

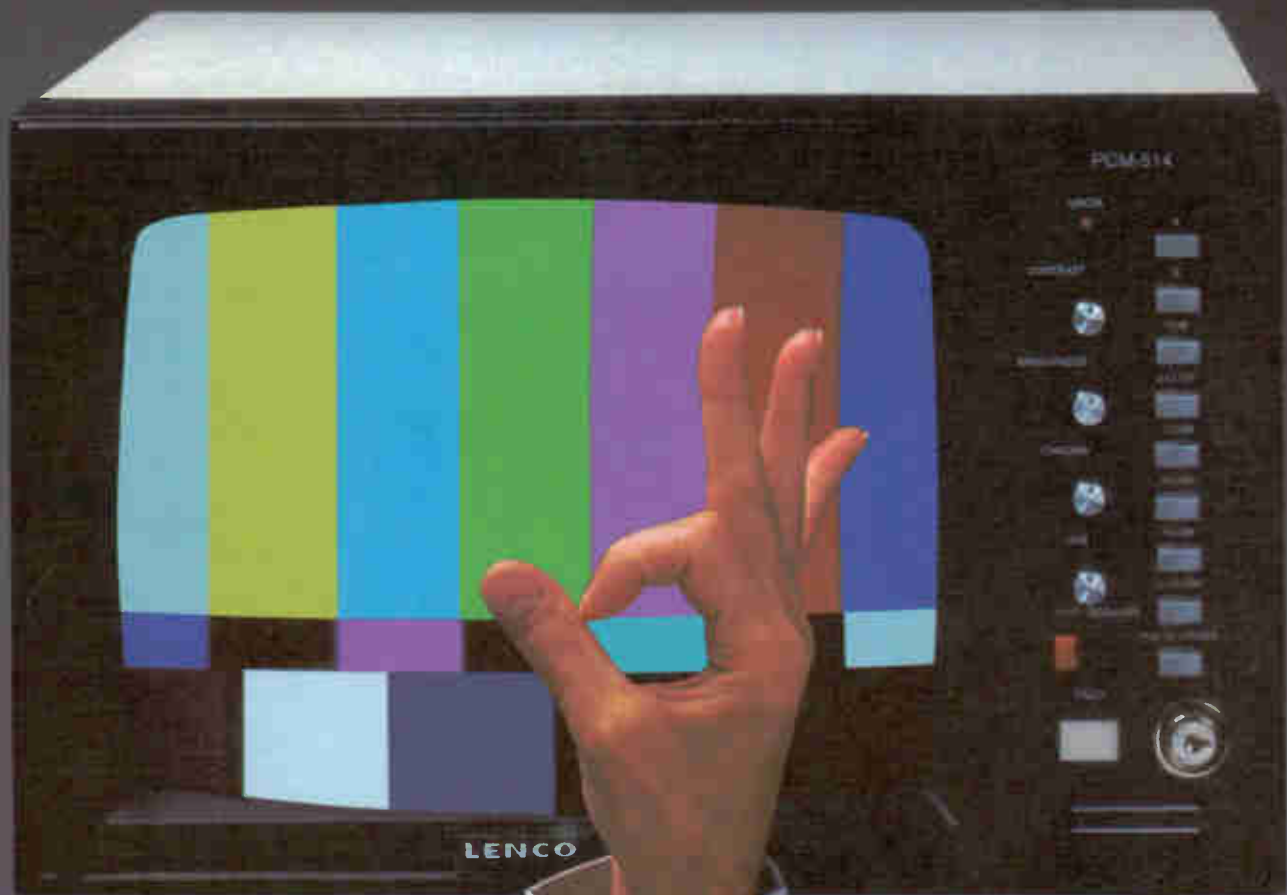
EQUIPMENT
BUYERS
GUIDE



Broad

BILL DANIELS'
ILLUSTRATED
TRADE REFERENCES

AT LAST A MONITOR WITH ITS FOCUS ON YOUR NEEDS.



At last there's a line of broadcast color monitors that's built the way you'd build them if you built them yourself—the Lenco 514 series.

It's all here—everything you want in a professional monitor. Everything you need to give you maximum performance, easier adjustability and greater reliability.

All the latest technology is here. Including PIL tube for simplified convergence and an ultra-stable, non-scan-derived high voltage system that really nails down regulation. Lenco monitors mean you get the stable picture you want—with the color accurate every time.

Features that are optional at extra cost on many other units you get standard with Lenco. Including RGB and two NTSC inputs, Comb filter, Pulse cross, Underscan, Chroma align, Int-Ext sync and degauss—all selectable from the front panel.

And if service is your concern, you'll really like the modular construction that

makes every printed circuit section easily accessible. Plus the fact that we're building these Lenco monitors with nearly all American parts—parts your distributor knows and carries.

Before you buy, take a look at how much better Lenco monitors fit your needs. Ask us today.

Lenco Inc.
Electronics Division
300 N. Maryland St.
Jackson, MO 63755
(314) 243-3147



Engineered and manufactured
in the United States
The Professionals' Choice.

LENCO

LOOK ALIVE!

Here's a group of JVC Color Video Monitors that'll put a whole new look in the life of the teleproduction professional. Big or small, each delivers that exclusive JVC combination: advanced design and unbeatable value.

TM-22U. A 5" portable color monitor with dual circuits for audio and video signals. The in-line black stripe picture tube delivers excellent color. AC and DC power supply.

TM-R9U. 9" color monitor specially suited to broadcast & production

studios and mobile production vans. Comb filter and many other features including underscan, pulse cross, skew, and blue check.

TM-90U. 9" portable color monitor for use as a VCR playback, with a video camera, or as a display monitor for a personal computer. At 9.3 kg, the smallest 9" color monitor available.

TM-2084U. 19" color monitor for use with almost all 1/2" VCRs. Many adjustment controls, and a special comb filter that delivers color and detail far superior to conventional monitors of this size.

C-1483UM. 13" color monitor/receiver with wireless remote control for volume, channel select, and power on/off. High-Focus CRT II with newly-developed electron gun. Comb filter. Many other features in a modern, professionally-styled package.

C-2082UM. 19" monitor/receiver with stereo sound. Dual audio channels for stereo VCRs. Receiver can be directed to 12 VHF and UHF frequen-

cies. Improved comb filter. Color can be switched off when working with monochrome video signals.

For a demonstration of — or a Spec Sheet on — any or all JVC Video Monitors, or JVC's complete catalogue, just ask. Call, toll-free:

1-800-JVC-5825

JVC COMPANY OF AMERICA,
Professional Video Communications
Division, 41 Slater Drive,
Elmwood Park, NJ 07407.
JVC CANADA, Scarborough, Ontario

TV reception not shown



JVC

JVC COMPANY OF AMERICA
Professional Video Communications
Division

YOU CAN'T SEE IT

BUT IT CAN DESTROY YOUR BROADCAST SIGNALS

The next time your performance is measured by the success of audio and video transmissions, take a closer look at the critical link: will the shielded cable you select maintain signal integrity? At Belden, we're working to protect this critical link.

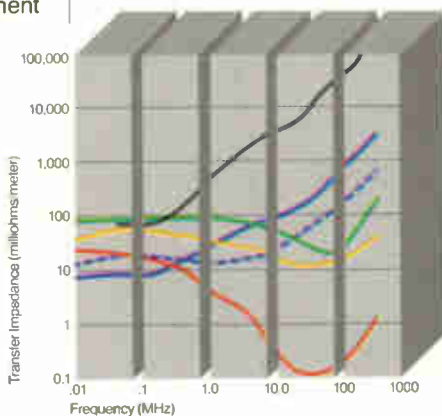
Shield Effectiveness

With heavy foot and equipment traffic inside the broadcast studio, one of your greatest challenges is to preserve the integrity of your transmission. This tough environmental problem, coupled with the need to protect the quality of your signal, has created a growing demand for sophisticated, shielded cable constructions.

Belden responds to these demands with innovative shielding designed to meet the highest performance standards in the broadcast industry.

Belden helps you control interference and protect signal integrity with innovative shielded cable

Transfer Impedance Test Results



The lower the value of transfer impedance, the more effective the shielding.

— Braid
— Spiral
— Foil
— Foil Braid
— Foil Braid/Foiled Duobond Plus
— Optimized Braid

Test Methods Protect Your System

To help you define interference problems, Belden's Technical Research Center evaluates the development, implementation and refinement of shields and shield effectiveness testing. Our Transfer Impedance Test is but one of many rigorous tests employed by Belden engineers. The procedures we use help you select the proper shielded cable that results in cost-effective transmission performance.

Effective Assistance

Belden has recently published a *Cable Shield Performance and Selection Guide*. It's free, and it helps you define your interference problem, acquaints you with current FCC regulations, and familiarizes you with the trade-offs associated with different shield designs and Belden's various test procedures for measuring shielding effectiveness. Shield performance results are detailed from each test to properly guide your cable selection.



Contact Belden today for your free personal copy. Belden Electronic Wire and Cable, P.O. Box 1980, Richmond, IN 47375. Phone: 317-983-5200.

There is no equal.



BILL DANIELS'
ILLUSTRATED
TRADE REFERENCES

85/86 BROADCAST

***EQUIPMENT
BUYERS
GUIDE***

PUBLISHED By

BILL DANIELS CO., INC.

**P.O. BOX 2056
SHAWNEE MISSION, KS 66201
1-913-492-9900**

FOR ADVERTISING INFORMATION TELEPHONE 1-800-255-6038

The BILL DANIELS' ILLUSTRATED TRADE REFERENCES BROADCAST EQUIPMENT BUYERS GUIDE is published by the Bill Daniels Co. Inc., P.O. Box 2056, Shawnee Mission, KS 66201. All rights are reserved throughout the world. Any reproduction or copying, in whole or in part, without written permission is prohibited.

All the information published has been developed from specification sheets, price lists, sales brochures and technical manuals provided by vendors and/or their dealers.

Prices shown on these catalog pages are furnished for information only—they are not included as quotations, and may not be the current resale price. Participating manufacturers reserve the right to change specifications, revise prices or discontinue items without notice.

While every precaution has been taken to assure accuracy in content, the publisher cannot be responsible for manufacturers claims and representations, nor can any guarantee be made against the possibility of error or omission.

**© 1985 Bill Daniels Co., Inc., Shawnee Mission, KS 66201
ALL RIGHTS RESERVED**

TABLE OF CONTENTS

A

Abekas Video Systems, Inc. -	B-6-9
Accurate Sound Corp.	B-10, 11
Acrodyne Industries, Inc. -	B-12
ADC Magnetic Controls Co.	B-13-15
ADDA Corp.	B-16-20
ADM Technology, Inc. -	B-21-23
Advance Industries, Inc. -	B-24-29
Agfa-Gevaert, Inc. -	B-30, 31
AKG Acoustics, Inc.	B-32-36
Alexander Battery Co. -	B-37
Allen Avionics, Inc. -	B-38-43
Alpha Audio/Alpha Recording Corp.	B-44
Amber Electro Design, Inc.	B-45-50
Amek Consoles, Inc.	B-51, 52
Amperex Electronic Corp. -	B-53, 54
Ampex Corp. -	B-55-61
Ampro Scully/A Television Technology Co.	B-62-76
Amtel Systems, Inc.	B-77-79
Anchor Audio, Inc.	B-80-82
Andersen Laboratories, Inc. -	B-83-85
Angenieux Corp. of America -	B-86
Anixter-Mark/Anixter Communications	B-87
RB Annis Co.	B-88
Anton/Bauer, Inc.	B-89
Anvil Cases, Inc. -	B-90
Aphex Systems, Ltd.	B-91, 92
Arrakis Systems, Inc.	B-93-97
Artel Communications Corp. -	B-98, 99
A & S Flight & Road Case Co. -	B-100
Asaca/Shibasoku Corp. of America -	B-101-108
Ashly Audio, Inc.	B-109, 110
Atlas Sound -	B-111
Audico, Inc.	B-112, 113
Audi-Cord Corp.	B-114, 115
Audiolab Electronics, Inc.	B-116
Audio-Technica U.S., Inc.	B-117, 118
Audio Technologies, Inc. (ATI)	B-119-121
Audisar -	B-122
Autogram Corp.	B-123, 124
Automation Techniques, Inc.	B-125

B

Beaveronics, Inc.	B-126, 127
Belar Electronics Lab, Inc.	B-128, 129
Belden Corp.	B-130-135
Beston Electronics, Inc.	B-136
Beyer Dynamic, Inc.	B-137-143
Bird Electronic Corp.	B-144-147
Blonder-Tongue Labs, Inc.	B-148-152
Bogner Broadcast Equipment Corp.	B-153
Robert Bosch Corp.	B-154-161
Bretford Mfg. Co.	B-162-166
Walter S. Brewer Co., Inc.	B-167-178
Broadcast Audio Corp.	B-179-181
Broadcast Cartridge Service, Inc.	B-182
Broadcast Electronics, Inc.	B-183-187
Broadcast Microwave Services, Inc.	B-188
Broadcast Video Systems, Ltd.	B-189-191
Buhl Optical Co.	B-192, 193

C

Cablewave Systems, Inc.	B-194-218
Canare Cable, Inc.	B-219-230
Canon USA, Inc.	B-231-234
Capitol Magnetic Products Int'l., Inc.	B-235
Carvin Corp.	B-236, 237
CAT Systems, Inc.	B-238
Catel Telecommunications	B-239-243
CEL Electronics, Ltd./ James Grunder & Assoc.	B-244-247
Celwave RF, Inc.	B-249-264
Cetec Broadcast Group/ Schafer World Communications Corp.	B-266-272
Cetec Vega Corp.	B-273-278
Channelmatic, Inc.	B-279-282
Chroma Digital Systems, Inc. (CDS)	B-265
Chyron Corp.	B-283, 284
Cine 60, Inc.	B-285-291
Cinetronics	B-292
Cipher-Digital, Inc.	B-293
Circuit Research Labs, Inc./CRL Audio	B-294
Clear-Com Intercom Systems	B-295
CMX Systems	B-296
Colortran, Inc.	B-297-301
Comark Communications, Inc. (CCI)	B-302
Comprehensive Video Supply Corp.	B-303-310
Compu=Prompt	B-311
Connectronics Corp.	B-312
Conrac Corp.	B-313-317
Continental Electronics Mfg. Co.	B-318
Control Video Corp.	B-319
Convergence Corp.	B-320, 321
Cool-Lux Lighting Ind., Inc.	B-322-324
Costume Armour, Inc.	B-325
Countryman Associates, Inc.	B-326
Crosspoint Latch Corp.	B-327-330
Crown International	B-331-334

D

Peter W. Dahl Co., Inc.	B-335
Datum, Inc.	B-336, 337
Davis & Sanford Co., Inc.	B-338-340
dbx, Inc.	B-341-344
Delta Electronics, Inc.	B-345-349
Dielectric Communications	B-350-353
Digital Entertainment Corp.	B-354-358
Di-Tech, Inc.	B-359
Dolby Laboratories, Inc.	B-360, 361
Dorrrough Electronics	B-362
Durcom, Inc.	B-363
Dyma Engineering, Inc.	B-364
Dynair Electronics, Inc.	B-365-367
Dynatech Data Systems	B-368

E

Echolab, Inc.	B-369
ED/COR	B-370, 371
EECO, Inc.	B-372-378
EEV, Inc.	B-379-382
Elcon/Television Equipment Assoc., Inc.	B-383

TABLE OF CONTENTS (Cont'd)

Electrohome Electronics	B-384, 385
Electro-Voice, Inc.	B-386-396
Emcee Broadcast Products	B-397, 398
EMT/Gotham Audio Corp.	B-399, 400
Equipto Electronics Corp.	B-401
ESE	B-402-404

F

For-A Corp. of America	B-405, 406
Foundation Instruments, Inc.	B-407-410
Frezzolini Electronics, Inc.	B-411-415
Fuji Photo Film USA, Inc.	B-416, 417
Fujinon, Inc.	B-418, 419

G

Garner Industries	B-420, 421
General Electric Co.	B-422-424
GKC Research & Development	B-425-428
Gold Line Connector, Inc.	B-429
Gorman Redlich	B-430
Gotham Audio Corp.	B-399, 400, 431, 880-884
The Grass Valley Group, Inc.	B-432-443
Gray Engineering Laboratories, Inc.	B-444, 445

H

Hallikainen & Friends	B-446-448
Harris Corp.	B-449-521
HEDCO/Hughes Electronic Devices Corp.	B-522-528
Henry Engineering	B-529
Hero Communications	B-530
Hipotronics	B-531
Hitachi Denshi, Ltd.	B-532-545
Howe Audio Productions, Inc.	B-546-548

I

IEM/International Electro-Magnetics, Inc.	B-549
Ikegami Electronics, Inc.	B-550-563
Image Video, Ltd.	B-564-577
IMS/Integrated Media Systems	B-578, 579
Inflight Service, Inc.	B-580
Information Transmission Systems/ITS	B-581
Innovative Television Equipment/ITE	B-582, 583
Interand Corp.	B-584, 585
Intergroup Video Systems	B-586-597
International Tapetronics Corp./3M	B-598-601

J

JBL, Inc.	B-602-605
JVC Company of America	B-606-642

K

Kahn Communications, Inc.	B-643
Kangaroo Video Products, Inc.	B-644, 645
Kay Elemetrics Corp.	B-646
Kay Industries, Inc.	B-647
K & H Products, Ltd.	B-648, 649

Kinotone, Inc.	B-650, 651
Kinometrics, Inc.	B-652-654
Kliegl Bros.	B-655-659
Knowledge Industry Publications, Inc.	B-660
Knox Video Products	B-661, 662
Kobold/SATNEWS, Inc.	B-663-685
Eastman Kodak Co.	B-686

L

Laird Telemedia, Inc.	B-687-695
Lea, Inc.	B-696, 697
Leader Instruments Corp.	B-698-710
Leitch Video of America, Inc.	B-711-716
Lenco, Inc.	B-717-726
Lexicon, Inc.	B-727-729
Link Electronics/ Television Equipment Assoc., Inc.	B-730
Peter Lisand Machine Corp.	B-731, 732
Lowel-Light Mfg., Inc.	B-733-737
LPB, Inc.	B-738-745
LTM Corp. of America	B-746-755
Lucasey Mfg. Co., Inc.	B-756, 757
L-W International	B-758-760

M

3M Company	B-761-772, 1002-1004
M/A Com Video Systems, Inc.	B-773-780
Magnasync/Moviola Corp.	B-781-785
Magnetic Reference Laboratory (MRL)	B-786
Marathon Products Corp.	B-787, 788
Marshall Electronic	B-789
Marshall Electronics, Inc.	B-790
Marti Electronics, Inc.	B-791-798
Matthey/Television Equipment Assoc., Inc.	B-799
Maxell Corp. of America	B-800-802
MCI/Quantel	B-803
McMartin Industries, Inc.	B-804-810
MICMIX Audio Products, Inc.	B-811
Micron Audio Products, Ltd.	B-812-818
Microtime, Inc.	B-819-821
Micro-Trak Corp.	B-822-827
Microtran Co., Inc.	B-828
Microwave Specialty Corp. (MSC)	B-829-837
Miles Air Products, Ltd.	B-838
Modular Audio Products	B-839-845
Modulation Sciences, Inc.	B-846
Keith Monks Audio/PMG Diversified	B-847-851
Monster Cable Products, Inc.	B-852-854
Morton System Furnishings	B-855, 856
Moseley Associates, Inc.	B-857-862
Motorola Special Products	B-863

N

Nagra Magnetic Recorders, Inc.	B-864-866
Nautel Maine, Inc.	B-867
NEC America, Inc.	B-868-875
Neotek Corp.	B-876-879
Neumann/Gotham Audio Corp.	B-880-884
Neutrik Products	B-885, 886
Non-Linear Systems	B-887-889

TABLE OF CONTENTS (Cont'd)

O

O'Connor Camera Support Systems	B-890-892
Olesen	B-893, 894
Orban Associates, Inc.	B-895-899

P

Paltex (California Paltex Corp.)	B-900, 901
Panasonic Industrial Co.	B-902-915, 956-962
The Pep Line	B-916, 917
Perma Power Electronics, Inc.	B-918, 919
Perrott Eng. Labs, Inc.	B-920
Philadelphia Resins Corp.	B-921
Phoebus Manufacturing	B-922
Piclear, Inc.	B-923
Porta-Brace/K & H Products, Ltd.	B-648, 649
Porta-Pattern, Inc.	B-924, 925
PRC of America	B-926, 927
Precision Echo	B-928, 929
Premier Metal Products Co.	B-930
Pro-Co Sound, Inc.	B-931
Professional Products, Inc.	B-932

Q

QEI Corp.	B-933-935
QSI Systems, Inc.	B-936, 937
Q-Tv Telesync	B-938, 939
Quad/Eight Electronics	B-940-943
Quanta Corp.	B-944-946
QuickSet, Inc.	B-947-951

R

Racal/Television Equipment Assoc., Inc.	B-952
Radio Systems, Inc.	B-953, 954
Ramko Research, Inc.	B-955
Ramsa/Panasonic Industrial Co.	B-956-962
R-Columbia Products Co., Inc.	B-963
The Real World Technologies Group, Inc.	B-964
Revox/Studer Revox America, Inc.	B-965, 966
Rohde & Schwarz Sales Co., Inc.	B-967-969
Rosco Labs, Inc.	B-970-972
Ross Video Limited	B-973-977
RTS Systems	B-978-982
Ruslang Corp.	B-983-987
Russco Electronics, Inc.	B-988-990

S

Sachtler Corp.	B-991-994
Scala Electronic Corp.	B-995
Schneider Corp. of America	B-996
Scientific Atlanta, Inc.	B-997-1001
Scotch/3M Co.	B-1002-1004
Scribe Recorders, Inc.	B-1005
Sennheiser Electronic Corp.	B-1007-1016
Sescom, Inc.	B-1017
Sharp Electronics Corp.	B-1018-1020
Shintron Co., Inc.	B-1021, 1022
Shively Laboratories	B-1023-1025

Shure Brothers, Inc.	B-1026-1032
Sigma Electronics, Inc.	B-1033, 1034
H.A. Solutec, Ltd.	B-1035
Sonar Radio Corp.	B-1036, 1037
Sony Corp. of America	
Professional Audio	B-1038
Tape Sales	B-1039
Broadcast	B-1040-1064
Soundcraft Electronics, Inc.	B-1065-1072
Soundolier, Inc.	B-1073-1076
Sound Technology, Inc.	B-1077-1081
Southeast Electronics, Inc.	B-1082
Spectra Sonics	B-1083-1086
Standard Tape Laboratory, Inc. (STL)	B-1087-1090
Stanton Magnetics, Inc.	B-1091, 1092
Stantron/Unit of Zero Corp.	B-1093
Strong Ballantyne of Omaha/Strong Int'l	B-1094
Swintek Telecommunications Division	B-1095
Studer Revox America, Inc.	B-965, 966
SWR, Inc.	B-1096
Symetrix, Inc.	B-1097

T

Taber Mfg. & Eng. Co.	B-1098
Total Audio Concepts, Ltd. (TAC)	B-1099
Tandberg of America	B-1100
Tascam/Teac Corp. of America	B-1101-1105
Tektronix, Inc.	B-1106-1128
Telemet	B-1129-1131
Telepak San Diego	B-1132
Texar, Inc.	B-1133
Thomson-CSF Broadcast, Inc.	B-1134, 1135
Time & Frequency Technology, Inc.	B-1136-1141
Times One	B-1142
Trompeter Electronics, Inc.	B-1143

U

Ultimatte Corp.	B-1144-1146
United Media	B-1147

V

Valley People, Inc.	B-1148, 1149
Videomedia, Inc.	B-1150-1154
Videotek, Inc.	B-1155-1160
VIF International	B-1161

W

Wheelit, Inc.	B-1162-1167
White Instruments, Inc.	B-1168-1172
H. Wilson Co.	B-1173
Wireworks Corp.	B-1174
The Winsted Corp.	B-1175-1177
WRE	B-1178, 1179

X Y Z

Xedit Corp.	B-1180
Yamaha International Corp.	B-1181-1236
The Zei-Mark Corp.	B-1237



A52

A52 DIGITAL SPECIAL EFFECTS SYSTEM FEATURES

- Variable axis compression
- Infinite expansion
- Picture repositioning
- Mosaics
- Posterization
- Picture splits
- Flips
- Tumbles
- Freeze
- Multi-freeze
- Trajectory and linear moves
- Picture cropping
- Border
- Background

RGB Outputs. The A52 has optional high quality RGB outputs. This option has many useful applications, one of primary importance being the ability to externally matte the output of the A52.

Soft Edge Key. Unlike other systems, the A52 offers a hard or soft key signal. The key edges are interpolated thus eliminating edge stepping on the keyed image. The softness is user programmable.

Digital Interface. The A52 provides composite digital input and output ports. These digital ports make it possible to interface the A52 to the Abekas A42 digital still store system.

A52 Digital Special Effects System. Abekas Video Systems, Inc., presents the A52 Digital Special Effects system, the next generation of powerful picture manipulation systems, intended to set a new standard of performance in the television industry. The A52 provides high signal transparency, smooth picture movement and a powerful yet easy to use control system. The A52 control system is ideal for both on-air and post-production application.

Transparent Picture Quality. Transparent picture quality is the direct result of utilizing advanced digital signal processing techniques. The incoming composite signal is immediately digitized to eliminate the usual analog decoding problems such as drift and complex adjustments. It is digitally decoded into 4:2:2 components and then processed in order to ensure signal transparency and long-term stability.

Powerful Control System. The A52 is the first system to recognize that different types of control systems are required for on-air and post-production applications, but that one system must satisfy both these requirements. The A52 control system is ideal for both on-air and post-production applications. For simple applications the system is as easy to use as selecting a pre-programmed effect and executing it automatically or manually. When it comes to creating complex effects, the more you demand from it the more powerful it becomes.

Simple Control Panel. The A52 control panel consists of an integral graphics display, T-bar, 3-axis joystick, DataKey[†], numeric keypad and other appropriate keys. The graphics display enhances the power and simplicity of the system. Whether selecting simple pre-programmed effects, or programming complex effects, the graphics display presents information in a form that is easy to understand. The T-bar is ideal for rehearsing effects or executing them manually on-air. In normal operation the professional 3-axis joystick is used for specifying all picture manipulation parameters. For those critical times when everything has to be precise, the picture parameters can be entered through the numeric keypad. The A52 specifies picture position in normalized screen units and not in line and pixel counts.

[†]Trademark of DATAKEY, INC.

A52 (Cont'D)

Pre-Programmed Effects. The A52 provides 24 pre-programmed effects stored in non-volatile memory. 12 of these pre-programmed effects, which are a collection of frequently used simple transitions like "quarter size compress to the upper right hand corner," are presented in graphic form on the display for easy identification. Users may program the other 12 to customize the system best for their everyday needs.

Multi-Channel Operation. The A52 is available as a one or a two channel system. A two channel system can be used as a dual channel system or two independent single channel systems. In the multi-channel configuration the user can fully program each channel separately and then simultaneously execute the effect thus providing true multi-channel capabilities.

Effects Programming. The A52 offers simple and powerful programming techniques and effects editing capabilities. An effect can be made up of as little as two or as many as 16 key frames. Picture manipulation parameters such as size, position, and flips are programmed on a key frame basis. Duration between key frames is specified in seconds and frames. The system computer interpolates parameters between key frames to achieve smooth transitions.

Once an effect has been programmed, it can be fully edited to achieve desired results. An effect can be edited by modifying parameters within a given key frame or by adding, deleting or substituting key frames. Time duration between key frames can be selectively changed or the length of the entire effect can be increased or decreased.

Off-Line Effects Storage. The A52 utilizes DataKey†, a unique and practical concept for off-line storage of effects. DataKey† is a reusable electronic memory capable of storing 16 key frame multi-channel effects. It is small, economical, and is part of the control panel which means it does not require additional console space.

†Trademark of DATAKEY, INC.



A52 SPECIFICATIONS

VIDEO

NTSC TELEVISION SIGNAL STANDARD

FREQUENCY RESPONSE ± 0.25 dB to 4.2 MHz

DIFFERENTIAL PHASE 2°

DIFFERENTIAL GAIN 2%

K FACTOR (2T PULSE) 1%

SIGNAL TO NOISE 52 dB

(A/D, D/A DIRECT CONNECTION)

INPUTS

VIDEO INPUT: Analog composite, synchronous ± 2 lines

Digital composite (TTL levels)

REFERENCE (gen lock): Black burst, high impedance looping

OUTPUTS

Composite analog video

Analog key signal

Composite digital video (TTL levels)

Optional RGB and Sync

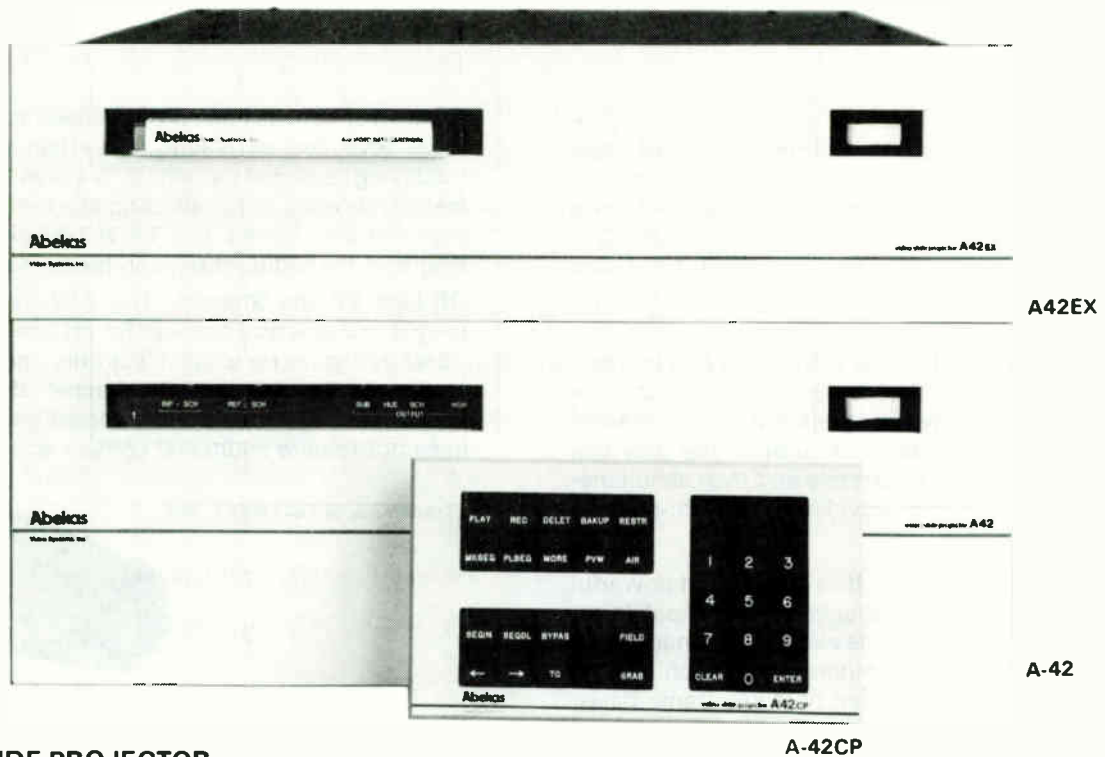
INTERCONNECTS

A52CP control panel to A52: Serial RS422, 2000 ft. maximum

PHYSICAL & ELECTRICAL

UNIT	POWER	SIZE	WEIGHT
A52	Less than 500 Watts	8.75" H x 19" Rackmount X 22" D	80 Lb
A52CP	Less than 20 Watts (DC from A52)	7" H x 19" Rackmount X 3.5" D	10 Lb

Prices available upon request



A-42 VIDEO SLIDE PROJECTOR

The A-42 is a compact 7-inch high rack mountable unit. Its all digital video processing system produces consistently high quality images. A microprocessor based control system provides powerful yet easy to use features. A built-in highly reliable 5¼" Winchester disk drive allows 100 frames/200 fields on-line storage. Automatic intermixing of fields and frames maximizes effective storage. This chassis also accommodates an optional second video output channel.

FEATURES

Virtual Picture Numbering Scheme. The picture numbering scheme employed in the A-42 is completely independent of physical disk storage locations. Pictures are identified by serial numbers ranging from 1 to 9999 regardless of the on-line storage capacity. The user is no longer unnecessarily burdened with knowing the actual picture storage location on disk.

Backup and Off-Line Storage. Abekas offers the most up-to-date, reliable and cost effective means of off-line storage. The A-42 utilizes a high speed digital streaming tape drive to store pictures on a compact quarter-inch tape cartridge. The low media cost and compact size, for the first time, makes unlimited off-line picture storage practical. Transporting pictures from one system to another or from the studio to mobile truck is now as simple as carrying this pocketbook size tape cartridge. Microprocessor assisted lineup guarantees perfect changeability. Besides transferring the entire contents of the disk drive or streamer cartridge, selective backup and restore can be done by creating a sequence or range of serial numbers.

Sequence. A sequence of 100 pictures can be created using any of the recorded pictures. A sequence can be edited at any time by inserting, deleting or substituting pictures. The forward and back arrows on the control panel allow a sequence to be played in either direction. A sequence can be temporarily exited to perform other functions.

B-8

Prices and Specifications Subject to Change Without Notice.

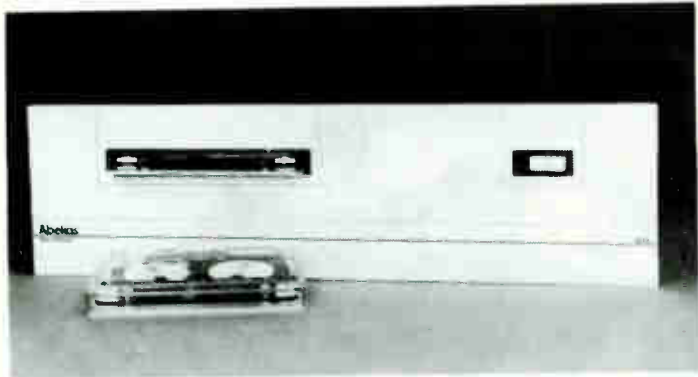
Simple Basic Operations. The system always grabs a frame, but a field or a frame can be displayed by changing the state of a field/frame select control. A picture is recorded on the disk as a field or a frame corresponding to the picture monitor display. During playback the field/frame selection becomes automatic and the system plays back a picture as it was recorded (field or frame). To further simplify operation and prevent errors the user is presented with complete system status display superimposed on the preview video output.

Independent Output Channels. In a dual channel system, pictures can be recalled to both channels independently. While one channel is displaying a picture, the other channel can be fully used to record, play back or create sequences. The outputs of the two channels can be cross-faded or switched during the vertical interval, by the system, for on-air transitions. The rate of fade is selectable from the control panel.

Graphics Compose. The A-42 provides excellent multi-generation capability which is essential in the composition of multi-layer graphics. The special graphics compose mode optimizes the use of the two channels for easy graphics creation. The entire graphic can be created in the frame buffer and stored on the disk or each step along the way can be saved. Making a mistake on the last layer of a complex multi-layer graphic requires starting over in most other systems. Since the A-42 automatically saves the previous layer in the other frame buffer, it is extremely easy to recover from mistakes.

Built-in Test Signals. A-42 has the ability to digitally generate multiburst, color bars and other useful test signals to aid in the maintenance and trouble shooting of the system.

A-42 CON'T



The **A42 EX** is an optional 5¼ inch high rack mountable expansion unit. It houses additional disk drives to expand the on-line storage to 300 frames/600 fields. It also contains a high speed digital streaming tape drive for backup and off-line storage.



The **A42 CP** is an ultra compact, microprocessor based control panel. It communicates over a serial link with the A 42. A system status display is superimposed on the preview video output and provides extensive user feedback. The control panel combined with the system status display makes for a very efficient operator interface.

A 42 SPECIFICATIONS

VIDEO	
NTSC TELEVISION SIGNAL STANDARD	
FREQUENCY RESPONSE	± 0.25 DB To 4.2 MHz
DIFFERENTIAL PHASE	2°
DIFFERENTIAL GAIN	2%
K FACTOR (2T PULSE)	1%
SIGNAL TO NOISE	52 DB

INPUTS
VIDEO INPUT: 1 Volt p-p composite, synchronous or nonsynchronous
REFERENCE (gen lock): 1 Volt p-p composite, high impedance looping

OUTPUTS
CHANNEL A: Composite video
CHANNEL B: Composite video
PREVIEW Composite video

STORAGE
Maximum on-line storage: 1,050 frames / 2,100 fields

INTERCONNECTS
A 42 CP control panel to A 42: Serial RS 422, 2000 ft maximum
A 42 EX expansion chassis to A 42: Flat ribbon cables, 15 ft maximum

PHYSICAL & ELECTRICAL			
UNIT	POWER	SIZE	WEIGHT
A 42	Less than 250 Watts	7"H X 19" Rack mount X 22"D	75 Lb
A 42 EX	Less than 150 Watts	5.25"H X 19" Rack mount X 22"D	40 Lb
A 42 CP	Less than 5 Watts (DC from A42)	4.75"H X 8.25"W X 2"D	5 Lb

Prices available upon request

Prices and Specifications Subject to Change Without Notice.

3515 Edison Way
Menlo Park, CA 94025
(415) 365-2843 Telex 34-8327



SYSTEM AS-200 High Speed Audio Duplicator

FEATURES

- Elimination of capstan-idler (pressure roller)
- Crystal-referenced DC servo capstan
- DC servo supply & take-up motors
- Elimination of mechanical brakes
- Simple electronic set-up and adjustment

AUTO CUE LOGIC OPTION

The Auto Cue Logic option is a plug-in module offering bin-like productivity with the ease and convenience of a reel-to-reel transport. Auto Cue Logic automatically rewinds the master tape and restarts the duplicating cycle—allowing for unattended operation. Cycling is accomplished either on a continuous basis or as programmed by the operator. Auto Cue Logic is an important system add-on that will improve overall efficiency.

AS-200 RM, 1/4" 2 Channel	\$9,300.00
AS-200 RM4, 1/4" 4 Channel	11,650.00
AS-200 Slave RS2, 1/4" 2 Channel	7,800.00
AS-200 Slave RS4, 1/4" 4 Channel	8,650.00
Auto Cue Option	900.00

SPECIFICATIONS

Tape/Track Formats: Master—1/4-inch 2-channel, 4-channel, 1/2-inch 4 channel
Slave—150-mil cassette (2-channel or 4-channel), 1/4-inch full track, 2-channel 1/4-inch 4 channel

Tape Speeds: 60/120/240 ips

Duplication Ratios: 16:1, 32:1, 64:1

Tape Speed Error:	0.08% maximum
Overall Flutter Contribution:	0.15% rms, NAB weighted
Tape Drive Type:	Capstan: DC servo, crystal referenced; Supply and Take-up: DC servo
Bias Frequency:	10 MHz, crystal reference
Frequency Response:	7-1/2 ips copies: +1 -3dB, 50Hz to 18kHz 3-3/4 ips copies: +1 -3dB, 50Hz to 12kHz 1-7/8 ips copies: +1 -3dB, 50Hz to 12kHz
Stereo Phase Error:	Less than 45° at 15kHz
Level Calibration:	Ovu record level referenced to 200 nW/m as standard. Alternate factory calibration per customer requirement.
Reel Size Capacity:	7", 10-1/2", 14"
System Expansion:	10 slaves per master, maximum
Power Requirements:	117 VAC 50/60Hz, transports fused at 3A. 230 VAC available as special order.
Shipping Weight:	Master: 112 lbs Slave: 81 lbs Stand: 45 lbs
Container Size:	Master: 36" x 24" x 18" Slave: 25" x 18" x 24" Stand: 35" x 6" x 24"

3515 Edison Way
Menlo Park, CA 94025
(415) 365-2843 Telex 34-8327



HORIZONTAL
4 FT. MINIMUM
8 FT. MAXIMUM

VERTICAL
5 FT. MINIMUM
9 FT. MAXIMUM

AIR VALVE—ORIFICE
VALVE CUSHIONS DESCENT
OF VERTICAL SHAFT

MODEL 180 **Deluxe Starbird Studio Boom**

The Starbird Deluxe Studio Boom is a favorite of engineers. Its flexibility permits almost any microphone arrangement and its balanced design affords maximum extensions with complete safety for personnel and equipment. It rolls smoothly and silently, on large rubber tired ball-bearing casters. With this boom, you can "spot your mike" wherever you wish and save valuable set-up time. Adaptors are supplied to fit most standard microphones.

The swivel clevis permits 360 degree microphone facing. The adaptors supplied permit you to use most any microphone you prefer. The cable is securely and neatly clamped to the boom. The 15 lb. adjustable counter-weight will balance all microphone weights.

Large ball-bearing casters allow the boom to be moved freely and noiselessly about. The heavy base reduces the possibility of tipping or rocking the boom while it is being moved about the studio.

The 180 degree quadrant allows you to place the microphone anywhere you want it; raise or lower it, rotate it in a complete circle, set it at any height, from the floor to 16 feet high and without moving the base. **\$595.00**

- Each part is accurately machined to close tolerances, insuring dependable operation
- All tubings are centerless ground and anodized, to insure smooth action and prevent sticking
- All hand-wheels and adjustment parts are knurled, for quick and easy handling
- Appearance—all paint is Western Electric grey
- Air Valve—Orifice valve prevents sudden descent of vertical shaft

ACRODYNE INDUSTRIES, INC.

516 Township Line Road
 Blue Bell, Pennsylvania 19422
 (215) 542-7000 (800) 523-2596
 Telex 846358

TELEVISION TRANSMITTERS AND TRANSLATORS

VHF/UHF TELEVISION TRANSLATORS

- Wide Band Amplifiers
- Modular Construction
- Synthesized Local Oscillator
- Overall AGC

Acrodyne's new series of low power television transmitters/translators feature TCU and TCV frequency synthesized upconverters incorporating the latest concepts in carrier generation and upconversion techniques. Features such as broadband amplifiers, synthesized LO, AGC, protective logic, plug-in modules, and built-in diagnostics are all included in this "new generation" product. Acrodyne offers the broadest range of products available for this power level, with a selection of broadcast quality modulators and receiver front ends for translators/transposers.

Options And Accessories

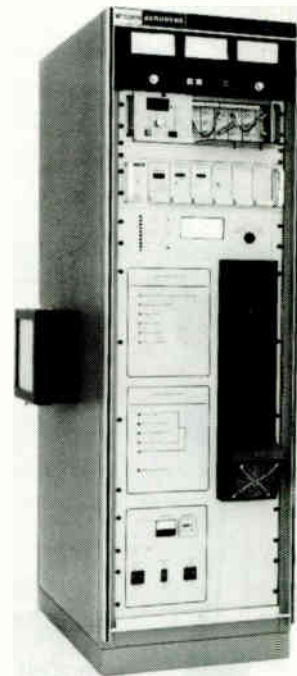
- Remote Control
- Automatic Identification
- DC Operation 1 and 10 watt Translators
- Dual Systems with Auto Switchover
- Solar and/or Wind Powered Systems

Medium Powered Transmitters

Acrodyne manufactures transmitters for full service VHF and UHF broadcasting at power levels up to 120kW

Preamplifiers

- Broadband (VHF Channels)
- Channelized (VHF Channels)
- Broadband (UHF Channels)
- Channelized (UHF Channels)



TRANSLATORS/LPTV TRANSMITTERS

VHF Output	P Out	Driver	Final
TLL(H)/10	10W	SS	SS
TLH/100	100W	SS	SS
TLL(H)/100A	100W	SS	8791

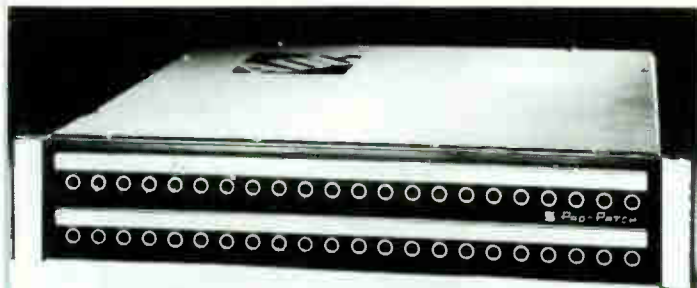
TRANSLATORS/LPTV TRANSMITTERS

UHF Output	Channel	P Out	Driver	Final
TLU/1	14-80	1W	SS	SS
TLU/10	14-80	10W	SS	SS
TLU/30	14-80	30W	SS	SS
TLU/100	14-80	100W	SS	SS
TLU/100A	14-80	100W	SS	TH328
TLU/200A	14-80	200W	SS	TH338
TLU/1KA	14-80	1kW	SS	TH347
TLU/1KAC	14-80	1kW	SS	TH347



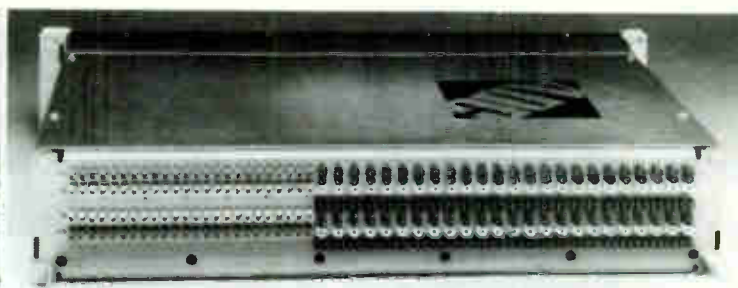
ADC MAGNETIC CONTROLS CO.
 4900 West 78th Street
 Minneapolis, MN 55435
 (612) 835-6800

PRE-WIRED AUDIO JACKFIELDS



Front View

ADC's new Pro-Patch jackfield is truly state-of-the-art. Incorporating the split cylinder contacts, Pro-Patch units are reusable and especially suited for remotes, special broadcasts and advance builds.



Rear View

With the ability to change circuits and normaling configurations in seconds, Pro-Patch jackfields provide the ultimate in time and labor savings, flexibility, and ease of installation and maintenance.

Pro-Patch is available in 3 standard sizes:

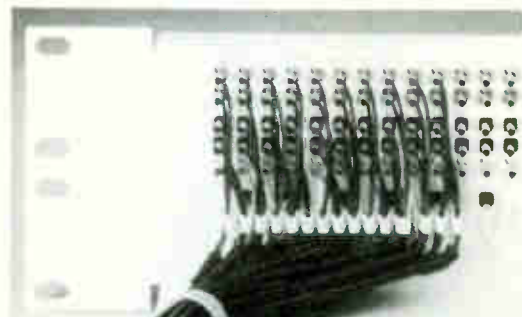
- 1) 1-3/4" x 14" ADC Part Number PPA1-14 \$650.00
- 2) 3-1/2" x 14" ADC Part Number PPA3-14 650.00
- 3) 3-1/2" x 18" Chassis ADC Part Number PPA3-18 . . 650.00



Front View

Ultra-Patch panels, another innovative product utilizing ADC's split cylinder technology, were designed to provide yet another set of options for audio patching and interconnect requirements.

Ultra-Patch panels can be terminated at the factory to any of ADC's standard or custom jackfields and



Rear View

may be rack or wall mounted. Accessory brackets are available for racks with nonadjusting rear supports as well as for wall mount applications. Cable troughs, front and rear, provide for a clean and professional look for any system. Ultra-Patch panels are available separately.

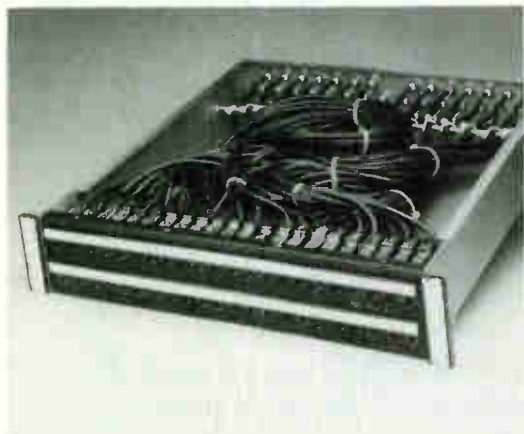
- UP3-N** Tip/ring/sleeve and normals brought out, 48 Positions \$100.00
- UP3** Tip/ring/sleeve only, 48 Positions 90.00
- UP-W** Wall mount brackets 7.00
- UP-R** Rack mount brackets 7.00
- UP96-N** Tip/ring/sleeve and normals brought out, 96 Position 200.00
- UP96** Tip/ring/sleeve, 96 Position 150.00

Prices and Specifications Subject to Change Without Notice.



ADC MAGNETIC CONTROLS CO.
 4900 West 78th Street
 Minneapolis, MN 55435
 (612) 835-6800

PRO-PATCH VIDEO JACKFIELDS



The Pro-Patch video jackfield features a 2 x 22 or 2 x 24 array of ADC switching (self-normalling) coax jacks wired back to quick and simple BNC connectors on a clutter-free rear panel. Self-normalling loops internal to the jackfield are color-phase compensated for cross patching. No phase shift occurs between self-normal and patch cord providing a phase coherent patching system. ADC Part Number PPV-22 or PPV-24

PPV-22 \$1410.00
 PPV-24 1540.00

SPECIFICATIONS

Physical

- Chassis: Aluminum with gold anodized finish.
- Front Panel: Black thermoset plastic or black thermoplastic.
- Rear Connectors: Isolated BNC bulk-head receptacle, non tarnish finish

Cable

RG-59 series coax cable (75 ohms impedance)

Jacks

Nickel plated zinc alloy housing. Gold-plated beryllium copper and phosph-bronze springs.

Electrical

Better than 90dB isolation between circuits in range of 0-6 MHz. Not greater than 0.2dB of insertion loss. VSWR of less than 1.15 in range of 0-100 MHz.

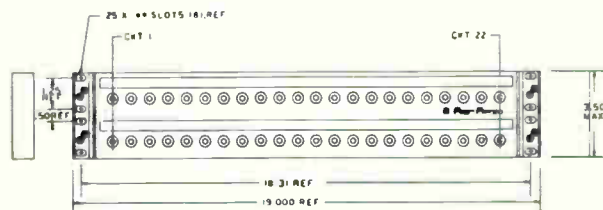
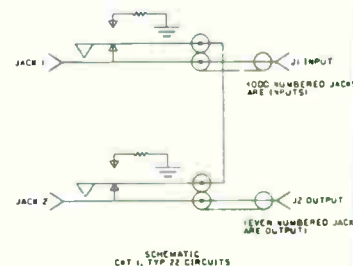
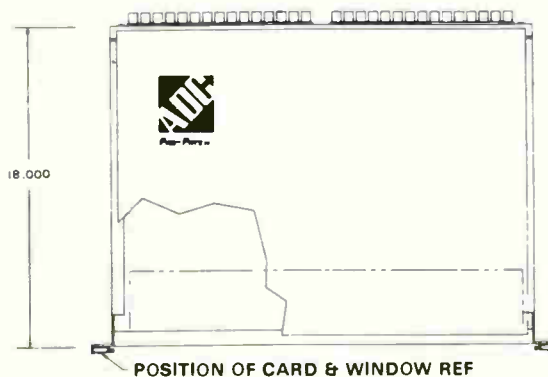
Environmental

Operating Temperature: 0°C to +50°C.
 Non-operating Temperature: -40°C to +70°C.
 Humidity: 5% to 95%.

MARKING AS SHOWN TO
 IDENTIFY CIRCUITS



REAR VIEW (ROTATED)

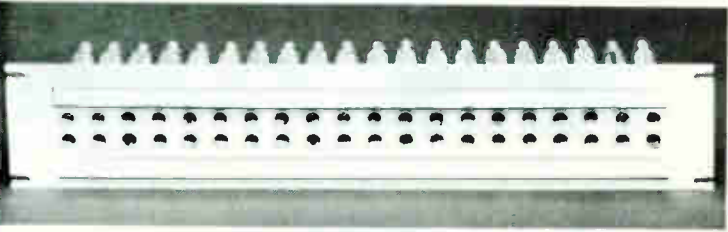




ADC MAGNETIC CONTROLS CO.
 4900 West 78th Street
 Minneapolis, MN 55435
 (612) 835-6800

COAXIAL COMPONENTS

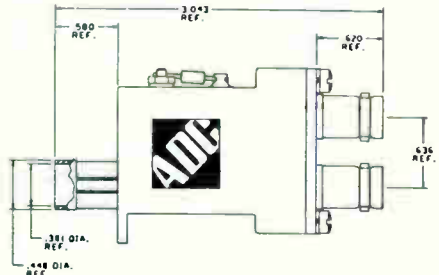
Coaxial Components



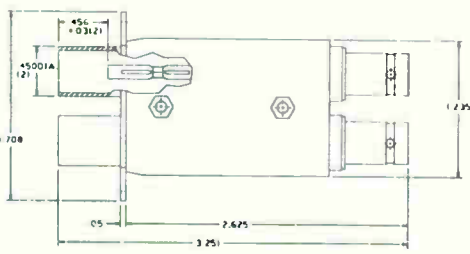
Panels are available in various sizes and configurations and can be purchased separately or loaded with choice of jacks.



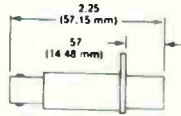
1000



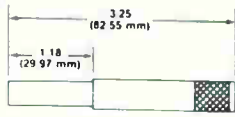
2000



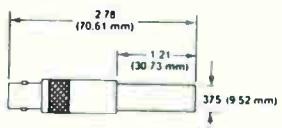
CJ-1011X*



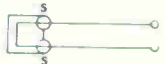
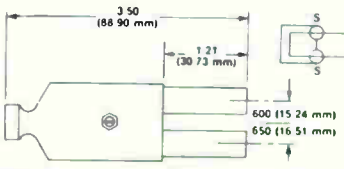
CP-1040X*



CP-1051X*



CP-1063X*



Standard Size Coaxial Patch Cords



75 OHM	Length
CC-1072X	12 in. (.305m)
CC-1074X	24 in. (.609m)
CC-1076X	36 in. (.914m)

Note: use only 36" patch cords for Pro-Patch units.

*Note: When ordering, replace X with either G or N. G denotes gold plating on all contact surfaces, N denotes gold plating on the center conductors/springs only.

Coax Panels		Price
DC Number		
9"x1.75" Panels		
PPI-1120R	20 hole, .83" horiz spacing	\$49.00
PPI-1124G	24 hole, .625"/.75" horiz spacing	56.00
PPI-1220R	40 hole, .83" horiz spacing, .625" vert spacing	77.00
PPI-1224G	48 hole, .625"/.75" horiz spacing, .625" vert spacing	85.00
PPI-1226R	52 hole, .83" horiz spacing, .625" vert spacing	85.00
3"x3.5" Panels		
PPI-2220RS	40 hole, .83" horiz spacing, .625" vert spacing	77.00
PPI-2220RW	40 hole (angled jack mount), .83" horiz spacing, 1.0" vert spacing	77.00
PPI-2222RW	44 hole (angled jack mount), .75" horiz spacing, 1.0" vert spacing	77.00
PPI-2224GS	48 hole, .625"/.75" horiz spacing, .625" vert spacing	85.00
PPI-2224RS	48 hole, .625" horiz spacing, .625" vert spacing	85.00
PPI-2224RW	48 hole (angled jack mount), .70" horiz spacing, 1.0" vert spacing	85.00
PPI-2226RS	52 hole, .625" horiz spacing, .625" vert spacing	95.00

other quantities — call for quote

Coax Accessories		
ADC Number	Price	Price
Patch Cords		
CC-1072G	\$17.83	
CC-1072N	13.66	
CC-1074G	17.83	
CC-1074N	13.66	
CC-1076G	17.83	
CC-1076N	13.66	
Plugs		
CP-1040G	12.94	
CP-1040N	9.73	
CP-1051G	12.76	
CP-1051N	7.64	
CP-1063G	17.98	
CP-1063N	13.48	
Single Jacks		
CJ-1011G		\$9.74
CJ-1011N		5.68
Switching Jacks		
SJ-1000N		26.22
SJ-1000N75		30.35
(75 ohm resistor)		
SJ-2000N		26.22
(non terminating)		
SJ-2000N75		30.35
(75 ohm resistor)		

130 Knowles Drive
Los Gatos, CA 95030
(408) 379-1500

ESP II Electronic Graphics System

The easy entry to professional broadcast quality, still store and electronic graphics generation.

ADDA's ESP II offers a unique opportunity to move up to truly professional video graphics production and presentation. Transfer your current slides, still photos, art cards, titles and other graphics to digital frames in the ADDA ESP II for video production or special display.

You can even "grab" stills from live camera or tape productions with the ESP II freeze frame feature. Stills may be stored as random frames, each with a numerical address for instant recall, or assembled in sequences. ESP II high resolution stills are always perfect, always right side up, always available.

Create your own graphics without costly art work, paste up or photography. Multi-layer video graphics may be assembled in the frame buffer for storage as completed stills. Because the ESP II uses the same 8-bit, 4-times subcarrier sampling scheme, multi-generation graphics can be created without picture degradation. Up to 2 of the most popular drive units may be used with the ESP II, each with a capacity of up to 400 stills. Drives may be fixed or removable for additional off-line storage flexibility. The ESP II's modular architecture permits expansion to dual-channel operation at any time to add additional production capability plus digital transitional effects between channels.

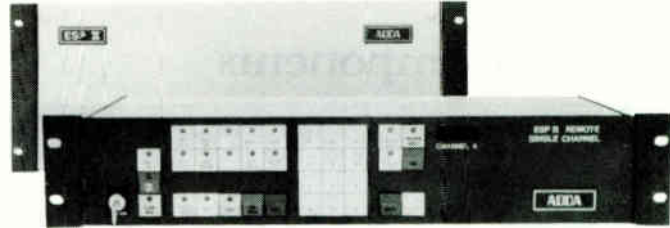
Add new dimensions to video productions and display presentations with broadcast quality electronic graphics...always at hand in the ESP II. Save on slide production and graphics cost as well as maintenance.

VIDEO

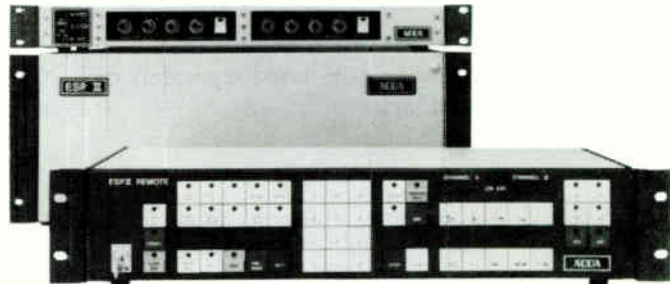
Television Standard:	Accepts NTSC or NTSC type 525 line, 60Hz signal.
Input Signals:	Requires stable color signal. Also requires gen lock reference signal with composite sync, blanking, and burst.
Input Impedance:	75 ohms, A and B Channel Inputs. (Gen Lock is high impedance looping)
Output Signals: (A, B, C Outputs)	Composite video with burst, composite sync, and blanking meeting RS-170A requirements.
Range of Synchronization:	One frame (2 fields).
Bandwidth:	± 0.5dB to 5MHz.
K Factor:	1% (2T pulse).
Differential Phase:	Less than 2° at 40 IRE, using linearity ramp and subcarrier test signal.
Differential Gain:	Less than 2%.
Signal-to-Noise:	+ 56dB (p-p signal to rms noise).
Sampling Rate:	4 x Fsc (14.3MHz).
Line Rate Tilt:	Less than 1%.
Field Rate Tilt:	Less than 1%.
Output Sync Jitter:	± 1 nsec.

POWER REQUIREMENTS

Voltage:	120 ± 10%.
Frequency:	50 or 60Hz.
Power Consumption (single):	Less than 300 watts (mainframe); less than 50 watts. (remote control unit at 120V AC).
Power Consumption (dual):	Less than 350 watts (mainframe); less than 50 watts (remote control unit at 120V AC).



ESP II REMOTE (Single Channel)



ESP II REMOTE (Dual Channel)

DIMENSIONS AND WEIGHT

	MAIN FRAME	REMOTE
Height:	7 inches	3-3/4 inches
Width:	19 inches	19 inches
Depth:	21-3/8 inches	8 inches
Weight:	35 lbs. (46 lbs. for dual)	6 lbs.

Cat. No.	Description	Price
SINGLE CHANNEL		
ESP II	Analog/Digital Processor with Proc Amp Control Master Control Panel	\$19,500.00
ESP II 2 Channel Upgrade		
DC-II	ESP II Single Channel Upgrade to Dual Channel	9990.00
Remotes		
RM-II	Remote Control Panel	3200.00
ACR-II	Engineering Remote	1200.00

DUAL CHANNEL

ESP II	Analog/Digital Processor with Proc Amp Control Master Control Panel	\$27,590.00
Remotes		
RM-II	Remote Control Panel	3500.00
ACR-II	Engineering Remote	1200.00

ACCESSORIES

Drives		
DD-80-F	80 Megabyte Fixed Disk Drive (200 Frames)	\$ 5500.00
DD-80-R	80 Megabyte Removable Storage Disk Drive (200 Frames)	10,500.00
DD-160	160 Megabyte Fixed Disk Drive (400 Frames)	10,500.00
Cables		
CB-II-20	Processor-to-drive Cable B 20'	390.00
CA-II-20	Processor-to-drive Cable A 20'	390.00
CA-II-06	Drive-to-drive Cable A 6'	150.00

Circuit Board Repair

Circuit board repair on "exchange" basis 350.00*

*ADDA Corporation reserves the right to refuse to repair any board out of warranty.



VW-2



VW-3

VW SERIES

Time Base Corrector/ Frame Synchronization

VW SERIES FEATURES

- Full frame "infinite window" time base correction
- Electronic Frame or Field Freeze for production applications
- Remote control panel for full studio control of operational and setup functions
- Exceptional degree of transparency in either TBC or Synchronizer mode
- Hot switching without video roll or breakup
- Selectable freeze on loss of video—last good field or system black
- Horizontal blanking fixed at 10.8 usec.
- Bandwidth exceeds 2.4 MHz in heterodyne TBC mode
- RS-170A
- Direct or Heterodyne color processing
- Vertical Blanking is switch selectable in any order between lines 15-20
- Velocity compensation in both Direct and Heterodyne TBC mode
- Bandwidth exceeds 2.4 MHz in Heterodyne TBC mode
- Adjustable chrominance-to-luminance delay of ± 200 nsec.
- Advanced vertical output to minimize video delay for multiple generation editing
- Capable of delaying non-synchronous video feeds by as much as a full frame to make them synchronous with system reference

VW-2/VW-3

TBC, Frame Synchronizer, Electronic Freeze Frame

The VW-2 is designed to provide first-quality time base correction and dropout compensation for systems which utilize direct color Type C format VTR's.

The VW-3 is designed to provide first-quality time base correction and synchronization for systems applications.

The VW-2/VW-3 also supply superior heterodyne processing for systems employing 3/4 and 1/2-inch format video tape machines.

The VW-3 has a signal-to-noise of 56 dB and is smaller with less power consumption.

The VW-3 provides simultaneous time base correction and synchronization, making it possible to take random feeds from land lines, microwave links or satellite and switch them synchronously with program materials.

- Hot switching without video roll or breakup
- Electronic Frame or Field Freeze for production applications
- Selectable Freeze on loss of video, last good field or system black
- Remote control unit can be operated from any location. Two remotes may be used
- Internal sync generator or Gen-lock mode
- Dropout compensation: TTL or RF inputs

SPECIFICATIONS

Television Standard
NTSC 525-line 60 Hz

Video

Bandwidth: ± 0.5 dB to 5 MHz; Heterodyne 2.4 MHz (luminance)

K Factor: 1% (2T pulse); Heterodyne 4% (2T pulse)

Differential Phase: Less than 2°

Differential Gain: Less than 2%

Signal-to-Noise: (WV2 + 56 dB)
(WV-3 + 58 dB)

Sampling Rate: 4th Harmonic of color sub-carrier

Time Base Error:

Monochrome: ± 20 ns

Heterodyne: $\pm 3^\circ$

Direct Color: ± 2 nsec

Range of Correction: 1 TV frame (two fields)

Line Rate Tilt: 1%

Field Rate: 1%

Output Sync Jitter: ± 1 nsec

Operating Controls

Bypass: Bypasses input video to Video Out 1

HET: Selects Heterodyne TBC mode

Freeze Frame: Full frame freeze

Freeze Field: Field freeze eliminates interfield flicker

Chroma Level: 3 dB

Hue: $\pm 45^\circ$ (with $\pm 180^\circ$ switch)

Setup: ± 10 IRE

Video Level: ± 3 dB

Outputs: Video — 2 outputs composite video

1 volt p-p

3.58 MHz — jittering 3.58 MHz 1 volt signal + adv. sync

Inputs: Video input — 1 volt ± 3 dB composite (NTSC) 75 Ohm terminating

Reference input — composite video or black burst looping input; 1 volt ± 3 dB return loss is 40 dB with power on or off. (VW-3 — RF or TTL DOC)

VW-2 Physical

Size: 5-1/4"H, 19"D, rack mount

Weight: 50 lbs.

Power Consumption: 250 watts at 115 VAC

Operating Voltage: 100 v-240 V AC 50/60 Hz

Operating Range: 0-35°C

VW-3 Physical

Size: 1-3/4"H, 23"D, rack mount

Weight: 28 lbs.

Power Consumption: 150 watts at 115 VAC

Operating Voltage: 115/230 V AC 50/60 Hz

Operating Range: 0-35 C

Basic System Description:

	Price
1 — VW-2 Main Frame	\$15,500.00
1 — Remote Control	1875.00
1 — VW-3 Main Frame	\$14,500.00
1 — Remote Control	1875.00

130 Knowles Drive
Los Gatos, CA 95030
(408) 379-1500

AC 20A DUAL CHANNEL VIDEO SIGNAL PROCESSING SYSTEM The Modular Concept

Truly modular signal processing is more than a collection of plug-in parts; it is an integrated system of interchangeable components that can be selected to perform a number of specific tasks at the user's discretion.

It may be configured as a single or dual channel system of time base correction or field/frame synchronization or a combination of both...by simply inserting the appropriate modules.

The AC 20A concept was the first digital video processor designed to grow with you as your needs expand. Start with a single channel processor at a very modest cost and add the second when you're ready.

Select the TBC module for tape machine use or the synchronizer module for integrating non-synchronous video...or a combination of both.

The simple architecture of the AC 20A includes four major elements...mainframe, genlock board and two signal processing channels.

AC 20 A Mainframe

The mainframe chassis occupies only 7" of rack space. All connections are made on the rear panel, power, video, external reference for video and advanced vertical and 3.58 MHz feedback for VTR use. Multi-pin connectors are used for interconnection with remote units and accessories.

Proc amp controls, genlock indicator and bypass switches may be included on the front panel of the mainframe, or on a separate Engineering Remote unit.

Inside, a single printed-circuit interconnect board routes power, video and sync signals to and from the genlock board, the module boards and the outboard remote and accessory units.

The AC 20A may be equipped with either a single or dual changeover power supply.

Genlock Board

The AC 20A may operate as a stand alone system with its own internal sync generator, or it will genlock to house reference black burst or composite video. The GL 1 board supplies each channel with accurately timed blanking, sync and burst for reinsertion into the corrected output video.

The optional GL 2 genlock board performs all GL 1 functions plus production remote control as well as control from many commercial tape editors. It provides switching effects and channel C output circuitry which may be controlled by the PRC 20.

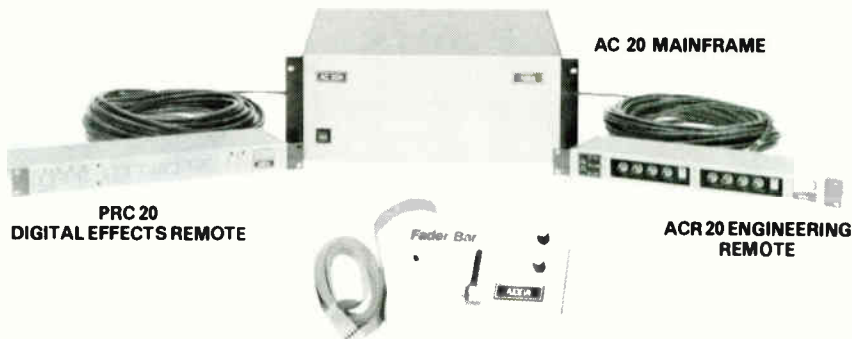
Modular Video Processing

Interchangeable modules provide for one or two channels of digital video processing — time base correction and/or field/frame synchronization.

You may add either one or two TBC or field/frame synchronizer boards in any combination...two TBC's, two synchronizers, or one channel of each. Processor modules in the AC 20A are totally interchangeable.

TB 1 Digital TBC Processor Module

The time base corrector module in the AC 20A accepts color NTSC composite video from common V-locked, nonsegmented video tape machines which will accept 3.58 MHz subcarrier feedback (supplied from the AC 20A).



Output is time base corrected NTSC composite signal meeting RS-170A specifications.

TB2 Digital TBC Processor Module

The TB2 TBC module has all the TB1 capabilities, plus: Heterodyne processing — 3.58 MHz feedback available but not required (for 3/4 and 1/2" VTR's); Sony BVU 820 Sio Motion capabilities; viewable picture up to 40 times shuttle speed; and, drop out compensation.

VS 1/VS 2

Digital Synchronizer Module

The synchronizer module delays non-synchronous video by as much as a full frame to make it synchronous with system reference. Field synchronization is provided with the VS 2 board; frame synchronization is provided with the VS 1 board.

With 8 bit resolution and a sample rate of 4 times subcarrier, the synchronizer module makes the AC 20A ideal for all broadcast and production applications.

PRC 20 2:1

Production Remote Control

The PRC 20 puts digital switching effects within the reach of almost any budget, delivering professional control of speed, type and direction of transitions between the two channels without tying up a costly production switcher. Microcomputer controlled effects include Push On, Push Off and Pull On...transitions not available on any analog switcher.

Transitions are selected by pushbutton control and may be made at any of four fixed rates — 16, 24, 32 or 48 frames.

When added to the AC 20A with two TBC channels, the PRC 20 transforms the system to an ingenious post-production tool to smooth out the complexities of three-machine, A/B roll editing.

GL 2 Editor Interface

Many editing system controllers are able to interface directly to the AC 20A in order to fully control the digital switching effects as part of the edit list.

Take Box Editor Interface

Lower cost editing systems which do not include software interface provisions may still control the switching transitions between channels with the "Take Box"...a 3 x 4 x 1" accessory which initiates the last function selected on the PRC 20 remote control panel when it receives a ground closure signal from the editor controller.

Dual Power Supply

In order to meet the needs of many broadcast applications, a full standby power supply may be included as an option. This alternate power supply may be selected at the flip of a switch.

Manual Transition FADER BAR

This accessory unit, with familiar T-type "handle bar," permits the operator to control the duration of transition effects manually.

Available in desk top or panel-mount configurations, the Fader Bar extends the range of creative control for production and post-production applications.

System Pricing

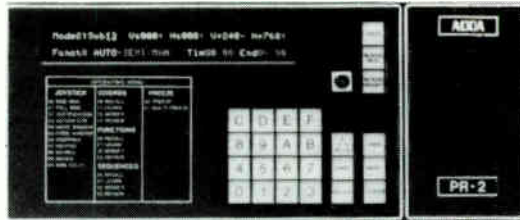
Product	Price
Time Base Correctors (TBI)	
AC 20A 1-Channel	\$6950.00
AC 20A 2-Channel	13,450.00
AC 20A 2-Channel with Digital Production Effects	17,450.00
Note 1-Add \$550 for ACR 20 Configuration (PROC AMP Remote)	
Note 2-Add \$1,500.00 Per Channel for TB 2 TBC Module	
Field Synchronizers	
AC 20A 1-Channel	7990.00
AC 20A 2-Channel	14,990.00
AC 20A 2-Channel with Digital Production Effects	18,990.00
Note 1-Add \$550 for ACR 20 Configuration (PROC AMP Remote)	
Note 2-Add \$1000.00 Per Channel for Frame Synchronizer	
TBC/Field Synchronizers	
AC 20A 1-Channel TBC (TBI)	
1-Channel Synchronizer with Digital Production Effects	13,750.00
Note 1-Add \$550 for ACR 20 Configuration (PROC AMP Remote)	
Note 2-Add \$1000.00 for Frame Synchronizer	
Note 3-Add \$1500.00 Per Channel for TB 2 TBC Module	
Upon request 1 or 2 channel models may be ordered with the GL 2 Gen Lock Module for Digital Production Effects in place of the GL 1 Gen Lock Model for an additional \$2500.00	

Spare Pricing

Product	Price
TB 1 Video Module	\$6500.00
TB 2 Video Module	8000.00
ACR 20 Engineering Remote	1200.00
GL 1 Gen Lock Board	2200.00
GL 2 Gen Lock Board	4200.00
PRC 20 Production Remote	1500.00
AC 20 Mainframe without plug-in modules	3700.00
AC 20S Mainframe without plug-in modules	4300.00
AC 20 Power Supply	500.00
VS 1 Frame Synchronizer Board	8000.00
VS 2 Field Synchronizer Board	7000.00
Take Box	500.00
Fader Bar	530.00
Rack Slides	80.00
Circuit Board Repair	
Circuit board repair on "exchange" basis	\$350.00*

*Adda Corporation reserves the right to refuse to repair any board out of warranty.

130 Knowles Drive
Los Gatos, CA 95030
(408) 379-1500



The basic ADDA VIP-C system can be upgraded to interactive multifunction operation with PR-2 remote panel, featuring menu-driven effects and off-line sequence control.

VIP-C Video Compressor

The ADDA VIP-C is a modular, single-channel image compressor and positioner with exceptional signal processing transparency and straight-forward approach to image manipulation.

The difference between the basic unit with the PR-1 and the VIP-C with PR-2 remote unit is the degree of image control sophistication.

PR-1 has 6 preset effects positions that can be remembered, while the VIP-C with PR-2 intelligent remote panel can commit over 224 events and sequences to memory for either manual or automated recall. The optional off-line "sequence memory module" expands the storage capacity of routine effects setups and sequences.

The VIP-C is a versatile digital effects system. Frame synchronization and time base correction for heterodyne VTRs are included for extended versatility in utilizing freeze frame and multi-freeze effects. Engineering control is provided on a separate remote panel.

With these features, the VIP will serve the everyday needs of most stations and production houses, and even many in-house video operations in industry, business, medicine and education.

Basic Control Panel (PR-1)

Simplicity is the key for news and mobile installations. The basic PR-1 control panel can be rack or desk-top mounted. Push button clusters control image size and position. Unit includes six size & position presets, variable or locked image size, and border controls.

Engineering Remote and Proc Amp Control Panel (ER-1)

The engineering remote provides processor control of video, chroma and setup as well as hue, system subcarrier and horizontal phase. ER-1 assigns up to four production remotes and selects TBC or synchronizer modes.

Both production and engineering remote modules connect to the mainframe chassis with a single 75 ohm coax, eliminating the need for multi-conductor cables.

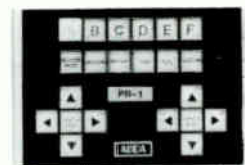
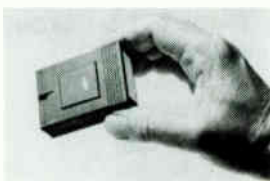
Interactive Control Panel (PR-2)

Optional multifunction programmer. 3-axis joystick provides infinite video compression size and position, locked or variable aspect ratio, border generator plus programmable sequence control and extended event memory. Prompter panel informs operator of position, move trajectory and image size in addition to sequence order.

VIP-C with PR-2 control can learn up to 16 effects events which can be executed in real time from the working memory. Over 224 events — including move time and move ballistics — can be stored in the protected memory, as separate effects or linked together to form sequences which may be run manually or automatically.

Sequence Memory Programmer (SM-1)

An optional off-line effects sequence memory system, featuring a removable plug-in archive module, can be added to the PR-2 to off-load selected sequences for individualized effects control by different operators.



VIP-C PR-2 3-axis joystick provides infinite compression size and position. Optional off-line effects sequence memory module may be included to off load sequences for individualized operation. Joystick unit may mount on either end of remote control panel.

Standard PR-1 remote unit is engineered for simplicity. Adaptable for rack or console mount, the panel's small size is ideal for mobile application. Push-button clusters control size and position; up to six different effects (size, position and border) may be preset.

System Description:

- 1 MF-1 Main Frame
- 1 ER-1 Engineering Remote
- 1 PR-2 Remote Control

Price

\$42,000.00

FEATURES

- Single channel system
- 0-7 10 of full screen size compression when synchronizing and or time base correcting
- 0-full screen size when feeds are synchronous
- Picture may be positioned anywhere
- Improved horizontal and vertical interpolation
- Remotes utilize a single 75 ohm coax cable

Options:

PR-1 PRODUCTION REMOTE

\$3700.00

FEATURES

- Pushbutton operation
- 4 x 3 aspect ratio lock/unlock during zoom
- Horizontal and vertical justification (one side of picture locks to edge of screen, then it compresses off screen)
- Color border or mat generator
- Unity size and center position switches (will return either to center or full size)

PR-2 REMOTE CONTROL

FEATURES

- Joystick control of positions, size, borders
- Hex key pad entry with menu
- Software defined and multimode
- Inversions and reversions
- Multiuser and RS 232 port
- Color border or mat generator
- Electronic freeze frame
- Programmable presets
- Dynamic moves
- Programmable sequences
- SM-1 cassette storage of pre-programmed effects

\$7600.00

Cassette pricing

1/4 user cassette pack of 3

\$550.00

Full user cassette, pack of 3

\$45.00

Pre-programmed cassette

\$90.00

130 Knowles Drive
Los Gatos, CA 95030
(408) 379-1500

ESP C SERIES

Digital Still Storage and Retrieval

On-line previewing and editing; automatic sequencing; the instant creation of multi-layer graphics.

The electronic storage and retrieval of video images for graphic production and preprogrammed on-air use, is becoming an industry standard for the technological leaders in television and video production.

Now there is a new generation of still store systems. And from the 200C to the large, multiple drive 750C, our microprocessor-controlled, expandable systems have a production versatility that can't be beat.

The Basic System

The ESP 750C Digital Graphics System consists of an Analog/Digital Processor, a Master Control Panel, and standard computer industry disk drives. But the built in flexibility of our system makes it easy to expand. Each Analog/Digital Processor can accommodate up to four drives. You can add up to a total of fifteen remote production panels. And more off-line storage with up to 99 separately identified disk packs.

Our dual channel output and front end synchronization allow you a choice of inputs and a wider range of capabilities.

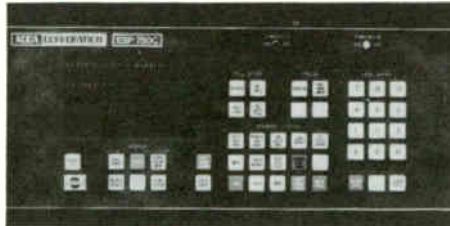
And the 750's second generation digital electronics give you a production-oriented sequence and memory system that lets you perform last minute editing. Add or delete within a sequence. Create multiple generation graphics with virtually no degradation in the quality of your original image.

ESP's intelligent controls make the C Series a production tool that goes easy on everyone in your operation.

FEATURES

- A built-in operator prompter.
- Single function keys.
- A rapid-access sequence and memory system.
- Built-in safety features.

ESP-750 C Series Electronic Graphics System



CAT. #	DESCRIPTION	PRICE
ESP-750C	Analog/Digital Processor; Master Control Panel; Disk Drives (2); Acoustic Cabinet. Cables CB-750C-20 (2) CA-750C-20 (1) CA-750C-06 (1) Disk Packs (2) Multipix	\$119,500.00

ACCESSORIES

RM-750C	Remote Control Panel	6500.00
---------	----------------------	---------

CABLES

CB-750C-20	Processor-to-drive Cable B (20')	390.00
CA-750C-20	Processor-to-drive Cable A (20')	390.00
CA-750C-06	Drive-to-drive Cable A (6')	150.00

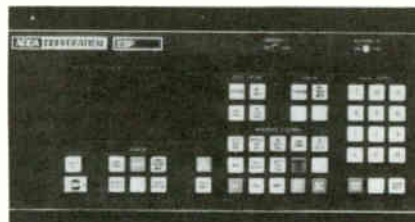
DISK PACKS

DP-750	Record and playback packs, 750 frames/pack.	
	Quantity	
	1-4	1075.00
	5-10	1000.00
	11 +	940.00

OPTIONS

Digital I/O	5200.00
-------------	---------

ESP-400 C Series Electronic Graphics System



CAT. #	DESCRIPTION	PRICE
ESP-400C	Analog/Digital Processor; Master Control Panel; Disk Drives: (1) 160MB. Cables CB-400C-20 (1) CA-400C-20 (1) CA-400C-06 (1)	\$62,700.00

ACCESSORIES

RM-400C	Remote Control Panel	6500.00
---------	----------------------	---------

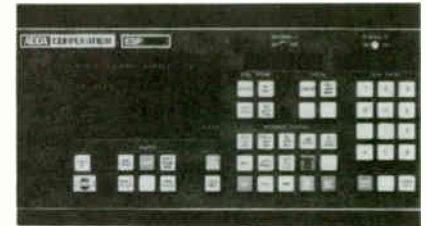
CABLES

CB-400C-20	Processor-to-drive Cable B (20')	390.00
CA-400C-20	Processor-to-drive Cable A (20')	390.00
CA-400C-06	Drive-to-drive Cable A (6')	150.00

OPTIONS

Digital I/O	5200.00
ACI	5200.00
Multipix	3500.00

ESP-200 C Series Electronic Graphics System



CAT. #	DESCRIPTION	PRICE
ESP-200C	Analog/Digital Processor; Master Control Panel; Disk Drive (1) 80MB. Cables CB-200C-20 (1) CA-200C-20 (1) CA-200C-06 (1)	\$52,700.00

ACCESSORIES

RM-200C	Remote Control Panel	6500.00
---------	----------------------	---------

CABLES

CB-200C-20	Processor-to-drive Cable B (20')	390.00
CA-200C-20	Processor-to-drive Cable A (20')	390.00
CA-200C-06	Drive-to-drive Cable A (6')	150.00

CARTRIDGE

DP-200	Record and playback cartridges 200 frames/cartridge	420.00
--------	--	--------

OPTIONS

Digital I/O	5200.00
ACI	5200.00
Multipix	3500.00

LIBRARY CONTROL SYSTEM

The ADDA Library Control System (LCS) is an option to the ESP-C series digital video still store. Utilizing the LCS, an operator may identify a still with an alpha descriptor and then may conduct searches for descriptors, build sequences of stills, transfer sequences to and from the ESP main frames, and print copies of sequence lists or disk packs.

FEATURES

- One to eight users.
- One-half second typical search time.
- Dedicated engraved key functions.
- Multiple search categories.
- Single or quantitative searches.
- Up to 15,000 still descriptors storable.

Basic System Description

1 — Computer Operating Software	
1 — Terminal/CRT	
1 — Library Control Software	
1 — Library Interface Card	\$14,750.00

Options

Printer	\$1200.00
Terminal/CRT	1350.00
Interface Card	600

ADM TECHNOLOGY, INC.

1626 E. Big Beaver Road
Troy, MI 48084
(313) 524-2100 Telex 23-1114

BROADCAST PRODUCTION CONSOLES

1642 SERIES II BROADCAST PRODUCTION CONSOLES

The 1642 Series II Console is a full 16 input, 4 submaster, 2 output console which utilizes standard ADM 2780 Input, 3880 Submaster and 3980 Master Output modules.

The 1642 II is fully wired for the total module complement, but may be ordered with a lesser number of modules initially to have availability for future expansion. Various combinations of Signal Processing devices may be supplied with the console, (e.g. 1540 Equalizers, 1580 Hi/Lo Pass Sound Effects Filters, 1310 Noise Suppressors and 1340 Limiter modules) or these may be added later as usage requires. This will be done by simply plugging in the required modules as circumstances dictate.

The 1642 Series II Console utilizes the patented ADM Slidex for noise-free attenuation throughout. Our unique 202 Discrete Operational Amplifier exemplifies ADM's innovative ingenuity. These ADM design philosophies are employed throughout the Console to achieve the finest specifications available today.

This technology is continued in the 1642 II with such features as Stereo capability, Foldback busses, Echo Send and Return bus, parallel Cue functions, Solo, 2 module Group Functions, LED status indicators, illuminated OFF/ON switches, 5 frequency Oscillator, Talkback, Slating, dual Monitor busses, machine remote controls and so on.

Features

- 5 Year Unconditional Warranty
- Wired for stereo production capability
- Totally modular design, utilizing plug-in components
- Phase reversal
- 16 Microphone/Line inputs with 2 position preselection for each
- 4 Submaster busses
- 2 Master output busses
- Individual Echo Send from inputs and Return to Submasters and Masters
- Solo
- Built-in Cue Amplifier and Speaker
- Dual Foldback busses
- 4 band, 14 frequency reciprocal Equalizers
- ADM Filters, Limiters and Noise Suppressors available
- 6 Illuminated VU meters
- Gold plated card edge connections throughout



- Patented, ultra-smooth, sealed Slidex[®] faders with Cue detent on inputs
- 5 Frequency Oscillator individually assignable to Submasters and Masters
- Talkback and Slate Facilities
- Group module muting capabilities
- 6 sets of machine remote controls
- Illuminated ON-AIR and Power Supply status indicators

Console Specifications

1. Frequency Response:

No equalization. Measured at any output level up to clipping. ± 1 dB, 20Hz-20KHz Ref. 1KHz.

2. Distortion:

The total harmonic distortion at +24 dBm or lower at 1KHz will be less than .07% and will not exceed .15% THD over the band 100Hz-20KHz at +24 dBm or lower.

3. Maximum Output Level:

The clipping level at any output when terminated in 600 ohms shall be +27 dBm 30Hz to 20KHz.

4. Noise:

The equivalent input noise of any microphone shall be lower than -125.5 dBu referred to a 250 ohm impedance measured on an average response meter. Any line level input (+8 dBm ref) to any output channel (+8 dBm ref) will exhibit a maximum noise of -72 dBm (S/N 80 dB). All noise measurements based on a bandwidth 20Hz to 20KHz.

5. Crosstalk:

Better than 72 dB measured between adjacent channels at normal operating levels over the band 100Hz to 10KHz.

6. Temperature:

Over the temperature range 0 to 55 degrees C. no apparent changes in operational characteristics are discernible.

7. RF Susceptibility:

Based on the tailored roll off characteristics and proper manufacturing techniques, ADM consoles will operate in high RF environments.

ADM TECHNOLOGY, INC.

1626 E. Big Beaver Road
Troy, MI 48084
(313) 524-2100 Telex 23-1114

PRODUCTION CONSOLES

ST SERIES II ON AIR AND PRODUCTION CONSOLES

The ST Series II Consoles are full Stereo with 10, 16, 20, and 24 input modules. There are three independent Stereo output modules and one Monaural output module. Each Console comes factory wired for its maximum capability, but may be ordered with a lesser number of modules for future expansion capability. Various combinations of Signal Processing devices (Equalizers, Limiter/De-essers) may be supplied with the Console or added later, as usage dictates. This may be quickly accomplished on a plug-in basis. The ST Series II Consoles utilize the patented ADM Slidex driving Stereo VCAs which provide superior tracking, noise-free attenuation and extreme longevity.

Our unique 202 Discrete Operational Amplifier exemplifies ADM's innovative ingenuity by giving the user an input noise figure unobtainable with conventional integrated circuitry.

Features

- 5 Year Unconditional Warranty
- Totally modular design, utilizing plug-in modules throughout
- Transformer balanced inputs and outputs
- Many Variations of Microphone and Line module
- 2 Preselect inputs per module
- Stereo Pan-Pot on Microphone modules
- Stereo Balance control on Line modules
- Machine control Logic built in
- Input Slidex® Linear Attenuators drive VCA's for superior tracking and longevity
- 8 Position Stereo Preselectors
- Variety of Signal Processors
- Independent Studio and Control Room monitor matrices
- Headset jack with separate volume control
- 5 Year Unconditional Warranty
- Broadcast quality Talkback Microphone
- Large illuminated VU meters
- Built-in Cue amplifier and speaker
- Simultaneous Program and Audition master outputs
- Independent Auxiliary master output



- Selectable Monaural master output
- 100% Redundant Power Supply with automatic changeover
- All pushbuttons illuminated or with companion LED
- CMOS Logic throughout
- Plug-in Op-Amps and IC's
- All circuit board and input/output connectors are gold plated

Console Specifications

1. Frequency Response:

No equalization. Measured at any output level up to clipping. ± 1 dB, 20Hz-20KHz Ref. 1KHz.

2. Distortion:

The total harmonic distortion at +24 dBm or lower at 1KHz will be less than .07% and will not exceed .15% THD over the band 100Hz-20KHz at +24 dBm or lower.

3. Maximum Output Level:

The clipping level at any output when terminated in 600 ohms shall be +27 dBm 30Hz to 20KHz.

4. Noise:

The equivalent input noise of any microphone shall be lower than -125.5 dBu referred to a 250 ohm impedance measured on an average response meter. Any line level input (+8 dBm ref) to any output channel (+8 dBm ref) will exhibit a maximum noise of -72 dBm (S/N 80 dB). All noise measurements based on a bandwidth 20Hz to 20KHz.

5. Crosstalk:

Better than 72 dB measured between adjacent channels at normal operating levels over the band 100Hz to 10KHz.

6. Temperature:

Over the temperature range 0 to 55 degrees C. no apparent changes in operational characteristics are discernible.

7. RF Susceptibility:

Based on the tailored roll off characteristics and proper manufacturing techniques, ADM consoles will operate in high RF environments.

ADM TECHNOLOGY, INC.

1626 E. Big Beaver Road
Troy, MI 48084
(313) 524-2100 Telex 23-1114

AUDIO POST-PRODUCTION CONSOLE

VP SERIES AUDIO POST-PRODUCTION CONSOLE

The VP 1603 is a 16 input, 3 output Console. Also available are the VP 1203, a 12 input, 3 output Console, and the VP 803, an 8 input, 3 output Console. Each Console is identical in all respects except for the number of input strips and monitoring positions. The physical size of the console mainframe is scaled down appropriately.

Each VP Series Console utilizes the ADM 2783 Input module with its associated 4158 VCA controlled Slidex attenuator, the ADM 3984 Master output module for the Left/Right outputs and the ADM 3985 Auxiliary output module. Various combinations of Signal Processor modules, such as the ADM 1310 Noise Suppressor, 1340 Limiter-Compressor/De-Esser, 1540 Equalizer and 1580 Sound Effects Filter may be utilized within the VP Console mainframe.

Each VP Series mainframe is pre-wired for its maximum complement of modules, but may be ordered with any lesser number of input strips and signal processors as initially required. Future expansion (up to full mainframe capacity) is accomplished on a straightforward "plug-in" basis.



- Patented, ultra-smooth, sealed Slidex[®] linear attenuators
- 5 Frequency Oscillator
- Talkback and Slate Facilities
- Illuminated Power Supply status indicators
- Plug-in signal processors for each strip

Features

- 5 Year Unconditional Warranty
- Stereo production capability
- Totally modular design utilizing plug-in components
- VCA based attenuator in each input strip
- Dual Attenuation control bus assignable to each input
- Opto-isolated bus selection inputs
- External or local control of Control bus and/or strip assignments
- Variable intensity LED indication of input control voltage
- Dual independent monitoring facility with local or external control of all monitor functions
- Input vs. output monitoring with Bus/Play switch
- "Invert" switch on each Control Fader allows smooth cross-fade
- Phase reversal function for each input
- Up to 16 Microphone/Line inputs
- 1 Auxiliary mix bus output
- 2 Master Output busses
- Built-in Cue Amplifier and Speaker
- 5 Illuminated VU meters
- Gold plated card edge connections throughout

Console Specifications

- 1. Frequency Response:**
No equalization. Measured at any output level up to clipping. ± 1 dB, 20Hz-20KHz Ref. 1KHz.
- 2. Distortion:**
The total harmonic distortion at +24 dBm or lower at 1KHz will be less than .07% and will not exceed .15% THD over the band 100Hz-20KHz at +24 dBm or lower.
- 3. Maximum Output Level:**
The clipping level at any output when terminated in 600 ohms shall be +27 dBm 30Hz to 20KHz.
- 4. Noise:**
The equivalent input noise of any microphone shall be lower than -125.5 dBu referred to a 250 ohm impedance measured on an average response meter. Any line level input (+8 dBm ref) to any output channel (+8 dBm ref) will exhibit a maximum noise of -72 dBm (S/N 80 dB). All noise measurements based on a bandwidth 20Hz to 20KHz.
- 5. Crosstalk:**
Better than 72 dB measured between adjacent channels at normal operating levels over the band 100Hz to 10KHz.
- 6. Temperature:**
Over the temperature range 0 to 55 degrees C. no apparent changes in operational characteristics are discernible.
- 7. RF Susceptibility:**
Based on the tailored roll off characteristics and proper manufacturing techniques, ADM consoles will operate in high RF environments.

2301 Bridgeport Drive
Sioux City, IA 51102
(712) 252-4101 (800) 831-0974
Telex 48-0121

Model S4A Tower

The Model S4A is a square self-supporting tower fabricated of structural shapes, angles, and H-Beams. The S4A tower incorporates many design features found on no other tower. The tower is completely fabricated prior to shipment from factory and shipped knocked down to tower site. No guy wires are required. The S4A is designed for quick low-cost construction.

Efficient Diagonal Design

- Because the diagonal members are designed as compression and tension members, one member performs the function of two or more members as found in other tower designs in addition to reducing wind-load. By taking advantage of efficient design, towers by Advance cost less.
- Hot dip galvanizing is standard on all S4A towers unless otherwise specified.
- Inside climbing ladder is standard on S4A towers.
- The basic sections of the S4A tower are 25 feet in length. Top sections are designed to allow tower to be supplied in any height required.
- Example: An 80 foot S4A tower would be supplied with three twenty-five foot sections and one five foot section.

S3T Self-Supporting Tower

The Model S3T is a triangular (3 leg-3 face) fabricated basically of tubular members. It incorporates many design features found in no other tower.

Tubular Members Galvanized Inside And Out

By incorporating the "open end" method of design, Advance Hot Dip galvanizes the interior of all tubular members. This design feature eliminates the problem of "no interior galvanizing" found on conventional designs.

Tower leg members are designed with the "end" completely open. Butt plate is open the full diameter of the tube permitting even flow of galvanizing in the interior of the tube and insures that all members are completely galvanized.

Efficient Diagonal Design

Because diagonal members are designed as compression and tension members, one member performs the function of two or more members as found in other tower designs, in addition to reducing windload. By taking advantage of efficiently designed towers, Towers by Advance cost less.

Base Spreads

A rule of thumb for spread is as follows: Spread between legs = 1/10th of tower height plus 5 feet.

Standard Sections

The basic sections of the S3T Tower are 25 feet in length. Top sections are designed to allow tower to be supplied in any special height required.

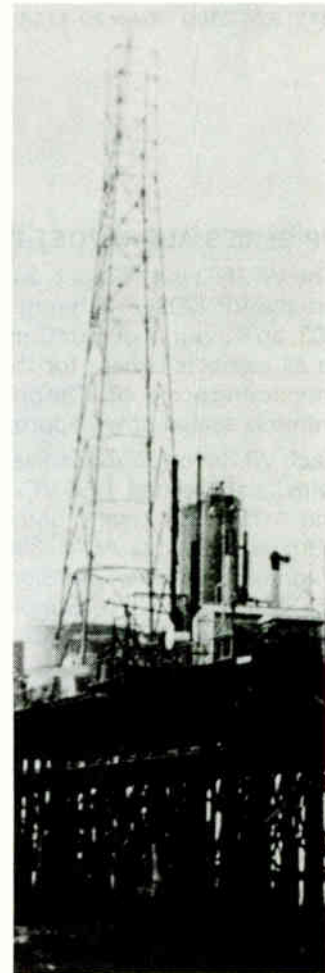
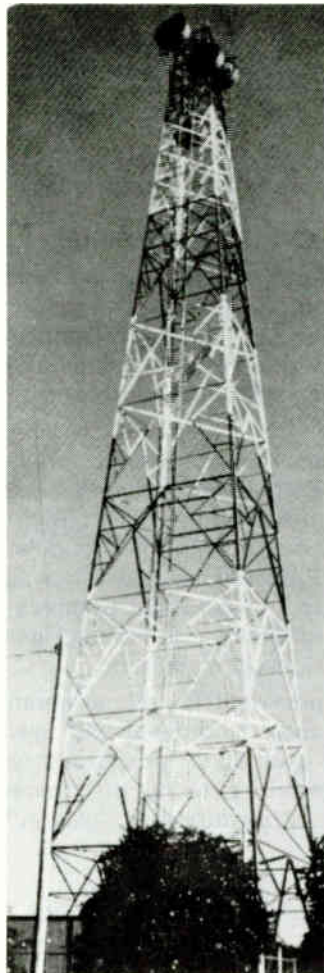
For example an 80 foot S3T Tower would be supplied with three twenty-five foot sections and one five foot section.

Climbing Ladder

A climbing ladder is standard on every S3T model.

300 S Self-Supporting Tower

- No guy wires required.
- Hot Dip galvanized unless otherwise specified.
- Designed for quick, low-cost construction.
- Climbing steps on tower leg standard equipment. (Climbing Ladder optional.)
- Triangular tower—tubular legs.



- Leg columns utilize "open ends" allowing for complete application of galvanizing both inside and outside of leg members. (This increases tower life considerably.) If galvanizing is not desired, tower members are given a shop coat of primer prior to shipment.
- The top section or sections on some lightweight Model 300S Towers are welded one piece 20 foot sections with all members (legs, horizontals, and diagonals) fabricated of solid steel rounds.
- Diagonal members are angular.
- Tower is completely fabricated prior to shipment from factory and shipped knocked down to tower site.

Designed in accordance with EIA RS 222C specifications.

S3A Self-Supporting Tower

- The Model S3A tower is triangular in cross-section and is completely fabricated from structural angle steel.
- The Model S3A tower is used for those applications that require a tower made from all solid members and where the packed volume of the tower is critical. All pieces of the tower when shipped, will lay flat or "neat" to provide the very minimum number of cubic feet of space in shipping.
- The ladder can be installed on any face.
- All surfaces of every member (structural angle) are always visible for ready field inspection for rust or galvanizing failure.
- The S3A Self-Supporting Tower is designed in accordance with EIA RS 222C specifications.
- The bolted, angular construction of this tower lends it self to easy field erection. It also provides a tower that can have added or changed bracing field installed to increase the capability of the tower.

2301 Bridgeport Drive
 Sioux City, IA 51102
 (712) 252-4101 (800) 831-0974
 Telex 48-0121

TALL GUYED TOWERS

Heavy Duty Guyed Towers are available for use when heights of 1000 feet and higher are required.

Design

Computer designed with a complete structural and deflection analysis supplied with each tower.

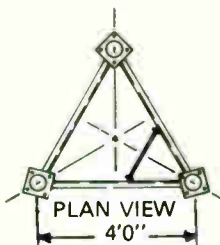
General Description

Advance Industries, Inc., has the capability to engineer, manufacture and install fabricated, galvanized steel for radio and communication towers and electric transmission line towers, as well as custom steel and aluminum fabrication and galvanizing. Pre-assembled, environmentally controlled shelters of aluminum, steel or fiberglass are fabricated for use as electronic enclosures, generator enclosures, metering enclosures or for any other specialized application for which these units are suitable.

With a large, skilled installation force, Advance Industries, Inc., has the capability of field installation of any of the products they manufacture.

Engineering

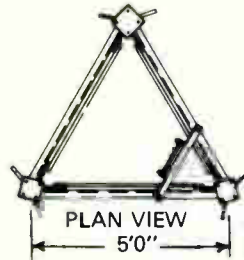
Advance maintains its own Engineering Department, staffed with professional registered structural engineers, especially trained in computer graphics, to provide you with the most efficient design whether it be towers, custom fabrication and/or buildings. Qualified personnel are available to discuss any design problems you may have. The engineering department enables us to provide information on any intricate specialized job you may have quickly and efficiently.



Model 4800

Features:
 Welded sections normally supplied with tubular leg and solid round diagonal and angular horizontal members, solid round legs available. Inside climbing ladder is standard.

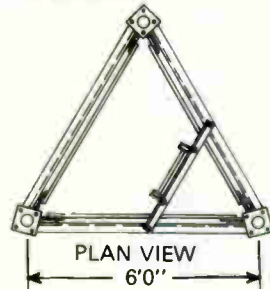
Model 4800 Face 48 Inches



Model 90

Features:
 Bolted section normally supplied with solid round leg and diagonal members and angular horizontal members. Two bolt connections are used for all diagonal and horizontal members. Inside climbing ladder is standard.

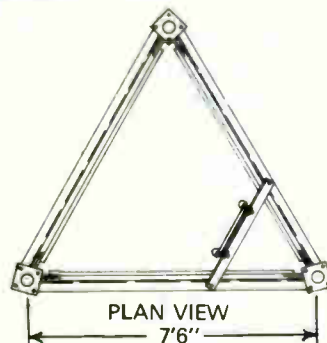
Model 90 Face 60 Inches



Model 7200

Features:
 Normally supplied with tubular leg and solid round diagonal and angular horizontal members. Solid round legs available. Two bolt connections are used for all diagonal and horizontal members. Inside climbing ladder is standard.

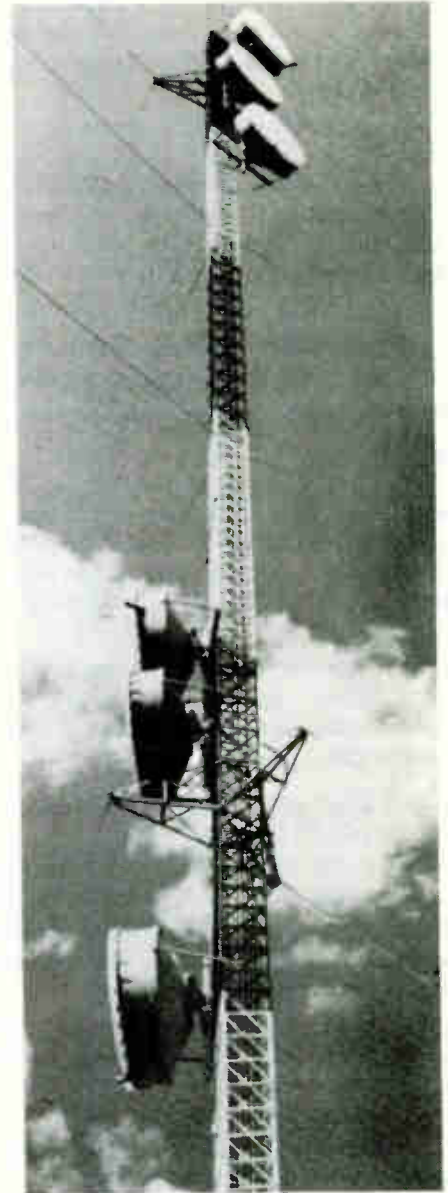
Model 7200 Face 72 Inches



Model 9000

Features:
 Normally supplied with tubular leg and solid round diagonal and angular horizontal members. Solid round legs available. Two bolt connections are used for all diagonal and horizontal members. Inside climbing ladder is standard.

Model 9000 Face 90 Inches



GUYED TOWER

2301 Bridgeport Drive
Sioux City, IA 51102
(712) 252-4101 (800) 831-0974
Telex 48-0121

MODEL 4000

The Model 4000 heavy duty tower has tubular legs, angular horizontal bracing and solid rod diagonals all welded into a twenty foot triangular foot tower section with a three and a half foot face.

The components for each section are given by a computer design analysis program and they are welded together using high precision jigs to be sure that each section is true in all respects and is not twisted. The section splice plates are made with a full pipe O.D. hole in the center for the leg and are welded to the leg both above and below the leg.

The Model 4000 can be painted and have obstruction lights.

The Model 400 series is supplied in face width of 40 inches with climbing horizontals and members.

Optional inside climbing ladder available on request.

MODEL 333

The four foot faced, angular guyed 333 tower is a custom assembly of long proven, standard components. The components used in this tower are defined by the computer analysis program to provide a tower adequate to meet the tower design criteria as to antenna loading, wind load and ice loading (if specified.)

The tower components, guys and all hardware are all "hot-dipped" galvanized. The tower can be painted and have obstruction lights installed per the applicable F.A.A. standards.

BASE AND ANCHOR DISTANCES FOR MODELS 333 & 4000

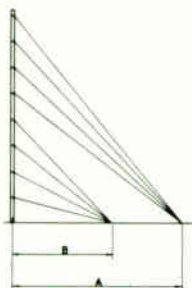
This charted information will enable you to plot your Base and Anchor locations for your tower requirements.

Detailed are the ideal site requirements to permit proper installation of your tower. Included in the chart are the actual foundation locations.

Should your site require a special foundation because of poor soil or should your land area not permit the location of anchors as detailed, do not hesitate to call on Advance Engineers to design for your site.

Base and anchor details on tower heights in excess of 500 ft. will be provided on request.

Anchor location distances will vary slightly with different antenna and wind loadings.

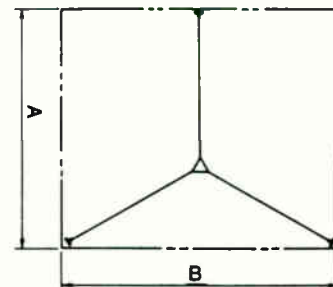


TOWER HEIGHT	A	B	TOWER HEIGHT	A	B
100'		80'	300'		240'
120'		96'	320'		256'
140'		112'	340'		272'
160'		128'	360'	288'	136'
180'		144'	380'	304'	144'
200'		160'	400'	320'	136'
220'		176'	420'	336'	156'
240'		192'	440'	352'	204'
260'		208'	460'	368'	210'
280'		224'	480'	384'	222'
			500'	400'	236'

TOWER HEIGHT	A	B	C
100'	125'	145'	176'
120'	150'	174'	208'
140'	175'	203'	240'
160'	200'	232'	272'
180'	225'	261'	304'
200'	250'	290'	336'
220'	275'	319'	368'
240'	300'	348'	400'
260'	325'	377'	432'
280'	350'	406'	464'
300'	375'	435'	496'
320'	400'	464'	528'
340'	425'	493'	560'
360'	450'	522'	592'
380'	475'	551'	624'
400'	500'	580'	656'
420'	525'	609'	688'
440'	550'	638'	720'
460'	575'	667'	752'
480'	600'	696'	784'
500'	625'	725'	816'

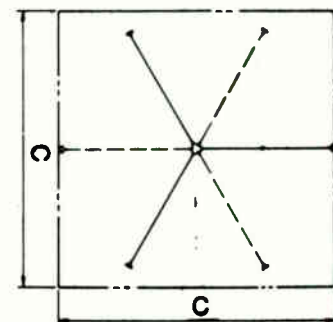
LAND AREA REQUIRED FOR TOWER SITE

Detailed are minimum and maximum areas required for Model 333, 4000 and 4200 towers, through 500 ft. in height. Land areas differing from those illustrated can be used and those detailed are to be considered rather than absolutely necessary. Our professional engineers will furnish any special site information desired at no obligation to your company.



MINIMUM AREA

This is minimum area of land required. However, this area will not always permit orienting tower anchors into the best position for signal path azimuth.



PREFERRED AREA

This is preferred area of land since it is large enough to permit orienting the tower anchors in any position of azimuth.

2301 Bridgeport Drive
 Sioux City, IA 51102
 (712) 252-4101 (800) 831-0974
 Telex 48-0121

Tower Lighting Kits And Replacement Components

Advance Industries provides complete tower lights for all tower heights. All materials for exposed (neoprene jacket) or steel conduit wiring meeting FAA-FCC and National Electric Code requirements are provided.

Replacement components are also available for immediate shipment from inventory.

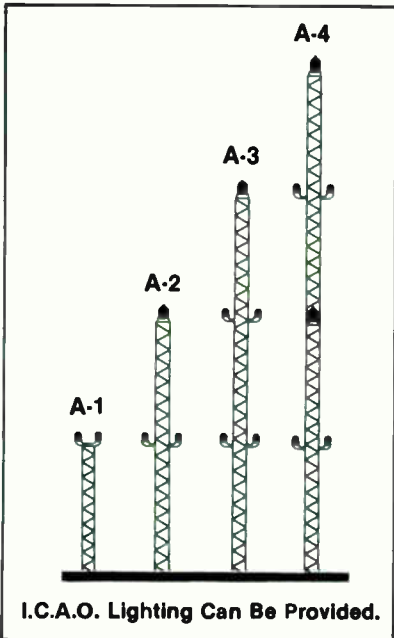
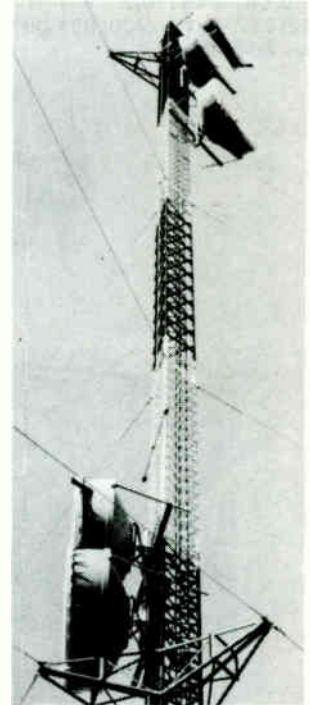
Kits are complete with 300MM code beacons, obstruction lights, photo-electric controls, flasher, conduits, fittings, wiring and miscellaneous accessories as required for complete kits.

Starmont Stabilizers For Rigidity

The use of guyed towers for microwave communication parabolic antennas require that the towers be equipped with devices to prevent the towers from twisting about the vertical axis.

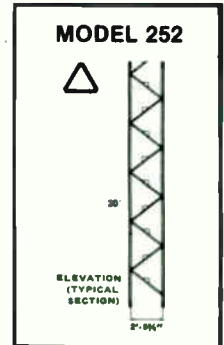
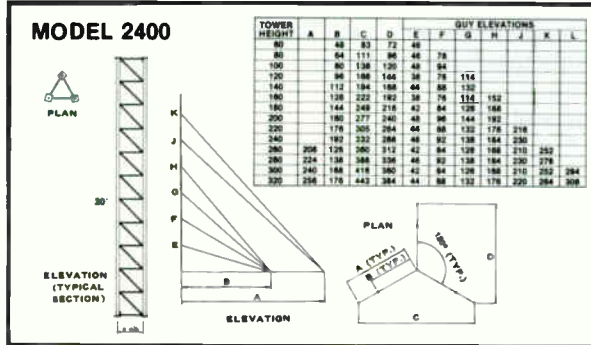
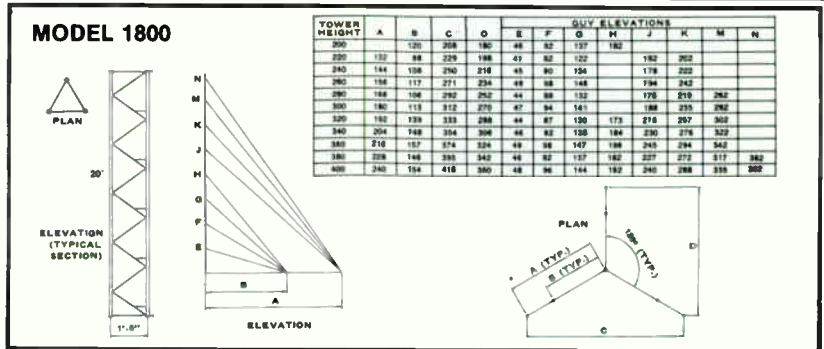
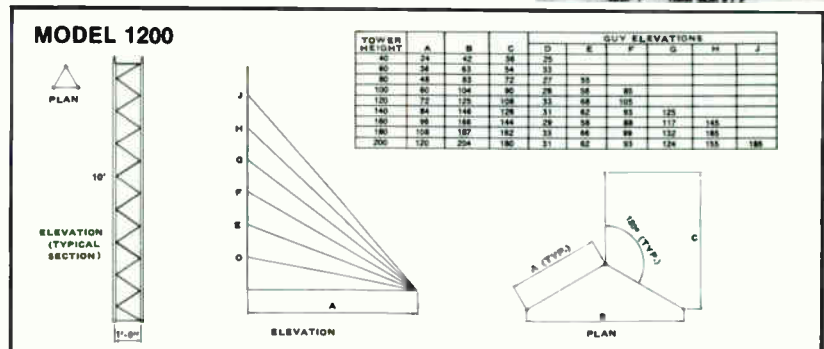
Advance Industries has engineered, and they have been field proven, a complete line of stabilizers for the Model 333 and 4000 towers. These eight, nine, or fifteen foot stabilizers

are installed in the vicinity of the antennas to resist the torque caused by the wind blowing on the side of the antenna. The stabilizers are installed on each face of the tower at the same level. With guys from two adjacent anchors attached to the point of each stabilizer section, a lever arm several feet in length is created to resist the antenna torque and hold the antenna "on path" to the required extent. The computer tower design specifies the elevation and size of each stabilizer. The tower is usually built heavier in the antenna—stabilizer area. Our unique starmount design is such that the arms are interconnected to pull against each other rather than pulling against the tower face or legs which tends to pull the tower apart as is the case in other company designs.

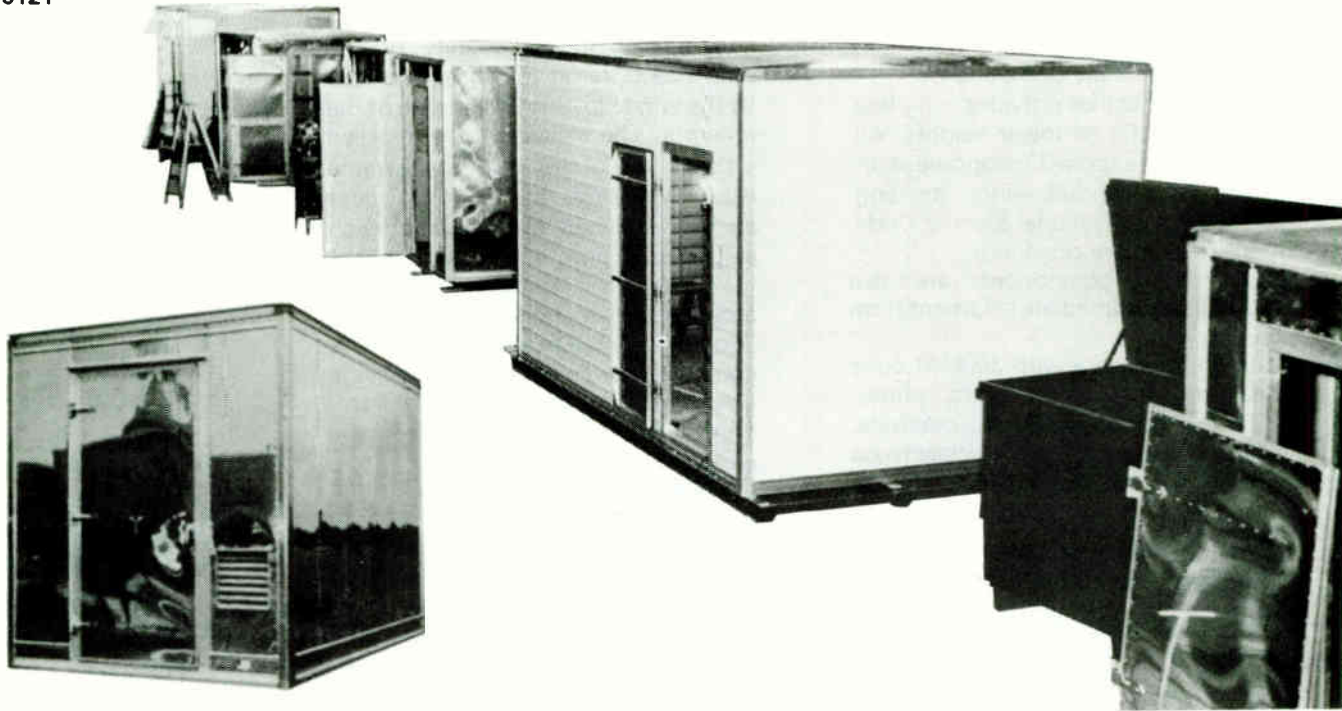


FAA-FCC Kit Models

- | | |
|-------------------|----------|
| Height | FAA Type |
| 21-150 feet..... | A-1 |
| 151-300 feet..... | A-2 |
| 301-450 feet..... | A-3 |
| 451-600 feet..... | A-4 |



2301 Bridgeport Drive
Sioux City, IA 51102
(712) 252-4101 (800) 831-0974
Telex 48-0121



ALUMINUM PRE-BUILT TRANSMITTER BUILDINGS

Construction Features (All Buildings):

- Two skids—6" beams
- Cross member floor supports—channel structural steel
- Floor—1 ½" plywood with ¼" tile underlayment covered by vinyl asbestos tile.
- Insulation walls and ceiling—2" fiberglass.
- Interior walls and ceiling—¼" pre-finished plywood or masonite.
- Undercoating—entire bottom of building is undercoated with Minnesota Mining Undercoating.

Factory Pre-Assembled Buildings put you on "Standby Power" quicker and consequently reduces costly waiting time. Generator-set and wiring installed prior to shipment. Avoid the delays caused by using conventional construction. Save time, dollars and headaches by using the Advance Pre-Assembled Buildings.

Options Available

- Climatic conditions often make it desirable to provide heat in the Pre-Assembled Generator-Set Building.
- The building can be manufactured of fiberglass or steel construction, and completely foam insulated.
- Multi-room construction.
- Snow snorkels are optional.

Aluminum Buildings:

- Durable
- Modern
- Economical
- Uprights and roof bows—aluminum 2" x .102" "Z" channel.

- Outside walls and roof—.040' aluminum.
- Door—40" x 72" x 1 ¾" insulated aluminum with special 3 point lock and padlock provision.
- Exterior finish—natural high gloss—painting optional at additional cost on request.

Fiberglass Buildings:

- Low maintenance costs
- Extremely long life
- Uprights and roof bows—2" x 4" studs, 16" on center.
- Outside walls and roof—laminated fiberglass over plywood.
- Door—3'0" x 6'8" x 1 ¾" commercial steel and steel frame with tumbler lock.
- Exterior finish—laminated fiberglass—color optional.

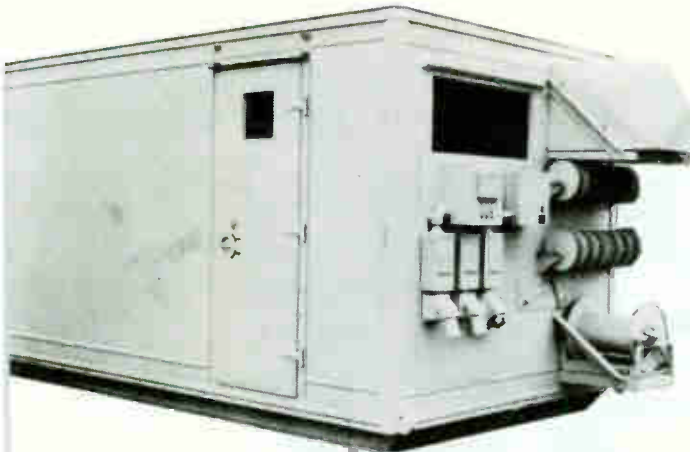
Steel Buildings:

- Rugged construction
- Temperature controlled atmosphere
- Uprights and roof bows—12 gauge steel.
- Outside wall and roof—16 gauge steel.
- Door—3'0" x 6'8" x 1 ¾" commercial steel and steel frame with tumbler lock.
- Exterior finish—special, three-coat weather resistant paint—color optional.

Rhinohide Armor Buildings:

- Aggregate finish over aluminum shell.
- Bullet resistant to a .357 magnum at point blank.
- Virtually maintenance free.
- Aesthetically appealing.

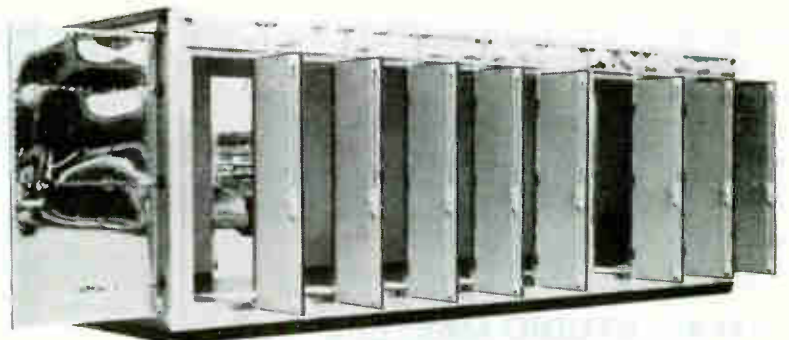
2301 Bridgeport Drive
 Sioux City, IA 51102
 (712) 252-4101 (800) 831-0974
 Telex 48-0121



Building Built to Military Specifications



**8 feet by 28 feet by 9 feet high
 Pre-Assembled Aluminum
 Building**



Building Designed for Installation of 13 Generators

Special Buildings For Industry

THE LOW COST ON SITE INSTALLATION FOR ALL SES

Advance Industries takes pride in its highly skilled craftsmen who produce the finest Pre-Assembled Building on the market. The Pre-Assembled Building is built of quality material in a plant specifically designed to manufacture the Pre-Assembled Building.

The Custom Built Advance Pre-Assembled Buildings Are Made To Be Used In:

- Substation Control
- Airport Radar
- Environmental Testing
- Communications
- Pipeline Control

- Earth Station Receiving Site
- Guard Houses
- Computer Center

and other applications requiring transportable, pre-assembled and equipped buildings of the highest quality.

Customized Features

- Custom Wiring
- Metering
- Custom Interior
- Precision Environmental Control
- Rest Rooms
- Electronic-Surveillance
- Ready For Your Equipment



MAGNETIC TAPE DIVISION

Corporate Headquarters
275 North Street
Teterboro, NJ 07608
(201) 288-4100



PEM 468 STUDIO MASTERING TAPE

1½ Mil High Output, Low Noise, Low Print

Features:	Description	Size
Lowest print-through	7" Reel	¼" x 1200'
Excellent slitting	10½" Reel	¼" x 2400'
Consistency	Hub Bulk	¼" x 2400'
Tensitized Base	Hub	½" x 2400'
	10½" Reel	½" x 2400'
Batch number and web position on back coating	12½" SK Reel	½" x 3750'
	10½" SK Reel	1" x 2400'
	10½" SK Reel	2" x 2400'

PEM 366 BIN MASTERING TAPE

1 Mil High Output, Low Noise, Low Print

Features:	Description	Size
Extended Play	Hub Bulk	½" x 3600'
Specifically Designed for Bin Application	Hub Bulk	1" x 3600'
High Frequency stability		
Mechanical stability		

PEM 469 STUDIO MASTERING TAPE

1½ Mil High Output, Low Noise, Low Print

Features:	Description	Size
Extended dynamic range	10½" Reel	¼" x 2500'
Low print-through	Hub Bulk	¼" x 2500'
Excellent slitting	10½" Reel	½" x 2500'
Consistency	Hub	½" x 2500'
Bias Compatibility	12½" SK Reel	½" x 3750'
Tensitized Base	10½" SK Reel	1" x 2500'
	10½" SK Reel	2" x 2500'

BULK AUDIO CASSETTE TAPE

Standard Bias

Low noise, super high output, exceptional high end response for IEC Bias I, 120 microsecond equalization, designed for highest quality music recording.

Description	Size	Description	Size
Magnetite 12	C-60	PE 619	C-60
Magnetite 12	C-90	PE 819	C-90
Magnetite 12	C-120	PE 1219	C-120
PE 611	C-60		
PE 811	C-90		
PE 1211	C-120		

High Bias

Low noise, pure chromium dioxide optimized for the new IEC Bias II 70 microsecond chrome equalization, for high quality music recording where strong dynamics, high frequency response and low noise are critical performance factors.

Description	Size
PE 627	C-60
PE 827	C-90

PEM 369 STUDIO MASTERING TAPE

1 Mil High Output, Low Noise, Low Print

Features:	Description	Size
Extended Play	Hub Bulk	¼" x 3600'
Tensitized Base		
Lowest print-through		
Excellent slitting		
Consistency		

PEM 526 BIN MASTERING TAPE

1½ Mil High Output, Low Noise, Low Print

Features:	Description	Size
Specifically Designed for Bin Application	Hub Bulk	¼" x 2400'
High Frequency stability	Hub Bulk	½" x 2400'
Mechanical stability	Hub Bulk	1" x 2400'



AGFA-GEVAERT, INC.

VIDEO CASSETTES

MAGNETIC TAPE DIVISION

Corporate Headquarters
275 North Street
Teterboro, NJ 07608
(201) 288-4100

Eastern Region
Twin Bridge Plaza
24 Meadowlands Parkway
Suite 300
Secaucus, NJ 07094
(201) 330-1800 (212) 947-2848

Central Region
2803 Butterfield Road
Suite 200
Oak Brook, IL 60521
(312) 242-1951 (312) 986-9076

Pacific Region
Century Park Plaza
1801 Century Park East
Los Angeles, CA 90067
(213) 552-9622



AGFA BROADCAST PLUS U-MATIC VIDEO CASSETTES

Video producers and engineers demand perfection from their master video cassette. They fully appreciate that their image depends upon the quality of the video tape original just as much as it does on the camera, lens and lighting. AGFA BROADCAST PLUS U-Matic video cassettes fulfill all of these expectations...and then some.

AGFA BROADCAST PLUS U-Matic Cassettes will add a new dimension of color brilliance and definition to your masters with: 3 dB more color signal-to-noise, 3 dB more video signal-to-noise, 2 dB more RF output and an exceptionally low drop out rate, as compared to the industry standard.

In addition to excellent video characteristics, AGFA BROADCAST PLUS U-Matic Cassettes utilize a black anti-static backcoating resulting in better tape transport and winding properties.

Precision molded and assembled under stringent and uncompromising quality control standards, AGFA BROADCAST PLUS U-Matic Cassettes are designed for use on all U-Matic video cassette players and recorders.

CASSETTE TYPE	PLAYING TIME	TAPE LENGTH
	Packaged/Labeled Series	
CS10 BP (mini)	10 min.	237 ft. (72.3m)
CS20 BP (mini)	20 min	424 ft. (129.3m)
CA5 BP	5 min	140 ft. (42.7m)
CA10 BP	10 min	237 ft. (72.3m)
CA20 BP	20 min	424 ft. (129.3m)
CA30 BP	30 min	611 ft. (186.3m)
CA60 BP	60 min	1175 ft. (358.2m)
	Bulk/Duplicator Series	
CA5 BP	5 min	140 ft. (42.7m)
CA10 BP	10 min	237 ft. (72.3m)
CA15 BP	15 min	329 ft. (100.3m)
CA20 BP	20 min	424 ft. (129.3m)
CA30 BP	30 min	611 ft. (186.3m)
CA30 BP	40 min	798 ft. (243.2m)
CA40 BP	50 min	985 ft. (300.2m)
CA60 BP	60 min	1175 ft. (358.2m)

Broadcast Quality Tape at Regular Tape Prices

Technical Data

VIDEO PERFORMANCE	1. Video Signal to Noise Ratio 2. Chroma Signal to Noise Ratio 3. Dropouts (16dB, 10µs) 4. RF Output (5MHz) 5. Still Frame 6. Tape Life	≥ 51 dB -3dB 10/min. max. average -2dB capable of exceeding 3 hours capable of exceeding 2000 passes														
AUDIO PERFORMANCE	1. Audio Signal to Noise Ratio 2. Audio Output Uniformity 3. Relative Frequency Response	52dB ± 1 dB +1dB														
MAGNETIC PROPERTIES	1. Oxide 2. Orientation 3. Coercivity H_C 4. Retentivity B_{RS}	CrO ₂ Longitudinal 500 Oersteds 1500 Gauss														
PHYSICAL PROPERTIES	1. Thickness (Nominal) - Base - Coating - Backcoating - Total 2. Width - Tolerances	<table border="1"> <tr> <td>19µm</td> <td>0.75 mils</td> </tr> <tr> <td>5µm</td> <td>0.20 mils</td> </tr> <tr> <td>2µm</td> <td>0.07 mils</td> </tr> <tr> <td>26µm</td> <td>1.02 mils</td> </tr> </table> <table border="1"> <tr> <td>19mm</td> <td>.748 in.</td> </tr> <tr> <td>+0.025mm</td> <td>+.001 in.</td> </tr> <tr> <td>-0.010mm</td> <td>-.0004 in.</td> </tr> </table>	19µm	0.75 mils	5µm	0.20 mils	2µm	0.07 mils	26µm	1.02 mils	19mm	.748 in.	+0.025mm	+.001 in.	-0.010mm	-.0004 in.
19µm	0.75 mils															
5µm	0.20 mils															
2µm	0.07 mils															
26µm	1.02 mils															
19mm	.748 in.															
+0.025mm	+.001 in.															
-0.010mm	-.0004 in.															

Prices and Specifications Subject to Change Without Notice.

B-31

77 Selleck St.
Stamford, CT 06902
(203) 348-2121



K-4 Stereo Electrostatic-Dynamic-Mini-Headphone. The only headphone in the world that incorporates both dynamic moving-coil (mid and low frequency) and electrostatic (high frequency) transducers yet weighs only 2.3 ounces. Self-adjusting headband. Matches 4-400 ohm outputs. 9.8 foot cable and standard 1/4 inch phone plug. Includes adaptor to 3.5mm mini-stereo plug. **\$99.00**



K-3 Stereo Mini-Headphone with passive diaphragms. Weighing under 2.0 ounces, it's the world's only mini-headphone to use the patented passive diaphragm technology made famous in the successful K-240. Self-adjusting headband. Matches 4-400 ohm outputs. 9.8 foot cable and standard 1/4 inch phone plug. **\$79.00**



K-2 Stereo Mini-Headphone. Moving-coil dynamic elements produce broadband response, high output and high efficiency. System is well balanced with an open sound and is compatible with almost any component. Adjustable earcups with washable cushions. Matches 4-200 ohm output with 8 foot cable and standard 1/4 inch phone plug. Weight 3 oz. **\$35.00**



K-340 Electrostatic/Dynamic Stereo Headphone. Two-way stereo headphone. Offers unsurpassed frequency and transient response, plus accurate spatial reproduction. Patented design combines electrostatic high-frequency transducers, dynamic mid/low-frequency transducers, cross overs and 10 passive diaphragms in circumaural earcups. Matches 4-400 ohm outputs. With 3m (9.8') coiled cable and standard stereo phone plug. Weight 14 oz. **\$195.00**



K-240 Deluxe Circumaural Stereo Headphone. Provides better directional sound perspective and distance discrimination, faithfully simulating hearing in natural room conditions. Patented design combines main transducers and 12 passive diaphragms, providing cross-over at 200 Hz. Matches 4-600 ohm outputs. With 9-3/4 foot, 4-conductor cable and standard 3-conductor stereo phone plug. Weight 9-1/4 oz. **\$99.00**



K-141 Deluxe Cardan Stereo Headphone. Quality stereo headphone that is lightweight and comfortable. It is semi-open featuring resonance-free characteristics but with greater freedom from low-frequency side effects. The K-141 provides an extremely broad, flat response almost totally free of coloration — sound which is warm, not boomy; open and present, without harshness. Weight 9-1/4 oz. **\$80.00**



K-130 Stereo Headphone. The K-130's transducers are microphone-derived moving coil/markrofol-diaphragm systems, not merely small paper-cone loudspeakers as widely used by other manufacturers. The transducers, earcushions, and housing are all bio-acoustically designed to form an integrated system with the listener's ear — a system concept that replicates natural listening conditions. This is achieved by utilizing a Supra earcup and maintaining an open-air operating principle. Weight 8 oz. **\$55.00**



K-45 Supra-Aural Stereo Headphone. Combines lightweight design and high efficiency of a mini with full frequency response and imaging of a studio-quality headphone. Adjustable headband and earcups allow for an extremely comfortable fit. Matches 4-200 ohm outputs and comes with a 9-3/4 foot cable and standard 1/2 inch phone plug. Weight 3 oz. **\$45.00**



HEADPHONE/BOOM — MICROPHONE SET

K-18 Ultra-Lightweight Boom Set. Consists of two monophonically connected dynamic earphones and boom arm with noise-cancelling dynamic microphone. Headphone impedance matches 4-300 ohm outputs. Nominal microphone impedance 200 ohms matched by all low-impedance unbalanced (25-1000 ohms) inputs. With 3-1/4 foot non-detachable cable with stripped-and-tinned leads. Weight 3-1/4 oz. **\$69.00**

77 Selleck St.
Stamford, CT 06902
(203) 348-2121



D-12E

Large-diaphragm cardioid dynamic microphone with high proximity effect. For mic'ing bass drums and other low-pitched instruments, as well as for general vocal applications. Features shock-suspended transducer and fixed wire-mesh windscreen. Integral XLR-type connector in microphone shaft. Includes: SA-30 stand adaptor; and case.

Frequency Range: 30-15kHz
Sensitivity at 1kHz: -53dBv

D-12E \$295.00



D-125E

Anti-feedback cardioid dynamic microphone perfect for sound reinforcement. Wire-mesh windscreen and die-cast housing assure reliability. Includes: SA-30 stand adaptor; and case.

Frequency Range: 100-18kHz
Sensitivity at 1kHz: -54dBv

D-125E \$110.00



D-130E

Ruggedized omnidirectional microphone for field broadcast use. Designed for newsfilm and ENG applications where durability is of utmost importance. Includes: SA-30 stand adaptor; and case.

Frequency Range: 50-13kHz
Sensitivity at 1kHz: -55dBv

D-130E \$105.00



D-190ES

Cardioid dynamic microphone with sintered bronze wind/pop filter. Cardioid pattern reduces feedback. Smooth frequency response makes it an excellent speech or music microphone for performing and recording use. Includes: SA-30 stand adaptor; and case.

Frequency Range: 30-15kHz
Sensitivity at 1kHz: -53dBv

D-190E \$115.00
D-190ES w/On-Off Switch 130.00



D-222EB TWO-WAY

Rugged two-way cardioid dynamic microphone. Modular dual-transducer design eliminates proximity effect and simplifies field service. Integral sintered-bronze wind and pop filter makes unit equally suitable for studio or location use. 3-position bass-rolloff switch. Includes: SA-30-Black stand adaptor; and case.

Frequency Range: 20-16kHz
Sensitivity at 1kHz: -57dBv

D-222EB \$290.00
D-202E 350.00



D-1200E

Rugged cardioid dynamic microphone. Unique B-M-S switch allows for on-mic equalization to adjust sound of mic for almost any application without sacrificing performance. Includes: SA-31-Black stand adaptor; and case. (Replaces D-224E)

Frequency Range: 25-17kHz
Sensitivity at 1kHz: 52.8dBv

D-1200E \$135.00



D-310S

Ruggedized cardioid dynamic microphone for vocal-music coverage in the home or studio. Shock-mounted transducer, die-cast housing and dual windscreen/pop filter for reliability. Includes: SA-31 stand adaptor; and case.

Frequency Range: 80-18kHz
Sensitivity at 1kHz: -58dBv

D-310 \$135.00
D-310S w/On-Off Switch 150.00



D-320B

Ultra-rugged hypercardioid dynamic microphone for vocalists on the road. Shock-mounted plug-in transducer simplifies field repair if needed. Die cast housing and dual windscreen/pop filter withstand repeated abuse. 3-position bass-rolloff switch tailors proximity effect, suppresses feedback. Includes: SA-31 stand adaptor; and case.

Frequency Range: 80-18kHz
Sensitivity at 1kHz: -57dBv

D-320B \$170.00



D-330BT

Ultra-rugged feedback-rejecting hypercardioid design demanded by top vocalists. Unsurpassed reliability ensured by shock-mounted plug-in field-replaceable transducer, die-cast housing and dual windscreen/pop filter. Two equalizer switches (3-pos. bass rolloff, 3-pos. treble rise) for ultimate flexibility in tailoring response to specific voices and ambient acoustics. Includes: SA-31 stand adaptor; and case.

Frequency Range: 50-20kHz
Sensitivity at 1kHz: -58dBv

D-330BT \$210.00

All AKG microphones are low-impedance balanced-output units fitted with a standard 3-pin XLR-type connector. Nominal output impedance is 200 ohms and is suitably matched by all low-impedance (25-1000 ohms) inputs.

Prices and Specifications Subject to Change Without Notice.

77 Selleck St.
Stamford, CT 06902
(203) 348-2121



C-535EB

Versatile studio-quality cardioid microphone for demanding applications in broadcasting, recording or sound reinforcement. Special 4-position output-padding/bass-rolloff switch prevents overload of associated mic-input stages at high sound-pressure levels, and tailors response to sound source and/or environment; (1) 0 padding, 0 rolloff; (2) 0 padding, 12dB/octave rolloff below 100Hz; (3) 14dB padding, 0 rolloff; (4) 14dB padding, 6dB/octave rolloff below 500Hz. Removable windscreens; field-replaceable shock-mounted transducer with integral FET pre-amplifier. 9-52V phantom powered. Includes: SA-31 stand adaptor; and case. Satin-black finish.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -41dBv

C-535EB \$295.00

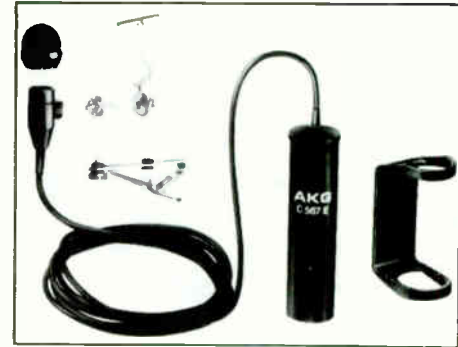


C-568EB SHOTGUN

Rugged one piece short shot-gun. Outstanding performance and attractive appearance enables mic to be used in film, TV (handheld or camera mount), stage, and audio or video recording. System includes two-position bass roll-off switch, SA-30 stand adaptor and W-68 foam windscreens. Integrated preamplifier is phantom powered by 9-52V. Satin black finish.

Frequency Response: 20-20kHz
Sensitivity at 1kHz: -62dBv

C-568EB \$295.00



C-567E LAVALIER

Miniature wide-range lavalier microphone for exceptional clean speech and music coverage in film, TV and general theatrical sound reinforcement. May be user worn or clipped to musical instrument. Couples unobtrusive appearance and durable metal construction with shock/noise resistance and ease of field service. 9-52V phantom powered. Includes: capsule-and-cable assembly (shock-mounted transducer, integral FET preamplifier, 1.3m [4'] flexible cable); output module (electronic DC regulator, output transformer, XLR connector) W-37 windscreens; H-16 belt clip; H-20 tie tack; H-21 tie bar case. Satin-black chrome finish.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -44dBv

C-567E Lavalier \$235.00

SPECIAL-PURPOSE DYNAMIC MICROPHONES



D-109

Lightweight lavalier dynamic microphone with matte nickel finish. Includes 9m (29-1/2') non-detachable cable with stripped and tinned leads at free end, nylon neck cord, tie clasp, and case.

Frequency Range: 70-12kHz
Sensitivity at 1kHz: -59dBv

D-109 \$99.00



D-58E

Differential noise-cancelling dynamic microphone for communications, paging and talk-back applications. Extremely small and lightweight. May be used with GN-7E, GN-14E, GN-20E, goosenecks. With case.

Frequency Range: 70-12kHz
Sensitivity at 1kHz: -63dBv

D-58E \$99.00



D-900E SYSTEM

Shotgun dynamic microphone system. Includes W-19 windscreens, W-9A windscreens, SA-16/1 stand adaptor, SA-70/9 pistol-grip and boom-suspension adaptor, H-7 pistol grip, H-70 boom-suspension shock mount, MC-25 cable and CC-9 foam-lined carrying case.

Frequency Range: 60-12kHz
Sensitivity at 1kHz: -50dBv

D-900E \$310.00
D-900E System 628.00



D-510B

Omnidirectional dynamic microphone on flexible gooseneck shaft. 310mm (12-3/16") long overall. Includes 1.15m (3-3/4") cable and mounting hardware. Table stand not included.

Frequency Range: 125-20kHz
Sensitivity at 1kHz: -59dBv

D-510B \$120.00

B-34

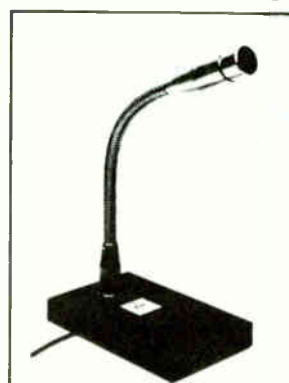


D-541

Cardioid Dynamic Microphone on flexible gooseneck shaft. 350mm (~13-3/4") long overall. Includes ~1.6m (~5') cable and mounting hardware. Black finish. Table stand not included.

Frequency Range: 80-15000kHz
Sensitivity at 1kHz: -55dBv

D-541 \$95.00



D-558B

Differential noise-cancelling dynamic microphone on flexible gooseneck shaft. 310mm (12-3/16") long overall. Includes 1.15m (3-3/4") cable and mounting hardware. Table stand not included.

Frequency Range: 70-15kHz
Sensitivity at 1kHz: -63dBv

D-558B \$130.00



D-590

Cardioid dynamic microphone on flexible gooseneck shaft. 285mm (11-1/4") long overall. Includes 1.15m (3-3/4") cable and mounting hardware. Table stand not included.

Frequency Range: 160-15kHz
Sensitivity at 1kHz: -58dBv

D-590 \$140.00

Prices and Specifications Subject to Change Without Notice.

77 Selleck St.
Stamford, CT 06902
(203) 348-2121



C-34

Small-diaphragm (CK-1) stereo microphone with FET preamplifier. Nine polar patterns selected via remote control. 9-52V phantom powered. Complete with S-42E remote control, MK-42/20 20m (66') cable, W-34 windscreen, H-15/6 suspension mount/stand adaptor and foam-lined carrying case.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -47dBv

C-34 \$1649.00



C-460B COMB.

12-52V cardioid condenser-microphone combination. With switchable bass rolloff, 4 positions: flat, 50Hz, 70Hz, 150Hz and switchable 0/-20dB attenuation. Consists of: C-460B preamplifier and CK-1 cardioid capsule. Satin-black finish; A-60 capsule thread adaptor/shock mount; W-32 foam windscreen; SA-30 stand adaptor and foam lined case.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -40dBv

C-460B Black Preamp	.....	\$330.00
C-460B Black Comb	.....	464.00
C-451EB Black Preamp	.....	275.00
CK-1 Cardioid Capsule, Black	.....	127.00
CK-1S Cardioid Capsule, Nickel	.....	127.00
CK-1X Cardioid Capsule, Black	.....	175.00
CK-2X Omni Capsule, Black	.....	175.00
CK-3 Hypercardioid Capsule, Black	.....	127.00
CK-5 Shock Suspended Cardioid Cap, Black	.....	237.00
CK-8 Short Shotgun Capsule, Black	.....	227.00
CK-9 Long Shotgun Capsule, Black	.....	277.00
CK-22 Omni Capsule, Black	.....	127.00
A-51 Swivel, Black	.....	85.00

A complete range of accessories are available.

C-414EB/P48

FET condenser microphone with large diaphragm capsule, providing four selectable patterns (omni, cardioid, hypercardioid, figure eight), with three position bass-rolloff switch (flat, 75Hz, 150Hz) and 0, -10dB, -20dB attenuator switch. For 48V low-current drain (= 1mA) phantom powering only. Complete with W-26 windscreen, SA-18/3 clamp stand adaptor and case.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -41dBv

C-414EB/P48 \$795.00

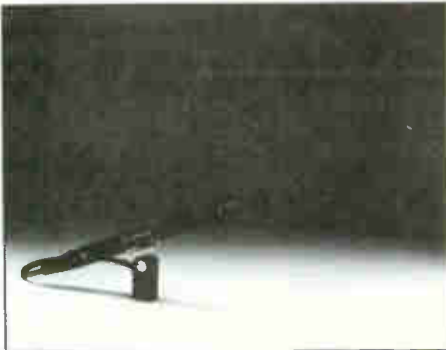


C-422

Large-diaphragm stereo microphone with FET pre-amplifier. Nine polar patterns selected via remote control. 0, -10dB, -20dB pre-attenuator. 9 52V phantom powered. Includes unique LED "aiming lights". Complete with S-42E remote control, MK-42/20 20m (66') cable, W-42 windscreen, H-15/9 suspension mount/stand adaptor and foam-lined carrying case.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -44dBv

C-422 \$2500.00



C-451EB/CK-8

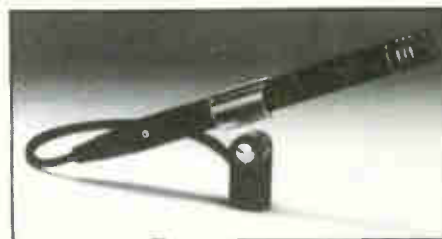
12V short-shotgun condenser-microphone combination with bass-rolloff facilities and black finish. Consists of: C-451EB Black 12V preamplifier with built-in 3 position bass-rolloff switch; CK-8 short-shotgun capsule; B-1E battery power supply; W-18 windscreen; and SA-18/1 Black stand adaptor. CC-8 foam-lined carrying case included.

Frequency Range: 30-20kHz
Sensitivity at 1kHz: -36dBv

C-451EB/CK-8 Black Comb \$671.00



C-414EB/P48



C-451E/C-451EB COMBINATION

12 52V Cardioid condenser microphone combination. C-451E has nickel finish while C-451EB has black satin finish and includes 3 position bass rolloff switch. Modular system utilizes a wide range of capsules, modules, extension tubes, and accessories. Combination includes W-32 windscreen, SA-15/1 stand adaptor and case.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: 40dBv

C-451E Combination	.....	\$380.00
C-451EB Combination	.....	427.00



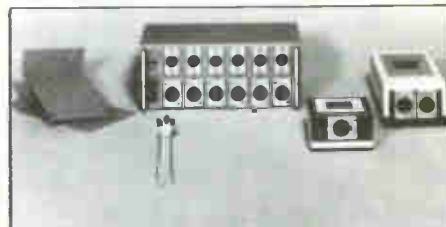
C-451EB/CK-9

12V dual-purpose cardioid/shotgun condenser-microphone combination with bass rolloff facilities and black finish. Consists of: C-451EB black 12V preamplifier with built-in 3 position bass rolloff switch; interchangeable CK-1 black cardioid and CK-9 shotgun capsules; B-1E battery power supply; W-32 and W-19 windscreens; SA-15/1 black and SA-18/3 black stand adaptors; SA-70/3 pistol-grip and boom-suspension adaptor; H-7 pistol grip; H-70 boom-suspension shock mount; and MCH-20 cable. CC-9 foam-lined carrying case included.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -39dBv

C-451EB/CK-9 Black Combination \$855.00

POWER SUPPLIES FOR CONSENSER MICROPHONES



B-1E Battery 1-mic, 9 volts	.....	\$ 85.00
B-18E Battery 1-mic, 18 volts (not shown)	.....	85.00
N-62E AC 2-Mics	.....	95.00
N-62ET AC 2 Mics w/Transformers	.....	160.00
N-66E AC 6 Mics	.....	265.00
A-52	.....	27.00

With the exception of remote-control versions all AKG microphones are low-impedance balanced-outputs units fitted with a standard 3-pin XLR-type connector. Nominal output impedance is 200 ohms and is suitably matched by all low-impedance (25-1000 ohms) inputs.

KM-10 Floor Stand

Well balanced 10" round base stand. Base has black-crinkle finish with rubber feet. Upright has a strong twist-to-lock type clutch and is adjustable from 36" to 60" high with a 5/8"-27 top thread. Net Wt. 7-1/2 lbs. **\$31.50**

KM-195 Speaker Stand

Extra heavy-duty speaker stand for mounting columns or conventional speakers. Locking height adjustment, with five positions in eight-inch steps from 48" to 78". Exceedingly stable. Threaded flat mounting plate 6" x 4-3/4" x 1/2". Collapsible with folding legs; folds down to 60" length and maximum diameter of 5-1/2". Matte-black with chrome extension. Net wt. 23 lbs. **\$130.00**

KM-199 Floor Stand

Lightweight, collapsible telescopic floor stand. Plastic-tipped feet lock in place during use. 14-1/2" base radius. Infinite adjustments from 21-1/2" through 67-1/4". Collapsed length 20". 5/8"-27 thread. Chrome with matte-black fittings. Net Wt. 2 lbs. **\$35.00**

KM-200 Floor Stand

Anti-shock floor stand. Unique suspension attenuates floor vibration. Noiseless height adjustment. Telescoping pole permits continuous height adjustment between 35" and 62". Base radius: 11". Collapsed length 33". 5/8"-27 thread. Chrome with beige fittings. Includes handy cable clamp on main telescope section. Net Wt. 6 lbs. **\$70.00**

KM-201A/2 Floor Stand

Heavy-duty collapsible floor stand. Impact resistant. Noiseless telescopic height adjustment between 36" and 63". Heavy-duty feet with elastic-rubber tips. Base radius: 14-1/2". Collapsed length: 33". 5/8"-27 thread. Chrome with matte-black fittings. Includes handy cable clamp on main telescope section. Net Wt. 5-1/2 lbs. (Also available with matte-black finish throughout.) **\$45.00**

KM-212 Boom Stand

Extra heavy-duty collapsible stand with large telescoping boom arm with counter-weight. Adjustable height from 60" to 88". Telescoping boom arm from 37-1/2" to 64-1/2". Base radius: 23". Collapsible with folding legs; folds down to 54" (boom: 48" overall) length and maximum radius of 3-1/2". 5/8"-27 thread. Chrome with matte-black fittings. Net Wt. 22 lbs. **\$150.00**

KM-251 Floor Stand

Heavy-duty, collapsible floor stand similar to KM-201A/2, but with three telescoping pieces. Height adjustment from 23" to 53". Folds down to 21" total length and maximum diameter of 3-1/2". 5/8"-27 thread. Chrome with matte-black fitting. Includes handy cable clamp on largest telescoping section. Net Wt. 5 lbs. **\$50.00**
(Also available with matte-black finish throughout.)

KM-255 Two-Way Stand With Boom

Versatile two-way floor stand. Converts for use as: (1) low-profile stand with telescoping boom arm; (2) conventional upright stand. In boom configuration, boom arm adjusts from 28" to 60". In upright configuration, height adjustable from 41" to 67-1/2". Base radius: 13-1/2". Folds down to 34" length and 3" maximum radius. 5/8"-27 thread. Chrome with matte-black fittings. Includes cable clamp on vertical section. Net Wt. 8 lbs. **\$60.00**

KM-257/2 Floor Stand

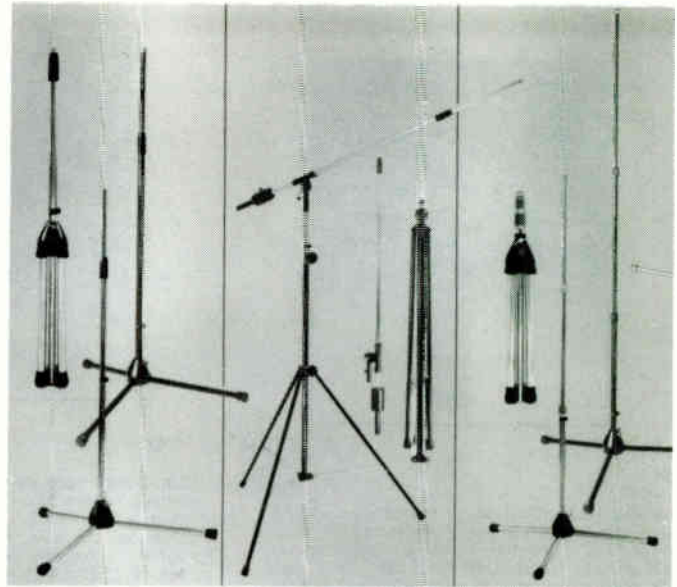
Rugged, low-cost floor stand. Central locking cam for securing feet during use. Adjustable height from 32-3/4" to 59-3/4". Base radius: 14". Folds down to 33" length and 1-1/2" maximum radius. 5/8"-27 thread. Chrome with matte-black fitting. Net Wt. 3 lbs. **\$34.00**

KM-270 Floor Stand With Boom

Collapsible chrome trifold stand with a detachable chrome boom. 33" boom is single section type and is adjustable. Clutch-held upright adjustable 34" to 61-1/2" and has a maximum height with boom of 91" while folding down to 33". Snap-on cable clamp and 1/8"-27 thread. Net Wt. 9 lbs. **\$70.00**

KM-401 Reading and Music Stand

Reading and music stand. Table size: 16-1/2" x 12-1/4". Collapsible locking feet. For left-hand or right-hand use. Height: 32" min., 49" max. Maximum horizontal table-arm extension: 9". Base radius: 13". Collapsed length: 25". Nickel plated with brown table. Net Wt. 5 lbs. **\$34.00**



KM-201A/2

KM-212

KM-251

ACCESSORIES

KM-160/1 Ashtray, to attach to KM-200, KM-201A/2, KM-251, KM-255, or KM-257/2. Chrome. **\$5.00**

KM-211/2 Telescoping boom arm for KM-200, KM-201A/2 or KM-251. Boom extension 17-1/4" min., 33" max. 5/8"-27 thread. Collapsed length: 22-1/2". Chrome with matte-black fittings. Net Wt. 2 lbs. **\$25.00**

KM-211/2 Black Same as KM-211/2, but with matte-black finish throughout. **\$25.00**

KM-216 Thread adapter, 3/8" male to 5/8"-27 female. Chrome. **\$3.00**

KM-217 Thread adapter, 3/8" female to 5/8"-27 male. Chrome. **\$3.00**

KM-221C Flange adapter for microphone mounting. 3/8" thread. Hammertone gray. **\$7.00**

KM-231/1 Collapsible tripod table stand. 5/8"-27 thread. Chrome with matte-black fitting. **\$7.00**

KM-235/1 Stereo microphone bar adapter to mount two microphones on KM-199, 200, 201A/2, 251, 255, 257/2 or any similar stand having 5/8"-27 thread. Chrome with matte-black. **\$7.00**

KM-237 Clamp adapter for microphone mounting on table tops, etc. 5/8"-27 thread. Chrome. **\$7.00**

KM-238 Microphone adapter to clamp 2nd microphone to KM-199, 200, 201A/2, 251, 255, 257/2 or any similar stand. 5/8"-27 thread. Chrome. **\$7.00**

FLEXIBLE CABLE ASSEMBLIES FOR MICROPHONES

NOTE: All cables are 7.6m (25') long, except MC-50.

MC-25	Low impedance w/o switch (female Neutrik XLR-male Neutrik XLR)	\$18.00
MC-25F	Low impedance w/o switch (female Neutrik XLR-stripped and tinned ends)	15.00
MC-25P	Low impedance w/o switch (female Neutrik XLR-Neutrik phone plug)	19.00
MC-25RC	Low impedance w/o switch (female Neutrik XLR-male Neutrik right angle XLR).	21.00
MC-25S	Low impedance w/switch (female Neutrik XLR-male Neutrik XLR)	27.00
MC-25T	High impedance w/o switch (female Neutrik XLR-transformer- Neutrik phone plug)	30.00
MC-25TS	High impedance w/switch (female Neutrik XLR-transformer- Neutrik phone plug)	35.00
MC-50	Low impedance 15.2m (50') extension (female Neutrik XLR-male Neutrik XLR)	30.00

ALEXANDER BATTERY CO.

4410 W. Elm St.
P. O. Box 365
McHenry, IL 60050
(800) 323-3813 (800) 892-2265

If you've ever been on location with portable cameras or VTRs, you probably know the frustration of a dead or defective battery pack. You know what it can cost in wasted dollars and man hours and missed stories and deadlines. Now Alexander Manufacturing can end all that with this line of quality nickel-cadmium rechargeable battery packs.



Alexander BP20A-11. (Top photo) 13.25 volt, 2.3 AH. Improved, with a 5-amp internal fuse and heavy-duty molded plug.

Replaces these packs: Sony BP20A, Christie 10B25A3, Cine BP512FC, Pep V20, Frezzolini FNC-12-2.

Alexander BP60A. (Right photo) 13.75 volt, 2.2 AH.

Replaces these packs: Sony BP60, Cine BP612FC, Pep V60, Pappac PP-60.



Alexander JVC-1. (Above) 12 volt, 2.3 AH.
Alexander JVC-11 13.25 volt, 2.3 AH. Must be charged by Alexander 20-11 Charger.

Replaces these packs: JVC PBP-1, Panasonic LCR-3012, Christie 10B25C3, ER5, Cine CBP2J5FC, Pep V44, Frezzolini FBP 12-25, Pappac PP-1.

Alexander BP90. (Right) 12 volt, 4 AH. Newly redesigned, including improved molded plug.

Replaces these packs: Sony BP90, Christie ER6, Cine BP912FC, Pep V90, V90N, Frezzolini FBP-90, FBP-90FC, Penolt PE90.



EQUIPMENT	ALEXANDER NO.
JVC	JVC-1 or JVC-11
AV/CS4500	
CR4400U Recorder	
CR4400LU Recorder	
CC4800U/CR4400U	
GC-PV4800U	
HP4000AU	
HR4100 Recorder	
HR4110 Recorder	
HR4100 GC3350	
HR4100 G-71US	
HR4100 G-31US	
TM41AU Monitor	
PANASONIC	JVC-1 or JVC-11
NV-8400 Camera	
NV-9400 Recorder	
PV2000/PK300	
PV-2100 Recorder	
PV-2300 Recorder	
PV-3000 Recorder	
RCA	BP90
TH-50 Recorder	
SONY	
AV-3400 Recorder	BP20A-11
AV-3450 Recorder	
AV3400/AVC3450	
AV3400/AVC3400	
AV8400/AVC3450	
BVH-500 Recorder	BP90
BVP-100 Camera	BP20A-11
BVP-300 Camera	BP90
BVP-330 Camera	
BVU-50 Recorder	
BVU-100 Camera	BP20A-11
BVU-110 Recorder	BP90
BVU-500 Recorder	
DXC-1610 Camera	BP20A-11
DXC-1640 Camera	BP60A
DXC-1800 Camera	
DXC-6000 Camera	
SL-340 Recorder	
SLO-340 Recorder	
SL3000/HVC1000	
SO-3800 Recorder	BP20A-11
SO-4800 Recorder	
VO-3800 Recorder	BP20A-11
VP-4800 Recorder	BP60A
THOMSON	
MC-601	BP90

REPLACEMENTS

EQUIPMENT	ALEXANDER NO.
JVC	JVC-1 or JVC-11
AV/CS4500	
CR4400U Recorder	
CR4400LU Recorder	
CC4800U/CR4400U	
GC-PV4800U	
HP4000AU	
HR4100 Recorder	
HR4110 Recorder	
HR4100 GC3350	
HR4100 G-71US	
HR4100 G-31US	
TM41AU Monitor	
PANASONIC	JVC-1 or JVC-11
NV-8400 Camera	
NV-9400 Recorder	
PV2000/PK300	
PV-2100 Recorder	
PV-2300 Recorder	
PV-3000 Recorder	
RCA	BP90
TH-50 Recorder	

BATTERIES/CHARGERS

CHART LOCATES PROPER ON-BOARD PACK

EQUIPMENT	ALEXANDER NO.
AMPEX	
BCC-14	7600
BCC-20	
CINEMA PRODUCTS	
MNC-71CP	7600 or 7700
HITACHI	
FP-10	7600-11 or 7700-11
FP-21	
FP-22	
FP-40S	
SK-81	7600 or 7700
SK-91	
IKEGAMI	
HL-78A	7600 or 7700
HL-79A	
ITC-350	7600
JVC	
KY-1900	7600-10
KY-2000	7600-11 or 7700-11
KY-2700	7700
PANASONIC	
AK-710	7600-10 or 700-11
AK-760	
PHILIPS	
LOK-14	7600 or 7700
RCA	
TK-76	7600 or 7700
TK-76B	
TK-76C	
TK-86	
SONY	
BVP-300	7600 or 7700
BVP-330	
DXC-1610	7600-11 or 7700-11
DXC-1640	
DXC-1800	
DXC-6000	
THOMSON	
MC601	7600 or 7700
TOSHIBA	
PK-60	7600



Alexander 7700. Like 7600, except is equipped to mount on QR5V-type bracket.

Replaces: Anton Bauer Pro Pack 14.

Alexander 7700-11. Like 7600-11, except is equipped to mount on QR5V-type bracket.

Replaces: Anton Bauer Pro Pac 13.

Alexander B77 Mounting Bracket. Accommodates 7600 type batteries.

Fits these cameras: RCA TK-76, TK-76B, TK-

CHARGERS FOR EACH BATTERY PACK



ON-BOARD UNITS



Alexander 7600 Ride Behind is a fully rechargeable nickel-cadmium 14.4 volt, 4 AH unit. Equipped with studs for snap-on mounting on any camera equipped with a keyhole mounting bracket. Attach a standard or short power cable to camera.

Replaces these packs: Christie KR2, Cine OB4-14, OB5-14, OB5-14S, Frezzolini BP14, PEP H14.

Alexander 7600-11 Ride Behind. Like TR7600, 13.2 volt, 4 AH unit.

Replaces these packs: Christie KR1.

Alexander 7600-10 Ride Behind. Like TR7600, 12 volt, 4 AH unit.

Replaces these packs: Cine OB5-12, Frezzolini BP12, PEP H12.

Alexander CR90-1 Smart Charger. We call it "smart" because it detects when the battery is fully charged and automatically drops to trickle charge. Will charge any 12-15 volt battery with a capacity of at least 4 AH.

Alexander 20-11. Completely recharges three BP20A-11, JVC-1 or JVC-11 packs in ten hours or less. Cannot harm battery by overcharging.

Alexander 20-40. Completely recharges two BP90 packs in ten hours or less.

Alexander CR76-2. Completely recharges two 7600 "Ride Behind" packs in ten hours or less. Cannot harm battery by overcharging.

Prices and Specifications Subject to Change Without Notice.

Allen Avionics, Inc.

224 E. Second St.
Mineola, NY 11501
(516) 248-8080

FOR TECHNICAL ASSISTANCE OR IMMEDIATE
PRICE AND DELIVERY INFORMATION CALL
FACTORY: PHONE (516) 248-8080

HUM ELIMINATOR

HUM ELIMINATOR HEC1000



ELIMINATES HUM AND OTHER INTERFERENCE in Video Lines caused by differences in Ground Potential.

IN FIELD:
Between Remote Truck & Telco
Between Remote Truck & Microwave
For Intertruck Hookup
For VTR Units
For Monitoring Lines

IN STUDIO:
Between Buildings
On long runs in Buildings
Between Studios & Transmitter
On incoming Telco Circuits
On outgoing Telco Circuits

- FLAT - DC to 10 MHz
- For Color and Black & White
- No Low Frequency or High Frequency Roll-Off
- No Differential Gain Distortion
- No Differential Phase Distortion
- Passive Device - Failure Free
- Reversible
- Small Compact Package
- Low Price

Impedance
Connectors
Bandwidth
Hum Reduction
Dimensions
Weight
Insertion Loss

SPECIFICATIONS:

75 ohms, unbalanced
Type BNC
DC to 10MHz (0.6 dB @ 10 MHz)
to 50 dB depending on system
5.3" x 4.0" x 2.0" (135 x 102 x 51 mm)
Approx. 3 lbs. (1.36kg)
< 0.2 dB

NETWORKS

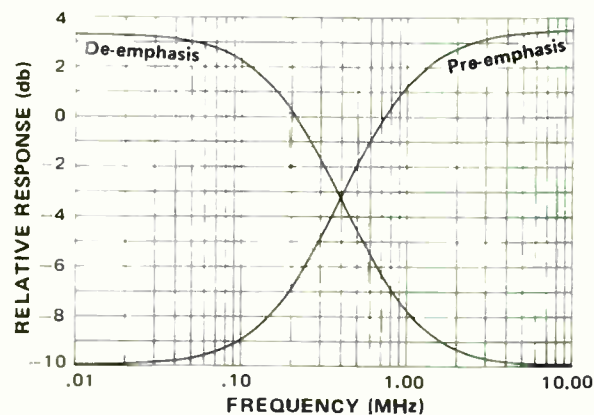
PRE-EMPHASIS & DE-EMPHASIS WAVE SHAPING NETWORKS

Pre-emphasis networks are used preceding the FM modulator in order to optimize the TV transmission.

De-emphasis follows the demodulator and serves to restore the wave shape of the demodulated signal.

IMPEDANCE 75 OHMS

Part No.	Description	Size
NW400	Pre-emphasis	2" x 1 ⁵ / ₈ " x 1 ¹ / ₈ "
NW500	De-emphasis	2" x 1 ⁵ / ₈ " x 1 ¹ / ₈ "



UNITS SUPPLIED IN METAL CANS
WITH BNC CONNECTORS

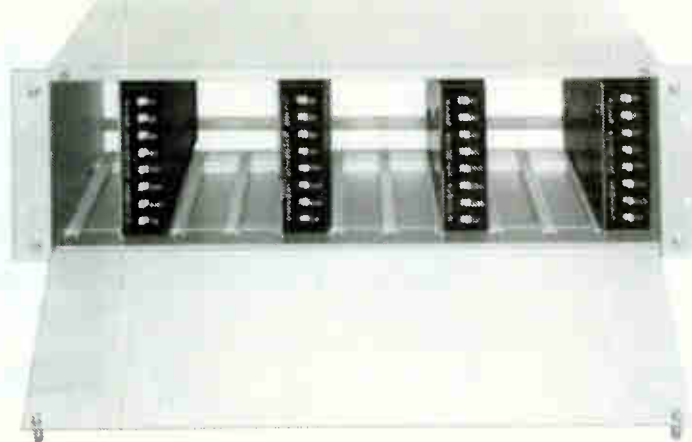
ALSO AVAILABLE – RANDOM NOISE MEASUREMENT NETWORKS TO EIA STANDARD RS-250B

RACK MOUNTABLE VIDEO/ PULSE DELAY LINES

Allen Avionics, Inc.

(516) 248-8080

A complete rack mountable series of video and pulse delay lines, with the capability of replacing up to 1450 feet of cable, is now being marketed by Allen Avionics.



All models are stocked in our plant in Mineola, New York.

RACK MOUNT showing delay units with switches and terminals available for delay changes. Up to 11 delay units can be housed. Cards for mounting units in rack are purchased separately. Note hinged front panel.

Rack Size:
19" w., 10" d., 5 1/4" h.



Showing 8 individual slide switches for rapid delay changes.

Photo shows 1 of 4 Strappable versions (VRS Series). Note that there are 7 input and output terminals available for strapping desired delay.



Four variable slide switch units are being offered with total delays of 255, 637.5, 1275 and 2270 nanoseconds. Each unit contains 8 individual delay units. Four strappable units are also manufactured with total delays of 317.5, 635, 1270 and 2260 nanoseconds. The strappable units consist of 7 separate delay lines each having their own input and output terminals. The slide switches or terminal strapping provide methods for adding the individual lines together so that the output is always the summation of the individual lines. This eliminates most video distortions and assures good chrominance to luminance delay. Precision delay changes of as small as one nanosecond are easily accomplished. Low insertion loss, amplitude and delay flatness, along with excellent pulse fidelity, are characteristic of this series.



Units are rack mounted by attaching a durable plastic card to the large surface. Note inserts provided for the attachment.



To satisfy requirements other than rack mounting, additional inserts are provided.

All units are manufactured to fit standard 19 inch racks and are provided with additional inserts to satisfy almost any mounting requirement. Delay units and racks can be purchased separately. The rack is manufactured with a hinged panel so that fast delay adjustments can be made. However, once adjustments are made, the front panel prevents further tampering with the slide switches or terminals.

Part No.	Delay Range (Nano-Sec.)	Delay Steps (Nano-Sec.)	Method of Variation	Maximum Insertion Loss @ 100 KHz (db)	Amplitude Flatness At Any Delay Setting 100KHz to 5.5MHz (db)	Max. Rise Time (Nano-Sec.)	Package Size (Inches)
VRM0255	0-255	1.0	Slide Switch	.40	.4 Max.	20	1.250 x 4.15 x 4.00
VRM0637	0-637.5	2.5	Slide Switch	*1.00	.4	28	1.250 x 4.15 x 6.00
VRM1275	0-1275	5.0	Slide Switch	*3.00	.4	33	1.250 x 4.15 x 9.00
VRM2270	0-2270	10.0	Slide Switch	*3.00	.5	40	1.250 x 4.15 x 9.00
VRS0317	0-317.5	2.5	Strap	.40	.5	26	1.250 x 4.15 x 4.00
VRS0635	0-635	5.0	Strap	.75	.5	35	1.250 x 4.15 x 6.00
VRS1270	0-1270	10.0	Strap	1.50	.5	37	1.250 x 4.15 x 9.00
VRS2260	0-2260	20.0	Strap	3.00	.5	40	1.250 x 4.15 x 9.00

*±.2db variation at any delay setting.

Impedance: 75 ohms.

Pulse Distortion: Less than 4% with an input pulse rise time of 20 nanoseconds.

Working Voltage: 50 volts maximum.

Return Loss: 15db minimum.

Delay Tolerance: 5% or 1 nanosecond, whichever is greater.

Prices and Specifications Subject to Change Without Notice.

B-39

Allen Avionics, an established leader in the design and manufacture of Electromagnetic Delay Lines and L-C Filters has now developed a specialized group of products for the video market.

In color television broadcasting, accurate timing of signals is essential. This was initially achieved by the use of 75 ohm coaxial cable. The cost in time and materials to accomplish precise trimming and the lack of a rapid and convenient method of changing delays is currently responsible for the decline in cable usage. Television studios, studio equipment manufacturers and others engaged in the video industry are changing from 75 ohm cable to a more suitable method of achieving precise short delays. Allen Avionics now offers a line of Video Units for this purpose. Their use will result in a reduction of size, weight, installation cost and an overwhelming saving in time and effort to make delay changes.



Models VPO635, VP1270 and VP2075 are padded to provide a flat loss at any setting. As a result of this padding, these units will exhibit a maximum variation of ± 0.2 db at any delay setting.

Model VP0010 was designed specifically to be used as a delay trimmer in conjunction with our other delay units or any 75 ohm system. It offers .5 nanosecond switching resolution with excellent amplitude flatness up to 5.5 MHz.

These new delay units feature extremely flat amplitude response to 5.5 MHz, small increments of delay variation, low signal distortion and tight delay tolerance. The delay networks are ideal for pulse applications because of their fast rise times and low distortion. Amplitude equalization is employed to achieve excellent flatness over the video frequency range. The delayed output of any model in this group is the summation of individual lines. It is not the result of a tapped line. This feature insures that output pulse distortions are minimized. Units will match to any 75 ohm system and can be directly connected into the video signal path by means of BNC connectors.



Part No.	Delay Range (Nano-Sec.)	Delay Steps (Nano-Sec.)	Method of Variation	Maximum Insertion Loss @ 100 KHz (db)	Amplitude Flatness At Any Delay Setting 100KHz to 5.5MHz (db)	Max. Rise Time (Nano-Sec.)	Package Size (Inches)
VP0010	0-10.5	.5	Toggle	.15	.2 Max.	3	4 3/8 x 2 3/8 x 1 1/16
VP0127	0-127	1.0	Toggle	.15	.3	14	4 3/8 x 2 3/8 x 1 1/16
VP0255	0-255	1.0	Toggle	.15	.3	16	4 3/8 x 2 3/8 x 1 1/16
VP0317	0-317.5	2.5	Toggle	.15	.3	20	4 3/8 x 2 3/8 x 1 1/16
VP0635	0-635	5.0	Toggle	* .50	.4	25	4 11/16 x 3 11/16 x 2 1/8
VP1100	0-1100	10.0	Rotary	1.25	.4	30	4 11/16 x 3 11/16 x 2 1/8
VP1270	0-1270	10.0	Toggle	*3.00	.4	30	4 11/16 x 3 11/16 x 2 1/8
VP2075	0-2075	25.0	Toggle	*3.00	.5	40	7 3/8 x 4 11/16 x 2 1/8
VS0315	0-315	5.0	Strap	.25	.4	28	4 x 2 x 1 1/4
VS0635	0-635	5.0	Strap	.60	.5	33	5 x 2 x 1 1/4
VS1275	0-1275	5.0	Strap	1.25	.5	33	5 x 3 x 1 1/4
VS2075	0-2075	25.0	Strap	2.50	.5	40	6 1/2 x 3 1/2 x 2

* ± 0.2 db variation at any delay setting

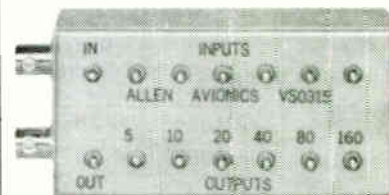
Impedance: 75 ohms.

Pulse Distortion: Less than 4% with an input pulse rise time of 20 nanoseconds.

Working Voltage: 100 volts maximum.

Return Loss: 20db minimum. 15db minimum for VP2075 & VS2075.

Delay Tolerance: 5% or 1 nanosecond, whichever is greater.



DELAY TRIMMERS—VRM011, VAR011 & VAR005

NEW



VRM011

These VAR Units, which permit an infinitely small delay adjustment, insure an amplitude and delay flatness superior to that of any other unit presently available.

The units can be used as delay trimmers alone, or in conjunction with any of our other delay boxes from D.C. to over 5.5 MHz.



VAR011

Part No.	Delay Range (Nano-Sec.)	Toggle Switch Variation (Nano-Sec.)	Trimmer Variation (Nano-Sec.)	Maximum Insertion Loss @ 100 KHz (db)	Amplitude Flatness at Any Delay Setting 100KHz to 5.5 MHz (db)	Package Size (Inches)
VRM011	0 - 11	.5 steps to 10.5	Continuously Variable to .5	.3	.3	1 1/4 x 4 5/16 x 4
VAR011	0 - 11	.5 steps to 10.5	Continuously Variable to 1	.2	.25	4 3/8 x 2 3/8 x 1 1/16
VAR005	3 - 7	---	Continuously Variable from 3 to 7	.2	.2	3 5/8 x 1 1/2 x 1 1/4

Impedance: 75 ohms.

Working Voltage: 100 volts.

Pulse Distortion: Less than 3% with an input rise time of 20 nanoseconds.

Return Loss: 20db or greater.



VAR005

TYPE AV-397 & 75-2A

75-2A
7-3/8" x 4-11/16" x 2-3/16"

Maximum Delay: 2.075 microseconds $\pm 3\%$ variable in .025 μ s. steps from .025 to 2.075 microseconds.

Time Delay of Individual Lines: 1, .5, .2, .2, .1, .05, .025 microseconds.

Rise Time for Entire Line: .06 microseconds maximum.

Frequency Response: 3db down at 5 megahertz for 2.075 microseconds delay.

Distortion: 2% maximum with .2 microsecond input pulse.

Impedance: 75 ohms $\pm 5\%$.

Working Voltage: 100.

Temperature Coefficient: 50 parts/million/ $^{\circ}$ C from -55° C to 105° C.

Attenuation: 7% maximum for 2.075 microsecond delay.



AV-397
2"x2-1/2"x5-1/2"



TV LINE EQUALIZERS—VE300 & AV-535

IMPEDANCE: 75 ohms ± 2 ohms to 8 Megahertz.
ATTENUATION OF CABLE PLUS EQUALIZER: 3db.

These Equalizers are designed to compensate for losses in RG-11/U (75 ohm) cable and its equivalents. The units are capable of equalizing 50 to 300 feet in 50 foot increments.

The VE300 is provided with a rotary switch to select the required amount of cable footage to be equalized. It is supplied with BNC connectors for quick input and output connections and is foamed in a metal can.

The AV-535 has terminals on its mounting surface arranged to provide for simplified strapping of different cable lengths. The unit is foamed and hermetically sealed in a metal can.

Attenuation of equalizer alone is as shown.

TOLERANCE $\pm .07$ db.



VE300
4-11/16" x 3-11/16" x 2-1/16"

Feet	0.1 MHz	2 MHz	4 MHz	8 MHz
50	2.97 db	2.86 db	2.79 db	2.67 db
100	2.93	2.68	2.53	2.27
150	2.90	2.51	2.28	1.88
200	2.86	2.35	2.03	1.52
250	2.82	2.19	1.82	1.21
300	2.78	2.02	1.58	0.86



AV-535
2" x 3-1/2" x 5"

Prices and Specifications Subject to Change Without Notice.

NEW "MVFL" SERIES

DELAY EQUALIZED NTSC LOWPASS FILTERS — VFL, MVFL & VCL SERIES

For the video field, we have built many lowpass filters having sharp roll-offs and good passband delay linearity with cut-off frequencies from .1 MHz to 10 MHz. The most popular of these are used to attenuate the harmonics of the NTSC color sub-carrier frequency 3.58 MHz. The most commonly used filters in this group are tabulated below:

VFL & MVFL SERIES — IMPEDANCE = 75 OHMS

Standard Size Max. Insertion Loss 1db Part No.	Miniature Size Max. Insertion Loss 2db Part No.	Max. .25db Attenuation @ Frequency (MHz)	Max. 3db Attenuation @ Frequency (MHz)	Min. 45db Attenuation @ Frequency (MHz)	Approximate Passband Delay (Nanoseconds)
VFL1P7	MVFL1P7	1.75	1.92	2.41	1691
VFL2P2	MVFL2P2	2.25	2.45	3.10	1325
VFL2P7	MVFL2P7	2.75	3.00	3.77	1082
VFL3P2	MVFL3P2	3.20	3.50	4.40	928
VFL3P5	MVFL3P5	3.50	3.84	4.82	846
VFL3P8	MVFL3P8	3.80	4.16	5.22	781
VFL4P0	MVFL4P0	4.00	4.38	5.51	741
VFL4P5	MVFL4P5	4.50	4.93	6.19	659
VFL5P2	MVFL5P2	5.20	5.70	7.16	570
VFL6P0	MVFL6P0	6.00	6.58	8.27	494
VFL6P5	MVFL6P5	6.50	7.12	8.95	457

Max. Delay Variation = ±3% to —.25 db Freq. Max. Passband Ripple = ±.25db.

VFL Size: 4" x 2" x 1 1/4" in metal can with BNC Connectors.

MVFL Size: 3" x 1 3/8" x 1/2" in metal can with terminals for PC mounting.

VCL SERIES — IMPEDANCE = 75 OHMS

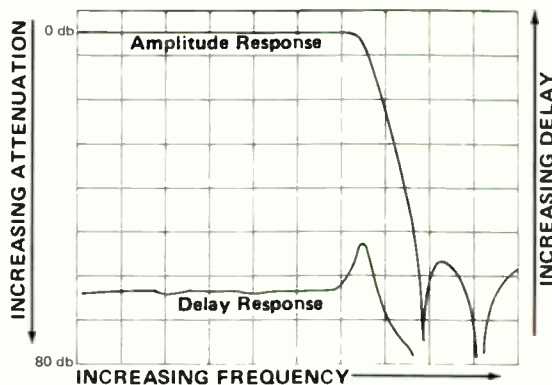
Part No.	Maximum ±3% Delay Distortion to Frequency (MHz)	Maximum .25db Attenuation @ Frequency (MHz)	Minimum 45db Attenuation @ Frequency (MHz)	Approximate Passband Delay (Nanoseconds)
VCL3P2	2.7	3.2	3.63	1100
VCL3P5	2.9	3.5	3.97	1010
VCL3P8	3.2	3.8	4.31	930
VCL4P2	3.5	4.2	4.76	840
VCL4P5	3.8	4.5	5.10	780
VCL4P9	4.1	4.9	5.56	720
VCL5P2	4.4	5.2	5.90	680
VCL5P7	4.8	5.7	6.46	620

Max. Insertion Loss @ 100 KHz = 2.5db.

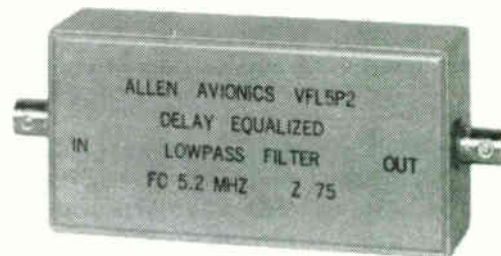
Max. Passband Ripple = ±.25db.

Size: 6" x 2" x 1 1/4" in metal can with BNC Connectors.

DELIVERY FROM STOCK



TYPICAL AMPLITUDE & DELAY RESPONSE OF VFL & MVFL SERIES



NTSC REJECT FILTERS

Some of the most frequent specifications that we encounter in the video industry are based upon rejection of the color information in the video signal to provide isolation from the luminance signal. These specifications require very low phase distortion to the luminance signal. To satisfy this requirement, Allen Avionics has designed a group of band reject filters with phase equalization where necessary. One of the most often used applications for this band reject filter is in color systems for monochrome transmission to prevent color flashes from appearing on the screen. Since various segments of the television industry have different passband requirements, we are listing three filters with different reject bandwidths.



Impedance = 75 ohms.
Maximum Insertion Loss @ 100 KHz = 3db.
Maximum Passband Ripple to 5.5 MHz = ±.25db.

Part No.	Maximum 3db Attenuation @ Frequency (MHz)	Minimum Attenuation @ 3.58 MHz
VFR4P6	1.95 — 6.55	40db
VFR1P3	3.00 — 4.30	40db
VFR0P5	3.37 — 3.88	30db

Size: 4" x 2" x 1 1/4" in metal can with BNC Connectors.

NTSC BANDPASS FILTER

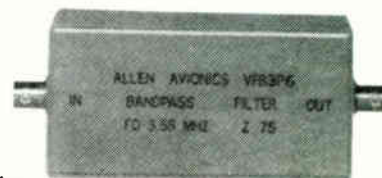
Allen Avionics sub-carrier bandpass filter is a low distortion unit designed to attenuate the luminance information in color TV signals. This filter is useful in most applications where it is required to isolate the chrominance information.

Impedance = 75 ohms.
Maximum Insertion Loss @ 3.58 MHz = 1.5db.
Maximum Ripple = ±.25db.

Part No.	Maximum 3db Attenuation @ Frequency (MHz)	Minimum 30db Attenuation @ Frequency (MHz)
VFB3P6	3.40 — 3.70	2.40 — 5.80

Size: 4" x 2" x 1 1/4" in metal can with BNC Connectors.

Prices and Specifications Subject to Change Without Notice.



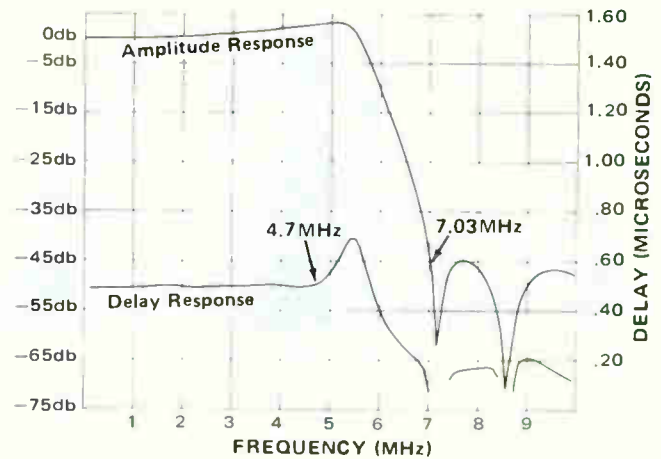
VSL4P5 DELAY EQUALIZED LOWPASS FILTER

This filter is similar to the VFL series and is intended for use at the output of a digital to analog converter. Its special feature is that amplitude equalizers have been incorporated to shape the passband response for $\frac{\sin x}{x}$ correction.

Impedance = 75 ohms.
 Attenuation = 38db or greater
 at 7.03 MHz to 20 MHz.
 Maximum Group Delay Distortion
 = 30 nanoseconds or less
 to 4.7 MHz.
 Nominal Delay = 500 nanoseconds.
 Size - 4 x 2 x 1 1/4 inches.

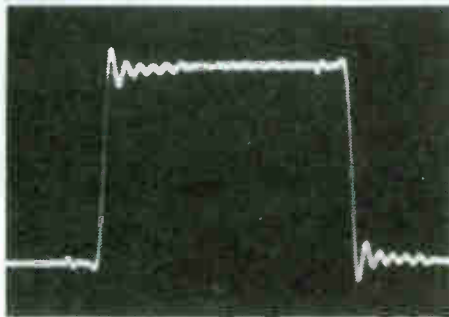


Units supplied in Metal Cans with BNC Connectors

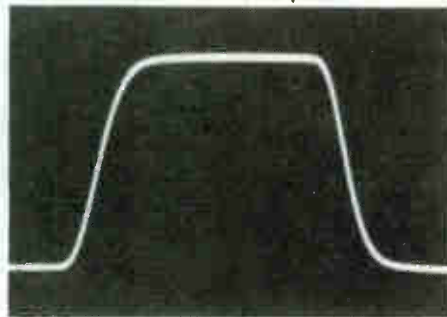


VIDEO GAUSSIAN FILTERS

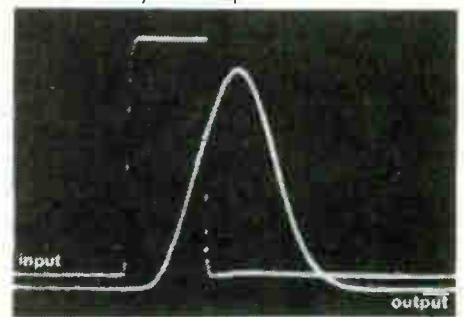
These filters are used for pulse shaping and bandwidth limiting. They are very useful in the removal of unwanted distortions caused by noise, ringing, preshoot and overshoot. Due to their fine impulse response, they are often used in conjunction with delay lines that must have minimum pulse distortion in the delayed output.



Input Pulse



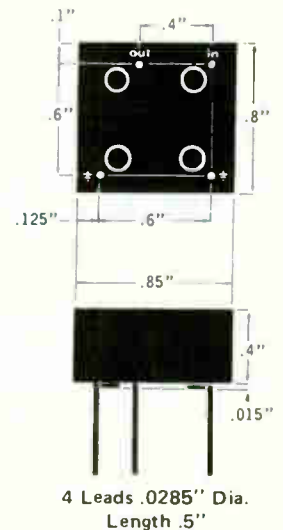
Output Pulse



An approximate Gaussian Waveshape obtained by passing a pulse through a Gaussian Filter.

Part No.	3db ± .5db Frequency (MHz)	Impedance (Ohms)	17db Min. Attenuation Frequency (MHz)	Delay Time (Nano-seconds) Nominal	Rise Time (Nano-seconds) Nominal
VGFO0P17Z500	0.17	500	.45	1988	2016
VGFO0P30Z500	0.30	500	.80	1126	1147
VGFO0P33Z500	0.33	500	.87	1024	1038
VGFO1P00Z***	1.00	50, 75, 500	2.60	340	357
VGFO1P14Z***	1.14	50, 75, 500	3.00	296	300
VGFO1P25Z***	1.25	50, 75, 500	3.30	270	275
VGFO1P50Z***	1.50	50, 75, 500	4.00	225	229
VGFO1P72Z***	1.72	50, 75, 500	4.50	196	200
VGFO2P00Z***	2.00	50, 75, 500	5.20	169	171
VGFO2P39Z***	2.39	50, 75, 500	6.30	142	144
VGFO2P50Z***	2.50	50, 75, 500	6.60	135	137
VGFO3P00Z***	3.00	50, 75, 500	8.00	113	115
VGFO3P44Z***	3.44	50, 75, 500	9.00	98	100
VGFO4P00Z***	4.00	50, 75, 500	10.50	84	86
VGFO4P89Z***	4.89	50, 75, 500	12.80	68	70
VGFO5P00Z***	5.00	50, 75, 500	13.20	67	69
VGFO5P53Z***	5.53	50, 75	14.65	67	69
VGFO12P00Z***	12.00	50, 75	32.00	29	30

*** Replace asterisks with 050, 075 or 500 depending on your impedance selection from chart.



ALPHA AUDIO

ALPHA RECORDING CORP

2049 West Broad Street
 Richmond, VA 23220
 (804) 358-3852
 Telex 469037 ALPH AAUD CI

ACOUSTICAL FOAM



SHEETS 4" X 4"

Natural Colors

Charcoal, Brown, Tan (Natural Brown and Tan not available in 4" depth)

Painted Colors

Silver, Blue, Brown, Orange

SONEX

Sonex is an open-cell urethane plastic foam designed to control reverberation time, eliminate stray reflections, and kill standing waves. The Sonex contour employs the "anechoic wedge" to optimize noise dissipation through its special geometric shape. Sonex also presents a surface area up to 450% greater than a flat material of the same dimensions. It outperforms carpeting, acoustical tile, and flat foams. Sonex is widely used in recording and broadcast studios, remote trucks, VTR control rooms, and numerous noise reductions applications. The standard sheet size is 4' x 4'. Sonex Audiotiles measure 15" x 15". Sonex is available in thicknesses of 2-, 3-, and 4-inch and comes in natural colors of Charcoal, Tan, Blue and Brown, or with fire-retardant overspray in colors of Silver, Blue, Brown, and Orange.

SHEETS Natural Colors

Depth	Sheets Per Box	Sq. Ft. Per Box	Single Box	2-5 Boxes	6-19 Boxes	20 + Boxes
2"	8	128	\$261	\$253	\$234	\$217
3"	6	96	\$254	\$247	\$228	\$211
4"*	4	64	\$249	\$242	\$223	\$207

Painted Colors

2"	8	128	\$337	\$325	\$300	\$279
3"	6	96	\$332	\$318	\$294	\$273
4"	4	64	\$321	\$311	\$288	\$267

AUDIO TILES

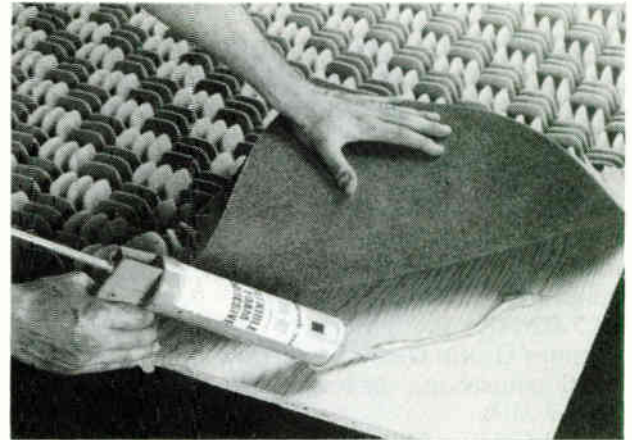
2"	28	50	\$198	\$198	\$188	\$178
----	----	----	-------	-------	-------	-------

Boxes of Tiles include 3 tubes of adhesive

TRIAL KITS 2 Sonex Sheets, 32 Sq. Ft. Total

No.	Depth	Natural*	Painted*
TK-21	2"	\$ 88	\$110
TK-31	3"	\$115	\$144
TK-41*	4"	\$145	\$181

*Natural Brown and Tan are not available in 4" depth.
 †Be sure to specify color when ordering.



Adhesive & Applicator

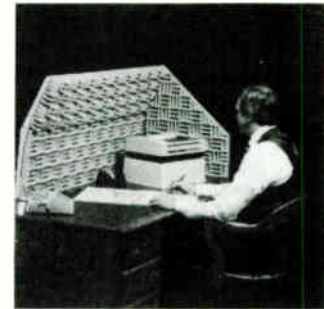
PA-01 Applicator Gun & 1 Adhesive Cartridge
 PA-02 Adhesive Cartridge

\$5.75
 3.50



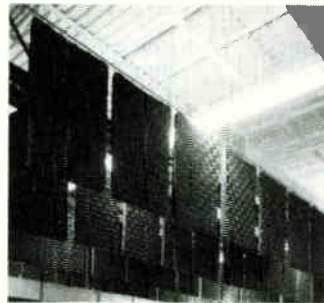
AUDIO TILES 15" x 15"

Natural Colors
 Charcoal, Brown, Tan, Blue
Painted Colors
 Silver, Blue, Brown, Orange
 (limited availability on painted audio tiles)



Privacy Panels

A 26" x 53" panel made with 3" Sonex, attaches to desk with adhesive strip **\$149.00**



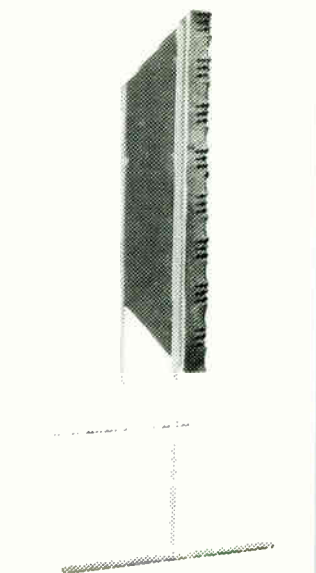
Hanging Baffles

31" x 48" ready-to-hang baffles of 2" Sonex back-to-back, 4 to a box, Natural colors only.

Single box \$203.00	2-5 boxes \$197.00
6-19 boxes \$182.00	20 + boxes \$169.00

Sonex Juniors

2' x 2' squares of 2" Sonex packed 4 to a box, Natural colors only **\$48.00/bx.**



Portable Frame Kits

2 Telescoping legs with 5 positions from 4' low to 8' high **\$60.00**

MODEL 5500 PROGRAMMABLE AUDIO MEASUREMENT SYSTEM

The model 5500 can measure virtually every parameter of audio components and systems including gain, frequency response, output power, weighted and unweighted noise, crosstalk, total harmonic distortion, intermodulation distortion, phase response and wow and jitter. The benchtop instrument can be controlled using a conventional user friendly front panel, an external controller for ATE applications or the in-built non-volatile user programmability.

The instrument offers high performance with distortion to as low as 0.03% and high speed with readings yielded in typically two seconds or less. It can be interfaced to professional equipment with the fully balanced and high level input and output.

The system contains a high performance generator with output capability to over +30dBm balanced. The comprehensive analyzer can measure level in Volts, dBV, dBm or Watts. It measures frequency to five digits, noise with four or eight selectable weightings, total harmonic distortion and intermodulation distortion to SMPTE, DIN or CCIF requirements. Measurements can be true rms, average or quasi peak. A built-in spectrum analyzer with four selectable bandwidths allows noise floor characterization and crosstalk measurements.

The user can store ten complete instrument setups in non-volatile memory for rapid recall of repetitive tests. And the 5500 can be interfaced to virtually any computer with built-in serial RS-232 and parallel IEEE-488 interfaces.

SPECIFICATIONS

Generator

Frequency Range	10Hz to 100kHz
Frequency Resolution	0.1% of setting
Output Level Range	-70dBm to +30dBm into a 600 ohm load from 150 ohm source 245 μ V to 24.5V rms open circuit
Output Level Resolution	1% or 0.1dB worst case
Output Source Impedance	600 ohms or 150 ohms
Flatness (ref 1kHz)	\pm 0.1dB 20Hz to 20kHz \pm 0.25dB 10Hz to 100kHz
Distortion & Noise	The higher of: 0.01% (-80dB) or 30 μ V, 20Hz to 20kHz, 80kHz BW 0.032% (-70dB) or 95 μ V, 20kHz to 50kHz, 500kHz BW 0.056% (-65dB) or 169 μ V, 50kHz to 100kHz, 500kHz BW
Configuration	Balanced or unbalanced Grounded or floating

Distortion Measurement (THD + N)

Fundamental Frequency Range	10Hz to 100kHz
Distal Measurement Bandwidth	10Hz to 500kHz
Output Level Range	-30dBm to +40dBm (30mV to 100V)
Display Format & Resolution	Percent 0.001% to 100% dB -100.0dB to 0.0dB
Accuracy	\pm 1dB 20Hz to 20kHz \pm 2dB 10Hz to 100kHz
Residual Noise & Distortion	the higher of: 0.01% (-80dB) or 30 μ V, 20Hz to 20kHz, 80kHz BW 0.032% (-70dB) or 95 μ V, 20kHz to 50kHz, 500kHz BW 0.056% (-65dB) or 169 μ V, 50kHz to 100kHz, 500kHz BW



MODEL 5500

Level & Noise Measurement

Frequency Range	10Hz to greater than 500kHz
Level Range	Max level measurement +40dBm, 100V Min. noise measurement -100dBm, 10 μ V
Display Resolution	+40dBm to -40dBm: 0.01dB -40dBm to -100dBm: 0.1dB
Accuracy (20Hz to 20kHz) (10Hz to 100kHz)	Above -40dBm: \pm 0.2dB Below -40dBm: \pm 1dB Above -40dBm: \pm 0.5dB Below -40dBm: \pm 2dB

Frequency Measurement

Range	10.00Hz to 500kHz (useable to over 1MHz)
Resolution	4.5 digits
Accuracy	\pm 0.003% \pm 1 digit
Sensitivity	50mV in Distortion modes 1mV or better in Level/ Noise mode

General

Power	100, 120, 220 or 240 Volts (+5-10%), 48 to 66Hz
Temperature	0°C to 50°C
Dimensions	7"H x 17"W x 18.5"D (178mmH x 432mmW x 470mmD 40lbs. (18kg))

Model	Option	Description	Price
5500		Programmable Distortion & Noise Measuring System Complete generator & analyzer system measuring level, noise, THD and frequency	\$6500.00
	001	High level balanced output Changes floating medium level output (+18dBV) to balanced high level (+30dBm)	800.00
	002	Intermodulation Distortion Adds generation and analysis capability for SMPTE, DIN & CCIF (twin tone) IMD	1200.00

4810 Jean Talon West
Montreal, Canada H4P 2N5
(514) 735-4105

14125 Capri Drive
Los Gatos, CA 95030
(408) 378-3501

4400A

Multipurpose Audio Test Set

The demands on Audio Test and Measurement Instruments are becoming more stringent. Greater sophistication of audio equipment in general has required more measurements, greater accuracy, higher resolution and better sensitivity. The multiplication of channels in professional systems and the sheer quantities of systems and components in other audio areas has created the need for a new breed of test instrument. Performance has improved in virtually all parameters to the point where yesterday's test and measurement equipment cannot properly qualify a contemporary system.

The Amber 4400A was specifically designed to fulfill this need. It is comprehensive—it combines in a single package what would formerly have required several instruments, significantly more set up, space and cost. It's high performance—there are no compromises in quality, accuracy, resolution, dynamic range, bandwidth, or sensitivity. All are state of the art. And most important its method of acquisition and presentation of data introduce a new generation of convenience, speed and thoroughness.

Audio measurements have historically been time consuming, laborious and subject to numerous possible errors. Conversely, contemporary requirements of the design engineer, the production test manager or the maintenance technician demand more data, faster. This seemingly conflicting requirement has been admirably met in the design of the Amber 4400A. It gathers test data rapidly and presents it in a concise, easy to interpret manner. Its comprehensive facilities allow the complete analysis of the device under test in a variety of formats. Flexibility of operation ensures that measurements can be made to several standards and conventions.

Sophisticated digital circuitry in the 4400A provides stable, repeatable operation. Well human-engineered logic interconnections of the various analog functions simplify operation, maintain accuracy of readings and facilitate and expedite data presentation. Internal transparent autoranging, digitally programmed oscillators, filters and gain stages, digitally based computational circuitry and digital storage of vast amounts of data make the Amber 4400A one of the most powerful audio test instruments available.

FEATURES

The 4400A provides a generator, a receiver and a meter section. It contains virtually every type of audio generator required. Included are a function generator, log sweep generator, noise generator, tone burst generator and comb generator. Unique features are the low distortion of the sine waveform in the function generator—better than an order magnitude improvement over conventional function generators. Asymmetrically clipped waveforms facilitate system polarity verifications. Crystal stable comb generator for tape speed checks and a versatile tone burst gating section facilitates dynamic tests. A high power output stage (100V Peak to Peak swing— +33 dBm) permits system headroom check.

The meter section provides digital measurement of frequency and level of both the generator output and the receive input to a high degree of accuracy. Frequency may be measured from 10 Hz to over 150 kHz and level may be measured from over +30 dBm to -120 dBm (narrow band) or -90 dBm (wide band). Measurement resolution is 0.01 dB and a variety of weighting networks coupled with the switchable true RMS/Average/Peak detector response allow noise measurements to several standards.

The receive section digital plot recorder is the most unique feature. Plots of amplitude or phase versus time or frequency may be stored in up to four storage memories and displayed on any standard non storage oscilloscope. A wide flexibility of scale selection, display presentation and sweep methods permit the user to generate and view measurement data in the most concise and meaningful way. Plots may be generated of wide band amplitude, amplitude difference between two signals, phase shift between send and receive or between two external signals. The vertical axis is linear in dB or degrees and may be from 10 to 60 dB in 10 dB increments over a 150 dB range and + / -60° to + / -180° in 60° increments.



4400A MULTIPURPOSE AUDIO TEST SET

The instrument also contains a multimode filter and spectrum analyser. The filter may be configured as a band pass, band reject, high pass or low pass and has variable Q (percentage bandwidth). The spectrum analyser has been optimised for audio and acoustic applications with a log frequency sweep and constant percentage bandwidth. The filter and spectrum analyser may be used with the digital meter for noise and other types of measurements and with the digital plot recorder for generation or noise floor plots, crosstalk measurements, acoustic response plots, RT60 plots and others. The log frequency axis, linear dB amplitude axis, variable bandwidth (nominally one octave to one tenth octave), digital programming and storage yield a high degree of operational convenience, measurement accuracy and speed to acoustic measurements.

Next to your oscilloscope, the Amber 4400A is the most powerful test instrument you can own.

4400A	Audio Test Set	\$5950.00
	Options and Accessories	
01	Extended Markers	\$ 75.00
02	Ext Lo-Freq Response	1000.00
03	Int Weighting Nets	850.00
04	Variable Duty Gate	350.00
05	Ext hi-Freq Response	1000.00
06	Auto Tuning	900.00
07	Swept Amplitude	650.00
441	XY Interface	\$650.00
443	Rack Mtg Kit	85.00
444	Weighting Net Kit	300.00
900	Extra Manual	65.00

AMBER ELECTRO DESIGN, INC.

4810 Jean Talon West
Montreal, Canada H4P 2N5
(514) 735-4105

14125 Capri Drive
Los Gatos, CA 95030
(408) 378-3501

AUDIO TEST SET

4400A MULTIPURPOSE AUDIO TEST SET

GENERATOR SECTION

Outputs:	Sine, triangle, square, pulse, asymmetrically clipped sine, triangle, sweep, pink noise and comb.
Frequency Range:	20Hz to 100kHz
Output Amplitude Flatness: (Final output, sweep mode)	50Hz to 20kHz: ± 0.05 dB 20Hz to 100kHz: ± 0.2 dB
Sine Wave Distortion: (Final output, sweep mode, +20dBm, 600 Ω load)	100Hz to 10kHz <0.05% 20Hz to 20kHz <0.2% 20kHz to 50kHz <0.5% 50kHz to 100kHz <1%
Output Source Impedance:	50 Ω $\pm 1\%$ (all attenuator positions)
Minimum Load Impedance:	50 Ω with +20dBv or lower 600 Ω with +30dBm or lower
Maximum Output Level:	+33dBm open circuit
Output Configuration:	Single ended or floating
Output Attenuator Range:	+30dBm to -70dBm
Output Level Control Range:	+2dB to -10dB
Comb Generator Frequency Accuracy:	$\pm 0.01\%$
Comb Generator Amplitude Uniformity:	± 0.1 dB relative 1kHz
Pink Noise Generator Amplitude Flatness:	± 0.5 dB, 20Hz to 30kHz

DIGITAL METER SECTION

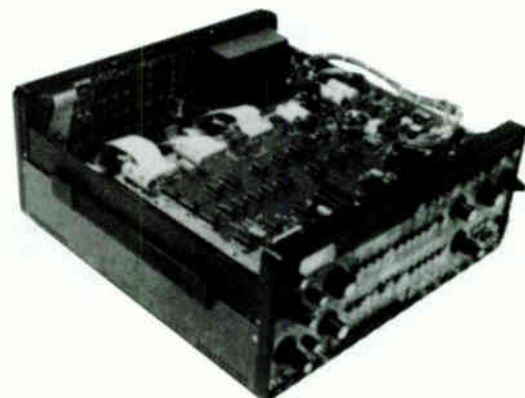
Measures:	level: +30.00dBm to -120.00dBm narrow band +30dBm to -90.00dBm wide band frequency: 10Hz to >100,000Hz
Accuracy:	Level (RMS mode), Input A +30dBm to -30dBm, 50Hz to 20kHz: ± 0.2 dB +30dBm to -30dBm, 20Hz to 50kHz: ± 1 dB +30dBm to -60dBm, 20Hz to 100kHz: ± 3 dB Frequency: ± 1 Hz
Resolution:	Level: 0.01dB Frequency: 1Hz
Display Update:	Level: 10 readings per second Frequency: 1 reading per second
Amplitude Detector Characteristics:	true RMS fast, true RMS Slow average, peak (switch or internally selectable)
Weighting:	20kHz Low Pass, 18dB/octave selectable. Optional High or Low Pass filters or ANSI, A, B, C or other networks available.

RECEIVER SECTION

Input Configuration:	Differential or Dual Channel
Input Impedance:	20k Ω $\pm 2\%$
CMRR (differential configuration):	>60dB at 1kHz
Filter Configurations:	tunable high pass, low pass, band pass or band reject. Sweepable band pass (spectrum analyser).
Filter Frequency Range:	20Hz to 100kHz
Pass Band Amplitude Flatness:	50Hz to 20kHz: ± 0.1 dB 20Hz to 50kHz: ± 2 dB
Band Pass Filter Bandwidth:	Manually adjustable from approximately 3% to 70%. At 3% attenuation at 0.5F and 2F better than 30dB.
Digital Plot Storage:	4 memory positions, each 256 points x 256 points.
X-Axis:	Log frequency, 20Hz to 20kHz or 100Hz to 100kHz. Linear time 1 second to 1024 seconds in binary sequence (1, 2, 4... etc.).
Y-Axis:	Absolute Amplitude: linear in dB, 10, 20, 30, 40, 50 or 60dB display range. Ratio Amplitude: linear in dB ± 10 , ± 20 , ± 30 dB display range. Phase (linear): $\pm 60^\circ$, $\pm 120^\circ$, $\pm 180^\circ$ display range.
Digital Plotter Amplitude Accuracy:	50Hz to 20kHz: ± 0.1 dB 20Hz to 50kHz: ± 1 dB
Digital Plotter Amplitude Range:	+30dBm to -90dBm wide band +30dBm to -120dBm narrow band
Digital Plotter Amplitude Detector:	True RMS, Fast or slow

GENERAL

Power:	100V, 120V, 220V, 240V +5%, -10% selectable, 48Hz to 440Hz
Dimensions:	178 mm high x 406 mm wide x 426 mm deep (7" x 16" x 16.8") not including handles, feet or knobs.
Mounting:	Vinyl feet on bottom with locking, tilt stand. Steel cored strap handles on both sides. Rack mounting rails available.
Weight:	13.6 kg (30 lbs).



Prices and Specifications Subject to Change Without Notice.

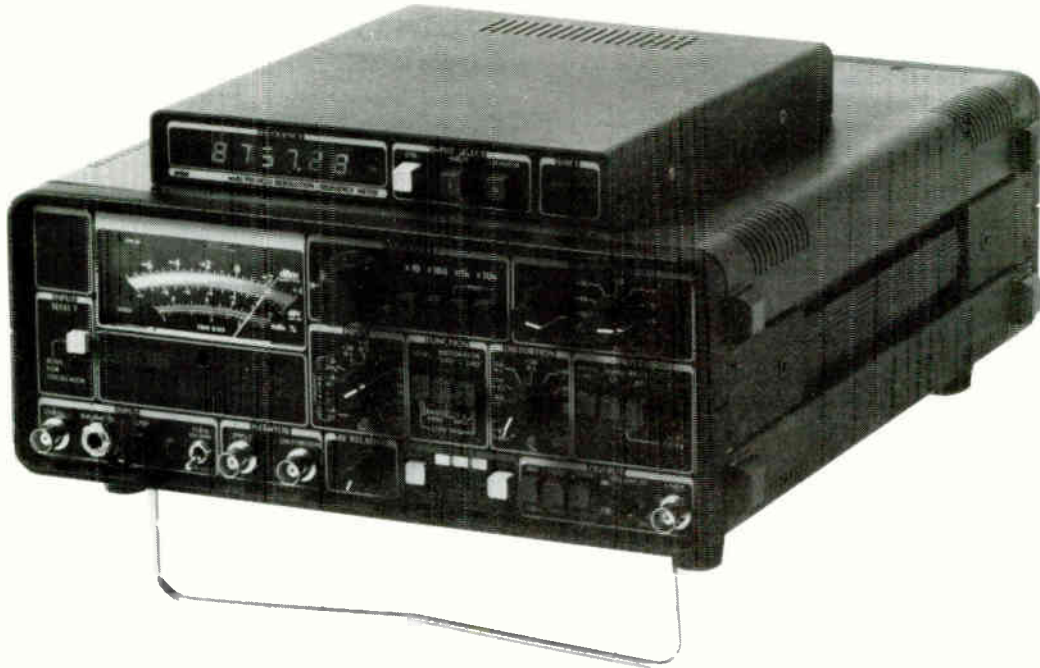
B-47

AMBER ELECTRO DESIGN, INC.

4810 Jean Talon West
Montreal, Canada H4P 2N5
(514) 735-4105

14125 Capri Drive
Los Gatos, CA 95030
(408) 378-3501

DISTORTION AND NOISE MEASURING SYSTEM



Model 3501 Distortion and Noise Measuring System

- Super high performance: THD to below 0.0008%! Noise to below — 120 dBm (1 μ V)
- Easy to use: Auto null, auto set level, tracking oscillator/analyzer
- Low Cost: 15% to 60% below competitive units
- Portable: Under 1/2 cu. ft., 12.5 lbs. — smaller than a portable oscilloscope
- Additional unique features: Frequency selective voltmeter for manual spectrum analysis, crosstalk measurements
- Optional IMD: Dual tone measurements to 100 KHz as well as SMPTE, DIN, CCIF and IHF standards
- Flexible filtering: Four user changeable filters for weighted noise measurements
- Optional balanced input/output: Output capability to over +28 dBm (+30 dBm typical) into a 600 ohm load
- Optional rechargeable battery: For field use or ground loop problems
- Optional frequency meter: High resolution and fast update
- User upgrade: All options may be field installed

The Amber 3501 is an ultra high performance distortion and noise measuring system. Distortion measurement capability is the best in the industry with measurements to below 0.0008% (-102 dB). The 3501 offers the convenience of automatic nulling and automatic set level in a portable low cost instrument. It provides several unique features for even greater measurement power such as manual spectrum analysis. Comprehensive filtering allows weighted noise measurements to virtually any standard — and the four filters are easily user changeable.

Configured to Your Application

A wide selection of field retrofitable options allows customization to specific user requirements. A powerful Intermodulation Distortion measurement capability allows measurements not only to various international standards but also front panel choice of frequencies from 2kHz up to 100 kHz — a feature useful in qualifying TIM and other high frequency phenomena. Rechargeable battery systems are available for field use or floating applications in the lab.

Balanced Input and Output

For broadcast and professional audio applications a balancing option gives a balanced/differential input and a balanced/floating output with the highest output level in the industry — over +28 dBm into a 600 ohm load (typically +30 dBm). Front panel controls select the configuration: balanced or unbalanced, grounded or floating, terminated or unterminated.

Reliability

System reliability is enhanced by the liberal use of "cold switching" technology and high performance components such as precision conductive plastic controls, enclosed switches and gold contacts. RFI susceptibility is virtually eliminated by the linear front end.

Convenient and Portable

A well engineered front panel layout, automatic operation, comprehensive input/output configurations and full monitoring make the 3501 particularly easy to use and the convenient size and weight will be welcome by both the travelling technician and the crowded lab bench.

USA Prices

3501	Distortion & Noise Measuring Set	\$2600.00
3501-001	Battery and Charger System	200.00
3501-002	Extended Battery and Charger System	325.00
3501-003	International AC Mains Converter	100.00
3501-004	Balanced Input	400.00
3501-005	Balanced Output	400.00
3501-006	IMD Analysis	800.00
3501-007	Rack Mount Kit (specify with/without 358)	100.00
3501-900	Extra Manual	35.00
3501-358	High Resolution Frequency Meter	700.00
3501-1105	Tip-Ring-Sleeve Plug-to-Banana Post Adaptor	45.00
1130	AM Detector Module	200.00

Misc Noise Weighting Filters also available.

AMBER ELECTRO DESIGN, INC.

4810 Jean Talon West
Montreal, Canada H4P 2N5
(514) 735-4105

14125 Capri Drive
Los Gatos, CA 95030
(408) 378-3501

DISTORTION AND NOISE MEASURING SYSTEM

MODEL 3501 SPECIFICATIONS

SIGNAL SOURCE (unbalanced output)

Frequency Range: 10Hz to 100kHz in four overlapping ranges. Continuously variable vernier drive FREQUENCY control permits selection of any frequency.

Output Level Range: maximum +18dBm (+20 dBm typical) into 600 ohm load, (12.6V rms open circuit) to <60 dBm minimum plus OFF. 9 steps of 10 dB (± 0.5 dB at 1kHz) and variable control of >10dB.

Amplitude Flatness: ± 0.1 dB 20 Hz to 20 kHz (referred to 1 kHz) ± 0.2 dB 10 Hz to 100 kHz

Output Source: 600 ohms $\pm 2\%$ at all control settings
Impedance (except MAX where impedance is approx. 300 ohms).

Distortion: (THD): 50 Hz to 5 kHz $\leq 0.0008\%$ (-102 dB)
($R_L \geq 600$ ohms) 10 Hz to 10 kHz $\leq 0.0015\%$ (-96 dB)
10 kHz to 50 kHz $\leq 0.003\%$ (-90 dB)
50 kHz to 100 kHz $\leq 0.006\%$ (-84 dB)

Additional specifications for option 006 IMD:

Signal Source: Composite mix of main oscillator and additional low frequency oscillator. LF Signal: 60 Hz $\pm 5\%$ (internally changeable from 20 Hz to 500 Hz) HF Signal: 10 Hz to 100 kHz set by front panel FREQUENCY control.

Amplitude Ratio: LF:HF 4:1 $\pm 5\%$ (± 0.5 dB)

Residual IM (SMPTE/DIN Mode): $\leq 0.003\%$ (-90 dB)

Additional specifications for option 005 Balanced Output:

Output Level Range: Maximum +28 dBm (+30 dBm typical) into 600 ohm load, (24V rms open circuit) to ≤ -60 dBm minimum plus OFF

Amplitude Flatness: ± 0.2 dB 20 Hz to 20 kHz (referred to 1 kHz) ± 0.5 dB 10 Hz to 100 kHz

Output Source: 600 ohms $\pm 2\%$ at all control settings except
Impedance MAX where impedance is <100 ohms

Distortion (THD): 50 Hz to 5 kHz $\leq 0.0015\%$ (-96 dB) (+28 dBm to -30 dBm)
20 Hz to 20 kHz $\leq 0.003\%$ (-90 dB)
terminated or 20 kHz to 50 kHz $\leq 0.006\%$ (-84 dB)
unterminated 50 kHz to 100 kHz $\leq 0.01\%$ (-80 dB)
10 Hz typically $\leq 0.03\%$ (-70 dB)

DISTORTION MEASUREMENT (THD + N) (specifications apply to both balanced and unbalanced input except where noted):

Fundamental Frequency: 10 Hz to 100 kHz in four overlapping ranges

Input Level Range: +40 dBV to -30 dBV (+42 dBm to -28 dBm/100 V to 30 mV rms)

Measurement Bandwidth: 10 Hz to ≥ 300 kHz ± 3 dB

Accuracy: Fundamental 20 Hz to 20 kHz: ± 1 dB (harmonic measurement)
Fundamental 10 Hz to 50 kHz: ± 2 dB
Fundamental 50 kHz to 100 kHz: ± 3 dB

Residual THD + N: 50Hz to 5kHz, 30kHz BW: $\leq 0.0008\%$ (-102dB)
(Input signal within 10Hz to 10kHz, 80kHz BW: $\leq 0.0015\%$ (-96dB)
top third of meter scale 10kHz to 50kHz, full BW: $\leq 0.003\%$ (-90dB)
in LEVEL mode and 50kHz to 100kHz, full BW: $\leq 0.006\%$ (-84dB)
signal >0dBV/1 Vrms)

Supplemental Data for THD + N Measurement:

Fundamental Rejection: Typically 10dB below specified residual THD of instrument or actual signal THD, whichever is greater.

DISTORTION MEASUREMENT IMD (requires option 006.

Specifications apply to both balanced and unbalanced input except where noted.):

Function: SMPTE/DIN MODE: Measures AM modulation of HF signal by LF signal as a percentage or ratio of HF signal

CCIF Mode: Measures difference frequency component ($F_1 - F_2$) expressed as a percentage or ratio of high frequency twin-tone composite signal

Frequency Range: SMPTE/DIN: Low frequency: 10Hz to 500Hz
High frequency: 2kHz to 100kHz
CCIF : Mean frequency: 2kHz to 100kHz
 $F_1 - F_2$: 10Hz to 1kHz

Input Level Range: Same as THD

Amplitude Mix: SMPTE/DIN: 1:1 to 5:1 (LF:HF)
CCIF : 1:1 $\pm 10\%$

Residual Distortion/Accuracy: SMPTE/DIN (LF 20Hz to 200Hz, HF 5kHz to 20kHz, mixed at 4:1) :
 $\leq 0.003\%$ (-90dB) ± 1 dB ($\pm 10\%$)
CCIF (5kHz to 20kHz, $F_1 - F_2 = 20$ Hz to 500Hz mixed at 1:1):
 $\leq 0.003\%$ (-90dB) ± 1 dB ($\pm 10\%$)

LEVEL/NOISE MEASUREMENT FUNCTION (specifications apply to both balanced and unbalanced input except where noted):

Input level range: +40dBV, (+42dBm, 100V rms) maximum to -70dBV (-68dBm, 0.3mV) in LEVEL mode and -130dBV, (-128dBm, 0.3μV) in Low Pass or Band Pass mode

Bandwidth (-3dB): 3Hz to ≥ 300 kHz

Residual Noise (source resistance $\leq 1k$ ohm):
Low Pass Mode: $F_c \leq 5$ kHz: ≤ -120 dBV (1μV)
 $F_c \leq 100$ kHz: ≤ -110 dBV (3μV)
Band Pass Mode (12% BW): $F_c \leq 1$ kHz: ≤ -120 dBV (1μV)
 $F_c \leq 100$ kHz: ≤ -100 dBV (10μV)

Accuracy, LEVEL Mode: 20Hz to 20kHz: $\pm 2\%$ of range (± 0.3 dB)
Input Signals -60dBV 10Hz to 100kHz: $\pm 4\%$ of range (± 0.5 dB) (1mV) or greater

Common Characteristics, measurement section.

Input Impedance: 100k ohms $\pm 2\%$ shunted by ≤ 100 pf (100k ohms $\pm 2\%$ each side to ground shunted by ≤ 200 pf balanced)

Common Mode Rejection: ≥ 40 dB at 50 or 60Hz

Supplemental data for measurement section:

Meter Detection: True rms for signals with crest factor ≤ 3

Meter Scales: dBm (ref 1mW, 600 ohms), dBV (ref 1V rms) Volts, percent

FILTERS (useable on all functions):

400Hz High Pass (standard): -3dB at 400Hz $\pm 5\%$, at least 40dB rejection at 60Hz (18dB per octave)

30kHz Low Pass (standard): -3dB at 30kHz $\pm 5\%$ (18dB per octave)

80kHz Low Pass (standard): -3dB at 80kHz $\pm 5\%$ (18dB per octave)

Supplementary Data for Filters:

Auxiliary Filter: 16 PIN socket to accept various filters available from Amber including ANSII/IEC. A Weighting, CCIR and others.

Band Pass Level Mode: Tuneable band pass filter with a bandwidth of approximately 12%. User changeable from 100% to less than 1% with single resistor change.

Low Pass Level Mode: Low pass filter with tuneable cutoff point. Slope characteristics: 12dB per octave. Pass band ripple ≤ 3 dB.

General:

Temperature, operating: 0°C to +50°C
storage: -40°C to +75°C

Humidity Range: <95% RH, 0°C to +40°C

Power Requirements: 120V rms +5%, -10%, 50/60Hz. Option 003 100, 120, 220 or 240V rms +5%, -10%, 48 to 62Hz. Instrument may also be powered from an external source of DC nominal 12.5V to 18V at <2A or 14V AC, 40VA.

Internal Battery: 12V rechargeable battery and charging system provides (option 001) 1.5 hours or more of instrument operation after full charge.

(option 002): Same as above but provides 3 hours or more.

Dimensions (excluding bottom feet and front and rear panel projections):

H x W x D: 114 mm x 292 mm x 356 mm
(4.5 in x 11.5 in x 14 in)

Weight: Basic instrument: 5.7 kg (12.5 lbs)
As above with 001 Battery: 6.8 kg (15 lbs)
As above with 002 Battery: 8.2 kg (18 lbs)

Note: Values shown in SPECIFICATIONS are warranted specifications. SUPPLEMENTARY DATA shown in italics are non-warranted data supplied for information only.

AMBER ELECTRO DESIGN, INC.

4810 Jean Talon West
Montreal, Canada H4P 2N5
(514) 735-4105

14125 Capri Drive
Los Gatos, CA 95030
(408) 378-3501

DISTORTION AND NOISE MEASURING SYSTEM

MODEL 3501 OPTIONS AND ACCESSORIES

001 Rechargeable battery & charger system. 12V 2.5AH battery and power supply provides independent instrument power and isolates grounds. Gives approximately one and one half hours or more of operation on a full charge. Automatically shuts down instrument when battery reaches end of life.

002 Extended life battery & charger. Same as 001 above but with 12V 5AH battery for approximately 3 hours or more of operation.

003 International AC adapter/charger. Replaces 120V AC transformer normally supplied with one suitable for use on 100, 120, 220, 240V AC +5%, -10% 48 to 62Hz. Contains IEC standard mains receptacle, voltage tap selector and US/European type fuse holder. Housed in metal box and supplied with mating mains cable with European color code suitable for user terminated AC mains plug.

004 Balanced input. Adds a differential input preamplifier to provide active balanced input for use in professional/broadcast systems and for measurement of non-ground referenced sources. Also useful to break ground loops.

005 Balanced output. Adds a floating/balanced output to instrument and increases capability to provide up to +28dBm (+30dBm typical) into a 600 ohm load. Uses a transformer for true float and a proprietary active correction technique (Patent pending) to virtually eliminate distortion contribution.

006 Intermodulation distortion measurement/Generation facility. Adds a second (low frequency) oscillator and mixing circuitry to provide twin-tone composite signal (SMPTE type) and intermodulation measurement circuits to measure SMPTE, DIN, CCIF or IHF distortion. Frequency range 2kHz to 100kHz.

358 High resolution frequency meter. Adds a six digit frequency readout of internal oscillator or external signals. Frequency multiplier provides two orders of magnitude improvement in measurement speed/resolution over conventional meters with several readings per second and up to 0.01Hz resolution. "Smart" signal detector automatically blanks display in absence of sufficient signal amplitude. Auto range circuitry (with manual override) permits measurement from below 10Hz to over 500kHz (typically 1MHz). Using the high meter sensitivity and filtering of the 3501, valid measurement of low level and noisy signals is possible. Pushbutton input selection permits measurement of 3501 oscillator, external signal input or the external signal with filtering.

Pushbuttons select either fast (approx. 3 readings/second, 0.1Hz resolution) or high resolution (0.01Hz resolution, 1 reading/second).

The 358 is powered by the 3501 internal power supply and automatically switches off when the 3501 is turned off. It mounts on the top cover of the 3501 adding approximately 1.2 inches (3 cm) to the height and is 7.7 inches (20 cm)



wide by 8.5 inches (22 cm) deep. It plugs in to existing connectors on the 3501 and may be field retrofitted.

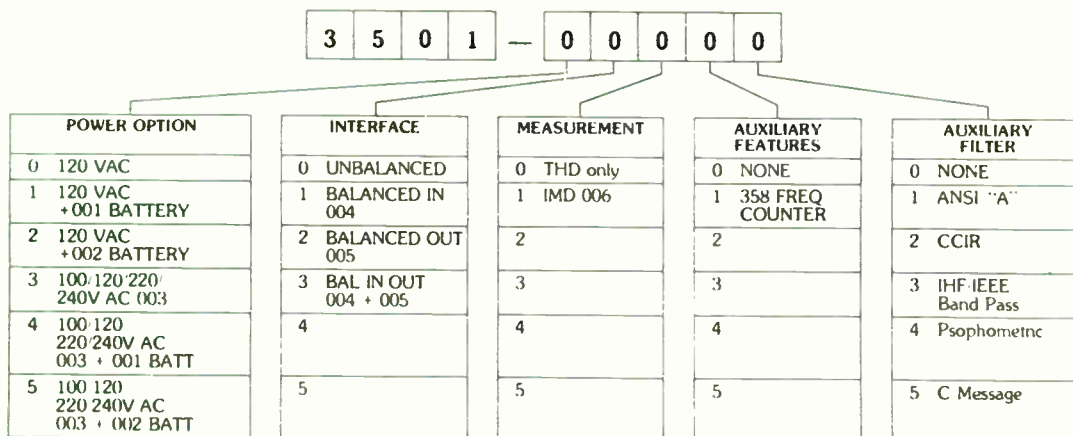
Filters. To accommodate various noise weighting standards several special and custom filters are available. Normally, if a single optional filter is ordered, it will be fitted to the AUX FILTER position of the 3501. Alternatively, any of the four filter positions may be populated with any of several available filters.

Typical choices for standard optional filters include ANSI/IEC "A" weighting and CCIR 468-2.

Custom filters include the IHF-T-200/IEEE 185 receiver band pass, the telecommunications C-message weighting with and without notch, program weighting and Psophometric.

One, two and three pole high pass and low pass filters are easily accommodated and may be either purchased from Amber or constructed by the user from data supplied in the 3501 owner's manual.

ORDERING INSTRUCTIONS



Example: a basic 3501 with no options is a 3501-00000. A 3501 with the 001 battery option, 004 balanced input, 005 balanced output, 006 IMD and an ANSI/IEC "A" weighting filter in the AUX FILTER position would be a 3501-13101.



BC01 PORTABLE BROADCASTING MIXER

AMEK BC01 System is a compact modular audio mixing desk which may be either mains- or battery-powered. A selection of input modules is available, making the desk suitable for either on-location, portable, or installation applications, typically in broadcast and television studios, outside broadcast and EFP vans, video edit suites, film sound recording, submixing and many other areas where both comprehensive facilities, a high technical standard, and size are at a premium.

The BC01 System is of robust mechanical construction, the chassis being comprised of steel and aluminum fabrications, while the modules themselves integrate the printed circuit board, front panel controls and connectors for the module, on a steel sub-chassis. The modules plug into a printed-circuit motherboard. A battery compartment is provided underneath the fader section, while the AC power supply, which may itself serve as a battery-charger, is a separate 1u, 19" rackmounted unit giving both DC rail voltages and +48V DC phantom power output.

The desk is available in two standard chassis sizes denoted BC11P, which may be mounted into a 19" rack, and BC15P. The latter accommodates up to 12 input channels and one BC02 4-bus output module, while the BC11P accommodates up to 8 input channels and one BC02 output module. Unless rack mounting brackets are fitted, the chassis is supplied with decorative hardwood end trims. Additionally a meter hood option is available for both chassis. The BCMH (meterhood) will be used where extra facilities, such as limiters, are required. Various options available for the BC01 System are described here, but custom modifications are possible and not precluded by the facilities outlined below.

At the present time there are 3 input modules. These include:

- (I) BC01 mono mic/line channel with equalization.
- (II) BC01S stereo mic/line input with equalization.
- (III) BC01L stereo line-only input, without equalization.

The three modules all interface to the BC02 4-bus output module. Thus standard maximum configurations are 8/4 or 12/4 according to chassis size selected. All 3 types of inputs may be mixed in the same chassis. The BC02 module contains all metering, monitoring and other control facilities for the desk.

The BCMH meter hood may be fitted with a Pf1 (Cue) speaker, limiters, extra meters, phase correlation meter, etc. Alternatively, a speaker may be placed in the BC02 module and the meters moved into meter hood. The exact configuration of meters, limiters and other options will depend on customer requirements, chassis size, available space, and so forth. VU and PPM meters are available.

TYPICAL PERFORMANCE CHARACTERISTICS

These figures were obtained on an 8/4 using supply rails of +/-15.3V. Maximum levels would reduce on batteries.

General

Voltages in dBV are referred to 0.775V: Channel and master faders set to unity gain position. Line outputs loaded with 10k ohms: External sources such as mics have source impedance of approx. 200 ohms: Data given are valid from 40Hz to 15kHz: Levels measured with a continuous sine wave.

Levels

Sensitivity of mic inputs: -60 to -20dBV
Sensitivity of line inputs: -20 to +20dBV
Level at insert points: -6dBV

Impedances

Input impedance, line: 10k ohms
Input impedance, mic: 1k ohms
Source impedance, with transformer: 200 ohms
Source impedance, unbalanced: 100 ohms

Frequency Response

Low cut, 12dB/oct, -3dB at: 100Hz, +/-5Hz
Treble shelving: +/-14dB at 6/12kHz
Bass shelving: +/-14dB at 80/160Hz
Mid control: +/-14dB, 220Hz to 7kHz
Filters off: +/-1.0dB, 20Hz to 20kHz

Overload Margin

Max level at mic input, without pad: +4dBV
Max level at line input, without pad: +44dBV
Overload margin at channel fader: +25dBV
Max output level into 200 ohms: +19dBV

Crosstalk

Left-Right crosstalk is dependent on panpot end of track resistance. Group to group crosstalk, better than -70dB. Some versions have individual track selectors by-passing panpot.

Supply

Mains PSU provides +/-15.3V at 1 amp and 48V phantom power at 60mA. 12V batteries can be incorporated providing max 12 hour operation.

Overall Dimensions

Without meter housing (approx.): 44.5cm front-to-back; 15cm high excluding knobs; 47cm wide for 8 input chassis; 63cm wide for 12 input chassis; Modules are 40mm wide

Noise

Noise measured with Radford ANM 1, 20Hz to 20kHz.
Master closed, main output: Better than -83dBV
Master closed, aud output: Better than -87dBV
One channel at unity gain: Better than -83dBV
11 channels at unity gain: Better than -75dBV
Equivalent input noise: -125dBV

Distortion

Unity gain with output of +6dBV and no transformer:
1kHz: Less than 0.02%
40Hz to 15kHz: Less than 0.03%

AMEK CONSOLES, INC.

11540 Ventura Blvd.
Studio City, CA 91604
(818) 508-9788

AUDIO CONSOLES

ANGELA MIXING CONSOLE

AMEK Angela is an extremely flexible multitrack console system with a wide range of options. There are 3 standard chassis sizes, which may be supplied with the jackfield onboard or offboard (on an umbilical cable). The jackfield occupies 11 module positions; it is not possible to remove the jackfield and simply retrofit modules; this option is only possible if specified at the time of order.

The 3 chassis sizes are:

- Angela M42
- Angela M50
- Angela M65

Three types of modules are used in the system:

- A10 input/output module
- A20 aux send/return module
- A30 master module

The auxiliary and master modules normally occupy 3 module positions. Standard metering on all chassis sizes are 27 LED meters, 30 segment switchable VU/Peak ballistic, reading Bus/Tape 1 through 24, stereo output, and solo/pf1.

In addition, Angela M65 can be configured with 48 track metering and monitoring, with 24 busses and 24 direct outs (from inputs 25 to 48). Chassis can, of course, be supplied short-loaded.

A bolt-on 19" producer's desk and jackfield of similar profile to the console is available. It may be fitted to either the left or right hand end of the chassis. 13 rack mounting units of space are available. (Note: this adds a third leg to either end of the console depending on which side it is mounted.) A Neve-type meter overbridge may also be fitted to any size chassis. The overbridge contains 5-1/4" of rack mount space and is 15" deep so as to accommodate any peripheral equipment or metering.

The console may be retrofitted with VCA fader automation which also provides 10 DC subgroups on the free-grouping system (any fader as master). The recommended computer is Optimix 2, which operates on up to 40 VCA's. The Angela can also be automated with "Diskmix", "Arms", "Mastermix", or the "Massenberg Labs" motorized fader automation system. Prices on the above interfaces on request.

COMPLETE CONSOLES

Angela M42	Price
28/24 Standard	\$36,950.00
28/24/A automation ready	45,500.00
28/24/A/C auto ready with Optimix computer	53,250.00

Angela M50	
36/24 Standard	\$46,500.00
36/24/A automation ready	57,330.00
36/24/A/C auto ready with Optimix computer	65,080.00

Angela M65	
51/24 Standard	\$60,700.00
51/24/A automation ready	75,805.00

Angela M65 (48 Track Version)	
51/48	\$66,300.00
51/48/A automation ready	81,405.00

Packing	
M42 Version	\$500.00
M50 Version	625.00
M65 Version	875.00

NOTE: To obtain pricing for odd input configurations (shortloaded mainframes), subtract the following from the above versions:

A10 Input Module	\$600.00
VCA Package	285.00

Angela M42/EJ (External Jackfield)	
39/24/EJ	\$45,950.00
39/24/EJ/A	57,635.00
39/24/EJ/A/C	65,385.00

Angela M50/EJ	
47/24/EJ	\$57,175.00
47/24/EJ/A	71,140.00
47/24/EJ/A/C	78,890.00

B-52

Prices and Specifications Subject to Change Without Notice.



ANGELA

Angela M65/EJ

62/24/EJ	\$73,900.00
62/24/EJ/A	92,140.00
62/24/EJ/A/C	99,890.00

Angela M65/EJ (48 Track Version)

62/48/EJ	\$79,500.00
62/48/EJ/A	97,740.00
62/48/EJ/A/C	105,490.00

JACKFIELD EXTENDER UNIT

Various Formats Are Available:

Extender, underside terminal panel, no stand	\$1525.00
Extender, rear door terminal panel, no stand	1360.00
Extender, stand when attached to chassis	525.00
Extender, stand, free standing unit	710.00
Pair of wood trims (solid mahogany)	440.00

NOTE: Items 1 and 2 do not include fill in blanks.

Metal producer's table top	\$60.00
Upper blank	33.00
Lower blank	70.00

ANGELA OPTIONS

Neve-type Meter Overbridge with 19" rack mounting for effects, etc.	\$2600.00
Full Console Skirting. Encloses legs and rear opening of console	2000.00
Sifam R32 VU Meters for stereo mix (pair)	500.00
Mono Meter	250.00
Full VU Meter Option instead of Lite Meters (includes extended meterhood 24 R22 meters, and 3 R32 VU meters)	1900.00
Phase Meter	475.00
AMEK Limiter/Compressor, built into meter bridge or below jackfield	425.00
Parametric Equalizer, 4 band with swept filters mounted on meter bridge or below jackfield	475.00
On-Board Headphone Amplifier, 2 output and assignable from aux buses	350.00
Redundant Talk-back Control, on left side of console	300.00
Additional Producers Desk, left or right hand mounted includes meterhood extender, top wood trim, and additional stand	2500.00
P & G Fader Option: Mono (per input channel)	90.00
Stereo (sub-group and master)	125.00
8 Assignable Group-Mutes (non-VCA version only) per input	250.00
Producers 28 x 4 Monitor/Effects Section, mounts below the jackfield. As above but with P & G Fader option	5675.00
Angela A10 Input Module	710.00
VCA Retrofit Package (estimate number of inputs plus 2) per module	300.00
Optimix 2 Programmer, 40 Channel maximum	7750.00
Spare Power Supply	1950.00
Effects Jackstrip (96 point TT wired to 4 ELCO/90 pin connectors)	1500.00
1/4" Jackfield Option instead of TT (additional per 96 jacks)	350.00
Swept Frequency added to Hi-EQ per A10 Module	250.00
Blank Module Panel	33.00

A NORTH AMERICAN PHILIPS COMPANY

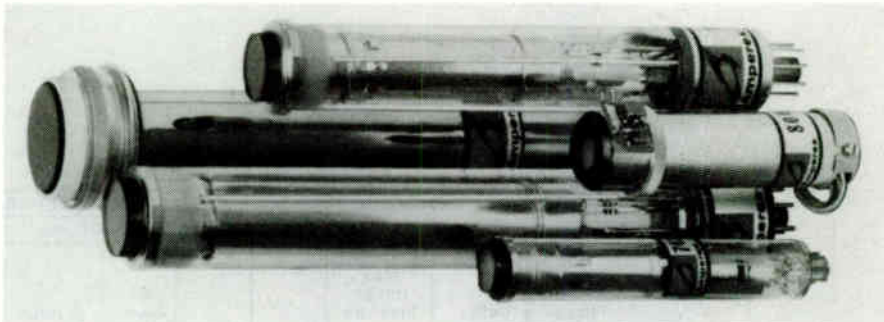
Providence Pike
Slatersville, RI 02876
(401) 762-3800 TWX 710-382-6332

XQ1070 Series Plumbicon® Camera Tube

The Amperex XQ1070 Series is a 1" (25mm) high resolution Plumbicon television camera tube with low heater power, separate mesh construction, magnetic focusing and deflection.

The XQ1070 Series is intended for use in highest quality broadcast camera equipment.

The XQ1070 Series is also mechanically interchangeable with 1" diameter vidicons with separate mesh construction and has the same base pin connections.



XQ1075 Series Plumbicon® Camera Tube

The Amperex XQ1075 Series is a 1" (25mm) high resolution Plumbicon television camera tube with extended red response, and is intended for use in high quality broadcast camera equipment where infrared filtering is required but not present in the camera optical system.

The XQ1073 Series is identical to the XQ1075 Series with the exception that it does not have an infrared cutoff filter.

XQ1427 Series Plumbicon® Camera Tube

The XQ1427 is a 2/3" (17.7mm) Plumbicon television camera tube with high resolution leadoxide photoconductive target, separate mesh construction, low heater power, magnetic deflection and magnetic focusing.

The XQ1427R, XQ1427G, and XQ1427B types are intended for use in color cameras in Field Production, Broadcast Studio, Electronic News Gathering, educational and high quality industrial applications.

XQ1410 Series Plumbicon® Camera Tube

The Amperex XQ1410 Series is a 1.2" (30mm) diameter Plumbicon television camera tube with high resolution leadoxide photoconductive target, separate mesh construction, magnetic deflection and magnetic focusing and internal light bias. It's intended for highest quality usage in XQ1410L, XQ1410R, XQ1410G and XQ1410B types of color cameras, in broadcast, educational and high quality industrial applications.

The XQ1410 series has increased resolution and internal light bias for reduction of lag under low-key conditions.

XQ1413, XQ1415 Series Plumbicon® Camera Tube

The Amperex XQ1413 Series is a 1.2" (30mm) diameter Plumbicon camera tube with high resolution lead oxide photoconductive target, with extended red response.

The XQ1413 Series is interchangeable with the XQ1023 Series, however the XQ1413 Series has internal light bias for reduction of lag under low-key conditions.

Tubes of the XQ1415 Series are identical to tubes of the XQ1413 Series but incorporate an infrared reflecting filter on the anti-halation glass faceplate.

XQ2170 Series Plumbicon® Camera Tube

1" (25mm) Diode Gun™ (Patent Pending)
High Resolution Plumbicon® Camera Tube

The XQ2170 Series Plumbicon® Camera Tube is a high sensitivity, high resolution, low lag television pick-up tube with lead-oxide photoconductive layer, separate mesh and all magnetic deflection and focus.

It has a new electron gun assembly designed to significantly improve resolution and lag. The electron gun operates in a diode mode. The beam has a uniform energy distribution, improved beam acceptance and speed of response, and enhanced resolution. The gun also provides very high beam reserve, minimizing comet tailing and blooming in cameras with dynamic beam control.

©T.M. N.V. Philips of Holland

Note that while the XQ2170 Series is mechanically interchangeable with the XQ1070 Series, the "diode gun" requires a positive grid 1 voltage (up to + 20V) and draws a positive grid current of up to 5mA. Cameras designed around XQ1070 then, must be modified to accommodate this.

XQ2427 Series Plumbicon® Camera Tube

2/3" (17.8mm) diameter Plumbicon television camera tubes with special high resolution lead-oxide photoconductive target, low heater power, magnetic focusing and deflection.

Special features are:

- New photoconductive target for increased resolution
- "Diode" electron gun for DBC (dynamic beam control) to minimize comet tailing and blooming

XQ3427 Series Plumbicon® Camera Tube

2/3" (17.8mm) diameter Plumbicon television camera tubes with special high resolution lead-oxide photoconductive target, low heater power, magnetic focusing and deflection.

Special features are:

- New photoconductive target for increased resolution
- "Diode" electron gun for DBC (dynamic beam control) to minimize comet tailing and highlight blooming
- Low output capacitance for high signal to noise ratio

XQ3457 (87XQ) Series Plumbicon® Camera Tube

2/3" (17.8mm) diameter Plumbicon television camera tube with high resolution lead oxide layer, Magnetic Focus and Electrostatic Deflection (MS). The XQ3457 R, G, & B incorporates the Diode Gun™ for dynamic beam control DBC, Low Capacitance for high signal-to-noise ratio and is only 87.5mm long for smaller cameras.

XQ3467 Series Plumbicon® Camera Tube

2/3" (17.8mm) diameter Plumbicon television camera tube with a lead oxide, high resolution layer. The XQ3467 R, G, & B employs a triode gun with Electrostatic Focus and Magnetic Deflection.

XQ4087 (80XQ) Plumbicon® Camera Tube

The XQ4087 is a 1/2" (8mm scan diagonal) Plumbicon television camera tube with low heater power, magnetic deflection and electrostatic focusing, assembled with a DT1120 small lightweight deflection unit.

Special features are:

- Diode electron gun for DBC (dynamic beam control), which minimizes comet tailing and blooming
- Low output capacitance achieved by a special signal plate with contact through the window
- Low deflection field damping by wall electrodes
- Excellent geometry and registration capability
- Reduced line pick-up due to side connection of the mesh
- Low power consumption due to electrostatic focus

The XQ4087 tubes are intended for color and monochrome cameras in broadcast (Electronic News Gathering), educational and high quality industrial applications.

XQ4187 (85XQ) Plumbicon® Camera Tube

2/3" (17.8mm) diameter Plumbicon television camera tube with Diode Gun™ for dynamic beam control DBC and low output capacitance for best signal-to-noise ratio. The XQ4187 R, G, & B has a high resolution lead oxide photoconductive layer, Electrostatic Focus magnetic deflection with high stability (HS) electrode structure. It requires very low power and has low deflection field damping.

Antimony Trisulfide Vidicons

Type	Length mm/in.	Mesh Construction I - Integral S - Separate	Focus- ing Method	Deflec- tion Method	Max Image Size mm (Scan diagonal)	Heater		Typical Operation Conditions (2856K Source)						Application Remarks
						Current (mA)	Power (Watts)	Sensitivity		Response (4 x 3 Aspect)			Limiting Resolution (TV-Lines) or (Line Pair/ mm)	
								At Dark Current (nA)	Output Signal nA at F.C.	At Mesh Voltage	Amp Response at 400 TV Lines/PH (%)			
XQ1240	159 6.260	S	M	M	16	95	0.6	20	300 at 0.1	425 950	50 65	750 1000	1" X-Ray (Medical and Industrial)	
XQ1241	159 6.260	S	M	M	16	95	0.6	20	300 at 0.1	425 950	50 65	750 1000	1" Industrial	
XQ1280	159 6.260	S	M	M	16.2	95	0.6	20	150 at 0.1	425 950	—	60LP/mm	1" Ultra High Resolu- tion	
XQ1285	159 6.260	S	M	M	15.8	95	0.6	20	150 at 0.1	425 950	—	50LP/mm	1" with Fiber Optic Face plate for Medical or In- dustrial X-Ray Equipment	
XQ1270/ 20PE11	108 4.235	I	M	M	11	95	0.6	20	200 at 0.1	400	35	500	2/3" Industrial and con- sumer CCTV applications	
XQ1271/ 20PE13	108 4.235	S	M	M	11	95	0.6	20	200 at 0.1	400	35	500	2/3" Industrial and con- sumer CCTV applications	
XQ1272/ 20PE14	108 4.235	S	E	M	11	95	0.6	20	200 at 0.1	600	35	500	2/3" Industrial CCTV applications with elec- trostatic focus	
XQ1600/ S4152	85 3.35	S	E	M	8	105	0.3	10	120 at 0.1	550	> 20	450	1/2" Miniature, electro- static focus	

Newvicons

XQ1440/ S4076	159 6.260	S	M	M	16	95	0.6	—	240 at 0.5	500	50	800	1" Industrial CCTV appli- cation
XQ1442/ S4093	160 6.299	S	M	M	16	95	0.6	—	240 at 0.5	500	50	650	1" Industrial CCTV appli- cation with fiber optic faceplate
XQ1274/ S4075	108 4.235	S	M	M	11	95	0.6	—	260 at 0.1	400	35	650	2/3" Industrial CCTV application
XQ1275/ S4092	108 4.235	S	E	M	11	95	0.6	—	260 at 0.5	35 to 55	30	600	2/3" Industrial CCTV application with elec- trostatic focus
XQ1601/ S4162	85 3.35	S	E	M	8	105	0.3	—	110 at 0.1	550	> 20	450	1/2" Miniature electro- static focus

Deflection and Focusing Coil Units

Type	Max. Out Side Dia. (mm)	Overall Length (mm)	Weight (g)	Inductance (mH)		Resistance (ohms)			Current (mA)			Tube Diameter	Remarks
				Line Deflec- tion Coils	Frame Deflec- tion Coils	Line Deflec- tion Coils	Frame Deflec- tion Coils	Focus Coil	Line Deflec- tion Coils	Frame Deflec- tion Coils	Focus Coils		
AT1116	60.4	136.7	615	0.78	28	2.4	52	149	300 p-p	43 p-p	105	1"	Front load, for B/W and color applications
KV-12S	46	84	300	0.86	28.7	3.2	146	55	160 p-p	25 p-p	120	2/3"	Front load, for B/W appli- cations
KV-19G	30	80	56	0.9	23	4.6	146	—	160 p-p	25 p-p	—	2/3"	Front load, "Electro- Magnetic" for B/W applications

AMPEX

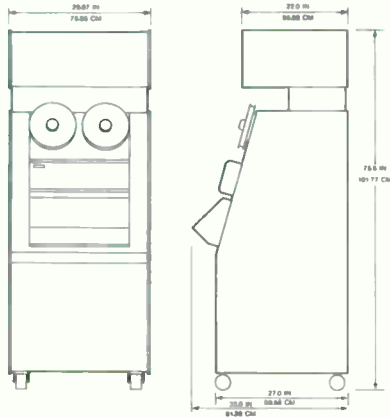
401 Broadway
Redwood City, CA 94063
(415) 367-2011

VPR-3 Type C Video Tape Recorder

The VPR-3 has been created for the uncompromising new video production world. It has more instant functions. It is more versatile and flexible. It's more precise and sophisticated. And it's crafted for longer life and simpler maintainability.

Day-in, day-out, this machine will give you air-guided tape handling, superior video and audio features, simplified control and easy adjustment accessibility.

VPR-3. It's ideal for teleproduction where time is money. For broadcasters use where versatility is expected. And for satellite or cable distribution organizations where dependability is demanded.



CONSOLE

The optional console has provisions for mounting the VPR-3, TBC-3, a picture monitor, waveform and vector monitors, and the high power audio system

RACK MOUNT

19 inch rack compatible

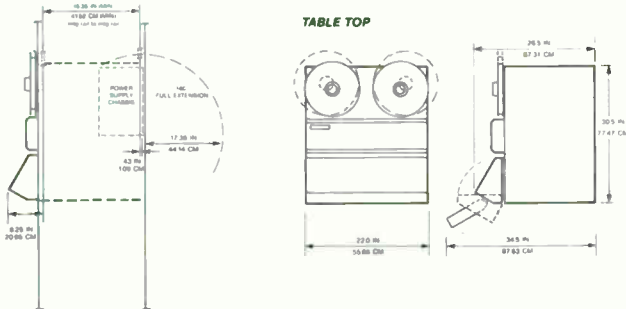


TABLE TOP

FEATURES

- Pinch-rollerless design. Vacuum capstan with gas film and roller guides provide fast, gentle and precise tape control and handling in all operating modes for smooth, predictable acceleration/deceleration
- 500 inches/second acceleration/deceleration profile allows a 30 second segment to be re-cued and synchronously played in 2.0 seconds using one hour tape reels
- Large dot addressable fluorescent display with direct access and six menu-identified "soft keys" can easily organize, display and simplify important operational control and diagnostic functions
- Unique SCH phase meter built-in to assure better control for fast edits without picture shift
- Master Unity control
- Automatic computer optimization of video and audio record parameters, with storage for three tape types

PROFESSIONAL VIDEO TAPE RECORDER



PHYSICAL DIMENSIONS

	Rack Mount	Table Top	Studio Console w/Monitor Bridge & TBC
Height	29.75 in. 75.56 cm	30.5 in. 77.47 cm	75.5 in. 191.77 cm
Width	19.0 in. (Note #4) 48.26 cm	22.0 in. 55.88 cm	29.875 in. 75.86 cm
Depth	25.75 in. 65.4 cm	26.5 in. 67.31 cm	32.00 in. (Note 5) 81.28 cm
Weight	270 lb 122.47 kg	275 lb 124.74 kg	650 lb 294.84 kg

- Single field lock-up (20 milliseconds) and synchronous start for full color frame playback in a maximum of four fields in NTSC, and a maximum of eight fields in PAL/SECAM
- Audio input and output processing ports for easy interfacing with popular noise reduction and time compression/expansion systems
- Five machine editing control
- 3-hour reel capability in either a tabletop or rackmount configuration
- Optional line-by-line autochroma
- Input cable equalizer

Additional Features

- AST Automatic Scan Tracking permits continuously variable play, from still frame to 3X play speed forward, and zero to 1X in reverse
- SMPTE/EBU Type "C", one-inch format
- Individually replaceable video and sync head assemblies
- Two SMPTE series communications ports (RS-422)

Optional Accessories

- TBC-3 Time Base Corrector
- Time Code Reader-Generator/Character Generator
- High-Powered Audio System/Speakers
- Digital line-by-line Autochroma
- SMC-100 Slow-motion Controller

AMPEX

401 Broadway
Redwood City, CA 94063
(415) 367-2011

COMPUTERIZED EDITING SYSTEM

ACE

Ampex Computerized Editing

In editing suites everywhere, Ampex Computerized Editing (ACE) systems have gained a reputation as extremely fast, exceptionally user-friendly editing systems. Many of the most creative editors in the business attest to its easy, trouble-free operation. All this because ACE is truly a state-of-the-art system, using high level computer language and distributed processing techniques to provide creative power and flexibility.

Because ACE is both software based and modular, it is a superior long-term investment. Software updates enhance the system's capabilities without making hardware obsolete. Modularity means that you start out with exactly what you need in the system and add options or accessories as you grow.

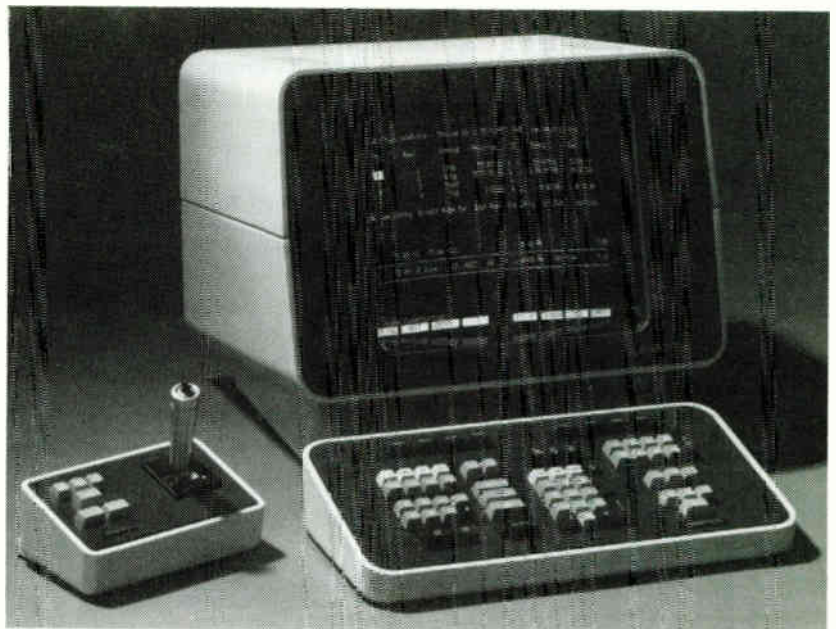
ACE is human-engineered to a high degree. Because individual editors have individual preferences and working styles, ACE offers a choice of human interfaces. The basic software has been tested and perfected by working editors, to insure that it meets "real world" requirements. And that's not all. You can even configure menus to suit your own needs.

ACE also offers the editor unsurpassed power over the entire array of equipment in the complete system. Using the joystick control, the editor can control the switcher, special effects and graphics systems as well as video and audio recorders.

ACE Software

ACE software is tailored to whichever of the three human interface options you choose, TouchScreen, dedicated keyboard or ASCII keyboard. The manner in which data is displayed varies, but the inherent power and flexibility are the same.

One of the unique features of ACE software is the ability to configure menus to an editor's own preference. Needless to say, this is a popular feature. You can display as little or as much data as you want on your Edit Construction List (ECL) or Edit Decision List (EDL). You can see all the time code numbers, for example, or leave them out of the display. It makes no difference, because the system remembers everything. Should you need to change or re-format menus in the middle of a job you can do so. Everything you need to know is in memory and can be recalled.



Another unique feature, variable hardware configurations, allows the editor to quickly adapt to the machine requirements of any given job. If you need more VTRs or a different peripheral device or system for a particular job, you merely change the Hardware Configuration menu. You don't have to stop and physically connect or disconnect equipment.

ACE Hardware

The basic hardware in an ACE system includes the Edit Controller, dual 8-inch floppy disk drive, the human interface device (TouchScreen or keyboard with optional data monitor), joystick module, optional preview switcher and whatever machine interfaces (MIFs) are required. Other Options include the Dedicated Editing Switcher, General Purpose Interface, and various peripheral devices such as printers, terminals and paper tape punch/readers. Diagnostic options include a PROM-based micro-processor exerciser.

At the heart of the system is the edit controller, with its advanced, RAM-based LSI-11* computer family. The edit controller contains five standard control cards: the CPU, memory, character generator, timing board, and floppy disk interface. There is room for ten additional intelligent line control cards (ILCs), for control of up to 20 peripheral devices.

One drive of the dual floppy disk drive is used for loading the editing program into the CPU on power-up; the other for storing edit decision lists and other pertinent notations. The second drive can also be used for making duplicates of valuable master disks.

A machine interface (MIF) is required for each machine that is controlled by the system, unless SMPTE interface is built into the machine, as in the case of the VPR-3, for example. Each MIF has a different configuration to meet the requirements of the machine it controls. MIFs are usually housed in small, rack mountable chassis.

A Variety of Input/Output Peripherals

Edit decision lists and other data necessary for final program assembly can be output via a number of standard I/O peripherals. RS-232-C serial communications are available to allow ACE to interface with hard copy printers, terminals, paper tape punch/readers and other floppy disk units.

*T.M. Digital Equipment Corporation

AMPEX

401 Broadway
Redwood City, CA 94063
(415) 367-2011

VPR-6 Type C Video Tape Recorder

The VPR-6 is an appealing blend of machine intelligence and ease of operation, combined to allow operators to be more productive. Powerful microprocessors help the operator to make recording and playback operations as smooth as a ballet, perform simple or complex editing steps with equal ease, or to locate a troublesome IC if necessary. The mechanical design and packaging, based on proven Ampex designs, offer more reliability and greater accessibility.

"User friendly," a term often applied to computers, applies equally well to the VPR-6. A well laid out control panel allows the operator to easily access the logical and powerful software. Virtually all board edge controls have been eliminated, allowing the operator to perform machine setup procedures from the control panel.

With RS-422 serial communications capability, the VPR-6 operates efficiently as an element of state-of-the-art systems, responding to computer editing systems such as the Ampex ACE edit controller.

Helping the VPR-6 attain its full potential is the TBC-6 digital time base corrector, performance matched to the VPR-6. Expanded memory and a very compact package make the TBC-6 the ideal companion for the VPR-6.

FEATURES

- AST™ Automatic Scan Tracking is standard, allowing variable play speeds, 1 to 3X normal
- Shuttle speeds approaching 500 ips with viewable picture
- Forward and reverse single-frame jog
- Video and audio confidence playback
- Optional sync channel
- Optional fourth audio channel (EBU systems)
- Microprocessor-controlled optimization of servos for gentle tape handling of all reel sizes from spot to 2 hours
- Automatic unthread mode prevents head breakage from ragged tape ends
- Virtually all machine functions can be run from control panel
- Extensive built-in diagnostics monitor VTR status continuously
- Expanded diagnostic routine utilizing test probe can be run from control panel

ACCESSORIES AND OPTIONS

Sync Channel

An option to permit all vertical sync information to be recorded according to the SMPTE/EBU Type "C" formats.

Four Channel Audio

This EBU option provides a fourth high quality audio channel in the track space normally allotted to the sync channel.

Audio Processing Kit

This kit provides a harness and connectors to allow simple interfacing of the VPR-6 to external processing devices.

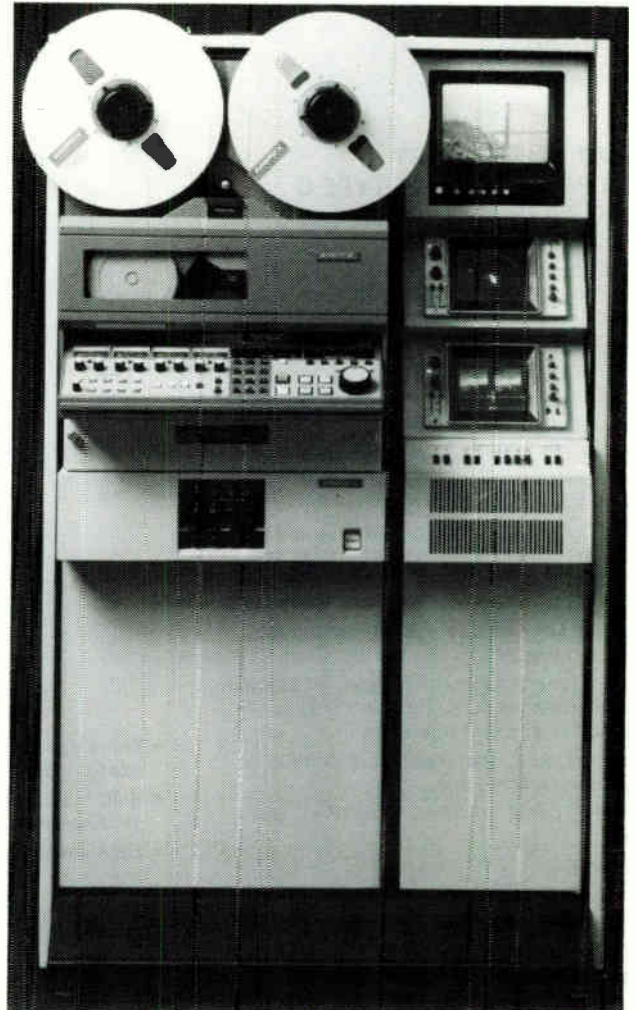
Rack Size Monitoring

A compact, rack mountable monitoring assembly is available for use with the VPR-6.

Time Code Generator/Reader & Character Display

A printed wiring assembly plugs into the VPR-6 electronics bay to add longitudinal time code generation and reading capability.

PROFESSIONAL VIDEO TAPE RECORDER



Parallel Remote Interface PWA

Installation of this accessory adds a 75-pin remote connector which is pin-compatible with Ampex VPR-2B's and VPR-80's.

Serial Remote Interface PWA

Installation of this PWA provides RS-422A-compatible connection to the serial control bus of a microprocessor-based editing system.

Diagnostic Probe

Standard diagnostics capability in the VPR-6, consisting of wakeup and background tests, can identify system malfunctions to assembly or subassembly level.

SMC-100

The traditional sports slow motion controller provides full variable speed playback control of the VPR-6 from up to 100 feet away.

STC-100

This multi-point search-to-cue accessory provides up to 99 cue point assignment and search capability. All cues can be recorded on tape for later recall.

PHYSICAL DIMENSIONS

	Rack Mount	Table Top	Console with Monitoring	Side Car Monitoring Console	Overhead Monitoring Console
Height	21.0 in 533 mm	22.0 in 558.8 mm	70.5 in 1791 mm	56.4 in 1433 mm	74 in 1880 mm
Width	19.0 in 482.6 mm	22.0 in 558.8 mm	22.0 in 558.8 mm	33.0 in 838 mm	33.0 in 838 mm
Depth	21.0 in 533 mm	22.0 in 558.8 mm	26.5 in 673 mm	26.5 in 673 mm	26.5 in 673 mm
Weight	143 lb 65 kg	150 lb 68 kg	317 lb 144 kg	545 lb 247 kg	670 lb 304 kg

AMPEX

401 Broadway
Redwood City, CA 94063
(415) 367-2011

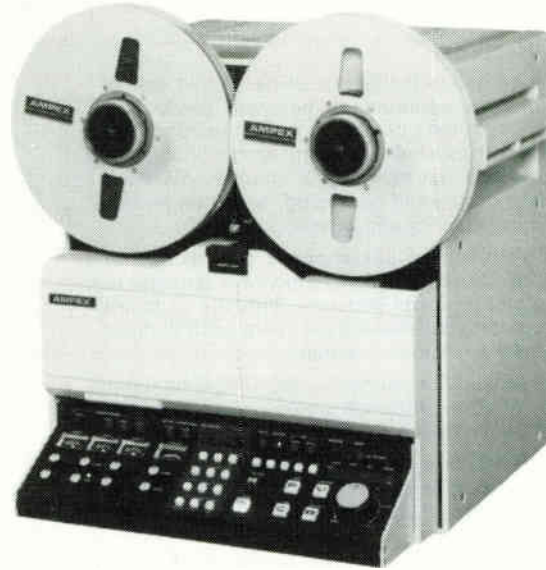
PROFESSIONAL VIDEO TAPE RECORDER

VPR-80 — LOW COST HIGH PERFORMANCE TYPE C VIDEO TAPE RECORDER

Reliability, simplicity, efficiency: The fundamentals behind the design of the VPR-80. It offers the video producer the latest advances in helical recording technology from Ampex.

FEATURES

- SMPTE/EBU Type C 1" format
- Advanced transport design for superior tape handling of all reel sizes, from 6-1/2" "spots" to 2-hour, 11-3/4" reels
- Dual microprocessor control of all VTR functions and servo systems
- AST™ Automatic Scan Tracking system, permits continuously variable play from still frame playback to 1-1/2 times play speed with no picture breakup
- Compact design offers table-top and rack-mount versatility
- Highly functional control panel, all operational controls are up front, logically placed for efficient operation
- Sophisticated, frame-accurate editing including search-to-cue
- Control panel includes Key Pad entry system
- Edit trim
- Exit to entrance edit cue transfer
- Extensive built-in fault detection
- Power-down memory holds control panel setup and tape timer information for up to four days
- Easy access to PWAs, transport components and internal electronics
- State-of-the-art materials, designed to meet the most stringent international safety requirements
- Optional diagnostic probe systems for user-interactive fault tracing
- Compatible with the Ampex VPR-series options and accessories
- High-band FM video recording system for the highest quality video signal performance



VPR-80

- Three full, high quality audio channels, third channel is time-code-compatible
- Built-in speaker monitors any combination of channels
- Tape speed override for VTR synchronization
- Unthread mode protects heads and master tapes

ACCESSORIES

Remote Interface

The VPR-80 offers optional parallel and serial remote control data interfaces for external control panels or editing systems such as the Ampex Computerized Editing (ACE) system.

Diagnostic Test Probe

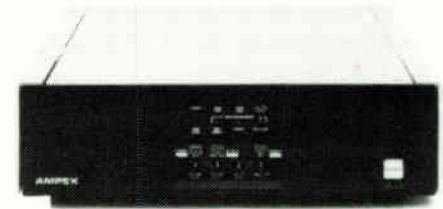
Using the VPR-80's control system microprocessor, an optional handheld test probe is available for troubleshooting component-level faults in the VPR-80 electronics circuitry.

Rack Size Monitoring

A compact, standard rack width monitoring assembly is offered with space provided for picture waveform and vectorscope monitoring, and an integral two-source video monitor switch panel.

Time Code Generator/ Reader Character Display

A microprocessor-based, plug-in printed wiring assembly (PWA) provides time code generation and reading on Audio Track 3. An eight digit character display provides time code information on the picture monitor.



TBC-80 Time Base Corrector

A digital TBC that provides full performance time base correction of the VPR-80's off tape signal during playback, from still-frame up to 1.5X play speed. The TBC-80 includes full color dropout and velocity error compensation, and color slow motion processing as standard features.

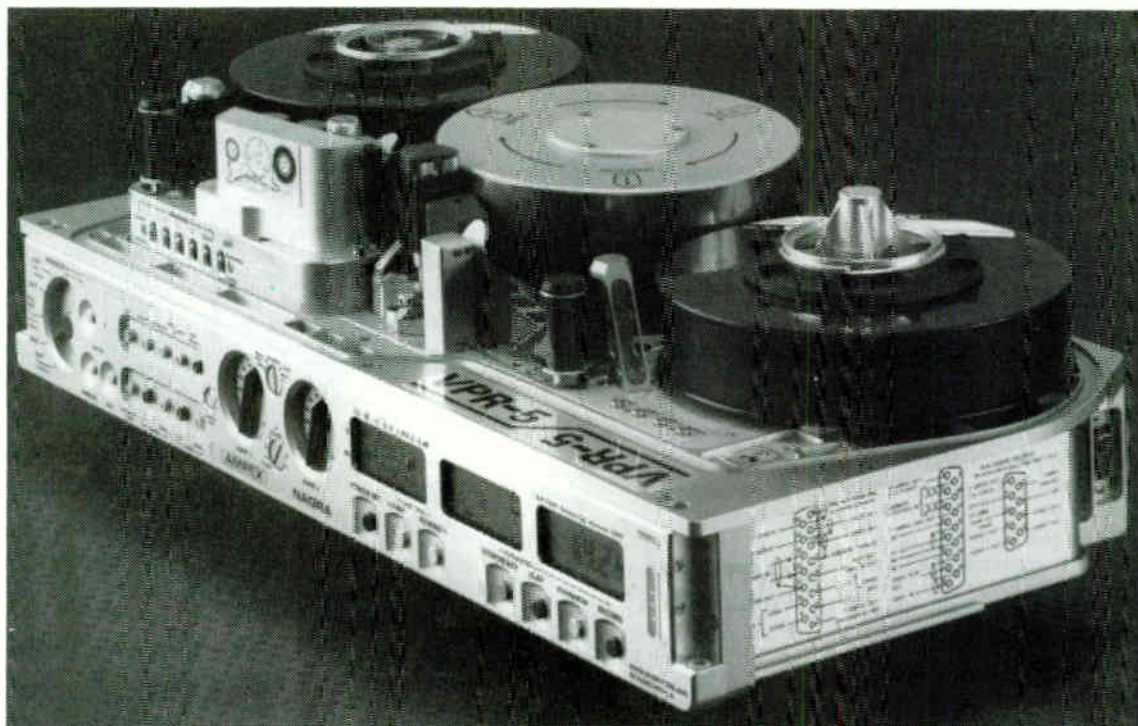
PHYSICAL DIMENSIONS

	Rack Mount	Table Top	Consolette with Monitoring	Side Car Monitoring Console	Overhead Monitoring Console
Height	21.0 in 533 mm	22.0 in 558.8 mm	70.5 in 1791 mm	56.4 in 1433 mm	74 in 1880 mm
Width	19.0 in 482.6 mm	22.0 in 558.8 mm	22.0 in 558.8 mm	33.0 in 838 mm	33.0 in 838 mm
Depth	21.0 in 533 mm	22.0 in 558.8 mm	26.5 in 673 mm	26.5 in 673 mm	26.5 in 673 mm
Weight	138 lb 63 kg	145 lb 66 kg	312 lb 142 kg	540 lb 246 kg	655 lb 299 kg

AMPEX

PROFESSIONAL VIDEO TAPE RECORDER

401 Broadway
Redwood City, CA 94063
(415) 367-2011



AMPEX NAGRA VPR-5

Type C Video quality from Ampex, Nagra Audio quality, all in the world's finest field recorder.

Combined in this machine are the quality and features of an Ampex one-inch type C VTR with Nagra audio quality from Kudelski SA, in the most practical field acquisition recorder, no bigger than a briefcase and weighing only 15 lb. (6.8 kg.)

The VPR-5 adapts to all kinds of situations, thanks to its own versatility and a full complement of options and accessories. It adapts to the user's working style. One person can handle both a camera and the VPR-5, or the VPR-5 can be manned by a dedicated operator, with the recorder connected to either a shoulder-held or fixed camera. The machine also conveniently fits into any kind of field production vehicle or aircraft.

Despite its compact size, the VPR-5 offers a full range of features needed for sophisticated production. To begin, you're in C-format, which pays off in the quality of your material. Added to that are some other VPR-5 amenities, such as its exclusive dual-cue editing that allows studio-type control. Four edit-related functions characterize this VTR's professional ability: from "let's see it" reviews and precise returns to the next edit point, to total control when replacing undesired material, and even mid-segment edits to new material.

Advanced audio technology is built into the VPR-5. You'll find features like a variety of interfaces available for microphone types and/or line inputs. And seven built-in switch-selectable filters to match scene acoustics, particularly low frequency reverberation cancellation.

You'll find a unique display using LCD for VU or PPM level. Even full individual record channel lockouts for two audio channels and standard time code channel.

You'll also discover that the VPR-5 features an audio confidence playback selector independent of the video.

Physical Dimensions:

Height: 5.5" (13.7 cm)

Width: 17.5" (44.2 cm)

Depth: 8.5" (21.5 cm)

ACCESSORIES

Extended Record/Play

When a production calls for recording times longer than the standard 20-minute reels, the VPR-5 can be converted in a matter of seconds to hold NAB 9-inch, one hour tapes.

Power Systems

The VPR-5 is powered from a variety of sources. Two on-board, pluggable battery packs of different capacities are available: the lightweight standard capacity version for use with 20-minute tapes, and an extended capacity pack to accommodate one-hour tape operation.

The Battery Charger Unit can charge six battery packs at one time.

An ac power mains adapter that works with all world power standards is available. The VPR-5 can also be powered from low impedance dc sources of 12 to 18 Vdc, such as vehicle batteries.

Field Playback

When the normal monochrome confidence-quality video replay is not satisfactory, the optional Color Stabilizer Unit produces a color-locked signal with excellent color rendition on any monitor or conventional TV receiver.

Audio Inputs

A modular approach has been taken for audio inputs of the VPR-5, so that field reconfigurations dictated by audio sources can be quickly accommodated.

Carrying Aids

The VPR-5, with its light weight and compact size, is easy to take where C-format has never gone before. To enhance this portability, a protective soft case and a pack frame with carrying harness are available.

Video Interface

The VPR-5 has optional, pluggable modules for most EFP applications.

AMPEX

401 Broadway
Redwood City, CA 94063
(415) 367-2011

ARC

1/2" M-Format VTR/Camera System

The Ampex ARC system utilizes the 1/2" M-format to produce broadcast video and audio quality in a portable package that is superior to 3/4" VTRs. The video recording system is the latest technology in separate luminance and chrominance signal recording, producing superb picture quality generation after generation of post-production processing. The two channels of broadcast-quality audio also feature the Dolby C* noise reduction system for low noise, multi-generation performance.

This lightweight, versatile system is ideally suited for EFP applications. You can shoot and record quickly and easily, then edit and go on the air via necessary time base correction but without dubbing to another format. The self-contained camera/VTR unit can be operated by one person and uses readily available, inexpensive VHS cassettes.

The complete ARC system consists of a camera/recorder unit, a portable VTR, a studio editing VTR and an editing controller. All components interface with each other and are compatible with existing studio equipment.

AMPEX ARC-10 Camera/VTR

The Ampex ARC-10 integrated camera/VTR allows one person to cover all the action with comfort, with precision, and with efficiency. It produces 20 minutes of recording time on one VHS cassette. The rechargeable battery gives a full 60 minutes of power.

Weighing less than 22 lbs., the ARC-10 camera and VTR lock together to form a self-contained system with freedom from connecting cables, shoulder straps, and pack frames. The integrated camera/VTR utilizes microprocessor-based circuitry to provide automatic functions. It features a weather-proof, high power, motorized zoom lens with automatic lens cap when the camera is in stand-by or off. Other features include a high sensitivity cardioid microphone that is removable for interviews and a slide-in/out rechargeable battery pack for rapid change in the field.

The camera employed in the ARC-10 is a 3-tube prism optics camera with automatic beam control, 2-line vertical aperture corrector, black stretch, and corner registration circuitry.

Choose from either a 2/3" Plumbicon* or Saticon**tube. The economical Saticon offers high resolution with 550 lines; the Plumbicon offers higher resolution with 600 lines. Signal-to-noise ratio is 59dB for Plumbicon, 58dB for Saticon.

VTR/CAMERA SYSTEM



AMPEX FPR-10 Portable VTR

You'll appreciate the flexibility of the FPR-10: it can work as part of the ARC-10 System while directly coupled with the camera; it can be separated for operation as a two-unit system equipped with a multipurpose video adaptor and used with any camera or video source with a composite output.

The FPR-10 comes complete with two audio tracks, a dedicated SMPTE/EBU Time Code Track, a built-in Backspace Record function, and a built-in SMPTE/EBU Time Code Generator. The controls located at the rear of the unit are easily accessed.

ARC-20 Portable VTR

The ARC-20, full-featured portable VTR, weighing under 20 lbs. offers the user built-in confidence, quality replay capabilities, and much more. ARC-20 complements the Ampex ARC-10 Recorder/Camera, and it gives a field director instant color playback in even the remotest locations.

ARC-20 can also function as the primary field recorder, serving as an acquisition VTR as well as offering field replay. ARC-20's light weight and small size make it the ideal match for portable ENG/EFP cameras that operate in a two-piece configuration.

ARC-20 offers uniquely powerful production capabilities in a fully portable VTR.

ARC-40 Studio VTR

After the ARC-10 and ARC-20 have been used for field recording, the ARC-40 provides a full range of post-production capability. With its optional plug-in digital time base corrector, the ARC-40 is ready to play direct to air, or work in a variety of editing situations. Convenient controls, picture-in-shuttle, search and jog provide full stand-up editing capability.

The ARC-40 also fits into all types of editing systems arrangements, from the simplest two-machine system controlled with the optional ARC-30 Editing Controller, to the most powerful multi-machine, multi-format systems. Existing interfaces allow the ARC-40 to work with most popular computerized editing systems.

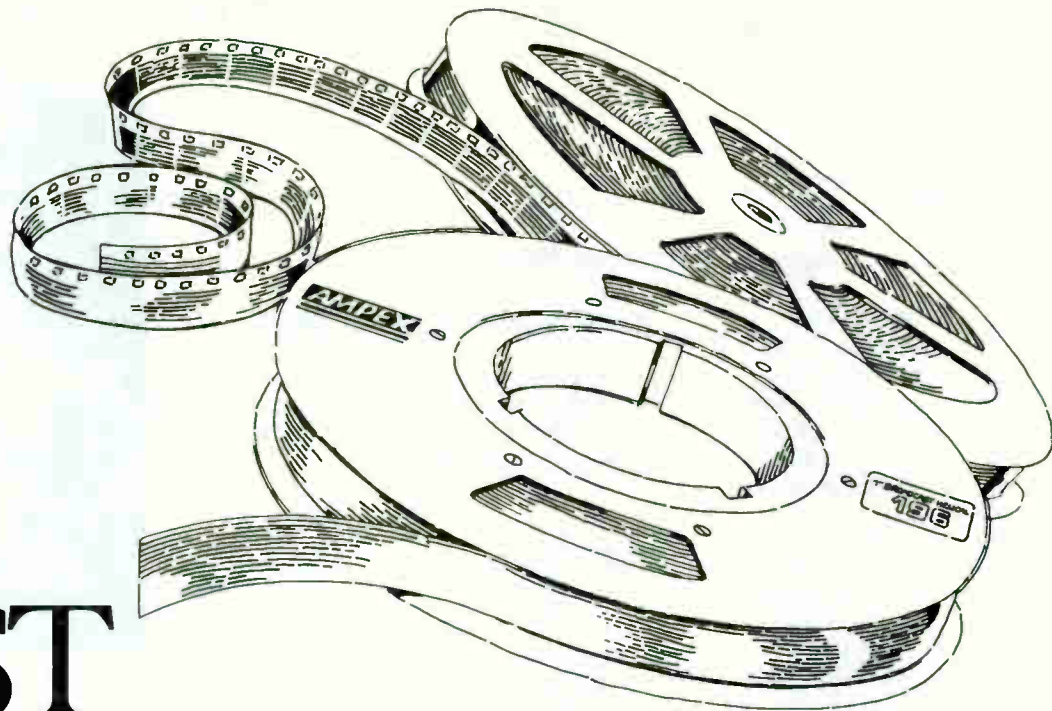
ARC-30 Editing Controller

The ARC-30 is a low-cost, sit-down editor for a two ARC-40 editing configuration. Control track based, one-event edits keep its operation simple but flexible. It controls edits between the ARC-40s in the dub mode, maximizing the M-format multi-generation video quality.

*T.M. Dolby Laboratories Licensing Corp.

*T.M. N.V. Philips

** T.M. Hitachi



BEST OF BOTH WORLDS

When you've produced the best show in town, transferring to Ampex 196 Professional Video Tape lets you keep all the emotion, color and snap of the original. And it stays that way, run after run. Nothing is lost, especially the subtleties and the 'little things' that can make your show memorable.

Ampex 196 High Energy Video Tape offers superb color and crispness. Plus the kind of audio performance that has made Ampex tape number one in the music industry.

Video tape quality won't be the only reason

your show's a hit, but if you specify film-to-tape transfer on Ampex 196, you'll see on the screen what you first saw in the script.

To find out more about how Ampex 196 Video Tape can give you the best of both your worlds, call our Regional Sales Office in Glendale (213) 240-5000 or write Ampex Corporation Magnetic Tape Division, 401 Broadway, Redwood City, CA 94063.



AMPEX

Ampex Corporation • One of The Signal Companies

**WE'VE GOT
A LOT TO SHOW
FOR IT.**

2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396



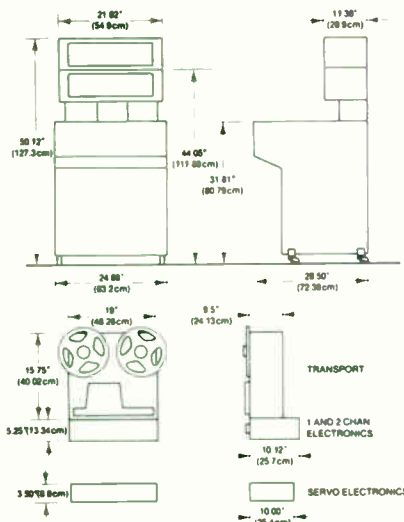
280B SERIES

1/4" (6.35mm) or 1/2" (12.7mm) tape, to 11.5" (29.21cm)

All the important features: functionally-illuminated transport controls, motion-direction sensing, dynamic braking... and now a new constant tape tension control for improved tape handling... are incorporated in the 280B Series Recorder/Reproducer.

Scully offers an optional dc capstan-servo drive with variable pitch control. Two advantages are gained, in addition to servo control: the ability to adjust pitch up or down to a desired level; and the more positive tape drive at all speeds afforded by the larger capstan and pinch roller in the servo system.

All this adds up to a standard in broadcast and studio recording where smooth, positive tape handling, low-noise electronics, and control convenience provide truly professional results. The 280B is available in full-or half-track mono; 2-or quarter-track stereo in 1/4" (6.35mm) models, or 4-track (quad stereo) in 1/4" (6.35mm) or 1/2" (12.7 mm) tape width models. Options/Accessories: dc capstan servo system w/pitch control, VARISYNC accessory console mount, remote transport control.



Transport Specifications

Flutter and Wow

Weighted peak flutter (ANSI S 4.3-1972; I.E.C. 386-1972) using a pre-recorded flutter tape.

Speed	DC Servo	AC Motor
30 in/s (76.2 cm/s)	.04%	—
15 in/s (38.1 cm/s)	.04%	.08%
7.5 in/s (19.05 cm/s)	.05%	.1%
*3.75 in/s (9.52 cm/s)	.1%	.2%

Speed Accuracy

±0.1% with dc servo; ±0.2% with ac motor throughout reel 7.5 to 30 in/s using 1.5 mil tape.

Wind Time

Less than 60 seconds for 2400 foot (731.5m) NAB reel, 1/4" (6.35mm) tape.

Reel sizes

To 11.5-in (29.21 cm) (CCIR).

Tape Speed

Equalization switches automatically with speed. 3.75 in/s (9.52 cm/s) and 7.5 in/s (19.05 cm/s) or 7.5 in/s (19.05 cm/s) and 15 in/s (38.1 cm/s) or with dc servo option, 15 in/s (38.1 cm/s) and 30 in/s (76.2 cm/s).

Motors

Capstan: Direct drive hysteresis synchronous or optional dc servo. Reel: Induction torque motor (2).

Brakes

Dynamic, plus disc.

Remote Control

Fast (FWD-RWD); Start/Stop; Record, and ATL Defeat (Fast FWD or RWD Button).

Transport Motion Controls

Fast (FWD-RWD); Start; Stop; Record; Edit.

Power Requirements

105-125 V or 220-240 V, 50 or 60 Hz. Power consumption at 117 V, 60 Hz: 1 & 2 channel = 223 VA; 4 channel = 328 VA.

Head and Track Configuration

Full-track mono 1/4" (6.35mm)
Half-track mono 1/4" (6.35mm)
Two-track stereo 1/4" (6.35mm)
Quarter-track stereo 1/4" (6.35mm)
Four-track 1/4" (6.35mm)
Four-track 1/2" (12.7mm)



Weights (approx.)

Shipping weights, standard carton.

Unmounted recorders:

Mono - 106 pounds (48 kg)

2-channel - 106 pounds (48 kg)

4-channel - 127 pounds (57.6 kg)

Empty consoles:

1- and 2-channel - 103 pounds

(46.7 kg)

4-channel - 120 pounds (54.4 kg)

280B Recorder/Reproducers (with Motion Direction Sensing) 10.5" Reels for Rack Mounting.

Ordering Number: When ordering, use the coded format shown.

921-00	-X	X	X
I	II	III	IV

Track Configuration	Tape Width	Code	Base Price
Mono Full Track	1/4"	0	\$3,990.00
Mono Half Track	1/4"	1	\$3,990.00
Stereo 2 Track	1/4"	2	\$5,025.00
Quad 4 Track	1/4"	3	\$7,134.00
Quad 4 Track	1/2"	4	\$7,015.00
Stereo Quarter Track	1/4"	5	\$5,075.00

Voltage	Motor type/ Line frequency	Speed (in/s)	Code	Add To Base Price
117	ac 60 Hz	3 3/4-7 1/2	A	None
117	ac 60 Hz	7 1/2-15	B	None
117	ac 50 Hz	3 3/4-7 1/2	C	None
117	ac 50 Hz	7 1/2-15	D	None
117	servo	3 3/4-7 1/2	E	\$360.00
117	servo	7 1/2-15	F	\$360.00
117	servo	15-30	H	\$360.00
117	servo, rack mount	3 3/4-7 1/2	J	\$360.00
117	servo, rack mount	7 1/2-15	K	\$360.00
117	servo, rack mount	15-30	L	\$360.00
220	ac 60 Hz	3 3/4-7 1/2	M	None
220	ac 60 Hz	7 1/2-15	N	None
220	ac 50 Hz	3 3/4-7 1/2	P	None
220	ac 50 Hz	7 1/2-15	R	None
220	servo	3 3/4-7 1/2	S	\$360.00
220	servo	7 1/2-15	T	\$360.00
220	servo	15-30	J	\$360.00
220	servo, rack mount	3 3/4-7 1/2	V	\$360.00
220	servo, rack mount	7 1/2-15	W	\$360.00
220	servo, rack mount	15-30	X	\$360.00

(3.75 lbs not available in .50" A.C. mode-x)

Equalization	Code
NAB	D
IEC	I

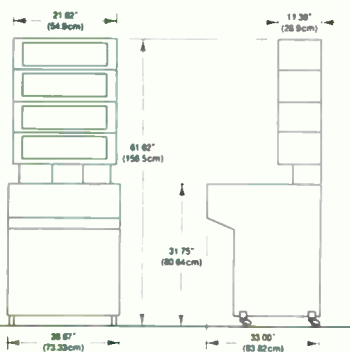
2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396



284B-8 SERIES

1" (25.4mm) tape, up to 14" (35.56cm) reels

Scully's Master Recorder/Reproducer is available in an eight-channel version using the popular low-noise 280B electronics. These 284B-8's use 1" (25.4mm) tape for maximum eight-channel separation and quality; up to 14" (35.56 cm) tape reels to provide a realistic supply of tape for program-length recording and post-production. The 284B-8 has motion-direction sensing, dynamic braking, and automatic start-torque boost for smooth, positive tape shuttling; uses Scully's new constant tension system for added tape handling precision in the PLAY/RECORD modes. Scully dc capstan servo drives are standard in all units, as is the variable pitch control. Any two specified adjacent speed-pairs will be present when the machine is ordered. Equalization is automatically switched with speed control. A sturdy console cabinet is included as standard equipment. These features make the Scully 284B-8 the most desirable eight-track system in its price range. Accessories: ARISYNC Accessory, remote transport control.



Transport Specifications

Flutter and Wow

Weighted peak flutter (ANSI S 4.3-1972: I.E.C. 386-1972) using a pre-recorded flutter tape.

Speed	DC Servo
30 in/s (76.2 cm/s)	.04%
15 in/s (38.1 cm/s)	.04%
7.5 in/s (19.05 cm/s)	.05%
3.75 in/s (9.52 cm/s)	.1%

Speed Accuracy

±0.1% throughout reel 7.5 to 30 in/s using 1.5 mil tape.

Reel Sizes

To 14 in. (35.56 cm).

Tape Speed

Equalization switches automatically with speed. 3.75 in/s (9.52 cm/s) and 7.5 in/s (19.05 cm/s) or 7.5 in/s (19.05 cm/s) and 15 in/s (38.1 cm/s) or 15 in/s (38.1 cm/s) and 30 in/s (76.2 cm/s).

Motors

Capstan: dc servo.

Reel: Induction torque motor (2).

Brakes

Dynamic, plus disc.

Remote Control

Fast (FWD-RWD); Start/Stop; Record, and ATL Defeat (Fast FWD or RWD Button).

Transport Motion Controls

Fast (FWD-RWD); Start; Stop; Record; Edit.

Power Requirements

105-125 V, 50 or 60 Hz (220/240 V optional), 400 VA.

Head and Track Configuration

8-track (1.00") (25.4mm).

Weights (approx.)

Shipping weight, standard carton.

With console: Total - 391 pounds (117.4 kg).



284B-8 Recorder/Reproducers Console Mounted 14" Reels. Complete with D.C. servo
Ordering Number: When ordering, use the coded format shown.

922-00-6			
		X	X
		II	III
II			
Voltage	Speed (in/s)	Code	Price
117	3 3/4-7 1/2	E	\$13,915.00
117	7 1/2-15	F	\$13,915.00
117	15-30	H	\$13,915.00
220	3 3/4-7 1/2	S	\$14,065.00
220	7 1/2-15	T	\$14,065.00
220	15-30	U	\$14,065.00
III			
		Equalization	Code
		NAB	0
		IEC	1

Accessories

VARIABLE SPEED ACCESSORY		
Model	Price	
280B/284B For console mount	992-20-000	\$1,325.00
Series For remote mounting	992-20-001	\$1,325.00
CONSOLE MOUNTS		
Model	Price	
280B Mono or Stereo	992-10-002	\$480.00
280B-4 Quad 4 Channel	992-10-003	\$555.00
REMOTE CONTROLS		
Model	Price	
280B/284B Deluxe Remote in Box	992-00-000	\$230.00
Deluxe Remote Panel Mount	992-00-001	\$200.00
EQUALIZERS		
Model	Price	
280B and NAB 3.75-7.5 ips Rec/Rep	802-1A-016	\$47.00
284B NAB 7.5-15 ips Rec/Rep	802-A-017	\$47.00
Series IEC 7.5-15 ips Rec/Rep	802-A-018	\$47.00
NAB 15 AES 30 ips Rec/Rep	802-1A-019	\$47.00
IEC 15 AES 30 ips Rec/Rep	802-1A-020	\$47.00
MAINTENANCE MANUALS		
Model	Price	
280B/284B Recorder/Reproducer	731-40-000	\$32.00
284B-8 Recorder/Reproducer	732-40-002	\$32.00

2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396

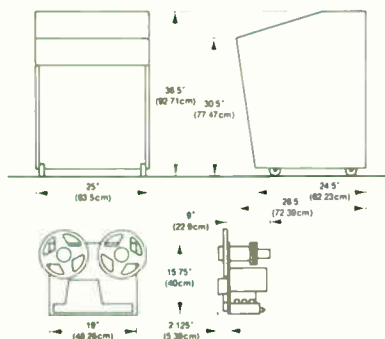
AMPRO Scully

285B SERIES

1/4" (6.35mm) tape, up to 11.5" (29.21cm) reels

The Scully 285B Reproducer is a professional quality playback or editing system for broadcast or studio applications, as automated tape players, quality control monitors, broadcast control room reproducers, or music library reproducers. The 285B electronics include 600 Ohm line output and 8 Ohm (3 Watt) speaker output for cueing, editing and monitoring. Speaker gain control is on the front panel.

Transport features found in the 280B Series are standard, such as motion-direction sensing logic, functionally-illuminated pushbuttons, edit control, and dynamic braking. Rack-mount units occupy only 15.75" (400mm) of vertical space - electronics are mounted behind the transport deck plate. Electronic set-up adjustments are accessible by removing the head cover. A monitor headset jack is mounted on the transport panel for convenience. Configurations include: full-track mono, two-or quarter-track stereo. Accessories: slope-front console, remote control.



Specifications

Frequency Response
(3M 206 or Equivalent)
15 in/s (38.1 cm/s) ±2 dB
30 Hz to 18 kHz
7.5 in/s (19.05 cm/s) ±2 dB
30 Hz to 15 kHz
3.75 in/s (9.52 cm/s) ±2 dB
30 Hz to 10 kHz

Signal-to-Noise-Ratio

(Using bulk erased 3M 206 tape or equivalent) Peak record level (500 nWb/m) to NAB weighted noise.

	Full Track	Two Track	Quarter Track
15 in/s (38.1 cm/s)	72 dB	68 dB	65 dB
7.5 in/s (19.05 cm/s)	72 dB	68 dB	65 dB
3.75 in/s (9.52 cm/s)	68 dB	64 dB	61 dB

Flutter and Wow

Weighted peak flutter (ANSI S 4.3-1972; I.E.C. 386-1972) using a prerecorded flutter tape.

Speed	AC Motor
15 in/s (38.1 cm/s)	.08%
7.5 in/s (19.05 cm/s)	.1%
3.75 in/s (9.52 cm/s)	.2%

Distortion

3rd harmonic distortion of 500 Hz signal; at peak record level (500 nWb/m) less than 3%; at standard operating level (250 nWb/m) less than 0.6%. Speaker out 1% at 3.0 Watts into 8 Ohm resistive load.

Outputs

Line + 17 dBm into 600 Ohm load. Speaker 3.0 Watts into 8 Ohm resistive load.

Equalization

Automatically switched with transport speed. Specify NAB or I.E.C. (CCIR).

Speed Accuracy

±0.2% throughout reel 7.5 to 15 in/s using 1.5 mil tape.

Reel Sizes

To 11.5 in. (29.21cm) (CCIR).

Brakes

Dynamic, plus disc.

Power Requirements

105-125 V or 220-240 V, 50 Hz or 60 Hz. Power consumption at 117 V 60 Hz: 250 VA.

Weights (approx.)

Shipping weights, standard carton. Unmounted Reproducer: 90 pounds (40.8 kg). Empty console: 105 pounds (47.6 kg).



285B Reproducers 10.5" Reels for Rack Mounting

Ordering number: When ordering, use the coded format shown.

924-00	-X	X	X
I	II	III	IV

Track Configuration	Code	Price
Mono Full Track	0	\$3,383.00
Stereo Two Track	2	\$3,505.00
Stereo Quarter Track	5	\$3,505.00

Voltage	Frequenc	Speed (in/s)	Code
117	60 Hz	3 3/4-7 1/2	A
117	60 Hz	7 1/2-15	B
117	50 Hz	3 3/4-7 1/2	C
117	50 Hz	7 1/2-15	D
220	60 Hz	3 3/4-7 1/2	M
220	60 Hz	7 1/2-15	N
220	50 Hz	3 3/4-7 1/2	P
220	50 Hz	7 1/2-15	R

Equalization	Code
NAB	0
IEC	1

Accessories

CONSOLE MOUNTS	Model	Price
285B Mono or Stereo	992-10-001	\$425.00

TELEVISION TECHNOLOGY CO.

2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396



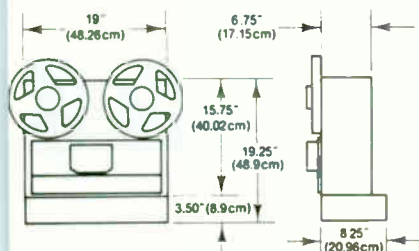
250 SERIES

Contemporary . . . yet totally compatible with the traditions of all Scully recording instruments, the new 250 Series meets your quality, reliability, and operational needs in one professional, compact, moderately priced 10.5" (26.67cm) broadcast recorder/reproducer.

For rack mounting in your studio, or case mounting for field recording, the Scully 250 will take on all assignments. You can plug in mic preamps for direct news, sports, and other portable recording requirements . . . and in the studio the 250 will complement your audio system requiring only 19 1/4" (48.9cm) rack height.

The Scully 250 features low-noise dependable electronics with sync control provided for adding a track to alternate channel, and input/playback monitor/VU selectors. Equalization is switched with speed control. Adjustments and maintenance are made easy by a pull-out drawer providing top access to equalization and bias controls. The transport has all touch-button control TTL logic with protective motion-sensing circuits which prevent tape break or spill when operating from fast mode to play. Automatic tape lifter defeat is actuated by depressing fast mode button or transport or remote control. XLR input and output connectors are standard.

Configurations include full-or half-track mono; two-or quarter-track stereo. All models have two-speed hysteresis synchronous direct drive capstan motors. Un-mounted weight about 45 lbs. (20.4 kg). Made in U.S.A.



Specifications

Head Configurations

Full-track, half-track, 2-track, quarter-track, 1/4" (6.35mm).

Tape Speeds

3.75 and 7.5 in/s (9.52 and 19.05 cm/s) or 7.5 and 15 in/s (19.05 and 38.1 cm/s).

Frequency Response

15 in/s (38.1 cm/s) ±2 dB, 50 Hz-18 kHz

7.5 in/s (19.05 cm/s) ±2 dB, 50 Hz-15 kHz

3.75 in/s (9.52 cm/s) ±2 dB, 50 Hz-10 kHz

Signal-to-Noise Ratio

(Using 3M 206 tape or equivalent) peak record level to NAB weighted noise (NAB equalization 500 nWb/m).

	Full Track	Half Track	Stereo 2-Track
15 in/s	70 dB	66 dB	66 dB
7.5 in/s	70 dB	66 dB	66 dB
3.75 in/s	66 dB	63 dB	63 dB

Distortion

500 Hz 3rd harmonic (500 nWb/m): less than 3%. Standard operating level (250 nWb/m): less than 0.7%.

Flutter and Wow

Weighted Peak flutter (ANSI S 4.3-1972; I.E.C. 386-1972) 15 in/s .08% or better; 7.5 in/s 0.1%; 3.75 in/s 0.2% or better.

Speed Accuracy

±0.2% throughout reel at all speeds using 1.5 mil tape.

Brakes

Differential "fail safe" spot brakes.

Winding Time

Approximately 90 seconds for 2400 ft. (731.5m) NAB reel.

Start Time

Less than 0.5 second at 15 in/s.

Reel Size

5"-7" (12.7-17.8cm) EIA, and 10.5" (26.67cm) NAB.

Equalization

NAB or IEC.

Bias/Erase Frequency

120 kHz.

Erase Efficiency

Greater than 70 dB at 1 kHz.

Inputs

10K Ohms, min. level 200 mV. (Accessory plug-in balanced bridge transformer or 250-600 Ω mic preamp.)

Outputs

600 Ohm unbalanced +17 dBm (balanced transformer available). Monitor earphone jack on front panel, 8 Ohm min. impedance.

RECORDER/REPRODUCER



Motors

Capstan - Direct Drive Hysteresis Synchronous, plus two torque motors.

Control Logic

TTL with motion-sensing protection.

Transport Controls

Power, Hi-Lo tension, fast FWD, fast RWD, Stop, Start, Record.

Power Requirements

105-125 V or 220-240 V, 50 or 60 Hz, 150 Watts.

Accessories

Microphone pre-amp, balanced bridge input transformer, balanced line output transformer, remote control, portable case.

250 Recorder/Reproducer 1/4" (6.35mm) Tape Width 10.5" (26.67cm) Reels for Rack Mounting

Ordering number: When ordering, use the coded format shown.

925-0	X-	X	X	X
I	II	III	IV	V

Options	Code	Add To Base Price	
		Mono	Stereo
None	0	None	None
Mic pre-amp	1	\$115.00	\$230.00
Input transformer	2	\$40.00	\$80.00
Output transformer	3	\$32.00	\$64.00
Input and output transformer	4	\$72.00	\$144.00
Mic pre-amp and output transformer	5	\$147.00	\$294.00

No. of tracks	Code	Base Price
Mono Full Track	0	\$2,620.00
Mono Half Track	1	\$2,620.00
Stereo Two Track	2	\$2,745.00
Stereo Quarter Track	5	\$2,745.00

IV			
Voltage	Frequency	Speed	Code
(in/s)			
117	60 Hz	3 3/4-7 1/2	A
117	60 Hz	7 1/2-15	B
117	50 Hz	3 3/4-7 1/2	C
117	50 Hz	7 1/2-15	D
220	60 Hz	3 3/4-7 1/2	M
220	60 Hz	7 1/2-15	N
220	50 Hz	3 3/4-7 1/2	P
220	50 Hz	7 1/2-15	R

V	
Equalization	Code
NAB	0
IEC	1

Accessories

250 SERIES	Model	Price
Microphone Preamp	822-5A-020	\$115.00
Bridging Input Transformer	310-AD-018	\$40.00
Balanced Output Transformers	822-5A-002	\$32.00
Remote Control	992-00-003	\$121.00
Portable Case	992-10-005	\$305.00

250 Series Standard Remote Control in Box	992-00-003	\$121.00
---	------------	----------

2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396

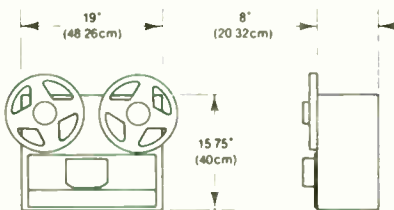
AMPRO  **Scully**

255 SERIES

The Scully 255 is a competitively priced tape reproducer designed for continuous operation in automation systems and other playback requirements. It is extremely rugged, employs trouble-free TTL control logic, low-noise plug-in electronics and a precision milled heavy cast deck plate . . . built with typical Scully craftsmanship to stand out above other broadcast playback units.

The 255 features all touch-button control logic with protective motion-sensing circuits to prevent tape break or spill when operating from fast mode to play. Automatic tape lifter defeat is actuated by depressing fast mode button on transport or remote control. Set-up adjustments and easy maintenance are accomplished by a pull-off front dress panel which permits access to equalizers. XLR output connectors are employed to make the Scully 255 compatible to broadcast standards.

Basically developed as a 7.5 in/s (19.05 cm/s) two-track, two-channel system, the 255 is also available in all standard mono and stereo configurations. Made in U.S.A.



Specifications

Head Configurations

Full-track, half-track, 2-track, quarter-track, 1/4" (6.35mm).

Tape Speed

7.5 in/sec (19.05 cm/sec) standard.

3.75 in/sec (9.52 cm/sec) available.

Frequency Response

(3M 206 or equivalent.)

7.5 in/sec (19.05 cm/sec) ±2 dB, 50-15 KHz.

3.75 in/sec (9.52 cm/sec) ±2 dB, 50-10 KHz.

Amplifier Noise

-74 dB, ANSI weighted below 500 nWb/m (Half-track).

Distortion

0.2%, 1000 Hz at +4 dBm, 3rd harmonic.

Equalization

NAB or IEC.

Line Output

600 Ohm unbalanced +17 dBm (balanced transformer available).

Phones Output

Front panel phone jack, 8 Ohm min. impedance.

Line Out Connections

XLR type.

Amplifier Controls

Front panel gain knobs (eq. adjustments accessible from front).

Head Adjustments

Pull-off head cover and Mumetal shield gives full access to plug-in heads for all adjustments and cleaning.

Flutter and Wow

0.08% weighted peak flutter.

Speed Accuracy

±0.2% throughout reel at all speeds using 1.5 mil tape.

Winding Time

Less than 90 seconds for 2400 ft. (731.5 m) NAB reel.

Reel Sizes

5"-7" (12.7-17.78 cm) EIA and 10.5 (26.67 cm) NAB reel.

Motors

Single-speed direct drive hysteresis plus two torque motors.

Brakes

Differential "fail safe" spot brakes.

Control Logic

TTL with motion-sensing protection.

Transport Controls

Power, Hi-Lo tension, fast FWD, fast RWD, stop, start.

Remote Control

(Accessory) contains all mode controls including lifter defeat.



Power Consumption

120 Watts, 117 V or 220 V, 50 Hz or 60 Hz.

Rack Space

19" wide x 15 3/4" high (48.26 cm x 40 cm) x 1.5" (3.81 cm). Reel overhang at top using NAB reel.

Options, Accessories

3.75 in/s (9.52 cm/s) speed; 25 Hz tone sensor; Balanced output (600 Ohm) transformers; Remote Control; Portable case.

255

Reproducer 10.5" (26.67 cm)
Reels for Rack Mounting.

Ordering number: When ordering, use the coded format shown.

926-0	X	-X	X	X
I	II	III	IV	V
II				

Options	Code	Add To Base Price	
		Mono	Stereo
None	0	None	None
25 Hz sensor	1	\$152.00	\$152.00
Output transformer	2	\$ 32.00	\$ 64.00
25 Hz sensor and Output transformers	3	\$184.00	\$216.00

III		
No. of Tracks	Code	Base Price
Mono Full Track	0	\$1,525.00
Mono Half Track	1	\$1,525.00
Stereo Two Track	2	\$1,595.00
Stereo Quarter Track	5	\$1,595.00

IV			
Voltage	Frequency	Speed	Code
			(in/s)
117	60 Hz	3 3/4	A
117	60 Hz	7 1/2	B
117	50 Hz	3 3/4	C
117	50 Hz	7 1/2	D
220	60 Hz	3 3/4	M
220	60 Hz	7 1/2	N
220	50 Hz	3 3/4	P
220	50 Hz	7 1/2	R

V	
Equalization	Code
NAB	0
IEC	1

Accessories

255 SERIES	Model	Price
25 Hz Tone Sensor	882-6A-002	\$152.00
Balanced Output Transformer	822-5A-001	\$ 32.00
Extender Board	5A4-A0-010	\$ 38.00
Remote Control	992-00-002	\$121.00
Portable Case	992-10-005	\$305.00

255 Series Standard Remote Control in Box	992-00-002	\$121.00
---	------------	----------

2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396

AMPRO  **Scully**

270 SERIES

The Scully 270 professional long play reproducer has become the standard of excellence in the automated broadcast industry. Designed to run for long periods reliably and with trouble-free performance, the 270 is an extra-rugged, heavy-duty reproducer designed and built with typical Scully craftsmanship.

Features:

- Disc brakes
- Fully transistorized, plug-in amplifiers
- Rugged cast frame and solid panel construction
- Direct drive heavy-duty motors
- Removable face plate
- Instant access for maintenance
- Automatic start torque tension control
- Reversing capability with mono half-track & stereo quarter-track units only; accomplished by foil-sensing low current transistor switching

Specifications

Head configurations
Monophonic, half- or full-track; stereo, 2- or quarter-track.

Tape Speed
3¾-7½ or 7½-15 in/sec (9.53-19.05 or 19.05-38.1 cm/sec.)

Tape Width
¼" (6.35mm).

Reel Size
Up to 14" (36.56cm).

Start Time
Play speed in 0.1 seconds.

Rewind Time
Approximately 105 seconds 4,800 Ft. reel (1463.04 m).

Timing Accuracy
Better than 99.7% for 30 min. tape.

Power Requirements
117 v, 60 Hz, 275 Watts (50 Hz optional).

Transport Controls
Play, Fast, Direction Change, Stop, Speed Selector.

Control System
All relays and solenoids 24 Vdc; plug-in relays.

Frequency Response
Mono and 2-track, ±2 dB, 50-7, 500 Hz at 3¾ ips; +2-3 dB, 50-15,000 Hz at 7½ ips; ±2 dB, 50-15,000 Hz at 15 ips. Quarter-track stereo, ±4 dB, 50-100 Hz; above 100 Hz response same as mono and 2-track.

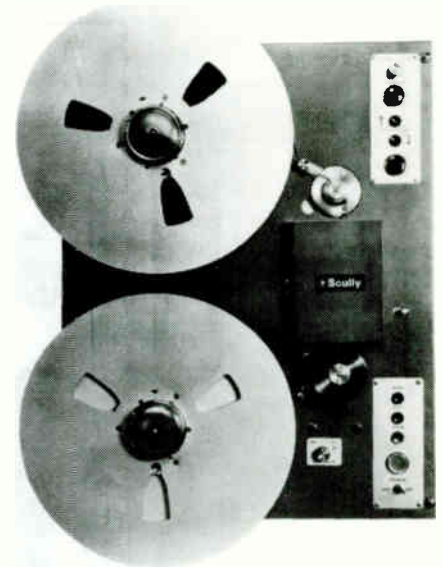
Signal-to-Noise Ratio
Mono Full-Track; 65 dB minimum at 7½ & 15 ips. Stereo 2-Track; 60 dB minimum at 7½ & 15 ips. Stereo qr-track; 58 dB minimum at 7½ & 15 ips, 54 dB minimum at 3¾ ips.

Flutter and Wow
3¾ ips - 0.2% RMS or better; 7½ ips - 0.1% RMS or better; 15 ips - .08% RMS or better.

Distortion
Less than .5% total harmonic distortion at +18 dBm.

Equalization
Front panel switch.

Output
+18 dBm into 600 Ohm balanced line (Normally supplied +4 dBm = Zero VU)



Tape Tension

Continuous adjustable electrical control system.

Shipping Weight

100 lb (45.36 kg).

Size

19" x 24½ x 8¾" (48.26 cm x 62.23 cm x 22.23 cm).

270 Reproducers 14" Reels for Rack Mounting

Ordering number: When ordering, use the coded format shown.

923-00	-X	X	X
I	II	III	IV
II			
Track Configuration	Code	Base Price	
Mono Full Track	0	\$4,325.00	
Stereo Two Track	1	\$4,870.00	
Mono Half Track, auto reverse	7	\$4,485.00	
Stereo-Quarter Track, auto reverse	8	\$5,345.00	
III			
Voltage	Frequency	Speed (in/s)	Add To Base Price
117	60 Hz	3¾-7½	A None
117	60 Hz	7½-15	B None
117	50 Hz	3¾-7½	C None
117	50 Hz	7½-15	D None
220	60 Hz	3¾-7½	M \$105.00
220	60 Hz	7½-15	N \$105.00
220	50 Hz	3¾-7½	P \$105.00
220	50 Hz	7½-15	R \$105.00
IV			
Equalization	Code		
NAB	0		
IEC	1		
MAINTENANCE MANUALS		Model	Price
270 Series	Reproducer	731-AO-012	\$32.00

TELEVISION TECHNOLOGY CO.

2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396

AMPRO  **Scully**

1500-L SERIES LOGGER

LOGGING RECORDER



The Scully Series 1500-L Logger is a slow-speed Recorder/Reproducer providing 25.6 hours of 4-channel recording on a 3600-foot, 10½" reel of ¼" tape. Any of the four channels can be monitored from the front panel speaker, head-phone jack, and VU meter.

A servo motor capstan is a standard feature, eliminating belts and pulleys to provide trouble-free stable tape drive. A five-digit counter is provided to assist in locating previously recorded information. Modular construction throughout makes alignment and maintenance fast and easy.

Specifications

Configuration

4-channel single transport, one direction.

Reel Size

10½" NAB, 7" and 5" IEC.

Maximum Recording Time

25.6 hours with 3600-foot tape.

Tape Speed

15/32 ips, 15/16 ips.

Frequency Response

±3 dB 300-3000 Hz 15/32 ips.

±3 dB 300-5500 Hz 30/32 ips.

Input

-30 to +20 dBm, adjustable each channel.

Signal-To-Noise

35 dB minimum.

Cross Talk

35 dB minimum.

Distortion

3% THD (tape limited).

Wow and Flutter

1% peak weighted.

Erase

All channels simultaneously in Record, with Erase-Enable selected.

Output

1-Watt speaker output with head-phone cut-out jack; 600 Ohm balanced floating output, +4 dBm.

Counter

Five-digit, resettable.

Weight and Size

Transport, 15¾" high, electronics chassis, 3½" high.

Shipping weight:

Shipping weight: 80 lb.

Model			Price
92F-00-000	15/16 IPS	110V	\$3750.00
92F-00-001	15/16 IPS	220V	3750.00
92F-00-002	15/32 IPS	110V	3750.00
92F-00-003	15/32 IPS	220V	3750.00

TELEVISION TECHNOLOGY CO.

2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396

AMPRO  **Scully**

2500/3500 and 4500 SERIES CARTRIDGE TAPE RECORDERS/ REPRODUCERS

Ampro cartridge tape broadcast recorders/reproducers are designed and built to be the equivalent of the finest studio reel-to-reel machines. Their rugged mechanical design, with the latest linear and digital integrated circuit technology gives Ampro cartridge tape equipment superior system reliability, reduced adjustments, and a significant reduction in size. There are 34 different modes available, in various mono and stereo configurations - all in full compliance with the latest NAB requirements.

All models include 1 kHz stop cue and audio switcher as standard features. Operation is reliable and noise-free, with a human-engineered panel design, quiet operating controls, and non-slip shock-absorber mountings. Conservatively designed circuits, state-of-the-art components, rugged construction and painstaking testing assure long-term circuit reliability. Electronic assemblies are constructed on plug-in, military-grade, glass epoxy boards with heavy gold plating on connector areas.

Ampro cartridge tape recorders/reproducers have compact packaging that allows convenient placement in studio and control rooms. Their low, 5 1/4" profile, in rack and desk enclosures, provides ready stakability for optimum space utilization in crowded operation centers.

Conveniences such as front-insertion rack enclosures, flip-top desk cabinets, modular electronic assemblies and plug-in rear panel audio and remote connectors all provide ready access for routine cleaning and maintenance. For ease of servicing, all Ampro equipment is operational even with housing and external connectors removed.

Features:

- Solid 1/2 inch precision-machined aluminum deck construction.
- Rugged, machined, lockdown headmounts with three tape guides and full-width cartridge hold-down spring for maintaining stable azimuth and stereo phasing.
- Precision airdamped solenoid provides fast, noise-free pinch roller operation without pre-loading, cocking or release mechanisms.
- Fast forward cue up - automatic at end cue, with audio muting.
- Self-aligning, ball-bearing pinch roller, assures smooth tape flow for best phasing.
- Cool running (17W) four-inch direct drive capstan motor - 600 rpm speed for highest rotating momentum - lowest "wow" and flutter.
- Instant start and no audible "wow" and 45 msec stop (1/2 inch of tape at fast forward) prevents upcutting spots.
- Human-engineered panel de-

sign, rugged and quiet push buttons, 1 1/2" start button.

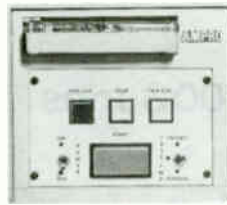
- Fast forward indicator, manual and inhibit switch.
- Tamed and shaped FET audio muting eliminates pops and clicks. Audio interlock system allows multiple units to drive common bus without noise build-up.
- Shielded heads, low-hum leakage transformers and low-noise pre amplifier with high-level line amplifier for quiet, low-distortion audio with +22 dBm maximum output.
- Wideband, digital cue detectors, immune to noise, crosstalk, cue frequency and level variation. No adjustment required. Accepts logging tones with fast forward.
- Digital cue tone generator guarantees stable cue amplitude and frequency. No LC networks to age and drift.
- Lower distortion record amplifier bridges -20 to +20 dBm lines. 20 dB headroom.
- 100 kHz true constant current bias oscillator maintains lowest recorded noise by feedback compensation for record head saturation; eliminates bias trap service adjustments.
- Automatic playback-to-record VU meter switching. Switch selected flat or equalized record metering or continuous playback metering.
- Buffered IC logic controller. All functions remotable by momentary contact closures.
- Reload indicator flashes ready light after play until cartridge is reloaded.
- LED record level indicator.
- Digital message timer (option) - 5 digit LED display of elapsed playing time.
- Electronic splice finder (option).

Playback System

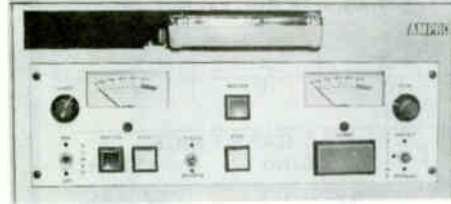
- Lowest-noise pre amplifier with well-shielded heads and a computer-designed, low-hum-leakage power transformer give playback system noise typically 68 dB below 3% tape saturation level (tape still).
- Series/Shunt FET audio switcher.
- High-output line amplifier (+22 dBm clipping level).

Control System

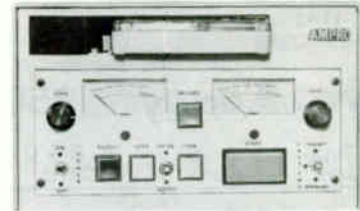
- Buffered TTL-logic controller.
- All functions remotable by momentary contact closures (TTL-compatible).



2500 SERIES



4500 SERIES



3500 SERIES

CARTRIDGE TAPE RECORDERS/ REPRODUCERS

- Fast solenoid switching stops tape in 40 ms.
- Built-in audio interlock system allows several units to drive common audio bus without noise build-up. Last unit started drives lines.
- Automatic fast-forward switching with audio muting.

Record System

- Wide input range, balanced differential input record amplifier blocks hum and RF while accepting inputs from -20 to +20 dBm.
- 100 kHz, constant current bias oscillator maintains lowest recorded noise by automatically compensating for head saturation on bias peaks. AGC-controlled master oscillator avoids use of bulky tuned inductors and transformers.
- VU meters automatically switched to record amplifier when unit is placed into record mode. Switch-selected flat or equalized record metering or continuous playback amplifier metering.

Cue System

- Digital generation of cue tones guarantees stable cue frequency and amplitude.
- Wideband digital counting cue detectors are immune to noise, crosstalk, frequency and level variations. No adjustments required.
- Accepts 3.3 kHz logging tones along with fast-forward.
- Electronic contact closure outputs switch 40 volts at 1 Amp - interfaces with relay or digital logic systems.

Specifications

Power
117/234 VAC, 60 Hz, 80 VA, maximum, 50 Hz Optional.

Tape Speed
7 1/2 inches per Second
Direct Drive Hysteresis Synchronous

Motor with Electroplated Shaft and class seven instrument type Permanently Lubricated ball bearings.

Timing Accuracy
.1% or better

Audio Output
+20 dBm before clipping. +8 dBm nominal @ OVU (adjustable from 0 to +10 dBm) 600/150 ohm balanced output.

Distortion
Reproduce Amplifier, .3% maximum 20-20000 Hz @ +18 dBm output (loop injection mea-

surement).
Record to Reproduce, (tape limited) 3% maximum at 8 dB above NAB standard Reference level, 400 Hz, 3M156 Tape.

Hum & Noise
58 dB or better below 400 Hz, 3% THD, 20-20000 Hz Measurement band width.

Cross Talk
Better than 50 dB @ 1 kHz (head limited).

Frequency Response
± 2 dB 50-15000 Hz
+ 2, -4 dB 30-18000 Hz

Equalization
NAB-adjustable to compensate for head wear.

Cue Signals
NAB Primary Cue 1 kHz Std. 150 Hz and 8 kHz cue optional. Constant pulse width electronic ground closure output. Data Logging output provided.

Wow & Flutter
.15% Peak Weighted.

Playback Time
2500 Series; NAB type A (2 seconds to 10 minutes).
3500 Series; NAB type A & B (2 seconds to 16 minutes).
4500 Series; NAB type A, B & C (2 seconds to 31 minutes).

Start Time
100m Sec. Maximum

Stop Time
45m Sec. Maximum from fast forward or normal speed.

Remote Controls
All control and indicators. All switching functions are buffered and protected momentary contact ground closures (TTL Compatible).

Optional Features
Fast Forward: 22.5 IPS (1171 mm/s) automatic at end cue, with front panel Manual and Inhibit control.

Audio Switcher
FET Switcher gated on at start, off at end cue or stop command, Single Line audio interlock bus allows combining multiple units into a common audio bus with no increase in noise.

Mounting
Flip top, non skid stackable desk enclosure standard. Optional Rack Mount accommodates 3 Model 2500, 2 models 3500 or 1 model 4500 plus 1 model 2500.

Dimensions
Model 2500: 5 1/4" H. 5 5/8" W. 17" D., 22 lbs.
Model 3500: 5 1/4" H. 8 3/4" W. 17" D., 25 lbs.
Model 4500: 5 1/4" H. 11 1/4" W. 17" D., 27 lbs.

Prices and Specifications Subject to Change Without Notice.

B-69

TELEVISION TECHNOLOGY CO.

2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396

CARTRIDGE TAPE RECORDERS/REPRODUCERS

AMPRO Scully 2500 - 3500 - 4500 Series

NAB Type A & B A, B & C
A Carts Carts Carts

Recorders

Ordering number: When ordering, use the coded format shown.

912-0	X	-X	X	X
I	II	III	IV	V

Series	Code	BASE PRICE	
		Mono	Stereo
3500	1	\$2270.00	\$2645.00
4500	2	\$2270.00	\$2645.00

III

Configuration	Equalization	Code
Mono	NAB	0
Stereo	NAB	1
Mono	IEC	2
Stereo	IEC	3

IV

Voltage	Frequency	Speed (in/s)	Code	Add To Base Price
117	60 Hz	3 $\frac{3}{4}$	0	\$200.00
117	60 Hz	7 $\frac{1}{2}$	1	None
117	50 Hz	3 $\frac{3}{4}$	2	\$200.00
117	50 Hz	7 $\frac{1}{2}$	3	\$133.00
220	60 Hz	3 $\frac{3}{4}$	4	\$200.00
220	60 Hz	7 $\frac{1}{2}$	5	None
220	50 Hz	3 $\frac{3}{4}$	6	\$200.00
220	50 Hz	7 $\frac{1}{2}$	7	\$133.00

V

Record Option Codes	A	B	C	D	E	F	G	H	J	K	L	M
None	X											
End Cue, Trip Cue		X		X	X	X	X	X	X	X	X	X
Fast Forward			X		X	X	X	X		X		X
Digital Message Timer			X		X		X	X			X	X
Splice Finder					X		X					
Erase-Mono									X	X	X	X
Add to Base Price	*	Standard	*	\$120.00	\$200.00	\$478.00	\$320.00	\$678.00	\$278.00	\$398.00	\$478.00	\$598.00

*Model No Longer Available

	MODEL	PRICE
MONOMAX Audio Phase Protector	991-10-000	\$515.00
MX-1 Dual Matrix and Dematrix Desk Mount Unit		

	MODEL	PRICE
PHONECON Telephone Answering Device	991-00-000	\$390.00

Reproducers

Ordering number: When ordering, use the coded format shown.

911-0	X	-X	X	X
I	II	III	IV	V

Series	Code	BASE PRICE	
		Mono	Stereo
2500	0	\$1300.00	\$1460.00
3500	1	\$1300.00	\$1460.00
4500	2	\$1330.00	\$1525.00

III

Configuration	Equalization	Code
Mono	NAB	0
Stereo	NAB	1
Mono	IEC	2
Stereo	IEC	3

IV

Voltage	Frequency	Speed (in/s)	Code	Add To Base Price
117	60 Hz	3 $\frac{3}{4}$	0	\$200.00
117	60 Hz	7 $\frac{1}{2}$	1	None
117	50 Hz	3 $\frac{3}{4}$	2	\$200.00
117	50 Hz	7 $\frac{1}{2}$	3	\$133.00
220	60 Hz	3 $\frac{3}{4}$	4	\$200.00
220	60 Hz	7 $\frac{1}{2}$	5	None
220	50 Hz	3 $\frac{3}{4}$	6	\$200.00
220	50 Hz	7 $\frac{1}{2}$	7	\$133.00

V

Option Codes	A	B	C	D	E	F
No Options	X					
End Cue, Trip Cue		X		X	X	X
Fast Forward				X		X
Digital Message Timer			X		X	X
Add to Base Price	*	Standard	*	\$120.00	\$200.00	\$320.00

*Model No Longer Available

CARTRIDGE TAPE EQUIPMENT ACCESSORIES

	MODEL	PRICE
Rack Shelf-mounts three CT2500, two CT3500 or one CT4500 with one CT2500	991-20-000	\$ 84.00
Fill Panel - $\frac{1}{3}$ rack width	541-A0-104	\$ 22.00
Fill Panel - $\frac{1}{2}$ rack width	541-A0-105	\$ 28.00
Remote Control Panel (4 Start Switches)	821-CA-104	\$106.00
Remote Control Panel (Full Function Record)	821-CA-105	\$140.00
Card Extender	801-CA-029	\$ 48.00
Alignment Tool Kit - includes head insertion gage, height gage, allen head wrenches, adjustment screw driver	871-CA-000	\$ 58.00
Spare Semiconductor Kit-Reproducer	875-CA-000	\$ 76.00
Spare Semiconductor Kit - Recorder/Reproducer	875-CA-001	\$140.00
Head Cleaner Cartridge	703-A0-060	\$ 37.00
Speed Test Cartridge	703-A0-062	\$ 40.00
Torque Test Cartridge	703-A0-061	\$ 37.00
Azimuth and Response Cartridge	703-A0-059	\$ 63.00

TELEVISION TECHNOLOGY CO.

2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396

AMPRO 

SERIES 8300 THREE-DECK CARTRIDGE TAPE REPRODUCER

The new Scully Series 8300 three deck tape cartridge reproducer provides a new standard of excellence in a convenient modular configuration. All presently marketed three deck machines were evaluated, which resulted in a new packaging concept with all decks removable, a new servo motor without bearing adjustments, a new head bridge assembly, and graphics that won't wear off.

Standard features include a two bearing crystal-controlled D.C. brushless servo motor, 150 Hz secondary cue tone, audio mixer, audio switcher, and a reload indicator.

Modular construction allows field conversion from Mono to Stereo, as well fast and easy maintenance.

Specifications

Tape Speed

7.5 ips (19.05 cm/s).

Timing Accuracy (at 7.5 ips)

0.1% Second Maximum.

Wow and Flutter

0.15% Peak Weighted.

Noise (Reproducer)

Monophonic: 60 dB or better below reference at 400 Hz at 3% THD; 52 dB below 160 nWb/m at 1 kHz. Stereophonic: 58 dB or better below reference of 400 Hz at 3% THD; 50 dB below 160 nWb/m at 1 kHz.

Distortion (Playback

Electronics Only)

18 dB above 160 nWb/m 50-15 kHz less than .5%.

Equalization

NAB, IEC, CCIR as specified.

Frequency Response

±2 dB from 50 Hz to 15 kHz exclusive of head countour effect.

Cross Talk (Magnetic

Head Limited)

Cue channel to program channel, monophonic.

150 Hz - 50 dB

1 kHz - 55 dB

8 kHz - 50 dB

Stereo, cross talk between program channels better than 50 dB, 50 Hz to 15 KHz.

Audio Output

Differentially balanced output.*
Maximum adjustable level +14 dBm into 600 Ohm load from 160 nWb/m at 1 kHz.

*Transformers optionally available for 600/150 Ohm balanced floating output.

Peak output level:

Differentially balanced output +22 dBm clipping into 600 Ohm load.

Cue Signals

1kHz Primary - Standard feature.

150 Hz Secondary** - Standard feature with remote status available

8 kHz Tertiary** - Optional feature with remote status available.

**Relays optionally available for normally open or closed isolated contacts.

Audio Mixer

Standard feature allows two or three decks to be actively combined (summed) to provide one audio output.

Audio Switcher

Standard jumperable feature allows decks combined with audio mixer to only pass audio from the last started deck.

150Hz control is also a jumperable selected standard feature to turn off a deck's audio switcher at the beginning or ending of the 150Hz secondary cue tone.

Reload Indicator

(indicated "played" status)

Stop/Ready lamp flashes when cartridge has been started and then stopped either by pushing the stop button or by the presence of the cue tone.

Motor

Two bearing non-adjustable closed loop crystal controlled direct drive servo.

Tape Capacity

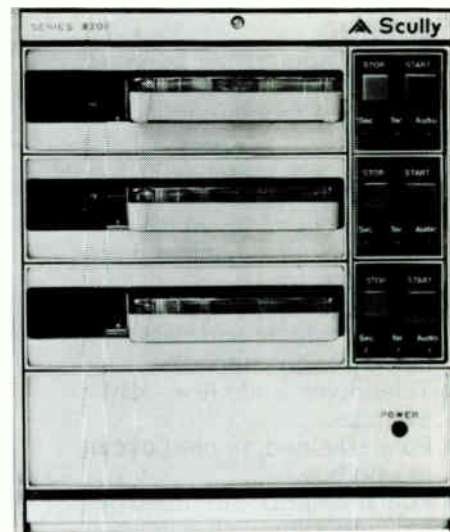
Type A or B, AA or BB NAB cartridge.

Power

105 to 125 V or 210 to 230
50/60Hz Ambient operating temperature: 0°C to 50°C.

Remote Control

All front panel switches and indicators.



External Connections

Audio: 15 position "D" type, mating connector supplied.

Remote: 25 position "D" type, mating connector supplied.

Dimensions (less feet)

10³/₈" H x 8⁵/₈" W x 13¹/₂" D

Weight

43 Pounds

Configurations

Model 8321 Mono Three Deck

Model 8322 Stereo Three Deck

Series 8300

Three-Deck Cartridge Tape Reproducer

Ordering number: When ordering, use the ordering format shown.

910-0	X	-X	X	X
I	II	III	IV	V
II				
Add To Base Price				
Options	Code	Mono	Stereo	
None	0	None	None	
8 kHz	1	\$100.00	\$100.00	
Relay	2	\$ 35.00	\$ 35.00	
Output transformers	3	\$ 75.00	\$150.00	
8 kHz, relay	4	\$170.00	\$170.00	
Output transformers, relay	5	\$110.00	\$185.00	
Output transformers, 8 kHz	6	\$175.00	\$250.00	
Output transformers, 8 kHz, relay	7	\$245.00	\$320.00	
III				
Configuration	Code	Base Price		
Mono	0	\$2820.00		
Stereo	1	\$3150.00		
IV				
Voltage	Speed (in/s)	Code		
117	3 ³ / ₄	A		
117	7 ¹ / ₂	B		
220	3 ³ / ₄	C		
220	7 ¹ / ₂	D		
V				
Equalization	Code			
NAB	0			
IEC	1			

TELEVISION TECHNOLOGY CO.

2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396

AMPRO  **Scully**

AUDIO CONSOLES

Features

- Muting programmer board to allow any mic input to control any of the four muted monitor outputs.
- Remote start switching for all high-level inputs.
- Two studio intercom plus remote line talkback and program cue.
- Step-type rotary faders with silver contacts and detented cue on each channel.
- Telephone-grade lever key switches.
- Fully shielded, printed circuit mixing bus.
- Four level LED "stretched peak" indicators on each output channel in addition to two standard VU meters.
- Balanced transformer pre-amps on all mic and high-level inputs.
- Stereo pre-amps for all mic and high-level inputs on all stereo, dual-stereo and simulcast models.
- Four interlocked pushbutton switches per input channel allows easy expansion of input sources.
- 20-Watt monitor amplifier with four inputs, switch selectable to either program line or two auxiliary inputs.
- Dissipation-sensing monitor protects against shorts and overloads.
- Headphone amplifier with 4 switchable inputs.
- Phase test switch for immediate audible check of signal deterioration from improperly processed stereo source material (standard on all stereo models).
- Plug-in modular PC board electronics.



6 CHANNEL



8 CHANNEL



10 CHANNEL



12 CHANNEL

Audio Consoles

	Rotary Fader		Linear Fader	
	Model	Price	Model	Price
6 Channel Monaural, 24 inputs	902-00-000	\$3,530.00	Not Available	
6 Channel Dual Monaural, 24 inputs	902-00-100	\$3,906.00	Not Available	
6 Channel Stereo, 24 inputs	902-00-200	\$5,067.00	Not Available	
6 Channel Stereo with Summing Amp	902-00-300	\$5,400.00	Not Available	
8 Channel Monaural, 32 inputs	901-00-000	\$4,228.00	901-00-030	\$4,835.00
8 Channel Dual Monaural, 32 inputs	901-00-100	\$4,577.00	901-00-130	\$5,190.00
8 Channel Stereo, 32 inputs	901-00-200	\$5,764.00	901-00-230	\$6,380.00
8 Channel Stereo with Summing Amp	901-00-500	\$6,097.00	901-00-530	\$6,713.00
8 Channel Dual Stereo, 32 inputs	901-00-300	\$6,268.00	901-00-330	\$6,880.00
8 Channel Dual Stereo with Summing Amp	901-00-600	\$6,601.00	901-00-630	\$7,213.00
8 Channel Stereo-Mono, 32 inputs	901-00-400	\$6,114.00	901-00-430	\$6,728.00
10 Channel Monaural, 40 inputs	901-00-010	\$5,276.00	901-00-040	\$6,035.00
10 Channel Dual Monaural, 40 inputs	901-00-110	\$5,624.00	901-00-140	\$6,379.00
10 Channel Stereo, 40 inputs	901-00-210	\$6,758.00	901-00-240	\$7,525.00
10 Channel Stereo with Summing Amp	901-00-510	\$7,091.00	901-00-540	\$7,858.00
10 Channel Dual Stereo, 40 inputs	901-00-310	\$7,255.00	901-00-340	\$8,032.00
10 Channel Dual Stereo with Summing Amp	901-00-610	\$7,588.00	901-00-640	\$8,365.00
10 Channel Stereo-Mono, 48 inputs	901-00-410	\$7,106.00	901-00-440	\$7,879.00
12 Channel Monaural, 48 inputs	901-00-020	\$5,919.00	901-00-050	\$6,842.00
12 Channel Dual Monaural, 48 inputs	901-00-120	\$6,268.00	901-00-150	\$7,187.00
12 Channel Stereo, 48 inputs	901-00-220	\$7,610.00	901-00-250	\$8,489.00
12 Channel Stereo with Summing Amp	901-00-520	\$7,943.00	901-00-550	\$8,822.00
12 Channel Dual Stereo, 48 inputs	901-00-320	\$8,100.00	901-00-350	\$9,033.00
12 Channel Dual Stereo with Summing Amp	901-00-620	\$8,433.00	901-00-650	\$9,366.00
12 Channel Stereo-Mono, 48 inputs	901-00-420	\$7,960.00	901-00-450	\$8,879.00
Spare Semiconductor Kit	875-PA-001	\$ 56.00		
Summing Amp Field Kit-Stereo	990-00-000	\$ 350.00		
Summing Amp Field Kit-Dual Stereo	990-00-001	\$ 350.00		

TELEVISION TECHNOLOGY CO.

2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396

AMPRO  **Scully**

AUDIO CONSOLE Specifications

Input Levels

Microphone Lines: -50 dBm nominal, -26 dBm maximum
High-Level Lines: -10 dBm nominal. Change in input pad allows range of normal input from: -30 to +24 dBm

Maximum Direct Inputs: 100 mVrms

Monitor Auxiliary Lines: -10 dB nominal (balanced source)

Phone Auxiliary Lines: -30 dBm nominal (balanced source)

Output Levels

Program: Test level, +18 dBm

Clipping level, +22 dBm

"O" VU output, +8 dBm

(above measured after 6 dB isolation pad)

Monitor Amp: 20 Watts into 4 or 8 Ω load

Audition Bus Boost Amp: .31 Vrms nominal

6.0 Vrms maximum

(mono and stereo consoles only)

Headphone Amp 6.0 Vrms @ 600 Ω

Metering

Switchable VU meters plus an individual "Stretched Peak" LED display for each output channel. Four audio levels, adjustable from -20 to +12 VU are displayed for each channel. All audio peaks in excess of 15 μ sec duration are "stretched" into a .1 sec. visible blink.

Gain

104 \pm 2 dB microphone input to program output.

Impedances

Microphone Inputs: Source, 150 Ω

Minimum input, 2,000 Ω

High-Level & Direct Transformer

Inputs: Source 600 Ω

Minimum input, 10,000 Ω

Through 20 dB pad as shipped:

Input-terminating, 600 Ω

Input-bridging, 5,000 Ω

Auxiliary Inputs: Source-balanced,

300 Ω , Input-unbalanced, 10,000 Ω

Frequency Response

Program Channels: 20-15 kHz

\pm 1.5 dB

Monitor Channels: 20-15 kHz \pm 2.0

dB

Distortion

Program Channels: 20-20 kHz, maximum .5% (+18 dBm out, -50 dBm input)

Monitor Channels: 20-15 kHz, maximum .5% (@ 15 Watts output to 4 load)

Signal-to-Noise Ratio

Program Channels: Minimum 74

dB, 20-20 kHz measurement

Bandwidth (+18 dBm out, -50

dBm available power input)

Monitor Channels: Minimum 74

dB, 20-20 kHz measurement

Bandwidth (15 Watts out into 4 Ω ,

-50 dBm available power input)

Cross Talk

Program Channel: Minimum 68 dB

into program channel referenced

to +18 dBm output when driving

audition plus monitor at 15 Watts

output into 4 Ω load.

Audition Channel: Minimum 68 dB

into audition plus monitor refer-

enced to 15 Watts output when

driving program channel to +18

dBm output.

Enclosure

Cabinet: Beige Armorhide paint

with oiled finish walnut end panels.

Panels: Cream baked enamel with

etched and filled black markings.

Black adhesive foil markers sup-

plied for input selector switch

designations.

Power Requirements

117/234 V (strappable), 50/60 Hz,

Maximum 110 Watts.

Series AC-6

Six-channel audio consoles

(Rotary Faders) Inputs - 12 Micro-

phone, 12 High-Level

Dimensions - 11" H x 33 $\frac{3}{8}$ " W x

20 $\frac{1}{2}$ " D

Weight - 95 lb.

Series AC-8

Eight-channel audio consoles

(Rotary Faders) Inputs - 16 Micro-

phone, 16 High-Level

Dimensions - 11" H x 39 $\frac{3}{8}$ " W x

20 $\frac{1}{2}$ " D

Weight - 105 lb.

Series AC-10

Ten-channel audio consoles (Ro-

tary Faders) Inputs - 16 Micro-

phone, 24 High-Level

Dimensions - 11" H x 45 $\frac{3}{8}$ " W x

20 $\frac{1}{2}$ " D

Weight - 110 lb

Series AC-12

Twelve-channel audio consoles

(Rotary Faders) Inputs - 24 Micro-

phone, 24 High-Level

Dimensions - 11" H x 51 $\frac{3}{8}$ " W x

20 $\frac{1}{2}$ " D

Weight - 125 lb.

Spare semi-conductor kit and lub-

ricant included with each console.

Summing Amplifier

Sums stereo output to mono (con-

verts stereo or dual-stereo to

simulcast).

AMPRO LINEAR CONSOLES

The 8-, 10-, and 12-channel Ampro LC Series of linear fader consoles are a natural selection for discriminating professionals preferring linear fader operation. Incorporating all the tried and proven features of the Ampro series of rotary fader models, the new LC Series of linear fader boards adds the advantages of smooth linear input level control in an attractive, dual-slope panel configuration. They fulfill the professional performance and appearance requirements of medium - to-large scale production, radio, and television installations.

The premium quality linear attenuators each have a four-inch travel, with cue. All other features, including electrical/electronic specifications, are the same as those listed for our rotary fader consoles on the previous pages.

BLOCK DIAGRAM

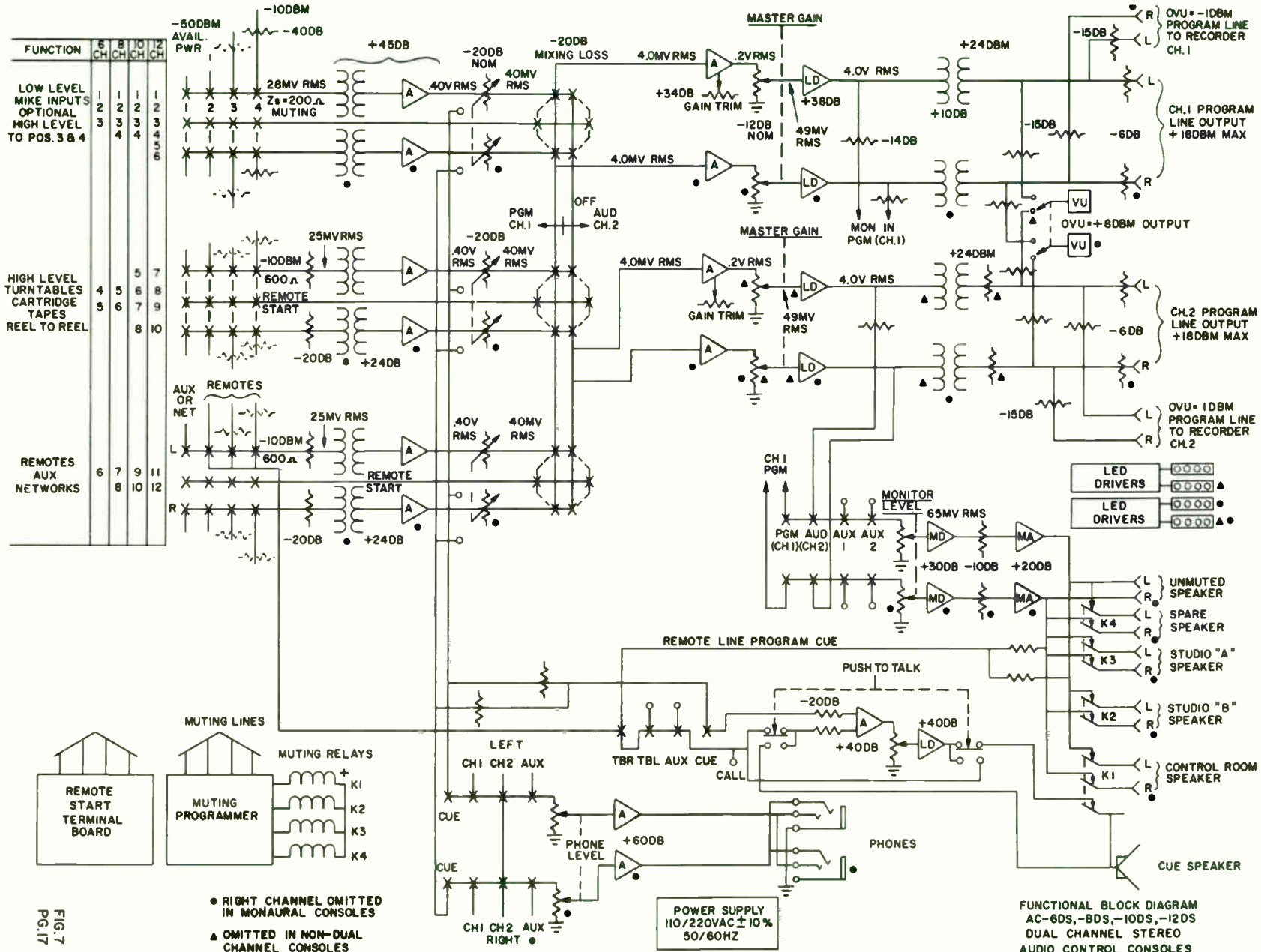


FIG. 7 PG. 17

● RIGHT CHANNEL OMITTED IN MONAURAL CONSOLES
▲ OMITTED IN NON-DUAL CHANNEL CONSOLES



2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWM 910-938-0396

TELEVISION TECHNOLOGY CO.

AUDIO CONSOLES

TELEVISION TECHNOLOGY CO.

AUDIO CONSOLES

2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396



MICROTOUCH AUDIO CONSOLES



MICROTOUCH CONSOLES FROM AMPRO

Each is a complete, full function audio control center built for operational simplicity and long life. Ampro, the leader in broadcast console design, has utilized the latest component and packaging technology to produce a cost-effective console for the station that demands the quality, low maintenance, ease of use and ease of service of a top-of-the-line board. Ideal for small to medium studio use, newsrooms, remote vans and TV audio. MICROTOUCH avoids the component reliability compromises and maintenance headaches inherent in most economy console approaches.

FEATURES

- 5 and 8 mixers
- Rotary and linear fader configurations
- MICROTOUCH bus switching eliminates lever key switches
- FET audio switching controlled by 10 million operation mechanical touch switches
- Balanced transformer input preamps on all mixers eliminate RF pickup and ground loops
- 2 inputs per mixer, selectable mic, high lever or mixed

- Programmable muting for every input
- 5 input remote line selector assignable to any high level input
- 3 input selector to 10 watt monitor amplifier, two muting relays
- 3 input selector to 1 watt headphone amplifier
- Built-in cue amplifier and speaker
- Dual mono and dual stereo program outputs plus extra output line, front panel switchable to either PROGRAM 1 or PROGRAM 2 outputs
- Self indicating, color keyed input, remote, monitor and phone selectors
- 4 color LED readout of PROGRAM 1, PROGRAM 2, CUE and OFF for each mixer
- All circuits on plug in boards, one preamp and one program amplifier spare entire console
- Power supply status indicators
- Tally outputs for on-air light relay control
- All user connections to screw terminal barrier strips
- Entire input selector panel is removable with all user connections intact for ease of console service. All plug in boards accessible through top cover
- Permanent anodized panel markings
- Extended life AB pots — 3 times normal life
- Comfortable, full width armrest
- Optional script rack

Microtouch Audio Consoles

Model		Price
900-00-000	Dual Monaural, 5 Rotary Mixers	\$2,375.00
900-00-020	Dual Monaural, 5 Linear Mixers	\$2,575.00
900-00-100	Dual Stereo, 5 Rotary Mixers	\$2,875.00
900-00-120	Dual Stereo, 5 Linear Mixers	\$3,455.00
900-00-010	Dual Monaural, 8 Rotary Mixers	\$2,899.00
900-00-030	Dual Monaural, 8 Linear Mixers	\$3,310.00
900-00-110	Dual Stereo, 8 Rotary Mixers	\$3,935.00
900-00-130	Dual Stereo, 8 Linear Mixers	\$4,645.00
825-PA-000	Optional Script Rack	\$ 91.00
875-PA-000	Spare Semiconductor Kit	\$ 85.00
900-DA-037	Spare Preamp board, Monaural	\$ 97.00
800-DA-038	Spare Preamp board, Stereo	\$ 121.00
800-DA-039	Spare Program Amplifier board, Mono	\$ 97.00
800-DA-040	Spare Program Amplifier board Stereo	\$ 121.00

SPECIFICATIONS

INPUT LEVELS

Microphone (direct) inputs
Available Power -50dBm nominal
Maximum Input 20mVrms
High Level (attenuated) Inputs
As supplied +8dBm nominal
Any Input convertible -50 to +20dBm
Monitor Auxiliary Input 1 Volt RMS nominal

IMPEDANCES

Microphone inputs Source 150 ohms
minimum input 2,000 ohms
High level inputs through 58dB pad as shipped
terminating 600 ohms
bridging 50,000 ohms
Monitor auxiliary input unbalanced 10,000 ohms
(must be driven from balanced,
ungrounded off air monitor)

Output Levels:

Program outputs Test level, +18dBm
Into 600/150 ohms Clipping level, +21dBm
(Strappable) "O" VU level, +8dbm
Monitor output into 4 ohms 10 watts
Headphone output into 8 ohms 1 watt
Cue output into internal speaker 1.5 watts

GAIN

Microphone input to program output ... 100 + /-2dB.

FREQUENCY RESPONSE

Program Channels 50 to 15,000Hz + /- 1dB
Monitor Channels 50 to 15,000Hz + /- 1.5dB

DISTORTION

Program Channels
+18dBm out,
-50dBm input
50-15,000Hz THD max. 1% IM 0.1%
Monitor Channel
10 watts out to
4 ohm load
50-15,000Hz THD max. 1.5% IM 1.0%

NOISE

Program Channels
+18dBm out,
-50dBm input
20-20,000Hz S/N = 70dB, E.I.N. -120dBm

CROSSTALK

Into Program Channel referenced to
+18dBm out, -50dBm input when
driving any other program channel to
+18dBm plus monitor to 10 watts minimum 65dB

POWER REQUIREMENTS

117/234 VAC (Strappable) 50/60Hz 100VA max.

ENCLOSURE

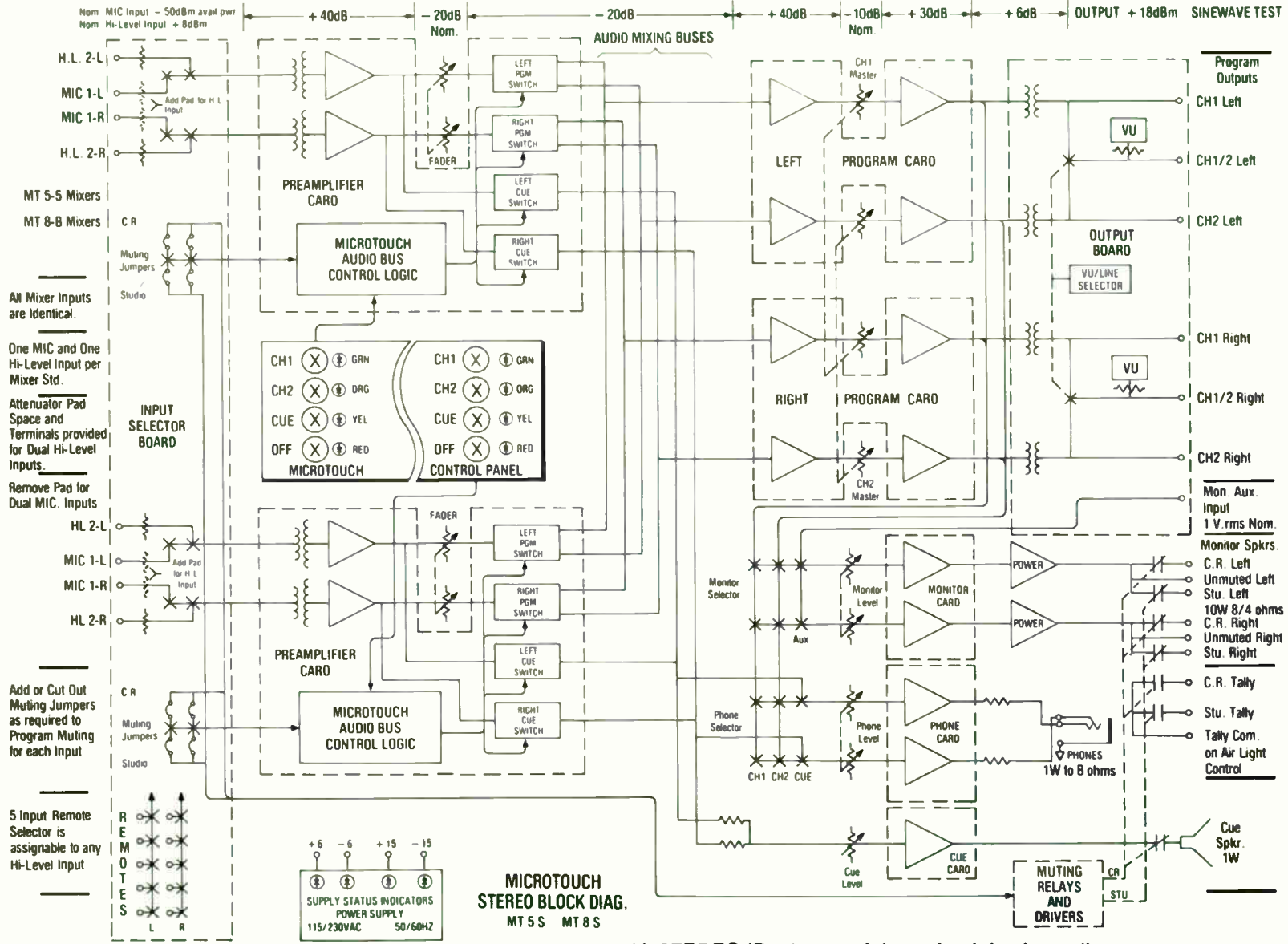
Satin black panel with silver anodized markings, stainless steel top, walnut end panels, black padded arm rest.

Dimensions	Height	Width	Depth	Unit Weight
5 Mixer	9"	20-1/8"	27-1/4"	45 lbs.
8 Mixer	9"	25-1/8"	27-1/4"	55 lbs.



2360 Industrial Lane
Broomfield, CO 80020
(303) 465-4141
TWX 910-938-0396

BLOCK DIAGRAM



5 and 8 MIXER DUAL STEREO (Dual mono deletes the right channel)

AMTEL SYSTEMS, INC.

400 West Cummings Park
Suite 4750
Woburn, MA 01801
(617) 938-8551
Master U.S. Distributor of
Evertz Microsystems

TIME CODE EQUIPMENT/CLOCKS & TIMERS



MC 1000

Model MC 1000 Master Clock

The MC 1000 Master Clock is a digital master clock and pulse clock driver of great accuracy, flexibility and reliability all in one rack unit package. The MC 1000 provides time of day in 12 or 24 hour format (front panel selectable) and 12V alternating polarity pulses to drive up to 25 (100 optionally) analog pulse clocks with stepping second hands.

DQS-B6 serial time code is easily distributed via a single audio pair to operate a variety of accessories such as time displays, video character generator, serial-to-parallel decoders, etc. A DQS slaving input allows master clocks at remote sites to be locked together to within a few milliseconds. A crystal oscillator provides the time reference accurate to 2 to 4 seconds per month. An optional temperature compensated oscillator is available to provide accuracy within 4 to 5 seconds per year. Also, an external reference is provided to lock the clock to a superior reference source.

The clock is fully protected against brownouts and power failures for several hours by an internal standby battery. An external battery connection is provided if longer protection is desired. When power from the battery falls below a predetermined level during prolonged power failures, the pulse clocks are stopped to avoid scattering due to mechanical differences in the clock movements. When the main power is restored, the pulse clocks are automatically placed in a fast count mode to restore them to the correct time.

Time is entered from the front panel keypad and may be adjusted in -/-1 hour, +/-1 sec or +/-1 sec increments to facilitate changes to daylight savings time and fine calibration.

Eight transistor switch outputs of programmable duration can be reset to activate at any time during a 24 hour day or be activated manually from the front panel.

An optional communications interface is available to allow automatic correction from various sources of standard time.

IC-1000 Digital Master clock with pulse-clock driver, standby battery, event count 8 programmable outputs, 2 second per month accuracy.

\$2900.00

Option 1 Parallel BDC time output—20 lines compatible with all 5V logic levels. **250.00**

Option 2 Temperature compensated oscillator in lieu of standard crystal oscillator. Provides accuracy to 4 seconds per year. **395.00**

Model PT 26 Production Timer

The PT 26 Production Timer is a very versatile and easy to use production tool. Two independent timers with separate displays allow up-counting, down counting with automated count reverse at 00:00, individualizing program segments, real time use in 24 hour format, etc. Timer A may be used as a 24 hour real time clock and gives a DQS-B6 serial code output to drive many Evertz accessories such as remote displays, video character generators, serial-to-parallel decoders, etc. A programmable transistor switch output is available on each timer and will operate in either the up or down mode. A front panel slide switch permits the two timers to operate with seconds in sync.

Calculator entry follows calculator format for ease of operation. Separate function keys for each timer control UP/DOWN, SET/RESET and START/STOP. Each timer is provided with an external input for remote control using a single push button for stop, start or reset.

A quartz crystal timebase provides an accuracy of approximately 1 second per week. Power is supplied from a separate 9-14V, 300mA DC power adaptor. The unit is packaged in an attractive, lightweight enclosure.

PT-26 Deluxe production timer features two event count up, count down, real time and two displays, time calculator function. **\$890.00**



PT 26



1274



1272



1275A

Remote Time Displays

A variety of remote time displays is available, all operating off our well established DQS-B6 serial time code. The code can be distributed over large areas using a twisted or shielded pair cable. In addition, a simulated analog display, Model 1275A, also reads SMPTE/EBU edit code.

Model 1272 Remote Time Display

Model 1272 is a bright 6 digit time display with 1" high characters readable to over 40'. Desk or wall mountable.

1272 6 digit remote time display with wall or desk mount—large bright 0.8" high digits. **\$295.00**

Model 1274 Time Display

Model 1274 is a large 6 digit time display with 2 1/2" high characters using high efficiency, high brightness LED's, legible to 100'. Wall mounting.

1274 6 digit remote time display wall or desk mount—large bright 2 1/2" digits. **\$650.00**

Model 1275A Time Display

Model 1275A has 60 LED's mounted in a circular arrangement, simulating an analog second hand. In addition, the hours, minutes and seconds are displayed in digital format. The unit reads DQS-B6 or SMPTE/EBU time code or may be used as a totally self contained 12 or 24 hour clock. A dip switch allows user selection of 8 different operating and display modes. Beautifully finished with wood trim, ideally suited for studio, lobby, board room, etc.

1275A 6 digit time display wall mount. 1" high digits in center of clock face, 1/4" LED's light to indicate 60 second sweep around clock face. Operates as stand alone or slave display. **\$890.00**

AMTEL SYSTEMS, INC.

400 West Cummings Park
Suite 4750
Woburn, MA 01801
(617) 938-8551
Master U.S. Distributor of
Evertz Microsystems

TIME CODE EQUIPMENT

Model 3700D Edit Code Master

Our best longitudinal time code generator and full speed reader (over 2000:1 speed ratio). A video character generator with high resolution characters and alpha-numeric user bit decoding is standard. In addition to the features listed for the 3600D, these functional enhancements give this unit the power and flexibility to meet your most difficult operational requirements.

Features

- Separate generator and reader displays are particularly useful in Jam-Sync modes and when operating reader and generator independently.
- High flexible Jam-Sync modes allow transfer of reader time and user bits into the generator in a variety of configurations.
- Full alpha-numeric user bit functions can be used to record tape index, captions, source identification or other data along with the time code.
- RS-232-C serial port permits interfacing to remote control panels, computers, editors, etc.
- Multiplexed parallel BCD output of reader time and user bits.
- An aural alarm signals genlock problems. This can be disabled if, for example, the generator is locked to a VTR rather than house sync or PGM video.

3700D Edit Code Master \$3950.00

Model 3600D Edit Code Generator/Reader

This is an SMPTE/EBU edit code generator, a full speed reader and a video character inserter in a slim one rack unit package.

Features

- True dual standard, NTSC and PAL. Generates time code in accordance with SMPTE RS170 or RS170A, or EBU 4 or 8 field standards (4 switch selectable modes), locked to the PGM video source.
- Front panel format switches, no need to disassemble whenever certain system parameters need to be changed, e.g. field 1 or 2 update of VCG, color framing, drop frame, etc.
- Reads time code from 1/30x to 70x playspeed. New input circuit design permits reliable recovery of even severely distorted code such as can be expected off low end 3/4" machines.
- High resolution character generator in two character sizes, full screen positionable, keys time and user bits into the picture.
- Momentary and continuous Jam-Sync modes. In Cont-Jam, good code is automatically substituted when synchronizing to poorly recorded or disrupted code.

3600D Edit Code Generator/Reader \$3150.00

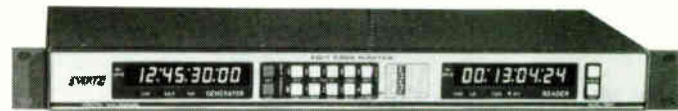
Model 4900 Edit Code Reader/VCG/Translator

A superb reader, capable of hesitation-free time code display from 70x down to 1/30x play speed, and with VITC option all the way down to still frame. We believe this to be the finest code reader available anywhere.

Features

- Full speed range LTC reader.
- Optional VITC decoder module (Model 49V).
- Easily accessible formatting Dip switches.
- High resolution character inserter; 2 sizes.
- VITC source ID decoder.
- Byte-wide parallel data output for easy Editor interface.
- Play speed LTC translator output incorporating a new soft-lock feature provides continuous time code at all reading speeds from still frame to maximum wind.
- LTC code phase corrector/regenerator for dubbing.

4900 Edit Code Reader/VCG/Translator P.O.R.



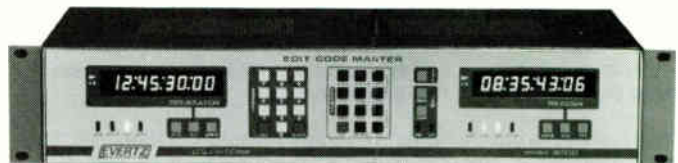
3700D



3600D



4900



4000

Model 4000 Edit Code Master (with VITC)

The top of the line Model 4000 Edit Code Master combines a generator and reader for both VITC and longitudinal time code with a high resolution character inserter, making it the most comprehensive answer to all time code needs. It reads from still frame to full wind speeds directly from the VTR output. Alpha-numeric user bit capabilities enable the storage of tape indexes, program comments and source identification.

Utilizing one of the most powerful microprocessors available, plus built-in diagnostics, the Model 4000 achieves new levels of functional flexibility and reliability. Particular attention has been paid in its overall design to maintaining operational simplicity. To this end we have introduced a new and unique concept which allows the Model 4000 to be configured to your particular operational environment. The daily operation of the unit is greatly simplified, often being reduced to just a few push button functions.

4000 Edit Code Master (with VITC) \$4995.00

Model 4300 Portable VITC Reader/Character Generator/Translator

Portable VITC reader/character generator. 15 character positions on raster; reads time code, standard and alphanumeric user bits, source ID data; reads VITC code at speeds of 10x play and above depending on VTR format; translates VITC to longitudinal time code.

4300 Portable VITC Reader/Character Generator \$1600.00

*1995
DEC 1986*

AMTEL SYSTEMS, INC.

400 West Cummings Park
Suite 4750
Woburn, MA 01801
(617) 938-8551
Master U.S. Distributor of
Evertz Microsystems

CHARACTER GENERATORS/AUTOMATION AND TEST EQUIPMENT

Model 1260 Character Generator

The Model 1260 Video Character Generator, designed primarily to display time information in video, has limited text and logo capabilities too. It decodes DQS-B6 or SMPTE/EBU time code from your master clock system and displays the time or user bit information. In addition, a built-in elapsed time counter with 0.01 sec resolution and a remote START/STOP control may be used for timing sporting events, etc.

The 1260 may be used as a low cost alphanumeric generator using the optional serial ASCII port. Limited custom logo capabilities are optionally available.

Eight front panel keys allow user selection of 4 character sizes; horizontal and vertical positioning, inverse video, input code, and display formats to suit individual applications. The configuration parameters are stored in non-volatile memory, eliminating the need to reprogram the setup after a power failure.

A broadcast quality keyer and high resolution characters combine to give a high quality presentation for on-air use. A separate preview output is provided for setup to preserve the integrity of the program output on air.



1260 Video character generator including video keyer to convert master clock, SMPTE, inputs to video output. Sports timer function with remote control stop/start facility—internal clock system, H-V positioning, inverse video-preview output. Optional serial ASCII input for alphanumeric display information and tape leader generator function.

1260A Video character generator as described above with optional serial I/O port for alphanumeric and tape leader generator displays.

\$2480.00

Model 1930 Programmable Controller

The Programmable Controller provides momentary switch closures to ground capable of activating a relay with a self-holding contact. Up to 48 parallel outputs are available. The individual output action is based on the time of day and the day of the week and optionally on external digital or analog data. The system uses C-MOS random access memory, thus allowing long term protection of user entries with an internal NiCad battery. Memory may be expanded to 1000 entries.

Operator interface is made simple by a 19 button keypad and an eight digit LED display. Time and day are displayed continuously in the normal operating mode. When entering time or data, appropriate status lights prompt the operator into correct key entries. A serial interface option allows use of a computer terminal as a more convenient programming device, or a printer for permanent records of such data as changes in entries, time corrections, power failure times and duration.

The time keeping element is a quartz oscillator, keeping the time accurate within a few seconds a month. There is provision for an external 1 MHz source of greater accuracy to override the internal oscillator. Also, a 1Hz input allows synchronization to a master clock system. The time is continuously displayed using the 24 hour system with the appropriate day legend illuminated. The outputs are synchronized to the clock, the output pulses occurring at the same moment that the seconds display is updated.

Digital time is available in serial form using the DQS-B6 serial time code and is easily distributed via a single audio pair. Many accessories such as remote time displays, serial-to-parallel decoders or character generators employing this time code are available.



A security code makes it impossible for unauthorized personnel to tamper with the time or programmed outputs.

This Programmable Controller is a powerful but compact microcomputer as a stand-alone unit, but may be added as a peripheral controller to an existing computerized system.

1930 Programmable controller/time event generator with 984 programmable events on 48 outputs. Includes remote terminal interface RS-232.

\$2950.00

LPG-2 Automatic color bar, slate and cue generator.

1395.00

VA-10A1 Passive audio follow video 10 X 1 19" rackmount routing switcher.

350.00

VA-10X1 SA Active dual audio follow video routing switcher with audio breakaway capable of handling up to two remote panels.

1695.00

RA-101 Remote control panel for VA 10X1 SA

195.00

Model STG 300 Digital Safe Title Generator

The Amtel Model STG 300 Safe Title Generator produces a white or black graticule on the preview monitor input so safe title or safe action can always be observed for consistency in television production.

Graticule positions are derived digitally by counting subcarrier from the leading edge of horizontal sync and by counting horizontal lines from vertical sync. The graticule cannot drift in relation to reference video.



STG-300 Safe area, safe title generator including FCC specification for blanking markers. Unit includes three outputs.

\$1250.00



913 W. 223rd St.
Torrance, CA 90502
(213) 533-5984

MINI SOUND SYSTEMS

ANCHOR 100/150 SERIES

Speaker Type: 4-1/2" high compliance full range speaker • **Frequency response:** Music — 100Hz to 15kHz; Speech — 150Hz to 15kHz; **Rated Power** — 35watts RMS • **Maximum SPL at 1m, Full Power** — 104dB • **Input Impedance:** Microphone — 780ohms, balanced; Phono — 51Kohms, unbalanced; Line — 35Kohms, unbalanced • **Connectors:** Microphone Input — Professional 3-pin audio connector (female) • **Line Input** — 1/4" phone jack, **Line Output** — 1/4" phone jack • **Controls:** Volume, Mic/Phono/Line input selection switch, Speech/Music equalization switch • **Indicator Lights:** Two green LEDs, one on front, one on back panel • **Power Requirements** — 120V AC, 60Hz, 1A

AN 100 — Walnut veneer cabinet. Wt. 11 lbs. Dimensions: 6-1/4" x 6-3/4" x 7" **\$349.00**

AN 150 Roadie Version — Vinyl covered plywood cabinet, reinforced corners, front and back covers. Wt. 13 lbs. Dimensions: 6-1/2" x 11-1/2" x 7-3/4" **\$369.00**

ANCHOR 200/250 SERIES

Speaker Types — Two 4-1/2" high compliance full range speakers and one 1" diameter HF dome tweeter • **Frequency Response:** Music — 100Hz to 20kHz; Speech — 150Hz to 20kHz • **Rated Power** — 55 watts RMS • **Maximum SPL at 1m, Full Power** — 109dB • **Input Impedance:** Microphone — 780ohms, balanced; Phono — 51Kohms, unbalanced; Line, 35Kohms, unbalanced • **Connectors:** Microphone Input — Two RCA phono jacks; **Line Input** — 1/4" phone jack; **Line Output** — 1/4" phone jack • **Controls:** Volume, Mic/Phono/Line input selector switch, Speech/Music equalization switch • **Indicator Lights** — Two green LEDs, one on front and one on back panel • **Power Requirements** — 120V AC, 60Hz, 1A

AN 200 — Walnut veneer cabinet. Wt. 16 lbs. Dimensions: 8" x 6-3/4" x 12" **\$449.00**

AN 250 Roadie Version — Vinyl covered plywood, reinforced corners, front and back covers. Wt. 20 lbs. Dimensions: 8-1/2" x 11-1/2" x 12-3/4" **\$469.00**

ANCHOR 206/256 SERIES

Speaker Type — Two 4-1/2" high compliance full range speakers and one 1" diameter HF dome tweeter • **Frequency Response:** Music 100Hz to 20kHz; Speech 150Hz to 20kHz • **Rated Power:** 55 watts RMS • **Maximum SPL at 1m, Full Power** — 109dB • **Input Impedance:** Microphone 780ohms, balanced; Line, 50Kohms, unbalanced • **Controls:** Mic 1 volume, Mic 2 volume, Line volume.

- **Microphone Inputs**—Professional 3-pin audio connector
- **Line Input**—1/4" phone and two RCA phone jacks
- **Line Output**—1/4" phone jack
- **Indicator Lights**—Two green LEDs, one on front and one on back panel

AN 206—Walnut veneer cabinet. Wt. 16 lbs. Dimensions: 8" x 6-3/4" x 12" **\$479.00**

AN 256—Vinyl covered plywood, reinforced corners, front and back covers. Wt. 20 lbs. Dimensions: 8-1/2" x 11-1/2" x 12-3/4" **\$499.00**

ACCESSORIES

ES-002 External Speaker Modification — Installation of external speaker output jack (4 ohm) option available on all 200 Series. Drivers with high impedance are installed in unit. Output protection device and 1/4" phone jack installed. **\$48.00**

SS-750 — Speaker stand assembly including mounting adaptor. **\$79.00**

SB-710 — Speaker bracket for AN 100 and AN 001. **\$36.00**

SB-715 — Speaker bracket for AN 150 and AN 015. **\$36.00**

SB-720 — Speaker bracket for AN 200 and AN 002. **\$39.00**

SB-725 — Speaker bracket for AN 250, AN 256 and AN 025. **\$39.00**



AN 150



AN 206

RM-770 — Single rackmount for AN 100 or AN 001. **\$59.00**

RM-780 — Dual rackmount for AN 100 or AN 001. **\$69.00**

SA-701 — Stand adaptor for AN 100 or AN 150. **\$12.00**

BC-002 — Battery operation capability installation on AN 200, AN 250 or AN 256. **\$65.00**

FV-001 — Front volume control installation available on all models. **\$36.00**

MIC-84 — Dynamic microphone for vocal use with on/off switch; 15' cable female and male connectors, stand adaptor, black finish. **\$89.00**

BP-760 Battery Pack — For use with all Battery Capable units including the Seville lectern. Sealed Lead Acid type. No memory effect. Ten hour running time. Recharges from Anchor unit. **\$379.00**

SEVILLE LECTERN

• **Speaker Type** — Two 4-1/2" high compliance full range speakers and one 1" diameter HF dome tweeter • **Frequency Response:** Music 100Hz to 20kHz • **Rated power:** 55 watts RMS • **Maximum SPL at 1m** • **Full Power, 109dB** • **Input Impedance:** Microphones 780 ohms, balanced; Line 50K ohms, unbalanced • **Controls:** Two Mic volume, Line volume, Tone control. High-Off-Low Light Switch • **Connectors:** Microphone — Professional 3-pin audio connector (female), Line Input — 1/4" phone jack, Line Output, 1/4" phone jack • **Indicator lights** — Two green LEDs, one on front and one on back panel • **Power Requirements** — 120V AC, 60Hz, 2A • **Cabinet** — Oak • **Wt.** 48 lbs; **Dimensions:** 18-1/4" x 20" x 24" • Available as unpowered lectern • **Optional 30" high base** also available for powered or unpowered models

LP-600 — Top and bottom with amplifier less gooseneck and microphone. **\$1489.00**

LT-601 — Top unit only, with amplifier less gooseneck and microphone. **\$1059.00**

LC-614 — Heavy duty padded vinyl cover for Seville lectern. **\$119.00**

LM-618 — One piece condenser microphone with gooseneck—17" length, balanced, low impedance. Black with Black windscreen. (For Seville lectern.) **\$79.00**

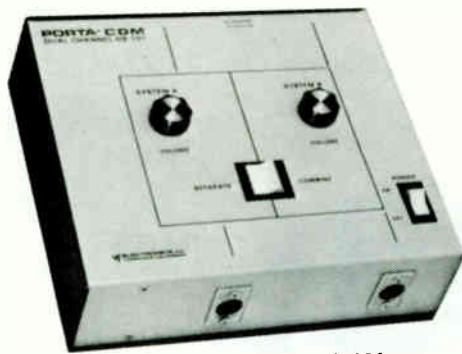
LW-613 — Optional casters for Seville lectern. **\$79.00**

LL-615 — Optional light for Seville lectern, dual intensity. **\$59.00**

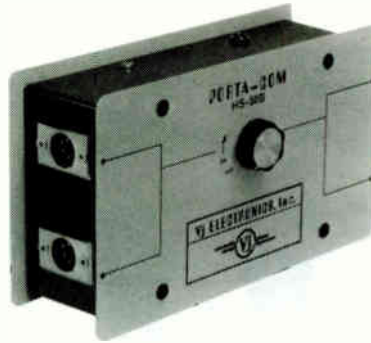


913 W. 223rd St.
Torrance, CA 90502
(213) 533-5984

HEADSET COMMUNICATION SYSTEMS



HS-101



CENTRAL CONTROL



BRANCH BOX

PORTA-COM

COM 2 Headset System

- 1 ea. Central Control Console, Model HS-50B
- 2 ea. Headsets (microphone and dual earphones), Model H-50
- 2 ea. 50 ft. Extension Cables with connectors, Model EX-50PC
- 4 ea. Batteries, "AA" cells
- 1 ea. Carrying Case, Model CC-50

COM 4 Four Headset System

- 1 ea. Central Control Console, Model HS-50B
- 4 ea. Headsets (microphone and dual earphones), Model H-50
- 4 ea. 50 ft. Extension Cables with connectors, Model EX-50PC
- 4 ea. Batteries, "AA" cells
- 1 ea. Carrying Case, Model CC-50

COM 6 Six Headset System

- 1 ea. Central Control Console, Model HS-50B
- 6 ea. Headsets (microphone and dual earphones), Model H-50
- 6 ea. 50 ft. Extension Cables with connectors, Model EX-50PC
- 1 ea. Branch Extension Box, Model BS-30
- 4 ea. Batteries, "AA" cells
- 2 ea. Carrying Cases, Model CC-50

Porta-Com Headset Communication Systems

All Systems feature a Dynamic Difference

- Dynamic Noise-canceling Microphone. The Porta-Com Systems have incredible clarity and abundant volume. This makes the Dynamic Difference in the sound of Porta-Com. The noise-canceling microphone keeps background distractions at a minimum
- Balanced LO-Z System. Balanced Low Impedance microphone lines assure maximum protection against interference from radio signals power lines, etc.
- Single Console Amplifier Design. This feature eliminates the need for individual amplifiers ("body-paks") at each headset, a Porta-Com exclusive that keeps the cost low and maintenance at a minimum
- East Set-Up . . . Easy to Use. 1. Plug in headsets, 2. Turn console on, 3. Talk
- Adjustable Volume. This control provides precise regulation for desired listening level
- Portable and Compact. Designed to travel; each system includes a durable carrying case
- Flexible Utilization. The internal power supply in the Central Console allows system mobility. An AC adapter available for battery conservation
- Reliable. Porta-Com is engineered with solid-state high quality components. They are securely mounted on a custom designed circuit board
- Rugged. The Central Control is housed in a steel enclosure. Headsets are made of lightweight, high impact plastic

- Expandable/Options. Accessories can be added to enlarge systems or extend distances between headsets. Up to ten (10) headsets can be operated without loss of volume. Cable length does not affect system performance. A dual-channel Central Control Console, additional branch boxes, extension cables, extra headsets, heavy duty carrying cases, etc. are available. Optional microphone on-off switch, and/or system call button can be ordered on either dual or single headsets.

COM-2	Porta Com-Two Station (excluding battery)	\$529.00
COM-4	Porta Com-Four Station	759.00
COM-6	Porta Com-Six Station	1049.00

Components

HS-50B	Central Control Console (excl. bat.)	\$269.00
RM-50	Central Control Rackmount Kit, 5-1/4 ft.	42.00
AC-100	AC adaptor for HS-50B	16.00
H-50	Headset-Dual Earpieces & Microphone	86.00
H-50C	Headset-Dual Ear w/call Button	94.00
H-50M	Headset-Dual Ear w/Mic switch	96.00
H-50CM	Headset-Dual Ear w/call & Mic Switch	99.00
H-50S	Headset-Single Earpiece & Microphone	81.00
H-50SC	Headset-Single Ear w/call Button	89.00
H-50SM	Headset-Single Ear w/Mic Switch	92.00
H-50SCM	Headset-Single Ear w/call Button & Mic Switch	99.00
B-20	Branch Extension Box (1 input 2 output)	59.00
B-30	Branch Extension Box (1 input 3 output)	65.00
B-40	Branch Extension Box (1 input 4 output)	69.00
B-50	Branch Extension Box (1 input 5 output)	74.00
EX-6PCF	Adaptor cable w/ female connectors on each end, L 6 ft.	26.00
EX-25PC	Extension Cable with connectors, 25 ft.	29.00
EX-50PC	Extension Cable with connectors, 50 ft.	38.00
EX-75PC	Extension Cable with connectors, 75 ft.	46.00
EX-100PC	Extension Cable with connectors, 100 ft.	54.00
EX-200PC	Extension Cable with connectors, 200 ft.	86.00
EX-500PC	Extension Cable with connectors, 500 ft.	169.00
EX-1000PC	Extension Cable with connectors, 1000 ft.	298.00
C-1338	Bulk Extension Cable without connectors	36/ft.
A-4F	Extension Connector - female	5.90
A-4M	Extension Connector - male	4.90
CC-50	Carrying Case	30.00
WIM	Wall Plate w/1 male connector, water-proof cover and box	38.00
W2M	Wall Plate w/2 male connectors, water-proof cover and box	42.00

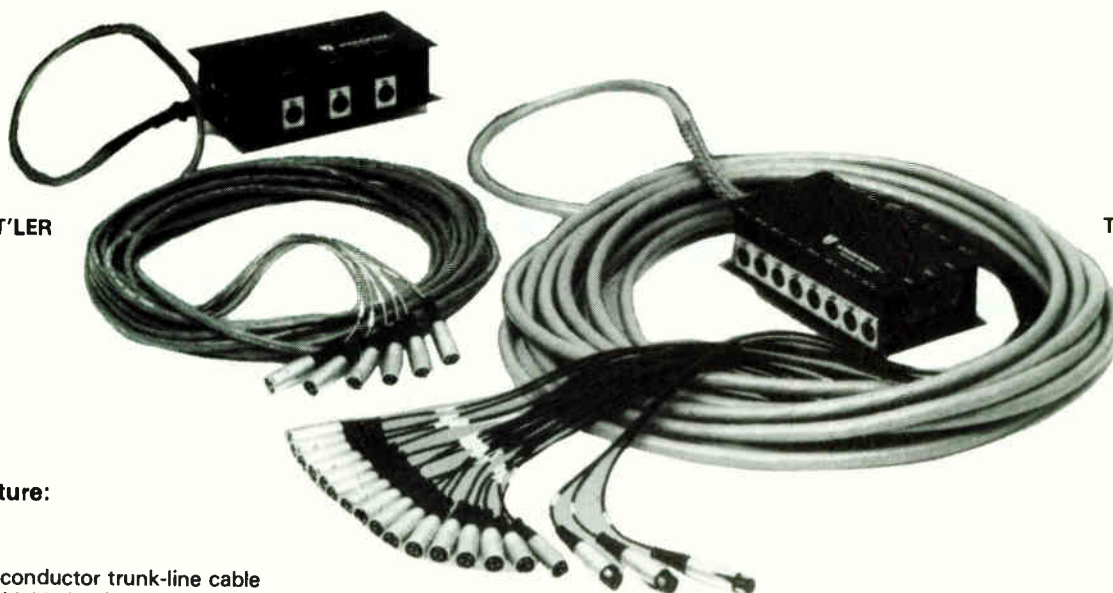


913 W. 223rd St.
Torrance, CA 90502
(213) 533-5984

MICROPHONE MULTIPLE INPUT CABLE

The RAT'LER

The BOA



Snakes Feature:

- Single multi-conductor trunk-line cable
- Individually shielded pairs within cable
- Durable steel input box
- Protective box lid and base overhang
- Side mounted box connectors allow microphone cables to lay flat along floor - no "hump and bend" at input connectors, reduces microphone cable failure - increased reliability!
- Input connectors on box are Neutrik XLR-type female
- Input connectors on spread to mixer are Neutrik XLR-type male
- Monitor line-level send lines (applicable models) have Neutrik XLR-type female connectors at the spread-end, and XLR-type male connectors on the end of the box
- Reinforced cable at point of spread
- Web-woven self gripping steel strain relief at box holds large cables securely
- Professional HI-TECH black finish on box
- Standard 50 ft. length (custom lengths available)
- Single multi-pin connector on detachable models

The RAT'LER . . . 6 inputs/no sends

- Model 6AM-BX (permanent spread and box)
- Model 6AM-DBX (permanent spread, detachable box)
- Model 6DAM-DBX (detachable spread and box)
- Model 6EXM-EXF (extension cable/multi-pin connectors)
- Custom length RAT'LER snakes available.

The COBRA . . . 8 inputs/3 sends

- Model 8AM-BX-3 (permanent spread and box)
- Model 8AM-DBX-3 (permanent spread, detachable box)
- Model 8DAM-DBX-3 (detachable spread and box)
- Model 8EXM-EXF (extension cable/multi-pin connectors)
- Custom length COBRA snakes available

The PYTHON . . . 12 inputs/3 sends

- Model 12AM-BX-3 (permanent spread and box)
- Model 12AM-DBX-3 (permanent spread, detachable box)
- Model 12DAM-DBX-3 (detachable spread and box)
- Model 12EXM-EXF (extension cable/multi-pin connectors)
- Custom length PYTHON snakes available

The BOA . . . 16 inputs/3 sends

- Model 16AM-BX-3 (permanent spread and box)
- Model 16AM-DBX-3 (permanent spread, detachable box)
- Model 16DAM-DBX-3 (detachable spread and box)
- Model 16EXM-EXF (extension cable/multi-pin connectors)
- Custom length BOA snakes available

RAT'LER SNAKES

6AM-6BX-50	50 ft. length	\$319.00
6AM-6DBX-50	50 ft. length	369.00
6DAM-DBX-50	50 ft. length	419.00
6EXM-EXF-50	50 ft. length	180.00
Rat'ler Cable	(for custom length)	1.44 ft.
6AM-BX-100	Snake - 100 ft.	369.00
6AM-DBX-100	Snake - 100 ft.	429.00
6DAM-DBX-100	Snake - 100 ft.	479.00
6EXM-EXF-100	Snake - 100 ft.	249.00

COBRA SNAKES

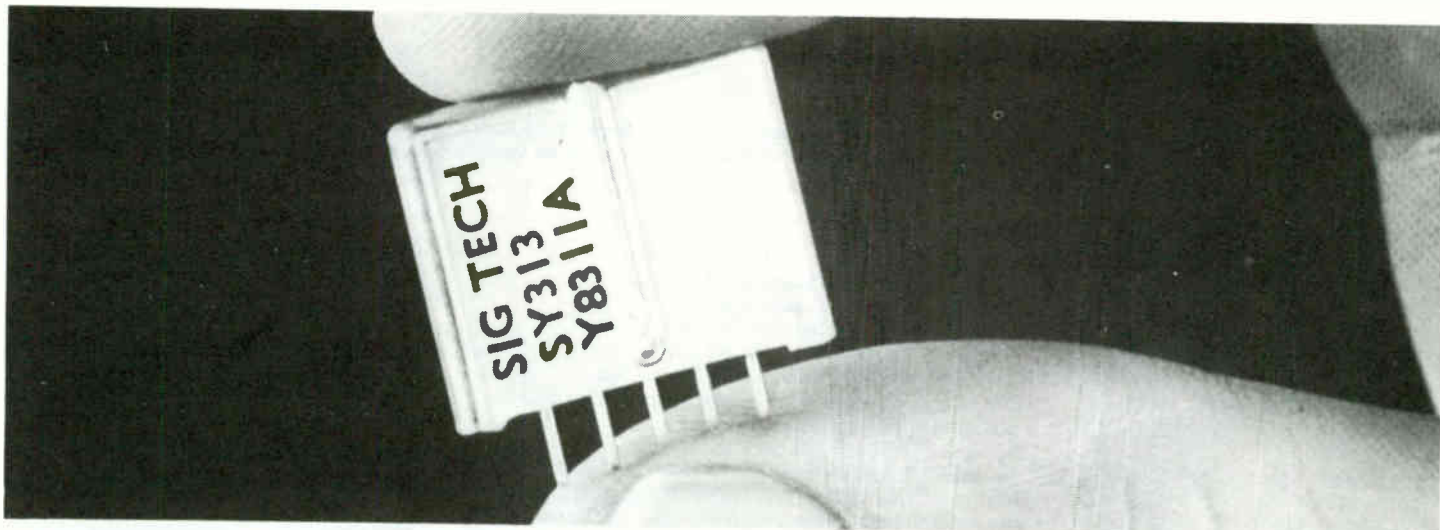
8AM-BX-3-50	Snake - 50 ft.	459.00
8AM-DBX-3-50	Snake - 50 ft.	509.00
8DAM-DBX-3-50	Snake - 50 ft.	589.00
8EXM-EXF-3-50	Snake - 50 ft.	339.00
Cobra Cable	(for custom length)	2.70 ft.
8AM-BX-3-100	Snake - 100 ft.	569.00
8AM-DBX-3-100	Snake - 100 ft.	619.00
8DAM-DBX-3-100	Snake - 100 ft.	699.00
8EXM-EXF-3-100	Snake - 100 ft.	419.00

PYTHON SNAKES

12AM-BX-3-50	Snake - 50 ft.	599.00
12AM-DBX-3-50	Snake - 50 ft.	759.00
12DAM-DBX-3-50	Snake - 50 ft.	979.00
12EXM-EXF-3-50	Snake - 50 ft.	439.00
Python Cable	(for custom length)	3.50 ft.
12AM-BX-3-100	Snake - 100 ft.	739.00
12AM-DBX-3-100	Snake - 100 ft.	919.00
12DAM-DBX-3-100	Snake - 100 ft.	11.59
12EXM-EXF-3-100	Snake - 100 ft.	599.00

BOA SNAKES

16AM-BX-3-50	Snake - 50 ft.	659.00
16AM-DBX-3-50	Snake - 50 ft.	859.00
16DAM-DBX-3-50	Snake - 50 ft.	1119.00
16EXM-EXF-3-50	Snake - 50 ft.	559.00
Boa Cable	(for custom length)	4.40 ft.
16AM-BX-3-100	Snake - 100 ft.	879.00
16AM-DBX-3-100	Snake - 100 ft.	1079.00
16DAM-DBX-3-100	Snake - 100 ft.	1379.00
16EXM-EXF-3-100	Snake - 100 ft.	779.00



SAW devices with mass appeal.

Produced by Signal Technology

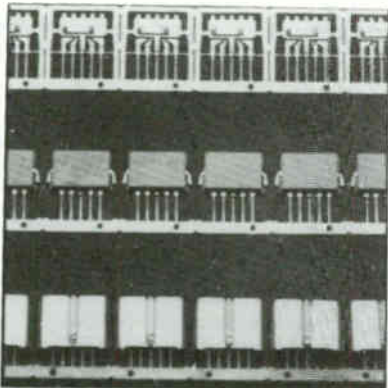
Now you can enjoy all the benefits of acoustic wave technology at the lowest possible price, thanks to the mass production capabilities of Signal Technology Ltd, our sister company in Swindon, England.

Signal Technology is the largest independent manufacturer of commercial SAW devices in the world. Their fully automated production facility includes 100% computer testing that records the performance of every device. And their special assembly equipment produces up to 2,000 finished devices per hour (that's one device every two seconds).

Large Volume, Large Selection

These devices are available in either 5- or 8-lead TO-8 cases or in proven, single-in-line (SIP) metal cases that

provide unequalled electrical and environmental performance. These single-in-line devices can save you important space on your PC boards. They're auto insertable. And they've passed 96 hours of autoclave tests (four times



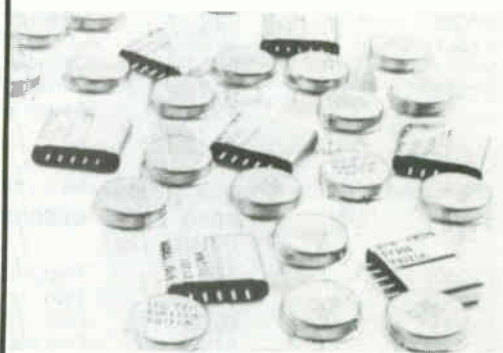
better than the industry's most stringent requirements).

Available from Andersen

These devices are distributed in the U.S. and Canada by Andersen Laboratories. We're a leading manufacturer of SAW devices ourselves (we were the first commercial

producer of sideband filters for CATV). And we're ready to put our acoustic signal processing expertise to work on any application you might have.

We have SAW devices for all international broadcasting standards at common IF frequencies, as well as low band VHF filters. Many devices are available from stock. Just call Don Lowcavage at (203) 242-0761.



**SEE
US AT
BOOTH
1041, NCTA**

ANDERSEN LABORATORIES

Andersen Laboratories, Inc., Dept. 691, 1280 Blue Hills Avenue, Bloomfield, CT 06002 Telephone (203) 242-0761/TWX 710-425-2390
Andersen SAW products are available in the United Kingdom and Europe through our sister company, Signal Technology Ltd., Swindon, Wiltshire, UK

Prices and Specifications Subject to Change Without Notice.

TELEVISION IF FILTERS

The broad range of devices below are designed to perform the necessary filtering in the intermediate frequency stages of monochrome or color television receivers. They exhibit optimized amplitude and phase responses for most of the world's television standards.

TYPE	SYSTEM	FREQ. (MHz)	DESCRIPTION	PACKAGE	STATUS
SW203	M, N	45.75	Standard device with sound shelf	CM5	Production
SY203	M, N	45.75	Same as SW203 in SIL package	SP5	Production
SW204	M, N	45.75	High performance optimized for teletext	CM5	Production
SY204	M, N	45.75	Same as SW204 in SIL package	SP5	Production
SY1204	M, N	45.75	Same as SY204 with integral amplifier added	SP5	Preproduction
SY205	M, N	45.75	Similar to SY204 with additional adjacent sound trap	SP5	Development
SW153A	I	39.5	Standard device with sound shelf	CM5	Production
SY153A	I	39.5	Same as SW153A in SIL package	SP5	Production
SY1153A	I	39.5	Same as SY153A with integral amplifier added	SP5	Preproduction
SY155	I	39.5	High performance device optimized for teletext	SP5	Development
SW165	I	39.5	For parallel sound systems-separate outputs for sound & vision	CM8	Development
SY1173A	B, G	38.9	Equivalent to SY173A with integral amplifier added	SP5	Preproduction
SW174A	B, G	38.9	Device optimized for teletext and stereo sound	CM5	Production
SY174A	B, G	38.9	Same as SW174A but in SIL case	SP5	Production
SY176	B, G	38.9	Similar to SY173A but has optimized pulse & sound performance	SP5	Production
SY177	B, G	38.9	Similar to SY176 but optimized for high impedance drive	SP5	Development
SW185A	B, G	38.9	For parallel sound systems-separate outputs for sound & vision	CM8	Development
SW253	L, L	32.7	French standard vision carrier only device	CM5	Development
SW260	B, G, D, K, I	38.0	Multi standard device for Eastern & Western Europe	CM5	Production
SY260	B, G, D, K, I	38.0	Same as SW260 in SIL case	SP5	Preproduction
SW270	D, K	37.0	Chinese standard IF device	CM5	Production
SW270	D, K	37.0	Same as SW270 in SIL case	SP5	Preproduction
SW453	I	38.9	Performance similar to SY153A but with 38.9 MHz vision carrier	CM5	Production
SY453	I	38.9	Equivalent to SW453 in SIL case	SP5	Production

VESTIGIAL SIDEBAND FILTERS

These devices are used to define the vestigial sideband when used in the output of a double sideband video and sound modulator.

TYPE	SYSTEM	FREQ. (MHz)	DESCRIPTION	PACKAGE	STATUS
SW302	M, N	55.25	Channel 2	CM5	Production
SY302	M, N	55.25	Channel 2 in SIL case	SP5	Production
SW303	M, N	61.25	Channel 3	CM5	Production
SY303	M, N	61.25	Channel 3 in SIL case	SP5	Production
SW304	M, N	67.25	Channel 4	CM5	Production
SY304	M, N	67.25	Channel 4 in SIL case	SP5	Production
SW307	M, N	61.25/67.25	Channels 3 & 4 selectable	CM5	Preproduction
SY307	M, N	61.25/67.25	Channels 3 & 4 selectable in SIL case	SP5	Preproduction
SY313	M, N	61.25	Channel 3 with improved carrier levels	SP5	Production
SY639	B, G	38.9	Commercial version of high performance VSB	SP5	Production
SY610	M, N	45.75	Commercial version of high performance VSB	SP5	Production

OTHER PRODUCTS

The following is only a sample listing of the complete range.

TYPE	FREQ. (MHz)	DESCRIPTION	PACKAGE	STATUS
RE2001	375	Two port resonator	CM5	Preproduction
RE2002	750	Two port resonator	CM5	Preproduction
SY323	65.75	For US Pay TV convertors sound only filter	SP5	Production
SW333	61.25	For US Pay TV convertors IF filter	CM5	Production
SW801	39.5	Multi-application devices, modems, etc.	CM5	Production



ANDERSEN LABORATORIES

Andersen Laboratories, Inc., Dept. 691, 1280 Blue Hills Avenue, Bloomfield, CT 06002 Telephone (203) 242-0761/TWX 710-425-2390
Andersen SAW products are available in the United Kingdom and Europe through our sister company, Signal Technology Ltd., Swindon, Wiltshire, UK

Commercial SAW Filters

The comprehensive range of commercial SAW Devices detailed in this brochure are designed to perform: 1) The necessary filtering in the Intermediate Frequency stages of both monochrome and Color Television Receivers, 2) Required IF filtering for both basic and addressable CATV Convertors and Decoders, TV Tuners and Data Modems, 3) Filtering for video and sound modulator outputs of both basic CATV and addressable Set Top Convertors, and Satellite Receivers.

Our highly sophisticated computer aided design techniques allow cost effective solutions to many special signal processing requirements associated with Datatext, Teletext, and other emerging markets.

Packaging

Most models are now available in either an industry standard TO-8 can or a 5 lead hermetically sealed single-in-line case. Refer to Figures 1 and 2 below for package details. Filter models SW are in TO-8 and SY are in single-in-line (SIL) cases.

Dimensions

inches
(mm)

FIG. 1

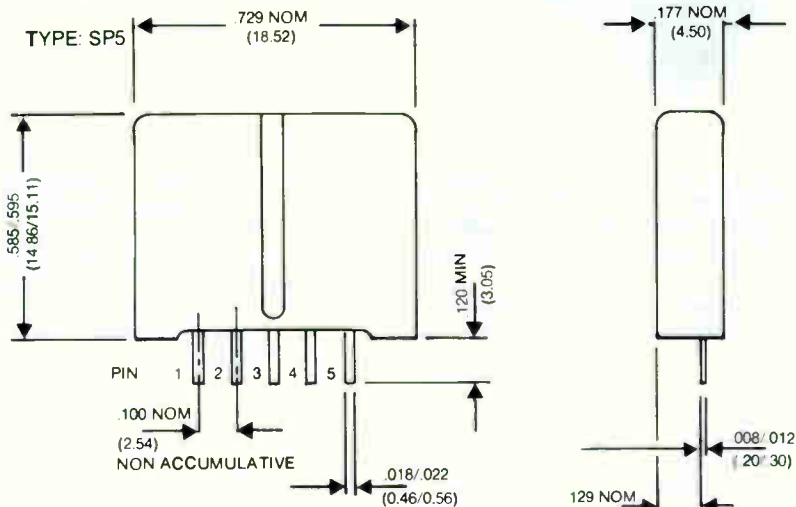
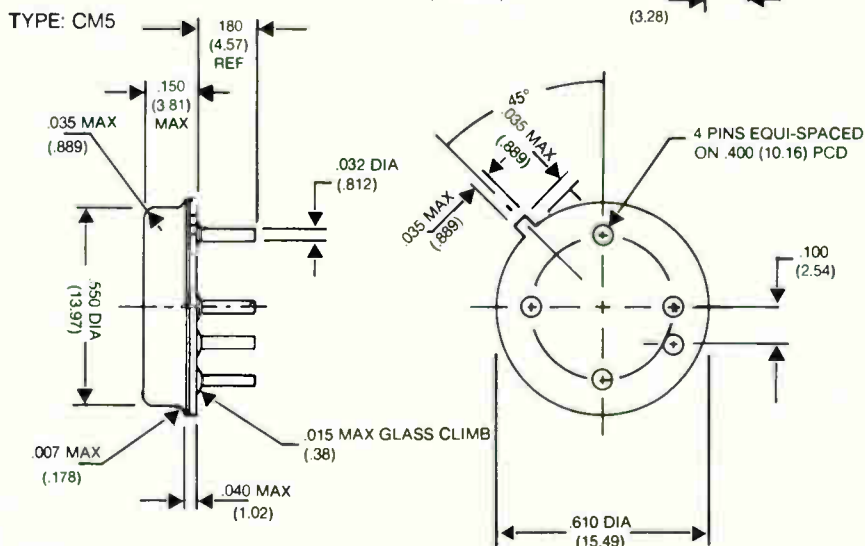


FIG. 2



PACKAGE CODE

SP5-A five lead 0.1 inch pitch single-in-line aluminum package with resin lead seals. See Figure 1

CM5-A five lead TO-8 round metal package with glass lead seals. See Figure 2

CM8-An eight lead 0.1 inch pitch version of CM5.

ANDERSEN LABORATORIES

Andersen Laboratories, Inc., Dept. 691, 1280 Blue Hills Avenue, Bloomfield, CT 06002 Telephone (203) 242-0761 / TWX 710-425-2390

Andersen SAW products are available in the United Kingdom and Europe through our sister company, Signal Technology Ltd., Swindon, Wiltshire, UK

Prices and Specifications Subject to Change Without Notice.

B-85

7700 N. Kendall Drive
 Suite 303
 Miami, FL 33156
 (305) 595-1144 Telex 80-8425



15X9 f/1.5-T1.65

This entirely new lens provides unexcelled illumination because of the extremely high aperture of f/1.5 combined with the outstanding photometric factor of 1.1. This feature is also particularly valuable as it allows the use of the built-in turret operated 2x extended in low light conditions.

Despite the larger lens elements needed to achieve this, the overall weight is only 2.1 kg (4.7 lbs.) including range extender turret and servo zoom control.

The image quality is particularly high at infinity as well as at close working distances, to match the improved performance of 2/3" tube cameras.

The lens is weather resistant with shower-proof optical and servo units. Performance and features of the lens (such as built-in 2x range extender turret—choice of pistol grip or rocker-switch zoom control—all weather construction etc...) responds completely to end user needs.

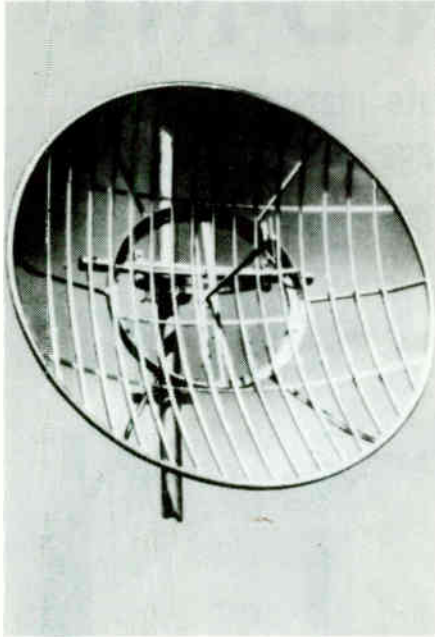
Price Upon Request

specifications	15x9		15x9 with retrozoom		15x9 with tele-attachment	
		with 2x extender		with 2x extender		with 2x extender
focal length	9-135 mm	18-270 mm	7.2-108 mm	14.5-216 mm	64-225 mm (note 1)	30-450 mm
zoom range	15x	15x	15x	15x	3.5x (note 1)	15x
maximum aperture (see curves below)	f/1.5-f/1.9 T 1.65-T 2.1	f/3-f/3.8 T 3.3-T 4.2	f/1.5-f/1.9 T 1.7-T 2.2	f/3-f/3.8 T 3.4-T 4.3	f/1.9 T 2.2 (note 2)	f/3-f/3.8 T 3.4-T 4.3
image diagonal	11 mm	11 mm	11 mm	11 mm	11 mm	11 mm
minimum focusing distance	0.80 m 31"	0.80 m 31"	0.50 m 20"	0.50 m 20"	2 m 6 1/2'	2 m 6 1/2'
minimum focusing distance with close-up lens	0.40 m 16"	0.40 m 16"				
horizontal field angle	51°-33/4°	26 1/2°-2°	60 3/4°-43/4°	32 3/4°-21 1/4°	7 1/2°-21 4°	16 3/4°-1°
vertical field angle	39°-23/4°	20°-1 1/2°	47 1/2°-31 1/2°	24 3/4°-13/4°	5 3/4°-1 3/4°	12 1/2°-3/4°
smallest object to fill the screen	36x48 mm 1.4x1.9"	18x24 mm .7x1"	29x38 mm 1.1x1.5"	15x19 mm .6x.8"	59x77 mm 2.3x3"	29x38 mm 1.1x1.5"
smallest object to fill the screen with close-up	18x24 mm .7x1"	9x12 mm .4x.5"				
weight (includes servo zoom, rocker switch control, servo iris, 2x range extender and lens mount)	2.1 kg 4.7 lbs	2.1 kg 4.7 lbs	3.1 kg 6.8 lbs	3.1 kg 6.8 lbs	3.1 kg 6.8 lbs	3.1 kg 6.8 lbs

ANIXTER-MARK ANIXTER COMMUNICATIONS

P.O. Box 1548
2180 S. Wolf Road
Des Plaines, IL 60018 (312) 298-9420
(800) 323-5273 Telex 28-2557 ANIXMARK

MICROWAVE GRID PARABOLIC ANTENNAS



Anixter-Mark offers a variety of sizes of Heli-Arc welded aluminum Multi-Element Grid Parabolas for point-to-point relay operation in the 890-960 megahertz frequency range. The patented (U.S. No. 2,850,735; Canada No. 545,296) grid construction is lightweight, yet extremely strong. One of the outstanding advantages of the grid antenna is it has wind loading characteristics of only 25 to 40% of comparable size solid parabolas.

Heated grid parabolas come with completely installed de-icing equipment. The lead jacketed heater cable is securely mounted to the back side of each grid element and terminated in a weatherproof cast aluminum enclosure. The thermostat is preset to activate when the temperature drops to the ice forming range. De-icing power is applied only between 25 and 35 degrees Fahrenheit.

Standard input termination of all parabolas in the 890-960 MHz range is 7/8 inch EIA swivel flange. Type "N" female termination non-pressurized feed is available on all models.

VSWR is 1.3:1 or better on all antennas listed. Low VSWR to 1.06:1 is also available (see specs). When ordering, please specify: size, exact operating frequency, pressurized or non-pressurized, heated or non-heated.

SPECIFICATIONS 890 - 960 MHz

Diameter	Model Number	Gain-dBi Midband	Half Power B/W	F/B Ratio	Max VSWR		Windthrust 100 MPH	
					STD	LOW	Grid vs. Solid***	
4'	P-948GR	18.9	19.8°	23	1.3	*	110	480
6'	P-972GR	22.0	11.0°	28	1.3	*	250	1070
8'	P-996GR	25.0	9.3°	29	1.3	*	500	2200
10'	P-9120GR	27.0	8.0°	30	1.3	*	700	2990
12'	P-9144GR	28.5	6.1	31	1.3	*	950	3900
15'	P-9180GR	30.0	5.2°	32	1.3	*	1200	6600

890 - 960 MHz PRESSURIZED*

Mount to 1.9" - 3.5"

Mount to 4" IPS

4'	P-948GR-M1	\$ 697.00	P-948GR-M2	\$ 855.00
6'	P-972GR-M1	960.00	P-972GR-M2	1059.00
8'	P-996GR-M1	1567.00	P-996GR-M2	1688.00
10'	P-9120GR-M1	2257.00	P-9120GR-M2	2412.00
12'			P-9144GR-M2	4121.00
15'			P-9180GR-M2	9960.00

890 - 960 MHz NON-PRESSURIZED*

Mount to 1.9" - 3.5"

Mount to 4" IPS

4'	P-948GRN-M1	\$ 697.00	P-948GRN-M2	\$ 855.00
6'	P-972GRN-M1	960.00	P-972GRN-M2	1059.00
8'	P-996GRN-M1	1567.00	P-996GRN-M2	1688.00
10'	P-9120GRN-M1	2257.00	P-9120GRN-M2	2412.00
12'			P-9144GRN-M2	4121.00
15'			P-9180GRN-M2	9960.00

*Low VSWR Application — \$110 additional.

For Heated Grid Antennas Add "/HC" After Model Number. Add The Following To Price:

Under 1000 MHz Over 1000 MHz

4'	\$ 658.00	\$ 758.00
6'	774.00	963.00
8'	1068.00	1484.00
10'	1132.00	1647.00
12'	1437.00	2395.00
15'	1863.00	3253.00

Connectors:

Pressurized: 7/8" EIA

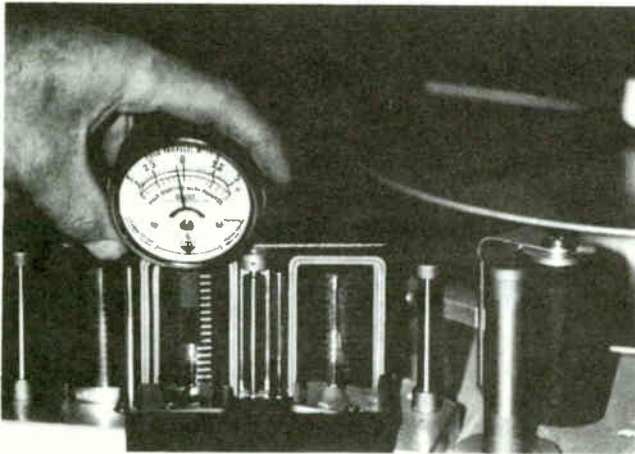
Non-Pressurized: Type "N" Female

ANNIS

Protect valuable recorded tapes with an...

Audiophile HAN-D-KIT

Provides everything needed to measure and eliminate magnetism in recorder components before recorded tapes are damaged permanently



1 Check Magnetism in Recorder Components

The Annis Pocket Magnetometer quickly and accurately measures residual magnetism levels in recorder heads, drive capstans or tape guides. Indicates when it's time to demagnetize and lets you know when it's again safe to use the recorder.

2 Demagnetize Components When Necessary

Whenever the Magnetometer indicates any appreciable level of magnetism in a tape transport component, you can demagnetize it effectively with the powerful Annis Han-D-Mag before it causes permanent damage to recorded tapes.

Valuable audio and video tapes can be damaged when played on equipment that is not thoroughly and regularly demagnetized. Magnetism can easily build up in capstans, tape guides or recorder heads to a point where it will degrade the magnetically recorded signal on tapes passing over them. Tape damage is first apparent as a loss of recorded high frequencies and a progressive increase in background noise each time they are played on magnetized equipment.

Until recently, there has been no easy way to tell when demagnetizing was needed, and most Demagnetizers on the market were far too weak to be effective, particularly on offending hardened steel guides or capstans, etc. Now, with the introduction of the Audiophile Han-D-Kit, both measurement and correction problems can be solved easily at modest cost.

Here in one convenient package is everything needed to measure magnetic levels quickly, along with a handy, powerful unit to demagnetize components completely before they can spoil valuable tapes.

THE AUDIOPHILE HAN-D-KIT CONTAINS

ANNIS POCKET MAGNETOMETER

Measures level of magnetism in components. Calibrated to read directly in gauss. Model 20/B5 shown.

TEST STRIPS

One of these sensor strips is magnetically soft and the other magnetically hard. For experiments and testing your demagnetizing technique.

CLIP-ON EXTENSION PROBE

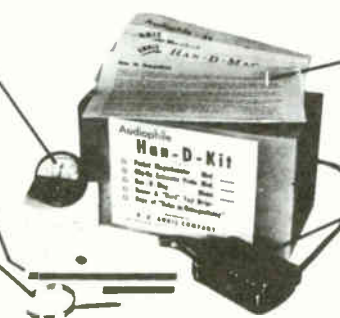
Extension probe is 1 3/4" long. Can be formed with fingers. Improves checking of magnetism in hard to reach components.

"NOTES ON DEMAGNETIZING" ETC.

Explains causes of magnetism, with particular reference to tape recorders. How to measure it accurately and how to eliminate it. Interesting experiments also included.

ANNIS AUDIOPHILE HAN-D-MAG

A rugged, dual-use Demagnetizer having a powerful, sine wave demagnetizing field strength of over 350 oersted 1/4" beyond the tip of the 2 1/4" long probe.



Standard Han-D-Kit Model K20/B5

Includes all items shown above. Model 20 Magnetometer has polarity indicating center zero scale, calibrated to read 5-0-5 gauss.

Deluxe Han-D-Kit Model K25/S5

Same as above except for the Magnetometer. This kit includes the larger, more rugged Model 25 jewelled Magnetometer with ten times the calibration stability of standard Model 20.

	Shipping Wt.	Price
Standard Han-D-Kit Model K20 / B5 For operation on 115 V. 50 / 60 Hz.	2 Lbs.	\$49.00
Deluxe Han-D-Kit Model K25 / S5 For operation on 115 V. 50 / 60 Hz.	2 1/4 Lbs.	83.00

SPECIAL SAVINGS ON PREPAID ORDERS: When money order or check accompanies your order, add \$1.00 for handling. Surface delivery to your door is included Via UPS or Parcel Post in USA. Air shipment, or export, is extra.

R. B. ANNIS COMPANY • 1101 N. Delaware St. • Indianapolis, Ind. 46202 • Ph. (317) 637-9282



One Controls Drive
Shelton, CT 06484
(203) 929-1100

BATTERIES/CHARGERS PORTABLE LIGHTING

SNAP-ON® NICAD BATTERIES

Anton/Bauer Snap-On batteries are the original equipment power source for virtually every professional video camera manufacturer. Features quick change design for instant camera mounting without cables or connectors. Premium fast charge cells and exclusive all-cell sensing provide 100% reliable charging. Every battery is individually computer tested and shipped with a print-out. Accessories are available for mounting Snap-On batteries on belts, VTRs, monitors, and other portable equipment.

Pro Pac® 14 4 AH, 14.4 Volt Snap-On NiCad Battery

Fast or slow charge. Wgt. 4-3/4 lbs. Typical Run Time: 2 hours at 25 watts, 3 hours at 18 watts, 4 hours at 13 watts. **\$495.00**

Pro Pac 13 4 AH, 13.2 Volt Snap-On NiCad Battery

Fast or slow charge. Wgt. 4-1/4 lbs. Typical Run Time: 2 hours at 24 watts, 3 hours at 16 watts, 4 hours at 12 watts. **\$475.00**



PRO PAC 14



PRO PAC 90

PRO PAC 90 PROFESSIONAL VTR BATTERY

The Anton/Bauer Pro Pac 90 is a premium professional direct substitute for the Sony BP-90 type VTR battery. Unique features include: unique circuit board design, special fast charge premium cells, individual cell sensing system for foolproof charging, special Triconn™ 3-conductor connector (eliminates need for separate fast charge cable), accessible fuse with spare fuse, and heavy duty molded housing. Can be charged directly with all Lifesaver Chargers.

Pro Pac 90 4 AH, 12 Volt NiCad VTR Battery

Fast or slow charge. Wgt. 3-1/2 lbs. Typical Run Time: More than 3 hours at 14 watts. **\$330.00**



30/13 BATTERY BELT

UNIVERSAL NICAD BATTERY BELT MODEL 30/13

30/13 Battery Belt

30 volt, 4 AH or 13 volt, 8 AH switchable. Built-in 115/230 volt overnight charger. Can be one hour fast charged. 10 Amp circuit breaker. Waist size: 32" to 48" adjustable. Wgt. 11-1/2 lbs. **\$795.00**

CA-30 Fast Charge Cable

Connects 30/13 belt to Lifesaver 1 Hour Fast Charger (LSFC) **\$48.00**

NICAD LIFESAVER® CHARGERS

The first 100% safe charging systems. Lifesaver circuit safely maintains fully charged battery indefinitely. All Lifesaver chargers feature: 3 automatic charge rates; logic controlled charge monitor circuit; battery coupled cell sensing system. Integral Anton/Bauer Snap-On bracket directly accepts Snap-On type batteries, and special Triconn 3 conductor connector accepts Pro Pac 90 and other BP-90 type VTR batteries.

LSFC Lifesaver Fast Charger

Single position, one hour charger. Accepts all Anton/Bauer 4 AH Snap-On, Pro Pac 90 and Pro Pac 60 NiCad batteries, and all Anton/Bauer battery belts. Size: 7-1/2" x 6-1/4" x 4". Wgt. 3 lbs. 115/230V, 50/60Hz. **\$495.00**

LSQC Lifesaver 8 Hour Single

Single position, 8 hour quick charger. Accepts all Anton/Bauer 4 AH Snap-On, Pro Pac 90 and Pro Pac 60 NiCad batteries. Charges other brand BP-90 type batteries at the overnight rate. Size: 6-1/2" x 4-1/8" x 3-5/8". Wgt. 4-3/4 lbs. 115/230V, 50/60Hz. **\$235.00**

LSQ4 Lifesaver 8 Hour Quad

Four position 8 hour quick charger. Independent charge circuits and LED indicators for each position. Accepts any combination of Anton/Bauer 4 AH Snap-On and Pro Pac 90 NiCad batteries. Charges other brand BP-90 type batteries at overnight rate. Size: 10-1/4" x 3-5/8" x 7". Wgt. 3-1/4 lbs. 115/230V, 50/60Hz. **\$895.00**

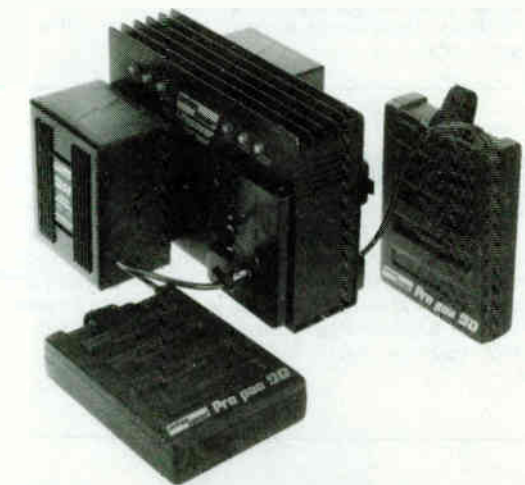
PORTABLE LIGHTING

New UltraLight Modular Lighting System

UltraLights feature universal bulb selection from 12-120 volts in a full range of wattages and beam angles with a variety of modular accessories.

Single **\$195.00**
Dual **350.00**

Anton/Bauer offers a complete line of NiCad and Silver Zinc batteries and state-of-the-art charging systems. In addition to the products listed here, Anton/Bauer designs and manufactures AC power supplies, specialty chargers, diagnostic equipment, accessories, and MicroControl Camera Control systems which represent the highest quality and most versatile products of their kind available to video professionals.



LIFESAVER 8 HOUR QUAD



ULTRALIGHT SINGLE



ULTRALIGHT DUAL

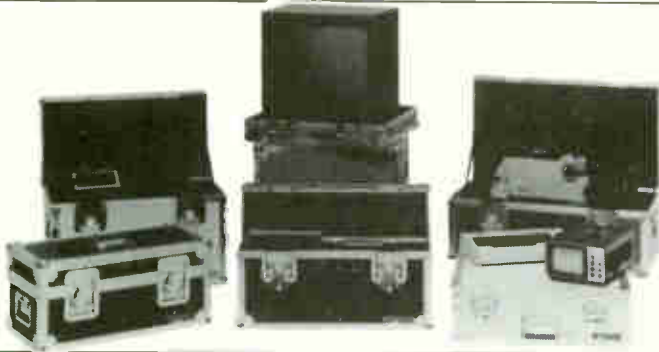
Prices and Specifications Subject to Change Without Notice.

Transit Cases from ANVIL®

ANVIL® A.T.A. Cases offer the ultimate in protection. They conform to the Air Transport Association specification 300, Category 1 standards for reusable shipping containers. ANVIL® A.T.A. Cases must withstand the rigors of more than 100 round-trip transittings, on both surface vehicles and aircraft, to qualify for this rating.

In addition to custom-designed models for individual requirements, ANVIL® maintains a design library containing literally thousands of stock Case models which can be shipped as is, or modified to meet your requirements, and shipped without delay.

Case interiors are custom-designed to provide maximum shock absorption and vibration resistance. Soft, resilient unicellular polyfoam is sculptured to fit around your equipment like a glove. Quality control is assured through numerous inspections during and at the conclusion of the manufacturing process.



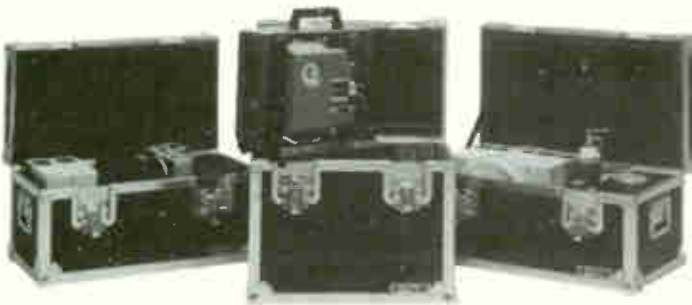
A.T.A. VIDEO CASES

We can build a strong Case around any broadcast, industrial or educational video product on the market. Just give us the model number of your camera, recorder, monitor or any other component or combination—and we'll give you a Case that will make sure your video components are ready to get the shot when you are, every time!



ANVIL® A.T.A. COMPUTER CASES

Now you can ship individual computer components, or entire mini or micro computer systems, anywhere in the world without the slightest bit of worry. Our new A.T.A. Computer Case catalog contains models for hundreds of different components and system combinations. And mixing components from different hardware manufacturers is as easy as giving us the brand names and model numbers. We'll recommend the Case or Cases required to provide the highest degree of protection possible. And we can custom-design your Cases to provide room for software and peripherals, too.



A.T.A. AUDIO-VISUAL CASES

Want your A/V shows to come off without a hitch, time after time? Pack your gear in ANVIL® Cases—and relax! Our catalog includes models for motion, slide, strip and overhead projectors, as well as multi-image devices and dissolve units. And we've got your sound system covered too! FORGE II® carrying Cases are now available for selected film-based items.



ANVIL® E.I.A. RACKMOUNT CASES

Standard 19 inch rackmount components can be safely and easily moved to your location—shoot ready! ANVIL® offers several variations on the rackmount design; front and rear removeable lids with or without shock isolation option, pull-over-lid design (case within a case design), or the popular mixer/rack arrangement providing rackmount space horizontally opposed to standard vertical rack space. Whichever way you go, ANVIL® has the rack case to make for the fastest set-up and strike.

**ANVIL CASES, INC., 4128 Temple City Blvd. • Rosemead, CA 91770
(818) 575-8614 • TWX: 910-587-4935**

APHEX SYSTEMS LTD.

13340 Saticoy St.
North Hollywood, CA 91605
(818) 765-2212 TWX 910-321-5762



EQF-2 \$449.00

The EQF-2 combines a 3-band sweep equalizer with a sweep Hi and Lo pass filter section. The EQ has switchable peak/shelf on the Hi and Lo sections, and reciprocal 12 dB of cut and boost on all sections. The filters are second order Butterworth and can be switched separately from the EQ section.

SPECIFICATIONS

FREQ.

RESPONSE: $\pm 1\text{dB}$ 20 Hz - 20 kHz all sections in

THD & IMD: Below 0.1% at max. I/O

NOISE: -123 dB below max. I/O

FILTERS: Hi pass 20-500 Hz
Lo pass 1-20 kHz

EQ LOW: 25 - 500 Hz

MID: 250 - 5kHz

HI: 1 - 20kHz

MAX. I/O: +20 dBm (+30 dBm with opt.

Jensen xtrmr)

SIZE: 1-1/2" x 5-1/4" x 6" (industry standard)

WEIGHT: 2 lbs.



CX-1 \$449.00

The CX-1 is a very versatile module combining a "soft knee" compressor/limiter with a switchable expander/gate. The CX-1 uses the proprietary Aphex VCA chip to provide an extremely clean overall sound. The expander is adjustable from 0 to 100 dB of expansion (gating) and is the only noise gate on the market that can be guaranteed not to click or pop. The unit features a multi-functional LED display that indicates input, output, compression or expansion levels.

SPECIFICATIONS

BANDWIDTH: $\pm 1\text{dB}$ 20 - 20 KHz all sections

THD, IMD: Less than 0.2% at max I/O

NOISE: -85 dBm

MAX I/O: +20 dBm (+30 dBm with optional Jensen xtrmr)

SIZE: 1-1/2" x 5-1/4" x 6" (industry standard)

WEIGHT: 2 lbs.



2521 - OPERATIONAL MODULE \$35.00 (Singles)

The 2521 Operational Module is a high speed, high output, short circuit proof buffer that takes on the characteristics of the IC that is plugged into it. It is current limited and can put out a full watt of power into a 62 ohm load.

FEATURES

100% Field-repairable

100% short circuit proof

Greatly improved overload characteristics

Built-in power decoupling

Socketed IC eliminates obsolescence

Extremely low noise current

SPECIFICATIONS

BANDWIDTH: 4MHz
THD (at clipping -1 dB): 0.02%
IMD: 0.02%
GAIN: 50,000 Min.
SLEW RATE: >10 v/ μ Sec.
OUTPUT NOISE: -113 dBm
MAXIMUM INPUT: 30 Volts P-P
MAXIMUM POWER OUTPUT: 1 Watt (+30 dBm)
MAXIMUM VOLTS OUTPUT: Supply - 4 volts P-P
MAX. SUPPLY VOLTAGE: ± 18 volts (with LF 351)

High voltage: high output versions are available
Consult the factory for details.



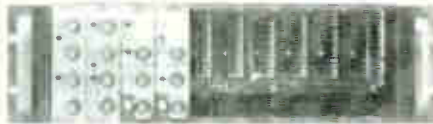
(Preliminary Data)

MTA 401 SUPERMATCHED QUAD ARRAY \$5.00 (100's)

The MTA 401 is a tightly matched, junction isolated NPN transistor array with an order of magnitude improvement over conventional discrete and monolithic arrays. Most operating parameters approach theoretical limits making the MTA 401 an extremely attractive package for countless high quality audio applications such as mic, tape head and phono pre-amps, precision OTA's and multipliers as well as many instrumentation uses.

SPECIFICATIONS

NOISE: 1.2nV/ $\sqrt{\text{Hz}}$ @ 2mA Ic
BE MATCHING: to 25 μ V
FE MATCHING: 1%



R-1 \$195.00

The R-1 holds 10 Aphex modules and provides barrier strip access to all inputs and outputs. Power and ground are bussed.



PS-3 \$275.00

The PS-3 is a $\pm 16\text{V}$ @ 3.4A regulated supply with OVP that will power two R-1 racks.

VCA PRODUCTS



1537A VCA IC new low price! \$6.00 (100's)

The 1537A is the only monolithic Class A voltage-controlled attenuator on the market today. Its patented design features extremely low distortion, low noise, high stability and wide dynamic range. It can provide more than 100dB of attenuation at +20 dBm. Its high slew rate gives low T.I.M. and makes it useable from DC to 50 MHz.

SPECIFICATIONS

BANDWIDTH: DC to 50 MHz
THD: 0.004% TYP
IMD: 0.03% TYP
NOISE: -90 dBv worst case
MAX. ATTENUATION: >100 dB. DC - 200 kHz

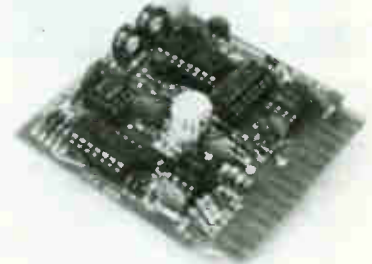
VCA 500A \$89.00 (singles)

The new VCA 500 A utilizes a 1537A VCA IC to significantly improve the performance and overall sound quality of the MC JH-500 series console. Conversion takes only a few minutes per channel with plug-in convenience.



4B-1 \$349.00

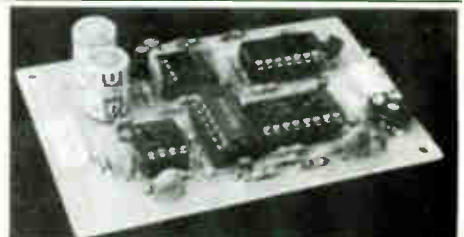
Self-powered, the 4B-1 is for the mobile engineer. It holds 4 Aphex modules and has a built-in patch board on the rear with 1/4" and T-T size jacks.



VCA 505 \$89.00 (singles)

The VCA 505 is an expanded version of the highly-acclaimed 1537A Voltage Controlled Attenuator. It utilizes a 15-pin card edge mount package for easy installation, has multiple buffered control inputs for maximum versatility, and requires no additional circuitry.

SIZE: 2.75" high x 2.85" deep x .72" wide

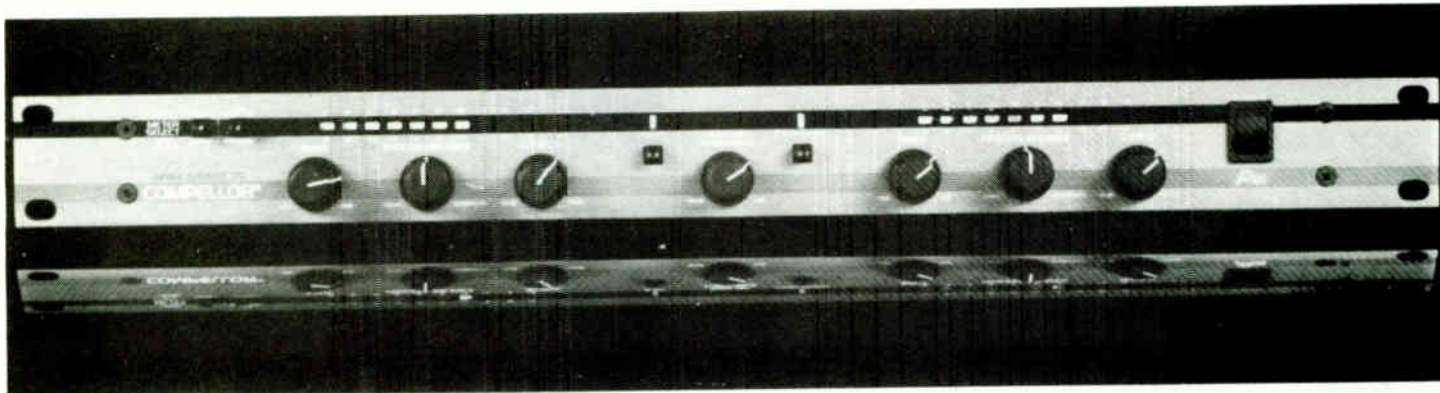


Prices and Specifications Subject to Change Without Notice.

APHEX SYSTEMS LTD.

13340 Saticoy St.
North Hollywood, CA 91605
(818) 765-2212 TWX 910-321-5762

AUDIO PROCESSORS



COMPELLOR™ COMPRESSOR/LEVELER/ PEAK LIMITER \$1195.00

Presenting the COMPELLOR™, a revolutionary audio processor. It delivers intelligent compression, leveling, peak limiting simultaneously! The COMPELLOR™ control circuits are actually analog computers that constantly monitor the input, adapt and control a single VCA per channel for minimal signal path. Operating

controls are kept to a minimum, for the COMPELLOR™ intelligently varies all the parameters for you. All you need do is set input level to control the amount of processing, adjust output level, and set the balance between compression and leveling. That's it. The COMPELLOR™ will then provide complete dynamic control—smooth, inaudible compression, increased loudness, freedom from constant gain riding, and the desired density—all

automatically. Its unique circuitry actually enhances transient qualities, making even heavy processing undetectable.

This smart, versatile, cost effective processor is equally at home in broadcast pre-processing, microphone control, audio production, tape duplicating, live sound and film dubbing; producing the "sound" audio engineers have always sought but seldom found.

THE APHEX AURAL EXCITER™

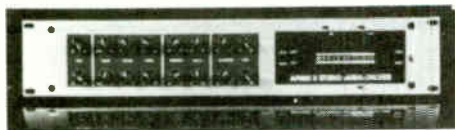
The remarkable Aphex Aural Exciter is a unique proprietary audio processing device that makes use of highly advanced psychoacoustic principals to effectively restore and enhance audio presence, brightness and intelligibility. The patented psychoacoustic process creates the perception of an increase in mid and high frequency energy, with *NO* actual increase in power or level.

The Aural Exciter can produce dramatically improved clarity, dimension and character in any sound system or application. It can also reduce distortion in P.A. and sound reinforcement applications by providing increased penetration and audibility at reduced power levels. The device can be added to virtually any new or existing system with no danger of overload-

ing other components or triggering compressors or limiters.

The Aural Exciter is a single-ended process, requiring no decoder. Once encoded, copies made from a processed tape sound every bit as good as the original.

The Aphex Aural Exciter is available in three models, each is specially designed for a specific application.



APHEX II-S \$2950.00

The Studio Aural Exciter is engineered for the sophisticated recording and production studio, as well as advanced sound reinforcement applications. In the studio, the Aural Exciter effectively restores the presence and clarity which the recording process removes, reviving that bright, unmistakable "live" quality. It can also make certain segments "stand out" without actually being louder. Used typically in stereo mixdown situations, this latest version of the Aural Exciter features increased flexibility so it's ideal for virtually all types of program material, from the hardest rock and roll, to the subtlest movie dialogue and sound effects.

The Aural Exciter is also well suited to stage and concert use. It can make any P.A. system sound much cleaner, brighter and intelligible without adding any level or feedback to the house or monitor system. It is particularly effective in filling acoustic spaces to eliminate dead spots. The device cleans up sound in overly reverberant halls and makes speaker location much less critical.



APHEX II-B \$2950.00

The Broadcast Aural Exciter has all the remarkable features and capabilities of the Studio unit, plus complete R.F. shielding and safety bypass relays in the event of power failure. Designed specifically for on-air use, this unit provides AM stations with the clarity and brightness of FM, while restoring to FM the naturalness and openness normally lost due to processing.

The most impressive aspect of the Aphex Broadcast Aural Exciter is the fact that the lower the quality of the playback system, the better the comparative benefit derived. The sound of your broadcast will satisfy the most demanding audiophile, and at the same time grab the attention of the rush-hour commuter.



APHEX AURAL EXCITER TYPE B \$495.00

The Aural Exciter Type B is engineered for less demanding situations. It utilizes the same psychoacoustic principles to make Aural Excitement available to small clubs, studios, halls, restaurants, musicians, tape duplicators and sound contractors operating on a more modest budget. Retaining the most important features of its bigger brothers, the Aural Exciter Type B is a small, lightweight package with extensive capabilities limited only by the user's imagination.

309 Commerce Drive
Fort Collins, CO 80524
(303) 224-2248



150SC



500SC

150 SC - Six Channel Console

FEATURES

- 6 Channels
- 18 Inputs
- Rotary Faders
- VCA Controlled

The 2000SC has proven to be so popular that we are now bringing you its little brother. The 150SC is identical to the 2000 except for its smaller size. The 150SC can handle the small jobs, that the 2000 is too large for.

The 150 is the same rugged and reliable design as the 2000SC. Rugged pots and switches assure a long troublefree life. Solid oak and 1/8" aluminum panels provide both strength and beauty.

Electronically the 150SC is without peer. It is totally DC controlled.

SPECIFICATIONS

Physical

Dimensions: 30"W x 17"D x 8"H Console

Weight: 35 lbs. approx.

Finish: aluminum sheet metal, screened enamel, oak sides and armrest

Faders: Rotary

Switches: Schadow by ITT, Mon.-100,000 Op. Interlock 50,000 Op.

Electrical

Frequency Response: ± 1 dB over 20Hz to 20,000Hz

Hum and Noise: one channel on, 70dB below +8dBm, -50dBm input

Total Harmonic Distortion: mic in to Program out, .02% typical

Stereo Tracking: 1dB over a 40dB range

Crosstalk: normal levels - Below 70dB at 1kHz

DC Power Supply: ± 15 V 3A regulated, modular

AC Power: 110 VAC, 210 VAC (optional)

150SC-6M Mono Model\$1895.00

150SC-6S Stereo Model1995.00

500SC-Eight Channel Console

FEATURES

- 8 Channels
- 22 Balanced inputs
- Balanced program and audition outputs
- VCA level controls—stereo tracking to within 1dB
- DC controlled audio—no audio on pots or switches
- NE5532 Integrated circuits
- External regulated power supply
- Solid oak end panels and arm rest for lasting beauty
- VU meters monitor program and audition simultaneously
- Plug in PC boards for ease of service
- Motherboard construction eliminates unreliable wiring

The 500SC is a rugged and versatile console designed for "On The Air", production, or portable broadcast applications. Plug in construction enables the engineer to replace defective PC boards quickly and easily. DC control means there is no audio on any of the pots or the Program Audition select switches. This dramatically improves pot and switch life. All switching functions are silent and extremely reliable. The console is constructed of heavy aluminum panels with solid hardwood oak for the sides and armrest. The entire console front panel swings up and back for total access to the interior of the console. All audio electronics is on plug in PC boards that plug into a motherboard. Interior terminal strips eliminate all external wiring. An external fully regulated power supply module accompanies the console. By placing the power supply outside the console, 60 cycle hum and noise is not coupled by the transformer into the audio electronics.

SPECIFICATIONS

Physical

Dimensions: 30"W x 17"D x 7"H

Weight: 25 lbs. approx.

Finish: aluminum sheet metal, screened enamel, solid oak sides

Faders: Allen Bradley Mod Pots

Switches: Schadow by ITT, Mon.-100,000 Op. Interlock 50,000 Op.

Input/Output Connectors: Electrovert screw terminal strips, internal

Electrical

Frequency Response: +.5dB over 20Hz to 20kHz

Frequency Response: +5dB over 20Hz to 20kHz

Hum and Noise: one channel on, 70dB below 8dBm, -50dBm input

Total Harmonic Distortion: mic in to Program out, .1% at 18dBm

Stereo Tracking: +1dB over a 40dB range

Crosstalk: normal levels, (monitor, cue, phones off) Program to

Audition and reverse. Below 70dB at 1kHz

DC Power Supply: +15V1A regulated, +15V3A regulated. External,

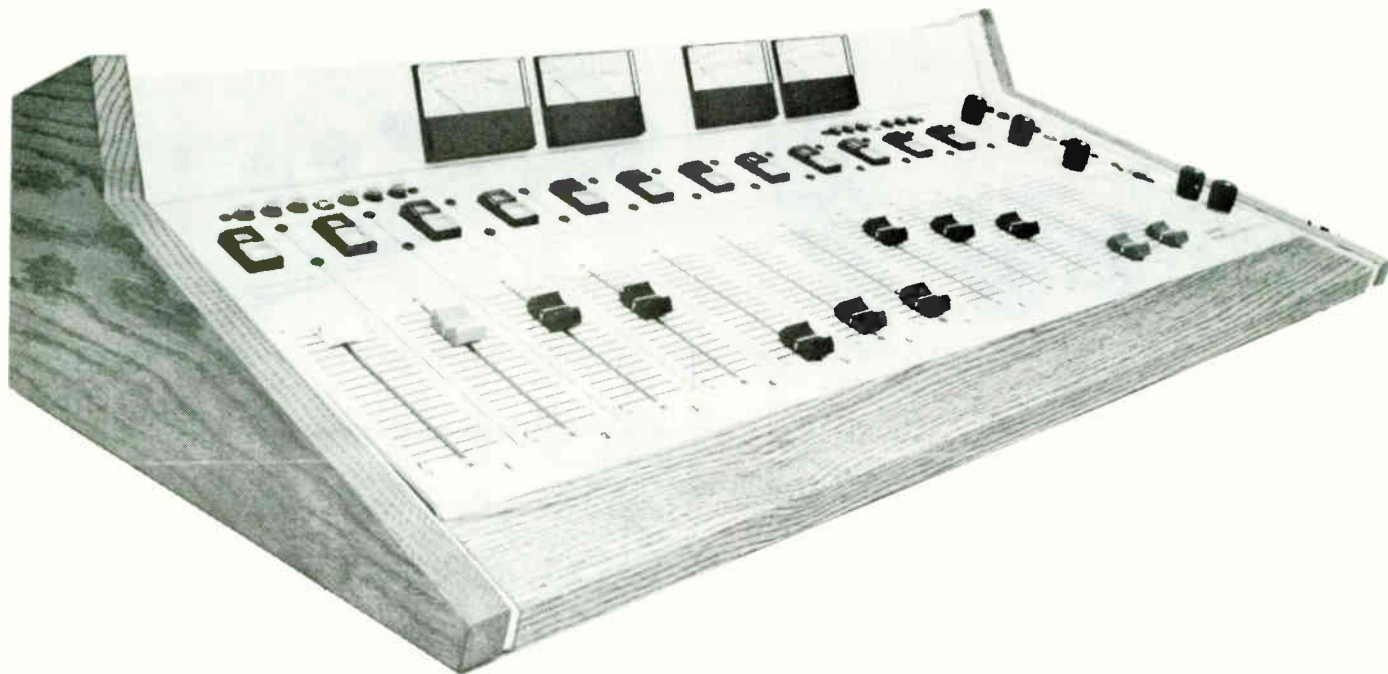
modular with 6' DC power cord

AC Power: 110VAC, 220VAC (optional)

500SC-8M Mono Model\$3550.00

500SC-8S Stereo Model3750.00

309 Commerce Drive
Fort Collins, CO 80524
(303) 224-2248



2000SC TWELVE CHANNEL CONSOLE

FEATURES

- 12 Channels
- 24 Balanced Inputs
- Balanced Program and Audition Outputs
- Penny and Giles Slide Faders
- VCA Level Controls - Stereo Tracking within 1 dB
- DC Controlled Audio - No Audio on Pots or Switches
- NE5532 Integrated Circuit
- External Regulated Power Supply
- Solid Oak End Panels and Armrest
- VU Meters Monitor Program and Audition Simultaneously
- Motherboard Construction Eliminates Unreliable Wiring

The 2000SC is designed for ease of operation, uncompromising performance, and maximum durability. Each of the 12 channels features a single input per channel. Two remote select switches bring in an additional 14 inputs. Cue is accomplished by a detent on the slide fader while lighted momentary switches actuate the Program and Audition buses. VU meters monitor both the Program and Audition buses simultaneously. What console can be simpler to operate. Remote state is actuated by the Program and Audition switches.

The 2000SC features the Signetics NE5532 Op Amp. The only audio switches in the audio path are reed relays which produce no audio degradation at all.

To provide for long, trouble free operation, the 2000SC is constructed of heavy hardened aluminum panels complemented by solid oak end pieces and armrest. For the industries finest fader performance and reliability the 2000SC uses the Penny and Giles 3000 Series slide faders. All front panel switches are Schadow by ITT. Motherboard construction reduces hand wiring and dramatically improves reliability.

SPECIFICATIONS

- Channels: 12 • Inputs: 1 per channel — 2 remote select switches - 7 inputs each — 24 total balanced inputs to 12 channels — Lo Level - 1000 ohms, -50dBm typical input level, Trim pot adjustable level — High Level - 10,000 Ohm typical input level • Program, Audition Outputs: Identical 600 ohms balanced +22dBm maximum output • Monitor Amp: selectable between Program, Audition and 5 balanced external inputs — 10 watts RMS at 8 ohms, THD .1% at 1 watt • Cue Amp: selected by detent on the individual volume pot — 4 watts RMS at 8 ohms • Earphone Amp: selectable between Program, Audition, and Cue — 4 watts RMS at 8 ohms, THD .1% at 1 watt • Meters: taut band, VU response, separate sets for Program and Audition. Meters are buffered and adjustable • Muting Relay: 3 Pole Double Throw (3PDT) 5 amp 110VAC relay contacts are provided for ON THE AIR light or telephone • Remote Start: each of the 12 channels has a set of 2PST reed relay contacts for start. Jumpers determine momentary or sustained action.

Electrical

Frequency Response: +5dB over 20Hz to 20,000Hz
Hum and Noise: one channel on, 70dB below +8dBm, -50dBm input
Total Harmonic Distortion: mic in to Program out, .1% max at +18dBm
Stereo Tracking: ± 1 dB over a 40dB range
Crosstalk: normal levels, (monitor, cue, phones off) Program to Audition and reverse. Below 70dB at 1kHz
DC Power Supply: ± 15 V 1A regulated, ± 15 V 3A regulated External, modular with 6' DC power cable
AC Power: 110VAC, 210VAC (optional)

Physical

Dimensions: 30"W x 17"D x 8"H Console
Weight: 35 lbs. approx.
Finish: aluminum sheet metal, screened enamel, oak sides and armrest
Faders: Penny and Giles 3000 Series
Switches: Schadow by ITT, Mon.-100,000 Op. Interlock 50,000 Op.

2000SC-12M Mono Model \$4495.00
2000-12S Stereo Model 4695.00

309 Commerce Drive
Fort Collins, CO 80524
(303) 224-2248



2100SC

2100SC TWELVE CHANNEL CONSOLE

FEATURES

- 12 Channels
- 34 Inputs
- Penny & Giles Slide Faders
- VCA Controlled

The 2000SC has proven to be so popular that we are now bringing you its big brother. The 2100SC is identical to the 2000 except for expanded input capacity. The 2100 has two. The 2100 can handle the big jobs, the 2100 even has remote start on both A & B inputs.

The 2100 is the same rugged and reliable design as the 2000SC. P & G slide faders and ITT switches are the best at any price. Solid oak and 1/8" aluminum panels provide both strength and beauty.

Electronically the 2100 is without peer. It is totally DC controlled with Reed relay switching.

SPECIFICATIONS

• Channels: 12 • Inputs: 2 per channel, channels one thru ten — 2 remote select switches - 7 inputs each channels 11 & 12 — 34 total balanced inputs to 12 channels — Lo Level - 1000 ohms, -50dBm typical input level, Trim pot adjustable level 30dB A & B inputs — High Level - 10,000 OdBm typical input level, 30dB trim adjustable A & B • Program, Audition Outputs: Identical 600 ohms balanced +22dBm maximum output • Monitor Amp: selectable between Program, Audition and 5 balanced external inputs 10 watts at 8 ohms, THD .1% at 1 watt. Line out for external amps. • Cue Amp: selected by detent on the individual volume pot, 2 watts RMS at 8 ohms • Earphone Amp: selectable between Program, Audition, and Cue, 2 watts RMS

at 8 ohms, THD .1% at 1 watt • Meters: taut band, VU response, separate set for Program and Audition. Meters are buffered and adjustable • Muting Relay: 3 Pole Double Throw (3PDT) 5 amp 110VAC relay contacts are provided for ON THE AIR light or telephone. • Remote Start: each of the 12 channels has a ground closure for start. Jumpers determine momentary or sustained action. A & B start individually.

Physical

Dimensions: 30"W x 17"D x 8"H Console

Weight: 35 lbs. approx.

Finish: aluminum sheet metal, screened enamel, oak sides and armrest.

Faders: Penny and Giles 3000 Series

Switches: Schadow by ITT, Mon.-100,000 Op. Interlock 50,000 Op.

Electrical

Frequency Response: ± 1 dB over 20Hz to 20,000Hz

Hum and Noise: one channel on, 70dB below +8dBm, -50dBm input.

Total Harmonic Distortion: mic in to Program out, .1% max at +18dBm

Stereo Tracking: ± 1 dB over a 40dB range

Crosstalk: normal levels, (monitor, cue, phones off) Program to Audition and reverse. Below 70dB at 1 kHz

DC Power Supply: ± 15 V 1A regulated, +15V 3A regulated External, modular

AC Power: 110VAC, 210VAC (optional)

2100SC-12M \$5495.00
2100SC-12S 5695.00

ARRAKIS SYSTEMS, INC.

309 Commerce Drive
Fort Collins, CO 80524
(303) 224-2248

RS SERIES—AUDIO ROUTING SWITCHERS

Switching systems of up to 64 stereo inputs x 32 stereo outputs can be easily configured from standard plug-in RS family components.

- Rack or table mount
- Remote controllable
- Terminal strip inputs & outputs on back
- Expandable
- Signetics NE5532 IC's
- Ultrareliable - two year warranty
- Modular regulated computer grade power supply
- 1,000,000 operation thumbwheel select switches
- All IC's socketed

The RS Audio Routing Switcher is the professional alternative to patch panels, mechanical switches, and distribution amps. Ultrareliable—the power supply is regulated, protected and has a 10 year mean-time before failure. LSI integrated circuits reduce parts count to a minimum. All IC's are socketed for ease of replacement. The thumbwheel control switches are 1,000,000 operation. Due to the ultrareliable design redundant power supplies are unnecessary. These switchers may be used in the most critical sections of the audio chain with total confidence.

The 100RSM features plug-in cards accessible from the front panel. A motherboard on the back contains the bus and input/output terminal strips. The other models use an ultradense 5" by 16" PC board that contains all circuitry and input/output terminal strips. This motherboard is on the back of the unit and provides instant access to plug-in IC's for service. The front panel holds the control switches and is removable to provide access to the power supply. The switcher need never be unwired or removed from the rack for service.

These switchers are transparent to audio. Flat within .1dB and with a distortion typically of .02% they don't color your sound.

Routing switchers perform many applications that are difficult with other technologies. A single audio line with remote control can link a satellite system to a studio. This replaces several D.A.'s and a massive cable bundle. Studios can be linked together and to the transmitters. The larger models can switch an entire studio. The 1100A-RSS 16 by 4 stereo model is ideal for an audio preselector for 4 tape recorders. The possibilities are limited only by the imagination.

SPECIFICATIONS

- Gain - Unity, non-adjustable
- Input level - + 24dBm max.
- Output level - + 24dBm max.
- Total harmonic distortion - .1% max + 8dBm (.02 typical)
- Frequency response - 20Hz to 20kHz +/- .1dB
- Noise - 85dB below + 8dBm (100RSM - 70dB)
- Input impedance - 100,000 ohms balanced (100RSM - 4,400 ohms)
- Output impedance - 600 ohms balanced
- Crosstalk - -85dB typ. at 16kHz (100RSM - 65dB)
- Bus loading - .1dB max.
- Control - 4 bit binary with enable
- Size - 5-1/4" x 19" rack mount
- Power - 110VAC input (DC - +/- 15VDC regulated)

1100A-RSS

- 16 in by 4 outputs stereo
- Control-by four 16 position binary thumbwheels. One per output
- Size - 5-1/4" x 9" rack mount
- Expandable - yes, in and out
- Remote control - 4 bit binary plus enable

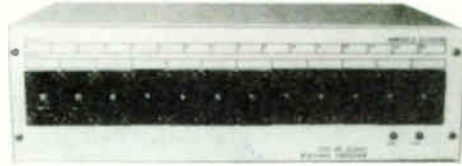
1100A-RSM Mono Model \$895.00
1100A-RSS Stereo Model 995.00

1100B-RSS

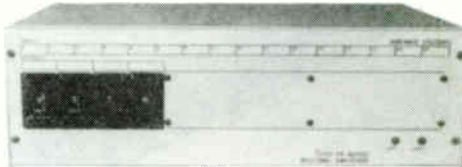
- 16 in by 8 outputs stereo
- Control - by eight 16 position thumbwheels. One per output
- Size - 5-1/4" x 19" rack mount
- Expandable - yes, in and out
- Remote control - 4 bit binary plus enable

1100B-RSS Stereo Model \$1695.00
1100B-RSM Mono Model 1195.00

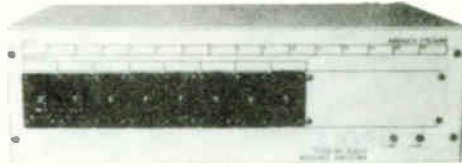
AUDIO ROUTING SWITCHERS



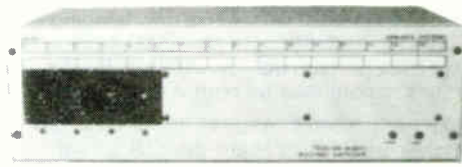
100-RSM



1100A-RSS



1100B-RSS



2100A-RSM

100-RSM

- 16 in by 12 outputs mono
- Control-by twelve 16 position thumbwheels. One per output
- Size - 5-1/4" x 19" rack mount
- Expandable - more outputs only, no additional inputs
- Remote control - 4 bit binary

100-RSM Mono Model \$1500.00

2100A-RSM

- 32 in by 4 outputs mono
- Control - by four 16 position thumbwheels and four A/B select switches. One each per output
- Size - 5-1/4" x 19" rack mount
- Expandable - yes, in and out
- Remote control - 4 bit binary plus enable

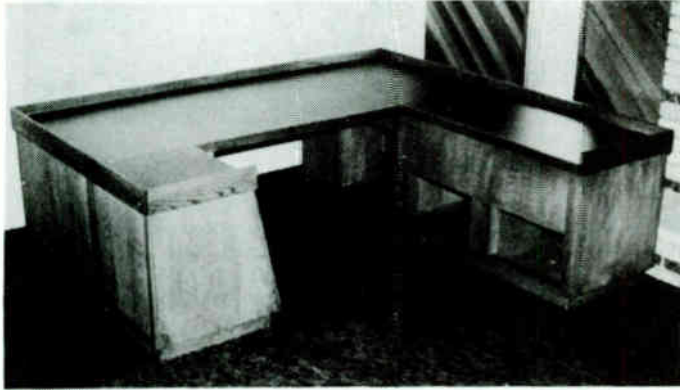
2100A-RSM Mono Model \$1695.00

2100B-RSS

- 32 in by 8 outputs stereo
- Control - by eight 16 position thumbwheels and eight A/B select switches. One each per output
- Size - 10-1/2" x 19" rack mount
- Remote control - 4 bit binary plus enable

2100B-RSS Stereo Model - (two 2100B-RSM units) \$3496.00
2100B-RSM Mono Model - 5-1/4" rack 1695.00

309 Commerce Drive
Fort Collins, CO 80524
(303) 224-2248



1000 SERIES

1000 SERIES PROFESSIONAL STUDIO FURNITURE

Features

- Full line of studio furniture
- Hardwood plywood only
- Solid oak trim
- Matching tabletop cart racks & rack cabinets
- Durable, warm & attractive
- Custom quotes encouraged

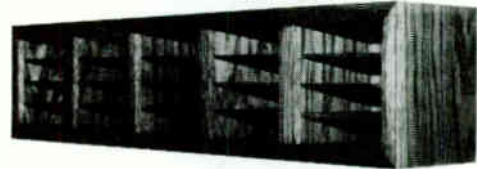
Arrakis Studio Furniture is made with premium quality hardwood plywood. Dura-beauty plastic laminates add beauty & durability to the table surface. Solid oak corners, trim & splashguards accent & provide years of rugged service with an enduring attractive appearance. The warmth of wood combined with the strength of oak unite to make Arrakis Studio Furniture a uniquely attractive broadcast environment.

A full complement of accessories are available for our basic cabinetry. Tabletop cart racks & rack mount cabinets expand storage & the mounting of rack mounted equipment. Unlike economy furniture, our 1000 Series features extensive rack mount storage within the basic furniture. Cable channels within the furniture hide unsightly wiring. The back of each cabinet can be easily removed for interior access. By completing the studio within the basic furniture, expensive & unattractive stand up racks are eliminated while wiring & labor are reduced.

- 1000RLP-CC** Right & left pedestal with connecting counter -
(a) Right Pedestal - (1000RP) 24"W x 37-1/2"D x 29"H — 17" rack space 19" width
(b) Left Pedestal - (1000LP) 24"W x 37-1/2"D x 29"H — 17" rack space 19" width
(c) Connecting counter - (1000CC) 37-1/2"D x 44-1/2"W
- 1000DTR** Dual turntable return 48"W x 24"D x 29"H — two 10-1/2" rack spaces 19" width
- 1000SFC** Slope face rack cabinet 24"W x 24"D x 29"H — 20-1/4" rack space 19" width
- 1000TTR** Table top rack cabinet 21"W x 15"D — available from 5-1/4" to 17" rack height
- 1000TTC** Table top cart rack —
1000TTC-20— 20 cartridges— 25"W x 7-1/2"H x 4"D
1000TTC-40— 40 cartridges— 25"W x 13-1/2"H x 4"D
1000TTC-100— 100 cartridges— 25"W x 27"H x 6"D



BSC 100 SERIES



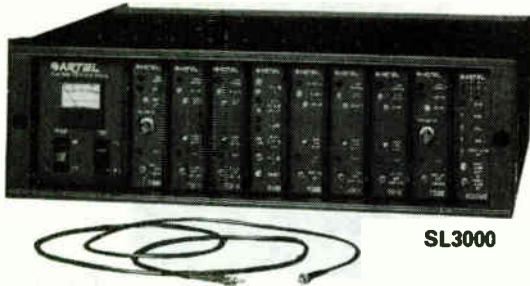
BSC 100 Series Wall Cart Racks

Arrakis cart racks are extremely high quality & durable products. Constructed entirely of plywood (not particle board), they will not warp, twist, split, or sag. Corners are mitered (not butt joints) while construction is dado-rabbit jointing. Real wood veneered plywood adds warmth & beauty to any studio.

*Please specify-Light Walnut or Dark Walnut

Special sizes, colors & laminates are available for a slight charge.

MODEL	CARTS	W/H ROWS	SIZE	PRICE
BSC 20	20	5 x 4	25½ x 5½	21.00
BSC 40	40	5 x 8	25½ x 10½	38.00
BSC 60	60	5 x 12	25½ x 14½	56.00
BSC 100A	100	5 x 20	25½ x 23½	81.00
BSC 100B	100	10 x 10	50¼ x 12½	81.00
BSC 200	200	10 x 20	50¼ x 23½	164.00
BSC 100T	100	2 x 50	10½ x 66	84.00
BSC 250T	250	5 x 50	25½ x 66	213.00
BSC 500T	500	10 x 50	50¼ x 66	416.00
BSC 1000T	1000	20 x 50	100½ x 66	815.00



SL3000

SL3000 LASER-BASED FIBER OPTIC SYSTEM

For simultaneous transmission of video, audio and data.

FEATURES

- Over 20 mile (32km) range without repeaters
- Exceeds RS-250B short haul standards
- Over 20 MHz video bandwidth
- Automatic protection switching option
- On-line self-diagnostics and metering
- Automatic alarming (local and remote)
- 75 ohm or 124 ohm (balanced) input/output
- Easy access connectors (WECO or SMA-type)
- Long wavelength, singlemode option
- Coaxial input/output equalization
- Compact, modular construction
- Front panel monitor output
- Multiple audio subcarrier option

This FM laser-based system combines state-of-the-art modulation techniques with the latest in reliability/maintainability features. These features include automatic protection switching and on-line self-diagnostics. The SL3000 is a compact, modular system designed to replace microwave radio and balanced coaxial cable in video transmission links ranging over 20 miles (32 kilometers).

Longest Distance Transmission

The SL3000 is available as a short wavelength (840nm) multimode system for distances up to 10 kilometers, and as a long wavelength (1300nm) singlemode system (SL3000L) for distances over 32 kilometers without repeaters. Artel's low-noise receiver circuitry means that the SL3000 can transmit over 10dB greater cable loss than other systems.

Most Transparent Video and Audio

The SL3000 exceeds the most stringent video transmission standards: RS-250B (short haul). The system's bandwidth is a full 20 MHz wide, allowing you to send wideband video and multiple subcarriers. Audio is flat from 20 Hz to 20 kHz, with better than 70 dB RMS signal-to-noise ratio and less than 0.1% total harmonic distortion.

Flexible Modular Construction

Video and subcarrier cards are separately packaged on compact plug-in modules. Up to nine card modules can be housed in a single 19-inch card frame. The T/R3000 video module set can be configured for transmission of high resolution (up to 20 MHz) video or for standard video plus up to six subcarriers. Subcarrier modules are switch selectable for either audio or data transmission, and can be incrementally added or changed as needed. All modules are quick and easy to change and to troubleshoot, with self-diagnostic indicators on the front of each module.

Video Plus Data and Audio Subcarriers

The Artel SL3000 system consists of three transmitter/receiver pairs designated the T/R3000 for broadcast quality video and T/R3111 and T/R3114 FM subcarriers for broadcast audio or TTL data. The SL3000 system lets you independently add up to two channels of audio or TTL data or one of each on a single optical fiber. Both video and audio modules exceed RS-250B short haul standards over installed cable with losses exceeding 40dB. An additional four channels of microwave-compatible (standard) audio subcarriers can be provided upon special request.

POR



SL2000

The T3000 cards accept unbalanced 75 ohm coax and 124 ohm balanced pair, 1 Vp-p video. These cards also have built-in coax equalizers. The subcarrier transmitter cards (T3111, T3114) accept 600 ohm balanced audio or TTL asynchronous data, with the selection of audio or data made by on board DIP switches.

All transmitter cards convert the video, audio and data signals to a composite optical signal which is transmitted through the fiber optic cable. The receiver cards reconvert the optical signal to full level video, audio and data. BNC connectors are used for loop through video inputs.

SL-2000 FIBER OPTIC TRANSMISSION LINK

FEATURES

- Broadcast quality video/audio
- Long distance transmission
- Extended frequency response
- Eliminates group loops, hum
- Immune to RFI and EMI
- Self-monitoring, self-testing
- EIA/CCIR compatibility
- Space saving cable
- Versatility
- Convenient modular construction
- Dual video outputs
- Loop through input
- Switchable AGC/MGC
- Switchable squelching
- Adjustable I/O levels
- Tunable differential gain
- Signal level alarm outputs
- High reliability
- Quick, easy set-up
- Switchable DC clamping

A high performance fiber optic video/audio system for fixed point-to-point transmission. This versatile system delivers broadcast quality signals over long distances with complete freedom from interference and ground faults.

The Artel SL2000 is a revolutionary advance in video communications. For the first time fiber optics can be used to transmit broadcast quality video and audio signals over several kilometers without the need for repeaters. This modular system offers the convenience of small, lightweight cable, with performance that rivals microwave. And there is no need to obtain an FCC license with fiber optics.

The SL2000 is specifically designed to meet the performance requirements of the broadcast industry. Only with fiber optics can this performance be achieved, without regard to atmospheric or electromagnetic considerations. Only the SL2000 can deliver this level of quality over such long distances.

The SL2000 delivers all the intrinsic advantages of fiber optics, plus unique features that enhance performance, reliability and ease of use.

POR

P.O. Box 100
West Side Station
Worcester, MA 01602
(617) 752-5690 Cable: ARTEL

T/R-2010 HIGH SPEED DATA TRANSMISSION

Artes's T/R-2010 data modules give your network high speed TTL digital data capacity.

FEATURES

- Remote loopback testing
- Self-test E/O signal measurement
- Bit error monitoring
- Indicators monitor data and optical signal status
- First-bit recognition in burst mode

SPECIFICATIONS

Input/Output Level: TTL/ECL (unbalanced)
Input/Output Impedance: 50ohm (BNC)
Data Rate: DC to 50 Mb/sec
Bit Error Rate: <10

IBM 3250 (CADAM) Interface Modems

Directly replace coaxial cable between IBM 3258 and 3255 control units with the LS-100 Fiber Optic Modem. This stand-alone, plug compatible modem transparently interconnects control units separated by as much as 3 miles (5 km).

FEATURES

- Remote Loopback Testing
- Indicators monitor signal transfer
- Optical self-testing
- Hi/Lo Range Selector Switch

LS-100 MODEM

SPECIFICATIONS

Max. Transmission Distance: 16,400 ft. (5 km)
Data I/O Connector: 75 ohm Coaxial, F-type
Dimensions: 9" x 9" x 2.8"

FIBER CABLES FOR EVERY ENVIRONMENT

Artes supports its broad system line with standard graded index fiber optic cables. Choose from a variety of cable types, including indoor/outdoor, duct, aerial or direct buried.

- 1000 Single channel field cables
- 1200 Two channel indoor/outdoor cables
- 1600 Six channel cables for duct installation
- 1600S Six channel steel armored cables for direct burial
- ...and many other types available

ADD AUDIO AND DATA SUBCARRIERS

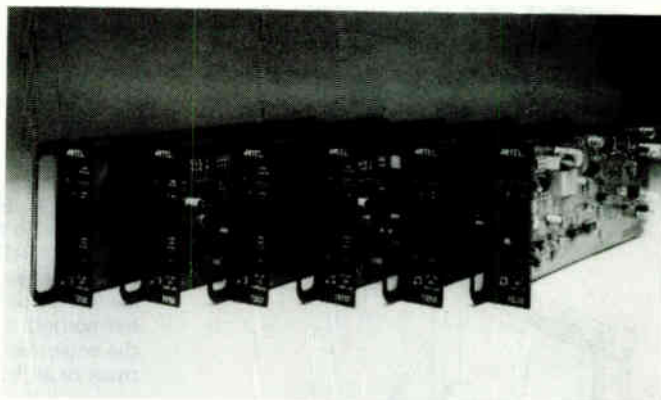
Expand your system by combining subcarrier modules with your video modules. Add up to two audio and/or data channels on the same fiber as your video.

FEATURES

- Indicators monitor electrical and optical signal status
- Self-test measures electrical and optical signals on-line
- Automatic alarm outputs
- Adjustable audio I/O (± 6 dB)

SPECIFICATIONS

	T/R-2150	T/R-2121	T/R-2210
Signal Type:	Audio	Audio	Data
0 Level:	0-21 dBm	0-21 dBm	TTL
0 Impedance:	600 ohm (bal.)	600 ohm (bal.)	50 ohm
udio S/N:	>80 dB	80 dB	—
udio THD:	0.1%	0.2%	—
eq. Response			
20 Hz-20 kHz:	± 0.1 dB	± 0.1 dB	—
-3 dB points:	2 Hz, 30 kHz	2 Hz, 30 kHz	—
ata Rate:	—	—	100-250 kb/sec
t Error Rate:	—	—	<10 ⁻⁹
ubcarrier Freq.:	15 MHz	21 MHz	21 MHz
O Connector:	3-pin XLR	3-pin XLR	BNC



T/R-2150

T/R-2121

T/R-2210



S-100



EN-1000

EN-1000 FIBER OPTIC ENG/EFT TRANSMITTER

The EN-1000 is a portable fiber optic transmitter that takes your live ENG/EFP places you could never go until now. This small, battery operated unit gives you a two mile camera-to-van range...around any corners or obstacles.

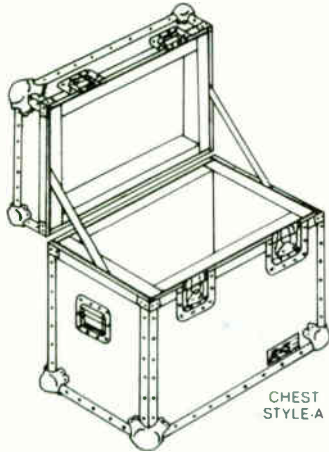
The EN-1000 weighs approximately one pound, and measures 7 x 3.6 x 1.6 inches.

SECURE YOUR COMMUNICATIONS

The ACU-2400 Alarm Control Unit monitors all modules in the S-2000 frame for intrusion or faults. Audible and visible alarms with remote relay closures quickly alert security/operations personnel. The ACU-2400 also contains an automatically switched integral back up power supply. An optional "Auto Shut Off" feature is available for added communications security.



1111 N. GORDON STREET
HOLLYWOOD, CA 90038
(213) 466-6181



CHEST
STYLE-A

A.T.A. —

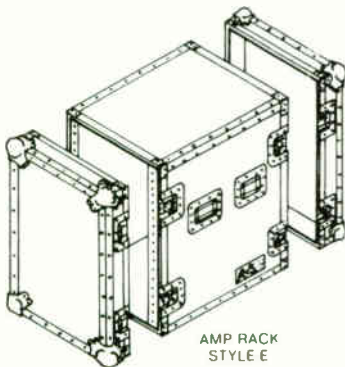
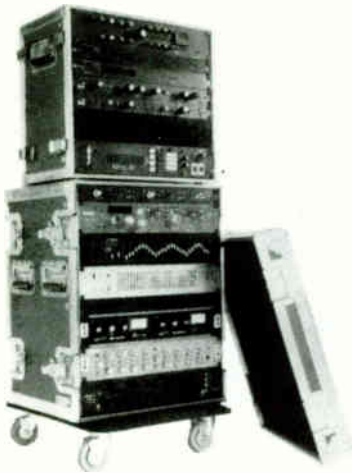
Our A.T.A. Spec. 300, Category 1 Cases are constructed using the finest materials available. To form the actual shell, we start with high grade 1/4" plywood, laminated with tough ABS plastic, fiberglass, or aluminum. Aluminum edging is secured into place using machine driven steel rivets. Heavy duty recessed twist-latches and recessed spring loaded handles are used on all A.T.A. Cases. Other features include heavy gauge steel ball corners and edge clamps. The interior is lined with 1" polyester foam to custom-fit the equipment and provide protective shock absorption. Definitely a must for excessive truck or air travel.

LITE FLITE —

Designed for the around town user, LITE FLITE Cases are made with high grade 1/8" plywood laminated with ABS, fiberglass, or aluminum. Aluminum edging is secured to panels using machine driven steel rivet. High quality exterior latches and handles are used on LITE FLITE Cases. As in the A.T.A. Case, the interior is 1" polyester foam lining provided for shock protection.

CUSTOM CASES —

Our especially trained staff of case designers are available by telephone between 9:00 and 5:00 and in person to answer any questions in regards to design or specific case requirements. Their expertise is invaluable in designing for, and fulfilling your particular case needs. Contact our salespersons or our design staff at (213) 466-6181.



AMP RACK
STYLE E

COLORS —

ABS Exterior —

Black, Blue, Red, White, Grey, Green,
Sky Blue, Orange, Beige, Pink

FIBERGLASS — (Available at 10% additional charge)

Black, Blue, Orange, Red, Yellow,
White, Olive, Grey

CARPET COVERING —

ALUMINUM — (Available at 10% additional charge)

ASIA



Catalogs and data sheets with complete information and specifications are available. Please write or call 800-423-6347 or in California 213-827-7144. ASACA SHIBASOKU, 12509 Beatrice Street, Los Angeles, Ca. 90066

MONITORS



CMM 26-11 High Resolution TV Monitor



CMM 20-11 High Resolution TV Monitor



CMM 14-11 High Resolution TV Monitor



CM 65A6 High Definition 26" TV Monitor



CM 99A High Resolution 9" TV Monitor



CMM 20-7 High Resolution TV Monitor



CMM 14-7 High Resolution TV Monitor



CM 22A6 High Definition 20" TV Monitor



ASACA Shibasoku has a complete line of color monitors. 14", 20" and 26" Delta—9", 14", and 20" In-line Dot Matrix—20" and 26" High Definition (1125 line system)—and 14" and 20" Data Displays.

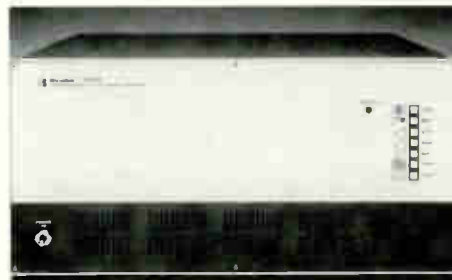
Featuring CombFilter, R-Y, B-Y, Y, I, Q, RGB, Y+R-Y, B-Y CROSS HATCH, plus a two year warranty on all parts and labor. Available in NTSC, PAL, SECAM.



TG/7 Video Test Signal Generator

A complete modular test signal system with all drives. Seven interchangeable modules provide up to 48 different test signals. RS170-170A Sync, Gen Lock, and Black Burst.

The TG 7 may be completely automated with the QB102A (531) GP-1B Interface unit. Available in NTSC, PAL, SECAM.



TG91A6 High Definition TV Test Signal Generator

This Signal Generator is used for 1125-Scan Systems and produces the following patterns: zone plate, multiburst, stairstep, ramp, sin² and bar, crosshatch, and color bars.



TG 52A1 Digital TV Signal Generator

This generator provides 12 major signals and 8 additional for customized test signals. The TG 52A1 is also a VITS generator and these signals may be inserted into a total of 16 lines 13-20 H and 276-283 H.

The TG 53A1 uses a 10 bit high speed digital-analog converter for perfect stability. All functions may be remotely controlled using the GP-1B Interface Bus.



216 Color Bar Generator

Provides up to ten signals as well as an RF Modulator and an Audio Oscillator. Available in NTSC, PAL, SECAM.



TG53A1 Digital Test Signal Generator

This generator uses an 8 bit high speed digital-analog converter. It generates 6 signals and also utilizes two RAMs with a two-line writing capacity. Utilizing the GP-1B Interface Bus, special test signals may be designed, placed on a floppy disc and displayed via the RAM.



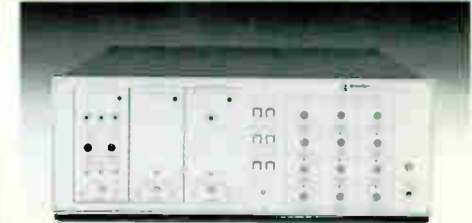
226 Color Bar Generator

The 226 provides split field bars and a custom designed station identification. The 226 uses AC or may be operated with 9 C Cell batteries. Available in NTSC.



CB53A1 Digital Color Bar Generator

The CB53A1 provides 7 signals as well as an RF modulator, Audio Oscillator, Gen Lock, and a character Generator which displays 31 characters on 2 lines. AC DC Operation. Available in NTSC, PAL.



404A Video Test Signal Generator

A complete modular test system which provides up to 35 different signals with 13 modules. Available in NTSC, PAL, SECAM.



CB11A Color Bar Generator

The CB11A is designed for the precise adjustment of television receivers and monitors. There are 10 basic patterns available and combining these with the specially designed "mode switch," an additional 50 patterns and combinations are available. Available in NTSC, PAL, SECAM.



315K/1 VITS Inserter

The 315K used with the TG/7 allows test signals to be inserted into the Composite Video Signal. Its primary use would be for testing of Microwave, Satellite and Television Transmission signals during actual operation.

AUDIO



725B Automatic Audio Distortion Analyzer

A completely automatic system when used with the AG15A Oscillator and the GP-IB Interface Unit. The 725 will measure distortion ratios as low as 0.0001% (-120dB) and analyze distortion from the 2nd to the 5th Harmonic.



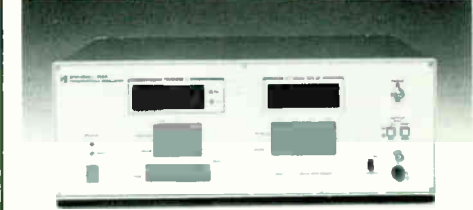
856 Audio Analyzer

The 856 contains an Oscillator, Level Meter, Distortion Meter, Frequency Counter, CCIR Weighting Network Circuit and a Measuring Circuit for level and phase differences between two signals.



796F Distortion Meter/Oscillator

The 796F may be used as an Oscillator, Distortion Meter, Noise Meter, and a Volt Meter. It also allows the Distortion Measurement Frequency to be utilized together with the Oscillating Frequency.



550A Programmable Oscillator

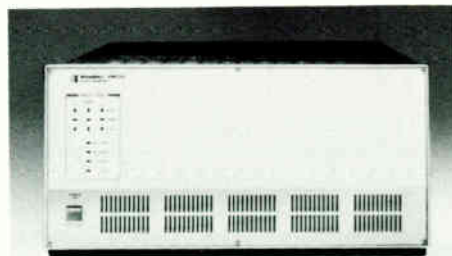
This Oscillator generates signals with an extremely low distortion and is an ideal signal source with automatic instrument systems.



703A Wow Flutter Meter

Using the Peak Hold and Sigma Memory Systems, the 703A may also be fully automated using the built-in GP-IB Interface Unit and a computer system.

SPECIALIZED TEST EQUIPMENT



VM02A1 Digital Video Memory

The VM02A1 conducts high speed A/D conversion of analog video signals in real time. The memory is designed for special picture processing for medical use and textile design as well as video production.



VH01BZ VTR Dropout Counter

With dropout detection levels selectable from -10dB--24dB and dropout time widths selectable from 0.5-50 Micro seconds, the VH01BZ gives high precision readings and is also an automatic testing system using the QB101A GP-IB Interface Unit. Available in NTSC, PAL, SECAM.



CD101A Color Decoder

The CD101A demodulates the VBS signal to generate RGB, Y, I, Q, and R-Y, B-Y. Drive signals of BL, BF Sync, and SC are also available for interfacing with other equipment. Also available is the CD902A to generate RGB and sync only. Available in NTSC, PAL, SECAM.



1130 Camera Measurement Set

The 1130 is capable of measuring High Resolution Registration Error with both a digital and printed readout. Using the built-in microprocessor, the 1130 also tests color balance, chromaticity, shading, flare, deflection distortion, and gamma characteristics. Available in NTSC, PAL, SECAM.



549A TV Test Pattern Generator

The 549A generates a digital test pattern which is divided into nine parts: Window, Sin and window, 250 kHz Square Wave, Color Bar, Center Marker, Multiburst, 5-step stair step, Sin, and Black Window and delay color. Grating and axis signals are generated simultaneously on the periphery of the picture. Available in NTSC, PAL.



925R Color Video Noise Meter

The 925R Video Noise Meter is designed to measure both luminance and chrominance noise voltage generated from TV transmission equipment, TV Cameras, and Video Tape Recorders. The 925R is equipped with a GP-IB interface. Also available is the 925D which is the manual version. Available in NTSC, PAL.



875 VTR Jitter Meter

The 875 has been specially designed to measure the tape speed and jitter of all magnetic tape used with color video tape recorders.



588A Digital Test Pattern Generator

The 588A generates a circular high resolution monochrome pattern used for adjusting and extreme fine tuning of video equipment. Available in NTSC, PAL.



TP15A6 High Definition TV Pattern Generator

This generator produces a high resolution test chart used with 1125 line TV systems.



201 Envelope Delay Measuring Set

The 201 has been designed to measure the envelope delay of the video transmission equipment for color television broadcasting. The 201 features a large CRT display and a built-in sweep generator. Available in NTSC, PAL.



CC-5 Color Encoder

The CC-5 is a high quality encoder which converts the RGB signals to composite video. In addition, the unit also outputs Y, I, Q, and R-Y, B-Y and has aperture corrector. Available in NTSC, PAL, SECAM.



SR21A RF Sweep Generator

The SR21A is a VHF/UHF sweep signal generator which covers a range of 5 MHz to 960MHz with two bands. Available in NTSC, PAL.



205A Video Sweep Generator

The 205A is used to measure the frequency response on color TV sets, Video Tape Recorders and other video equipment. The frequency range is 100kHz-10MHz. Available in NTSC, PAL.



VS13A0 Video Sweep Generator 200 Hz-150 MHz



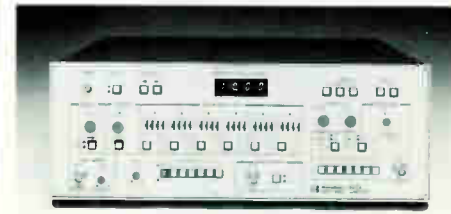
IE-5 Contour Corrector

The IE-5 has been designed to improve the quality of color pictures from 1/2" & 3/4" video tape recorders. Both manual and automatic operation allows for a peak horizontal contour of 3.0 MHz. The major feature of this unit is that it creates absolutely no noise as it improves the picture quality. Available in NTSC.



SR22 RF Sweep Generator

The SR22 RF Sweep Generator covers from 860 kHz to 440 MHz using 9 bands. Available in NTSC, PAL



SV-11A Video Sweep Generator

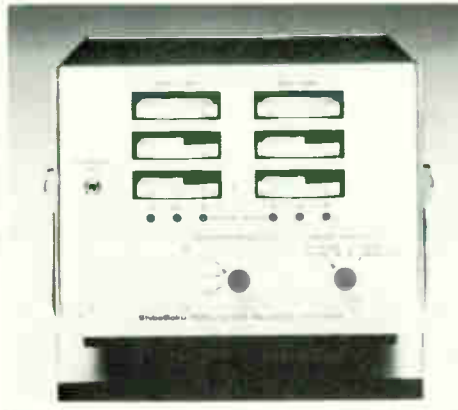
The SV-11A has been designed with a frequency range of 100kHz - 30 MHz and is most suitable as a signal source and test instrument for the precise adjustment and inspection of high resolution and wide band video equipment. Available in NTSC, PAL.



H-2133 Safe Title Marker Generator

This unit mixes a safe area zone with the video signal to determine the correct area for character insertion.

SPECIALIZED TEST EQUIPMENT



898B White Balance Checker 487B White Balance Signal Generator

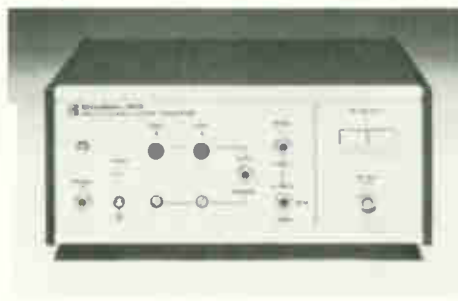
The 898B is used to precisely adjust color television monitors to a uniform picture. The 487B is used as a signal source along with the 898B. With this generator, both the high lights and the lowlights may be adjusted quickly and accurately.



CS1A1 Color Shading Checker



CS02A Luminance Shading Checker



TA35A MCS TV Sound Signal Generator

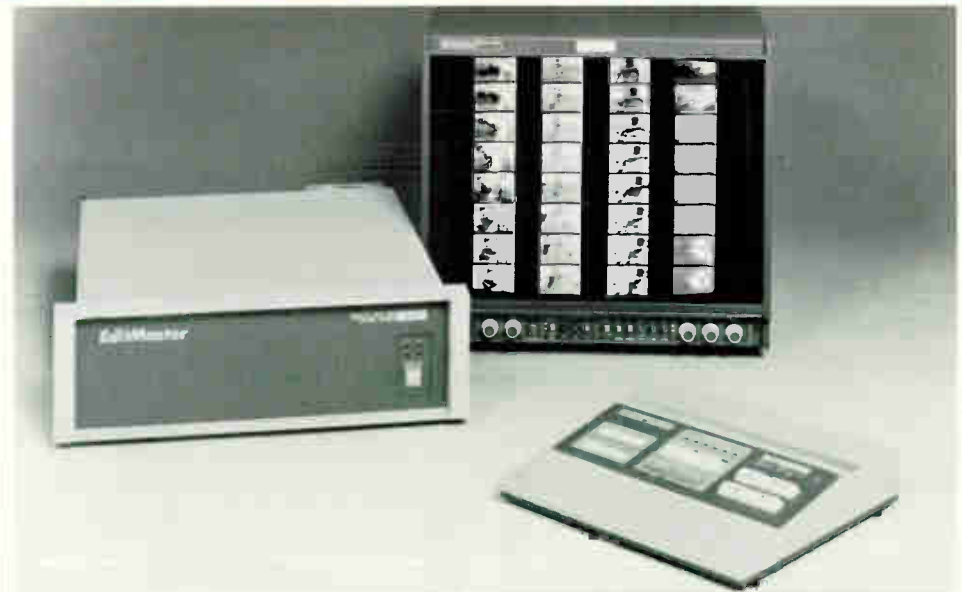
The TA35A is a TV sound signal generator based on the sound subcarries system using the American Zenith (stereo sound) MCS System.

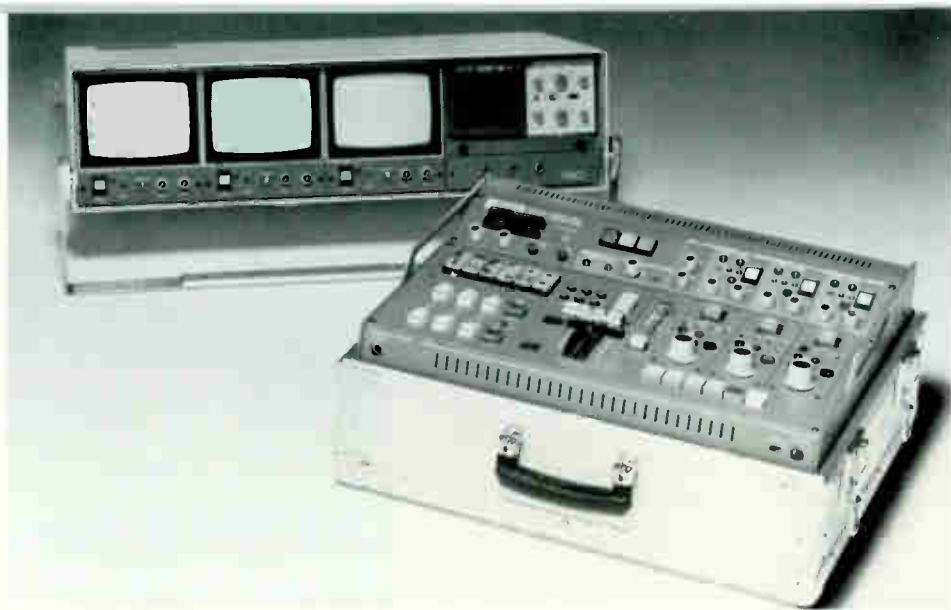
PRODUCTION EQUIPMENT



ADC-810 Tape Evaluator/Cleaner

The ADC-810 is an evaluating/cleaning system for 1/2" and 3/4" video tape. The unit reads both dropouts and edge damage and displays results digitally, as well as from Radio History





ASW-100, ASW-200, ASW-50 Portable Production Systems

These systems control from 2-4 cameras. The units feature automatic sync and phase control, VTR controls, down stream keyers, and up to 31 different wipe patterns. The ASW-200 also features two background generators. All units have cable compensation up to 1000', intercom systems, view finder return, video bypass, and a sync generator. All units are AC DC operational and require a minimal amount of set-up time.



ASW-300 Video Switcher

The ASW-300 provides up to 5 inputs of video for special effects for cuts and fades. It also utilizes an RS422 interface to permit use from a remote control panel.



APO-100 Opaque System

Portable system used to insert and overlay special graphic designs and symbols not capable of being produced by a character generator.



ACL-3000 Automatic Random Access Cart System

A completely automatic cart system which holds 300 carts and utilizes a bar code identification and insert-reject system. Any 1/2" tape format may be used, with up to 8 video tape players.



**ASACA/SHIBASOKU
CORP. OF AMERICA
12509 Beatrice Street
Los Angeles, CA 90066**



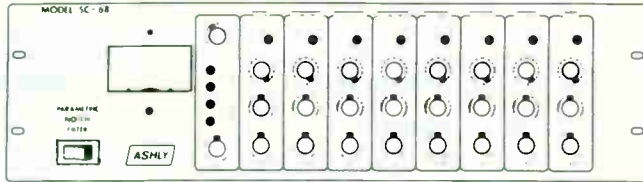
ASHLY AUDIO, INC.

100 Fernwood Ave.
Rochester, NY 14621
(716) 544-5191

AUDIO EQUIPMENT



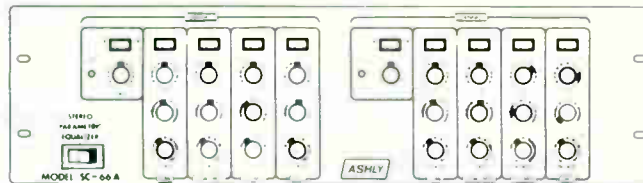
Model SC-40



Model SC-68



Model SC-63



Model SC-66A



Model SC-33



Model FET-200

FET-500 Not Pictured

INSTRUMENT PREAMPS

SC-40 Instrument Preamp

For pre-amplification of a guitar, bass or keyboard where low noise and distortion, sophisticated tone controls, separate outputs and effects send/return patch points are desired **\$425.00**

PARAMETRIC EQUALIZERS

SC-68 Notch Filter

For making sharp cuts in the frequency spectrum. For example: feedback, cabinet resonances, hum or TV sync signals and single "hot" notes on musical instruments. Note: includes a unique setup system with a built in limiter to help you find feedback. **\$689.00**

SC-63 Mono Three Band

For shaping the overall sound of a PA system to improve response, monitor system feedback control, correction of front system speaker or room resonance problems, instrument tone control, monitor speaker response adjustment for recording studios, mixing console equalization supplementation, obtaining better results from reverb and effects units, broadcast announcer voice enhancement, record wear equalization correction, removal of unwanted sounds in motion picture sound and TV, bass drum emphasis, frequency selected voice over effects and modified speaker response curves. Basically, anywhere that complete eq control is desired **\$439.00**

SC-66A Stereo Four Band

Stereo version (also can be used mono) of the SC-63. Same suggestions apply **\$725.00**

NOISE GATE

SC-33 Noise Gate

For use in PA and recording situations to isolate drum microphones, clean up noisy keyboards, shut off vocal microphones when not in use, provide automatic fade outs and other effects **\$429.00**

POWER AMPLIFIER

FET-200 100 Watt/Ch. Amplifier

100 watt/ch at 8 ohms, MOS-FET type amplifier. Can be used anywhere conventional power amplifiers are used (same hook-ups) **\$769.00**

FET-500-250 Watt/Ch. Amplifier

FEATURES

- 800 watts 8 ohms bridged mono
- 250 watts/channel at 8 ohms
- MOS-FET type amplifier
- Uses 5-1/4" rack space
- 400 watts/channel at 4 ohms.

The FET-500 is a push-pull amplifier with high voltage, wide bandwidth electronics. This approach assures low noise, low distortion, and excellent transient response. Inputs are bridging, active balanced (transformerless), equipped with both 1/4" jacks and XLR-type connectors of both sexes. All input connections can, however, operate as balanced or unbalanced. This is determined by the connector used in conjunction with the input. Stereo, mono and bridging modes are user selectable by means of rear panel switches, requiring no internal modifications or additional components. Each channel's electronics and heat sink are combined into a compact, plug in module which can be removed from the amplifier in seconds.

\$1095.00



ASHLY AUDIO, INC.

100 Fernwood Ave.
Rochester, NY 14621
(716) 544-5191

AUDIO EQUIPMENT



SC-20



SC-22



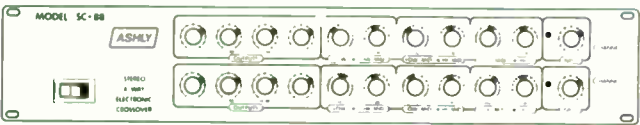
SC-70



SC-77



SC-80



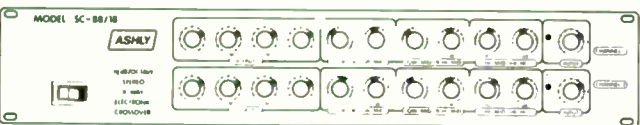
SC-88



SC-77/18



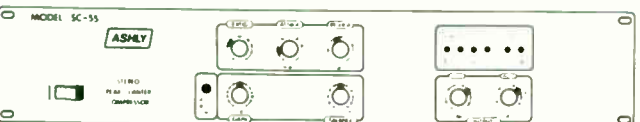
SC-80/18



SC-88/18



SC-50



SC-55

ELECTRONIC CROSSOVERS

SC-20 Mono Two Way

For active mono 2-way PA or bass guitar systems. Also, the SC-20 can be used as a low or high cut filter. Summing inputs can be used with stereo mixers for submixing purposes.

\$265.00

SC-22 Stereo Two Way

For active stereo 2-way or mono 3-way systems. Also, can be used as a low cut, high cut, or bandpass filter.

\$349.00

SC-70 Mono Three Way

For active mono 2-way or 3-way systems. Also, can be used as a low cut, high cut or bandpass filter.

\$299.00

SC-77 Stereo Three Way

For active stereo 2-way or 3-way, mono 2-way, 3-way, 4-way or 5-way systems. Also, can be used as a low cut, high cut or bandpass filter.

\$519.00

SC-80 Mono Four Way

For active mono 2-way, 3-way or 4-way systems. Also, can be used as a low cut, high cut, or multiple bandpass filter.

\$425.00

SC-88 Stereo Four Way

For active mono 2-way, 3-way, 4-way, 5-way, 6-way, 7-way; or stereo 2-way, 3-way or 4-way systems. Also, can be used as a low cut, high cut and multiple bandpass filter.

\$665.00

SC-70/18 Mono Three Way

Same as SC-70 with an 18 dB per octave slope instead of 12 dB per octave.

\$355.00

SC-77/18 Stereo Three Way

Same as SC-77 with an 18 dB per octave slope instead of 12 dB per octave.

\$599.00

SC-80/18 Mono Four Way

Same as SC-80 with an 18 dB per octave slope instead of 12 dB per octave.

\$495.00

SC-88/18 Stereo Four Way

Same as SC-88 with an 18 dB per octave slope instead of 12 dB per octave.

\$769.00

LIMITER-COMPRESSORS

SC-50 Mono

May be used as protective device to prevent audio levels from overloading associated systems such as: tape recorders, amplifiers, speakers or transmitters. It may also be used for loudness enhancement or to create special effects and unusual sounds for recording and musical performance situations (example: instrument sustain).

\$359.00

SC-55 Stereo

Stereo version of the SC-50. The same applications apply.


\$599.00



ATLAS SOUND

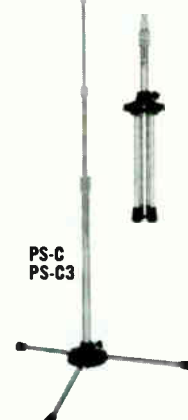
**Microphone
Stands and
Accessories**

"MICROPHONE FLOOR STANDS"




MS-10C

The world's most popular, budget-priced microphone floor stand. 5/8"-27 standard microphone threads. Grip-action clutch. 10" dia., circular base, charcoal finish. 35" to 63" H., 10 lbs.




**PS-C
PS-C3**

Porta-Series. Functional and foldable. Designed for the touring performer. Unique spring-lock tripod base reduces to 32" H. minimum for transport and storage. PS-C3; with 3-section tube for miking at low height. PS-C; 35" to 65" H., 4.5 lbs. PS-C3; 26" to 66" H., 4 lbs.




**MS-11S
MS-12S**

The Professional's favorite. Automatic sleeve action clutch for effortless instantaneous height adjustment. Low silhouette, circular base. MS-11S; with decorative chrome base-cover. 39" to 62" H. MS-11S; 13 lbs. MS-12S; 12 lbs.




**MS-11C
MS-12C**

Versatile general purpose floor stands featuring grip-action clutch, and low profile, 10" dia. base with added weight for stability. MS-11C; chrome finish base. MS-12C; texture charcoal base. 34"-62" H., 12 lbs.



**MS-4
MS-20**

Professional stands, with grip-action clutch. Low contour circular base provides heavy duty stability required for stage, or use with boom attachment. MS-4; 3 section 25" to 65" H., 11 lbs. low height option. MS-20; 37" to 66" H., 14 lbs.




MS-25


Professional studio stand. Air suspension system for microphone protection. Over-size 1 1/4" dia. tube assembly and extra heavy 17" triangular base with chrome cover for maximum stability. 38" to 67" H., 23 lbs.

"MICROPHONE BOOM ATTACHMENTS"


With Counterweights for precision balance, modern finish, diecast, tapered styling



BB-44
Universal one-piece swivel. Single knob control for motion and positioning. 31" L., 3 lbs.




PB-1
Porta-Boom. Designer-styled for stage and studio applications. Over-sized hardware. Diecast zinc swivel with dual adjustment controls. 31" L., 4 lbs.




PB-1X
Expandable Porta-Boom. Increased length for added microphone placement flexibility. Ideal for keyboard and instrument miking, studio and stage use. 31" to 47" L., 4.5 lbs.


Without Counterweights



BB-55
Contemporary styling, positive action triangular knob for dependable control and microphone adjustments. 31" L., 2 lbs.



PB-3
Fixed length Porta-Boom. For use with lightweight or wireless microphone. Dual adjustment controls with oversized hardware. 31" L., 2.5 lbs.



PB-2X
Expandable length, Porta-Boom. For use with floor and table stands, or hand held miking applications. 21" to 37" L., 2.5 lbs.

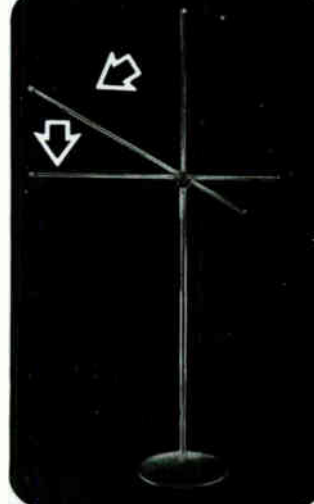
"STUDIO BOOMS"



**SB-36
SB-36W**

Professional boom stand. Grip-action clutch with integral air suspension system for counterbalance. Boom length 62", tapered counterweight. Vertical adjustments from 48" to 72" H., triangular base 17". Includes microphone swivel, cable guide clips, chrome shell on base. 36 lbs. SB-36W; Mobile model. Same as SB-36 with noiseless rubber casters. 40 lbs.

"2 IN 1 STAND"



MSB-21

"Two-In-One". Converts easily from conventional floor stand to stand-with-integral microphone boom without disassembly. Economical and convenient for transportation-ease and compact storage. A patented Atlas Sound stand, and the ideal "starter" for many schools, churches, catering establishments, civic organizations, clubs and studios. Heavyweight diecast base for optimum stability. 40" to 70" H. Boom Extension to 30" L., 14.5 lbs.

ATLAS SOUND

DIVISION OF AMERICAN TRADING AND PRODUCTION CORPORATION
10 POMEROY ROAD, PARSIPPANY, NEW JERSEY 07054
TELEPHONE 201 887-7800



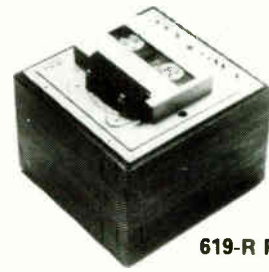
219 Crossen
Elk Grove, IL 60007
(312) 640-1030
Telex 4992690 AUDCO UI

audico inc,

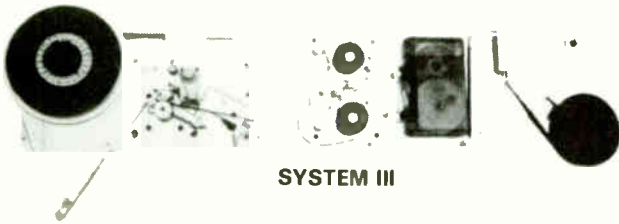
TAPE LOADING SYSTEMS/ACCESSORIES



SYSTEM III WITH 619-P PAY-OFF UNIT



619-R REWINDER



SYSTEM III



"HOCKEY PUCK" SPLICER

VIDEO TAPE LOADING SYSTEMS

UMATIC, VHS AND BETA — (Also Load Audio)

Systems can be equipped to load Umatic, VHS, and Betamax video cassette and cookies as well as audio cassettes, cartridges and reels. Tape loading speed is 135 inches per second. Counter allows selection of exact tape length desired. Built-in cleaner is included which can be used to wipe both sides of video tape during loading or rewinding. Space is provided to mount a burnisher/scrapper.

All systems consist of a 751-V Delivery Unit and an 829 Receiving Unit with one interchangeable Take-up Module. Systems II and III also include the 29R Unloading Unit. The 829 Receiving Unit, which contains a processor that continuously monitors in-path tape loading tension, may be upgraded: System I or II to System II or System III.

Systems I and II require only one Take-up Module for both VHS and Beta; System III requires separate modules for each format. Umatic modules handle both KCA and KCS housings. When ordering, specify desired module — Umatic or 1/2" on System I or II; Umatic, VHS or Beta on System III.

System I Video Loader Loads new tape into new cassette housing. **\$5775.00**

System II Video Loader/Reloader Has additional feature that automatically removes old tape from cassette housings without taking them apart, and thus allows for their convenient reuse **6775.00**

System III Video Loader/Reloader/Rewinder Adds ability to rewind and fast-forward cassettes, and to wipe tape while rewinding. When reloading, tape can be removed from either reel. **6975.00**

Take-up Modules Extra interchangeable modules (in addition to one selected with Receiving Unit).

Load (All Systems) **450.00**

Load/Reload (Systems II and III) **600.00**

Load/Reload/Rewind (System III) **750.00**

Audio Tape Loading Options (1) Audio Cassettes, (2) Type-A Broadcast and 8-track Carts, and (3) Nagra Reels.

First Option **325.00**

Second and Third Option (each) **50.00**

619-P Pay-off Unit Used with video loader to transfer tape directly from a cassette housing or cookie into another housing. Mounts to left of Delivery Unit which counts desired length. Built-in leader detector stops loading, and length loaded is indicated. VHS unit transfers tape from VHS housings to both VHS and Beta housings.

Umatic or VHS **975.00**

Umatic and VHS **1175.00**

Economy Video Loader Loads new tape into new cassette housings. Includes 751-V Delivery Unit and 619-T Take-up Unit with tape wiper and one Take-up Module, either 1/2" (VHS and Beta) or Umatic, Audio tape loading options also available **4275.00**

Second Take-Up Module **450.00**

VIDEO CASSETTE REWINDER

619-R Video Cassette Rewinder Rewinds and fast-forwards Umatic, VHS and Beta cassettes. Unit can also be used as either 619-P Pay-off Unit or 619-T Take-up Unit on Economy Video Loader (Take-up tape wiper is \$150 extra).

Rewinder One format — Umatic, VHS or Beta **\$1125.00**

Each additional format **700.00**

Rewinder/Unloader 29-R Unloader added to above 619-R. Allows old tape to be removed from housings and stops automatically when leader is detected. One format **1975.00**

Each additional format **700.00**

VIDEO TAPE SPLICERS

"Hockey Puck" Splicer Tape and leader are butted together and held in place by vacuum holes in tape slot. Splicing tape is placed on top of block across ends to be spliced. The "puck", a precision fitting, hardened metal roller, is rolled down the slot and cuts and applies splicing tape in one motion.

1/2" Tape **\$550.00**

3/4" Tape **550.00**

Vacuum Source The "Hockey Puck" Splicer requires a vacuum source for tape hold-down, either a small vacuum pump or a compressed air source connected thru a venturi.

Venturi Kit Consists of venturi, flow control and fittings to generate vacuum from compressed air source. **75.00**

Vacuum Pump **125.00**

SUMMARY

Costs for various formats and features, including optional "Hockey Puck" Splicer(s) and vacuum pump.

ECONOMY LOADER	SYSTEM I	SYSTEM II	SYSTEM III
Umatic (or one 1/2" format on System III)			
\$4950.00	\$6450.00	\$7450.00	\$7650.00
VHS and Beta			
4950.00	6450.00	7450.00	8400.00
Umatic, VHS and Beta (two "Hockey Puck" Splicers)			
5950.00	7450.00	8600.00	9700.00

Above System III for Umatic, Plus:

Umatic Pay-off Unit **\$8625.00**

VHS/Beta System II Load/Reload Module,
and 1/2" "Hockey Puck" Splicer **8800.00**

Add \$325.00 to above prices for audio cassette or broadcast cart loading option; add \$375.00 for both.

Subtract \$50.00 from above prices for Venturi Kit instead of Vacuum Pump.

All prices F.O.B. Elk Grove, IL, and subject to change without notice.



219 Crossen
Elk Grove, IL 60007
(312) 640-1030
Telex 499-2690 AUDCO UI

audico inc,

VIDEO TAPE/ACCESSORIES

VIDEO TAPE LOADING SYSTEMS

LOAD/RELOAD* Your Own...and Save!

*Easily Reuse Cassette Housings Without Taking Them Apart

Umatic

VHS

Beta

Length	Material Costs	
	Tape Only (Reload)	Tape and Housing
5 min	\$.83	\$ 5.38
20 min	3.30	7.85
60 min	9.90	14.45
T-5	\$.08 - \$.12	\$1.18 - \$1.37
T-30	.48 - .71	1.58 - 1.96
T-120	1.93 - 2.82	3.03 - 4.07
L-50	\$.12 - \$.18	\$1.22 - \$1.43
L-500	1.20 - 1.75	2.30 - 3.00

CASSETTE LABELS Umatic, VHS, Beta

- Die Cut • Pressure Sensitive • Ready to Use
- Suitable for Typing, Printing, Duplicating, etc.
- Available in Pewter, Sand and Matte White

ACTUAL LABEL SIZES

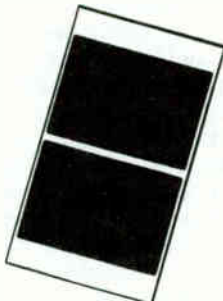
100 SHEETS PER PACKAGE

umatic

6-1/4" x 4-3/8"

2 LABELS PER SHEET
200 Labels per package

SHEET SIZE:
6-3/8" x 11-1/4"

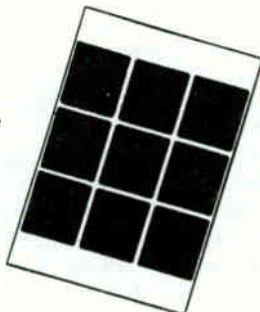


beta

2-1/2" x 2-3/4"

9 LABELS PER SHEET
900 Labels per package

SHEET SIZE:
7-7/8" x 11-1/4"

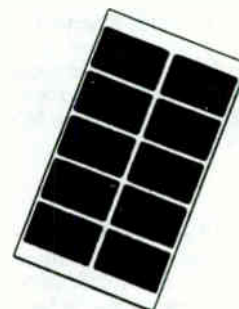


vhs

3-1/16" x 1-7/8"

10 LABELS PER SHEET
1,000 Labels per package

SHEET SIZE:
6-3/8" x 11-1/4"



(Types, colors and whites may be mixed to achieve quantity prices)

	1-4	5-9	10-19	20 & More
Audio				
Whites	\$17.00	\$15.30	\$13.80	\$12.40
Colors	21.00	18.60	16.50	14.60
Video				
Whites	22.00	19.80	17.80	16.00
Colors	26.00	23.00	20.40	18.00

RAINBOW ASSORTMENT PACKAGES:

Audio—10 Colors and 2 Whites: 10 sheets of each (120 sheets total)	\$30.00
2 sheets of each (24 sheets total)	10.00
Video and Audio—Choice of any 50 sheets	20.00

Prices FOB Elk Grove, Illinois
(When orders are prepaid, surface freight is allowed
within the continental U.S.A.)

AUDI-CORD CORPORATION

1845 W. Hovey Ave.
Normal, IL 61761
(309) 452-9461

3 TRANSPORT REPRODUCER



The "A" Series Playback:

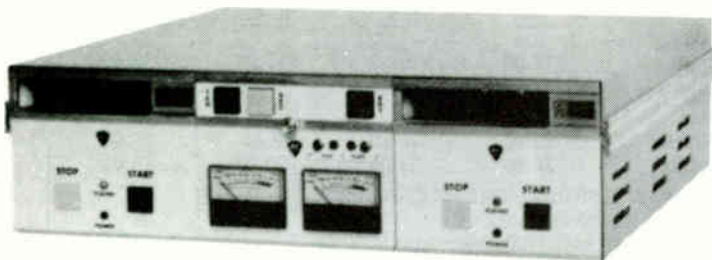
- Modular constructed for easy service • Interchangeable transports and other assemblies • 1 or 3 tone — mono or stereo • Replay reminder system • Full remote control — automation compatible • Meets the needs of the 1976 NAB standards • Latching connectors — slip/lift cover.

The Audi-Cord "A" Series

An intermediate priced cartridge tape machine series with most of the quality and features found in units costing much more • Approx. 17 1/4" wide x 5 1/4" high • Mono or stereo — 1 or 3 tones • Slide-out front panel (recorder) • All the other "A" Series features and playing capabilities.

A brand new concept in record-play design — this is quite possibly the most useful studio production machine ever produced. It took Audi-Cord design ingenuity and foresight to produce such an idea for your needs!!

Three Selectable Recording Modes — Standard Dual Replay Modes:



- Regular Single Deck Recordings—Made on the right hand deck. Left deck may be playing as needed • Dual Recordings—Simply load the cartridge and push the buttons. How many times have you needed two copies? This is now possible with Audi-Cord Twin Transport Record-Play • Copies (Dubs)—Place cartridge to be copied in left deck and select dub mode, make a perfect copy in the right deck (all switching is automatic • Sound Over Sound—Cut first sound in normal manner, place in left deck, mix in second recording by dubbing left to right • Composites—Easily performed in dub mode using 1 kHz inhibit facility provided • Stereo to Mono Mix Dubs—Special models on request with 1 deck of each

SPECIFICATIONS

- Just 5-1/4"H — perfect for those console built-ins where height is a premium • 3 independent outputs—three independent control systems • 5-3/4"W x 16"L Each Unit width • Weight: 19 lbs. per unit • Rack or desk mountings • Same features of single playbacks



- Rated Audio Output: +8 dB, balanced transformer • Rated Audio Input (for 160 nWb/m: -24 dBm, 600 ohms (50 MV. RMS), min. 2.5 Volts Max • Amplifier Overload Capability: +18 dBm min. +20 dBm clipping • Input Impedance: 5100 ohms, Balanced Transformer Amplifier Distortion: 0.5% total harmonic, 18 dB above 160 nWb/m. 1KHz • System Distortion: 1% Typical at 160 nWb/m, 1KHz • Equalization: Dual Hi-Lo • Bias Oscillator Frequency: 100 KHz, nominal • Response Test Accuracy: +/-2 dB, verified by metering internal • Record Timer Stop Mode: Selectable for front or end of EOM • Optional Record Timer: 4 Digit, Seconds and Tenths • Record Timer Accuracy: +/-2 second (Plus transport timing accuracy) • Cue Tone Oscillators: All 3 NAB Tones are Standard • Hum and Noise (wideband): -50 dB re 160 nWb/m at 1KHz-mono; -47 dB re 160 nWb/m at 1KHz-stereo; -48 dB re 160 nWb/m at 1 KHz-mono; -46 dB re 160 nWb/m at 1 KHz-stereo, (W.B. S/N (Typical Tape) • Frequency Response: +/-2 dB to NAB Standard Tape, 50 Hz to 15 KHz • Phase Stability: +/-90 °, long term at 12 KHz • Optional Cue Switching: Sinking (Open Collector) Logic • Cue Switching Loads: 100 ma. max., +40 VDC open circuit max. • Flutter: 0.15% weighted peak, max.

"A" SERIES 3 TRANSPORT PLAY

A30 Mono	1 Cue (Desk Cabinet - Wt. 52#)	..... \$2429.00
A30R Mono	1 Cue (Rack Mount - Wt. 60#)	..... 2429.00
A31 Mono	3 Cue (Desk Cabinet - Wt. 52#)	..... 2519.00
A31R Mono	3 Cue (Rack Mount - Wt. 60#)	..... 2519.00
A35 Stereo	1 Cue (Desk Cabinet - Wt. 52#)	..... 2629.00
A35R Stereo	1 Cue (Rack Mount - Wt. 60#)	..... 2629.00
A36 Stereo	3 Cue (Desk Cabinet - Wt. 52#)	..... 2719.00
A36R Stereo	3 Cue (Rack Mount - Wt. 60#)	..... 2719.00

"A" SERIES DUAL TRANSPORT REC-PLAY

A50 Mono	1 Cue (Desk Cabinet - Wt. 43#)	..... \$2219.00
A50R Mono	1 Cue (Rack Mount - Wt. 54#)	..... 2219.00
A51 Mono	3 Cue (Desk Cabinet - Wt. 43#)	..... 2279.00
A51R Mono	3 Cue (Rack Mount - Wt. 54#)	..... 2279.00
A55 Stereo	1 Cue (Desk Cabinet - Wt. 43#)	..... 2539.00
A55R Stereo	1 Cue (Rack Mount - Wt. 54#)	..... 2539.00
A56 Stereo	3 Cue (Desk Cabinet - Wt. 43#)	..... 2599.00
A56R Stereo	3 Cue (Rack Mount - Wt. 54#)	..... 2599.00
A56-1 Stereo	3T w/LH Mono (Desk Cabinet - Wt. 43#)	..... 2449.00
A56-1R Stereo	3T w/LH Mono (Rack Mount - Wt. 54#)	..... 2449.00

"A" SERIES PLAYBACKS

A10 Mono	1 Cue (Desk Cabinet - Wt. 21#)	..... \$819.00
A10R Mono	1 Cue (Rack Mount - Wt. 33#)	..... 819.00
A11 Mono	3 Cue (Desk Cabinet - Wt. 21#)	..... 849.00
A11R Mono	3 Cue (Rack Mount - Wt. 33#)	..... 849.00
A15 Stereo	1 Cue (Desk Cabinet - Wt. 21#)	..... 889.00
A15R Stereo	1 Cue (Rack Mount - Wt. 33#)	..... 889.00
A16 Stereo	3 Cue (Desk Cabinet - Wt. 21#)	..... 919.00
A16R Stereo	3 Cue (Rack Mount - Wt. 33#)	..... 919.00

"A" SERIES RECORD-PLAYBACKS

A20 Mono	1 Cue (Desk Cabinet - Wt. 28#)	..... \$1379.00
A20R Mono	1 Cue (Rack Mount - Wt. 39#)	..... 1379.00
A21 Mono	3 Cue (Desk Cabinet - Wt. 28#)	..... 1419.00
A21R Mono	3 Cue (Rack Mount - Wt. 39#)	..... 1419.00
A25 Stereo	1 Cue (Desk Cabinet - Wt. 28#)	..... 1619.00
A25R Stereo	1 Cue (Rack Mount - Wt. 39#)	..... 1619.00
A26 Stereo	3 Cue (Desk Cabinet - Wt. 28#)	..... 1659.00
A26R Stereo	3 Cue (Rack Mount - Wt. 39#)	..... 1659.00

AUDI-CORD CORPORATION

1B45 W. Hovey Ave.
Normal, IL 61761
(309) 452-9461



RECORD-REPRODUCER
(Shown in Stereo Model S26)
(Desk Cabinet)

S SERIES PLAYBACK FEATURES:

- All front access controls in pull-out drawer
- Dual play equalization — HI & LO
- Replay lock-out to prevent accidental replays *
- Off speed motor lock-out to prevent start WOW *
- Automatic motor shut-off for long idle periods *
- Off cue indicator avoids un-cued carts
- SEC & TER Signal Lites
- Selectable 600 or 150 ohm outputs w/internal pad space
- Full +8dBm output, +20dBm clipping
- All solid-state control system of modern CMOS and Linear I.C.'s
- Thick aluminum deck, overlaid with stainless steel for wear
- Very rugged head mounts with top adjustments that stay put
- Split polished stainless steel tape guides that are individually adjustable and reversible for wear, offer ultra precise internal guiding
- Pressure roller regulating system insures proper pressure and indent to reduce tape (phase) skew
- Complete remote facilities (plugs furnished)
- Attractive textured vinyl clad cabinet with slip/lift cover for easy cleaning access
- Polycarbonate panel inserts with permanent control markings
- Extensive use of plug-in's and easy maintenance access

* Indicates customer selected options

S SERIES REPRODUCERS:

Rated Audio Output: +8dBm, balanced transformer
 Amplifier Overload Capability: +18dBm min., +20dBm clipping, int. pad provided
 Amplifier Distortion: 0.5% max. total harmonic @ +1dBm
 Hum & Noise * -50dB re 160 nWb/m @ 1kHz-mono
 (Wideband) * -47dB re 160 nWb/m @ 1kHz-stereo
 W.B. S/N (Typical Tape) * -48dB re 160 nWb/m @ 1kHz-mono
 -46dB re 160 nWb/m @ 1kHz-stereo

* NOTE: Add -2 to -8dB when comparing to some older specs.

Equalization: Dual HI & LO
 Frequency Response: ±2dB to NAB Standard Tape, 50Hz - 15kHz
 Phase Stability: ±90 degrees, long term @ 12kHz
 (The Audi-Cord transport is designed for long term phase stability. However, it is appreciated that phase differential over long term use is difficult to achieve unless stringent maintenance is applied).

Optional Cue Switching: Sinking (Open Collector) Logic
 Cue Switching Loads: 100ma. max., +40VDC open circuit max.
 Flutter: 0.15% weighted peak (max.)
 Dimensions: 8 1/4" W x 5 1/4" H x 14" L

REPRODUCER
(Desk Cabinet)



S SERIES RECORDER FEATURES:

- Plug-in companion to any similar playback. Easily field exchanged to distribute transport wear if desired
- All front access operator controls in pull-out drawer

RECORDERS/REPRODUCERS

- Multi-function meter system with automatic switching from record to replay
- Dual recorder equalization — HI & LO
- Internal 3 tone response check facility
- Bias and tone recording indicators
- Record shut-off with end of SEC tone
- Timed tone bursts with manual over-ride
- Recording timer selectable for min-sec or sec-tenths mode, front or end of SEC tone stop action
- 5K ohm bridging transformer input with internal pad space
- Complete remote control facilities (plugs furnished)
- Compatible with all known automation encoders
- Polycarbonate panel inserts and control markings
- Extensive use of plug-in's and easy maintenance access
- Attractive textured vinyl clad cabinet with slip/lift cover

S SERIES RECORD-REPRODUCERS:

Rated Audio Input: -12dBm, 600 ohms, Alterable to -22dBm by internal gain changes
 (for 160 nWb/m)
 Input Impedance: 5100 ohms, Balanced Transformer
 Amplifier Distortion: 0.5% total harmonic, 1dB above 160 nWb/m @ 1kHz
 System Distortion: 1% Typical, 160 nWb/m @ 1kHz
 Equalization: Dual HI & LO
 Bias Oscillator Frequency: 100kHz, nominal
 Response Test Accuracy: ±2dB, verified by metering internal
 Record Timer Stop Mode: Selectable for front or end of E.O.M.
 Optional Record Timer: 4 Digit, Seconds & Tenths, Min & Sec option
 Record Timer Accuracy: ±.2 second (Plus transport timing accuracy)
 Cue Tone Oscillators: All 3 NAB Tones are Standard
 Dimensions: (Record-Play) 16" W x 15" L x 5 1/4" H

TWIN DECK-TDS SERIES REPRODUCER TDS SERIES FEATURES:

- The lower deck is an adjustable slide-out assembly for easy maintenance
- Extensively modular design with plug-in circuit cards thru-out
- Most electronic and renewal parts same as the "S" Series family
- Front panel controls attractively and functionally placed for easy operation
- Attractive vinyl-clad cabinet and polycarbonate panel inserts
- SEC, TER & PLAYED signal lites for each deck
- Replay reminder system with full selectable use options
- Dual reproduce equalizers — HI & LO frequencies
- Selectable 600 or 150 ohm balanced transformer audio outputs
- Full +20dBm clipping point audio amplifier system
- Complete remote control facilities
- Automatic motor shut-down when both carts have played
- Audi-Cords heavy-duty deck and head mounts with split tape guides
- Side azimuth adjustment (lower deck only)
- 100% solid-state design with high noise immunity CMOS logic
- Dimensions: 8 1/4" W x 7 1/2" H x 14" D

S SERIES PREMIUM PLAYBACKS:

S11 Mono, 3 Cue (desk cabinet - 22 lbs.) \$1029.00
 S11R Mono, 3 Cue (rack mount - 34 lbs.) 1029.00
 S16 Stereo, 3 Cue (desk cabinet - 22 lbs.) 1119.00
 S16R Stereo, 3 Cue (rack mount - 34 lbs.) 1119.00

S SERIES PREMIUM TWIN DECK PLAYBACKS:

TDS-1 Mono, 3 Cue (desk cabinet - 32 lbs.) \$1499.00
 TDS-6 Stereo, 3 Cue (desk cabinet - 32 lbs.) 1679.00
 502-0039
 Rack Mounting Shelf (holds 2 units in 8 1/4" of 19" rack space - 15 lbs.) 39.00

S SERIES PREMIUM RECORD PLAYBACKS:

S21 Mono, 3 Cue & Timer (desk cabinet - 33 lbs.) \$1799.00
 S21R Mono, 3 Cue & Timer (rack mount - 40 lbs.) 1799.00
 S26 Stereo, 3 Cue & Timer (desk cabinet - 33 lbs.) 1989.00
 S26R Stereo, 3 Cue & Timer (rack mount - 40 lbs.) 1989.00

S SERIES DELAY MACHINES:

S32 Mono Network Delay, 3 T. & Timer (desk - 37 lbs.) \$1889.00
 S32R Mono Network Delay, 3 T. & Timer (rack - 44 lbs.) 1889.00

TD-1B Tape Degausser

(With Automatic Overheat Thermal Protection)

- Erases audio, video, computer, data tape, magnetic films, cartridges and cassettes.
- For tapes up to 3/4 inch.
- Accommodates up to 10 1/2 inch NAB reels.
- Provides a wide focused magnetic field to assure complete erasure.
- Positive results every time with a simple two pass operation for broadcast NAB audio cartridges.
- Transient protection to prevent permanent tape damage.
- Operate light flashes, indicating auto-shutoff by thermo protector, resets automatically.
- 115 and 220 volt, 50-60 Hz models available.

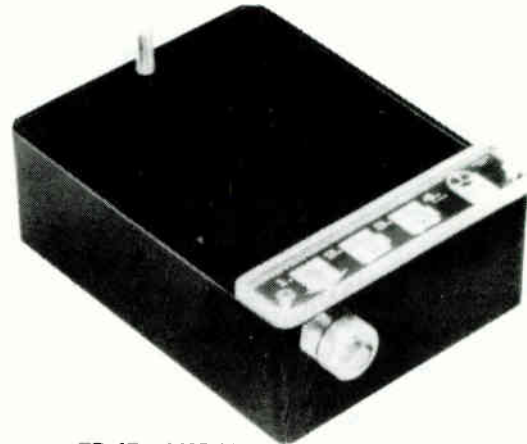
Power Requirements: TD-1B 115 volts AC ± 10% 50-60 Hz.
TD-1BF 230 volts AC ± 10% 50-60 Hz.

Duty Cycle: One minute ON — Three minutes OFF.

Dimensions: 5 1/4 x 7 1/4 x 3 inches high. 133 x 184 x 76.2 MM.

Weight: Net — 9 1/2 lbs. Shipping — 10 lbs.

Reel Size: Up to 10 1/2 inches in diameter. Removable center post for large carts.



TD-1B - \$105.00
(115V 50-60 Hz)

TD-1BF - \$118.00
(230V 50-60 Hz)

TD-4 Tape Degausser

- Erases audio, video, data tapes, U-Matic cassettes up to 750 oersteds, reels to 14 inches in diameter. See performance chart.
- Provides 2550 effective gauss field.
- Built in timer has adjustable "on" cycle and automatic shut-off.
- Automatic cooling fan operation.
- Overheat light with automatic thermal protection prevents exceeding duty cycle on "HI" position. Thermal protection resets to normal operation automatically.
- Hi-Lo operation allows continuous duty erasing on Lo position for most tapes. See performance chart.
- Standard 5/16 inch center post with 3 inch NAB hub supplied.
- Conservative design assures long reliable performance.

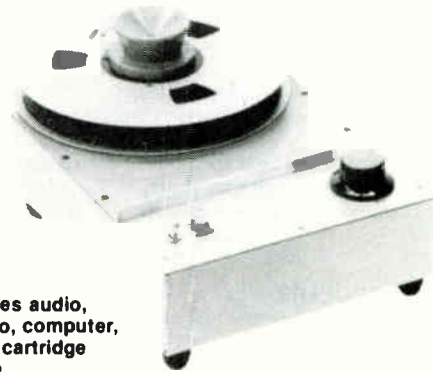
MODEL NUMBER	LINE VOLTAGE	LINE FREQUENCY	LINE CURRENT		MAXIMUM GAUSS		
			HI	LO	HI	LO	
TD-4-115-60	110-125 VAC	60 HZ	8A	4A	2550	2000	\$735.00
TD-4-115-50	110-125 VAC	50 HZ	8A	4A	2550	2000	775.00
TD-4-230-60	220-250 VAC	60 HZ	4A	2A	2550	2000	825.00
TD-4-230-50	220-250 VAC	50 HZ	4A	2A	2550	2000	825.00

Duty Cycle: Hi position 50%, 20 minutes. Lo position - continuous.

Dimensions: 10 x 13 x 4 inches. (25.4 x 33 x 10.1 mm)

Shipping Weight: 45 lbs. (14.97 kg)

Erases audio,
video, computer,
and cartridge
tape.



TD-5 Tape Degausser

- Erases audio, video, data U-Matic cassettes up to 1100 oersteds and 16 inches diameter.
- Provides 3500 effective gauss field.
- Built in timer has adjustable "on" cycle and automatic shut-off.
- Automatic cooling fan operation.
- Overheat light and automatic thermal protection prevents exceeding duty cycle on "Hi" position, resets to allow normal operation.
- Hi-lo selectable operation allows continuous duty erasing on Lo position for many tapes. See performance chart.
- Standard 5/16 inch center post with 3 inch NAB hub supplied.
- Conservative design assures long reliable performance.

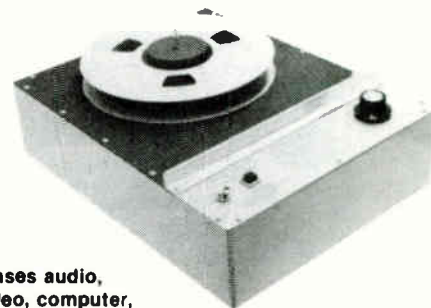
MODEL NUMBER	LINE VOLTAGE	LINE FREQUENCY	LINE CURRENT		MAXIMUM GAUSS		
			HI	LO	HI	LO	
TD-5-115-60	110-125 VAC	60 HZ	10	4	3400	2600	\$845.00
TD-5-115-50	110-125 VAC	50 HZ	10	4	3400	2600	885.00
TD-5-230-60	220-250 VAC	60 HZ	5	2	3400	2600	915.00
TD-5-230-50	220-250 VAC	50 HZ	5	2	3400	2600	915.00

Duty Cycle: Hi position 50%, 20 minutes. Lo position - continuous.

Dimensions: 13 x 17 x 4 inches. (33 x 43.2 x 10.1 mm)

Shipping Weight: 46 lbs. (20.87 kg)

Erases audio,
video, computer,
and cartridge
tape.





audio-technica®

1221 Commerce Dr.
Stow, OH 44224
(216) 686-2600 Telex 986411



AT837



AT853

UNIPOINT™ MICROPHONES

AT837 Miniature Unidirectional Electret Condenser Gooseneck Microphone

Battery or 9-52V phantom power. Includes: AT8102 2-stage windscreen*; AT8504 power module; battery. Requires output cable. Frequency response: 40-18,000Hz (close), 70-18,000Hz (distant).

AT837 Master Pack Quantity 10 \$135.00

AT853 Miniature Unidirectional Electret Condenser Microphone

Battery or 9-52V phantom power. Includes: AT8102 2-stage windscreen*; AT8505 power module with flat/roll-off response switch; 3200726 stand adaptor; 3200727 wire hanger adaptor; battery. Requires output cable. Frequency response: 30-20,000Hz.

AT853 Master Pack Quantity 10 \$175.00

AT855 Miniature Unidirectional Electret Condenser Microphone

Base mounts to 5/8"-27 threaded stand or flange. Battery or 9-52V phantom power. Includes: AT8102 2-stage windscreen*; AT8505 power module with flat/roll-off response switch; battery. Requires output cable. Frequency response: 30-20,000Hz.

AT855 Master Pack Quantity 10 \$175.00

AT857QM Miniature Unidirectional Electret Condenser Quick-Mount Gooseneck Microphone

Mounts directly to standard XLR panel jack. Flat/roll-off response switch in base. Phantom power only, 9-52V. Includes: AT8102 2-stage windscreen*; integral power module. Frequency response: 30-20,000 Hz.

AT857QM Master Pack Quantity 10 \$195.00

AT859 Miniature Unidirectional Electret Condenser Telescoping Wand Microphone

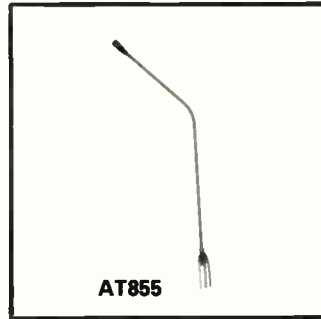
Battery or 9-52V phantom power. Includes: AT8102 2-stage windscreen*; integral power module; AT8405 stand adaptor; battery. Requires output cable. Frequency response: 40-18,000Hz (close), 70-18,000Hz (distant).

AT859 Master Pack Quantity 10 \$180.00

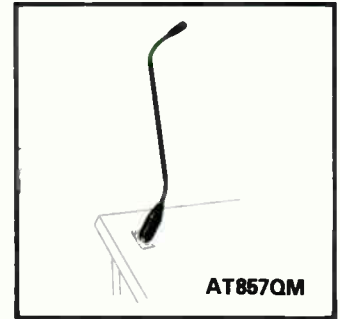
ACCESSORIES

- AT8102** Two-stage windscreen \$ 6.50
- AT8405** Snap-in mike clamp, metal base (for 21mm body diameter) 8.50
- 3200726** Custom stand adaptor for AT853 Fits 5/8"-27 stands 15.00
- 3200727** Wire hanger adaptor for AT853 8.50

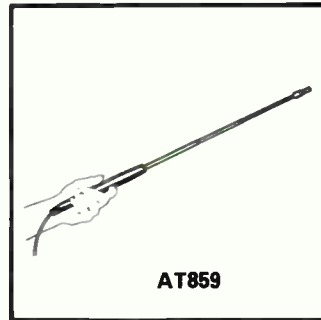
MICROPHONES/ACCESSORIES



AT855



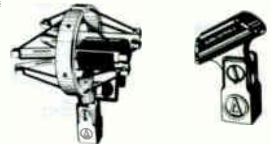
AT857QM



AT859



WINDSCREENS (8100 Series)



MICROPHONE MOUNTS (8400 Series)

MICROPHONE ACCESSORIES

Windcreens (8100 Series)

- AT8101** For AT801 \$6.00
- AT8111** For AT811 6.00
- AT8112** For AT812 6.00
- AT8114*** For AT813, AT814a 6.00
- AT8115** For AT836 6.00
- AT8116** For AT803a, AT831a 6.00

*AT8114 also available in Blue, Green, Red, White and Yellow. (Standard Gray will be supplied unless another color is specified.)

Line Matching Transformers (8200 Series)

- AT8201** Lo-Z/Hi-Z XLR/A3F in, 1/4" phone plug out . . . \$29.50
- AT8202** In-Line Attenuator (10, 20, 30 dB) 33.00

Cable Assemblies (8300 Series)

- AT8302** 16-1/2 ft. with XLR/A3F, 1/4" phone plug \$21.50
- AT8303/25*** 25 ft. extension cable with XLR/A3F and XLR/A3M connectors 26.00
- AT8305** 20 ft. with XLR/A3F, Lo-Hi-Z xfmr, 1/4" phone plug 36.00

*AT8303 series cables are available at authorized Audio-Technica microphone dealers in lengths of 10, 18, 25 and 50 ft. and in six colors in 25 ft. lengths.

Microphone Mounts (8400 Series)

- AT8405** Snap-in mic clamp \$ 4.50
- AT8406** Slip-in tapered clamp 4.50
- AT8407** Universal, spring-loaded mic clamp 6.50
- AT8410a** Shock mount 21.00
- AT8411** Tie clip for AT803a, AT831a 3.00
- AT8412** Dual tie clip for AT803a, AT831a 4.35
- AT8413** Tie clip for AT805S 3.00
- AT8414** Tie tac for AT803a, AT831a 5.50

Power Supplies (8500 Series)

- AT8501a** Dual 9 Volt Battery Phantom Power Supply \$78.50

Microphone Stands (8600 Series)

- AT8601** Desk Stand \$12.50

Prices and Specifications Subject to Change Without Notice.



800 SERIES MICROPHONES

AT802 Moving Coil Dynamic (Omni)

Sensitivity: -56dBm. Impedance: 600 ohms. Connector: XLRM. Frequency Response: 50-15,000Hz.

Accessories Furnished

AT8405 snap-in stand clamp. 16-1/2 ft., 2-cond.; shielded cable with XLR conn. mic end. Specify 1/4" or XLRM output end. Protective vinyl case.

AT802.....\$94.00

AT803a Sub-Miniature Clip-On Electret Condenser (Omni)

Sensitivity: -49dBm. Impedance: 400 ohms. Max. Input SPL: 130dB, 1% THD. S/N: 45dB/ μ Bar. Battery: 1.5V N Type. Battery Life: 4 months. Switch: On/Off Audio/Battery. Connector: XLRM. Frequency response: 30-20,000Hz.

Accessories Furnished

AT8411 tie clip*. AT8116 windscreen. Battery. Protective vinyl case.

*AT8412 double tie clip also available.

Note: Also operates on 9-52V phantom power.

AT803a.....\$115.00

AT813 Electret Condenser (Uni-Cardioid)

Sensitivity: -55dBm. Impedance: 600 ohms. Max. Input SPL: 125dB, 1% THD. S/N: 50dB/ μ Bar. Battery: 1.5V AA Type. Battery Life: 6 months. Switch: On/Off. Connector: XLRM.

Accessories Furnished

AT8405 snap-in stand clamp. Battery. 16-1/2 ft., 2-cond.; shielded cable with XLR conn. mic end. Specify 1/4" or XLRM output end. Protective vinyl case.

AT813.....\$125.00

AT813R Remote-Powered Electret Condenser (Uni-Cardioid)

Sensitivity: -49dBm. Impedance: 200 ohms. Max. Input SPL: 141dB, 1% THD. S/N: 50dB/ μ Bar. Power requirement: 9-52V DC. Phantom Power. Connector: XLRM. Frequency response: 40-20,000Hz.

Accessories Furnished

AT8405 snap-in stand clamp. 16-1/2 ft. 2-cond.; shielded cable with XLR conn. mic end and XLRM output end. Protective vinyl case.

AT813R.....\$180.00

AT814a Moving Coil Dynamic (Uni-Cardioid)

Sensitivity: -56dBm. Impedance: 250 ohms. Connector: XLRM. Frequency response: 30-20,000Hz.

Accessories Furnished

AT8406 tapered slip-in stand clamp. 16-1/2 ft., 2-cond.; shielded cable with XLR conn. mic end. Specify 1/4" or XLRM output end. Protective vinyl case.

AT814a.....\$145.00

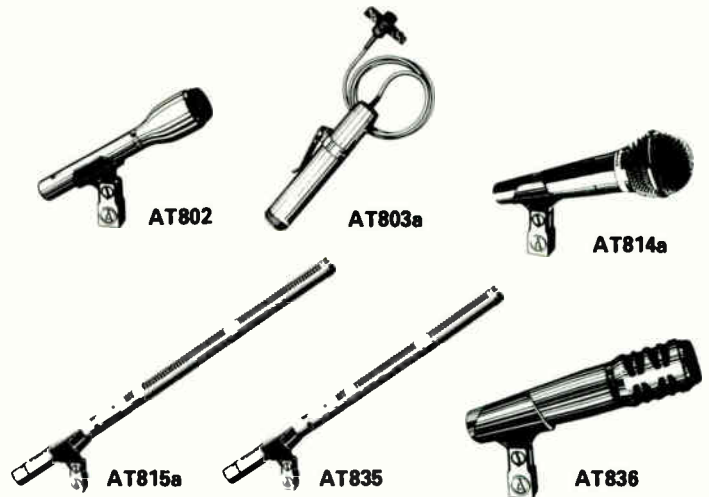
AT815a Electret Condenser Line/Gradient (Unidirectional)

Sensitivity: -44.5dBm. Impedance: 600 ohms. Max. Input SPL: 115dB, 3% THD. S/N: 50dB/ μ Bar. Battery: 1.5V AA Type. Battery Life: 4 months. Switch: Flat/Roll off. Connector: XLRM. Frequency response: 40-20,000Hz.

Accessories Furnished

AT8405 snap-in stand clamp; Battery. 16-1/2 ft., 2-cond.; shielded cable with XLR conn. mic end. Specify 1/4" or XLRM output end. Protective vinyl case. Foam windscreen.

AT815a.....\$220.00



AT815R Electret Condenser Line/Gradient (Unidirectional)

Sensitivity: -43dBm. Impedance: 200 ohms. Max. Input SPL: 140dB, 1% THD. S/N: 50dB/ μ Bar. Power requirement: 9-52V DC. Phantom Power. Frequency response: 40-20,000Hz.

Accessories Furnished

AT8405 snap-in stand clamp. Foam windscreen. 16-1/2 ft., 2-cond.; shielded cable with XLR conn. mic end and XLRM output end. Protective vinyl case. Connector: XLRM.

AT815R.....\$295.00

AT831a Sub-Miniature Clip-On Electret Condenser (Uni-Cardioid)

Sensitivity: -50dBm. Impedance: 400 ohms. Max. Input SPL: 130dB, 1% THD. S/N: 45dB/ μ Bar. Battery: 1.5V N Type. Battery Life: 4 months. Switch: On/Off Audio/Battery. Connector: XLRM. Frequency response: 40-20,000Hz (close); 70-20,000Hz (distant).

Accessories Furnished

AT8411 tie clip*. AT8116 windscreen. Battery. Instrument adaptor. Protective vinyl case.

*AT8412 double tie clip available.

Note: Also operates on 9-52V phantom power.

AT831a.....\$130.00

AT835 Electret Condenser Line/Gradient (Unidirectional)

Sensitivity: -44.5dBm. Impedance: 600 ohms. Max. Input SPL: 115dB, 3% THD. S/N: 50dB/ μ Bar. Battery: 1.5V AA Type. Battery Life: 4 months. Switch: Flat/Roll off. Connector: XLRM. Frequency response: 40-20,000Hz.

Accessories Furnished

AT8405 snap-in stand clamp; Battery. 16-1/2 ft., 2-cond.; shielded cable with XLR conn. mic end and XLRM output end. Foam windscreen. Protective vinyl case.

AT835.....\$210.00

AT836 Moving Coil Dynamic (Uni-Cardioid)

Sensitivity: -56dBm. Impedance: 250 ohms. Connector: XLRM. Frequency response: 50-17,000Hz.

Accessories Furnished

AT8406 slip-in stand clamp; 16-1/2 ft., 2-cond.; shielded cable with XLR conn. mic end and XLRM output end. Protective vinyl case.

AT836.....\$225.00

AT838G Moving Coil Dynamic (Uni-Cardioid)

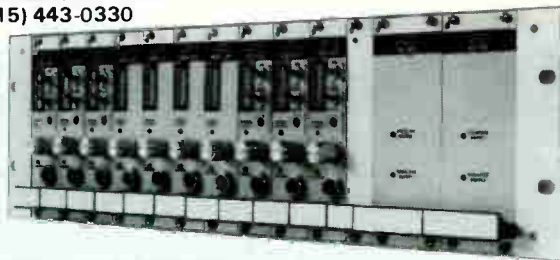
Sensitivity: -63dBm. Impedance: 600 ohms. Connector: XLRM. Frequency response: 100-10,000Hz.

AT838G.....\$89.00



**AUDIO
TECHNOLOGIES
INCORPORATED**

328 W. Maple Avenue
Horsham, PA 19044
(215) 443-0330



**MICRO AMP SERIES
DA-10000 Modular Distribution Amplifier Systems**

Features:

- Ten 1 x 6 DA modules in 5¼ inches
- Dual redundant plug in power supplies
- Five interchangeable types of DA modules
- Active balanced or transformer outputs
- Metering and Compressor options
- Safe, attractive closed front design
- Barrier Block or Mass Termination Connectors
- State of the Art, High Slew Rate design

DA100 Basic One In, Six Out Distribution Amplifier.

Single power stage drives six active balanced outputs at +22dBm each. Split and by-passed build-out resistors give protection against shorts and RF. Balanced bridging input. Single panel level control sets all outputs. Headphone monitor jack. **\$275.00**

MDA100 Metered One by Six Distribution Amplifier.

Adds a LED Bargraph VU Meter to the basic amplifier described above. Measures -21 to +6 VU with 0 VU adjustable for outputs from 0 to +18dBm. Signal Alarm indicator and output warns of dead channel. **\$335.00**

CDA100 Compressing One by Six Distribution Amplifier.

Adds a Gated Compressor to the MDA100. Controls on inputs above -30dBm. Compression Slope adjustable up to 20:1. Input level sensor gates compressor gain recovery to prevent background noise build-up during program pauses. Meter is switchable to Output or Gain Reduction levels. Switchable linear amplifier mode. **\$395.00**

IDA100 Independent Six Output Distribution Amplifier.

Six Transformer (-1) or active Balanced (-2) outputs. Individual trimmers provided for each output along with a Master Level control. Headphone output. **\$375.00**

MIDA100 Metered Independent Output Distribution Amplifier.

Six Transformer (-1) or Active Balanced (-2) outputs with independent level controls. LED Bargraph meter switchable to all outputs. **\$449.00**

PS100 Power Module

A bi-polar unregulated 18 VDC supply drives the system power buss through fused isolation diodes. Operates singly or as a redundant pair in the right hand positions of each rack frame. Front panel LEDs indicate low voltage and blown fuses. Power Failure Alarm relay contacts close for any power loss and can activate external alarm. Dual power transformers in each module run cooler and generate minimal hum field, 115 and 230 VAC operation. **\$330.00**

RM100 Rack Frame

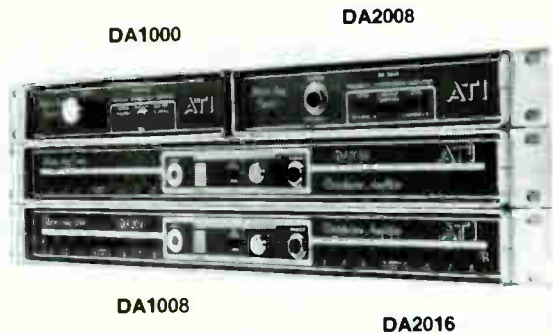
Mounts ten amplifier modules and two power modules in a 5¼" high by 19" wide Eurocard specification enclosure 14½" deep. All modules plug in from the front, are secured with captive hardware and present an attractive and safe closed front panel. Aluminum extrusion construction makes a strong and rugged enclosure and allows free convection for vertical air flow. The basic frame includes power bussing for all positions. Individual modules include mating connector assemblies which mount on the rear of the card frame and plug into the power buss. Connector assemblies provide barrier block connections with fanout strips for studio wiring, consult factory for alternate insulation displacement, mass termination connector systems which allow simple plug-on audio connections. **\$299.00**

MICRO AMP SERIES

DA1000 1X8 and DA2008 1X4

Mass Feed Distribution Amplifiers

- DA1000-1** 1 Input to 8 bal. outputs **\$325.00**
DA2008-1 Dual sections, each 1 by 4 **\$345.00**
 • +24 dBm Active balanced outputs • 70 dB output isolation and full short circuit protection • Signal Present LED (DA1000 only) • Output Clipping LEDs • Front Headphone or Metering Jack • 30K ohm balanced input bridges +24 dBm • 26 dB loaded gain, front panel adjustment • Flat Response, ±.25 dB, 20 to 20,000 Hz • Low distortion, .2% max THD, 20-20,000 Hz • Quiet, -70 dBm maximum output noise
- P/N 20021-501** Single Unit, Centered Mount **\$17.00**
P/N 20024-501 Double, Side by Side Mount **22.00**



DA1008 1x8/DA2016 2x16

Microamp Distribution Amplifiers

- One Input to Eight Individual Outputs
DA-1008-1 + 22 dBm, Transformer Outputs **\$ 795.00**
DA1008-2 + 22 dBm Balanced Differential Outputs **755.00**
DA1008-3 + 30 dBm, Transformer Outputs **1095.00**
DA1008-4 + 30 dBm, Balanced Differential Outputs **995.00**
- Dual 1 by 8, Two Inputs to Sixteen Individual Outputs
DA2016-1 + 22 dBm, Transformer Outputs **1095.00**
DA2016-2 + 22 dBm, Balanced Differential Outputs **995.00**
DA2016-3 + 30 dBm, Balanced Differential Outputs **1375.00**

• Micro-Amps provide individual adjustment for each output. Audio taper, hot molded, sealed, premium level controls eliminate noise and erratic operation • MicroAmps have exclusive SCAN monitoring and metering. SCAN pressure sensor switch is fully protected behind the panel. Touching SCAN marking on the panel scans the monitor circuit across all 16 outputs at two steps per second. LED digital readout indicates channel being monitored • MicroAmp DAs provide a high resolution, three color LED VU meter display. Front panel calibration switch selects +4, +8, or +18 dBm outputs at 0 VU • MicroAmp headphone monitor provides two channel monaural drive for stereo headphones with front panel level control and phone jack • MicroAmp Input Overload Indicators flash to indicate input signals which exceed the rated +24 dBm maximum input level.

Input Impedance

Balanced differential inputs
30,000 ohm bridging

Gain

24 dB, front panel screwdriver adjustable

Power

115/230 VAC +/- 10%, 47-63Hz.

Size

17" W, 1¾" H, 10½" D, 10 lbs.

Prices and Specifications Subject to Change Without Notice.



**AUDIO
TECHNOLOGIES
INCORPORATED**

328 W. Maple Avenue
Horsham, PA 19044
(215) 443-0330

AMPLIFIERS/INTERFACES

M-1000

Dual Microphone Amplifiers

• Transformer coupled inputs and outputs incorporate full electrostatic and magnetic shielding • XLR type input connectors • Low noise: — 124dBm equivalent input noise (20kHz bandwidth) • High input overload: 125mVrms minimum • High gain: 72dB, front panel adjustable • Low distortion: .2% maximum with input levels up to 100mVrms. • Flat response: +/-25dB, 30 to 20,000Hz.

M-1000-1 Dual, Transformer Outputs \$345.00
M-1000-2 Dual, Balanced Differential Outputs 345.00

L-1000

Dual Line Amplifiers

• Balanced differential inputs: 30,000 ohm bridging, fully transient protected and RF suppressed • 80dB common mode hum rejection • High input overload capability: +24dBm bridging • Low noise: — 107dBm equivalent input noise (20kHz bandwidth) • Low distortion: .2% maximum (transformer output), .05% maximum (direct outputs) • Flat response: +/-25dB, 30 to 20,000Hz • 34dB voltage gain: Front panel adjustable.

L-1000-1 \$315.00
L-1000-2 Dual, Balanced Differential Outputs 315.00

P-1000

Stereo Phono Amplifiers

• High gain: 1mVrms at 1kHz for +8dBm output. Front panel adjustable, accepts any cartridge • High input overload: 320mVrms at 1kHz, cannot be overloaded even by direct and digitally mastered disks driving high output cartridges • Lowest noise: 80dB S/N referred to 10mVrms at 1kHz, cartridge source impedance • Flat response: RIAA curve +/-25dB • High boost switch • High cut switch • Active feedback 2 pole high pass filter blocks rumble, record warp and seismic pickup without loss of audio, 18dB to 26dB rejection in the 10 to 7Hz tone arm resonance range • Low distortion: .2% max. (Transformer output) .05% max. (Direct outputs) • Mounting: Brackets supplied for internal turntable cabinet mounting.

P-1000-1 Dual/Stereo Transformer Outputs \$345.00
P-1000-2 Dual/Stereo Balanced Differential Outputs 345.00

MA-1000

P-1000

M-1000

L-1000



MA-1000

Stereo Power Amplifier

• 10 Watts per channel — Stereo • 25 Watts — mono bridged • Balanced bridging inputs • Front level control and headphone jack rear speaker terminals • Electronic output protection instantaneously limits output voltage and current to safe levels • Mode control switches both inputs and outputs for mono bridged operation • Ideal headphone booster or monitor amplifier for low output consoles. Balanced differential inputs allow internal console connection without causing ground loops.

MA-1000-1 Stereo 10W/Mono Bridged 25W \$365.00

Rackmount Kits

P/N 20021-501 Single Unit, Centered Mount \$17.00
P/N 20024-501 Double, Side by Side Mount 22.00



The Match Maker™

Bi-Directional IHF ↔ PRO Level/Impedance Interface

Interconnects consumer/industrial Reel to Reel and Cassette Recorders, Graphic Equalizers and Noise Reduction Systems, Audio Effects Processors and Digital Reverbs into professional 600 ohm balanced, +4dBm systems without loading distortion, hum loops, RF pickup or high frequency rolloff.

60dB line input CMR hum rejection, effective RF protection, adjustable IHF output level. True transformer balanced and protected line outputs drive +22dBm at under .01% THD, 20Hz to 20kHz with +0, -25dB response and over 98dB dynamic range. Adjustable line outputs. Self-contained power supply, Velcro™ or rack panel mounting, one or two units in 1-3/4".

Match-Maker™, Model MM100-1 \$239.00
Rack Panel, P/N 20273-501 22.00



The Disc-Patcher™

Uni-Directional IHF → PRO Level/Impedance Interface

Interconnects Compact Digital Audio Disc Players. Off-Air Monitor Tuners, ENG Cassettes, Console Audition Outputs into professional 600 ohm balanced, +4dBm systems without loading distortion, ground loops, RF pickup or high frequency rolloff.

True transformer balanced, isolated and protected outputs with greater dynamic range (102dB), flatter response (+0, -25dB) and lower nominal THD (.005%, 20 to 20,000Hz) than Digital Audio Disc Systems. Adjustable outputs, self-contained power supply, Velcro™ or rack panel mounting.

Disc-Patcher™, Model DP100-1 \$189.00
Rackmount Panel, Single or Dual, P/N20273-501 22.00



**AUDIO
TECHNOLOGIES
INCORPORATED**

328 W. Maple Avenue
Horsham, PA 19044
(215) 443-0330

MICRO AMP SERIES



EM1000

Emph' a Sizer

Microphone or Line Level Audio Processor

- EM1000-1 Transformer Output at +24 dBm \$1395.00
- EM1000-2 Active Balanced Output at +24 dBm 1395.00
- Rack Mount Kits**
- 20104-501 Center mounts one EM1000 \$30.00
- 20105-501 Dual side by side mounts 2 EM1000 45.00

• Noise Gate-adjustable background fade 0 to 80 dB - fast or slow, inaudible recovery • Gated Gain Compressor-Limiter, adj. dynamic range, variable slope, individually settable fast attack and fast release thresholds • Four full range Parametric Equalizer Sections, internal adjustments with front panel in-out switching and selectable Pre, Post, or Compressor Side-Chain equalizer positioning • DJ Personality Processor...for that unique sound • Remotes...crowd noise controller, compressor, line limiter and equalizer • Sound Reinforcement...gated automatic level control prevents overloads, equalizers notch out critical room resonances to allow max levels without feedback • Bar Graph Output level and Gain Reduction Displays.



P100

Encore Series™

P100 Turntable Amplifier

- P100M Monaural \$199.00
- P100S Stereo 219.00
- Active balanced +18 dBm outputs • Adjustable R and C cartridge loading • Active two pole subsonic warp filter • 750 mVp-p input headroom • 80 dB unwtgd. S/N, 90 dB "A" weighted • ±.5 dB, 30 to 20,000 Hz, old or new curve • .1% THD maximum, 20 to 20,000 Hz • 13V/μSec Slew Rate for minimum TIM • Excellent RF protection.



VU 1000

VU1000 Micro Meter

Audio Metering and Monitoring System

- VU1000-1 Drives external power amplifier \$575.00
- VU1000-2 Internal 6W/8 ohm amplifier 675.00

Accessories

- Stereo Interconnect Cable (20209-501) \$15.00
- Remote Control Scan Cable (20214-501) 12.00
- Rack Mount, Single, centered (20021-501) 17.00
- Rack Mount, Dual, Side by Side (20024-501) 22.00

Features:

- LED Meter, 3 color bargraph
- VU, Average and PPM ballistics
- 5 ranges measure -30 to +24 dBm
- 8 balanced inputs with readout
- Touch Switch input scan with audio mute
- Line level balanced output
- Headphone and external monitor outputs
- Eight active balanced inputs bridge +24dBm lines • Remoteable digital input selection mutes all audio during scan • 12 segment, 3 color LED meter has switchable VU, Average and PPM ballistics • Range switch selects OVU meter reading at -10, 0, +4, +8 or +18dBm input • Line output drives +22dBm into 600 ohm balanced load, select 0, +4 or +8dBm output at OVU meter indication, ±.25dB response, .1% max THD, 20-20kHz • Monitor, VU1000-1 drives 600 ohm headphones and external amplifier, VU1000-2 drives 6 watts into Lo-Z phones or external speaker, phones interrupt external feed • Mount singly or as stereo pair in 1 1/4".



Encore Series™

Distribution Amplifiers

Maximum Performance....Minimum Cost

- DA208 Dual 1X4 \$319.00
- DA416 Quad 1X4 469.00

- Eight or sixteen active balanced +18dBm outputs • Individual smooth log taper level adjustments • Combine channels by paralleling inputs for 1X8, 2X8 or 1X16 configurations • LED clipping indicators for each channel warn of any overdriven output • 20dB gain, .10% max THD, -75dBm maximum output noise, ±.25dB response, 30-20,000 Hz • -70dB isolation and crosstalk • 30K ohm balanced inputs bridge +22dBm lines • High slew rate, 13V/μSec for minimum TIM distortion • Excellent RF protection • Barrier block terminals with fanning strip • Rack mount in only 1 1/4".

AUDISAR INDUSTRIAL AUDIO TRANSFORMERS

The Audisar 9000 Series Audio Transformers provide many unique problem solving solutions for the broadcast and industrial audio user. For example, the 9K-600-6 in many cases will directly replace an expensive distribution amplifier. Highest quality standards are maintained throughout the manufacturing process, with each unit individually hand made to insure reliability and consistency of performance. Every core assembly is varnish impregnated for protection from moisture and corrosion. Both open frame and shielded units are available. Audisar transformers are manufactured in our Bellevue facility from American made materials.



PART NUMBER	TYPE/USE	FREQUENCY RESPONSE ₂	MAX. OPER. LEVEL ₃	IMPEDANCE, OHMS
9K-600-2	1:1 ISOLATION	17Hz~50KHz±0.5dB	+24dBm	600:600Ω
9K-600-3	1:2 ISOLATION SPLITTING	17Hz~50KHz±0.5dB	+24dBm	Z in:600x2
9K-600-6	1:5 ISOLATION DISTRIBUTION	17Hz~50KHz±0.5dB	+24dBm	IMP IS CONFIGURATION DEPENDENT. (NOTE 4)
9K-600-2SF	LINE LEVEL OUTPUT MATCHING	20Hz~50KHz±0.4dB	+18dBm	600:600Ω
9K-600-15KP ₁	SHIELDED INPUT, LINE LEVEL, ISOLATION	20Hz~50KHz±0.25dB	+20dBm	600:15K(R _L =27KΩ)
9K-150X2-150P ₁	MICROPHONE COMB 200Ω, SHIELDED	20Hz~20KHz±0.5dB	Ø LEVEL	150/200X2:150/200 Bal.
9K-300X2-15KP ₁	INPUT, SHIELDED, DUAL PRIMARY, SERIES-PAR.	20Hz~50KHz±0.25dB	+20dBm	300x2: 15KΩ(R _L =27KΩ) (150/300/600Ω INPUT)
9K-600-2P ₁	1:1 LINE LEVEL SHIELDED INPUT	20Hz~20KHz±0.4dB	+18dBm	600:600Ω
9K-600-6SMT	1:5 DISTRIBUTION, SHIELDED, ISOLATION	10Hz~20KHz±0.25dB	+30dBm@10Hz	Z IN AND Z OUT IS CONFIGURATION DEPENDENT (NOTE 5)
9K-600-2SMT	1:1 MATCHING SHIELDED, ISOLATION	20Hz~20KHz±0.35dB	+26dBm	600:600Ω
9K-300X4SMT	REPLACES WESTERN ELECTRIC, 111C	20Hz~30KHz±0.5dB	+26dBm	MULTI-MATCH 150/600:150/600

1. Denotes octal base, plug-in type

2. Measured at +10dBm except 9K-150X2-150P re:0=0.775Vrms

3. Measured @ 20Hz, except where noted.

4. Insertion loss =5dB all sec loaded 600Ω

5. Insertion loss =3dB all sec loaded 600Ω

Audisar 12K001 Remote Sound Projector Input

Interfacing sound projectors (typically 16mm) to sound systems of various configurations presents a number of problems to the system designer and the sound contractor. The Audisar 12K001 addresses these problems specifically and offers an excellent, reliable and economical solution. The 12K001 provides a floating input and a floating output configuration to prevent ground loop problems and protect the projector power amplifier and the system input.

General Description

The front mounting panel is 16ga. stainless steel, durable, tough and rust proof. The input jack is the projector standard, switchcraft S-11 (0.21"). Mounting configuration is in conformance with the electrical standard 4-screw, 2-gang deep box and plaster-ring combination. On the rear of the device is a printed circuit board with 3 connecting screws for attaching the cable. External mounting hardware and installation instructions are provided.

Electrical Specifications

Input: ≈3Vrms (about one watt) from projector amplifier produces a β-level, 600-OHM, balanced output.

Frequency Response: 20Hz~20KHz ±0.35dB

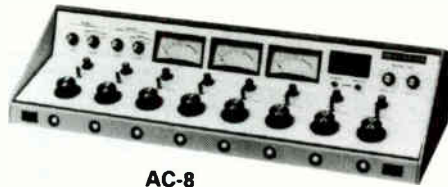
Maximum Operating Level: +26dBm (15Vrms)



PLASTER RING NOT INCLUDED

631 J Place
P.O. Box 456
Plano, TX 75074
(214) 424-8585

AUDIO CONSOLES



AUDIO CONSOLES

IC-10 Ten-Channel Stereo/Mono Audio Console

INPUT

Sources: 28 stereo inputs — customer's option as to use by plug-in modules. 1 high level cassette.

OUTPUT (depends on modules used)

1 stereo program, 1 stereo audition, 1 monophonic program, 2 monitor amplifiers, 2 headphone amplifiers, 1 cue amplifier.

MOUNTING & DIMENSIONS

Table top with bottom or back entry cable. Height: 10 in.; 25.4 cm. Depth: 20 in.; 50.8 cm. Width: 44 in.; 118. cm.

AC-8 Eight-Channel Stereo/Mono Console

INPUT

Sources: 26 stereo inputs — customer's option as to use by plug-in modules. 1 high level cassette

OUTPUT (depends on modules used)

1 stereo program, 1 stereo audition, 1 monophonic program, 2 monitor amplifiers, 2 headphone amplifiers, 1 cue amplifier.

MOUNTING & DIMENSIONS

Table top with bottom or back cable entry. Height: 10 in.; 25.4 cm. Depth: 20 in.; 50.8 cm. Width: 37-1/4 in.; 94.6 cm.

AC-6 Six-Channel Stereo/Mono Audio Console

INPUT

Sources: 23 stereo inputs — customer's option as to use by plug-in modules. 1 high level cassette

OUTPUT (depends on modules used)

1 stereo program, 1 stereo audition, 2 monitor amplifiers, 2 headphone amplifiers, 1 cue amplifier.

MOUNTING & DIMENSIONS

Table top with bottom or back cable entry. Height: 10 in.; 25.4 cm. Depth: 20 in.; 50.8 cm. Width: 32-3/8 in.; 82.2 cm.

COMMON SPECIFICATIONS

INPUT

Impedances: Microphone, 200. High level 10K ohm bridge or 600 ohm terminate. External monitor 10K ohm. Levels: Microphone — 65 to -50 dBm. High level — 10 dBm to +10 dBm. External monitor — 10 dBm to +10 dBm. Noise: Program/audition — 120 dBm. Monitor — 110 dBm. Power Source: 117 or 230 Vac 50-60 Hz single phase.

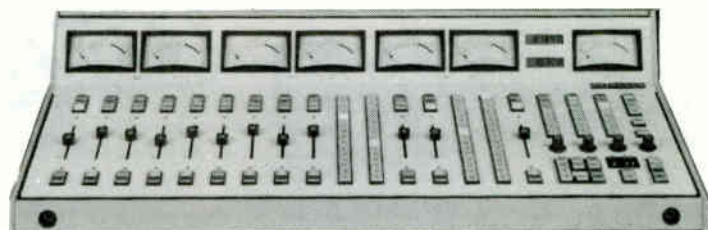
OUTPUT

Impedances: Program/audition 600 ohm balanced or unbalanced. Monitor 4-16 ohm unbalanced. Cue 4-16 ohm unbalanced. Levels: Program/audition or mono: +8 dBm nominal — +24 dBm maximum. Monitor — 15 watts RMS into 8 ohm load. Cue and headset — 1 watt into 8 ohm load. Frequency Response: Program/audition +/- 1 dB 30 to 15kHz. Monitor +/- 1.5 dB 30 to 15kHz. Distortion: Program/audition less than 0.5% THD. Monitors less than 1.5% THD

	Each	Typical Stereo	Typical Mono
IC-10 Ten-Channel Console Shell less Modules	\$6564 (1)	\$6564 (1)	\$6564
LA-1 Line Amplifier	60 (5)	300 (2)	120
MA-1 Monitor Amplifier	95 (2)	190 (1)	95
CA-1 Cue Amplifier	77 (1)	77 (1)	77
HA-1 Headset Amplifier	68 (2)	136 (1)	68
MPA-1 Mike Amplifier	99 (2)	198 (2)	198
PS-1 Power Supply/Regulator	76 (1)	76 (1)	76
JP-1 Jumper Plug	8 (0)	(0)	(0)
MT-1 Matching Transformer	40 (16)	640 (8)	320
BT-1 Bridging Transformer	40 (0)	(0)	(0)
MXA-1 Mixing Amplifier	66 (4)	264 (2)	132
XL-1 Microphone Connector	16 (0)	(0)	(0)
TOTAL		\$8445	\$7650

	Each	Typical Stereo	Typical Mono
AC-8 Eight-Channel Console Shell less Modules	\$4558 (1)	\$4558 (1)	\$4558
LA-1 Line Amplifier	60 (5)	300 (2)	120
MA-1 Monitor Amplifier	95 (2)	190 (1)	95
CA-1 Cue Amplifier	77 (1)	77 (1)	77
HA-1 Headset Amplifier	68 (2)	136 (1)	68
MPA-1 Mike Amplifier	99 (2)	198 (2)	198
PS-1 Power Supply/Regulator	76 (1)	76 (1)	76
JP-1 Jumper Plug	8 (0)	(0)	(0)
MT-1 Matching Transformer	40 (12)	480 (6)	240
BT-1 Bridging Transformer	40 (0)	(0)	(0)
MXA-1 Mixing Amplifier	66 (4)	264 (2)	132
XL-1 Microphone Connector	16 (0)	(0)	(0)
TOTAL		\$6279	\$5564

	Each	Typical Stereo	Typical Mono
AC-6 Six-Channel Console Shell less Modules	\$3532 (1)	\$3532 (1)	\$3532
LA-1 Line Amplifier	60 (4)	240 (2)	120
MA-1 Monitor Amplifier	95 (2)	190 (1)	95
CA-1 Cue Amplifier	77 (1)	77 (1)	77
HA-1 Headset Amplifier	68 (2)	136 (1)	68
MPA-1 Mike Amplifier	99 (1)	99 (1)	99
PS-1 Power Supply/Regulator	76 (1)	76 (1)	76
JP-1 Jumper Plug	8 (0)	(0)	(0)
MT-1 Matching Transformer	40 (10)	400 (5)	200
BT-1 Bridging Transformer	40 (0)	(0)	(0)
MXA-1 Mixing Amplifier	66 (4)	264 (2)	132
TOTAL		\$5014	\$4399



Preliminary Specifications Microgram Audio Console

Input:

Sources:

64 stereo inputs max

Impedances:

Microphone: 200 ohm

High level: 10k or 600 ohm terminate

External Monitor: 10k

Levels:

Microphone: -65 to -50 dBm (single input chassis only)

High level: -10 dBm to +10 dBm

External monitor: -10 dBm to +10 dBm

Noise:

-80 dB at +18 dBm outputs

Power Source:

117 or 230 VAC 50-60 Hz single phase power supply
(external)

Programming Options:

5 front panels: 5 control sections max, including 1 monitor

Any combination of 4 single line or multiline sections

Single line: 4 microphone or hi level inputs

Multiline: 16 hi level inputs

Machine control for remote starts

RS 422 computer interface

Add external computer to automate up to two stereo audio buses

Add external printers and accessories for complete program logging

12-hour clock display

Stop watch display

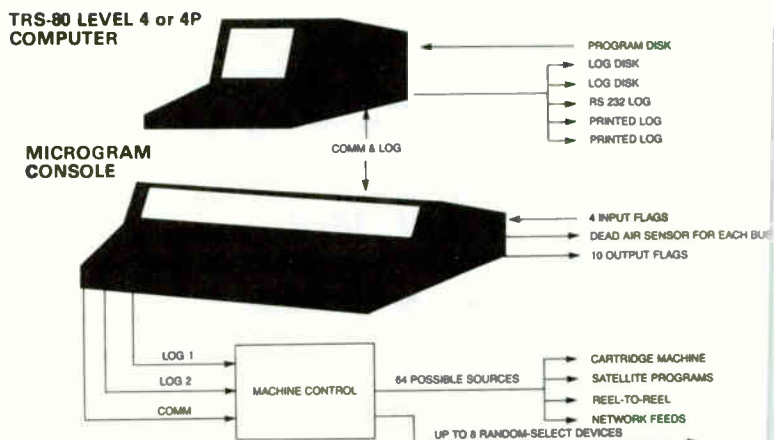
Dimensions:

11 in. above table (279.4 mm)

33 in. deep (838.2 mm)

43 in. wide (1092.2 mm)

TRS-80 LEVEL 4 or 4P
COMPUTER



Output:

3 stereo buses

1 mono program

2 cue amplifiers

2 headphone amplifier

4 line output (feed external monitor amplifiers)

Impedances:

Program and Monitor: 600 ohm balanced or unbalanced

Headphone: 8 ohm unbalanced

Levels:

Program and Monitor: +8 dBm nominal, +24 dBm max

Cue and Headphone: 1 watt into 8 ohm load

Frequency Response:

Program and Monitor: +/-0.5 dB 30 to 15kHz

Cue and Headphone: +/-1.5 dB 30 to 15kHz

Distortion

Program and Monitor: Less than 0.5% THD

Cue and Headphones: Less than 1.5% THD

Basic with Live Assist 24 Inputs

\$16,535.00

Basic with Automation 24 Inputs

21,356.00

AUTOMATION TECHNIQUES, INC.

1550 North 105th East Avenue • Tulsa, Oklahoma 74116 • 1-918-836-2584

Automation Techniques is a driving force in the satellite communications industry. We've built a solid reputation on quality craftsmanship of innovative, dependable satellite communications and signal and automated video equipment — all at affordable prices. And we continue to solidify our reputation with a constantly evolving, imaginative product line that provides the industry with fresh ideas.

Unmatched dedication to affordable, innovative technology and responsive service — that's why we are and will continue to be an industry leader.

IMAGELESS SATELLITE RECEIVERS



FEATURE	GLR-500*	GLR-520	GLR-560	GLR-750
TRANSPONDER TUNING	Variable	Pushbutton Fine Tuning	Pushbutton Fine Tuning	Crystal Synthesized
AUDIO TUNING (No. of Channels)	Variable w/ AFC (1)	Variable w/ AFC (1)	Variable w/ AFC (2) Stereo/Matrix	Crystal Synthesized (2)
AUDIO TUNING RANGE	5-8 MHz	5-8 MHz	5-8 MHz	5-7.99 MHz
WIDE/NARROW AUDIO SWITCH	Yes	Yes	Yes	No
POLARITY CONTROL	12 VDC @ 10 ma.	Contact Closure	Contact Closure	Tracking 24 VDC @ 350 ma.
C/N THRESHOLD	Better than 8 dB	Better than 8 dB	Better than 7.5 dB	Better than 7.5 dB
METERED AUDIO LEVEL CONTROL	No	Yes	Yes	Yes
IF BANDWIDTH	28 MHz	28MHz	30 MHz	34 MHz
REMOTE CONTROL	Opt.	Opt.	Opt.	Opt. Jan '83 BCD
DETECTOR	P11	P11	Digital	Digital
RELATIVE POWER METER	Incl.	Incl.	Incl.	Incl.
AUDIO METERS	No	Incl.	Incl.	Incl.
MODULATOR	CH. 3 or 4 (Specify)	CH. 3 or 4 (Specify)	CH. 3 or 4 (Specify)	N/A
RACK MOUNT	GLR-511 (514) (Detent Tune)	N/A	GLR-561	Rack Only
SUGGESTED LIST PRICE	\$895	\$1,095	\$1,295	\$1,995

*The GLR-500 can be retrofitted to a GLR-550 for a very low cost, and a new one-year warranty will be extended on the unit.



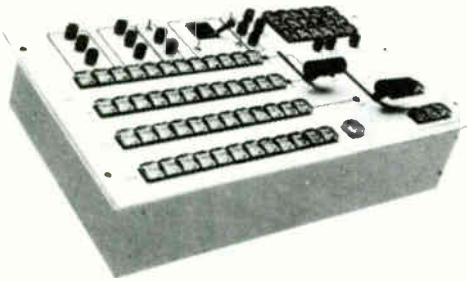
Beaveronics, Inc.

STUDIO PRODUCTION VIDEO SWITCHING SYSTEMS

8 Haven Ave.
Port Washington, NY 11050
(516) 883-4414

MODEL 712

For Remote and Small Production Facilities
\$8300.00



12-input, 4-output mix-effects amp with downstream mixer, includes downstream preset and program buses with cut bar, RGB chroma key

OPTIONS
Downstream Keyer
\$2250.00

(Also available in PAL and PAL-M versions)

STANDARD FEATURES

- 12 inputs including Black-burst and Color Background
 - Built-in Black-burst Generator
 - Built-in Colorizer
 - Built-in RGB Chroma keyer
 - Four Switching Buses
 - Downstream Preset and Program Buses with cut bar
 - Rack-mounted electronics
 - Adjustable Soft Wipe
 - Adjustable Border edges
 - Color Matte
 - Vertical Interval switching thru-out
 - Illuminated Momentary Contact pushbuttons.
 - Internal, external, Chroma-key, and matte inputs to keyer
 - Built-in pattern modulator with frequency and amplitude controls
 - Full Tally
 - Pattern symmetry control
 - Illuminated Momentary contact pushbuttons for effects selection
 - Normal/Reverse/Normal-Reverse wipe transitions
 - Pattern limit controls for presetting size of patterns or varying vertical and horizontal aspect ratio
 - Loop-through inputs
 - Input amplifiers with clamping
 - Synchronous/Non-synchronous inhibit
 - Modular construction with front access plug-in modules
- PAL/PAL-M Versions, per Switcher \$1250.00

CHECK BEAVERONICS FOR: • Master control switchers AFV with audio breakaway • Specialized custom switchers • Keys

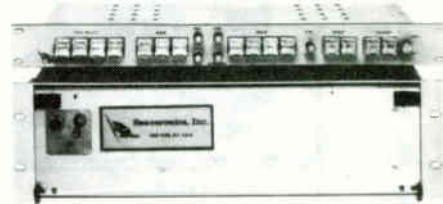
MODEL DSK-4-DLB

Stand-alone Downstream Keyers To Upgrade Your Total System
\$9500.00

This Keyer is specifically designed for Character Generators and accepts both Video and Key signal outputs from up to four Char. Gens. (or other video sources). The key signals may, if desired, be keyed simultaneously, assuming different portions of the picture area are involved, to produce multiple inserts. The unit is packaged with its electronics on plug-in cards in a 5-1/4" rack mounted frame together with a compact 1-3/4" remote control panel.

FEATURES

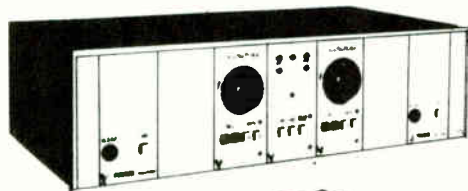
- Independent stand-alone keyer
- Built-in Edge Border, Shadow, and Outline, variable from black to white
- Built-in Matte Generator
- Key can be inserted or removed by cut or automatic mix at any of four rates
- "Cut" or automatic Fade to Black at any of four rates
- Edge Border variable from black to white
- Key may be filled with either key video or matte
- Can select up to four key sources either individually or simultaneously



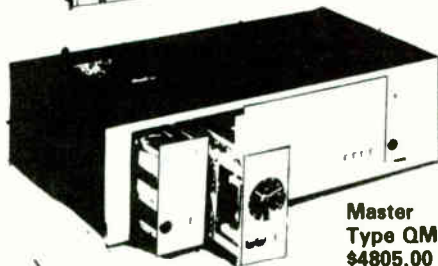
ALL BEAVERONICS SWITCHING EQUIPMENT CARRIES A TWO YEAR WARRANTY

FAVAG MASTER CLOCK SYSTEMS Available with accuracy better than 1 second/yr. or tied to Rubidium std.

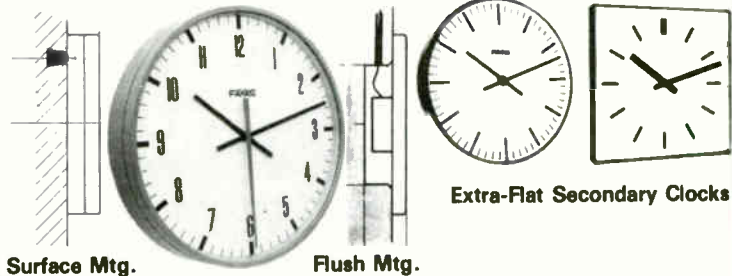
NUMEROUS SECONDARY CLOCKS ARE AVAILABLE INCLUDING THOSE WITH SILENT OIL-BATH MOVEMENTS.



Dual Master
Type 2QMS-2
w/Auto Changeover
\$8060.00



Master
Type QMS-1
\$4805.00



Surface Mtg.

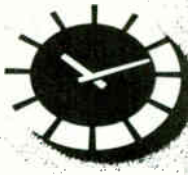
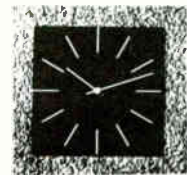
Flush Mtg.

Extra-Flat Secondary Clocks



Table Top
\$395.00
Minute or Second Impulse

6 Digit Digital
Displays Available



Decorative Secondary Clocks

**MASTER CLOCK SYSTEMS MODULAR
DESIGN FACILITATES FUTURE EXPANSION**

Write or phone for details.

Beaveronics, Inc. 8 Haven Avenue • Port Washington, New York, 11050 • Tel: (516) 883-4414



STUDIO PRODUCTION VIDEO SWITCHING SYSTEMS

**For Moderate Size Facilities
Model B1-154**

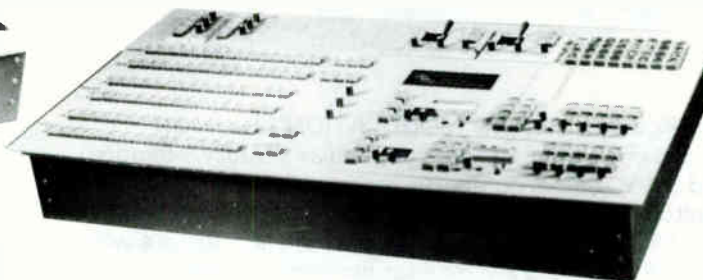
\$14,440.00



15-input, 4-bus mix/eff/key amp with downstream mix/key amp. Many optional features including DSK and quad-split, etc.

**For Sophisticated Facilities
Model B1-156**

\$23,975.00



15-input, 6-bus with two full mix/eff/key systems and dir. pgm and pre busses: many options available, DSK, quad, etc.

**Models 154 and 156
(Also Available in PAL and PAL-M Versions)**

STANDARD FEATURES

- Switcher Models 154 and 156** are of the same basic design and utilize the same electronic sub assemblies. These switchers have the same standard basic features, differing only in the number of busses and in the number of mix/effects units. The basic standard features include 32-pattern mix/effects, color black and color matte background generator, and a mix/key unit in the case of the model 154.
- Input Amplifiers** • loop through high impedance input • gain equalization for 1000' cable • 22° sub carrier phase control • clamped inputs (10% to 90% APL) sync addition on non composite signals if desired.
- Tallies** • isolated dry contact relay closure on all inputs (2 amps at 50v.)
- Mix-Effects Units [Includes Keying Function]** • One (1) used in model B1-154 • Two (2) used in model B1-156 • Fades (or Supers), Wipes, Keys may be produced • Positioner Joystick for each M/E positions patterns. • Pattern Modulation may be accomplished by an internal waveform generator. Modulating sources may be either (1) sine wave, (2) square wave, (3) saw tooth, or (4) an external customer generated source. • Mix Key and Wipe Key available. • Soft Wipe and Soft Key available with adjustable variations. • Push to Preview obtained by depressing knob on clip potentiometers (provides for M/E monitor output). • Wipe Mode — 3 interlocked buttons select "NOR", "REV" or "N/R". • Hard Wipe, Soft Wipe or Border can be selected with degree of softness made by "Edge" control adjustment. Border may be Colorized by adjustment of "Hue" and "Luminance" control. • Symmetry of Pattern may be adjusted by "SYM" knob. • Preset Wipe Limits are set by potentiometers. "H" and "V" vertical preset limits activated by Pattern Limit button. • Spotlight alternate action push button produces a 6 db. level difference between "A" and "B" input channels in the "Wipe" mode. (Operates on all patterns.) • Pattern Assignment is made by depressing "ASSIGN" button. Pattern select feature may be "locked" to pattern matrix by depressing the "ASSIGN" button a second time on the same pattern. Patterns assigned appear on LED display on

M/E control panel. • Non-Synchronous Inputs. An "NS" indicator is provided. Tearing is prevented by not allowing a non-synchronous signal to be switched except at extreme position of fader handle where a "cut" transition occurs. • Key Input Sources may be either (1) "A" bus video for self keying, (2) preview Key bus, (3) chroma key, or (4) an external key source. • Key Invert selector provided to accommodate either positive or negative video as a keying source. • Key Fill may be either "A" video for self keying or a colorized matte. • Mix/Key provided a lieu of second Mix/effects system for Model B1-154 switching system. Provides for all mix and keying functions of mix/effects system (as previously described) except for the pattern effects.

OPTIONAL FEATURES

May be added at any time (required control panel wiring already installed) except those indicated with an asterisk.

- Chroma Keyer [C.K.]** **\$1100.00**
• Hue — selects hue of keying color • Gain — adjusts the amplitude • Clip — adjusts the clip level for keying • Camera (4 x 1) input switcher — selects RGB output of any one of 4 cameras to feed C.K.
- Down Stream Keyer [DSK]** **\$2250.00**
• Keys in titles, inserts, or fades to black with or without insert • Color matte background • Key sources: (1) Mix/Effect, (2) Chroma Key, (3) External • Push to Preview (Monitor)
- DSK Border** **\$2200.00**
• Border — black edge around insert • Shadow — black edge on right side and bottom of insert.
- Quad Split** **\$2500.00**
Provides four (4) variable size quadrants from eight possible sources with variable width border.
- Aux Busses** — (Model 156 only) **\$2300.00**
Two remote outputs are available — remote control panel and amps required.
- 2nd Mix/Effect Unit in lieu of Mix/Key amp in 154** **\$2990.00***
- Mix/Key amp fed by preview and program busses in 156** .. **3850.00***
- PAL/PAL-M Versions, per Switcher** **1250.00***

ALL BEAVERONICS SWITCHING EQUIPMENT CARRIES A TWO YEAR WARRANTY



Beaveronics, Inc. 8 Haven Avenue • Port Washington, New York, 11050 • Tel: (516) 883-4414

Write or phone for details.

BELAR ELECTRONICS LAB, INC.

Lancaster At Dorset
 Box 76
 Devon, PA 19333
 (215) 687-5550

MODULATION MONITORS



FM FREQUENCY AND MODULATION MONITOR

The Belar FM monitors are designed as a totally integrated, solid state system to enable the broadcaster to fulfill his monitoring equipment requirements as the need arises. The Belar FMM-1 Frequency and Modulation Monitor is a wide-band, all solid state FM monitor designed expressly to fulfill all the new requirements for monaural monitoring as well as to provide a virtually pure, distortionless demodulated signal to drive the companion FMS-1 Stereo Frequency and Modulation Monitor and the SCM-1 SCA Frequency and Modulation Monitor for multiplex monitoring.

\$1750.00



FMS-2 STEREO MODULATION MONITOR

The FMS-2 is the first stereo monitor to incorporate two independent autoranging voltmeters allowing the broadcaster to automatically measure the channel separation and crosstalk. The left modulation meter can be switched to monitor Total, L + R, Pilot, or Left Channel Audio. The right modulation meter can be switched to monitor Pilot Phase, L - R, 38kHz Suppression, or Right Channel Audio. Thus if the Left and Right Channel buttons are depressed the meters will automatically register the wanted channel and the unwanted channel. A front panel Hold button is used to lock the autorange to the displayed range.

\$1550.00



STEREO FREQUENCY AND MODULATION MONITOR

The Belar FMS-1 Stereo Frequency and Modulation Monitor, when added to the FMM-1 FM Frequency and Modulation Monitor, provides complete monitoring and test functions to meet the daily requirements for stereo monitoring and provides additional facilities for making the proper tests for weekly and monthly maintenance checks to insure maximum performance from stereo transmitters.

FM Equipment

FMM-1 FM Frequency and Modulation Monitor . . \$1750.00
 (FCC Type Approval No. 3-129)

FMS-1 Stereo Frequency and Modulation Monitor . 1650.00
 (FCC Type Approval No. 3-146)

SCM-1 SCA Frequency and Modulation Monitor . . 1650.00
 (FCC Type Approval No. 3-162)

RFA-1 FM RF Amplifier 575.00

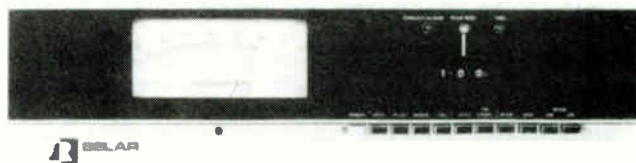
MP-1 Remote Meter Panel for FMM-1 225.00

MP-2 Remote Meter Panel for FMS-1 225.00

MP-3 Remote Meter Panel for SCM-1 225.00

MP-8 Remote Meter Panel for FMM-2 and FMS-2 . . 325.00

MJ-10 Yagi Antenna, 10 Element, used with RFA-1 . . 95.00



FMM-2 STEREO MODULATION MONITOR

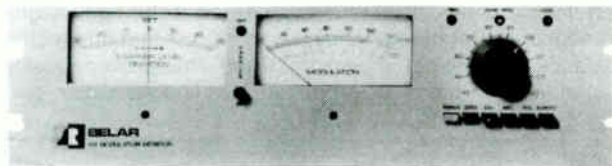
The FMM-2 sets new standards in accurate FM monitoring — the first to incorporate a sample hold peak modulation meter circuit independent of modulation polarity to allow the meter to respond to program peaks of the shortest duration. The heart of the FMM-2 is an ultra-linear digital discriminator which provides a distortionless baseband signal for accurate monitoring as well as precise stereophonic, quadraphonic and SCA decoding. The Belar FM monitors were designed as a totally integrated system to allow the broadcaster to fulfill his monitoring requirements as the need arises.

\$1350.00

BELAR ELECTRONICS LAB, INC.

Lancaster At Dorset
Box 76
Devon, PA 19333
(215) 687-5550

MODULATION MONITORS



AMM-2A AM MODULATION MONITOR

The AMM-2A Modulation Monitor sets new standards in accurate AM monitoring — the first AM monitor to incorporate true ratio-type peak indicators. The AMM-2A contains a unique modulation cancellation scheme to recover unmodulated carrier to reference the modulation peaks to. Thus the instantaneous program peaks refer to the instantaneous carrier without the need of time-constants, as with AGC devices. True carrier is indicated with asymmetrical modulation encountered in today's high positive peak modulation, and peaks are automatically referenced to this true carrier to give the most accurate indication of program peaks. FCC Type Approval No. 3-240.



AMM-3 AM MODULATION MONITOR

The AMM-3 Modulation Monitor sets new standards in accurate AM monitoring — the first AM monitor to incorporate true ratio-type peak indicators, as well as ratio-type metering circuits. The AMM-3 contains a unique modulation cancellation scheme to recover unmodulated carrier to reference the modulation peaks to. Thus the instantaneous program peaks are references to the instantaneous carrier without the need of time-constants, as with AGC devices. True carrier is indicated with asymmetrical modulation encountered in today's high positive peak modulation, and peaks are automatically referenced to this true carrier to give the most accurate indication of program peaks. FCC Type Approval No. 3-231

AM Equipment

AMM-2A AM Modulation Monitor \$ 990.00
(FCC Type Approval No. 3-240)
AMM-3 AM Modulation Monitor 1400.00
(FCC Type Approval No. 3-231)

AMM-4 AM Frequency Monitor \$990.00
Option 01 Relay Card 175.00
RFA-2 AM RF Amplifier 595.00
MP-6A Remote Meter Panel for AMM-2A 225.00
MP-7 Remote Meter Panel for AMM-3 245.00
LP-1 Shielded Loop Antenna 225.00
LP-1A Shielded Loop Antenna w/built-in
pre-amplifier for RFA-2 275.00
Option 01 Power Supply for Loop Antenna 60.00
Miscellaneous Equipment
AS-1 Audio Sentry 250.00

TV MODULATION MONITOR

The TVM-1 Television Aural Modulation Monitor is a wide-band, all solid-state TV aural monitor designed to provide accurate modulation monitoring for the TV Broadcaster, UHF or VHF. The state-of-the-art TVM-1 measures both positive and negative peaks simultaneously and automatically selects and registers the higher of the two on both the true peak meter and peak flasher. Exclusive polarity lamps indicate the instantaneous polarity of the peaks registered on the peak meter and peak flasher. Calibration accuracy may be checked at any time with the front panel push-button modulation calibrator.

The Belar TVM-2A and the TVM-3A are digital TV frequency monitors designed expressly to measure TV visual carrier and aural carrier or aural intercarrier deviations. Since the TVM-2A and TVM-3A incorporate true frequency counter circuits that are multiplexed between aural and visual carriers, the aural and visual carrier frequencies may be measured independently. When one carrier is off, the monitor will display the remaining carrier frequency correctly while giving both a carrier-off and an off-frequency alarm for the missing carrier. The monitor contains two digital displays — one for aural and one for visual with + / - indicators to indicate deviations from correct channel frequency. The monitor also incorporates off-frequency alarm drivers that are inhibited so that three successive errors are required to signal an alarm to prevent false off-frequency alarms.

TV Equipment Prices

TVM-1 TV Modulation Monitor \$1850.00
(FCC Type Approval No. 3-181)
TVM-2A Frequency Monitor (VHF) 2100.00
TVM-3A TV Frequency Monitor (UHF) 2300.00
RFA-3 TV RF Amplifier 675.00
MP-4 Remote Meter Panel for TVM-1 160.00



BELDEN
 2200 U.S. Hwy 27 S.
 Box 1980
 Richmond, IN 47375
 (317) 983-5200

COAXIAL & BROADCAST CABLES










TV Camera Cables AND CCTV CABLES

Belden TV Broadcast and Closed Circuit TV Camera Cables assure reliable circuit isolation thereby reducing AC hum and minimizing cross-talk between circuits. They are made to withstand rugged service and to maintain high conductor insulation resistance regardless of ambient temperature changes.

Major uses for these cables are for controlling, powering and transmitting sound and picture information for monochrome and

color TV cameras as well as for remote control, monitor and cue line systems.

Belden TV Camera Cables are engineered to be lightweight, flexible and easy to terminate. They are manufactured and tested in accordance with Belden's own rigid and time-proven quality control standards in order to assure outstanding reliability, performance and service life.

Description	Trade & UL Type Number	Standard Lengths		Std. Pkg. Lb. ea.	AWG (Stranding) {Dia. in mm} Nom. D.C.R.	Insulation & Nominal Core O.D.		Nominal O.D.		No of Shields and Material Nom. D.C.R.	Nom. Imp (ohms)	Nom. Vel of Prop	Nominal Capacitance		Nominal Attenuation		
		ft.	m			Inch	mm	Inch	mm				pF/ft	pF/m	MHz	db/ 100 ft	db/ 100 m
 59/U TYPE 100% Sweep Tested 5-300 MHz	9259  1354 60C	50	15.2	2.0	22 (7x30)	Cellular Polyethylene 146 | 3 71	242	6	15	1 bare copper 2.6Ω/M 8.5Ω/km 95% shield coverage	75	78%	17.3	56.8	1	4	1.3
		100	30.5	4.0	[76]										5	8	2.6
		U-500	U-152.4	17.0	bare copper									10	1.0	3.3	
		500	152.4	18.0	copper									50	2.1	6.9	
		U-1000	U-304.8	33.5	15.0Ω/M									100	3.0	9.8	
		1000	304.8	35.0	49.2Ω/km												
PRODUCT DESCRIPTION: Recommended for camera to recorder to monitor connections. Stranded center conductor adds the flexibility needed to resist severe twisting, bending and other stresses which occur in many CCTV applications. Black non-contaminating PVC jacket.																	
 59/U TYPE 100% Sweep Tested 5-300 MHz	NEW 9659†  1354 60C	50	15.2	2.0	22 (7x30)	Cellular Polyethylene 146 | 3 71	242	6	15	1 bare copper 2.6Ω/M 8.5Ω/km 95% shield coverage	75	78%	17.3	56.8	50	2.1	6.9
		100	30.5	4.0	[76]										100	3.0	9.8
		U-500	U-152.4	17.0	bare copper									200	4.5	14.8	
		500	152.4	18.0	copper									400	6.6	21.7	
		U-1000	U-304.8	33.5	15.0Ω/M									700	8.9	29.2	
		1000	304.8	35.0	49.2Ω/km									900	10.1	33.1	
														1000	10.9	35.8	
<i>Black PVC jacket For CCTV applications</i>																	
 124Ω BALANCED VIDEO PAIR	9860†  2448 30V 60C	500	152.4	53.0	16 (Solid)	Cellular Polyethylene Color coded white blue	440	11	18	1 DUOFOIL + 94% 1 tinned copper braid 1.3Ω/M 4.3Ω/km 100% shield coverage	124	78%	Be- tween Cond 10.9 Shield un- grnd	35.8	1	27	.89
		1000	304.8	104.0	[1 29]										10	.89	2.9
		2000	609.6	209.6	bare copper 4.2Ω/M 13.8Ω/km									20	1.3	4.3	
														50	2.0	6.6	
														100	2.9	9.5	
														200	4.1	13.5	
<i>Black PVC jacket</i>																	
 6/U TYPE 100% Sweep Tested 5-300 MHz	9290 80C	U-500♦	U-152.4	28.6	18 (Solid)	Cellular Polyethylene 180 | 4 57	290	7	37	2 bare copper braids 2.0Ω/M 6.6Ω/km 98% shield coverage	75	78%	17.3	56.8	1	19	.62
		500♦	152.4	29.4	[95]										5	45	1.5
		1000♦	304.8	66.2	bare copper 7.5Ω/M 24.6Ω/km									10	64	2.1	
		2000♦	609.6											50	1.5	4.9	
														100	2.1	6.9	
														200	3.1	10.2	
														500	5.0	16.4	
														900	6.9	22.6	
														1000	7.4	24.3	
<i>Black PVC jacket</i>																	
 6/U TYPE 100% Sweep Tested 5-300 MHz	9248†  1354 80C	U-500	U-152.4	15.6	18 (Solid)	Cellular Polyethylene 180 | 4 57	270	6	86	1 DUOFOIL + 61% 1 tinned copper braid 5.2Ω/M 17.1Ω/km 100% shield coverage	75	78%	17.3	56.8	1	19	.62
		500	152.4	16.4	[95]										5	45	1.5
		U-1000	U-304.8	30.3	bare copper 7.5Ω/M 24.6Ω/km									10	64	2.1	
		1000	304.8	33.3										50	1.5	4.9	
														100	2.1	6.9	
														200	3.1	10.2	
														500	5.0	16.4	
														900	6.9	22.6	
														1000	7.4	24.3	
<i>Black PVC jacket</i>																	

† Passes the VW-1 vertical flame test.

□ One piece ± 10%







♦ Spools are one piece, but length may vary ± 10% from length shown.



BELDEN
 2200 U.S. Hwy 27 S.
 Box 1980
 Richmond, IN 47375
 (317) 983-5200

COAXIAL & BROADCAST CABLES

TV CAMERA CABLES AND CCTV CABLES (cont'd.)

Description	Trade & UL Type Number	Standard Lengths		Std Pkg Lb. ea.	AWG (Stranding) [Dia in mm] Nom. D.C.R.	Insulation & Nominal Core O D		Nominal O D		No. of Shields and Material Nom D.C.R.	Nom Imp (ohms)	Nom Vel. of Prop.	Nominal Capacitance		Nominal Attenuation		
		ft	m			Inch	mm	Inch	mm				pF ft	pF m	MHz	db 100 ft	db 100 m
 9265  20006 60C BELDFOIL* 59/U TYPE 100% SWEEP TESTED 5 to 300 mhz	500 1000	152.4 304.8	30.5	2 cond 22 (7x30) [76] tinned copper	PVC 054 137	24.2 x 445	6.15 x 11.30	1 pair Beldfoil shielded 100% shield coverage	—	—	51.0	167	—	—	—	—	—
<i>SIAMESE TYPE CABLE RG59 U Type with BELDFOIL aluminum-polyester shield and twisted pair</i>																	
 9165†  20006 60C For Electronic News Gathering (ENG) and CCTV Applications	500 1000	152.4 304.8	46.7 91.3	3 Pairs 22 (7x30) [76] tinned copper 15 Ω/M' 49 Ω/km	PVC 054 137 ea	290 x 561	7.34 x 14.23	3 Pairs individually Beldfoil* shielded 100% shield coverage w/drain	—	—	51.0	167	—	—	—	—	—
<i>SIAMESE TYPE CABLE RG59 U Type with BELDFOIL aluminum-polyester shield twisted pairs. COLOR CODING OF PAIRS: Red Blk., Org. Brn., Grn. Wht., 100% sweep tested (5-300 MHz).</i>																	
 9166 80C Siamese 7-Conductor EFP & ENG Camera Cable	500 1000 2000	152.4 304.8 609.4	111.9 216.8 485.6	1-Triax 14 (Solid) [1 63] bare copper 2.6 Ω/M' 8.5 Ω/km	Cellular Poly- ethylene 285 7 24	475 x 830	12.07 x 21.1	Two bare copper braids 1.5 Ω/M' 4.9 Ω/km Per Shield 93% shield coverage	75	78%	17.3	56.8	50 100 200 500 900	1.0 1.5 2.2 3.7 5.2	4.9 7.2 12.1 17.1	—	—
<i>CONDUCTOR COLOR CODE: Red Blk., Wht. Grn., Org. Blue.</i>																	
 9170 75C 12-Conductor EFP & ENG Camera Cable	250 500 1000	76.2 152.4 304.8	28.2 60.0 117.0	2 Coax Cables 25 (7x33) [53] bare copper 31.2 Ω/M' 102.0 Ω/km	Cellular Poly- ethylene 100 2.54	—	Overall 490 12 4	1 tinned copper over each coax 6.0 Ω/M' 19.7 Ω/km 93% shield coverage	75	78%	17.3	56.8	1 10 50 100 300 500	4 1.5 3.8 5.6 10.6 13.8	1.3 4.9 12.5 18.4 34.8 45.3	—	—
<i>Chrome PVC jacket. CONDUCTOR COLOR CODE COAX — Black, Black w White Hash Marks Pairs — Blk. Red, Blk. Wht., Blk. Grn., Blk. Blue, Blk. Yel.</i>																	

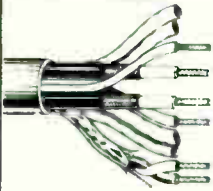





† Passes the VW-1 vertical wire flame test



BELDEN
 2200 U.S. Hwy 27 S.
 Box 1980
 Richmond, IN 47375
 (317) 983-5200

COAXIAL & BROADCAST CABLES

TV CAMERA CABLES AND CCTV CABLES (cont'd.)

Description	Trade & UL Type Number	Standard Lengths		Std Pkg Lb ea	AWG (Stranding) | Dia in mm | Nom D C R	Insulation & Nominal Core G D		Nominal O D		No of Shields and Material Nom D C R	Nom Imp (ohms)	Nom Vel of Prop	Nominal Capacitance		Nominal Attenuation									
		ft	m			Inch	mm	Inch	mm				pF/ft	pF/m	MHz	db/100 ft	db/100 m							
 14-Conductor Electronic Field Production (EFP) Camera Cable	9171 75C	250 500 1000	76.2 152.4 304.8	49.7 97.5 196.7	2 Coax 22 (7x30) | 76 | bare copper 15 0Ω M 49 2Ω km	Cellular Poly-ethylene 1.46 | 3.71	Overall 585 | 1.86	1 bare copper 2 6Ω M 8 5Ω km 95% shield coverage over ea coax	75	78%	17.3	56.8	1 5 10 50 100	3 .8 1.0 2.3 3.0	1 3 8 15 26	1.0 2.6 3.3 7.5 9.8	COLOR CODE OF 2 COAX Blk., Blk. w Hash Marks.							
																	5 Pairs 22 (7x30) | 76 | tinned copper 15Ω M 49 2Ω km	PVC 0.54 | 1.37 ea	5 Pairs individually Beldfoil shielded 100% shield coverage w drain	51.0	167	—	—	—
																	2 Cond 16 (26x30) | 52 | tinned copper 4Ω M 13Ω km	PVC 0.94 | 2.39 ea	COLOR CODE OF 2x16 Org., Vio. Chrome PVC jacket					
 2 Conductor Digital Video Time Code Cable	9180 80C	500 U-500 1000 U-1000	152.4 U-152.4 304.8 U-304.8	5.4 5.7 11.0 10.4	26 (7x34) | 48 | tinned copper 41 0Ω M 134 5Ω km	Datalene .049 | 1.22	144 | 3.66	1 Beldfoil 26 (7x34) tinned copper drain wire 23 1Ω M 75 8Ω km	100	78%	13	42.7												
Chrome PVC jacket Conductor Color Code: Black, White.																								
 4-Conductor Video Tape Recorder (VTR) Cable	9176  2668 30V 60C	500 1000	152.4 304.8	16.8 33.4	2 Coax 28 (7x36) | 38 | tinned copper 65Ω M 213Ω km	Cellular Poly-ethylene 0.41 | 1.04	Overall 260 | 3.60	1 tinned copper 94% shield coverage over each coax (braid)	50	78%	26	85.3	COAX COLOR CODE Gray PVC jacket. Blue PVC jacket.											
													1 Cond 24 (10x34) | 61 | tinned copper 26Ω M 85Ω km	PVC 0.56 | 1.42	Brown PVC jacket									
													1 Shielded Conductor 28 (7x36) | 38 | 65Ω M 213Ω km	PVC 0.35 | .89	1 tinned copper 94% shield coverage (spiral)	Yellow PVC jacket. Overall Gray PVC jacket.								
 7-Conductor Video Tape Recorder (VTR) Cable	9175†  2502 30V 80C	250 500 1000	76.2 152.4 304.8	22.1 45.9 89.4	4 Coax 24 (7x32) | 61 | bare copper 23 9Ω M 78 4Ω km	Cellular Poly-ethylene 0.51 | 1.30 ea	Overall .401 | 10.19	1 bare copper 94% shield coverage over each coax	38	78%	35	114.8	COLOR CODE OF PVC JACKETED COAX'S: Red, Yel., Gr., Blue.											
													3 Cond 20 (26x34) | 97 | tinned copper 10Ω M 33Ω km	PVC 0.69 | 1.75 ea	COLOR CODE OF 3x20: Wht., Brn., Vio. Gray PVC jacket.									

† Passes the VW-1 vertical flame test.



BELDEN
2200 U.S. Hwy 27 S.
Box 1980
Richmond, IN 47375
(317) 983-5200

COAXIAL & BROADCAST CABLES

75 OHM VIDEO COAXIAL RETRACTILE CABLES

PRODUCT DESCRIPTION: Stranded tinned copper conductor, polyethylene insulation, 100% Beldfoil, tinned copper serve shield. Nom. cap. 21 pF/ft. (68.9 pF/m). Nickel gray PVC jacket

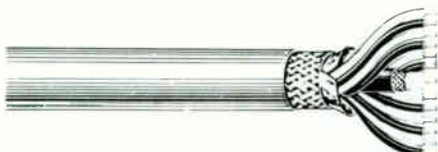
CONTROL, AUDIO, PAN AND TILT



Trade & UL Style Number	Retracted Length		Practical Extended Length		Std. Pkg. Lb. ea.	No. of Cond.	AWG (Strand-ing) [Dia. in mm]	Insulation Thickness		Jacket Thickness		Nominal O.D.		Nominal Coil O.D.	
	Inch	cm	ft.	m				Inch	mm	Inch	mm	Inch	mm	Inch	mm
9447 60C	6	15.24	2	.61	.18	1	25 (7x33)	.058	1.47	.045	1.14	.242	6.15	1.125	28.6
9448 60C	12	30.48	4	1.22	.35	1	25 (7x33)	.058	1.47	.045	1.14	.242	6.15	1.125	28.6
9449 60C	24	60.96	8	2.44	.68	1	25 (7x33)	.058	1.47	.045	1.14	.242	6.15	1.125	28.6

TV CAMERA CABLES AND CCTV CABLES (cont'd.)

13-Conductor Remote Control and Video Cable



Recommended for use in installations requiring external drive signals, tallies, intercom, switching and video operations.

Trade & UL Style Number

9262†



2594
60C

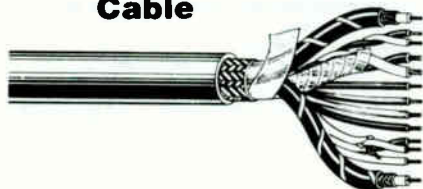
Specifications:

12-20 AWG (7x28) [.97 mm] tinned copper conductors, PVC insulated, color coded 1-75 ohm coax. 22 AWG [.79 mm] stranded bare copper conductor, foam polyethylene insulated. Nom. Core O.D. .146" [3.71 mm], bare copper braid shield, 95% coverage, black PVC jacket. Overall tinned copper braid shield 80% shield coverage. Overall gray PVC jacket, .460" [11.7 mm] nominal O.D. Standard Spool Lengths in ft. 50, 100, 500, 1000 (15.2, 30.5, 152.4, 304.8 m)

Underwriters Laboratories Inc. Listed. (Style 2594)

Standard Spool Lengths		Std. Pkg. Lb. ea.
ft	m	
50	15.2	8.3
100	30.5	16.8
500	152.4	83.2
1000	304.8	163.2

13-Conductor Camera Extension Cable



Recommended for remote control, closed circuit and cue line applications. STYLE 2497 Specified for the Dage 800 camera and other similar cameras.

9254†



2497
60C

2-20 AWG (10x30) [.95 mm] tinned copper, PVC insulated, color coded, twisted pair. Mylar tape wrapped. 9-22 AWG (7x30) [.76 mm] tinned copper, PVC insulated, 2 conductors cabled, BELDFOIL® shield, 2 conductors cabled unshielded, 5 conductors unshielded. 2-Foam polypropylene insulated coaxial cables. Nom. impedance 75 ohms, color coded 97% shield coverage. Overall tinned copper braid shield 83% shield coverage 550 [14.0 mm] Nom O.D. Chrome PVC jacket. Standard Spool Lengths in ft. 100, 250, 500, 1000, 1500 (30.5, 76.2, 152.4, 304.8, 457.2 m) Underwriters Laboratories Inc. Listed (Style 2497)

Standard Spool Lengths		Std. Pkg. Lb. ea.
ft	m	
100	30.5	20.1
250 ♦	76.2	45.4
500 ♦	152.4	89.0
1000 ♦	304.8	178.1
1500 ♦	457.2	269.7

♦ Spools are one piece, but length may vary ± 20%-0 from length shown.

† Passes the VW-1 vertical flame test.

• Belden U.S. Patent 3,032,604



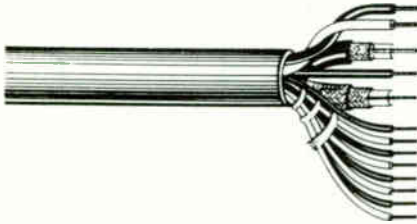
BELDEN
 2200 U.S. Hwy 27 S.
 Box 1980
 Richmond, IN 47375
 (317) 983-5200

COAXIAL & BROADCAST CABLES

TV CAMERA CABLES AND CCTV CABLES (cont'd.)

13-Conductor TV Eye Cable

8282[†]
60C



Especially engineered for TV Eye Cameras. Recommended for remote control, monitor and cue line applications.

Specifications:

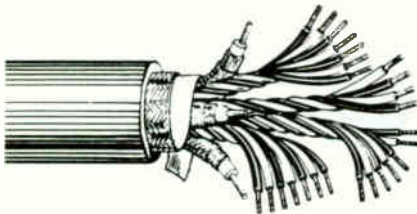
8-22 AWG (7x30) [.76 mm] tinned copper, PVC insulated, color coded.
 1-22 AWG (7x30) [.76 mm] polyethylene insulated conductor.
 2-18 AWG (16x30) [1.19 mm] tinned copper conductor, PVC insulated, black and red.
 1-RG-58A U cable 50 ohm coax 97% shield coverage
 1-72 ohm coax, stranded conductor, polyester tape wrapped 97% shield coverage
 Chrome PVC jacket, .470" [11.9 mm] Nom. O.D.
 Standard Spool Lengths in ft 100, 250, 500, 1000, 1500 (30.5, 76.2, 152.4, 304.8, 457.2 m).

Standard Spool Lengths		Std. Pkg. Lb. ea.
ft.	m	
100	30.5	15.0
250	76.2	36.8
500	152.4	73.1
1000	304.8	148.2
1500	457.2	213.8

28-Conductor TV Camera Cable

9253[†]

2511
60C



Recommended for transistorized TV cameras.

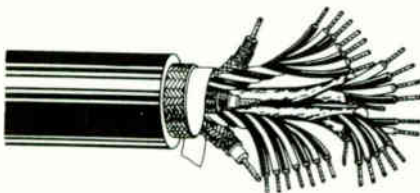
Specifications:

4-18 AWG (16x30) [1.19 mm] tinned copper, PVC insulated, ring band stripe color coded. BELDFOIL* aluminum-polyester wrapped shield around 4 conductors with stranded drain wire, polyester tape over this shielded group.
 21-22 AWG (7x30) [.76 mm] tinned copper, PVC insulated, cabled in 3 groups of 7, ring band stripe color coded, one group of 7 has a BELDFOIL aluminum-polyester wrapped shield overall with a stranded drain wire, polyester tape over this shielded group.
 3 coaxial cables Nom impedance 75 ohms, RG 59 U type with foam polypropylene insulation, 85% shield coverage
 Tinned copper braid shield, 86% shield coverage, Chrome PVC jacket, 810" [20.5 mm] Nom. O.D.
 Standard Spool Lengths in ft 100, 250, 500, 1000, (30.5, 76.2, 152.4, 304.8 m) 250, 500 & 1000 ft lengths -20% -0 length tolerance

Standard Spool Lengths		Std. Pkg. Lb. ea.
ft.	m	
100	30.5	42.0
250 ♦	76.2	104.4
500 ♦	152.4	212.8
1000 ♦	304.8	411.5

28-Conductor TPE TV Camera Cable

8286
80C



A 75 ohm cable designed to remain flexible in cold weather. Recommended for transistorized TV cameras.

Specifications:

4-18 AWG (16x30) [1.19 mm] tinned copper, PVC insulated ring band stripe color coded. BELDFOIL aluminum-polyester wrapped shield around 4 conductors with stranded drain wire, polyester tape over this shielded group.
 21-22 AWG (7x30) [.76 mm] tinned copper, PVC insulated, cabled in 3 groups of 7, ring band stripe color coded, one group of 7 has a BELDFOIL aluminum-polyester wrapped shield overall with a stranded drain wire, polyester tape over this shielded group.
 3 coaxial cables Nom impedance 75 ohms, 95% shield coverage
 Tinned copper braid shield, Black thermoplastic elastomer jacket, .730" [18.54 mm] O.D.
 86% shield coverage
 Standard Spool Lengths in ft 100, 250, 500, 1000 (30.5, 76.2, 152.4, 304.8 m) 250, 500 & 1000 ft lengths -20% -0 length tolerance

Standard Spool Lengths		Std. P.C. No.
ft.	m	
100	30.5	33.0
250 ♦	76.2	80.5
500 ♦	152.4	162.1
1000 ♦	304.8	318.1

♦ Spools are one piece, but length may vary +20%-0 from length shown.

[†] Passes the VW-1 vertical wire flame test.



BELDEN
 2200 U.S. Hwy 27 S.
 Box 1980
 Richmond, IN 47375
 (317) 983-5200







COAXIAL & BROADCAST CABLES

75 OHM PRECISION VIDEO CABLES

The 9231 is a precision 75 ohm video cable manufactured with rigid control of concentricity and all dimensional tolerances offering superior return loss characteristics; a quality video transmission cable which provides exceptional picture definition and eliminates problems resulting from periodicity. It has a non-contaminating PVC jacket for more flexibility. The double braid 8281 75 ohm video cable is made to tight tolerances for excellent

return loss performance. Our 8279 miniature 75 ohm video cable is for applications where space is critical. The gray PVC and black polyethylene jackets are made of non-contaminating, non-migratory compounds.

Typical Application: Video signal transmission in Color and Monochrome TV studios.
 100% SWEEP TESTED.

Description	Trade & UL Type Number	Standard Lengths		Std. Pkg. Lb. ea.	AWG (Stranding) [Dia. in mm] Nom. D. C. R.	Insulation & Nominal Core O. D.		Nominal O. D.		No. of Shields and Material Nom. D. C. R.	Nom. Imp. (ohms)	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation		
		ft.	m			Inch	mm	Inch	mm				pF/ft	pF/m	MHz	db/ 100 ft	db/ 100 m
	9231 † 60C	500 1000	152.4 304.8	35.3 74.0	20 (Solid) [.81] bare copper 9.9Ω/M' 32.5Ω/km	Poly-ethylene 198 | 5.03	.304	7.72	Tinned copper, double braid 1.06Ω/M' 3.5Ω/km 98% shield coverage	75	66%	21	69	.01 .1 1 4.5 10 100	.06 .08 .25 .45 .78 2.70	.2 .3 .8 1.5 2.6 8.9	<i>Gray non-contaminating PVC jacket.</i>
	8281 80C	500 1000	152.4 304.8	37.0 75.0	20 (Solid) [.81] bare copper 9.9Ω/M' 32.5Ω/km	Poly-ethylene 198 | 5.03	.304	7.72	Tinned copper, double braid 1.06Ω/M' 3.5Ω/km 98% shield coverage	75	66%	21	69	.01 .1 1 4.5 10 100	.06 .08 .25 .45 .78 2.70	.2 .3 .8 1.5 2.6 8.9	<i>Black polyethylene jacket.</i>
	9141 80C	500 1000	152.4 304.8	38.2 73.6	20 (Solid) [.81] bare copper 9.9Ω/M' 32.5Ω/km	Poly-ethylene 200 | 5.08	.305	7.75	Tinned copper double braid 1.06Ω/M' 3.5Ω/km 99% shield coverage	76	66%	20	65.6	.01 .1 1 4.5 10 100	.06 .08 .25 .45 .78 2.70	.2 .3 .8 1.5 2.6 8.9	<i>Clear polyethylene jacket. (For indoor use only)</i>
 Miniature	8279 • 80C	100 250 500	30.5 76.2 152.4	3.1 7.5 15.0	23 (7x32) [.57] bare compacted copper 23.1Ω/M' 75.9Ω/km	Poly-ethylene 146 | 3.71	.220	5.59	1 tinned copper 96% 4.5Ω/M' 14.8Ω/km	75	66%	21	69	.01 .1 1 4.5 10 100	.14 .15 .35 .80 1.30 4.98	.5 .5 1.1 2.6 4.3 16.3	<i>Black polyethylene jacket. Compacted conductor combines impedance uniformity of solid conductor and "nick-resistance" of stranded conductor.</i>
	9209 80C	U-500 U-1000	U-152.4 U-304.8	14.2 27.3	23 (7x32) [.57] bare compacted copper 19.1 Ω/M' 62.7 Ω/km	Poly-ethylene 146 | 3.71	.220	5.59	100% Duobond II + 96% 1 tinned copper 4.5Ω/M' 14.8Ω/km	75	66%	21	69	.01 .1 1 4.5 10 100	.14 .15 .35 .80 1.30 4.98	.5 .5 1.1 2.6 4.3 16.3	<i>Black polyethylene jacket. Compacted conductor combines impedance uniformity of solid conductor and "nick-resistance" of stranded conductor.</i>
	8299	Pkg. wt. ea. .3 lb.			For Use on 9231, 8281, and 9141. Adapter for use with PI-259 connector. 25 in												

REQUEST QUOTATIONS ON RG/U CABLES NOT LISTED

- Request Technical Data Bulletin T18-16 for connector information
- Request Technical Data Bulletin T18-17 for connector information

† Passes the VW-1 vertical wire flame test.

Prices and Specifications Subject to Change Without Notice.

BESTON ELECTRONICS, INC.

P.O. Box 937

Olathe, KS 66061

(913) 764-1900 TWX 910-749-6401

VIDEO PRODUCTION GENERATOR

MARQUEE 3000

Video Production Generator for Studio or Mobile Vans

The new Marquee 3000... the features of the Marquee 2000 and more:

Font Swap:

Font Swap is a real time saver, because it allows you to instantly swap the style of your caption with any font which is already resident within the Marquee 3000 font memory. You can swap the style of a single character, a single word, a group of words or a whole row, the choice is yours, instantly!

Chromastick:

Chromastick is the small joystick on the Marquee-3000 keyboard. As its name implies, its function, and that of the luminance control, is to allow you to select the color of your choice. In fact, with Chromastick over 4000 colors are yours for the choosing.

It's fast, accurate and very easy to operate, and what's more you can choose and commit to memory up to 7 different colors per page. Then, display them on a word by word basis for characters and on a line by line basis for background.

Chromastick even allows you to choose any of your 7 colors after you've composed your text, so that you can be sure your character colors and background colors are in perfect harmony. With Chromastick it's simple and takes only seconds.

And here's another plus. When you store your text, you not only store the text but all the color setting data as well. Which means each and every page can have its own unique set of 7 colors (plus black) which will be faithfully and instantly reproduced when the page is recalled from the disk.

See-Through-Characters:

Any font style regardless of its size or complexity can be displayed as SEE-THROUGH CHARACTERS, which you can select on a row by row basis.

Left and Right Justification:

Any row, groups of rows or the whole page can be justified left or right. The position of the left or right justification is determined by the position of the Cursor.

Delayed Cut:

As an alternative to displaying your pages as a series of instant back to back cuts, Delayed Cut will allow you to insert a momentary cut to black between each page. Just a keystroke will give you a delayed cut of either 6, 12, 18 or 24 fields in duration.



Add On Reveal:

Once a page has been stored in the Marquee 3000 memory you can recall it for display either as a complete page or row by row, starting from the top of the page and working down. You can determine how many rows are revealed at a time by use of the End of Text marker when composing your text.

Subtitles:

Up to 1050 three line subtitles may be recorded in sequence on a single disk for later recall. Subtitles can be selected using the keyboard or the optional Cypher-One unit. With the Cypher-One you can store on each disk up to 1050 three line subtitles either in or out of sequence and display them in the correct sequence automatically using the SMPTE Time Code.

Roll/Crawl:

The Marquee 3000 provides 8 speeds of Roll and Crawl, selectable before or during a roll or crawl sequence.

Row Compression and Expand:

As an aid to fast editing and left and right justification, the Marquee 3000 Row Compress and Expand facility will allow you to compress or expand all the interword spaces in a row simultaneously in 125 nano second steps.

NOTE: Marquee 3000 is single channel only.

BEYER DYNAMIC, INC.

5-05 Burns Avenue
Hicksville, NY 11801
(516) 935-8000

PROFESSIONAL DYNAMIC HEADPHONES

PROFESSIONAL DYNAMIC HEADPHONES DT109 VARIOUS MODELS

Dynamic headset with built in dynamic boom mic, dual muff configuration. Same application as the DT108.

DT109K* Same as the DT109 supplied with a 1.5m (K109.0) detachable straight cable, open-ended. **\$153.00**

DT109WK* Same as the DT109 supplied with a 3m (WK109.00) detachable coiled cable, open-ended. **158.00**

DT109.3* Same as the DT109 with built-in hum bucking coil in the mic line. For use in high intensity electrical field applications. Available with either straight (K) or coiled (WK) detachable cable, open ended. **153.00**

*For ordering purposes please specify straight (K) or coiled (WK) cable and impedance. DT109 is available in the following headphone impedance: 8, 50, 100, 200, 400, 800 and 2000 ohms. Microphone standard impedance is 200 ohms (also available in 600 ohms as a special order).

SPECIAL PURPOSE HEADPHONES

DT109.4 Same as the DT109 with a 400, 600, 2000 or 6000 ohm headphone impedance and a 200 ohm balanced microphone line. Equipped with a built-in amplifier. Non-detachable straight cord, open-ended. The DT109.4 is designed for use with carbon microphone inputs found in many broadcast applications (e.g. cameras, intercoms, etc.). **\$210.00**

DT109.5 Same as the DT109.4 with balanced mic line but without built-in amplifier, 200 ohm mic impedance and 6000 ohm headphone impedance only. Non-detachable straight cable, open-ended. **175.00**

DT109.6 Same as the DT109.4 with built-in, independent volume controls for each headphone system. **215.00**

DT109.7 Same as the DT109.5 with built-in, independent volume controls for each headphone system. **175.00**

DT109.9 Same as the DT109.4 with a 600 ohm mic impedance and 400, 600, 2000 or 6000 ohm headphone impedance. **220.00**

DT109.11 Same as the DT109.4 with an unbalanced mic line. **205.00**

DT209 Dynamic headset with built-in dynamic boom mic, dual muff configuration. Designed for language labs, as well as broadcast and film/video production. Available in 50 or 400 ohm headphone impedance and 200 or 600 ohm microphone impedance. **122.00**

DT505 Dynamic mini, mono earphone complete with earloop (OB506). Available in 15, 50, 400, 800 and 2000 ohm impedances. **24.00**

STC505 Underchip 'stetoclip' holder for 2 pcs. of DT505 for binaural listening. **8.00**

DT509 Under-the-chin monaural designed for TV and radio field interviewing, dictation machines and personal radios and cassette players. Frequency response 20-12-kHz, 11 dB isolation. Mono 5 ohms only. **45.00**

DT920 Conference headset, designed for conference rooms, language labs, dictation or transcription. Extremely lightweight (2.8 oz.) 300-8 kHz. Comes with non-detachable open-ended cable. **38.00**

ACCESSORY HEADPHONE CABLES

K96.00 Straight (5') 1.5m open ended cable for the DT96. **\$14.00**



DT209



DT509



DT-109 COMBINED
DYNAMIC MOVING COIL
MIC AND DT-100 MOVING
COIL HEADPHONE

WK96.00 Coiled (5') 1.5m (relaxed) version of the K96.00. **19.00**

K96.05 Straight (5') 1.5m cable with 1/4" phone jack wired mono for the DT96. **17.00**

WK96.05 Coiled (5') 1.5m (relaxed) version of the K96.05. **22.00**

ACCESSORY HEADPHONE CABLE

K96.07 Straight (5') 1.5m cable with 1/4" phone jack wired in stereo for the DT96. **\$17.00**

WK96.07 Coiled (5') 1.5m (relaxed) cable with 1/4" phone jack wired in stereo for the DT96. **22.00**

K100.00 Straight (10') 3m cable open-ended for the DT100. **17.00**

WK100.00 Coiled (10') 3m cable open-ended for the DT100. **22.00**

K100.05 Straight (10') 3m cable with 1/4" phone jack wired mono for the DT100 and DT102. **20.00**

WK100.05 Coiled (5') 1.5m (relaxed) version of the K100.05. **25.00**

K100.07 Straight (10') 3m cable with 1/4" phone jack wired in stereo for the DT100. **20.00**

WK100.07 Coiled (5') 1.5m (relaxed) version of the K100.07. **25.00**

K109.0 Straight (5') 1.5m cable open-ended for the DT108 and DT109. **17.00**

K109.00 Straight (10') 3m cable for the DT108 and DT109. **18.00**

WK109.00 Coiled version of the K109.00. **22.00**

BOOM MIC WIND SCREEN

WS108-109 Open-cell polyurethane wind screen for the DT108 and DT109 boom mic. **\$4.00**

BEYER DYNAMIC INC.

5-05 Burns Avenue
Hicksville, NY 11801
(516) 935-8000

PROFESSIONAL DYNAMIC MICROPHONES



M260



M400



M600

DYNAMIC STUDIO MICS

- M69 Dynamic unidirectional studio microphone, hypercardioid pickup pattern. **\$165.00**
- M69S Same as M69 with voice-music switch. **200.00**
- M88 Dynamic unidirectional studio microphone, hypercardioid pickup pattern. **320.00**
- M201 Dynamic unidirectional studio microphone, hypercardioid pickup pattern. **190.00**
- M160 Dynamic unidirectional studio microphone, hypercardioid pickup pattern, double ribbon element. **360.00**
- M260 Dynamic unidirectional microphone hypercardioid pickup pattern, ribbon element. **200.00**
- M260S Same as M260 with lockable noise-free on/off switch. **210.00**

SPECIAL APPLICATION DYNAMIC MICS

- M101 Dynamic studio microphone, omnidirectional pickup pattern. **\$220.00**
- M130 Dynamic bidirectional studio microphone. Figure-eight pickup pattern. Double ribbon element. **440.00**
- M111 Dynamic lavalier microphone, omnidirectional pickup pattern. **230.00**

DYNAMIC MICS FOR MUSICIANS

- M200 Dynamic unidirectional microphone, cardioid pick-up pattern. **\$100.00**
- M200S Same as M200 with lockable, noise-free, on-off switch. **110.00**
- M300 Dynamic unidirectional microphone, cardioid pick-up pattern. **125.00**
- M300S Same as M300 with lockable, noise free, on-off switch. **135.00**
- M400 (Soundstar MKII) Dynamic unidirectional microphone, supercardioid pick-up pattern. **160.00**
- M400S Same as M400 with lockable noise-free on/off switch. **170.00**
- M500 Dynamic unidirectional microphone, hypercardioid pick-up pattern. **240.00**
- M500S Same as M500 with lockable noise-free on/off switch. **250.00**
- M600 (Soundstar MKII) Dynamic unidirectional microphone, hypercardioid pick-up pattern. **270.00**
- M600S Same as M600 with lockable noise-free on/off switch. **280.00**

DYNAMIC P.A. AND SOUND REINFORCEMENT MICS

- M260.80 Dynamic, unidirectional microphone, hypercardioid pickup pattern. Similar to the M260 with built-in bass roll-off for high reverb applications. **\$210.00**
- M411 Dynamic unidirectional microphone, cardioid pickup pattern. **130.00**
- M411S Same as M411 with built-in on/off switch. **140.00**
- M412 Dynamic unidirectional microphone, cardioid pickup pattern, encased in elastic rubber. **135.00**
- M64 Dynamic unidirectional microphone, cardioid pickup pattern. **100.00**
- M420 Dynamic unidirectional microphone, hypercardioid pickup pattern. **155.00**
- M422 Dynamic unidirectional microphone, supercardioid pickup pattern. **75.00**
- M640 Dynamic unidirectional microphone, cardioid pickup pattern. **100.00**
- M680S Same as M640 with permanently attached gooseneck. 500mm long (includ. mic) and 15mm dia. with on/off switch and terminated in 3/8" female thread. **175.00**
- M680N(C)S M640 with permanently attached gooseneck, 350mm long 15mm diameter. With on/off switch. Terminating in a 3 pin male XLR connector. **175.00**
- M681S Same as M680S with 30mm gooseneck (includ. mic) and 11mm dia. **170.00**
- M682 Same as M681S but without the on/off switch. **165.00**
- M682N(C) Same as M682 but gooseneck terminates with 3 pin male XLR connector on the bottom. **170.00**

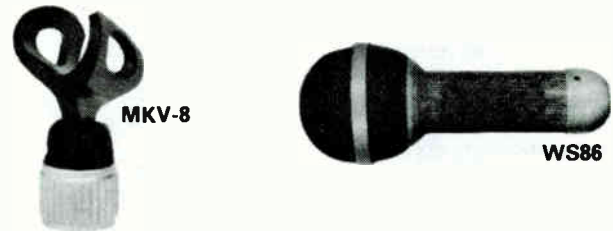
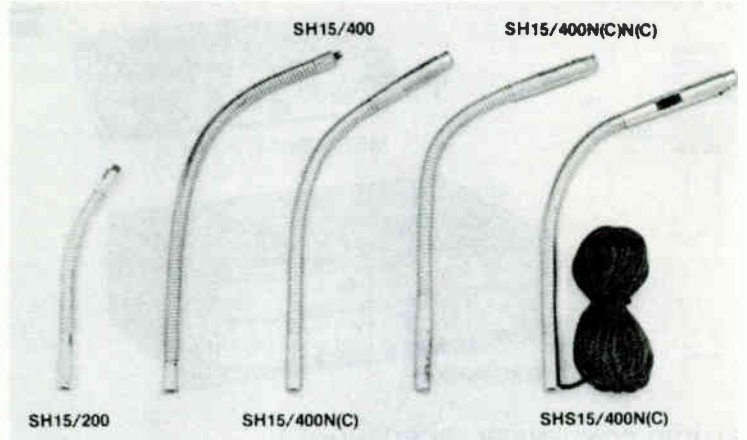
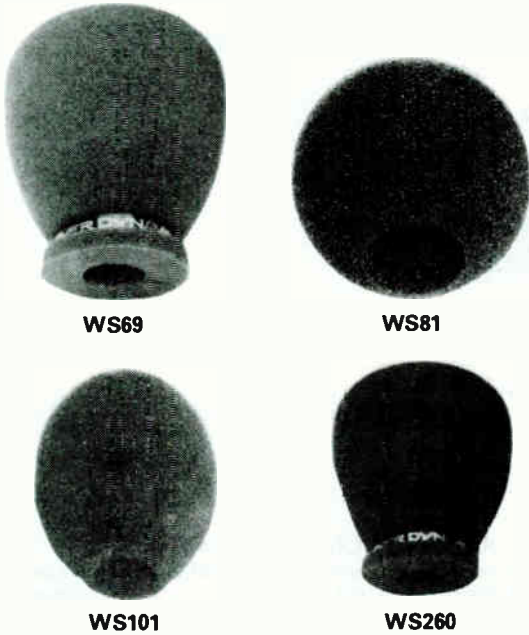
TABLE STANDS FOR GOOSENECK P.A. MICS

- MTF222 Solid plastic base for gooseneck. **\$50.00**
- MTF-SH15/250N Same base as MTF222, with 250mm long and 15mm dia. gooseneck attached. Designed to accept Beyerdynamic M64, M420, M422 and M640 PA Mics. **130.00**
- MTF-SH11/200N Same as MTF-SH15/250N but gooseneck is 200mm long with a 11mm dia. **\$115.00**

BEYER DYNAMIC INC.

5-05 Burns Avenue
Hicksville, NY 11801
(516) 935-8000

PROFESSIONAL DYNAMIC MICROPHONES/ACCESSORIES



MICROPHONE GOOSENECKS

- SH15/200 200mm gooseneck with a 15mm dia. 3/8" male thread on top and a 3/8" female thread on bottom. Chromium plated. **\$28.00**
- SH15/400 Same as above with a 400mm length. Chromium plated. **30.00**
- SH15/250N(C) 250mm gooseneck with a 15mm dia. female XLR connector on the top and a 3/8" female on the bottom. Matte nickel plated. **50.00**
- SH15/250N(C)-N(C) 250mm gooseneck with 15mm dia. female XLR connector on the top and a male XLR connector on the bottom. Both XLR connectors are prewired. Matte nickel plated. **68.00**
- SH15/300N(C) 300mm gooseneck with a 15mm dia. female XLR connector on the top and a 3/8" female thread on the bottom. Matte nickel plated. **55.00**
- SH15/400N(C) Same as above with 40mm length. Matte nickel plated. **60.00**
- SH15/400N(C)-N(C) 400m gooseneck with a 15mm dia. female XLR connector on the top and a male XLR connector on the bottom. Both XLR connectors are prewired. Matte nickel plated. **78.00**
- SHS15/400N(C) 400mm gooseneck with a 15mm dia. female XLR connector on the top and a 3/8" female thread on the bottom. This gooseneck features a built-in on/off switch and is fitted with a cable with open ends at the bottom. Matte nickel plated. **93.00**

PROFESSIONAL DYNAMIC MICROPHONE ACCESSORIES

MICROPHONE CLAMPS

- (All mic clamps come with 5/8" termination complete with 3/8" adaptor.)
- MKV6 Clothespin type plastic clamp for cylindrical shafts with dia. from 19-32mm. **\$10.00**
 - MKV8 Swivel stand adaptor clamp for cylindrical and conical mic shafts with dia. from 22-32mm. **12.00**
 - MKV9 Same as MKV8 but designed for 19mm shaft only. **12.00**
 - MKV17 Swivel stand adaptor of high-impact styrene plastic for mics with cylindrical shaft of 17mm. **7.00**
 - MKV19 Same as above for 19mm mic shaft. **7.00**
 - MKV22 Same as above for 22mm mic shaft. **7.00**
 - MKV24 Same as above for 24mm mic shaft. **7.00**
 - MKV25 Same as above for 25mm mic shaft. **7.00**
 - MKV27 Same as above for 27mm mic shaft. **7.00**

CABLES

- MVK C-C/20 20' black Neutrik male XLR to black Neutrik female XLR. **\$14.00**
- MVK C-C/25 25' black Neutrik male XLR to black Neutrik female XLR. **15.50**
- MVK C-C/50 50' black Neutrik male XLR to black Neutrik female XLR. **23.50**
- MVK C-K/20 20' black Neutrik female XLR to 1/4" phone jack. **14.00**
- TR/BV C-C Female XLR to male XLR, low to high impedance transformer. 200 ohm to 45K ohm. **75.00**
- TR/BV C-K Female XLR to male 1/4" phone jack, low to high impedance matching transformer. 200 ohm to 45K ohm. **60.00**
- MY139 200 mm (666 ft.) roll of mic cable, open ended. **170.00**

POPSCREENS

- (All mic clamps come with 5/8" termination complete with 3/8" adaptor.)
- PS88 Open-cell polyurethane foam popscreen. Protects mic against explosive breath sounds. For M69 and M88 mics. Dark grey color. **\$12.50**
 - PS260 Same as above for M260, M300 and M400 mics. **12.50**
 - PS500 Same as above for M500 mic. Grey color. **12.50**
 - PS500 also available in yellow, red, green and blue. **14.00**
 - PS600 Same as above for M600 mic. **12.50**

WINDSCREENS

- WS69 Open-cell polyurethane foam windscreen provides maximum wind noise suppression and protects against mechanical shock for M69 and M88 mics. Black Color. **\$15.50**
- WS69 Same as above. Available in red, blue, yellow and green. **17.00**
- WS81 Same as above for M411 and M412 mics. Black color. **12.50**
- WS81 Same as above available in yellow. **14.00**
- WS86 All metal wire mesh windscreen with built-in elastic suspension for M69 and M88 mics. **135.00**
- WS101 Same as above for M101 and M201 mics. Black color. **10.00**
- WS101 Same as above available in red, blue, yellow and green. **11.50**
- WS260 Same as above for M130, M160, and M260 mics. Black color. **14.50**
- WS260 Same as above available in red, blue, yellow and green. **16.50**

CARRYING CASE CATEGORY

- MZK5 Plastic vinyl carrying case for five microphones. **\$35.00**

BEYER DYNAMIC INC.

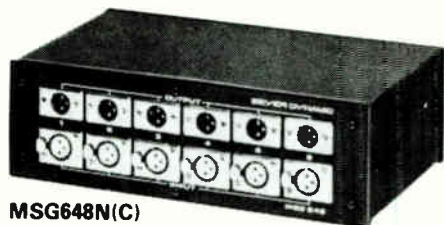
5-05 Burns Avenue
Hicksville, NY 11801
(516) 935-8000



MC734



MSG248N(C)



MSG648N(C)



KWS723

EA717

WS716

STUDIO CONDENSER MICROPHONES

MC734N(C) Vocal condenser microphone. Cardioid polar pattern. Designed for hand-held use for either studio or stage. Features 3 position bass roll-off filter. Requires 48 volt phantom powering. **\$830.00**

MC736N(C) 'Short shotgun' condenser microphone. Cardioid/lobe polar pattern. Features switchable 12 dB attenuation and bass roll-off. High signal to noise ratio and SPL capability. **725.00**

MC737N(C) 'Long shotgun' condenser microphone. Lobe polar pattern. Features switchable 12 dB attenuation and bass roll-off. High signal-to-noise ratio and SPL capability. **825.00**

POWER SUPPLIES FOR CONDENSER MICROPHONES

MSB9N(C) Battery power supply for powering one condenser microphone with CV720N(C) powering module. To be used with balanced inputs. Operates on one 9 volt battery. **\$135.00**

MSB9N(C).1 Same as the MSB9N(C) with built-in balancing transformer for unbalanced inputs. **150.00**

MSG248N(C) AC power supply. Provides 48 volt phantom powering for one or two condenser microphones. To be used with balanced inputs. **200.00**

MSG248N(C).1 Same as the MSG248N(C) with built-in balancing transformer for unbalanced inputs. **230.00**

MSG648N(C) AC power supply. Provides 48 volt phantom powering for up to six condenser microphones. To be used with balanced inputs. **425.00**

MSG648N(C).1 Same as the MSG648N(C) with built-in balancing transformer for unbalanced inputs. **525.00**

ACCESSORIES FOR THE CONDENSER MICROPHONES

MICROPHONE CLIPS

MKV8 Swivel stand adaptor for for cylindrical and conical microphone shafts with a diameter of 22-32mm. Thread insert for both 3/8" and 5/8" mounting. **\$12.00**

MKV9 Same as the MKV8 but for use with 19mm diameter shafts only. **12.00**

ELASTIC SUSPENSIONS

EA21 Elastic microphone suspension for microphones with 19-24mm shaft diameter. Nickel plated. **\$95.00**

EA21TV Same as the EA21 with a matte black finish. **95.00**

EA25 Elastic microphone suspension for microphones with 23-27mm shaft diameter. Nickel plated. **95.00**

EA25TV Same as the EA25 with a matte black finish. **95.00**

EA713 Anti-vibration microphone suspension, horseshoe-type mount. To be used with swivel joint MZG1 or pistol-grip handle MZP767. Matches KWS723 windscreens. To be used with MC711, 712, 713, 714, 721, 722, 723 and 724 microphones. **125.00**

EA716 Anti-vibration microphone suspension, horseshoe-type mount. To be used with swivel joint MZG1 or pistol-grip handle MZP767. Matches KWS726 windscreens. To be used with MC716 and 725 microphone. **125.00**

EA717 Tubular, anti-vibration shockmount. To be used with pistol-grip MZP767 or swivel-joint MZG1. Matched KWS727 windscreens. To be used with MC717, 727 and 737 microphones. **125.00**

EA736 Same as the EA717 to be used with the MC736. **140.00**

STUDIO CONDENSER MICROPHONES/ACCESSORIES

WINDSCREENS

WS716 Black open-cell polyurethane windscreens to be used with the MC716, 726 and 736 microphones. **\$25.00**

WS717 Same as WS716 to be used with the MC711, 727 and 737 microphones. **50.00**

SPECIAL APPLICATION WINDSCREENS

KWS723 Fiberglass windscreens for better protection against wind noise. Operational with the EA713 and the MZG1 swivel joint or MZP767 pistol grip. To be used with the MC711, 714, 721 and 724 microphones. **\$300.00**

KWS726 Same as the KWS723. Operational with the EA716 or EA736 and MZG1 swivel joint or MZP67 pistol-grip. To be used with the MC716, 726 and 736 microphones. **300.00**

KWS727 Same as the KWS723. Operational with the EA717 and MZP767 pistol-grip. To be used with MC717, 727 and 737 microphones. **325.00**

WIND COVERS

ZWS723 High wind cover made of gray fleece fabric with Velcro opening. Used for extreme wind conditions. To be used with KWS723. **\$50.00**

ZWS726 Same as the ZWS723 to be used with KWS726. **50.00**

ZWS727 Same as the ZWS723 to be used with KWS727. **50.00**

FISHPOLE BOOM

MZA716 Fiberglass telescoping fishpole boom, matte black color. Comes with MZG2 metal swivel mount with variable tilt through 360° range. To be used with EA21 and EA25 suspensions. **\$200.00**

MZG2 Metal swivel mount, matte black. Found on the MZA716 fishpole boom. Variable tilt through 360° range. **85.00**

PISTOL GRIP HANDLE

MZP767 Pistol grip handle for long and short shotgun microphones. To be used with EA713, EA716, EA717 and EA736 suspensions. **50.00**

SWIVEL MOUNT

MZG1 Metal swivel joint with 3/8" female thread in the base. To be used with EA713, EA716, EA717 and EA736 suspensions. **\$50.00**

CAPSULE EXTENSION TUBES (MCM SERIES)

CKV1 Mic capsule extension tubes for mounting between the capsule and the powering module. Designed for unobstructive placement of the microphone (e.g.: theater stage, announcer's desk). 200mm long, straight version. **\$125.00**

CKV2 Same as the CKV1. 400mm long, straight version. **150.00**

CKV3 Same as the CKV1. 600mm long, bent toward the capsule end. **225.00**

ZCVK4 Stand adaptor designed to hold the CKV1, 2 and 3 capsule extension tubes. **160.00**

SA710 Elastic suspension for microphones using the capsule extension tubes. To be used with the MZG1 swivel joint. **140.00**

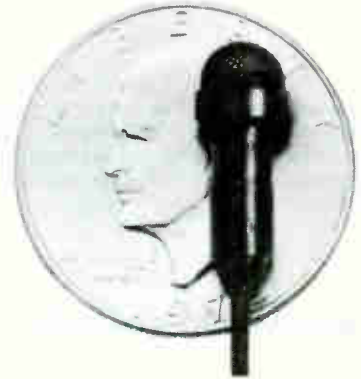
BEYER DYNAMIC, INC.

5-05 Burns Avenue
Hicksville, NY 11801
(516) 935-8000

CONDENSER MICROPHONES



MPC50



MCE5

MPC50 ACOUSTICAL BOUNDARY MICROPHONE

MPC-50N(C) Acoustical Boundary Microphone, hemi spherical polar pattern. The MPC50 utilizes the increase in sound pressure on acoustically live surfaces but does not pick up reflections from the surface. Incorporates power supply powered by one 9 volt battery or it can be powered by any 48 volt phantom source. 8-11/16" square, 7/8" high bevelled oak panel. 20-20 kHz freq. response. **\$530.00**

MCE5 CLIP-ON ELECTRET CONDENSER MICROPHONE

MCE5
Omnidirectional, clip-on, electret condenser microphone, 7mm diameter, 23mm long. Matte black color. Designed for use in TV and radio broadcasting, film/video production and pick-up for instruments. Terminates in a 6 pin DIN connector to be used in conjunction with the MES5VN(C) power supply. **\$168.00**

MCE5.1N(K)
Same as the MCE5 terminating in a 2 conductor 1/4" phone connector incorporating its own power supply operable with a 5.6 volt battery (included). **240.00**

MCE5.3
Same as the MCE5 with a built in bass roll-off for use in high reverberation applications and conditions. **179.00**

MCE5.4
Same as the MCE5 with higher sensitivity and lower impedance, designed for use with NAGRA tape recorders. **185.00**

MCE5.5
Same as the MCE5 with termination for direct interface with NAGRA SN tape recorder. **300.00**

MCE5.6
Same as the MCE5 terminating in a 3 pin female XLR connector. **268.00**

MCE5.8
Same as the MCE5 terminating in an 8 pin LEMO connector. **215.00**

MCE5.9
Same as the MCE5 terminating with no connector (open-ended) for use with various wireless transmitters, including the SONY WRT-27. **140.00**

MCE5.11N(C)
Same as the MCE5 terminating in a 3 pin male XLR connector incorporating its own power supply operable with a 5.6 volt battery (included) or by a 48 volt phantom power source. **275.00**

MCE5 POWER SUPPLY

MES5VN(C)
Battery power supply (9 volt) for use with the MCE5, 5.3 and 5.4

microphones. 6 pin DIN input, 3 pin male XLR output. MES5VN(C) can also power the MCE5 by means of a 48 volt phantom power source. **\$115.00**

MCE5 ADAPTORS

MA5P48N(C)
Adaptor for the direct connection of the MCE5, 5.3 and 5.4 microphones to a 48 volt phantom source. 6 pin DIN input, 3 pin male XLR output. **\$108.00**

MA5T12N(C)
Same as the MA5P48N(C) but for use with a 12 volt "AB" power source. **108.00**

MA5P48N(C).1
Adaptor for the MCE5.4 microphone to be used with a NAGRA or STELLAVOX tape recorders. 6 pin DIN input, 3 pin female XLR output. **115.00**

MA5T12N(C).1
Adaptor for MCE5.4 microphone for 12 volt "AB" powering with NAGRA tape recorders. 6 pin DIN input and 3 pin female XLR output. **115.00**

MCE5 ACCESSORIES

WS5
Black wire mesh windscreen for the MCE5 microphone. **\$10.00**

MKV5/1
Tie/Lapel clip to hold one MCE5 microphone. **13.00**

MKV5/1D
Same as the MKV5/1 with a turntable mic holder for better microphone directionality. **25.00**

MKV5/2
Tie/Lapel clip to hold two MCE5 microphones. **15.00**

MSV5/1
Stick pin to hold one MCE5 microphone. **9.00**

MSV5/2
Stick pin to hold two MCE5 microphones. **12.00**

MZGH5
String hold mount for the MCE5 for violin, viola or cello. **35.00**

MZAG5
Clip mount for the MCE5 for acoustic guitar. **22.00**

MZFH5
Flute mount for the MCE5. **43.00**

ZHV5
Belt carrier clip for the MES5VN(C) power supply. **4.00**

BEYER DYNAMIC INC.

5-05 Burns Avenue
Hicksville, NY 11801
(516) 935-8000

STUDIO CONDENSER MICROPHONES

The Beyer Dynamic MCM Series Studio Condenser Microphones offer complete flexibility. The complete microphone contains both the powering module and an interchangeable mic capsule. Thus creating different mics for a variety of applications. Available as separate powering modules (CV), mic capsules (CK) and complete modules (CV + CK).

POWERING MODULES (MCM SERIES)

CV710N(C)

Powering module for a 48 volt phantom power source. Features a built-in switchable 10dB attenuation to prevent high SPL from overloading the internal electronics and a bass roll-off switch to suppress low frequency interference. **\$280.00**

CV720N(C)

Powering module for a 12 volt phantom power source. Same features as the CV710N(C) microphone capsules. **320.00**

MICROPHONE CAPSULES (MCM SERIES)

CK701

Pressure microphone with almost frequency-independent, omnidirectional characteristic. The high frequency emphasis of the free-field voltage response compensates for the attenuation of high frequencies occurring in the reverberant sound field. Can be used where no feedback can occur and a constant recording sensitivity is required all around. Frequency response: 40-20,000 Hz. **\$210.00**

CK702

Omnidirectional, similar to CK701 but with elastic suspension of capsule system and built-in protective wind and pop filter. It is therefore particularly insensitive to mechanical vibrations and wind and pop noises. Frequency response: 40-20,000 Hz. **250.00**

CK703

Pressure gradient microphone with cardioid pick-up characteristic. Very low feedback. Flat frequency response throughout the entire transmission range with a slight rise at the high end. As a directional microphone it permits excellent recording results even in acoustically unfavorable surroundings, as in the case of acoustic reverberation tending towards feedback and where disturbing ambient noise is present. Frequency response: 40-20,000 Hz. **260.00**

CK704

Cardioid polar pattern similar to CK703, but with elastic suspension of capsule system and built-in protective wind and pop filter. Ideal as a microphone for soloists, as it is particularly insensitive to handheld noise and popping. Frequency response: 40-20,000 Hz. **300.00**

CK706

Short directional tube with built-in capsule. 16.4cm in length. The CK706 is a combination of pressure gradient and interference tube. Its pick-up characteristic corresponds at low frequencies to that of a



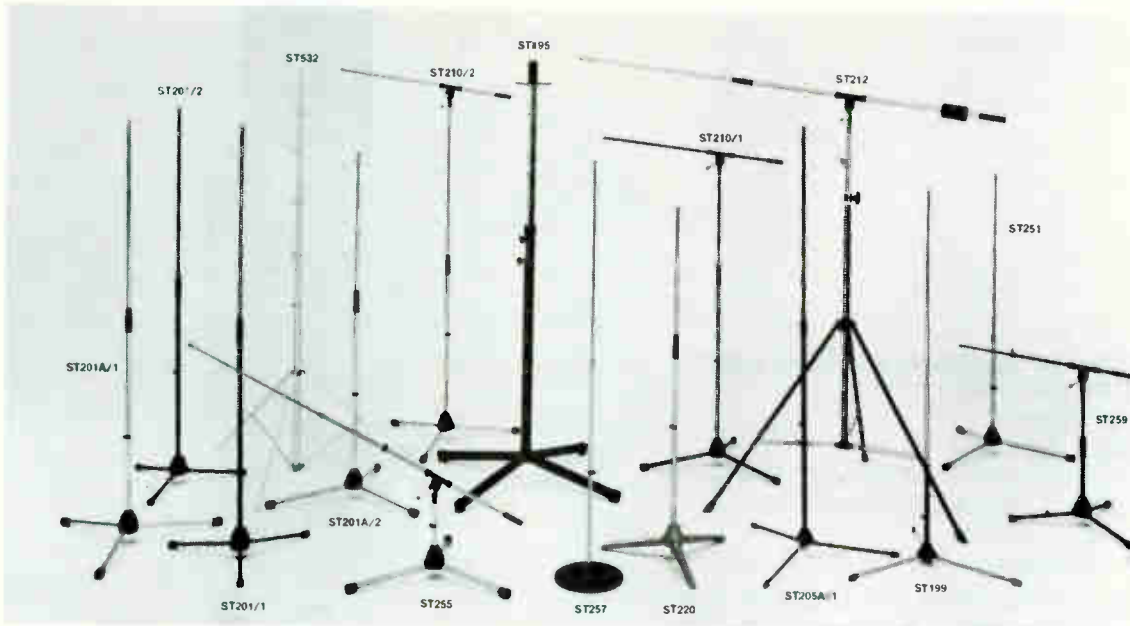
cardioid. At frequencies above 2 kHz it changes into a lobe form. The CK706 permits high quality sound pick-up even under difficult conditions such as severe surrounding noise and room reverberation, making the CK706 particularly suitable for soloists' recordings and for reporting. An additional protective windscreen is recommended for outdoor recording. Built-in protection from pop and breath noise. Frequency response 40-20,000 Hz. **400.00**

CK707

Long directional tube with built-in capsule. 43.4cm in length. The combination of interference tube and gradient principle results in a lobe form pick-up characteristic. Extremely high directivity factor. When recording outdoors or in the case of rapid swiveling movements of the microphone a windscreen is recommended. Frequency response: 40-20,000 Hz. **500.00**

CK708

Studio condenser microphone. Figure-eight pick-up pattern. High-performance condenser microphone with a frequency-independent, directional pick-up. Elastic suspension of the capsule system. The perfect microphone for difficult recording situations in studios. **460.00**



Floor Stands

- ST 199.** Lightweight telescopic stand. Tubes snap-lock into place. Fold-away legs. Extends from 17" to 55 1/2", 5/8" thread. **\$29.95**
- ST 201/1 Chrome.** Nickel-plated. Noiseless screw height adjustment lock. 12" screw-in tubular legs. 5/8" thread. **\$39.95**
- ST 201/1 Black.** Same as above except matte black finish. **\$40.95**
- ST 201A/1 Chrome.** Same as 201/1, but with heavy-duty 13"-long foot tubes. **\$41.95**
- ST 201A/1 Black.** Same as above except matte black finish. **\$42.95**
- ST 201/2 Chrome.** Same as 201/1, but with foldaway legs. **\$39.95**
- ST 201/2 Black.** Same as above except matte black finish. **\$40.95**
- ST 201A/2 Chrome.** Same as 201/2, but with heavy-duty 13"-long leg tubes. **\$42.95**
- ST 201A/2 Black.** Same as above except matte black finish. **\$44.95**
- ST 205A/1. Black** Nickel-plated. Impact resistant screw height adjustment lock. Fold-away legs. 5/8" thread. **\$40.95**
- ST210/1 Chrome.** An ST 201A/1 floor stand with an SCH211 boom arm attached. 5/8" thread. **\$58.95**
- ST 210/1 Black.** Same as above except matte black finish. **\$59.95**
- ST 210/2 Chrome.** An ST 201A/2 floor stand with an SCH211 boom arm attached. 5/8" thread. **\$59.95**
- ST 210/2 Black.** Same as above except matte black finish. **\$61.95**
- ST 220 Chrome.** Special anti-vibration stand. Legs have filter which counteracts noise and floor vibrations. Screw height adjustment lock. Fold-away legs. 5/8" thread. **\$79.95**
- ST 251 Chrome.** Anti-shock stand with 2 telescoping pieces. Height adjustment from 24" to 56". 5/8" thread. **\$47.95**
- ST 251 Black.** Same as above except matte black finish. **\$48.95**

- ST 255.** Low level stand with boom arm attached. Foldaway legs. Boom arm extends 36" to 60". 5/8" thread. **\$59.95**
- ST 257.** Round base stand. Adjusts from 34" to 61". 5/8" thread. **\$31.95**
- ST 259/ Chrome.** Low level stand with SCH 211/1 boom arm attached. Fold-away legs. Extends from 14" to 23". 5/8" thread. **\$54.95**
- ST 259/Black** Same as above except matte black finish. **\$56.95**
- ST 532.** Telescoping stand with 5 collapsible locking stages. Extends from 2'8" to 15'. 5/8" thread. **\$89.95**

Heavy Duty Floor Stands

- ST 195** Extra strong stand with 4 foldaway legs. Lock pin height adjustment. Comes with M 20 mounting plate for public address speaker. **\$99.95**
- ST212.** Heavy duty tripod stand extending to 7'6". With a 212C boom arm attached. **\$169.95**

Boom Arms

- SCH 211 Chrome.** One-piece boom arm. Length adjustable to 2'1" with locking knob. Fits all floor stands. 5/8" thread. **\$18.95**
- SCH 211 Black.** Same as above except matte black finish. **\$19.95**
- SCH 211/1 Chrome.** Same as 211 except for an additional locking telescoping section. Extends from 13.5" to 24.5". 5/8" thread. **\$20.95**
- SCH 211/1 Black.** Same as above except matte black finish. **\$21.95**
- SCH 211/2 Chrome.** Same as 211/1 except for the addition of a second telescoping piece with a locking nut. **\$22.95**
- SCH 211/2 Black.** Same as above except matte black finish. **\$23.95**
- 212C.** Heavy duty boom arm with counterweight. Extends to 6'. **\$62.95**

Table Stands

- ST 200.** Heavy duty cast alloy. Matte gray finish for gooseneck mounting. Cushion pads. **\$14.95**
- ST 200/1.** Same as above, but with on-off switch. **\$32.95**
- ST 300.** Lightweight plastic stand folds to picket size. **\$8.95**
- ST 300 MKV.** Same as above with choice of any MKV mic clamp attached. **\$15.95**
- ST 300 MKV 6/7.** Same as above with MKV 6 or 7 clothespin mic clamp attached. **\$16.95**

Accessories

- 160/1.** Clip-on ashtray. **\$5.95**
- 221D.** Table flange with 5/8" nut for gooseneck mounting. **\$3.95**
- 237.** Table-top mic clamp. **\$4.95**
- 238.** Clamp adapter for mounting extra mic to stand tubing. **\$6.95**
- EA 24 Black.** Mic suspension holder matte black finish **\$79.95**
- EA 24 Chr.** Same as above except polished chrome **\$69.95**
- ST 401.** Multi-purpose music stand. Nickel plated. For left or right-hand use. **\$32.95**
- ZMS 1.** Stereo rail for mounting two mics on one stand. **\$6.95**

Thread Adapters

- 215.** 5/8" O.D. to 3/8" I.D. **\$2.95**
- 216.** 3/8" O.D. to 5/8" I.D. **\$2.95**
- 217.** 5/8" O.D. to 3/8" I.D. (short) **\$2.95**
- 218.** 3/8" O.D. to 1/2" I.D. **\$2.95**
- 219.** 1/2" O.D. to 3/8" I.D. **\$2.95**

BIRD ELECTRONIC CORP.

LOAD RESISTORS

30303 Aurora Rd.
Cleveland (Solon), OH 44139
(216) 248-1200 (805) 646-7255
Telex 98-5298 Cable BIRDELEC

MODEL 8570

Termaline® Hi-Power RF Load Resistor/Reject Load 15kW Air-Cooled/Air-Dielectric

- Wide-band DC to 350MHz
- 15kW Transmitter Termination
- Reject load for up to 60kW FM or 100kW VHF-TV systems
- Forced air flow design for quiet operation
- Rugged, reliable construction
- Field-repairable, with ease

The latest addition to our series of dry, forced air cooled high power Load Resistors, model 8570 is a well-matched termination for 50 ohm rigid line systems to 15,000 watts for testing and alignment of transmitters. The RF power is dissipated in a large number of rugged parallel/series connected resistor elements, which not only provide an extensive total surface for heat transfer, but assure that the Load is not rendered inoperative due to the unlikely failure of one or two of the elements.

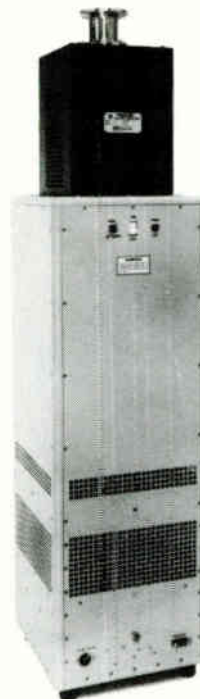
As a "Reject Load", model 8570 acts as a stand-by termination in dual-transmitter systems, absorbing power only in case one of the transmitters fails. Reject Loads must be ready to function at once without using water or energy in their hopefully eternal stand-by mode. Model 8570 is ideal for dual-transmitter operation to 60kW FM and 100kW TV-peak, since it is designed to absorb the required 25% average power of the installation without forced-air cooling for a period long enough to let the sensors power the cooling blowers. Since the power is dissipated in heat, the working environment either gets too hot or its air conditioning system must be large enough to handle the additional 15kW heat load. The Bird design can be ordered with optional hot-air duct P/N 8572-078, which removes 48,000 BTU/hour.

Weight: 118 lbs. (54kg)

Dimensions: incl. Conn. 16" x 16" x 69"H
(406 x 406 x 1753mm)

Finish: Light Navy Grey baked enamel (MIL-E-15090) and Lusterless Black Enamel (Fed. Spec. TT-E-527)

8570-115-6	3-1/8 EIA FL 15kW	.....	\$2750.00
8570-230-5	3-1/8 EIA FL 15kW	.....	2785.00



8572

MODEL 8572

Termaline® Hi-Power RF Load Resistor 25kW Air-Cooled/Air-Dielectric

- Rugged, reliable construction
- Wide band DC to 250MHz
- Forced air flow designed for quiet operation
- Field-repairable, with ease

The dry, forced air cooled high power Load Resistor, model 8572 is a well-matched termination for 50 ohm rigid line systems to 25,000 watts for testing and alignment of transmitters. The RF power is dissipated in a large number of rugged parallel/series connected resistor elements, which not only provide an extensive total surface for heat transfer, but assure that the Load is not rendered inoperative due to the unlikely failure of one or two of the elements.

As a dry Load, model 8572 is very nearly maintenance-free, and presents fewer problems, should servicing ever become necessary. The units are repairable in the field. A special option permits ducting hot air away from the Load, and out of your work environment.

Weight: 106 lbs. (48kg)

Dimensions: inc. Conn. (16" x 16" x 69"H
(406 x 406 x 1753mm)

Finish: Light Navy Grey baked enamel (MIL-E-15090) and Lusterless Black Enamel (Fed. Spec. TT-E-527)

8572-115-6	3-1/8 EIA FL 25kW	.....	\$3575.00
8572-230-5	3-1/8 EIA FL 25kW	.....	3610.00

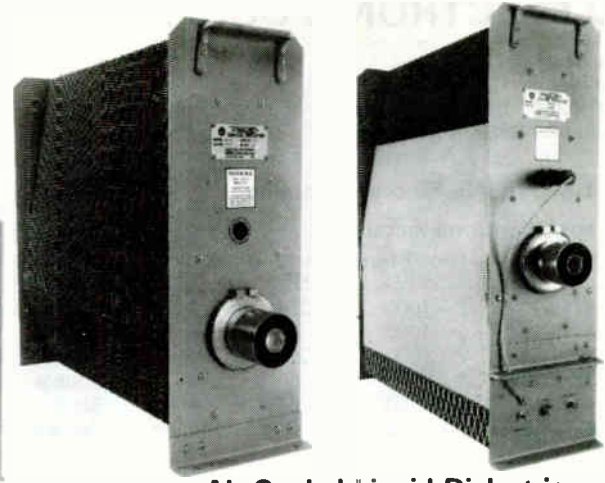
Reprinted with permission from materials © 1984 BIRD ELECTRONIC CORP.

BIRD ELECTRONIC CORP.

30303 Aurora Rd.
Cleveland (Solon), OH 44139
(216) 248-1200 (805) 646-7255
Telex 98-5298 Cable BIRDELEC

New Econoload High-Power TERMALINE[®] RF Loads

50 ohms nominal
With Field-Replaceable Resistors!
10kW, 20kW, 40kW
Line-Mounted RF Terminations for
CW, AM, FM, SSB and TV Transmitters.
As with many high power RF measurement and termi-
nation ideas, Bird broadcast-system load resistors
were an integral part of transmitter equipment right
from the industry's days of infancy. From an initial
shipping weight of 1400 pounds to a lightweight series
of hand-held line terminations, THERMALINE[®] high
power Load Resistors broke new ground at nearly
every step of technical innovation.



Air-Cooled Liquid-Dielectric TERMALINE[®] RF Load Resistors

Unique New Radiators Extend Upper Limits:
10,000 Watts

Bird THERMALINE[®] Load Resistors are used during
adjustment, testing and alignment of transmitters in
place of the antenna, as well as for permanent or
stand-by termination of transmission line branches.
Their low VSWR assures an excellent match and — at
1.1 — the absorption of at least 99.75% of the RF
energy generated.

MODULOAD[®] RF Load Resistors

50 ohms nominal

The new Self-Cooling MODULOAD[®] RF Load
Resistors operate continually in a few cubic feet of
space (3 cu. ft. at 10kW, 5 cu. ft. at 25kW, 11 cu. ft. at
40kW) under full rated RF power without the need for
external cooling water. These line terminating systems
are, therefore, ideal for locations where water supply is
reliable, expensive or simply not available. Self-con-
tained, with integral heat exchanger and protective
devices, models are available for 115V 60Hz and 230V
50Hz operation. The suffix indicating which line
voltage is applicable is part of each model's number.

MODULOAD[®] RF Calorimeter Load Systems

MODEL	CONNECTOR	POWER	PRICE
8631-601	3-1/8 EIA FL	10kW	\$6485.00
8631-602	3-1/8 EIA FI	10kW	6500.00
8635-601	1-5/8 EIA FI	10kW	6485.00
8635-602	1-5/8 EIA FI	10kW	6500.00
8638-601	3-1/8 Unfl	10kW	6485.00
8638-602	3-1/8 Unfl	10kW	6500.00
8645-601	3-1/8 EIA FI	25kW	8245.00
8645-602	3-1/8 EIA FI	25kW	8280.00
8646-601	3-1/8 Unfl	25kW	8245.00
8646-602	3-1/8 Unfl	25kW	8280.00
8655-601	3-1/8 EIA FI	50kW	10,400.00
8655-602	3-1/8 EIA FI	50kW	10,435.00
8656-601	3-1/8 Unfl	50kW	10,400.00
8656-602	3-1/8 Unfl	50kW	10,435.00

Above models' coolant is 100% water. For Glycol use,
replace "0" in model number with "3" (e.g. 8635-601
becomes 8635-631). Same Price.

LINE VOLTAGE SUFFIX: 601 115V 60Hz
602 230V 50 Hz

MODULOAD[®] Self-Cooled Load Systems

MODEL	CONNECTOR	POWER	PRICE
8631-115	3-1/8 EIA FI	10kW	\$3380.00
8631-230	3-1/8 EIA FI	10kW	3415.00
8635-115	1-5/8 EIA FI	10kW	3380.00
8635-230	1-5/8 EIA FI	10kW	3415.00
8638-115	3-1/8 Unfl	10kW	3380.00
8638-230	3-1/8 Unfl	10kW	3415.00
8645-115	3-1/8 EIA FI	25kW	5065.00
8645-230	3-1/8 EIA FI	25kW	5090.00
8646-115	3-1/8 Unfl	25kW	5065.00
8646-230	3-1/8 Unfl	25kW	5090.00
8655-115	3-1/8 EIA FI	50kW	7215.00
8655-230	3-1/8 EIA FI	50kW	7250.00
8656-115	3-1/8 Unfl	50kW	7215.00
8656-230	3-1/8 Unfl	50kW	7250.00
8690-060	6-1/8 EIA FI 230V 60 Hz	80kW	INQ.
8690-050	6-1/8 EIA FI 230V 50 Hz	80kW	INQ.

LINE VOLTAGE SUFFIX: -115 115V 60 Hz
-230 230V 50 Hz
(except 80kW units)

Wall-Mounting Brackets

6770-120	10kW	\$100.00
6770-125	20kW, 30kW, 40kW, 50kW	100.00
6770-130	80kW	100.00



6770-105-1 Dolly With
Load and 4805 Wattmeter

Water Cooled, Air Dielectric

MODEL	CONNECTORS	POWER	PRICE
8710 N/M or F		1kW	\$ 340.00
8711 C/M or F		1kW	375.00
8713 7/8 EIA FI/50 ohm		1kW	400.00
8720 1-5/8 EIA FI/50 ohm		5kW	600.00
8730 1-5/8 EIA FI Econoload [®]		10kW	685.00
8730-677 Above with dolly*		10kW	1335.00
8731 3-1/8 EIA FI Econoload		10kW	715.00
8731-677 Above with dolly*		10kW	1380.00
8738 3-1/8 Unfl Econoload		10kW	715.00
8738-677 Above with dolly*		10kW	1415.00
8745 3-1/8 EIA FI Econoload		20kW	1085.00
8745-677 Above with dolly*		20kW	1759.00
8746 3-1/8 Unfl Econoload		20kW	1085.00
8746-677 Above with dolly*		20kW	1780.00
8755 3-1/8 EIA FI Econoload		30kW	1485.00
8755-677 Above with dolly*		30kW	2140.00
8756 3-1/8 Unfl Econoload		30kW	1485.00
8756-677 Above with dolly*		30kW	2175.00
8765 3-1/8 EIA FI Econoload		40kW	1690.00
8765-677 Above with dolly*		40kW	2365.00
8766 3-1/8 Unfl Econoload		40kW	1690.00
8766-677 Above with dolly*		40kW	2380.00
8775 3-1/8 EIA FI Econoload		50kW	1890.00
8775-677 Above with dolly*		50kW	2560.00
8776 3-1/8 Unfl Econoload		50kW	1890.00
8776-677 Above with dolly*		50kW	2585.00
8790 6-1/8 EIA FI Econoload		80kW	2565.00
8790-677 Above with dolly*		80kW	3300.00
8791 6-1/8 Unfl Econoload		80kW	2565.00
8791-677 Above with dolly*		80kW	3345.00

*Dolly assembly includes Water Flow
Switch, Control Box and Coupling Kit

Control Box Assembly

8750-100 For all Econoloads \$200.00

Replacement Resistors — Econoloads

8731-021	10kW	\$250.00
8755-027-3	30kW	315.00
8755-027-4	40kW	375.00
8755-027-5	50kW	425.00
8755-029-2	20kW	250.00
8790-035	Two req'd. 80kW	425.00

Water Flow Switch — Econoloads

5-898-2	20kW	\$125.00
5-898-3	30kW	125.00
5-898-4	40kW, 50kW	125.00
5-898-6	10kW	125.00
5-898-7	80kW	125.00

Prices and Specifications Subject to Change Without Notice.

MODEL	CONNECTOR	POWER	PRICE
8833-3000	QC-LC(F)	1kW	\$ 575.00
8860	QC-LC(F)	1500W	690.00
8861	1-5/8 Unfl	1500W	705.00
8862	1-5/8 EIA FI	1500W	720.00
8863	3-1/8 Unfl	1500W	765.00
8864	3-1/8 EIA FI	1500W	785.00
8890-300	QC-LC(F)	2 ½kW	785.00
8890-008	Thermoswitch		100.00
8891-300		2 ½kW	865.00
8892-300		2 ½kW	805.00
8895-300	1. -5/8 Unfl/50 ohm (Recessed Ctr. Cond)	2 ½kW	850.00
8896-300	3-1/8 Unfl/51.5 ohm	2 ½kW	850.00
8897-300	3-1/8 Unfl/50 ohm (Flush Ctr. Coad)	2 ½kW	850.00
8898-300	3-1/8 Unfl/50 ohm (Recessed Ctr. Cond)	2 ½kW	865.00
BA-300-115-.230	Blower (8890-.91-.92-.95-.96-.97-.98-300)		375.00
8921	QC-LC(F)	5kW	1830.00
8922	1-5/8 EIA FI	5kW	1855.00
8926	3-1/8 EIA FI	5kW	1915.00
8927	3-1/8 Unfl	5kW	1900.00
8931-115	QC-LC(F)	10kW	2500.00
8931-230	QC-LC(F)	10kW	2540.00
8932-115	1-5/8 EIA FI	10kW	2530.00
8932-230	1-5/8 EIA FI	10kW	2565.00
8936-115	3-1/8 EIA FI	10kW	2550.00
8936-230	3-1/8 EIA FI	10kW	2595.00
8937-115	3-1/8 Unfl	10kW	2535.00
8937-230	3-1/8 Unfl	10kW	2690.00

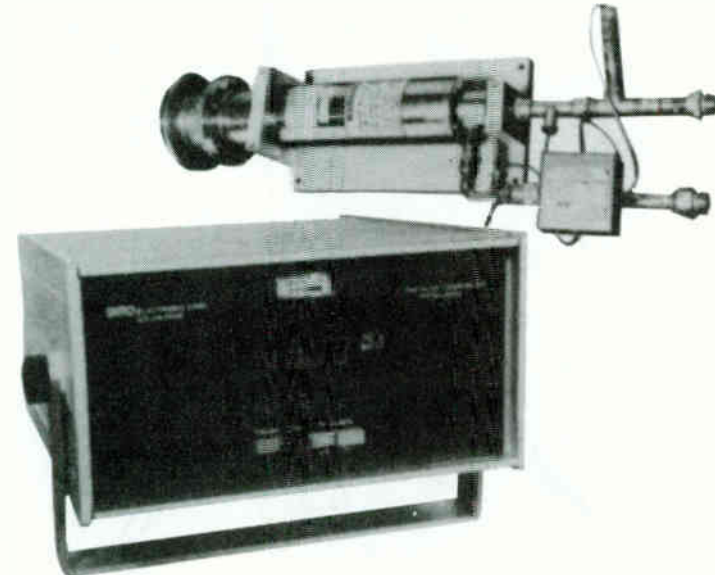
50 Ohm Line Sections 51.5 Ohm or 75 Ohm Line Sections Available on Special Order

PART NO.	ELEMENT SOCKETS	CONNECTOR	PRICE
4230-006-1	One	QC*	\$ 63.00
4230-053	Two	QC*	100.00
4230-059	One, w/Bracket	QC*	65.00
4501-000	One	7/8 FI	147.00
4502-000	Two	7/8 FI	189.00
4522-002	Two panel mtd.	QC	137.00
4600-000	One	3-1/8 FI	251.00
4610-000	Two	3-1/8 FI	309.00
4712-000	One	1-5/8 FI	200.00
4715-000	Two	1-5/8 FI	224.00
4720-000	One	1-5/8 Unfl	224.00
4723-000	Two	1-5/8 Unfl	251.00
4802-000	Two	3-1/8 Unfl	224.00
4805-000	One	3-1/8 Unfl	166.00
4902-000	One	6-1/8 FI	716.00
4905-000	Two	6-1/8 FI	733.00
4907-000	One	6-1/8 Unfl	744.00
4909-000	Two	6-1/8 Unfl	776.00
4910-000	One	9 FI	INQ.

*QC connectors not included.

BIRD ELECTRONIC CORP.

30303 Aurora Rd.
 Cleveland (Solon), OH 44139
 (216) 248-1200 (805) 646-7255
 Telex 98-5298 Cable BIRDELEC



DIGITAL HI-POWER Wide-Range RF Calorimeter 1000W to 80kW

- Measure RF power quickly with precision, after simple set-up.
- Automatically processes all sensor inputs.
- Displays power directly without charts or calculations.
- Conveniently portable.

After more than a quarter century of leadership in THRULINE® broadcast power measurement, Bird introduces convenience and simplicity to accurate high-power RF calorimetry: Place the sensors in series with the cooling water of a water-cooled line termination, let the liquid run until flow and temperature have stabilized, adjust the display to indicate zero, apply RF power and read!

No waiting for stabilization after the first reading: Power readings can be taken in seconds with +/- 3% accuracy. With CW or FM, the power indicated is the same as that measured by our average reading THRULINE wattmeters, which makes the model 6080 calorimeter an ideal in-house calibration instrument. With a black-level television transmission, the indicated power will be 60.1% of peak (as compared to 59.6% on an analog THRULINE wattmeter).

Modulating an AM carrier 100% with a pure single tone will increase the calorimeter reading by 50%, measuring the average power contained in the sidebands in addition to the carrier. In other words, the model 6080 digital readout always indicates the heating power dissipated in the load resistor. The use of a well-matched termination with low VSWR, such as Bird TERMALINE® Load Resistors, is essential.

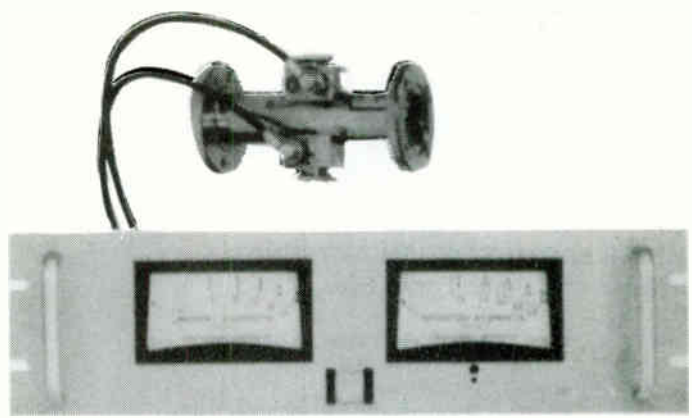
The outputs of the two temperature sensors and the flow-rate monitor are transferred to a long control cable in an RFI-protected junction box. The control cable permits the main unit to be placed up to eight feet from the point of measurement for convenience of reading and time-saving flexibility. This main control unit processes the sensor data and displays directly in kilowatts the result of:

$$\text{Flow rate} \times \text{Temperature differential} \times \text{Specific heat} \times \text{Conversion constant} = \text{RF Power}$$

Interpolation of flow rates, position of mercury columns in hard-to-read thermometers and of system constants has been completely eliminated.

MODEL	PRICE
6080-115 (less Termaline® water-cooled load)	\$2900.00
6080-230 (less Termaline® water-cooled load)	2900.00

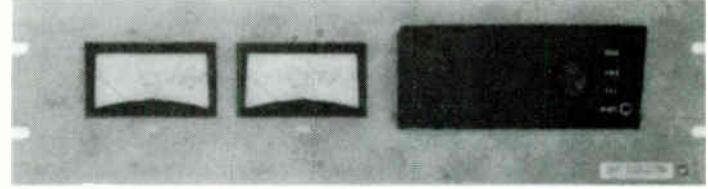
CALORIMETER/WATTMETERS



Transmitter Protection: WATTCHER® RF Power Monitor/Alarm Model 3127 for rigid lines Model 3128 for cable

Bird WATTCHER® models 3127/3128 are rack mounted instruments complete with power supply, two illuminated 5" meters for incident power and reflected power. The reflected meter has an adjustable set point which controls the contact point on the meter alarm.

Abnormal load conditions quickly cause transmitter shut-down, a buzzer alarm, and a change of illumination color of the reset button from green to red. Audible and visual alarms indicating system malfunction may be removed. Choice of Fail-Safe or Non-Fail-Safe Mode is selected by a rear switch.



HighSpeed Watcher® RF Monitoring System Model 3171

Model 3171 is a new high-speed monitoring system for remote and on-location supervision of transmitters ancillary services. The two most important features of the new design are a shortening of response time down to 200 microseconds — much faster than equipment protection requires — and remote reset capability.

The series 3171 WATTCHER RF Monitoring Systems warn a remote operator 1(Of low power due to detuning, component deterioration, AC line difficulties and 2(Of high VSWR due to antenna icing, transmission line moisture or deformation, sudden accidents or lightning, etc.

MODEL	PRICE
3127 For rigid lines	\$ 855.00
3128 For cables	855.00
DC cables for 3127, 3128	
4220-097-10 25' meter cable	20.00
4220-077-1 25' cable for 6-1/8 lines only	39.00
3170 High Speed RF Monitoring System	1000.00
3171 High Speed RF Mon. Sys. (rigid lines)	960.00
3171-020 High Speed RF Mon. Sys. (rigid lines) (15/30/60) ① ②	960.00
Elements for 3171, 3171-020	75 +
DC Cables for either 3170, 3171, 3171-020	

DC CABLES FOR EITHER 3170, 3171			PRICE
PART NO.	LENGTH	OUTPUT CONNECTOR	
3170-058-1	14'	BNC/M	\$17.00
3170-058-2	15'	BNC/M	22.00
3170-058-3	25'	BNC/M	26.00
3171-010	25'	BNC/M 6-1/8 lines only	39.00
3170-058-4	40'	BNC/M	34.00
3170-058-5	50'	BNC/M	36.00
†H-Series Elements for 3171			85.00
① less line section			
② less elements			

4.6 METER EARTH STATION ANTENNAS

Model 6048 with Prime Focus Feed

FEATURES

- Elevation-Over-Azimuth Mount for ease of operation
- Prime Focus Feed for minimum system cost
- Protected environment for LNCs
- Designed for minimum shipping and installation costs
- No panel alignment or testing required
- Minimum site preparation required
- Easy installation, minimum maintenance

4.6 Meter Antenna

Blonder-Tongue's field-proven 4.6-meter earth station antenna now includes a standard elevation-over-azimuth mount for ease of operation and pointing accuracy. The antenna is designed for receive-only applications in the 3.7 to 4.2 GHz range and is especially well suited for CATV operations receiving video programming from domestic satellites.

The parabolic reflector is made of twelve precision die-stamped aluminum panels for consistent surface accuracy. The twelve panels are uniform and completely interchangeable, allowing convenient handling, lower shipping costs and easy installation. After a foundation has been prepared, two men can install the antenna in less than one day. No special tools are required and no part weighs more than 100 pounds (45 kg).

Elevation-Over-Azimuth Mount

The 4.6-meter earth station has a standard elevation-over-azimuth mount, engineered to provide continuous satellite arc coverage from any location in the contiguous United States. Pointing the antenna is rapid and accurate. Complete 360° azimuth coverage does not require alignment of the foundation to a specific heading, eliminating the possibility of installation errors associated with foundation centerlines.

Economical Pier Foundation Kit

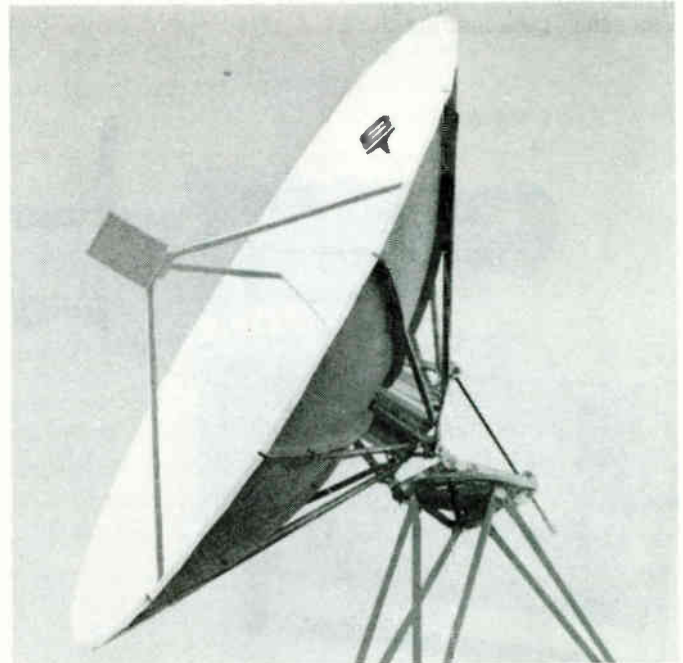
A cast pier foundation kit is available as an economical alternative to a concrete slab foundation. The pier foundation is designed for steady 100 mph windloads. It consists of three cast pier inserts. A steel framework bolts the inserts into a triangle which is lowered into three augered holes containing prepared re-bar cages. The holes are then filled with concrete. Installing the pier foundation is less time consuming and less expensive than pouring a concrete slab foundation.

NOTE: When ordering antennas with pier foundation kits please specify: Model 6049 for Prime Focus Feed Antenna/Pier Foundation Kit.

High-Performance Prime Focus Feed

Blonder-Tongue's standard prime focus feed offers consistent high quality and unusual economy in a mid-sized earth station antenna. Sidelobe performance is excellent meeting 29-25 log θ sidelobe specifications. The feed system provides dual-polarization capability in the 3.7 to 4.2 GHz range, and can be manually rotated to any position.

6048	AZ/EL mount w/ anchor bolts	\$5107.00
6049	AZ/EL mount w/ pier foundation kit	\$5345.00



4.6 METER ANTENNA WITH PRIME FOCUS FEED

SPECIFICATIONS

Electrical, Prime Focus Feed

Operating Frequencies	3.7 to 4.2 GHz
Gain at Midband (referenced to OMT port)	Receive
	43.0 dBi minimum at 3.95 GHz
VSWR	1:31 maximum
Polarization	Receive-only, dual linear
Polarization Adjustment	360° continuous
Cross-Polarized Suppression	35 dB minimum on axis
Isolation between Ports, Receive	35 dB minimum for dual linear operation
Beamwidth at Midband (nominal)	3 dB
Receive, 1.1°	First sidelobe Level
	-20 dB
Prime Focus Radiation Pattern Averaged Sidelobe Envelope*	Receive: (where θ is angle off axis)
	29-25 log θ dBi $2^\circ \leq \theta \leq 7^\circ$
	+8 dBi $7^\circ \leq \theta \leq 9.2^\circ$
	32-25 log θ dBi for $9.2^\circ \leq \theta \leq 48^\circ$
	-10 dBi $48^\circ \leq \theta \leq 180^\circ$
Antenna Noise Temperature (referred to OMT port) typical	
Elevation	Ta
5°	50K
10°	34K
15°	27K
20°	24K
30°	20K
40°	18K
Feed Interface	
Receive:	
	CPR 229F Flange

General

Antenna Type	Prime focus or cassegrain
Antenna Diameter	4.6m (15.1 ft.)
Reflector Construction	12 panels, precision die-stamped

Mount Configuration	Elevation-over-Azimuth
Satellite Coverage	Any satellite located between 5° and 90° elevation from any location.
Net Weight (approximate)	544 kg (1200 lbs)
Shipping Weight (approximate)	1043 kg (2300 lbs)
Shipping Volume (approximate)	5.7m ³ (200 ft ³)

Environmental

Wind Loading**	
Operational	Pointing Accuracy in 96 km/h (60 mph) wind
	Gusting to 137 km/h (85 mph)
	20° RMS @ 15° C (59° F)
	25° RMS @ -40° (-40° F)
	Temperature: Operational -40° C to +65° C
	(-40° F to +149° F)
	Survival (steady state wind velocities)
* No ice	
	160 km/h (100 mph) from any direction
	@ 15° C (59° F)
	151 km/h (94 mph) from any direction
	@ 0° C (32° F)
	145 km/h (90 mph) from any direction
	@ -40° C (-40° F)
*5 CM (2 in.) Radial Ice	
	112 km/h (70 mph) from any direction
	@ 0° C (32° F)

Solar Radiation	1.1 mw/mm ² (710 mw/in ²)
Atmospheric Conditions	Salt, pollutants, and corrosive contaminants as encountered in coastal and moderate industrial areas

Options

Pier Foundation Kit

**All conditions assume adjustable components securely clamped.

BLONDER-TONGUE

One Jake Brown Road
Old Bridge, NJ 08857
(201) 679-4000

EARTH STATION RECEIVER AND LOW NOISE CONVERTER

Earth Station Receiver Model 6008

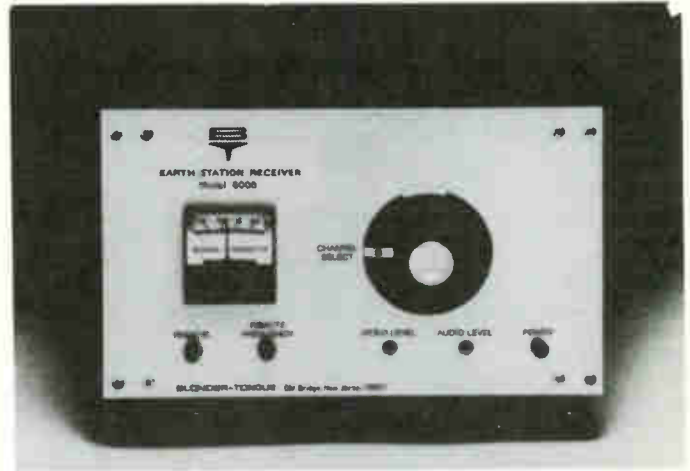
FEATURES

- Designed for TVRO/MATV installations.
- Low cost, high performance UHF receiver.
- Only 8 1/2" wide.
- Frequency agility provides selection of any one of 24 channels with one receiver.
- Automatic polarization switching for selected frequency.
- Threshold Extension Demodulation improves picture quality at low signal levels even with multiple subcarriers.
- Plug-in cards allow simplified field service.
- Remote code access to 24 transponder frequencies and option to select 6 channels by simple contact closure.
- Optional audio demodulation for additional subcarrier services.
- System permits low-cost UHF coaxial cable for further savings.
- Solid state reliability.
- Adaptable for microwave applications.

DESCRIPTION

The Model 6008 Earth Station Receiver is a low-cost, high-performance satellite television receiver, designed for use with a Blonder-Tongue Low Noise Converter (LNC). The LNC uses block downconversion to translate the entire 500 MHz satellite band to UHF frequencies between 270-770 MHz at the antenna feed. This eliminates the need for microwave components in the receiver design, resulting in significant cost reduction for multiple receiver applications.

The Model 6008 uses Threshold Extension Demodulation (TED) to enhance video and audio quality at low signal levels. Techniques employed in designing TED for the Model 6008 have substantially improved receiver performance, even in the presence of multiple subcarriers. Impulse noise in the video signal is reduced near the threshold level, and high picture quality is extended to considerably



lower operating signal levels than with conventional demodulation. The Model 6008 allows for selection of any one of 24 satellite channels simply by turning a single dial on the front panel. For remote operation, the unit is 6 or 24 channel programmable. Compatible interface equipment is available for use with cue tones or timing devices. The unit will accept optional plug-in subcarrier printed circuit boards for a variety of system applications and terrestrial microwave interface. The receiver is designed for side-by-side mounting in a 19" rack in MATV headends.

\$2281.00

3.7 to 4.2 GHz Low Noise Converter

DESCRIPTION

The 3.7 to 4.2 GHz Low Noise Converter (LNC) is designed for use with the Model 6008 Earth Station Receiver to provide low-cost, high-performance satellite television reception. The unit mounts at the prime focal point of the Blonder-Tongue Model 6001 or 6002 Earth Station Antenna, or on the rear of the Blonder-Tongue Model 6003 Earth Station Antenna. Three LNC Models are available: 120°K Model 6004, 100°K Model 6005, and 90°K Model 6006.

The LNC consists of a low noise GaAs FET amplifier and a block down-converter for optimum noise performance. The LNC converts the entire 500 MHz satellite band to UHF frequencies between 270-770 MHz at the antenna feed. This eliminates the need for microwave components in the receiver as well as expensive special coaxial cable from the antenna to the headend. The result is a low-cost earth station electronics sub-system. The LNC utilizes internal output isolation and an integral isolator to protect against antenna mismatch. A precision-cast housing contains a low noise amplifier, microwave oscillator, microwave filters and power supply regulator. Protection is provided to withstand exposure to all weather conditions. Standard units may be powered through the center conductor of the coaxial cable or via the external connectors.

6004	\$1088.00
6005	1097.00
6006	1623.00



ESHM MODULATOR For CATV And Private Cable Systems Stock No. 5928

FEATURES

- Heterodyne conversion process provides proper vestigial sideband selectivity for use in adjacent channel color systems
- Removable converter module for easy, in-field channel change, without opening modulator housing
- SAW filter provides flat group delay and maintenance-free bandpass characteristics
- Three light indicator system shows proper video modulation and over or under modulation
- Aural/visual IF loop-thru allows IF scrambling or alternate source of composite IF. Separate aural and video loop-thru is available
- Wide range of available frequencies — TV channels 2-13, midband (A-I), superband (J-W)

The ESHM is an all solid-state heterodyne audio/video modulator. It generates modulated visual and aural RF carrier output on any single VHF (2-13), Midband (A-I), or Superband (J-W) channel of a closed circuit CATV or SMATV system. It requires only standard baseband video and audio inputs. The ESHM also features excellent modulation qualities for use with character generators. The heterodyne conversion system provides proper vestigial sideband selectivity for use in adjacent channel color systems. The modulator uses a SAW (Surface Acoustic Wave) filter which provides flat group delay and maintenance-free bandpass characteristics.

A combined IF loop-thru accommodates the use of an alternate source of combined IF, as well as IF scrambling equipment. Optionally, separate aural and visual IF loop-thrus can be provided for the ESHM in order to use alternate scrambling systems.

A three-light indicator system pinpoints correct video modulation as well as under or overmodulation. An audio overmodulation indicator is also provided.

The ESHM has a removable heterodyne module, (slide-out drawer), which permits qualified service personnel to easily change channels in the field, without removing the entire modulator from the headend rack.

The modulator accepts standard NTSC signals (Sync negative, 0.5-2.5 p-p) from video sources such as a satellite receiver, video tape recorder, TV demodulator, or TV camera. All level controls and modulation indicators are located on the front panel for ease of operation.

SPECIFICATIONS

RF

Available Channels: TV Channels 2-13,
Midband (A-I), Superband (J-W)

Visual Carrier Output: +60dBmV Maximum, continuously adjustable between +50 and +60dBmV by a front level control

Aural to Visual Carrier Ratio: -10dB to -20dB continuously adjustable by a front panel aural/visual ratio control

Visual Carrier Frequency Tolerance: +/-25kHz

Aural Carrier Frequency: 4.5MHz above visual carrier +/-250Hz

Spurious Outputs: Greater than -60dB down at +60dBmV output (Aural carrier -15dB, color sub-carrier -25dB)

Output Return Loss On-Channel: 12dB (ref. 75 ohms)

IF Loop Thru

Output: Visual 32.5dBmV (+/-2.5dB); Aural (max) 22.5dBmV (+/-2.5dB)

Input: Visual 30 to 35dBmV; Aural (max) 20 to 25dBmV

Return Loss IF Loop Thru: 12dB

Composite IF

Output: Visual 32.5dBmV (+/-2.5dB); Aural (max) 22.5dBmV (+/-2.5dB)

Input: Visual (max) 35dBmV



ESHM MODULATOR

Visual

Video Input for 87.5% Depth of Modulation: 0.5V p-p Min.,
Composite NTSC video, negative sync

Frequency Response: 25Hz to 4.2MHz* +/-0.5dB

Video Input Return Loss: 24dB at 75 ohms

Video Modulation Depth: 0 to 95% variable by the front panel video level control (internal white limit factory set to 95%)

AM Hum and Noise: 60dB below 87.5% modulation depth

Sync Compression: 0.5dB Max. at 87.5% modulation depth

Tilt or Sag: 1% Max. on 60Hz square wave

Vestigial Sideband Response (in accordance with FCC Specs.):

-20dB at channel edge; -40dB at adjacent carrier frequency

Differential Gain: 2% Max. at 87.5% modulation*

Differential Phase: +/-0.5° Max. at 87.5% modulation*

Group Delay: +/-50ns Max. (Visual -5MHz to aural)

Visual Overmodulation Indicators:

Red LED for greater than 87.5% modulation

Green LED for 80-87.5% modulation

Yellow LED for less than 80% modulation

*As measured with Tektronix 1470 NTSC Generator,
520A Vectorscope and S-A 6250 Demodulator

Aural

Audio Input Level for 25kHz Peak Deviation: 250mV/rms, Min.

Audio Input: Hi-Impedance (balanced or unbalanced)

Audio Distortion at 25kHz Peak Deviation: Less than 1%
(20Hz - 20kHz) THD

Audio Frequency Response: 20Hz to 20kHz +/-1dB with
75µs pre-emphasis

4.5MHz Inter-carrier Stability: +/-250Hz (Max.), 100-130 VAC line

Audio Hum and Noise Below 25kHz Peak Deviation: 60dB

Aural Overmodulation Indicator: Red LED for greater than 25kHz peak deviation

General

Option A: Aural and Visual IF Loop-Thrus

Power Input: 100-130 VAC, 60Hz, 30W

Temperature Range: 0° to 50°C

Size: 19" x 1-3/4" x 14", Rackmount

Weight: 9.5 lbs.

Ordering Information

Stock No. 5928-X-YY

X-option code (A = Separate Visual and Aural IF Loop-Thrus)

YY-channel number

5928	.....	\$1459.31
5928A	w/ separate video and audio IF loop option	1484.31

ACCESSORY

5938	ESHM converter plug — in drawer	\$461.37
------	---------------------------------	----------



MAVM Audio/Video Modulator
Stock No. 5923

FEATURES

- Heterodyne Conversion Process Insures Optimum Vestigial Sideband Selectivity for Adjacent Channel Color Systems
- I.F. Loop Thru Allows Replacement of Standard I.F. Output with Alternate Source of Composite I.F. or Allows Use in All-Call Alert Systems
- Field Replaceable Heterodyne Converter Board for Easy In-Field Channel Conversion
- Calibrated Video and Audio LED Indicators
- Video and Audio Level Controls

The MAVM is an all solid state heterodyne audio/visual modulator that provides a modulated visual and aural RF carrier output on any single VHF (2-13), Midband (A-1), or Superband (J-W) channel. The Modulator can be used to put sound and color video on any unused channel of a closed circuit MATV or SMATV system. The heterodyne conversion system which is employed insures optimum vestigial sideband selectivity for adjacent channel color systems.

I.F. loop-thru capability in the MAVM supplies a padded I.F. output before channel conversion. This feature provides the capability to replace standard internally generated I.F. and "all call" capability.

The MAVM has a field replaceable heterodyne converter board which permits qualified service personnel to change channels in the field.

The Modulator accepts standard polarity (sync negative) of 0.7-2.5Vp-p level from video sources such as a satellite receiver, TV camera, video tape recorder or TV demodulator. All level controls and modulation indicators are located on the front panel for ease of operation.

MAVM Audio/Video Modulator **\$811.46**
MAVM Converter Module **268.94**

SPECIFICATIONS

RF	
Frequency Range:	TV Channels 2-13; Midband Channels A-1; Superband Channels J-W
Output Level:	+40 dBmV, Typical. 35dBmV Min.
Output Level range:	10 dB, continuously adjustable by the front panel output level control
Aural/Visual Carrier Ratio Control:	-9 dB to -30 dB, continuously adjustable by the front panel output level control
Visual Carrier Frequency Tolerance:	10 KHz Typical
Aural Carrier Frequency:	4.5 MHz above visual carrier ± 500 Hz
Spurious Output (except for video sidebands) at 35 dBmV output:	64 dB down, Typical. (A/V carrier ratio 17 dB)
IF Output Level:	Set at 30 dBmV
IF Input Level:	35 dBmV Max., A/V carrier ratio 15dB, color subcarrier @ -25dB, for 920 beat (External IF in) > 55 dB down
Output Return Loss:	12 dB
IF Output Return Loss:	10 dB
IF Input Return Loss:	12 dB
Intermod Distortion: (3 tone 920 beat)	60 dB; 35dBmV output, A/V carrier ratio-15 dB, color subcarrier -25 dB
VISUAL	
Video Input for 87.5% depth of modulation:	0.7V p-p Min
Video Modulation Depth:	Set @ 87.5% adjustable to 98% Typical
Vestigial Sideband Response:	Optimized for adjacent channel operation
Video Input Return Loss:	18 dB
Visual Carrier to Noise Ratio in 4 MHz Bandwidth:	60 dB
P-P Video to RMS Hum Ratio:	60 dB
Differential Gain:	±0.25 dB
@ 87.5% Modulation	
Differential Phase:	±1°
@ 87.5% Modulation	
AURAL	
Input Audio for 25 KHz Peak Deviation:	50mV RMS
Aural Overmodulation LED Deviation:	25 KHz ± 2 KHz
4.5 MHz Inter-carrier Stability:	±2.5 KHz, 0° C to 50° C
Power Requirements:	100-130 VAC, 60 Hz, .08 A
Fuse:	3 AG, 125V, 1/8A Slo-Blo
Temperature Range:	0° C to 50° C
MECHANICAL	
Dimensions:	19"W x 1 1/2"H x 4 1/4"D
Weight:	5 1/4 lbs. (Approximate)
Connectors	
Audio In:	RCA phono
Video In:	"F" type
RF Out:	"F" type
I.F. In and Out:	"F" type

Mounting brackets are included with the MAVM for installing the unit in a standard 19" EIA equipment rack.

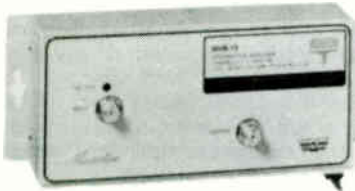
BLONDER-TONGUE

One Jake Brown Road
Old Bridge, NJ 08857
(201) 679-4000

MVB-15 VHF/FM Distribution Amplifier

Stock No. 1445

Low noise, high gain, broadband VHF and FM amplifier featuring the exclusive patented* ICEF circuit for increased input capability while combining low distortion with a low noise figure. Full band FM amplification when tunable FM trap is not used. 75-ohm input and output. **\$63.89**



MVB-25 VHF Distribution Amplifier

Stock No. 1498

- Designed Specifically for VHF MATV Installations
- Patented* ICEF Circuit Increases Input Capability
- Provides Snow-Free Reception in Weak Signal Areas
- Switchable FM Stop Filter Eliminates Interference from Strong FM Signals when Necessary

The MVB-25 is a medium gain, low noise, VHF broadband amplifier. It features the exclusive, patented inductively coupled emitter feedback (ICEF) circuit that increases input capability while combining low distortion with a low noise figure. **\$91.10**



MVB-35 VHF/FM Distribution Amplifier

Stock No. 1450

- Designed for Medium Size VHF MATV Installations
- Separate Gain Control for High and Low Bands
- Split Band Input Amplifiers
- Switchable FM Bandstop Filter Prevents FM Overload

The MVB-35 is a medium gain, low noise VHF broadband amplifier. It includes patented* inductively coupled emitter feedback circuit for wide dynamic range. **\$147.77**



MUVB-15 UHF/VHF/FM Distribution Amplifier

Stock No. 1444

Amplifies all VHF and UHF channels thru ch. 83 plus FM. Low noise, high gain distribution amplifier for large home or small MATV systems. Features ICEF circuit, separate VHF and UHF sections and tunable FM trap. Single UHF/VHF 75-ohm input and output. **\$87.28**

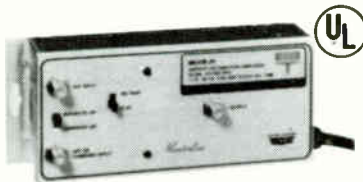


MUVB-25 UHF/VHF Distribution Amplifier

Stock No. 1499

- Superior UHF Gain to 890 MHz — Ideal for Translator Reception
- Extra Low-Noise Figure for Snow-Free Pictures
- Accepts Inputs from Separate UHF and VHF Antenna Cables or from a Single UHF/VHF Antenna Cable
- Switchable FM/MIO Band Stop Filter — Removes Interference from FM and Communications Band.

The MUVB-25 is a medium gain, low noise, broadband amplifier with both UHF and VHF amplifiers. The VHF section of the amplifier features the exclusive patented* inductively coupled emitter feedback (ICEF) circuit that increases input capability while combining low distortion with a low-noise figure. **\$128.42**



MUVB-35 UHF/VHF/FM Distribution Amplifier

Stock No. 1451

- Full UHF Gain to 890 MHz — Ideal for Translator Reception
- VHF Split Band Amplifiers Reduce Distortion
- Separate Gain Controls for High and Low Band VHF and UHF
- Switchable FM Bandstop Filter Prevents FM Overload

The MUVB-35 is a medium gain, broadband UHF/VHF/FM amplifier designed for use in medium size "on-channel" MATV systems. It features wide dynamic range, excellent stability and low noise. A switchable input mode permits the use of either a combined UHF/VHF antenna or separate UHF and VHF antennas in a system. **\$281.65**



MATV DISTRIBUTION AMPLIFIERS

MVB-45 VHF/FM Distribution Amplifier

Stock No. 1446

- Dynamic Range Increasing Type Gain Control Maintains Signal-to-Noise Ratio at Reduced Gain Settings
- Separate Gain Control for High and Low Band
- High Input Capability with Low Noise Figure
- Switchable FM Bandstop Filter Prevents FM Overload

The MVB-45 is a broadband VHF/FM MATV distribution amplifier featuring high gain and high output with low noise assuring a wide dynamic range. It consists of independent high and low band input amplifiers, main amplifier with three stages of RF amplification, and power supply. Switchable combined or split inputs are provided for use with either a single antenna (low band, FM, high band) or for separate low band and high band antennas. **\$332.59**



MASTERLINE PLUS® MVB-56 VHF/FM Distribution Amplifier

Stock No. 1447

- Automatic Overload Protection. Stabilizes Output Levels Over a Wide Range of Input Signal Levels to Prevent Overload
- High Output Capability and Low Noise Figure for Wide Dynamic Range
- Dynamic Range Increasing Type Gain Control
- Selectable Manual Gain Control or Automatic Level Control for each band
- FM Bandstop Filter can be "Switched In" to Prevent FM Signal Overload or "Switched Out" when High FM Sensitivity is Desired

The MVB-56 is a solid state, broadband VHF/FM MATV Amplifier with automatic overload protection to stabilize the output signal level. This very high gain unit consists of a main amplifier with three RF amplification stages, independent high and low band input amplifiers, automatic overload protection circuitry, independent variable high and low band gain controls. Signals can be provided by either a single antenna (low band, FM, high band) or by separate low band and high band antennas since the MBV-56 has switchable, combined or split inputs. *U.S. Pat. No. 3,413,563 **\$423.71**



MASTERLINE PLUS® MVB-62 VHF/FM Distribution Amplifier

Stock No. 1455

- Dynamic Range-Increasing Type Gain Control
- Automatic Overload Protection
- Integrated Circuit Design for Added Reliability
- -30 dB Test Point for Ease of Monitoring

The MVB-62 is a 75 ohm solid state, low noise, high output VHF distribution amplifier with automatic overload protection to stabilize the output signal. It is designed for large MATV systems using an off-the-air signal source. The unit features independent (LB/HB) automatic level controls, high output capability and a low noise figure. Switchable, combined or split inputs permit signals from a single antenna (LB/HB/FM) or separate antennas. The MVB-62 has switch selectable Manual Gain Control or Automatic Level Control in each band. **\$673.92**



BOGNER BROADCAST EQUIPMENT CORP.

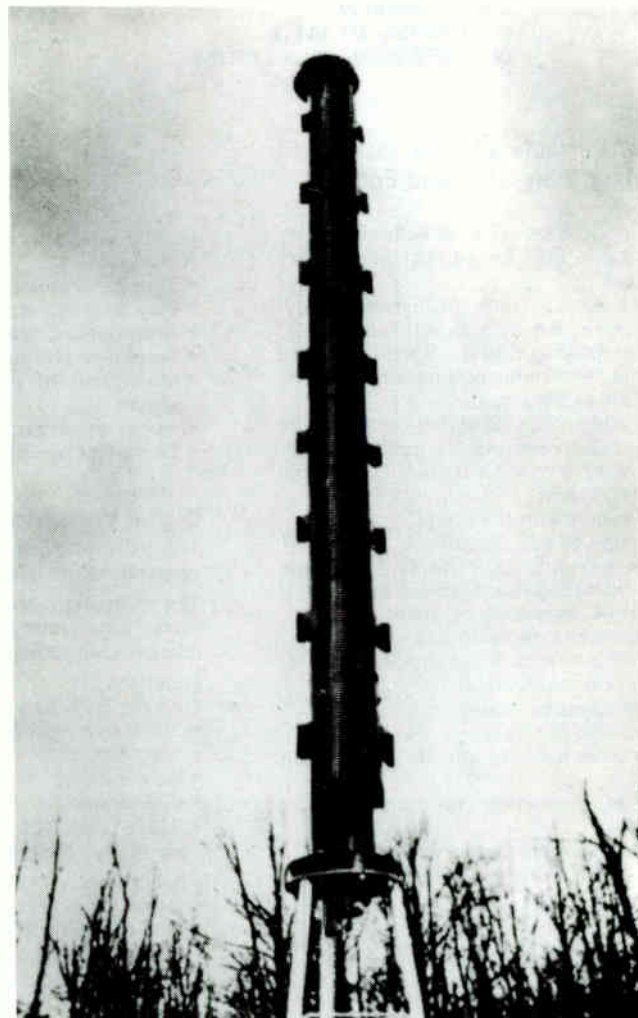
401 Railroad Ave.
Westbury, NY 11590
(516) 997-7800

TV BROADCAST ANTENNAS

LOW AND MEDIUM POWER TV BROADCAST ANTENNAS

MODEL	POWER RATING	PRICE
B2V	3.Kw	\$ 8,650.00
B4V	3.Kw	19,600.00
B6V	3.Kw	28,100.00
B2V(M)	5.Kw	10,700.00
B4V(M)	10.Kw	21,550.00
B6V(M)	10.Kw	30,900.00
B6V(H)	25.Kw	36,200.00
B4U	1.5 Kw	5,995.00
B8U	3.Kw	12,100.00
B16U	3.Kw	20,200.00
B4S	.5Kw	7,500.00
B8S	.5Kw	10,000.00
B16S	.5Kw	15,000.00
B24S	.5Kw	22,000.00
B4U(M)	3.Kw	7,500.00
B8U(M)	6.Kw	14,700.00
B16U(M)	10.Kw	24,000.00
B24U(M)	10.Kw	32,500.00
B16U(H)	15.Kw	29,900.00
B24U(H)	30.Kw	39,240.00

First nut Fill and electrical tilt available on B8U, B16U, and B24U Models at no extra charge.



HIGH VHF-BAND III UHF-BANDS IV AND V SHF-ITFS, MDS & ENG

FEATURES

- Full broadcast quality and versatility.
- Every unit fully tested.
- Wide variety of standard patterns and gains.

Bogner broadcast quality broadband slot antennas are designed for translator and low/medium power TV broadcasters. Bogner antennas are fully comparable in quality and versatility to the finest high-power antennas available to broadcasters today, but are substantially lower in cost. This is achieved through use of the inherently simple Bogner single slot per bay design, standardization of radiation patterns, and the utilization of modular construction and modern manufacturing techniques.

Antennas with any of twelve horizontal patterns, and a choice of vertical patterns, gains, and power input ratings up to 10kW, can be delivered in a very short period of time after order. These antennas are available for any High VHF (Band III) channel up to 8 MHz wide (between 170 and 230 MHz); for any one, or for any group of contiguous, UHF (Bands IV and V) channels up to 30 MHz wide (between 470 and 890 MHz); or for any SHF group up to 42 MHz wide (1990 to 2700 MHz).

SPECIFICATIONS

ANTENNA TYPE

Single vertical row of slots mounted on a steel cylinder, with pattern directors.

POLARIZATION

Horizontal, vertical or circular.

HORIZONTAL PLANE RADIATION PATTERNS

Omnidirectional within $\pm 1\frac{1}{2}$ dB, or directive with choice of 8 standard patterns shown above. Lowest level remains within 15 dB of peak level at any azimuth.

POWER GAIN

Peak values, stated both in power gain above a $\frac{1}{2}$ wave dipole, and in dB gain above an isotrope (dBi) are given above.

AVERAGE GAIN VALUES

Average gain values (in power above a $\frac{1}{2}$ wave dipole) on the peak of the vertical beam are:

Model B2V: 2.3
Models B4V, B4U, B4S: 4.7
Models B6V: 7.1
Models B8U, B8S: 9.4
Models B16U, B16S: 18.8
Models B24U, B24S: 26.5

PEAK TV INPUT POWER RATINGS

(Based on 20% aural at 40°C ambient.)

Low Power Models

B2V, B4V, B6V: 3.0 Kilowatts
B4U: 1.5 Kilowatts
B8U, B16U: 3.0 Kilowatts
B4S, B8S, B16S: 0.5 Kilowatts

Medium Power Models

(Suffix M added to model designations).
All UHF and VHF models: 10 Kilowatts.

VERTICAL PLANE RADIATION PATTERNS

Patterns are shown for no beam tilt. Electrical beam tilt may be specified on all models to a maximum value of 3°. Base scale may be shifted to the left to show pattern with desired tilt of beam since pattern and gain are negligibly affected.

INPUT TERMINALS

Pressure tight, located flush with base and internal to support tube. On all VHF and UHF models through 10 kilowatts: 1-5/8" EIA 50 ohm flange. 15 kilowatts and 30 kilowatts use 3-1/8" EIA 50 ohm flange. Optional adaptors available to other sizes and impedance values.

MULTICHANNEL OPERATION

As an option, UHF antennas may be provided for simultaneous use for up to five contiguous channels.

INPUT VSWR

VHF models, 1.10:1 over any 8MHz channel specified. UHF models, 1.10:1 over any 8MHz channel specified (under 1.30:1 over 30 MHz optional). SHF models, under 1.20:1 over any 42 MHz band specified. On VHF and UHF models a pressure tight fine tuner is supplied.

MOUNTING

All models are designed to be supported at base flange only, on a flat mounting plate. The top flange may be used for additional support when side mounting. Omnidirectional antennas should be top mounted. Directional antennas may be top or side mounted. (Patterns shown above are with antenna top mounted.)

BEACON AND MAINTENANCE PROVISIONS

On VHF and UHF models: antennas include a factory installed internal power cable and provisions for top mounting a customer furnished 300 mm beacon light; full steel climbing steps are welded to the support pipe. Radomes and all radiating parts can be reached and removed for maintenance. SHF models have no provision for beacon or climbing.



BOSCH

2300 S., 2300 W.
Salt Lake City, UT 84119
(801) 972-8000 Telex 38-8352

VIDEO TAPE RECORDERS/SYSTEMS

BCN 21 Portable VTR for Recording, Play-back and Editing

Features

- Weight: 16.6 lbs. (7.5kg) without battery and tape — 20.1 lbs. (9.1kg) with battery and tape
- 6.5 inch standard reels for 20 minutes playing time — 6.5 inch Bosch reels for 30 minutes playing time — 9 inch standard reels for 60 minutes playing time
- Color monitoring output
- Video and audio monitoring on any home receiver (with optional HF modulator)
- Internal 12 V/2.5 Ah battery or external 12 V DC-supply
- Field editing with the scene
- Correction of edit decisions
- Status monitor (LCD display) for time code, operating modes or failure
- Built-in μ C time code generator
- Presetting of time code and user bits
- Output for time code for simultaneous recording on two BCN 21
- Integrated audio mixer
- Three audio inputs
- Audio cross dubbing (on-site postproduction)
- Overload protection for audio tracks (limiter)
- Integrated supply line for condenser mike
- Integrated automatic editing facilities with edit simulation
- IN, OUT cue marks for Master and Slave
- Search function with two frame editing accuracy (tape timer)
- Fully remote control facilities
- Instant edits with 1 second backspace
- Interface for external editing systems

BCN 41/51 - One Inch Video Tape Recording System

The BCN 41 is the basic unit of the system. It consists of:

- Standard tape deck
- Control panel
- Electronics

Operating modes

- Recording with broadcast quality
- Insert and assemble editing (manual)
- B/W reproduction
- Color reproduction on request

Applications

- Compact unit for OB vans especially suitable due to low weight
- Optional operation with one processor switchable to two BCN 41s for broadcast playback
- All applications where time-base-corrected signals are not necessary but a top-quality recorder is required. An economical solution

The BCN 41 can be upgraded with the processor BCPC 49C and an additional monitoring bridge BCBM to the BCN 51

version which then includes the following features:

- Time base correction
- Play-back in broadcast quality
- Drop-out and velocity error compensation
- Delay time and subcarrier phase correction
- Monitoring of picture level and vector signals
- Audio monitoring
- Test point selection

Digital Vario Motion

The BCN 51 basic version can be further upgraded with a digital BCN store BCQE 620.

The following features can be added for a more time saving and therefore more economical production.

Functions

- As per BCN 51 basic version
- Still frame reproduction
- Step motion
- Slow motion
- Visible search
- BCN 51 with BCN store is the basic version for further optional peripheral units

Applications

- Demanding electronic productions
- Fast and economical decision making for editing; fast take search possible
- Analysis of moving sequences, e.g. sports events
- Artistic use of quad split mode

BCN 41/51 A Production Peripherals

A BCN 51 with the store unit and additional control interface ZPQ is capable of being used with four further control panels:

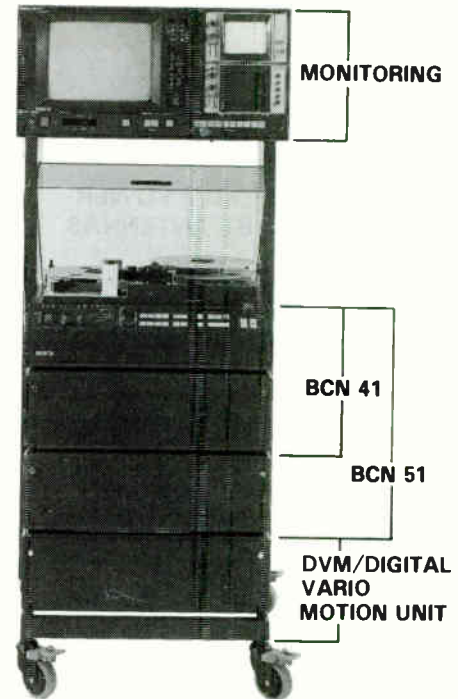
- Single frame display BFS 9B
- Slow motion programmer BPS 9A
- Production editing systems
- Remote control

A further specialty of the BCN system is the digital split system. The digital quad split control RCSH can be connected to every BCN 51 with the DVM unit.

- For picture archiving with fast access to individual pictures, (135,000 pictures on a 90 minute one-inch tape), picture sequences (programmer takes) or logos
- Replacement of slide archives where the slides have so far been reproduced conventionally

Functions

- Single frame recording and reproduction
- Remote control of main tape deck functions
- Automatic frame selection
- Automatic reproduction of picture sequences
- Fast search mode



BPS9A Slow Motion Programmer

Applications

- Programmable slow motion replay of various takes or high-lights (e.g. goal scene etc.) Analysis of motion sequences or for replay of still picture from any kind of program
- Substitute for complex disk store systems

Functions

- Programmable slow motion, forward and reverse
- Programmable single frame selection
- Automatic selection between normal and slow motion mode
- Variable slow motion speed
- Remote control of the main tape deck functions

RC SH Digital Quad Split Effects

Applications

- Analysis of motion sequences
- Artistic picture designing
- Production revising
- Industrial, scientific and medical applications

Functions

- Display of all effects with moving pictures in color
- Display of still pictures
- Adjustable frequencies of picture sequences when still pictures are reproduced (Skip field mode)
- Reduction of picture area down to 1/4
- 4 fold simultaneous display (Quadsplit)
- Repetition of Quadsplit produces 8 fold reduction (Restore)
- Selectable freeze frame of individual quadrants (Quad Freeze)
- Display of various mirror effects



BOSCH

2300 S. 2300 W.
Salt Lake City, UT 84119
(801) 972-8000 Telex 38-8352

COLOR MONITORS

MC 22 BA

Color Precision Monitor 9" High Resolution

FEATURES

- High resolution in-line-gun color picture tube
- Black matrix
- EBU or U.S. phosphors
- Color temperature 6500K, convertible to 3200K
- Beam current feedback
- Inputs: CCVS + RGB signals
- R, G, B, can be individually selected
- Remote control
- Portable, robust design
- Suitable for single or double installation in 19" racks or DIN cabinets (interchangeable with M 24 BA/BB)
- Mains or battery operation

The MC 22 BA monitor has been developed for assessing the quality of television pictures and can be used for all color standards by fitting appropriate PCBs. This new, portable, lightweight monitor can be powered directly from the mains or, optionally, from batteries. In the case of mains failure, the monitor switches automatically to battery operation (option). Thanks to its low weight and small size, the MC 22 BA is ideal for ENG/EFM work. For installation, i.e., in OB vehicles, two MC 22 BA monitors can be fitted directly side by side. The EBU phosphor coordinates of the MC 22 BA-A1 and the U.S. phosphor coordinates of the MC 22 BA-A2 correspond with the standards for professional color control.



MC 22 BA

MC 37 BA-B2

Color Monitor 15" High Resolution

FEATURES

- High resolution delta gun color picture tube
- U.S. phosphor
- Black matrix
- Three CCVS input + RGB input
- NTSC comb filter
- Blue only display as black/white pictures
- Monochrome display
- Automatic and manual degaussing
- Active convergence switching with separate corner correction
- Color temperature switchable 6500K/3200K
- Pulse cross
- (R-Y) (B-Y) output for vector display

This monitor has been developed especially for precise measurement and viewing of television pictures. This monitor uses high resolution delta gun, black matrix, U.S. phosphor picture tube. The monitor is equipped with a comb filter decoder. Dual standard is available as an option.



MC 37 BA-B2

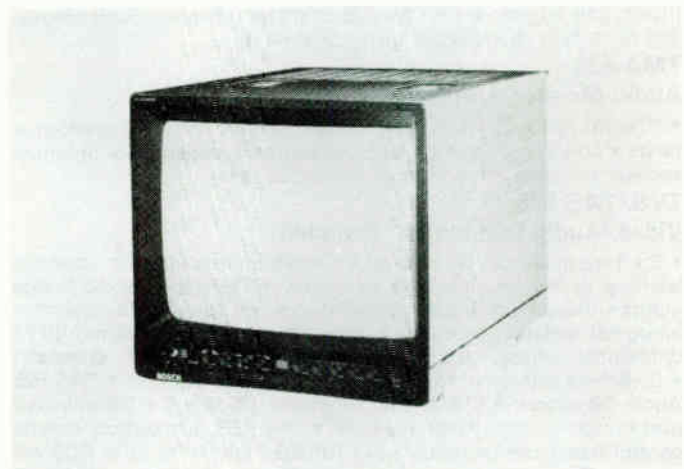
MC 51 BA-B2

Color Monitor 20" High Resolution

FEATURES

- High resolution delta gun picture tube
- U.S. phosphor
- Black matrix
- Color temp switchable 6500K/3200K
- Active convergence switching with separate corner correction
- Automatic and manual degaussing
- Blue only display as black/white picture
- Monochrome display
- Pulse cross
- (R-Y) (B-Y) output for vector display

This monitor is equipped with a high resolution delta gun color picture tube with U.S. phosphors and meets or exceeds standards set for professional broadcast color monitoring. It has three CCVS inputs and an RGB input which can be selected in the control panel. All the adjustment controls are easily accessible in a sliding tray which can be pulled out when necessary. It has a comb filter decoder and can be fitted with another set of decoders for dual standard operation.



MC 51 BA-B2



BOSCH

2300 S. 2300 W.
Salt Lake City, UT 84119
(801) 972-8000 Telex 38-8352

TERMINAL EQUIPMENT

"525" SERIES EQUIPMENT

TVA-528

Video Distribution Amplifier

• Differential input • One input/Six outputs • Precision-grade components assure long-term stability • 1% bounce (overshoot) • 0.25% distortion and tilt, 50Hz square wave (Servo on) • Accepts delay and equalizer plug-in operations • DL 525 Delay plug-in option — up to 300 nsec delay with frequency response/ripple of less than 0.25dB to 5MHz • EQ 525 Equalizer plug-in option — corrects for up to 1000 feet of 8281 cable • Delay/Equalizer combinations possible

TVA-528 Precision Video Distribution Amplifier

TVA-528D Precision Video Distribution Amplifier with DL-525 Delay Plug-in Accessory

TVA-528E Precision Video Distribution Amplifier with EQ-525 Equalizer Plug-in Accessory

TVA-528DE Precision Video Distribution Amplifier with both DL-525 and EQ-525 Plug-in Accessories

TVA-524

Video Distribution Amplifier

• Differential input • One input/Four outputs • Direct-coupled outputs • 0.25dB to 5.5MHz frequency response • 0.5% tilt 60Hz square wave • 0.25% 0.25° differential gain and phase (10-90% APL)

TPA-527

Precision Pulse Distribution Amplifier

• One input/Four outputs • Precision design assures long-term stability • Separate output stages • Individual output 350-4000 nsec delay adjustments

TPA-528

Precision Broadcast Pulse Amplifier

• One input/Six outputs • High input noise immunity • 0.5% tilt; 1% overshoot and ringing • Symmetrical output rise and fall times • Strappable for 2 or 4 volt operation

TSA-525/535

Distribution Amplifier

• TSA-525 for NTSC and PAS-M systems (3.58MHz), TSA-535 for PAL-I systems (4.43MHz) • 40dB input return loss at subcarrier frequency (Power on or off) • Greater than 360° individual phase adjustments • 1.8 to 2.0V p-p adjustable output level • Four outputs with 36dB isolation at 3.58MHz

TAA-524/525

Audio Distribution Amplifier

• Extremely low distortion at all power levels • Accepts balanced or unbalanced inputs • Wide dynamic range • High common mode rejection • TAA-524 offers direct-coupled input and outputs with master gain adjustment • TAA-525 offers transformer-coupled inputs and outputs with individual gain adjustments

TMA-525

Audio Monitor Amplifier

• 10 watts RMS, 20 watts peak • Wide dynamic range • Transformer range • Low distortion • Low output source impedance for optimum speaker damping • Front-panel volume control

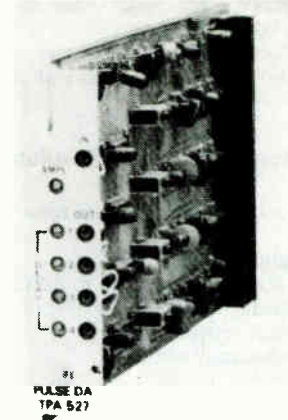
TVS/TAS-525

Video/Audio Distribution Switcher

• 5 x 1 modules can be stacked for additional inputs with common latching or for multiple bus operation • Video-loop/audio-bridge inputs • Video switching is vertical interval, with a sixth crosspoint for improved isolation specifications in multimodule systems, (0.2° differential phase, 0.2% differential gain), (-60dB crosstalk) • Switchers self-latch, require only momentary closures • TAS-525 Audio Distortion: 0.1dB overall; Crosstalk: -75dB • 5 x 1 illuminated pushbutton control panel available • The RC5 pushbutton remote control panel can be mounted in RP-203 rack frame. The RC5 will operate either a TVS-525, or a TAS-525, or both simultaneously (audio follow video). Looping control connections allow two control panels to operate in parallel. Each RC5 requires a CC5 interconnecting cable.

B-156

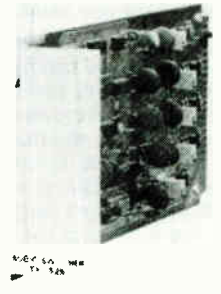
Prices and Specifications Subject to Change Without Notice.



TPA-527



TAS-525



TVS-525

TBB-525

Black Burst Generator/Sync Blanking and Burst Adder

• Burst adder • Permits smooth fades to black without loss of color-lock • Two separate outputs permit simultaneous sync/blanking/burst addition to monochrome source with separate blackburst output to switcher • Remote on/off control of burst on either output • Either output can be used for sync/blanking adder and/or burst adder • 360° burst phase adjustment

NOTE: Modules may be installed in RF-525 or RF-175 Rack Frames. 525 Series equipment may be intermixed subject to power supply and mounting space restrictions. Please specify with order.

ACCESSORIES

- DL-525** Delay plug-in for TVA-528
- EO-525** Equalizer plug-in for TVA-528
- RC-5** 5-pushbutton remote control panel, mounts in RP-203
- RP-203** Rack panel for up to three remote control panels
- CC-5/25** Connecting cable, 25 ft.
- CC-5/50** Connecting cable, 50 ft.

RACK FRAMES AND POWER SUPPLIES

- RF-525** 5 1/4" Rack frame for PS-525 and up to twelve 1" modules
- PS-525** Power supply, 115V +/- 10%, 50/60Hz
- PS-525RK** Power supply redundancy kit, two required for PS-525's
- PS-526RK** Same as PS-525RK but for use with PS-526's
- PS-526** Power supply, 230V +/- 10%, 50/60Hz
- RF-175** 1 3/4" Rack frame and power supply
- EX-526** Module extender
- RP-203** Rack panel for remote control modules, accommodates up to three modules
- BP-203** Blank panel for RP-203

NOTE: A PS-525 Power Supply must be ordered with each RF-525 Rack Frame. The RF-175 Rack Frame contains a built-in power supply; therefore, a PS-525 is not required.

BLANK FILLER PANELS

- BP-1** 1-3/4" x 19"
- BP-2** 3-1/2" x 19"
- BP-3** 5-1/4" x 19"
- BP-4** 7" x 19"
- BP-5** 8-3/4" x 19"
- BP-6** 10-1/2" x 19"

VENTILATION UNITS

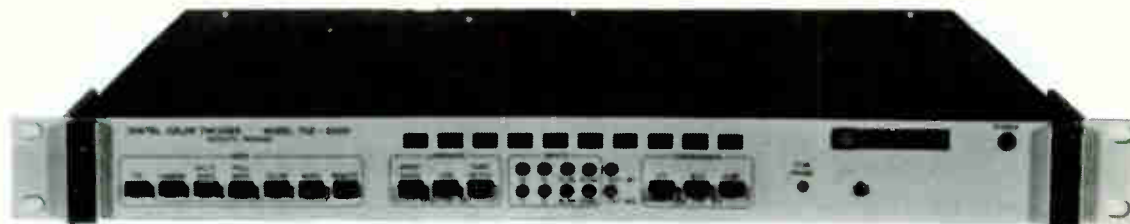
- TVU-175** Ventilation Unit, 117VAC
- TVU-176** Ventilation Unit, 234 VAC



BOSCH

2300 S. 2300 W.
Salt Lake City, UT 84119
(801) 972-8000 Telex 38-8352

SIGNAL PROCESSING EQUIPMENT



TCE-2000 Digital Color Encoders For NTSC/PAL/PAL-M Systems

Features

- Available for NTSC, PAL-I, PAL B, G, and H or PAL-M operation
- Drift-free digital modulators (U.S. Patent No. 3721755)
- All-digital color bar generator — full/split bars — optional
- Level-dependent proportional aperture correction
- 100% circuit access during operation — no extenders required — no phase shift or gain change during adjustment
- Umbilical connection for instant service replacement
- Subcarrier rejection typically 55 dB
- No DC shift with APL change
- Drift-free current summing matrices (U.S. Patent No. 3715470)
- Meets all specifications over 100-130 VAC, 0°-60°C range without readjustment

TCE-2000 Digital Color Encoders are available to produce NTSC, PAL or PAL-M encoded color signals according to NTSC, CCIR and EBU specifications. With the use of digital circuitry and precision components, set-up and maintenance requirements are minimized on the TCE-2000 Series.

The TCE-2000 Encoders are designed for use with both live and film cameras, either three or four-tube types. All inputs are bridging with looping jacks provided. Compensation networks assure excellent input return loss characteristics.

TCE-2000N NTSC Digital Color Encoder

Accessories

BG-2000 Digital Color Bar Generator
PD-2000 Pulse Delay Module

PAL Color Encoders

TCE-2000P PAL-I Digital Color Encoder
TCE-2000P-1 PAL-B,-G, and -H Digital Color Encoder
TCE-2000M PAL-M Digital Color Encoder

Accessories

BG-2000 Digital Color Bar Generator
PD-2000 Pulse Delay Module

THE-100 Hum Eliminator

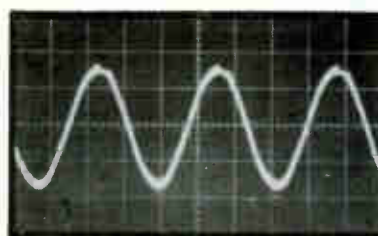
Features

- For use in color and monochrome systems
- Greatly reduces common mode power line hum in video circuits
- Passive, failure-free
- Compact
- Flat frequency response
- No differential phase or gain distortion

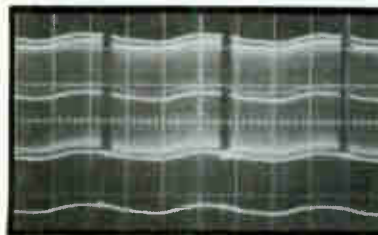
The THE-100 greatly reduces common mode hum caused by differences in ground potential as frequently encountered in installations with long video cables, incoming and outgoing lines, or separate power distribution systems.

Specifications

Impedance 75 ohms, unbalanced
Connectors Type BNC
Bandwidth DC to 10 MHz
 (-0.1dB at 5 MHz, -0.6dB at 10 MHz)
Hum Reduction To 50dB depending on system
Dimensions 4-11/16" H x 3-11/16" W x 2-1/4" D
 (119 x 93 x 57mm)
Weight 3 lbs. (1.36 kg)
Insertion Loss Greater than 0.5dB



Incoming Video with 16V P-P hum superimposed (5 V/Division)



Outgoing Video with 50 mV P-P hum: attenuation of 50 dB. (200 mV/Division)

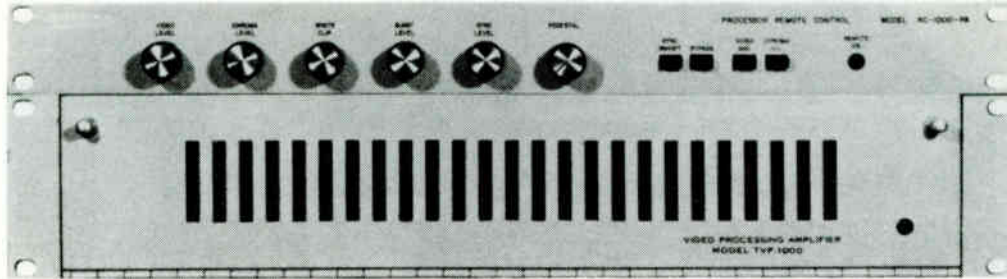




BOSCH

2300 S. 2300 W.
Salt Lake City, UT 84119
(801) 972-8000 Telex 38-8352

SIGNAL PROCESSING EQUIPMENT



TVP-1000

TVP-1000 Video Processing Amplifier

Features

- Full sync, blanking, burst regeneration
- Includes programmable pulse width digital sync generator with genlock
- Differential input rejects up to 30 V P-P Common Mode Hum
- Strappable for operation with helical scan and U-Matic format recorders
- Separate sync, luminance, chrominance and burst processing
- Failsafe compensated metallic-contact bypass
- Full 360° subcarrier phasing
- Full remote control
- Reverts to monochrome black on incoming signal loss
- Luminance and chrominance AGC (optional)
- VIRS AGC Mode — Luminance/chrominance ratio maintained. Loss of VIRS causes reversion to burst AGC mode
- Available for NTSC, PAL, or PAL-M standards
- Selectable AGC responds to VIRS or burst for chroma gain — sync, VIRS or video for luminance gain

The TVP-1000 Video Processing Amplifier meets modern broadcast performance requirements with superior operating features and stability. Handling both color and monochrome signals, the TVP-1000 is designed to operate with quadraplex, helical scan or U-Matic format videotape recorders. Models are available for NTSC, PAL or PAL-M.

A differential amplifier at the processor input, together with an input clamp circuit, provides over 60 dB common mode hum rejection and over 35 dB reduction of single-ended hum. A wide dynamic range permits the circuit to effectively remove over 30 V P-P common mode hum from the incoming video.

RC-1000 Remote Control

A remote control is available and separate controls are provided for Video, Chrominance, Pedestal, Sync, Burst and White Clip levels plus Sync Bypass, Processor Bypass, Video AGC and Chroma AGC. Any or all of these adjustments can be remotely controlled.

Sync Generator with Genlock

The sync generator built into the TVP-1000, a programmable digital unit, is an application of the TeleMation-originated digital approach to sync generator design. Transitions of the output pulses are all clock-derived and can be programmed in 100-nanosecond increments (83 nanoseconds for PAL operation). Once timed to meet local requirements, no further timing adjustments are required.

The special genlock circuit developed for the TVP-1000 provides stable performance even with badly degraded input signals. Output signal variations are minimal—regardless of wide variations in video level, burst level, time base stability and input signal-to-noise ratio. Internal strapping is provided for operation with helical scan or U-Matic format videotape recorders.

The PO-1000 Pulse Output accessory permits the TVP-1000 to be

used as a local sync generator. Sync generator outputs in 625/50 PAL units may be so used when genlocked, but do not provide the 25 Hz offset sync derivation when free-running.

In normal operation, sync, burst and blanking are replaced with internally generated waveforms. A remotable Sync Inhibit switch optionally allows the sync portion of the waveform to pass through the amplifier unchanged. Luminance, chrominance, sync and burst information are separated, processed separately then recombined.

AG-1000 AGC Option

The TVP-1000 provides automatic luminance and chrominance gain control with the plug-in AG-1000 AGC option. The luminance detector in the AG-1000 is switchable to operate on peak video, sync, a standard VIRS signal or any combination where the greatest of the selected signals compared to its reference level is used for control of output video level. Similarly, the chroma detector can be strapped for detection of burst amplitude or VIRS reference, but not both. If VIRS are not present, burst will automatically be used instead.

Unique to the TVP-1000 is the ability to select Full Video or Partial Video AGC operation. The Partial Video selects an area of the raster approximating the safe title area for the sampling. When VIRS referenced AGC is used, chrominance/luminance ratios are precisely maintained. With the absence of VIRS, the TVP-1000 reverts to burst and video/sync AGC references.

Range of the luminance and chrominance AGC circuit is sufficient to restrict output variations to less than 5%, with 6 dB increases or decreases in luminance or chrominance level.

The TVP-1000 allows a variety of sync and subcarrier reference options. All references can be derived from the incoming video. Sync and/or subcarrier may be referenced against external pulse sources or from an external black burst signal, if desired.

Video Processors

- | | |
|-------------------|--|
| TVP-1000N | NTSC Video Processor, use with RC-1000 Remote Control recommended |
| TVP-1000H | NTSC Video Processor for Helical Scan VTR, use with RC-1000 Remote Control recommended |
| TVP-1000P | PAL-I Video Processor |
| TVP-1000PH | PAL-I Video Processor, helical-scan VTR |
| TVP-1000M | PAL-M Video Processor |
| TVP-1000MH | PAL-M Video Processor, helical scan VTR |

Accessories

- | | |
|-------------------|--|
| AG-1000 | AGC Option. Specify for NTSC, PAL, PAL-M operation |
| PO-1000N/M | Pulse Output Module, NTSC/PAL-M |
| RC-1000 | Remote Control Panel, rackmount. Requires CC-6 |
| CC-6/5 | Connecting Cable, 5 ft. |
| CC-6/10 | Connecting Cable, 10 ft. |



BOSCH

2300 S. 2300 W.
Salt Lake City, UT 84119
(801) 972-8000 Telex 38-8352

DISTRIBUTION SWITCHING SYSTEMS

TVS/TAS-2000 Video/Audio Distribution Switcher FEATURES

- Multi-level breakaway capability (7 level standard)
- Power supply alarm indicators on all boards
- Power supply alarm indicators with contact closure for remote alarm
- No PROM changing on crosspoint boards
- Clamped video inputs
- Output delay trim
- Redundant control card capability
- Coax party line or RS-422 control standard
- Internal refresh memory with 120-hour memory save
- Fused power supply outputs
- Redundant power supply capability
- Vertical internal switching of video
- Field expansion of outputs without rewire
- Compact — 10 x 10 matrix arrangement. 60 x 10 audio and video or 130 x 10 audio or video in 8-3/4" card cage
- Internal cooling fans. Fans removable during normal operation
- Matrix "in use" indicator
- Computer automated system testing of audio and video circuit parameters through all possible signal paths. Hard copy results supplied.

The TVS/TAS 2000 Distribution Switcher is the newest in the family of Bosch distribution switchers. Bosch developed the 2000 switcher system using the knowledge gained from earlier switcher experience, and adding features suggested by our customers. Improved packaging, audio signal performance, video DC restoration, output delay adjustments to simplify timing, circuitry to monitor the power supplies on each circuit board. The power supplies are also monitored for failures. Redundant power supplies allow the system to continue operation if one power supply fails. The user is alerted to the failure of the first power supply, while the system continues to operate on the second.

CP-1400 Control Panel

The CP-1400 a Single Bus 10-key Control Panel for the TVS/TAS 1000 and TVS/TAS 2000 Video/Audio Distribution Switcher features alphanumeric LED displays for rapid identification of selected source.

CP-1404 Lever Wheel Control with Status

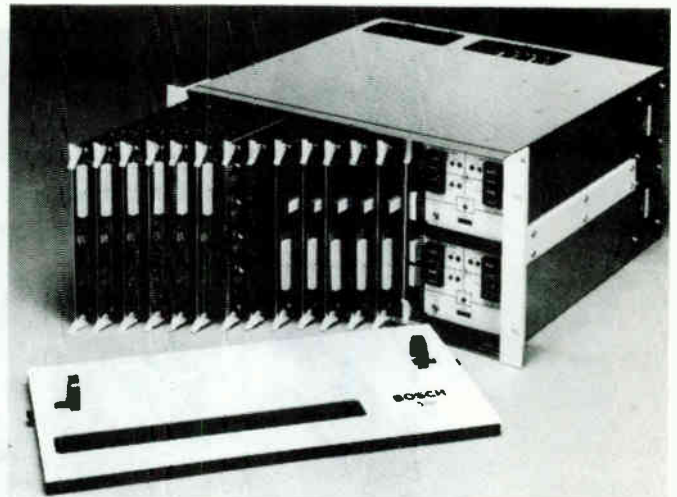
The CP-1404 Control Panels, for use with TVS/TAS 1000 and TVS/TAS 2000 Distribution Switchers, have lever wheel switches for input selection. LED readouts are provided for true switcher status.

CP-1405 Desk Top Lever Wheel Control Panel

The CP-1405 Control Panel, for use with TVS/TAS 1000 and TVS/TAS 2000 Distribution Switchers, is designed to sit on a desk or table top. It is intended to provide economical switcher control in offices and conference rooms.

CP-1420 Control Panel

The basic CP-1420 Control Panel for use with TVS/TAS 1000 and TVS/TAS 2000 Distribution Switchers, provides for 20 pushbuttons to select inputs for one switcher output. The buttons can select inputs in numerical order, or they can be encoded to select inputs in any order. Additional buttons may be added to expand input selection. X-Y control and category/number selection are also available.



TVS/TAS-2000

CP-1440 Control Panel

The CP-1440 Control Panels for use with the TVS/TAS 1000 and TVS/TAS 2000 Distribution Switchers have three level alphanumeric lever wheel switches for input selection. Four character alphanumeric LED displays are provided for status.

CP-1450 Control Panel

The CP-1450 is a single-bus, microprocessor based control panel for use with TVS/TAS 1000 and TVS/TAS 2000 Video/Audio Distribution Switchers. Alphanumeric lever wheels are used to reduce space requirements and cost while still providing category/number operation.

CP-1500 Control Panel

The CP-1500, a full-matrix control panel for use with TVS/TAS 1000 and TVS/TAS 2000 Video/Audio Distribution Switchers, features alphanumeric LED displays for rapid identification of sources and destinations. The alphanumeric displays, which can consist of any combination of one to four letters or numbers, are complemented by descriptive labels on a 10-key pad to provide simple error-free operation.

CP-1550 Control Panel

The CP-1550 is a single-bus, microprocessor based control panel for use with TVS/TAS 1000 and TVS/TAS 2000 Video/Audio Distribution Switchers. Alphanumeric lever wheels are used to reduce space requirements and cost while still providing category/number operation.

TI-2000 Telephone Interface

The TI-2000 Telephone Interface allows remote control of TVS/TAS 1000 and TVS/TAS 2000 Distribution Switchers from any Touch-Tone® telephone. All commands to the switcher are entered, using the Touch-Tone® pad. Prompting of the operator and status from the switcher are reported by a synthesized voice.

SM-2000 Full Matrix Status Monitor

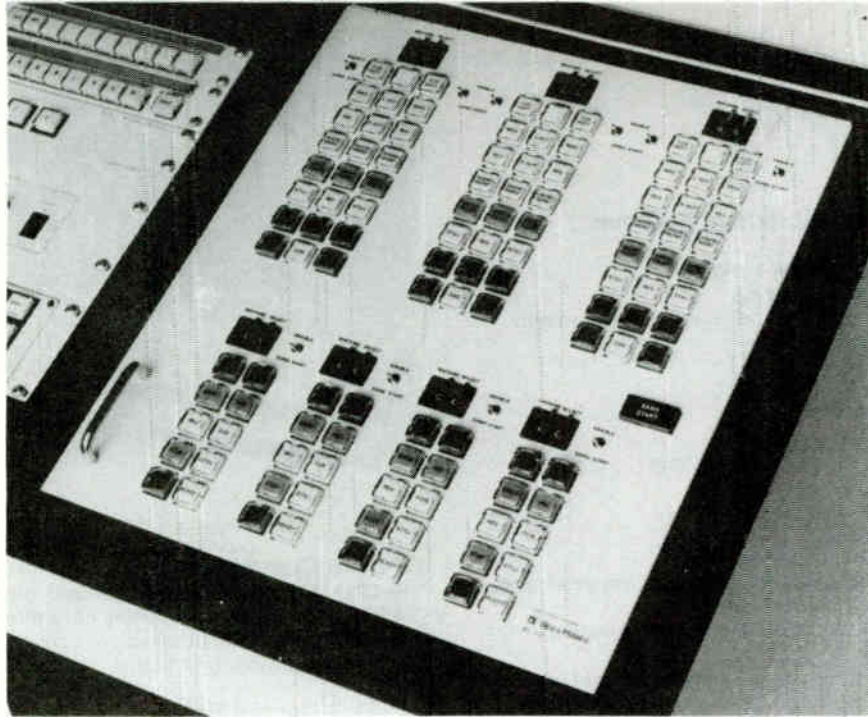
SM-2000 Full Matrix Status Monitor provides full matrix status information in alphanumeric format of entire matrix for display on any video monitor. Selection of display pages may be remote controlled via the party line control system. The video output is compatible with the TVS/TAS 1000 and TVS/TAS 2000 video switchers.



BOSCH

2300 S. 2300 W.
Salt Lake City, UT 84119
(801) 972-8000 Telex 38-8352

MACHINE CONTROL SYSTEMS



TCS-1

TCS-1 Machine Control System

- Controls up to 100 VTR's/film chains
- Dual twisted pair wiring simplifies installation
- Control of each VTR/film chain can be delegated to any one of eight studio control panels or machine control multiplexers:
 - Each studio control panel can operate up to four VTR's and three film chains simultaneously; each includes a "Gang-Start" switch. (custom configurations available)
 - Each machine control multiplexer can accommodate up to 30 MC-24 control panels
- Central microprocessor can be programmed to provide special functions, such as permanent assignment of specific machines to specific control panels
- System can be integrated with Bosch TVS/TAS-1000 Distribution Switcher to provide dynamic machine selection

The TCS-1 is a microprocessor/software based machine control system designed to operate up to 100 videotape recorders and/or telecine film chains. It eliminates patch panels or complex relay switching systems where it is desirable to delegate control of machines to various points. Connection between the control panels and the VTR's/film chains is accomplished with dual twisted pair audio-type wiring, rather than the multiple-conductor cabling normally used with remote controls. The system includes provisions for assigning specific machines to specific control panels, eliminating the possibility of conflicting or unauthorized control commands reaching the same machine from different control stations.

MI-8	8-Function Machine Interface, 1 1/4" Rack mount
MI-24	24-Function Machine Interface, 3 1/2" Rack mount
MD-8	Machine Delegate Panel, 1 1/4" Rack mount
MC-200	Studio Control Panel
MC-24	Single-machine Control Panel, requires MCM-1000. Includes space for one CP-1200A or BP-1200
MCM-1000	Machine Control Multiplexer, connects with up to 30 MC-24's
DC-1	Dynamic Machine Selector, connects with up to 6 MD-8's and 30 MI-8/24's (must be used in connection with Bosch TVS/TAS-1000 Distribution Switcher)
CP-1200A	Single-bus Control Panel, with audio breakaway, mounts in MC-24
BP-1200	Blank panel, mounts in MC-24 not having CP-1200A



BOSCH

2300 S. 2300 W.
Salt Lake City, UT 84119
(801) 972-8000 Telex 38-8352

VIDEO GRAPHIC SYSTEM

FGS-4000 Video Graphic System

FEATURES

- Polygon based system • NTSC, PAL, SECAM and film compatible
- Scene Synthesis of 2D and 3D shaded objects in 3-space • Real time animation • Area selectable display mode: raster fill or vector outlined
- Unlimited area overlap • Variable perspective • Multiple light sourcing: variable direction, color, intensity and ambience • Infinite curve resolution • Hidden surface processing • Keyboard, knob, tablet, stylus and joystick controls • Interactive editing from work station • Simultaneously displayable colors: 16,384 real time, 16,777,216 nonreal time • Real time, full-color frame capture • User diagnostics • High quality images • 2D and 3D image entry • Single frame VTR control • Software expandability • 16 levels of transparency • Texture mapping • Film Effects: glows, streaks, and script-on • Paint capabilities • Viewports of variable size and position

High Quality Animation System (HQAS)

The High Quality Animation System (HQAS) software gives the operator a tool for enhancing previously created animations by adding glows, script-on effects and streaking capabilities along with texture mappings. Each of these "high-quality" effects can be applied to produce exceptional animation sequences and still pictures. By generating single-frame animation sequences the FGS-4000 can produce effects previously available only with film.

Texture Mapping enables the artist to create special effects with video images "captured" by a camera. These effects can include images of metallic surfaces, textures, landscapes and personalities applied to a previously created object or shape. 3D box can now have different video inputs on each of the six sides. Logos assigned with a picture of chrome can be transformed into metal.

Real Time Text Editor

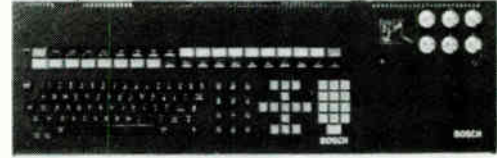
Using the Real Time Text Editor, displays can be created and pages composed of both 2D and 3D objects. Fonts can be selected, sized, colored, italicized or condensed either by turning a knob or by menu selection. All objects can then be positioned, rotated or rearranged prior to the animation being created. The operator is not limited to the virtual image area of the monitor, but can also type or position characters off-screen.

Typing is not limited to a horizontal line. By rotating the cursor, keyboard characters can be entered at an angle, into the distance (Z-axis) or even upside down and backwards, all in real time. There are no limits to composition with the Real Time Text Editor.

2D Editor

The 2D Editor allows the operator to input arbitrary flat objects by rapid digitization from artwork placed on the tablet. Overlapping of different colorable areas is possible, along with duplicating objects for repositioning, coloring, etc.

The 2D Editor puts real time entry and editing at the operator's fingertips. All operations are viewed in real time and display can be zoomed up and back or moved left-to-right for close-up scrutinizing. Character entry does not require preprocessing time prior to page composition and animation. This feature allows rapid creation time while maintaining interactive editing capabilities for the operator.



FGS-4000

3D Editor

The 3D Editor provides four different techniques for generation of three dimensional objects. With the Extruder, the operator can create a two dimensional character and make a three dimensional object. The object can also be extruded to a "ribbon" edge effect, without front or back faces. Options include variable curve tolerance to allow the operator to gauge the overall character smoothness and the capability of making a three dimensional font suitable for page composition from any 2D alphanumeric font.

Speed-Framing

This option is available for use with the Paint Editor, Animation Editor, and High Quality Animation System. It interfaces with a variety of 1" VTRs to provide automatic single frame control to allow mastering of nonreal time effects.

Animation Editor

The objects composed on a page in the Real Time Text Editor are animated by the Animation Editor. Each object, or group of objects, can be moved independently in 3D space. Controls including menus, knobs and a joystick are provided. Animations are Keyframe-based with automatic interpolation between Keyframes. Sizing, position and rotation can be animated, along with eye position, viewport size, and perspective. The FGS-4000 provides a single light source which can animate on the X, Y or Z axis. The intensity of the light source and ambient light levels also can be controlled.

By animating color, the operator has access to 16,000 real time and 16,000,000 nonreal time colors. There are 16 levels of transparency and two vector (or wire frame) character widths. When using vectors, the character maintains the assigned color, level of shading and high quality edges, a trademark of the FGS-4000.

Paint Editor

The Paint Editor extends the use of the FGS-4000 by transforming the operator's painting skills into artistic expressions of video imagery. "Paintings" are created by moving the stylus on the tablet in the same manner as moving a paint brush on a canvas. Instead of working directly on the painting, the artist watches the color monitor while moving his hand on the tablet.

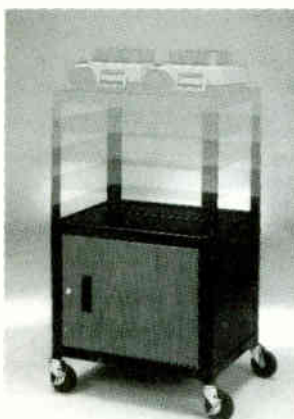
Other features of the Paint Editor include: airbrushing effects, painting with 16,000 colors and 16 levels of transparency. All features are accomplished by a pressure-sensitive stylus that fits firmly in the artist's hand.



9715 Soreng Ave.
Schiller Park, IL 60176
(312) 678-2545

A Complete Line of Quality Products From America's Largest Manufacturers of Communications Support Equipment

Versatility and ruggedness are just two of the valuable qualities built into every Bretford adjustable table. Each meets the application of the day with multiple height adjustments. Traditionally designed with all steel construction and die-cast shelves to offer solid support and years of dependable service. Each features the Quiet-Glide caster system, exclusive arc-welded caster sockets for maximum stability and heavy-duty 4" casters (2 with locking brakes) for smooth, noiseless transport of loads up to 460 pounds. One ribbed rubber mat for top shelf supplied with each unit. Optional Electrical Assembly with 2 outlets, 20 ft. grounded cord available.



CA2642

◀ The CA2642 Adjustable Cabinet with 26", 30", 34", 38" and 42" height adjustments. High impact Black, baked enamel finish. Lockable Walnut vinyl-clad steel door with piano hinge. Includes 2 keys. Ships UPS, assembled. *Weight:* 55 pounds. *Dimensions:* 24" W x 26 to 42" H x 18" D

CA2642E Adjustable Cabinet, with Electrical Assembly. *Weight:* 57½ pounds \$214.50

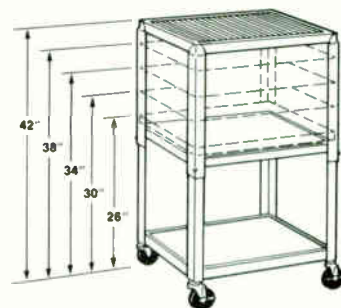


A2642E

The A2642 Universal Projection Table adjusts to 5 heights: 26" 30", 34", 38" and 42" high by simply removing and resetting four bolts. Slate Gray. Ships UPS, assembled. *Weight:* 42 pounds. *Dimensions:* 24" W x 26 to 42" H x 18" D \$105.00

A2642E Adjustable Table with Electrical Assembly. *Weight:* 44½ pounds \$129.50

Adjustable Cabinets and Tables



TVA3654

The TVA3654 Adjustable TV Table adjusts from 36" to 54" at two inch increments—ten different height adjustments in all. Double-welded top shelf. Slate Gray. Ships assembled. *Weight:* 50 pounds. *Dimensions:* 28" W x 36 to 54" H x 24" D, 17½" H from Bottom to Middle shelf. \$165.00

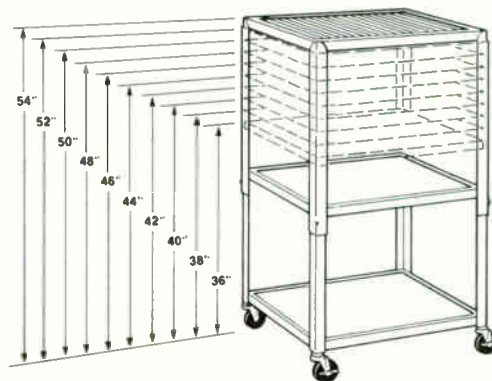
TVA3654E Adjustable TV Table, with Electrical Assembly. *Weight:* 52 pounds \$189.50



TVCA3654

The TVCA3654 Adjustable TV Cabinet adjusts from 36" to 54" at two inch increments. Black, baked enamel finish. Double welded top shelf. Lockable Walnut vinyl-clad steel door with piano hinge. Includes 2 keys. Ships assembled. *Weight:* 66 pounds. *Dimensions:* 28" W x 36 to 54" H x 24" D. *Cabinet Dimensions:* 25" W x 17½" H x 21" D \$281.00

TVCA3654E Adjustable TV Cabinet, with Electrical Assembly. *Weight:* 68 pounds \$305.50



Accessories

(See page 1 for complete description of accessories).

5" Caster replacing 4" Caster	\$10.00
E-Unit, Electrical Assembly 2 outlets.	\$24.50
ES-Unit Electrical Assembly 3 outlets	\$32.00
ES-Unit replacing E-Unit.	\$ 7.50
TVS Slant Bar for TVA3654 and TVCA3654.	\$10.00
RM1824, Rubber Mats for 24" x 18" tops.	\$ 5.50
RM2428, Rubber Mats for 28" x 24" tops	\$ 8.00

For stability, mobility, and economy, you can't beat Bretford's TV and VTR Cabinets and Stands. Choose from a diverse selection of functional designs for small and large group applications. All feature heavy gauge steel construction and Black, mar-resistant finish with Walnut highlights.

The VTRC54E TV/VTR Cabinet Stand with glare-free, slanted top shelf. Includes 4" casters (2 locking), and 2 keys for lock. *Weight:* 82 pounds. *Dimensions:* Outside-28"W x 54"H x 24"D, Top Shelf-28"W x 17"D, Top to Middle Shelf-24", Cabinet-25"W x 17"H x 21"D. Ships assembled\$300.50

The MPVC54E TV/VTR Cabinet Stand with electrical assembly and lockable cabinet storage. Designed for large groups, its built-in Slant Bar tilts TV forward to eliminate glare from overhead lights. Includes chrome legs with 4" ball casters (2 brakes), and 2 keys for lock. *Weight:* 88 pounds. *Dimensions:* Outside-30"W x 54"H x 20"D, Top to Middle Shelf-26", Cabinet-28"W x 17"H x 18"D. Ships UPS, disassembled\$300.50

Accessories

- 4" Caster replacing 2" caster (VTR20, VTRC30, and MPVC40 only)\$13.00
- 5" Caster replacing 2" caster (VTR20, VTRC30, and MPVC40 only)\$23.00
- 5" Caster replacing 4" caster (MPVC54, VTRC54, C42)\$10.00
- E-Unit Electrical Assembly 2 outlet, 20-foot grounded cord\$24.50
- ES-Unit Electrical Assembly 3 outlet, 20-foot grounded cord\$32.00
- ES-Unit replacing E-Unit.\$ 7.50
- SB-Safety Belt Black\$22.50
- RM2030 Rubber Mat Black for 30"x20" tops ...\$ 7.50
- RM1824 Rubber Mat Black for 24"x18" tops ...\$ 5.50
- RM2428 Rubber Mat Black for 28"x24" tops ...\$ 8.00



VTRC54E



MPVC54E



TV/VTR Cabinets and Stands



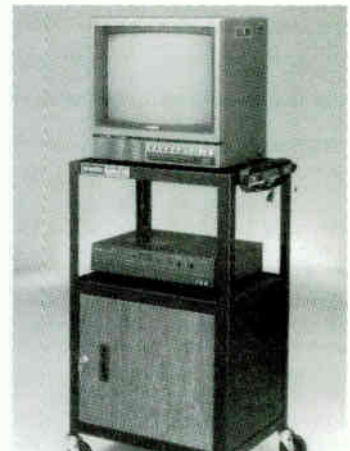
VTRC30E



MPVC40



VTR20E



C42E

The VTRC30E TV/VTR Cabinet with electrical assembly and lockable storage cabinet. Recessed top shelf for easy access to VCR on middle shelf. Includes chrome legs, 2" ball casters, and 2 keys for lock. *Weight:* 66½ pounds. *Dimensions:* Outside-30"W x 32"H x 20"D, Top Shelf-30"W x 16"D, Top to Middle Shelf-13", Cabinet-28"W x 10"H x 18"D. Ships UPS, disassembled\$279.50

The MPVC40E TV/VTR Cabinet Stand with two-door locking cabinet and electrical assembly. Designed for small to large groups. Recessed top shelf for easy access to VCR on middle shelf. Includes chrome legs, 2" ball casters, and 2 keys for lock. *Weight:* 83 pounds. *Dimensions:* Outside-30"W x 40"H x 20"D, Top Shelf-30"W x 16"D, Top to Middle Shelf-13", Cabinet-28"W x 17"H x 18"D. Ships UPS, disassembled\$301.50

The VTR20 TV/VTR Stand with recessed top shelf for easy access to VTR on middle shelf. Chrome legs with 2" ball casters. *Weight:* 34 pounds. *Dimensions:* Outside-30"W x 32"H x 20"D, Top Shelf-30"W x 16"D, Top to Middle Shelf-13". Ships UPS, disassembled\$ 94.00

The VTR20E TV/VTR Stand with electrical assembly. *Weight:* 36½ pounds. Ships UPS, disassembled\$118.50

The C42E TV/VTR Cabinet Stand with electrical assembly and lockable cabinet with Walnut finished, vinyl-clad steel door. Includes 4" casters (2 locking) and 2 keys for lock. *Weight:* 56 pounds. *Dimensions:* Outside-24"W x 42"H x 18"D, Top to Middle Shelf-14", Cabinet-23"W x 17"H x 17"D. Ships assembled.\$214.50

Prices and Specifications Subject to Change Without Notice.

Bretford kept you in mind when designing these TV and VTR tables. They're mobile, large, and sturdy enough for every application. Constructed of heavy gauge steel with a Slate finish. Top shelf is "Double Welded" for maximum security. Bretford's unique electrical welding process allows features like smooth rounded edges, and die pressed shelves. Quiet-Glide caster system. Arc-welded caster sockets. Slant-top models allow glare free TV viewing. One ribbed rubber mat for top shelf. Ships assembled. E models include electrical unit with 2 outlets and 20 ft. grounded extension cord.



Traditional TV and VTR Tables

- The T54 Traditional TV/VTR Table with 3 shelves. *Weight:* 59 pounds. *Dimensions:* Outside-28" W x 54" H x 24" D, Top to Middle Shelf-23", Middle to Bottom Shelf-20" \$161.00
- The T54E Traditional TV/VTR Table with electrical assembly. *Weight:* 61½ pounds \$185.50
- The TS54 Traditional TV/VTR Table with glare-free top slant shelf. *Weight:* 59 pounds \$168.00



TS54E

- The TS54E Traditional TV/VTR Table with electrical assembly. *Weight:* 61½ pounds \$192.50
- The T48 Traditional TV/VTR Table with 3 shelves. *Weight:* 57 pounds. *Dimensions:* Outside-28" W x 48" H x 24" D, Top to Middle Shelf-17", Middle to Bottom shelf-20" \$153.00
- The T48E Traditional TV/VTR Table with electrical assembly. *Weight:* 59½ pounds \$177.50
- The TS48 Traditional TV/VTR Table with glare-free top slant shelf. *Weight:* 55 pounds \$161.00
- The TS48E Traditional TV/VTR Table with electrical assembly. *Weight:* 57½ pounds \$185.50
- The T42 Traditional TV/VTR Table with 3 shelves. *Weight:* 54 pounds. *Dimensions:* Outside-28" W x 42" H x 24" D, Top to Middle Shelf-14", Middle to Bottom Shelf-17" \$150.00
- The T42E Traditional TV/VTR Table with electrical assembly. *Weight:* 56½ pounds \$174.50

Accessories

- 5" Caster replacing 4" Caster \$10.00
- E-Unit Electrical Assembly 2 outlets, 20 ft. grounded cord \$24.50
- ES-Unit Electrical Assembly 3 outlets, 20 ft. grounded cord \$32.00
- ES-Unit replacing E-Unit \$ 7.50

Overhead Projector Tables

Whether your overhead projector application requires you to stand-up or sit-down, Bretford has the projector stand to meet your needs. And, our newest line additions guarantee that no matter what size projector you have, we've got the stand to fit it.

From the standard application tables (A0H2741 and A0H2741E) to the top of the line Executive Model (WSOH29E)-All feature adjustable projector height and will enhance the use of any overhead projector on the market. E-models feature an Electrical Unit with 2 outlets, 20 ft. extension cord, and built-in cord winder.



WSOH29E

◀ The WSOH29E Executive Overhead Projector Work Station is a functional and elegant work station. This top of the line unit features an adjustable projector well (6" to 10" in 1" increments), convenient accessory drawer, a roomy 10 sq. ft. work surface, full width accessory shelf, and 2" twin-wheel casters. Putty Beige with Oak laminates. Includes electrical assembly. Ships disassembled. *Weight:* 112 pounds. *Dimensions:* 48" W x 29" H x 30" D, Projector Opening-15½" W x 16¾" D \$360.00



A0H2741

A.



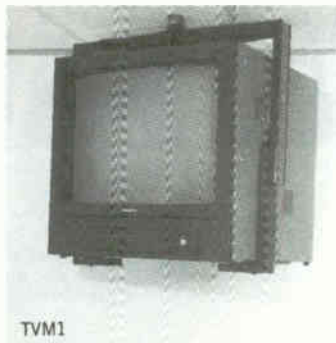
B.

The A0H2741 Adjustable Overhead Projector Table works well for stand-up or sit-down applications. Work surface adjusts from 27" H to 41" H in 2" increments, and platform adjusts from 6" to 10" in 1" increments. Features heavy gauge welded steel construction, smooth rounded edges, die pressed shelves. "Quiet-Glide" caster system, 4" casters (2 with locking brake) and arch welded caster sockets. Finished in Black with Walnut vinyl writing surface. *Weight:* 73 pounds. Ships assembled. *Dimensions:* 37" W x 27 to 41" H x 22½" D, Projector Opening-15½" W x 18½" D \$183.50

The A0H2741E Overhead Projector Table with Electrical Unit. *Weight:* 75 pounds \$208.00

- A. A0H2741 at full height for standing applications.
- B. A0H2741 at lowest position for sit-down applications.

Universal TV Wall/Ceiling Mounting Systems



TVM1

◀ The TVM1 Universal Video Mounting Bracket is perfect for every application, from small classrooms to large auditoriums. Installs monitors, receivers on ceiling. Accepts 17" to 26" diagonal screen TVs. Formed steel construction. Black baked enamel finish with Walnut vinyl-clad steel accents. Allows a tilt factor up to 20 degrees. *Weight:* 27 pounds. Ships UPS, disassembled \$150.00



TVM2

▶ The TVM2 Wall Bracket Adaptor allows TVM1 to mount on wall. *Weight:* 10 pounds. Ships UPS, disassembled \$ 42.50



Video Security Centers

Accessories

- RAS Rolling Accessory Shelf Black (For 40's and 70's) \$57.00
- FAS Fixed Accessory Shelf Black (For 40's and 70's) \$25.00
- RS Rolling Accessory Shelf (VTRC50E only) \$52.00
- FS Fixed Accessory Shelf (VTRC50E only) \$24.00
- E-Unit Electrical Assembly 2 outlet, 20 ft. grounded cord \$24.50
- ES-Unit Electrical Assembly 3 outlet, 20 ft. grounded cord . . . \$32.00
- ES-Unit replacing E-Unit . . . \$ 7.50



VTRC70E

Today, you depend on your video equipment more than ever before. It makes good sense to keep it protected. An attractively designed Video Security Center by Bretford provides mobility, but what's more, it locks up your entire video investment in one beautiful cabinet. Each center features a rolling pull-out shelf for the player/recorder and a monitor shelf. Plus all shelves are adjustable to accept a wide variety of equipment and uses. Cabinets combine heavy gauge steel construction, finished in Black with the warm accent of wooden doors finished in Walnut, mar-resistant laminate. Doors swing easily on full length piano hinges—fold back against cabinet for easy access. Positive lock includes 2 keys. Removable, ventilated back panel. Easy rolling, heavy duty 4" ball bearing casters. Electrical assembly with 2 outlets, 20 ft. grounded cord. Additional shelves available. Ships disassembled.

The VTRC70E Video Security Center with one rolling shelf plus 2 movable shelves. *Weight:* 281 pounds. *Dimensions:* 33"W x 72"H x 24"D. Inside: 31"W x 60"H x 22"D \$931.50



VTRC40E

The VTRC40E Video Security Center with one rolling and one movable shelf. *Weight:* 154 pounds. *Dimensions:* 33"W x 38"H x 24"D, Inside-31"W x 30"H x 22"D. \$528.50



VTRC50E

The VTRC50E Midsize Video Security Center with one rolling shelf and 2 adjustable shelves. *Weight:* 171 pounds. *Dimensions:* 28"W x 55"H x 23"D, Inside-26"W x 30"H x 22"D \$633.50



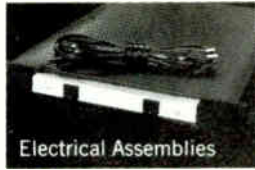
The VTRC90 Video Security Center is the state-of-the-art in video cabinetry. Features an open leg design, adjustable monitor shelf, cord organizer/modesty panel, 3 outlet electrical assembly with 20 ft. grounded cord. Steel construction with 1" square tubular steel legs. Putty Beige baked enamel finish with oak laminate doors which, when folded back, are held in place against the cabinet. 4" casters (2 with locking brakes). Ships disassembled. *Wt.:* 160 lbs. *Dimensions:* 36" W x 58" H x 25" D, Inside-36" W x 32" H x 24" D, Shelf-36" W x 23" D. \$399.00

Accessories



Castors

Replacement or substitute casters are available for most mobile stands, tables, cabinets, or trucks. Included are 1) Rigid Caster Packs for Mobile Utility Trucks; 2) 5" Caster Packs for easy rolling on carpets and rough surfaces, and 3) WS Caster Conversion kits for computer furniture.



Electrical Assemblies

Designed to attach to all Bretford Audio-Visual and Video furniture. Available assemblies include—1) The E Unit (UL approved) with 2 outlets, 20 ft. 3-wire cord and grounded plug; 2) E-S Unit—same as above with 3 outlets instead of two.



Rubber Mats

Ribbed Rubber Mats provide a protective non-slip surface to keep equipment in place on stands, cabinets, and tables. Available in several pre-cut sizes to fit most Bretford Products.



Safety Belt

Super strength Safety Belt holds valuable monitors in place on slant top shelves. It features a nine foot web strap with buckle and is designed for use on TV/VTR Mobile Equipment Tables.



Slant Bars

Two models available. The Model MPS is designed for use with Contemporary Mobile Equipment Tables, and the Model TVS for Adjustable and Traditional TV Tables. Attaches to top shelf and tilts monitor forward to eliminate glare. Slotted design allows you to bolt equipment in place.

Contemporary, functional design gets you right down to business. With features like steel construction, smooth rounded edges, die pressed shelves and "Quiet-Glide" casters, you'll agree these stands give you the most for your money. Square Lock Design allows fast assembly. Finished in Putty Beige with Black legs. Ships UPS, disassembled.

Mini Pack Series

The MP42 Mini Pack with 2 shelves. *Weight:* 30 pounds. Ships UPS. *Dimensions:* Outside-20" W x 42" H x 18" D, Top to Bottom Shelf-21" . . . \$ 94.00

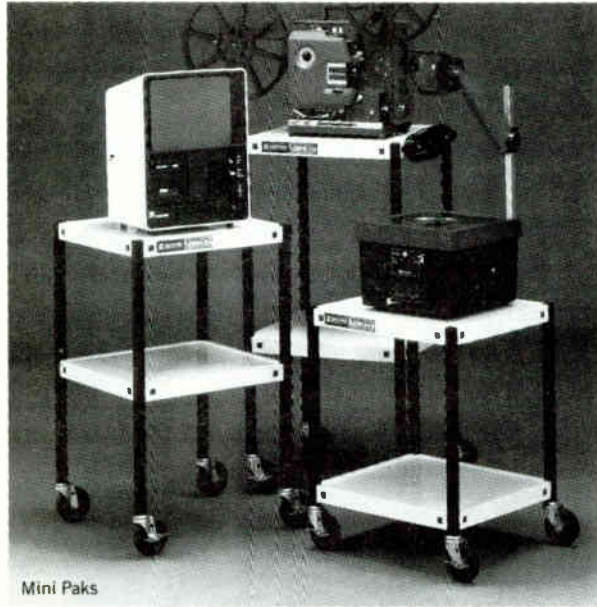
The MP42E Mini Pack with electrical assembly. *Weight:* 32 pounds. Ships UPS . . . \$118.50

The MP34 Mini Pack with 2 shelves. *Weight:* 28 pounds. Ships UPS. *Dimensions:* Outside-20" W x 34" H x 18" D, Top to Bottom Shelf-13" . . . \$ 91.00

The MP34E Mini Pack with electrical assembly. *Weight:* 30 pounds. Ships UPS . . . \$115.50

The MP26 Mini Pack with 2 shelves. *Weight:* 26 pounds. Ships UPS. *Dimensions:* Outside-20" W x 26" H x 18" D, Top to Bottom Shelf-17" . . . \$ 85.00

The MP26E Mini Pack with electrical assembly. *Weight:* 28 pounds. Ships UPS . . . \$109.50



Mini Paks



Contemporary Mobile Equipment Tables



MP30E

The MP30 Contemporary Mobile Equipment Table with 2 shelves. *Weight:* 36 pounds. Ships UPS. *Dimensions:* 30" W x 30" H x 20" D, Top to Bottom Shelf-14" . . . \$117.00

The MP30E Contemporary Mobile Equipment Table with electrical assembly. *Weight:* 38 pounds. Ships UPS . . . \$141.50

Accessories

5" Caster replacing 4" Caster . . . \$10.00

E-Unit Electrical Assembly 2 outlets, 20 ft. grounded cord . . . \$24.50

ES-Unit replacing E-Unit . . . \$ 7.50

ES-Unit Electrical Assembly 3 outlets, 20 ft. grounded cord . . . \$32.00

RM2030 Rubber Mat for 30" x 20" tops . . . \$ 7.50

RM1820 Rubber Mat for 20" x 18" tops . . . \$ 5.00

SB-Safety Belt Black . . . \$22.50

MPS Slant Bar . . . \$ 8.00

B-166



MP48E

The MP48 Contemporary Mobile Equipment Table with three shelves. *Weight:* 49 pounds. Ships UPS. *Dimensions:* Outside-30" W x 48" H x 20" D, Top to Middle Shelf-17", Middle to Bottom Shelf-20" . . . \$132.00

The MP48E Contemporary Mobile Equipment Table with electrical assembly. *Weight:* 51 pounds. Ships UPS . . . \$156.50

The MPS48 Contemporary Mobile Equipment Table with glare-free top slant shelf. *Weight:* 51 pounds. Ships UPS . . . \$140.00

The MPS48E Contemporary Mobile Equipment Table with electrical assembly. *Weight:* 53 pounds. Ships UPS . . . \$164.50



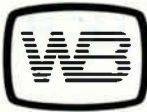
MPS54E

The MP54 Contemporary Mobile Equipment Table with 3 shelves. *Weight:* 52 pounds. Ships UPS. *Dimensions:* Outside-30" W x 48" H x 20" D, Top to Middle Shelf-17", Middle to Bottom Shelf -20" . . . \$138.00

The MP54E Contemporary Mobile Equipment Table with electrical assembly. *Weight:* 54 pounds. Ships UPS . . . \$162.50

The MPS54 Contemporary Mobile Equipment Table with glare free top slant shelf. *Weight:* 54 pounds. Ships UPS . . . \$146.00

The MPS54E Contemporary Mobile Equipment Table with electrical assembly. *Weight:* 56 pounds. Ships UPS . . . \$170.50

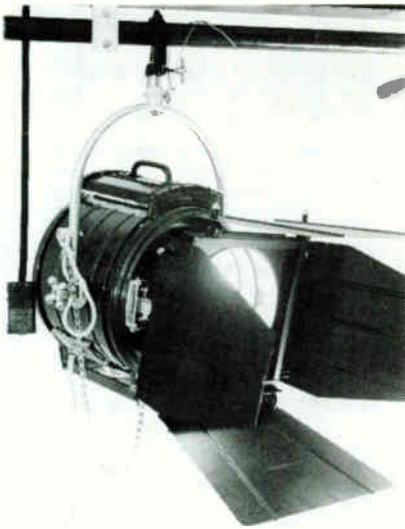


WALTER S. BREWER CO., INC.
 4717 "F" South Mingo Road
 Tulsa, OK 74146
 (918) 665-6820

STUDIO LIGHTS

- A—ALTMAN STAGE LIGHTING COMPANY, INC.
- BM—BARDWELL & MCALISTER INC.
- EC—ELECTRO CONTROLS INC.
- F—FREZZOLINI ELECTRONICS INC.
- GE—GENERAL ELECTRIC COMPANY
- LL—LOWEL-LIGHT MANUFACTURING, INC.
- L—LEVITON INC.
- R—ROSCO LABORATORIES INC.
- SY—SYLVANIA (GTE PRODUCTS CORPORATION)
- TH—THORN EMI LIGHTING
- WB—WALTER S. BREWER COMPANY, INC.

KEY & BACK LIGHT



FRESNEL

This family of fresnels are the workhorses of the industry, providing the art in lighting for the realization of depth, modeling and to set the mood, which is so important for that interesting picture. All are focusing.

06000-BM	1000W, 6" BABY KEG FOCUSING FRESNEL with "C" Clamp and GPP Plug	277.09
06001-BM	MOTION PICTURE MODEL as above except with Stand Mount, 25' cable and inline 20A crush proof on/off switch and plug	264.99
58005-BM	4-leaf Barndoor	39.60
49143-BM	Gel/Diffusion Frame	19.00
49141-BM	Safety Cable	8.80
49144-BM	Scrim, single	6.60
49145-BM	Scrim, half single	6.60
49146-BM	Scrim, double	7.70
49147-BM	Scrim, half double	7.70
10004-BM	Snoot 2" dia. opening	16.50
10005-BM	Snoot 3" dia. opening	16.50
10006-BM	Snoot 4" dia. opening	16.50
06308-GE	Replacement-Socket, medium bi-post	32.50

RECOMMENDED LAMPS 120V
 MEDIUM BIPOST BASE
 2½ L.C.L. TUNGSTEN-HALOGEN QUARTZ

Ansi Code	Volts	Watts	Temp.	Type	Price
EGN-TH	120	500	3200K	Clear	50.00
EGR-TH	120	750	3200K	Clear	70.00
EGT-TH	120	1000	3200K	Clear	75.00

14006-BM	2000W, 10" JUNIOR FOCUSING FRESNEL with "C" Clamp and GPP Plug	429.55
14005-BM	MOTION PICUTRE MODEL as above, except with stand mount, 25' cable and fixture mounted 20A switch and plug	441.65
58014-BM	4-leaf (8 way barndoors)	79.20
49369-BM	Gel/Diffusion Frame	20.00
49141-BM	Safety Cable	8.80
10012-BM	Snoot 6" dia. front opening	68.20
10013-BM	Snoot 8" dia. front opening	68.20
10014-BM	Snoot 10" dia. front opening	68.20
49148-BM	Scrim, single	8.00
49149-BM	Scrim, half single	8.00
49150-BM	Scrim, double	10.00
49151-BM	Scrim, half double	10.00
09343-BM	Replacement Socket Brass, terminal side	12.00
09344-BM	Replacement Socket Brass, clamp side	9.50

RECOMMENDED LAMPS 120V
 MOGUL BIPOST BASE
 5" L.C.L. TUNGSTEN-HALOGEN QUARTZ

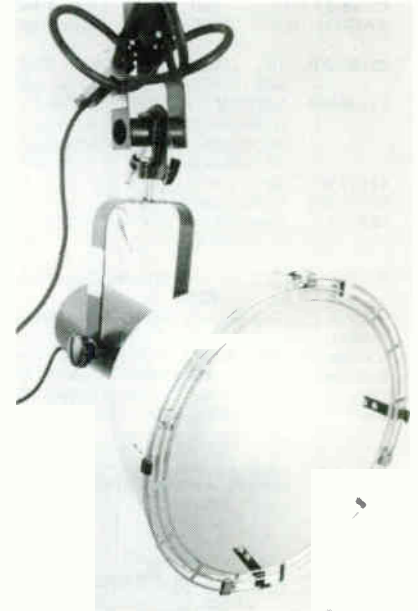
Ansi Code	Volts	Watts	Temp.	Type	Price
CYV-TH	120	1000	3200K	Clear	92.00
CXZ-TH	120	1500	3200K	Clear	115.00
CYX-TH	120	2000	3200K	Clear	125.00

19005-BM	5000W, 13" SENIOR FOCUSING FRESNEL with "C" Clamp and 60A GPP plug	771.65
19004-BM	MOTION PICTURE MODEL as above except stand mount 25' cable and fixture mounted 20A switch and plug	819.50
58022-BM	4-leaf (8 way barndoors)	132.00
49391-BM	Gel/Diffusion Frame	23.00
49141-BM	Safety Cable	8.80
10022-BM	Snoot 8" dia. front opening	85.80
10023-BM	Snoot 10" dia. front opening	85.80
10024-BM	Snoot 12" dia. front opening	85.80
49152-BM	Scrim, single	12.10
49153-BM	Scrim, half single	12.10
49154-BM	Scrim, double	13.20
49155-BM	Scrim, half double	13.20

RECOMMENDED LAMP 120V MOGUL BIPOST
 BASE 6½" L.C.L.
 TUNGSTEN-HALOGEN QUARTZ

Ansi Code	Volts	Watts	Temp.	Type	Price
DPY-TH	120	5000	3200K	Clear	535.00

BASE & FILL LIGHT



SCOOP

These fixtures give the proper light source and intensity to allow the lens aperture to operate at a desired setting to create that brilliant picture with creative depth and sharpness. All are focusing for absolute control.

02120-WB	14", 1000W FOCUSING SCOOP with "C" Clamp and GPP plug	230.00
01120-WB	MOTION PICTURE MODEL as above except with stand mount, 25' cable and inline 20A crush proof on/off switch and plug	240.00
01129-WB	Gel/Diffusion Frame	35.00
02710-WB	Safety Cable	6.50
08806-L	Replacement Socket, medium pre-focus base	12.00

RECOMMENDED LAMP 120V
 MEDIUM PREFOCUS BASE
 3½" L.C.L. TUNGSTEN-HALOGEN QUARTZ

Ansi Code	Volts	Watts	Temp.	Type	Price
EGC/EGD-GE	120	500	3200K	Clear	62.74
EGF-GE	120	750	3200K	Clear	70.37
EGK-TH	120	1000	3200K	Frosted	70.00

02124-WB	14", 2000W FOCUSING SCOOP with "C" Clamp and GPP Plug	230.00
01124-WB	MOTION PICTURE MODEL as above except with stand mount, 25' cable and inline 20A crush proof on/off switch and plug	240.00
01129-WB	Gel/Diffusion Frame	35.00
02710-WB	Safety Cable	6.50
08808-L	Replacement Socket, mogul screw base	14.50

Reprinted with permission from materials by © 1984, WALTER S. BREWER CO., INC.



WALTER S. BREWER CO., INC.

4717 "F" South Mingo Road
Tulsa, OK 74146
(918) 665-6820

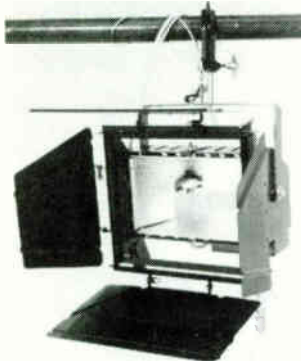
RECOMMENDED LAMP 120V
MOGUL SCREW BASE

5/4" L.C.L. TUNGSTEN-HALOGEN QUARTZ					
Ansi Code	Volts	Watts	Temp.	Type	Price
1500Q					
CL/48-SY	120	1500	3200K	Frosted	142.72
BWG-TH	120	2000	3200K	Frosted	140.00

02135-WB	18"	2000W	FOCUSING SCOOP	with "C" Clamp and GP Plug 250.00	
01135-WB	MOTION PICTURE MODEL as above except with stand mount, 25' cable and inline 20A crush proof on/off switch and plug 260.00				
01139-WB	Gel/Diffusion Frame 40.00				
02710-WB	Safety Cable 6.50				
08808-L	Replacement Socket, mogul screw base 14.50				

RECOMMENDED LAMP 120V MOGUL SCREW BASE

9 1/2" L.C.L. TUNGSTEN-HALOGEN QUARTZ					
Ansi Code	Volts	Watts	Temp.	Type	Price
DSE-GE	120	1000	3200K	Frosted	56.43
DSF-GE	120	1500	3200K	Frosted	65.61
BWG-TH	120	2000	3200K	Frosted	140.00



BROAD

48007-BM	1000W	FOCUSING SINGLE BROAD	with "C" Clamp and GPP Plug 236.50		
48006-BM	MOTION PICTURE MODEL as above except with stand mount, 25' cable and fixture mounted 20A switch and plug 236.50				
48015-BM	4-Way Barndoor 63.80				
48013-BM	Gel/Diffusion Frame 14.30				
49141-BM	Safety Cable 8.80				
08815-L	Replacement Socket (pair), recessed single contact 11.00				

RECOMMENDED LAMPS 120V
DOUBLE ENDED

4-1/16" M.O.L. TUNGSTEN-HALOGEN QUARTZ					
Ansi Code	Volts	Watts	Temp.	Type	Price
FDN-TH	120	500	3200K	Frosted	31.00
EMD-TH	120	750	3200K	Frosted	40.00
FHM-TH	120	1000	3200K	Frosted	35.00

48007/15-BM	1500W	FOCUSING SINGLE BROAD	with "C" Clamp and GPP Plug 236.50		
48006/15-BM	MOTION PICTURE MODEL as above except with stand mount, 25' cable and fixture mounted 20A switch and plug 236.50				
48015-BM	4-way Barndoor 63.80				
48013-BM	Gel/Diffusion Frame 14.30				
49141-BM	Safety Cable 8.80				
08815-L	Replacement Socket (pair), recessed single contact 11.00				

RECOMMENDED LAMPS 120V
DOUBLE ENDED

6 9/16" M.O.L. TUNGSTEN-HALOGEN QUARTZ					
Ansi Code	Volts	Watts	Temp.	Type	Price
FGV-GE	120	1000	3200K	Frosted (Disc)	
FGT-GE	120	1500	3200K	Frosted	65.61

STUDIO LIGHTS



LIGHT HANGER

WBC manufactures the only light hanger made in the USA that is adjustable from the studio floor. Extends 5', 8', 10', & 15'. Supports 0-100 lbs.

02740-WB	*Floor adjustable telescoping hanger, extends 5', supports 0-100 lbs.	525.00
02742-WB	*Floor adjustable telescoping hanger, extends 8', supports 0-100 lbs.	535.00
02744-WB	*Floor adjustable telescoping hanger, extends 10', supports 0-100 lbs.	545.00
02746-WB	*Floor adjustable telescoping hanger, extends 15', supports 0-100 lbs.	555.00
02750-WB	Battery operated motor assembly with activator pole and battery charger	295.00
02752-WB	5 ft. extension cable	**41.65
02755-WB	8 ft. extension cable	**44.35
02757-WB	10 ft. extension cable	**46.15
02760-WB	15 ft. extension cable	**50.65

Note: *Includes stirrup, safety cable and other needed accessories.
**Add \$20.00 per cable for NEMA L520 Twist lock



SOFT LIGHT

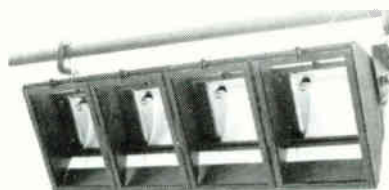
Used for virtually shadowless fill light and base light for smaller subjects. Fabricated from aluminum for easy movement.

01185-WB	1000/4000W FEATHERLITE SUPER SOFT-LIGHT with 4, 20A fixture mounted switches, 1 1/4" stud-stand mount, and two 20A pigtails with Locking Pin Plugs.	750.00
04074-WB	20A, 25' cables with female 120V pin plug (2 required)	53.25
01186-WB	Gel/Diffusion Frame	60.00
49100-BM	"C" Clamp	26.40
08815-L	Replacement Socket (pair), recessed single contact	11.00
08902-L	Replacement Switch	8.00

RECOMMENDED LAMP 120V DOUBLE ENDED
BASE 4 1/16" M.O.L.

TUNGSTEN-HALOGEN QUARTZ					
Ansi Code	Volts	Watts	Temp.	Type	Price
FCM-TH	120	1000	3200K	Clear	32.00

CYCLORAMA AND BACKGROUND LIGHTS



CYC LIGHTS

These units are available in a variety of configurations for up to 4 color cyclorama, background, set illumination and color blending. Grid or floor mounting are available with a full range of mounting hardware for any type of studio installation requirements. (Fixtures for single and four light systems listed. Other configurations available upon request.)

25013-BM	ONE LIGHT CYC LIGHT 1000W with GPP Plug	141.90
25013/15-BM	ONE LIGHT CYC LIGHT 1500W with GPP Plug	141.90
25050-BM	Extended Holder, One Light	50.00
25063-BM	"C" Clamp and Yoke Hanger Assembly for One Light Cyc	40.70
02208-WB	"C" Clamp and Yoke Hanger Assembly for Two One Light Cycs (Used in 4-circuit system)	45.00

25051-BM	Gel Frame	18.70
49141-BM	Safety Cable (1 required)	8.80
25018-BM	FOUR LIGHT, FOUR CIRCUIT CYC LIGHT 1000/4000W with GPP Plug	284.90
25018/15-BM	FOUR LIGHT, FOUR CIRCUIT CYC LIGHT 1500/600W with GPP Plug	284.90
25050-BM	Extended Holder, One Light	50.00
25060-BM	Extended Holder, Three Light	77.00
25053-BM	"C" Clamp and Hanger Assembly (Pair)	42.90
25051-BM	Gel Frame (4 required)	18.70
49141-BM	Safety Cable (1 required)	8.80
08815-L	Replacement Socket (pair), recessed single contact.	11.00

RECOMMENDED LAMPS 120V
DOUBLE ENDED

4 1/16" M.O.L. TUNGSTEN-HALOGEN QUARTZ
(Use with 1000W Version Only)

Ansi Code	Volts	Watts	Temp.	Type	Price
FDN-TH	120	500	3200K	Frosted	31.00
EMD-TH	120	750	3200K	Frosted	40.00
FHM-TH	120	1000	3200K	Frosted	35.00

RECOMMENDED LAMPS 120V
DOUBLE ENDED

6 9/16" M.O.L. TUNGSTEN-HALOGEN QUARTZ
(Use with 1500W Version Only)

Ansi Code	Volts	Watts	Temp.	Type	Price
FGV-GE	120	1000	3200K	Frosted (Disc.)	
FGT-GE	120	1500	3200K	Frosted	65.61

Reprinted with permission from materials by © 1984, WALTER S. BREWER CO., INC.

Prices and Specifications Subject to Change Without Notice.



WALTER S. BREWER CO., INC.
4717 "F" South Mingo Road
Tulsa, OK 74146
(918) 665-6820

EFFECTS PROJECTORS



FOLLOW SPOT

Has six color changers and dowsler, framing shutters, iris, variable focus, stand with casters, 25' cable, fixture mounted 20 amp switch and blower for gels and lamp.

02642-A	FOLLOW SPOT	900.00
08800-L	Replacement Socket, medium two pin base	11.00



ELLIPSOIDAL

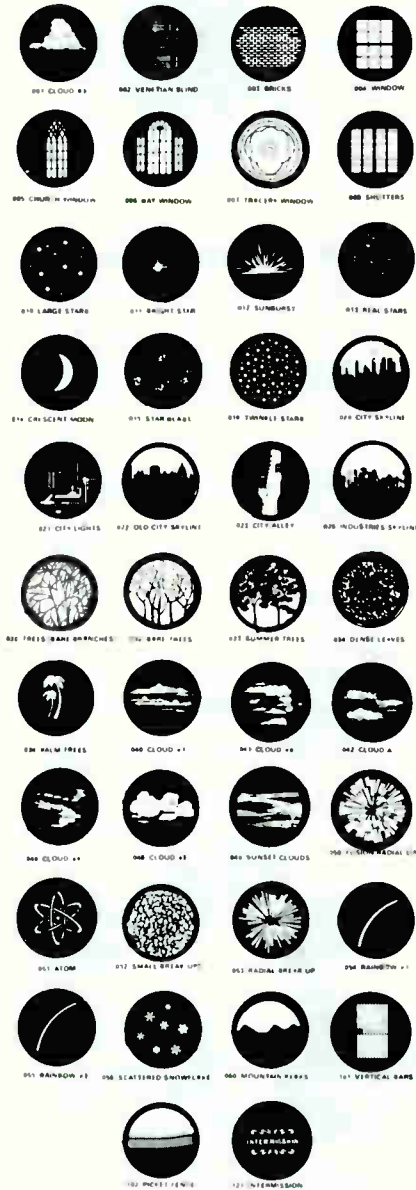
Used for background special effect. Will project rectangles, triangles, almost any combination of straight edges. Also, will project patterns. The ellipsoidal can be purchased with a iris to control the diameter of the beam.

02612-*	6" x 9" Ellipsoidal	240.00
02616-*	6" x 12" Ellipsoidal	240.00
02621-*	6" x 16" Ellipsoidal	240.00
02624-*	ZOOM Ellipsoidal, 1000W, 20 degree to 40 degree beam angle	380.00
* A modified by WB		
01411-WB	MOTION PICTURE ADDER for stand mounting, 25' cable with inline 20A crush proof on/off switch and Parallel Blade Plug	25.00
02632-A	Gel Frame	2.50
02635-A	Pattern Holder	8.00
02636-A	Iris	50.00
09608-A	Set of 8 Patterns	18.00
09609-WB	Set of 10 Designer Patterns	90.00
02710-WB	Safety Cable	6.50
08800-L	Replacement Socket, medium two pin base	11.00

RECOMMENDED LAMP 120V
MEDIUM TWO-PIN
BASE 2 1/2" L.C.L.
TUNGSTEN-HALOGEN QUARTZ

Ansi Code	Volts	Watts	Temp.	Type	Price
FEL-TH	120	1000	3200K	Clear	52.00

(For both Follow Spot and Ellipsoidal)



ELLIPSOIDAL DESIGNER PATTERNS

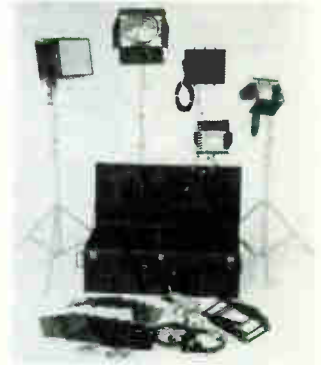
9.00

With over 100 precision patterns to choose from you can accent your picture theme or mood not possible any other way so inexpensively. These patterns will fit any standard brand of ellipsoidal fixture. When necessary, the special heat resistant metal can be cut to size with scissors to fit most pattern holders.

CUSTOM PATTERNS from camera ready art
(first pattern) 90.00

STUDIO LIGHTS/KITS

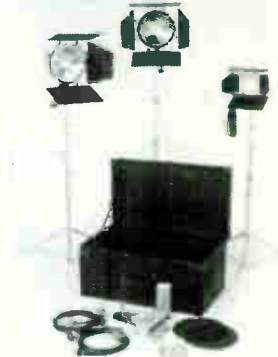
LIGHTING KITS



01720-WB PORTA-KIT 6000

Portable "open face" fixtures designed for larger set areas giving maximum footcandles and the ability to diffuse, color the light with field and beam control.

- 2—SLIMLINE II 1000/2000W "Punch Light" with integral (4) way barndoor and 10' power cable with crush proof inline switch and plug.
- 2—Accessory Holders (Attaches to Barndoor)
- 2—Gel/Diffusion Frame.
- 2—FEY 2000W, 3200K Quartz Lamp.
- 3—MINI MAC 1000W "Base Light with integral (4) way barndoor and 25' power cable with inline switch and plug.
- 3—Accessory Holders (attaches to barndoor).
- 3—Gel/Diffusion Frame.
- 3—FHM 1000W, 3200K Quartz Lamp
- 4—Medium Weight, Hi-riser Stand Folded 35 3/4", extended 127".
- 2—Gaffers Grip
- 1—Rosco Assortment-Roscolux; 3200K to daylight conversion blue, red, green and blue primary colors, amber and Tough Spun Diffusion Material.
- 1—Rugged Case-partitioned, roomy and lightweight **2300.00**



01730-WB PORTA-KIT 4000

Use as kit 6000 when not as many fixtures are needed and without maximum beam diffusion or colored light is needed.

- 2—SLIMLINE II 1000/2000W "Punch Light" with integral (4) way barndoor and 10' power cable with crush proof inline switch and plug.
- 2—Double Scrim.
- 2—FER 1000W Quartz Lamp.
- 1—MINI MAC 1000 with integral (4) way barndoor and 25 ft power cable with inline switch and plug.
- 1—Double Scrim.
- 1—FHM Frosted Quartz Lamp.
- 1—Gaffers Grip
- 3—Featherweight Hi-riser Stand, folded 30", extended 103".
- 1—Rugged Case-Partitioned, roomy and lightweight. **1275.00**

Reprinted with permission from materials by © 1984, WALTER S. BREWER CO., INC.

Prices and Specifications Subject to Change Without Notice.



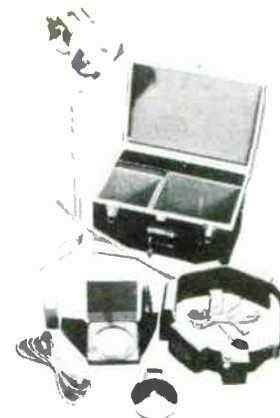
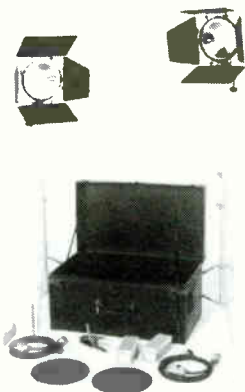
WALTER S. BREWER CO., INC.
4717 "F" South Mingo Road
Tulsa, OK 74146
(918) 665-6820

LIGHTING KITS

01740-WB SLIMLINE II 2000 KIT

Can be used for over all base light. We recommend using with Mini Mac 1000 kit for more versatility. The double kit system is easier to move from location to location.

- 2—SLIMLINE II 1000/2000 with integral (4) way barndoor and 10 ft. power cable with crush-proof inline switch and plug.
- 2—Double Scrim.
- 2—FER 1000W Quartz Lamp.
- 2—FEY 2000W Quartz Lamp.
- 1—Gaffers Grip.
- 2—Featherweight High Riser Stand, Folded 30" extended 103".
- 1—Rugged Case-Partitioned, roomy and light-weight. **1200.00**



01610-WB SUPER 600 "ENG" KIT I

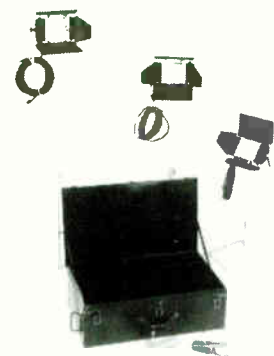
Designed for use when 120V AC is not available. The power is a 30 volt DC battery belt which generates a 250W lamp. Both power cords and lamps are included in the kit. Gives more light output per watt than any competitive fixture.

- 1—Frezzi 600, 30 volt DC/125 Volt AC fixture
- 1—120 Volt Cable, 8 ft. with on/off switch and plug
- 1—30 volt cable, 8 ft. with on/off switch and plug
- 1—Accessory Holder
- 1—Rotating Barndoor
- 1—Daylight Glass Conversion Filter, 3200K to 5400K.
- 1—Hand Grip.
- 1—Micro-Featherweight Stand, Folded 18½", extended 78".
- 1—30 Volt (α 4ah Battery Belt (250W-30 min.) w/charger cable.
- 1—DYS, 600 Watt (α 3200K Quartz Lamp.
- 1—DYG, 250 Watt (α 3400K Quartz Lamp.
- 1—ENG Kit I Carrying Case **950.00**

01750-WB MINI MAC 1000 KIT

As described above but generally are used more as a base light and the Slimline II as the key light. They also make excellent copy board lights.

- 3—MINI MAC 1000 with integral (4) way barndoor and 25 ft. power cable with inline switch and plug.
- 3—Double Scrim.
- 3—FHM 1000W Frosted Quartz Lamp.
- 1—Gaffers Grip.
- 3—Featherweight High Riser Stand, Folded 30", extended 103".
- 1—Rugged Case-Partitioned, roomy and Light-weight **1035.00**



01760-WB MINI MAC 650 KIT

Same rugged fixtures as above but smaller in size.

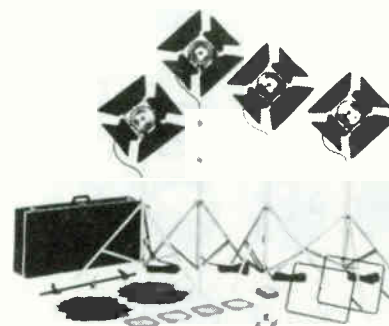
- 3—MINI MAC 650 with integral (4) way barndoor and 25 ft. power cable with inline switch and plug.

- 3—Double Scrim.
- 3—FBX 650W Frosted Quartz Lamp.
- 1—Gaffers Grip.
- 3—Featherweight High Riser Stand, Folded 30", extended 103".
- 1—Rugged Case-Partitioned, roomy and Light-weight **975.00**

D2-94-LL DP 4 KIT

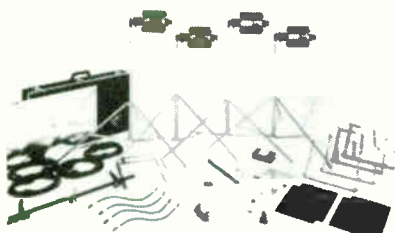
Light weight kit that is very versatile and unique. Four reflectors can be interchanged to vary the beam pattern from a soft wide angle to a narrow beam long throw fixture.

- 4—dp 1000 fixtures with #1 reflector and 16 ft power cable and inline switch.
- 4—dp barndoors
- 4—ks stands
- 1—dp lampak
- 1—carrying case, partitioned and light weight. **1375.00**



a large selection of accessories.

- 4—tota 1000W fixtures with 16 ft power cable and integral two-leaf reflecting doors.
- 1—tota-brella
- 4—tota-frames
- 2—assorted gels
- 1—lightflector
- 4—tota-flags
- 1—tota-flector
- 4—flexi-shafts
- 1—tota-tatch
- 4—omni-stands
- 1—tota-mount
- 1—tota-clamp
- 1—large space clamp
- 1—gaffer tape
- 1—tota-lampak
- 1—case **1290.00**



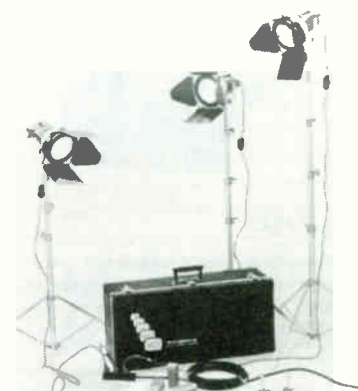
TI-94M-LL T 4 KIT

Versatile, light weight that gives a very wide spread of light or (by moving the reflector doors into the light beam) gives a concentration of light which can be used for bounce light. The kit has

01640-WB SUPER 600 "ENG" KIT III

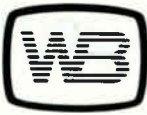
Everyone in TV or photo lighting production must have at least one ENG KIT III. Very efficient light output and light weight.

- 3—Frezzi 600, 30 Volt DC/125 Volt AC Fixture.
- 3—120 Volt Cable, 8 ft. with on/off switch and plug.
- 3—DYS 600W Quartz Lamp.
- 3—Accessory Holder.
- 3—Four Leaf Barndoor.
- 2—Scissor Mounts.
- 3—Ultra Featherweight Stands, Folded 25¼", extended 83½".
- 1—25' Extension Cable, 3-Way
- 1—Rugged Case, Partitioned, Roomy, Light weight **960.00**



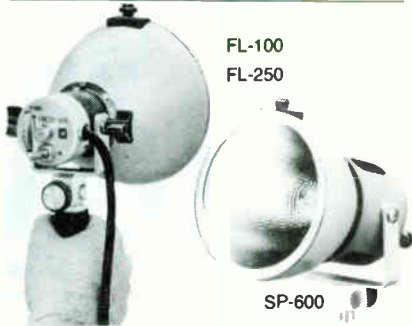
Reprinted with permission from materials by © 1984, WALTER S. BREWER CO., INC.

Prices and Specifications Subject to Change Without Notice.



WALTER S. BREWER CO., INC.
 4717 "F" South Mingo Road
 Tulsa, OK 74146
 (918) 665-6820

PORTABLE LIGHTING



KEY AND BACKLIGHTING

AC/DC Power—You need "FREZZI" high output lights, plus portable power for most all ENG production.

FL-100-F	FREZZI LIGHTHEAD WITH 11.5 Volt 1000W FAV Quartz Lamp, Handle Power Cable with Plug	195.00
FL-250-F	FREZZI LIGHTHEAD WITH 30 Volt DC 250W FBV Quartz Lamp, Handle, Power Cable with Plug. (Light-head accepts 150 or 350W Quartz Lamps)	195.00
SP-600-F	FREZZI SUPER 600 Fixture Only (No Lamp or Cable)	165.00
CABLES		
C12-F	12 Volt Cable, 8 ft. with On/Off Switch	32.00
C30-F	30 Volt Cable, 8 ft. with On/Off Switch	32.00
C120-F	120 Volt Cable, 8 ft. with On/Off Switch	17.00
C120EX-WB	120 Volt Extension Cable, 25 ft. 3 Way	18.50

FIXTURE ACCESSORIES

FLAH-101-F	Accessory Holder for Barndoors Plus Scrim & Dichroic Filter	29.00
FLBD-102-F	Rotating Barndoors, Mounts in Accessory Holder	36.00
01005-WB	Single Scrim, Mounts in Accessory Holder	8.50
01006-WB	Double Scrim, Mounts in Accessory Holder	8.50
01007-WB	Dichroic Filter, Mounts in Accessory Holder	85.00
FLDF-101-F	Dichroic Filter Swing Away	88.00
FLS-101-F	Scrim Swing Away	44.00
FLH-101-F	Hand Grip	12.00
FLEP-101-F	Extension Pole, 30", Makes lighting grid out of a drop ceiling.	60.00



2339-BM Scissor Clip with 1/2" Stud, Used to Suspend Light from Drop Ceiling. Allows dressing of power cable along drop ceiling. **6.00**

2339-1-BM Scissor Hook, Used to Dress Light Cable Across Drop Ceiling **6.00**

01510-WB	Micro-Featherweight High Riser Light Stand, Folded 18 1/2", Extended 78"	53.00
01512-WB	Ultra-Featherweight High Riser Light Stand, Folded 25 1/4", extended 83 1/2"	67.00
01980-WB	Eng Kit 1 Carrying Case	90.00
01982-WB	Eng Kit 3 Carrying Case	100.00

LAMPS		
EYL-GE	1000 Watt (a 3300K 12 Volt (50 hrs.)	13.68
DYG-GE	250 Watt (a 3400K 30 Volt (15 hrs.)	23.18
EKB-GE	420 Watt (a 3200K 120 Volt (75 hrs.)	30.74
DYS-TH	600 Watt (a 3200K 120 Volt (75 hrs.)	28.00
EKD-GE	650 Watt (a 3400K 120 Volt (25 hrs.)	30.31

DYR-220-GE		
650 Watt (a 3200K 220 Volt (50 hrs.)		35.63
DYR-240-GE		
650 Watt (a 3200K 240 Volt (50 hrs.)		35.63

MOUNTS		
FLCM-101-F	Camera Mount, 1/4-20 Screw In	12.00
FLCM-101A-F	Camera Mount, 10-32 Screw In	12.00

FLCM-101B-F		
Camera Mount, 4MM Screw-In		12.00
FLCM-102-F		
Dove Tail Mount		45.00
LS-1-F	Lite-Stud, 3" x 1/2", 1/4-20	10.00
LS-2-F	Lite-Stud, 3" x 1/2", 10-32	10.00
LS-3-F	Lite-Stud, 3" x 1/2", 5MM	11.00
LS-4-F	Lite-Stud, 3" x 1/2", 6MM	11.00
LS-5-F	Dove-Tail Assembly and Lite-Stud	49.00

LS-21-F	Lite Stud for FP-21/22	28.00
LS-79-F	Lite Stud for HL-9	17.00
LS-83-F	Lite-Stud for HL-83	28.00
LS-700-F	Lite-Stud for XC-700	17.00
LSM-21-F	Lite Mic Holder for FP-21/22	49.00
LSM-79-F	Lite Mic Holder for HL-79	49.00
LSM-83-F	Lite Mic Holder for HL-83	49.00
Special Mounts Available for Most Video Cameras		



PORTABLE BATTERY PACKS/BELTS & CHARGERS

Frezzolini fixture and camera batteries.		
FBP-12-4L-F	12 Volt (a 4ah Battery Pack (100W-20 Min.)	395.00
F-30-EC-F	30 Volt (a 4ah Battery Pack (250W-30 Min.)	545.00
F-30-		
EXFA-F	30 Volt (a 4ah Battery Pack (250W-30 Min.)	575.00
EC-30-F	30 Volt (a 4ah Battery Pack (250W-30 Min.)	575.00
800-NC-F	30 Volt (a 4ah Battery Pack (250W-30 Min.)	625.00
900-NC-F	30 Volt (a 6ah Battery Pack (250W-40 Min.)	850.00
FTC-12-S-F	12 Volt Trickle Charge (14 hrs.)	80.00
BC-77-U-F	12 Volt Fast Charger (1 hr.)	395.00
BC-30-C/D-F	30 Volt Fast Charger (1 hr.)	395.00

PORTABLE LIGHTING

FLCC-101-F	Super Case	650	AC	Kit	Carrying	125.00
FLCC-102-F	Super Case	650	AC	Kit	Shipping	295.00
FLCC-103-F	30 Volt Kit				Carrying Case	140.00
FLCC-104-F	12 Volt Kit				Carrying Case	140.00

BATTERY PACKS

BP-12-F	12V (a 4ah	455.00
BP-13-F	13.2V (a 4ah	475.00
BP-14-F	14.4V (a 4ah	495.00
BP-77-F	7.2V (a 4ah	495.00
BP-122-F	12V (a 2ah	275.00
BP-142-F	14.4V (a 2ah	295.00
FBP-20-F	12V (a 2ah	210.00
FBP-44-F	12V (a 2ah	210.00
FBP-60-F	12V (a 2ah	210.00
FBP-90-F	12V (a 4ah	275.00

FBP-90-FC-F

12V (a 4ah		330.00
FBP-12-4B-F	12V (a 4ah	395.00
FBP-12-4L-F	12V (a 4ah	395.00
FBP-14-43-F	14.4V (a 4ah	425.00
EC-30-F	30V (a 4ah	575.00

AC ADAPTERS

RPS1-F	On-Board, 40 Watts	515.00
RPS2-F	Dual Channel Adapter/Charger	895.00
RPS3-F	On-Board 50 Watts	595.00

BATTERY BELTS

F-12-		
EXFA-F	12V (a 6ah	475.00
F-12-		
77-F	6.0V (a 6ah	475.00
F-14-		
EXFA-F	14.4V (a 6ah	495.00
F-30-EC-F	30V (a 4ah	545.00
F-30-		
EXFA-F	30V (a 4ah	575.00

BATTERY MOUNTING BRACKETS AND ACCESSORIES

BHM-F	Belt Bracket	95.00
FCB-103-F	For FBP-12-4B/4L, FB-14-4E	90.00
HM76A-F	TK-76A	155.00
HM76B/C-F	TK-76B/C	155.00
HM77-F	HL-77	148.00
HM300-F	BVP-300/330	105.00
HM2000-F	KY-2000/2700	105.00
RM6000-F	On Board to DXC 1800/6000	198.00
HM90-F	BP-90 to On Board	198.00
ISM90-F	Side MT HL-79	110.00
HM6000-F	BP-90 to DCX-1800/6000	198.00
HMBV1-F	BETACAM	105.00

LEATHER BELT

FLBB-101-F For FBP-124B/4L & FBP-14-4E **28.00**

BATTERY CHARGERS

BC-77U-F	12-14V W/Cable	395.00
BC-77UB-F	12-14V W/Side BKT	395.00
BC-30C/D-F	30V W/Cable	395.00

FAST CHARGER ADAPTER CABLES

HL-F	To BP-122 142	30.00
HS-F	To FBP-20/44/60 & FBP-12-4B/4L	30.00
HV-F	To FBP-90-FC	30.00
HX-F	To FBP-14-4E	30.00

OVERNIGHT TRICKLE CHARGERS

BC-1225-F	For FBP-20/44/60	80.00
BC-1245-F	For BP-90	80.00
CR-1-F	Current Regulated	105.00
FTC-12-F	For BP-12	80.00
FTC-14-F	For BP-14	80.00
FTC-14X-F	For FBP-14-4E	80.00
FTC-122-F	For BP-122	90.00
FTC-142-F	For BP-142	90.00

MULTIPLE BATTERY CHARGING STATIONS

MBC-2-F	Fast Charges (5) Batteries' Plus (8) Inter-Mixed VTR Batteries Overnight	2,400.00
MBC-4-F	Fast Charges (5) Batteries' Plus (8) BP-90 Type or other Single Type VTR Battery Packs Overnight	2,090.00
MBC-4A-F	Fast Charges (5) Batteries Only	1,595.00
MBC-2/4C-F	Deluxe Shipping Case	375.00
*Fast Charge Adapter Cables Optional		
MBC-5-F	Charges (8) Sony BP-90 Type Battery Packs Overnight	395.00

Reprinted with permission from materials by © 1984, WALTER S. BREWER CO., INC.

Prices and Specifications Subject to Change Without Notice.



WALTER S. BREWER CO., INC.
 4717 "F" South Mingo Road
 Tulsa, OK 74146
 (918) 665-6820

STUDIO LIGHTS

DP LIGHT & REFLECTORS

DP light and reflectors make this 1000W very versatile. There are many accessories that compliment this fixture. Ask for a complete brochure.



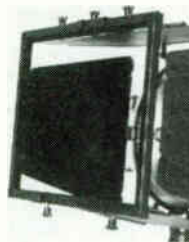
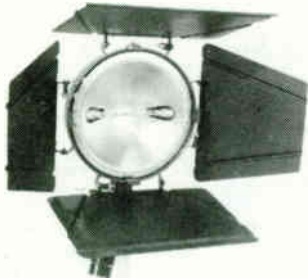
D2-10-LL	dp light	145.00
D2-15-LL	#1 reflector	13.00
D2-17-LL	#3 reflector	13.00
D2-18-LL	#4 reflector	13.00

DP LIGHT CONTROLS

D2-20-LL	complete barndoor	60.00
D2-21-LL	barndoor frame	25.00
D2-22-LL	rectangular leaf	13.00
D2-23-LL	triangular leaf	13.00
D2-50-LL	diffused glass	32.50
D2-51-LL	dichroic filter	107.50
D2-52-LL	clear glass	28.50
D2-53-LL	snoot	36.50
D2-54-LL	full scrim	14.50
D2-55-LL	half scrim	14.50
D2-56-LL	graduated scrim	17.00
D2-57-LL	cookaloris	14.50
D2-24-LL	dp frame	38.50

RECOMMENDED LAMP 120V MEDIUM TWO-PIN BASE

2 3/8" L.C.L. TUNGSTEN-HALOGEN QUARTZ					
Ansi Code	Volts	Watts	Temp.	Type	Price
EHC-GE	120	500	3150	Clear	56.73
EHF-GE	120	750	3200	Clear	62.74
FEL-TH	120	1000	3200	Clear	52.00
FCV-TH	120	1000	3200	Frosted	64.00



Heavy duty key light type fixture with excellent open face barndoor capacity. The fixture is very compact and the 4 leaf barndoor is integral.

29001-BM	SLIMLINE II 1000/2000W with integral (4) Leaf Barndoors, "C" Clamp and Plug	210.10
29000-BM	MOTION PICTURE MODEL as above except with stand mount, 25' cable and inline 20A Crush proof on/off switch with 20A Twist Lock Plug	214.50
04113-BM	U Ground Pigtail (PBG)	18.00
48015-BM	Four-Leaf Barndoor	63.00
01018-WB	Gel Frame	13.00
01017-WB	Gel Frame Holder (For Use on Barndoor to extend Gel Frame)	52.00
49304-BM	Scrim (10" Stainless Steel) Single	8.00
49305-BM	Scrim (10" Stainless Steel) Double	10.00

RECOMMENDED LAMPS 120V DOUBLE ENDED 5 1/2" M.O.L. TUNGSTEN-HALOGEN QUARTZ					
Ansi Code	Volts	Watts	Temp.	Type	Price
FER-GE	120	1000	3200K	Clear	68.46
DVV-SY	120	1500	3200K	Clear (Disc.)	
FEY-TH	120	2000	3200K	Clear	110.00

PAR LAMP HOLDERS

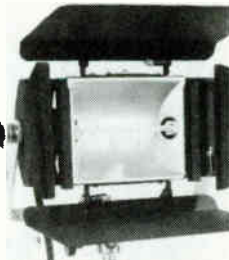
Used for lighting of arenas, sports events, churches, etc. More light per 1000W than any other quartz fixture.

02031-WB	1000 PAR 64 WHITE, includes "C" Clamp and Color Frame	110.00
02032-WB	1000 PAR 64 BLACK, includes "C" Clamp and Color Frame	100.00
02033-WB	1000 PAR 64 WHITE, with Canopy, Gel Frame, and No Plug	105.00
02034-WB	1000 PAR 64 BLACK, with Canopy, Gel Frame, and No Plug	95.00
01034-WB	MOTION PICTURE ADDER For Stand Mounting, 25' Cable with Inline 20A Crush Proof On/Off Switch and Plug	25.00
01035-WB	4-Way Barndoor	52.00
01036-WB	Color Frame	10.00
02710-WB	Safety Cable	6.50
02705-WB	"C" Clamp	19.80

RECOMMENDED LAMPS 120V SINGLE ENDED, EXTENDED MOGUL END PRONG BASE TUNGSTEN-HALOGEN QUARTZ

Ansi Code	Volts	Watts	Temp.	Type	Price
FFN-GE(VNS)	120	1000	3200K	Clear	85.15
FFP-GE(NS)	120	1000	3200K	Clear	85.15
FFR-GE(MF)	120	1000	3200K	Clear	85.15
FFS-GE(WF)	120	1000	3200K	Clear	85.15
FGM-GE(NS)	120	1000	5200K	Clear	191.85
FGN-GE(MS)	120	1000	5200K	Clear	191.85

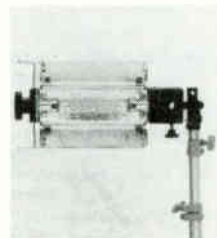
BASE AND FILL LIGHT



Excellent heavy duty base type light. Great for copy board lighting.

18003-BM	MINI MAC 1000 with Integral 4-leaf Barndoor, "C" Clamp and Plug	141.90
18001-BM	MOTION PICTURE MODEL as shown above except with stand mount, 25' cable and inline 15A on/off switch and Plug	141.90
01112-WB	Extended Holder	52.00
01113-WB	Gel Frame	13.00
49141-BM	Safety Cable	8.80

(See Lamp Listing below Set Lights)



Lots of light and an even wide angle beam. Has a semi-hard light pattern that can be concentrated by the reflector doors for bounce light.

T1-10-LL	Tota-Light 1000 with Reflecting Doors	107.00
T1-20-LL	Gel/Diffusion Frame	24.50
T1-80-LL	16', 120V Power Cable with Inline On/Off Switch and Plug	22.50

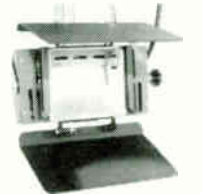
(See Lamp Listing below Set Lights)



For Soft almost shadowless light. Folds to take on location.

S2-10-LL	Soft Light 2-2000 with 14' Cable with Inline On/Off Switch	275.00
S2-20-LL	Two Leaf Barndoor	72.50
S2-30-LL	Replacement Reflector Shell	68.00

(See Lamp Listing below Set Lights)



SET AND BACKGROUND LIGHT

Heavy duty wash light for backgrounds, sets or curtains up to 9' in height. They work 4 1/2' from background service eliminating spill light on subject.

27001-BM	MINI SET 1000 with Integral 2-Leaf Barndoors, "C" Clamp and Receptacle	141.90
49141-BM	Safety Cable	8.80
27000-BM	MOTION PICTURE MODEL as above except with Stand Mounts, 25' Cable and Inline 15A On/Off Switch and Plug	141.90

RECOMMENDED LAMPS 120V DOUBLE ENDED

4 1/16" M.O.L. TUNGSTEN-HALOGEN QUARTZ					
Ansi Code	Volts	Watts	Temp.	Type	Price
FDN-TH	120	500	3200K	Frosted	31.00
EMD-TH	120	750	3200K	Frosted	40.00
FHM-TH	120	1000	3200K	Frosted	35.00
FCM-TH	120	1000	3200K	Clear	32.00

(Clear Lamp Used with Soft Light)



STAND FAMILY

This family of stands will handle most fixture mounting. There are many more stands available.

01510-WB	MICRO-FEATHERWEIGHT 18 1/2" extended 78"	53.00
----------	--	-------

Reprinted with permission from materials by © 1984, WALTER S. BREWER CO., INC.

Prices and Specifications Subject to Change Without Notice.



WALTER S. BREWER CO., INC.
4717 "F" South Mingo Road
Tulsa, OK 74146
(918) 665-6820

PORTABLE LIGHTING/ACCESSORIES

- 01512-WB ULTRA-FEATHERWEIGHT folded 25 1/4", extended 83 1/2" 67.00
- 01514-WB FEATHERWEIGHT folded 30", extended 103" 79.50
- 01516-WB MEDIUM WEIGHT folded 35 1/4", extended 127" 110.00



01517-WB Caster Adapters with Brakes for 01516-WB (Set of 3) 40.00

- 63006-BM STUDIO STAND folded 47", extended 142 1/2" 218.35
- 63003L-BM STUDIO STAND LOW folded 28", extended 64" 176.00



A must for placing the light beam exactly where you want it, placing the boom stand out of the picture. A light can easily be counter balanced equal to the weight of a 6" fresnel with accessories.

- 01540-BM BOOM STAND 555.00

GAFFER EQUIPMENT



18321/3-BM Two Position 3/4" Stand to Fixture Mount with 1/2 Yoke Bolt 12.75

- 49104-WB Safety Throat "C" Clamp with Hand Position Knob 19.80



63070-WB Gaffers Grip with 1/2" Safety Stud, Non-Marring 20.90



02731-WB Pantograph Stirrup 16.00

- 02734-WB Stirrup Pipe, two light position 10.00



SAND BAG

Used to weight stands for fixtures, boom, gobos and flags to assure stability and safety both on location and in the studio. These high quality lined sandbags can also be emptied and reloaded with ease.

- 07028-WB Single Bag—25 lbs. 55.00
- 07029-WB Saddle Bag—50 lbs. 75.00

PORTABLE DISTRIBUTION



CONNECTORS

All connectors are PHENELIC molded plastic, grounded and shipped with wire ends for the pin connectors. (All are grounded.)

- 04210-H 15A Parallel Blade (Fits Standard recept) Female 17.00
- 04211-H 15A Parallel Blade (Fits Standard recept) Male 11.00
- 04212-H 20A Parallel Blade, Female (Will accept 15A Male above) 18.00
- 04213-H 20A Parallel Blade, Male (cannot be used with 15A Female above) 11.50
- 04214-UC 20A Pin Connector, Female 6.25
- 04215-UC 20A Pin Connector, Male 6.25
- 04216-H 20A Twistlock, Female 20.00
- 04217-H 20A Twistlock, Male 13.00
- 04218-H 50A Twistlock, Female 53.00
- 04219-H 50A Twistlock, Male 41.50
- 04220-UC 60A Pin Connector, Female 22.50
- 04221-UC 60A Pin Connector, Male 22.50
- 04222-UC 100A Pin Connector Female 44.00
- 04223-UC 100A Pin Connector, Male 44.00



EXTENSION CABLE

- 25 FT. NUMBER 14/3 S.O. 1000 WATT
- 04030-WB Parallel Blade "U" Ground, 15A, 120V 60.00
- 04031-WB Grounded Pin Plug, 20A/120V 43.90
- 04032-WB Grounded Twist Lock, 20A, 120V 63.15
- 25 FT. NUMBER 12/3 S.O. 2000 WATT
- 04073-WB Parallel Blade "U" Ground, 20A, 120V 69.35
- 04074-WB Grounded Pin Plug, 20A/120V 53.25
- 04075-WB Grounded Twist Lock, 20A, 120V 72.35

- 50 FT. NUMBER 14/3 S.O. 1000 WATT
- 04033-WB Parallel Blade "U" Ground, 25A/120V 81.25
- 04034-WB Grounded Pin Plug, 20A/120V 65.10
- 04035-WB Grounded Twist Lock, 20A/120V 84.25
- 50 FT. NUMBER 12/3 S.O. 2000 WATT
- 04083-WB Parallel Blade "U" Ground, 20A/120V 99.75
- 04084-WB Grounded Pin Plug, 20A/120V 83.60
- 04085-WB Grounded Twist Lock, 20A/120V 102.75



PIGTAILS

- MALE TO FEMALE PIGTAIL 12/3 2000 WATT
- 04112-WB Male 15A/120V Parallel Blade "U" Ground to Female 20A/120V Grounded Pin Plug 29.20
- 04113-WB Male 15A/120V Parallel Blade "U" Ground to Female 20A/120V Grounded Twist Lock 46.75



PIGTAIL—TWO-FER

- MALE TO FEMALE 12/3 2000 WATT
- 04123-WB Male to Two Female 20A/120V Grounded Pin Plug 52.50
- 04124-WB Male to Two Female 20A/120V Grounded Twist Lock 92.35



PIGTAIL POWER BOXES

- MALE TO FEMALE 1000 WATT 15A/120V WATER RESISTANT APPROVED BOX.
- 04411-WB Parallel Blade "U" to Duplex 82.50
- 04412-WB Parallel Blade "U" to Quad 100.00
- 04413-WB Parallel Blade "U" to Duplex, Individually Switched-Quad Box 120.00

Reprinted with permission from materials by © 1984, WALTER S. BREWER CO., INC.
Prices and Specifications Subject to Change Without Notice.



WALTER S. BREWER CO., INC.
 4717 "F" South Mingo Road
 Tulsa, OK 74146
 (918) 665-6820

MALE TO FEMALE 2000 WATT 20A.120V WATER RESISTANT APPROVED BOX.

- 04418-WB Parallel Blade "U" to Duplex 84.00
- 04419-WB Parallel Blade "U" to Quad Box 102.00
- 04420-WB Parallel Blade "U" to Duplex Individually Switched-Quad Box 121.50
- 04423-WB Pin Plug to Duplex 79.00
- 04424-WB Pin Plug to Quad 97.00
- 04425-WB Pin Plug to Duplex, Individually Switched-Quad Box 116.00
- 04428-WB Twist Lock to Duplex 88.00
- 04429-WB Twist Lock to Quad 104.75
- 04430-WB Twist Lock to Duplex Individually Switched-Quad Box 103.75



PIGTAIL INLINE DIMMER 2.4KW

- 04433-EC Parallel Blade "U" 285.00
- 04434-EC Pin Plug 285.00
- 04435-EC Twist Lock 285.00
- 04437-EC Remote Control Unit 71.00



MAIN ENTRY POWER CONTROL BOX

Main power entry with CAM-LOK connectors to 50 amp 240 volt, 3 phase/4 wire main breaker distributed to eight 20 amp breaker/switches protecting two each 20 amp recessed plugs all housed in an approved enclosure. Box is constructed from aluminum. 150 usable amps at 125V

- 04439-WB Main Entry Power Control Box 2,300.00

Note: All Portable Distribution exposed cabling is of S.O. Standards (resists oil, water, etc.). Other wire types and configurations may be Custom Fabricated upon request. (All grounded wiring.)

GAFFER SUPPLIES

THORN LAMPS*

Thorn, an English corporation, is one of the world's largest manufacturers of quartz lamps. The CYX, one of the most used lamps in the



industry, has a stronger base than those of competitors . . . made from super strong glass mica plus a high-temperature metal retaining clip assures maximum strength from the base to the quartz envelope. Lamp test show they are 50% quieter and last up to 60% longer at 3200° Kelvin, 125 volt.

QUARTZ LAMPS *Indicates Thorn Lamps Considerable Savings

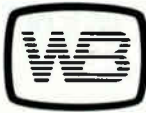
Ansi Code	Case Qty.	Watts	Color Temp.	Price
BAH	24	300	3200K	4.17
BBA	24	250	3400K	3.28
BCA	24	250	4800K	3.62
BEJ	24	200	3075K	15.57
BEP	24	300	3400K	9.26
BFA	24	375	3400K	14.87
BFK/BFL	24	750	3050K	39.79
*BHC/DYS/				
DYV	24	600	3200K	28.00
BRH	12	1000	3350K	47.81
BSC	12	750	3200K	79.92
BSD	12	750	3000K	75.19
*BTL	12	500	3050K	47.00
*BTM	12	500	3200K	47.00
*BTN	12	750	3050K	47.00
*BTP	12	750	3200K	47.00
*BTR	12	1000	3200K	52.50
BVR	24	30	2860K	9.28
*BVT	6	1000	3050K	72.00
*BVV	6	1000	3200K	72.00
*BVW	12	2000	3200K	88.00
*BWA	12	1000	3200K	120.00
*BWF	120	2000	3200K	130.00
*BWG	12	2000	3200K	140.00
BWL	6	2000	3200K	(Disc.)
BWM	6	750	3200K	82.73
BWN	6	1000	3200K	90.03
CAJ/CAC	24	50	2800K	11.27
CAW/CAX	24	50	2050K	7.65
CBJ/CBC	24	75	2950K	14.17
CBX/CBS	24	75	2950K	13.30
CCM/CHD	24	200	3150K	18.38
CDS/CDX	24	100	2975K	14.21
CEL	24	120	3000K	7.62
CEM	24	120	3000K	9.81
CEW/CFC	24	150	3100K	13.77
CHK	24	150	2850K	8.66
CLS/CSG	24	300	3150K	14.21
CLX/CMB	24	300	3150K	18.15
CMV/CMT	24	300	3100K	23.17
*CWZ	12	1500	3200K	96.00
*CXZ	8	1500	3200K	115.00
*CYV	12	1000	3200K	92.00
*CYX	12	2000	3200K	125.00
DAN	24	200	3400K	9.91
DDCT ("XL")	6	2000	3050K	146.43
DEB	24	500	2850K	53.93
DGH	24	750	3050K	46.81
DMX	24	500	3200K	25.31
DNS	24	500	3100K	62.53
DNT	24	750	3100K	56.33
DNV	241	1000	3100K	58.26
DNW	24	500	3050K	56.73
*DPY	1	5000	3200K	535.00
DCR/CRB	24	1000	3280K	33.72
DRS	24	1000	3280K	28.87
DSE/DKZ	6	1000	3050K	56.43
DSF/DKX	6	1500	3200K	65.81
*DTA	12	1500	3200K	90.00
*DTY	1	10000	3200K	995.00
DVV	12	1500	3200K	(Disc.)
DVY	12	650	3200K	30.00
DWC	24	150	2800K	5.32
DWD	24	300	2800K	8.81
DWE	12	650	3200K	42.99
DWT	12	1000	3000K	89.04
*DWY	12	650	3400K	26.00
DWZ	12	375	2950K	31.34
DXC	24	500	3400K	11.17
DXH	12	375	3200K	9.36
DXK	12	650	3400K	37.94
DXM	12	250	3400K	47.62
*DXN	10	1000	3400K	37.00
DXR/DXS	24	1000	3400K	17.92
DXT	24	1000	4800K	20.34
DXV	10	800	3200K	25.00
*DXW	10	1000	3200K	38.00
DXX	12	800	3200K	28.77

GAFFER SUPPLIES

DYA	12	1000	3200K	48.50
DYG	24	250	3400K	23.18
DYH	24	600	3200K	29.21
*DYS/DYV/				
BHC	24	600	3200K	28.00
BZD	12	1000	3200K	54.55
EAL	24	500	3200K	14.21
EBR	24	375	3400K	13.34
EBV	24	500	3400K	3.38
EBW	24	500	4800K	4.82
ECT	24	500	3200K	3.83
EEX	12	300	3200K	39.45
EFX	12	500	3000K	70.60
EGC/EGD	12	500	3200K	62.74
*EGE	50	500	3000K	58.00
EGF	12	750	3200K	70.37
*EGG	50	750	3000K	66.00
*EGJ	50	1000	3200K	68.00
*EGK	12	1000	3200K	70.00
*EGN	10	500	3200K	50.00
*EGR	10	750	3200K	70.00
*EGT	10	1000	3200K	75.00
*EHC/EHB	12	500	3200K	62.00
*EHD	50	500	3000K	52.00
EHF	12	750	3200K	58.00
*EHG	50	750	3000K	58.00
*EHM	12	300	3000K	29.00
EHP	12	300	3000K	43.25
EHR	12	400	3000K	38.18
EHT	12	250	3000K	33.07
EHV	12	325	3000K	33.97
*EHZ	12	300	3000K	33.00
*EJG	10	750	3200K	40.00
EKD	24	650	3400K	30.31
EKT	12	150	3400K	31.72
*EMD	10	750	3200K	40.00
ESL	12	150	3000K	34.34
ESM	12	250	3000K	36.25
ESN	12	100	3000K	36.89
ESP	12	150	3000K	34.34
ESR	12	100	3000K	36.89
ESS	12	250	3000K	33.07
ETB	12	250	2900K	36.25
ETC	12	150	3000K	33.07
ETD	12	100	3000K	39.43
ETF	12	150	3200K	35.82
ETG	12	150	3000K	33.07
ETH	12	150	2900K	35.82
EVR	12	500	3000K	34.62
EYL	12	100	3200K	13.68
EYT	12	650	3050K	47.33
EYV	12	500	3000K	38.12
EYW	12	100	3000K	33.48
EYX	12	500	3000K	38.12
*FAD	10	650	3200K	22.00
FAE	12	550	3200K	11.91
FAV	12	100	3400K	35.55
FAY	12	650	5000K	65.38
FBD/FBG	24	500	3200K	34.40
FBE	12	650	5000K	87.42
FBT	12	150	3400K	38.74
FBV	12	250	3400K	42.11
FBW	12	350	3400K	45.79
*FBX	10	650	3200K	27.00
*FBY	12	1000	3200K	39.00
FBZ	12	1000	3400K	41.02
*FCA	10	650	3400K	26.00
FCB	12	600	3200K	28.43
*FCL	12	500	3000K	29.00
*FCM	10	1000	3200K	32.00
*FCV	50	1000	3200K	64.00
FCX	12	650	3200K	40.58
*FCZ	12	500	3000K	33.00
FDA	12	400	3100K	34.25
FDB	12	1500	3200K	65.81
*FDF	10	500	3200K	32.00
*FDN	10	500	3200K	31.00
FDT	12	100	3300K	14.21
*FEL	50	1000	3200K	52.00
FEP	12	1000	3200K	57.40
FER	12	1000	3200K	68.46
FEV	12	200	3200K	28.73
FEX	12	1000	3200K	117.64
*FEY	12	2000	3200K	110.00
FFN	6	1000	3200K	85.15
FFP	6	1000	3200K	85.15
FFR	6	1000	3200K	85.15
FFS	6	1000	3200K	85.15
*FFT	12	1000	3200K	60.55
FFW	12	2000	3200K	70.60

Reprinted with permission from materials by © 1984, WALTER S. BREWER CO., INC.

Prices and Specifications Subject to Change Without Notice.



WALTER S. BREWER CO., INC.
4717 "F" South Mingo Road
Tulsa, OK 74146
(918) 665-6820

FGT	12	1500	3200K	85.61
FGV	12	1000	3200K	(Disc.)
FGW	24	150	3200K	24.67
*FHM	10	1000	3200K	35.00
1500-Q/CL/48	6	1500	3200K	142.72

HMI LAMPS

BA575	10	575	5600K	355.00
BA120	10	1200	5600K	500.00
BA120/32	2	1200	3200K	550.00
BA2500	1	2500	5600K	870.00
BA4000	1	4000	5600K	1100.00
BB1200-PAR/64	1200	5600K		550.00

*—THORN LAMPS
UNMARKED LAMPS ARE GENERAL ELECTRIC OR SYLVANIA



ROSCOLUX

The most durable color filter. Available in 103 colors and diffusers. Sold under the trade name "Supergel" overseas.

*Sheets: 20" x 24"

1027-R	Primary Red	4.25
1080-R	Primary Blue	4.25
1091-R	Primary Green	4.25

*Rolls: 24" x 50"

1027R-R	Primary Red	109.50
1080R-R	Primary Blue	109.50
1091R-R	Primary Green	109.50
8807-R	Swatch Book	2.50

1001	Lt. Bastard Amber	1051	Surprise Pink
1002	Bastard Amber	1052	Light Lavender
1003	Dark Bast. Amber	1053	Pale Lavender
1004	Med. Bast. Amber	1054	Special Lav.
1006	No Color Straw	1055	Lilac
1007	Pale Yellow	1057A	Lavender
1008	Pale Gold	1058A	Deep Lav.
1009	Pale Amber Gold	1059	Indigo
1010	Medium Yellow	1060	No Color Blue
1011	Light Straw	1061	Mist Blue
1012	Straw	1062	Booster Blue
1014	Medium Straw	1063	Pale Blue
1015	Deep Straw	1064	Light Steel Blue
1016	Light Amber	1065	Daylight Blue
1017	Light Flame	1067	Light Sky Blue
1018	Flame	1068	Sky Blue
1019	Fire	1069	Brilliant Blue
1020	Medium Amber	1070	Nile Blue
1021	Golden Amber	1071	Sea Blue
1022	Deep Amber	1072	Azure Blue
1023	Orange	1073	Peacock Blue
1024	Scarlet	1076	Lt. Green Blue
1025	Orange Red	1077	Green Blue
1026	Light Red	1078	Trudy Blue
1027	Medium Red	1079	Bright Blue
1030	Lt. Salmon Pink	1080	Primary Blue
1032	Salmon Pink	1081	Urban Blue
1033	No Color Pink	1082	Surprise Blue
1034	Flesh Pink	1083	Medium Blue
1035A	Light Pink	1085	Deep Blue
1036	Medium Pink	1086A	Pea Green
1037	Pale Rose Pink	1087	Pale Yel. Green
1038	Light Rose	1088	Light Green
1040	Light Salmon	1089	Moss Green
1041	Salmon	1090	Dark Yel. Green
1042	Deep Salmon	1091	Primary Green
1044	Middle Rose	1092	Turquoise
1045	Rose	1093	Blue Green
1046	Magenta	1094	Kelly Green
1047	Lt. Rose Purple	1095	Med. Blue Grn.
1048	Rose Purple	1097	Light Grey
1049	Medium Purple	1099	Chocolate
1050A	Mauve		

DIFFUSION MATERIAL

3006-R	Tough Spun, 4 1/2' x 22' Roll	80.00
03110-WB	Tough Spun, 4 1/2' x 5 1/2' Roll	25.00

PAINT

5710-R	Chroma Key Blue (gal.)	30.50
5711-R	Chroma Key Green (gal.)	30.50

TAPE

(2" x 60 YDS—24 Rolls Per Case)

398BL-WB	Black (case)	141.84
398GR-WB	Grey (case)	115.00
398GRY-WB	Grey (roll)	6.20
398CL-WB	Colors, Red, Green, Blue, Gold Yellow, White, and Black, (roll)	8.00



LIGHT METERS

09010-WB	G.E. Incident Footcandle Meter	75.00
09011-WB	Sekonic Incident Light Meter (reads in footcandle) Complete Kit	137.00
09012-WB	Gossen Sixicolor Color Meter (reads 2600 to 20,000K) indicating proper color	265.00

CURTAINS, TRACK & ACCESSORIES



CURTAINS—CYC

Cyclorama curtains are seamless up to 125 feet in length and 28 feet in height, the cloth is

STUDIO EQUIPMENT

inspected before fabrication to assure against weaving flaws and sewn to our rigid specifications. These cycloramas are available in three colors—white, gray, and powder blue/green.

Seamless Lino-Weave

This curtain has a 4" heavy duty binding at the top with spring harness snaps on one foot centers. The 2 1/4" bottom hem has a #90 lead tape weight sewn 1" above the bottom of the hem in a separate muslin pocket. The side hems have a 2" heavy duty binding with eyelets of 2" centers for tauting the curtain. Tow cord with handle is provided for easy transporting of curtain. The curtain is flame-proofed and flawless (as per the standards of the mills and converters) and is fabricated to the highest quality workmanship.

	Sq. Ft. (14'9" under)	Sq. Ft. (14'10" over)	
07005-WB	White	3.25	4.25
07006-WB	CBS Grey	3.40	4.50
07007-WB	Powder Blue/Green	3.35	4.35
07008-WB	Limbo Black	3.60	4.70

Seamless Scrim

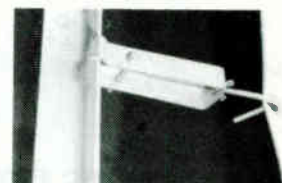
07038-WB	White	2.20	2.95
07039-WB	Black	2.30	3.20

TAUTING POLE

Tauting poles are used generally with the cyc curtain to assure proper horizontal tension on the cyclorama. They stand vertical at both ends of the cyc with adjustable claws attached through the vertical eyelet on the curtain. The base is weighted with a sandbag. The curtain is then adjusted to a proper tautness by the pair of poles.

07013-WB	Tauting Pole Base (one Left and one Right Hand)	45.00
07014-WB	(8') Tauting Pole with Guy Wire and Turnbuckle	52.00
07015-WB	(9') Tauting Pole with Guy Wire and Turnbuckle	58.50
07016-WB	(10') Tauting Pole with Guy Wire and Turnbuckle	65.00
07017-WB	(11') Tauting Pole with Guy Wire and Turnbuckle	71.50
07018-WB	(12') Tauting Pole with Guy Wire and Turnbuckle	78.00
07019-WB	(13') Tauting Pole with Guy Wire and Turnbuckle	84.50
07020-WB	(14') Tauting Pole with Guy Wire and Turnbuckle	91.00
07021-WB	(15') Tauting Pole with Guy Wire and Turnbuckle	97.50
07022-WB	(16') Tauting Pole with Guy Wire and Turnbuckle	104.00
07023-WB	(17') Tauting Pole with Guy Wire and Turnbuckle	110.50
07024-WB	(18') Tauting Pole with Guy Wire and Turnbuckle	117.00
07025-WB	(19') Tauting Pole with Guy Wire and Turnbuckle	123.50
07026-WB	(20') Tauting Pole with Guy Wire and Turnbuckle	130.00
07027-WB	(21') Tauting Pole with Guy Wire and Turnbuckle	136.50

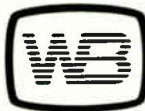
EYELET CLAWS



07031-WB	Eyelet Claws to Attach Tauting Pole to Cyc Curtain (2 ft. centers required)	10.00
----------	---	-------

Reprinted with permission from materials by © 1984, WALTER S. BREWER CO., INC.

Prices and Specifications Subject to Change Without Notice.



WALTER S. BREWER CO., INC.
4717 "F" South Mingo Road
Tulsa, OK 74146
(918) 665-6820

SAND BAG

07029-WB Sand Bag, 50 lb. size, non-spill saddle bag type made of heavy-duty duck with inner liner and Velcro fasteners to hold base and pole in position **75.00**

CURTAINS—BACKGROUND

SPECTROCOLOR II (TM)

The background curtains are also fabricated to rigid specifications and come in almost any color. Usually it is recommended that the first background curtain be chroma-key blue. This, then permits chroma-keying and when not illuminated may be used to produce a limbo effect.

	(Primary)	Sq. Ft.
07058-WB	Red	2.20
07059-WB	Green	2.20
07060-WB	Chroma-Key Blue	2.20
	(Other)	
07061-WB	Antique Gold	2.20
07062-WB	Silver Haze	2.20
07063-WB	Limbo Black	2.20

VELCRO FASTENER

07068-WB	8' Velcro Fastener	20.00
07069-WB	9' Velcro Fastener	22.50
07070-WB	10' Velcro Fastener	25.00
07071-WB	11' Velcro Fastener	27.50
07072-WB	12' Velcro Fastener	30.00
07073-WB	13' Velcro Fastener	32.50
07074-WB	14' Velcro Fastener	35.00
07075-WB	15' Velcro Fastener	37.50
07076-WB	16' Velcro Fastener	40.00
07077-WB	17' Velcro Fastener	42.50
07078-WB	18' Velcro Fastener	45.00
07079-WB	19' Velcro Fastener	47.50
07080-WB	20' Velcro Fastener	50.00
07081-WB	21' Velcro Fastener	52.50

SWATCH BOOK

SWATCH BOOK
2.50



07083-WB SWATCH BOOK
2.50

CYC GROUND ROW

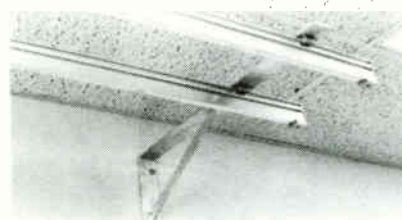
Made of fiberglass for durability and to allow compound curvatures. Color of the ground row matches the white cyclorama curtain. The ground row may be painted to match any color background curtain by using tempa paint and washing with water when production is complete. Hides all cyclorama fixtures. When using top cyc lighting, the ground row is tinted with gels. Works 5 ft. from cyc curtain.

CYC LIGHT GROUND ROW

07085-WB	4 1/2 ft. radius corner section	450.00
07086-WB	8 ft. straight section	475.00

CYC CURTAIN GROUND ROW

07088-WB	9 ft. radius corner section	425.00
07089-WB	8 ft. straight section	375.00



TRACK AND HANGERS

Track and accessories have been selected to assure a perfect installation. Curtain carriers are supplied with the proper trim chain ready to attach the cyc or background curtains. The dual track method is recommended. Track switching can be purchased upon installation or can be installed at a later date. A complete package, ready to install, includes preformed corners, assuring proper diameter for accurate corner illumination and ease of curtain travel.

SUSPENSION

It is most important that the curtains be suspended properly to assure even travel at the studio floor and stability of the track system. Wall brackets are available in 6" increments from the studio wall. Suspension brackets are used where wall mounting is not possible. All brackets assure proper spacing between the tracks. Grid mounted track hangers are available for studios where the grid pipe extends to the studio wall. Hardware is available for the mounting to any type of wall, including hollow.

07110-WB	5 ft. section of straight cyc/background	12.00
07111-WB	10 ft. section of straight cyc/background	24.00
07112-WB	15 ft. section of straight cyc/background	36.00
07113-WB	20 ft. section of straight cyc/background	48.00
07114-WB	9 ft. radius, 1/4 circle cyc/background corner track	40.00
07115-WB	9 ft. radius, crating charge	30.00
07118-WB	4 1/2' radius, 1/4 circle cyc/background corner track	22.50
07119-WB	4 1/2' radius, crating charge	16.00
07122-WB	Track Switch, Right Hand	400.00
07123-WB	Track Switch, Left Hand	400.00
07124-WB	Inter Track Switch Assembly	800.00
07125-WB	Switching Pole	85.00
07128-WB	Nylon Wheel Carrier with Bumper Assembly	6.00
07129-WB	Hanging Clamp	1.73
07130-WB	Ceiling Clamp	6.90
07131-WB	Splicing Clamp	5.50
07132-WB	Carrier Stop	3.75
07138-WB	4" Single Track Wall Bracket Assembly	16.50
07141-WB	8" Double Track Suspension Bracket Assembly	15.00
07142-WB	12" Double Track Wall Bracket Assembly	23.50
07143-WB	18" Double Track Wall Bracket Assembly	35.00
07144-WB	24" Double Track Wall Bracket Assembly	35.50

STUDIO EQUIPMENT

07145-WB	30" Double Track Wall Bracket Assembly	38.50
07146-WB	36" Double Track Wall Bracket Assembly	40.50
07147-WB	42" Double Track Wall Bracket Assembly	42.50
07153-WB	24" Double Track Corner Wall Bracket Assembly	37.00
07154-WB	30" Double Track Corner Wall Bracket Assembly	40.00
07155-WB	36" Double Track Corner Wall Bracket Assembly	43.00

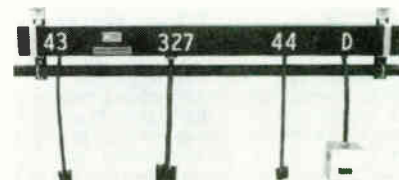
TRUSS OR CEILING SUSPENSION

7161-WB	Beam Attachment Assembly for 8" Suspension Bracket	18.50
07162-WB	Hanging Clamp Assembly for Single Track Suspension (each includes 18" x 3/8" all-thread rod)	10.75

GRID PIPE SUSPENSION

07163-WB	Track Suspension Bracket Top (1 1/2" I.D. to Track)	8.00
07164-WB	Track Suspension Bracket Top Corner Right Hand (1 1/2" I.D. Pipe)	8.00
07165-WB	Track Suspension Bracket Top Corner Left Hand (1 1/2" I.D. Pipe)	8.00
07167-WB	Track Suspension Bracket Bottom (1 1/2" I.D. to Track)	7.50
07168-WB	Track Suspension Bracket Bottom Corner Right Hand (1 1/2" I.D. Pipe to Track)	7.50
07169-WB	Track Suspension Bracket Bottom Corner Left Hand (1 1/2" I.D. Pipe to Track)	7.50
07172-WB	Accessory Suspension Bracket (with 3/8" Attachment Hole)	5.50
07171-WB	Accessory Suspension Bracket (with 3/8" Threaded Stud)	5.00
07170-WB	Accessory Suspension Bracket (with 3/8" Threaded Socket)	5.25

STUDIO DISTRIBUTION



Rigid, 16 gauge, one-piece 3/2" x 4 1/2" steel construction of desired length, with internal wiring to meet all electrical codes. Available with mounting hardware for any possible situation, standard 18" or 24" pigtail with connector of your choice. A unique four circuit cyc box for powering your cyc lights. Unit available completely assembled including 1 1/2" I.D. pipe (not included in price below) ready to hang... saving time and cost at installation. Comes primed and painted with 3" permanent decal assuring circuit identification from the control console.

Reprinted with permission from materials by © 1984, WALTER S. BREWER CO., INC.

Prices and Specifications Subject to Change Without Notice.



WALTER S. BREWER CO., INC.
4717 "F" South Mingo Road
Tulsa, OK 74146
(918) 665-6820

GRID CONNECTOR STRIPS

05015-WB	10 ft. Strip, 4 20A* Pigtails	395.00
05018-WB	13 ft. Strip, 5 20A* Pigtails	487.50
05021-WB	16 ft. Strip, 6 20A* Pigtails	602.00

Other Configurations Available
Price on Application

*Add \$13.75 per Circuit for 20 Amp NEMA Twist Lock.

Note: Price for Connector Strip Bracket Assemblies, Single Pipe are included in price of Connector Strip and are completely assembled ready to install. They are shipped in a wooden crate, price included.

Fabricated to the high standards of the above mentioned connector strip with desired number of circuits and ampacity. Ready for wall or pipe mounting.



WALL BOXES

05310-WB	Two Pigtails, 2-20A	102.00
05315-WB	Three Pigtails, 2-20A, 1-50A	150.00
05311-WB	Three Pigtails, 3-20A	138.00

Other Configurations Available
Price on Application

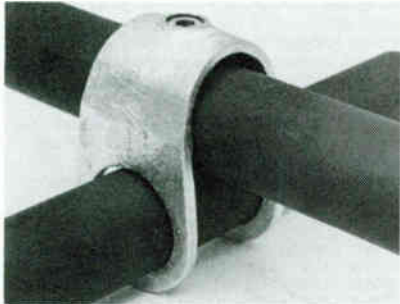
GRID HARDWARE

All hardware may be purchased to suspend the complete lighting grid system. Included would be load channel, for ceiling mounting positions, all thread, required nuts and bolts, beam clamps, concrete anchors, grid hardware and pipe cut to length.

05107-WB	LIGHT PIPE	2.25/ft.
----------	------------	----------

The heart of good lighting is the grid system. It is very important to use 1 1/2" I.D. light pipe.

05194-WB	LIGHT PIPE Handling Charge	.10/ft.
----------	----------------------------	---------



05109-WB	GRID LOCK	10.00
----------	-----------	-------

Used to fasten perpendicular 1 1/2" I.D. light pipe together when constructing a grid. Also used for moveable light pipe to place a light at any position in the grid. The grid lock will not let the pipe torque.

05113-WB	Beam clamp 3/8", attaches "Load Channel" to most types of angle iron, such as truss deck beams	4.50
----------	--	------

05114-WB	Bolt Assembly 3/8", attaches "Load Channel" (as above) when slots are provided by truss deck beams (money savings)	.70
05115-WB	Sleeve Anchor 3/8" (for low PSI density concrete ceiling and floors)	.55
05116-WB	Wedge Anchor 3/8" (for high PSI density concrete ceiling and floors)	1.25
05117-WB	Toggle bolt 3/8" assembly for hollow wall	1.00
05118-WB	Load Channel, slotted sections, 20' x 3/4" x 1-5/8", 12 gauge	76.00
05119-WB	All Thread Suspension Rod, 3/8" x 12'	7.00
05120-WB	Locking Spring Nut	1.25
05121-WB	Square Locking Washer	1.20
05122-WB	Hex Head Nut, 3/8"	.10
05123-WB	Flat Washer, 3/8"	.05
05124-WB	Lock Washer, 3/8"	.05
05125-WB	Connector Strip Bracket Assembly, Single Pipe	22.50
05126-WB	Connector Strip Bracket Assembly, Double Pipe	28.00
05191-WB	Corner 90 degree Cyc Light Pipe, 4 1/2" radius, 1 1/2" I.D. Slip Couplings—both ends	90.00
05192-WB	Pipe Cuts, 1 1/2" I.D.	1.75
05193-WB	Pipe Threads, 1 1/2" I.D.	5.00
05195-WB	Light Pipe Coupling	3.00
05197-WB	Moveable Light Pipe, 6' x 1 1/2" I.D.	15.00
05109-WB	Grid Locks, 1 1/2" x 1 1/2" for Moveable Light Pipe	10.00

STUDIO LADDERS



Designed to meet or exceed all safety standards. These ladders are manufactured to work to grid height providing a 6 ft. reach from ladder platform to grid with a 30" safety rail. The ladder is fabricated from 1" square tubing with all joints welded. Gaffers storage chest and basket for extension cables and other frequently used studio equipment are recommended. The large casters are rubber with toe touch locking. A second ladder is recommended for larger studios. Finished with a prime coat and two coats of durable enamel.

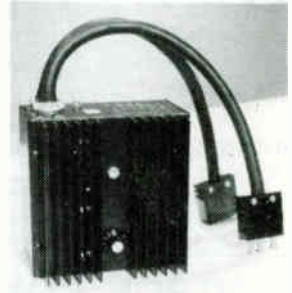
09210-WB	Studio Ladder for 8' Grid	495.00
09211-WB	Studio Ladder for 9' Grid	550.00
09212-WB	Studio Ladder for 10' Grid	640.00
09213-WB	Studio Ladder for 11' Grid	725.00

STUDIO EQUIPMENT/CONTROL SYSTEMS

09214-WB	Studio Ladder for 12' Grid	825.00
09215-WB	Studio Ladder for 13' Grid	880.00
09216-WB	Studio Ladder for 14' Grid	940.00
09217-WB	Studio Ladder for 15' Grid	995.00
09218-WB	Studio Ladder for 16' Grid	1,025.00
09219-WB	Studio Ladder for 17' Grid	1,100.00
09220-WB	Studio Ladder for 18' Grid	1,200.00
09221-WB	Studio Ladder for 19' Grid	1,250.00
09222-WB	Studio Ladder for 20' Grid	1,300.00
09228-WB	Gaffers Basket	65.00
09229-WB	Gaffers Tool Box, Locking	275.00

LIGHTING CONTROL SYSTEM

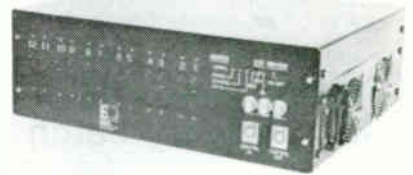
DIMMER BANKS—PORTABLE



ALPHA DIM TO INCLUDE: (For Portable/Location Use)

Alpha Dim 2.4 kW portable dimmer with integral potentiometer is used to dim 2-1000 or 1-2000W fixtures. It is used in small studios or on location. A 10' remote control cable can be purchased.

06005-EC	Single 20 Amp Dimmer with Input/Output 18" Pigtails and Plugs. Potentiometer included in Dimmer Enclosure	285.00
06006-EC	10 ft. Low Voltage Cable with Remote Potentiometer	71.00



PLAYMATE II PORTABLE DIMMER PACK TO INCLUDE: (For Portable/Location or Small Studio Use)

Compact and flexible, Playmate can be purchased with (12) 20 amp, (6) 50 amp, and (3) 100 amp dimmers per each portable pack. Recepticals on dimmer outputs are (2) per 20 amp dimmer and (1) per 30 amp and 100 amp dimmer. Each dimmer has a single properly sized protective breaker. The celebrity controller is used with the Playmate dimmer packs.

41412-EC	(12) 20 Amp Dimmers	3200.00
41408-EC	(6) 50 Amp Dimmers	3600.00
41403-EC	(3) 100 Amp Dimmers	2267.00
04-1400-00-EC	Daisy Chain 18"	66.65

Recepticle Code (Place after Cat. No.)
01-EC—Terminal Output

02-EC-PBG	(NEMA 520) 2 KW Dimmers Only Two Recepticals Per Dimmer
03-EC-UTLG	—Twist Lock (Not in 12 KW)
06-EC	—PPG Grounded Pin Plug

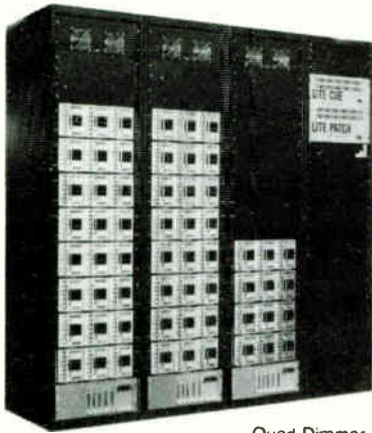
Reprinted with permission from materials by © 1984, WALTER S. BREWER CO., INC.

Prices and Specifications Subject to Change Without Notice.



WALTER S. BREWER CO., INC.
 4717 "F" South Mingo Road
 Tulsa, OK 74146
 (918) 665-6820

DIMMER BANKS Studio



Quad Dimmer
Modular Bank

MODULAR FLOOR MOUNT CABINET

Available in four heights (42", 59", 77", 85") DCF Cabinets provide independent ventilation for each dimmer, thus preventing cross-temperature effect

and increasing dimmer life. Standard 19" EIA Cabinets utilize tri-chassis dimmer racks and other components for complete system. Dimmers are available in 10, 20, 35, 60 and 100 amp ratings. Contractor access is assured by removable panels on all faces.

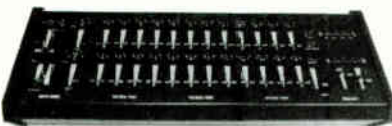
Studio dimmer racks are modular to simplify installation and provide customized economy. This system is complete with needed dimmer plug-in modules, wiring, breakers and all other components ready to be set in its permanent location and "hard-wired."

NOTE: SUPPRESSION OF RADIO FREQUENCY INTERFERENCE IN DIMMERS

SCR dimmers utilize rapid switching of electrical current for effective dimming. This rapid switching creates radio frequency interference (RFI) that causes "noise" problems in audio systems. All well-designed dimmers contain choke coils to filter most of the RFI. There is confusion, however, about the best method to describe such filtering. A common approach is to quote total rise time, which does not consider spikes. A more accurate approach is that proposed by Motorola Semiconductor Products in their article AN-295 on RFI suppression, wherein the rate of current rise is recommended to be less than 0.35 amps (350 milliamps) per microsecond. All Electro Controls' dimmers meet or exceed these recommendations.

Custom Built—Price on Application

CONTROL CONSOLES Manual



PLEXUS 200 PT PRESET CONSOLE TO INCLUDE:

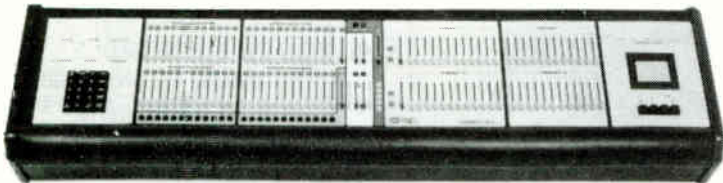
(For use with Custom Studio Dimmer Banks when used with (48) Dimmers or Less and an Electronic Patch is Not Desired.)

Compact and lightweight, PT Panels are ideal where space and weight are at a premium but where control capability cannot be compromised. Available

in single scene (PT 100) or two-scene (PT 200) preset, the Master Modules feature Grand and Independent Masters, A and B Scene Masters and on two-scene versions, manual or timed Split Fader. With sixteen 60mm (2 3/8") controllers on each Preset Module, the single scene version contains sixteen channels per module and the two-scene version contains eight channels per module. Non-dim modules are available. Control Power Supply is located in a dimmer cabinet. Control Panel can be ordered for hard wiring or with 52-conductor receptacle(s).

6200-16-EC (16) Channel, 2 Scene Preset	2480.00
6200-24-EC (24) Channel, 2 Scene Preset	2952.00
6200-32-EC (32) Channel, 2 Scene Preset	3439.75
6200-40-EC (40) Channel, 2 Scene Preset	3897.00
6200-48-EC (48) Channel, 2 Scene Preset	4368.00
6201-99-EC Timed Split Fader	304.00
6156-01-EC Wall Plug-In Box	117.00
2280-00-EC Console Stand w/ casters	962.80

CONTROL CONSOLES Manual/Memory/Patch



CELEBRITY

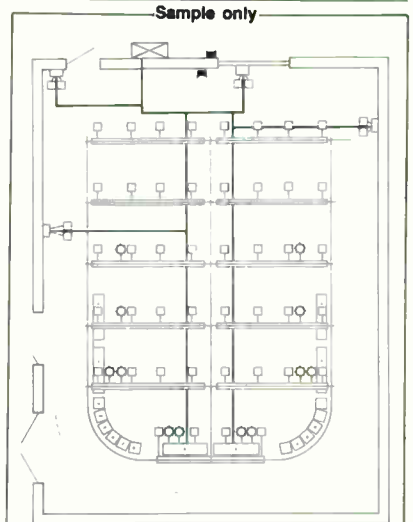
(For use with Custom Studio Dimmer Banks and the Playmate II Portable Dimmer Pack)

Modular celebrity comes in over 100 different models; in single or two-tiered designs. (There's one perfect for you.) Either 24 or 48 celebrity Scene Masters can be configured with 12, 24, 36 or 48 control channels, and with patch, celebrity controls up to 512 dimmers.

00-7700-10-EC	Celebrity Control Base Module Console with 24 Scenes x 12 Channels, Vinyl Cover, Operators Light and 25' Cable	2300.00
01-7700-01-EC	Single Tier or Double Tier, Castered Console Stand	900.00
01-7720-00-EC	24 Scene Master Expansion Module	670.00
01-7730-00-EC	12 Channel Expansion Module	700.00
01-7740-00-EC	Proportional Patch Module	1200.00
01-7750-00-EC	Tape Module, Plus (10) Tapes	1050.00
01-7760-00-EC	Special Effects Module	934.00
01-7770-00-EC	Radio Remote Control Unit	2480.00
01-7790-40-EC	Blank Plates	36.00
01-7791-10-EC	Wall Plug-In Box	63.00

CONTROL SYSTEMS

STUDIO PACKAGES



30' x 40' TELEVISION STUDIO LAYOUT
14' GRID HEIGHT

BILL OF MATERIALS

KEY AND BACK LIGHTS	30 1000 Watt 6" Sweep Focus Fresnel	18 2000 Watt 10" Focusing Fresnel	BASE AND FILL LIGHTS	10 1000/2000 Watt 14" Screw Focus Scoop	5 1500 Watt Focusing Broad	2 1000/4000 Watt Featherlite Super Spotlight	16 Floor Adjustable Telescoping Hanger	CYCLOPAMA, SET AND BACKGROUND LIGHTS	12 1000 Watt Two Light Two Circuit Cyc Light	6 1500 Watt Four Light Four Circuit Cyc Light	SPECIAL LIGHTS	2 1000 Watt 6" x 9" Ellipsoidal	1 Porta Kri 4000	3 Medium Duty High Riser Stand	2 Heavy Duty Low Riser Stand	6 Extension Cable (225')	3 Male-Female Pigtail Adapter	3 Power Box	3 Inline 1000 Watt Dimmer Gaffers Tape, Diffusion Material, Gel Primaries	ELECTRICAL DISTRIBUTION	11 Connector Strips (100') with 44 - 20 Amp and 12 - Four Light Cyc Pigtail Receptacles	4 Wall Boxes with 8 - 20 Amp Pigtail Receptacles	LIGHTING GRID	203 feet 1 1/2" I.D. steel light pipe with beam clamps, load clamps, lead channel, grid locks, bracket assemblies and other hardware as required for complete grid installation	DIMMING EQUIPMENT	95 20 Amp 0D Dimmers with SCR's, Corrosional RFI filters and System Analysis Indicators	LIGHTING CONTROL	1 24 Channel Two Scene Preset Pld Board with 98 x 24 low voltage patch	2 Wall Mount Control Receptacles	CYCLOPAMA AND CURTAINS	1 50' White Lino-weave 1 1/2" curtain	2 20' Chroma Key Blue Background 1 1/2" curtain	140 feet Curtain Track with 8 corners	SAFFER'S EQUIPMENT	1 Studio Ladder with Basket and Locking Tool Box	2 Footcandle Meter
----------------------------	-------------------------------------	-----------------------------------	-----------------------------	---	----------------------------	--	--	---	--	---	-----------------------	---------------------------------	------------------	--------------------------------	------------------------------	--------------------------	-------------------------------	-------------	---	--------------------------------	---	--	----------------------	---	--------------------------	---	-------------------------	--	----------------------------------	-------------------------------	---------------------------------------	---	---------------------------------------	---------------------------	--	--------------------

Studio lighting packages are designed to supply an excellent system for a particular size studio. The "Complete Package" has all the equipment lighting and control equipment needed to light sets and the production area of the studio. The equipment is not over specified.

The "Start Package" is assembled with the idea of getting enough equipment from the "Complete Package" (master list) to begin production and then, add from the "Complete Package" as your production needs increase.

81015-WB	10'0" x 15'0" START	P.O.A.
81115-WB	10'0" x 15'0" COMPLETE	P.O.A.
81520-WB	15'0" x 20'0" START	P.O.A.
81620-WB	15'0" x 20'0" COMPLETE	P.O.A.
82030-WB	20'0" x 30'0" START	P.O.A.
82130-WB	20'0" x 30'0" COMPLETE	P.O.A.
83040-WB	30'0" x 40'0" START	P.O.A.
83140-WB	30'0" x 40'0" COMPLETE	P.O.A.
84050-WB	40'0" x 50'0" START	P.O.A.
84150-WB	40'0" x 50'0" COMPLETE	P.O.A.
85080-WB	50'0" x 60'0" START	P.O.A.
85180-WB	50'0" x 60'0" COMPLETE	P.O.A.
86070-WB	60'0" x 70'0" START	P.O.A.
86170-WB	60'0" x 70'0" COMPLETE	P.O.A.
87500-WB	70'0" x 100'0" START	P.O.A.
87600-WB	70'0" x 100'0" COMPLETE	P.O.A.

reprinted with permission from materials by © 1984, WALTER S. BREWER CO., INC.

Prices and Specifications Subject to Change Without Notice.

BROADCAST AUDIO CORP.

11306 Sunco Drive
Rancho Cordova, CA 95670
(916) 635-1048

AUDIO CONSOLES



SYSTEM 20



SYSTEM 14

SYSTEM 20 STEREO BROADCAST CONSOLES

System 20 has options that enable you to virtually design your own audio console, for on-air use or production. Three plug-in mixers are available: Type A has in/out selectors, 7-frequency graphic equalizer, low-cut filter, stereo/mono mode switch and pan pot; Type B has in/out selectors, stereo/mono mode switch and pan pot; Type C has in/out selectors only. Each mixer has a transformer balanced mic input and a differential balanced line level input.

Motherboards and mixers are all double-sided with extensive ground planes for optimum noise and crosstalk, plus RFI rejection. All integrated circuits have sockets and are brand name off-the-shelf devices.

System 20 is rugged with welded frame construction, solid walnut end panels and armrest, plus extruded aluminum mixer panels with mylar overlays silk-screened on the reverse side.

Mixers: 20 maximum (log taper slider).

Inputs: 66 stereo inputs (3 per mixer) plus two 4-position remote input switches, user assigned to mixer inputs.

Size: 50.25"W x 33.5"D x 10.5"H

SYSTEM 14 Digitally Controlled Stereo Broadcast Console

System 14 is our latest and most technical audio console. A digital slide fader and digitally controlled CMOS high resolution logarithmic audio attenuator significantly reduce signal paths. Three plug-in mixers are available: Type A has output selectors, 5-frequency equalizer, stereo/mono mode switch and pan pot; Type B has in/out selectors, stereo/mono mode switch and pan pot; Type C has in/out selectors. Each mixer has a transformer balanced mic input and a differential balanced line level input.

Noiseless d-c audio switching is used for all program and monitor functions, which also enables each mixing channel to be turned off and on from a remote location, such as an announce studio, news booth, or video switcher. Options include Remote Line Selector, Talkback, Test Oscillator, Tape Controls and Clock/Timer.

System 14 combines digital technology with the operator conveniences and absolute reliability which exemplify BAC audio consoles.

Mixers: Up to 14 mixers, each with separate mono mic and stereo high level inputs.

Inputs: Up to 42 stereo inputs.

Size: 41"W x 28"D x 10"H

System 20 Stereo Broadcast Console. Mainframe includes everything except mixer modules and accessories as listed below **\$8750.00**

System 14 Digitally Controlled Stereo Broadcast Console. Mainframe includes everything except mixer modules and accessories as listed below **7000.00**

ACCESSORIES

Type A Mixer Module with input/output selectors, 7-frequency graphic equalizer, low-cut filter, stereo/mono mode switch and pan pot. (System 20) **\$875.00**

Type A Mixer Module with input/output selectors, 5-frequency equalizer, stereo/mono mode switch and pan pot. (System 14) **775.00**

Type B Mixer Module with input/output selectors, stereo/mono mode switch and pan pot. (Systems 20 and 14) **675.00**

Type C Mixer Module with input/output selectors. (Systems 20 and 14) **575.00**

Blank Panels, to mount in unused mixer positions. (Systems 20 and 14) **15.00**

Studio Monitor Control, for remote selection of monitor output to studio speakers (requires additional monitor amplifier). Includes panel or table top enclosure with 6-position switch and level control. 25 foot cable is provided. (Systems 20 and 14) **295.00**

External Control Module, with 8 start relays and 4 stop relays. Note: 2 muting relays are included in mainframe price. (System 14) **400.00**

Dual reel/reel control. (Systems 20 and 14) **250.00**

Talkback Module (three stations plus base) with Test Oscillator. (System 20 and 14) **675.00**

Talkback Module (three stations plus base). (System 14) **475.00**

Test Oscillator only. (Systems 20 and 14) **250.00**

Overbridge, 5-1/4" panel height, for custom installation. (Systems 20 and 14) **450.00**

Clock/Timer (mounted in Overbridge). (Systems 20 and 14) **350.00**

Spare Power Supply, with +12V, -18V and +18V outputs. Requires 5-1/4" rack space. (Systems 20 and 14) **595.00**

BROADCAST AUDIO CORP.

11306 Sunco Drive
Rancho Cordova, CA 95670
(916) 635-1048

AUDIO CONSOLES

SERIES II

STEREO BROADCAST CONSOLES

SYSTEM 16 features DC audio switching, using LCR's for completely quiet audio control. This also enables each mixing channel to be turned off and on from a remote location, such as an announce studio or news booth. Ten plug-in relays, with switch selection of maintained or momentary contacts, can be used for muting or remote start from any combination of mixers.

Operator conveniences include 4" long taper slide faders for extremely accurate tracking between channels. In addition to a cue detent position on the fader, there is a separate button for cueing when the fader is up. The stereo cue and amplifier is an industry first. The panel layout is easily understood and a pleasure to operate.

Mixers: 8 standard, 16 maximum (log taper slider).

Inputs: 24 standard, 48 maximum (3 per mixer).

Size: 44"W x 8.75"H x 25"D

System 12 is a model of engineering simplicity, using motherboard construction, with only 2 types of amplifier modules and a plug-in interconnecting harness. Two independent industrial grade power supplies are rack-mounted in a common housing, with front panel AC and DC status indicators. The power supply is short circuit proof and an optional redundant supply is also available.

Operator conveniences include 4" log taper slide faders for extremely accurate tracking between channels. In addition to a cue detent position on the fader, there is a separate button for cueing when the fader is up. The stereo cue amplifier is an industry first. The panel layout is easily understood and a pleasure to operate.

Mixers: 8 standard, 12 maximum (log taper slider).

Inputs: 24 standard, 36 maximum (3 per mixer).

Size: 35"W x 8.75"H x 25"D

System 8 is an expandable, completely modular broadcast mixer, with unprecedented features and performance. It was designed exclusively for broadcast and is not a scaled down version of recording or sound reinforcement equipment, so it performs flawlessly even in high RF environments.

An elegant low profile appearance is accentuated by solid walnut end panels and armrest. This mixer sits on top of the desk and does not require recessed mounting, so it's easy to install, with all connections made from the top.

Mixers: 6 standard, 8 maximum (log taper slider).

Inputs: 18 standard, 24 maximum (3 per mixer).

Size: 35"W x 8.75"H x 25"D



SYSTEM 16

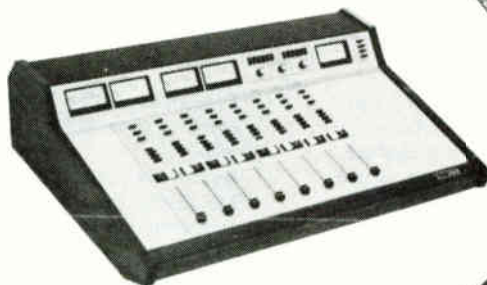
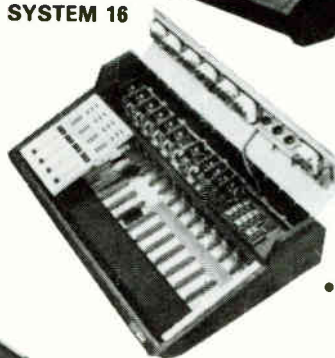
- IDENTICAL AMPLIFIERS FOR LINE, PHONES AND CUE OUTPUTS

- INTERIOR VIEW SHOWS MOTHERBOARD WITH EDGE CONNECTORS FOR 16 MIXERS. IF LESS ARE ORDERED, BLANKS ARE SUPPLIED WHICH CAN BE REPLACED LATER WITH ADDITIONAL MIXERS.

- PLUG-IN WIRING HARNESS
- HINGED METER PANEL

- PLUG-IN MIXERS

- SOLID WALNUT END PANELS AND ARMREST



SYSTEM 8



SYSTEM 12

SERIES II

System 16 Stereo Broadcast Console. Includes power supply and 8 stereo mixer modules, expandable to 16 **\$9950.00**

System 12 Stereo Broadcast Console. Includes power supply and 8 stereo mixer modules, expandable to 12 **9150.00**

System 8 Stereo Broadcast Console. Includes power supply and 6 stereo mixer modules, expandable to 8 **6950.00**

(P & G faders are standard on Series II)

ACCESSORIES

Additional Stereo Mixer Modules. Plug into existing connectors, replacing blank panels supplied in unused mixer positions **\$475.00**

Equalized Stereo Mixer Modules, with Hi-Mid-Lo boost/cut controls, replacing 3-input selector switch. Directly interchangeable with Standard Mixer Module. If substituted, add \$100.00 per EQ Mixer Module to base price **575.00**

Remote Input/Output Panel. Mounts in unused mixer position. Two 4-position selector switches, to add additional audio inputs or feed output of console to multiple locations **367.50**

Remote Input/Output Panel, as above, but including a single reel/reel control **467.50**

Dual reel/reel control. Mounts in unused mixer position **235.00**

Redundant Power Supply. Features additional +30V and +12V modules, with independent fuses, indicators and switch **410.00**

Spare Power Supply. Completely independent, takes 5-1/4" rack space **520.00**

Overbridge. 5-1/4" panel height, for custom installation **415.00**

BROADCAST AUDIO CORP.

11306 Sunco Drive
Rancho Cordova, CA 95670
(916) 635-1048

AMPLIFIERS/CONSOLES

ACCESSORY AMPLIFIERS

All four BAC amplifiers share the same 1-3/4" enclosure, which can be rack or table mounted. The amplifier circuits are on individual plug-in cards, which are inserted at the rear of the enclosure, and can be removed or installed with power on. Each amplifier has recessed front panel gain controls.

BA-235/435 Monitor Amplifier: Two or four 35 watt amplifiers, with internal bridging switch. Torroid power transformer eliminates buzz or vibration. MOSFET transistors used as output power amplifiers. Absolutely the finest broadcast monitor amplifier in this power range.

BA-6 x 4 Distribution Amplifier: Accepts up to 6 amplifier cards, each with active balanced inputs and 4 transformer balanced outputs. LED bar level indicator with 7-position switch. Maximum output of +30dBm, with superb isolation and ultra-low distortion.

BA-205/405 Phono Preamp: Two or four plug-in amplifier cards, with passive RIAA equalization. Internal switches adjust loading for specific cartridges. Subsonic rumble filter. Automatic redundant power supply.

BA-235 MOSFET Monitor Amplifier	\$ 595.00
BA-435 MOSFET Monitor Amplifier	995.00
BA-405 Dual Stereo Phono Preamplifier	995.00
BA-205 Stereo Phono Preamp	695.00
BA-6 x 4 Distribution Amplifier	1175.00
Additional DA cards	175.00

SYSTEM R ROTARY BROADCAST MIXER

System R is a basic broadcast mixer, with unprecedented quality and performance. An elegant low profile appearance is accented by solid walnut end panels and armrest.

System R is a model of engineering simplicity, using motherboard construction, with only 3 types of amplifier modules and a plug-in interconnecting harness. Two independent industrial grade power supplies are rackmounted in a common housing, with front panel AC and DC status indicators. Operator conveniences include damped rotary faders, driving VCA's for extremely accurate tracking between channels. A cue detent position is provided on each fader. The panel layout is easily understood and a pleasure to operate.

System R features DC audio switching and electronic muting for completely quiet audio control. Three optional plug-in relays, with switch selection of maintained or momentary contacts, can be used for muting or remote start from any combination of mixers. Additional contacts are available from the lever switches for control functions.

Size: 32"W x 7.00"H x 18"D

Shipping Weight: 75 lbs.

System R Stereo Broadcast Console , with Allen-Bradley conductive plastic rotary faders	\$4500.00
System R Stereo Broadcast Console , with Penny & Giles conductive plastic damped rotary faders	5500.00

Note: Specify 10k transformer, or 10k active bridging line inputs on System 5. Specify any combination of mono mic, stereo mic, 10k transformer, or active bridging line inputs on System R.



SYSTEM R

OPTIONS

External Control Module. 3 relays with momentary or maintained 2 Form C contacts, and 4 open collector outputs. Other relay options available	\$250.00
Extra Lever Switch Contacts. Factory wired to rear panel connector. Extra Form C contacts each side of center "off" position are provided as standard and can be used wired if optional connector is not required	250.00
Redundant Power Supply. Features additional +18V and -18V modules, with independent fuses, indicators and switch	450.00
System 5 Monaural Broadcast Console. Twelve inputs, 5 rotary attenuators, single channel. Features built-in monitor, cue and headphone amplifiers, electronic muting of Monitor and Cue, four momentary "start" buttons	1850.00
System 5 Monaural Broadcast Console , with Allen-Bradley conductive plastic rotary faders	1850.00
System 5 Monaural Broadcast Console , with Penny & Giles conductive plastic damped rotary faders	2475.00



BROADCAST CARTRIDGE SERVICE, INC.

15131 Triton Lane, Suite 108
Huntington Beach, CA 92649
17141 898-7224

AUDIO CARTRIDGES

New Broadcast Cartridges

Brand Time	Audiopak A-2	Fidelipac M-300	Fidelipac Mastercart I & II	Audiopak AA-3	Aristocart	3M Scotchcart	Audiopak AA-4
Empty	2.20	2.85	3.70	N/A	4.00	4.30	N/A
20 sec. 40 sec. 70 sec. 90 sec. 100 sec.	3.25	3.70	4.50	4.10	4.60	4.45	4.55
140 sec. 2.5 min. 3.5 min. 4.5 min.	3.60	4.20	5.00	4.60	5.15	5.00	5.05
5.5 min. 6.5 min. 7.5 min. 8.5 min. 10.5 min.	4.00	5.00	5.80	5.35	6.00	5.90	6.05
FIDELIPAC —		M-600 Empty \$5.20	M-600 16 min. \$10.05	M-1200 Empty \$7.70	M-1200 31 min. \$15.50		

Cartridge Reconditioning (Factory Authorized)

Length	Standard Tape	Holn or Super Holn Tape	Length	Standard Tape	Holn or Super Holn Tape	
Empty	2.10	2.30	5.5 min.	2.95	3.25	
10 sec.			6.5 min.			
20 sec.			7.5 min.			
40 sec.			8.5 min.			
70 sec.			9.5 min.			
90 sec.			10.5 min.			
100 sec.	M-600					
120 sec.	2.45	2.70	Empty	3.10	6.45	
140 sec.			16 min.	5.85		
2.5 min.			M-1200			
3.5 min.			Empty	4.30		
4.5 min.			32 min.	8.20		
				9.00		

We have a large assortment of cartridges in stock at all times. Please call for volume discounts. Call collect (714) 898-7224. All timing is done at 7 1/2 i.p.s.



Aristocart. The "aristocrat" of cartridges, this unit is built in Canada of tough Lexan plastic. The tradition continues with new 2006 Super High-Output-Low-Noise tape. Designed for stereo application.



3M Scotchcart. With Super HOLN tape, this cartridge is a radical new design. It is without a moving turntable and has no pressure pads. In addition, it incorporates a life-extending cam.



Capitol Audiopak A-2. A very popular mono cartridge. This cartridge has survived 14 years of rugged use to become a standard in the industry.



Capitol Audiopak AA-3. Designed for stereo applications, this cartridge features HOLN tape. Many thousands in use world-wide.



Capitol Audiopak AA-4. This is the State-of-the-Art stereo cartridge with Super High-Output-Low-Noise tape. This is the newest addition to the Audiopak family.



Fidelipac M-300. The first cartridge on the market with 20 years of use in the broadcast industry. For monaural use.



Fidelipac Master Cart I. Stereo cartridge with standard level tape.



Fidelipac Master Cart II. Stereo cartridge with HOLN tape.



BROADCAST ELECTRONICS INC.

4100 N. 24th St.
Quincy, IL 62301
(217) 224-9600 Telex 25 0142

TRANSMITTING EQUIPMENT

FM Transmitters

MODEL FM-30, ONE TUBE 10-30 KW

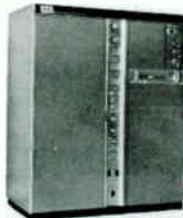
A single-tube FM-30 utilizes a folded half-wave cavity which eliminates troublesome plate blocker capacitors and sliding RF contacts. Second generation digital controller with diagnostic LED readout. Includes the advanced design FX-30 synthesized exciter. The FM-30 is the most advanced transmitter since the advent of FM broadcasting.

FM-30 909-0001

30,000 watt FM transmitter complete with final tube, solid-state FX-30 Exciter, for operation on ___MHz, 50 ohm output, Transmitter Power Output (TPO) to be ___KW, 208/240VAC, 3 phase, 60Hz or, optional for 380V, 50Hz, three phase. (Power supply in line).

FM-30 909-0001-1

30,000 watt FM transmitter complete with final tube, solid-state FX-30 Exciter, for operation on ___MHz, 50 ohm output, Transmitter Power Output (TPO) to be ___KW, 208/240VAC, 60Hz or, optional for 380V, 50Hz, three phase. (Power supply separate from transmitter).



MODEL FM-1.5A, ONE-TUBE 1.5 KW

Superb performance is assured from this single tube FM-1.5 transmitter which utilizes the FX-30 synthesized exciter. Only 5'10" high, this 1 KW transmitter occupies only five square feet of floor space. Employing a single type 3CX1500A7/8877 triode tube, the entire PA stage is contained in a slide-out drawer for instant accessibility. Microprocessor video diagnostic system (MVDS) for monitoring operating conditions is optional.



FM-1.5A 909-1500-200

FM-1.5A one tube 1500 watt FM transmitter complete with final tube, solid-state exciter for operation on ___MHz, 50 ohm output, Transmitter Power Output (TPO) to be ___KW, single phase 208/240 VAC, 60Hz power source.

MODEL FM-5A, ONE-TUBE 5 KW

Incorporating the same patented folded half-wave cavity technique used in the FM-30, the Model FM-5A provides optimum reliability and superb FM performance. Single tube PA's ensure excellent bandwidth and long term operating economy. Self-contained in 34.5" wide cabinet with the FX-30 exciter and built-in low pass filter. Primary power requirements are 208V WYE/240V DELTA, 50/60 Hz, 3Ø. Taps for 196-252 VAC. Microprocessor video diagnostic system (MVDS) for monitoring operating conditions is optional.



FM-5A 909-5000-200

FM-5A one tube 5000 watt FM transmitter complete with final tube, solid-state exciter for operation on ___MHz, 50 ohm output, Transmitter Power Output (TPO) to be ___KW, three phase 208/240 VAC, 60Hz power source.

MODEL FM-3.5A, ONE-TUBE 3.5KW

Other than for its lower output rating which permits the use of a single phase power supply, the FM-3.5A is identical to the FM-5A. Both models use a single type 4CX3500A tube. Conservatively-rated components and intelligent and practical application of advanced engineering concepts contribute to long-term reliability and superlative performance. Microprocessor video diagnostic system (MVDS) for monitoring operating conditions is optional.



FM-3.5A 909-3500-200

FM-3.5A 3500 watt FM transmitter complete with final tube, FX-30 solid-state exciter, for operation on ___MHz, 50 ohm output, Transmitter Power Output (TPO) to be ___KW single phase 208/240 VAC, 50/60Hz power source.

MICROPROCESSOR VIDEO DIAGNOSTICS SYSTEM OPTION (MVDS)

Available for use with the B/E FM-1.5A, FM-3.5A or FM-5A FM Transmitters the MVDS option, in conjunction with the standard automatic power control circuitry in the basic transmitters, continuously monitors and controls all major transmitter parameters. By keyboard selection a front panel video monitor provides 1) exciter, IPA, PA and TPO "normal display" operating information; or 2) user-established operating level limit information, both in analog tabular form, or 3) simultaneous digital bargraph readouts of major IPA and PA forward/reverse powers and operating parameters, as well as PA plate efficiency. Out-of-limit values are shown in reverse video, alerting the operator to an undesired condition. The normal display information may be remotely logged. The MVDS operation is redundant to that of the standard transmitter control microprocessor. If disabled in any way, control reverts automatically to the primary controller.



MVDS 909-0091-000

Microprocessor Video Diagnostics System, option, for use with FM-1.5A, FM-3.5A and FM-5A transmitters, factory installed.

AX-10 AM STEREO EXCITER

Incorporating highly-advanced, second-generation C-QUAM® digital design the new B/E Model AX-10 stereo exciter is compatible with essentially any existing AM broadcast transmitter. Utilizing independent, non-interfacing left- and right-channel modulators in an IF modulation configuration, the AX-10 combines superior stereo performance with full monaural compatibility. Independent, switch-selectable, equalization networks for two-transmitter or dual antenna pattern operation are standard. The AX-10 is fully capable of remote control operation. It delivers up to 10 watts RF output and features a separate TTL-compatible output for use with transmitters with digital input capability. Balanced 600 ohm audio output is variable from -10 to +26dBm with independent day/night level adjustment. The AX-10 occupies only 3 1/2" of standard 19" rack height.

FEATURES

- Second generation C-QUAM® digital design
- Advanced-technology, independent right and left channel IF modulation technique
- Interfaces with virtually any existing AM transmitter
- Superior stereo performance, yet compatible with existing AM mono receivers

® Registered trademark, MOTOROLA, INC.

AX-10 907-0010-000 AM Stereo Exciter, 10 watt, solid-state, 117V, 60Hz, with independent day/night two (2) transmitter equalization.



MODEL FS-30 FM STEREO GENERATOR

Teamed-up with the widely acclaimed FX-30 FM exciter, the new digital FS-30 stereo generator provides the very best stereo performance available. Includes linear, delay equalized audio low pass filters for minimum overshoot without the use of clippers or other non-linear devices. Front panel LED peak reading modulation status display; RFI protection; ready for remote control.

FS-30 909-0050 FM Stereo Generator



MODEL FC-30 SCA GENERATOR

The FC-30 SCA Generator assures very low FM noise, high stability and, with its ultra linear 67kHz modulated oscillator, minimum distortion is obtained. Front panel LED peak modulation indicator; extensive RF filtering and front panel test jacks are other features. Controlled delay muting designed to be compatible with today's SCA receivers.

FC-30 909-0051 FM SCA Generator



FX-30 SYNTHESIZED FM EXCITER

With more than 550 in use (1984) the synthesized FX-30, 30 watt FM exciter/transmitter has been universally accepted as the industry standard. The FX-30 provides excitation for each of the B/E FM transmitter models. It is however readily adaptable to interfacing with FM transmitters of any manufacture or vintage to dramatically update performance to today's most stringent standards. The FX-30 utilizes an ultra-linear modulated oscillator for unsurpassed performance; features typical THD and IMD at less than 0.02%; is extremely quiet in operation with a typical SNR of 80dB; and is completely broadband, requiring no tuning adjustments. It is of semi-modular mechanical design. Slide-mounting ensures ready access to sub-assemblies. Pushbutton-selectable analog metering and a color-coded LED digital display afford highly-accurate parameter and modulation monitoring.

FX-30 909-0009 FX-30 Solid-state 3-30 watt FM exciter/transmitter, frequency range 87MHz to 109MHz with automatic power control, synthesized frequency control, and low pass filter, 19" rack mount, for operation on ___MHz and for single phase 97 to 133VAC or 194 to 266VAC, 50/60Hz power source.





BROADCAST ELECTRONICS INC.

4100 N. 24th St.
Quincy, IL 62301
(217) 224-9600 Telex 25 0142

AUDIO CONSOLES



10S150/10M150

150 Series Mono/Stereo

MODELS 5M150/5S150 5-MIXER

Models 5M150, mono dual-channel and 5S150, stereo, five-mixer consoles employ high quality conductive-plastic attenuators for economical, yet extended noise-free operation. Identical plug-in preamplifier modules, presettable for microphone or line input service, feature gold-to-gold contact fingers. Using gated FET techniques, electronic bus selection is rapid and silent. Interlocked pushbutton selection of two sources per mixer is provided. Premixer loudspeaker cueing is effected by setting mixer controls to a detented, fully-CCW position. Separate headphone and monitor amplifiers permit full aural monitoring.

MODELS 8M150/8S150 8-MIXER

Eight-mixer consoles are also available in the 150 Series. These are designed as Models 8M150 for monaural dual-channel and 8S150 for stereo operation. Other than the number of mixing channels, these models are essentially identical to their five- and ten-mixer counterparts. All consoles in the 150 Series feature elegant and durable styling with clean, crisp front panel graphics protected by a laminated polycarbonate overlay. This tough, protective surface makes it virtually impossible to scratch the panel or wear away the lettering. Plug-in line amplifiers with +18dBm output capability insure adequate headroom for superlatively clean audio signal transmission.

MODELS 10S150/10M150 10-MIXER

The newest members of the Series 150 family are the 10S150 stereo and 10M150 dual-channel mono, 10-mixer models. The 150 Series provides ± 0.5 dB response over the 30 to 20,000Hz range and 0.05% intermodulation and total harmonic distortion at full +18dBm output level. The 150 Series consoles are supplied with one speaker muting/warning light relay with a second as an option. Stereo models also accept an optional plug-in mono matrix card. The 150 Series satisfy the demands for reasonably priced professional control equipment, tailored to meet the widely varying requirements of today's broadcaster.

150 Series Mono And Stereo Consoles*

Model	Stock No.	Description
5M150	938-0531	5-Mixer Monophonic Console, Sealed Pots, Dual Channel
8M150	938-0831	8-Mixer Monophonic Console, Sealed Pots, Dual Channel
10M150	901-1030-000	10-Mixer Monophonic Console, Sealed Pots, Dual Channel
5S150	938-0530	5-Mixer Stereophonic Console, Sealed Pots
8S150	938-0830	8-Mixer Stereophonic Console, Sealed Pots
10S150	901-1031-000	10-Mixer Stereophonic Console, Sealed Pots

Options And Accessories

918-3602	Mono Matrix PC Board for 5S150, 8S150 and 10S150
270-0007	Second Muting Relay for any Series 150 Console
838-0200	Additional Cost for 230 VAC/50Hz Power Source

*Supplied with One Muting Relay

250 Series Mono/Stereo Deluxe Dual Channel

MODEL 5S250 5-MIXER

Series 250 consoles are deluxe in every way. This is a full feature console line with superior audio performance. 5-, 8- and 10-mixing channel models are available in mono or stereo with dual channel provisions. Precision step type ladder attenuators are used. Channel keys are telephone type roller cam design for long life and silent operation. Three muting relays are included. Series 3600 plug-in amplifiers provide unexcelled response, distortion and noise specifications.



10S250/10M250

MODEL 8S250 8-MIXER

In addition to preamplifier and line amplifiers, all Series 250 consoles are supplied with required monitor, cue and headphone amplifiers. A sum derived mono matrixed output is optional for stereo models. A totally new styling adds durability and enhances the attractiveness of the 250 Series consoles. The front panel features crisp, clean graphics protected by a laminated polycarbonate overlay. This tough exterior surface makes it virtually impossible to scratch or wear away the labelling.

MODELS 10S250/10M250 10-MIXER

The 10S250 stereo console accommodates twenty inputs into ten mixing channels. The console features identical line level stereo program and audition output channels with VU meter switching to either stereo pair. Mixing controls are maintainable, step type dual ladder attenuators. Quiet operating, telephone type channel select switches are used. A mono model, the 10M250 is also available. For applications requiring a summed L + R mono signal in addition to the stereo program outputs, the 10S250 is prewired to accept an optional plug-in module for this purpose.

250 Series Mono And Stereo Consoles*

Model	Stock No.	Description
5M250	938-0541	5-Mixer, Deluxe Monophonic Console, Step type Attenuators
8M250	938-0541	8-Mixer, Deluxe Monophonic Console, Step type Attenuators
10M250	938-1041	10-Mixer, Deluxe Monophonic Console, Step type Attenuators
5S250	938-0540	5-Mixer, Deluxe Stereophonic Console, Step type Attenuators
8S250	938-0840	8-Mixer, Deluxe Stereophonic Console, Step type Attenuators
10S250	938-1040	10-Mixer, Deluxe Stereophonic Console, Step type Attenuators

Options And Accessories

918-3602	Mono Matrix PC Board for 5S250, 8S250 and 10S250
838-0200	Additional cost for 230 VAC/50 Hz Power Source

*Supplied with 3 Muting Relays

Series 350

10-MIXER, VERTICAL FADER, DUAL-CHANNEL MONO/ STEREO MODELS

The 350 Series consoles feature 22 inputs into 10 mixing channels. Available in either mono or stereo models, they are ideal for multiple-mix applications. Mixers #1 through #8 accept two inputs per mixer; Mixers #9 and #10, three each. Input preselection is by interlocked pushbutton switching. Mixer outputs, routed through advanced, contact-free electronic switching, may be fed separately or simultaneously to the dual output channels. Attractive front panel graphics are protected by a laminated polycarbonate overlay for maximum durability. Integral module presetting permits individual input channel use for either microphone or line level input service. The stereo model features mono/stereo mode selection.

350 Series Slider Mixer Audio Consoles

Model	Stock No.	Description
10M350	938-1051	10-Mixer, Slider-Fader, Dual-Channel, Monophonic Console
10S350	938-1050	10-Mixer, Slider-Fader, Dual-Channel, Stereophonic Console

Options And Accessories

918-3602	Mono Matrix PC Board for 10S350
----------	---------------------------------



Dual-Channel, Mono Outputs — Model 10M350

Series 50 4-Mixer, Mono/Stereo/Rack Mount

MODEL 4M50, MONO

The 4M50 is a complete console ideal for production or on-air use. The 4 mixers each accept two switch selectable inputs and each preamplifier can be wired for either microphone or line level sources. Speaker and headphone amplifiers are built-in for monitoring console output, an external source, or the cue circuit. Each mixer is equipped with a cue position which also feeds a built-in cue speaker controlled by a muting relay. Optional rack adaptor permits mounting in a standard 19" rack.



4M50

MODEL 4R50, RACK MOUNT MIXER

The 4R50 console is a compact rack mount mixer suitable for use by TV, CATV, CCTV, film studios, commercial sound, remote broadcast and dubbing facilities. A unique feature is an output to feed a public address amplifier. The 4R50 console has four mixers, sealed pots with cue detents. Three accept two inputs (switchable high or low level) and one accepts a single switchable input plus three high level inputs. Monitoring includes a switchable VU meter, headphone amp and muted cue amp/speaker.



4R50

MODEL 4S50, STEREO

This four mixer, 12 input stereo console features quality performance at a practical price. Easily installed it has cue-switches on all faders. In addition to level selectable preamplifiers, the 4S50 has individual monitor, cue and headphone amplifiers. The stereo performance of the 4S50 makes it ideal for production or on air broadcast use.

Series 50 Mono/Stereo/Rack Mount Consoles

Model	Stock No.	Description
4M50	938-0450	Mono Four 4-Mixer Monophonic Console
4M50R	938-0451	Mono Four Rack Mount 4-Mixer Monophonic Console
4M50P	901-0450-020	Mono Four 4-Mixer Monophonic Console with XLR Plug-in Connectors
4S50	938-0452	Stereo Four 4-Mixer Stereophonic Console
4S50R	938-0453	Stereo Four Rack Mount 4-Mixer Stereophonic Console
4S50P	901-0451-020	Stereo Four 4-Mixer Stereophonic Console with XLR Plug-in Connectors
4R50	901-2000-000	4-Mixer Mono Console, Rack Mount, 115 VAC/60 Hz



4S50



BROADCAST ELECTRONICS INC.

4100 N. 24th St.
Quincy, IL 62301
(217) 224-9600 Telex 25 0142

TAPE CARTRIDGE EQUIPMENT

Single Deck Cartridge Machines

SERIES 3000

Series 3000 are B/E's top of the line cartridge machines. They feature superb electronics, low wow and flutter, 52dB stereo S/N, a large air damped current regulated low voltage solenoid, direct drive synchronous motor and a rugged 1/2-inch machined deck. Operates from 105 to 125V, 60Hz or 210V to 230V, 50Hz as specified.

These premium quality cartridge machines include exclusives such as the Phase Lok IV head bracket; integrated circuit/solid-state design with exceptionally wide dynamic operating ranges; premium long life heads; and outstanding performance. A full range of options include manual/automatic fast forward, additional cue tones and microphone input. More than 10,000 machines are in use worldwide.

Factory Installed Options

- 906-3000 Q Trip I & II (150Hz and 8kHz), Playback Only Models
- 906-3001 Q Trip I & II (150Hz and 8kHz), Record/Playback Models
- 906-3003 Microphone Input Option, Mono Record/Playback Models
- 906-3004 Microphone Input Option, Stereo Record/Playback Models
- 906-3006 Automatic and Manual Fast Forward, Playback Only Models with Q Trip I & II (150Hz and 8kHz)
- 906-3007 Automatic and Manual Fast Forward, Record/Playback Models with Q Trip I & II (150Hz and 8kHz)

Accessories

- 906-3013 Rack Mount Shelf for EIA 19" Rack
- 906-3010 Top Cover for 906-3013 Shelf
- 906-3014 Rack Shelf Filler Panel, 1/2 Rack
- 906-3015 Rack Shelf Filler Panel, 1/2 Rack
- 919-1504 Extender, PC Boards



A Size Cartridges

Model	Stock No.	Description
3100P	906-3100	Mono, Playback Only
3100PS	906-3101	Stereo, Playback Only

A & B Size Cartridges

Model	Stock No.	Description
3200P	906-3200	Mono, Playback Only
3200RP	906-3201	Mono, Record/Playback
3200PS	906-3202	Stereo, Playback Only
3200RPS	906-3203	Stereo, Record/Playback
3200RP/DL	906-3204	Mono, Delay Programmer

A, B & C Size Cartridges

Model	Stock No.	Description
3300P	906-3300	Mono, Playback Only
3300RP	906-3301	Mono, Record/Playback
3300PS	906-3302	Stereo, Playback Only
3300RPS	906-3303	Stereo, Record/Playback
3300RP/DL	906-3304	Mono, Delay Programmer

A, B & C Size Cartridges (Rack Mount)

Model	Stock No.	Description
3400P	906-3400	Mono, Playback Only
3400PS	906-3401	Stereo, Playback Only
3400RP	906-3402	Mono, Record/Playback
3400RPS	906-3403	Stereo, Record/Playback
3400RP/DL	906-3404	Mono, Delay Programmer

SERIES 2100

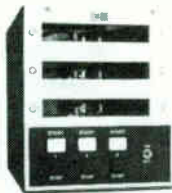
Available in mono or stereo models, the Series 2100 accepts A, B or C-size cartridges. 1kHz and 150Hz cue tones are standard. Low wow and flutter from the direct drive synchronous motor, superb electronics and low voltage DC solenoid for cool, quiet operation. Over 2000 machines in use. Phase Lok IV head bracket with azimuth adjustment independent of height and zenith.

Model	Stock No.	Description
2100P	907-2110	Mono, Playback Only, 115V, 60Hz
2100RP	907-2111	Mono, Record/Playback, 115V, 60Hz
2100PS	907-2112	Stereo Playback Only, 115V, 60Hz
2100RPS	907-2113	Stereo, Record/Playback, 115V, 60Hz
2100PA	907-2124	Mono, Playback with Audio/Amplifier, 115V, 60Hz

Options And Accessories

- 907-2114 Rack Mount Shelf for EIA 19" Rack. Holds up to three 2100 Series
- 471-2101 Top Cover for 2114 Shelf
- 503-2124 Rack Shelf Filler, 1/2 Rack
- 503-2123 Rack Shelf Filler Panel, 1/2 Rack
- 471-0054 Top Cover for 2100 Series
- 919-2100 Test Extender PC Board

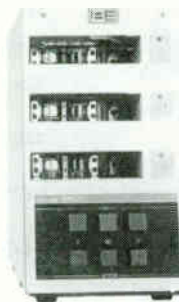
Multiple Deck Cartridge Machines



MODEL 5300B THREE DECK

Features extremely stable and accurate deck and capstan positioning independent of front panel reference attributable to advanced, internal bulkhead mechanical design. Run lights adjacent to each deck, removable upper decks, direct-drive hysteresis synchronous motor, reliable low-voltage solid-state solenoid switching, superb Phase Lok IV head bracket, FET muting, active cue tone filters and rear panel LED service aids. Each contribute to outstanding performance. Available in mono or stereo with single or multiple cue tones, Companion record amplifiers, Model 5309 for mono, or 5310 for stereo permits recording as well as playback on the lowest deck.

Model	Stock No.	Description
5301B	906-5301B	Mono Playback (A & B Size)
5302B	906-5302B	Mono Playback (A & B Size) with Cue Tones
5303B	906-5303B	Stereo Playback (A & B Size)
5304B	906-5304B	Stereo Playback (A & B Size) with Cue Tones
	906-5309	Recorder, Mono for 3 Decker, without Q Trip Option
	906-5310	Recorder, Stereo for 3 Decker, without Q Trip Option
SW5E	904-5000	Audio Switcher for 3 Decker
	906-5311A	Secondary (150 Hz) and Tertiary (8 kHz) Q Trips for Mono Recorder
	906-5311B	Secondary (150 Hz) and Tertiary (8 kHz) Q Trips for Stereo Recorder
	906-5306	Rack Mount (1) Unit
	906-5307	Rack Mount (2) Units
	919-1806	Extender PC Board



MODEL 5400 'TRIM LINE' THREE DECK

The newest of the B/E advanced-design cartridge machines. Its trim-line configuration permits three machines to be rack mounted, side-by-side. Featuring clean sound, the 5400 provides low wow and flutter, 52dB stereo S/N ratio, Phase Lok IV head brackets for optimum stereo phasing and solid 1/2-inch precision-machined aluminum decks for stable cartridge positioning. Plug-in decks and PCB's expedite servicing and maintenance. Air-damped solenoids for cool, quiet, operation. Optional recording amplifiers, Models 5409 (mono) and 5410 (stereo) are available for recording on Deck #3 independent from the other two decks.

Model	Stock No.	Description
5401	900-5401-000	Mono Playback
5402	900-5402-000	Mono Playback with Cue Tones
5403	900-5403-000	Stereo Playback
5404	900-5404-000	Stereo Playback with Cue Tones
5406	900-5406-000	Shelf, Rack Mount for 1, 2 or 3, 5400 units in 19" Rack
5409	900-5409-000	Recorder, Mono with Cue I and II for 5400 Series 117V, 60Hz
5410	900-5410-000	Recorder, Stereo with Cue I and II for 5400 Series 117V, 60Hz
SW5E	904-5000	Audio Switcher for 3 Decker
	919-1806	Extender Printed Circuit Board



MODEL 5500B FIVE DECK

Broadcast Electronics' 5-deck playback unit with a dependable direct drive hysteresis synchronous motor. Available in mono and stereo versions with standard stop tone or all three standard NAB tones. Top four decks slide out for maintenance. Air-damped solenoids provide quiet, yet positive, operation. Liberal use of integrated circuits contribute to the latest electronics design. Companion recording amplifiers, Model 5309 for mono or Model 5310 for stereo offer full record/playback capability on bottom deck. Model SW5F audio switcher is also available.

Model	Stock No.	Description
5501B	900-5501	Mono Playback
5502B	900-5502	Mono Playback with Cue Tones
5503B	900-5503	Stereo Playback
5504B	900-5504	Stereo Playback with Cue Tones
	906-5309A	Recorder, Mono for 5500 Series
	906-5310A	Recorder, Stereo for 5500 Series
	906-5311	Secondary & Tertiary Q Trips (Mono)
	906-5311	Secondary & Tertiary Q Trips (Stereo)
SW5F	904-5001	Audio Switcher
	906-5506	Rack Shelf, (1) to (3) Units
	906-5507	1/2 Rack Filler Panel
	919-1806	Test Extender PC Board

Prices and Specifications Subject to Change Without Notice.



BROADCAST ELECTRONICS INC.

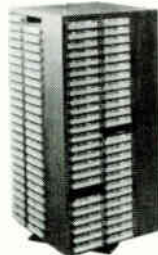
4100 N. 24th St.
Quincy, IL 62301
(217) 224-9600 Telex 25 0142

TAPE CARTRIDGE EQUIPMENT

Tape Cartridge Accessories



DM-72



DM-200



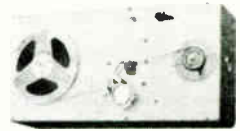
RM-100

**MODEL RM-100
WALL MOUNT CART TAPE STORAGE RACK**
Holds 100 "A" size cartridges in minimum space.
Walnut formica trim. 2'H x 2'W x 4-3/8"D.



TD-1B

MODEL TD-1B TAPE ERASER
Heavy duty table top bulk eraser for cartridges.
Equipped with spindle for reels up to 10.5" in diameter,
1" wide. Automatic overheat thermal protection and
transient protection.



TW-120T
(with timer)

TAPE CARTRIDGE WINDER
Model TW-120 (117 VAC, 60Hz); Model TW-240 (240
VAC, 50Hz). Rugged, field-proven tape winder.
Operates at 22-1/2" per second. Worn tape in old car-
tridges easily replaced. Optional, installed tape timer
Models TW-120T and TW-240T include timer.



200-3T

MODEL 200-3T HAND HELD TAPE ERASER
8-foot, 3-conductor line cord and safety push-button
switch. Equipped with built-in thermostat. Automati-
cally cuts AC power if eraser exceeds proper operating
temperature. Model 200-3T operates on 115V,
50/60Hz. Model 220-3T, 220V, 50/60Hz.

DESK MOUNT CART TAPE STORAGE MODULES
Rotating racks present four-sided storage in attractive
walnut formica. DM-72 holds 72 cartridges. 22"H x
11"W x 11"D. DM-200 provides 200 storage slots.
29-1/2"H x 15-3/4"W x 15-3/4"D.

CARTRIDGE STORAGE RACKS

RM10	818-0010	Stores 10, A Size Cartridges, Rack Mounting (5-1/4"H) (for use with RA-70 Rack Frame)
RM20V	818-0014	Cartridge Rack, 20 Carts, Fits 1/3 Rack Shelf for 5500 Series.
RM20H-001	818-0020-001	Stores 20, A Size Cartridges, Rack Mounting (5-1/4"H)
RS25	816-0025	Wire Rack Section, holds 25 A Size Cartridges.
RM100	810-0100	Wall Mounting, Formica Covered, holds 100 A Size Cartridges.
DM20	812-0655	Wall or Table Mounting; walnut finish cabinet, holds 20 A Size Cartridges.
LZ20	800-2000	Lazy Susan, Table Top, Wood/Formica, holds 20 A Size Cartridges.
DM40	812-0650	Table Top Lazy Susan, walnut finish cabinet holds 40 A Size Cartridges.
DM72	812-0072	Lazy Susan Module, Formica Covered for table top use, holds 72 A Size Cartridges.
DM200	812-0200	As per above, holds 200 A Size Cartridges.
LS200	814-0200	Lazy Susan Wire Unit, floor stand w/heavy duty casters, holds 200 A Size Cartridges.

CARTRIDGE WINDERS

TW-120	900-0100	Tape Cartridge Winder 117V, 50/60Hz
TW-120T	900-0110	Tape Cartridge Winder w/Timer, 117V, 60Hz
TW-240	900-0200	Tape Cartridge Winder 220V, 50Hz
TW-240T	900-0210	Tape Cartridge Winder w/Timer, 230V, 50Hz
TI-50A	800-4002	Calibrated Tape Timer
	449-0023-001	Adaptor hub for Fidelipac Mastercart
	467-0111	Adaptor hub for 3M Scotchcart

DEMAGNETIZERS AND ERASERS

200-3T	820-0200	Bulk Tape Eraser, Hand Held 115V, 50/60Hz
220-3T	820-0220	Bulk Tape Eraser, Hand Held 220V, 50/60Hz
TD1B	820-0300	Bulk Tape Eraser, Heavy Duty, Table Top 115V, 50/60Hz
TD1BF	820-0301	Bulk Tape Eraser, Heavy Duty, Table Top 220V, 50/60Hz
K20/B5	800-3000	Annis Standard Han-D-Kit. Pocket Magnetometer, test strips and clip on extension probe and Han-D-Mag demagnetizer, 115V, 50/60Hz
K25/S5	800-3001	Annis Deluxe Han-D-Kit, same as above, except with larger Model 25 jewelled demagnetizer, 115V, 50/60Hz
PF-380	800-3002	Nortonics Carbide Head Degausser, 117V, 60Hz only
RS25055A	800-3003	Robbins Tape Head Demagnetizer, 115V, 50/60Hz only

Program Automation Equipment

CONTROL 16x

Control 16x with new expanded software, offers many new practical capabilities such as automatic system resync following a power failure, expanded log display on the system video monitor, complete business system interface with full two-way communications, and processor reset without need for memory reprogramming. In addition, Control 16x has more format control with the addition of new "event" and "compare time" functions. Live assist programming is also much easier in Control 16x with the added "direct start" capability. Regardless of your format, the "BE" Control 16x will air it with the least amount of difficulty. Even the newer satellite formats are handled with amazing ease.

C-16 960-1600 Control 16 Dual Microprocessor Automatic Program Controller with full stereo capability.

ECONO-16

Econo 16 is an economy version of Broadcast Electronics' highly successful, top of the line Control 16x. Microprocessor based, the Econo 16 is field expandable to full Control 16x capability. It is perfect for live assist programming and provides 2000 program events and 10 repetitive compare times. Many of Control 16x's unequalled features such as simplicity of operation and superior technical performance are retained.

SAT-16

SAT-16 is designed to handle unique "direct start" to automate satellite formats the way they were intended. This popular program system has memory capacity for full 24 hours of operation. It permits quick and simple programming and the system is expandable at any time.

EC-16 960-1605 Econo-Control 16 Microprocessor Program Controller with full stereo capability.

SAT-16 908-1610 SAT-16 Microprocessor Program Controller with full stereo capability.



CONTROL 16x



SAT-16



ECONO-16



BROADCAST ELECTRONICS INC.

4100 N. 24th St.
Quincy, IL 62301
(217) 224-9600 Telex 25 0142

STUDIO EQUIPMENT



MODEL 12C2 TWO-SPEED 12" TURNTABLE



MODEL 12C THREE-SPEED 12" TURNTABLE



MODEL 16C THREE-SPEED 16" TURNTABLE



GALAXY II VARIABLE-SPEED TURNTABLE

FEATURES

- Rim Drive Assures Minimum Rumble, Maximum Starting Torque
- Rugged Construction, Only three moving parts
- Stereo Rumble Less Than -38dB (Exceeds NAB Standards)
- Instant Start and No Speed Overshoot

The Models 12C, 12C2 and 16C turntables are rugged and reliable. Now manufactured by Broadcast Electronics, the turntables incorporate a series of subtle, precision improvements to the basic, time-proven QRK design which earned the Model 12C its reputation as "the industry standard".

These turntables reach operating speeds in a fraction of a second. They perform with a minimum of rumble, wow and flutter. The use of an acoustic-absorbing, high-memory rubber idler, as well as newly designed motor isolation mounts and statically-balanced motor/counter-weight assemblies contributes to the highly desirable, low rumble, wow and flutter characteristics.

Vastly improved dynamic balance is attributable to a redesigned precision machined, cast aluminum platter which produces maximum flywheel kinetic energy. The high-memory idler is especially designed to transmit the motor torque to the inner rim of the perfectly concentric platter in a highly efficient manner. Unlike center hub drive systems which require larger sized motors to produce comparable start times, outer rim drive, as demonstrated in over 35 years of usage, delivers essentially "instant start" time with a minimum of vibration side effects.

Available in two- or three-speed 12" or three-speed 16" versions the B/E "C-line" turntables satisfy the demand for high-quality, long-life, low noise and rumble equipment.

Attractively styled, the turntables are finished in a hard wearing gray with a black felt platter pad. Control panels are protected by an extremely durable polycarbonate overlay for long term protection of labelling and legends.

SPECIFICATIONS

Speeds	Speed Regulation	Platter Weight	Depth below Frame
12C2, 33-1/3 and 45 rpm	+1%, -0	12C, 12C2, 5 lbs.	12C, 12C2, 5"
12C, 16C, 33-1/3, 45 and 78 rpm	Line Voltage	16C, 9.5 lbs.	16C, 5-5/8"
	115VAC, 60Hz standard	Capstan Concentricity	Weight
Start Time (at 33-1/3 rpm)	(230VAC, 50Hz optional)	± 0.00015"	12C, 12C2, 21 lbs.
12C, 12C2 1/8th revolution	Platter Size	Dimensions	net. 25 lbs. packed.
16C, 1/4th revolution	12C, 12C2, 12"	12C, 12C2, 15"W x 15 1/2"D	16C, 22 1/2 lbs., net. 26 lbs.
Stereo Rumble	16C, 16"	16C, 20-1/8"W x 20-1/4"D	packed.
-38dB (NAB standard, -35dB)	Wow and Flutter	Platter Concentricity	Standard Color
	less than 0.1%	+ 0.010" max. at driven rim	Gray with black felt pad

TURNTABLES 12", 2-SPEED 33-1/3 and 45

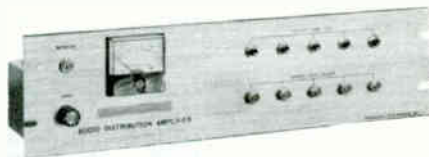
- 12C2/U 902-0063 12C Turntable 2-speed undrilled
- 12C2/320 902-0064 Same as 902-0063 except drilled for S-320
- 12C2/O 902-0065 Same as 902-0063 except drilled for other brand tone arm (specify brand arm)

TURNTABLES 12", 3-SPEED 33-1/3, 45, 78

- 12C/U 902-0008 12C Turntable 3-speed undrilled
- 12C/320 902-0009 Same as 902-0008 except drilled for S-320
- 12C/O 902-0010 Same as 902-0008 except drilled for other brand tone arm (specify brand arm)

TURNTABLES 16", 3-SPEED 33-1/3, 45, 78

- 16C/U 902-0069 16C Turntable 3-speed, 16" platter, undrilled. AC motor, 117V, 60Hz
- 16C/260 902-0070 Same as 902-0069 except drilled for S-260
- 16C/O 902-0071 Same as 902-0069 except drilled for other brand tone arm (specify brand arm)



AUDIO DISTRIBUTION AMPLIFIER

The Model AD1B audio distribution amplifier provides five isolated audio output channels for audio distribution to multiple points or to telephone lines. All five isolated outputs have individual front panel monitoring and level controls. Bridging or matching balanced or unbalanced input with VU meter. Model AD1B/T has transformer output.

- AD1B 903-0010 Audio D.A., 1 in, 5 out, rack mounting, Emitter Follower Output
- AD1B/T 903-0011 Audio D.A., 1 in, 5 out, rack mounting, Transformer Outputs



REK-O-KUT TONE ARMS

Optimum tracking capability ensures superior stereo reproduction. Available in 12" or 16" models, S-320 or S-260.

TONE ARMS

- S-320 950-0061 S-320 Rek-O-Kut 12" Tone Arm, Chrome plated
- S-260 950-0062 S-260 Rek-O-Kut 16" Tone Arm, Chrome plated



EP-1/2 TURNTABLE PREAMPLIFIER

The EP-1/2 Phono Preamps feature superb RFI immunity, exceptional S/N performance and excellent -70dB channel separation. EP-1 provides 600 ohms balanced transformer-less output. The EP-2 utilizes high quality output transformers for 150/600 ohms balanced floating outputs.

PREAMPLIFIERS

- EP-1 903-0020 Equalized Turntable PreAmplifier, RFI protected 117/220/240V, 50/60Hz
- EP-2 903-0021 Equalized Turntable PreAmplifier, RFI protected, w/transformer output, 117/220/240V, 50/60Hz



BETMS-100/200 TURNTABLE PREAMPLIFIER

The BETMS-100/200 series are economical professional quality dual channel turntable preamps for use with either mono or stereo cartridges. The BETMS-200 has transformer output.

- BETMS-100 903-0100 Equalized Turntable PreAmplifier
- BETMS-200 903-0200 Equalized Turntable PreAmplifier, with transformer output

Prices and Specifications Subject to Change Without Notice.

BROADCAST MICROWAVE SERVICES, INC.

7322 Convoy Ct.
San Diego, CA 92111
(619) 560-8601 TWX 9103351662

BROADCAST MICROWAVE ANTENNAS



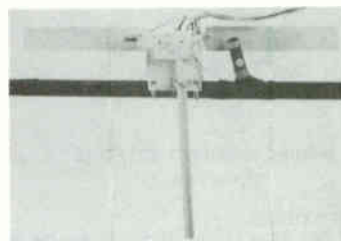
Point to Point Microwave Antennas



21 dB Dual Helix Antenna



10 dB Horn Antenna



16 dB Helicopter Antenna Array



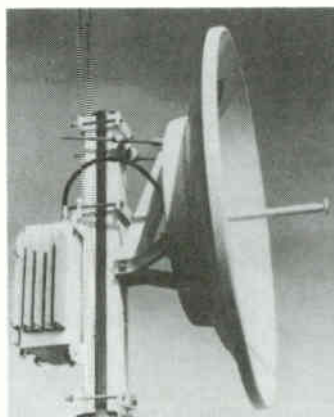
16 dB Yagi Antenna



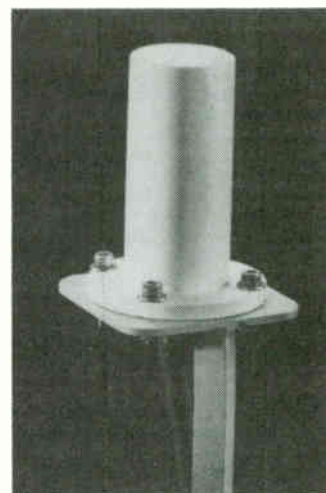
19 dB 2 Foot Dish Antenna



Truck Mounted Microwave System



18 dB Single Helix Antenna



Camera Mounted Omni

BROADCAST ANTENNAS

MODEL	FREQUENCY	ANTENNA TYPE
TBA-0-0	.2GHz	Back Pack
TBA-10	.2 GHz	Horn Antenna
TBA-10-D	.2 GHz	Horn R and LHC
TBA-6-0	.2GHz	Omni
TBA-14-0	.2GHz	Omnidirectional Receive
TBA-16Y	.2 GHz	Yagi
TBA-16YD	.2 GHz	Dual Yagi
TBA-18H	.2 GHz	Single Helix
TBA-21HD	.2 GHz	Dual Helix
TBA-2R	.2 GHz	2 ft. Radome
TBA-2RH	.2 GHz	2 ft. Radome, Heated
TBA-4R	.2 GHz	4 ft. Radome
TBA-4RH	.2 GHz	4 ft. Radome, Heated
TBA-6R	.2 GHz	6 ft. Radome
TBA-6RH	.2 GHz	6 ft. Radome, Heated
TBA-2/4R	.2 GHz	2 x 4 Radome
TBA-2/4	.2 GHz	2 x 4 R & LHC
TBA-2V	.2 GHz	2 ft. Parabolic, vert.
TBA-2	.2 GHz	2 ft. Parabolic, R & LHC
TBA-4	.2 GHz	4 ft. Parabolic
TBA-6	.2 GHz	6 ft. Parabolic
TBA7-6-0	.7 GHz	Omni
TBA7-16H	.7 GHz	16 dB Horn Antenna
TBA7-2R	.7 GHz	2 ft. Radome
TBA7-2RH	.7 GHz	2 ft. Radome, Heated
TBA7-4R	.7GHz	4 ft. Radome
TBA7-4RH	.7 GHz	4 ft. Radome, Heated
TBA7-6R	.7 GHz	6 ft. Radome
TBA7-6RH	.7 GHz	6 ft. Radome, Heated
TBA7-2	.7 GHz	2 ft. Parabolic
TBA7-4	.7 GHz	4 ft. Parabolic
TBA7-6	.7 GHz	6 ft. Parabolic
TBA13-2RH	.13 GHz	2 ft. Radome, Heated
TBA13-4R	.13 GHz	4 ft. Radome
TBA13-4RH	.13 GHz	4 ft. Radome, Heated
TBA13-6R	.13 GHz	6 ft. Radome
TBA13-6RH	.13 GHz	6 ft. Radome, Heated
TBA13-2	.13 GHz	2 ft. Parabolic
TBA13-4	.13 GHz	4 ft. Parabolic
TBA13-6	.13 GHz	6 ft. Parabolic

1050 McNicoll Ave., Unit 15
Agincourt, Ont. M1W2L8
(416) 497-1020 Telex 065-25329



EV4061

MODEL EV-4061

COMBINATION WAVEFORM/VECTOR MONITOR

- Switchable between waveform and vector display modes
- Full broadcast specifications
- A-B encoded video inputs with buffered video output
- Half rack width, 5-1/4" high
- Mounts beside half rack picture monitor for complete monitor bridge
- 3 Vertical and 3 Horizontal sweep rates
- High brightness trace on all sweep rates
- Variable brightness illuminated graticule
- Int/Ext Reference in either mode
- Parade display

CONTROLS AND FEATURES COMMON TO BOTH DISPLAYS

Front Panel Controls

- Waveform/Vector mode switch
- V and H centering
- A-B-CAL switch
- Intensity, focus, scale illumination
- Power on/off toggle switch
- DC restorer on/off switch
- Int/Ext reference switch

Rear Panel Controls (screwdriver adjust)

- Trace rotation

Display

- 10 x 8 cm rectangular flat faced CRT with P31 phosphor
- Accelerating voltage 6KV regulated

Power Requirements

- 108-125V, 216-238V, 50/60Hz switchable on rear panel, 35VA

Operating Temperature

- 0° to 45°C

Mechanical

- Dimensions: 5-1/4"H x 8-1/2"W x 18"L
- Weight: 18 lbs.

OPTIONS

- Adjustable carrying handle
- Rackmount adaptor
- Line selector input (both waveform and vector mode) using the BVS LS-300 Line Selector.

The EV4061 can be installed beside the following half rack width picture monitors:

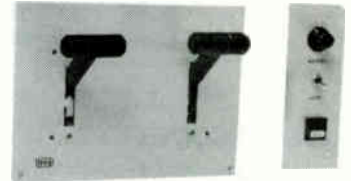
- Contrac SNA9/RK
- Sony PVM-8200T
- Videotek VM-8PRW
- Electrohome EVM910, EVM920
- Panasonic WV5311
- JVC TM-41AU (with BVS rack mount)

EV4061

\$3650.00



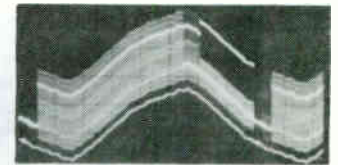
YMA-400



YMA-400K



HB-800



INPUT



OUTPUT

YMA-400 DUAL VIDEO MIX AMP

YMA-400K DOWNSTREAM KEYS

YMA-400

- Two independent, stand alone video mixing amplifiers in a single rack unit complete with remote control panel
- Each mix amp may be operated independently of the other, or may be cascaded
- No external sync required, operates on synchronous video sources
- Tally outputs provided on rear panel
- Ideal for expansion of any video system by adding two more levels of mix

YMA-400K

- Provides mix-in of downstream key, plus master fade to black
- Switchable between self key and external key
- Key preview output
- Switchable between 400 and 400K operation

Optional AUTO-MIX allows a variable rate, automatic mix or auto take on mix amp 1, initiated by pushbutton on remote panel or momentary contact closure to rear panel connector. Easily adaptable to any edit system.

YMA-400

\$1890.00

YMA-400K

2260.00

HB-800 HUM BUCKING COIL

Eliminate up to 6Vp-p ground induced hum.

- Dimensions: 5" x 2-1/4" x 5-1/4"
- Connectors: BNC
- Flat Loss: Less than 0.1 dB
- Freq. Response: Less than 0.1 dB down at 5.5 MHz
- Diff. Phase: Less than 0.1°
- Diff. Gain: Less than 0.1%
- Path Length: 21 ns

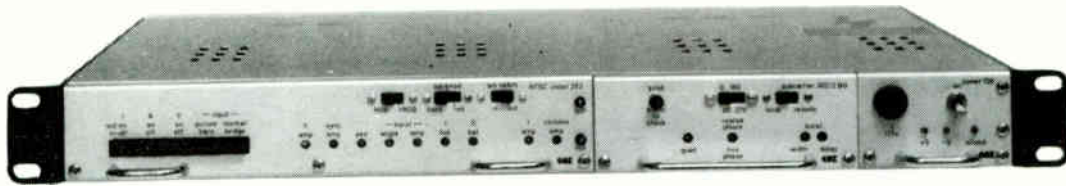
HB-800

\$165.00

BROADCAST VIDEO SYSTEMS LTD.

1050 McNicoll Ave., Unit 15
 Agincourt, Ont. M1W2L8
 (416) 497-1020 Telex 065-25329

ENCODER/ GENERATOR



203 NTSC ENCODER

203 NTSC ENCODER

- Integral bar generator available as option
- Single bar generator can drive multiple encoders
- Delivers 5 outputs
- All set-up controls on front panel
- Long term stability
- Occupies only 1-3/4 inches of rack height

Designed for any RGB (or YRGB) picture source, this encoder provides all the facilities needed in a broadcast encoding system in the smallest practical package, with operational requirements and stability as prime considerations. All switch functions such as picture-bars changeover, bridging, etc., are carried out using individually latching push button switches, while all preset controls are accessible from the front so that extender modules are not required for setting up purposes.

Color bars are EBU type, switchable between full field bars, split field (with lower third red) and full field red.

Note: If several encoders are to be installed together, one bar board can drive several encoders.

SPECIFICATIONS

Inputs: a) RGB picture inputs, impedance 75 ohm +/- 0.1% (if YRGB are required please specify with order) b) RGB bar input, looping input Zin greater than 100K c) sync d) blanking e) subcarrier f) Power 115v +/- 10%, 17VA 60Hz

The encoder is designed to operate with pulses of 2-8 volt amplitude, but with design centre of 4 volts. Subcarrier amplitude can be from 0.7 to 2 volts.

All inputs have looping connectors, and a return loss greater than 30dB.

Outputs: 5 isolated outputs from 75 ohm source, with return loss greater than 34dB to 5MHz

Pedestal: adjustable from 0 to 10 IEEE units

Modulator Balance: residual subcarrier less than 2mV (-54db) after optimization

L.F. Tilt: less than 1% on 60Hz bar signal (outputs clamped)

Luminance Response: typically +/- 0.3 dB to 5MHz; pulse/bar ratio 0.2us HAD pulse 99-101%; pulse 0.1us HAD pulse 98-102%

Registration: Luminance-Chrominance/Chrominance-Chrominance typically +/- 25ns

Insertion Delay: typically 800ns

Sync Risettime: 125ns +/- 25ns

Sync Width: as input pulse width +/- 70ns, with 4 volt pulse input

Burst Width and Breezeway: adjustable on front panel

Burst Phase: no separate burst modulator is used, therefore drift is minimized. Angle set by panel preset.

Overall Phase: 0-180° on a multiturn control, and with 0° or 180° extra on a switch. May be controlled locally or remotely.

Remote Control: Fine and coarse phase; Input changeover (picture/bar); Bridging (green input tied to red and blue); Chroma delete (for monochrome working)

Connectors: BNC for video and pulse, Cannon DE9 for control

Mechanical: Height: 44mm (1 3/4"). Depth: 322mm (12 1/2") from rack mounting face to connector panel. Weight: 3.5Kg unpacked (8 lbs.)

Extenders: Available if required. Order type 163 (8 way) for power module, 164 (24 way) for subcarrier module, 2 x 164 (dual 24 way) for encoding module. **\$3600.00**



SA-101

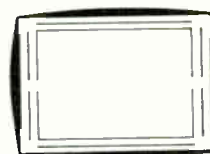
SA-101 Safe Area Generator

- Any pattern may be added to any of 5 independent, synchronous video sources.
- Safe Action and Safe Title Areas (as per SMPTE RP 27.3) displayed simultaneously.
- Display can be switched on/off, black/white independently on each source from remote panel.
- Center cross to locate exact picture center.
- Markers inserted to show legal H & V blanking limits.
- All patterns and markers digitally generated and locked to subcarrier, assuring accurate, drift-free reference for precise picture positioning.
- Movable Box Generator Option — An optional plug-in PC board allows the user to generate and store in memory ten different rectangles which can be keyed into any of the five video sources, with or without the Safe Area patterns. Each rectangle can be program-

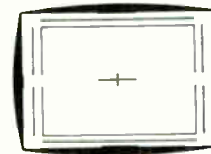
med for size and position at two rates of speed from the remote panel. Recall of any of these rectangles is via a remote thumbwheel. This option is very useful for positioning graphics, news shots, chroma keys, etc...

SA-101
 MBG option

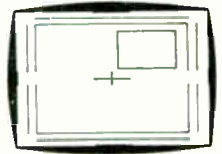
\$1525.00
750.00



Safe Action And
Title Graticules



With Center Cross And
Blanking Markers Enabled



With Addition Of
Box Generator Option

BROADCAST VIDEO SYSTEMS LTD.

1050 McNicoll Ave., Unit 15
 Agincourt, Ont. M1W2L8
 (416) 497-1020 Telex 065-25329

VIDEO AND PULSE DELAY LINES

DL505 SERIES RACK MOUNTED VIDEO DELAYS

- 75 ohms equalized to 5.5MHz
- 16 cards in 3 1/2" x 19" rackmount
- Isolated grounds between channels
- Greater than 70dB crosstalk between channels

The DL505 series, utilizing the new range of bvs dual-in-line delays offers the widest range of video delay concurrent with small size, rigid specifications and economy. The gold contact "Bergstrip" jumpers provide quick and easy delay selection while maintaining the circuit integrity of a soldered connection. The total range of any card may be extended in the field by simply adding an additional line.

Cards are infinitely adjustable within specified range via jumpers and fine trim.



DL505-2



DL505-13

Card Type	Range
DL505-1	10-165ns
DL505-2	10-245
DL505-3	10-455
DL505-4	310-745
DL505-5	410-845
DL505-6	510-945
DL505-7	610-1045
DL505-8	710-1145
DL505-9	810-1245
DL505-10	910-1345
DL505-11	1010-1445
DL505-12	1110-1545
DL505-13	1210-1645
DL505-14	1310-1745
DL505-15	1410-1845
DL505-16	1510-1945



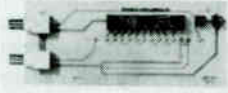
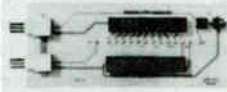
FR505 Mounting Frame

For full performance specifications see bvs dual-in-line data sheet.

DL500 SERIES RACK MOUNTED VIDEO DELAYS

- 75 ohms equalized to 5.5MHz
- 16 cards in 3 1/2" x 19" rackmount
- Isolated grounds between channels
- Greater than 70dB crosstalk between channels

The DL501 and DL502 are infinitely adjustable within their specified range via soldered jumpers and variable fine trim. They will mount in an FR505 frame.

Part No. DL501		Part No. DL502	
Range 10-165ns		Range 10-325ns	

VARIABLE BOXED VIDEO DELAYS

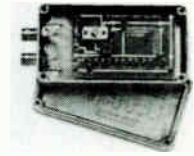
75 ohms equalized to 5.5MHz

Part No. 1002		Part No. 1001	
Range 10-165ns		Range 10-325ns	

via toggle switches and fine trim

via toggle switches and fine trim

Part No.	Range
010BV	7-15ns
165BV	15-165
215BV	65-215
265BV	115-265
365BV	215-365
465BV	315-465
565BV	415-565
665BV	515-665



Video Delay Lines mounted on PC board, installed in metal box, complete with BNC connectors. Infinitely variable delay within specified range by means of soldered jumpers and adjustable fine trimmer.

VARIABLE BOXED PULSE DELAYS

5ns Increments		20ns Increments	
Part No.	Range	Part No.	Range
155BP	5-155ns	620BP	20-620ns
310BP	5-310	1240BP	20-1240
755BP	5-755	3620BP	20-3620
1655BP	5-1655	100ns Increments	
1810BP	5-1810	1500BP	100-1500
2275BP	5-2275	3000BP	100-3000
3155BP	5-3155	4500BP	100-4500

75 Ohms Pulse Delay Lines mounted in metal box complete with BNC connectors. Delay sections can be connected to obtain specific delays within ranges shown.

DL505 SERIES RACK MOUNTED VIDEO DELAYS

Card Type	Price	Card Type	Price
DL505-1	\$192.00	DL505-9	\$679.00
DL505-2	233.00	DL505-10	707.00
DL505-3	346.00	DL505-11	712.00
DL505-4	497.00	DL505-12	820.00
DL505-5	524.00	DL505-13	857.00
DL505-6	529.00	DL505-14	884.00
DL505-7	647.00	DL505-15	889.00
DL505-8	674.00	DL505-16	895.00
FR505 Mounting Frame — \$170.00			

DL500 SERIES RACK MOUNTED VIDEO DELAYS

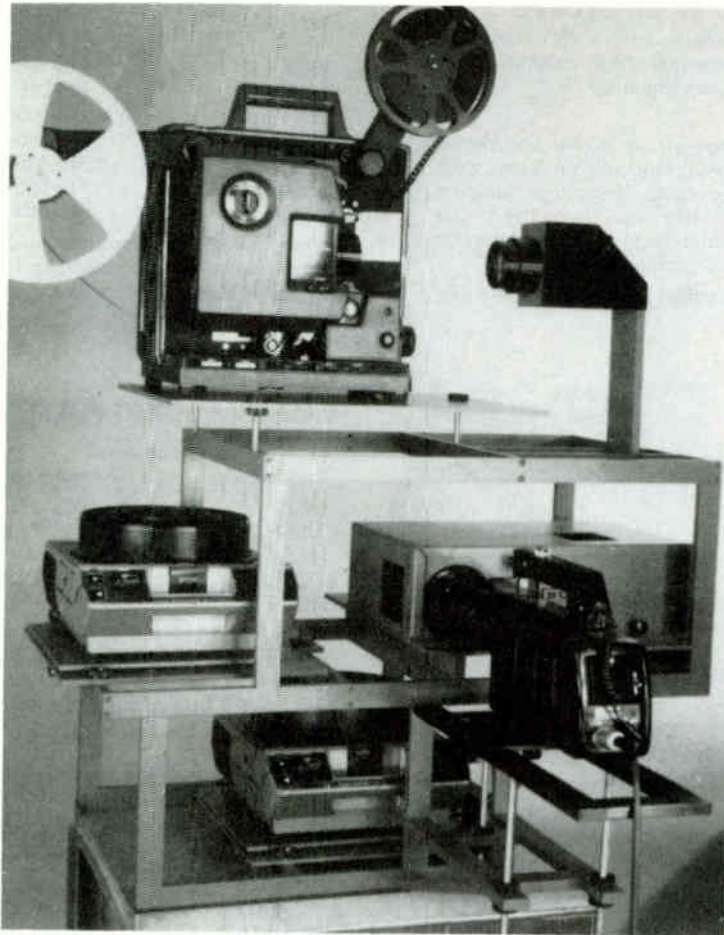
Card Type	Price	Card Type	Price
DL501	\$173.00	DL502	\$278.00

VARIABLE BOXED VIDEO DELAYS

Part No.	Price	Part No.	Price
1002	\$190.00	265BV	\$292.00
1001	345.00	365BV	324.00
010BV	72.00	465BV	388.00
165BV	182.00	565BV	435.00
215BV	266.00	665BV	458.00

VARIABLE BOXED PULSE DELAYS

Part No.	Price	Part No.	Price
155BP	\$ 87.00	620BP	\$ 98.00
310BP	144.00	1240BP	166.00
755BP	155.00	3620BP	308.00
1655BP	192.00	1500BP	135.00
1810BP	249.00	3000BP	240.00
2275BP	260.00	4500BP	345.00
3155BP	297.00		



SERIES II - MOBILE MULTIPLEXER

SERIES II - MOBILE MULTIPLEXER

The Film Chain Without A Dedicated Camera

Active image optical system.

The Series II Mobile Multiplexer is a free standing, compact film chain system designed to optically transfer visual dissolve programs to video systems, using two 35mm slide projectors and a 16mm projector.

Non-dedicated camera.

The television camera does not have to be dedicated to film chain use. The camera can be tripod-mounted and used on the Multiplexer with its normal zoom lens. A camera mount and quick release device are available if desired.

Normal zoom lens.

The camera's zoom lens allows precise image sizing. This includes the option of image size adjustments for mixtures of normal 35mm slides and TV format slides. No special lenses or close-up attachments are needed to enable the camera to match-up with the optical components of the Multiplexer.

A high quality, three element collimating lens system optically places the aerial image so that the video camera may be used at normal distance settings.

Built in projector lenses.

All highly corrected objective lenses for the slide projectors and the 16mm projector are built into the Multiplexer. One lens is used for the pair of slide projectors, which eliminates any magnification problems that might arise from using individual objective lenses.

Ektagraphic III slide projectors.

The Multiplexer is designed for use with Ektagraphic Series III E slide projectors. This projector features easy lamp change, is compatible with most electronic dissolve controls and only a minor modification is needed to adapt these projectors for video use.

Standard loading slide trays.

The carefully designed folded optical path allows for the 35mm slides to be loaded into the trays as for normal front projection. This eliminates the need to "flip" the slides for correct image orientation.

Because the camera has constant access to all inputs at all times, the slide projectors can be used to provide extra titles for the 16mm film.

620-100 Mobile Multiplexer \$3000.00

Basic unit includes mounting plate to hold 16mm projector and the optical system for 16mm films. Does not include projectors. Includes light diffusion device and neutral density filter holder for slide projectors.

620-150 Camera mount for 620-100 Multiplexer 240.00

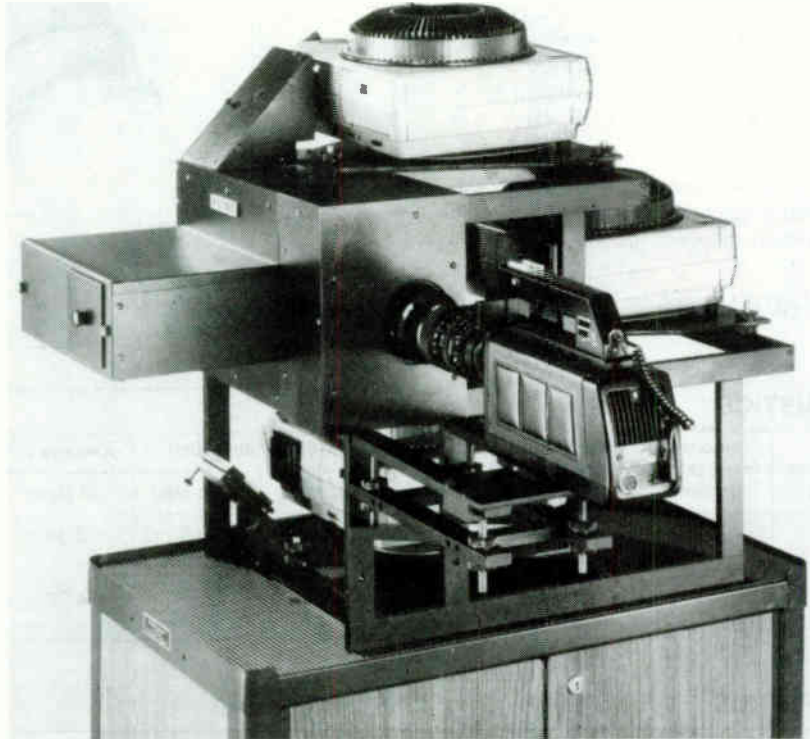
620-180 Floor mounting stand for MM II with leveling feet . . . 247.50

620-182 Floor mounting stand for MM II with locking casters . 261.00

620-390 Rolling cabinet for MM II, Shipped from Kansas 282.00

620-400 Ektagraphic E III for use on MM II and installed on original equipment 247.00

1009 Beech Ave.
Pittsburg, PA 15233
(412) 321-0076 (800) 245-4574



SERIES III - MULTIPLEXER

SERIES III - MULTIPLEXER

The Mobile Multiplexer III Film Chain
Designed to provide top quality transfers from three 35mm slide projectors onto video.

Space requirements.

The Mobile Multiplexer III is compact in design. Three Ektagraphic III slide projectors are placed in a stacked arrangement. Due to the projector arrangement, the actual footprint of the Multiplexer is only 2 x 3 feet.

Image alignment.

Images from the three projectors are accurately superimposed through the folded optical path. The camera has constant access to all inputs. Beamsplitting prisms are used rather than fragile pellicles or double-image producing beamsplitting plates. There are no double-image problems when using beamsplitting prisms. There are no moving mirrors to worry about.

Slide projectors.

The Mobile Multiplexer III is designed around the Kodak Ektagraphic III slide projectors. These projectors feature easy lamp access and are compatible with most electronic dissolve controls. Brightness modifiers for the three slide projectors are factory installed. Neutral density filter holders are provided should balancing filters be needed.

Alignment controls.

Easy to reach controls for alignment and fine tuning drastically cut down on initial set-up time as well as pre-transfer checking. Alignment and adjustment of each projector is precise and independent of the others.

Objective lens.

A highly corrected objective lens is used for all three slide projectors. The use of only one lens eliminates frustrating magnification problems that arise when more than one lens is used.

Collimating lens system.

A high quality three element collimating lens system optically places the image so that the video camera may be used at normal distance settings. No macro or other special lensing is needed for the video camera. The camera's normal zoom lens allows for precise image sizing. This includes the option of image size adjustments for normal vs TV format slides. The integrity of the optical video relations in the camera design is retained.

630-310 Multiplexer **\$2925.00**
Accepts 3 Ektagraphic III Slide Projectors. No input for 16mm. Does not include projectors.

630-312 Multiplexer **\$3225.00**
Accepts 3 Ektagraphic III Slide Projectors and has a 4th input port for a 16mm projector. Does not include projectors.

630-316 Multiplexer **\$2600.00**
Accepts 2 Ektagraphic III Slide Projectors.

630-150 Camera Mount **\$240.00**
Fits 630-310, 630-312, and 630-316 Multiplexers. Used for mounting the video camera instead of a free standing tripod.

CABLEWAVE SYSTEMS

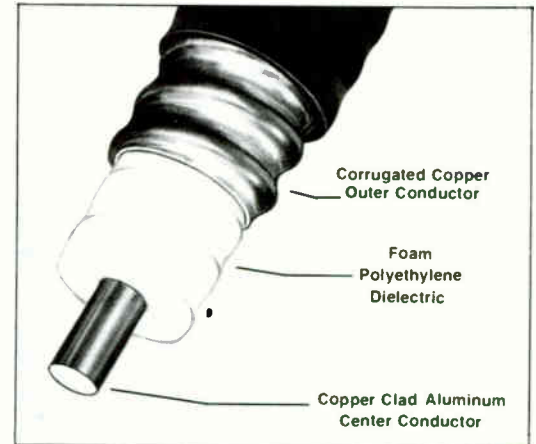
60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

3/8" AND 1/2" FOAM WELLFLEX COAXIAL CABLE

Cablewave Systems Foam Wellflex coaxial cables offer a combination of remarkable flexibility, high strength, and superior electrical performance. The designs include a copper clad aluminum center conductor, low-loss cellular polyethylene foam dielectric, corrugated copper outer conductor, and a protective black polyethylene jacket. Foam Wellflex is used extensively in communications and electronic systems in the HF, VHF, UHF and microwave frequency bands.

Standard Wellflex cables are supplied with a protective black polyethylene jacket. For indoor applications (delay lines or inter-rack cabling) an unjacketed version may be special ordered by dropping the "J" suffix.

Copper clad aluminum meets ASTM-B-566-72.



ELECTRICAL CHARACTERISTICS

Cable Type (part no.)	Cable Size	Impedance Ohms	Velocity of Propagation percent	Max. Freq. 90% fco GHz	Attenuation dB/100 ft. (db/100m)			Average power, KW @ 40° C Ambient		
					30 MHz	400 MHz	1000 MHz	30 MHz	400 MHz	1000 MHz
FCC 38-50J (810909-001)	3/8"	50	81	12.7	.58 (1.9)	2.3 (7.55)	3.9 (12.8)	2.44	.61	.35
FCC 12-50J (810907-001*)	1/2"	50	81	8.22	.38 (1.25)	1.59 (5.22)	2.78 (9.12)	4.27	1.03	.57

*75 ohm version available upon request.

MECHANICAL CHARACTERISTICS

Cable Type (part no.)	Center Conductor O.D., in. (mm)	Outer Conductor		Jacket O.D., in. (mm)	Minimum Bending Radius, in. (mm)	Cable Weight lbs/ft (kg/m)
		I.D., in. (mm)	O.D., in. (mm)			
FCC 38-50J (810909-001)	0.115 (2.92)	.293 (7.44)	.375 (9.53)	.445 (11.30)	4 (100)	.087 (0.12)
FCC 12-50J (810907-001)	.179 (4.55)	.457 (6.60)	.539 (13.69)	.610 (15.49)	5 (127)	.157 (0.23)

SHIPPING INFORMATION

Cable Type and Length ft. (m)		Package	Size, inches (mm)	Shipping Volume cu. ft. (m³)	Tare Weight lbs. (kg)
3/8"	1/2"				
0-200 (0-61)	—	Carton	28 x 28 x 4 (711 x 711 x 101)	1.8 (0.05)	5 (2.3)
200-400 (61-137)	0-200 (0-61)	Carton	42 x 42 x 4 (1066 x 1066 x 101)	4.1 (0.12)	14 (6.4)
—	200-350 (61-107)	Carton	60 x 60 x 6 (1524 x 1524 x 152)	12.5 (0.35)	18 (8.2)
450-825 (137-252)	—	Non-returnable reel	24 dia. x 20 wide (610 dia x 508 wide)	6.7 (0.19)	28 (12.7)
825-2500 (251-762)	350-1225 (107-373)	Non-returnable reel	41 dia. x 22.5 wide (1041 dia. x 571 wide)	22.0 (0.62)	85 (38.6)
2500-5800 (762-1768)	1230-3030 (375-924)	Non-returnable reel	44 dia. x 27.5 wide (1118 dia. x 699 wide)	31 (0.88)	57 (25.9)








Standard factory bulk lengths are 2,500 ft. (762 m) ± 10% for 3/8" and 1/2" Foam Wellflex cables. The normal tolerance on specified lengths is -0 +2%. Special tolerances available upon request. Attenuation values are nominal.

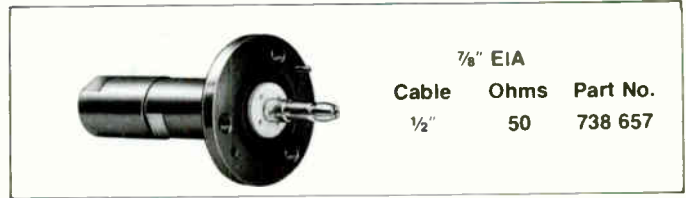
Copyright © 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

CONNECTORS FOR 3/8" AND 1/2" FOAM WELLFLEX

	N Male		
Cable	Ohms	Part No.	
3/8"	50	738 626	
1/2"	50	738 650	
	N Female		
Cable	Ohms	Part No.	
3/8"	50	738 627	
1/2"	50	738 651	
	UHF Male		
Cable	Ohms	Part No.	
3/8"	50	738 628	
1/2"	50	738 652	
	UHF Female		
Cable	Ohms	Part No.	
3/8"	50	738 629	
1/2"	50	738 653	
	TNC Male		
Cable	Ohms	Part No.	
3/8"	50	738 630	
	End Terminal		
Cable	Ohms	Part No.	
3/8"	50	738 632	
1/2"	50	738 659	
	Splice		
Cable	Ohms	Part No.	
3/8"	50	738 631	
1/2"	50	738 658	



CONNECTOR DIMENSIONS

Type	3/8"		1/2"	
	O.D. Inches	Length Inches	O.D. Inches	Length Inches
N Male	7/8	2 ¹³ / ₁₆	1	3 ⁵ / ₈
N Female	7/8	2 ⁵³ / ₆₄	1	3 ¹ / ₂
UHF Male	7/8	2 ³ / ₄	1	3 ¹ / ₄
UHF Female	7/8	2 ¹³ / ₁₆	1	3 ¹ / ₂
TNC Male	7/8	2 ⁷ / ₈	1	3 ³ / ₈
End Terminal	7/8	3 ⁹ / ₁₆	1	3 ¹ / ₂
Splice	7/8	3 ⁹ / ₁₆	1	4 ³ / ₈
7/8" EIA	—	—	1	3 ⁵ / ₈

ORDERING INFORMATION

Connectors may be ordered by the part number listed or by a cable designator followed by an interface abbreviation, i.e. "FC 38-50NM" for N male connector for 3/8" cable. Panel and bulkhead mount versions of most connectors are available and may be ordered by adding the suffix "(P)" or "(B)", i.e. FC 38-50NF(P) for N female panel mount connector for 3/8" cable and FC 12-50NF(B) for N female bulkhead mount connector for 1/2" cable.

EIA flange connectors for Foam Wellflex are not gas tight and use brass flanges. The EIA connectors include inner connector, O ring, and hardware.

Copyright© 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

1/2" and 7/8" LOW LOSS FOAM WELLFLEX CABLE



SPECIFICATIONS

FLC foam coaxial cables are newly designed to exhibit lower attenuation than prior foam cables. The proprietary design features a closed cell foam dielectric with low density and high velocity specifications. FLC cables provide low loss performance characteristics that are almost as low as air dielectric cables but with none of the pressurization requirements associated with air cable.

The outer conductor is annularly corrugated for flexibility, crush resistance, and prevention of moisture migration. This type of construction provides exceptional connector to cable attachment strength. Bonding the foam dielectric to the copper clad aluminum center conductor, and mechanically securing the outer conductor, insures dimensional stability under extreme environmental conditions. Weatherproof connectors have been designed for low VSWR and easy field installation. Cables are available in continuous lengths and are supplied with a black polyethylene jacket for improved handling and installation characteristics, and for use in direct burial applications.

This new series offers optimum performance for many applications throughout the Land Mobile, Microwave, Broadcast and Radar bands.

ELECTRICAL	Type No. FLC 12-50J	Type No. FLC 78-50J
	Part No. 810918-001	Part No. 810919-001
Frequency — Max.	8.0 GHz	5.0 GHz
Impedance	50 ohm	50 ohms
Velocity of Propagation	88%	88%
Attenuation (see curve page 2)		
400 MHz	1.50 dB/100 ft. (5.0 dB/100m)	0.8 dB/100 ft. (2.6 dB/100m)
800 MHz	2.2 dB/100 ft. (7.3 dB/100m)	1.2 dB/100 ft. (3.9 dB/100m)
2000 MHz	3.7 dB/100 ft. (12.15 dB/100m)	2.2 dB/100 ft. (7.2 dB/100m)
4000 MHz	5.6 dB/100 ft. (18.4 dB/100m)	3.5 dB/100 ft. (11.5 dB/100m)
Peak Power	26 kW	87 kW
Capacitance	23.5 pF/ft. (77.1 pF/m)	23.7 pF/ft. (77.8 pF/m)
Inductance	0.057 μH/ft. (0.187 μH/m)	0.058 μH/ft. (0.19 μH/m)
Phase Temperature Stability	-10 ppm/°F (-18 ppm/°C)	-10 ppm/°F (-18 ppm/°C)
DC Resistance		
center conductor	0.46 ohm/1000 ft. (1.51 ohm/1000m)	0.15 ohm/1000 ft. (0.5 ohm/1000m)
outer conductor	0.43 ohm/1000 ft. (1.41 ohm/1000m)	0.25 ohm/1000 ft. (0.82 ohm/1000m)
DC Test Voltage	3.2 kV	8 kV

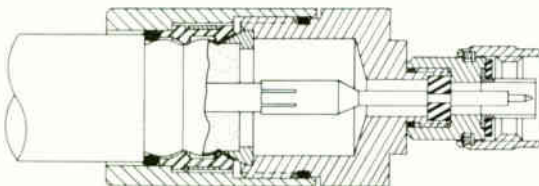
MECHANICAL

Nominal Size	1/2 in.	7/8 in.
Diameter over Jacket	0.640 in. max. (16.3mm)	1.124 in. max. (28.5mm)
Jacket Material	Black Polyethylene	Black Polyethylene
Outer Conductor	Annular Corrugated Copper	Annular Corrugated Copper
Center Conductor	Copper Clad Aluminum	Copper Clad Aluminum
Cable Weight	.178 lbs./ft. (0.26 kg/m)	0.43 lbs./ft. (0.64 kg/m)
Minimum Bending Radius	5 in. (127mm)	10 in. (254mm)
Bending Moment with Jacket	2 lbs. ft. (2.7 Nm)	19 ft. lbs. (25.7 Nm)
Number of Bends, Minimum	15	15
Tensile Strength	300 lbs. (136 kg)	330 lbs. (150 kg)
Flat Plate Crush Strength	115 lbs./in. (2 kg/mm)	80 lb./in. (1.4 kg/mm)
Operation Temperature Range		
lower limit	-40° F (-40° C)	-40° F (-40° C)
upper limit	determined by power level	determined by power level

CONNECTORS AND ACCESSORIES



FLC 1/2" CONNECTOR TYPE N MALE



CONNECTORS

	Type No. FLC 12-50J	Type No. FLC 78-50J
	Part No. 810918-001	Part No. 810919-001
N Male	738802	738828
N Female	738801	738829
Splice	738806	738830
EIA 7/8	738807	738831
UHF Female	738803	738832
UHF Male	738804	738833
End Terminal	738805	738834

MOUNTING HARDWARE AND ACCESSORIES

Non-Insulated Hanger Kit	920159-001	920159-002
Insulated Hangers	920150-001	920150-002
Round Member Adapter Kit	514542	514542
Angle Member Adapter Kit	920167-001	920167-001
Ceiling Adapter	514608-007	514608-007
Wall/Roof Feed Through	920432-002	920433
Hoisting Grip	910303	910307
Grounding Kit	713737-002	713737-004

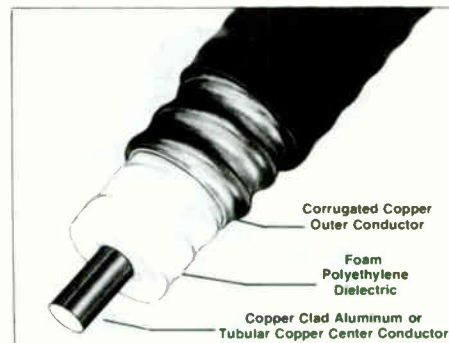
CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

7/8" AND 1-5/8" FOAM WELLFLEX/ COAXIAL CABLE

Cablewave Systems Foam Wellflex coaxial cables offer a combination of remarkable flexibility, high strength, and superior electrical performance. The designs include a copper clad aluminum (for 7/8") or a corrugated copper tube center conductor (for the 1 5/8" size), a low loss cellular polyethylene foam dielectric, corrugated copper outer conductor, and a protective black polyethylene jacket. Foam Wellflex is used widely in communications systems in the HF through microwave frequency range.

Copper clad aluminum meets ASTM-B-566-72.



ELECTRICAL CHARACTERISTICS

Cable Type (part no.)	Cable Size	Impedance ohms	Velocity of Propagation percent	Max. Freq. 90% fco GHz	Attenuation dB/100 ft. (dB/100m)			Average Power Kw (at 40° C Ambient)		
					30 MHz	400 MHz	1000 MHz	30 MHz	400 MHz	1000 MHz
FCC 78-50J* (810908-001)	7/8"	50	81	4.39	.21 (.69)	.99 (3.25)	1.8 (5.91)	9.6	2.1	1.07
FCC 158-50J (810910-001)	1 5/8"	50	80	2.5	.13 (.43)	.68 (2.23)	1.3 (4.27)	20.9	4.08	1.90

*75 ohm version available upon request.

MECHANICAL CHARACTERISTICS

Cable Type (part no.)	Center Conductor O.D., inches	Outer Conductor		Jacket O.D., in. (mm)	Minimum Bending Radius, in. (mm)	Cable Weight lbs./ft. (kg/m)
		I.D., in. (mm)	O.D., in. (mm)			
FCC 78-50J (810908-001)	.335 (8.51)	.866 (21.99)	.980 (24.89)	1.080 (27.43)	10 (254)	.476 (.708)
FCC 158-50J (810910-001)	.630 (16.00)	1.470 (37.34)	1.750 (44.45)	1.850 (46.99)	15 (381)	1.20 (1.78)

SHIPPING INFORMATION

Cable Type and Length ft. (m)		Package	Shipping Size, inches (mm)	Shipping Volume cu. ft. (m³)	Tare Weight lbs. (kg)
7/8"	1 5/8"				
0-125 (0-38)	—	Carton	60 x 60 x 6 (1524 x 1524 x 152)	12.5 (0.35)	18 (8.2)
125-250 (38-76)	—	Carton	60 x 60 x 12 (1524 x 1524 x 304)	25 (0.71)	22 (10)
250-1650 (76-503)	—	Non-returnable reel	62 dia. x 30.5 wide (1575 x 775)	68 (1.93)	324 (147)
1650-4750 (503-1448)	—	Non-returnable reel	76 dia. x 47 wide (1930 x 1194)	157 (4.46)	753 (341.6)
—	0-200 (0-61)	Crate	84 x 84 x 10 (2134 x 2134 x 254)	120 (3.40)	40.9 (18.6)
—	200-650 (61-122)	Non-returnable reel	82 dia. x 34 wide (2083 x 864)	132.4 (3.75)	708 (20.)
—	650-1100 (122-335)	Non-returnable reel	84 dia. x 42 wide (2134 x 1067)	171 (5.83)	900 (408)
—	1100-1800 (335-549)	Non-returnable reel	92 dia. x 42 wide (2337 x 1067)	206 (5.83)	535 (243)










Standard factory bulk lengths are: 2,500 ft. (760 m) ± 10% for 7/8" foam Wellflex and 1,500 ft. (455 m) ± 10% for 1 5/8" foam Wellflex. Maximum lengths of 7/8" cable with 7/8" EIA connectors attached are 1500 ft. (322 m) for the 62" dia. reel and 4400 ft. (1340 m) for the 76" dia. reel. Maximum lengths of 1 5/8" cable with 1 5/8" EIA connectors attached are 450 ft. (137 m) for the 82" dia. reel, 1000 ft. (322 m) for the 84" dia. reel, and 1500 ft. (457 m) for the 92" dia. reel. The normal tolerance on specified lengths is -0 +2%. Special tolerances available upon request. Attenuation values are nominal.

Copyright© 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473



CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

CONNECTORS FOR 7/8" AND 1-5/8" FOAM WELLFLEX

	7/8" EIA	Cable	Ohms	Part No.
		7/8"	50	738 682**
		1 5/8"	50	738 705**
(Inner Connector P/N 612951)				
	1 5/8" EIA	Cable	Ohms	Part No.
		1 5/8"	50	738 704**
(Inner Connector P/N 612874)				
	LC Male	Cable	Ohms	Part No.
		7/8"	50	738 679
	LC Female	Cable	Ohms	Part No.
		7/8"	50	738 680
	N Male	Cable	Ohms	Part No.
		7/8"	50	738 675
		1 5/8"	50	738 700
		7/8"	75	738 450
	N Female	Cable	Ohms	Part No.
		7/8"	50	738 676
		1 5/8"	50	738 701
		7/8"	75	738 451
	UHF Male	Cable	Ohms	Part No.
		7/8"	50	738 677
	UHF Female	Cable	Ohms	Part No.
		7/8"	50	738 678
	Splice	Cable	Ohms	Part No.
		7/8"	50	738 683
		1 5/8"	50	738 706
		7/8"	75	738 453

* Uses 70 ohm center pin **Inner connector supplied loose

	End Terminal			
Cable	Ohms	Part No.		
7/8"	50	738 684		
1 5/8"	50	738 707		
7/8"	75	738 454		
	HN Male	Cable	Ohms	Part No.
		7/8"	50	738 681
7/8" EIA 90° Miter Elbow		4-78-50		
1 5/8" EIA 90° Miter Elbow		4-158-50		
1 5/8" EIA—7/8" EIA Plate Reducer		23-158-50		
3 1/8" EIA—1 5/8" EIA Plate Reducer		23-318-50		
For rigid line components, see pages 107 to 115.				

CONNECTOR DIMENSIONS

Type	7/8"		1 5/8"	
	O.D. Inches	Length Inches	O.D. Inches	Length Inches
7/8" EIA	1 1/16	5 5/8	2 5/8	7 3/32
1 5/8" EIA	—	—	2 5/8	7 1/2
LC Male	1 1/16	3 15/16	2 5/8	7 1/4
LC Female	1 1/16	4 3/32	2 5/8	7 1/8
N Male	1 1/16	3 29/32	2 5/8	6 1/2
N Female	1 1/16	4	2 1/2	5 11/64
UHF Male	1 1/16	3 27/32	—	—
UHF Female	1 1/16	3 15/16	—	—
Splice	1 1/16	5 3/32	3 5/8	10 1/8
End Terminal	1 1/16	4 23/32	2 5/8	9 1/8
HN Male	1 1/16	3 15/16	2 5/8	5 5/8

ORDERING INFORMATION

Connectors may be ordered by the part number listed or by a cable designator followed by an interface abbreviation, i.e. "FC 78-50EIA" for 7/8" EIA connector for 7/8" Foam Wellflex cable. Panel and bulkhead mount versions of most connectors are available and may be ordered by adding the suffix "(P)" or "(B)", i.e. FC 78-50NF(B) for N female bulkhead mount connector for 7/8" cable. EIA connectors for Foam Wellflex are not gas tight and use brass flanges. All EIA connectors include inner connector, O ring, and hardware. The 75 ohm type N connector has a 70 ohm center pin. Spanner wrench is supplied where required.

Copyright © 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

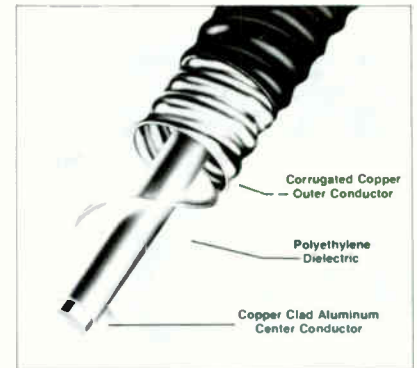
60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

COAXIAL CABLE 1/2" AND 7/8" AIR DIELECTRIC WELLFLEX

Cablewave Systems air dielectric Wellflex coaxial cables offer a combination of remarkable flexibility, rugged strength, and superior electrical performance. The designs include a copper clad aluminum center conductor, extruded spiral polyethylene dielectric insulator, corrugated copper outer conductor, and protective black polyethylene jacket. Air dielectric Wellflex is used extensively in communications and electronic systems in the HF through microwave frequency range.

The helix is extruded precisely onto (and covers) the center conductor, to achieve better uniformity, lower attenuation, and better mechanical stability than similar size competitive air dielectric coaxial cables. The Wellflex "locked" insulator construction results in superior phase stability through temperature changes and bending.

Copper clad aluminum meets ASTM-B-566-72.



ELECTRICAL CHARACTERISTICS

Cable Type (part no.)	Cable Size	Impedance ohms	Velocity of Propagation percent	Max. Freq. 90% fco GHz	Attenuation dB/100ft. (dB/100m)			Average Power Kw, @40 Ambient		
					30 MHz	400 MHz	1000 MHz	30 Mhz	400 MHz	1000 MHz
HCC 12-50J (810901-001)	1/2"	50	91.5	11.3	.455 (1.49)	1.72 (5.64)	2.79 (9.15)	3.57	.946	.583
HCC 78-50J (810902-001)	7/8"	50	91.5	5.13	.202 (.67)	.783 (2.57)	1.29 (4.23)	11.0	2.85	1.73
HCC 78-75J (810973-001)	7/8"	75	93	5.75	.189 (.62)	.735 (2.41)	1.22 (4.00)	10.2	2.65	1.60

MECHANICAL CHARACTERISTICS

Cable Type (part no.)	Center Conductor O.D., Inches (mm)	Outer Conductor		Jacket O.D., in. (mm)	Minimum Bending Radius, in. (mm)	Cable Weight lbs/ft. (kg/m)
		I.D., in. (mm)	O.D., in. (mm)			
HCC 12-50J (810901-001)	.155 (3.94)	.338 (8.59)	.484 (12.29)	.618 (15.70)	5 (127)	.16 (.24)
HCC 78-50J (810902-001)	.354 (8.99)	.794 (20.17)	1.00 (25.4)	1.13 (28.8)	10 (254)	.55 (.82)
HCC 78-75J (810973-001)	.226 (5.74)	.794 (20.17)	1.00 (25.4)	1.13 (28.8)	10 (254)	.45 (.67)

SHIPPING INFORMATION

Cable Type and Length ft. (m)		Package	Shipping Size, inches (mm)	Shipping Volume cu.ft. (m ³)	Tare Weight lbs. (kg)
1/2"	7/8"				
0-200 (0-60)		Carton	42 x 42 x 4 (1067 x 1067 x 101)	4.1 (0.1)	14 (6.4)
200-500 (60-152)	0-120 (0-37)	Carton	60 x 60 x 6 (1524 x 1524 x 152)	12.5 (.35)	18 (8.2)
	120-250 (37-76)	Carton	60 x 60 x 12 (1524 x 1524 x 305)	25 (.7)	22 (10)
500-1250 (152-381)		Non-returnable reel	41 dia. x 22.5 wide (1041 x 571)	22.5 (0.6)	85 (38.6)
1250-3050 (381-930)		Non-returnable reel	44 dia. x 27.5 wide (1066 x 699)	31.0 (0.9)	157 (71.2)
	250-1550 (76-472)	Non-returnable reel	62 dia. x 30.5 wide (1575 x 775)	67.9 (1.9)	324 (147)
	1550-3950 (472-1200)	Non-returnable reel	76 dia. x 47 wide (1930 x 1194)	157.2 (4.46)	753 (342)

Standard factory bulk lengths are 2,500 ft. (765 m) ± 10% for 1/2" and 7/8" air dielectric Wellflex. Maximum lengths of 7/8" cable with 7/8" EIA connectors attached are 1300 ft. (395 m), 62" dia. reel, and 2,000 ft. (610 m) for the 76" dia. reel. The normal tolerance on specified lengths is -0 +2%. Special tolerances available upon request. Attenuation values are nominal.

Copyright © 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473





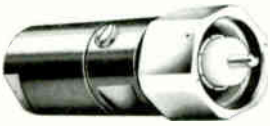



Prices and Specifications Subject to Change Without Notice.

B-199

CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

CONNECTORS FOR 1/2" AND 7/8" AIR WELLFLEX

	<p>7/8" EIA (GP)</p> <table border="1"> <thead> <tr> <th>Cable</th> <th>Ohms</th> <th>Part No.</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>50</td> <td>738 259**</td> </tr> <tr> <td>7/8"</td> <td>75</td> <td>738 550**</td> </tr> </tbody> </table> <p>(Inner Connector P/N 612951)</p>	Cable	Ohms	Part No.	7/8"	50	738 259**	7/8"	75	738 550**			
Cable	Ohms	Part No.											
7/8"	50	738 259**											
7/8"	75	738 550**											
	<p>7/8" EIA (GB)</p> <table border="1"> <thead> <tr> <th>Cable</th> <th>Ohms</th> <th>Part No.</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>50</td> <td>738 256**</td> </tr> </tbody> </table> <p>(Inner Connector P/N 612951)</p>	Cable	Ohms	Part No.	7/8"	50	738 256**						
Cable	Ohms	Part No.											
7/8"	50	738 256**											
	<p>N Male</p> <table border="1"> <thead> <tr> <th>Cable</th> <th>Ohms</th> <th>Part No.</th> </tr> </thead> <tbody> <tr> <td>1/2"</td> <td>50</td> <td>738 200</td> </tr> <tr> <td>7/8"</td> <td>50</td> <td>738 250</td> </tr> </tbody> </table>	Cable	Ohms	Part No.	1/2"	50	738 200	7/8"	50	738 250			
Cable	Ohms	Part No.											
1/2"	50	738 200											
7/8"	50	738 250											
	<p>N Female</p> <table border="1"> <thead> <tr> <th>Cable</th> <th>Ohms</th> <th>Part No.</th> </tr> </thead> <tbody> <tr> <td>1/2"</td> <td>50</td> <td>738 201</td> </tr> <tr> <td>7/8"</td> <td>50</td> <td>738 251</td> </tr> <tr> <td>7/8"</td> <td>75*</td> <td>738 551</td> </tr> </tbody> </table>	Cable	Ohms	Part No.	1/2"	50	738 201	7/8"	50	738 251	7/8"	75*	738 551
Cable	Ohms	Part No.											
1/2"	50	738 201											
7/8"	50	738 251											
7/8"	75*	738 551											
	<p>LC Male</p> <table border="1"> <thead> <tr> <th>Cable</th> <th>Ohms</th> <th>Part No.</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>50</td> <td>738 254</td> </tr> </tbody> </table>	Cable	Ohms	Part No.	7/8"	50	738 254						
Cable	Ohms	Part No.											
7/8"	50	738 254											
	<p>UHF Female</p> <table border="1"> <thead> <tr> <th>Cable</th> <th>Ohms</th> <th>Part No.</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>50</td> <td>738 253</td> </tr> </tbody> </table>	Cable	Ohms	Part No.	7/8"	50	738 253						
Cable	Ohms	Part No.											
7/8"	50	738 253											
	<p>Splice</p> <table border="1"> <thead> <tr> <th>Cable</th> <th>Ohms</th> <th>Part No.</th> </tr> </thead> <tbody> <tr> <td>1/2"</td> <td>50</td> <td>738 204</td> </tr> <tr> <td>7/8"</td> <td>50</td> <td>738 257</td> </tr> </tbody> </table>	Cable	Ohms	Part No.	1/2"	50	738 204	7/8"	50	738 257			
Cable	Ohms	Part No.											
1/2"	50	738 204											
7/8"	50	738 257											
	<p>End Terminal</p> <table border="1"> <thead> <tr> <th>Cable</th> <th>Ohms</th> <th>Part No.</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>50</td> <td>738 258</td> </tr> <tr> <td>7/8"</td> <td>75</td> <td>738 553</td> </tr> </tbody> </table>	Cable	Ohms	Part No.	7/8"	50	738 258	7/8"	75	738 553			
Cable	Ohms	Part No.											
7/8"	50	738 258											
7/8"	75	738 553											

* Uses 70 ohm center pin **Inner connector supplied loose

N Male (Low VSWR Tunable)			N Female (Low VSWR Tunable)		
Cable	Ohms	Part No.	Cable	Ohms	Part No.
7/8"	50	738 260	7/8"	50	738 261
7/8" EIA Anchor Inner Connector			612951		
7/8" EIA 90° Miter Elbow			4-78-50		
1 1/2" EIA—7/8" EIA Plate Reducer			23-158-50		
For rigid line components, see pages 107 to 115.					

CONNECTOR DIMENSIONS

Type	1/2"		7/8"	
	O.D. Inches	Length Inches	O.D. Inches	Length Inches
7/8" EIA (GP)	—	—	1 1/16	4 7/32
7/8" EIA (GB)	—	—	1 1/16	4 7/32
N Male	1	3 3/16	1 1/16	3 7/8
H Female	1	3 1/4	1 1/16	3 13/16
L C Male	—	—	1 1/16	4 1/16
L C Female	—	—	1 1/16	4 11/32
UHF Female	—	—	1 1/16	3 7/8
Splice	1	3 3/16	1 1/16	4 11/16
End Terminal	—	—	1 1/16	4 7/8
N Male (Low VSWR Tunable)	—	—	1 1/16	9
N Female (Low VSWR Tunable)	—	—	1 1/16	7 13/16

ORDERING INFORMATION

Connectors may be ordered by the part number listed or by a cable designator followed by an interface abbreviation, i.e. HC 78-50 EIA(GP) for 7/8" EIA (gas pass) connector for 7/8" air Wellflex cable. Panel and bulkhead mount versions of several connectors are available and may be ordered by adding the suffix "(P)" or "(B)", i.e. HC 12-50NF(B) for N female bulkhead mount connector for 1/2" air Wellflex or HC 78-50NF(P) for N female panel mount connector for 7/8" air dielectric Wellflex cable.

An anchor inner connector, "O" ring gasket, and hardware are supplied with each EIA connector. Normally a gas pass (GP) connector is used at the antenna end and a gas barrier (GB) type at the equipment end to facilitate antenna pressurization. EIA connectors for air dielectric Wellflex use brass flanges.

Copyright © 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

60 Dodge Avenue
 North Haven, CT 06473
 (203) 239-3311
 Telex 6813343 TWX 710-465-0244

1-5/8" FLC LOW LOSS FOAM FLEXWELL CABLE



FLC 1-5/8" LOW LOSS FOAM FLEXWELL CABLE

FLC 1-5/8 inch coaxial cable features a proprietary closed cell foam dielectric with low density and high velocity specifications. FLC cable exhibits lower attenuation than prior foam cable of its size.

The cable outer conductor is annularly corrugated for flexibility, crush resistance and prevention of moisture migration. The foam dielectric is bonded to the corrugated copper tubular center conductor providing dimensional stability under extreme environmental conditions. Weatherproof connectors have been designed for low VSWR and easy field installation. The cable is available in continuous lengths and is supplied with a black polyethylene jacket for improved handling and for use in direct burial applications.

FLC 1-5/8 inch coaxial cable offers optimum performance for many applications throughout the Land Mobile, Cellular, Microwave, Broadcast, and Radar bands.

Connectors		Mounting Hardware/Accessories	
ITEM	PART NUMBER	ITEM	PART NUMBER
EIA 7/8"	738854	Non-Insulated Hanger Kit	920159-003
EIA 1-5/8"	738853	Insulated Hanger	920161-003
N Male	738850	Round Member Adapter Kit	514542
N Female	738851	Angle Member Adapter	920167-002
End Terminal	738856	Wall/Roof Feed Through	920434
Splice	738855	Hoisting Grip	910311
		Grounding Kit	713737-005

SPECIFICATIONS

Type No. FLC 158-50J Part No. 810920-001

ELECTRICAL

Maximum Operating Frequency 2.7 GHz
 Velocity of Propagation 88%
 Attenuation
 100 MHz 0.23 dB/100 ft.
 850 MHz 0.82 dB/100 ft.
 2000 MHz 1.38 dB/100 ft.
 Peak Power 320 kW
 Average Power Rating
 Peak Operating Voltage 4 kV

MECHANICAL

Jacket (black polyethylene) 2.0 in.
 Outer Conductor 1.83 in.
 Center Conductor 0.68 in.
 Minimum Bending Radius 20 in.
 Weight 0.92 lb/ft.
 1.37 kg/m

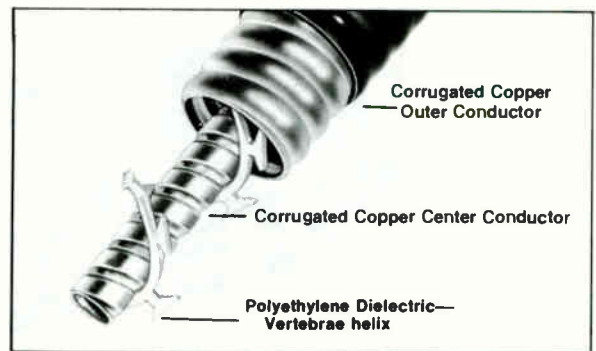
CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

1-5/8", 3" AND 3-1/2" AIR DIELECTRIC WELLFLEX/COAXIAL CABLE

Cablewave Systems air dielectric Wellflex coaxial cables achieve a combination of remarkable flexibility, rugged strength, and superior electrical performance. The 1 5/8", 3" and 3 1/2" cable design includes a corrugated tubular copper center conductor, spiral polyethylene dielectric, corrugated outer conductor, and a black polyethylene jacket. The special helix insulator construction contributes to low dielectric loss and excellent mechanical stability.

Air dielectric Wellflex cables are used extensively in high power applications in the HF through lower frequency microwave bands.



ELECTRICAL CHARACTERISTICS

Cable Type (part no.)	Cable Size	Impedance Ohms	Velocity of Propagation percent	Max. Freq. 90% fco GHz	Attenuation dB/100 ft. (db/100m)			Average Power Kw 40° Ambient		
					30 MHz	400 MHz	1000 MHz	30 MHz	400 MHz	1000 MHz
HCC 158-50J (810903-001)	1 5/8"	50	95	2.74	.107 (.35)	.417 (1.37)	.699 (2.29)	25.3	6.44	3.85
HCC 300-50J (810905-001)	3"	50	96	1.63	.071 (.233)	.330 (1.08)	.612 (2.01)	69.5	15.0	8.14
HCC 312-50J (810915-001)	3 1/2"	50	96	1.43	.058 (.19)	.229 (.751)	.384 (1.26)	93	25	15

MECHANICAL CHARACTERISTICS

Cable Type (part no.)	Center Conductor O.D., in. (mm)	Outer Conductor		Jacket O.D., in. (mm)	Minimum Bending Radius, in. (mm)	Cable Weight lbs./ft. (kg/m)
		I.D., in (mm)	O.D., in. (mm)			
HCC 158-50J (810903-001)	.732 (18.6)	1.564 (39.7)	1.830 (46.4)	1.996 (51)	20 (508)	.915 (1.36)
HCC 300-50J (810905-001)	1.150 (29.2)	2.500 (63.5)	2.850 (723)	3.05 (77.4)	30 (762)	1.75 (2.60)
HCC 312-50J (810915-001)	1.36 (34.54)	2.961 (75.21)	3.36 (85.34)	3.60 (91.44)	30 (762)	2.0 (2.98)

SHIPPING INFORMATION

Cable Type and Length ft. (m)		Package	Shipping Size, inches (mm)	Shipping Volume cu. ft. (m ³)	Tare Weight lbs. (kg)
1 5/8"	3"				
0-200 (0-61)	0-75 (0-23)	Non-returnable reel	75 dia x 20 wide (1905 x 508)	40.9 (1.16)	120 (54.4)
	0-200 (0-61)	Non-returnable reel	88 dia x 40 wide (2235 x 1016)	132.4 (3.75)	708 (321)
200-650 (61-198)		Non-returnable reel	88 dia x 40 wide (2235 x 1016)	132.4 (3.75)	708 (321)
650-1150 (198-351)		Non-returnable reel	88 dia x 40 wide (2235 x 1016)	171.5 (4.86)	898 (407)
1150-1800 (351-549)		Returnable reel	98 dia x 65 wide (2489 x 1651)	205.8 (5.8)	1016 (461)
	200-700 (61-213)	Returnable reel	98 dia x 65 wide (2489 x 1651)	246 (6.97)	1164 (528)
	700-1450 (213-442)	Returnable reel	108 dia x 66 wide (2743 x 1676)	398 (11.27)	1710 (776)

Standard factory bulk lengths are 1,500 ft. (460 m) ± 10% for 1 5/8" Air Wellflex and 1,200 ft. (265 m) ± 10% for 3" Air Wellflex. Maximum lengths of 1 5/8" cable with 1 5/8" EIA connectors attached are 450 ft. (165 m), 88" dia. reel, 1,000 ft. (305 m), 88" dia. reel, and 1,200 ft. (365 m) for 98" dia. reel. Maximum lengths of 3" cable with 3 1/2" EIA connectors attached are 500 ft. (150 m), 98" dia. reel, and 1,200 ft. (365 m) for the 108" dia. reel. The normal tolerance on specified lengths is -0 + 2%. Special tolerances available upon request. Attenuation values are nominal.

Copyright © 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

CONNECTORS FOR 1-5/8", 3" AND 3-1/2" AIR WELLFLEX



1 1/2" EIA (Gas Pass)
Cable Ohms Part No.
1 1/2" 50 738 314*
(Inner Connector P/N 612874)



1 1/2" EIA (Gas Barrier)
Cable Ohms Part No.
1 1/2" 50 738 303*
(Inner Connector P/N 612874)



3" EIA (GP)
Cable Ohms Part No.
3" 50 738 355*
3 1/2" 50 734 579



3" EIA (GB)
Cable Ohms Part No.
3" 50 738 350*
3 1/2" 50 734 578



3" EIA Anchor Inner Connector
Ohms Part No.
50 622 720



N Female
Cable Ohms Part No.
1 1/2" 50 738 301

7/8" EIA (GP/Low VSWR Tunable)
Cable Ohms Part No.
1 1/2" 50 738 308
(See page 99)

7/8" EIA (GB/Low VSWR Tunable)
Cable Ohms Part No.
1 1/2" 50 738 310
(See page 99)



7/8" EIA Reducer Connectors
Connector Cable Ohms Part No.
7/8" EIA(GB) 1 1/2" 50 738 304
7/8" EIA(GP) 1 1/2" 50 738 311



End Terminal
Cable Ohms Part No.
1 1/2" 50 738 306



Splice
Cable Ohms Part No.
1 1/2" 50 738 305
3" 50 738 352
3 1/2" 50 734 574

LC Female
Cable Ohms Part No.
1 1/2" 50 738 302

3 1/2" EIA Anchor Inner Connector 622 720
1 1/2" EIA 90° Miter Elbow 4-158-50
3 1/2" EIA 90° Miter Elbow 4-318-50
3 1/2" EIA End Terminal 20H-318-50
For rigid line components, see pages 107 to 115

CONNECTOR DIMENSIONS

Type	1 1/2"		3"	
	O.D. Inches	Length Inches	O.D. Inches	Length Inches
1 1/2" EIA and 1 1/2" EIA (GB)	2 1/2	6 1/6	—	—
3 1/2" EIA and 3 1/2" EIA (GB)	—	—	5 1/6	7 7/8
N Female	2 1/2	5 3/6	—	—
LC Female	2 1/2	5 1/32	—	—
7/8" EIA Reducer Connector	2 1/2	5 3/8	—	—
End Terminal	2 1/2	7 3/8	—	—
Splice	3 1/2	4 3/6	4 1/2	7 3/6
7/8" EIA (GB/Low VSWR Tunable)	2 1/2	8 3/6	—	—
N Female (Low VSWR Tunable)	2 1/2	9 3/6	—	—

ORDERING INFORMATION

Connectors may be ordered by the part number listed or by a cable designator followed by an interface abbreviation, i.e. HC 158-50 EIA(GP) for 1 1/2" EIA gas pass connector.

The 1 1/2" EIA connectors include an anchor inner connector, "O" ring gasket, and hardware. The 3 1/2" EIA connectors are female type and include only an "O" ring gasket and hardware while the anchor inner connector is ordered separately if required. EIA connectors for Air Wellflex coaxial cable are supplied with brass flanges. Normally, a gas pass (GP) connector is used at the antenna and a gas barrier (GB) connector at equipment end. Spanner wrench is supplied where required.

Copyright © 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

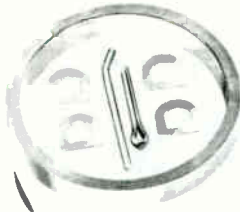
CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

COAXIAL CABLE/ INSTALLATION ACCESSORIES

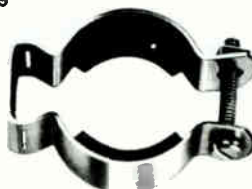
STRAPTITE STAINLESS STEEL STRAPPING 910 061

Stainless steel strapping kit used at 3 ft. (1 m) intervals for 1/4" through 1 1/2" cables. Kit consists of 100 ft. (30 m) 1/2" wide high strength alloy stainless steel strap, fastener buckles, and installation tightening tool.



NON-INSULATED HANGER KIT 920 159

Corrosion resistant stainless steel cable hangers used with angle member or round member adaptors. Recommended spacing every 3 ft. (1 m): Includes special weatherproof adhesive cushioning tape for jacket protection. 10 hangers per kit.



Cable	Hanger Mtn. Hole	Part No.
1/2"	17/64"	920 159-001
7/8"	17/64"	920 159-002
1 5/8"	13/32"	920 159-003
3"	13/32"	920 159-004
3 1/2"	13/32"	920 159-005
4 1/2"	17/32"	920 159-006

ANGLE MEMBER ADAPTOR KIT

Fastens non-insulated or insulated hangers to tower angle members without drilling. Consists of hot dip galvanized universal clamps with clamp set screw and hanger mounting screw supplied. Hanger mounting screw may be located in either of two mounting holes. 10 angle member adaptors per kit.



Angle Adaptor Part No.	Hanger Type	Jaw Opening	Hanger Mtn. Screw
920 167-001	1/2"-7/8"	3/4"	1/4"-20 x 5/16"
920 167-002	Non-insulated, 1 1/2"-3"	7/8"	5/16"-18 x 1/2"
920 160-000	Insulated, 1 1/2"-3"	15/16"	1/2"-13 x 5/8"

CEILING ADAPTOR 514 608

Electroplated steel stud (12" long) with ceiling mounting plate. Use with non-insulated hangers, crosses, or other support hardware.



Stud	Mounting	Part No.
1/4"-20	1/4" Hdwr. - 2 1/8" Sep.	514 608-007
3/8"-16	1/4" Hdwr. - 2 1/8" Sep.	514 608-003
1/2"-13	1/4" Hdwr. - 2 1/8" Sep.	514 608-006

ROUND MEMBER ADAPTOR KIT 514 542

Used to mount non-insulated or smaller insulated hangers to round members. Consists of stainless steel hose clamp with screw driver adjustment. Recommended mounting interval, every 3 ft. (1 m). 10 adaptors per kit.



Member Diameter inches (mm)	Part No.
1-1 3/4 (25-44)	514 542-001
1 1/2 -2 3/4 (38-70)	514 542-002
2 1/2 -3 3/4 (63-95)	514 542-003
3 1/2 -4 3/4 (89-120)	514 542-004
4 1/2 -5 3/4 (114-146)	514 542-005

ROUND MEMBER CLAMP ADAPTOR 920 173

Hot dip galvanized heavy duty round member clamp for mounting insulated hangers to tower round members.



Pipe Size	Actual O.D. Range	Part No.	Stud Thread
1"-3"	1.315-3.50	920173	1/2-13 UNC 2A
3 1/2"-4"	4.00-4.50	920173-003	1/2-13 UNC 2A
5"-6"	5.563-6.625	920173-004	1/2-13 UNC 2A

INSULATED HANGERS 920 150

For use on insulated towers with 1/2" and 7/8" cable. Recommended spacing 3 ft. (1 m). Hangers mount to tower holes or angle adaptors with two 1/4"-20 bolts 1" long at 3/4" separation. May also be strapped to round member.



Cable	Hanger Part No.
1/2"	920 150-001
7/8"	920 150-002

INSULATED HANGERS FOR 1 1/2"-3" CABLE 920 161

For those 1 1/2" and 3" cable installations requiring isolation of cable from tower. Recommended spacing, 3 ft. (1 m). Hangers mount to 5/8" hole with 1/2"-13 x 1 1/4" bolt supplied, or to angle member adaptors, 920 160.



Cable	Hanger Part No.
1 1/2"	920 161-003
3"	920 161-002
3 1/2"	920 161-007

Copyright© 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

COAXIAL CABLE/ INSTALLATION ACCESSORIES

HOISTING GRIPS

Grips are split type and may be affixed with lacing supplied. Recommended interval, 200 ft. (60m) all cables. Grips may be left on tower as top hanger if desired. "Plain" type hoisting grips available on special order.



Cable	Part No.
1/2"	910 303
7/8"	910 307
1 5/8"	910 311
3"	913 563
3 1/2"	913 563

GROUNDING KIT

For use with jacketed or unjacketed cable. Consists of cable clamp, 2 ft. copper strap and lug, and tape. Recommend one grounding kit at vertical portion of cable run near tower base and one at top of cable run. Aluminum cable grounding kit uses cadmium plated copper strap.



Copper Cable		Aluminum Cable	
1/2"	713 737-002	1/2"	713 727-002
7/8"	713 737-004	7/8"	713 727-004
1 5/8"	713 737-005		
3"	713 737-006		
3 1/2"	713 737-006		

SPLICE PROTECTION KIT 712 870

Used for protection of splices and connectors that are directly buried, or exposed to corrosive environmental conditions. Consists of primer, adhesive electrical putty, and plastic sealing tape. One kit will satisfactorily cover four 1/2" splices, two 7/8" splices, or one 1 5/8" splice. Two kits will cover one 3" splice. Splice Protection Kit may also be used as weather sealing protection for cable entry. Sometimes called "all weather protection kit" or "connector burial kit."

O ring kits for all connectors are available, contact factory.

WALL/ROOF FEED THROUGH

Galvanized steel wall/roof feed through includes appropriate plastic sealing compound.



Cable	Catalog No.
3/8"	920 432-001
1/2"	920 432-002
7/8"	920 433
1 5/8"	920 434
3"	920 435
3 1/2"	920 572

ROTARY TUBING CUTTER

Fitted with special wheel and wide rollers for use in cutting cable conductors and tubing.



Cable	Part No.
7/8"	920 000
1/4" - 1 5/8"	920 163
1 5/8" - 4 1/8"	920 164

SPANNER WRENCH



Cable	Part No.
1 5/8"	410 803-001

(One supplied with each connector)

HEAVY DUTY GROUNDING KIT

Cable	Part No.
1/2"	913778
7/8"	913779
1 5/8"	913780
3"-3 1/2"	913781

CABLE REPAIR KIT

Cable	Part No.
7/8"	913782
1 5/8"	913783
3"-3 1/2"	913784

Copyright © 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

LOW VSWR COAXIAL CABLE/ 1.7-2.3 GHz

Cablewave Systems offers a complete line of low VSWR cables in both foam and air dielectric versions. These cables are specially tested and selected to provide the lowest possible VSWR over a specified operating bandwidth.

The cables are normally supplied in assembly form with specially compensated connectors, or tunable connectors. For best return loss, a 7/8" EIA connector is used at the antenna end and a low VSWR tunable connector may be used at the junction of the feeder cable and radio equipment jumper where normally a type N is used. At the antenna end a 7/8" EIA connector is used.

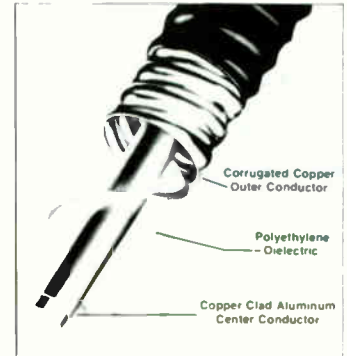
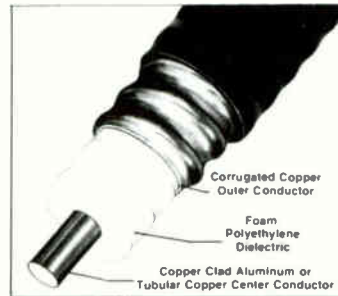
The Assembly VSWR is guaranteed only when factory assembled. Tunable connectors are also available separately for use on cable assemblies already installed in the field, for VSWR improvement.

For the ultimate in low VSWR cable assemblies, Cablewave Systems also offers a complete line of jumpers which are used between the main cable line and the radio equipment.

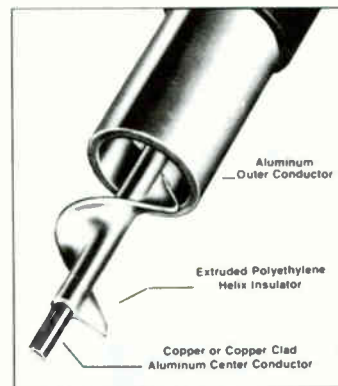
WHEN ORDERING LOW VSWR CABLES, SPECIFY OPERATING FREQUENCY BAND.

Contact the factory for special requirements or engineering assistance.

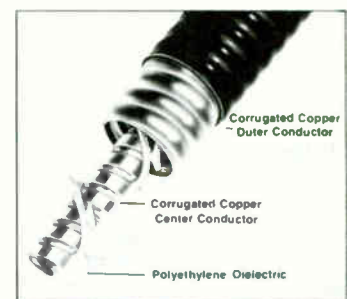
1/2", 7/8" and 1 5/8" Foam Wellflex 7/8" Air Wellflex



7/8" Spirafil



1 5/8" Air Wellflex



Part No.	Cable Size	Impedance Ohms	Attenuation dB/100 ft. at 2 GHz	Velocity of Propagation %	Peak VSWR	Jacket O.D. In. (mm)		Minimum Bending Radius In. (mm)		Cable Weight Lbs/ft (Kg/m)		
Low VSWR FOAM WELLFLEX, Copper Corrugated (Type FCC)												
1700 - 2300 MHz (200 MHz Bands) [SPECIFY OPERATING BAND WHEN ORDERING]												
810907-003	1/2"	50	3.2	81	1.15:1	.610	(15.49)	5	(127)	.157	(0.23)	
810908-003	7/8"	50	2.9	81	1.15:1	1.08	(27.43)	10	(254)	.476	(.71)	
810910-003	1 5/8"	50	2.3	80	1.20:1	1.85	(46.99)	15	(381)	1.20	(1.73)	

Low VSWR SPIRAFIL, Smooth Wall Aluminum (Type SLA)												
1700 - 2300 MHz (200 MHz Bands) [SPECIFY OPERATING BAND WHEN ORDERING]												
810961-004	7/8"	50	2.4	94	1.10:1	0.98	(24.77)	10	(254)	0.39	(0.58)	

Low VSWR AIR WELLFLEX, Copper Corrugated (Type HCC)												
1700 - 2300 MHz (200 MHz Bands) [SPECIFY OPERATING BAND WHEN ORDERING]												
810902-004	7/8"	50	1.8	91.5	1.08:1(1)	1.13	(28.8)	10	(254)	.45	(.67)	
810903-004	1 5/8"	50	1.1	95	1.10:1(2)	1.996	(51)	20	(508)	.915	(1.36)	

- (1) VSWR 1.08:1 peak with non-tunable 7/8" EIA's or with one 7/8" non-tunable EIA and one tunable N male or female.
- (2) VSWR 1.10 peak with non-tunable 1 5/8" EIA's, or with tunable 7/8" EIA's, or with one tunable 7/8" EIA and one tunable N male or female.




Copyright© 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS




60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

LOW VSWR/CONNECTOR AND JUMPER ASSEMBLIES

Connectors For 1/2" & 7/8" Low VSWR Foam Wellflex

	7/8" EIA		
	Cable	Ohms	Part No.
	1/2"	50	738 657
	7/8"	50	738 682
	N Male		
	Cable	Ohms	Part No.
	1/2"	50	738 650
	7/8"	50	738 675
	N Female		
	Cable	Ohms	Part No.
	1/2"	50	738 651
	7/8"	50	738 676

Connectors For 7/8" Low VSWR Spirafil

	7/8" EIA (GP)		
	Cable	Ohms	Part No.
	7/8"	50	734 515
	N Male		
	Cable	Ohms	Part No.
	7/8"	50	734 800
	N Female		
	Cable	Ohms	Part No.
	7/8"	50	734 801






Low VSWR 1/2" Foam Wellflex Jumper Assemblies, 1700 - 2300 MHz

Standard Connectors N Male Both Ends.

Part Number	Length ft.	Attenuation dB	VSWR Max.
814405-002	2	.12	1.06:1
814405-003	3	.18	1.06:1
814405-004	4	.24	1.06:1
814405-006	6	.36	1.08:1

Other lengths available on special order.

Connectors—Standard and Tunable For Low VSWR Air Wellflex

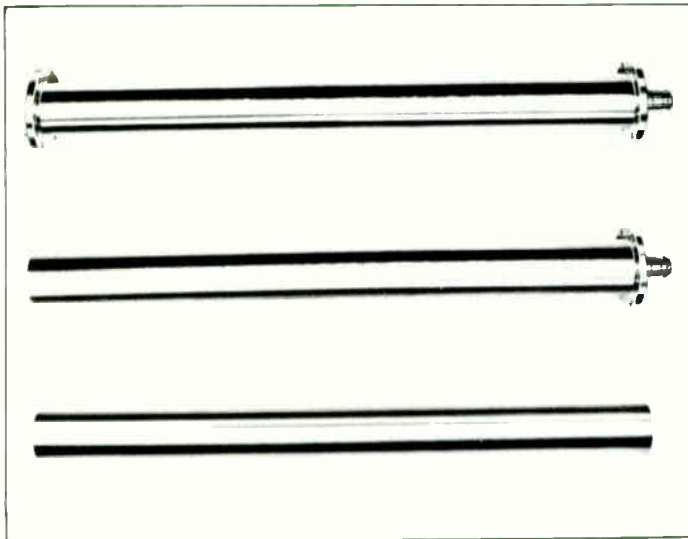
	7/8" EIA (GP)		
	Cable	Ohms	Part No.
	7/8"	50	738 259 (std)
	1 1/8"	50	738 311 (std)
	7/8" EIA (GP)		
	Cable	Ohms	Part No.
	7/8"	50	738 268 (tunable)
	1 1/8"	50	738 308 (tunable)
	7/8" EIA (GB)		
	Cable	Ohms	Part No.
	7/8"	50	738 256 (std)
	1 1/8"	50	738 304 (std)
	7/8"	50	738 262 (tunable)
	1 1/8"	50	738 310 (tunable)
	N Male		
	Cable	Ohms	Part No.
	7/8"	50	738 250 (std)
	1 1/8"	50	738 300 (std)
	7/8"	50	738 260 (tunable)
	1 1/8"	50	738 319 (tunable)
	N Female		
	Cable	Ohms	Part No.
	7/8"	50	738 251 (std)
	1 1/8"	50	738 301 (std)
	7/8"	50	738 261 (tunable)
	1 1/8"	50	738 309 (tunable)

Copyright © 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

50 OHM RIGID LINE/COAXIAL TRANSMISSION LINE



Cablewave systems coaxial transmission line is fabricated from high conductivity hard-drawn copper tubing with precision machined, pin-type, Teflon dielectric insulators. The standard 50 ohm line is offered in sizes from 7/8" through 6 1/8". The EIA bolt type flanges and inner connectors are compatible with EIA standards, US MIL specifications, and international IEC recommendations. Aluminum outer conductor 50 ohm and copper 75 ohm lines are available on special order.

Unless otherwise noted, the EIA flanges are the bolt type flanges defined in EIA Standard RS-225 with a female inner conductor, removable anchor inner connector with Teflon insulator, and a rotatable swivel-type outer flange ring. On many items, the EIA flange ring is soldered directly to the outer conductor and is designated as an "EIA male" flange. If the flange ring is fixed and the inner connector is unremovable, the flange is called "EIA fixed male".

The components shown are useful in both coaxial cable and rigid line installations.

For indoor applications, unflanged, ungasged line may be suitable. Unflanged components are joined by a slotted, unpresurized, straight brass coupling around the outer conductor and a silver plated inner connector for the center conductor connection.

ORDERING INFORMATION

Cablewave Systems Rigid Line Catalog numbers consists of a prefix to designate the component, and a suffix to call out line size and impedance.

Catalog number prefix "1" refers to a 20 foot length transmission line with EIA fixed flanges on both ends.

One anchor inner connector, one "O" ring gasket, and one hardware set are supplied.

Prefix "2" designates a 20 foot length of transmission line with one unflanged end, one EIA fixed flange, and one anchor inner connector, "O" ring and hardware set.

Catalog number prefix "3" denotes a 20 foot length of unflanged transmission line. No inner connector, "O" ring hardware is included.

Special high reliability coated anchor inner connectors are supplied with the 3 1/8" and 6 1/8" rigid line sections. These include a special dry baked molybdenum di-sulfide coating for long term, reliable lubrication to prevent conductor galling. All sizes of components and the 7/8" and 1 1/8" line sections include conventional silver plated anchor inner connectors.

*Prefix designations "1S," "2S," and "3S" refer to special lengths of rigid line in which the exact length in inches is added as a suffix after the impedance, i.e.: 1S-318-50 (24) for a 2 ft. (609mm) length of 3 1/8" 50 ohm line with EIA flanges on each end.

When ordering, part numbers where listed should also be used.

DESCRIPTION AND CATALOG NUMBERS

Size	20 Foot section, flanges both ends		20 Foot section, flange one end		20 Foot section, no flanges	
	Cat. No.	Part No.	Cat. No.	Part No.	Cat. No.	Part No.
7/8"	1-78-50	920213	2-78-50	920217	3-78-50	920221
1 1/8"	1-158-50	920214	2-158-50	920218	3-158-50	920222
3 1/8"	1-318-50	920215	2-318-50	920219	3-318-50	920223
6 1/8"	1-618-50	920216	2-618-50	920220	3-618-50	920224

Size	Special length, flanges both ends*		Special length, flange one end*		Special length, no flanges*	
	Cat. No.	Part No.	Cat. No.	Part No.	Cat. No.	Part No.
7/8"	1S-78-50		2S-78-50		3S-78-50	
1 1/8"	1S-158-50		2S-158-50		3S-158-50	
3 1/8"	1S-318-50		2S-318-50		3S-318-50	
6 1/8"	1S-618-50		2S-618-50		3S-618-50	

ELECTRICAL CHARACTERISTICS

Size	Impedance, Ohms	Maximum Frequency, MHz	Velocity percent	Attenuation and Average Power Rating	Peak Power, KW
7/8"	50	4,000	99.8	see curves pages 112, 113.	61
1 1/8"	50	3,000	99.8		234
3 1/8"	50	1,600	99.8		920
6 1/8"	50	800	99.8		3,590

MECHANICAL CHARACTERISTICS

Size	Outer Conductor O.D. x I.D. Inches (millimeters)	Inner Conductor O.D. x I.D. Inches (millimeters)	Shipping Carton Inches (millimeters)	Net Weight Per Length lbs. (Kg)	Number of Line Sections Per Carton	Shipping Weight Per Carton lbs. (Kg)
7/8"	.875 x .785 (22.2 x 20.0)	.341 x .291 (8.7 x 7.4)	13 x 13 x 245 (330 x 330 x 6223)	12 (5.5)	16	250 (114)
1 1/8"	1.625 x 1.527 (41.3 x 38.8)	.664 x .588 (16.9 x 14.9)	13 x 13 x 245 (330 x 330 x 6223)	27 (12.3)	9	303 (138)
3 1/8"	3.125 x 3.027 (79.4 x 76.9)	1.315 x 1.231 (33.4 x 31.3)	13 x 13 x 245 (330 x 330 x 6223)	52 (23.6)	4	268 (122)
6 1/8"	6.125 x 5.981 (155.6 x 151.9)	2.600 x 2.520 (66.0 x 64.0)	12 x 24 x 245 (305 x 610 x 6223)	135 (61.4)	2	370 (168)

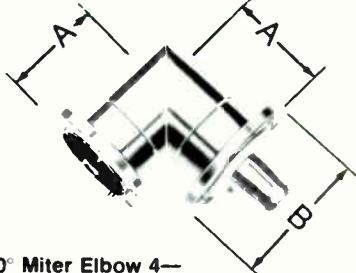
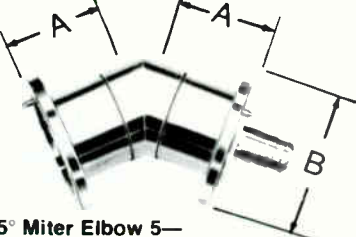

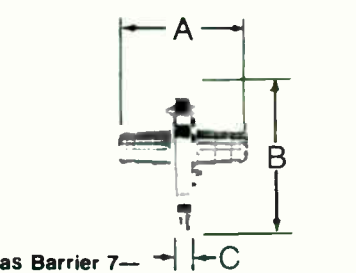
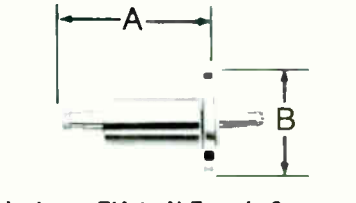
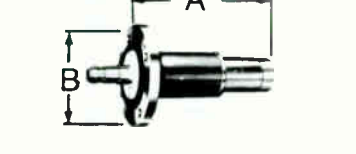
Copyright © 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

50 OHM RIGID LINE COMPONENTS

Unless otherwise noted flanges are standard EIA swivel flanges, and the component includes an anchor inner connector, "O" ring gasket, and hardware set for one end only.

 <p>90° Miter Elbow 4—</p>	<p>90° Miter Elbow. 50 ohm copper and brass construction. EIA swivel flanges. Unsupported silver plated inner conductor. One anchor inner connector, "O" ring, and hardware set.</p> <table border="1"> <thead> <tr> <th rowspan="2">Size</th> <th rowspan="2">Cat. No.</th> <th rowspan="2">Part No.</th> <th colspan="2">Dimensions, inches (millimeters)</th> <th colspan="2">Weight, pounds (kilograms)</th> </tr> <tr> <th>A</th> <th>B</th> <th>Net</th> <th>Shipping</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>4-78-50</td> <td>920225</td> <td>2 3/4 (69.9)</td> <td>2 1/4 (57.2)</td> <td>1.3 (.6)</td> <td>1.7 (.8)</td> </tr> <tr> <td>1 5/8"</td> <td>4-158-50</td> <td>920226</td> <td>2 1/2 (63.5)</td> <td>3 1/2 (88.9)</td> <td>3.4 (1.5)</td> <td>3.8 (1.7)</td> </tr> <tr> <td>3 1/8"</td> <td>4-318-50</td> <td>920227</td> <td>3 13/16 (96.8)</td> <td>5 3/16 (131.8)</td> <td>8.2 (3.7)</td> <td>8.9 (4.0)</td> </tr> <tr> <td>6 1/8"</td> <td>4-618-50</td> <td>920228</td> <td>5 1/2 (139.7)</td> <td>8 1/8 (206.4)</td> <td>22.0 (10)</td> <td>26.0 (11.8)</td> </tr> </tbody> </table>	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		A	B	Net	Shipping	7/8"	4-78-50	920225	2 3/4 (69.9)	2 1/4 (57.2)	1.3 (.6)	1.7 (.8)	1 5/8"	4-158-50	920226	2 1/2 (63.5)	3 1/2 (88.9)	3.4 (1.5)	3.8 (1.7)	3 1/8"	4-318-50	920227	3 13/16 (96.8)	5 3/16 (131.8)	8.2 (3.7)	8.9 (4.0)	6 1/8"	4-618-50	920228	5 1/2 (139.7)	8 1/8 (206.4)	22.0 (10)	26.0 (11.8)						
Size	Cat. No.				Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)																																						
		A	B	Net		Shipping																																								
7/8"	4-78-50	920225	2 3/4 (69.9)	2 1/4 (57.2)	1.3 (.6)	1.7 (.8)																																								
1 5/8"	4-158-50	920226	2 1/2 (63.5)	3 1/2 (88.9)	3.4 (1.5)	3.8 (1.7)																																								
3 1/8"	4-318-50	920227	3 13/16 (96.8)	5 3/16 (131.8)	8.2 (3.7)	8.9 (4.0)																																								
6 1/8"	4-618-50	920228	5 1/2 (139.7)	8 1/8 (206.4)	22.0 (10)	26.0 (11.8)																																								
 <p>45° Miter Elbow 5—</p>	<p>45° Miter Elbow. Copper and Brass construction. Unsupported inner conductor.</p> <table border="1"> <thead> <tr> <th rowspan="2">Size</th> <th rowspan="2">Cat. No.</th> <th rowspan="2">Part No.</th> <th colspan="2">Dimensions, inches (millimeters)</th> <th colspan="2">Weight, pounds (kilograms)</th> </tr> <tr> <th>A</th> <th>B</th> <th>Net</th> <th>Shipping</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>5-78-50</td> <td>920229</td> <td>2 3/4 (69.9)</td> <td>2 1/4 (57.2)</td> <td>1.2 (.5)</td> <td>1.6 (.7)</td> </tr> <tr> <td>1 5/8"</td> <td>5-158-50</td> <td>920230</td> <td>2 1/2 (63.5)</td> <td>3 1/2 (88.9)</td> <td>3.3 (1.5)</td> <td>3.6 (1.6)</td> </tr> <tr> <td>3 1/8"</td> <td>5-318-50</td> <td>920231</td> <td>3 1/2 (88.9)</td> <td>5 3/16 (131.8)</td> <td>7.9 (3.6)</td> <td>8.6 (3.9)</td> </tr> <tr> <td>6 1/8"</td> <td>5-618-50</td> <td>920232</td> <td>5 1/2 (139.7)</td> <td>8 1/8 (206.4)</td> <td>21.0 (9.5)</td> <td>25.0 (11.3)</td> </tr> </tbody> </table>	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		A	B	Net	Shipping	7/8"	5-78-50	920229	2 3/4 (69.9)	2 1/4 (57.2)	1.2 (.5)	1.6 (.7)	1 5/8"	5-158-50	920230	2 1/2 (63.5)	3 1/2 (88.9)	3.3 (1.5)	3.6 (1.6)	3 1/8"	5-318-50	920231	3 1/2 (88.9)	5 3/16 (131.8)	7.9 (3.6)	8.6 (3.9)	6 1/8"	5-618-50	920232	5 1/2 (139.7)	8 1/8 (206.4)	21.0 (9.5)	25.0 (11.3)						
Size	Cat. No.				Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)																																						
		A	B	Net		Shipping																																								
7/8"	5-78-50	920229	2 3/4 (69.9)	2 1/4 (57.2)	1.2 (.5)	1.6 (.7)																																								
1 5/8"	5-158-50	920230	2 1/2 (63.5)	3 1/2 (88.9)	3.3 (1.5)	3.6 (1.6)																																								
3 1/8"	5-318-50	920231	3 1/2 (88.9)	5 3/16 (131.8)	7.9 (3.6)	8.6 (3.9)																																								
6 1/8"	5-618-50	920232	5 1/2 (139.7)	8 1/8 (206.4)	21.0 (9.5)	25.0 (11.3)																																								
 <p>90° Miter Elbow, EIA Male Flanges 6—</p>	<p>90° Miter Elbow, Male. EIA male swivel flanges both ends. Silver plated, supported inner conductor. Two "O" rings and two sets of hardware included.</p> <table border="1"> <thead> <tr> <th rowspan="2">Size</th> <th rowspan="2">Cat. No.</th> <th rowspan="2">Part No.</th> <th colspan="2">Dimensions, inches (millimeters)</th> <th colspan="2">Weight, pounds (kilograms)</th> </tr> <tr> <th>A</th> <th>B</th> <th>Net</th> <th>Shipping</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>6-78-50</td> <td>920233</td> <td>2 3/4 (69.9)</td> <td>2 1/4 (57.2)</td> <td>1.2 (.5)</td> <td>1.6 (.7)</td> </tr> <tr> <td>1 5/8"</td> <td>6-158-50</td> <td>920234</td> <td>2 1/2 (63.5)</td> <td>3 1/2 (88.9)</td> <td>3.3 (1.5)</td> <td>3.7 (1.7)</td> </tr> <tr> <td>3 1/8"</td> <td>6-318-50</td> <td>920235</td> <td>3 13/16 (96.8)</td> <td>5 3/16 (131.8)</td> <td>8.2 (3.7)</td> <td>8.9 (4.0)</td> </tr> <tr> <td>6 1/8"</td> <td>6-618-50</td> <td>920236</td> <td>5 1/2 (139.7)</td> <td>8 1/8 (206.4)</td> <td>22.0 (10.0)</td> <td>26.0 (11.8)</td> </tr> </tbody> </table>	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		A	B	Net	Shipping	7/8"	6-78-50	920233	2 3/4 (69.9)	2 1/4 (57.2)	1.2 (.5)	1.6 (.7)	1 5/8"	6-158-50	920234	2 1/2 (63.5)	3 1/2 (88.9)	3.3 (1.5)	3.7 (1.7)	3 1/8"	6-318-50	920235	3 13/16 (96.8)	5 3/16 (131.8)	8.2 (3.7)	8.9 (4.0)	6 1/8"	6-618-50	920236	5 1/2 (139.7)	8 1/8 (206.4)	22.0 (10.0)	26.0 (11.8)						
Size	Cat. No.				Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)																																						
		A	B	Net		Shipping																																								
7/8"	6-78-50	920233	2 3/4 (69.9)	2 1/4 (57.2)	1.2 (.5)	1.6 (.7)																																								
1 5/8"	6-158-50	920234	2 1/2 (63.5)	3 1/2 (88.9)	3.3 (1.5)	3.7 (1.7)																																								
3 1/8"	6-318-50	920235	3 13/16 (96.8)	5 3/16 (131.8)	8.2 (3.7)	8.9 (4.0)																																								
6 1/8"	6-618-50	920236	5 1/2 (139.7)	8 1/8 (206.4)	22.0 (10.0)	26.0 (11.8)																																								
 <p>Gas Barrier 7—</p>	<p>Gas Barrier. Fixed male EIA inner connectors both ends. 1/8" FPT pressure inlet with plug. One set of longer bronze hardware, and two "O" rings.</p> <table border="1"> <thead> <tr> <th rowspan="2">Size</th> <th rowspan="2">Cat. No.</th> <th rowspan="2">Part No.</th> <th colspan="3">Dimensions, inches (millimeters)</th> <th colspan="2">Weight, pounds (kilograms)</th> </tr> <tr> <th>A</th> <th>B</th> <th>C</th> <th>Net</th> <th>Shipping</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>7-78-50</td> <td>920237</td> <td>3 5/16 (84.1)</td> <td>2 1/4 (57.2)</td> <td>5/8 (15.9)</td> <td>1.1 (.5)</td> <td>1.3 (.6)</td> </tr> <tr> <td>1 5/8"</td> <td>7-158-50</td> <td>920238</td> <td>3 7/8 (98.4)</td> <td>3 1/2 (88.9)</td> <td>5/8 (15.9)</td> <td>3.4 (1.5)</td> <td>4.1 (1.9)</td> </tr> <tr> <td>3 1/8"</td> <td>7-318-50</td> <td>920239</td> <td>4 7/8 (123.8)</td> <td>5 3/16 (131.8)</td> <td>5/8 (15.9)</td> <td>6.2 (2.8)</td> <td>7.0 (3.2)</td> </tr> <tr> <td>6 1/8"</td> <td>7-618-50</td> <td>920240</td> <td>6 1/8 (155.6)</td> <td>8 1/8 (206.4)</td> <td>1 1/16 (27.0)</td> <td>15.2 (6.9)</td> <td>17.0 (7.7)</td> </tr> </tbody> </table>	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)		A	B	C	Net	Shipping	7/8"	7-78-50	920237	3 5/16 (84.1)	2 1/4 (57.2)	5/8 (15.9)	1.1 (.5)	1.3 (.6)	1 5/8"	7-158-50	920238	3 7/8 (98.4)	3 1/2 (88.9)	5/8 (15.9)	3.4 (1.5)	4.1 (1.9)	3 1/8"	7-318-50	920239	4 7/8 (123.8)	5 3/16 (131.8)	5/8 (15.9)	6.2 (2.8)	7.0 (3.2)	6 1/8"	7-618-50	920240	6 1/8 (155.6)	8 1/8 (206.4)	1 1/16 (27.0)	15.2 (6.9)	17.0 (7.7)
Size	Cat. No.				Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)																																					
		A	B	C		Net	Shipping																																							
7/8"	7-78-50	920237	3 5/16 (84.1)	2 1/4 (57.2)	5/8 (15.9)	1.1 (.5)	1.3 (.6)																																							
1 5/8"	7-158-50	920238	3 7/8 (98.4)	3 1/2 (88.9)	5/8 (15.9)	3.4 (1.5)	4.1 (1.9)																																							
3 1/8"	7-318-50	920239	4 7/8 (123.8)	5 3/16 (131.8)	5/8 (15.9)	6.2 (2.8)	7.0 (3.2)																																							
6 1/8"	7-618-50	920240	6 1/8 (155.6)	8 1/8 (206.4)	1 1/16 (27.0)	15.2 (6.9)	17.0 (7.7)																																							
 <p>Adapter — EIA to N Female 9—</p>	<p>Adapter — EIA to type N Female. Mates with UG21/U. Gas tight with 1/8" FPT pressure inlet and plug.</p> <table border="1"> <thead> <tr> <th rowspan="2">Size</th> <th rowspan="2">Cat. No.</th> <th rowspan="2">Part No.</th> <th colspan="2">Dimensions, inches (millimeters)</th> <th colspan="2">Weight, pounds (kilograms)</th> </tr> <tr> <th>A</th> <th>B</th> <th>Net</th> <th>Shipping</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>9-78-50</td> <td>920241</td> <td>4 (101.6)</td> <td>2 1/4 (57.2)</td> <td>.6 (.3)</td> <td>.9 (.4)</td> </tr> <tr> <td>1 5/8"</td> <td>9-158-50</td> <td>920242</td> <td>5 (127.)</td> <td>3 1/2 (88.9)</td> <td>2.0 (.9)</td> <td>2.7 (1.2)</td> </tr> <tr> <td>3 1/8"</td> <td>9-318-50</td> <td>920243</td> <td>6 (152.4)</td> <td>5 3/16 (131.8)</td> <td>6.0 (2.7)</td> <td>6.8 (3.1)</td> </tr> </tbody> </table>	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		A	B	Net	Shipping	7/8"	9-78-50	920241	4 (101.6)	2 1/4 (57.2)	.6 (.3)	.9 (.4)	1 5/8"	9-158-50	920242	5 (127.)	3 1/2 (88.9)	2.0 (.9)	2.7 (1.2)	3 1/8"	9-318-50	920243	6 (152.4)	5 3/16 (131.8)	6.0 (2.7)	6.8 (3.1)													
Size	Cat. No.				Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)																																						
		A	B	Net		Shipping																																								
7/8"	9-78-50	920241	4 (101.6)	2 1/4 (57.2)	.6 (.3)	.9 (.4)																																								
1 5/8"	9-158-50	920242	5 (127.)	3 1/2 (88.9)	2.0 (.9)	2.7 (1.2)																																								
3 1/8"	9-318-50	920243	6 (152.4)	5 3/16 (131.8)	6.0 (2.7)	6.8 (3.1)																																								
 <p>Adapter — EIA to LC Female 24—</p>	<p>Adapter — EIA to LC Female. Mates with UG154/U. Gas tight with 1/8" FPT pressure inlet and plug.</p> <table border="1"> <thead> <tr> <th rowspan="2">Size</th> <th rowspan="2">Cat. No.</th> <th rowspan="2">Part No.</th> <th colspan="2">Dimensions, inches (millimeters)</th> <th colspan="2">Weight, pounds (kilograms)</th> </tr> <tr> <th>A</th> <th>B</th> <th>Net</th> <th>Shipping</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>24-78-50</td> <td>920244</td> <td>3 3/4 (95.3)</td> <td>2 1/4 (57.2)</td> <td>1.2 (.5)</td> <td>1.4 (.6)</td> </tr> <tr> <td>1 5/8"</td> <td>24-158-50</td> <td>920245</td> <td>5 1/4 (133.4)</td> <td>3 1/2 (88.9)</td> <td>3.5 (1.6)</td> <td>4.2 (1.9)</td> </tr> <tr> <td>3 1/8"</td> <td>24-318-50</td> <td>920246</td> <td>5 7/16 (138.1)</td> <td>5 3/16 (131.8)</td> <td>6.3 (2.9)</td> <td>7.1 (3.2)</td> </tr> </tbody> </table>	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		A	B	Net	Shipping	7/8"	24-78-50	920244	3 3/4 (95.3)	2 1/4 (57.2)	1.2 (.5)	1.4 (.6)	1 5/8"	24-158-50	920245	5 1/4 (133.4)	3 1/2 (88.9)	3.5 (1.6)	4.2 (1.9)	3 1/8"	24-318-50	920246	5 7/16 (138.1)	5 3/16 (131.8)	6.3 (2.9)	7.1 (3.2)													
Size	Cat. No.				Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)																																						
		A	B	Net		Shipping																																								
7/8"	24-78-50	920244	3 3/4 (95.3)	2 1/4 (57.2)	1.2 (.5)	1.4 (.6)																																								
1 5/8"	24-158-50	920245	5 1/4 (133.4)	3 1/2 (88.9)	3.5 (1.6)	4.2 (1.9)																																								
3 1/8"	24-318-50	920246	5 7/16 (138.1)	5 3/16 (131.8)	6.3 (2.9)	7.1 (3.2)																																								

Copyright © 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

Prices and Specifications Subject to Change Without Notice.

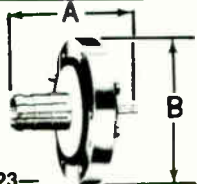
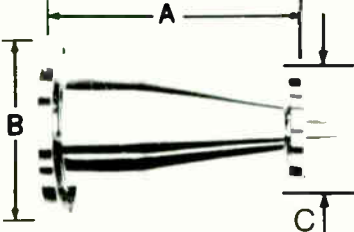

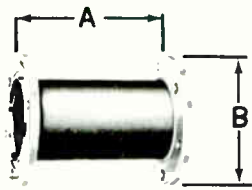
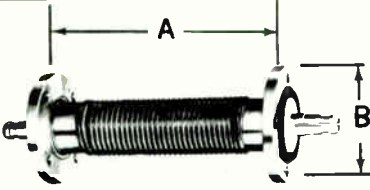
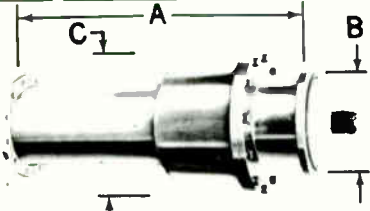
B-209

CABLEWAVE SYSTEMS

50 OHM RIGID LINE COMPONENTS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

Unless otherwise noted flanges are standard EIA swivel flanges, and the component includes an anchor inner connector, "O" ring gasket, and hardware set for one end only.

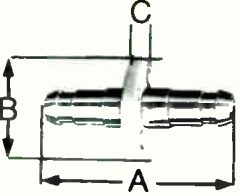
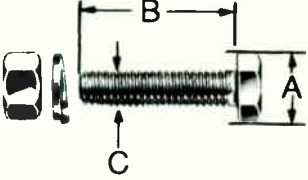
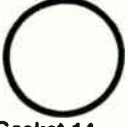
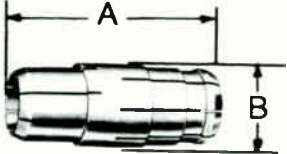
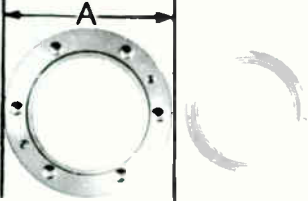
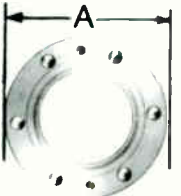
 <p>Plate Reducer 23—</p>	Plate Reducer. Quick step type. Fixed male inner connectors on both ends. "O" rings and hardware included for both ends.						
	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)	
			A	B	Net	Shipping	
1½" — 7/8"	23-158-50	920247	¾ (19.0)	3½ (88.9)	3.0 (1.36)	3.6 (1.63)	
3½" — 1½"	23-318-50	920248	7/8 (22.2)	5³/₁₆ (131.8)	5.0 (2.27)	5.8 (2.63)	
 <p>Taper Reducer 17—</p>	Taper Reducer. Low VSWR (1.05 @ 1.0 GHz). Fixed EIA flanges both ends. Unsupported inner conductor. Removable anchor inner connector, "O" ring and hardware included for smaller size flange only.						
	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)
			A	B	C	Net	Shipping
1½" — 7/8"	17-158-50	920249	4 ²⁷ /₆₄ (112.3)	3½ (88.9)	2¼ (57.2)	1.75 (0.8)	2.4 (1.1)
3½" — 1½"	17-318-50	920250	7³/₃₂ (180.0)	5³/₁₆ (131.8)	3½ (88.9)	4.1 (1.9)	5.0 (2.3)
6½" — 3½"	17-618-50	920251	8¼ (209.5)	8½ (206.4)	5³/₁₆ (131.8)	11.5 (5.2)	12.5 (5.7)
 <p>End Terminal 20—</p>	End Terminal. For strap connection to antenna. Pressure tight with 1/8" FPT gas inlet and plug. Fixed EIA flange with male inner connector. "O" ring and hardware included.						
	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)	
			A	B	Net	Shipping	
7/8"	20-78-50H	920252	4½ (114.3)	2¼ (57.2)	1.0 (0.5)	1.4 (0.6)	
1½"	20-158-50H	920253	5 (127.0)	3½ (88.9)	2.6 (1.2)	3.4 (1.5)	
3½"	20-318-50H	920254	6½ (165.1)	5³/₁₆ (131.8)	4.4 (2.0)	5.4 (2.5)	
6½"	20-618-50H	920255	8 (203.2)	8½ (206.4)	11.7 (5.3)	12.8 (5.8)	
 <p>Adapter — Male to Male 21—</p>	Adapter — Male to Male. Unsupported inner conductor. Fixed EIA flanges. One "O" ring and hardware set included. No anchor inner connector included.						
	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)	
			A	B	Net	Shipping	
7/8"	21-78-50	920256	4 (101.6)	2¼ (57.2)	1.0 (0.5)	1.5 (0.7)	
1½"	21-158-50	920257	4 (101.6)	3½ (88.9)	2.4 (1.1)	3.2 (1.5)	
3½"	21-318-50	920258	6 (152.4)	5³/₁₆ (131.8)	6.0 (2.7)	7.0 (3.2)	
6½"	21-618-50	920259	6 (152.4)	8½ (206.4)	18.0 (8.2)	23.0 (10.4)	
 <p>Flexible Section 30—</p>	Flexible Section accommodates vibration and angles up to 30° for 1½" and 20° for 6½". Maximum offset or compression is .25" (0.64 cm) for 1½" and .5" (1.27 cm) for the 3½" and 6½" units. EIA fixed male flanges both ends. Two sets of "O" rings and hardware supplied.						
	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)	
			A	B	Net	Shipping	
1½"	30-158-50	920260	10 (254.0)	3½ (88.9)	4.2 (1.9)	4.7 (2.1)	
3½"	30-318-50	920261	18 (457.2)	5³/₁₆ (131.8)	15.0 (6.8)	16.9 (7.7)	
6½"	30-618-50	920262	24 (609.6)	8½ (206.4)	31.0 (14.1)	36.0 (16.3)	
 <p>Breakaway Section 31—</p>	Breakaway Section. Permits easy opening and disassembly of transmission line. Pressure tight when closed. EIA fixed flange on one end. EIA male anchor inner connector on one end.						
	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)
			A	B	C	Net	Shipping
1½"	31-158-50	920263	12 (304.8)	3½ (88.9)	4¼ (108.0)	14.0 (6.35)	18.0 (8.16)
3½"	31-318-50	920264	14 ³ /₁₆ (376.2)	5³/₁₆ (131.8)	7 (177.8)	21.0 (9.53)	34.0 (15.42)
6½"	31-618-50	920265	24 (609.6)	8½ (206.4)	10¼ (260.4)	47.0 (21.32)	59.0 (26.8)

Copyright© 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

50 OHM RIGID LINE COMPONENTS

 <p>Anchor Inner Connector 12—</p>	<p>Anchor Inner Connector. With Teflon insulator. Standard type 12— is silver plated. Inner connectors type 12A— include a dry baked molybdenum di-sulfide lubricant coating to prevent galling and electrical deterioration with repeated thermal expansion and contraction of the inner conductor.</p> <table border="1"> <thead> <tr> <th rowspan="2">Size</th> <th rowspan="2">Cat. No.</th> <th rowspan="2">Part No.</th> <th colspan="3">Dimensions, inches (millimeters)</th> <th colspan="2">Weight, pounds (kilograms)</th> </tr> <tr> <th>A</th> <th>B</th> <th>C</th> <th>Net</th> <th>Shipping</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>12-78-50</td> <td>612951</td> <td>2¹/₁₆ (68.3)</td> <td>0.810 (20.6)</td> <td>3/16 (4.8)</td> <td>0.1 (.05)</td> <td>0.1 (.05)</td> </tr> <tr> <td>1 1/8"</td> <td>12-158-50</td> <td>612874</td> <td>3 3/4 (82.6)</td> <td>1.645 (41.9)</td> <td>1/4 (6.4)</td> <td>0.2 (.09)</td> <td>0.2 (.09)</td> </tr> <tr> <td>3 1/8"</td> <td>12-318-50</td> <td>622720</td> <td>4 1/4 (108.)</td> <td>3.195 (81.2)</td> <td>3/8 (9.5)</td> <td>0.8 (.4)</td> <td>1.0 (.45)</td> </tr> <tr> <td>6 1/8"</td> <td>12-618-50</td> <td>920270</td> <td>5 1/2 (139.7)</td> <td>6.055 (153.8)</td> <td>7/16 (11.1)</td> <td>2.9 (1.3)</td> <td>3.5 (1.6)</td> </tr> </tbody> </table>	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)		A	B	C	Net	Shipping	7/8"	12-78-50	612951	2 ¹ / ₁₆ (68.3)	0.810 (20.6)	3/16 (4.8)	0.1 (.05)	0.1 (.05)	1 1/8"	12-158-50	612874	3 3/4 (82.6)	1.645 (41.9)	1/4 (6.4)	0.2 (.09)	0.2 (.09)	3 1/8"	12-318-50	622720	4 1/4 (108.)	3.195 (81.2)	3/8 (9.5)	0.8 (.4)	1.0 (.45)	6 1/8"	12-618-50	920270	5 1/2 (139.7)	6.055 (153.8)	7/16 (11.1)	2.9 (1.3)	3.5 (1.6)
Size	Cat. No.				Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)																																					
		A	B	C		Net	Shipping																																							
7/8"	12-78-50	612951	2 ¹ / ₁₆ (68.3)	0.810 (20.6)	3/16 (4.8)	0.1 (.05)	0.1 (.05)																																							
1 1/8"	12-158-50	612874	3 3/4 (82.6)	1.645 (41.9)	1/4 (6.4)	0.2 (.09)	0.2 (.09)																																							
3 1/8"	12-318-50	622720	4 1/4 (108.)	3.195 (81.2)	3/8 (9.5)	0.8 (.4)	1.0 (.45)																																							
6 1/8"	12-618-50	920270	5 1/2 (139.7)	6.055 (153.8)	7/16 (11.1)	2.9 (1.3)	3.5 (1.6)																																							
 <p>Hardware Set 26—</p>	<p>Hardware Set Stainless steel.</p> <table border="1"> <thead> <tr> <th rowspan="2">Size</th> <th rowspan="2">Cat. No.</th> <th rowspan="2">Part No.</th> <th rowspan="2">Qty Per Set</th> <th colspan="3">Dimensions, inches (millimeters)</th> </tr> <tr> <th>A</th> <th>B</th> <th>C (Thread)</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>26-78</td> <td>920272</td> <td>3</td> <td>7/16 (11.1)</td> <td>1 (25.4)</td> <td>1/4-20 UNC</td> </tr> <tr> <td>1 1/8"</td> <td>26-158</td> <td>920273</td> <td>4</td> <td>1/2 (12.7)</td> <td>1 3/8 (34.9)</td> <td>5/16-18 UNC</td> </tr> <tr> <td>3 1/8"</td> <td>26-318</td> <td>920274</td> <td>6</td> <td>9/16 (14.3)</td> <td>1 3/8 (34.9)</td> <td>3/8-16 UNC</td> </tr> <tr> <td>6 1/8"</td> <td>26-618</td> <td>920275</td> <td>12</td> <td>9/16 (14.3)</td> <td>1 3/4 (44.5)</td> <td>3/8-16 UNC</td> </tr> </tbody> </table>	Size	Cat. No.	Part No.	Qty Per Set	Dimensions, inches (millimeters)			A	B	C (Thread)	7/8"	26-78	920272	3	7/16 (11.1)	1 (25.4)	1/4-20 UNC	1 1/8"	26-158	920273	4	1/2 (12.7)	1 3/8 (34.9)	5/16-18 UNC	3 1/8"	26-318	920274	6	9/16 (14.3)	1 3/8 (34.9)	3/8-16 UNC	6 1/8"	26-618	920275	12	9/16 (14.3)	1 3/4 (44.5)	3/8-16 UNC							
Size	Cat. No.					Part No.	Qty Per Set	Dimensions, inches (millimeters)																																						
		A	B	C (Thread)																																										
7/8"	26-78	920272	3	7/16 (11.1)	1 (25.4)	1/4-20 UNC																																								
1 1/8"	26-158	920273	4	1/2 (12.7)	1 3/8 (34.9)	5/16-18 UNC																																								
3 1/8"	26-318	920274	6	9/16 (14.3)	1 3/8 (34.9)	3/8-16 UNC																																								
6 1/8"	26-618	920275	12	9/16 (14.3)	1 3/4 (44.5)	3/8-16 UNC																																								
 <p>"O" Ring Gasket 14—</p>	<p>"O" Ring Gasket for EIA flange. Silicone rubber.</p> <table border="1"> <thead> <tr> <th>Size</th> <th>Cat. No.</th> <th>Part No.</th> <th>Size</th> <th>Cat. No.</th> <th>Part No.</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>14-78</td> <td>510681-010</td> <td>3 1/8"</td> <td>14-318</td> <td>510681-012</td> </tr> <tr> <td>1 1/8"</td> <td>14-158</td> <td>510681-011</td> <td>6 1/8"</td> <td>14-618</td> <td>920279</td> </tr> </tbody> </table>	Size	Cat. No.	Part No.	Size	Cat. No.	Part No.	7/8"	14-78	510681-010	3 1/8"	14-318	510681-012	1 1/8"	14-158	510681-011	6 1/8"	14-618	920279																											
Size	Cat. No.	Part No.	Size	Cat. No.	Part No.																																									
7/8"	14-78	510681-010	3 1/8"	14-318	510681-012																																									
1 1/8"	14-158	510681-011	6 1/8"	14-618	920279																																									
 <p>Inner Connector Adaptor 32—</p>	<p>Inner Connector Adaptor to connect 50 ohm EIA flanged line to 51.5 ohm flanged line. No anchor beads.</p> <table border="1"> <thead> <tr> <th rowspan="2">Size</th> <th rowspan="2">Cat. No.</th> <th rowspan="2">Part No.</th> <th colspan="2">Dimensions, inches (millimeters)</th> <th colspan="2">Weight, pounds (kilograms)</th> </tr> <tr> <th>A</th> <th>B</th> <th>Net</th> <th>Shipping</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>32-78-50</td> <td>920280</td> <td>2⁵/₁₆ (58.7)</td> <td>.341 (8.7)</td> <td>0.1 (.05)</td> <td>0.1 (.05)</td> </tr> <tr> <td>1 1/8"</td> <td>32-158-50</td> <td>920281</td> <td>2³/₄ (69.9)</td> <td>.664 (16.9)</td> <td>0.2 (.09)</td> <td>0.2 (.09)</td> </tr> <tr> <td>3 1/8"</td> <td>32-318-50</td> <td>920282</td> <td>3³/₈ (85.7)</td> <td>1.315 (33.4)</td> <td>0.8 (.4)</td> <td>1.0 (.45)</td> </tr> <tr> <td>6 1/8"</td> <td>32-618-50</td> <td>920597</td> <td>3⁵/₈ (92.1)</td> <td>2.600 (66.5)</td> <td>2.9 (1.3)</td> <td>3.5 (1.6)</td> </tr> </tbody> </table>	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		A	B	Net	Shipping	7/8"	32-78-50	920280	2 ⁵ / ₁₆ (58.7)	.341 (8.7)	0.1 (.05)	0.1 (.05)	1 1/8"	32-158-50	920281	2 ³ / ₄ (69.9)	.664 (16.9)	0.2 (.09)	0.2 (.09)	3 1/8"	32-318-50	920282	3 ³ / ₈ (85.7)	1.315 (33.4)	0.8 (.4)	1.0 (.45)	6 1/8"	32-618-50	920597	3 ⁵ / ₈ (92.1)	2.600 (66.5)	2.9 (1.3)	3.5 (1.6)						
Size	Cat. No.				Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)																																						
		A	B	Net		Shipping																																								
7/8"	32-78-50	920280	2 ⁵ / ₁₆ (58.7)	.341 (8.7)	0.1 (.05)	0.1 (.05)																																								
1 1/8"	32-158-50	920281	2 ³ / ₄ (69.9)	.664 (16.9)	0.2 (.09)	0.2 (.09)																																								
3 1/8"	32-318-50	920282	3 ³ / ₈ (85.7)	1.315 (33.4)	0.8 (.4)	1.0 (.45)																																								
6 1/8"	32-618-50	920597	3 ⁵ / ₈ (92.1)	2.600 (66.5)	2.9 (1.3)	3.5 (1.6)																																								
 <p>Swivel Flange 18—</p>	<p>Swivel Flange kit for silver brazing of an EIA swivel flange to outer conductor tubing. Includes silver solder preform ring.</p> <table border="1"> <thead> <tr> <th rowspan="2">Size</th> <th rowspan="2">Cat. No.</th> <th rowspan="2">Part No.</th> <th colspan="2">Dimensions, inches (millimeters)</th> <th colspan="2">Weight, pounds (kilograms)</th> </tr> <tr> <th>A</th> <th></th> <th>Net</th> <th>Shipping</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>18-78-50</td> <td>920283</td> <td>2 1/4 (57.1)</td> <td></td> <td>.5 (.2)</td> <td>1 (.4)</td> </tr> <tr> <td>1 1/8"</td> <td>18-158-50</td> <td>920284</td> <td>3 1/2 (88.9)</td> <td></td> <td>.8 (.3)</td> <td>1.3 (.6)</td> </tr> <tr> <td>3 1/8"</td> <td>18-318-50</td> <td>920285</td> <td>5³/₁₆ (131.7)</td> <td></td> <td>1.6 (.7)</td> <td>2.0 (.9)</td> </tr> <tr> <td>6 1/8"</td> <td>18-618-50</td> <td>920286</td> <td>8 1/8 (206.4)</td> <td></td> <td>5.3 (2.4)</td> <td>6 (2.7)</td> </tr> </tbody> </table>	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		A		Net	Shipping	7/8"	18-78-50	920283	2 1/4 (57.1)		.5 (.2)	1 (.4)	1 1/8"	18-158-50	920284	3 1/2 (88.9)		.8 (.3)	1.3 (.6)	3 1/8"	18-318-50	920285	5 ³ / ₁₆ (131.7)		1.6 (.7)	2.0 (.9)	6 1/8"	18-618-50	920286	8 1/8 (206.4)		5.3 (2.4)	6 (2.7)						
Size	Cat. No.				Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)																																						
		A		Net		Shipping																																								
7/8"	18-78-50	920283	2 1/4 (57.1)		.5 (.2)	1 (.4)																																								
1 1/8"	18-158-50	920284	3 1/2 (88.9)		.8 (.3)	1.3 (.6)																																								
3 1/8"	18-318-50	920285	5 ³ / ₁₆ (131.7)		1.6 (.7)	2.0 (.9)																																								
6 1/8"	18-618-50	920286	8 1/8 (206.4)		5.3 (2.4)	6 (2.7)																																								
 <p>Fixed Flange 13—</p>	<p>Fixed Flange kit for silver brazing of EIA fixed flange to outer conductor tubing. Includes silver solder preform ring.</p> <table border="1"> <thead> <tr> <th rowspan="2">Size</th> <th rowspan="2">Cat. No.</th> <th rowspan="2">Part No.</th> <th colspan="2">Dimensions, inches (millimeters)</th> <th colspan="2">Weight, pounds (kilograms)</th> </tr> <tr> <th>A</th> <th></th> <th>Net</th> <th>Shipping</th> </tr> </thead> <tbody> <tr> <td>7/8"</td> <td>13-78</td> <td>920287</td> <td>2 1/4 (57.1)</td> <td></td> <td>.5 (.09)</td> <td>1 (.4)</td> </tr> <tr> <td>1 1/8"</td> <td>13-158</td> <td>920288</td> <td>3 1/2 (88.9)</td> <td></td> <td>.8 (.4)</td> <td>1.3 (.6)</td> </tr> <tr> <td>3 1/8"</td> <td>13-318</td> <td>920289</td> <td>5³/₁₆ (131.7)</td> <td></td> <td>1.6 (.7)</td> <td>2.0 (.9)</td> </tr> <tr> <td>6 1/8"</td> <td>13-618</td> <td>920290</td> <td>8 1/8 (206.4)</td> <td></td> <td>5.3 (2.4)</td> <td>6 (2.7)</td> </tr> </tbody> </table>	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		A		Net	Shipping	7/8"	13-78	920287	2 1/4 (57.1)		.5 (.09)	1 (.4)	1 1/8"	13-158	920288	3 1/2 (88.9)		.8 (.4)	1.3 (.6)	3 1/8"	13-318	920289	5 ³ / ₁₆ (131.7)		1.6 (.7)	2.0 (.9)	6 1/8"	13-618	920290	8 1/8 (206.4)		5.3 (2.4)	6 (2.7)						
Size	Cat. No.				Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)																																						
		A		Net		Shipping																																								
7/8"	13-78	920287	2 1/4 (57.1)		.5 (.09)	1 (.4)																																								
1 1/8"	13-158	920288	3 1/2 (88.9)		.8 (.4)	1.3 (.6)																																								
3 1/8"	13-318	920289	5 ³ / ₁₆ (131.7)		1.6 (.7)	2.0 (.9)																																								
6 1/8"	13-618	920290	8 1/8 (206.4)		5.3 (2.4)	6 (2.7)																																								

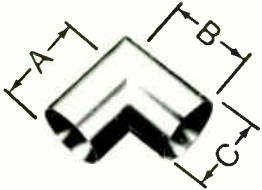
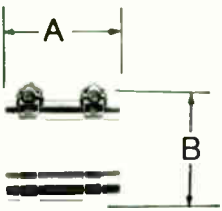
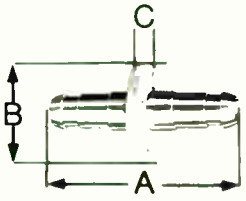
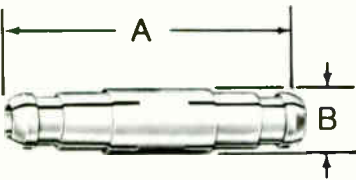
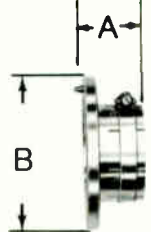
Copyright © 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

50 OHM RIGID LINE COMPONENTS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

Unflanged, unpressurized transmission line may be used for indoor installations in which pressurization is not required. Connection is made by means of a coupling sleeve and hose clamps.

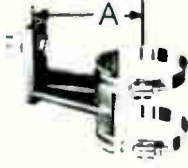


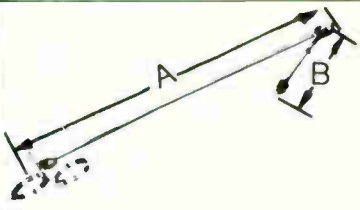
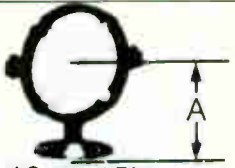
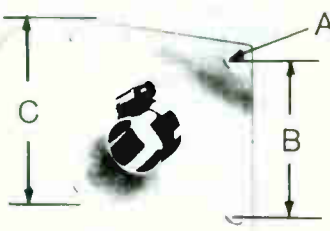
	Unflanged 90° Elbow. Unflanged elbow. No straight coupling or inner connector included. 7/8" sizes have supported inner conductor. 1 1/8" 3/8" and 6 1/8" sizes have nonsupported inner conductor.						
	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)
			A	B	C	Net	Shipping
7/8"	25-78-50	920291	2 ¹¹ / ₁₆ (68)	2 ¹¹ / ₁₆ (68)	.875 (22.2)	1.2 (.5)	1.6 (.7)
1 1/8"	25-158-50	920292	2 3/8 (60)	2 3/8 (60)	1.625 (41.3)	3.2 (1.5)	3.6 (1.6)
3 1/8"	25-318-50	920293	3 5/8 (92)	3 5/8 (92)	3.125 (79.4)	7.9 (3.6)	8.9 (4.0)
6 1/8"	25-618-50	920294	5 9/32 (134)	5 9/32 (134)	6.125 (155.6)	21.0 (9.5)	25.0 (11.3)
	Unflanged Line Straight Coupling. Connects unflanged lines and fittings. Includes one inner connector and hose clamps.						
	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)
			A	B		Net	Shipping
7/8"	16-78-50	920295	2 1/8 (54.0)	1 1/8 (31.8)		0.3 (.1)	0.4 (.2)
1 1/8"	16-158-50	920296	2 1/4 (57.2)	2 1/4 (57.2)		0.5 (.2)	0.6 (.3)
3 1/8"	16-318-50	920297	3 1/4 (82.6)	3 1/2 (88.9)		1.5 (.7)	3.3 (1.5)
6 1/8"	16-618-50	920298	5 1/2 (139.7)	6 3/4 (171.5)		5.4 (2.5)	6.5 (3.0)
	Anchor Inner Connector for unflanged 50 ohm line. Teflon insulator, silver plated. Use with coupling 16-158-50 (P/N 920296) and 16-318-50 (P/N 920297)						
	Size	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)	
			A	B	C	Net	Shipping
1 1/8"	613946		3 1/4 (82.6)	1.625 (41.3)	.250 (6.4)	0.2 (.09)	0.2 (.09)
3 1/8"	624054		4.238 (107.7)	3.125 (79.4)	.373 (9.5)	0.8 (.4)	1.0 (.45)
	Inner Connector for unflanged unpressurized line. Silver plated, no undercut.						
	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)
			A	B		Net	Shipping
7/8"	27-78-50	522781	2 ¹¹ / ₁₆ (68.3)	0.341 (8.7)		0.1 (.05)	0.1 (.05)
1 1/8"	27-158-50	525641	3 1/4 (82.6)	0.664 (16.9)		0.2 (.09)	0.2 (.09)
3 1/8"	27-318-50	534518	4 1/4 (108.)	1.315 (33.4)		0.7 (.3)	0.9 (.4)
6 1/8"	27-618-50	920302	5 1/2 (139.7)	2.6 (66)		2.7 (1.2)	3.3 (1.5)
	Unpressurized EIA field flange does not include anchor inner connector, hardware or O ring. Not gas tight.						
	Size	Cat. No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)
			A	B		Net	Shipping
7/8"	11-78	920303	1 (25.4)	2 1/4 (57.2)		.7 (.3)	1.2 (.5)
1 1/8"	11-158	920304	1 1/4 (31.8)	3 1/2 (88.9)		1.2 (.5)	1.7 (.8)
3 1/8"	11-318	920305	1 ¹¹ / ₁₆ (42.9)	5 ³ / ₁₆ (131.8)		2.5 (1.1)	3.0 (1.4)
6 1/8"	11-618	920306	3 (76.2)	8 1/8 (206.4)		6.5 (3.0)	7.0 (3.2)

Copyright© 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

50 OHM RIGID LINE HARDWARE AND INSTALLATION ACCESSORIES

 <p>Fixed Hanger 51—</p>	Fixed Hanger for fastening a transmission line run to the top of the tower. Use one fixed hanger for each 300 feet of line. Mounts to $\frac{9}{16}$ " diameter hole with $\frac{1}{2}$ "-13 x $1\frac{3}{4}$ " bolt supplied.									
	Line Size	Cat. No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)			
				A			Net	Shipping		
	$\frac{7}{8}$ "	51-78	920307	$1\frac{1}{8}$ (28.6)			.75 (.3)	1 (.5)		
	$1\frac{5}{8}$ "	51-158	920308	$3\frac{13}{16}$ (96.8)			1.25 (.6)	$1\frac{1}{2}$ (.7)		
 <p>Spring Hanger 91—</p>	Spring Hanger for supporting rigid line every 10 feet. Accommodates line expansion-contraction. Mounts to $\frac{9}{16}$ " diameter hole with $\frac{1}{2}$ " threaded rod.									
	Line Size	Cat. No.	Part No.	Dimensions, inches (centimeters)			Weight, pounds (kilograms)			
				A			Net	Shipping		
	$1\frac{5}{8}$ "	91-158	920311	$4\frac{3}{8}$ (111.1)			2.5 (1.1)	3 (1.4)		
	$3\frac{3}{8}$ "	91-318	920312	$5\frac{7}{8}$ (149.2)			2.8 (1.3)	$3\frac{1}{2}$ (1.6)		
 <p>Slide Hanger 151—</p>	Slide Hanger. Line guide ring to secure transmission line to supporting towers every 10 feet for short runs if spring type hangers are not required. Mounts to $\frac{9}{16}$ " diameter hole with $\frac{1}{2}$ "-13 x $1\frac{3}{4}$ " bolt supplied.									
	Line Size	Cat. No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)			
				A			Net	Shipping		
	$1\frac{5}{8}$ "	151-158	920314	$8\frac{1}{4}$ (209.6)			1.2 (.6)	1.5 (.7)		
	$3\frac{3}{8}$ "	151-318	920315	9 (228.6)			1.75 (.80)	2.5 (1.1)		
 <p>Lateral Brace 131—</p>	Lateral Brace for securing transmission line at bottom of vertical run. Prevents lateral motion. Use two per transmission line run. Mounts to $\frac{9}{16}$ " diameter hole with $\frac{3}{8}$ "-16 threaded rod.									
	Line Size	Cat. No.	Part No.	Dimensions, inches (centimeters)			Weight, pounds (kilograms)			
				A B			Net	Shipping		
	$1\frac{5}{8}$ "	131-158	920316	39 (991.0)			$7\frac{1}{2}$ (190.5)	2.3 (1.0)	3 (1.4)	
	$3\frac{3}{8}$ "	131-318	920317	39 (991)			$7\frac{1}{2}$ (190.5)	2.3 (1.0)	3 (1.4)	
 <p>Horizontal Support 71—</p>	Horizontal Support for supporting horizontal runs of transmission line. Mounts to post or plate with $\frac{1}{2}$ " bolts to $\frac{9}{16}$ " holes, three equally spaced on 3" diameter mounting circle. Hardware not supplied.									
	Line Size	Cat. No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)			
				A			Net	Shipping		
	$1\frac{5}{8}$ "	71-158	920319	$2\frac{7}{16}$ (61.9)			.91 (.4)	1.5 (.7)		
	$3\frac{3}{8}$ "	71-318	920320	$3\frac{3}{16}$ (81)			1.5 (.7)	2 (.9)		
 <p>Bulkhead Fitting 111—</p>	Bulkhead Fitting for anchoring single horizontal transmission line run at building entrance. Galvanized steel. Mounts to entry wall with $\frac{1}{2}$ " bolts through $\frac{9}{16}$ " holes. Use 712 870 Weatherproofing kit to seal fitting at wall entry.									
	Line Size	Cat. No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)			
				A B C			Net	Shipping		
	$\frac{7}{8}$ "	111-78	920321	$\frac{9}{16}$ (14.3)			$4\frac{3}{4}$ (120.7)	6 (152.4)	$2\frac{5}{8}$ (.9)	3 (1.4)
	$1\frac{5}{8}$ "	111-158	920322	$\frac{9}{16}$ (14.3)			$4\frac{3}{4}$ (120.7)	6 (152.4)	$2\frac{5}{8}$ (.9)	3 (1.4)
<p>Weatherproofing Kit 712 870</p>	Weatherproofing Kit for complete weather sealing of transmission line through wall feed through. Consists of all weather vinyl plastic electrical tape, electrical insulation putty and brush-on sealant for easy field installation. Complete instructions packaged with each kit.									
	<p>Round Member Clamp Adaptor 90—</p>	Heavy-duty, hot-dip galvanized universal round member clamp. Allows mounting fixed, spring, or slide hangers of $1\frac{1}{4}$ " to $2\frac{3}{4}$ " diameter tower legs without drilling. Accepts $\frac{1}{2}$ "-13 bolt.								

Copyright© 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

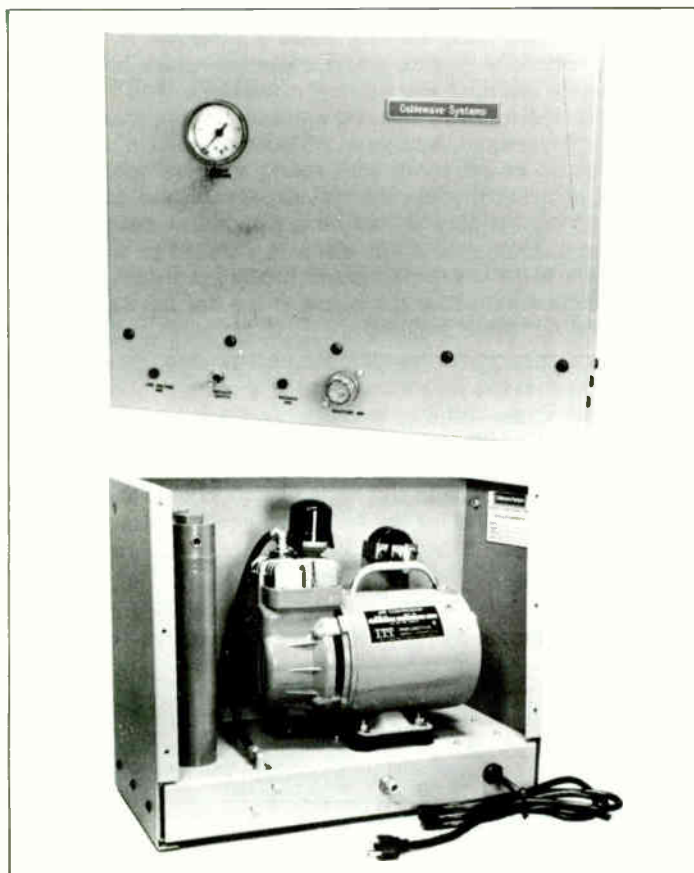
Prices and Specifications Subject to Change Without Notice.

B-213

CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

PRESSURIZATION EQUIPMENT



The APD-20 Automatic Pressurization Dehydrator is designed for reliable pressurization of elliptical waveguide, coaxial cable, waveguide, and rigid line systems. Utilizing the dual canister, self-reactivating, heatless fractionator process, with high efficiency aluminum-silicate molecular sieve adsorbent, the dryer is completely automatic, with no need for replacement or manual reactivation of the dessicant.

The APD-20 is rated at .2 SCFM (.09 liter/sec. and -40°F (-40°C) dry air dew point output at 95°F (35°C) 95% relative humidity input. From normal room environments, the output air has typical dew points of -55°F (-46°C). The dryer operates over an ambient temperature range of -20°F to 120°F (-28.9 to 49°C). Output pressure is factory adjusted to 2 psig (.14 Kg/sq. cm) "on" and 5 psig (0.35 Kg/sq. cm) "off", but may be readjusted in the field to operate anywhere between 2 and 15 psig. A check valve prevents loss of pressure back through the dehydrator and a standard low pressure alarm switch, factory set for 1 psig (.07 Kg/sq. cm), offers SPST contacts for remote monitoring.

Standard features include a power switch, 0-15 psig pressure gauge, indicating power fuse, and visual moisture alarm monitor which turns dark blue when dry and pink when wet. The units may be shelf mounted or placed in 14" of an EIA 19" relay rack. The dehydrator color is light grey and an optional black expanded metal rear cover, catalog number 920 186, may be ordered as an accessory.

APD-20 DEHYDRATOR CAPACITY RATINGS

Transmission Line	Approximate length	
	feet	(meters)
7/8"	15,000	(4,500)
1 1/8"	4,000	(1,200)
3 1/8"	1,200	(350)
6 1/8"	200	(60)
6 to 12 GHz waveguide	3,000	(900)
4 to 5 GHz waveguide	1,000	(300)

CHARACTERISTICS

Power Source	
APD-20 P/N 920635	115 V 60 Hz
APD-21 P/N 920636	115 V 50 Hz
APD-22 P/N 920637	240 V 50 Hz
Output Ratings	
60 Hz model	0.2 SCFM (.09 liters/sec.) -40°F (-40°C) dew point @ 95°F (35°C) 95% R.H. input
50 Hz model	0.14 SCFM (.08 liters/sec.) -40°F (-40°C) dew point @ 95°F (35°C) 95% RH input
Ambient Temperature	-20 - 120°F (-28.9 to 49°C)
Output Pressure On/Off	
Factory set	2-5 psig (.14 - .35 Kg/sq. cm)
Field adjustable	1-15 psig (.07-1.05 Kg/sq. cm) @ 3 psig (.21 Kg/sq. cm) differential
Standard Low Pressure Alarm 913467	factory set 1 psig (.07 Kg/sq. cm) @ .1 psig (.007 Kg/sq. cm) differential
Output Dimensions, H x W x D inches (mm)	3/8" plastic tube fitting 14 x 17 11/16 x 8 (355 x 450 x 203)
Power Consumption, watts	
pumping	300
idle	10
Net Weight, lbs. (Kg)	36 (16)
Shipping Weight, lbs (Kg)	44 (20)
Standard Items Supplied	20 ft. (6m) 3/8" plastic tubing 1/8" MPT fitting 6 ft. 3 conductor grounded power cord
Optional Accessories	
P/N 933639	Accessory Back Cover Kit
P/N 920641	Maintenance Parts Kit for APD-20, 21, or 22
P/N 913843	Floor Stand
P/N 913907	Relay Rack Mtg., Brkt. Kit
P/N 920184	High pressure alarm
P/N 920185	Humidity alarm
P/N 920187	Regulator reservoir tank
P/N 940008	Wall Shelf

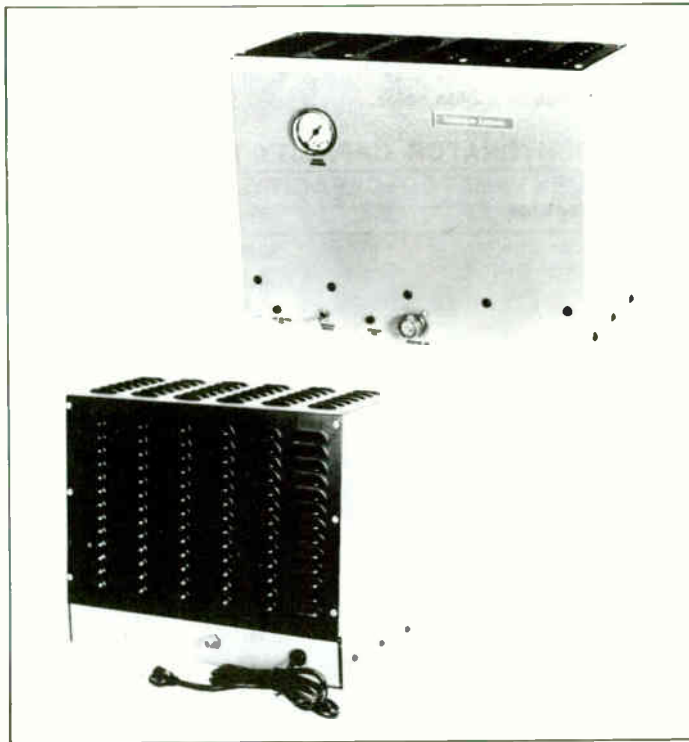
The APD-21 and 22 are identical to the APD-20 except for 50 Hz operation and a reduced output rating of .14 SCFM (0.07 standard liters/sec.)

Copyright© 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

PRESSURIZATION EQUIPMENT



The APD-130 Automatic Pressurization Dehydrator, 1.3 SCFM 115 volts 60 Hz, is designed for operation in larger systems with up to 1,200 ft. of 6 $\frac{1}{8}$ " diameter line. The dehydrator utilizes the heatless, dual canister molecular sieve drying system with completely automatic operation and no need for replacement or manual reactivation of desiccant. The APD-130 generally is similar in design and features to the APD-20 series, except that the APD-130 includes an expanded metal rear cover as standard equipment and has the larger 1.3 SCFM capacity.

From normal room environments, the APD-130 delivers typical dry air dew points of -60°F. The pressure output control is factory set at 3 psig (0.21 Kg/sq.cm) "on" and 7 psig (0.49 Kg/sq.cm) "off". A check valve prevents loss of pressure back through the dehydrator. A standard low pressure alarm switch, factory set for 1 psig (0.07 Kg/sq. cm) is included for remote monitoring.

APD-130 DEHYDRATOR CAPACITY RATINGS

Trans. Line	Approx. Length	
	feet	(meters)
7/8"	90,000	(27,500)
1 1/8"	24,000	(7,500)
3 1/8"	6,000	(1,800)
6 1/8"	1,200	(300)
6 to 12 GHz waveguide	20,000	(6,000)
4 to 5 GHz waveguide	6,000	(1,800)

CHARACTERISTICS

Power Source	
APD-130 P/N 920638	115 V 60 Hz
APD-131 P/N 920639	115 V 50 Hz
APD-132 P/N 920640	240 V 50 Hz
Output Ratings	
60 Hz models	1.3 SCFM (0.6 liters/sec.) -40°F (-40°C) dew point @ 95°F (35°C), 95% RH input
50 Hz models	1.0 SCFM (0.45 liters/sec.) -40°F (-40°C) dew point @ 95°F (35°C), 95% RH input
Ambient Temperature	-20-120°F (-28.9 to 49°C)
Output Pressure On/Off	
Factory set	3-7 psig (.21 - .49 Kg/sq.cm)
Field adjustable	1-15 psig (.07 - 1.05 Kg/sq.cm) @ 3 psig (.21 Kg/sq.cm) differential
Standard Low Pressure Alarm P/N 913467	factory set at 1 psig (.07 Kg/sq.cm) .1 psig (.007 Kg/sq.cm) differential
Output	3/8" plastic tube fitting (removes to provide 1/8" FPT desired)
Dimensions, HxWxD inches (mm)	
APD-130	14 x 17 11/16 x 8 (355 x 450 x 203)
APD-131, 132	14 1/8 x 22 3/4 x 13 1/2 (359 x 578 x 343)
Power Consumption, watts	
pumping	600
idle	10
Net Weight, lbs. (kg)	62 (28)
Shipping Weight, lbs. (Kg)	72 (33)
Standard Items Supplied	20 Ft. of 3/8" plastic tubing 1/8" MPT fitting 6 ft. 3 cond. grounded power cord
Optional Accessories	
P/N 920642	Maintenance Parts Kit for APD-130 and APD-131
P/N 920643	Maintenance Parts Kit for APD-132
P/N 920184	High Pressure Alarm
P/N 920185	Humidity Alarm
P/N 913843	Floor Stand
P/N 913907	Relay Rack Mtg. Brkt. Kit
P/N 940008	Wall Shelf for APD-130
P/N 940009	Wall Shelf for APD-131, 132

NOTE

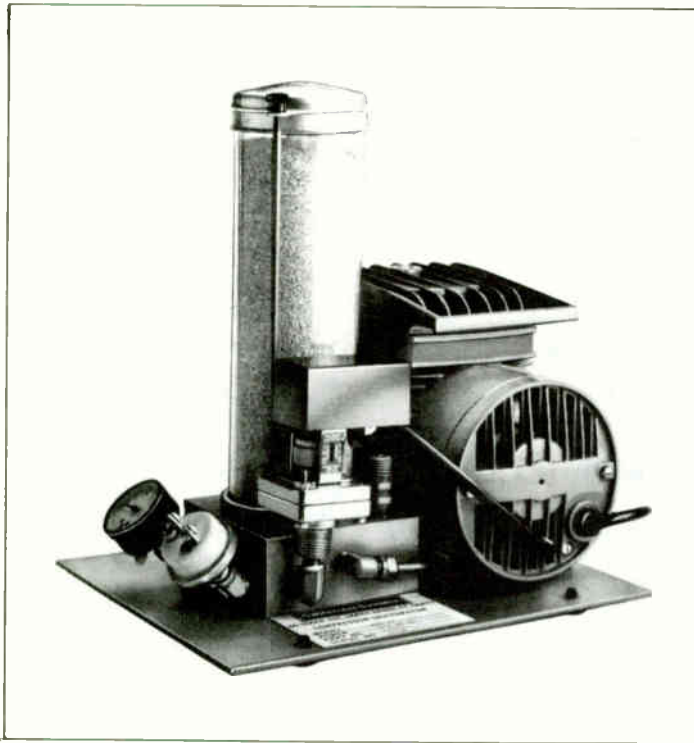
The pipe fittings referred to in this section are to U.S. National Pipe Thread standards and are abbreviated as 1/8" MPT for 1/8" NPT male and 1/8" FPT for 1/8" NPT female. These fittings may be mated with the international 1/8" pipe thread fittings although the U.S. standards include 27 threads per inch while the European International Standards Organization fittings have 28 threads per inch.

Copyright© 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

PRESSURIZATION EQUIPMENT



The SPD-10 Series Semi-Automatic Dehydrator is designed for applications where cost is a factor and where periodic desiccant replacement is practical.

The SPD-10 dehydrator consists of a 1/10th h.p. shaded pole motor compressor with permanently lubricated and sealed ball bearings, a 10,000 hour 2-ply Buna N with nylon cord diaphragm, a 0 to 15 psig pressure gauge, a pressure switch, a low pressure alarm, a high pressure safety relief valve, and a clear plastic canister with two (2) pounds of desiccant — anhydrous calcium sulphate impregnated with cobalt chloride.

Output capacity rating is 1.0 scfm (0.47 (liters/sec.)). Output pressure is factory set to 3-8 psig. (0.21-0.56 kg/sq. cm) but may be readjusted in the field to operate anywhere between 2 and 15 psig. (0.14-1.05 kg/sq. cm). Differential is fixed at 5 psig (0.35 kg/sq. cm). A check valve prevents loss of pressure back through the compressor, and a standard low pressure alarm switch, factory set for 1 psig (.07 kg/sq. cm) offers SPST contacts for remote monitoring.

The High Pressure Safety Relief Valve protects transmission line components in case of excessive pressure buildup. The valve is set at 10 psig (0.7 kg/sq. cm); leak rate will keep up with the capacity of the compressor (1.0 SCFM). With the safety relief valve in operation maximum pressure is limited to 10 psig (0.9 kg/sq. cm).

A Bleedoff Orifice is located in the input connector fitting to the manifold block and should not be interpreted as an air leak. The purpose of the bleedoff is to (1) bleed pressure from the canister so it is not under pressure when shut off, thereby allowing safe removal when it is necessary to restore desiccant, and to (2) remove pressure from the head of the pump so it is not under load when the motor-compressor is turned on.

Dry desiccant is blue color, when the desiccant becomes moisture saturated it turns pink and requires replacement or regeneration. Regeneration can be accomplished by heating the desiccant in an oven at 350°F (180°C) for four (4) hours, or until it is dry as indicated by change to a blue color.

SPD-10 DEHYDRATOR CAPACITY RATINGS

Transmission Line	Approx. Length	
	feet	(meters)
7/8"	30,000	(9,000)
1 1/8"	8,000	(2,400)
3 1/8"	2,400	(700)
6 1/8"	400	(120)
6 to 12 GHz waveguide	6,000	(1,800)
4 to 5 GHz waveguide	2,000	(600)

Typical service time of desiccant is approximately six months. This is based on dry air makeup of 1 cu. ft. (0.028 cu. m) per day under 50% R.H. at 65°F (18.3°C).

CHARACTERISTICS

Power Source SPD-10 P/N 933629	115 V 60 Hz
Power Consumption	250 watts
Output Rating	1.0 scfm (0.47 liters/sec) Below -35°F (-37°C) Dew Point @ 90°F (32.2°C) 90% R.H. input
Ambient Temperature	-20° to 120°F (-28.9° to 48.9°C)
Output Pressure	
—Factory Set	3-8 psig (0.21-0.56 kg/sq. cm)
—Field Adjustable	2-15 psig (0.14-1.05 kg/sq. cm)
High Pressure Safety Relief Valve	Factory Set 10 psig (0.7 kg/sq. cm)
Standard Low Pressure Alarm	Factory Set 1 psig (.07 kg/sq. cm)
Low Pressure Alarm Contacts	SPST 24 volts 4 amps dc
Output Connection	3/8 inch (9mm) plastic tube fitting
Dimensions, H x W x D	
Inches	13 x 9 x 11
(mm)	(330 x 229 x 280)
Net Weight, Lbs. (kg)	21 (9.5)
Shipping Weight, Lbs. (kg)	28 (12.7)
Standard Items Supplied	15 ft. (4.6 m) 3/8" plastic tubing 1/8 inch mpt fitting.

OPTIONAL ACCESSORIES

Part No. 920184	High Pressure Alarm Set at 10 psig (0.7 kg/sq. cm)
------------------------	---

NOTE: Due to the limited service time of desiccant, the SPD-10 is not recommended for purging. If used for purging it may be necessary to run the desiccant through several regeneration cycles, depending on moisture content of air, before putting unit into service.

Copyright© 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

CABLEWAVE SYSTEMS

60 Dodge Avenue
 North Haven, CT 06473
 (203) 239-3311
 Telex 6813343 TWX 710-465-0244

PRESSURIZATION EQUIPMENT

HIGH PRESSURE ALARM 920 184

Suitable for field installation or may be ordered factory installed. The alarm sensor is set at 10 psig (0.7 Kg/sq. cm.). May be special ordered for any pressure between 7 and 30 psig (0.49-2.1 Kg/sq. cm.). Provides SPST contact rated at 4 amps 24 VDC.



HUMIDITY ALARM 920 185

Can be field or factory installed on any 115 volt 60 Hz pressurization dehydrator. Sensor is factory set for 10% relative humidity, but values down to 2% RH available on special order.



REGULATOR-RESERVOIR TANK 920 187

Prevents dehydrator cycling due to back pressure surges and allows reliable operation with low volume coaxial cable and microwave waveguide systems. The regulator may be adjusted between 1.0 psig (0.07 Kg/sq. cm.) and 5.0 psig (0.35 Kg/sq. cm.) output pressure.

The Regulator Reservoir Tank consists of a steel tank, equipped with a fine adjust, stable output regulator and 5 psig pressure gauge. 1/8" FPT input fitting. Includes 15 ft. (3m) of 3/8" black plastic tubing and 1/8" MPT fitting to connect to gas distribution manifold. (Tank only — 920485)



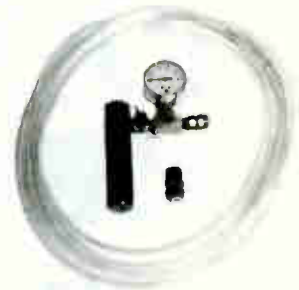
LOW PRESSURE ALARM 920 467

Factory installed on all dehydrators or may be ordered separately for field installation to GDM gas distribution manifold. Pressure end mounts to 1/8" FPT. Sensor factory set for 1 psig (0.07 Kg/sq. cm.). May be special ordered for any value between 1 psig and 7 psig. Provides SPST contact rated at 4 amps 24 VDC.



GAS DISTRIBUTION MANIFOLD KIT GDM-(*)

Used for pressure distribution to several transmission lines. Allows easy maintenance checks of individual lines. Includes 1/8" FPT input, distribution manifold block and one needle release valve, 0-15 psig pressure gauge, and 15 ft. (4.5m) 3/8" plastic tubing for each outlet. Designate number of outlets by suffix number, i.e., GDM-2 for two outlets, GDM-3 for three outlets, etc.



Part No.		Part No.	
GDM-1	920201	GDM-6	920206
GDM-2	920202	GDM-7	920207
GDM-3	920203	GDM-8	920208
GDM-4	920204	GDM-9	920209
GDM-5	920205	GDM-10	920210

LOW PRESSURE DISTRIBUTION MANIFOLD KIT LDM-(*)

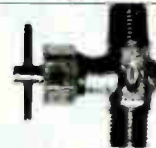
Identical to GDM-(*) except pressure gauges are 0-5 psig.

Part No.		Part No.	
LDM-1	920211-001	LDM-6	920211-006
LDM-2	920211-002	LDM-7	920211-007
LDM-3	920211-003	LDM-8	920211-008
LDM-4	920211-004	LDM-9	920211-009
LDM-5	920211-005	LDM-10	920211-010



BLEEDER RELEASE VALVE

Length	
910 069	1 1/8" 1/8" MPT
913 437	1 3/4" 1/8" MPT



NEEDLE RELEASE VALVE

913 302 1/8" MPT each end.



NEEDLE RELEASE VALVE






913 341 1/8" MPT one end, 1/8" FPT other end.


Copyright © 1980, Cablewave Systems, Inc North Haven, Connecticut 06473




CABLEWAVE SYSTEMS

60 Dodge Avenue
North Haven, CT 06473
(203) 239-3311
Telex 6813343 TWX 710-465-0244

PRESSURIZATION EQUIPMENT

	910 072 913 394	PIPE TEE 1/8" FPT each end. 1/4" FPT each end.
	913 344	MALE CONNECTOR 3/8" Plastic Tubing to 1/8" MPT.
	913 347 913 565	MALE ELBOW CONNECTOR 3/8" Plastic Tubing to 1/8" MPT. 1/4" Plastic Tubing to 1/4" MPT.
	920 126 913 438	PIPE NIPPLE 1/8" MPT each end, 1" long. 1/8" MPT each end, 1 1/2" long.
	913 342	TUBING TEE Used to branch 3/8" plastic tube lines.
	PIPE PLUG 1/8" MPT.	510 784

<p>NITROGEN TANK REGULATOR KIT 920 188 Used with locally obtained nitrogen tank. Includes a reliable single stage regulator, high pressure gauge (0-3,000 psig), low pressure gauge (0-30 psig) and 10 ft. (3m) 3/8" plastic tubing with 1/8" MPT fitting. Regulator fits CGA 580 (0.965" right hand internal) nitrogen tank connection, which is standard for most US sources.</p> 
<p>NITROGEN TANK REGULATOR KIT 920 190 (Recommended for W/G Systems) Similar to the 920 188 but includes a precision, dual stage regulator. Recommended for applications requiring accurate pressure control, i.e. phase sensitive systems such as phasing lines to TV antenna elements or special multiple array antennas.</p>

<p>NITROGEN FITTING ADAPTOR 920 189 Modifies nitrogen regulator to fit a CGA 550 (0.903" left hand external) connection found on some nitrogen tanks.</p>															
<p>PLASTIC TUBING 100 ft. length of 3/8" dia. (9mm) black polyethylene plastic tubing for pressure distribution. 100 ft. per carton.</p> <p>913 723</p>	<p>PLASTIC TUBING SUPPORT Mounting clip for fixing 3/8" plastic tubing to wall. 10 straps per kit.</p> <p>913 368</p>														
 <p>511 437</p>	<p>SCHRAEDER VALVE Pressure inlet valve provides handy pressure check point for custom installation. Stainless steel spring, valve core, 1/8" MPT. Includes valve caps.</p>														
 <p>920 191</p>	<p>TEFLON TAPE (THREAD SEALANT) Teflon tape for use on all joints which have been broken and resealed.</p>														
 <p>511 675</p>	<p>PRESSURE GAUGE 0-15 PSIG 1/8" MPT, indoor use only.</p>														
<p>PRESSURE KIT 713 732 (includes 511675, 511437, 910072, 920126)</p>															
<p>PRESSURIZATION MONITOR 913844 Consists of high (P/N 920184) and low (P/N 920467) pressure alarms, humidity alarm (P/N 920185) and connecting lines.</p>															
<p>SPARE PARTS FOR SPD-10</p> <table border="1"> <thead> <tr> <th>Part No.</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>913488</td> <td>Desiccant—2 Lb</td> </tr> <tr> <td>913493</td> <td>Filter Pad</td> </tr> <tr> <td>913560</td> <td>Canister Assembly</td> </tr> <tr> <td>913559</td> <td>Pressure Gauge (0-15 psig)</td> </tr> <tr> <td>913481</td> <td>Pressure Switch</td> </tr> <tr> <td>913599</td> <td>O Ring Kit</td> </tr> </tbody> </table>		Part No.	Description	913488	Desiccant—2 Lb	913493	Filter Pad	913560	Canister Assembly	913559	Pressure Gauge (0-15 psig)	913481	Pressure Switch	913599	O Ring Kit
Part No.	Description														
913488	Desiccant—2 Lb														
913493	Filter Pad														
913560	Canister Assembly														
913559	Pressure Gauge (0-15 psig)														
913481	Pressure Switch														
913599	O Ring Kit														

The pipe fittings referred to in this section are to U.S. National Pipe Thread standards and are abbreviated as 1/8" MPT for 1/8" NPT male and 1/8" FPT for 1/8" NPT female. U.S. standards include 27 threads per inch while the European International Standards Organization fittings have 28 threads per inch.

Copyright© 1980, Cablewave Systems, Inc. North Haven, Connecticut 06473

MICROPHONE CABLES

4-Conductor, Star-Quad Configuration

L-4E Series Braided Copper Shield

Canare L-4E Series cable is designed for use with microphones although it is also excellent for line-level signals from mixers to power amps. Its Star-Quad configuration plus high shield density reduce hum and noise to less than 1/10 that of conventional 2-conductor mic cables. Special construction reduces handling noise while maintaining excellent flexibility.

High density braided shield blocks electrostatic noise to eliminate annoying hum, buzz and radio interference.

Star-Quad 4-conductor design cancels electro magnetically induced noise from SCR dimmers and fluorescent lights.

Excellent frequency response preserved due to low capacitance provided by dielectric qualities of Polyethylene insulation.

Handling noise is prevented by use of cotton filler material.

Highly flexible due to the large number of thin wire strands, plus special PVC jacket that remains pliant at extreme low temperatures (brittle point is -56 degrees F): no wait between cold shipping and installation or use on stage.

Can be used as stereo cable (see L-4E6S technical memo in Technical Information section).



L-4E5C

Extra thin cable designed to save weight and space in tight installations. Provides maximum flexibility for freedom of motion, while offering excellent durability for its size.

Thin polyethylene insulation is irradiated, which cross links the polymers so it will not shrink back, deform or char when soldering.

Available in 10 attractive, satin finish colors for easy channel identification by engineers, and for coordination with performers' costumes.



L-4E6S

Flexible, extra-strong standard diameter cable that fits perfectly in Cannon JAE XLR-3 connectors. Recommended for hand-held microphones.

With 40 separate strands in each conductor, breakage due to flexing is all but eliminated, especially at or close to the solder joint.

High density braided shield won't open up, even after repeated sharp bends, thus preserving noise rejection.

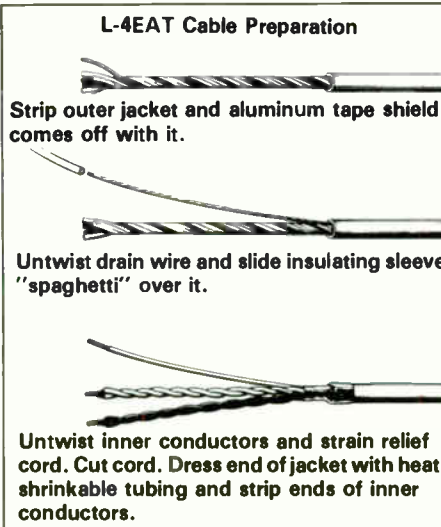
L-4E6S Assorted Bulk Pack Cable

The same fine L-4E6S sold in 500 and 1000 foot lengths in each color is also available in 5 color packages with 100 feet of each, and 10 color packages with 50 feet of each color.

5L-4E6SAF 5 colors x 100 feet each (red, orange, yellow, blue, white).

5L-4E6SBF 5 colors x 100 feet each (brown, green, purple, gray, black).

10L-4E6SF 10 colors x 50 feet each (all 10 Canare colors).



EC Type Cable

L-4E6S mic cable with pre-wired XLR connectors in assorted lengths for patch or mic extension use.

For extra convenience, Canare L-4E6S mic cable is available in a variety of lengths and colors with genuine Cannon XLR connectors in place. XLR-3-11C and XLR-3-12C female and male connectors are carefully soldered to ensure the most durable, long life connections. Female cable shells are grounded to the shield, but the ground wire may be cut if floating shells are preferred. All cables are available in 10 colors.

EC006F 6 foot cable.

EC010F 10 foot cable.

EC015F 15 foot cable.

EC025F 25 foot cable.

EC050F 50 foot cable.



L-4E6

Extra-strong mic cable for use where flexibility of a braided shield is needed yet the cable must withstand pulling in conduits, installation in cold outdoor environments, or use on sound stages.

Available with gray jacket only.

L-4EAT Series

Aluminum Tape (Foil) Shield

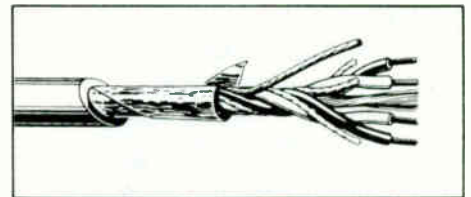
Canare L-4EAT Series cable is similar to L-4E Series, and is also designed for use with microphones and for line-level signals from mixers to power amps. However, aluminum tape shielding rather than braided copper is used, which provides 100% coverage and gives the cable a very thin profile. Because aluminum tape is less able to take repeated sharp bending than braided shields, this cable is ideal for laying in conduit, installation between equipment, and general industrial use. (Its Star-Quad configuration plus high shield density reduce hum and noise to less than 1/10 that of conventional 2-conductors mic cables).

Aluminum foil shield provides 100% coverage to block electrostatic noise. Strips simultaneously with jacket which reduces assembly work time to 1/3 that of braided shield.

Contains Dupont Kevlar 29™ fibers for high tensile strength. Stronger than steel, Kevlar can resist more than 3 times the tension of usual reinforcement filler (121 pound cable test) to prevent stretching or kinking of wires when pulled through conduit. Tensile strength of Dupont Kevlar 29 is 3,900 pounds/inch and expansion factor is less than usual reinforcement fiber). This is the same super tough fiber used in bullet proof vests and composite military aircraft skins.

Star-Quad 4-conductor design cancels electro magnetically induced noise from SCR dimmers and fluorescent lights.

Cold resistant due to special PVC jacket that remains pliant at very low temperatures.

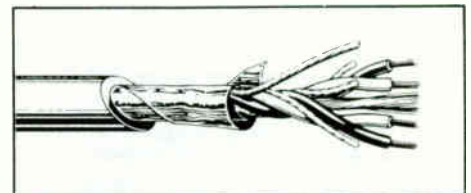


L-4E5AT

Extra thin, high strength cable ideal for pulling through narrow conduit.

Irradiated Polyethylene insulation is cross linked so it will not shrink back, deform or char when soldering.

Available in gray jacket only.



L-4E6AT

Large diameter, high tensile strength cable has the largest conductors of all Canare Star-Quad mic cables for very low losses; perfect for those extra-long cable runs.

CANARE CABLE, INC.

6733 Vineland Ave.
N. Hollywood, CA 91606
(213) 980-8092

MICROPHONE CABLES

SERIES	L-4E	L-4E	L-4E	L-4EAT	L-4EAT
MODEL	L-4E5C	L-4E6S	L-4E6	L-4E5AT	L-4E6AT
INNER CONDUCTOR(S)					
Nominal cross section area In sq. mils* (# gauge, AWG)	232.5 (#25)	310.0 (#24)	356.5 (#23)	279.0 (#24)	465.0 (#22)
Diameter of each conductor (mils)	22	24	26	22	30
Strands per conductor/diameter each strand (mils)	30/3.15	40/3.15	20/4.73	16/4.73	12/7.09
Insulation type**/thickness (mils)	IPE/12.2	PE/15.8	PE/18.9	IPE/36	IPE/48
Quantity of conductors	4	4	4	4	4
OTHER FEATURES					
Filler materials	Cotton	Cotton	Cotton	Cotton & Kevlar	Cotton & Kevlar
Paper Tape thickness (mils)	2	2	2	2	2
Shield stranding (mils/quant/pitch***)	3.94/8/16	3.94/8/16	4.73/6/24	N/A	N/A
PVC jacket thickness (mils)	34	40	40	36	48
Jacket brittle temp. (deg. F)	-56	-56	-56	-16	-16
Jacket color	All 10	All 10	Gray	Gray	Gray
Overall diameter (inches)	0.197	0.237	0.256	0.197	0.248
Weight (pounds/1000 feet)	27	33	40	20	33
Single conductor resistance (ohms/1000 feet)	37	30	27	33	20
Capacitance, twin blue to twin white leads (pF/ft)	50	45	44	51	51
Capacitance, twin blue to shield (pF/ft)	61	55	57	68	72
Insulation resistance (Megohms/3000 feet)	>1000	>1000	>1000	>1000	>1000
Dielectric strength (min. breakdown V, 3000 feet)	500 VAC	500 VAC	500 VAC	500 VAC	500 VAC
Roll length (feet)	500, 1000	500, 1000	500, 1000	500, 1000	500, 1000

*1 mil is equal to 0.001 inches

**PE = Polyethylene

IPE = Irradiated (beamed, cross-linked) Polyethylene

***Pitch refers to the number of twists per unit length of center conductors.

MULTI-CHANNEL MICROPHONE CABLES

Individually Insulated Cables, Star-Quad 4-Conductor Configuration

L-4E3/L-4E4/L-4E4AT Series

Canare offers many types of individually insulated, multichannel microphone cables from 2 to 24 channels. The three series described here all utilize Star-Quad 4-conductor configuration for maximum rejection of electro magnetic noise.

Each channel has its own shielded, individually insulated cable so that grounds are isolated which helps prevent ground-loops in complex systems.

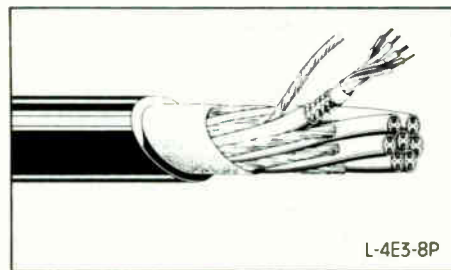
A separate drain wire is provided for ground return for the overall multi-channel cable (L-4E4AT Series also has individual drain wires in each channel).

Reinforcing tape is used on larger cables to hold the cable shape; cotton and jute filler adds to pulling strength.

Cotton separator tape wrapped around bundle simplifies outer jacket removal.

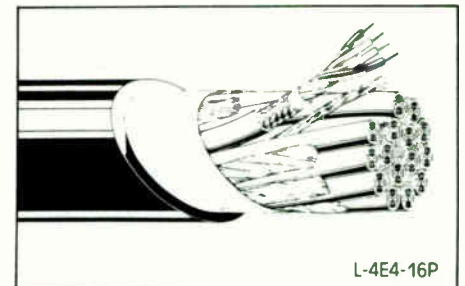
Individual channels are color coded to simplify identification for faster installation.

Select from braided copper shields for flexibility, or aluminum tape shields for 100% shield density, low profile and fastest assembly in fixed installations.



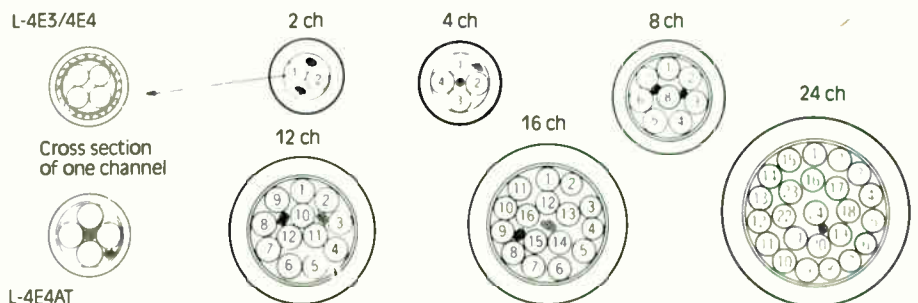
L-4E3 Series Braided Copper Shield, Thin Profile

- L-4E3-2P 2 Channel
- L-4E3-2H 2 Channel with stainless steel strain-relief wire for extra pulling strength.
- L-4E3-4P 4 Channel
- L-4E3-8P 8 Channel
- L-4E3-12P 12 Channel
- L-4E3-16P 16 Channel
- L-4E3-24P 24 Channel



L-4E4 Series Braided Copper Shield, Standard Size

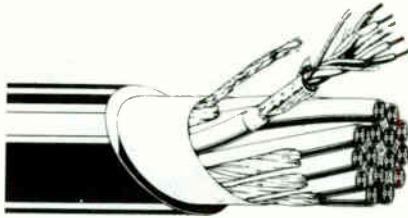
- L-4E4-4P 4 Channel
- L-4E4-8P 8 Channel
- L-4E4-12P 12 Channel
- L-4E4-16P 16 Channel
- L-4E4-24P 24 Channel



CANARE CABLE, INC.

6733 Vineland Ave.
N. Hollywood, CA 91606
(213) 980-8092

MICROPHONE CABLES



L-4E4-16AT

L-4E4AT Series Aluminum Tape Shield, Thin Profile

- L-4E4-4AT 4 Channel
- L-4E4-8AT 8 Channel
- L-4E4-12AT 12 Channel
- L-4E4-16AT 16 Channel
- L-4E4-24AT 24 Channel

	L-4E3	L-4E3	L-4E3	L-4E3	L-4E3	L-4E3	L-4E3	L-4E4	L-4E4	L-4E4
	L-4E3-2P	L-4E3-2H	L-4E3-4P	L-4E3-8P	L-4E3-12P	L-4E3-16P	L-4E3-24P	L-4E4-4P	L-4E4-8P	L-4E4-12P
	2	2	4	8	12	16	24	4	8	12
Nominal cross section area in sq. mils* (# gauge, AWC)	124 (#28)	124 (#28)	124 (#28)	124 (#28)	124 (#28)	124 (#28)	124 (#28)	232 5 (#25)	232 5 (#25)	232 5 (#25)
Diameter of each conductor (mils)	15	15	15	15	15	15	15	22	22	22
Strands per conductor/diameter each strand (mils)	16/3 15	16/3 15	16/3 15	16/3 15	16/3 15	16/3 15	16/3 15	30/3 15	30/3 15	30/3 15
Insulation type**/thickness (mils)	IPE/12	IPE/12	IPE/12	IPE/12	IPE/12	IPE/12	IPE/12	IPE/12	IPE/12	IPE/12
Quantity of conductors	8	8	12	32	48	64	76	16	32	48
Filler materials	cotton & jute	cotton & jute	cotton & jute	cotton & jute	cotton & jute	cotton & jute	cotton & jute	cotton & jute	cotton & jute	cotton & jute
Wrap type (thickness, mils)	Paper (2)	Paper (2)	Paper (2)	Paper (2)	Paper (2)	Paper (2)	Paper (2)	Paper (2)	Paper (2)	Paper (2)
Shield stranding (mils/quant/pitch***)	3 94/6/16	3 94/6/16	3 94/6/16	3 94/6/16	3 94/6/16	3 94/6/16	3 94/6/16	3 94/8/16	3 94/8/16	3 94/8/16
PVC Jacket thickness (mils)	28	44	40	52	52	52	67	59	59	59
Jacket brittle temp. (deg. F)	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56
Jacket color	Black	Gray	Black	Black	Black	Black	Black	Black	Black	Black
Overall diameter (inches)	0.335	0.351	0.410	0.591	0.658	0.729	0.926	0.532	0.705	0.792
Weight (pounds/1000 feet)	56	60	88	162	229	303	471	142	229	323
Single conductor resistance (ohms/1000 feet)	72	72	72	72	72	72	72	40	40	40
Capacitance, twin blue to twin white leads (pF/ft)	44	44	44	44	44	44	44	50	50	50
Capacitance, twin blue to shield (pF/ft)	52	52	52	52	52	52	52	61	61	61
Insulation resistance (Megohms/3000 feet)	>1000	>1000	>1000	>1000	>1000	>1000	>1000	>1000	>1000	>1000
Dielectric strength (min. breakdown V, 3000 feet)	500 VAC	500 VAC	500 VAC	500 VAC	500 VAC	500 VAC	500 VAC	500 VAC	500 VAC	500 VAC
Roll length, feet (meters)	328, 656 (100, 200)	164, 328 (50, 100)	164, 328 (50, 100)	98 4, 164, 328 (30, 50, 100)	98 4, 164, 328 (30, 50, 100)	98 4, 164, 328 (30, 50, 100)	98 4, 164, 328 (30, 50, 100)	328, 656 (100, 200)	164, 328 (50, 100)	164, 328 (50, 100)
Stainless steel reinf. wire: # of strands/diameter each (mils)/overall diam. (mils)	N/A	7/3 937/82 7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		L-4E4AT	L-4E4AT	L-4E4AT	L-4E4AT	L-4E4AT	L-4E4AT	L-4E4	L-4E4	
		L-4E4-4AT	L-4E4-8AT	L-4E4-12AT	L-4E4-16AT	L-4E4-24AT		L-4E4-16P	L-4E4-24P	
		4	8	12	16	24		16	24	
Nominal cross section area in sq. mils* (# gauge, AWC)		279 (#24)	279 (#24)	279 (#24)	279 (#24)	279 (#24)		232 5 (#25)	232 5 (#25)	
Diameter of each conductor (mils)		22	22	22	22	22		22	22	
Strands per conductor/diameter each strand (mils)		16/4 73	16/4 73	16/4 73	16/4 73	16/4 73		30/3 15	30/3 15	
Insulation type**/thickness (mils)		IPE/13	IPE/13	IPE/13	IPE/13	IPE/13		IPE/12	IPE/12	
Quantity of conductors		16	32	48	64	96		64	96	
Filler materials		cotton & jute	cotton & jute	cotton & jute	cotton & jute	cotton & jute		cotton & jute	cotton & jute	
Wrap type		Cloth	Cloth	Cloth	Cloth	Cloth		Paper (2)	Paper (2)	
Shield		Al foil	Al foil	Al foil	Al foil	Al foil		3 94/8/16	3 94/8/16	
PVC Jacket thickness (mils)		52	56	56	56	59		63	67	
Jacket brittle temp. (deg. F)		-16	-16	-16	-16	-16		-56	-56	
Jacket color		Gray	Gray	Gray	Gray	Gray		Black	Black	
Overall diameter (inches)		0.489	0.670	0.760	0.843	1.036		0.886	1.099	
Weight (pounds/1000 feet)		128	209	289	336	464		404	538	
Single conductor resistance (ohms/1000 feet)		33	33	33	33	33		40	40	
Capacitance, twin blue to twin white leads (pF/ft)		50	50	50	50	50		50	50	
Capacitance, twin blue to shield (pF/ft)		68	68	68	68	68		61	61	
Insulation resistance (Megohms/3000 feet)		>1000	>1000	>1000	>1000	>1000		>1000	>1000	
Dielectric strength (min. breakdown V, 3000 feet)		500 VAC	500 VAC	500 VAC	500 VAC	500 VAC		500 VAC	500 VAC	
Roll length, feet (meters)		328, 656 (100, 200)	164, 328 (50, 100)	164, 328 (50, 100)	164, 328 (50, 100)	164, 328 (50, 100)		164, 328 (50, 100)	164, 328 (50, 100)	

MICROPHONE CABLES

2-Conductor

L-2 Series

Canare also makes standard 2-conductor cables. These cables use the same high-density braided shields and quick-strip aluminum tape shields as Star-Quad cable, and provide superior rejection of hum and noise.



L-2T2S Braided Copper Shield

Microphone cable for general purpose use.

High density braided shield blocks electrostatic noise and eliminates annoying hum, buzz and radio interference.

Utilizes 60 strands of 3.15 mil copper wire for excellent flexibility; will resist breaking even if accidentally nicked.

Special PVC jacket combines strength and flexibility even in cold winter temperatures outdoors.

Available in 5 colors: orange, red, yellow, blue, black.



L-2T2AT Aluminum Tape Shield

Special cable for microphones or line level audio circuits in conduit or other fixed installations.

Aluminum tape shield provides 100% coverage; easy preparation for wiring because shield strips off with outer jacket.

Reinforced with Tetron fiber for much greater pulling strength than L-2T2S.

Irradiated polyethylene insulation is tougher than standard insulation, and resists deformation, meltback and charring when soldering. Available in gray only.



L-2B2AT

Very Thin Cable, Aluminum Tape Shield

Special cable for routing mic and line level audio signals inside electronic equipment.

Aluminum tape shield provides 100% coverage; easy preparation for wiring because shield strips off with outer jacket.

Irradiated polyethylene insulation is tougher than standard insulation, and resists deformation, meltback and charring when soldering. Available in gray only.

Series	L-2	L-2	L-2
Model	L-2T2AT	L-2B2AT	L-2T2S
Inner Conductor(s)			
Nominal cross section area In sq. mils* (# gauge, AWG)	465 (#22)	279 (#24)	465 (#22)
Diameter of each conductor (mils)	30	22	29
Strands per conductor/ diameter each strand (mils)	12/7.09	16/4.73	60/3.15
Insulation type**/thickness (mils)	IPE/16	IPE/13	PE/13
Quantity of conductors	2	2	2
Other Features			
Filler materials	Tetron	N/A	Cotton
Paper tape thickness (mils)	N/A	N/A	2
Shield (if braid: mils, # of strands, pitch)	Al foil	Al foil	Cu Braid, 3.94/8/16
PVC jacket thickness (mils)	59	16	40
Jacket brittle temp. (deg. F)	-16	-16	-56
Jacket color	Gray	Gray	Blk, Red, Orn, Yel, or Blu
Overall diameter (Inches)	0.244	0.126	0.237
Weight (pounds/1000 feet)	27	8.8	31
Single conductor resistance (ohms/1000 feet)	20	33	20
Capacitance, between center conductors (pF/ft)	24	23	21
Capacitance, conductors to shield (pF/ft)	42	37	33
Insulation resistance (Megohms/3000 feet)	>1000	>1000	>1000
Dielectric strength (min. breakdown V, 3000 feet)	500 VAC	500 VAC	500 VAC
Roll length (feet)	500, 1000	500, 1000	500, 1000

*1 mil is equal to 0.001 inches

**PE = Polyethylene

IPE = Irradiated (beamed, cross-linked) Polyethylene.

MULTI-CHANNEL MICROPHONE CABLES

2-Conductor Configuration, Uninsulated Braided Copper Shields and Common Drain Wire

L-PE Series

The L-PE series of multichannel microphone cables offers a combination of thin profile, very high flexibility, excellent noise rejection, and exceptionally low crosstalk characteristics. This is excellent microphone or line-level "snake" cable for indoor and outdoor installations.

Each channel has its own shielded 2-conductor cable, but the shields are not insulated so grounds are shared. This provides a thinner profile with one large ground drain for excellent protection against electrostatic noise.

A separate overall ground drain wire is also provided for wiring convenience in avoiding common mode noise.

Crosstalk damping is greater than 127 dB, despite the thin profile of these cables. Each channel in an L-PE cable has a different pitch so that crosstalk damping is more than 30 dB better than ordinary twisted pair cable of otherwise similar construction. (Crosstalk within conventional multichannel cables is caused by mutual inductance from a common pitch).

Excellent frequency response due to low capacitance provided by polyethylene insulation (17 pF/ft.).

The "S" version is very thin profile; the L-PE3202S 32 channel cable is actually thinner than the 24 channel L-PE2402.

Cotton and jute filler adds to pulling strength. Cotton separator tape wrapped around bundle simplifies outer jacket removal.

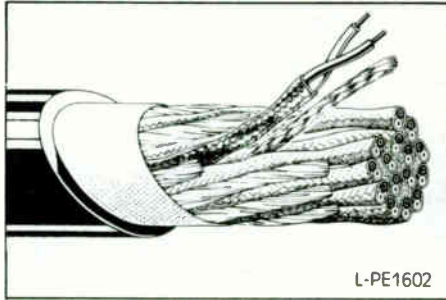
Individual channels are color coded to simplify identification for faster installation.

Special PVC jacket combines strength and flexibility, even in cold winter temperatures outdoors.

CANARE CABLE, INC.

6733 Vineland Ave.
N. Hollywood, CA 91606
(213) 980-8092

MICROPHONE CABLES



- L-PE203 2 Channel
- L-PE403 4 Channel
- L-PE802 8 Channel
- L-PE1202 12 Channel
- L-PE1602 16 Channel
- L-PE2402 24 Channel
- L-PE3202S 32 Channel, Thin Profile

	L-PE	L-PE	L-PE	L-PE	L-PE	L-PE	L-PE
	L-PE203	L-PE403	L-PE802	L-PE1202	L-PE1602	L-PE2402	L-PE3202S
	2	4	8	12	16	24	32
Nominal cross section area in sq. mils* (# gauge, AWG)	465 (#22)	465 (#22)	310 (#24)	310 (#24)	310 (#24)	310 (#24)	310 (#24)
Diameter of each conductor (mils)	30	30	24	24	24	24	20
Strands per conductor/diameter each strand (mils)	12/7.09	12/7.09	18/4.73	18/4.73	18/4.73	18/4.73	12/4.73
Insulation type**/thickness (mils)	PE/21	PE/21	PE/15	PE/15	PE/15	PE/15	PE/12
Quantity of conductors (mils)	4	8	16	24	32	48	64
Filler materials	Jute	Jute	Jute	Jute	Jute	Jute	Jute
Shield stranding (mils/quan/pitch***)	4.73/6/16	4.73/6/16	4.73/5/16	4.73/5/16	4.73/5/16	4.73/5/16	4.73/5/16
PVC Jacket thickness (mils)	59	59	59	59	59	67	67
Jacket brittle temp. (deg. F)	-56	-56	-56	-56	-56	-56	-56
Jacket color	Black	Black	Black	Black	Black	Black	Black
Overall diameter (Inches)	0.44	0.50	0.57	0.63	0.69	0.86	0.82
Weight (pounds/1000 feet)	84	129	154	222	269	404	417
Single conductor resistance (ohms/1000 feet)	20	20	30	30	30	30	40
Capacitance, between inner conductors (pF/ft)	20	20	21	21	21	21	19
Capacitance, twin blue to shield (pF/ft)	32	32	32	32	32	32	27
Insulation resistance (Megohms/3000 feet)	>1000	>1000	>1000	>1000	>1000	>1000	>1000
Dielectric strength (min. breakdown V, 3000 feet)	500 VAC	500 VAC	500 VAC	500 VAC	500 VAC	500 VAC	500 VAC
Roll length, feet (meters)	328, 656 (100, 200)	328, 656 (100, 200)	98.4, 164, 328 (30, 50, 100)	98.4, 164, 328 (30, 50, 100)	98.4, 164, 328 (30, 50, 100)	98.4, 164, 328 (30, 59, 100)	98.4, 164, 328 (30, 50, 100)

*1 mil is equal to 0.001 inches
 **PE = Polyethylene
 IPE = Irradiated (beamed, cross-linked) Polyethylene
 ***Pitch refers to the number of twists per unit length of center conductors.

MULTI-CHANNEL MICROPHONE CABLES

2-Conductor Configuration, Individually Insulated Cables With Aluminum Tape Shields and Overall Common Drain Wire

2E3-AT Series

The 2E3-AT Series of multichannel microphone cables offer a combination of very thin profile, 100% shield density for excellent static noise rejection, and individual cable shielding to prevent ground loop problems in complex sound systems. This is an ideal microphone or line-level "snake" cable for pulling in conduit, whether indoors or out of doors.

Each channel has its own shielded, individually insulated 2-conductor cable and drain wire.

A separate overall ground drain wire is provided for wiring convenience in avoiding common mode noise.

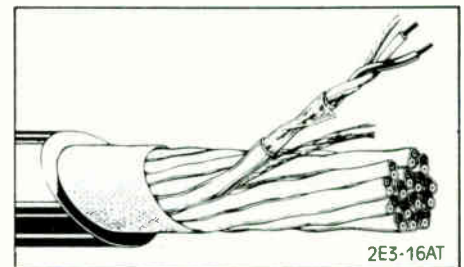
Large diameter (#22 AWG) conductors mean low losses, facilitating very long cable runs.

Cotton reinforcing tape is used on larger cables to hold the cable shape; Kevlar and jute fillers provide very high pulling strength.

Cotton separator tape wrapped around bundle simplifies outer jacket removal.

Individual channels are color coded to simplify identification for faster installation.

Special PVC jacket combines strength and flexibility, even in cold winter temperatures outdoors.

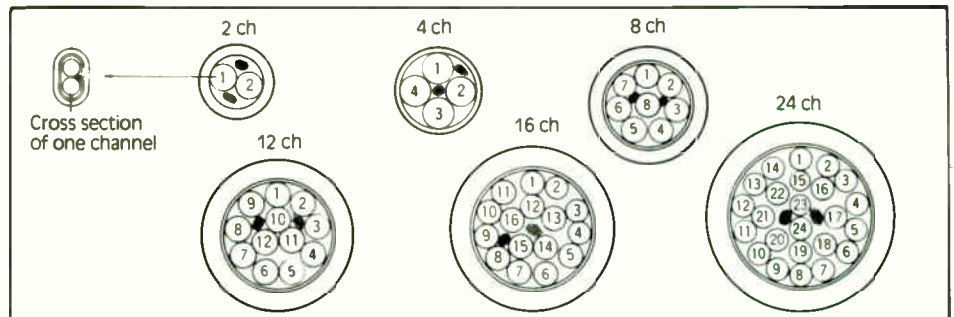


- 2E3-2AT 2 Channel
- 2E3-4AT 4 Channel
- 2E3-8AT 8 Channel
- 2E3-12AT 12 Channel
- 2E3-16AT 16 Channel
- 2E3-24AT 24 Channel

CANARE CABLE, INC.

6733 Vineland Ave.
N. Hollywood, CA 91606
(213) 980-8092

MICROPHONE INSTRUMENT AND SPEAKER CABLES



Series	2-E3AT	2-E3AT	2-E3AT	2-E3AT	2-E3AT	2-E3AT
Model	2E3-2AT	2E3-4AT	2E3-8AT	2E3-12AT	2E3-16AT	2E3-24AT
Channels	2	4	8	12	16	24
Inner Conductor(s)						
Nominal cross section area in sq. mils* (# gauge, AWG)	480.5 (#22)	480.5 (#22)	480.5 (#22)	480.5 (#22)	480.5 (#22)	480.5 (#22)
Diameter of each conductor (mils)	30	30	30	30	30	30
Strands per conductor/diameter each strand (mils)	12/7.09	12/7.09	12/7.09	12/7.09	12/7.09	12/7.09
Insulation type**/thickness (mils)	IPE/16	IPE/16	IPE/16	IPE/16	IPE/16	IPE/16
Quantity of conductors	4	8	16	24	32	48
Other Features						
Filler materials	Jute	Jute	Jute	Jute	Jute	Jute
Cloth tape thickness (mils)	10	10	10	10	10	10
Shield Tape	Al foil	Al foil	Al foil	Al foil	Al foil	Al foil
PVC Jacket thickness (mils)	48	59	59	59	59	67
Jacket brittle temp. (deg. F)	-16	-16	-16	-16	-16	-16
Jacket color	Gray	Gray	Gray	Gray	Gray	Gray
Overall diameter (inches)	0.406	0.489	0.666	0.744	0.823	1.016
Single conductor resistance (ohms/1000 feet)	20	20	20	20	20	20
Capacitance, between inner conductors (pF/ft)	24	24	24	24	24	24
Capacitance, conductor to shield (pF/ft)	41	41	41	41	41	41
Insulation resistance (Megohms/3000 feet)	>1000	>1000	>1000	>1000	>1000	>1000
Dielectric strength (min. Breakdown V, 3000 feet)	500 VAC	500 VAC	500 VAC	500 VAC	500 VAC	500 VAC
Roll length, feet (meters)	328, 656 (100, 200)	328, 656 (100, 200)	164, 328, 656 (50, 100, 200)	164, 328, 656 (50, 100, 200)	164, 328, 656 (50, 100, 200)	164, 328, 656 (50, 100, 200)

*1 mil is equal to 0.001 inches

**PE = Polyethylene.

IPE = Irradiated (beamed, cross-linked) Polyethylene

GUITAR/INSTRUMENT CABLE

1-Conductor, Heavy Gauge Coax, Braided Copper Shield

GS-6

GS-6 cable is specially designed for connecting electric guitars and basses, as well as other electric instruments to amps, effects units and mixers. This cable is also excellent for connecting speakers to power amplifiers in relatively short runs (under 100 feet).

Thick No. 17 AWG inner conductor has more than 3 times the cross-sectional area of conventional guitar cables, cuts loss for "hotter" signals without increased noise; also able to handle the power in speaker applications.

Inner conductor comprised of 127 strands of .00394" diameter (3.94 mils), non-oxidizing copper wire for exceptional flexibility and strength; avoids breakage due to wire fatigue.

Low capacitance, due to polyethylene insulation, and low series resistance, due to thick center conductor, mean improved frequency response; even in long cables with high impedance guitar inputs, a bright, rising characteristic is preserved.

B-224

Conductive carbon-vinyl plastic sheath just inside the braid avoids "handling noise" by dissipating internal static charges.

Very high density, non-oxidizing braided copper shield provides maximum protection from electrostatically induced hum and buzz.

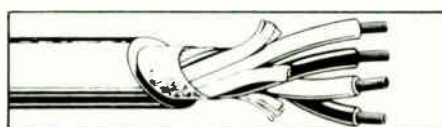
Excellent durability, proven by 40,000-flex test, means cable will withstand heavy commercial use.

Tough, flexible jacket can be unpacked from extreme cold and used immediately. The brittle point is -56 degrees F (-49 degrees C).

Available in 5 attractive satin finish colors to aid channel identification and/or to complement visual appearance: red, yellow, orange, blue and black.

SPEAKER CABLE

4-Conductor, Unshielded, Twisted Double-Pair



4S8

4S8 is a perfect cable for distribution of signals from power amplifiers to loudspeakers, especially in large sound reinforcement or distributed speaker systems where extended frequency response and minimum power loss are essential.

4 large conductors (each #16 AWG) are wired in pairs, 2 red to one speaker terminal, 2 white to the other, so that resistance is very low for very low loss. (equivalent of #13 AWG cable).

Frequency response is excellent, due to low capacitance; down only 4 dB at 100 kHz in a 328 foot cable (which is about 9 dB better than ordinary 2-wire speaker cable).

Special PVC jacket combines strength and flexibility, even in cold winter temperatures outdoors. Protects against chafing of individual conductor insulation and avoids kinking and tangles typical of unjacketed twisted pairs.

Cotton filler for extra strength.

Paper separator tape wrapped around twisted conductors simplifies outer jacket removal.

Prices and Specifications Subject to Change Without Notice.

CANARE CABLE, INC.

6733 Vineland Ave.
N. Hollywood, CA 91606
(213) 980-8092

INSTRUMENT, SPEAKER AND VIDEO CABLE

Model	C5-6	458	3C-2VS	5C-2VS
Type	Shielded Instrument or Speaker	Unshielded Speaker	75 Ohm Video Coax	75 Ohm Video Coax
Inner Conductor(s)				
Nominal cross section area in sq. mils* (# gauge, AWG)	1550 (#17)	1968.5 (#16)	279 (#24)	573.5 (#21)
Diameter of each conductor (mils)	52	59	22	31
Strands per conductor/diameter each strand (mils)	127/3.94	50/7.09	7/7.093	7/10.24
Insulation type**/thickness (mils)	PE/34	PE/20	PE/51	PE/82
Quantity of conductors	1	4	1	1
Other Features				
Filler materials	N/A	Cotton	N/A	N/A
Paper Tape thickness (mils)	N/A	2	N/A	N/A
Shield stranding (mils/quan/pitch***)	3.94/8/16	N/A	5.52/5/24	5.52/7/24
PVC Jacket thickness (mils)	40	40	32	36
Jacket brittle temp. (deg. F)	-56	-56	-56	-56
Jacket color	Red, Orn, Yel, Blue, Blk	Gray	Red, Yel, Grn, Blu, Brn, Wht, Gry, Blk	Red, Yel, Grn, Blu, Brn, Wht, Gry, Blk
Overall diameter (Inches)	0.233	0.34	0.213	0.292
Weight (pounds/1000 feet)	34	64	29	47
Single conductor resistance (ohms/1000 feet)	6.7	4.3	31 (Z = 75 ohms)	16 (Z = 75 ohms)
Capacitance, twin red to twin white leads (pF/ft)	N/A	27	N/A	N/A
Capacitance, center conductor to shield (pF/ft)	49	N/A	21	21
Insulation resistance (Megohms/3000 feet)	>1000	>1000	>1000	>1000
Dielectric strength (min. breakdown V, 3000 feet)	500 VAC	500 VAC	500 VAC	500 VAC
Roll length, feet (meters)	500, 1000	500, 1000	328 (100)	328 (100)

*1 mil is equal to 0.001 inches

**PE = Polyethylene
IPE = Irradiated (beamed, cross-linked) Polyethylene

***Pitch refers to the number of twists per unit length of center conductors.

COAXIAL VIDEO CABLE

Braided Copper Shield, 75 ohm Nominal Impedance

3C-2VS/5C-2VS

These coaxial cables are designed for field broadcasting, video patching, and general instrumentation work. 3C-2VS is a thin profile cable, whereas 5C-2VS is a heavier cable for use where minimum attenuation is required. The use of multi-strand, small diameter center conductors and pliant PVC jacketing ensures high flexibility so cables will "stay put".

Inner conductor has 7 strands of copper wire for flexibility and durability.

High density shield blocks stray RF and electrostatic noise.

Low attenuation at video frequencies (see attenuation value chart).

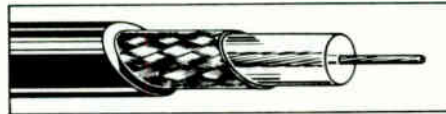
Tough, flexible jacket can be unpacked from extreme cold and used immediately. The brittle point is -56 degrees F (-49 degrees C).

Available in 8 standard colors to aid channel identification: red, yellow, green, blue, gray, white, brown, and black.

Packaged in 328 foot (100 meter) rolls; also available as pre-wired video/instrumentation patch cords with BNC connectors on each end.

Standard Attenuation Value

Frequency	Attenuation (per 100 feet)	
	3C2VS	5C2VS
5 MHz	1.04 dB	0.58 dB
10 MHz	1.46 dB	0.82 dB
50 MHz	3.11 dB	1.86 dB



3C-2VS Thin profile, bulk packaged

5C-2VS Extra low loss, bulk packaged

VIDEO REMOTE CABLE

Combined Video/Power/ Audio/Intercom Cables

A2/A4/A8/A12

Canare video remote cables are designed for electronic news gathering and electronic field production applications where it is necessary to combine video, audio, power and intercom connection in a single, flexible cable that runs from the camera/monitor/mixer site to the remote recording/transmission van. Five different models provide increased channel capability for various applications.

Exceptionally low crosstalk thanks to individual, high density braided shields on all audio, video and power cables, plus careful control of pitch and insulation characteristics.

Power channel uses Star-Quad configuration plus high density shield to neutralize noise radiation into mic and video lines; polyethylene insulation over numerous thin wire strands increases flexibility while keeping low profile. High voltage, low loss characteristics.

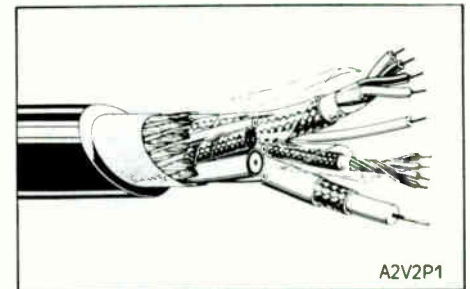
Video channels use 75 ohm, high flexibility, low loss coax. Excellent shielding density with braided, non-oxidizing copper.

Audio channels use super-low noise Star-Quad 4E3 type cable for rejection of electro magnetic and electrostatic noise, and very low crosstalk. Largest A12V2P7 also uses 2-conductor shielded cables, which still provides good noise rejection if mics are used, but is intended for less critical line level signals.

Individually insulated intercom leads for use with DC (carbon mic) type intercoms, or dynamic mic systems. Alternately, can be used for control voltage connections, and spare shielded audio cable can be used for intercom.

Polyester tape is wrapped around shields.

Heavy duty PVC jacket resists wear and stays flexible in the coldest outdoor temperatures.



A2V2P1

A2V22 video coax cables, 2 Star-Quad audio cables, 5 conductors for intercom, all in a common jacket.

A2V2P1 2 video coax cables, 2 Star-Quad audio cables, 4 conductors for intercom, 4-conductor shielded power cable, all in a common jacket.

A4V2P4 2 video coax cables, 4 Star-Quad audio cables, 4 conductors for intercom, 4-conductor shielded power cable, all in a common jacket.

A8V2P7 2 video coax cables, 8 Star-Quad audio cables, 6 conductors for intercom, 4-conductor shielded power cable, all in a common jacket.

A12V2P7 2 video coax cables, 6 Star-Quad audio cables, 6 2-conductor audio cables, 6 conductors for intercom, 4-conductor shielded power cable, all in a common jacket.

Prices and Specifications Subject to Change Without Notice.

B-225

CANARE CABLE, INC.

6733 Vineland Ave.
N. Hollywood, CA 91606
(213) 980-8092

CABLE SYSTEMS



Model Unit	A2V2			A2V2P1			
	V Coaxial (equivalent to 2.5C2V)	A Audio (4E3)	I Intercom	P Power	V Coaxial (equivalent to 3C2V)	A Audio (4E3)	I Intercom
Nominal conductor cross section (mil ²)	155 (27 AWG)	124 (28 AWG)	310 (24 AWG)	465 (22 AWG)	263.5 (24 AWG)	124 (28 AWG)	465 (22 AWG)
Stranding (Quantity/mil)	7/5.52	16/3.15	18/4.73	12/7.09	7/7.09	16/3.15	12/7.09
Quantity of conductors	2x1	2x4	5x1	1x4	2x1	2x4	4x1
Binding tape thickness (mils)	N/A	2	N/A	2	N/A	2	N/A
Shield Stranding (mil/q'ty/ptch)	4.73/6/16	3.94/6/16	N/A	4.73/6/16	5.52/5/24	3.94/6/16	N/A
Individual Jacketing	Mylar Tape	PVC (Gray)	N/A	Mylar tape	Mylar tape	PVC (Gray)	N/A
Conductor resistance/impedance (Ohm/1000 ft)	75	70	27	20	75	70	20
Filler materials	Jute/Cotton Tape			Jute/Cotton Tape			
PVC Jacket thickness (mils)	40			59			
Overall Diameter (Inch)	0.406			0.571			
Weight (Pound/1000 ft)	88			162			
Insulation resistance (Megohm/1000 ft)	Greater than 1,000			Greater than 1,000			
Dielectric strength (min. breakdown, 3,000 feet)	500 VAC			500 VAC			
Roll length, feet (meters)	328 (100)			164 (50), 328 (100)			



A4V2P4				A8V2P7				A12V2P7				
P Power	V Coaxial (equiv- alent to 3C2V)	A Audio	I Intercom	P Power	V Coaxial (equiv- alent to 3C2V)	A Audio (4E3)	I Intercom	P Power	V Coaxial (equiv- alent to 3C2V)	A Audio (A1/A2)	A Audio (A3/A4)	I Intercom
1162.5 (16 AWG)	263.5 (24 AWG)	124 (28 AWG)	465 (22 AWG)	1937.5 (16 AWG)	263.5 (24 AWG)	124 (28 AWG)	465 (22 AWG)	1937.5 (16 AWG)	263.5 (24 AWG)	124 (28 AWG)	124 (28 AWG)	465 (22 AWG)
30/7.09	7/7.09	16/3.15	12/7.09	50/7.09	7/7.09	16/3.15	12/7.09	50/7.09	7/7.09	16/3.15	16/3.15	12/7.09
1x4	2x1	4x4	4x1	1x4	2x1	8x4	6x1	1x4	2x1	6x4	6x2	6x1
2	N/A	2	N/A	2	N/A	2	N/A	2	N/A	2	N/A	N/A
5.52/6/24	5.52/5/24	3.94/6/16	N/A	5.52/6/24	5.52/5/24	3.94/6/16	N/A	5.52/6/24	5.52/6/24	3.94/6/16	3.94/4/16	N/A
Mylar Tape	Mylar tape	Mylar tape	N/A	Mylar tape	Mylar tape	Mylar tape	N/A	Mylar tape	Mylar tape	Mylar tape	Mylar tape	N/A
7	75	70	20	4.3	75	70	20	4.3	75	70	70	20
Jute/Cotton tape				Jute Cotton tape				Jute/Cotton tape				
59				67				67				
0.642				0.784				0.843				
216				333				336				
Greater than 1,000				Greater than 1,000				Greater than 1,000				
500 VAC				500 VAC				500 VAC				
164, 328 (50, 100)				164, 328 (50, 100)				164, 328 (50, 100)				

CABLE SYSTEMS

Canare manufactures a large selection of pre-wired components and cable systems. Using the same high quality multichannel cables described previously, Canare fabricates "snakes" with male and female multi-pin connectors on each end. These may be terminated with mating "pigtailed" that mate to the multi-pin connectors and fan out to individual leads with XLRs, or they may be terminated with a variety of junction boxes, some with only male or only female XLRs, and others with parallel wired male and female XLRs for each channel. For still greater system versatility, some of Canare's junction boxes have 2, 3 and 4 multipin connectors so they may be inserted "in-line" at various points in a large multichannel microphone distribution system. Canare makes a variety of cable reels, most of which include built-in brakes to prevent unwanted de-spooling.

Canare also offers individual components—cables with multipin connectors, junction boxes, pigtails, reels—as well as partial or complete systems that are assembled from combinations of these components.

Canare cable systems utilize only the finest Cannon multipin K and MS type connectors, and Cannon XLR connectors, so you can be assured of good contacts and maximum durability. Canare's skilled workers carefully strip, dress and solder leads to the highest standards to avoid power-robbing nicks, broken leads, shorts, and intermittent contacts.

Cannon XLR Connectors

Canare uses Cannon XLR connectors, manufactured in Japan by Cannon-JAE. Cannon XLRs have strong contacts that won't pull out or loosen. They also have the lowest contact resistance, not only initially, but after months of use, where cheaper connectors are subject to contact corrosion. In order to avoid signal losses and prevent degradation of signal-to-noise ratio, it is important to keep contact resistance as low as possible, especially in large systems with many connectors between the microphone and the mixer. Quality does make a difference.

CANARE CABLE, INC.

6733 Vineland Ave.
N. Hollywood, CA 91606
(213) 980-8092

Cannon Multipin Connectors

Canare multichannel cables, junction boxes, and pigtails are fitted with Cannon multipin connectors: 8 and 12 channel cables utilize NK-type, 16 channel cables utilize FK-type, 24 and 32 channel cables utilize MS-type. These connectors have silver pins for low contact resistance, and bayonet type "screw lock" sleeves for fast, positive connections. Connector covers on a short steel cable protect the connectors when the system is being stored or transported.



XLR3-11C



XLR3-32



XLR-12C



XLR3-31

8 AND 12 CHANNEL



NK27-21C



NK27-32SL



NK27-22C



NK27-31SL

16 CHANNEL



FK37-21



FK37-32S



FK37-22C



FK37-31S

24 CHANNEL



MS-3057-20A



MS-3102A-32A-10P

MS-3102A36-73P (32 CH.)

JUNCTION BOXES

Parallel Male and Female XLRs Per Channel

One male XLR-3-32 and female XLR-3-31 connector per channel for splitting mic signals, or use as either input or output in complex systems.

Thick aluminum construction (0.16") combines rigidity, light weight and durability.

Handsome, long-life black finish.

Carefully wired with minimum unshielded lead lengths and master ground return bus to exclude noise.

Available in 8, 12, 16, 24 and 32 channel configuration with from 1 to 4 multipin connectors; use of several multipins permits junction boxes to be used "in line" in large distributed systems, or to split a 32-channel cable into two 16-channel cables.

24 channel boxes have female XLRs on top, male XLRs on two sides.



With one Cannon K-type female connector

8J12N1 8 channel, NK27-31SL multipin

12J12N1 12 channel, NK27-31SL multipin

16J12F1 16 channel, FK37-31S multipin



With one or more Cannon K-type or MS-type male multipin connectors

8J12N2 8 channel, NK27-32SL multipin

12J12N2 12 channel, NK27-32SL multipin

16J12F2 16 channel, FK37-32S multipin

24B12MS 24 channel, MS-3102A-32A-10P multipin

24B12MSW 24 channel, 2 x MS-3102A-32A-10P multipins

32B12MS 32 channel, MS-3102A36-73P multipin

32B12MSW 32 channel, 2 x MS-3102A36-73P multipins



With locking Cannon K-type male and female multipin connectors

8J12N12 8 channel, NK27-32SL and NK27-31SL

12J12N12 12 channel, NK27-32SL and NK27-31SL

16J12N12 16 channel, FK37-32S and FK37-31SL

32B12MWF11 32 channel, 2 x male MS-3102A36-73P 32 ch. conn. and 2 x female FK-37-31S 16 ch. multipins

32B12MF11 32 channel, 1 male MS-3102A36-73P 32 ch. conn. and 2 x female FK-37-31S 16 ch. multipins

CABLE SYSTEMS, JUNCTION BOXES

JUNCTION BOXES

Single XLR per channel

One male or female XLR connector per channel, plus 1 multipin K-type connector for mating with multichannel cable.

Thick aluminum construction (0.16") combines rigidity, light weight and durability.

Handsome, long-life black finish.

Carefully wired with minimum unshielded lead lengths and master ground return bus to exclude noise.

Available in 8, 12 and 16 channel configurations.



With Cannon male XLRs K-type female connector

8B2N12 8 channel, 8 x XLR-3-32, NK-27-31SL

12B2N1 12 channel, 12 x XLR-3-32, NK-27-31SL

16B2F1 16 channel, 16 x XLR-3-32, FK-37-31S



With Cannon female XLRs, K-type male connector

8B1N2 8 channel, 8 x XLR-3-31, NK-27-32SL

12B1N2 12 channel, 12 x XLR-3-31, NK-27-32SL

16B1F2 16 channel, 16 x XLR-3-31, FK-37-32S

MULTI-CHANNEL PIGTAIL TERMINATIONS

These "pigtails" attach individual cables with XLR connectors to a single multipin connector for terminating a multi-channel cable ("snake"). As an alternative to a junction box and individual patch cords, these pigtails are very convenient for interfacing the snake to a mixing console. They utilize Cannon connectors, with a choice of male or female XLRs so they can be used for mixer inputs or outputs.



8S1N2 8 ch., male NK27-22C, 8 x female XLR-3-11C

8S2N1 8 ch., female NK27-21C, 8 x male XLR-3-12C

12S1N2 12 ch., male NK27-22C, 12 x female XLR-3-11C

12S2N1 12 ch., female NK27-21C, 12 x male XLR-3-12C

16S1F2 16 ch., male FK37-22C, 16 x female XLR-3-11C

16S2F1 16 ch., female FK37-21C, 16 x male XLR-3-12C

CANARE CABLE, INC.

6733 Vineland Ave.
N. Hollywood, CA 91606
(213) 980-8092

MULTI-CHANNEL SNAKES

With multi-pin connectors each end

Canare multi-channel "snakes" are constructed in 8 through 32 channels using L-PE type cable, and in 8 through 24 channels using 4E3 type cable. On 8-16 channel cables, Cannon multipin connectors are attached to each end, male on one end, female on the other, so that these "snakes" can be hooked together for longer runs, and will interface with our junction boxes, and pigtails. L-PE is a 2-conductor, braided shield cable, whereas L-4E3 is a Star-Quad, 4 conductor braided shield cable. The Star-Quad design offers superior rejection of noise and minimum crosstalk, and therefore 4E3 type is preferable when mic and line level signals are to be mixed in the same multichannel cable.

L-PE Series

2 conductors per channel, uninsulated, braided shield, common ground with drain wire*



8C10, 8C30, 8C50 8 channel, NK multipins
12C10, 12C30, 12C50 12 channel, NK multipins
16C10, 16C30, 16C50 16 channel, FK multipins
24C10, 24C30, 24C50 24 channel, MS multipins
32C10, 32C30, 32C50 32 channel, Ms multipins

4E3 Series

Individually insulated, braided shield, Star-Quad*

8C10E3N12, 8C30E3N12, 8C50E3N12
8 channel, NK multipins
12C10E3N12, 12C30E3N12, 12C50E3N12
12 channel, NK multipins
16C10E3F12, 16C30E3F12, 16C50E3F12
16 channel, FK multipins
24C10E3MS, 24C30E3MS, 24C50E3MS
24 channel, MS multipins

*The number 10, 30 or 50 in the cable model is the cable length in meters; equal to 33, 98 or 164 feet.

SNAKES, JUNCTION BOX SYSTEMS AND CABLE REELS

MULT-PAIR CABLE AND JUNCTION BOX SYSTEMS

For convenience, Canare offers pre-packaged systems that combine L-PE series multichannel cables with junction boxes that mate via multipin connectors and provide XLR terminations on each end. These are the same high quality components described previously.



SB Series

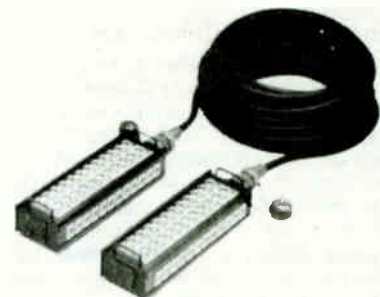
8, 12 and 16 channel cable and 2 junction boxes, one with single male XLR per channel, other with single female XLR per channel.

8SB10 8 channel, 33 foot (10m)
8SB30 8 channel, 98 foot (30 m)
8SB50 8 channel, 164 foot (50m)
12SB10 12 channel, 33 foot (10m)
12SB30 12 channel, 98 foot (30m)
12SB50 12 channel, 164 foot (50m)
16SB10 16 channel, 33 foot (10m)
16SB30 16 channel, 98 foot (30m)
16SB50 16 channel, 164 foot (50m)

JC Series

8, 12 and 16 channel cable and 2 junction boxes, both with parallel male and female XLR on each channel.

8JC10 8 channel, 33 foot (10m)
8JC30 8 channel, 98 foot (30m)
8JC50 8 channel, 164 foot (50m)
12JC10 12 channel, 33 foot (10m)
12JC30 12 channel, 98 foot (30m)
12JC50 12 channel, 164 foot (50m)
16JC10 16 channel, 33 foot (10m)
16JC30 16 channel, 98 foot (30m)
16JC50 16 channel, 164 foot (50m)



BC Series

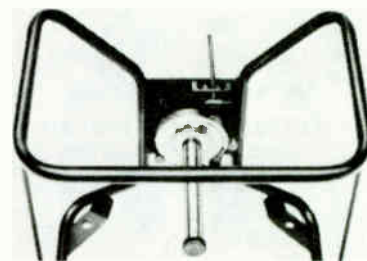
24 channel cable and 2 junction boxes, both with parallel male and female XLR on each channel

24BC10 24 channel, 33 foot (10m)
24BC30 24 channel, 98 foot (30m)
24BC50 24 channel, 164 foot (50m)

CABLE REELS AND CABLE REEL SYSTEMS

Moving and laying cable on a tight schedule can be very demanding, not only on personnel, but also on the cable. Canare has developed a unique cable reel that keeps cable stored neatly when not in use, yet allows quick deployment without tangles and twisting.

All models include a special 3-position brake lever. In locked position, used during transportation, the reel will not rotate so cable will not spill. In soft-brake position, the cable can be pulled from the reel, but friction prevents excess spillage when cable is pulled quickly. In free position, the cable will pull from the reel easily; this position is ideal for rewinding. A winding handle is included.



Because the reels are constructed of tubular steel, with an "E" shaped brace, they are extremely durable. Heavy duty, permanently lubricated bearings mean they will perform as well as new after years of hard use. The reels will deform only 0.04 inches with a 440 pound load on the main shaft, and just 0.2 inches with a maximum 550 pound load. The tensile strength of welded parts is 5,500 pounds. These reels are further tested with sustained vibration, so they will withstand transportation.

CANARE CABLE, INC.

6733 Vineland Ave.
N. Hollywood, CA 91606
(213) 980-8092

CABLE REELS



R380S Small reel, w/casters, cutout and hanger for multi-channel cable.



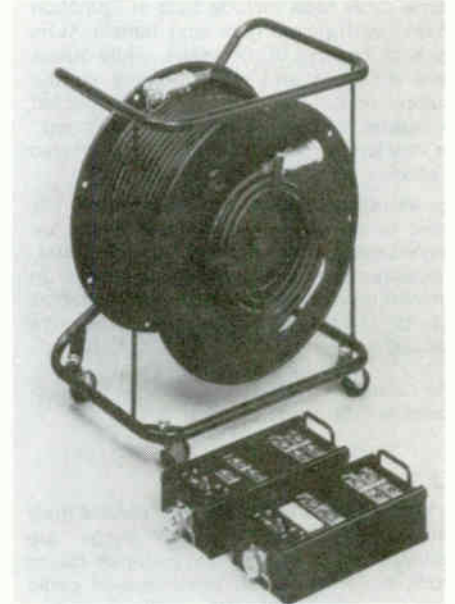
R300CN Small reel, stackable (no casters), parallel-wired male and female XLR-3 connectors on hub, and parallel male and female XLRs on flange.



R300S Small reel, stackable (no casters), cutout and hanger for single mic cable.



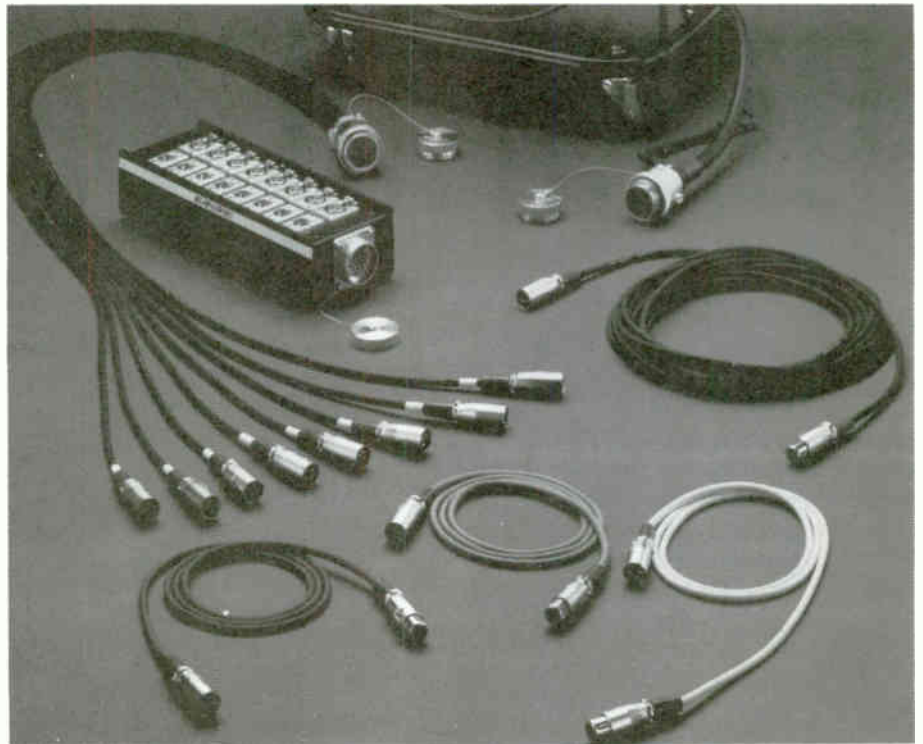
R300 Small reel, stackable (no casters).



Custom video remote cable/reel systems
Canare can fabricate custom cable reel and junction box assemblies for use with remote video equipment (ENG/ENJ/EFP). Because individual requirements differ widely, consult Canare for a quote. All junction boxes utilize special high quality multi-pin audio/video coax/power/intercom connectors, and are fabricated with heavy gauge aluminum for strength without excess weight. Cable reels are on casters, and include cable brake.



R300L Small reel, stackable (no casters) cutout and hanger for single mic cable, plus cutouts on hub and flange to mount custom connector panel, if desired.



Prices and Specifications Subject to Change Without Notice.

B-229

CANARE CABLE, INC.

6733 Vineland Ave.
N. Hollywood, CA 91606
(213) 980-8092



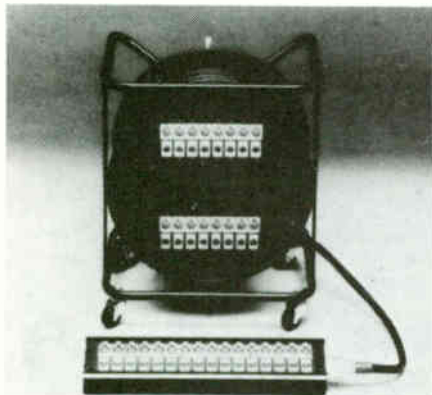
Some cable reels include built-in "junction boxes" with paired male and female XLRs per each channel of the snake, while others have a cutout and cable holders so the multipin end of the cable can be connected as desired. Multiple reels can be "chained" for very long cable runs. Empty reels are also available.

For extra convenience, multi-channel reels come with roll-around casters. Reels for single cables, which are smaller and lighter, are designed to be stackable, so they take up a minimum of storage space; several cables may be pulled at once while the reels are stacked.

The cables are L-PE series, and the junction boxes are the same as those listed.

RJ Series

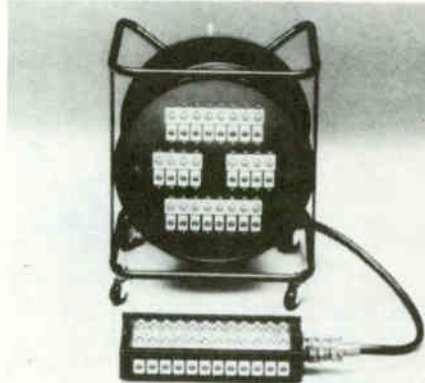
8, 12 and 16 channel cable reel, parallel male and female XLRs on reel flange are permanently connected to multi-pair cable; multipin connector on other end of cable joins to junction box with parallel male and female XLRs. NOTE: These reels are also available without the junction box; omit "J" from model number.



- 8RJ30D 8 channel, 98 foot (30m)
- 8RJ50D 8 channel, 169 foot (50m)
- 12RJ30D 12 channel, 98 foot (30m)
- 12RJ50 12 channel, 169 foot (50)
- 16RJ30D 16 channel, 98 foot (30m)
- 16RJ50 16 channel, 169 foot (50m)

RB Series

24 channel cable reel, parallel male and female XLRs on reel flange are permanently connected to multi-paired cable; multipin connector on other end of cable joins to junction box with parallel male and female XLRs. NOTE: These reels are also available without the junction box; omit "B" from model number.



- 24RB30 24 channel, 98 foot (30m)
- 24RB40 24 channel, 131 foot (40m)

CR Series

Stackable reels that include a single 328 foot (100 meter) long L-4E6S type microphone cable with male and female XLR-3 connectors on the cable.



CR100CN Reel has parallel male and female XLRs on reel hub, wired to parallel male and female XLRs on reel flange. These permit multiple reels to be "chained," and serve as input/output adaptors. Includes 328 foot (100 meter) cable.

CABLE REELS



CR100S Reel has no connectors, but includes cable hanger and 328 foot (100 meter) mic cable.

R Series

Includes reel only, no cable included. For use with your existing cables or new custom cables.



R460S Large reel, w/casters, cutout and hanger for multi-channel cable.

J18 x 9B IE

J13 x 9B IE II

PH13 x 6.6B IE



FOR 2/3" TUBE COLOR TV CAMERAS

SPECIFICATIONS Lens	Application	Zoom Ratio	Range of Focal Length	With Extender	Maximum Relative Aperture	Angular Field of View
J25x11.5B IE	ENG/EFP	25X	11.5-288mm		1:1.6	41.9°x32° at 11.5mm 1.8°x1.3° at 288mm
			23-576mm	2X	1:3.2	21.6°x16.3° at 23mm 0.9°x0.7° at 576mm
J20x8.5B IE	ENG/EFP	20X	8.5-170mm		1:1.6	54.7°x42.4° at 8.5mm 3°x2.2° at 170mm
			17-340mm	2X	1:3.2	29°x22° at 17mm 1.5°x1.1° at 340mm
J18x9B IE	ENG	18X	9-162mm		1:2.4	52.1°x40.3° at 9mm 3.1°x2.3° at 162mm
			18-324mm	2X	1:4.8	27.5°x20.8° at 18mm 1.6°x1.2° at 324mm
J40x9.5B IE	ENG/EFP	40X	9.5-380mm		1:1.4	49.7°x38.3° at 9.5mm 1.3°x1.0° at 380mm
			19-760mm	2X	1:2.8	26.1°x19.7° at 19mm 0.66°x0.5° at 760mm
J15x9.5B	Portable/ENG	15X	9.5-143mm		1:1.8	49.7°x38.3° at 9.5mm 3.5°x2.6° at 143mm
J13x9B IE II	Portable/ENG	13X	9-117mm		1:1.6	52.1°x40.3° at 9mm 4.3°x3.2° at 117mm
			18-234mm	2X	1:3.2	27.5°x20.8° at 18mm 2.2°x1.6° at 234mm

FOR 1/2" TUBE COLOR TV CAMERAS

SPECIFICATIONS Lens	Application	Zoom Ratio	Range of Focal Length	With Extender	Maximum Relative Aperture	Angular Field of View
PH13x6.6B IE	Portable/ENG (Hawk Eye)	13X	6.6-86mm		1:1.4	51.7°x40° at 6.6mm 4.3°x3.2° at 86mm
			13.2-172mm	2X	1:2.8	27.3°x20.6° at 13.2mm 2.1°x1.6° at 172mm

J25X11.5B IE



J20X8.5B IE



J40X9.5B IE



FOR 2/3" TUBE COLOR TV CAMERAS (Cont'd)

Minimum Object Distance (M.O.D.)	Object Dimensions at M.O.D.	Optical Back Focal Distance	Size WxHxL	Weight (Approx.)	Operation System	Remarks
J25x11.5B IE 1.5m	101.9 x 76.5cm at 11.5mm	48.2mm in air	190x200x370mm	10kg	Servo/manual control	Built-in extender 2X
	4.1 x 3.1cm at 288mm					
	51.3 x 38.4cm at 23mm 2.1 x 1.6cm at 576mm					
J20x8.5B IE 0.6m	82.1 x 60.4cm at 8.5mm	47.9mm in air	180x175x380mm	8kg	Servo/manual control	Built-in extender 2X
	3.9 x 3cm at 170mm					
	40 x 29.8cm at 17mm 2 x 1.5cm at 340mm					
J18x9B IE 0.9m	80.2 x 60.2cm at 9mm	48.6mm	133x90x196.5mm	1.7kg	Servo/manual control	Built-in extender 2X
	4.5 x 3.4cm at 162mm					
	40.1 x 30.1cm at 18mm 2.3 x 1.7cm at 324mm					
J40x9.5B IE 2.5m	205 x 154cm at 9.5mm	48.9mm	280x309x644.6mm	30kg	Servo/manual control	Built-in extender 2X
	5.0 x 3.8cm at 380mm					
	103 x 77cm at 19mm 2.6 x 2.0cm at 760mm					
J15x9.5B 1m	86.2 x 64.7cm at 9.5mm	22.1mm in air	140x95x140mm	1.5kg	Zoom & Iris: Servo/manual control Focus: Manual control	
J13x9B IE II 0.8m	72.2 x 54.2cm at 9mm	41.7mm in air	131x96x187mm	1.5kg	Zoom & Iris Servo/manual control Focus: manual control	Built-in extender 2X
	5.6 x 4.2cm at 117mm					
	36.1 x 27.1cm at 18mm 2.8 x 2.1cm at 234mm					

* 1 in case of B3 type

* 2 in case of B4 type

FOR 1/2" TUBE COLOR TV CAMERAS

Minimum Object Distance (M.O.D.)	Object Dimensions at M.O.D.	Optical Back Focal Distance	Size WxHxL	Weight (Approx.)	Operation System	Remarks
PH13x6.6B IE 0.8m	72.3 x 54.2cm at 6.6mm	33mm in air	127.5 x 80 x 168.5 mm	1.3kg	Zoom & Iris Servo/manual control Focus: manual control	Built-in extender 2X
	5.6 x 4.2cm at 86mm					
	36.5 x 27.3cm at 13.2mm 2.9 x 2.2cm at 172mm					

P40X18B IE



P18X15B IE



P12X18B IE



For 1-1/4" Tube Color TV Cameras

Specifications Lens	Application	Zoom Ratio	Range of Focal Length	(With Extender)	Maximum Relative Aperture	Angular Field of View
P40x18B IE	Field	40x	18 - 720mm		1 2 3	50.7° × 39.1° at 18mm 1.4° × 1° at 720mm
			36 - 1440mm	2x	1 4 6	26.7° × 20.2° at 36mm 0.7° × 0.5° at 1440mm
P18x15B IE	Field Studio	18x	15 - 270mm		1 2 1	60.4° × 47.1° at 15mm 3.7° × 2.7° at 270mm
			22.5 - 405mm	1.5x	1 3 1	42.4° × 32.4° at 22.5mm 2.4° × 1.8° at 405mm
			30 - 540mm	2x	1 4 2	32.4° × 24.6° at 30mm 1.8° × 1.4° at 540mm
P12x18B IE	Studio	12x	18 - 216mm		1 2 1	50.8° × 39.1° at 18mm 4.5° × 3.4° at 216mm
			27 - 324mm	1.5x	1 3 1	35.1° × 26.7° at 27mm 3° × 2.3° at 324mm
			36 - 432mm	2x	1 4 2	26.7° × 20.2° at 36mm 2.3° × 1.7° at 432mm

For 1" Tube Color TV Cameras

Specifications Lens	Application	Zoom Ratio	Range of Focal Length	(With Extender)	Maximum Relative Aperture	Angular Field of View
P40x13.5B IE	Field	40x	13.5 - 540mm		1 1 7	50.7° × 39.1° at 13.5mm 1.4° × 1° at 540mm
			27 - 1080mm	2x	1 3 4	26.7° × 20.2° at 27mm 0.7° × 0.5° at 1080mm
PV18x11B IE	Field Studio	18x	11 - 200mm		1 1 6	60.4° × 47.1° at 11mm 3.7° × 2.7° at 200mm
			16.5 - 300mm	1.5x	1 2 4	42.4° × 32.4° at 16.5mm 2.4° × 1.8° at 300mm
			22 - 400mm	2x	1 3 2	32.4° × 24.6° at 22mm 1.8° × 1.4° at 400mm
PV12x14B IE	Studio	12x	13.5 - 162mm		1 1 6	50.8° × 39.1° at 13.5mm 4.5° × 3.4° at 162mm
			20.3 - 243mm	1.5x	1 2 4	35.1° × 26.7° at 20.3mm 3° × 2.3° at 243mm
			27 - 324mm	2x	1 3 2	26.7° × 20.2° at 27mm 2.3° × 1.7° at 324mm

PV40X13.5B IE



PV18X11B IE



PV12X14B IE



For 1-1/4" Tube Color TV Cameras (Cont'd)

Minimum Object Distance (M.O.D.)	Object Dimensions at M.O.D.	Optical Back Focal Distance	Size W×H×L	Weight (Approx.)	Operation System	Remarks
P40x18B IE 2.5m	211×158cm at 18mm 53×4cm at 720mm	75mm in air	280×309×648mm	30kg	Zoom } Servo manual Focus } Iris Servo	Built-in extender 2×
	106×80cm at 36mm 27×2cm at 1440mm					
P18x15B IE 0.6m	92.2×69.2cm at 15mm 49×3.7cm at 270mm	75.3mm in air	260×285×636mm	27kg	Zoom } Servo manual Focus } Iris Servo	Built-in extender 1.5×, 2×
	60.9×45.7cm at 22.5mm 33×2.5cm at 405mm					
	45.8×34.4cm at 30mm 25×1.9cm at 540mm					
P12x18B IE 0.9m	75.5×56.7cm at 18mm 65×4.9cm at 216mm	78.27mm in air	284×321.5×433mm	20kg	Zoom } Servo manual Focus } Iris Servo	Built-in extender 1.5×, 2×
	50.3×37.8cm at 27mm 43×3.3cm at 324mm					
	37.8×28.4cm at 36mm 33×2.4cm at 432mm					

For 1" Tube Color TV Cameras

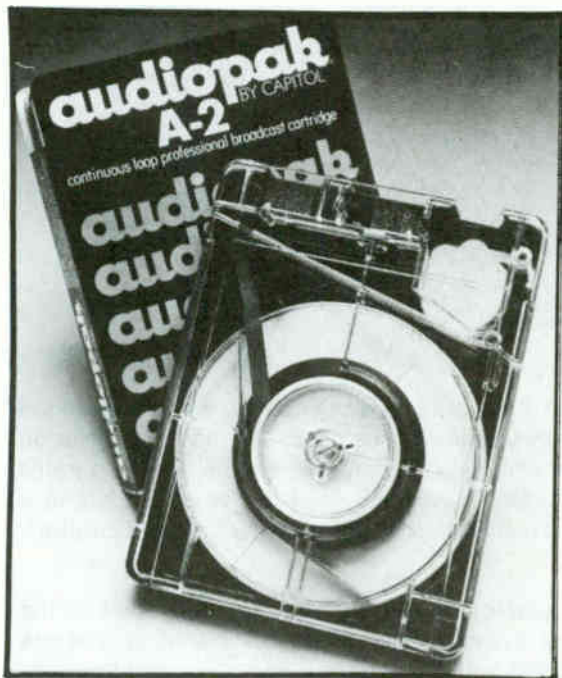
Minimum Object Distance (M.O.D.)	Object Dimensions at M.O.D.	Optical Back Focal Distance	Size W×H×L	Weight (Approx.)	Operation System	Remarks
PV40x13.5B IE 2.5m	211×158cm at 13.5mm 53×4cm at 540mm	62.8mm in air	280×309×648mm	30kg	Zoom } Servo manual Focus } Iris Servo	Built-in extender 2×
	106×80cm at 27mm 27×2cm at 1080mm					
PV18x11B IE 0.6m	92.2×69.2cm at 11mm 49×3.7cm at 200mm	62.79mm in air	260×277.5×710mm	27kg	Zoom } Servo manual Focus } Iris Servo	Built-in extender 1.5×, 2×
	60.9×45.7cm at 16.5mm 33×2.5cm at 300mm					
	45.8×34.4cm at 22mm 25×1.9cm at 400mm					
PV12x14B IE 0.9m	75.5×56.7cm at 13.5mm 65×4.9cm at 162mm	63.22mm in air	284×321.5×433mm	20kg	Zoom } Servo manual Focus } Iris Servo	Built-in extender 1.5×, 2×
	50.3×37.8cm at 20.3mm 43×3.3cm at 243mm					
	37.8×28.4cm at 27mm 33×2.4cm at 324mm					

CAPITOL MAGNETIC PRODUCTS INT'L, INC.

DIVISION OF CAPITOL RECORDS, INC.

6902 Sunset Blvd.
Hollywood, CA 90028
(213) 461-2701 Telex 4720854

BROADCAST CARTRIDGES



A-2

AUDIOPAK by Capitol

Time/ Length	A-2 Catalog Number	Price	AA-4 Catalog Number	Price	
BROADCAST CARTRIDGES					
Empty	27-200-001	\$2.80			
10 Sec (6.5')	27-210-001	}	27-400-010	}	
20 Sec (13')	27-220-001		27-400-020		
35 Sec (22')	27-235-001		27-400-035		
40 Sec (25')	27-240-001		27-400-040		
50 Sec (32')	27-250-001		27-400-050		\$5.90
65 Sec (41')	27-265-001		27-400-065		
70 Sec (44')	27-270-001		27-400-070		
90 Sec (57')	27-290-001		27-400-090		
100 Sec (63')	27-210-101		27-400-100		
140 Sec (88')	27-214-101		27-400-140		
2.5 Min (94')	27-202-511	27-400-150			
3.0 Min (113')	27-203-011	27-400-180			
3.5 Min (132')	27-203-511	27-400-210	\$6.60		
4.0 Min (150')	27-204-011	27-400-240			
4.5 Min (169')	27-204-511	27-400-270			
5.0 Min (188')	27-205-011	27-400-300		}	
5.5 Min (207')	27-205-511	27-400-330			
6.0 Min (225')	27-206-011	27-400-360			
6.5 Min (244')	27-206-511	27-400-390	\$7.90		
7.5 Min (282')	27-207-511	27-400-450			
8.5 Min (319')	27-208-511	27-400-510			
9.5 Min (357')	-----	27-400-570			
10.5 Min (394')	27-210-511	27-400-630			



AA-4

AA-4 AUDIOPAK

The key feature of the AA-4 is the SGS-4 broadcast mastering tape. When recorded on a high quality cartridge recorder, the SGS-4 tape can produce identical copies of the best analog or digital master tapes. The SGS-4 tape, available exclusively in AA-4 cartridges, offers nearly 5 dB higher saturation headroom at 16 kHz (7 1/2 ips) compared to the HOLN tape in AA-3 cartridges.

REPLACEMENT PARTS

Base w/ Screw				
Insert	C5-245-996	\$1.40	C-5-245-933	\$2.10
Brake Spring	C8-785-040	.22	N/A	N/A
Brake Arm	C5-360-030	.25	N/A	N/A
Teflon Washer	C9-440-015	.08	C9-440-015	.08
Fixed Hub & Flange	C6-582-010	1.00	C6-582-010	1.00
Pressure Pad	C8-030-582	.10	N/A	N/A
Front Pressure Pad	N/A	N/A	C8-030-933	.13
Side Pressure Pad	N/A	N/A	C8-030-833	.12
Cover	C5-545-995	.80	C5-545-933	1.26
Screw	C8-620-055	.08	C8-620-055	.08
Label (Sheet of 10)	C7-212-051	.25	C7-212-051	.25

LUBRICATED TAPE

Formula 17		
7" x 1800' Reel	17-918-100	\$6.90
4200' Hub	17-942-605	9.10
8400' Hub	17-984-605	14.00

Q17 HOLN

7" x 1800' Reel	17-618-613	\$ 9.60
3600' Hub	17-636-613	16.20
7200' Hub	17-672-613	26.40

CARVIN

1155 Industrial Ave.
Escondido, CA 92025
(619) 747-1710
(800) 854-2235 (800) 542-6070

RECORDING MIXER



MX1688 RECORDING CONSOLE

Recording Features

- Eight Track Studio Control Center
- Input/Output Channel Organization
- Independent 8 into 2 Monitor Mixer
- Three Band Parametric EQ w/Defeat Switch
- Four Auxiliary Busses w/Pre/Post
- Mute and Solo on all Input and Output Channels
- Two Effects Returns w/Pan and Solo
- Talkback w/Built-in Mic and Monitor Dimming
- Peak Warning Indicators w/Peak Stretching
- Patch Points on all Channels
- Microphone Phantom Power
- Cue and Effects Sends from Output Channels
- Alternate Metering of Cue and Two-Track
- Quick Tape Playback through Monitors
- Independent Mic and Line Preamps
- Studio Feed w/Source Selection
- Totally Modular Internal Construction
- Input Noise of -127dBV
- 20dB headroom at All Stages
- +4dB or -10dB Operation Level
- THD better than .05%

PA Features

- Eight Sub-Groups w/Solo and Mute
- Four Independent Monitor Mixes available
- Headphone Monitoring of Main or Monitor
- Compact for Easy Handling
- Talkback to Monitors
- 11 Step Gain Controls for Easy Set-Up
- Channels Assignable to L & R Stereo Output

MX1688

A full function recording mixer designed specifically to serve as the control center for a modern eight-track recording studio. Recording basic tracks, over-dubbing sessions, and final mixdown are all handled with ease by the 1688; signals are automatically routed to the appropriate sections of the console for each recording operation. You will rarely need to reconnect any signal cables with the 1688. One of the key features provided by the MX1688, but rarely found on PA "recording" mixers, is an independent control room monitor mixer with bus/tape source selection. Working groups will find this mixer perfect for the double duty requirements of recording and live sound mixing. The input channels of the 1688 include three-band parametric equalization with defeat switch, four auxiliary mixing busses with pre/post switching, and solo/mute functions. Quiet performance starts with an ultra low-noise differential mic preamp and is preserved throughout the mixer by careful gain structure and the use of the finest low-noise integrated circuits.

Construction of the 1688 is highly modular with individual circuit boards used for each channel and each master strip. Virtually all hand wiring has been eliminated through the use of highly reliable circuit board connectors and ribbon cable. The circuit boards are made from flame retardant .062"

material with a moisture repelling coating and silk screened component descriptions. The chassis is made of precision formed steel with long life pem-nut fasteners and a durable epoxy finish. One inch thick solid oak wood ends and a padded hand rest make the 1688 good looking and comfortable to use.

Some examples of the quality components found in the 1688 are the Switchcraft professional signal connectors (3-pin and 1/4") and ITT Schadow switches used throughout. These quality switches assure years of quiet, scratch free operation. Large professional VU meters are driven by a well damped circuit and are easy to read. Long throw 100mm faders have a precise audio taper for smooth fade outs and an integral dust shield for long life. The rotary pots are optimally damped for smooth operation. All of the knobs have easy to read top pointers and are color coded by function.

An internal heavy duty power supply spares the expense and inconvenience of a separate outboard supply and is located in such a way that system noise is not affected. Tight voltage regulation helps keep crosstalk low while current limiting protects the supply from accidental shorts. AC power is provided to the mixer by way of a standard detachable international line cord with safety ground. Applications for the MX1688 include recording studios, live sound mixing, production studios, broadcast, and sound mixing for film.

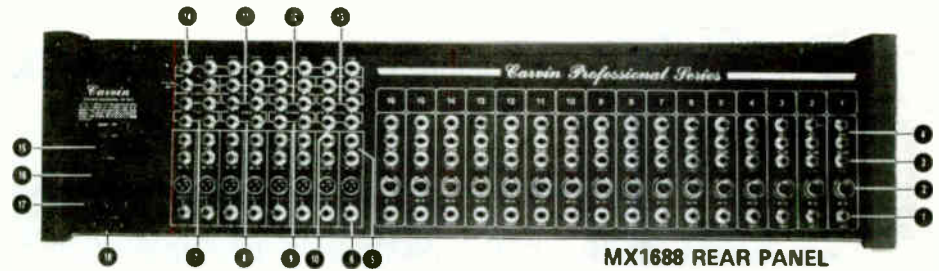
MX1688 16 x 8 x 2 x 1 Console \$2995.00

Include \$249.00 for the AN-16 Anvil™ flight case for shipping protection. May be returned for a refund.

Shipping: Include \$49.00 for freight shipment anywhere in the Cont. USA.

Accessories & Spare Modules

- G-12 Littlite™ BNC night light \$ 25.00
- CAP-881 Channel Module (ea.) 175.00
- EFP-882 Effects Module 125.00
- SFP-883 System Module 140.00
- OMP-884 Output Module (ea.) 150.00
- PSP-885 Power Supply Module 130.00



MX1688 RECORDING CONSOLE (Con't) Rear Panel

1. Line Input Jack

The input to the channel line preamp accepts unbalanced signals with levels from -25 dBv up to +20 dBv.

2. Mic Input Connector

The snap-in balanced XLR input to the differential mic preamp will accept signal levels up to 0 dBv.

3. Channel Direct Output

The channel direct output is taken post fader and post EQ and may be used as a direct input to the multitrack tape recorder, an auxiliary effects send, a cue send, etc.

4. Channel Send and Return Jacks

These jacks constitute the channel patch point and allow external signal processors to be patched into the channel signal path. The channel patch point is pre fader and post EQ.

5. Sub Output Send and Return Jacks

The sub output patch point is pre the output channel fader and allows insertion of external processors into the output channel signal path.

6. Sub Outputs

The sub output signals are available as both balanced and unbalanced signals on XLR connectors and phone jacks respectively. The mixer is calibrated at the factory for an output level of +4 dBv for 0 VU

indication but can easily be recalibrated to provide an output level of -10 dBv at 0 VU indication for use with tape recorders using a -10 dBv operating level.

7. Control Room Outputs

The control room L/R outputs are intended to feed the control room monitor loudspeakers. These outputs also feed the headphone amplifier.

8. Cue Send Jacks

Cue outputs are normally used to feed musicians headsets in the studio. However, the cue mixes can also be used as effects sends during final mixdown to two-track.

9. Effects Send Jacks

In addition to being used to send effects signals to external effects processors, the effects sends can also be used as cue or monitor sends during recording sessions or for live sound mixing.

10. Effects Return Input Jacks

These jacks are used to return signals from reverbs, or other external signal processors, to the output section of the mixer.

11. Studio Output Jacks

The studio output signal is intended to feed monitor loudspeakers in the studio to allow tape playback and talkback into the studio.

12. Two-Track Output Jacks

The two-track output signals usually feed the two-track tape recorder. For live sound mixing the two-track outputs are used to feed the main sound system.

13. Two-Track Input Jacks

The output from the two-track recorder is connected to the two-track inputs to allow two-track playback through the system.

14. Stacking Input Jacks

Stacking input jacks allow access to each of the summing busses in the mixer. This allows two 1688's to be combined for 32 input channel operation.

15. AC Line Fuse

The AC line fuse provides protection to both the mixer and the user from improper AC power or other faults.

16. Power On/Off Switch

This is the main power switch for the mixer. A pilot light built into the switch indicates when power is switched on.

17. Power Cord Connector

A standard line cord connector allows the power cord to be detached when the mixer is not in use.

18. 120/240V AC Line Selector Switch

This restricted access switch allows the MX1688 to be powered from either 120V or 240V AC.

MX1688 TECHNICAL SPECIFICATIONS

Frequency Response

Mic or line inputs to two-track output: 15 Hz-25kHz \pm 1 dB

Total Harmonic Distortion

Mic in to two-track out 40 dB gain
0 dBv output, 20-20kHz: less than .05%
Line in to two-track out 10 dB gain
+10 dBv output, 20-20kHz: less than .02%

Equivalent Input Noise

unweighted, 150 ohm source: -127 dBv

Output Noise

All faders minimum: -85 dBv
Sub fader at nominal, one channel assigned w/ nominal gain and channel fader settings: -78 dBv

Crosstalk Adjacent channels: -60 dB at 1kHz

Common Mode Rejection Ratio: -70 dB at 1kHz

Channel Equalizer

Type: parametric 3 band/6 knob peak/dip variable frequency
Max boost/cut: 15 dB
Low frequency: 40 Hz to 800 Hz
Mid frequency: 200 Hz to 4kHz
High frequency: 1kHz to 16kHz

Integrated Circuits: NE5532 ultra-low noise high speed op amps

Slew Rate: 9 volts per microsecond

Peak Warning Level: 6 dB below clipping (+14 dBv)

Phantom Power: +48 V DC applied to pins 2 and 3

Mic Input

Connector: 3-pin XLR type
Input impedance: 4.4k ohms (balanced)
Source impedance: nominal "low impedance" (50 ohms to 2k ohms)
Nominal input range: -70 to -10 dBv (.3mV to 300mV)
Maximum input level: +10 dBv (3.3 V)

Line Input Connector: 1/4" phone jack
Input impedance: 22k ohms (unbalanced)
Nominal input range: -20 dBv to +10 dBv (100mV to 3V)
Maximum input level: +30 dBv (30V)

Maximum Gain

Mic in to sub out: 74 dB
Line in to sub out: 45 dB

Sub Outputs 1-8

Connector: 3-pin XLR (balanced) and 1/4" phone (unbalanced)
Nominal output level: +4 dBv (can be set up for -10 dBv)
Maximum output level: +20 dBv (10k ohm load)

Two-Track, Cue, Effects, Control Room, and Studio Outputs

Connector: 1/4" phone (unbalanced)
Nominal output level: +4 dBv
Maximum output level: +20 dBv (10k ohm load)

Headphone Output

Connector: 1/4" stereo phone jack
Load impedance: 8 ohms or higher (stereo)

Power Supply: Fully regulated with current limiting

Accessory Mini-Lamp Connector: BNC type female connector

Power Requirements: 120V AC, or 240V AC 50 or 60 Hz

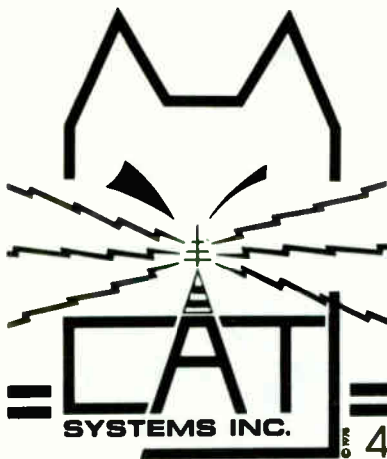
Weight: 75 lbs.

Dimensions: 8 3/4" H, 35 1/4" W, 29" D

Warranty: 1 year parts and labor

Note: 0 dBv referenced to .775 V RMS

All noise measurements are unweighted, 20kHz bandwidth



COMPUTERIZED AUTOMATION FOR TELESYSTEMS

401 EAST 74TH STREET, NEW YORK, N.Y. 10021 (212) 988-0290

Computerized Remote Control Systems:
Complete Facilities Monitoring and Control;
Computer Systems; Computer Consultants;
Station Planning/Construction.

MODELS

- 5200 Earth Station R/C System \$15,000 +
- 5250 Expanded ES R/C System 16,000 +
- 6200 TV Transmitter R/C System 15,000 +
- 4200 Facility Monitoring System 12,000 +
- 3200 Security System 10,000 +
- 6300 FM Transmitter R/C System 9,000 +

****NOTE:** All systems may be combined at purchase, or upgraded to combine functions, at less than the combined prices.

NEW FEATURES: Computers are IBM, Texas Instruments, DEC or HP. Output is Hi-Res RGB. User control of all systems is by LIGHT PEN; no keyboard required. Instruction manual for system and HELP function software resides in computer. Built-in expansion capability.

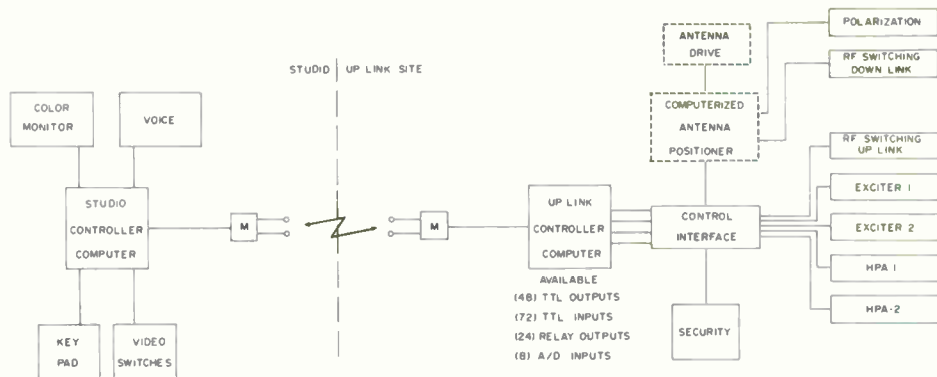
OPTIONS: Studio Quality NTSC Output, TOUCH SCREEN, Voice Synthesizer, Satellite Antenna Positioning Control, Logging Printer, Security System, Multiple Site Operation, and Control, Transmitter Instruction Manual in software. Trend Analysis Remote operation from touch-tone telephone. Training and simulation can be performed in background mode without interrupting operation. Auto Start. Preset Sequences. Control of Microprocessor based Transmitters.

NEW: Model 4200 Facility Monitoring System shows system parameters and RF switching network schematic in Hi-Res Color. User can preview any mode for training in background.

NEW: Model 3200 Security System shows floor plan of pre-mesis, and all alarm points in Hi-Res Color. All alarms are announced, logged on printer; response time of Guard, etc. is recorded. Automatic telephone calls performed.

MODEL 5200 SATELLITE UPLINK

COMPUTERIZED REMOTE CONTROL SYSTEM



SPECIAL FUNCTIONS

- PRE SET
- AUTO START
- IF LOOP BACK TESTS
- RF LOOP BACK TESTS
- SYSTEM TEST
- ANTENNA POSITIONING

A/D INPUTS

- HPA-1 POWER
- HPA-1 VSWR
- HPA-2 POWER
- HPA-2 VSWR

TTL INPUTS

- HPA 1-2 CHANNEL #
- HPA 1-2 HEATER ON
- HPA 1-2 STANDBY
- RF SWITCH POSITION
- ANTENNA POSITION
- HPA 1-2 CHANNEL LOCK
- HPA 1-2 CHANNEL UNLOCK
- HPA 1-2 SUMMARY FAULT
- EXCITER 1-2 SUMMARY FAULT
- HPA 1-2 SUMMARY FAULT
- ANTENNA IN MOTION/LOCKED

PRE SET FUNCTIONS

- AUTO START HPA CHANNEL #
- ANTENNA #
- VIDEO SOURCE
- ILLUMINATE

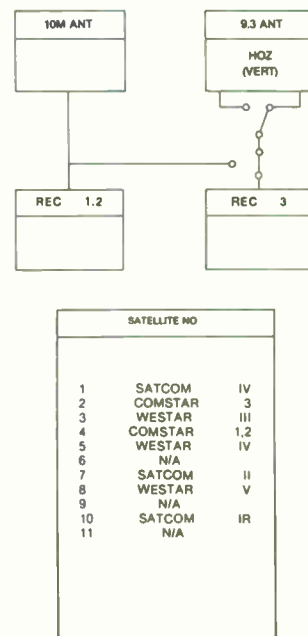
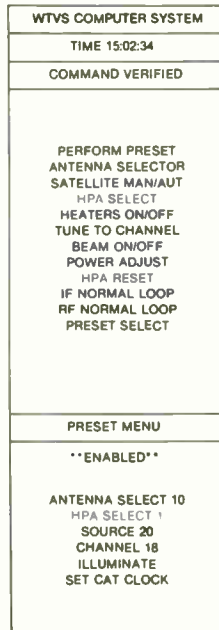
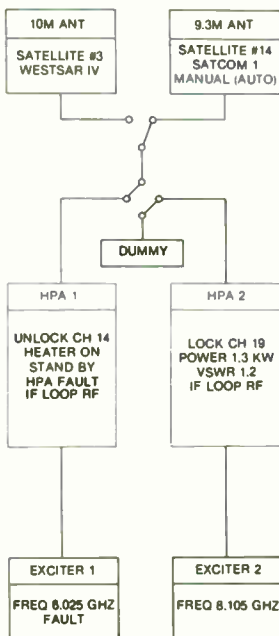
CONTROL FUNCTIONS

- HPA 1-2 HEATER ON/OFF
- HPA 1-2 TUNE TO CHANNEL
- HPA 1-2 BEAM ON/OFF
- HPA 1-2 OVERLOAD RESET

CONTROL FUNCTIONS

- EXCITER 1-2 TUNE TO CHANNEL
- SWITCH HPA-1-ANT/HPA-2-LOAD
- SWITCH HPA-2-ANT/HPA-1-LOAD
- SWITCH HPA TO 10M ANT
- SWITCH HPA TO 9.3 ANT
- SELECT ANTENNA POSITION
- HPA 1-2 IF LOOP BACK/NORMAL
- HPA 1-2 RF LOOP BACK/NORMAL
- SELECT VIDEO SOURCE
- AUTO START
- HPA 1-2 POWER RAISE/LOWER
- ANTENNA POSITIONING AUTO/MANUAL

SCREEN DISPLAY





WFMM 3000 MODULATOR



WFMD 3000 DEMODULATOR

SERIES 3000

Signal Transmission Systems for Broadband Coax and Fiber

Series 3000 is a new family of professional quality signal transmission systems, using plug-in modules, for broadband communications.

Combining CATEL's over 15 years of experience with innovative ideas in electronic design, Series 3000 gives broadband coax users superior performance, high reliability, and unequalled convenience. These advantages are described below, using, as an example, the new WFMS-3000 broadband video/FM transmission system.

The WFMS-3000 is a complete, 70 MHz IF based, broadband system featuring sophisticated circuitry and compliance with international standards. The system provides virtually transparent transmission of wideband signals such as video (PAL/NTSC/SECAM), high speed PCM Multiplex Data, and Analog FDM Multiplex signals. Detailed specifications are listed on the back page of this brochure.

Modular Flexibility

The basic Series 3000 housing is a 5-1/4" EIA, rack mount frame and power supply that accepts up to eight separate Series 3000 modules. Three modules typically make up any basic sub system. So, two sub systems can be combined in one cabinet, with two individual module slots left free for auxiliary functions. For instance, an FM modulator and demodulator can form a full modem. Any 3000 Series module can be used in any slot because all slots have identical universal connecting, and all systems are user programmable by means of rear panel BNC jumpers. True modular performance is guaranteed because modules can be replaced without need for systems adjustments to meet full specs.

Wide Frequency Range

In step with the latest bandwidth expansions of broadband coax systems, operating frequencies in the Series 3000 cover 5 octaves, from sub-low to hyperband frequencies. In the WFMS-3000 system, for example, double conversion input and output converters are used to cover the 14 to 130 MHz range, and single conversion converters cover the 130 to 450 MHz range.

To enhance the frequency agility of the Series 3000 Systems, a frequency translator

can be created by pairing back to back input and output converters with an IF AGC and filter module (3720 Wideband IF Processor).

Fiber Optics and Data I/O Compatible

Cabinet space in all Series 3000 systems is provided for modules that can interface the system to fiber optics links, high speed data buses, T1 Multiplexers and FDM Multiplexers. Or, the extra slots can be used for auxiliary functions. In a typical television link application, they are taken up by an Audio Modulator and an Audio Demodulator.

User Programmable Options

The circuit boards on all Series 3000 PC boards have a variety of options, such as different clamping, emphasis, supplementary phase equalization, and signal filtering modes which are implemented via jumpers. Therefore, system modules can be customized for specific installations.

AC or DC Operation

Series 3000 systems can be AC or DC powered. The standard AC mode provides both 110 and 220 volts, selectable by a switch on the rear panel of the Power Supply Module, which comes as part of the basic Series 3000 cabinet.

Front Panel Diagnostics

A major feature of the Series 3000 is the use, on module front panels, of LED performance indicators and alarms, BNC connectors or test jacks and screwdriver adjustments. You are able to see, at a glance, the status of your system, easily make any signal tests needed and quickly make any necessary adjustments. The front panel features of the WRMS system are described below.

Sub-Carrier Audio Modulator

The 3303 Sub-Carrier Modulator is used to carry audio as a 4.5 MHz (NTSC), or a 5.5 MHz (PAL/SECAM) sub-carrier above video. This module accepts audio and a video loop, and presents composite video to the Video Input Processor Module. Front panel controls are provided for deviation adjustments (monitored by a 4 segment LED indicator), and sub-carrier superimposition level.

Input Video Processor

The 3101 Video Input Processor provides clamping, CCIR pre-emphasis, video gain and DC disposition to the IF Modulator. A video presence indicator is provided as a diagnostic aid.

Wideband FM Modulator

The Wideband IF Modulator is available in two versions: Model 3102 (NTSC), and Model 3104. The 3104 is particularly well suited to high speed data applications, as well as PAL/SECAM television signals. These modules are phase-locked on 70 MHz, to ensure precise channel centering. Test points for incoming processed video and modulated IF, an AFC alarm and an LED deviation indicator are provided for diagnostics.

Output Converter

The 3105 (14 to 130 MHz) and 3106 (130 to 450 MHz) Output Converts accept the 70 MHz IF signal and translate it to the desired frequency. A -20dB test connector is provided for convenient monitoring of the output signal.

Input Converter

The 3205 (14 to 130 MHz) and 3206 (130 to 450 MHz) Input Converters translate the received channel frequency to the 70 MHz IF. A 70 MHz test point is provided for observing the 70 MHz IF signal.

Wideband FM Demodulator

The 3202 Wideband IF Demodulator provides the selectivity to the system through phase corrected IF filters. A spare phase equalizer is built into the module, which can be user programmed into the IF path to fine tune any desired specification for special applications. AGC is combined with limiting, to reduce AM to PM conversions and ensure consistent performance over the specified input level range. Front panel diagnostics include a low input level indicator, as well as a test point for the demodulated baseband signal.

Sub-Carrier Audio Demodulator

The 3401 Sub-Carrier Demodulator is a particularly versatile module. Designed to accept a composite (video + sub-carrier) signal, this unit delivers a demodulated audio signal, a filtered video signal with sub-carrier removed, and the original composite video signal. An elaborate, phase-equalized low pass filter, with buffering amplifiers, is used to ensure minimal degradation of the filtered video signal.

More detailed instructions about all these front panel features are available in the instruction manuals furnished with each Series 3000 system.

VFMS-2000 System

FEATURES

- Greater than 60 dB Signal to Noise
- Improved Impulse Noise Immunity
- Longer Transmission Runs with Less Distortion
- No Gain and Tilt Compensation Required
- Low Maintenance, Solid State Design
- Minimum Cross-Modulation Effect
- High Output Levels
- Improved Group Delay Performance
- Ideal for PCM Multiplex
- Lower Cost than Comparable AM Systems
- Minimum Effect from Intruded Signals

The Catel VFMS Video FM Transmission System consists of a VFMM-2000 Video FM Modulator and a VFMD-2000 FM Video Demodulator. Frequency range available is from 16 to 340 MHz with standard bandwidth of 14 MHz. (NTSC) or 16 MHz PAL/SECAM.

Due to the noise immunity advantages inherent in FM, this system is capable of long distance transmission of high speed data, television pictures of facsimile with minimum distortion.

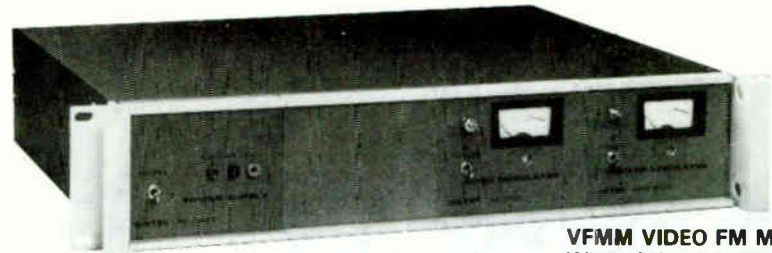
SPECIFICATIONS

VFMS-2000 Video FM System

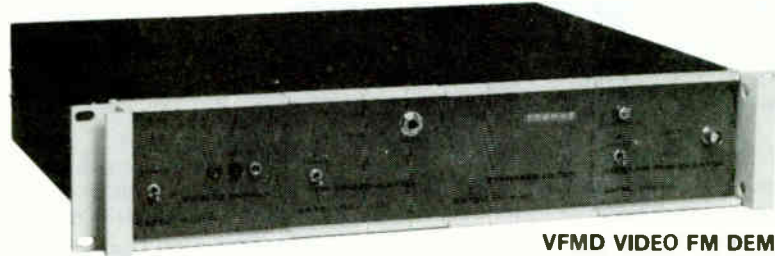
- Frequency Range:
16 MHz, to 340 MHz—System (Specify)
- Channel Bandwidth:
14 MHz (NTSC), 16 MHz (PAL)
- Video Frequency Response:
 ± 0.5 dB 30 Hz to 4.2 MHz NTSC, 25 Hz to 5.5 MHz (PAL/SECAM)
- Chrominance-Luminance Delay:
 ± 50 nsec (62-340 MHz Systems)
- Differential Gain:
 ± 0.5 dB
- Differential Phase:
 $\pm 2^\circ$, 3.58/4.43 MHz
- Signal to Noise Ratio:
60 dB Min. Back to Back (Unweighted)
+ 15 dBmV Receive Level
- Field Squarewave Tilt:
2% Max.
- Operating Temperature:
+ 10 to +40°C, Ambient

VFMM-2000 Video FM Modulator

- Input Level:
1.0V Peak-Peak, (Adjustable)
- Input Impedance:
75 Ohm Unbalanced
20 dB Return Loss
- Deviation:
800 kHz, Sync tip to peak white
- Output Impedance:
75 Ohm Unbalanced
16 dB Return Loss
- Output Level:
 ± 54 dBmV, (Adjustable)



VFMM VIDEO FM MODULATOR WITH AUDIO MODULE



VFMD VIDEO FM DEMODULATOR WITH AUDIO MODULE

- Frequency Stability:
 $\pm 0.1\%$
- Spurious Output:
Min. of 60 dB Below Peak
Carrier Level Outside 14 MHz Bandwidth

VFMD-2000/BPF-2100 Video FM Demodulator

- Input Level:
+ 10 dBmV Min. to +30 dBmV Max.
- Input Impedance:
75 Ohm Unbalanced
16 dB Return Loss
- Output Level:
1V Peak to Peak (Adjustable)
- Output Impedance:
75 Ohm Unbalanced
20 dB Return Loss

PS-2500 BP Power Supply

- Input:
110/220 VAC, 50/60 Hz, 60W Max.
- Outputs:
+ 12.6 VDC
-15.0 VDC

- Regulation:
Electronic
- Protection:
Input—Fused
Output—Electronic Short Circuit Protected

- Options:
Video bandwidths to 20 MHz
Enhanced deviation
High level launch to +80 dBmV
Low level receive to -10 dBmV,
Preamp & Equalizer
12, 24 or 48 VDC power supplies

FMX-2100 Audio Modules

- Output Level:
+ 45 dBmV (Adjustable)
- Frequency Range:
14-200 MHz
- Audio Frequency Response:
 ± 1 dB of 75 Microsecond Pre-emphasis curve 50 Hz to 15 kHz
- Deviation:
 ± 75 kHz Max.
- Harmonic Distortion:
Less than 1% (50 Hz to 15 kHz)

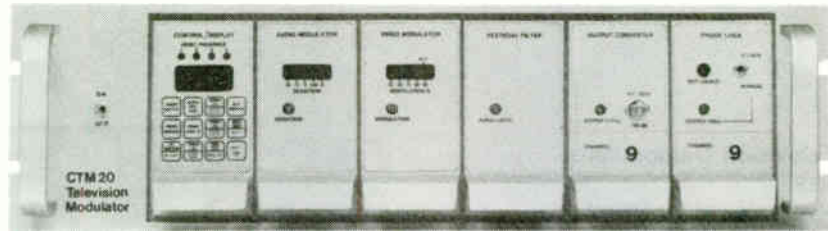
- Hum and Noise:
60 dB below 100% Modulation
- Input Level:
-10 dBm
- Input Impedance:
5000 Ohms unbalanced or 600 Ohms balanced
- Spurious Signals:
60 dB below max. output
- Frequency Stability:
 $\pm 0.005\%$
- Power Requirements:
+ 12.6 VDC 220 mA max. (Powered by PS2500 Power Supply)

FMRX-2200

- Frequency Range:
4 MHz to 200 MHz (Specify)
- Sensitivity:
3 Microvolts for 30 dB Quieting (IHF)
- Selectivity:
Less than 150 kHz at 30 dB down
Less than 250 kHz at 50 dB down
- Passband:
200 kHz
- AM Rejection:
50 dB
- Capture Ratio:
2.5 dB
- Spurious Response:
-80 dB Minimum
- Audio Output:
+ 10 dBm at 600 Ohms
- Audio Frequency Response:
 ± 1 dB of 75 Microsecond De-emphasis Curve, 50 Hz to 15 kHz
- Harmonic Distortion:
Less than 1% (50 Hz to 15 kHz)
- Hum and Noise:
-60 dB Minimum
- Power Requirements:
12.6 VDC, 115 mA (Powered by PS2500 Power Supply)
- Options:
50 Microsecond Pre and De-emphasis
Flat Response
Stereo Capability

DIVISION OF UNITED SCIENTIFIC CORP.

4800 Patrick Henry Drive
Santa Clara, CA 95054
(408) 988-7722 TWX 910-338-2263



CTM20

CTM20 Color Television Modulator

FEATURES

- Microcomputer Control
- Extensive Control and Monitoring Capability
- Central Control Serial Data Interface
- Totally Modular Expansion
- Multiple Audio/Visual Switching
- Internal Message Generator
- Complete Scrambler Interface
- Surface Acoustic Wave (SAW) IF Filtering
- Bar Graph Modulation Indicators
- Calibrated Detent Modulation Controls
- Self Test Mode
- Audio/Video/IF AGC Signal Level Normalizing

The CTM20 is a high performance digitally controlled modulator designed for all applications in CATV system headends, local origination, terrestrial microwave service, and satellite TVRO signal remodulation for cable distribution. The modulator incorporates an on-board microcomputer control system, complete audio, video, and IF signal switching, and provisions for controlling operating levels, signal switching, and the monitoring of system performance from a central terminal or under local control.

System Design Flexibility

The modulator is designed to give total configuration control to the system operator. All options for the modulator can be readily field installed by the equipment user. System revisions, updates, or reconfiguration can be made from the central control computer and through the option hardware within the modulator.

SAW Vestigial Sideband Filter

A surface acoustic wave IF filter is utilized in the CTM20. Inherently linear phase and a flat amplitude response across the channel passband are achieved with the SAW filter, insuring excellent video signal transparency and waveform fidelity. The exceptional shape factor obtained with the SAW filter affords excellent adjacent channel protection. Auxiliary video and IF filters with attendant all-pass delay correction circuits are not required with the SAW filter.

Phase Equalization

The SAW IF filter exhibits an inherently flat group delay characteristic across the channel passband. The shaped group delay characteristic specified for color television transmission is provided by an all-pass phase equalizer in the video module.

Control and Monitoring System

A microcomputer based control system contained within the CTM20 provides

extensive controlling and monitoring capability. All switching functions as well as modulation levels and the channel output level are controllable from a headend terminal. Up to four audio and three video signal sources may be accepted by each modulator. A video message generator option located within the modulator offers preprogrammed, custom messages as the fourth video signal source.

Local control of the modulator's audio, video, and IF switching is accomplished by means of parallel, hardwired switch input lines to the modulator's control module.

Audio and video modulation levels are internally precalibrated to normalized values. Adjustment of detent type front panel controls permits local override of the preset levels or central controller command if desired.

Control Features

AGC — Automatic level control of selected audio, video, and IF signal inputs is optionally available within the CTM20. These options serve to normalize the modulator's modulation characteristics and carrier level under all conditions of signal switching, and provide the means for remote programming and monitoring of these functions.

Signal Switching

The internal signal switching provisions within the CTM20 will accommodate multiple signal sources (both baseband and IF) and various modes of switch program control. All commands for signal switching are processed by the microcomputer located within the modulator and permit the control of switching functions by local commands generated at the headend site, by automatic prioritized signal selection, or by override of both these through central controller commands.

Baseband Switching

The audio/video switches respond to the microcomputer generated commands, with switching decisions based on 4 data input types:

- hardwired, parallel data switch commands into the modulator

- presence of video at each of 4 audio/video switch locations in the modulator
- the priority level of each switch relative to all other switches
- central controller serial data input commands to the modulator

Audio switching normally will follow the associated video switch unless otherwise specified by central controller command. The hardwired, parallel data inputs permit audio override to energize the emergency audio alert switch or to switch off all audio sources.

IF Switching

The substitute IF signal switching control may be enabled by either local, hardwired input line commands, or by the central controller data input. Automatic switching to an external IF signal source may be initiated by the loss of a selected video input signal source if so desired.

Signal Scrambling

A scrambler interface for both IF and baseband encoders is included in the CTM20 chassis. Separate picture and sound carrier loop through connectors provide the interface to IF scramblers. Video loop through connectors at the video output bus allow baseband scrambling of the CTM20 switch selected video source. An aural subcarrier input provides for sound security in baseband encoding systems.

Monitoring Features Self Test Mode

The self contained local monitoring system provides a self test mode that is automatically initiated with power up of the modulator, or at the request of the local keyboard. Ten parameters are sequentially checked against internal preset limits contained in ROM. The measured parameters are:

- Audio, video, VSB filter, and converter module currents
- Audio and video modules local 5 and 15 volt regulator outputs
- Audio module and output converter AFC levels

DIVISION OF UNITED SCIENTIFIC CORP.

4800 Patrick Henry Drive
Santa Clara, CA 95054
(408) 988-7722 TWX 910-338-2263

CTD10

Color Television Demodulator

FEATURES

- Synchronous/Envelope Detection
- Zero Carrier Chopper
- Video Squelch
- Switchable Sound Traps
- Split Carrier/Intercarrier Sound
- Audio Squelch
- Balanced Audio Output
- DC and AC Input Powering

The CTD10 Series Demodulators are solid state and have been designed for use in cable system applications. The demodulated signal is available for monitoring, video processing, or remodulation for transmission over cable system or microwave systems.

Synchronous/Envelope Detection

Both synchronous and envelope video demodulation are available in the CTD10. Selection of the desired detection mode may be chosen by front panel control, or remotely from rear panel contacts. Logic circuitry automatically enables the envelope detection mode with removal of the optional synchronous detector module. Rear panel terminal jumpering also permits automatic transfer to envelope detection with synchronous detection phase unlock.

SPECIFICATIONS

Input Level Range:

- 20 dBmV to +30 dBmV VHF Channels
- 10 dBmV to +30 dBmV UHF Channels

Operating Channels:

- Any standard VHF 2 thru 13
- Any standard UHF 14 μ thru 83 μ
- Sub-Low Cable Channels T 7-T11
- Cable Channels 14 thru 36 (A-W)

Noise Figure:

- 6 dB Channels T7 thru T11 & 2 thru 6
- 7 dB Channels 7 thru 13
- 12 dB Channels 14 μ thru 83 μ

Input Impedance:

- 75 ohms nominal

Input VSWR:

- 16 dB (1.37:1) 6 MHz Channel width, over specified input level range

AGC Type:

- Keyed AGC, sync tip referenced

AGC Control:

- ± 0.5 dB maximum video variation over specified input level range

Image Rejection:

- 60 dB VHF, 50 dB UHF

IF Rejection:

- 60 dB

Adjacent Channel Rejection:

- 60 dB

IF Frequency:

- 45.75 MHz Visual Carrier,
- 41.25 MHz Aural Carrier



CTD10

Video Output Impedance:

- 75 ohms, 30 dB min return loss

Video Output Level:

- Adjustable to 1.5 VP-P, sync tip to peak white

Video Frequency Response:

- a) Envelope detector ± 0.5 dB, 30 Hz-3.58 MHz
- b) Synchronous detector, sound traps in: ± 0.5 dB, 30 Hz-4.18 MHz
- c) Synchronous detector sound traps out: ± 0.5 dB, 30 Hz, -4.5 MHz

Envelope Delay:

- a) Sound traps in circuit, Chroma/Luminance delay within ± 25 nsec of completion of FCC transmitter nominal delay
- b) Sound traps out of circuit, Chroma/Luminance delay within ± 25 nsec (synchronous detector only)

Linearity:

- 2% Synchronous, 5% Envelope Detection

Differential Gain:

- $\pm 1\%$ Synchronous
- $\pm 2.5\%$ Envelope Detection

Differential Phase:

- $\pm 0.5^\circ$ Synchronous
- $\pm 1.0^\circ$ Envelope Detection

Chopper:

- Position adjustable within vertical blanking interval, width adjustable between 30 μ sec and 60 μ sec

Chopper Carrier Cutoff:

- 55 dB

Video Squelch:

- Activation selectable from one or more of 3 modes
- a) Carrier loss
- b) Adjustable threshold carrier level
- c) Synchronous Detection Phase Unlock

Audio Output Level:

- Adjustable to 2.0 VRMS across 600 ohms (Before deemphasis starts). The main output is balanced or unbalanced to ground depending on the selected option. The monitor output is always unbalanced to ground

Audio Frequency Response:

- ± 0.5 dB from 30 Hz to 15 kHz

Audio Deemphasis:

- 75 μ sec

Audio Harmonic Distortion:

- 0.5%, 30 Hz to 15 kHz, 25 kHz deviation at specified maximum audio output level

4.5 MHz Output:

- Adjustable to 0.2 VP-P, 75 ohms source impedance, 1:25:1 VSWR

AC Powering Input:

- 100 to 130 VAC, 50-60 Hz, 30 watts

DC Powering Input:

- 21.5 to 30.0 VDC, 800 mA, negative ground

Option Code C

DC Powering Input:

- 21.5 to 28.0 VDC, 1.5A, floating ground

Ambient Temperature:

- 0 to +55°C operating

Dimensions:

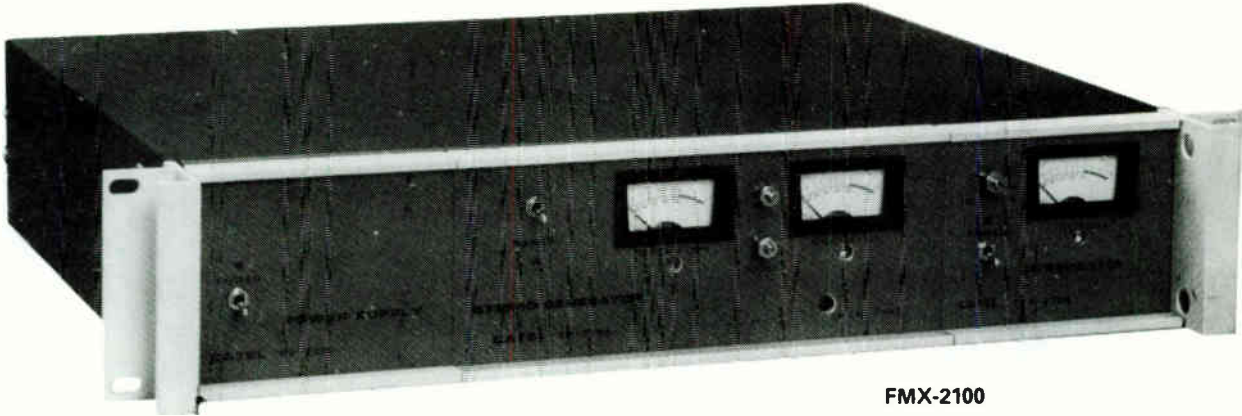
- Standard 19" rack mount, 5-1/4"H, 16" chassis depth

Weight:

- 24 lbs.

DIVISION OF UNITED SCIENTIFIC CORP.

4800 Patrick Henry Drive
Santa Clara, CA 95054
(408) 988-7722 TWX 910-338-2263



FMX-2100

FMX-2100 FM Modulator

FEATURES

- Direct modulation of RF carrier
- Oven regulated VCO for high stability
- Fully solid state
- Crystal controlled output on any VHF or HF frequency
- Pre-emphasis or optional flat response
- Output plus 45 dBmV...continuously variable over 15 dB range
- Meter indicates percentage of modulation

The FMX-2100 FM Modulator is a modular packaged frequency modulation cable transmitter designed specifically for CATV and CCTV applications. When used with the SM-2200 Stereo Generator it makes possible the origination of stereo programming. With direct audio sources such as AM/FM tuners, tape decks, microphone preamplifiers and short wave receivers, it can add varied FM signals to the cable system. In addition to the re-transmission of audio signals the wide band (plus or minus 75 kHz) deviation makes the unit ideal for multiplexed voice or data transmission.

The crystal controlled output of the FMX is normally on a customer selected frequency in the 88 to 108 MHz frequency range. It is also available, at added cost, on any other HF or VHF frequency on special order. The unit is fully solid state and employs an oven regulated VCO for greater stability. Up to ten FMX-2100 Modulators can be powered from a single PS-2000 Regulated Power Supply.

SPECIFICATIONS

Frequency Output:
50 to 55, 87 to 108, 170 to 174 MHz. Other frequencies to 200 MHz are available on special order

Output Impedance:
75 Ohms

Output Level:
+45 dBmV

Output Control:
Continuously Variable

Frequency Stability:
0.005%, Crystal Controlled

Response:
Response:
Within ± 1 dB of Pre-emphasis Curve, 50 to 15 kHz or 50 to 60 kHz, ± 1 dB without Pre-emphasis (Hi Z input)

Modulation Frequency Range:
30 Hz to 100 kHz

Modulation Capability:
75 kHz Deviation

Hum and Noise:
60 dB Below Maximum Output

Power Requirements:
+12.6 VDC @150 ma

Multiplexing:

Catel SM-2200 Available, See Data Sheet

Input Impedance/Level:

5000 Ohms Unbalanced and 600 Ohms Balanced Standard, - 10 dBm for 100% Modulation

Modulation:

Oven Regulated VCO

Distortion:

less than or equal to 1% at 100% Modulation (1 kHz)

Spurious Signals:

60 dB Below Maximum Output

Dimensions:

3-1/2" x 4" x 12" Deep

Weight:

3 lbs.

Connectors:

"F" Standard

Options:

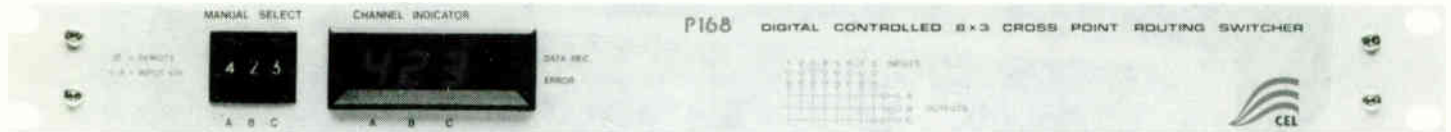
1. Special Frequencies
2. 25 μ Sec, 50 μ Sec
3. TTL, Current loop or EIA data interfaces, and TV Sync interface.

CEL ELECTRONICS LTD

DISTRIBUTED EXCLUSIVELY
BY JAMES GRUNDER & ASSOC.

5925 Beverly
Shawnee Mission, KS 66202
(913) 831-0188

ROUTING SWITCHER



P168

P168 Digitally Controlled 8x3 Cross Point Routing Switcher

The P168 is designed as a general purpose routing switcher for the studio environment. It may either be used as a stand alone manually operated routing switcher or digitally-controlled by means of either serial or parallel link from any control source such as a computer, edit controller, etc. The product is also intended as a systems component in conjunction with CEL's frame store/digital effects controller packages. The unit is packaged in a standard 19" rack format of just one U high.

The P168 provides 8 video inputs with corresponding loop through outputs which are all fully buffered to the switch matrix. Any one of the 8 inputs may be selected at any one of the three output channels. The input selection of each of the 3 output channels is indicated by a 7 segment display on the front panel. Selection may be either done by the manual thumb wheel switches or, alternatively, on an individual channel basis via the digital control inputs. Unlike most other routing switchers, this device is able to accept non-synchronous feeds on any of its inputs selected through to any of the output channels. Switching always occurs during the field blanking interval of the currently selected input. Further buffer amplifiers on all three channel outputs each provide two 75 ohms outputs.

The low cost and high specification of the P168 make it equally suited for both broadcast and industrial applications and it is equally at home with either PAL, NTSC or SECAM television standards. An audio matrix switch follower is also available for the P168 as an option.

Note: Preliminary Specifications

SPECIFICATIONS

Input

Number of channels: 8
Input level: 1 Vpp composite nominal
Configuration: 75 ohm Loopthrough

Output

Number of output channels: 3
Outputs per channel: 2
Level: 1 Vpp composite
Impedance: 75 ohm $\pm 1\%$
Frequency Response: DC to 6 MHz $\pm .2$ dB
Overshoot: less than 1%
Tilt: less than 0.1%
Differential Gain: $\pm .2\%$
Differential Phase: $\pm 0.2\%$
Crosstalk: less than 55dB at 4.43 MHz

Control Interface

Serial: RS 422/423 or RS 232
Baud Rate: 110 to 19200
Connector: 9 Pin D Type
Alternative Parallel: 8 bit TTL + Strobe
Connector: 15 Pin D Type
Command Protocol: 1 prefix character
+ 1 command character

Dimensions

Approx. 483(W) x 387(D) x 44(H)mm
Approx. 19"W x 15.2"D x 1.7"H

Power Requirements

220—240 VAC or 110—125 VAC
45—100 Hz
30 VA

P168 \$1895.00

CEL ELECTRONICS LTD

DISTRIBUTED EXCLUSIVELY
BY JAMES GRUNDER & ASSOC.

5925 Beverly
Shawnee Mission, KS 66202
(913) 831-0188

DIGITAL FRAME STORE/TBC

P147-12 SXT-P PAL-NTSC Translator P147-12 SXT-N NTSC-PAL Translator

The P147-12SXT series is intended as a low cost solution to the problem of standards translation. The unit is designed to provide viewable pictures from one TV standard to another without the expense and complexity of a full specification standards converter.

The P147-12 SXT series does not incorporate interpolation between lines, fields or frames, being fundamentally a TBC/synchronizer. Thus, in 625 to 525 translation, 100 lines are cropped for each of the two fields, 25 at the top and 25 at the bottom.

CEL's P147-12 Digital Frame Store Synchronizers really do provide an economic answer to a whole range of video problems.

Utilizing the latest in digital video processing the P147-12:

Is a Single-Wire Time Base Corrector capable of handling a wide range of inputs.

Is a synchronizer with "Infinite Window" performance.

Provides first-rate freeze effects.

Is a color corrector for "fixing it in post."

Offers selective bit-switching for posturization digital effects.

When linked to a CEL Digital Effects Controller it allows for a wide range of compression/manipulation.

CEL's P147-12 SXT Digital Frame Store provides a unique answer to the problem of low cost standard translation, synchronization, and digital effects capabilities. Now, for the first time, it is possible to obtain a frame store translator specifically designed for use with low band VTR's and associated systems.

'The Answer' is housed in a standard 19" rack-mountable case with connections on the rear panel and all major controls on the front. A built-in proc amp provides control of input levels of chroma, luminance, black level and the hue (burst phase). Color correction and chrominance-to-luminance delay compensation adjustments are provided behind a hinged panel which also provides access to controls for posturization/solarization effects.

Freeze controls are provided to allow field freeze (to eliminate inter-field jitter on fast moving subjects). In addition, a built in timer allows for 'multigrab'—the process of freezing individual fields or frames at selected variable intervals.

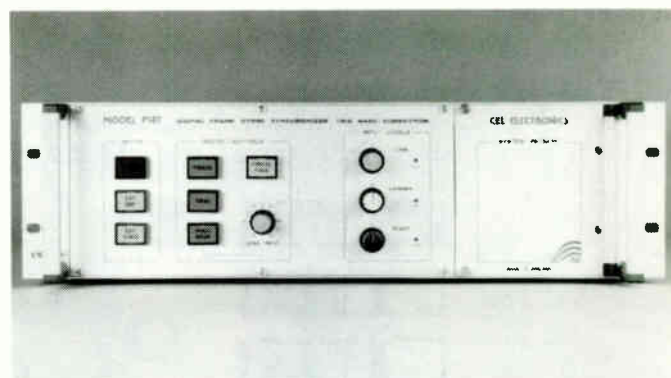
In use 'The Answer' either genlocks to incoming CVBS reference or to its own internal SPG. Black burst drive is available from the unit as a reference to genlock or other items such as an SEG or production switcher.

A single wire feed of video for correction is all that is required—there is no need for capstan servo reference signals. This ensures that the unit will correct and lock the video output of any VTR or VCR system. (The unit may also be used for non-standard video signals such as personal computers and non-interlaced camera video signals as well as consumer type VCR's).

'The Answer' can also be used as a synchronizer to lock the output of other video equipment (e.g. VDU's, cameras, tuners, satellite and microwave feeds) to a standard reference.

In the event that input signal for correction is disrupted (e.g. by a bad edit in the case of a VTR output) the last available good field information is frozen until a non-disrupted input is available. This allows the unit to 'iron-out' poor quality or incorrectly edited tapes as the off tape disruption is often so short that the freeze becomes unnoticeable. Similarly, non-sync cuts ('hot-switches') between sources can be eliminated.

'The Answer' provides image manipulation using an external controller. A variety of effects can be produced including compression, expansion, inversion, selective freeze and frame transitions.



P147-12 SXT-P

State of the art design utilizing component digital store and manipulation of data gives performance that seems visibly in excess of the 18 bit levels used. The inherent advantage of component encoding (3dB luminance and 4dB for chrominance) over systems that use composite encoding has performance that seems to out-strip the specifications.

TECHNICAL SPECIFICATIONS

Model P147-12

TV System: 525 line NTSC input and output

Digitization System

Component 672 bits luminance per line, 6 bit word length

Line Storage: 525 lines per Frame (287 line per field max.)

Field Storage: 2

Luminance Sampling: 12.9 Mhz

Luminance Bandwidth: 2.8 Mhz -3dB

Chroma Bandwidth: 1 Mhz

Signal to noise: -52dB Peak signal to rms noise (Note 1) Quantization 1/2LSB

Output Stability: Luma \pm 20nS w.r.t. external reference, Chroma 4nS

Inputs

REF. Video input 1V nom. 75 ohms BNC

REF. Video loop out or term BNC

Unsynchronized video input 1V nom. 75 ohms BNC

Unsynchronized video loop out or term BNC

Key Freeze BNC

D.O.C. RF Sensing BNC

Digital Effects Controller:

Aux A 25 pin D type

Aux B 25 pin D type

Outputs

Composite Video output 1x1 Volt nom 75 ohms BNC

Auxiliary Video output 1x1 Volt nom 75 ohms BNC

Black and Burst output 1x Volt nom 75 ohms BNC

Size

Standard 19" rack mounting 3U high (5.25") 19"W x 18.75"D x 5.2"H

(482.5mm W x 476mm D x 132mm H overall)

20 lbs. (9kgs.)

Power

Input Voltage 100-130 Volts 47-63Hz (200-260 Volts Available)

Input Power@ 70W

Environmental

Operating temperature range 0-45 degrees C

Operating humidity range 0-90% RH non-cond.

NOTE 1: Signal-to-Noise measured with flat field test signal using a Rohde and Schwarz noise meter in full BW mode.

P147-12SXT-P

\$9995.00

P147-12SXT-N

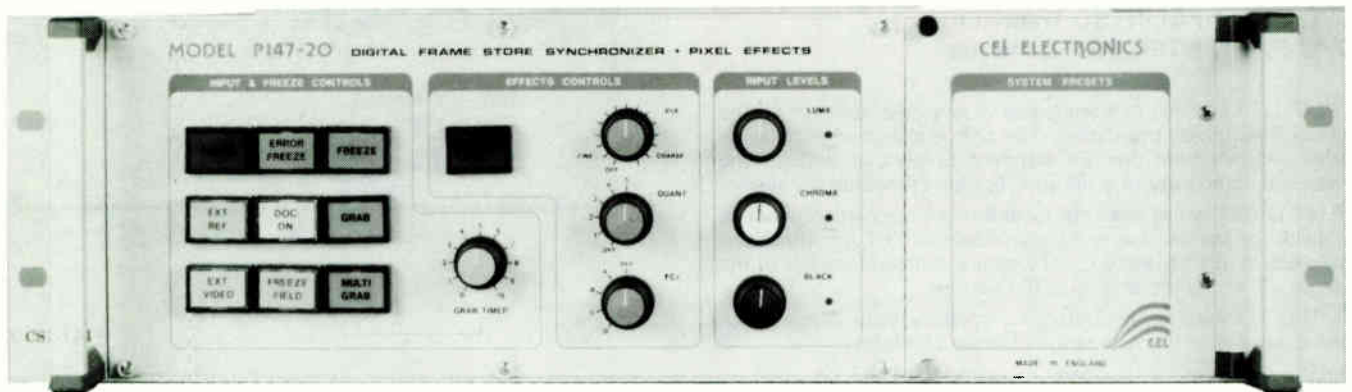
\$995.00

CEL ELECTRONICS LTD.

DISTRIBUTED EXCLUSIVELY
BY JAMES GRUNDER & ASSOC.

5925 Beverly
Shawnee Mission, KS 66202
(913) 831-0188

DIGITAL FRAME STORE SYNCHRONIZER & TIME BASE CORRECTOR



P147-20

P147-20

The very latest in digital processing allows the P147-20 to offer the ideal balance of quality and economy. In addition to an enhanced technical specification this model offers a wider range of special effects and, of course, comes ready configured for use with CEL digital effects controllers.

Hi-Band Quantisation for improved picture quality and significantly upgraded noise performance. Composite video input signals are first split into luminance and chrominance components before being quantised by industry standard TRW converters. This has the effect of significantly improved picture quality with respect to quantisation noise and other effects. The higher level of luminance quantisation requires additional memory to cope with the extra data produced. In addition to extra memory the P147-20 is equipped with a completely new and improved output processing system featuring a very high grade digital to analogue converter. This additional processing endows the unit with a number of extra digital special effects functions not found on the P147-10.

Digital Special Effects. The P147-20 has a remarkable repertoire of special effects. And apart from those listed here the unit is fully compatible with the CEL P151 family of digital effects controllers.

Built-in Matte Generator. The built-in matte generator is able to produce color mattes to any format and any hue or saturation. It achieves this via the use of an external strobe pulse (simply generated) which causes the unit to store the digital YUV value of any given pixel within the normal picture area. This value may then be output according to the format dictates of an external key signal. This feature has particular applications in the field of optically orientated special effects as it becomes possible to match electronic mattes to existing picture information very precisely. Finally, all these effects may be set up, then removed or inserted instantaneously by means of a single front panel switch (Front panel operable drop out compensator, Error freeze mode indicator, Built-in bypass switch).

Front Panel Operable Posterisation. A posterisation effect is also controlled from the front panel. This rotary switch progressively deletes lesser significant bits of luminance information in a series of six steps.

Built-in Pixelator. By further utilization of the matte generator the unit can produce pixelation effects. In this case the YUV value at any given pixel is reproduced for a finite period before being replaced by a fresh value. The period between value changes can be adjusted from the front panel of the P147-20 and the on screen effect is of a picture progressively breaking down into a series of "tiles". Pixelation is achieved in 15 levels horizontally at between 114 and 14 elements per line.

Built-in False Color Imaging (FCI). False color imaging is enabled when the chrominance data, instead of coming directly from the memory system, is selected from on board read only memories. The ROMs contain a translation code such that they convert a luminance grey scale into a series of chrominance values. For each luminance level a false color is therefore produced. The system can hold 4 alternative color schemes and these may be selected from the front panel.

SPECIFICATIONS

TV System

625 line 50 fields PAL input and output
SECAM input PAL output version SP
525 line 60 field NTSC option version N

Digitisation System

Component
Luminance 672 bits per line 7 bit word
Chroma 224 bits each U & V channel per
line 7 bit word length

Line Storage

287 lines (max.) per field

Field Storage

2

Luminance Sampling Rate

12.9 MHz

Luminance Bandwidth

To 3.5 MHz within 3dB (PAL version)

Chroma Bandwidth

1 MHz

Signal to Noise Ratio

-56dB Peak Signal to rms Noise
(Quantisation $\pm 1/2$ LSB)

Output Stability

$\pm 15nS$ w.r.t. external reference

Inputs

Reference video 1V nom 75 ohms or loop
Unsynchronised video 1V nom 75 ohms or
loop
Drop out compensator R.F. reference
Key
Matte Strobe
Matte Key

Outputs

Composite video 1V nom 75 ohms
Auxiliary video 1V nom 75 ohms
Black and burst 0.3V nom 75 ohms

Dimensions

Standard 19" rack mounting 3U high
482.5mm W x 170mm D x 132.5mm H overall

Weight

20 lbs. (9kgs)

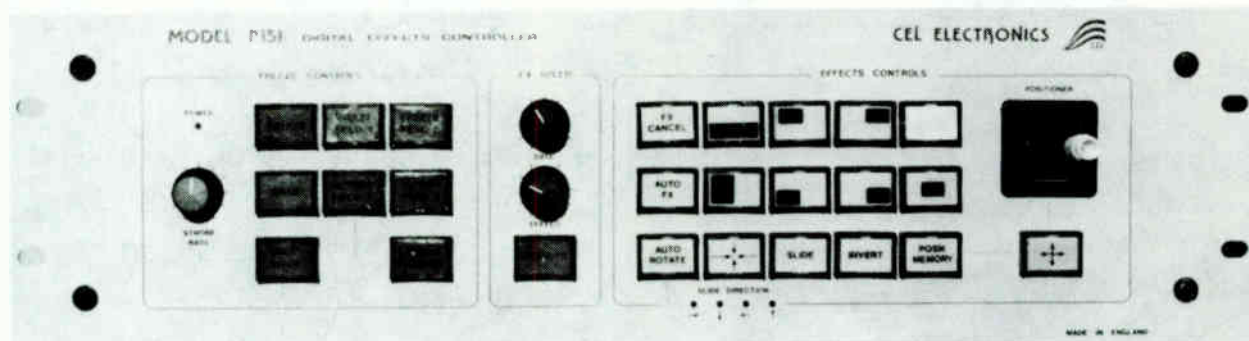
P147-20 \$9,995.00

CEL ELECTRONICS LTD

DISTRIBUTED EXCLUSIVELY
BY JAMES GRUNDER & ASSOC.

5925 Beverly
Shawnee Mission, KS 66202
(913) 831-0188

DIGITAL EFFECTS CONTROLLER



P151 Digital Effects Controller

P151 controllers offer digital effects capability previously available only on large, costly image processors. By simple plug-in attachment to a P147 Digital Frame Store it is possible to freeze, compress, invert, position and slide pictures. Many of the controls can be driven via GPI pulse command from edit controllers or similar devices ensuring effective transitions, automatically, with minimum 'operator error'. System interface to SEGs and production switchers is done with the greatest of ease providing low cost featuresome digital effects expansion to even the most modest system.

DIGITAL EFFECTS CONTROLLER

This is a digital effects controller designed for use with either the P147-12 or P147-20. The unit is housed in a neat 19" rackmountable case and connects to the P147 via a pair of ribbon cables (10 feet standard, other lengths available to 100 feet).

A wide variety of special effects is possible. These include picture compression to 1/4 normal size as well as picture positioning, inversion, slide and the unique effect of Digital Dissolve as well as the standard freeze effects of the P147.

The standard version of the P151 is designated Model No. N151-10. A more advanced version is also available which incorporates a Travelling Key facility to provide a 'window' for effects using a separate vision mixer equipped to handle external keying. This version is designated Model No. P151-12.

Key Features of both models are:

Freeze: This freezes both fields and is effectively a remote control of the standard freeze button of the P147.

Grab: Will allow a fresh frame to be grabbed when in normal freeze mode. Also can be used to trigger a number of other effects.

Multigrab: Operates grab facility via a timer control for repeated effects.

Normal Framing: This disables the freeze or field controls to allow a standard output.

Quadrant Buttons: These produce 1/4 size pictures in each of the four quarters of the screen. While only one quarter can be active at any time the use of grab and multigrab allows for each quarter to be live sequentially.

Center: This produces a quarter size compression at the center of screen and overrides the other compression controls.

Joystick Positioner: Controls the position of any live picture (compressed or not) when activated. TrakSet™ control system ensures that positions do not 'creep', while a position memory system allows for reproducible positioning.

Freeze Field (1 & 2): Each of these controls provides for the freezing of either an odd or an even field. The unselected field continues in normal motion.

Output Field (1 & 2): Each of these controls matches to the freeze controls to display only odd or even fields at the output. Used in combination of live or frozen fields.

Invert: Simply inverts any picture compressed or not.

Slide: As it sounds, this control allows a fresh live picture to be 'slid' on to screen from each of 4 off screen positions. The direction and rate of slide are fully controllable and slides may be initiated automatically under the control of the multigrab timer or as a result of an error freeze. Both full size and compressed pictures may be controlled in this way.

Auto Fx: Used in conjunction with the Fx Cancel and freeze controls, this control allows for a number of effects to be initiated via an 'unfreeze' command, e.g. after a picture cut.

Single Axis Compression: Allows for compression in only one direction. Thus a split screen effect with geometric distortion is possible.

Dissolve: These controls are for the unique Digital Dissolve system which in effect can create an almost infinite range of image transitions. It operates by producing a progressive 'unfreeze' of a picture and has a wide range of control. It can be automatically initiated.

Rear Panel Connectors:

1x50 way ribbon cable connector

1xTravelling Key out (1V nom. comp. video 75 ohms BNC) P151-12 only

1xPower in (IEC)

Size:

Standard 19" rack mounting 3U high.

19"W x 6.7"D x 5.2"H

Weight:

9.35 lbs.

Coupled with the range of facilities offered by the P147, the P151 offers an unparalleled combination of effects and value for money. It is undoubtedly THE production tool of the eighties bringing digital effects within the reach of almost all serious video users.

P151 \$3745.00



Your Catalog is Our Business

BDC

913-492-9910 • 800-255-6038

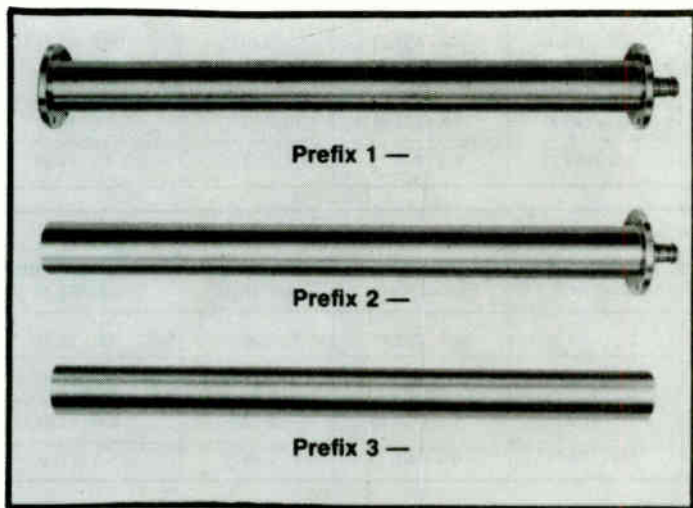
BILL DANIELS COMPANY, Inc.

P.O. BOX 2056 SHAWNEE MISSION KANSAS 66201

CELWAVE RF, INC.

Rt. 79
Marlboro, NJ 07746
(201) 462-1880 TWX 710-722-3861

RIGID COAXIAL TRANSMISSION LINE



Celwave coaxial transmission line is fabricated from high conductivity hard-drawn copper tubing with precision machined, pin-type, Teflon dielectric insulators. The standard 50 ohm line is offered in sizes from 7/8" through 6 1/8". The EIA bolt type flanges and inner connectors are compatible with EIA standards, US MIL specifications, and international IEC standards, US MIL specifications, and international IEC recommendations. Aluminum outer conductor 50 ohm and copper 75 ohm lines are available on special order.

Unless otherwise noted, the EIA flanges are the bolt type flanges defined in EIA Standard RS-225 with a female inner conductor, removable anchor inner connector with Teflon insulator. On many items, the EIA flange ring is brazed directly to the outer conductor and is designated as an "EIA fixed" flange. If the flange ring is fixed and the inner connector is not removable, the flange is called "EIA fixed male".

The components shown are useful in both coaxial cable and rigid line installations.

For indoor applications, unflanged, ungasged line may be suitable. Unflanged components are joined by a slotted, unpressurized, straight brass coupling around the outer conductor and a silver plated inner connector for the center conductor connection.

DESCRIPTION AND CATALOG NUMBERS			
Size	20 Foot section, flanges both ends	20 Foot section, flange one end	20 Foot section, no flanges
7/8"	1-78-50	2-78-50	3-78-50
1 1/8"	1-158-50	2-158-50	3-158-50
3 1/8"	1-318-50	2-318-50	3-318-50
6 1/8"	1-618-50	2-618-50	3-618-50
Size	Special length, flanges both ends*	Special length, flange one end*	Special length, no flanges*
7/8"	1S-78-50	2S-78-50	3S-78-50
1 1/8"	1S-158-50	2S-158-50	3S-158-50
3 1/8"	1S-318-50	2S-318-50	3S-318-50
6 1/8"	1S-618-50	2S-618-50	3S-618-50

ORDERING INFORMATION

Celwave Rigid Line Catalog numbers consists of a prefix to designate the component, and a suffix to call out line size and impedance.

Catalog number prefix "1" refers to a 20 foot length transmission line with EIA fixed flanges on both ends.

One anchor inner connector, one "O" ring gasket, and one hardware set are supplied.

Prefix "2" designates a 20 foot length of transmission line with one unflanged end, one EIA fixed flange, and one anchor inner connector, "O" ring and hardware set.

Catalog number prefix "3" denotes a 20 foot length of unflanged transmission line. No inner connector, "O" ring or hardware is included.

Special high reliability coated anchor inner connectors are available with the 3 1/8" and 6 1/8" rigid line sections. These include a special dry baked molybdenum di-sulfide coating for long term, reliable lubrication to prevent conductor galling. All sizes of components and the 7/8" and 1 1/8" line sections include conventional silver plated anchor inner connectors.

* Prefix designations "1S", "2S", and "3S" refer to special lengths of rigid line in which the exact length in inches is added as a suffix after the impedance, i.e., 1S-318-50 (24) for a 2 ft. (609mm) length of 3 1/8" 50 ohm line with EIA flanges on each end.

ELECTRICAL CHARACTERISTICS					
Size	Impedance, Ohms	Maximum Frequency, MHz	Velocity percent	Attenuation and Average Power Rating	Peak Power, KW
7/8"	50	4,000	99.8	see curves pages 12,13	61
1 1/8"	50	3,000	99.8		234
3 1/8"	50	1,600	99.8		920
6 1/8"	50	800	99.8		3,590

MECHANICAL CHARACTERISTICS						
Size	Outer Conductor O.D. x I.D. Inches (millimeters)	Inner Conductor O.D. x I.D. Inches (millimeters)	Shipping Carton Inches (millimeters)	Net Weight Per Length lbs. (Kg)	Number of Line Sections Per Carton	Shipping Weight Per Carton lbs. (Kg)
7/8"	.875 x .785 (22.2 x 20.0)	.341 x .291 (8.7 x 7.4)	13 x 13 x 245 (330 x 330 x 6223)	12 (5.5)	16	250 (114)
1 1/8"	1.625 x 1.527 (41.3 x 38.8)	.664 x .588 (16.9 x 14.9)	13 x 13 x 245 (330 x 330 x 6223)	27 (12.3)	9	303 (138)
3 1/8"	3.125 x 3.027 (79.4 x 76.9)	1.315 x 1.231 (33.4 x 31.3)	13 x 13 x 245 (330 x 330 x 6223)	52 (23.6)	4	268 (122)
6 1/8"	6.125 x 5.981 (155.6 x 151.9)	2.600 x 2.520 (66.0 x 64.0)	12 x 24 x 245 (305 x 610 x 6223)	135 (61.4)	2	370 (168)

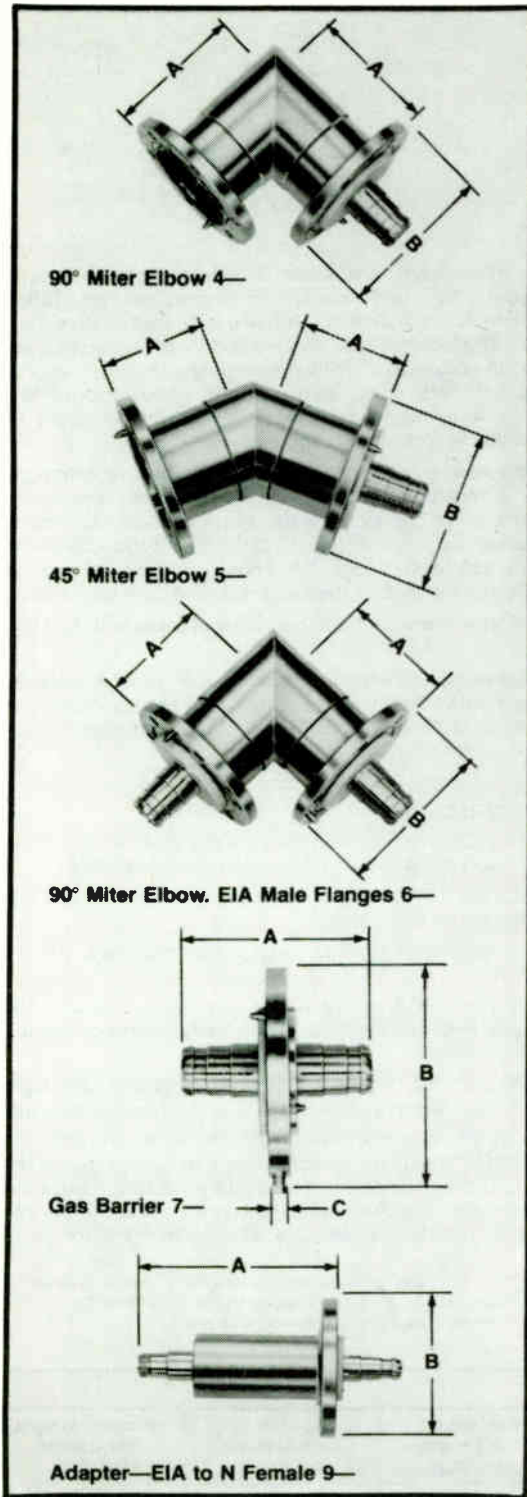
Prices and Specifications Subject to Change Without Notice.

B-249

CELWAVE RF, INC.

Rt. 79
Marlboro, NJ 07746
(201) 462-1880 TWX 710-722-3861

50 OHM RIGID LINE COMPONENTS



90° Miter Elbow. 50 ohm construction. EIA swivel flanges. Unsupported silver plated inner conductor. One anchor inner connector, "O" ring and hardware set.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	4-78-50	2 3/4 (69.9)	2 1/4 (57.2)	1.3 (0.6)	1.7 (0.8)
1 1/8"	4-158-50	2 1/2 (63.5)	3 1/2 (88.9)	3.4 (1.5)	3.8 (1.7)
3 1/8"	4-318-50	3 13/16 (96.8)	5 3/16 (131.8)	8.2 (3.7)	8.9 (4.0)
6 1/8"	4-618-50	5 1/2 (139.7)	8 1/8 (206.4)	22.0 (10)	26.0 (11.8)

45° Miter Elbow. Associated items as above.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	5-78-50	2 3/4 (69.9)	2 1/4 (57.2)	1.2 (0.5)	1.6 (0.7)
1 1/8"	5-158-50	2 1/2 (63.5)	3 1/2 (88.9)	3.3 (1.5)	3.6 (1.6)
3 1/8"	5-318-50	3 1/2 (88.9)	5 3/16 (131.8)	7.9 (3.6)	8.6 (3.9)
6 1/8"	5-618-50	5 1/2 (139.7)	8 1/8 (206.4)	21.0 (9.5)	25.0 (11.3)

90° Miter Elbow Male. EIA male swivel flanges both ends, silver plated inner conductor. Two "O" rings and two sets of hardware included.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	6-78-50	2 3/4 (69.9)	2 1/4 (57.2)	1.2 (0.5)	1.6 (0.7)
1 1/8"	6-158-50	2 1/2 (63.5)	3 1/2 (88.9)	3.3 (1.5)	3.7 (1.7)
3 1/8"	6-318-50	3 13/16 (96.8)	5 3/16 (131.8)	8.2 (3.7)	8.9 (4.0)
6 1/8"	6-618-50	5 1/2 (139.7)	8 1/8 (206.4)	22.0 (10.0)	26.0 (11.8)

Gas Barrier. Fixed male EIA inner connectors both ends. 1/8" FPT pressure inlet with plug. One set of longer hardware, and two "O" rings.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	C Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	7-78-50	3 9/16 (84.1)	2 1/4 (57.2)	5/8 (15.9)	1.1 (0.5)	1.3 (0.6)
1 1/8"	7-158-50	3 7/8 (98.4)	3 1/2 (88.9)	5/8 (15.9)	3.4 (1.5)	4.1 (1.9)
3 1/8"	7-318-50	4 7/8 (123.8)	5 3/16 (131.8)	5/8 (15.9)	6.2 (2.8)	7.0 (3.2)
6 1/8"	7-618-50	6 1/8 (155.6)	8 1/8 (206.4)	1 1/16 (27.0)	15.2 (6.9)	17.0 (7.7)

Adapter—EIA to type N Female. Mates with UG21/U. Gas tight with 1/8" FPT pressure inlet and plug.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	9-78-50	4 (101.6)	2 1/4 (57.2)	0.6 (0.3)	0.9 (0.4)
1 1/8"	9-158-50	5 (127)	3 1/2 (88.9)	2.0 (0.9)	2.7 (1.2)
3 1/8"	9-318-50	6 (152.4)	5 3/16 (131.8)	6.0 (2.7)	6.8 (3.1)

Unless otherwise noted all flanges are standard EIA swivel flanges, and the component includes an anchor inner connector, "O" ring gasket, and hardware set for one end only.

CELWAVE RF, INC.

Rt. 79
Marlboro, NJ 07746
(201) 462-1880 TWX 710-722-3861

50 OHM RIGID LINE COMPONENTS

Adapter—EIA to LC Female. Mates with UG 154/U. Gas tight with 1/8" FPT pressure inlet and plug.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	24-78-50	3 3/4 (95.3)	2 1/4 (57.2)	1.2 (.5)	1.4 (.6)
1 1/8"	24-158-50	5 1/4 (133.4)	3 1/2 (88.9)	3.5 (1.6)	4.2 (1.9)
3 1/8"	24-318-50	5 7/16 (138.1)	5 3/16 (131.8)	6.3 (2.9)	7.1 (3.2)

Anchor Inner Connector with Teflon insulator. Standard type 12—is silver plated. Inner connectors type 12A—include a dry baked molybdenum di-sulfide lubricant coating to prevent galling and electrical deterioration with repeated thermal expansion and contraction of the inner conductor.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	C Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	12-78-50	2 11/16 (68.3)	0.810 (20.6)	3/16 (4.8)	0.1 (.05)	0.1 (.05)
1 1/8"	12-158-50	3 1/4 (82.6)	1.645 (41.9)	1/4 (6.4)	0.2 (.09)	0.2 (.09)
3 1/8"	12-318-50 12A-318-50	4 1/4 (108.0)	3.195 (81.2)	3/8 (9.5)	0.8 (.4)	1.0 (.45)
6 1/8"	12-618-50 12A-618-50	5 1/2 (139.7)	6.055 (153.8)	7/16 (11.1)	2.9 (1.3)	3.5 (1.6)

Hardware Set consists of stainless steel hex head bolts, nuts and lock washers for one flange.

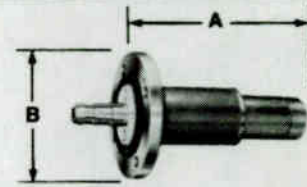
Size	PD No.	Qty. Per Set	A Dimensions inches (mm.)	B Dimensions inches (mm.)	C Thread
7/8"	26-78	3	7/16 (11.1)	1 (25.4)	1/4-20 UNC
1 1/8"	26-158	4	1/2 (12.7)	1 1/2 (38.1)	5/16-18 UNC
3 1/8"	26-318	6	9/16 (14.3)	1 1/2 (38.1)	3/8-16 UNC
6 1/8"	26-618	12	9/16 (14.3)	1 3/4 (44.5)	3/8-16 UNC

"O" Ring Gasket for EIA flange. Long life Buna N rubber is standard for normal North American usage. Silicone rubber "O" ring gaskets are available on special order for extreme cold temperature applications.

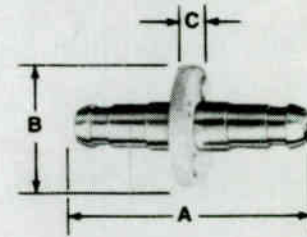
Size	PD No.
7/8"	14-78
1 1/8"	14-158
3 1/8"	14-318
6 1/8"	14-618

Inner Connector Adaptor to connect 50 ohm EIA flanged line to 51.5 ohm flanged line. No anchor beads.

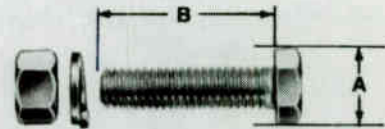
Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	32-78-50	2 5/16 (58.7)	.341 (8.7)	0.1 (.05)	0.1 (.05)
1 1/8"	32-158-50	2 3/4 (69.9)	.664 (16.9)	0.2 (.09)	0.2 (.09)
3 1/8"	32-318-50	3 3/8 (85.7)	1.315 (33.4)	0.8 (.45)	1.0 (.45)
6 1/8"	32-618-50	3 3/8 (92.1)	2.600 (66.5)	2.9 (1.3)	3.5 (1.6)



Adapter — EIA to LC Female 24—



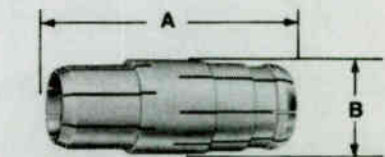
Anchor Inner Connector 12—



Hardware Set 26—



"O" Ring Gasket 14—



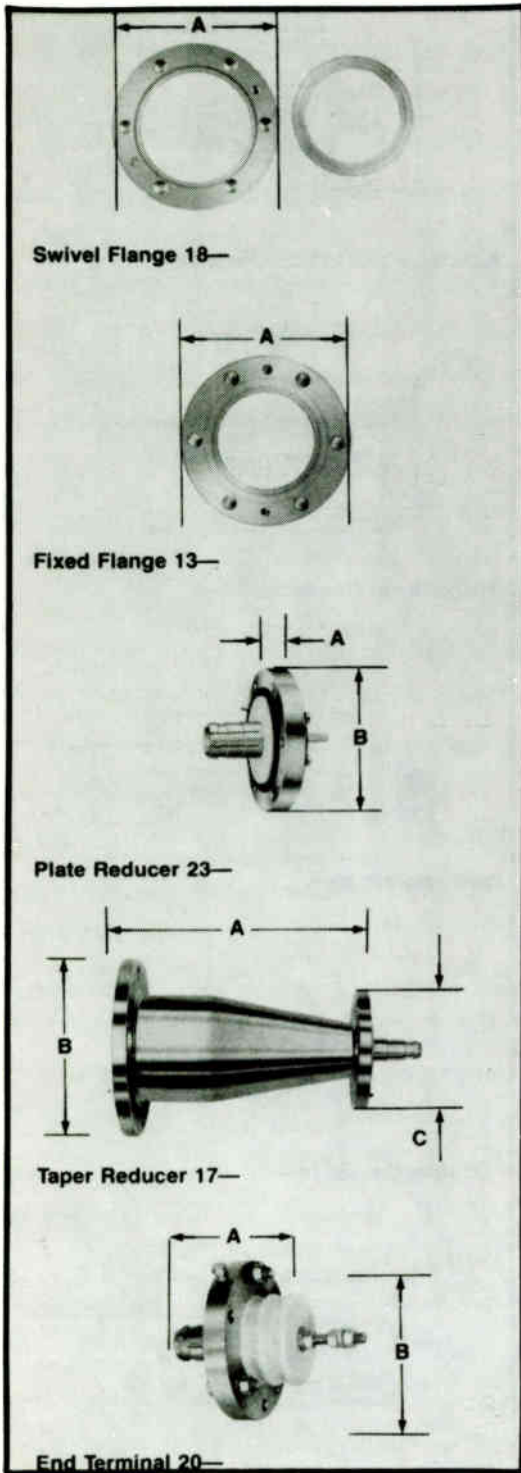
Inner Connector Adaptor 32—

Unless otherwise noted all flanges are standard EIA swivel flanges, and the component includes an anchor inner connector, "O" ring gasket, and hardware set for one end only.

CELWAVE RF, INC.

Rt. 79
Marlboro, NJ 07746
(201) 462-1880 TWX 710-722-3861

50 OHM RIGID LINE COMPONENTS



Swivel Flange kit for silver brazing of an EIA swivel flange to outer conductor tubing. Includes silver solder preform ring.

Size	PD No.	A Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	18-78-50	2 1/4 (57.2)	.5 (.2)	1 (.4)
1 1/8"	18-158-50	3 1/2 (88.9)	.8 (.3)	1.3 (.6)
3 1/8"	18-318-50	5 3/16 (131.7)	1.6 (.7)	2.0 (.9)
6 1/8"	18-618-50	8 1/8 (206.4)	5.3 (2.4)	6 (2.7)

Fixed Flange kit for silver brazing of EIA fixed flange to outer conductor tubing. Includes silver solder preform ring.

Size	PD No.	A Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	13-78	2 1/4 (57.2)	.5 (.2)	1 (.4)
1 1/8"	13-158	3 1/2 (88.9)	.8 (.4)	1.3 (.6)
3 1/8"	13-318	5 3/16 (131.7)	1.6 (.7)	2.0 (.9)
6 1/8"	13-618	8 1/8 (206.4)	5.3 (2.4)	6 (2.7)

Plate Reducer. Quick step type. Fixed male inner connectors on both ends. "O" rings and hardware included for both ends.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
1 1/8"- 7/8"	23-158-50	3/4 (19.0)	3 1/2 (88.9)	3.0 (1.36)	3.6 (1.63)
3 1/8"- 1 1/8"	23-318-50	7/8 (22.2)	5 3/16 (131.8)	5.0 (2.27)	5.8 (2.63)

Taper Reducer. Low VSWR (1.05 @ 1.0 GHz). Fixed EIA flanges both ends. Unsupported inner conductor. Removable anchor inner connector. "O" ring and hardware included for smaller size flange only.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	C Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
1 1/8"- 7/8"	17-158-50	4 27/64 (112.3)	3 1/2 (88.9)	2 1/4 (57.2)	1.75 (0.8)	2.4 (1.1)
3 1/8"- 1 1/8"	17-318-50	7 3/32 (180.0)	5 3/16 (131.8)	3 1/2 (88.9)	4.1 (1.9)	5.0 (2.3)
6 1/8"- 3 1/8"	17-618-50	8 1/4 (209.5)	8 1/8 (206.4)	5 3/16 (131.8)	11.5 (5.2)	12.5 (5.7)

End Terminal. For strap connection to antenna. Pressure tight with 1/8" FPT gas inlet and plug. Fixed EIA flange with male inner connector. "O" ring and hardware included.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	20-78-50H	4 1/2 (114.3)	2 1/4 (57.2)	1.0 (0.5)	1.4 (0.6)
1 1/8"	20-158-50H	5 (127.0)	3 1/2 (88.9)	2.6 (1.2)	3.4 (1.5)
3 1/8"	20-318-50H	6 1/2 (165.1)	5 3/16 (131.8)	4.4 (2.0)	5.4 (2.5)
6 1/8"	20-618-50H	8 (203.2)	8 1/8 (206.4)	11.7 (5.3)	12.8 (5.8)

Unless otherwise noted all flanges are standard EIA swivel flanges, and the component includes an anchor inner connector, "O" ring gasket, and hardware set for one end only.

CELWAVE RF, INC.

Rt. 79
Marlboro, NJ 07746
(201) 462-1880 TWX 710-722-3861

50 OHM RIGID LINE COMPONENTS

Adapter—Male to Male. Unsupported inner conductor. Fixed EIA flanges. One "O" ring and hardware set included. No anchor inner connector included.

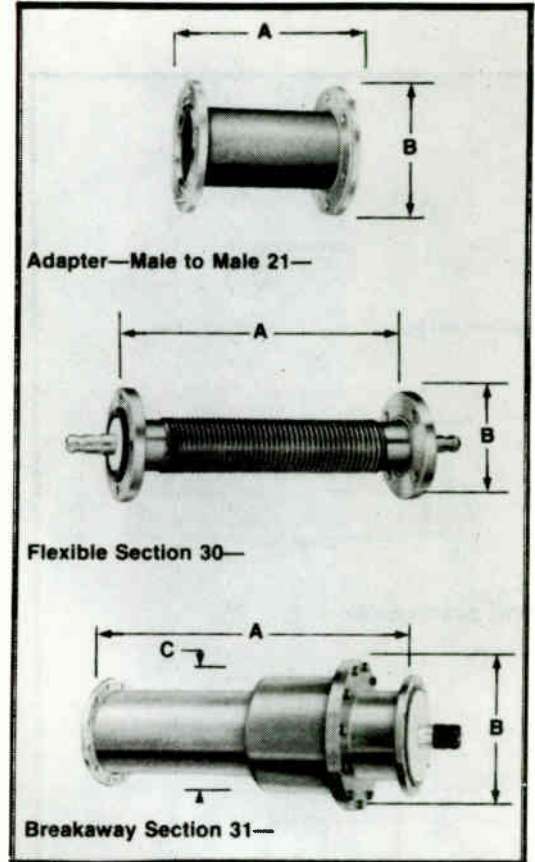
Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	21-78-50	4 (101.6)	2 1/4 (57.2)	1.0 (0.5)	1.5 (0.7)
1 1/4"	21-158-50	4 (101.6)	3 1/2 (88.9)	2.4 (1.1)	3.2 (1.5)
3 1/4"	21-318-50	6 (152.4)	5 3/16 (131.8)	6.0 (2.7)	7.0 (3.2)
6 1/8"	21-618-50	6 (152.4)	8 1/8 (206.4)	18.0 (8.2)	23.0 (10.4)

Flexible Section accommodates vibration and angles up to 30° for 1 1/4" and 20° for 3 1/4" and 6 1/8". Maximum offset or compression is .25" (0.64 cm) for 1 1/4" and .5" (1.27 cm) for the 3 1/4" and 6 1/8" units. EIA fixed male flanges both ends. Two sets of "O" rings and hardware supplied.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
1 1/4"	30-158-50	10 (254.0)	3 1/2 (88.9)	4.2 (1.9)	4.7 (2.1)
3 1/4"	30-318-50	18 (457.2)	5 3/16 (131.8)	15.0 (6.8)	16.9 (7.7)
6 1/8"	30-618-50	24 (609.6)	8 1/8 (206.4)	31.0 (14.1)	36.0 (16.3)

Breakaway Section. Permits easy opening and disassembly of transmission line. Pressure tight when closed. EIA fixed flange on one end. EIA male anchor inner connector on one end.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	C Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
1 1/4"	31-158-50	12 (304.8)	3 1/2 (88.9)	4 1/4 (108.0)	14.0 (6.35)	18.0 (8.16)
3 1/4"	31-318-50	14 3/16 (376.2)	5 3/16 (131.8)	7 (177.8)	21.0 (9.53)	34.0 (15.42)
6 1/8"	31-618-50	24 (609.6)	8 1/8 (206.4)	10 1/4 (260.4)	47.0 (21.32)	59.0 (26.8)

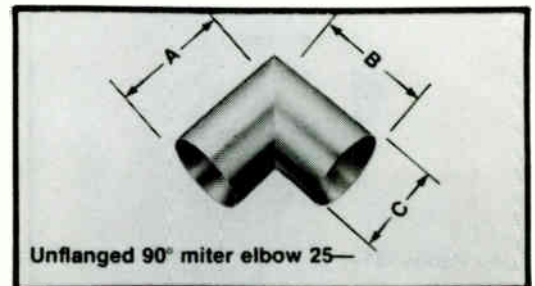


Unless otherwise noted flanges are standard EIA swivel flanges, and the component includes an anchor inner connector, "O" ring gasket, and hardware set for one end only.

50 OHM RIGID LINE UNFLANGED COMPONENTS

Unflanged 90° Elbow. No straight coupling or inner connector included. 7/8" and 1 1/4" sizes have supported inner conductor. 3 1/4" and 6 1/8" sizes have nonsupported inner conductor.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	C Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	25-78-50	2 11/16 (68)	2 11/16 (68)	.875 (22.2)	1.2 (.5)	1.6 (.7)
1 1/4"	25-158-50	2 1/8 (60)	2 1/8 (60)	1.625 (41.3)	3.2 (1.5)	3.6 (1.6)
3 1/4"	25-318-50	3 3/8 (92)	3 3/8 (92)	3.125 (79.4)	7.9 (3.6)	8.9 (4.0)
6 1/8"	25-618-50	5 9/32 (134)	5 9/32 (134)	6.125 (155.6)	21.0 (9.5)	25.0 (11.3)

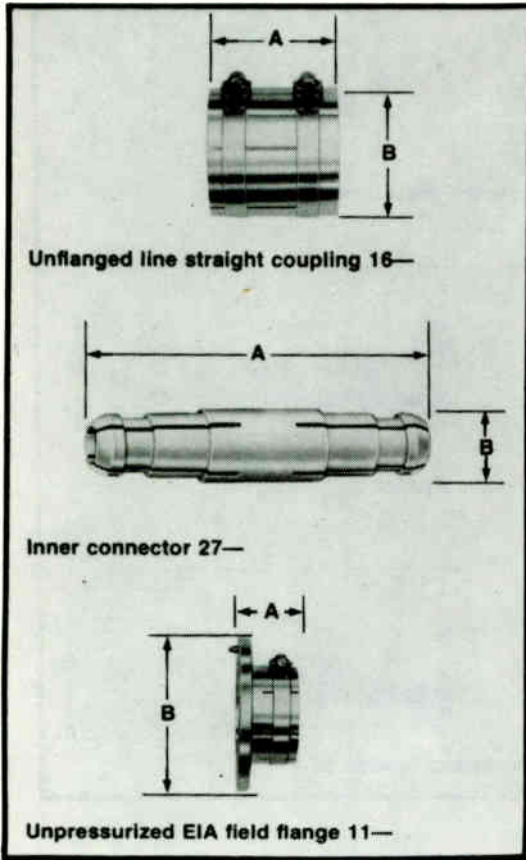


Unflanged, unpressurized transmission line may be used for indoor installations in which pressurization is not required. Connection is made by means of a coupling sleeve and hose clamps.

CELWAVE RF, INC.

Rt. 79
Marlboro, NJ 07746
(201) 462-1880 TWX 710-722-3861

50 OHM RIGID LINE UNFLANGED COMPONENTS



Unflanged Line Straight Coupling. Connects unflanged lines and fittings. Includes one inner connector and stainless steel clamps.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	16-78-50	2 1/8 (54.0)	1 1/8 (31.8)	0.3 (.1)	0.4 (.2)
1 1/8"	16-158-50	2 1/4 (57.2)	2 1/4 (57.2)	0.5 (.2)	0.6 (.3)
3 1/8"	16-318-50	3 1/4 (82.6)	3 1/2 (88.9)	1.5 (.7)	3.3 (1.5)
6 1/8"	16-618-50	5 1/2 (139.7)	6 3/4 (171.5)	5.4 (2.5)	6.5 (3.0)

Inner Connector for unflanged unpressurized line. Silver plated, no undercut.

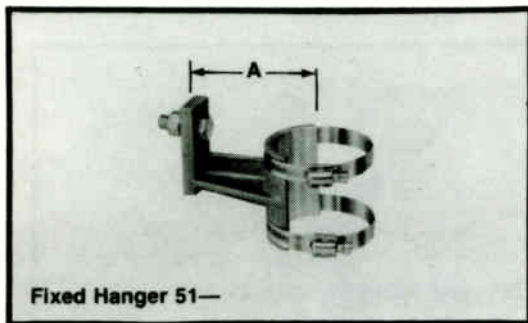
Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	27-78-50	2 11/16 (68.3)	0.341 (8.7)	0.1 (.05)	0.1 (.05)
1 1/8"	27-158-50	3 1/4 (82.6)	0.664 (16.9)	0.2 (.09)	0.2 (.09)
3 1/8"	27-318-50	4 1/4 (108.0)	1.315 (33.4)	0.7 (.3)	0.9 (.4)
6 1/8"	27-618-50	5 1/2 (139.7)	2.6 (66.0)	2.7 (1.2)	3.3 (1.5)

Unpressurized EIA field flange does not include anchor inner connector, hardware "O" ring. Not gas tight.

Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	11-78	1 (25.4)	2 1/4 (57.2)	.7 (.3)	1.2 (.5)
1 1/8"	11-158	1 1/4 (31.8)	3 1/2 (88.9)	1.2 (.5)	1.7 (.8)
3 1/8"	11-318	1 11/16 (42.9)	5 9/16 (131.8)	2.5 (1.1)	3.0 (1.4)
6 1/8"	11-618	3 (76.2)	8 1/8 (206.4)	6.5 (3.0)	7.0 (3.2)

Unflanged, unpressurized transmission line may be used for indoor installations in which pressurization is not required. Connection is made by means of a coupling sleeve and hose clamps.

RIGID LINE HARDWARE AND INSTALLATION ACCESSORIES



Fixed Hanger for fastening a transmission line run to the top of the tower. Use one fixed hanger for each 300 feet of line. Mounts to 9/16" diameter hole with 1/2" — 13 x 1 3/4" bolt supplied.

Size	PD No.	A Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
7/8"	51-78	1 1/8 (28.6)	.75 (.3)	1 (.5)
1 1/8"	51-158	3 13/16 (96.8)	1.25 (.6)	1 1/2 (.7)
3 1/8"	51-318	4 9/16 (115.9)	2.25 (1.0)	2 1/2 (1.1)
6 1/8"	51-618	5 5/8 (142.9)	4.375 (2.0)	4 1/2 (2.0)

The following variety of hardware components and accessories have been specifically designed to aid in the appropriate installation of Celwave rigid Coaxial transmission line. Included are elbows, spring hangers, horizontal supports, hose clamps and other devices.

CELWAVE RF, INC.

Rt. 79
Marlboro, NJ 07746
(201) 462-1880 TWX 710-722-3861

RIGID LINE HARDWARE AND INSTALLATION ACCESSORIES

Spring Hanger for supporting rigid line every 10 feet. Accommodates line expansion-contraction. Mounts to $\frac{9}{16}$ " diameter hole with $\frac{1}{2}$ " threaded rod.

Size	PD No.	A Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
1 $\frac{1}{2}$ "	91-158	4 $\frac{3}{8}$ (111.1)	2.5 (1.1)	3 (1.4)
3 $\frac{1}{4}$ "	91-318	5 $\frac{7}{8}$ (149.2)	2.8 (1.3)	3 $\frac{1}{2}$ (1.6)
6 $\frac{1}{4}$ "	91-618	9 $\frac{1}{4}$ (238.1)	7.8 (3.5)	8 (3.6)

Slide Hanger. Line guide ring to secure transmission line to supporting towers every 10 feet for short runs if spring type hangers are not required. Mounts to $\frac{9}{16}$ " diameter hole with $\frac{1}{2}$ "—13 x 1 $\frac{3}{4}$ " bolt supplied.

Line Size	PD No.	A Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
1 $\frac{1}{2}$ "	151-158	8 $\frac{1}{4}$ (209.6)	1.2 (.6)	1.5 (.7)
3 $\frac{1}{4}$ "	151-318	9 (228.6)	1.75 (.80)	2.5 (1.1)

Lateral Brace for securing transmission line at bottom of vertical run. Prevents lateral motion. Use two per transmission line run. Mounts to $\frac{7}{16}$ " diameter hole with $\frac{3}{8}$ "—13 threaded rod.

Line Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
1 $\frac{1}{2}$ "	131-158	39 (991)	7 $\frac{1}{2}$ (190.5)	2.3 (1.0)	3 (1.4)
3 $\frac{1}{4}$ "	131-318	39 (991)	7 $\frac{1}{2}$ (190.5)	2.3 (1.0)	3 (1.4)
6 $\frac{1}{4}$ "	131-618	39 (991)	7 $\frac{1}{2}$ (190.5)	2.4 (1.1)	3 (1.4)

Horizontal Support for supporting horizontal runs of transmission line. Mounts to post or plate with $\frac{1}{4}$ " lag screws or bolts. Mounting hardware not supplied.

Line Size	PD No.	A Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
1 $\frac{1}{2}$ "	71-158	2 $\frac{7}{16}$ (61.9)	.91 (.4)	1.5 (.7)
3 $\frac{1}{4}$ "	71-318	3 $\frac{3}{16}$ (81)	1.5 (.7)	2 (.9)

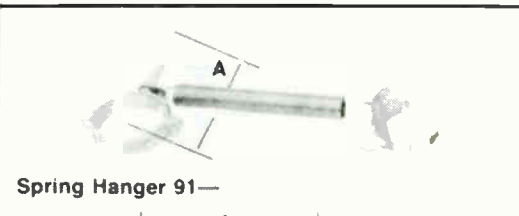
Bulkhead Fitting for anchoring single horizontal transmission line run at building entrance. Galvanized steel. Mounts to entry wall with $\frac{1}{2}$ " bolts through $\frac{9}{16}$ " holes. Use 712 870 Weatherproofing kit to seal fitting at wall entry.

Line Size	PD No.	A Dimensions inches (mm.)	B Dimensions inches (mm.)	C Dimensions inches (mm.)	Net Weight lbs. (Kg.)	Shipping Weight lbs. (Kg.)
$\frac{7}{8}$ "	111-78	$\frac{9}{16}$ (14.3)	4 $\frac{3}{4}$ (120.7)	6 (152.4)	2 $\frac{5}{8}$ (.9)	3 (1.4)
1 $\frac{1}{2}$ "	111-158	$\frac{9}{16}$ (14.3)	4 $\frac{3}{4}$ (120.7)	6 (152.4)	2 $\frac{5}{8}$ (.9)	3 (1.4)
3 $\frac{1}{4}$ "	111-318	$\frac{9}{16}$ (14.3)	6 $\frac{1}{4}$ (171.5)	8 (703.2)	2 $\frac{3}{4}$ (1.3)	4 (1.8)
6 $\frac{1}{4}$ "	111-618	$\frac{9}{16}$ (14.3)	10 $\frac{1}{4}$ (260.3)	12 (304.8)	14 $\frac{1}{4}$ (6.5)	16 (7.0)

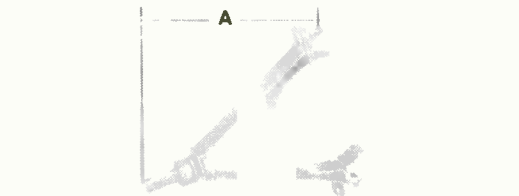
Weatherproofing Kit for complete weather sealing of transmission line through wall entry. Consists of all weather vinyl plastic electrical tape, electrical insulation putty and brush-on sealant for easy field installation. Complete instructions packaged with each kit.

Heavy-duty, hot-dip galvanized universal round member clamp. Allows mounting fixed, spring, or slide hangers of 1-1/4" to 2-3/4" diameter tower legs without drilling. Accepts 1/2" — 13 bolt.

The following variety of hardware components and accessories have been specifically designed to aid in the appropriate installation of Celwave rigid coaxial transmission line. Included are elbows, spring hangers, horizontal supports, hose clamps and other devices.



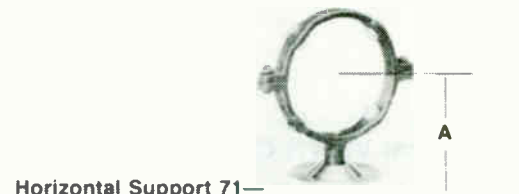
Spring Hanger 91—



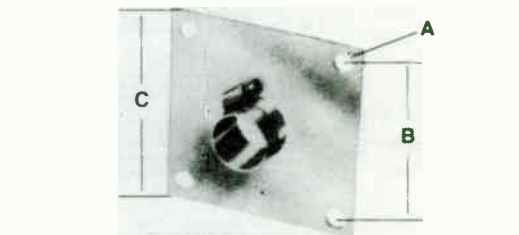
Slide Hanger 151—



Lateral Brace 131—



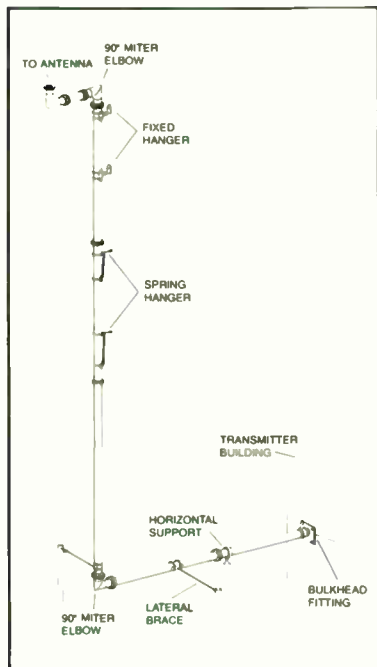
Horizontal Support 71—



Bulkhead Fitting 111—

Weatherproofing Kit 712 870

Round Member Clamp Adaptor 90—

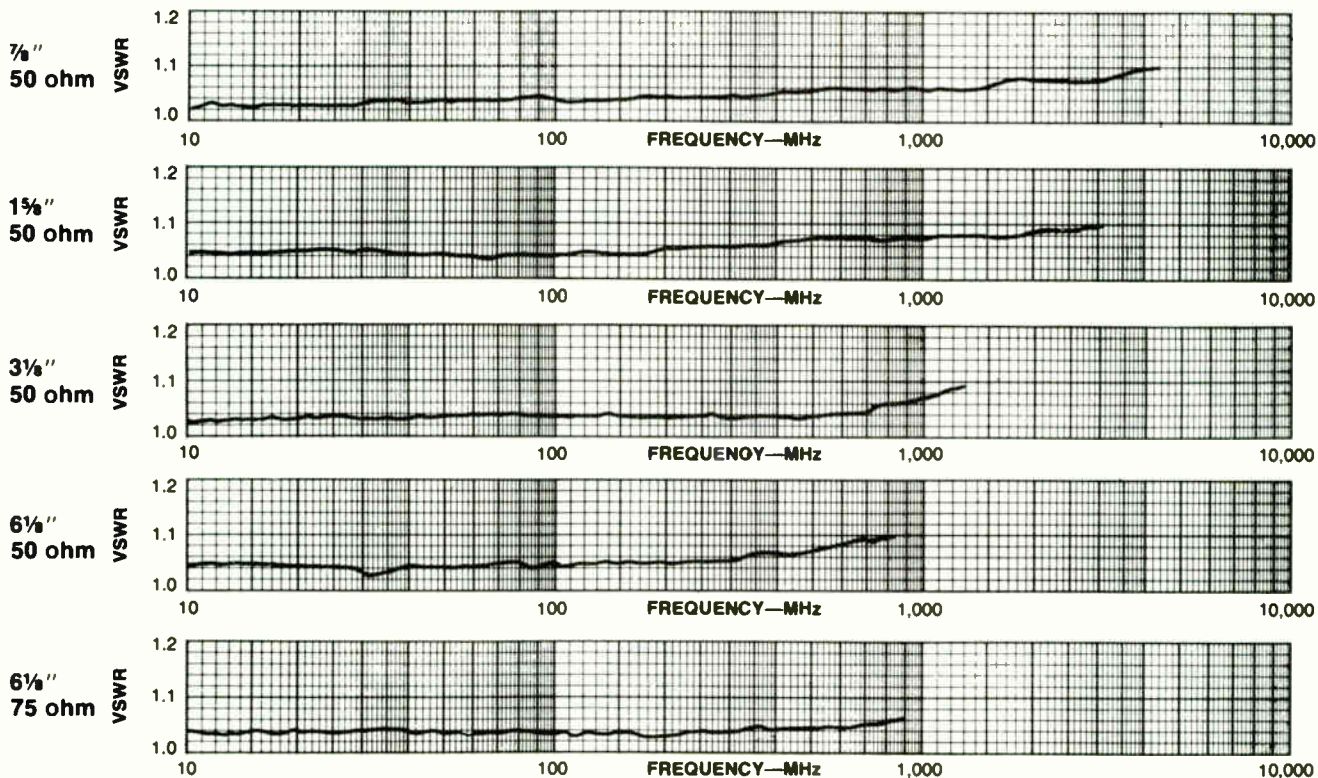


Normally, installations of transmission lines are begun at the top of the tower. If the antenna feedline is vertical, a 90° elbow, a short horizontal section and another 90° elbow are used to bring the transmission line next to the tower. The first 20-foot section is attached and secured with one or more fixed hangers. Additional 20-foot sections are assembled and secured to the tower with spring hangers spaced every 10 feet to accommodate thermal expansion and contraction. These spring hangers should be preloaded at installation. At the base of the tower, a 90° elbow is installed to connect the vertical line to the horizontal run with two lateral braces to prevent lateral motion (one near the elbow in the vertical run and one in the first horizontal section).

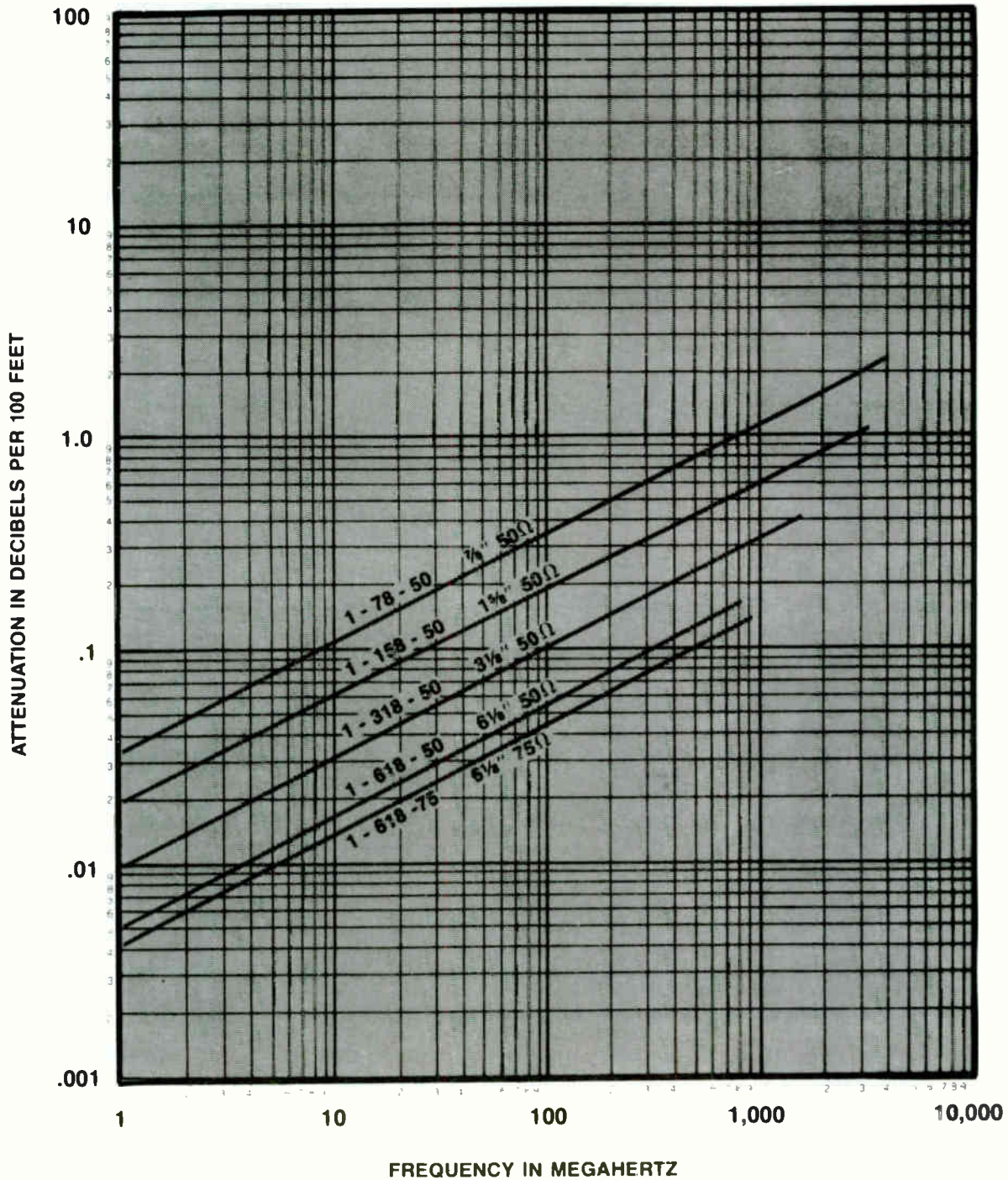
Horizontal supports or hangers support the line from the base of the tower to the bulkhead fitting at the equipment building entry wall. The horizontal run is anchored by the hose clamps at the bulkhead fitting to prevent transfer of expansion—contraction movement into the equipment building. The small length changes of both the vertical and horizontal runs will be absorbed by the 90° elbow at the base of the tower. This elbow acts as an expansion joint.

Upon completion of the installation, it is necessary to purge the line to remove any presence of moisture, and then pressurize to maintain a dry, reliable installation.

Typical VSWR Curve for 100 ft. of Transmission Line



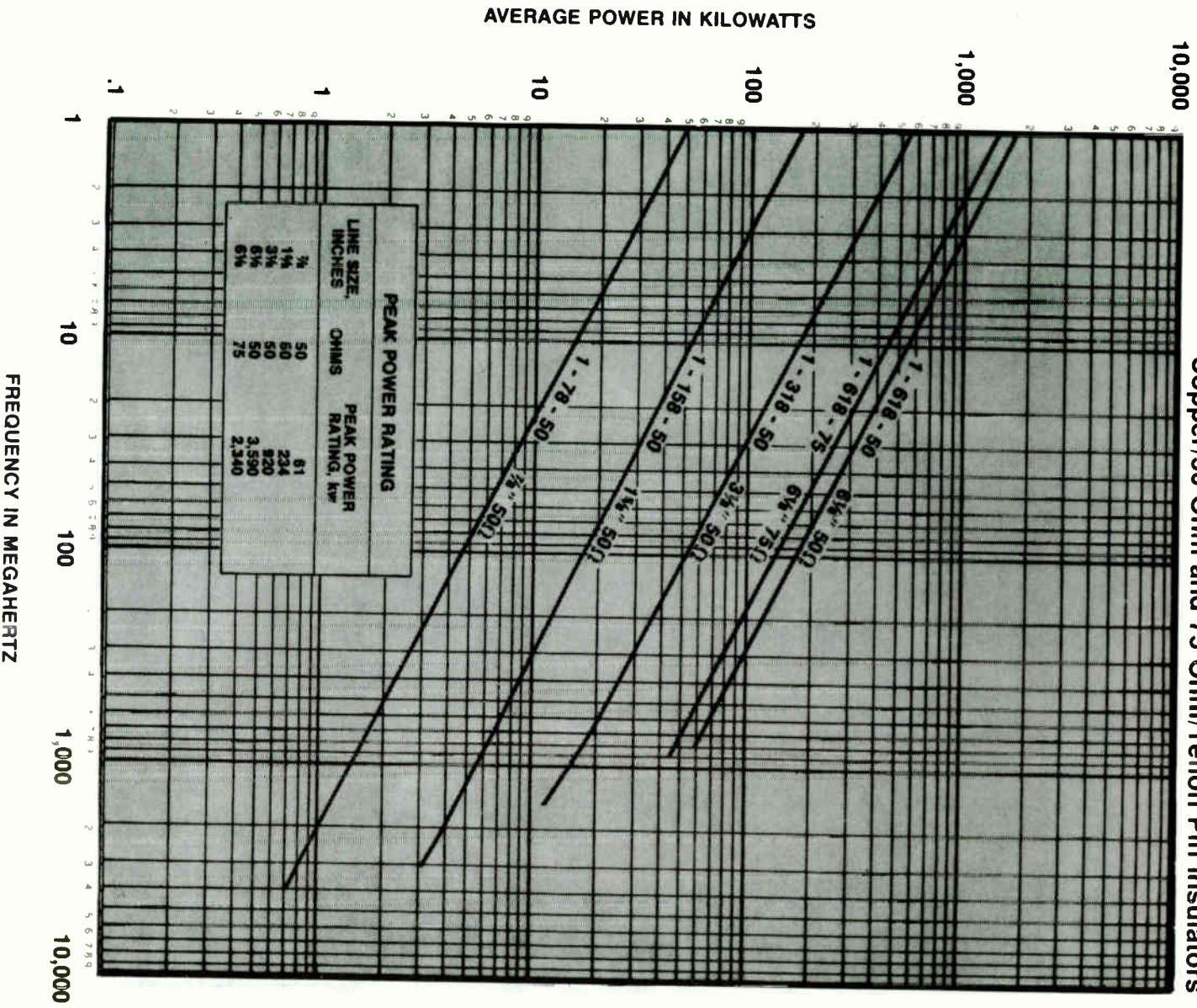
Copper/50 Ohm and 75 Ohm/Teflon Pin Insulators



Attenuation curves based on:
 Ambient Temperature 20°C (68°F)
 Unpressurized dry air (0 psig)

Conversion Data:
 1 db/100 feet = 3.28 db/100 meters
 For aluminum outer conductor, multiply by 1.08

Copper/50 Ohm and 75 Ohm/Teflon Pin Insulators



Power ratings based on:
 VSWR 1.0
 Ambient Temperature 40°C (104°F)
 Inner conductor temperature 102°C (216°F)
 Unpressurized dry air (0 psig)

Conversion Data:
 For ambient temperature 50°C (122°F), multiply by .85
 For 5 psig dry air pressure, multiply by 1.07
 For 15 psig dry air pressure, multiply by 1.2
 For aluminum outer conductors multiply by .96.

CELWAVE RF, INC.

Rt. 79
Marlboro, NJ 07746
(201) 462-1880 TWX 710-722-3861

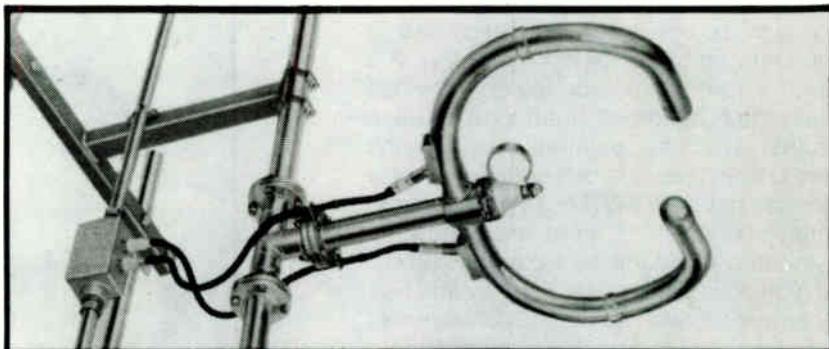
CIRCULARLY POLARIZED FM BROADCAST ANTENNAS

Standard circularly polarized FM antennas are fabricated of 1 5/8" O.D. copper tube formed into a 1 1/2 turn helical radiating element. This element produces a transmitted signal that is circularly polarized in all directions in the azimuth plane.

Antennas are available with all elements fed inphase to produce maximum gain on the horizon with 1 through 8 elements end fed and 10 through 16 elements center fed. If beam tilt and/or null fill is required the multi-element array needed to produce the required pattern is center fed with appropriate power divider and phaser supplied.

All antennas are supplied complete ready for installation on the tower. Each antenna has an input transformer to correct for any minor variations between the antenna test site and the actual field installation.

If required, stainless steel internal deicer heaters are available.



FM ANTENNA SPECIFICATIONS

Type No. And Bays	Power Gain	Gain In db	Field Gain	FS @ 1 Mile 1 KW, MV/M	Net Weight Lbs. (Kgs.)	Power Rating KW	Wind Load* 50/33 PSF
CFM LP-1	.45	-3.24	.67	93	118 (53.6)	5	97
CFM HP-1	.475	-3.21	.69	95	178 (80.7)	5	160
CFM LP-2	.95	-0.2	.98	136	145 (65.8)	10	170
CFM HP-2	1.00	0.0	1.0	138	223 (101.2)	10	280
CFM LP-3	1.5	1.8	1.23	170	172 (78.2)	10	250
CFM HP-3	1.55	1.9	1.25	172	268 (121.8)	15	400
CFM LP-4	2.05	3.1	1.44	199	198 (89.8)	10	325
CFM HP-4	2.15	3.3	1.47	203	313 (142.0)	20	525
CFM LP-5	2.55	4.1	1.6	221	225 (102.0)	10	400
CFM HP-5	2.70	4.3	1.65	227	358 (162.4)	25	650
CFM LP-6	3.15	5.0	1.78	246	251 (114.0)	10	480
CFM HP-6	3.30	5.2	1.82	251	404 (183.6)	30	780
CFM LP-7	3.65	5.6	1.92	265	278 (126.0)	10	560
CFM HP-7	3.85	5.9	1.97	273	449 (203.7)	35	910
CFM LP-8	4.2	6.2	2.05	283	305 (138.4)	10	640
CFM HP-8	4.4	6.4	2.10	290	494 (224.1)	40	1030
CFM LP-10	5.2	7.2	2.28	315	365 (165.6)	10	820
CFM HP-10	5.5	7.4	2.35	325	600 (272.2)	40	1320
CFM LP-12	6.25	8.0	2.5	345	418 (189.6)	10	975
CFM HP-12	6.6	8.2	2.57	355	690 (313.0)	40	1560
CFM LP-14	7.3	8.6	2.7	373	471 (214.0)	10	1130
CFM HP-14	7.7	8.9	2.8	386	781 (354.3)	40	1800
CFM LP-16	8.4	9.2	2.9	400	532 (241.3)	10	1290
CFM HP-16	8.8	9.5	2.97	410	872 (395.5)	40	2060

CFM LP - Circularly Polarized Low Power Shunt Fed with 1 5/8" Feed Line complete with 1 5/8" Fine Matcher

CFM HP - Circularly Polarized High Power Shunt Fed with 3 1/8" Feed Line Complete with 3 1/8" Fine Matcher

*244 166 Kg.m²

Length of Antenna in feet is 984 divided by frequency in MHz X (No. of Bays - 1) Plus 6 1/2.

Power Gains are for 50/50 horizontally and vertically polarized ratios. Other ratios available.

Antenna polarization is circular in all directions of azimuth.

Prices include complete mounting hardware for leg or face mounting on uniform towers 24" face or less. Brackets for other than uniform towers are extra and will be quoted upon request.

High Power antennas—input flange is 3 1/8" EIA Female. Low power antennas—input flange is 1 5/8" EIA Female.

Antenna weights include standard mounting hardware. Add 10 lbs. per bay for deicers. Deicers require 230 volts single phase balanced to ground with 500 watts consumption per bay.

When ordering—specify:

Antenna Type No.
Deicers, PD-1201
Frequency (88.1 to 107.9 MHz)
Radome PD-1200

Horizontal and Vertical Power Gains
Description of Tower—Make & Model
Beam Tilt and Null Fill, if required
Thermostat & Control Box PD-1202

Prices and Specifications Subject to Change Without Notice.

B-259

CELWAVE RF, INC.

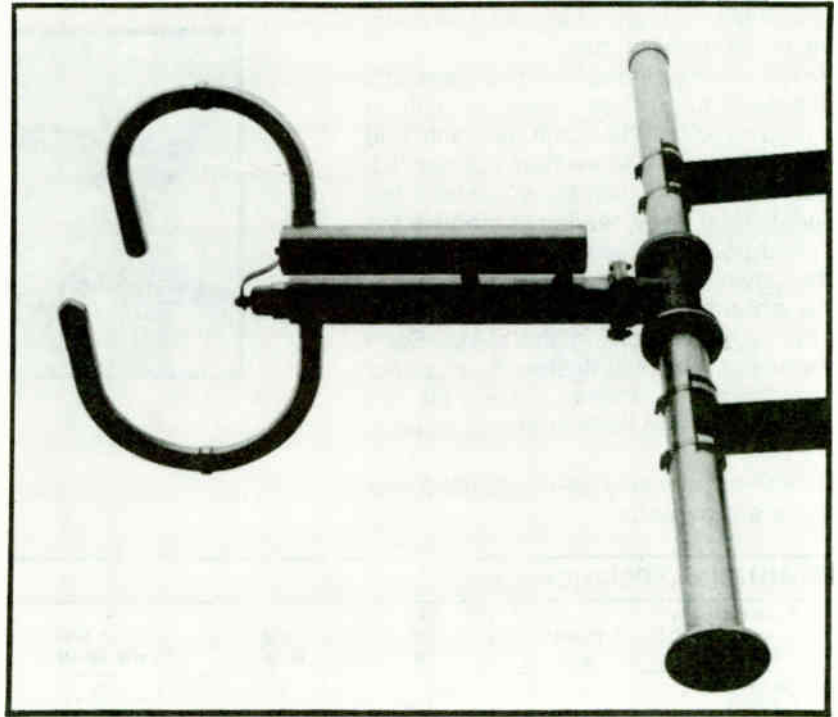
Rt. 79
Marlboro, NJ 07746
(201) 462-1880 TWX 710-722-3861

SUPER POWER CIRCULARLY POLARIZED FM BROADCAST ANTENNAS

The new series of Super Power Circularly Polarized FM Broadcast Antennas are very high power antennas which use a minimum number of bays. A massive 3 1/8 inch (79.4mm) two tube balun provides wider match bandwidth than loop coupled designs. The new element has a much lower Q than previous designs. These new antennas have a VSWR of 1.1:1 for approximately 500 KHz, 2 1/2 times the bandwidth of standard circularly polarized low power and high power antennas. Two bay and four bay arrays are also available. All elements are fed inphase to produce maximum gain on the horizon with the two element array end fed and the four element array center fed.

All antennas are precisely cut and matched at the factory. A fine tuner is supplied for final matching of the antenna after installation. The input impedance of each element is carefully adjusted for optimum results in the final array configuration.

If required, stainless steel internal deicer heaters are available. Due to the much wider bandwidth produced by the new Super Power Circularly Polarized Antennas the impedance change due to icing is minimized, therefore deicers are not required under light icing conditions.



- SPC-1** Super Power Circularly Polarized Baluned Element with 3 1/8" (79.4 mm) Fine Matcher
- SPC-2** Super Power Circularly Polarized End Fed 2 Element Array with 6 1/8" (155.6 mm) Fine Matcher
- SPC-4** Super Power Circularly Polarized Center Fed 4 Element Array with 6 1/8" (155.6 mm) Fine Matcher

Type No. And Bays	Power Gain	Gain In dB	Field Gain	FS @ 1 mile (1.6 km) 1 kw, mv/m	Net Wt. Lbs. (Kg)	Power Rating kw	Wind Load Lbs. (Kg)
SPC-1	.475	-3.21	.69	95	150 (68)	20	100 (45.5)
SPC-2	1.00	0.0	1.00	138	400 (181)	40	570 (259)
SPC-4	2.15	3.3	1.47	203	700 (317)	40	900 (409)

* at 50/33 PSF (244 166 kg-m²)

Length of antenna in feet is 984 divided by frequency in MHz times (number of bays less 1) plus 9.

Power gains are for 50/50 horizontally and vertically polarized ratios.

Antenna polarization is circular in all directions of azimuth.

Prices include complete mounting hardware for leg or face mounting on uniform towers 24" (609.6 mm) face or less. Brackets for other than uniform towers are extra and will be quoted upon request.

Antenna weights include standard mounting hardware. Add 15 lbs. (6.8 kg) per bay for deicers. Deicers require 230 volts single phase balanced to ground with 1000 watts consumption per bay.

When ordering, specify:

- Antenna Type No.
- Frequency (88.1 to 107.9 MHz)
- Description of tower, make and model
- Beam tilt and null fill, if required

CELWAVE RF, INC.

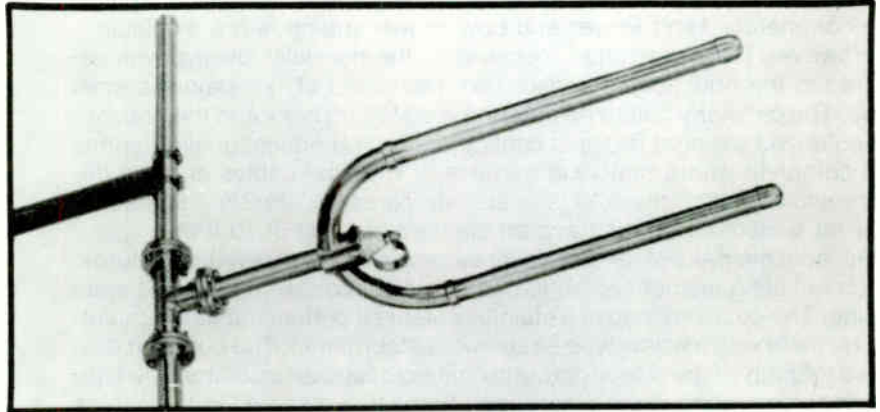
Rt. 79
Marlboro, NJ 07746
(201) 462-1880 TWX 710-722-3861

HORIZONTALLY POLARIZED FM BROADCAST ANTENNAS

Standard horizontally polarized FM antennas are fabricated of 1 5/8" O.D. copper tube formed into a U shape. This element produces a horizontally polarized signal that is equal in all azimuth directions and has a vertical pattern similar to a vertically polarized dipole.

As with the circularly polarized High Power and Low Power antennas, single element antennas are available. Multi-element arrays are available with all elements fed inphase to produce maximum gain on the horizon with 2 through 8 elements end fed and 10 through 16 elements center fed. If beam tilt and/or null fill is required, the multi-element array will be center fed with appropriate power divider and phaser supplied.

Deicers are also available with the horizontal High Power and Low Power antennas.



FM ANTENNA SPECIFICATIONS							
Type No. And Bays	Power Gain	Gain In db	Field Gain	FS @ 1 Mile 1 KW, MV/M	Net Weight Lbs. (Kgs.)	Power Rating KW	Wind Load* 50/33 PSF
HFM LP-1	1.0	0	1.0	138	118 (53.6)	5	97
HFM HP-1	1.0	0	1.0	138	178 (80.7)	5	160
HFM LP-2	1.85	2.7	1.36	187	145 (65.8)	10	170
HFM HP-2	1.9	2.8	1.38	190	223 (101.2)	10	280
HFM LP-3	2.9	4.6	1.70	234	172 (78.2)	10	250
HFM HP-3	3.0	4.8	1.73	238	268 (121.8)	15	400
HFM LP-4	4.0	6.0	2.00	276	198 (89.8)	10	325
HFM HP-4	4.1	6.1	2.02	279	313 (142.0)	20	525
HFM LP-5	5.0	7.0	2.23	307	225 (102.1)	10	400
HFM HP-5	5.2	7.1	2.28	314	358 (162.4)	25	650
HFM LP-6	6.0	7.8	2.44	336	251 (114.0)	10	480
HFM HP-6	6.3	8.0	2.51	346	404 (183.6)	30	780
HFM LP-7	7.0	8.5	2.64	364	278 (126.0)	10	560
HFM HP-7	7.3	8.6	2.70	372	449 (203.7)	35	910
HFM LP-8	8.1	9.1	2.84	391	305 (138.4)	10	640
HFM HP-8	8.4	9.2	2.90	400	494 (224.1)	40	1030
HFM LP-10	10.2	10.1	3.19	440	365 (165.6)	10	820
HFM HP-10	10.5	10.2	3.24	447	600 (272.2)	40	1320
HFM LP-12	12.2	10.9	3.49	481	418 (189.6)	10	975
HFM HP-12	12.5	11.0	3.53	487	690 (313.0)	40	1560
HFM LP-14	14.3	11.5	3.78	521	471 (214.0)	10	1130
HFM HP-14	14.6	11.6	3.82	527	781 (354.3)	40	1800
HFM LP-16	16.3	12.1	4.03	556	532 (241.3)	10	1290
HFM HP-16	16.7	12.2	4.09	564	872 (395.5)	40	2060

HFM LP = Horizontally Polarized Low Power Shunt Fed with 1 5/8" Feed Line—Complete with 1 5/8" Fine Matcher
HFM HP = Horizontally Polarized High Power Shunt Fed with 3 1/8" Feed Line—Complete with 3 1/8" Fine Matcher

*244/166 Kg-m²

Length of Antenna in feet is 984 divided by frequency in MHz X (No. of bays - 1) plus 6 1/2.

Prices include complete mounting hardware for leg or face mounting on uniform towers 24" face dimension or less. Brackets for other than uniform towers are extra and will be quoted upon request.

High power antennas—input flange is 3 1/8" EIA Female. Low power antennas—input flange is 1 5/8" EIA Female.

Antenna weights include standard mounting hardware. Add 10 lbs. per bay for deicers. Deicers require 230 volts single phase balanced to ground with 500 watts consumption per bay.

When ordering specify:

Antenna Type No.

Deicers, PD-1201

Frequency, 88.1 to 107.9 MHz

Description of tower—Make & Model

Beam Tilt and Null Fill, if required

Thermostat & Control Box PD-1202

Prices and Specifications Subject to Change Without Notice.

B-261

CELWAVE RF, INC.

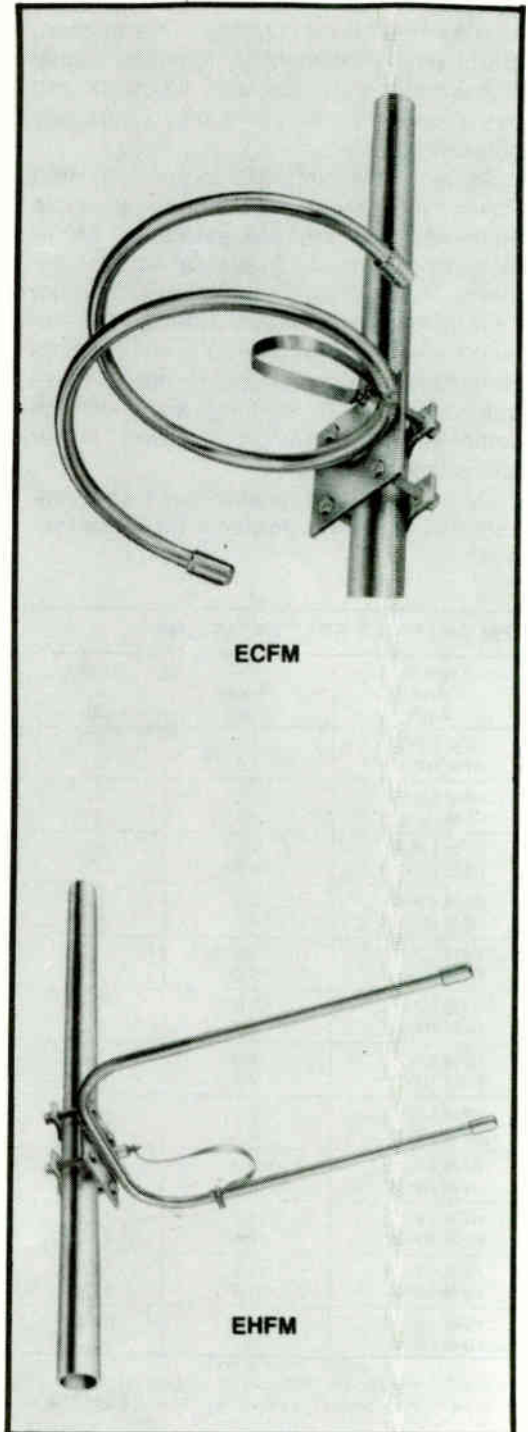
Rt. 79
Marlboro, NJ 07746
(201) 462-1880 TWX 710-722-3861

FM EDUCATIONAL ANTENNAS

Educational FM antennas using the same general design concepts as the commercial High Power and Low Power antennas are available.

However, these antennas, because of the normally lower power required in the educational service, are fabricated of 7/8" stainless steel tube. The circularly polarized antenna is a 1 1/2 turn helix and the horizontal polarized element has a U configuration. The educational antennas are complete with a matching harness of RG type cables and are designed to mount on tower legs or support pipes 1 1/4" to 2 3/4" diameters. The multi-element arrays have an element spacing of 10 feet.

All educational FM antennas are completely grounded structures. Each radiating element is fabricated of a single piece of stainless steel tubing. The coupling loop is a stainless steel strip attached to the radiating element with a worm-type all stainless steel clamp. The coupling loop is fed through a type N feed-through connector and an insulator. The type N connectors used in the binary feed harness are sealed to the cables with heat shrink tubing. Where icing may be a problem radomes are available for circularly polarized but not horizontally polarized antennas.



ECFM

EHFM

CIRCULARLY POLARIZED FM EDUCATIONAL ANTENNA SPECIFICATIONS

Type No. And Bays	Power Gain	Gain In db	Field Gain	FS @ 1 Mile 1 KW, MV/M	Net Weight Lbs. (Kg.)	Power Rating KW	Wind Load* 50/33 PSF
ECFM-1	.43	-3.66	.65	90	9 (4.1)	.2	19
ECFM-2	.90	-.46	.95	131	21 (9.6)	.4	40
ECFM-3	1.42	1.52	1.19	165	32 (14.5)	.5	62
ECFM-4	1.95	2.9	1.39	192	43 (19.5)	.5	84
ECFM-5	2.42	3.84	1.56	215	54 (24.5)	.5	107
ECFM-6	2.99	4.76	1.73	239	65 (29.5)	.5	130

*244/166 Kg-m² When ordering specify Radome PD-1203

HORIZONTALLY POLARIZED FM EDUCATIONAL ANTENNA SPECIFICATIONS

Type No. And Bays	Power Gain	Gain In db	Field Gain	FS @ 1 Mile 1 KW, MV/M	Net Weight Lbs. (Kgs)	Power Rating KW	Wind Load* 50/33 PSF
EHFM-1	1.0	0	1.0	138	9 (4.1)	.2	19
EHFM-2	1.8	2.55	1.34	184	21 (9.6)	.4	40
EHFM-3	2.8	4.47	1.67	230	32 (14.5)	.5	62
EHFM-4	3.7	5.7	1.92	264	43 (19.5)	.5	84
EHFM-5	4.6	6.6	2.1	289	54 (24.5)	.5	107
EHFM-6	5.5	7.4	2.3	317	65 (29.5)	.5	130

*244/166 Kg-m²

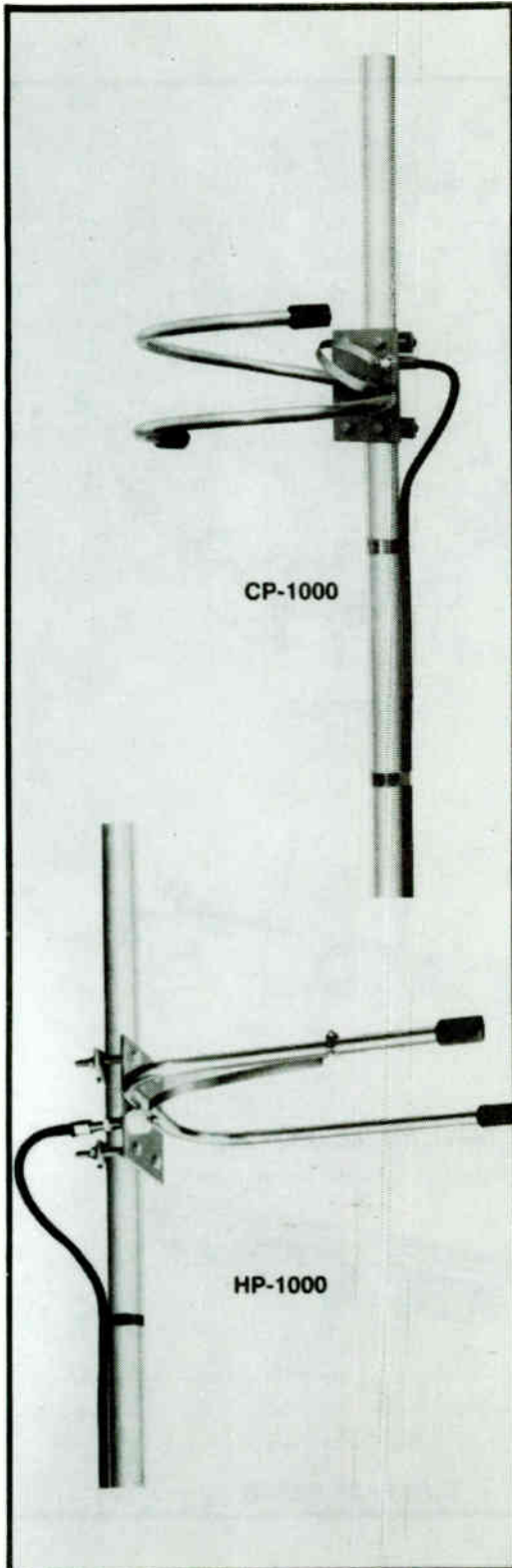
Educational FM Antennas are designed to mount on tower legs or support pipes having diameters up to 2 3/4". The spacing between bays is 10 ft.

Education FM Antennas are fed with RG-8 and RG-11 cables and all have a type N Male Input Connector.

CELWAVE RF, INC.

Rt. 79
Marlboro, NJ 07746
(201) 462-1880 TWX 710-722-3861

1000 WATT PER BAY FM BROADCAST ANTENNAS



Celwave CP-1000 or HP-1000 broadcast antennas are rated 1000 watts per bay and are parallel fed so that a two bay antenna is two KW, a three bay antenna is three KW, etc. The radiating elements are fabricated of 1" O.D. x .065" wall stainless steel tubing. Elements are fed with 1/2" — 50 ohm corrugated copper transmission line. The lines are fed from a single 7/8" — 50 ohm EIA flanged power divider and matching transformer.

Each individual CP-1000 and HP-1000 radiating element is matched to 50 ohm input impedance. In the multi-element antenna, the lower element antenna is fed through a transmission line which is electrically 1/2 wavelength long. Each succeeding element is fed through transmission lines 1 electrical wavelength longer. Since the velocity of propagation in the 1/2" 50 ohm transmission line is .81 wavelengths. Mounting hardware is supplied with each element to mount it on tower legs or support pipes 1-1/4" to 2-3/8" diameter. Radomes are available for circularly, but no horizontally, polarized antennas.

CIRCULARLY POLARIZED ANTENNA SPECIFICATIONS

Type No. & Bays	Power Gain	Gain In dB	Field Gain	FS @ 1 Mile 1 KW, MV/M	Net Wt. lbs. (Kg.)	Power Rating KW	Windload* 50/33 PSF
CP-1000-1	.44	-3.6	.66	91	12 (5.4)	1	22
CP-1000-2	.92	- .36	.96	132	25 (11.3)	2	46
CP-1000-3	1.45	1.61	1.20	165	38 (17.2)	3	71
CP-1000-4	2.0	3.0	1.41	194	51 (23.2)	4	96

*244/166 Kg-m²

When ordering specify Radome PO-1203

HORIZONTALLY POLARIZED ANTENNA SPECIFICATIONS

Type No. & Bays	Power Gain	Gain In dB	Field Gain	FS @ 1 Mile 1 KW, MV/M	Net Wt. lbs. (Kg.)	Power Rating KW	Windload* 50/33 PSF
HP-1000-1	1	0	1.0	138	12 (5.4)	1	22
HP-1000-2	1.8	2.55	1.34	184	25 (11.3)	2	46
HP-1000-3	2.8	4.47	1.67	230	38 (17.2)	3	71
HP-1000-4	3.8	5.8	1.95	269	51 (23.2)	4	96

*244/166 Kg-m²

CELWAVE RF, INC.

Rt. 79
Marlboro, NJ 07746
(201) 462-1880 TWX 710-722-3861

FM BROADCAST DIRECTIONAL COUPLERS, LOW PASS FILTERS AND RADOMES

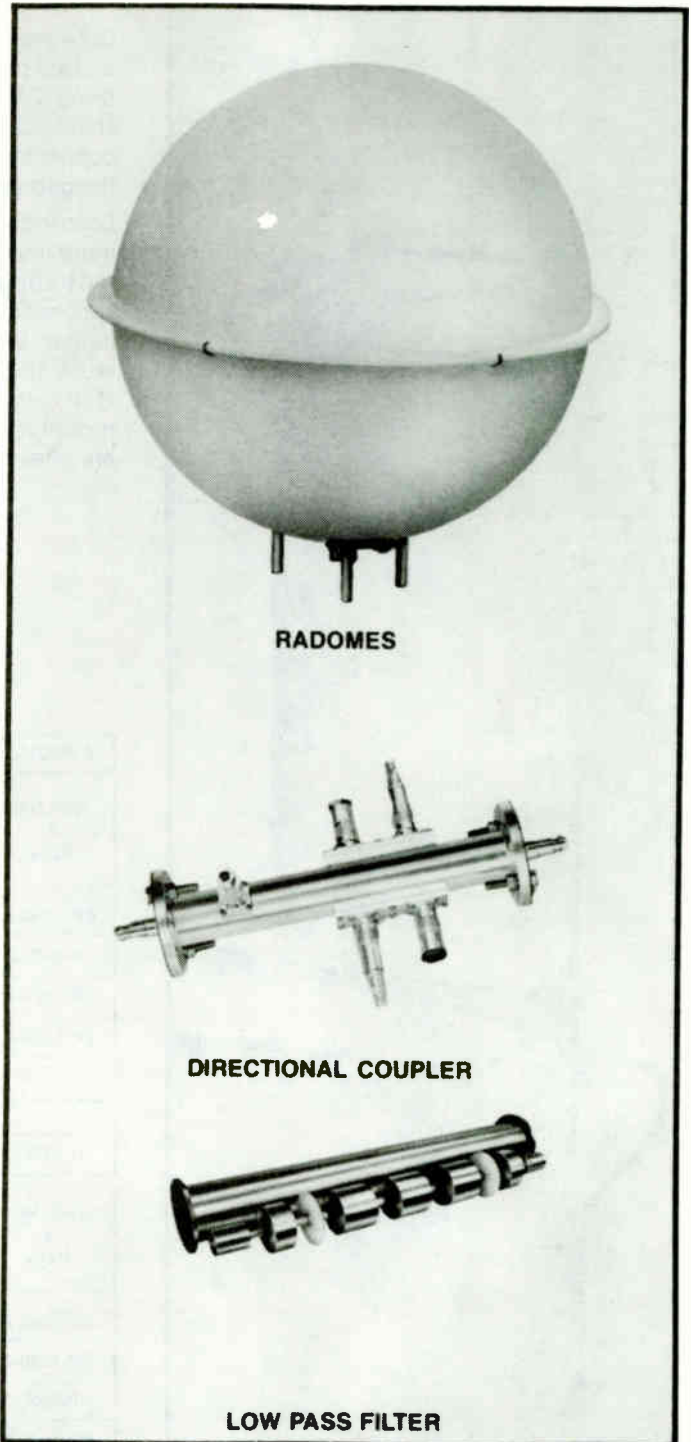
In areas where icing is encountered, Radomes are available for all CPM antennas. The Radome covered elements in the HP and LP antennas are of a higher Q design than the heated or unheated elements and therefore are not capable of handling the same input power as these units. In heavy icing areas heated elements are recommended. In light icing areas the Radomed units will perform satisfactorily at input powers not exceeding 2,500 watts per bay. The increased wind load introduced by the Radomes is approximately 75 lbs. per bay at 50/33 PSF (244/166 Kg-m²).

CP-1000 and ECFM antennas are also available with Radomes. The power rating of these antennas remain unchanged. No heaters are available for these antennas and in icing areas the Radomes are recommended. The wind load increase per bay for the Radomes for the CP-1000 and ECFM antennas is approximately 110 lbs. at 55/33 PSF (244/166 Kg-m²).

Celwave Directional Couplers produce d.c. voltages proportional to the power flowing in the transmission line. The forward port provides a voltage proportional to the power flowing toward the antenna or load, the reverse port a voltage proportional to the power reflected by the antenna or load.

The Directional Coupler outer conductors are fabricated of extra heavy wall brass tubing and are supplied with affixed inner conductor connectors to preserve good mechanical integrity and to assure excellent electrical properties.

To reduce the harmonic content of an RF signal, low pass filters may be used. The filters can be fabricated in any line size and for any practical line impedance. The unit illustrated has a copper outer conductor with standard EIA flange terminations. The inner conductors are fabricated of copper and brass to provide minimum attenuation up to their cut-off frequency.



FM BROADCAST DIRECTIONAL COUPLERS				
PD No.	Power (KW)	Connectors	VSWR	Directivity
44-158-50	3, 5 and 10	1 ⁵ / ₈ -50 EIA	1.04 Max	30 db
44-318-50	20 and 25	3 ¹ / ₈ -50 EIA	1.04 Max	30 db

Shims are provided with each directional coupler to position the coupler loops so as to produce 1 volt D C into a 5000 ohm load at the specified power level i.e. 3, 5 or 10 KW for Cat. No. 44-158-50 and 20 or 25 KW for Cat. No. 44-318-50. In addition to the D C outputs of the directional loops an RF monitor non-directional port is provided which can couple as much as 2 watts into a 50 ohm load.

FM BROADCAST LOW PASS FILTERS					
PD No.	Power (KW)	Connectors	Pass Band Loss (db)	Harmonic Rejection (db)	Length Inches
42-78-50	1	1 ⁵ / ₈ -50 EIA	.2	40	65
42-158-50	5	1 ⁵ / ₈ -50 EIA	.2	40	70 ¹ / ₄
43-158-50	10	1 ⁵ / ₈ -50 EIA	.2	40	79 ¹ / ₈
42-318-50	20	3 ¹ / ₈ -50 EIA	.2	40	86 ² / ₂

Other frequency ranges and rejection levels available on special order



CHROMAFEX 766

Special Effects, Full Frame Store & Infinite Window Time Base Correction

The Chromafex 766 offers high performance, plus the economy and space savings made possible by combining three functions into one package. It is designed to enhance your on-air performance and simplify and speed your day-to-day production work. The Chromafex 766 is a powerful production tool, but it is straight-forward and easy to operate. The Chromafex 766 was designed for a variety of applications. Industrial, educational and post-production users as well as television stations, will find the Chromafex 766 a cost-effective tool.

Digital Special Effects

The Chromafex 766 offers special effects performed by more expensive image processors. Compress a picture to one-half or one-fourth of its original size. Position the compression anywhere on the screen. Store the compression in the Position memory to be recalled at any time. Use the compression for a tri- or quad-split screen. Invert or slide full size or compressed pictures. Freeze a frame or field in memory for recall. Strobe for animation or "Keystone Kops" effects. Built-in visual effects allow the following:

- Posterization for interesting video effects
- Mosaic tilting for digital dissolves
- False color imaging for color substitution of your choice

The Chromafex 766 offers a built-in background color generator as well as an external traveling key generator. Effects may be done alone or in any combination. Your creativity is unrestricted.

Frame Store/Time Base Corrector

The Chromafex 766 is a frame synchronizer and time base corrector that provides total error correction. The Chromafex 766 utilizes advanced memory technology which allows a frame, a field, or even a single line to be automatically frozen

in the event of an off-tape interruption. Built-in drop out compensation will clean up the noisiest of tapes. The system uses 7-6-6 bit processing for high picture resolution. There is full proc-amp control of luma, chroma, set-up, chroma phase and Y/C delay. Single-wire fed TBC eliminates the need for subcarrier and advanced sync connections to the VTR. And the onboard RS-170A sync pulse generator can be Gen-locked, or standalone. Full frame, infinite window correction will handle any velocity error as well as frame synchronization of remote feeds into studio switching systems. ENG, microwave, satellite, and network feeds can all be accommodated.

System Interface

Due to its advanced design, the Chromafex 766 will plug into most video systems. A contact-closure interface allows any effect to be preselected and then triggered via most editing controllers.

SPECIFICATIONS

Signal-to-Noise: 48dB

Memory: 2 Field

Chroma Bandwidth: B-Y .5 MHz, R-Y 1.5 MHz

Quantizing: Luma 7-bit, R-Y 6-bit, B-Y 6-bit

Residual Jitter: ± 10 ns

Differential Phase: 3°

Differential Gain: 3%

K Factor: 3%

Power: 85W

MECHANICAL

Signal Processing Unit, Rack Mountable: $15\frac{1}{2}$ "D x 19"W (Standard Rack) x $5\frac{1}{4}$ "H

Control Unit (Tabletop): $10\frac{1}{2}$ "D x 18"W x $4\frac{1}{4}$ "H

\$14,750.00

CETEC BROADCAST GROUP

NOW:

SCHAFFER WORLD COMMUNICATIONS CORP.

Corporate Office

P.O. Box 31

Marion, VA 24354

(703) 783-2001 Telex 658-461

AUDIO CONSOLES

Cetec 2000 Series Audio Consoles

Cetec Broadcast Group developed the 2000 Series as a family of audio consoles that will give the broadcaster solid performance throughout a seven-day broadcast week, but keep well within the studio equipment budget.

Four basic configurations make up the series: the 5-mixer (10 inputs), stereophonic or monophonic; and the 8-mixer (16 inputs), stereo or mono. All four represent significant improvements in performance specifications and built-in features.

Series 2000 consoles are ready to go to work upon delivery. Plug in power and inputs, connect the loudspeakers, and cue the announcer!

Monitor amplifiers and muting relays are built in. All mixers are modular and easy to service, with convenient accessibility.

Five unwired utility buttons are included on each console, and can be wired to provide up to four additional inputs.

Precision step attenuators are included on 8-mixer models; 5-mixer consoles may be equipped with either sealed rotary attenuators or rotary step attenuators.

All 2000 Series consoles are 7 $\frac{3}{8}$ " high and 11" deep, front to back. 5-mixer units are 16 $\frac{1}{4}$ " wide; 8-mixers are 25 $\frac{1}{4}$ " wide.

Each mixer is fed by a pair of pushbutton selector switches, with inputs from barrier terminal strips on the rear of the console. Mixer output to either a program bus or an audition bus is controlled by a silent lever switch, and an LED indicator lamp on each mixer output shows program bus selection.

Microphone inputs (one mixer standard on 5-mixer, two on 8-mixer consoles) are 150 ohm, transformer-balanced, while line level inputs (remainder of input mixers) are 10K ohm balanced, in a bridging transformer configuration. Resistors can be easily added to make the line inputs 600 ohms. Identical integrated circuit amplifiers serve the program and audition channels. Program outputs are transformer-balanced, 600 ohm; audition output is unbalanced, 600 ohm. All outputs have electronic short-circuit protection.

All consoles are equipped with two VU Meters. The mono versions meter both program and audition outputs simultaneously. On the stereo versions, a pushbutton switch selects either program or audition metering for both left and right channels.

All inputs and outputs are connected to back-mounted barrier strips, so that installation is very easy and in-and-out harnessing cable is eliminated.

The 2000 Series consoles include integral headphone amplifier(s), cue amplifier (with speaker on 8-mixer consoles) and monitor amplifier(s). Two muting relays, controllable from any mixer channel, are also standard equipment. The 8-channel consoles also include a talkback system incorporated into the cue system. The PS2000 power supply is mounted external to the 2000 console, with a 20-foot cable provided. The "console end" of the cable is fitted with a simple plug connector.

The Cetec 2000 Series

2000 5-mixer, mono console, sealed rotary attenuators

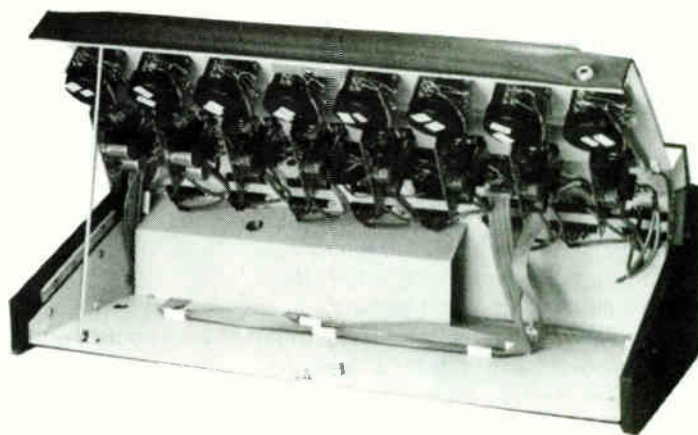
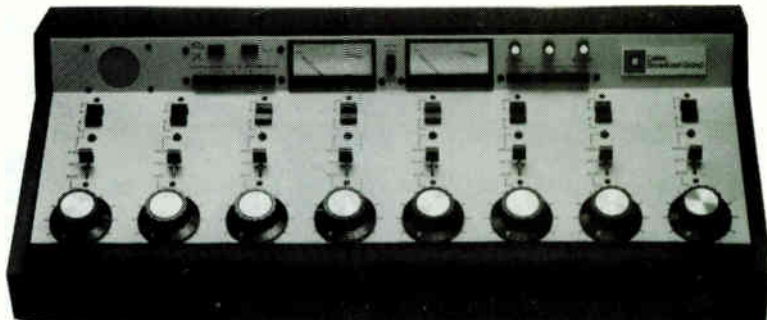
2001 5-mixer, mono console, rotary step attenuators

2002 5-mixer, stereo, sealed rotary attenuators

2003 5-mixer, stereo, rotary step attenuators

2004 8-mixer, mono console, rotary step attenuators

2007 8-mixer, stereo console, rotary step attenuators

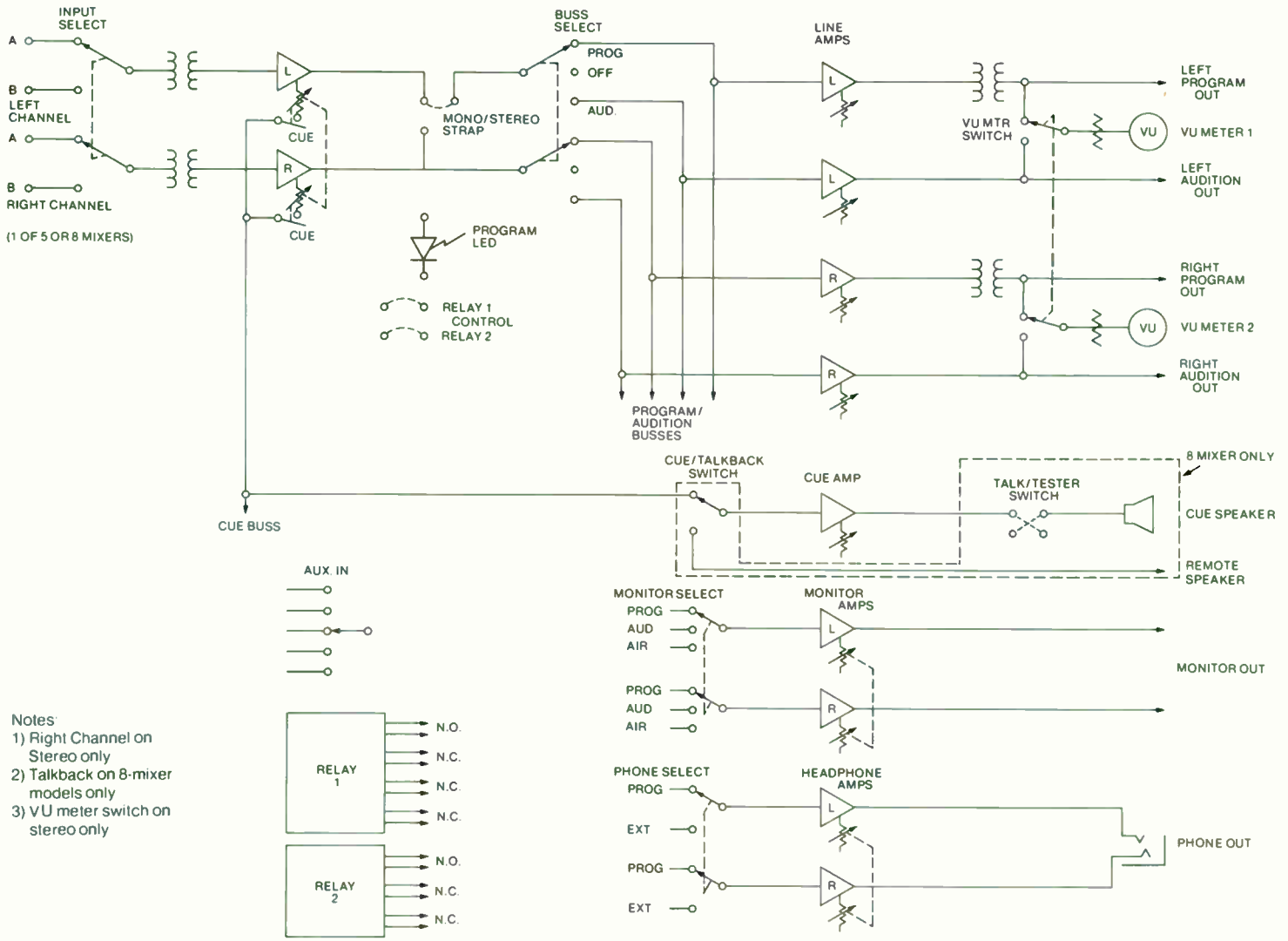


2000 SERIES
ELECTRONICS ARE MODULAR, EASILY ACCESSIBLE

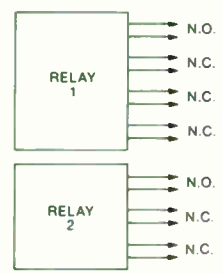
CETEC BROADCAST GROUP

NOW:
SCHAFFER WORLD COMMUNICATIONS CORP.
 Corporate Office
 P.O. Box 31
 Marion, VA 24354
 (703) 783-2001 Telex 658-461
CETEC 2000 SERIES CONSOLE SCHEMATIC

AUDIO CONSOLES



- Notes:
- 1) Right Channel on Stereo only
 - 2) Talkback on 8-mixer models only
 - 3) VU meter switch on stereo only



2000 Series Specifications

Number of Inputs: 5 channel: 10 (2 standard microphone) 8 channel: 16 (4 standard microphone). Both models include five-position auxiliary switch for additional input

Input Impedances: Microphone: 150 ohms transformer balanced. Line: 10K ohms transformer balanced

Input Levels: Microphone: -55 dBV nominal, -35 dBV max. Line: 0 dBm nominal, +20 dBm max.

Frequency Response input to output: +/- 1.0 dB, 30 Hz to 20 kHz

Distortion: Less than 0.1% at 1 kHz. Less than 0.2% THD typical, 0.5% THD max., 50 Hz to 20 kHz at +8 dBm output level

Signal-to-Noise Ratio: Microphone: 70 dB below +8 dBm out with -55 dBV input level. Line: 80 dB below +8 dBm out with 0 dBm input level

Outputs: Program: One for mono, two for stereo, transformer balanced, 600 ohm. Audition: One for mono, two for stereo, unbalanced, 600 ohms

Output Levels: +8 dBm nominal, +20 dBm max.

Crosstalk: Between program and audition busses: Better than 65 dB at 1 kHz

Meters: Two VU meters. Mono console meters program and audition: stereo console meters stereo program or audition (switchable)

Monitor Amplifier: 2.5 watts mono, 2.5 watts per channel stereo, into 8 ohm or higher load(s)

Headphone Amp: 1 watt mono, 1 watt per channel stereo, into 8 ohm or high load(s) through front panel jack

Cue Amplifier: 1 watt into 8 ohm load on 5 channel console, 1 watt into internal speaker on 8 channel con.

Muting: Two relays, each with two normally closed contacts, one normally open contact. One additional normally closed contact

Dimensions: Five Channel: 16-1/4"W x 11"D x 7-3/8"H
 Eight Channel: 25-1/4"W x 11"D x 7-3/8"H

Weight: Five Channel: 26 lbs. (11.8 kg)
 Eight Channel: 27 lbs. (16.8 kg)

Power Requirements: 105-127 VAC, 50/60 Hz (210-254 VAC optional). External PS2000 Power Supply included, with LED indicators

Prices and Specifications Subject to Change Without Notice.

CETEC BROADCAST GROUP

NOW:
SCHAFFER WORLD COMMUNICATIONS CORP.

Corporate Office
P.O. Box 31
Marion, VA 24354
(703) 783-2001 Telex 658-461

STUDIO CONSOLES



8000 SERIES CONSOLES

Radio Broadcast Consoles

- **Deluxe, high-performance studio consoles**
- **8 channels standard; expandable to 16**
- **All modular and solid-state; almost no hard wiring**
- **State-of-the-art integrated circuits throughout**
- **Clean, clear sound — only .008% THD**

The 8000 Series operates in full-range stereo, and offers many new all-inclusive features for the professional broadcaster in competitive price range.

The 8000 has 8 standard broadcast channels and 24 inputs standard. Plug-in mixer modules can expand the unit to 16 channels and 48 inputs. Patch points in pre-amp and line amp are easily accessible at screw-in barrier strips.

All maintenance is made simple by the use of plug-in circuit boards and ribbon cable throughout.

Series 8000 has five meters and two peak LED overload indicators. Five enunciators are built in to advise the announcer: Transmitter, Alarm, Mic, EBS, and Phone. (No need for a makeshift, tack-on d.j. message panel.)

Penny and Giles audio faders are standard on the Cetec 8000. There are four output busses — three stereo and one mono.

Total harmonic distortion (THD) is .008% at 1 KHz + 27 dBm output. (+ 28 dBm maximum output standard.) This excellent specification, achieved through the selection of high-quality integrated circuits and transformers, contributes to the 8000's fine audio quality.

The 8000's equalizer module, an option, is much improved in design and performance over predecessor models.

A front panel-mounted intercom option is standard; so is a liquid crystal clock/timer; so is the internal headphone amplifier; so is the 4-watt cue amplifier. The clock/timer is individually programmable from each channel module. A ready/play display (giving cart machine status) is also standard on the 8000.

The 8000 Console is "all there" when it is delivered, complete and ready to go. It has been engineered for broadcast convenience and efficiency. All work surfaces are in scratch-resistant, non-reflective black overlay, with all graphics and markings protected from marring. There is

a factory label system to designate each module assignment.

Our 25-watt/channel monitor amp is pre-wired. You can just make the speaker connection and turn on the power. No soldering, no wire harness to trace.

This great new 8000 Series is from Cetec, the broadcast automation leader, and you can be assured that the 8000 is fully compatible with System 7000 — or any automation system. The console is designed to permit control via cart machine or remote audio sources.

Since the 8000 employs just one universal and interchangeable module, the station operator needs only two spare PC boards (line input and mixer module).

8000 SERIES SPECIFICATIONS

Mixers	8 standard, expandable to 16 maximum	Controls	8 control relays activated through module on/off switching. Sustained, momentary (module on). Momentary (module off). Normally open or closed contacts. 3 muting relays with two normally closed and one normally open contact, each. Any module can activate any relay with "A", "B" or "C" input or "A" only.
Inputs	24 standard (three per mixer), expandable to 48	Timer	4 digit illuminated liquid crystal display timer with "start", "stop", and "hold" controls. "Hold" is internally selectable to be "display hold" or "count hold". Control can be assigned to any module with module jumper.
Input Impedance	150 ohms balanced microphone, 10 K balanced high level input with reversible XFMR module	Power Size	117V 50/60 Hz (230V optional) Console: 40" W x 26 1/2" D x 10 1/4" H
Input Levels	Module-selectable on each module for -55 dBm or 0 dBm. May be extended to +20 with balanced pad. Head room: 26 dB. Patch point in preamp and line amp.	Remote Power Supply/Muting/Monitor Amplifier Size	5 25" H (133 35 mm) rack mount Rack mount is 19" (433 mm) American standard
Output Levels	Four lines with 8 dBm into 600 ohms to 0 V/U indication. 28 dBm maximum output. Monitor: 25 watts RMS. Cue: 4 watts to internal speaker. Intercom (talkback): 4 watts. Phones: 7.5 VRMS into 600 ohms. High impedance phones may be used.		
Output Lines	Program, Audition, Utility, Mono		
Response	All amplifiers +0 -1 dB 20-20,000 Hz at rated output, line position		
Distortion	All amplifiers less than .3% THD 20-20,000 Hz, at rated output. Typically less than .005% at 1,000 Hz		
Signal-to-Noise	70 dB below (minimum) 73 dB below (typical) +8 dBm output, referenced to -55 dBV input, 20-20,000 Hz unweighted. Equivalent input noise -125 dBV (775 V = 0 dBV) -82 dB with 0 dBm input level (line position)		



CETEC BROADCAST GROUP

NOW:

SCHAFFER WORLD COMMUNICATIONS CORP.

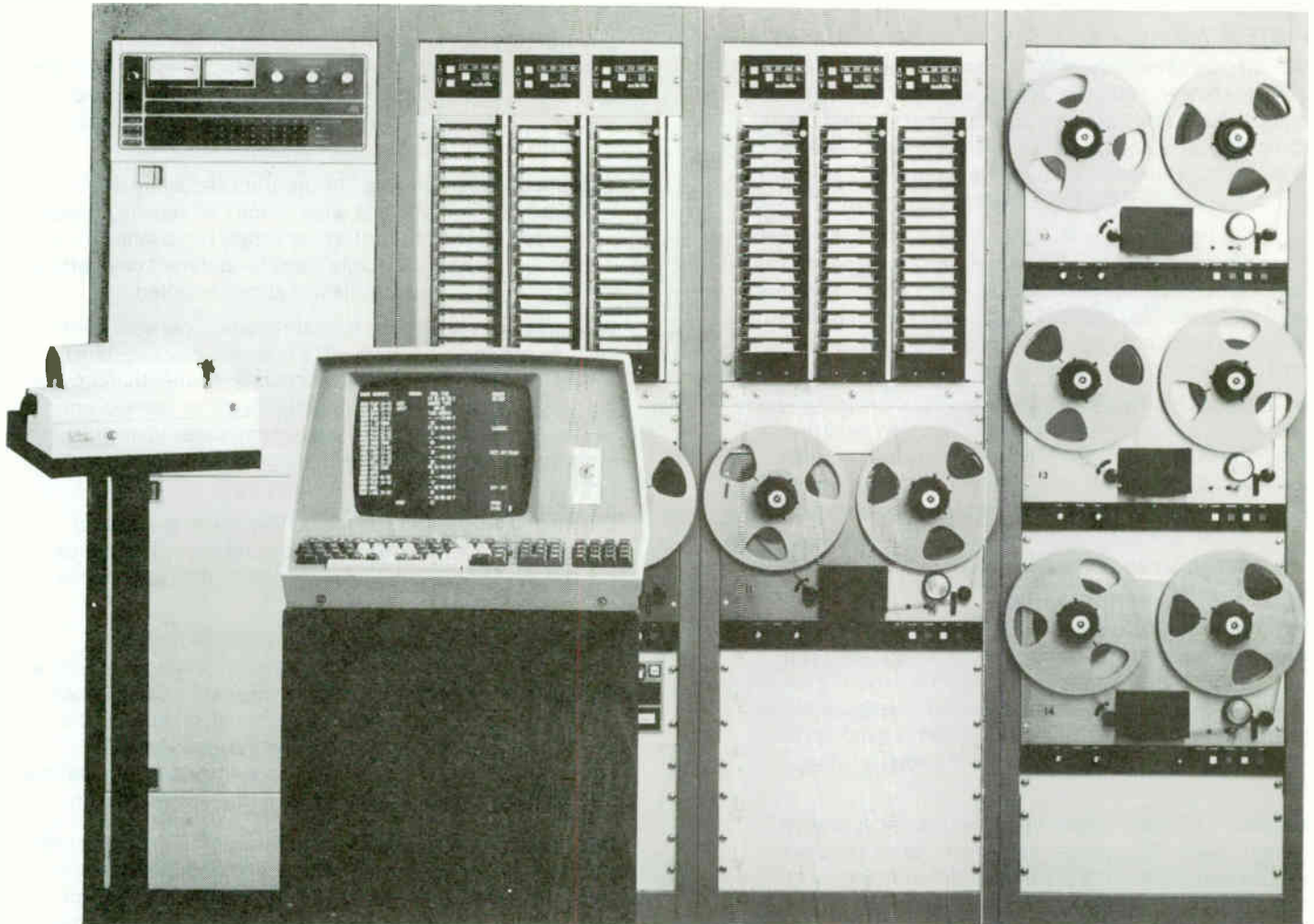
Corporate Office

P.O. Box 31

Marion, VA 24354

(703) 783-2001 Telex 658-461

AUTOMATION SYSTEM



CETEC SCHAFFER AUTOMATION SYSTEM 7000

Now there is a new standard for radio program automation and it is named the Cetec Schafer System 7000.

The role of automation in radio broadcast has changed several times since Schafer Electronics introduced the first system 25 years ago. For a time, some broadcasters used automation as a passive element — simply a way to economize, and to reduce on-the-air staff. History proved that to be a limited view of the possibilities.

A positive role in programming

More than ever, modern automation is a major factor in broadcast economics — but in clearly positive and productive ways.

And the most advanced system of all, Cetec Schafer's 7000, contributes to profitability in a dozen ways: absolutely consistent high-quality audio, maximum editing and programming flexibility, long-range plug-in expandability, true computer precision, error-free keyboard interlocking, real-time response, simple operation in clear English, and others.

Sophistication made simple

The 7000 is a highly sophisticated programming and management system — and the third-generation multiprocessor electronics are highly reliable and solid-state. The software is broadcast-dedicated and *built in* to the firmware in the system. You edit and program the 7000 in English, and it displays its compliance, or asks questions, or advises of errors — also in English.

That's a prime example of the "human engineering" designed into System 7000. It is a system that works for *broadcasters*. Nobody has to be an electronics engineer, or a computer programmer, or any kind of a specialist to program and edit the System 7000. Any member of the station staff can learn to operate the system in a matter of minutes.

Cetec Schafer 7000 "family photo". System 7000 is shown with real-time clock and Verified English Logging subsystems. In foreground at left is VEL impact printer. System video terminal in photo displays *program*, *edit*, *time*, and *system status* columns. At rear, from left, are main control cabinet (housing microcomputer, universal source cards, "debug" card, emergency power supply), two Schafer Audiofile II multi-cart systems, and reel-to-reel equipment. Video terminal and VEL printer can be moved to any convenient location.

CETEC BROADCAST GROUP

NOW:

SCHAFFER WORLD COMMUNICATIONS CORP.

Corporate Office

P.O. Box 31

Marion, VA 24354

(703) 783-2001 Telex 658-461

SYSTEM 7000 (Con't)

The Cetec Schaffer System 7000 comes complete with micro-computer power; 1000-event memory; capacity for 16 audio sources; dual stereo program buses; separate, dedicated video terminal — and the ability to expand and diversify almost without limit. It is state-of-the-automation-art today — it will still be state-of-the-art five years from now.

You can expand memory to 10,000 events, 1000 at a time. You can expand to 64 audio sources. You can expand to as many as four separate CRT channels, and an unlimited number of terminals. You can add a logging system. You can add a real-time clock subsystem for precise network feeds or other critical time requirements.

The universal hardware concept in the 7000 design provides the basis for expansion. When you're ready to grow, the system grows with you. Starting with the powerful Z80 micro-processor, the proprietary Schaffer microcomputer architecture is engineered to accommodate *tomorrow's* work, not just today's. You already have as much computer and control capability as you'll ever need, whatever the station task.

Super-clean audio: System 7000 has higher audio fidelity specs than any other available automation system. Consistent audio quality, whatever the audio source, is mandatory in any contemporary broadcast situation. The System 7000 universal source cards deliver the station "sound" to its listeners with fine fidelity — whether the source is live, reel-to-reel, cart, or multi-cart.

Dual stereo program buses: Voice-over-music is always balanced perfectly with the 7000, thanks to an *exclusive* dual bus feature. And it's automatic! When the voice comes up, the music is properly mixed to blend with the voice. The buses are easily accessible, so that audio processing equipment can be conveniently inserted in the loop.

Dedicated CRT terminal is the "conversation piece" of the system. It can be located in the control room — or anywhere else that is convenient. You can add video terminals for different functions — for example, program event-entries can be in process on one terminal, while the program director is editing tomorrow's schedule, or traffic is working on its next-day scheduling on an additional terminal.

Terminal keyboards are color-coded and interlocked — you can't mis-program by accident. When an incorrect or illogical entry is made, the system will advise the operator in plain English on the video display — and await new instructions.

In the editing mode, the system asks for step-by-step verification: Function? Source? Tray? Enter?

Operating the 7000: This system is human-engineered for operation by radio station people. Entries and system responses are displayed in broadcast English, and the system verifies entries step-by-step. The video keyboard won't let you get in the wrong mode. Example: If you are in "program edit," all the other keyboard modes are inoperative.

AUTOMATION SYSTEMS

It's true: any station employee can be taught to operate System 7000 in one hour or less.

Load/list system for inserting program blocks into the System 7000 memory (seven-day programming, for example) is available as an option. The program is entered into the memory, unloaded onto a digital cassette, then reloaded into the memory at the appropriate time.

Lookahead programming: The program sequence display looks ahead to 19 events at once — you can see the program pattern for several hours at a time simply by advancing the display. Subroutine capability, used for different day-parts or music rotation by category, is just about unlimited.

Real-time subsystem: For format-resetting, network feeds or joins, or any live programming, a real-time clock system is a must. System 7000 offers two options: A timer that provides simple time operations; and a real-time clock sub-system, keyboard programmable, that accommodates up to 100 time events and interfaces with a logging system such as Schaffer's VEL (Verified English Logging).

Eleven-at-a-time editing: In the editing mode, the display shows five events ahead and five behind — you can check the continuity, review previous entries, or double-check an entire subroutine.

Error detection and display: System 7000 detects and displays both operational errors (power or transmitter failure, closed loop, memory error, silent sense) and editing errors (adjacent trays, out of range). Operational failures are displayed both on the control panel and the video terminal. Editing irregularities are questioned on the video terminal display, while the system waits for the corrected instruction.

The "debug" card: A diagnostic printed circuit card gives the station engineer the ability to locate and display the source of system irregularities. System 7000 is a modular design, and problems of other than minor significance, should they occur, are most often solved by replacement of the appropriate plug-in board.

Remote control diagnosis: When there is a system problem that defies solution on the scene, Cetec Schaffer's 7000 engineers can address the microcomputer directly, via telephone-and-modem link, isolate the problem, diagnose the solution, and start corrective procedures — all in real-time!

Remote control options: Up to four active communications channels can talk to System 7000; and additional inactive video monitors can be installed wherever necessary in the station.

Using a telephone line and modem hookup, a station manager can address the system from his home. The remote control capability opens many other possibilities. The broadcaster can take a terminal with him to the live football remote broadcast; to the major store opening; to the political convention.

A simpler remote control option consists of a keyboard with which the operator can command "start," "stop," and "step" only.

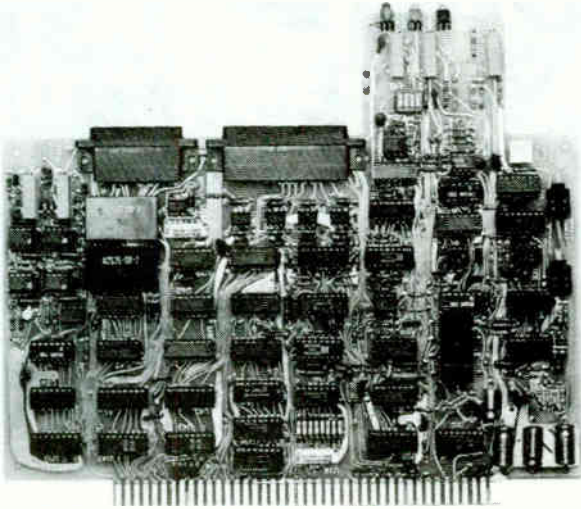
CETEC BROADCAST GROUP

**NOW:
SCHAFER WORLD COMMUNICATIONS CORP.**

Corporate Office
P.O. Box 31
Marion, VA 24354
(703) 783-2001 Telex 658-461

AUTOMATION SYSTEMS

SYSTEM 7000 (Con't)



Universal source cards direct "traffic" among the 16 audio sources available in the standard system (as noted earlier, the capability is expandable up to 64 sources at any time). Universal source cards are engineered in three source categories: reel-to-reel tape; tape cartridge, and multi-cart systems. They achieve exceptionally good signal-to-noise ratios. They also provide another Schaffer exclusive — System 7000 interfaces with *all* quality audio source equipment. LED displays on the control cabinet provide an instant reading on the source status: on air; next to play; or pre-roll.

The cabinet control panel includes twin vu-meters (left and right); an alarm reset button that draws operator attention to Schaffer's exclusive closed-loop and silence-sense controls; an audio mode monitor; volume control; and the source-status indicator display noted above.

Verified English Logging: Schaffer's Mark II VEL system is a valuable add-on to System 7000. Its own microprocessor allows VEL to log exact time, source, and description of every event that goes on-the-air — and to note any discrepancies in the program.

Using the System 7000 video terminal, English description of commercials and public service announcements is encoded with 3.5 kHz tones on the cue track of each cartridge. When the cartridge is played, the description is decoded and printed on the log. Where no specific description has been encoded, VEL will select the appropriate *fixed* English description from ten that are stored in its memory: station ID, network, voice track, weather, local studio, time announce, network fill music, station jingle, reel-to-reel music, or local news cart.

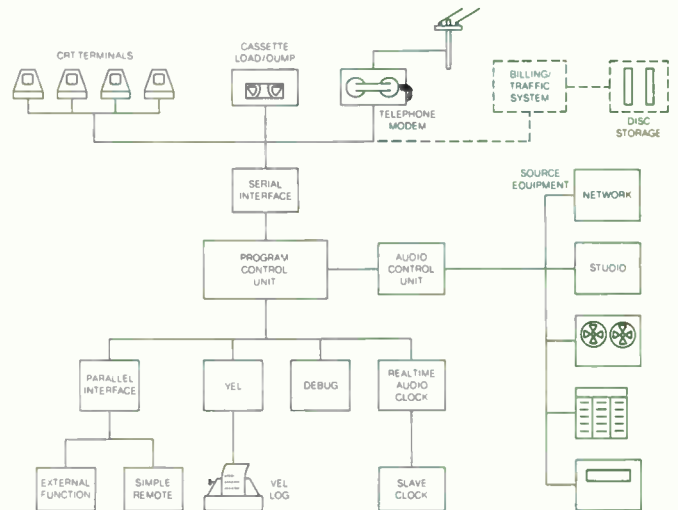
Discrepancy notations include silence-sense, closed loop, "step now," transmitter carrier "on," and transmitter carrier "off!"

VEL firmware interprets time, source, and event data, and drives a high-quality Xtel or other printer to produce the log.

Battery-power: A first-quality, computer-grade emergency power supply is standard equipment with the System 7000. It will supply power to the memory for several hours in event of power failure — and as much additional back-up power supply as seems necessary can be added externally to the system — 72 hours or even more.

Cetec Schaffer follow-through: For 25 years, Schaffer automation systems have been sold with a not-so-secret ingredient: after-sale service. That prompt and thorough back-up policy is stronger than ever. Schaffer response is still available on a 24-hour-a-day basis, and Schaffer is expanding its field service nationwide.

System 7000 design features themselves aid maintainability: master, memory, source and "debug" cards are all plug-in replaceable, and there is the remote "diagnosis" feature in which Schaffer customer service people "talk" to your system directly via telephone-and-modem link.



System 7000 Audio Characteristics

Frequency Response	± 1 db 50 to 15,000 Hz (including 25 Hz filtering)
Total Harmonic Distortion	Less than 0.5% at + 18 dbm (typically 0.1%)
Line Output	600 ohms balanced (stereo at + 8 dbm), adjustable - 20 to + 8 dbm out
Signal to Noise	- 60 db below + 8 dbm (not including audio source noise)
Filter Response	Greater than - 60 db at 25 Hz (rated at + 8 dbm)
Head Room	+ 10 db above rated output
Monitor Amp Output	Four Watts Stereo

CETEC BROADCAST GROUP

NOW:

SCHAFFER WORLD COMMUNICATIONS CORP.

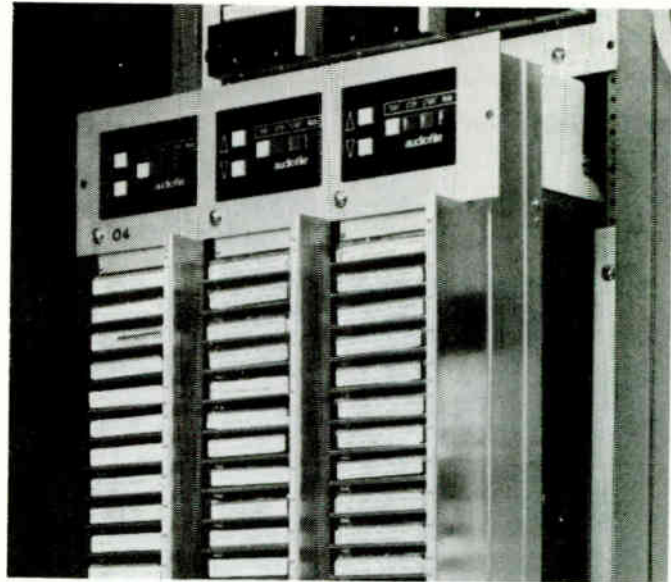
Corporate Office

P.O. Box 31

Marion, VA 24354

(703) 783-2001 Telex 658-461

MULTI-CART PROGRAM SYSTEM



- Versatile random-access cart selection
- Simultaneous audio from three cart stacks
- Microprocessor logic and semiconductor memory
- Human-engineered for easier maintainability

The microprocessor-based Cetec Audiofile IIA system is the most flexible multi-cart system for any automation system.

Multi-cart system performance must include excellent audio quality. Audiofile IIA meets or exceeds the latest NAB audio reproduction standards for the best single-play deck.

Each Audiofile IIA module has 16 cartridge trays (photo shows three-module, 48-tray configuration). Switch panel and motors are at the top of each module for accessibility and positive heat dissipation. Each Audiofile IIA unit rolls out forward for easy cleaning or head alignment, and any 16-tray module can be removed from the rack while the remaining two modules continue in operation.

Each module has independent output level and high/low frequency adjustment controls on the front panel. Every 16-cart module is interchangeable with any other in any position.

Because each module has its own output, audio from three carts can be programmed back-to-back-to-back — for example: voice track, commercial spot, commercial tag — all from the same audio source.

The Audiofile IIA design emphasizes reliability and ease of maintenance. Capstan shaft and bearing are removable from the capstan motor. Capstan motor turns the capstan only. Drive motors power tray and elevators, and run only during cart handling.

Solid state logic and other circuitry is on easily removable circuit boards.

In operation, Audiofile IIA removes the cart from its fixed tray and guides it onto the playing deck, where it is held by three alignment surfaces. The precision head mount (fully adjustable), three tape guides, and a dummy record head prevent wow, flutter, and tape skew.

Audiofile IIA can be adapted for sequential programming and self-testing with the addition of a single PROM (programmable read-only memory) to the logic board.

AUDIOFILE IIA SPECIFICATIONS

Electrical

Frequency

Response: NAB standard reproducer limits.

Equalization: NAB standard; adjustable high/low frequency.

Output: Referenced to 160nWb/m at 1kHz; Line and Cue, both 600 ohm plus 4dBm, transformer balanced; both levels adjustable.

Distortion:	Reproducer: Less than 0.5% at plus 18dBm, 50-16,000 Hz.
Noise:	Reproducer, unweighted: Mono, -50dB or more below program; stereo, -47dB or more below program.
Separation:	More than 45dB, 50-10,000 Hz.
Cue tones:	NAB standard; primary, 1kHz; secondary, 150 Hz; tertiary (optional), 8kHz.

Mechanical

Capacity:	48 NAB "AA" cartridge trays (16 in each vertical module).
Heads:	NAB standard, mono or stereo.
Motors:	Tape capstan: synchronous. Two platform drives: high torque, reversible.
Chassis slides:	Roll out forward for cleaning and alignment.
Tape speed:	7.5 IPS standard.
Wow and Flutter:	0.15% max, peak-weighted.
Cue Time:	8 seconds max, end of cart to next ready.
Controls:	<i>Cartridge Selection</i> locates platform and moves cart to play position; <i>Start</i> moves tape; <i>Stop</i> stops tape; <i>Auto/Manual</i> indicates automation control or front-panel control; <i>Level</i> adjusts audio and cue tone levels.
Start Time:	0.08 seconds max.
Stop Time:	0.08 seconds max.
Power Requirements:	117VAC \pm 10%, 60 Hz, 100 watts.
Size:	19" wide x 26.25" high x 21.5" deep (483 x 667 x 546 mm.) Standard RETMA/EIA rack width.
Weight:	130 pounds (59.5 kilos); shipping crate, 15 pounds (6.8 kilos).
Sequential Access:	Optional with addition of PROM (includes self-test feature).

DIVISION OF CETEC CORP.

P.O. Box 5348
 El Monte, CA 91734
 (818) 442-0782 TWX 910-587-3539

"Q" System Professional Wireless Intercom

Features

- Continuous "hands-free" communications
- Full-duplex operation, six-man (plus base), or . . .
- Push-to-talk/unlimited-number operation
- Easy Interface to wired Intercom systems
- Side-tone (verifies communications)
- VHF high band (reliable, low noise, minimal interference)
- Choice of accessories (headsets, holsters, etc.) for customizing your system
- Quick and easy installation and operation
- Unlimited system configurations
- Rugged, reliable, professional quality

Frequency Range 150-216 MHz

QT-1 Pocket-sized transmitter for simplex or duplex operation. Furnished with short flexible antenna, battery, Model 166 audio input plug, and push-to-talk switch. (Interconnect cables, headsets, mics and other accessories not included; see accessories for selection). **\$495.00**

QR-1 Pocket-sized receiver for simplex or duplex operation. Furnished with battery, Model 166 audio input plug, mode switch and volume control. (Interconnect cables, headsets and other accessories are not included, see accessories for selection). **\$537.00**

QX-1 Wireless intercom base station. Includes one Model QT-2 transmitter, one Model QR-2 receiver, Model 120 whip antenna, and wall-mount power supply. Does not include interface option for interfacing to wired intercom system. (See interface options for appropriate interface.) Allows one QT-1/QR-1 system to talk full-duplex into wired intercom system (four-wire, RTS, Clear-Com, David Clark, etc.). **\$1266.00**

QX-2 Wireless intercom base station. Includes one Model QT-2 transmitter, two Model QR-2 receivers, Model 120 whip antenna, and wall-mount power supply. Does not include interface option for interfacing to wired intercom system. (See interface options if an interface if an interface to a wired intercom is required). Allows up to six Model QT-1/QR-1 systems to talk party line (full duplex). One position can be strapped for priority if that position is used in PTT mode. A seventh party can operate locally if plugged into the base station. **\$2244.00**

QR-2 Add-on receiver for QX-2 base station. (Two QR-2 receivers are supplied with each QX-2 base station, and four more receivers may be added). **\$510.00**

Accessories

- 120** Right-angle whip antenna **\$18.00**
- 123** Dipple receiving antenna **\$84.00**
- 152** Leather holster with belt loop. Will hold either a QT-1 transmitter or QR-1 receiver. Cannot be used with units that have the Model 153 belt clip installed **\$24.00**
- 153A** Stainless-steel belt clip for QT-1 transmitter and QR-1 receiver **\$14.00**
- 160** Soft-rubber earphone with ear loop to hold in place. Complete with input connector to plug into QR-1 receiver. For "receive only" applications **\$60.00**
- 163** Dual-muff headset. Industrial, heavy-duty construction, with hearing protection. Complete with audio input plug and "noise canceling" boom mic **\$315.00**
- 164** Interconnect cable for connecting QT-1 transmitter and QR-1 receiver. Required with headsets **\$23.00**
- 166** Audio input plug for QT-1 transmitter and QR-1 receiver **\$10.00**
- 167** Miniature electret lavalier mic with 4 foot cable and connector to plug into Model QT-1 transmitter. For transmit-only applications **\$53.00**
- 168** Single-muff headset. Beyer DT-108 with special audio plug **\$177.00**
- HS-169** Ultralight headset with single ear cushion and noise-canceling boom mic **\$101.00**
- 172** Double leather holster **\$50.00**



QT-1 TRANSMITTER

QR-1 RECEIVER



QX-2 BASE STATION



MODEL 163
 DUAL-MUFF
 HEADSET



QX-1 BASE STATION

MODEL 168
 SINGLE-MUFF
 HEADSET

QX-1 Base Station Interface Options

- QF1-1 For interfacing to a 4-wire system **\$140.00**
- QF2-1 For interfacing to an RTS system **261.00**
- QF3-1 For interfacing to a Clear-Com System **273.00**

QX-2 Base Station Interface Options

- QF1-2 For interfacing to a 4-wire system **\$141.00**
- QF2-2 For interfacing to an RTS system **285.00**
- QF3-2 For interfacing to a Clear-Com system **285.00**



R-41/R-42



R-31

R-41 and R-42

Pro Plus Wireless-Microphone Receivers

- ULNR (ultralow-noise receiver) with highest signal-to-noise ratio and widest dynamic range. "Quiet as a wire".
- Switch-selectable DYNEX® II, a new standard in audio processing
- Highest adjacent-channel rejection, with 16 poles of IF filtering
- "Infinite gain" receiver technology for highest performance
- Lowest distortion and wide, flat frequency response
- True dual-receiver diversity (R-42) or single-channel (R-41) modules
- Independent headphone amplifier with front-panel level control (high quality, usable as an auxiliary output)
- Adjustable, four-range, balanced audio output with audio phasing switch
- Mu-Metal shielding for power transformer and other critical circuitry to eliminate hum and power-line noise
- High-performance, silver-plated, four-pole, true helical-resonator front-end filter
- Dual 115/230 VAC, 50-60 Hz operation (user-selectable) with internationally approved power-line hardware
- Attractive, modern, professional styling
- Large, internally illuminated audio and RF signal level meter with VU ballistics as well as VU scale
- Special high-speed squelch
- Front-panel overload and audio-processing-mode LED indicators
- Compatible with all current and previous Cetec Vega pro wireless-mic transmitters (with appropriate options)

R-41	Pro Plus receiver, same as Model 42 but w/o diversity	\$1763.00
R-42	Pro Plus diversity receiver w/DYNEX II	2775.00
R-42W	Same as R-42 except with two Model 123 right-angle whip antennas instead of the Model 123 dipole antennas	2643.00

R-31 PRO

Wireless-Microphone Receiver

- High signal-to-noise ratio and wide dynamic range
- Low distortion and wide, flat frequency response
- "Infinite gain" receiver technology for highest performance
- Switch-selectable audio processing for widest compatibility
- Independent headphone amplifier with front-panel level control (high quality, usable as an auxiliary output)
- Adjustable, dual-range, balanced audio output with audio phasing switch and high quality Mu-Metal shielded output transformer
- True helical-resonator front-end filter
- Dual 115/230 VAC, 50-60 Hz operation (user selectable) with internationally approved power-line hardware
- External power capability for vehicular and portable use, from a +12 to +24 VDC source
- Attractive, modern styling in a compact, 1-3/4" high cabinet
- Large internally illuminated audio and signal level meter with VU scale
- Compatibility with all current and previous Cetec Vega professional wireless-microphone transmitters (with appropriate options)

Pro Wireless-Microphone Receiver

R-31	w/o DYNEX	\$1250.00
	w/DYNEX II	1310.00
RK-131	19" rackmounting tray; holds two R-31 receivers	81.00

Accessories

M-117A	Wideband (169-216 MHz) multicoupler to split the RF signal from a 50 ohm antenna (such as a Model 123) to feed four receivers. Includes one Model 154 power cable and four Model 155 coaxial cables. Requires +12 VDC, which is available at the accessory jack on all Cetec Vega professional receivers	\$ 296.00
A-118	Wideband (169-216 MHz) line amplifier (RF preamplifier), for increasing antenna signal level to overcome coaxial line loss. Requires +12 VDC, which is available at the accessory jack on all Cetec Vega professional receivers	222.00
119	Audio input plug for Model 77 transmitter (Lemo connector)	27.00
120	Right-angle whip antenna	18.00
121	Straight whip antenna	18.00
123	Dipole receiving antenna. (Two antennas are provided with Model R-42 Pro Plus receiver package.) Includes 25-foot cable	84.00
124	"Rubber-duckie" antenna with BNC connector, approximately 6" long. Supplied with the Model 66A and Model 67A portable receivers, also with the Model C-466A Quad Case	18.00
126	Plastic mic-stand holder for all hand-held transmitters ..	9.00
RK-131	19" rackmounting tray; holds two R-31 receivers	81.00
RK-140	19" rackmounting tray; holds two Model R-41 or R-42 receivers	84.00
150	Fitted heavy-duty road case for smaller Cetec Vega wireless microphone systems (transmitter, receiver, and accessories.) Case has room for three portable systems	150.00
153A	Stainless-steel belt clip with strong adhesive pad for mounting to side of Model 77 transmitter	14.00
C-156	Fitted heavy-duty road case for Cetec Vega Pro-Plus wireless microphone system. Holds one R-41 or R-42, one pocket transmitter, one hand-held transmitter and all accessories. Made by Anvil	240.00
C-157	Soft zippered protective case for Model 77 transmitter ..	9.00
C-158	Soft zippered protective case for all models of hand-held transmitters	12.00
ZC-177	Impedance converter to allow use of 77/DII transmitter with guitar pickup or other musical instrument transducer. Very low noise and wide dynamic range ..	180.00
C-466A	66A Quad Case. Compact package includes antenna multicoupler and battery pack for 12 alkaline "D" cells. Holds four Model 77/66A portable systems	1043.00

DIVISION OF CETEC CORP.

P.O. Box 5348
 El Monte, CA 91734
 (818) 442-0782 TWX 910-587-3539

MODELS 67A/66A

Portable Wireless Microphone Receivers

- Battery-operated receiver with low power consumption; can be powered by external sources for true portability
- High signal-to-noise ratio and wide dynamic range
- Low distortion and wide, flat frequency response
- Multiple-pole crystal IF filter for superb IF selectivity
- Independent headphone amplifier with front-panel level control
- Dual-range, balanced audio output matches line or microphone inputs
- True helical-resonator front-end filter
- AC power adaptor available for in-studio use
- Internal battery pack (uses four 9-V alkaline batteries) for true portability
- External power capability for field and portable use, from a 12-V camera belt pack or other +10.5 to +18 VDC source
- Large multipurpose audio and signal level meter with VU scale

Designed for "on-location" and portable use, these models are fully compatible with all previous "Pro" transmitters, and now offer higher performance and expanded compatibility. The receivers are extremely sensitive, highly selective, and very stable. The preselector is a true two-pole helical-resonator filter, silver-plated for low loss and long-term durability. Low-noise, overload-resistant, dual-gate MOSFETs are used for the RF amplifier and mixer stages. The local oscillator is an overtone, crystal-controlled design, ensuring years of stable, drift-free operation. These models use a combination of LC and multiple-pole crystal IF filtering to provide outstanding IF selectivity and adjacent-channel rejection. The wideband, low-distortion FM demodulator has low distortion (system THD is typically 0.3 or less) and excellent dynamic range.

Either line-level or microphone-level audio output is available via the front-panel mounted XLR connector. (Mic-level audio is now externally adjustable). A monitor output is provided for use with headphones; this output is completely independent of the main audio circuitry. A high-quality VU scale meter is included, to allow monitoring of the audio output level. This meter may also be used to indicate the relative RF signal level and to meter the DC supply voltage.

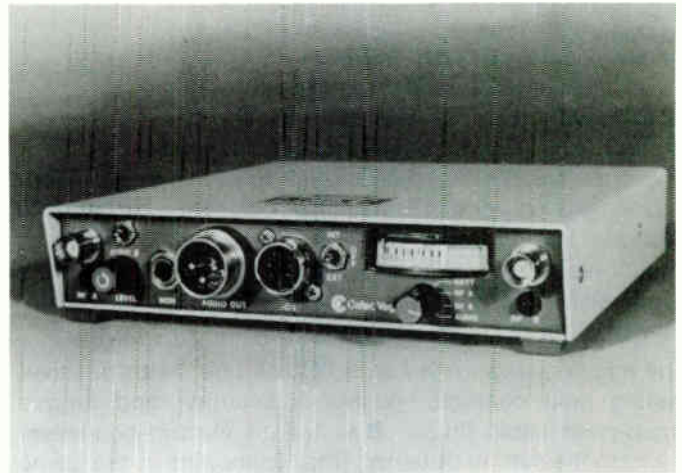
MODEL 67A

The 67A is fully compatible with all "Pro" transmitters equipped with the DYNEX® II audio processor, including Cetec Vega's new "T" Series transmitters. Because it is equipped with Cetec Vega's new DYNEX® II audio processor, its usable dynamic range is in excess of 100dB.

DYNEX® II portable, diversity, battery-powered receiver. Includes four 9-V alkaline batteries, two Model 124 antennas, and two right-angle BNC adaptors. (6.95" x 1.4" x 7") **\$1992.00**

MODEL 66A DII/66A

The 66A features an attractive new appearance with the same rugged, field-proven packaging as the previous 66, but with complementary colors. When equipped with Cetec Vega's new DYNEX® II audio processor, a usable dynamic range in excess of 100dB is available. A version without a processor is also available. With the optional DYNEX® II audio processor, the 66A is also fully compatible with Cetec Vega's new "T" Series transmitters.



MODEL 67A



MODEL 66A

66A/DII DYNEX II portable, battery-powered receiver. Includes four 9-V alkaline batteries, one Model 124 antenna, and one right-angle BNC adaptor. (5.4" x 1.3" x 6.25"). **\$1260.00**

66A Non-DYNEX version of Model 66A/DII. Includes same accessories as 66A/DII. **\$1197.00**

ACCESSORIES

PS-67A Wall-type power supply for Model 66A and Model 67A portable receivers. Note: Cannot be used with Model 66 receiver. **\$30.00**

BN-102 Rechargeable 9-volt NiCad battery for all transmitters and Model 66A and Model 67A receivers. **\$18.00**

CH-102 Charger for BN-102 **9.00**

124 "Rubber-duckie" antenna with BNC connector, approximately 6" long. Supplied with the Model 66A and Model 67A portable receivers, also with the Model C-466A Quad Case. **\$18.00**

C-466A 66A Quad Case. Compact package includes antenna multi-coupler and battery pack for 12 alkaline "D" cells. Holds four Model 77/66A portable systems. **\$1043.00**

DIVISION OF CETEC CORP.

P.O. Box 5348
El Monte, CA 91734
(818) 442-0782 TWX 910-587-3539

77 DYNEX® II

Professional Wireless-Microphone Transmitter

The 77 DYNEX® II is small enough to fit in a shirt pocket, and weighs only 5 oz. Transmitter circuitry is sealed in a separate compartment from the battery, all within an impact-resistant cycloac case. The standard 9 volt battery (Duracell MN1604 alkaline) can be replaced without exposure of other circuitry.

The mic connector is a Lemo "Quick-Loc" with positive-mating gold contacts, push-lock security, and rugged strain-relief cable fitting. Bias for an electret-condenser microphone can be obtained from spare pins in the Lemo connector.

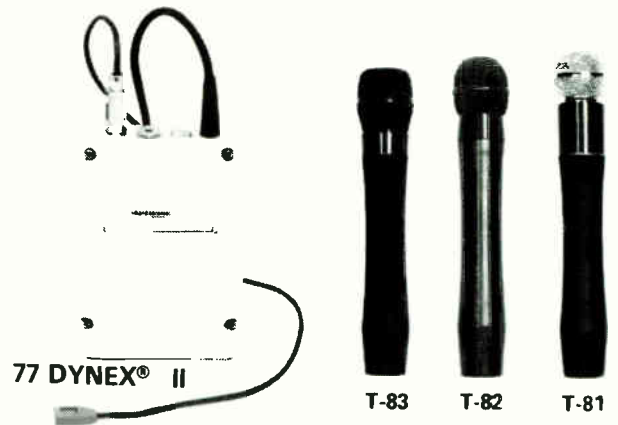
The 77 DYNEX® II is designed for compatibility with Cetec Vega's latest professional receivers such as the R-31 PRO and R-41 and R-42 PRO PLUS featuring DYNEX® II, a new standard in audio processing for wireless microphone systems. With DYNEX® II, the system provides lower noise and wider dynamic range, improved dynamic response for natural sounding audio, and flatter frequency response.

The preamplifier in the 77 DYNEX® II incorporates an ultralow-noise input stage, using the latest IC technology for lowest noise and distortion. It features improved gain control circuitry and improved "soft" gain compression circuitry for modulation control. Other features include compression-point metering and battery-status metering. Positive and negative microphone bias is available.

Specifications

- Frequency Ranges: 150-174 MHz, 174-216 MHz
- Frequency Stability: +/-0.005%, worst case, 20°C to +56°C
- Power Output: 50 mW
- Spurious Radiation: 40 dB below carrier, minimum, typically 55 to 60 dB below carrier
- Audio Input: -43 dBm (10 mV) to -4 dBm (0.5 V) for full deviation; -58 dBm (1 mV) to -19 dB (50 mV) for normal overhead allowance
- Input Impedance: 10K ohms, minimum
- Microphone Bias: +/-5 VDC, nominal
- Controls: Power on/off, microphone gain
- Metering: Dual function meter; battery-condition indication, audio compression metering
- Modulation Limiting (Compressor): Per FCC requirements; "soft" compressor action, 24 dB range (minimum), typically system distortion is less than 0.4% at 25 dB compression
- Connector: Microphone; four-pin Lemo (Type 304)
- Antenna: 1/4 wavelength flexible wire whip, permanently attached
- Battery: 9 V alkaline, Duracell MN1604 recommended
- Dimensions: 3.8"L x 2.8"W x 1.0"D (9.6 x 7.1 x 2.5 cm)
- Weight: 5 oz. (145 g), including battery

WIRELESS MICROPHONE SYSTEMS



Transmitter

- 77/DII** DYNEX II pocket transmitter designed to match the new technology and specifications of the Model R-41 and R-42 receivers **\$ 983.00**
- 77/DII-ZC** Music-system version of 77/DII, including all accessories plus ZC-177 impedance converter (available separately) for use with guitar pickup or other musical-instrument transducer. Very low noise and wide dynamic range **\$1163.00**
- 77** Non-DYNEX version of Model 77/DII **849.00**

T-80 SERIES

Hand-Held Wireless-Microphone Transmitters

- Lower noise and wider dynamic range
- Improved dynamic response for natural sounding audio
- Flatter frequency response

High-performance audio circuits:

- Ultralow-noise input stage
- Latest IC technology for lowest noise and lowest distortion
- Improved "soft" gain compression circuitry for modulation limiting
- Effective handling-noise filter

Other outstanding features:

- Patented internal dipole antenna, no performance compromises
- Attractive contoured styling
- All switches and controls on the bottom—out of the performer's way

AVAILABLE IN THREE MODELS:

- T-81*** Hand-held transmitter with advanced technology including DYNEX II. The T-81 utilizes the Shure SM58 microphone element. **\$1098.00**
- T-82*** Hand-held transmitter. This unit has the same electronics as the T-81 but utilizes the Shure SM85 condenser microphone element. **\$1098.00**
- T-83*** Hand-held transmitter. This unit has the same electronics as the Model T-81 but utilizes the AKG C-535 condenser microphone element.
- T-36*** Same as Model T-81 transmitter, but with Electro-Voice BK-1 element. Includes same accessories as T-81 **\$960.00**

*T-Series hand-held transmitters are available in non-DYNEX version at the same price as DYNEX II.

Orator II High-Quality Wireless Microphone System

Freedom of movement

The Cetec Vega Orator II is an economical wireless microphone system that combines ease of operation with high performance. It permits total movement without the restrictions of microphone cables to interfere with your speaking presentation. You can maintain clear, clear reception up to 1000 feet, line of sight, from the receiver.

Plugs into your existing sound system

The system is comprised of a Model 90 microphone/transmitter and a Model 91 receiver. All sounds are sent by the transmitter to the receiver. The receiver, in turn, feeds sound to a public-address system, microphone mixer, or recorder (just like any standard microphone).

Simple to use

Setup is as easy as plugging in the AC cord, one audio cable and the antenna. That's it. There are no complicated controls to worry about...just a simple level adjustment for optimum sound quality.

Economical operation

One standard-size 9-V transistor battery is all that is needed to power the microphone. The receiver power supply plugs into any standard 110-VAC wall outlet. Plug it in and forget it—power consumption is so low that it will add only pennies a month to your electric bill.

High quality performance

Although the Cetec Vega Orator II is an economical system, it incorporates many of the sophisticated design principles used in Cetec Vega's professional systems. Unlike most inexpensive wireless microphones, the Orator utilizes the VHF high band for less likelihood of interference from citizen's band radios, local electrical appliances, or fluorescent lights. (Beware of wireless microphones that operate on low band frequencies, which are subject to noise, interference and antenna problems, and of those that operate on UHF or 900-MHz frequencies, which are subject to signal fading and dropout problems.)

91 Receiver

The Model 91 receiver is deceptively easy to use for a system that works so well with almost every type of sound system. All connections and controls are located on the rear panel of the receiver. No internal adjustments are required. The receiver functions and audio levels are indicated by LEDs located behind an attractively designed acrylic front panel.

The low and high level output connections on the rear panel allow the Orator II to be connected to any microphone or line level input (balanced or unbalanced).

90 Microphone/Transmitter

The Model 90 is a full-fidelity, pocket model radio microphone, complete with electret condenser microphone and flexible wire antenna that are permanently wired to the transmitter with strain-relief boots to resist pulls and tugs. There are no connectors to pull loose.

The transmitter has a microphone level control to compensate for unusually loud or soft speech. A power On/Off switch prolongs battery life. A microphone On/Off switch acts as a "standby" switch to silence speech transmission without an increase in random noise reception that could occur if the transmitter were completely shut off.

Power for the transmitter is supplied by an economical 9-V alkaline battery which provides approximately 9 hours of continuous operation.



91 RECEIVER

90 MICROPHONE/
TRANSMITTER

SYSTEM SPECIFICATIONS

- Audio Frequency Response: 70 Hz to 12 kHz, +/-2 dB
- Signal-to-Noise Ratio: 65 dB, minimum
- Squelch Quieting: 74 dB, minimum
- Harmonic Distortion: Less than 1.5%
- Operating Range: Up to 1000 feet, line of sight
- Operating Temperature: -4°F to +122°F (-20°C to +50°C)

91 RECEIVER SPECIFICATIONS

- Frequency Range: 150 to 174 MHz or 175 to 196 MHz
- Sensitivity: 1.25uV for 30dB S/N
- Frequency Stability: +/-0.005%
- Output: -30 to +6dBm, balanced or unbalanced; or -60 to -30 dBm, balanced or unbalanced; note: do not ground any terminals other than GND terminal
- Power Requirements: 110-130 VAC (with supplied UL-listed wall-type power supply), or +13 to +18 VDC (with Switchcraft No. 760 DC plug)
- Power Consumption: Less than 5 watts
- Size: 6.2"W x 6.1"D x 2.6"H (15.7 x 15.5 x 6.6 cm)
- Weight: 1.25 lbs. (0.57 kg), excluding antenna and power supply
- FCC Compliance: Certified under Part 15; FCC ID; BFD0EG91
- DOC Compliance: B8246

90 TRANSMITTER SPECIFICATIONS

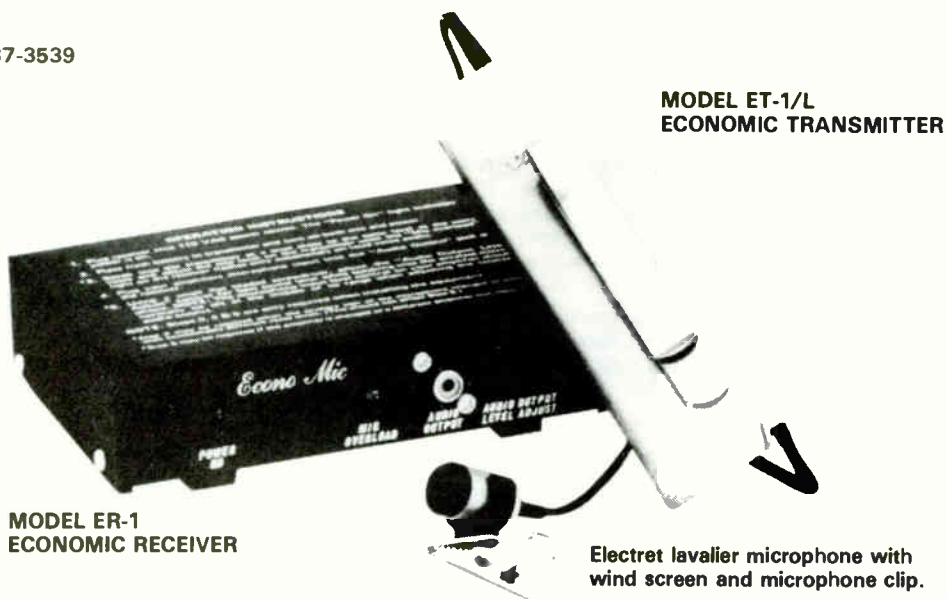
- Frequency Range: 150 to 174 MHz or 175 to 196 MHz
- Frequency Stability: +/-0.005%
- Power Output: 25 mW nominal
- Microphone: Electret lavalier
- Battery: 9V, Duracell MN1604 recommended
- Battery Drain: 15 to 20 mA (about 10-hr operation)
- Size: 3.8"H x 2.8"W x 1.0"D (9.7 x 7.1 x 2.5 cm)
- Weight: 7 oz. (0.2 kg)
- FCC Compliance: Type accepted under Part 90; FCC ID: BFD9EG-90C and BFD9EG90B (FCC requires licensing for nongovernmental users)
- DOC Compliance: E8248

ACCESSORIES SUPPLIED

- Transmitter: Belt clip, 9-V battery, microphone clip, and microphone windscreen
- Receiver: Whip antenna and wall-type power supply (UL-listed)

Description

- 90 Pocket transmitter for use only with Model 91 receiver. Includes battery and wired-in electret lavalier microphone. Standard frequency: 154.600 MHz* \$450.00
- 91 Radio mic receiver for use only with Model 90 transmitter. Includes whip antenna and wall-type AC power supply. Standard frequency: 154.600 MHz* 600.00
- Orator II System (Models 90 and 91, with accessories) . . . 1050.00



MODEL ER-1
ECONOMIC RECEIVER

MODEL ET-1/L
ECONOMIC TRANSMITTER

Electret lavalier microphone with
wind screen and microphone clip.

EconoMic Wireless Microphone System

...an economical, professional quality system designed and priced for church, school, business, and similar groups.

The EconoMic is simple to use and comes complete, ready to plug into your existing sound system. The system is equipped with two simple adjustments and an indicator showing proper operation at all times. For initial setup, the basic instructions are permanently printed on the receiver case.

The lightweight transmitter/mic can operate up to several hundred feet from the receiver with clean, clear reception. One economical, standard size, 9 volt transistor battery is all that is needed for power. Professional performance, simplicity of operation, and affordability all combine to make the EconoMic one of the most effective tools available to today's communicator.

No more fixed pedestal, no more tripping over wires, no more being tied to the podium. The EconoMic from Cetec Vega (the world's leading manufacturer of high-quality microphones for over 18 years) allows you total freedom in communicating. Imagine yourself moving across the stage, into the audience, and throughout the meeting area without interruption. What could be a more dramatic and effective addition to your presentation!

Wireless microphones are currently being used in the production of most motion pictures and throughout the TV and broadcast industry. Until now, individuals had a choice of these very expensive professional units or very inexpensive systems that were practically useless because of radio broadcast or CB interference and very short operating ranges. EconoMic offers you the basic features of the professional system but at an affordable price. The EconoMic is a result of optimizing today's audio technology in a package designed specifically for your needs.

SYSTEM OPERATION

Frequencies (Business Radio Service Licensed): 154.600MHz (Meets FCC rule requirements for Part 90.217 operation.)

Range (transmitter-to-receiver): Dependent upon location, 400 feet typical, 1,000 feet under good conditions.

Audio Response: 100 to 7500Hz, \pm 3dB. Tailored for optimum voice intelligibility.

Distortion: 2% or less.

TRANSMITTER UNIT (ET-1/L)

Case: High impact plastic with non-reflecting color and finish.

Microphone Element: High quality, professional type "Electret."

Power: Standard 9 volt transistor battery (Duracell MN1604 recommended).

Radio Frequency Control: High-stability crystal unit (\pm 0.005%).

Microphone Range (gain): Adjustable for normal voice level ranges.

RECEIVER UNIT(ER-1)

Squelch: Internal electronic sensor that switches output off when transmitter is off, preventing continuous noise.

Output: Continuously adjustable to match all conventional amplifiers "mic" or "phono" input.

Overload Indicator: A long life LED indicator flashes when the transmitter has been adjusted for the best mic input level. This eliminates tricky metering and adjusting that other brands sometimes require.

Power: Obtained from standard 115 VAC wall socket used. UL approved, low-voltage power module used, reducing any possible shock hazards and "hum" pickup.

Connection to Amplifier: Standard phone plug, 2 wires (1 ground, 1 voice) for balanced or unbalanced amplifier inputs.

Receiver Antenna: Plug-in whip antenna supplied.

Mounting: Table-top or wall-mounting positions accommodated.

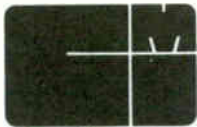
LARGER SYSTEMS

For installations which require more than one wireless microphone or for demanding high fidelity (such as broadcast quality) applications, ask about Cetec Vega's "Professional" series equipment.

Each EconoMic System package includes: 1 — ET-1/L Transmitter; 1 — ER-1 Receiver; 1 — 9V (Transmitter) Battery; 1 — Receiver-to-Amplifier Cable Assembly; 1 — Electret lavalier Microphone with wind screen and mic clip; 1 — UL approved wall-mount Power Supply for Receiver; 1 — Instruction Sheet. **\$653.00**

ET-1L Pocket transmitter for use only with ER-1 receiver. Includes electret lavalier microphone attached with 36" cable, short flexible antenna, 9V alkaline battery, stainless steel belt clip, power on/off switch, mic on/off switch, and gain control. **\$285.00**

ER-1 Radio mic receiver for use only with ET-1L transmitter. With LEDs to indicate power on and transmitter modulation. Has audio gain control. Includes AC adaptor, whip antenna, and audio cable. **\$368.00**



CHANNELMATIC

821 Tavern Road
Alpine, CA 92001
(619) 445-2691

AUTOMATIC VIDEO CASSETTE CHANGER

BROADCASTER I

Automatic Video Cassette Changer

(Patents Pending)

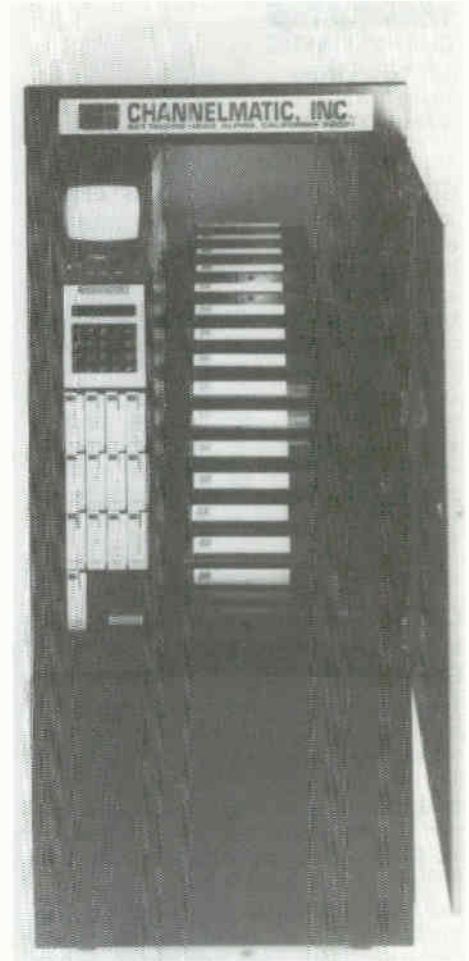
BROADCASTER I is the basic unit of a revolutionary new series of ultra-reliable and highly flexible video cassette changer systems. It can random access amongst up to fifteen video cassettes or, optionally can also random access up to 100 individual spots on each video cassette. It is designed to be used in broadcast stations, CATV systems, LPTV systems, hospitals, schools, hotels and other facilities where quality programming must be originated automatically on a pre-programmed weekly time schedule.

The microcomputer in BROADCASTER I is operator programmed to select any one of the standard 3/4 inch video cassettes from the integral tape storage magazine, insert it into an unmodified Sony Type-5 VCR, playback the tape and then replace it in its designated slot. Provisions are included for precisely prerolling the VCR and audio/video switching is accomplished in a broadcast fashion, with vertical interval transition as referenced to the primary program source.

BROADCASTER I may be operator programmed to rewind a video cassette immediately after it has played, or to delay tape rewinding until a specific time, such as midnight, when each tape which has been played will be inserted into the VCR, rewound and replaced in the magazine. All tape rewinding is totally automatic and requires no operator attention.

FEATURES

- Random Access of up to 15 Video Cassettes
- Total Microcomputer Control
- Easy Programming-Display Prompted in English
- Full 7-Day Programming (100 Events per Day)
- No VCR Modification Required
- Computerized Stepper Motor Drive — Indexing Accuracy Within .005 Inch
- Reliable...No Oil, No Gears, No Belts, No Chains
- Minimal Moving Parts for Ultra Long Service Life
- Units May Be Cascaded for Additional Capacity
- Will Play Multiple Sequential Segments on Each Tape
- Built-In Vertical Interval Switching
- Automatic Switching to Auxiliary Source During Cassette Change
- Automatic Record and Delayed Playback Optional
- Built-In Video Monitoring Optional
- Optional Electronic Modules can add Numerous Features



OPTIONAL EQUIPMENT

In its basic form BROADCASTER I can solve many of the problems associated with loading and operating a video cassette machine, but when options are added, BROADCASTER I becomes a custom workhorse capable of almost any operation involving video tape.

PHYSICAL DIMENSIONS

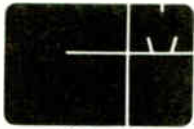
BROADCASTER I is housed in a free-standing, castered cabinet measuring 52"H x 22"W x 37"D and weighing approximately 200 lbs.

BROADCASTER I \$13,500.00

Single channel Random Cassette Changer including Microcomputer Controller, Audio/Video Switcher with two additional inputs and DTG-102A Tone Generator for encoding tapes.

OPTIONS:

- 5-Inch Monochrome Video Monitor \$ 300.00
- Additional 3-Input Audio/Video Switch 450.00
- Tone Decoder (Satellite) 400.00
- 8-Page Character Generator Including Programming 900.00
- Video Presence Detector 325.00
- Balanced Audio, 3-Input and 1-Output 300.00
- HANDIMOD I Accessory for Sony Type 5 VCR 300.00
- SONY VP-5000 Video Cassette Player, Installed 1895.00
- Video Distribution Amplifier, 6 Isolated Outputs 325.00
- Audio Distribution Amplifier, 6 Isolated Balanced Outputs 325.00
- Logging System Including 80-Column Printer 1500.00
- Random Access Within Tape (Incl. Logging and Tape Encoder) 5500.00
- Automatic Record and Playback 3000.00



CHANNELMATIC

821 Tavern Road
Alpine, CA 92001
(619) 445-2691

SERIES 3000 CUSTOM SYSTEMS

The Channelmatic 3000 Series "Building Blocks" provide the system designer with a diversified group of standard pre-packaged and pre-tested, plug-in modules which can be easily combined to satisfy a large variety of requirements. Over 50 modules, each with different functions, are available.

Developed by Channelmatic, Inc. through many years of providing custom designed switching and control systems for Cable and Industrial Television users, these modules represent the most reliable and economical solution to many specialized system requirements.

CMG-3008A 8-Page Color Message Generator Module

The messages are contained on a factory-programmed EPROM. Eight customer-composed messages are supplied with the module.

The CMG-3008A requires external video sync from a CSG-3000A Color Sync Generator module. One sync generator will drive up to thirty CMG-3008A modules.

The CMG-3008A is a very low cost 8-page color message generator module which displays an 8-line fixed message on a color background.

Up to eight different message pages can be stored in its non-volatile memory. The page to be displayed is selected with either a remote switch, a DIP switch mounted on the module, or by applying a 3-bit binary code to the page select inputs on the module.

Characters are displayed in a custom-designed uppercase font which includes numbers and all common symbols. The bold, white characters are 18 TV lines high for maximum legibility. Up to 32 characters may be placed on each message line; yielding a total message length of 256 characters per 8-line page. **\$1,605.00**

PCM-3000A SUPERCLOCK™ Programmable Controller Module

The PCM-3000A Programmable Controller is a microprocessor-based 7-day clock module for the Channelmatic Series 3000 frame. It has a 1-minute resolution and a large memory for storage of program events. The system is bus-oriented and provisions are included for input-output capability and addition of a multitude of special control interfaces. The basic system has eight programmable closure-type outputs which can be pre-programmed to open or close on any desired weekly time schedule.

The PCM-3000A is designed to be used in any application where local or remote control of equipment is required on a 7-day schedule. By adding appropriate modules, it can be used to control almost any electrical or electronic device, including satellite receivers, video cassette machines, audio-video switchers, relays, IF switching, message generators, solenoids, motors, etc.

A UAD-3000A Unattended Telephone Answering Device module and related CTD-3001A DTMF Decoder module can be added to a clock-controller subsystem enabling it to be operated over standard telephone lines.

Vertical-Interval Video Cassette Sequencers VCR-3005A-5

Automatic vertical-interval video cassette sequencer system for playback of locally generated programming. Frame is wired to handle up to five VCR's and provisions are included for cascading two or more main frames for the sequential control of any number of machines. Front panel Sequence Selector Switches allow each VCR to: 1) continue sequence normally, 2) bypass to the next VCR in sequence, or 3) terminate the sequence. For broadcast quality performance, all switching occurs in the vertical blanking interval of program video. This allows glitch-free transitions if the VCR's in the sequence are sync-locked using an accessory such as the HANDIMOD I. System includes ATG-202A Tone Generator/Verifier for videotape encoding. Sequence may be initialized using manual pushbutton, relay closure, or automatically on a real-time basis by the PCM-3000A Clock Controller.

\$5005.00

Typical Superclock Programmable Clock Systems PCM-3000A-1

Programmable 7-day, 1683-event clock with eight outputs. Assembled in Series 3000 frame with blank filler panel. Outputs are open collector transistor type, which will sink 40 MA at 30 VDC. **\$2380.00**

PCM-3000A-2

Same as -1, except outputs are eight form A (SPST) relay closures. **\$2480.00**

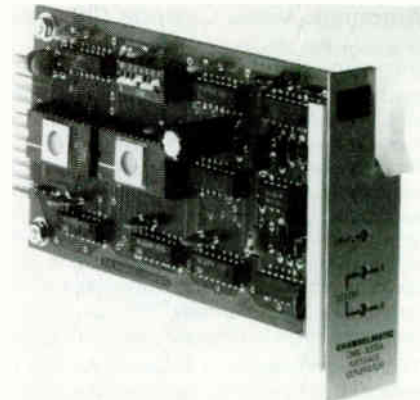
PCM-3000A-3

Same as -1, except also has UAD-3000A Automatic Telephone Answering Device module and CTD-3001A Tone Decoder for telephone override capability. **\$2980.00**

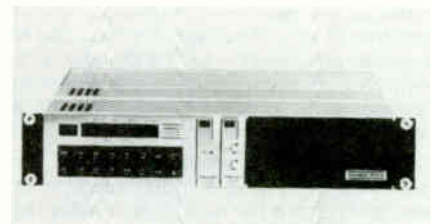
PCM-3000A-4

Same as -3, except outputs are eight form A (SPST) relay closures. **\$3080.00**

CUSTOM SYSTEMS MESSAGE GENERATORS/ CLOCK SYSTEMS AND VIDEO CASSETTE SEQUENCERS



CMG-3008A



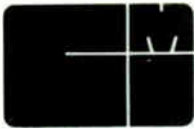
PCM-3000A SUPERCLOCK



VCR-3005A-5

PCM-3000A-13

Remotely programmable 7-day, 1683-event clock having both transmit and receive subsystems. Transmit subsystem is provided with an answering device and telephone override. Receive subsystem has decoding for twenty independently programmable decimal outputs, each of which are provided with a form A (SPST) relay. Receive system can be expanded to control hundreds of devices, including satellite receivers, audio/video switches, etcetera. Transmit and receive subsystems can be connected by any voice-grade audio path. Multiple hubs can be controlled by a single transmit subsystem (PCM) by adding receive subsystems for each. Includes modems, card extenders and blank panels. **\$7860.00** (Additional receive subsystems are \$3555 ea.)



CHANNELMATIC

821 Tavern Road
Alpine, CA 92001
(619) 445-2691

PATCHMASTER™

The PATCHMASTER is a broadcast-quality bridging audio-follow-video routing switcher which will satisfy a variety of switching requirements. Configured as a 10 input by 1 output switcher, the moving of internal jumper plugs converts the unit to two independent 5-input by 1-output switchers.

Switching is vertical interval as referenced to the output signal.

The extremely high impedance, low capacitance bridging inputs cause negligible line loading, therefore, many switchers may be looped together for expansion to any desired number of outputs. Expansion in increments of ten inputs is provided with automatic secondary switching to eliminate crosstalk degradation. Stereo audio is available optionally.

Connections are also provided for remote switcher control. The switches are momentary and provided with electronic interlocking.

AVS-10A SPECIFICATIONS VIDEO

- Inputs: 10 or 5 x 2, plus expansion in increments of 10
- Input Impedance: High impedance looping
- Return Loss: Greater than 50 DB at 5 MHz
- Input Level: 0.5 to 2.0 VPP
- Outputs: 2(10 x 1) or 1 (each 5 x 1) at 75 ohms
- Output Level: 4 VPP maximum
- Frequency Response: ± 0.05 DB to 5 MHz ± 0.1 DB to 10 MHz
- Crosstalk: 60 DB or more at 3.58 MHz
- Differential Gain: Less than 0.1 percent
- Differential Phase: Less than 0.1°

AUDIO

- Inputs: 10 or 5 x 2, plus expansion in increments of 10
- Input Impedance: High impedance balanced or unbalanced bridging
- Input Level: + 8 DBM Nominal, + 12 DBM Maximum
- Outputs: 2(10 x 1) or 1(each 5 x 1); 600 ohms Balanced
- Output Level: + 19 DBM Maximum
- Frequency Response: ± 0.05 DB, 20 Hz to 20 kHz
- Crosstalk: Greater than 70 DB at 20 kHz

AVS-10A PATCHMASTER \$1000.00
RCP-15A Remote Control Panel 350.00

UAA-6A Universal Audio Amplifier

The UAA-6A is a broadcast-quality universal audio amplifier providing six separate transformerless amplifiers in a self-contained 1.75 by 19 inch rack mounting frame. Each amplifier has a high impedance input which may be either balanced or unbalanced and a low impedance output of 600 ohms balanced or 150 ohms unbalanced. A front panel gain control and test points are also provided for level adjustments.

ROUTING SWITCHERS, AUDIO AMPLIFIERS, AUDIO AND VIDEO DISTRIBUTION AMPLIFIERS

It is particularly useful in installations utilizing video cassette machines to convert their high impedance preamp audio output to 600 ohms balanced and to provide gain control.

UAA-6A SPECIFICATIONS

- Response: 20 Hz to 20 kHz ± 0.1 DB
- THD: Less than 0.05% at +24 DBM output
- Connectors: XLR on input and output or terminal Board (UAA-6A-TB)

UAA-6A with XLR connectors \$750.00
UAA-6A-TB with screw terminals . . . 700.00

ADA-1A, ADA-2A, ADA-3A Audio Distribution Amplifier

The ADA-1A is a broadcast quality audio distribution amplifier providing six balanced 600 ohm source-terminated outputs from one high impedance bridging input. Both inputs and outputs may be connected to provide balanced or unbalanced circuits. Outputs are independent precision integrated amplifiers, providing accurate output balance. Gain is adjusted with a 25-turn potentiometer for ease and accuracy of control.

The 1.75 by 19 inch rack-mounting package is available with one, two or three independent amplifiers with a common power supply.

SPECIFICATIONS

- Frequency Response: ± 0.5 DB, 10 Hz to 30 kHz
- Hum and Noise: 80 DB down with +20 DBM Output
- Distortion: 0.1% or Less
- Connectors: Terminal Strips

ADA-1A One Amplifier \$375.00
ADA-2A Two Amplifiers 600.00
ADA-3A Three Amplifiers 800.00

VDA-1A, VDA-2A, VDA-3A Video Distribution Amplifier

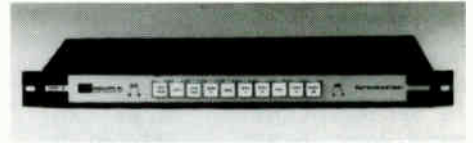
The VDA-1A is a self-contained broadcast-quality video distribution amplifier with six source-terminated 75 ohm outputs and one high-impedance looping input.

The 1.75 by 19 inch rack-mounting package is available with either one, two or three independent amplifiers with a common power supply.

SPECIFICATIONS

- Frequency Response: ± 0.10 DB to 5 MHz ± 0.20 DB to 10 MHz
- Differential Gain: Less than 0.1%, 10 to 90 APL
- Differential Phase: Less than 0.1°, 10 to 90 APL
- Automatic DC Offset Compensation

VDA-1A \$375.00
VDA-2A 600.00
VDA-3A 800.00



AVS-10A PATCHMASTER



AVS-10A PATCHMASTER BACK VIEW



RCP-15A REMOTE CONTROL PANEL



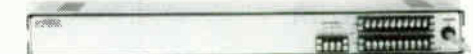
UAA-6A FRONT VIEW



UAA-6A WITH XLR's BACK VIEW



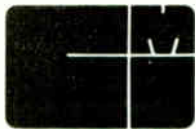
ADA-1A BACK VIEW



VDA-1A FRONT VIEW



VDA-1A BACK VIEW



CHANNELMATIC

821 Tavern Road
Alpine, CA 92001
(619) 445-2691

SPOTMATIC

Random Access

Commercial Insert System

The SPOTMATIC Random Access Commercial Insert System is designed to schedule and automatically insert local commercials into any length of available time slot on multiple channels of satellite service programming. SPOTMATIC locates, cues and inserts the proper commercials in the proper order from standard 3/4 inch video cassettes. Up to 100 randomly mixed commercial spots can be added to each cassette, greatly reducing tape and editing costs. In addition, it prints out a log of all switching functions as they occur and also prints out a daily advertiser-grouped listing identifying all spots inserted on each channel. Insertion is accomplished in a clean, broadcast-quality fashion.

FEATURES

- Controls up to Four VCR's Per Channel
- Display-Prompted Keypad Programming
- Controls Multiple Channels/VCR's Simultaneously
- Each Channel Independently Programmed for Versatility
- Uses Non-Modified Sony Type-5 VCR's
- Expandable to Control Up to 32 VCR's

The SPOTMATIC Random Access Commercial Insert System uses sophisticated multiple microcomputers to automatically locate an individual commercial spot on a video cassette, cue it in accordance with a satellite service's chosen preroll time and insert it upon receipt of the proper satellite cue tones. SPOTMATIC may be configured to control from one to four VCR's per channel and to insert commercials on as many channels as desired, as long as the total number of VCR's to be controlled does not exceed 32. SPOTMATIC also has a built-in automatic logging feature which gives the operator a hard copy printout of the times and contents of each commercial insertion.

\$18,000.00 & up

SPOTMATIC JR.

Single VCR

Commercial Insert System

The SPOTMATIC JR. provides a highly versatile, yet extremely cost-effective means of inserting local commercials into satellite programming. The microcomputer controlled unit performs all of the functions necessary to insert commercials in a broadcast fashion and is also equipped with a full-feature logging and verification printer.

The SPOTMATIC JR. is completely self-contained and provides all the necessary control for one satellite service. It decodes satellite tones which occur at the beginning of a local availability and inserts a VCR commercial into the satellite program. All variable microcomputer functions are programmed with an external handheld touchpad which is easily connected to a front panel mounted jack.

\$2,150.00

COMMERCIAL INSERT SYSTEMS, TONE SWITCHER, AND SONY VP/VO5000 SERIES VIDEO/AUDIO INTERFACE MODULE

The same touchpad is used to encode commercial tapes with spot cueing and advertiser information. **\$225.00**

ATS-4A

Automatic Tone Switcher

The ATS-4A Automatic Tone Switcher provides a simple and inexpensive means of inserting local programming from an audio source and a character generator or other video source into satellite programming. It decodes the satellite tones which occur at the beginning and end of the satellite programming or a local commercial insert period and uses the locally generated information to automatically fill the time period surrounded by the cue tones.

All switching is performed by integrated circuits and occurs during the vertical blanking interval for clean, broadcast-quality performance. The microcomputerized tone decoding circuitry is programmable for various satellite service tone codes and is equipped with a lithium backup power supply for memory retention in the event of power failure.

SPECIFICATIONS

INPUTS

Tone: 600 ohms balanced, 0 DBM nominal
Audio: 600 ohms balanced, 0 DBM nominal
Video: 1 volt PP, 75 ohm unbalanced
Video A and B: 1 volt PP, 75 ohm unbalanced

OUTPUTS:

Audio: 600 ohms balanced, 0 DBM nominal
Video: 1 volt PP, 75 ohm unbalanced

\$1,000.00

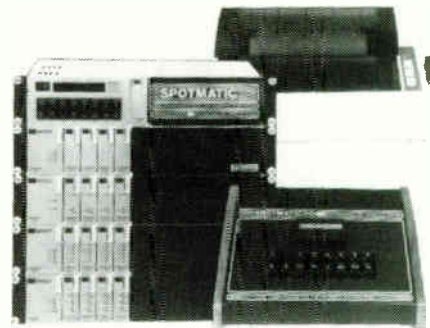
HANDIMOD I.

- **Auto Sync-Lock** — Automatic vertical sync-lock of Sony Type 5 VCR to an external video source so vertical interval switching is possible
- **Balanced Audio** — Converts 47,000 ohm high-impedance audio line output of VCR to 600 ohm balanced or dual 150 ohm unbalanced for compatibility with most audio equipment
- **Audio Level Control** — Installed in seconds by plugging into modulator cavity on rear of VCR; absolutely no VCR modifications necessary

Broadcast-Type Audio Output. The HANDIMOD I converts the high-impedance preamp audio output of the VCR into either one 600 ohm balanced audio output or two independent 150 ohm unbalanced audio outputs. An audio level control is also provided, which allows adjustment of the output level from zero to better than +14 DBM

Auto Sync-Lock. The HANDIMOD I also adds circuitry to enable the VCR to be sync-locked to an external video source.

The HANDIMOD I is particularly useful in VCR systems which require vertical interval switching between the VCR and an external source. **\$300.00**



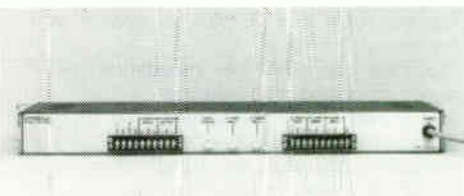
SPOTMATIC



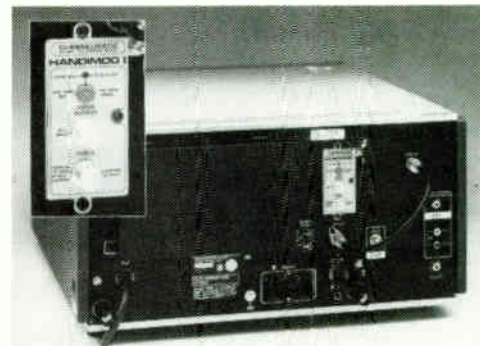
SPOTMATIC JR.



ATS-4A FRONT VIEW



ATS-4A BACK VIEW



HANDIMOD I

CHYRON CORP. VIDEO PRODUCTS DIVISION

265 Spagnoli Road
Melville, NY 11747
(516) 249-3018



VP-2 Character and Graphics Generator

The VP-2 is a low-cost, high-resolution character and graphics generator with features and capabilities found only on costly, more elaborate studio character generators. With complete keyboard and micro floppy disk drive, this stand-alone system offers 512 colors, 35 nanosecond resolution, 6-font capacity, multiple graphic planes, and many more features. The VP-2 has cursors and prompting menus for very easy graphics composition and display. This combination of operational ease, superior composition capabilities, and high quality image, makes Chyron's VP-2 the ultimate low-cost character and graphics generator.

FEATURES

- Character Resolution: 35 nanosecond resolution, equivalent to 1510 pixel elements
- Colors: 512 color choices available 8 per page for characters, edges, and background's
- Fonts: Six full fonts (upper and lower case) on line selectable from a library of 45 Chyron fonts with international fonts available. Custom font and logo compose service is also available. (two fonts standard)
- Character Planes: Full horizontal and vertical overlap of characters, symbols, and logos to any depth.
- Background Graphics: Color every two raster lines if desired.
- Auto Display (Read from Disk): Display selected graphics pages from disk memory in any sequence at variable rates.
- Palette Animation: Cycle color in graphic images at selected multiples of video frame rate.
- Edge Types: The three edge types for any font—full drop shadow, character offset, and bordered edge—can be varied in extent, direction, and color.
- Menus: Complete menus and prompting displays to guide you through graphics composition.
- Composition and Control Features: Cursor commands: up, down, right, left, backspace, return, home. Insert, delete, or move characters, words, lines. Select fonts, character colors, palette, edge types, edge colors, key color. Set tab, clear tab, right justify, center page, line or column. Italicize a font (left or right), and display menu. Change character, word, line, color, font, edge, or edge color.

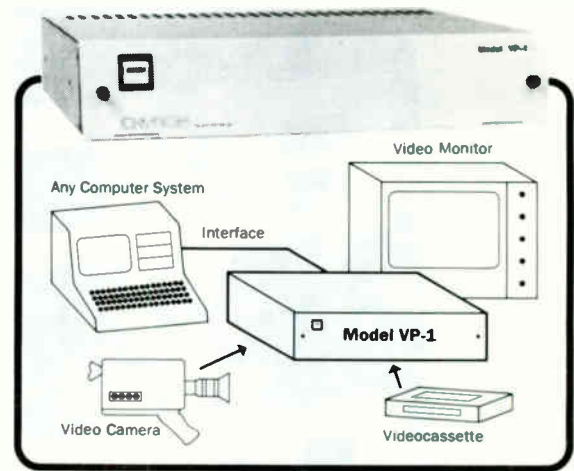
SPECIFICATIONS

- Power Requirements: 115 VAC at +/-10%, 60 Hz and less than 100 watts (230 VAC, 50 Hz available)
- Packaging: PC board design with switching power supply, enclosed in a metal case with lighted power switch and all connections on rear of unit.
- Physical Characteristics:
Keyboard: 7-5/8"D x 7/16"-1-3/8"H (front-back) x 17-3/4"W.
3 lbs.
Chassis: 20" x 3-15/32" x 17"
30 lbs.

\$8250.00

Prices and Specifications Subject to Change Without Notice.

CHARACTER AND GRAPHICS GENERATOR/ VIDEO PRINTER



VP-1 Video Printer

VP-1 is a low cost Video Printer that provides character generation and graphics capabilities with a resolution previously available only with costly and elaborate studio character generators.

The VP-1 accepts serial data from an RS232C communications interface. Imbedded format commands within the data will be detected and executed and will cause the generation of a high resolution video picture (35 NSEC increments). The video memory is organized as a dual frame buffer which allows one page to be displayed while the next page is being created.

FEATURES

- This unit can be driven by any computer system with text processing capability and a serial communication port. This includes most personal as well as larger computer systems.
- Font Storage: ROM based minimum of two fonts, each with full upper and lower case. Optional expansion to six fonts. (Font library of 44 fonts.)
- Hardware: Microprocessor controlled — dual 32K Byte frame store memory — ROM Program — 4000 bytes of message memory — internal sync generator with genlock and NTSC video generation.
- Color Select: Any one of eight colors may be assigned to backgrounds, characters or edge.
- Color Table: Any eight of 64 colors.
- Sync: Genlock to external sync or composite video from a stable source. VCR may not not be a stable source.
- Keying: Full down stream keying included.
- Output: NTSC composite video.
- Commands: Select background color, character color, edge type, edge color, font type. Skip scan lines (push down), center line, center page, roll display, page delay, repeat message, end of page, horizontal and vertical margin control. Adjust character spacing, italicize, set color table.
- Edit functions: New line. Character shift left, right, up, down. Repeat message. End of message.

SPECIFICATIONS

- System: Microprocessor based with ROM program
- Interface: Multibaud rate serial RS232 interface. Max 9600 BAUD
- Frame Store: 32K bytes of run length encoding. Two frame stores to provide sequential picture generation. (35 nsec resolution)
- Packaging: Single PC board designs for computer and video with switching power supply. Enclosed in a metal case with power switch and video connectors on rear of unit
- Power: 115 VAC, at +/-10%, 60 Hz, and less than 100 Watts
- Compliance: FCC

VP-1 Video Printer
Additional Fonts
Logo Compose

From \$4395.00
From 100.00
From 100.00

B-283



**The Chyron™
 Cassette Cleaner and
 Evaluator Model U-1A**

Completely cleans, evaluates and rewinds video-cassette tapes 10 times faster than normal playback time.

FEATURES

- Completely self-contained
- Doesn't alter the recorded signal
- Selectable Erase
- Selectable operating modes
- Completely automatic high-speed, hands-off operation
- Simple to use
- Optical evaluation
- User adjustable sensitivity
- Feed-back to operator
- Easily replaceable parts and supplies

The Chyron Cassette Cleaner and Evaluator Model U-1A is a compact, completely self-contained, easy-to-operate system for rapid cleaning and evaluation of 1/4-inch Type U Format video magnetic tape in both standard and small size video-cassettes.

Operating with any base and oxide formulation, the U-1A can provide substantial savings in time and money to organizations involved with video-tape production and maintenance of videocassette libraries.

The significantly improved Chyron U-1A offers numerous features which have made it the leader in professional videocassette tape maintenance.

Completely Self-Contained. All of the U-1A's capabilities are built into a single stand-alone unit. There is no need to tie up or tie into expensive auxiliary equipment.

Doesn't Alter the Recorded Signal. The circuitry is designed to safeguard the pre-recorded signal—and, in fact, may improve the signal quality on playback.

Selectable Erase. The erase function can be activated—at the operator's discretion—by two electrically interlocked front panel switches. When the ERASE button and START button are depressed simultaneously, the erase oscillator is energized and the full-track erase head moves into the tape path. In order to prevent accidental erasure of cassettes, the erase function is de-energized at the end of the cleaning cycle or when the STOP button is pressed. An internal ERASE LOCKOUT SWITCH is provided which can be engaged to prevent activation of the ERASE FUNCTION.

Selectable Operating Modes. The front panel STOP ON DAMAGE switch selects one of two operating modes. With STOP ON DAMAGE switch set in OFF position, the U-1A will indicate location and number of damages without interrupting the clean/evaluation cycle. When in ON position, the U-1A will stop at damage point to allow visual inspection of damaged areas.

Normally the machine will automatically rewind after evaluation. However, at any point during the evaluation, the tape can be removed for inspection and/or rejection without having to complete the entire evaluation cycle.

Completely Automatic High Speed, Hands-Off Operation. When a cassette is inserted into the unit, it is automatically rewound to the leader. Pressing the START button causes the tape to be withdrawn from the cassette and formed into a loop. The tape is automatically placed into contact with front and back surface cleaning stations and with a honing edge which removes embedded particles from the oxide surface.

The tape shuttles from supply spool to takeup spool, and rewinds with constant torque to assure proper tape tension for optimum performance during VTR recording and playback. Average tape speed is 60 inches per second. A 60-minute cassette is thoroughly cleaned, evaluated and rewound in approximately 6 minutes.

Simple to Use. Little or no operator training is required for cost-effective utilization of U-1A.

Optical Evaluation. A sensitive, all solid-state reflective sensor examines the oxide surface of the tape to detect head scoring, creases, voids, and

abrasions. An edge weighted sensitivity pattern allows reliable detection of edge damages, including scores, creases, scalloped edges, and changes in tape width.

User Adjustable Sensitivity. The sensitivity of the evaluator can be quickly and conveniently set by the operator. Low settings will limit the U-1A to detecting only major damages, while high settings will extend the detection range to include even extremely small damages. Thus evaluation can be tailored to all tape applications including evaluation of new unrecorded tapes.

Feed-Back to Operator. Eight indicator lights on the front panel provide easy monitoring of tape and system status. Two separate 3-digit LED counter displays provide the actual tape length in playing time, and tally each detection of damage.

After the clean/evaluation cycle is completed, tape length and total damage count are retained and continuously displayed until another tape is inserted.

MODEL DESCRIPTION	PRICE
U-1A Chyron Cassette Cleaner and Evaluator Model CCE U-1A. High speed cleaning and optical evaluation of 1/4" video cassettes	\$5,900.00
U-0139 Cleaning Tissue Spools (10 spools)	\$75.00
U-0244 Honing Edge	\$92.00
U-0135 Erase Head	\$287.00

DIMENSIONS:
 Height—10". Depth—18 1/2". Width—17".

SHIPPING WEIGHT:
 65 lbs., rugged all-metal construction.

POWER CONNECTOR:
 Hubbell, 3-wire twistlock #7484 Mating power cord supplied.

TYPICAL EVALUATOR TIMES:
 60 min. cassette—6 minutes.
 30 min. cassette—3 minutes 20 seconds.
 20 min. cassette—2 minutes 20 seconds.
 10 min. cassette—1 minute 30 seconds.
 Above times are based on standard size cassettes.



SPECIFICATIONS:
Camera or Equipment Plate
Mounting Provision
Locking Mechanism
Construction

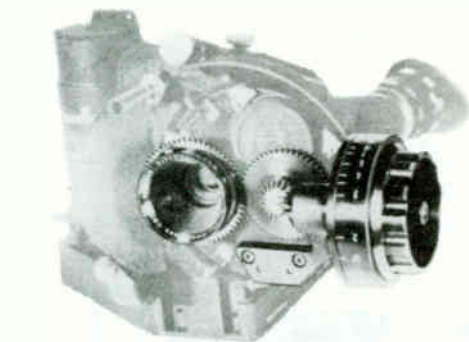
CAT. NO. 6700 2 1/2" x 3 1/2" x 1/4", Weight 4 ozs 2 1/2" Long Channel (3) 1/8" x 1/4" dia flat head screws supplied for both models Both models are precision machined aluminum alloy, black anodized, cork non-slip surface	CAT. NO. 6701 1 1/2" x 2 1/2" x 1/4", Weight 2 ozs 1 1/2" Long Channel (3) 1/8" x 1/4" dia flat head screws supplied for both models Both models are precision machined aluminum alloy, black anodized, cork non-slip surface
--	--

Interlocking Base Assembly
Mounting Provision
Locking Mechanism
Construction

3 1/2" x 5 1/2" x 1/4", Weight 15 ozs 1/8" x 1/4" x 1/4" Mounting Holes Both Models, machined nickel steel dovetail with double pushbutton safety release	2 1/2" x 4 1/4" x 1/4", Weight 8 ozs 1/8" x 1/4" x 1/4" Mounting Holes Both Models are precision machined aluminum alloy complete Snaplok Mount, Cat No 6700 or Cat No 6701
---	---

Camera/Equipment Plate Only
Mounting Screws

Cat No 6700A or 6701A 1/20 Cat No 67SS1 1/8" Cat No 67SS2	
--	--



Focusing Device

Cat. No. 6504. For uninterrupted easy follow focusing by camera man or assistant. Includes 3 interchangeable lens scales and 3 lens gears.

Cat. No. 6910 'C' Lens Mount Adaptor
Cat. No. 6910B 'Bayonet' Lens Mount Adaptor



Lens Mount Adaptors

Precision machined lens mounts permitting the use of Arri mounted lens on cameras with 'C' mounts and 'Bayonet' mounts.



6 Ft. Coil-Cord Battery Cables

6401S For Arri 16S with 2-pronged molded plug
6401S-5 For Arri 16S with 5-pin battery connector
6401M For Arri 16M with 2-pronged molded plug
6401M-5 For Arri 16M with 5-pin battery connector
6401BL For Arri 16BL with 4-pin battery connector
6401BL-5 For Arri 16BL with 5-pin battery connector
6401SR For Arri 16SR, 35BL 35-III Cameras
6402V For Arri 35 for variable speed motor
6402V-5 For Arri 35 with 5-pin battery connector
6402C For Arri 35 for constant speed motor
6402C-5 For Arri 35S with 5-pin battery connector
6403 With 5-pin Canon on 1 end, with other end open for equipment mating connector

Cables not listed can be made to special order.

Snaplok Mount

Mount your camera or device in a second. Consists of a precision machined dovetail plate for the camera or device and an interlocking base assembly for the tripod, shoulder pod or support. Allows quick mounting and removal. Once the dovetail plate has been attached to the camera or device and the interlocking base to the support, tripod or shoulder pod, no screws, cranks or levers are required to instantly mount or demount the camera or device. Two models are available, Cat. No. 6700 for medium to heavy weight equipment and Cat. No. 6701 for lightweight equipment.



Offset Motor Base

A gear box providing a flat camera base and low center of gravity for Arri 35. Essential for professional tripod mounting. Cat. No. 6900 - Mounts constant or variable speed motors next to camera eliminating need for hi-hat. Cat. No. 6900A - Same as #6900. But with built-in contacts for automatic claps tick on Arri 35HC-GS.

Bealieu Battery Pack

Direct replacement for Bealieu battery. 1200mAh capacity provides approximately 2000 ft. pr charge. Compact 4 1/2" x 1 1/2" x 3". Weight 1 lb. Equipped with built-in charger, charging cable, camera power cable and carrying pouch permitting wearing it on the waistbelt. Cat. No. 9000-B



2AH 16SR On-Board Battery

Custom-designed with special 2AH Cells providing a 30% increase in run time per charge. Totally compatible with Arri SR system. No adaptor, special mounting, or special connections required. Double Charger will recharge two batteries in 7 to 8 hours. At end of full charge, the charging channel cuts off automatically. Battery Cat. No. 12V/2A
Weight: 2 lbs.
Dimensions: 2 1/2" x 3 3/8" x 4 1/2"
Dual Charger Cat. No. D-NC2000
Input: 110/220V Automatic
Controls: (per channel) LED/Start Button, Automatic Cut Off
Weight: 1 1/2 lbs.
Dimensions: 2" x 3 1/2" x 4 1/2"



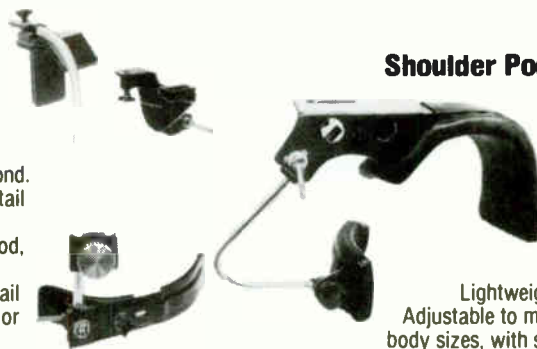
Zoom Drives

Remarkably compact zoom motors. Provide smooth, economical, variable speed zooming at the touch of a button. Complete with transistorized, rechargeable power supply/hand control unit.

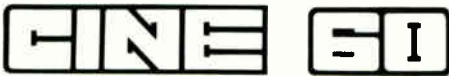
Cat. No. 6601 for Angenieux 12-120
Cat. No. 6602 for Angenieux 12-240
Cat. No. 6603 for Angenieux 25-250
Cat. No. 6604 for Angenieux 9.5-95
Cat. No. 6605 for Angenieux 9.5-57
Cat. No. 6606 for Canon 12-120
Cat. No. 6607 for Zeiss 10-100
Cat. No. 6608 for Angenieux 10-150
Cat. No. 6354 Replacement Charging Cord for power supply
Cat. No. 6355 Replacement Zoom Cable



Shoulder Pods



Lightweight. Adjustable to most body sizes, with soft cushioned shoulder and body supports. Fully adjustable to keep camera in perfect shooting position. Easily removable between takes. Cat. No. 6758-BL for Arri 16BL, 16SR & most flat base video cameras. Requires Arri Offset Eye Piece. Cat. No. 6758TK Same as 6758-BL except that body pad comes down to abdomen. For TK76 and similar Video Cameras. Cat. No. 6750 for Arri 16 and similar flat base cameras. Cat. No. 6751 for Arri 35.

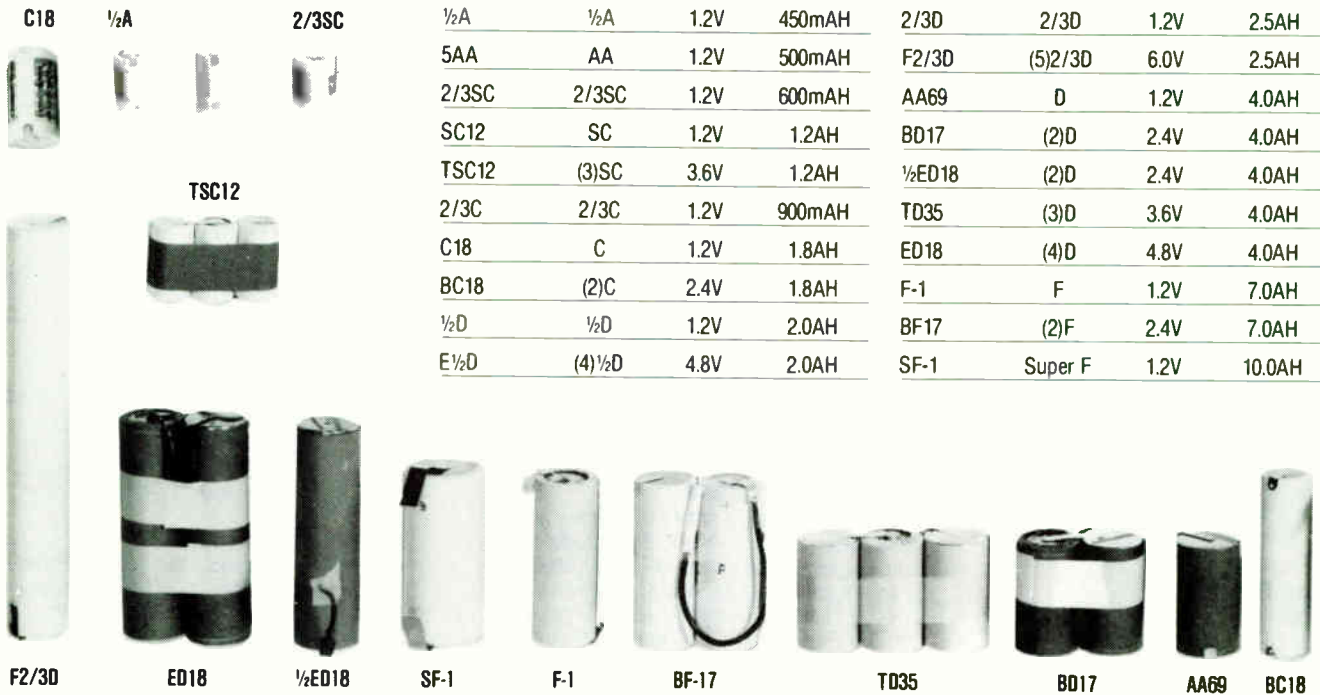


630 Ninth Avenue
New York, NY 10036
(212) 586-8782 Telex 645647

NICKEL-CADMIUM CELLS/ BATTERY MODULES

All Cells meet or exceed Cine 60 standards for heavy duty commercial use. Cell arrays can be assembled to any size or shape to fit your application.

Model No.	Size	Volts	AH (Capacity)	Model No.	Size	Volts	AH (Capacity)
1/2A	1/2A	1.2V	450mAH	2/3D	2/3D	1.2V	2.5AH
5AA	AA	1.2V	500mAH	F2/3D	(5)2/3D	6.0V	2.5AH
2/3SC	2/3SC	1.2V	600mAH	AA69	D	1.2V	4.0AH
SC12	SC	1.2V	1.2AH	BD17	(2)D	2.4V	4.0AH
TSC12	(3)SC	3.6V	1.2AH	1/2ED18	(2)D	2.4V	4.0AH
2/3C	2/3C	1.2V	900mAH	TD35	(3)D	3.6V	4.0AH
C18	C	1.2V	1.8AH	ED18	(4)D	4.8V	4.0AH
BC18	(2)C	2.4V	1.8AH	F-1	F	1.2V	7.0AH
1/2D	1/2D	1.2V	2.0AH	BF17	(2)F	2.4V	7.0AH
E1/2D	(4)1/2D	4.8V	2.0AH	SF-1	Super F	1.2V	10.0AH



Custom Packaging and Assembly

Cine 60 packages and assembles Nickel-Cadmium Cells and Battery Chargers into special Packs or Belts to meet your specific requirements. Complete services are available.

Battery Dememorizer

Nickel—Cadmium battery 'memory' is created by the build-up of excess crystals in the cell. Repetitive long periods of overcharging and shallow discharging can bring about this condition of apparent loss of capacity. The Dememorizer, properly used, will break down the excess crystals in the cell thereby restoring the apparent capacity loss. In the process it will also rebalance the cells to improve the battery's performance. Model No. DM-1214: equipped with solid-state constant current drain device, voltage sensor, automatic voltage cut off circuit, voltmeter, voltage selector, pushbutton 'start' switch. It will dememorize 12V and 14.4V 1.5 Amp to 20 Amp Batteries.



Battery Cables

Elasticity and rugged hard use is assured by the quality of these cables. Coiled types retracted are 11 inches long, extended 6 ft. They are supplied with OEM connectors. When the equipment's DC input connector is of the non-locking type, straight 6 ft. long cables are specified.



Newspak Nickel-Cadmium Battery Systems

Newspaks combine the best features of Cine 60 Battery Belts in an On-Board Battery to provide a high quality battery for video applications. The unique 4-module belt style construction reduces heat generated, slows cell ageing. Built-in Lifeguard Cell Sensors, 50% more accurate than the commonly employed sensors, monitor temperature of the custom-matched premium quality cells more efficiently, prevent overcharge and undercharge. Module covers are easily removeable for quick access to the cells for inspection, repair, or replacement. This exclusive design assures a longer, more powerful battery life and makes the Cine 60 Newspak the most practical high reliability battery on the market.

The Newspak mates with the standard battery bracket on the rear of most ENG cameras. It connects via an integral banana jack 'shorty' connector. As a direct replacement for OEM supplied On-Board Batteries, it is fully compatible with the OEM's Fast, Quick, or Slow Chargers. No cables, adaptors, or modifications are required. It also has an auxiliary 5-pin XLR for powering a battery light when required and which may also be used for charging with Cine 60 Chargers.

Newspak U-14

14.4V / 4 Amp.-Hr. / 4 1/2 lbs. For all Ikegami, Sony BVP Series, RCA, Thomson, Philips, CP, Harris, Ampex, and Hitachi SK81/91/97, FP-21, FP-22 Cameras. Direct Replacement for Ikegami QPY9N, Sharp XC-70/80/90 BAT On-Board Batteries.

U-14 \$435.00

Newspak U-13

13.2V / 4 Amp.-Hr. / 4 1/2 lbs. For Panasonic (except Recam), JVC, Sony DXC-M3, Sony Betacam, and all other Hitachi Cameras. Direct Replacement for Hitachi DP-40, JVC B-20, Sony BP-65AN, Panasonic SQ13F On-Board Batteries.

U-13 \$425.00

Cine 60 VTR Batteries

The Professional Direct Replacements for Sony BP-90 and BP-60 VTR Batteries. Feature custom-matched premium quality NiCad cells and the exclusive 'Lifeguard Cell Sensors' as used in Cine 60 Newspaks and Battery Belts.

BP-912FC & BP-912S Sony BP-90 Replacements

12V / 4 Amp.-Hr. VTR Battery in heavy-duty molded case with non-shorting type connector and replaceable fuse to guard against external shorts. Both Fast and Slow Charge models compatible with Sony BC-210 and all overnite chargers for BP-90 type Batteries.

BP-912FC \$255.00

(For fast or quik charging with all Cine 60 Fast Chargers use BPA Charger Adaptor)

BP-912S Standard Charge Model \$230.00

BP-612FC & BP-612S Sony BP-60 Replacements

13.2V / 2 Amp.-Hr. rating for maximum power. Delivers up to ten times more power over its life than Sony's BP-60. Can be stored in discharged condition indefinitely. Both Fast and Slow Charge models can be charged overnite with Cine 60's BP-25C 2-position Overnite Charger.

BP-612FC \$195.00

(With Cine 60 Lifeguard Fast or Quik Chargers, use BPA Adaptor)

BP-612S Standard Charge Model \$180.00

Cine 60 Betacam Battery NP-4

12V/4 Amp.-Hr. / 4 lbs. The Professional Replacement for Sony's NP-1 Battery. Provides more than three times the power. Features premium quality NiCad Cells and Cine 60's exclusive Lifeguard Cell Sensors. Has automatic reset circuit breaker to guard against external shorts, 4-pin XLR for direct connection to the Betacam's D.C. input. Mates with the Cine 60 MB-4 Battery Bracket which can be mounted on the rear of the Betacam with existing screws. Run Time: 2.5 Hrs. for BVW-1, 1.6 Hrs. for BVW-3 Betacam. Can be charged fast, quik or slow with Cine 60 Chargers.

NP-4 \$275.00

(Supplied with Overnite Charger, Shoulder Strap and Belt Clip for use off the Betacam)

MB-4 Battery Bracket \$ 75.00

(For the Betacam)

LC4-914 Lifeguard 4-Hour, 4-Position Fast Charger

Has 4 independent 1 Amp Charging Channels. Each can be changed to provide single position charge rates of 2, 3, or 4 Amps. Use as a single position 1 Hour Fast Charger for 4 Amp. Newspak, OEM On-Board Battery, BP-912FC, BP-612FC VTR Batteries, Betacam Battery...or...as a 4-position, 4-hour Fast Charger for any combination of these Batteries. Requires BP3XF Charge Adaptors for OEM Batteries, BPA Adaptor for VTR Batteries, 4P-5P Charge Adaptor for Betacam Battery. Excellent line and load regulation assures a full charge. 115/220V switchable. Compact 4 1/2" x 6 5/8" x 7 1/2". Lightweight 4 lbs.

LC4-914 \$695.00

LC-914 Lifeguard 4-Hour, Single-Position Quick Charger

Compact 1 Amp. single-channel version of LC4-914 Fast Charger. Weighs 10 ozs. Charges Newspak, OEM On-Board Batteries, etc. in 4 hours. Requires same Charge Adaptors for OEM & VTR Batteries as LC4-914 above. 115/220V switchable. Size: 4 1/4" x 2 7/8" x 1 1/2".

LC-914 \$210.00

BP-2C 2-Position Overnight Charger For BP-90 Batteries

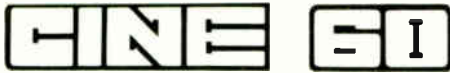
Accepts all types. Charges two overnight. Size: 4 1/4" x 2 7/8" x 1 1/2". Weighs 10 ozs. BP-2C 115V, BP-2C-220 220V.

BP-2C ea. \$105.00

BP-25C 2-Position Overnight Charger for BP-612 Batteries

Same size and weight as BP-2C. BP-25C 115V, BP-25C-220 220V.

BP-25C ea. \$105.00



630 Ninth Avenue
New York, NY 10036
(212) 586-8782 Telex 645647

NICKEL-CADMIUM BATTERY CHARGERS

"Pro" Universal Fast Chargers

Provide safe fast charging without overcharging of 6 to 30 volts (5 to 25 cell) Fast Charge type batteries. Will recharge a 4AH Battery in one hour, 7AH in 2 hours. Sensing circuits are utilized and visual indicators on the Chargers provide continual monitoring of Battery status. Manual "Start", automatic cut off at end of charging cycle. Two charge rates, Fast/Slow.



Model No.	Input Voltage	Cell Types	Charge Rates	Charge Conn.	Size	Weight
9400	115V 50/60Hz	D or F	4A/350mA	5-pin XLR	2 3/4" x 3 1/2" x 8"	3 lbs.
9400B	"	"	"	4-pin XLR	"	"
9422	220V 50/60Hz	"	"	5-pin XLR	"	"
9422B	"	"	"	4-pin XLR	"	"
BP2500	115V 50/60Hz	1/2D, 2/3D, D, F	2.5A/250mA	3-pin XLR	"	"
BP2522	220V 50/60Hz	"	"	"	"	"
9400-U	115/220V 50/60Hz	D or F	3A/350mA	5-pin XLR	3 3/4" x 4 1/2" x 8 3/4"	"
9400-UB	"	"	"	4-pin XLR	"	"

Mobile 12VDC Fast Chargers

Using the vehicle's electrical system, these models provide safe fast charging without overcharging 12 to 30 volt Fast Charge type batteries. Equipped with Charge Current Ammeter, LED Indicators for DC input & Charge Mode, "Start" Charge Pushbutton, On-Off Switch and sensing circuits to provide continual monitoring of battery status. Automatic cut off at end of charging cycle. DC Input Cord 3 ft. long terminated in AMP lugs for connection to Car Battery or Fuse block. Will recharge a 4AH battery in 1 hr., a 7AH battery in 2 hrs.

Model No.	DC Input Volts/Amps	Cell Types	No. of Cells	Charge Rate	Charge Conn	Size	Weight
94DC12A	12-13.5V-7 Amps	D or F	10, 11 or 12 cells (12V - 14.4V)	4A	5-pin XLR	4 3/4" x 4 3/4" x 7"	4 lbs.
94DC12B	"	"	"	"	4-pin XLR	"	"
94DC16A	"	1/2D, 2/3D, D, F	10 to 14 cells (12 to 16.8V)	2.5A	5-pin XLR	"	"
94DC30	12-13.5V-17 Amps	D or F	20 to 24 cells (30V-4A, 7A) (12-14.4V-8A, 14A)	4A	5-pin XLR	4 3/4" x 4 3/4" x 9"	5 lbs.



Single and Dual 14 - 16 Hour Overnight Chargers

Each type occupies an area 4 3/8" x 2 7/8" and is 1 1/2" high. The dual type will charge two batteries simultaneously. Each charging circuit includes an indicator lamp and flush-mounted charge receptacle. Both types come with 3 ft. long power input cord, polarized plug and are fused.



Dual Types Model No.	Input Voltage	Cell Types	No. of Cells	Charge Connector	Charge Rate
BP-2C	115V 50/60Hz	D or F	2 to 24 cells	2.1mm DC pin plug	350mA
BP-2C/220	220V 50/60Hz	"	"	"	"
BP-25C	115V 50/60Hz	1/2D, 2/3D	2 to 24 cells	"	250mA
CBP-2J	"	"	"	3.0mm DC pin plug	"
CBP-2J/220	220V 50/60Hz	"	"	"	"

Single Overnight Chargers

These line-isolated desk type chargers are available for replacing inefficient Nickel-Cadmium Battery Chargers. Each provides a full charge in 14 to 16 hours at the C10 charge rate. Each is equipped with a LED Charge Indicator, 5-pin XLR Charge Cable. C10 Chargers for different Battery Voltages, Charging Rates, and/or Charge Connectors can be made up on special order. To denote a 4-pin XLR Charge Cable for any charger listed below, add the letter "B" to the end of the model number. Charger input is 115V/50/60Hz. For 220 V Chargers add suffix -220V to Model No.

Single Overnight Charger Model Nos.

No. of Cells	7 Cells	10 Cells	12 Cells	14 Cells	20 Cells	24 Cells
Battery Voltage	8.4V	12V	14.4V	16.8V	24V	28.8V
Cell Size/Capacity	↓	↓	↓	↓	↓	↓
1/2A 450mAH	450-7	450-10	450-12	450-14	450-20	450-24
AA 500mAH	500-7	500-10	500-12	500-14	500-20	500-24
2/3SC 600mAH	600-7	600-10	600-12	600-14	600-20	600-24
2/3C 900mAH	900-7	900-10	900-12	900-14	900-20	900-24
SC 1200mAH	1200-7	1200-10	1200-12	1200-14	1200-20	1200-24
C 1800mAH	1200-7	1800-10	1800-12	1800-14	1800-20	1800-24
1/2D 2.0 AH	2.0-7	2.0-10	2.0-12	2.0-14	2.0-20	2.0-24
2/3D 2.5 AH	2.5-7	2.5-10	2.5-12	2.5-14	2.5-20	2.5-24
D 4.0 AH	4.0-7	4.0-10	4.0-12	4.0-14	4.0-20	4.0-24
F 7.0 AH	7.0-7	7.0-10	7.0-12	7.0-14	7.0-20	7.0-24
SF 10.0 AH	10.0-7	10.0-10	10.0-12	10.0-14	10.0-20	10.0-24

Sun-Gun #6201-A, 12 14.4 & 30 Volts

A unique battery-powered light used by TV News Camera Men and documentary video & film makers all over the world as a 'fill' light outdoors, a 'key' or 'fill' light indoors. For 70, 100, 150, 250 and 350 watt quartz lamps.

Features:

- Soft, wide angle focusing light. Ideal camera-mounted for head-on situations. At 10 ft. flood position throws a 14 ft. wide beam flat from edge to edge, free of hot spots, filament patterns, or halos. Camera man achieves better picture quality balancing 'fill' light to ambient light, and eliminating facial shadows. A heat insulated knob provides for focusing.
- Built-in Swing-Away Dichroic Filter provides 5500°K color temperature with the turn of a knob. Correct color temperature whether indoors or outdoors is always assured without the need for adjusting the camera's filter.
- Accepts 12V 100W, 14.4V 70W, 30V 150W, 250W & 350W Lamps.
- Single finger control of focus and on-off switch.



Cine 60 Sun-Gun Kits



The Sun-Gun Kit consists of: The Cine 60 Sun-Gun Head (with integral Swing-Away Filter Holder, removable handle, integral battery cable), Cat. No. 6201A; Tungsten-Halogen Lamp; Swing-Away Dichroic Filter, Cat. No. 6202; Powerbelt or Powerpak, Std. or Fast Charge; Overnight Charger; Carrying Case, Cat. No. 6207. Pictured: 12V .8AH FC Powerbelt Sun-Gun Kit with 1-Hour Fast Charger, Cat. No. SGK-8327PS.

SGK-8327PS	Standard Powerbelt Sun-Gun Kit. 12 Volt — 8AH (50 min. life. Wt. 20 lbs.)	\$ 972.00
SGK-8327PS	Fast Charge Powerbelt Sun-Gun Kit. 12 Volt — 8AH (50 min. life. With 9400 Fast Charger. Wt. 23 lbs.)	\$1304.00
SGK-7027PS	Standard Powerbelt Sun-Gun Kit. 12 Volt — 14AH (80 min. life)	\$1276.00
SGK-7027FC	Same As SGK-7027PS except with Fast Charge Powerbelt and Fast Charger	\$1596.00
SGK-6304PS	Standard Powerbelt Sun-Gun Kit. 30 Volt — 4AH (25 min. life. Wt. 21 lbs.)	\$ 941.00
SGK-8304PS	Fast Charge Powerbelt Sun-Gun Kit. 30 Volt — 4AH (25 min. life. With 9400 Fast Charger. Wt. 24 lbs.)	\$1270.00
SGK-7004PS	Standard Powerbelt Sun-Gun Kit. 30 Volt — 7AH (40 min. life)	\$1270.00
SGK-7004FC	Same As SGK-7004PS except with Fast Charge Powerbelt and Fast Charger	\$1607.00
SGK-9704PS	Standard Powerpak Sun-Gun Kit. 30V — 7AH (40 min. life. Wt. 23 lbs.)	\$1299.00
SGK-9704FC	2 Hr. Fast Charge Powerpak Sun-Gun Kit. 30 Volt — 7AH (40 min. life. With 9400 Fast Charger. Wt. 26 lbs.)	\$1616.00

Switchable Sun-Gun Kits

Combines 30V 250W and 14.4V 70W Sun-Gun lighting in one kit.

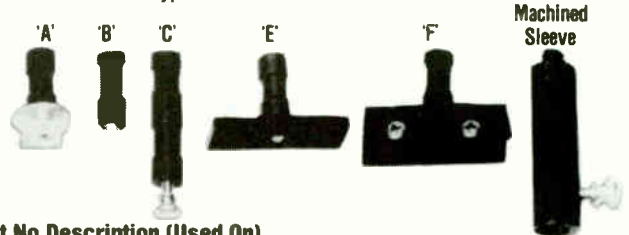
These Models are supplied with the Combination 30 Volt and 14.4 Volt Switchable type Battery Belt or Battery Pack, Standard or Fast Charge, plus the 30 Volt 250 Watt Lamp and 14.4 Volt 70 Watt Lamp.

SGK-3014PS	Standard Battery Belt Sun-Gun Kit. 30 Volt — 4AH / 14.4 Volt — 8AH 30 Volt — 250 Watt (27 min. life) 14.4 Volt — 70 Watt (90 min. life)	\$1080.00
SGK-3014FC	Fast Charge Battery Belt Sun-Gun Kit. 30 Volt — 4AH / 14.4 Volt — 8AH. Same life as standard kit. With 9400 Fast Charger	\$1416.00
SGK-3017PS	Standard Battery Belt Sun-Gun Kit. 30 Volt — 7AH / 14.4 Volt — 14AH 30 Volt — 250 Watt (42 min. life) 14.4 Volt — 70 Watt (147 min. life)	\$1408.00
SGK-3017FC	Fast Charge Battery Belt Sun-Gun Kit. 30 Volt — 7 AH / 14.4 Volt — 14AH. Same life as standard kit. With 9400 Fast Charger	\$1746.00

Sun-Gun Mounting Brackets

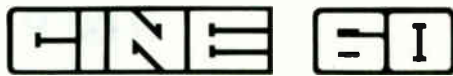
For easy, fast mounting and removing Sun-Gun on camera. Two piece set. Consists of precision machined aluminum sleeve with side locking knob for Sun-Gun and stud for camera. Supplied complete with hardware. Available in two diameters 3/8" and 1/2". Types for most cameras are listed below.

Two Piece Set — All Types \$45.00



Cat No. Description (Used On)

A-1/2	Has male accessory shoe. Mounts on all cameras equipped w/female accessory shoe.
B-1/2	Has 1/4-20 screw. Mounts on all cameras equipped w/1/4-20 hole. Sony BVP types, etc.
B1/6	Has 6mm screw. Mounts on Ikegami ITC-730.
B-1/5	Has 5mm screw. Mounts on JVC KY-1900.
B1/216	Has 3/8-16 screw. Mounts on all Panasonic and Ampex Recams.
C-1/2	Mounts on RCA TK-76.
D-1/2	Clamp type. Attaches to camera's handle.
E-1/2	Mounts on Ikegami HL-79 cameras.
F-1/2	Mounts on RCA TK-76B, C, and TK-86.
Note:	For 3/8" size Sleeve & Stud Set, instead of 1/2. specify 3/8.



LIFEGUARD SOFBELTS/PACKS/ STANDARD SOFBELTS

Features

- 115/230 Volt built-in Lifeguard switchable charger. Fully charges 4A or 8A Lifeguard Sofbelts or Packs in 4 hours, 7A or 14A units in 7 hours. Automatically switches to Lifeguard mode to keep battery fully charged.
- Thick-walled, cell-fitted, injection-molded, Sofbelt battery modules protect cells and intercell connections against harsh field abuse.
- Agelessly flexible, soft body-molded, foam-cushioned belt assures lifetime comfort. Soft rounded edges extend beyond mounted battery modules to conform to body contours.
- Individually calibrated precision ceramic cell sensors prevent overcharge, insure full charge.
- Switchable models, 14 volt for Camera, 30 volt for Light

Lifeguard Sofbelt/Battery Pack Data

All Lifeguard Battery Packs utilize the same components used in the 'Lifeguard' Sofbelt.

Battery Protection:

Precision cell sensing system assures full charge without overcharge. Automatically discontinues charge mode when full charge is reached.

'Lifeguard' rate prevents self-discharge, heat build-up.

Automatic reset circuit breaker disconnects battery from load in case of an external short.

Non-resettable thermal fuse.

All 'Lifeguard' Sofbelts, Packs, and Standard Sofbelts may be fast charged with Cine 60's 'Lifeguard' Fast Chargers Models LC4-914, LC4-930, or 'Pro' Chargers Models 9400, 9400-U, Car Chargers Models 94DC12A, 94DC30. Standard Sofbelts have same features and construction of 'Lifeguard' Sofbelts except that the built-in charger is a 14 hour overnite charge type and operates from 115VAC. 220 Volt operation is optional.



Built-in 'Lifeguard' Charger

Charge Time: 4 hours for 4 Amp & 8 Amp Batteries, 7 hours for 7 Amp & 14 Amp Batteries.

Charge Rate: 1 Amp, 'Lifeguard' Rate: 150mA

Regulation: Line and load regulation

Construction: Line-isolated, High Frequency System

Charger Cord: Integral

Operating Voltage: 95-135V/190-250V Switchable

Volts/Amps	Output Connector Arrangement	Sofbelt Lifeguard Cat.#	Sofbelt Standard Cat.#	Weight	Lifeguard Battery Pack	Case Style Size/Weight
12V 4A	XLR5-31	LS1204	S1204	5½ lbs.	LP9107*	'B' 4 lbs.
12V 7A	XLR5-31	LS1207	S1207	7½ lbs.	LP9707*	'C' 6 lbs.
12V 14A	XLR5-31, Charge Switch	LS1214	S1214	14 lbs.	LP9727	'E' 13 lbs.
13.2V 4A	XLR5-31	LS1304	S1304	5½ lbs.	LP9108*	'C' 5½ lbs.
13.2V 7A	XLR5-31	LS1307	S1307	6 lbs.	LP9708	'D' 8 lbs.
13.2V 8A	XLR5-31, Charge Switch	LS1308	S1308	11 lbs.	LP9128	'D' 10 lbs.
13.2V 14A	XLR5-31, Charge Switch	LS1314	S1314	15 lbs.	LP9728	'E' 15 lbs.
14V 4A	XLR5-31	LS1404	S1404	6 lbs.	LP9106*	'C' 5½ lbs.
14V 4A	XLR4-31	LS1404TK	S1404TK	6 lbs.	LP9106TK*	'C' 5½ lbs.
14V 7A	XLR5-31	LS1407	S1407	8 lbs.	LP9706	'D' 8 lbs.
14V 7A	XLR4-31	LS1407TK	S1407TK	8 lbs.	LP9706TK	'D' 8 lbs.
14V 8A	XLR5-31, Charge Switch	LS1408	S1408	11 lbs.	LP9126	'D' 10 lbs.
14V 8A	XLR4-31, Charge Switch	LS1408TK	S1408TK	11 lbs.	LP9126TK	'D' 10 lbs.
	XLR5-31 Charge Connector					
14V 14A	XLR5-31, Charge Switch	LS1414	S1414	15 lbs.	LP9726	'E' 15 lbs.
14V 14A	XLR4-31, Charge Switch	LS1414TK	S1414TK	15 lbs.	LP9726TK	'E' 15 lbs.
	XLR5-31 Charge Connector					
30V 4A	Amp AN3102-12S-3S XLR5-31 Charge Connector	LS3004	S3004	11½ lbs.	LP9004TK	'D' 11 lbs.
30V 7A	Amp AN3102-12S-3S XLR5-31 Charge Connector	LS3007	S3007	15 lbs.	LP9007	'E' 14 lbs.
30V 4A/14V 8A	Amp AN3102-12S-3S (30V) XLR5-31 (14V) Selector Switch	LS3014	S3014	11½ lbs.	LP9014	'D' 11 lbs.
30V 7A/14V 14A	Amp AN3102-12S-3S (30V) XLR5-31 (14V) Selector Switch	LS3017	S3017	15 lbs.	LP9017	'E' 15 lbs.

*Lifeguard Charger is separate. It is not built-into these Battery Packs.

CINETRONICS

8610 Oakdale Ave.
Canoga Park, CA 91306
(818) 709-4694

MIXER

4 Input Professional Microphone Mixer

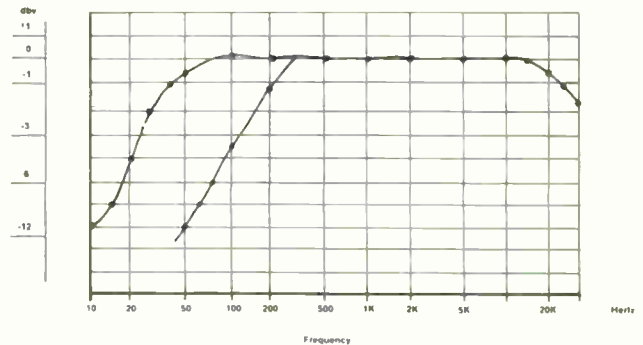
The CM-1 Mixer was specifically designed to fill requirements which heretofore were not satisfied by existing equipment in the TV and motion picture industries. It is ideally suited for one-man camera and sound operation as well as conventional use for ENG and film work. Among the outstanding features of the CM-1 Mixer is a completely new, non-visual distortion control system for one-man camera and sound work. This unique system for audio level control without V.U. meter monitoring provides a distortion-free output to a film or video recorder at a consistent level for best audio without utilizing automatic level control. Unlike many mixers which use an intermediate audio stage for a headset monitor, the CM-1 processes the last audio stage of the amplifier before recording through a clipping circuit which induces easily detected distortion in the headset circuit only. This distorted audio is actually 12 dBs before the level at which distortion will occur on the tape. By reducing gain until this distortion is not heard in the headset, the operator restores his 12 dBs of head room before audio quality is affected on the tape.

FEATURES

- A non-visual distortion control system for one-man camera/sound work.
- Twelve volt phantom power for shotgun mikes, switchable for any or all four channels.
- Low cut roll-off equalization down 12dBs at 50 cycles, switchable for any or all four channels.
- 1000 cycle sine wave tone for lineup. Level adjustable internally.
- V.U. meter which also reads battery condition.
- Four balanced microphone inputs. 50 to 250 ohms XLR connectors.
- Output in up position: Line output 600 ohms. In down position: Balanced output Mike-level 10mv.
- Phone plug headset output will accept any impedance from 8 to 400 ohms. Slotted screw adjusts headset volume to comfortable listening level.
- Separate twist lock battery compartment allows 30 second, no harness battery change without exposing electronic circuitry.
- Strap brackets for over-shoulder operation.
- External power input.
- Four individual audio channel controls.
- Peak level indication LED: adjustable to activate at the distortion point or any other desired head room level point before distortion.
- One year warranty.

SPECIFICATIONS

- Frequency Response: 40 to 18,000 KC +/-1 dB
 - Power System: An extremely versatile power system designed principally to draw power from external sources such as Nagra, ENG camera systems, or any power source 9 to 20 volts DC with plus or minus ground. The system provides that, if the external source fails or drops below the voltage of the internal 9 volt batteries, these batteries will automatically take over and supply power without any down time.
 - Power Consumption: 26 milliamps with no phantom power. 7 milliamps additional draw for each channel supplying phantom power.
 - Size: 6.5" x 2" x 3.5"
 - Weight: 31 ounces
- CM-1 Microphone Mixer\$977.00



MODIFICATIONS AVAILABLE FOR THE CM-1 MIXER

- Additional mic level output mini-jack below output selection switch\$30
 - Turn all XLR connectors 180 degrees (for use with right angle plugs)NC
 - Phantom power 12 volts pin 1-, 2+, pin 3+\$35
 - Requires extra switch in battery compartment to switch manually from internal power to external power with positive ground. In the external position, the batteries only supply power to the microphones.
 - FOR EACH OR EVERY INPUT**
 - Reversed AB powerNC
 - Input switchable to line level instead of mic power\$25
 - Balanced 10 dB attenuator in front of input transformer rather than mic power\$20
 - Power connector changed to XLR 4-pin male attached to the side of the mixer\$25
- When ordering modifications at a later time, add \$45

CIPHER-DIGITAL, INC.

10 Kearney Rd. Suite #21
Needham, MA 02194
(617) 449-7546

SMPTE TIME CODE READERS/GENERATORS/ VIDEO INSERTERS



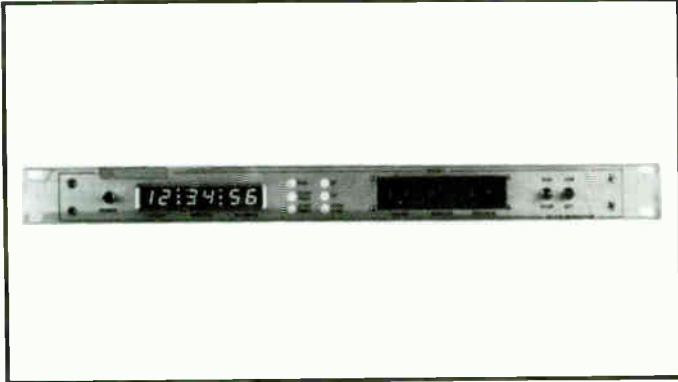
SMPTE Time Code Reader Model 710A

710A Features: • Low Cost • Wide Dynamic Input and Bandwidth
• Integral Video Character Generator • Low Profile 1-3/4" x 19" Package **\$2650.00**



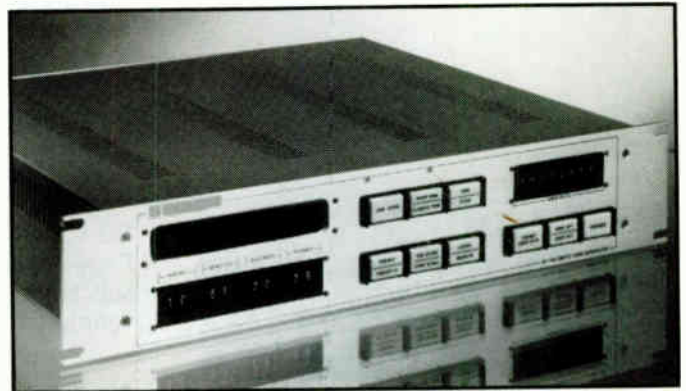
Reader/Generator/Character Generator with Video Model 722A

722A Features: • Designed to provide complete generate, read and video display capabilities in one cost-effective package • Drop Frame or Non Drop Frame mode, plus the insertion of User data • A wide dynamic input and bandwidth allows it to read and display code from 1/20 to 100x VTR play speed • Selectable parallel data outputs, for Time or User data **\$4950.00**



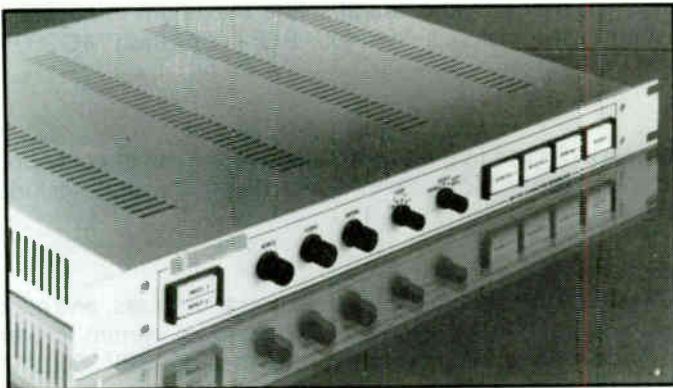
Time Code Generator Model 716A

716A Features: • Designed specifically for Television Studio and Production Environments • Display and output of SMPTE time codes • Internal Reader • Reference Sync inputs for video or film tach pulse • Drop Frame Mode • Jam Sync • Sync lock **\$2650.00**



SMPTE Code Generator Model 766

766 Features: • Generator Time and User Code • Internal or external Sync • Integral User Data Preset Switches • Fully Remote Controllable • Drop Frame Mode • Jam Sync Option • Real Time Clock Option **\$3650.00**



SMPTE Character Generator Model 700A

700A Features: • BCD Parallel Input • Keys Hexadecimal Characters on to Video Signal (O-F) • Low Cost **\$2450.00**



SMPTE Time Code Reader Model 760

760 Features: • Wide Input Bandwidth • Reads Simultaneous Time and User Data • Integral Video Character Generator • Dot-Matrix, Hexadecimal Display • Low Profile 1-3/4" x 19" Package **\$3650.00**



SCA 2 SYSTEM



SG 800 STEREO GENERATOR



AM 4 SYSTEM



FM 4 SYSTEM

APP 400 and SPP 800 PREPARATION PROCESSOR

This unit automatically corrects for errors in audio levels and tonal balance. Used alone, it is excellent for dubbing music and commercials since it will "fix" deficient source material and restore proper balance. AGC action is gated. Includes built-in pink noise generator.

SCA 2 SYSTEM

This system combines a state-of-the-art SCA generator; model SCA 300 with the APP 400, split band AGC for audibly superior sound, and main channel interference protection.

SEP 400A SPECTRAL ENERGY PROCESSOR

This unit provides the capability of shaping and altering program material to create any sound desired. It provides a powerful loudness increase; yet retains a musical sound quality.

PMC 300A PEAK MODULATION CONTROLLER

This unit provides necessary peak control without overshoot. Provides adjustable high-frequency pre-emphasis for maximum fidelity on typical receivers. Includes built-in compensation for plate modulated transmitters to improve fidelity.

SMP 900 AM STEREO MATRIX PROCESSOR

This unit is our latest design. Provides high quality audio and maintains maximum modulation to prevent coverage loss. A true matrix processor.

SMP 800 FM STEREO PROCESSOR/LIMITER

This unit provides absolute peak control and patented, no overshoot, filters. Contains input AGC circuit and 25, 50 or 75 microsecond pre-emphasis as required. Protects pilot with very effective low pass filter.

SG 800 STEREO GENERATOR

Exclusive balanced modulator design allows ultra-linear modulation of the 38kHz subcarrier, while maintaining a precision digital phase lock with the pilot to prevent any frequency drift. Available for use with the SMP 800 Stereo Limiter.

AM 2 SYSTEM

This is a two-band system at a budget price. Consists of APP 400 and PMC 300A. May be upgraded to the AM 4 at any time.

AM 4 SYSTEM

This is a four-band system that provides the absolute maximum in coverage, loudness, and received fidelity. Includes APP 400, SEP 400A and PMC 300A.

FM 2 SYSTEM

This two-band system is perfect to upgrade your audio at a modest cost. Connects directly to your stereo generator for an audience pleasing sound. Includes SPP 800 and SMP 800.

FM 4 SYSTEM

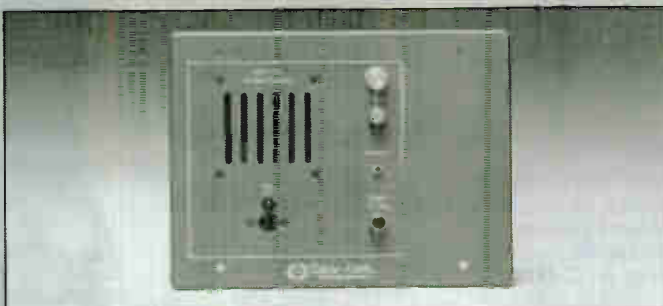
This is the ultimate FM system. Maximum fidelity, maximum loudness, and maximum control. Connects to your stereo generator. The perfect system for very competitive markets. The next best thing to more power. Includes SPP 800, SMP 800 and two SEP 400A units. *5750*

TV 2 SYSTEM

This unit provides a startling improvement to typical TV sound. Gates to avoid noise pull-up during pauses. Perfect peak control for maximum, audio coverage. Includes APP 400 and SMP 800.

HARD-WIRED INTERCOMS

- 1-8 channels
- portable, console and rack-mount stations
- circuit breaker-protected, no-fail power supplies
- volume and sidetone controls at every station
- interconnect with standard mic cable
- 4-channel intercom with 12 x 4 assignment matrix
- pre-settable talk and listen monitor functions
- visual "call" signalling
- stage announce and remote paging



KB-112 "Push-to-Talk" Speaker Station



CP-300 Belt Pack

BATTERY-POWERED INTERCOMS

- ideal for ENG, EFP, and other remote applications, indoors or out
- portable system runs on 12-32 volts DC
- rugged, lightweight belt-packs: 1- or 2-channels



PS-20 Two-Channel Power Supply



CS-210 Two-Channel Main Station

SYSTEM INTERFACES

- rack-mount and portable
- interfaces Clear-Com with any 2-, 3-, or 4-wire cameras and lines
- individual "transmit" and "receive" controls
- headset test tones for system balancing
- AC-10H holding coil lets you answer telephone without lifting receiver
- RTS-type system interface



AC-10H Telephone Interface

INTERCOM HEADSETS

- complete range of styles for all low- or high-noise environments
- lightweight and rugged
- built-in mic switches in flexible booms
- binaural or monaural headphones



Intercom Headsets (CC-35 & CC-55)



CC-75B



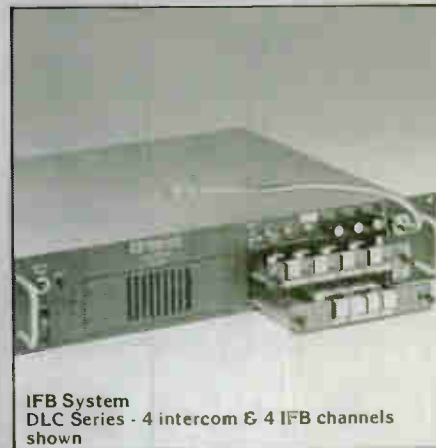
PH-7

WIRELESS INTERCOM INTERFACE

- partial full-duplex base station
- 1/4 mile range
- "call" signalling
- interfaces with hard-wired intercoms



Wireless Interface



IFB System
DLC Series - 4 intercom & 4 IFB channels shown

IFB SYSTEM (PROGRAM INTERRUPT)

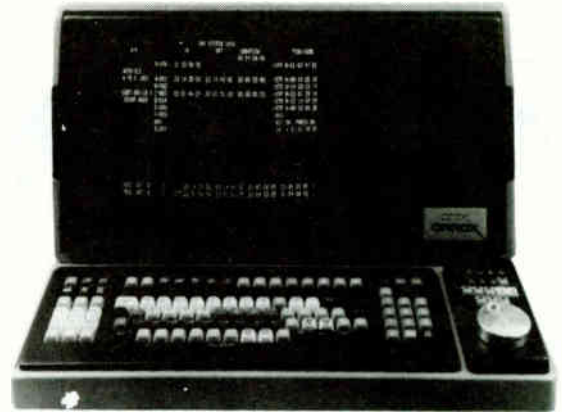
- designed for studio or remote applications
- perfect for sportscasters, news commentators, musicians
- accesses up to 8 talent
- one or two channels of program, select between continuous or interrupted feed
- compact Talent Receiver with miniature earphone
- "split-feed" Talent Receiver with binaural headset output
- rack-mount IFB Controller
- works with all Clear-Com Intercoms

CMX SYSTEMS

ORROX COMPANY

3303 Scott Blvd.
Santa Clara, CA 95050
(408) 988-2000 Telex 910-338-0554

EDITING SYSTEM



Model 340XL Videotape Editing System

Today CMX systems are used in every possible television application from a three-hour network special, to a ten-second spot, to industrial training tapes. Most Emmy Award winning television programs have been edited using CMX. Agencies and producers have come to expect their programming to be edited on CMX.

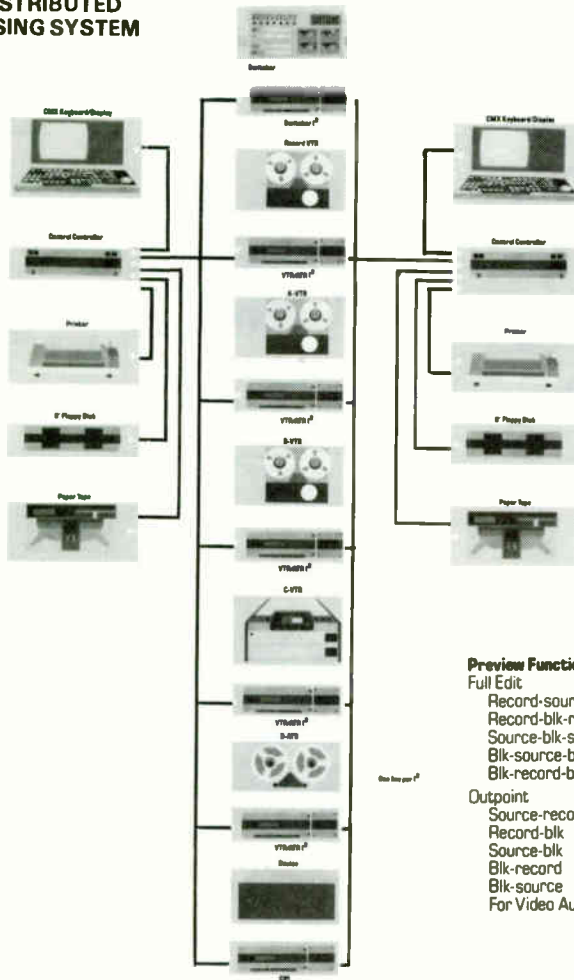
APPLICATIONS

- Delayed transition gives you the advantage of simple and efficient single event scene-transition-scene edits.
- Time code trim allows you to think in minutes, seconds and frames, not just frames.
- Nine preview modes allow you to see all important scene information for precise edits.
- Master/Slave operation gives you automatic synchronization of separate audio and video sources.

LIST MANAGEMENT

The CMX Decision List is the computer's copy of your Master Program Tape. True speed and flexibility in editing requires the capability to develop scene sequences in any order, i.e., matching incoming and outgoing takes, then processing the list for minimum auto assembly time. 340XL systems have the unique ability to move blocks of events, renumber events in groups or the entire list, and sort in several ways allowing you to get maximum efficiency from automatic assembly.

340X DISTRIBUTED PROCESSING SYSTEM



340XL SYSTEM SPECIFICATIONS

- System Configuration Distributed Processing
- Central Controller DEC Minicomputer
- Device Interfaces 16 Bit Microprocessor Controllers
- Device Interface Memory . . . EPROM
- Communication Format Serial/9600 BD/RS 232
- Communication Protocol . . . CMX 8 Bit Binary
- Edit Decision List Format . . . Industry Standard
- Edit Decision List I/O Most DEC compatible Floppy Disk /
Papertape/High Speed Printer Devices
- CRT Display Format 80 Characters per line/25 lines/50-60 Hz
Refresh Rate/Noninterlaced
- Display Monitor High Resolution CMX Terminal or any
Broadcast Video Monitor
- No. of Devices Assignable . . 24
- No. of Devices Controllable . 8
- Edit Accuracy Frame Accurate, Color Framed, PAL-pair
self-correcting
- Time Code Standards SMPTE Drop/NonDrop Frame, EBU
- Television Standards NTSC/PAL/SECAM
- Operators's Keyboard Expandable/Alphanumeric/Color Coded
- Motion Control Device Rotary Control for search/Slow Motion/
Frame Jogging (memorized recall in process)

Time Code Functions

- Set in time/Set multiple in times
- Set out time/Set multiple out times
- Set duration/Set multiple durations
- Trim in time/Trim multiple in times
- Trim out time/Trim multiple out times
- Mark in time/Mark multiple in times
- Mark out time/Mark multiple out times
- Auto trim of record and source devices
- Clear (all) marks
- Reset (all) marks
- Recall marks (of specific event)
- Restore last mark

Edit Transition Selections

- Cut
- Dissolve from/to
- Dissolve duration
- Wipe from/to
- Wipe code
- Wipe duration
- Key in (background/foreground/duration)
- Key out (background/foreground/duration)
- Delayed key
- Key delay time
- Fade up from black
- Fade to black
- (14 different types of key edits possible)

Machine Control Functions

- Rewind
- Fast forward
- Play
- Stop
- Slow motion
- Cue
- Still frame
- Jog forward
- Jog backward
- Retard Jog rate
- Advance Jog rate
- All stop

System Parameter Selection

- Event number
- Reel number (specific)
- All reel numbers
- Preroll time
- Drop/nondrop frame
- Print out time
- Print duration
- Interface channel assignment
- Show start
- Title
- Switcher crosspoint assignment

Edit Mode Selection

- Video only
- Audio only
- Audio follow video
- Split edit delay audio
- Split edit delay video
- Any combination of Audio 1, Audio 2, and Video can be selected

Automatic Edit Assembly Functions

- Sequential Assembly
- Reel-by-Reel Assembly
- Enable for Assembly (By Event #)
- Disable for Assembly (By Event #)
- Resume Assembly
- List Enabled Events
- List Disabled Events

Device Selection

- R—VTR/ATR
- A—VTR/ATR
- B—VTR/ATR
- C—VTR/ATR
- D—VTR/ATR
- E—VTR/ATR
- F—VTR/ATR
- AUX SOURCE
- BLK SOURCE

List Management

- Sort by event number
- Sort by record time
- Renumber events
- Move events
- New record start time
- Delete events
- Pull up events

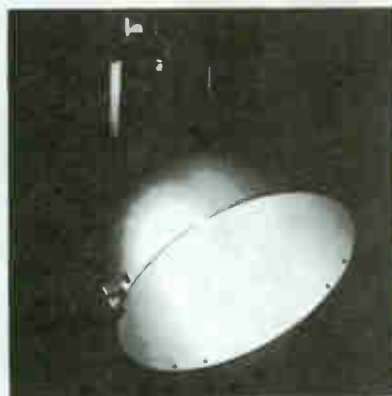
List Input/Output

- Load list
- Display list
- Punch list
- Read List
- Scroll list up
- Scroll list down



1015 Chestnut Street
 Burbank, CA 91506-9983
 (818) 843-1200
 Telex 67-7252WU, 188167TRT

LIGHTING



**For all your studio
 lighting and production
 needs — Colortran**



Colortran offers a complete line of "Made in America" production equipment, for your television studio requirements. New high efficiency Fresnels (1kW, 2kW & 5kW) are available in standard and pole operated versions. Ellipsoidal effects projectors with field angles from 5° to 40° for throws up to 100 feet. Light weight and efficient, Focusing Scoops, Soft Lights, Cys Strips (not illustrated) for fill and cyclorama lighting requirements. Plus variable load suspension units and distribution equipment custom built to your needs.

- 10 x 15 Studio Package
- 15 x 20 Studio Package
- 20 x 30 Studio Package
- 30 x 40 Studio Package
- 40 x 60 Studio Package

**PRICES
 ON
 REQUEST**



Colortran, Inc.

1015 Chestnut Street
Burbank, CA 91506-9983
(818) 843-1200
Telex 67-7252WU, 188167TRT

LIGHTING CONTROLS

Colortran offers a comprehensive line of both manual and computerized lighting control consoles to fit any application. Portable manual control units are available to control 6-999 dimmers in either fully manual units or in units with eight presettable recorded scenes. Three different computerized consoles are available for television lighting control: The portable Patchman for the small to medium sized studio; the System Two for larger installations; and the ultimate in lighting control systems, Dimension Five. State of the art dimming is available in the Dimension 192 Rack, available in rating capacities ranging from 1.2kw to 12.0kw all in plug-in configurations.



System Two 168-300 Series
A completely self-contained computerized control console.



Patchman 168-700 Series, the leader in portable lighting control systems, big system features, in a small package.



Dimension 192-192-000 Series
Maximum density dimming... up to 192 2.4kw dimmers or combinations with other ratings all in one rack.

(Optional) as an accessory to Dimension Five. Designer Remote 168-603 with a single display, channel controller, cue controller, two individual faders, and one crossfader which duplicate all main system functions, except for the more limited playback functions.



(Optional) as an accessory to Dimension Five. A hand held (Focusing Remote) 168-602 is provided to access all dimmers, channels and cues.

Dimension Five™ 168-400 Series, the most versatile and logical control system in the world. This is the lighting control system for the future, designed for versatility, ease of operation and for your needs —by Colortran.



Dimension Five—Two color video monitors, comprehensive group mastering, and multiple fader systems make this the ultimate in television lighting control.



1015 Chestnut Street
 Burbank, CA 91506-9983
 (818) 843-1200
 Telex 67-7252WU, 188167TRT

LIGHTING



1kw Pole Op Fresnels

FEATURES

- Rugged sheet metal construction with die cast reinforced accessory clips built to withstand tramping and rough handling
- New optical system designed for maximum photometric output
- Double wall construction for optimum cooling
- UL recognized floating diamond four point contact mogul bipost socket (patented)
- All operator controls are thermally insulated
- Rapid turn, rack and pinion focus mechanism for manual and pole operated versions for international applications
- Applications: Key lighting • Wattage: 1000W

100-205 Manual operated \$328.00
 100-215 Pole operated 477.00

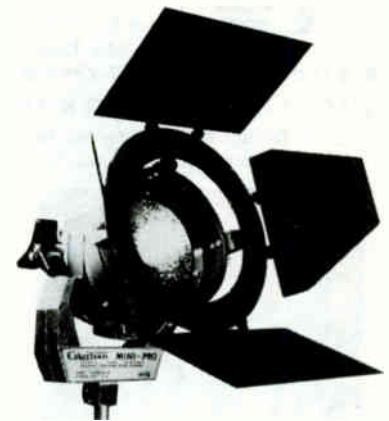


6" Theatre Fresnel

FEATURES

- Rugged lens door equipped with cool handling positive lock for fast and easy relamping
- High performance low expansion Borosilicate lens delivers maximum intensity in a smooth field
- Thermally insulated, fast track focus mechanism provides 6 to 1 spot/flood focus ratios
- Positive clutch system insures fast, positive, slip free operation
- Applications: Area, side, and back lighting
- Maximum Wattage: 750W

213-202 6" Theatre Fresnel \$160.00

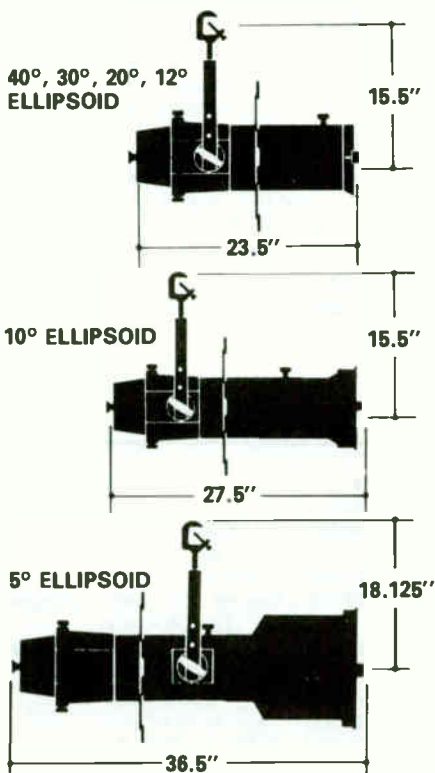


Mini-Pro®

FEATURES

- Utility yoke contains finger operated on/off switch
- Recessed power receptacle permits use of detachable 120 or 30 volt power cord
- Completely portable. Designed for stand mounting or hand held operation
- Operates at 30 volts, 120 volts or 240 volts AC/DC
- Safety lock prevents accidental loss of accessories from mounting clips
- Smooth field. No hot spots
- Variable focus produces 3:1 range
- Dichroic Filter available for daylight shooting
- "Quartz" Lamps for high efficiency
- Applications: Key, back, kicker, side lighting
- Maximum Wattage: 650W

100-091 Mini-Pro \$122.00



Ellipsoids

Colortran Ellipsoids are designed to frame areas, project patterns and help you create special effects. They are designed for throws of 14 feet to 140 feet. The Ellipsoid system incorporates: a rugged die cast housing assembly for long reliable service and ease of maintenance. A new high performance optical train with plano-convex lenses permits greater light transmission, fewer aberrations, improved field control and higher efficiency. Lenses are fabricated of low expansion borosilicate glass and may be easily field modified to create 40°, 30°, or 20° field angle in one unit. Lenses are shock mounted in silicone to eliminate possible damage. A new joy stick design assures fast precise filament alignment without tools. A new lens barrel design permits you to easily focus to a hard or soft field edge. A new framing shutter concept enables you to create nearly any three or four sided shape...this unique capability solves virtually every keystone problem. Each shutter travels in its own plane eliminating interference problems. Every unit is equipped with a built-in pattern slot and is available with an optional iris without the loss of other beam shaping capabilities.

40° & 30° Ellipsoid

Incorporates a single 4.5" and 6" diameter plano-convex lens. These units outperform 750 watt and 1kw 6" x 9" and 6" x 12" existing spotlights. They are designed for throws from 14' (4.3m) to 55' (16.7m). \$310.00

20° Ellipsoid

Incorporates a single 6" x 9" plano-convex lens. This unit outperforms 750 watt and 1kw 6" x 16" existing spotlights. Designed for throws from 30' (9.1m) to 67' (20.4m). \$305.00

12° Ellipsoid

Incorporates a single 6" x 12" plano-convex lens. This unit is equivalent in performance to higher priced generic eight-inch spotlights. Designed for throws from 45' (13.7m) to 80' (24.4m). \$310.00

10° Ellipsoid

Incorporates a single 8" diameter plano-convex lens. This eight-inch unit is equivalent in performance to existing ten and twelve-inch spotlights. Designed for throws from 55' (16.7m) to 108' (32.9m). \$446.00

5° Ellipsoid

Incorporates a high transmission 10" diameter plano-convex lens. With its efficient reflector design, single lens optical system and with optional iris assembly it actually outperforms many followspots. It is ideally suited to long-throw applications and is effective from 110' (33.4m) to 140' (42.7m). \$625.00

Mini-Ellipse

The new Mini-Ellipse establishes a new performance standard. It is designed for throws from 6 feet to 40 feet. It accepts a range of high output Tungsten-Halogen Lamps from 250 watts to 500 watts at 120 volts and 500 watts at 240 volts. \$165.00

Reprinted with Permission from Materials © 1982 COLORTAN, INC.

Prices and Specifications Subject to Change Without Notice.

B-299



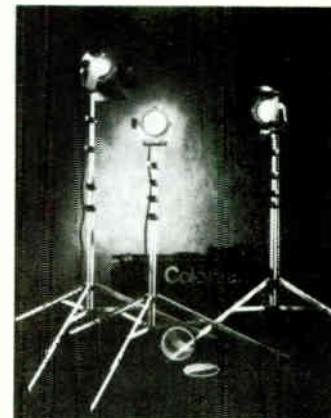
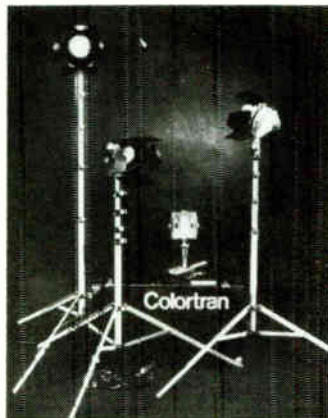
1015 Chestnut Street
Burbank, CA 91506-9983
(818) 843-1200
Telex 67-7252WU, 188167TRT

Colortran, Inc.

ENG/LOCATION LIGHTING KITS

14 — Highly flexible kits that set-up fast for the most complex shooting situations

LIGHTING KITS



COLOR BEAM 800 KIT

Features

Uses three cool touch Color Beam 800 units. Accessories include accessory holder, barn-doors and scrim set. Total connected load 16.3 amps at 120 volts and 11 amps at 220 volts.

Contents

qty.	catalog number	description
1	122-147	Scrim Set — Single, Half Single
1	148-007	Case
3	152-051	Mini-Stand with 5/8" Stud
3	176-002	650 Watt 120V Lamp (150-060 Kit)
3	400-201	Color Beam 800
3	118-013	4-Leaf Barndoor
3	126-097	Accessory Holder
3	176-007	800 Watt 220V Lamp (156-061 Kit)

150-060 (120V)

150-061 (220V) \$1300.00

PRO-KIT IV

FEATURES

Four lights. Two Minibroads, and two Mini-Pros. Key and fill lighting in one package.

Interchangeable accessories.

Designed for use with 120 volt or 240 volt lamps for foreign location work.

Draws: 20 amps at 120 volts and 11 amps at 220 volts.

Contents

qty.	catalog number	description
2	100-091	Mini-Pro
2	104-341	Mini-Broad
3	118-016	4-Leaf Barndoor
1	142-001	25' Extension Cord
1	148-030	Metal Case
3	152-050	Mini-Stand 1/2" Stud
1	156-012	Gaffer Grip
2	176-002	650 Watt 120V Lamp (150-052 Kit)
2	176-092	600 Watt 120V Lamp (150-052 Kit)
2	176-007	800 Watt 220V Lamp (150-053 Kit)
2	176-094	650 Watt 220V Lamp (150-053 Kit)

150-052 (120V) w/metal case

150-053 (220V) w/metal case \$1125.00

MINI-PRO KIT

FEATURES

Lightweight

Designed for use with 30 volt battery power, 120 volts, or 220 volts

Kits in current use by network news crews and photographers

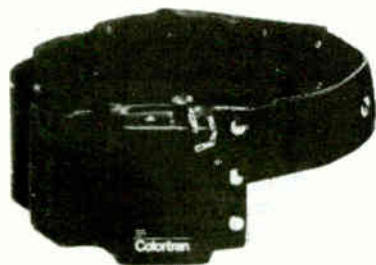
Draws 15 amps at 120 volts and 8amps at 220 volts

Contents

qty.	catalog number	description
3	100-091	Mini-Pro
2	118-016	4-Leaf Barndoor
1	122-137	Scrim Set-Single, Half Single
1	142-001	25' Extension Cable
1	148-030	Metal Case
3	152-050	Mini-Stand with 1/2" Stud
3	176-092	600 Watts 120V Lamp (150-050 Kit)
3	176-094	650 Watt 220V Lamp (150-050 Kit)

150-050 (120V) w/metal case

150-051 (220V) w/metal case \$930.00



BATTERY BELT KIT

BATTERY BELT KIT

FEATURES

Kit comes complete with Battery Belt, Mini-Pro, 30 Volt DC cord, Mini Pro Handle, 9 foot cord for 120 Volt AC power operator (note—requires 120V lamp). Carry Case and 250 Watt 3400 K 30V lamp.

Batteries are rechargeable Nickel-Cadmium Cells and will provide many years of reliable service.

Note—Belt comes complete with 14-hour overnight charger and an integrated cable. Charger designed for 120 and 240 volt input power.

Contents

qty.	catalog number	description
1	100-091	Mini-Pro
1	140-003	30 Volt DC cord
1	140-001	Battery Belt with charger unit (120/240 volt)
1	142-012	9' cord for 120V AC power (requires 120V lamp)
1	148-030	Carry Case (metal)
1	156-005	Mini-Pro Handle
1	176-090	250 Watt, 3400°K 30V lamp, 25 hours

150-063 30 volt Battery Belt Kit \$1475.00



1015 Chestnut Street
Burbank, CA 91506-9983
(818) 843-1200
Telex 67-7252WU, 188167TRT

LIGHTING KITS

ENG/LOCATION LIGHTING KITS

4—Highly flexible kits that set-up fast for the most complex shooting situations.

Colortran's lighting kits are designed for film/ENG lighting anywhere in the world.

14 different kits in 120, 220 and 240 volt versions. Kits are sized to deliver maximum lighting with minimum power consumption.

Fill lights and variable focus spots are available in wattage from 250 to 1000 watts. Lightweight construction and compact design delivers maximum illumination while maintaining complete portability.



PRODUCTION KIT

FEATURES

Designed to illuminate a 15' wide x 10' deep by 10' high area.

Includes lights, stands, accessories, cable, and switch boxes.

Applications include news, sports, weather, commercials, instruction, etc.

Total connected load 45.8 amps at 120 volts.

Contents

qty.	catalog number	description
3	100-201	1000 Watt Fresnel
3	118-013	4-Leaf Barndoor
3	142-101	25' Extension Cable
3	152-053	Compact Stand w/Casters
1	142-215	Outlet Box w/2 Outlets 25' Cable
3	176-097	1000 Watt Lamp
2	104-031	Broad
2	152-053	Compact Stand w/Casters
2	176-022	1000 Watt Lamp
1	104-041	Multi-Broad
2	120-007	Diffusion Frame
1	142-101	25' Extension Cable
1	152-053	Compact Stand w/Casters
1	176-024	500 Watt Lamp
2	148-001	Case

150-062 \$4130.00



LOCATION LIGHTING KIT

FEATURES

Accessory holder on Multi-10 simplifies operation.

Designed for more complex lighting setups.

One case carries all equipment.

Channel leg stands for reliable support.

Draws 41.6 amps at 120 volts and 14.5 amps at 220 volts.

Contents

qty.	catalog number	description
2	100-301	Multi-10
2	118-013	4-Leaf Barndoor
1	122-147	Scrim Set—Single, Half Single
2	176-012	1000 Watt 120V Lamp (150-056 Kit)
2	176-015	800 Watt 220V Lamp (150-057 Kit)
2	104-051	Mini-King
2	118-003	4-Leaf Barndoor
1	148-001	Case
2	152-052	Compact Stand
2	176-002	1000 Watt 120V Lamp (150-056 Kit)
2	176-027	800 Watt 220V Lamp (150-057 Kit)

150-056 (120V) \$1485.00
150-057 (220V) \$1485.00



FLIGHT KIT

FEATURES

Lightweight, compact, designed for fast setups.

Accessory holders on Multi-6 for simple setup.

Draws 27.5 amps at 120 volts and 15 amps at 220 volts.

Contents

qty.	catalog number	description
2	100-151	Multi-6
2	118-013	4-Leaf Barndoor
1	122-147	Scrim Set—Single, Half Single
2	176-002	650 Watt 120V Lamp (150-058 Kit)
2	176-007	800 Watt 220V Lamp (150-059 Kit)
2	104-051	Mini-King
2	118-003	4-Leaf Barndoor
1	148-007	Case
3	152-051	Mini-Stand with 5/8" Stud
1	156-001	Gaffer Grip
2	176-022	100 Watt 120V Lamp (150-058 Kit)
2	176-027	800 Watt 220V Lamp (150-059 Kit)

150-058 (120V) \$1655.00
150-059 (220V) \$1655.00



CAMERAMAN'S LIGHTING KIT

FEATURES

A highly flexible kit for complex shooting situations.

All equipment fits in one case.

High output lighting equipment for optimum production lighting.

Draws 27 amps at 120 volts and 14.5 amps at 220 volts.

Contents

qty.	catalog number	description
2	400-201	Color Beam 800
2	126-027	Accessory Holder
2	118-013	4-Leaf Barndoor

2	104-341	Mini-Board
2	118-016	4-Leaf Barndoor
1	122-137	Scrim Set—Single, Half Single
1	148-007	Case
2	152-050	Mini-Stand with 1/2" Stud
2	152-051	Mini-Stand with 5/8" Stud
4	176-002	650 Watt 120V Lamp (150-054 Kit)
4	176-007	800 Watt 220V Lamp (150-005 Kit)

150-054 (120V) \$1325.00
150-055 (220V) \$1325.00

COMARK COMMUNICATIONS, INC.

Route 57
Feeding Hills Road
Southwick, MA 01077
(413) 569-0116

FM ANTENNAS

FM ANTENNAS CIRCULAR POLARIZED

FM Model No.	dB Gain	Power Gain	Field Gain 1	MAXIMUM INPUT POWER				Net Weight Pounds 4	Windload 5
				1" CW	3" CW	4" CW	6" CW		
FMLC-1	-3.56	44	.66	5	—	—	—	40(1 1/2 feet)	55
FMLC-2	-0.13	.97	.98	10	—	—	—	90	170
FMLC-3	1.76	1.50	1.22	10	—	—	—	140	250
FMLC-4	3.10	2.04	1.43	10	—	—	—	190	325
FMLC-5	4.07	2.55	1.60	10	—	—	—	240	400
FMLC-6	4.97	3.14	1.77	10	—	—	—	290	480
FMLC-7	5.62	3.65	1.91	10	—	—	—	340	560
FMLC-8	6.21	4.18	2.04	10	—	—	—	390	640
FMLC-10	7.16	5.20	2.28	10	—	—	—	490	880
FMLC-12	7.96	6.25	2.50	10	—	—	—	580	1,000
FMLC-14	8.63	7.30	2.70	10	—	—	—	660	1,220
FMHC-1	-3.28	.47	.69	—	10	—	—	60(3 3/8 feet)	130
FMHC-2	-0.04	.99	.99	—	10	—	—	140	280
FMHC-3	1.88	1.54	1.24	—	15	20	25	220	400
FMHC-4	3.30	2.14	1.46	—	20	25	30	330	525
FMHC-5	4.33	2.70	1.64	—	25	30	35	380	650
FMHC-6	5.19	3.30	1.82	—	30	35	40	460	780
FMHC-7	5.82	3.84	1.96	—	35	40	45	510	910
FMHC-8	6.33	4.30	2.07	—	40	45	50	580	1,030
FMHC-10	7.32	5.40	2.32	—	40	50	75	650	1,380
FMHC-12	8.16	6.54	2.56	—	40	50	75	730	1,580
FMHC-14	8.86	7.70	2.77	—	40	50	75	860	1,880

NOTES:

- To obtain the effective free space field intensity at one mile MV/M for one kilowatt antenna power, multiply field gain by 137.6
- Listed for power handling purposes only. Electrical and mechanical data listed is nominal for 1 1/2" and 3 3/8" feed systems.
- Includes all hardware.
- Windload based on 50psf on flat surfaces and 33 psf for cylindrical surfaces (actual wind velocity 110 MPH) computed for midband antenna structure.

Power gains are for 50/50 horizontally and vertically polarized ratios.

Antenna polarization is circular clockwise, in all directions of azimuth.

Prices include complete mounting hardware for leg mounting on uniform guyed towers.

Brackets for face mounting or self-supporting towers are extra. Prices upon request.

Antenna input flange on H series is 3 3/8" EIA Female. The L series is 1 1/2" EIA Female.

Windload ratings are 50/33 PSF, 110 miles per hour.

Antenna weights include standard mounting hardware. Add 10 pounds per bay for deicers.

Deicers require 230 volts, single phase AC Power with 400 watts consumption per bay.

When Ordering Be Sure To Specify:

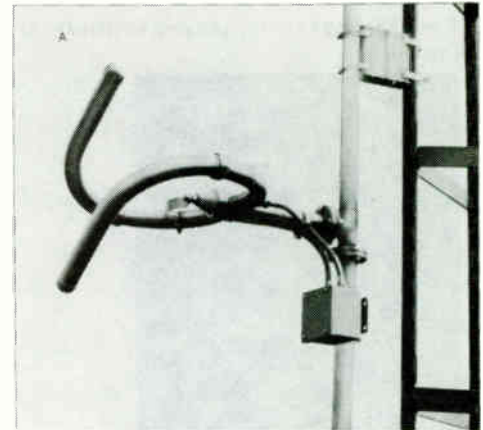
- Antenna Type Number
- Deicers, if any
- Exact Frequency
- Description of Tower — Make and Model

Circularly Polarized FM Educational Antenna Specifications

Model Number	Power Gain	dB	Field Gain	FS	WT	Power Rating (kW)	Windload
FMCE 1	43	-3.67	65	90	10	5	20
FMCE 2	90	-4.6	95	131	22	5	40
FMCE 3	140	1.46	117	163	35	5	65
FMCE 4	192	2.83	136	190	47	5	88
FMCE 5	240	3.80	154	212	59	5	112
FMCE 6	290	4.62	168	235	68	5	135

Horizontally Polarized FM Educational Antenna Specifications

Model Number	Power Gain	dB	Field Gain	FS	WT	Power Rating (kW)	Windload
FMHE 1	10	0	10	138	10	5	20
FMHE 2	18	2.55	134	184	22	5	40
FMHE 3	27	4.40	172	225	35	5	65
FMHE 4	36	5.52	195	260	47	5	88
FMHE 5	45	6.45	222	284	59	5	112
FMHE 6	54	7.2	235	312	68	5	135



FM Educational Antenna, Circularly Polarized

Model Number	Price
FMCE-1	\$ 485.00
FMCE-2	980.00
FMCE-3	1780.00
FMCE-4	1885.00
FMCE-5	2695.00
FMCE-6	3290.00

FM Educational Antenna, Horizontally Polarized

Model Number	Price
FMHE-1	\$ 485.00
FMHE-2	980.00
FMHE-3	1780.00
FMHE-4	1885.00
FMHE-5	2695.00
FMHE-6	3290.00

FM Broadcast Antennas, Circularly Polarized

Model Number	Price
FMLC-1	\$1670.00
FMHC-1	2195.00
FMLC-2	2575.00
FMHC-2	3940.00
FMLC-3	3625.00
FMHC-3	5540.00
FMLC-4	4645.00
FMHC-4	7125.00
FMLC-5	5750.00
FMHC-5	8765.00
FMLC-6	6735.00
FMHC-6	10,290.00
FMLC-7	7825.00
FMHC-7	11,950.00
FMLC-8	8905.00
FMHC-8	13,170.00
FMLC-10	11,025.00
FMHC-10	16,635.00
FMLC-12	12,140.00
FMHC-12	19,565.00
FMLC-14	15,400.00
FMHC-14	23,095.00

Antenna Accessories

Deicers/Bay	\$280.00
Deicer Control Box	595.00
Replacement Deicer Element	25.00
Non-Standard MTG Bracket (face or leg)	130.00

COMPREHENSIVE VIDEO ACCESSORIES

Comprehensive has recognized the benefits of making all types of video supplies and accessories, and below are listed a small sampling of what is available.

- | | |
|---|--|
| AC power accessories | Lighting background supports |
| Breakout boxes | Studio expendable supplies |
| Cable crimp connector kits | Video/audio connector adaptors |
| Complete line of cables (video/audio) | Video & film production prop accessories |
| Degaussers | Video labels and cards |
| Distribution amplifiers | Video maintenance tools & accessories |

Video Adapter Kit

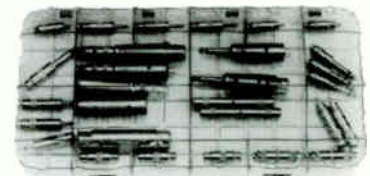


Adapt and interface with Video Connectors- includes 75 ohm terminators **VDAP-1 \$99.00**

Contents:

- | | | |
|----------------------------------|-------------------------------|--------------------------|
| 2 BNC Jack, Plug, Jack (T) | 2 "F" Jack to Jack (Barrel) | 1 Phono Plug to UHF Jack |
| 1 BNC Jack, Jack, Jack (T) | 1 Phono Jack to Jack (Barrel) | 1 Phono Plug to "F" Jack |
| 2 BNC Jack to Jack (Barrel) | 3 BNC Plug to UHF Jack | 1 Phono Jack to BNC Plug |
| 1 BNC Plug to Plug (Barrel) | 3 BNC Jack to UHF Plug | 1 Phono Jack to UHF Plug |
| 1 BNC Jack to Plug (Right Angle) | 1 "F" Plug to BNC Jack | 1 Phono Jack to "F" Plug |
| 1 UHF Jack, Plug, Jack (T) | 1 "F" Jack to BNC Plug | 2 BNC 75 ohm Terminator |
| 2 UHF Jack to Jack (Barrel) | 1 "F" Jack to Mini Plug | 1 UHF 75 ohm Terminator |
| | 1 Phono Plug to BNC Jack | 1 "F" 75 ohm Terminator |

Audio Adapter Kit



Adapt and interface with Audio Connectors **ADAP-1 \$99.00**

Contents:

- | | | |
|-------------------------------------|--|-----------------------------------|
| 3 Mini Plug to Phono Jack | 2 Standard Phone Plug to Mini Jack | 1 Standard Phone plug to XLR Jack |
| 3 Mini Plug to Standard Phone Jack | 2 Standard Phone Plug to Phono Jack | 1 XLR Plug to Phono Jack |
| 2 Mini Jack to Jack (Barrel) | 2 Standard Phone Jack to Jack (Barrel) | 1 XLR Plug to Standard Phone Jack |
| 3 Phono Plug to Mini Jack | 1 Phono Plug to XLR Jack | 1 XLR Plug to Plug (Barrel) |
| 2 Phono Plug to Standard Phone Jack | | 1 XLR Jack to Jack (Barrel) |
| 3 Phono Jack to Jack (Barrel) | | |

Crimp Kits

BNC AND UHF CRIMP CONNECTOR KIT BUCK-2 \$179.00

Contents:

- 25 BNC Plug for RG59/U Cable
- 25 UHF Plug for RG59/U Cable
- 1 Crimp tool
- 1 Cable stripper for BNC
- 1 Cable stripper for UHF



DELUXE "F" CRIMP CONNECTOR KIT FCK-2 \$129.00

Contents:

- 200 "F" Plug for RG59/U Cable with Crimp Ring
- 1 Heavy Duty Crimp tool for FP
- 1 Cable stripper



Break-Out Boxes



PS-7B

Features 10 pin cable (E10P) to plug into camera input of portable VCR or other equipment using 10 pin jack (E10JCM). Provides video in/out via BNCs and audio in/out via Minis (3.5mm). **PS-7B \$59.95**



PS-6B

Features 8 pin cable (E8P) to plug into equipment using 8 pin jack (E8JCM). Provides video in/out via BNCs and audio in/out via Minis (3.5mm). **PS-6B \$54.95**

CBB-10

Provides access to individual signals of color cameras using the common 10 pin (E10P) connection. Features: 10 pin camera input (E10J), Video out via BNC connector, Audio out via 3.5mm Mini connector, 12 volts DC power input fused via 4 pin DIN (allows external powering of camera), Remote record/pause via extended Mini jack.



CBB-10 \$69.95

Video Distribution Amplifier

Overcome line loss, provide additional equipment outputs and line equalization, or any combination of these. Comprehensive's 4 output Video Distribution Amplifier contains two input connectors to permit signal looping, thereby allowing the units to be "ganged" if more than four outputs are needed. Mounts easily on any flat surface.

CVA2B-4 \$175.00



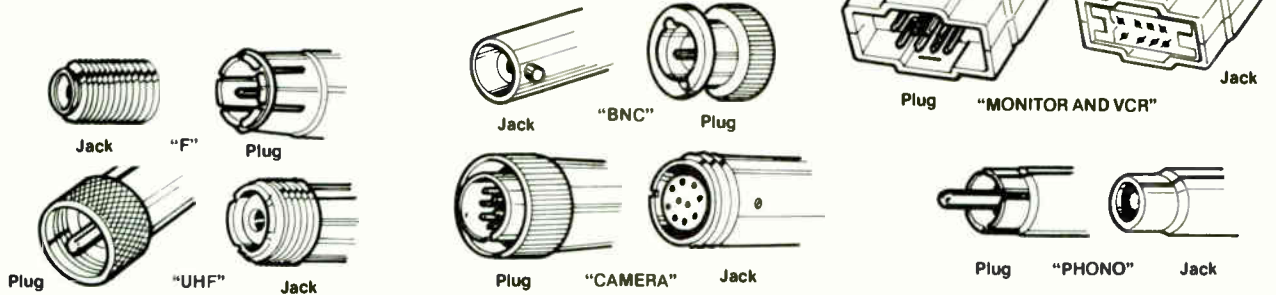
Passive Video Switchers

Versatile Switchers You Can Depend On

Comprehensive's passive video switchers with audio pass-along offer a fast simple way to interconnect video and audio equipment. Pushbuttons select the input and automatically terminate the other video inputs, for constant impedance.

CPS-4A 4 Pair Video with Audio pass-along \$129.00
CPS-8A 8 Pair Video with Audio pass-along \$179.00





VIDEO ADAPTERS

PART NO.	DESCRIPTION	1-4	5-49	50 +
BNC				
BT	BNC Jack, Plug, Jack (T)	\$ 8.99	\$ 8.09	\$ 7.19
BT-J	BNC Jack, Jack, Jack (T)	7.49	6.74	5.99
B-BL	BNC Jack to Jack (Barrel)	4.99	4.49	3.99
BP-BL	BNC Plug to Plug (Barrel)	7.99	7.19	6.39
BJ-BP-L	BNC Jack to Plug (Right Angle)	8.99	8.09	7.19
UHF				
UT	UHF Jack, Plug, Jack (T)	4.99	4.49	3.99
UJ-UP	UHF Jack to Plug (Push-On)	3.99	3.59	3.19
U-BL	UHF Jack to Jack (Barrel)	1.99	1.79	1.59
UJ-UP-L	UHF Jack to Plug (Right Angle)	4.99	4.49	3.99
"F"				
F-BL	"F" Jack to Jack (Barrel)	1.59	1.43	1.27
FJ-FP	"F" Jack to Plug (Push-On)	2.79	2.51	2.23
FJ-FP-L	"F" Jack to Plug (Right Angle Push-On)	2.99	2.69	2.39
Phono (Video)				
PT	Phono Jack, Plug, Jack (T)	2.99	2.69	2.39
PT-J	Phono Jack, Jack, Jack (T)	2.99	2.69	2.39
PJ-BL	Phono Jack to Jack (Barrel)	1.79	1.61	1.43
Between Series: BNC, UHF, "F", & Phono (Video)				
BP-UJ	BNC Plug to UHF Jack	5.59	5.03	4.47
BJ-UP	BNC Jack to UHF Plug	4.99	4.49	3.99
FP-BJ	"F" Plug to BNC Jack	4.59	4.13	3.67
FP-UJ	"F" Plug to UHF Jack	4.59	4.13	3.67
FJ-BP	"F" Jack to BNC Plug	5.59	5.03	4.47
FJ-UP	"F" Jack to UHF Plug	4.59	4.13	3.67
FJ-MP	"F" Jack to Mini Plug	4.29	3.86	3.43
MP-UJ	Mini Plug to UHF Jack	2.99	2.69	2.39
PP-BJ	Phono Plug to BNC Jack	4.59	4.13	3.67
PP-UJ	Phono Plug to UHF Jack	2.29	2.06	1.83
PP-FJ	Phono Plug to "F" Jack	4.29	3.86	3.43
PJ-BP	Phono Jack to BNC Plug	5.29	4.76	4.23
PJ-UP	Phono Jack to UHF Plug	4.29	3.86	3.43
PJ-FP	Phono Jack to "F" Plug	4.29	3.86	3.43

PART NO.	DESCRIPTION	1-4	5-49	50 +
UHF Plug to Plug				
UU-C-3	3 ft.	\$ 9.99	\$ 8.99	\$ 7.99
UU-C-10	10 ft.	11.69	10.52	9.35
UU-C-25	25 ft.	14.69	13.22	11.75
UU-C-50	50 ft.	20.69	18.62	16.55
BNC Plug to UHF Plug				
BU-C-3	3 ft.	9.99	8.99	7.99
BU-C-10	10 ft.	11.69	10.52	9.35
BU-C-25	25 ft.	14.69	13.22	11.75
BU-C-50	50 ft.	20.69	18.62	16.55
"F" Plug to 3.5 Mini Plug				
F-MP-C-10	10 ft.	8.69	7.82	6.95
Phono (RCA) Plug to Plug-Video				
PP-PP-CV-1.5	1 1/2 ft.	6.99	6.29	5.59
PP-PP-CV-3	3 ft.	7.29	6.56	5.83
PP-PP-CV-10	10 ft.	9.99	8.99	7.99
PP-PP-CV-25	25 ft.	12.99	11.69	10.39
BNC Plug to Phono (RCA) Plug				
B-PP-C-10	10 ft.	11.69	10.52	9.35
B-PP-C-25	25 ft.	14.69	13.22	11.75
UHF Plug to Phono (RCA) Plug				
U-PP-C-10	10 ft.	11.69	10.52	9.35
U-PP-C-25	25 ft.	14.69	13.22	11.75

EIAJ Multi-Pin Cable Assemblies

EIAJ 8-Pin VTR & Monitor Cables				
E8P-E8P-5	5 ft.	26.99	25.64	24.29
E8P-E8P-10	10 ft.	29.99	28.49	26.99
E8P-E8P-25	25 ft.	39.99	37.99	35.99
E8P-E8P-50	50 ft.	52.99	50.34	47.69
E8P-E8P-100	100 ft.	99.99	94.99	89.99
Portable VTR to Monitor Cable				
E8P-E10P-5S	(Sony) 5 ft.	38.99	37.04	35.09
E8P-E10P-5J	(JVC & Panasonic) 5 ft.	38.99	37.04	35.09
EIAJ 10-Pin Camera Extension				
E10P-E10J-5	5 ft.	38.99	37.04	35.09
E10P-E10J-10	10 ft.	45.99	43.69	41.39
E10P-E10J-25	25 ft.	62.99	59.84	56.69
E10P-E10J-50	50 ft.	88.99	84.54	80.09
E10P-E10J-100	100 ft.	145.99	138.69	131.39
EIAJ 10-Pin Hook-Up Cable				
E10P-E10P-5	5 ft.	40.99	38.94	36.89
E10P-E10P-10	10 ft.	46.99	44.64	42.29
E10P-E10P-25	25 ft.	58.99	56.04	53.09
E10P-E10P-50	50 ft.	88.99	84.54	80.09
E10P-E10P-100	100 ft.	145.99	138.69	131.39
Camera Cable (JVC)				
E10P-E12P-10	10 ft.	51.99	49.39	46.79
E10P-E12P-10CL	10 ft.	51.99	49.39	46.79
B & W Camera Extension Cable (6-Pin)				
D6P-D6J-25	25 ft.	36.99	35.14	33.29
Color Camera Extension (8-Pin)				
D8P-D8J-25	25 ft.	39.99	37.99	35.99
BETA Camera Extension (14-Pin)				
B14P-B14J-25	25 ft.	89.99	85.49	80.99
Hitachi Camera Extension Cable (10 Pin)				
H10P-H10J-25	25 ft.	56.99	54.14	51.29
Professional 14 Pin Camera Cable				
E14P-E14J-25	25 ft.	109.99	104.49	98.99
Multi-Pin Adapters				
E8J-BL	EIAJ 8 pin "GOOF" Plug			\$24.95
E8J-P	EIAJ 8 pin Dubbing Adapter			24.95
E14P-J	EIAJ 14 pin Adapter			39.95

VIDEO CABLES

PART NO.	DESCRIPTION	1-4	5-49	50 +
Molded Video Cables-Flexible Coax				
BNC Plug to Plug				
BB-C-1.5	1 1/2 ft.	9.99	8.99	7.99
BB-C-3	3 ft.	10.29	9.26	8.23
BB-C-10	10 ft.	12.99	11.69	10.39
BB-C-25	25 ft.	15.99	14.39	12.79
BB-C-50	50 ft.	21.99	19.79	17.59
"F" Plug to Plug-Push-On				
FF-C-1.5	1 1/2 ft.	5.99	5.39	4.79
FF-C-3	3 ft.	6.29	5.66	5.03
FF-C-10	10 ft.	7.99	7.19	6.39
FF-C-25	25 ft.	10.99	9.89	8.79
FF-C-50	50 ft.	16.99	15.29	13.59
"F" to "F" Right Angle Push-On				
FF-CR-3	3 ft.	7.29	6.56	5.83
FF-CR-10	10 ft.	9.99	8.99	7.99
FF-CR-25	25 ft.	12.99	11.69	10.39
UHF Plug to "F" Plug				
UF-C-10	10 ft.	11.69	10.52	9.35
UF-C-25	25 ft.	14.69	13.22	11.75

- Video Connectors
- Bulk Video Cable
- Video Adapters
- Video Cables

VIDEO CONNECTORS

1-4 5-49 50+

BNC

		\$ 3.99	\$ 3.59	\$ 3.19
BP	BNC Plug for RG59/U Cable, Solder			
BP-C	BNC Plug for RG59/U Cable, Crimp	3.59	3.23	2.87
BP-E	BNC Plug for RG59/U Cable, <i>Fast-Fit</i>	4.49	4.04	3.59
BP-C-8281	BNC Plug for 8281 Cable, Crimp	5.49	4.94	4.39
BP-E-8281	BNC Plug for 8281 Cable, <i>Fast-Fit</i>	5.49	4.94	4.39
BJ-CM	BNC Jack, Chassis Mount	1.99	1.79	1.59
B-BLCM	BNC Jack to Jack (Barrel), Chassis Mount	7.19	6.47	5.75
B-TM	BNC 75 Ohm Terminator	6.49	5.84	5.19

UHF

		2.29	2.06	1.83
UP	UHF Plug & Adapter for RG59/U Cable, Solder			
UP-C	UHF Plug for RG59/U Cable, Crimp	1.79	1.61	1.43
UP-E	UHF Plug for RG59/U Cable, <i>Fast-Fit</i>	2.99	2.69	2.39
UP-8281	UHF Plug & Adapter for 8281 Cable, Solder	2.99	2.69	2.39
UP-E-8281	UHF Plug for 8281 Cable, <i>Fast-Fit</i>	3.49	3.14	2.79
UJ-CM	UHF Jack, Chassis Mount	3.39	3.05	2.71
U-BLCM	UHF Jack to Jack (Barrel), Chassis Mount	4.49	4.04	3.59
U-TM	UHF 75 ohm Terminator	4.59	4.13	3.67

"F"

		.49	.44	.39
FP	"F" Plug for RG59/U Cable, Crimp			
FP-E	"F" Push-on Plug - RG59/U Cable, <i>Fast-Fit</i>	.99	.89	.79
FP-ES	"F" Plug for RG59/U Cable, <i>Fast-Fit</i>	1.49	1.34	1.19
FJ-CM	"F" Jack, Chassis Mount	1.09	.98	.87
F-BLCM	"F" Jack to Jack (Barrel) Chassis Mount	1.79	1.61	1.43
F-TM	"F" 75 Ohm Terminator	1.99	1.79	1.59

Phono (Video)

		1.29	1.16	1.03
PP-V	Phono Plug for RG59/U Cable, Solder			
PP-C	Phono Plug for RG59/U Cable, Crimp	.89	.80	.71
PJ-CM	Phono Jack, Chassis Mount	.69	.62	.55
P-BLCM	Phono Jack to Jack (Barrel), Chassis Mount	2.29	2.06	1.83
P-TM	Phono 75 Ohm Terminator	2.29	2.06	1.83

EIAJ Monitor and VCR Connectors

		6.99	6.29	5.59
E8P	8 pin Plug, Cable End			
E8J	8 pin Jack, Cable End	6.99	6.29	5.59
E8JCM	8 pin Jack, Chassis Mount	2.99	2.69	2.39
E8PCM	8 pin Plug, Chassis Mount	2.99	2.69	2.39

EIAJ VCR and Editor Remote Control Connectors

		13.29	11.96	10.63
E20P	20 pin Plug, Cable End			
E20JCM	20 pin Jack, Chassis Mount	4.99	4.49	3.99
E20J	20 pin Jack, Cable End	13.49	12.14	10.79
E20PCM	20 pin Plug, Chassis Mount	4.79	4.31	3.83
E33P	33 pin Plug, Cable End	19.99	17.99	15.99
E33JCM	33 pin Jack, Chassis Mount	15.99	14.39	12.79
E33J	33 pin Jack, Cable End	19.99	17.99	15.99
E33PCM	33 pin Plug, Chassis Mount	15.99	14.39	12.79
EX-33J	33 pin Shell Extension Jack Cable End	25.99	25.99	25.99
E34P	34 pin Plug, Cable End	16.29	14.66	13.03
E34JCM	34 pin Jack, Chassis Mount	6.99	6.29	5.59
E34J	34 pin Jack, Cable End	16.49	14.84	13.19
E34PCM	34 pin Plug, Chassis Mount	5.99	5.39	4.79
E45P	45 pin Plug, Cable End	16.79	15.11	13.43
E45JCM	45 pin Jack, Chassis Mount	7.49	6.74	5.99
E45J	45 pin Jack, Cable End	16.99	15.29	13.59
E45PCM	45 pin Plug, Chassis Mount	7.29	6.56	5.83
EX-33P	33 pin Shell Extension Plug, Cable End	25.99	25.99	25.99

Camera Connectors

		15.99	14.39	12.79
E10P	10 pin Plug, Cable End			
E10J	10 pin Jack, Cable End	14.99	13.49	11.99
E10JCM	10 pin Jack, Chassis Mount	9.99	8.99	7.99
E10PCM	10 pin Plug, Chassis Mount	14.99	13.49	11.99
H10P	10 pin Plug Push-On, Cable (Hitachi) End	15.99	14.39	12.79
H10J	10 pin Jack Push-On, Cable End (Hitachi)	14.99	13.49	11.99
E12P	12 pin Plug, Cable End (JVC)	18.99	17.09	15.19
E12J	12 pin Jack, Cable End (JVC)	16.99	15.29	13.59
E12JCM	12 pin Jack, Chassis Mount (JVC)	10.29	9.26	8.23

		34.00	32.40	28.80
E14P	14 pin Plug, Cable End			
E14J	14 pin Jack, Cable End	34.00	32.40	28.80
E14JCM	14 pin Jack, Chassis Mount	22.00	19.80	17.60
E14PCM	14 pin Plug, Chassis Mount	22.00	19.80	17.60
D6P	6 pin Plug, Cable End (B&W Cameras)	6.79	6.11	5.43
D6J	6 pin Jack, Cable End (B&W Cameras)	3.29	2.96	2.63
D6JCM	6 pin Jack, Chassis Mount (B&W Cameras)	3.49	3.14	2.79
D8P	8 pin Plug, Cable End (Hitachi, NEC)	4.59	4.13	3.67
D8J	8 pin Jack, Cable End (Hitachi, NEC)	3.59	3.23	2.87
D8JCM	8 pin Jack, Chassis Mount (Hitachi, NEC)	1.79	1.61	1.43
D7P-SL	7 pin Plug, Cable End (Akai)	7.59	6.83	6.07

Remote Control Connectors

		3.99	3.59	3.19
D8P-R	8 pin Plug, Cable End			
D8J-R	8 pin Jack, Cable End	3.79	3.41	3.03
D10P	10 pin Plug, Cable End	8.50	7.65	6.80
MP-R	Extended Mini Plug, Cable End	.99	.89	.79

DC Power Connectors

		5.79	5.21	4.63
D4P	4 pin Plug, Cable End			
D4J	4 pin Jack, Cable End	2.99	2.69	2.39
D4JCM	4 pin Jack, Chassis Mount	2.79	2.51	2.23
D8P-SL	8 pin Plug, Cable End (JVC)	11.99	10.79	9.59
DCP	Direct Current Plug 2.5 mm (Sony)	.99	.89	.79
DCP-A	Direct Current Plug 3mm (JVC, Panasonic)	.99	.89	.79
RM12BPG-3P	3 pin Plug, Cable End	11.99	10.79	9.59
RM12BPG-3S	3 pin Jack, Cable End	11.99	10.79	9.59
RM12BPG-4P	4 pin Plug, Cable End	11.99	10.79	9.59
RM12BPG-4S	4 pin Jack, Cable End	11.99	10.79	9.59
XLRP-4	4 pin XLR Plug, Cable End	6.29	5.66	5.03
XLRJ-4	4 pin XLR Jack, Cable End	8.29	7.46	6.63
XLRP-5	5 pin XLR Plug, Cable End	9.99	8.99	7.99
XLRJ-5	5 pin XLR Jack, Cable End	11.99	10.79	9.59
DCP12	12 pin Plug, Cable End (Sony)	9.50	8.55	7.60

BULK VIDEO CABLE

RG59/U Solid Center Conductor CVC-59

CVC-59-100	100 ft. reel	19.95
CVC-59-500	500 ft. reel	89.95
CVC-59-1000	1000 ft. reel	159.95

RG59/U Stranded Center Conductor CVC-59S

CVC-59S-100	100 ft. reel	21.95
CVC-59S-500	500 ft. reel	98.95
CVC-59S-1000	1000 ft. reel	169.95

Belden 8281 75 ohm Precision Broadcast Coax Cable

8281-500	500 ft.	306.00
8281-1000	1000 ft.	610.00

EIAJ 8 Pin VCR Cable CVC-8

CVC-8	1-499 ft.	.95 per ft.
	500-999 ft.	.85 per ft.
	1000+ ft.	.76 per ft.

EIAJ 10 Pin Camera Cable CVC-10

CVC-10	1-499 ft.	1.35 per ft.
	500-999 ft.	1.21 per ft.
	1000+ ft.	1.08 per ft.

EIAJ 14 Pin Camera Cable CVC-14

CVC-14	1-499 ft.	1.95 per ft.
	500-999 ft.	1.75 per ft.
	1000+ ft.	1.56 per ft.

20 Pin Remote Control Cable CVC-20

CVC-20	1-499 ft.	1.95 per ft.
	500-999 ft.	1.75 per ft.
	1000+ ft.	1.56 per ft.

COMPLETE CATALOG AVAILABLE

Prices and Specifications Subject to Change Without Notice.

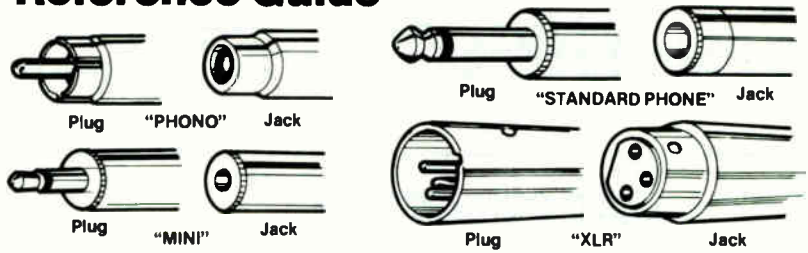
8-305

Comprehensive

148 Veterans Drive
Northvale, NJ 07647
(201) 767-7990
(800) 526-0242 Telex 13-5139

- Audio Adapters
- Audio Connectors
- Audio Cables
- Miscellaneous Accessories

Reference Guide



AUDIO ADAPTERS

PART NO.	DESCRIPTION	1-4	5-49	50+
Mini (3.5mm), Phono (RCA), Standard Phone (1/4")				
MP-PJ	Mini Plug to Phono Jack	\$1.79	\$1.61	\$1.43
MP-SPJ	Mini Plug to Standard Phone Jack	1.79	1.61	1.43
MJ-BL	Mini Jack to Jack (Barrel)	1.79	1.61	1.43
PP-MJ	Phono Plug to Mini Jack	1.79	1.61	1.43
PP-SPJ	Phono Plug to Standard Phone Jack	1.79	1.61	1.43
PJ-BL	Phono Jack to Jack (Barrel)	1.79	1.61	1.43
SPP-MJ	Standard Phone Plug to Mini Jack	1.79	1.61	1.43
SPP-PJ	Standard Phone Plug to Phono Jack	1.79	1.61	1.43
SPJ-BL	Standard Phone Jack to Jack (Barrel)	1.79	1.61	1.43

XLR Cannon Type

PP-XLRP	Phono Plug to XLR Plug	7.99	7.19	6.39
PP-XLRJ	Phono Plug to XLR Jack	8.99	8.09	7.19
SPP-XLRP	Standard Phone Plug to XLR Plug	11.99	10.79	9.59
SPP-XLRJ	Standard Phone Plug to XLR Jack	12.99	11.69	10.39
XLRP-PJ	XLR Plug to Phono Jack	7.99	7.19	6.39
XLRJ-PJ	XLR Jack to Phono Jack	8.99	8.09	7.19
XLRP-SPJ	XLR Plug to Standard Phone Jack	14.59	13.13	11.67
XLRJ-SPJ	XLR Jack to Standard Phone Jack	16.99	15.29	13.59
XLRP-BL	XLR Plug to Plug (Barrel)	11.99	10.79	9.59
XLRJ-BL	XLR Jack to Jack	17.59	15.83	14.07
SPP-XLRPS	Standard Phone Stereo Plug to XLR Plug	14.99	13.49	11.99
SPP-XLRJS	Standard Phone Stereo Plug to XLR Jack	16.59	14.93	13.37

AUDIO CONNECTORS

Mini (3.5mm)

MP	Mini Plug, Cable End	.89	.80	.71
MJ	Mini Jack, Cable End	.89	.80	.71
MJ-CM	Mini Jack, Chassis Mount	.69	.62	.55

Phono (RCA)

PP	Phono Plug, Cable End	.69	.62	.55
PJ	Phono Jack, Cable End	.69	.62	.55
PJ-CM	Phono Jack, Chassis Mount	.69	.62	.55
P-BLCM	Phono Jack to Jack (Barrel) Chassis Mount	2.29	2.06	1.83

Standard Phone (1/4 in.)

SPP	Standard Phone Plug, Cable End	1.29	1.16	1.03
SPJ	Standard Phone Jack, Cable End	1.29	1.16	1.03
SPJ-CM	Standard Phone Jack, Chassis Mount	.89	.80	.71
SPP-SP	Standard Phone Jack, Cable End w/ Spring Relief	1.59	1.43	1.27

XLR (3 Pin Cannon Type)

XLRP	XLR Plug, Cable End	4.99	4.49	3.99
XLRJ	XLR Jack, Cable End	5.99	5.39	4.79
XLRJ-CM	XLR Jack, Chassis Mount	6.99	6.29	5.59
XLRP-CM	XLR Plug, Chassis Mount	3.99	3.59	3.19

AUDIO CABLES

Mini (3.5mm), Phono and Standard Phone Cables

MP-MP-10	Mini Plug to Plug	10 ft.	2.99	2.69	2.39
MP-MP-25	Mini Plug to Plug	25 ft.	4.69	4.22	3.75
MP-MJ-10	Mini Plug to Jack	10 ft.	2.99	2.69	2.39
MP-MJ-25	Mini Plug to Jack	25 ft.	4.69	4.22	3.75
MP-PP-10	Mini Plug to Phono (RCA) Plug	10 ft.	2.99	2.69	2.39
MP-PP-25	Mini Plug to Phono (RCA) Plug	25 ft.	4.69	4.22	3.75
PP-PP-10	Phono (RCA) Plug to Plug	10 ft.	2.99	2.69	2.39
PP-PP-25	Phono (RCA) Plug to Plug	25 ft.	4.69	4.22	3.75
PP-PJ-10	Phono (RCA) Plug to Jack	10 ft.	2.99	2.69	2.39
PP-PJ-25	Phono (RCA) Plug to Jack	25 ft.	4.69	4.22	3.75
SPP-SPP-10	Standard Phone (1/4") Plug to Plug	10 ft.	3.99	3.59	3.19
SPP-SPP-25	Standard Phone (1/4") Plug to Plug	25 ft.	5.69	5.12	4.55
SPP-SPJ-10	Standard Phone (1/4") Plug to Jack	10 ft.	3.99	3.59	3.19
SPP-SPJ-25	Standard Phone (1/4") Plug to Jack	25 ft.	5.69	5.12	4.55
SPP-MP-10	Standard Phone (1/4") Plug to Mini Plug	10 ft.	3.29	2.96	2.63
SPP-MP-25	Standard Phone (1/4") Plug to Mini Plug	25 ft.	4.99	4.49	3.99

PART NO.	DESCRIPTION	1-4	5-49	50+	
SPP-PP-10	Standard Phone (1/4") Plug to Phono (RCA) Plug	10 ft.	\$3.29	\$2.96	\$2.63
SPP-PP-25	Standard Phone (1/4") Plug to Phono (RCA) Plug	25 ft.	4.99	4.49	3.99

Audio Adapter Cables

SP-2-C	Stereo Phone (1/4") Jack to Mini Plug	2.99	2.69	2.39
SP-4-C	Phono (RCA) Plug to Two Parallel Phono (RCA) Jacks	2.99	2.69	2.39
SP-5-C	Phono (RCA) Jack to Two Parallel Phono (RCA) Plugs	2.99	2.69	2.39
D5P-4PP	Din 5 Pin Plug to Four Phono (RCA) Plugs	8.99	8.09	7.19
SPP-PJT	Dual Standard Phone Plugs to Phone Jack	5.99	5.39	4.79

XLR Audio Cables

Microphone Extension Cables

XLRP-XLRJ-15	15 ft.	26.99	26.64	24.29
XLRP-XLRJ-25	25 ft.	33.99	32.29	30.59
XLRP-XLRJ-50	50 ft.	52.99	50.34	47.69
XLRP-XLRJ-75	75 ft.	72.99	69.34	65.69
XLRP-XLRJ-100	100 ft.	84.99	80.74	76.49

XLR to Mini, Phono and Standard Phone Cables (10 ft.)

XLRP-MP-10	XLR Plug to Mini Plug			
XLRP-MJ-10	XLR Plug to Mini Jack	9.99	9.49	8.99
XLRJ-MP-10	XLR Jack to Mini Plug	9.99	9.49	8.99
XLRJ-MJ-10	XLR Jack to Mini Jack	9.99	9.49	8.99
XLRP-PP-10	XLR Plug to Phono Plug	9.99	9.49	8.99
XLRP-PJ-10	XLR Plug to Phono Jack	9.99	9.49	8.99
XLRJ-PP-10	XLR Jack to Phono Plug	9.99	9.49	8.99
XLRJ-PJ-10	XLR Jack to Phono Jack	9.99	9.49	8.99
XLRP-SPP-10	XLR Plug to Standard Phone Plug	19.99	18.99	17.99
XLRP-SPJ-10	XLR Plug to Standard Phone Jack	19.99	18.99	17.99
XLRJ-SPP-10	XLR Jack to Standard Phone Plug	19.99	18.99	17.99
XLRJ-SPJ-10	XLR Jack to Standard Phone Jack	19.99	18.99	17.99

Microphone Cable 2 Conductor with Shield

CMC-2-100	100 ft. reel	54.00
CMC-2-500	500 ft. reel	249.00

Audio Cable CAC-2 2 Conductor with Shield

CAC-2-100	100 ft. reel	24.00
CAC-2-500	500 ft. reel	109.00
CAC-2-1000	1000 ft. reel	199.00

Audio Heavy-Duty "Zip Cord" CZC-2

CZC-2-100	100 ft. reel	8.79
CZC-2-500	500 ft. reel	37.95

MISCELLANEOUS

Cable Organizer

CR-2	Wall Mountable 15" long	14.95
------	-------------------------	-------

Cable Testers

PS-1	The Video Cable Tester	69.95
ACT-3	Audio Cable Tester	79.99

PART NO.	QUANTITY	LENGTH	MAX. BUNDLE DIA.	PRICE
----------	----------	--------	------------------	-------

Releasable Cable Ties

50R-25	25	5 1/2"	1 1/2"	3.29
50R-100	100	5 1/2"	1 1/2"	11.99
50L-25	25	9 3/4"	2 1/2"	5.49
50L-100	100	9 3/4"	2 1/2"	18.99



VIDEO CARRYING CASES



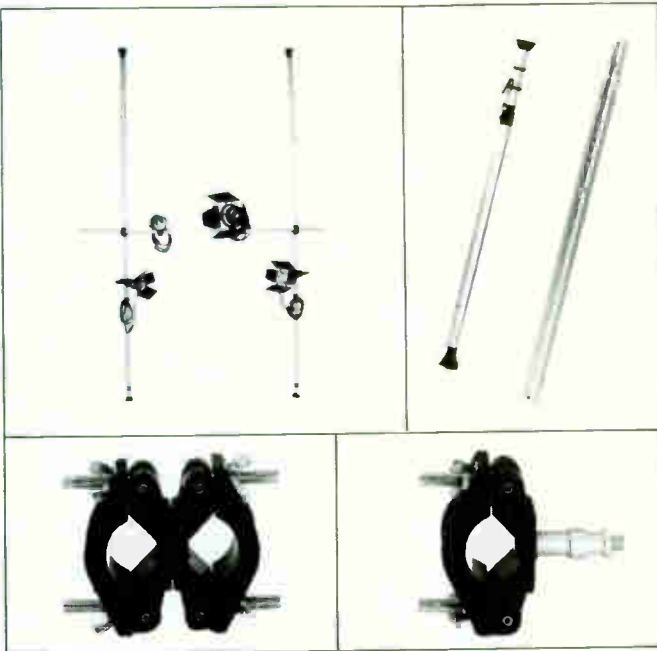
Aluminum-covered wood carrying cases provide maximum protection at the lightest weight and lowest cost.

CVC-300-B1 For all portable Beta and VHS recorders with AC adaptor. Comes with partition that allows using the case with many different video units. **\$139.95**

CVC-400-VHS For all VHS and Beta Series II. **\$129.95**

CVC-500E THE EVERYTHING CASE. Comes with layers of foam that allow you to cut out and custom fit cameras, decks, lenses, etc. to suit your needs. **\$139.95**

Outside dimensions of above cases (not including hardware): 21"L x 16-1/2"W x 7-1/4"H. Weight 16 lbs. Inside dimensions: 19-3/4"L x 15"W x 4-1/2"H.



UNIVERSAL-POLE SYSTEM

Unique lightweight pole system that offers unlimited possibilities for supporting lights, backgrounds or cameras. Poles and special clamps set up quickly and can be used floor to ceiling or horizontally between two walls.

Model No.		Closed	Fully Extended	Price
CUP-1	Set of two Universal-Poles	47"	70"	\$ 99.00
CUP-3	Set of two Universal-Poles	8'8"	11'	119.00
CUP-X	Set of two 33" extensions	—	—	19.00

Extensions interconnect for longer lengths.

Round-To-Round Cross Clamp

An attached pair of round clamps for connecting two intersecting poles. Allows clamping to poles with 1" to 1-7/8" diameters.

RC-2 \$19.00

Round Clamp with Stud

Clamp with equipment mounting stud. Reversible 5/8" - 3/8" stud for light fixtures and 1/4" - 20 thread for camera mounting. Clamps to poles with 1" to 1-7/8" diameters.

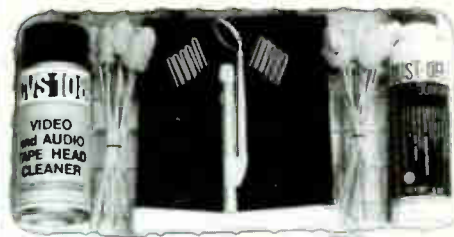
RC-S \$17.00

PROFESSIONAL GAFFERS KIT



- Contents:
- 2 rolls Silver Gaffers Tape 2" x 60 yds.
 - 1 roll Silver Gaffers Tape 2" x 10 yds.
 - 1 roll Black Gaffers Tape 2" x 10 yds.
 - 1 roll White Gaffers Tape 2" x 10 yds.
 - 1 roll Masking Tape 3/4" x 60 yds.
 - 1 roll Black Masking Tape 3/4" x 60 yds.
 - 1 roll Electrical Tape (Vinyl) 3/4" x 66 ft.
 - 1 roll Friction Tape 3/4" x 60 ft.
 - 1 roll Double Stick Foam Tape 1/2" x 36 yds.
 - 1 roll Cold Shrink Tape 1" x 10 ft.
 - 1 each Professional Electrician's Knife
 - 1 each Dulling Spray
 - 1 pkg. Reusable Cable Tie (100/pkg)
- PKG-1 \$99.95**

VCR/VTR MAINTENANCE KIT



Kit contains all the items necessary to maintain VCRs/VTRs to professional standards. Supplied in convenient carry-along storage box.

Contents:

- 1 each CVS-108 8 oz. can Professional Video Head Cleaning Fluid
- 1 each FGJB 6 oz. Dust-Off
- 25 each CVS-505 Cellular-Foam VCR Cleaning Swabs
- 10 each CVS-504 Professional Video Head Cleaning Tools
- 10 each CVS-508 Lint-Free Cloth Wipes
- 1 each CVS-506 Inspection Mirror with Light
- Instructions

CVS-10K \$39.95

COMPREHENSIVE POWER BELT



High-quality battery belts for industrial and educational video users. Economically priced alternative to broadcast-type power belts, while still maintaining high performance standards.

- Features:
- Extremely durable leather
 - Highest-quality NiCad cells
 - Built-in safety features
 - Flexible loom cell-to-cell continuity
 - Simple trouble-free operation

Model No.	Voltage	Rating	Price
CPB-124	12V	4AH	\$399.95
CPB-127	12V	7AH	535.50



PRODUCTION MUSIC / SOUND EFFECTS LIBRARIES



Over 150 music selections and 1000 sound effects are available with all clearance fees covered by purchase.

- State-of-the-art 24 track recording
- Ideal for industrial/educational programs as well as broadcast applications
- Can be used over and over again
- Produced by professionals in the commercial recording field

PML-8A	8 LP discs 150 music selections	\$450.00
PML-8B	100 music selections, 8 LP discs	450.00
PML-16	Combination library of 8A and 8B	810.00
SEL-30	30 LP discs over 1000 effects	360.00
SEL-15	15 LP discs over 500 effects	180.00
SEL-7	7 LP discs over 250 effects	84.00

PORTABLE MIC MIXER



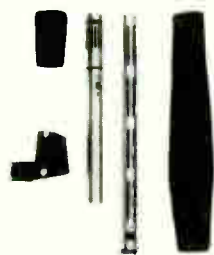
SPECIFICATIONS:
Input: 3 channels switchable between Dynamic and Phantom power sources
Impedance: Balanced, 200-600 OHM
Low Cut Switch: 12dB @ 100Hz
Input/Output Jacks: XLR type
Input Level: -70dBm
Output: 1 channel
Monitor Output: Mini Jack (3.5mm)
Distortion: 1% @ +20dB
Output Level: -4dB to -20dBm
Output-Level Selector Switch: (A) Low Switch 20dB (B) High Switch +4dB
Frequency Response: 40-15,000 Hz within -1.5dB
Dimensions: 2 1/8" H x 4 1/8" W x 4 1/8" D
Weight: 38 oz

The Comprehensive MX-1002 three-channel mixer is compact and light enough to clip on your belt yet provides master and individual gain control for up to three low-impedance mics. Separate low-pass filters and phantom power source for each mic, plus line-level output switch make this unit ideal for ENG and remote production applications.

MX-1002: \$249.95

MX-1001

Same as MX-1002 except it is a two channel mixer.



UEM-2000

TWO MICROPHONES IN ONE

Either a uni-directional or a super-directional microphone by simply changing the sound collecting head and element.

Type: Electret Condenser Microphone
Polar Pattern: Super-directional—Supercardioid; Uni-directional cardioid
Impedance: 600 ohms
Frequency Response: 50-15,000 Hz
Sensitivity: Super cardioid -65dB ± 3dB at 1,000 Hz

Controls: Music, Voice Tone Selection; On/Off Switch
Cable: 16 ft. with XLR Jack to Standard Phone Plug
Power Supply: 1.5V "AA" battery (included)
Accessories: Holder, Windscreen for super-directional head; windscreen for uni-directional head, vinyl storage box.

UEM-2000 \$169.00



SGM-2

SHOTGUN MICROPHONE

Designed for hand-held ENG/EPF cameras with quality voice recording possible from distances up to thirty feet.

- Ideal for:**
- sports and other action events
 - interviewing "on the run"
 - interviewing in a situation where hand-held or lavalier mics and associated cables would be unsightly
 - giving a more spontaneous appearance to group interviews and discussions in a studio, a classroom, or on location
 - any recording situation, indoors or outdoors, with high-level ambient noise

Type: Electret
Polar Pattern: Super-cardioid
Impedance: 600 ohms
Frequency Response: 50-10,000 Hz
Sensitivity: -60dB at 1,000 Hz
Power Supply: 1.5V "AA" battery (included)
Weight: 5 1/2 oz.
Cable: 3 ft. with Mini (2.5mm) Plug
Accessories: Camera mounting shoe, windscreen, vinyl storage box

SGM-2 \$74.95

ML-10



SML-20

PROFESSIONAL TIE-CLIP MICS

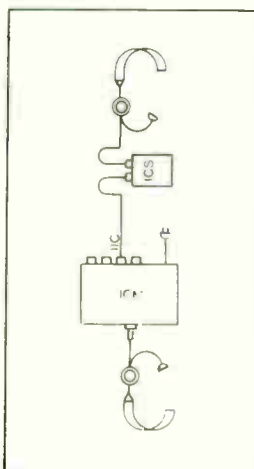
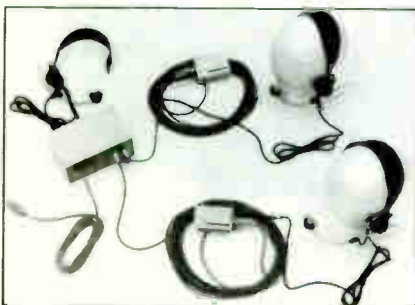
High-sensitivity/high-output subminiature tie-clip microphone delivers professional broadcast-quality performance every time. Rugged non-glare subminiature body. Ideal for on-camera use. Output is high enough to drive most VCRs, mixers and recorders inputs.

600 ohms at 1,000 Hz
 50-16,000 Hz
 -70dB ± 3dB at 1,000 Hz
 Standard phone plug

SML-20 \$89.95

600 ohms at 1,000 Hz
 50-16,000 Hz
 -64dB ± 3dB at 1,000 Hz
 Standard Phone plug

ML-10 \$44.95



COMPREHENSIVE ICM-4 INTERCOM SYSTEM

- Intercom suitable for use with ANY camera (no modifications necessary)
- Self-contained, and simple to operate
- Low cost
- Ideal way for schools or training departments to upgrade video program production capability
- Further sub-stations/headsets may be added as required

Each additional station requires:

- 1 each ICS-B Sub-station
- 1 each IIC interconnecting Cable
- 1 each Headset

MASTER STATION

ICM-4 \$199.00

Up to 4 sub-stations may be connected for 5 party line operation. Has jack for one headset. Dimensions: 3" H x 7" W x 4" D.

SUB-STATION — WITH BELT CLIP

ICS-B \$99.00

Belt clip affords cameraman or floor manager greater mobility. May also be clamped onto camera arm or tripod leg.

INTERCONNECT CABLE

IIC \$32.00

Connects Master Station to each sub-station. 32' long.



6144



Compact Tripod with Fluid-Effect Head

Compact and lightweight, this tripod is specially designed for today's lightweight industrial and consumer color cameras.

Collapsed Length: 20"
Extended Length: 54"
Weight: Less than 6 lbs.
Tripod/head Capacity: 18 lbs.

6144 \$169.00

Medium-Duty Tripod and Fluid-Effect Head

A medium-duty but lightweight assembly featuring a 30 lb. capacity fluid-effect head with adjustable quick-release platform, dual-handle operation, tilt safety stop, fluid-action pan and tilt, and reversible 1/4" or 3/8" camera mounting screw.

Collapsed Length: 30" Weight: 14-3/4 lbs.
Extended Length: 70" 3142 Tripod Capacity: 65 lbs.
1473 Fluid-Effect Head Capacity: 30 lbs.

3148 \$499.95



3148

**LIGHTING KITS
Comprehensive Lighting Kits**

Virtually all lighting kit suppliers face a similar challenge—selecting component pieces that best handle the requirements of the largest number of users. Comprehensive kits are therefore divided into two general categories: kits featuring a full assortment of accessories for a wide variety of locations; and kits that offer the bare necessities, but provide extra room for accessories of your choice. Either way, Comprehensive lighting kits offer you a substantial savings over purchasing individual component pieces.

Ultra-Min Kit

MODEL NO.	DESCRIPTION	PRICE
UM-1	(3) M-250 lights (1) UAMV umbrella/stand adapter (1) UMMV Mini umbrella (2) SAMV stand adapters (1) TCMV table clamp (1) HGMV handgrip (2) TRS mini stands (3) ENH lamps (1) MC mini case Size: 20-1/2 L x 4 W x 15-1/4 H Weight: 14 lb. 6 oz. (Lamps Included)	\$595.00



T-4 Kit

Basic 2 Kit

MODEL NO.	DESCRIPTION	PRICE
B-2	(1) VL-601 light (1) VL-601VF focussing light (1) VL-BD-2 Barndoors for VL-601VF (1) GUH Gel/Umbrella holder (1) MS Modular stud (1) U-30 Umbrella (30") (2) LS-2 light stands (2) DYH lamps (1) C-2 kit case Size: 25 L x 10 W x 8-1/4 H Weight: 18 lb. 5 oz. (Lamps included)	\$399.00

Take 2 Kit

MODEL NO.	DESCRIPTION	PRICE
T-2	(2) K-600 focussing lights (2) KBD Barndoors for K-600 (1) GUH Gel/umbrella holder (1) MS Modular stud (1) UMMV mini umbrella (2) TRS mini stands (2) DYS lamps (1) KC kit case Size: 22 L x 6-3/4 W x 16 H Weight: 19 lb. 14 oz. (Lamps included)	\$549.00

Take 4 Kit

MODEL NO.	DESCRIPTION	PRICE
T-4	(2) V-10/6 focussing light (2) VBD barndoors for V-10/6 (2) VAH accessory holders for V-10/6 (2) MF-10 flood lights (4) LSP light stands (2) DXW lamps (2) FHM lamps (1) PRC Kit case Size: 35 L x 11-1/2 W x 15-3/4 H Weight: 45 lb. (Lamps included)	\$995.00

Take 3 Kit

MODEL NO.	DESCRIPTION	PRICE
T-3	(2) V-10/6 focussing light (2) VBD Barndoors for V-10/6 (2) VAH Accessory holder for V-10/6 (1) MF-10 flood light (2) LSP light stands (2) DXW lamps (1) FHM lamp (1) PRC Kit case Size: 35 L x 11-1/2 W x 15-3/4 H Weight: 36 lb. 14 oz. (Lamps included)	\$795.00

Basic 3 Kit

MODEL NO.	DESCRIPTION	PRICE
B-3	(1) VL-601 light (2) VL-601VF focussing light (1) VL-BD-1 Barndoors for VL-601 (2) VL-BD-2 Barndoors for VL-601VF (1) GUH Gel/umbrella holder (1) MS Modular stud (1) U-30 Umbrella (30") (1) VLS-1 Single scrim for VL-601 (1) VLS-V Single scrim for VL-601VF (3) LS-2 light stands (3) DYH lamps (1) C-2 kit case Size: 25 L x 10 W x 8-1/4 H Weight: 25 lbs. (Lamps included)	\$599.00

ENG-3 Kit

MODEL NO.	DESCRIPTION	PRICE
ENG-3	(2) K-600 focussing light (1) VM-300 focussing lights (2) KBD Barndoors for K-600 (1) DFK diffusion filter for K-600 (1) DIV dichroic filter for VM-300 (1) CSMV camera mount for VM-300 (1) VC-30 30V battery cable for VM-300 (1) HGMV handgrip for VM-300 (1) SAMV stand adapter for VM-300 (3) TRS mini stands (2) DYS lamps (1) AVI lamp (1) EPL lamp (1) KC Case Size: 22 L x 6-3/4 W x 16 H Weight: 23 lb. 5 oz. (Lamps included)	\$775.00

Production 4 Kit

MODEL NO.	DESCRIPTION	PRICE
P-4	(2) V-10/6 focussing light (2) VBD barndoors for V-10/6 (2) VAH accessory holders for V-10/6 (2) VSS single scrim for V-10/6 (1) VDS double scrim for V-10/6 (2) MF-10 flood lights (2) FLS-1 single scrim for MF-10 (4) GUH gel/umbrella holders (4) MS modular studs (1) U-43 umbrella (43") (4) GF gel frames (1) LGP location gel pack (2) CSC ceiling scissor clip (2) CC c-clamp (4) LSP light stands (2) DXW lamps (2) FHM lamps (1) PRC Kit case Size: 35 L x 11-1/2 W x 15-3/4 H Weight: 53 lb. 13 oz. (Lamps included)	\$1,225.00

EFP-3 Kit

MODEL NO.	DESCRIPTION	PRICE
EFP-3	(2) V-10/6 focussing light (2) VBD barndoors for V-10/6 (2) VAH accessory holder for V-10/6 (2) VSS single scrim for V-10/6 (1) MF-10 flood light (1) FLS-1 single scrim for MF-10 (3) GUH gel/umbrella holders (3) MS modular studs (1) U-43 umbrella (43") (3) GF gel frames (1) LGP location gel pack (1) CSC ceiling scissor clip (1) CC c-clamp (3) LSP light stands (2) DXW lamps (1) FHM lamp (1) PRC Kit case Size: 35 L x 11-1/2 W x 15-3/4 H Weight: 43 lb. 4 oz. (Lamps included)	\$975.00

MODULAR MOUNTS & LIGHT CONTROLS

COMPREHENSIVE LIGHT MOUNTING AND CONTROL ACCESSORIES

Selecting and deploying lighting fixtures and control devices to one's exact specifications can be difficult on location or in small, "adapted" studios, where confined quarters, low ceilings, and a shortage of power is the rule rather than the exception.

Recognizing this, Comprehensive has created a new line of light mounting and control devices designed to work with portable lighting fixtures. They offer you much the same freedom and flexibility on location as you would expect in a studio environment. While they each perform a unique function, they share features important to you and your budget:

- Lightweight and portable. These rugged little devices can fill the nooks and crannies of your present lighting system case, without adding appreciably to your bulk and weight logistics.
- Generic compatibility. Our light control and mounting devices are designed to work with YOUR lightweight location lights.
- Designed for economy, not duplication. The modular aspect of our mounting devices eliminates the need to purchase costly parts over and over again, adding to your flexibility, not your overhead.

THE MODULAR STUD MS

Commonly known as the "baby pin", the 5/8" (16mm) diameter stud has become the most prevalent mount for lightweight professional lighting fixtures in use in motion picture and television. Nearly all manufacturers of this type of equipment design their lights to fit, or be adapted to, this mount. We have made this common denominator a modular piece in our system. It can be moved from device to device, thereby saving the cost of having to make repeat purchases of this item. The 3/4" deep 1/4-20 tapped hole in the base of the stud, enables it to be attached to all Comprehensive mounts, as well as many other types of mounts, stands, and rigs with 1/4-20 threaded screws. It's also an ideal building block when nothing will do but an invention of your own.

It conforms, in key mounting dimensions, to the new SMPTE proposed standard for the baby pin, but is an inch and a half longer (4 inches overall) to facilitate interchangeable mounting and add to the versatility of the piece. It features a safety hole through the top for safety wiring of lighting fixtures and a safety mounting groove, which should be standard on all light mounting devices.

CEILING SCISSOR CLIP CSC

For hanging lightweight lighting fixtures from the rails of dropped ceilings so commonly found in modern offices. Used in conjunction with the modular stud and our tilting umbrella/gel frame bracket, it also makes an excellent support for overhead microphones. (Mic must be equipped with 1/4-20 threaded receptacle or 3/8 to 1/4 adapter thread on mic mount.)

COMPREHENSIVE C-CLAMP CC

Our version of the industry's standard hangar for mounting lightweight lights and control devices to pipe, shelves, doors, and "two-by-fours", the Comprehensive C-Clamp accepts pipe and flat surfaces up to 2 inches thick. The pin mount's variable adjustment control makes this C-clamp the most versatile of its type available. Its 1/4-20 threaded

screw, our link to the modular stud, can also be used for microphone mounts and, in an emergency, to mount lightweight still cameras. Here, however extreme caution should be exercised so as not to perforate the camera's bottom; use the threaded back-up plate for this and similar applications.

COMPREHENSIVE DOUBLE CLAMP DC

This product eliminates forever the need to transport cumbersome and expensive pole systems to distant locations for the purpose of building temporary overhead rigging for your lights and controls. Two of these clamps, attached to the tops of two stands, will support a length of inexpensive, readily available, electrical or plumbing conduit, on which you can clamp your fixtures. Pipe of this type can be purchased locally from hardware stores, electrical outlets, or plumbing supply shops, used for the shoot and disposed of, all at a fraction of the cost of shipping such items to and from a location. A ten foot length of conduit is an inexpensive and ideal way to hang seamless background paper as well. A pair of these handy clamps is an ideal adjunct to any portable lighting system.

COMPREHENSIVE CAMERA MOUNT CM

Fast, simple, and safe, this is an effective way to attach lightweight fixtures to the camera shoes featured on many of today's video cameras. The mount, tooled from a single piece of sturdy bar aluminum, is fitted with a locking plate to prevent the fixture from sliding off the camera if it's tilted forward. The top of the mount is our standard 1/4-20 threaded screw to accept the modular light mounting stud.

5/8" to 3/8" ADAPTER A5/3

Adapts lights with 1/2" or 3/8" mounting receptacles to stands and clamps with 5/8" pin diameters. Like the 5/8" modular stud, the adapter features a safety undercut to prevent a light from sliding off a suspended mount.

COMPREHENSIVE/GEL UMBRELLA HOLDER GUH

This device enables you to equip 1,000 watt or under focussing spot or flood lights with either an umbrella for soft lighting applications, or a gel frame for color conversion, correction, diffusion, or special effects with gel. The holder has a tilting mechanism which enables the light and the gel frame or umbrella, to be re-oriented as an assembly rather than having to re-position these accessories independently when the light is moved. The top of the unit has a 1/4-20 lock screw that mates to the modular stud. In an emergency, the gel/umbrella holder can be used to support a lightweight still camera or mic mount on top of a light stand, however, the same caution mentioned in the C-Clamp description applies.

BACK-UP PLATE BUP

The 1/4-20 screws, common to most Comprehensive modular mounting devices, can provide temporary support for small cameras, mic mounts, and similar devices with 1/4-20 mounting receptacles. For most of these applications, however, the 3/4" screw length is too long. The back-up plate provides a secure, adjustable mounting surface for devices with shallower maximum mounting depths.

COMPREHENSIVE GAFFER GRIP GG-2

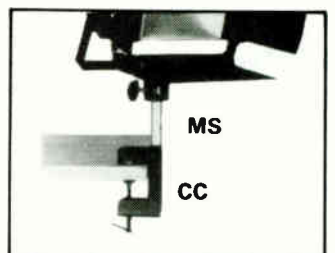
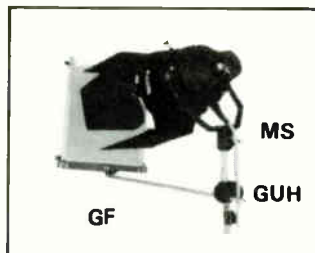
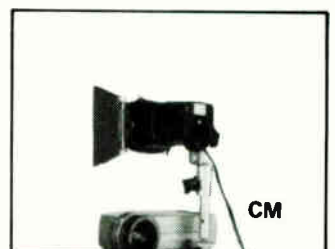
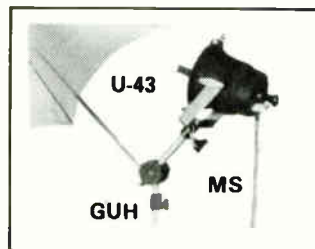
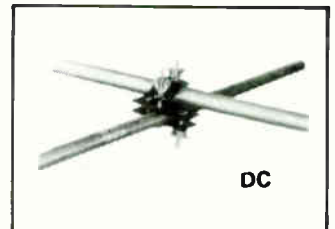
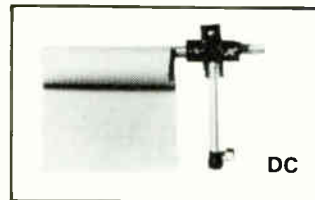
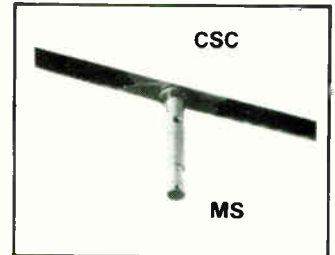
Made of heavy-duty fiberglass and featuring a permanently mounted 5/8" safety undercut stud, the Comprehensive gator-style gaffer grip is an efficient, reliable way to attach lightweight fixtures to shelves, doors, and similar flat surfaces. Use with 5/8" to 3/8" adapter for lights with smaller mounting receptacles (see fig 1 inside front cover)

COMPREHENSIVE GEL FRAME GF

The Comprehensive gel frame is designed to work in conjunction with our gel/umbrella holder, but will work equally well with standard "gobo" type devices from a variety of manufacturers in the industry. It's open-sided design facilitates "blending" the effect of the gel on the subject or set. The unique double ball & socket locking mechanism permits the plane of the gel supports to be set at any angle relative to the mounting shaft of the unit. It is sized to accommodate 10" x 12" gels, available in the Comprehensive/Rosco Gel Kits and from other manufacturers in this size. Four gels can be cut from industry standard 20" or 21" x 24" sheet sizes.

COMPREHENSIVE UMBRELLAS

Comprehensive reflective umbrellas convert small, focussing spot lights and flood lights into efficient soft sources, particularly useful in fill light applications. The U-43 and U-30 feature an aluminized surface, the UMMV is white. All provide high reflectivity and true color renditions, based on the color temperature of the lamp in use. Caution: When used in conjunction with focussing spots, light must be adjusted to flood position. Full spot intensity aimed at the center of the umbrella may cause scorching of the umbrella surface.



Modular Light Controls & Mounting:

MODEL NO.	DESCRIPTION	WT.	PRICE
MS	Modular stud	2 oz	\$ 3.50
CC	C-clamp	11oz	12.95
CSC	Ceiling scissor clip	2 oz	2.50
GUH	Gel/umbrella holder	12 oz	19.95
GF	Gel frame	10 oz	19.95
CM	Camera mount	1 oz	5.50
A5/3	5/8" to 3/8" adapter	2 oz	4.95
DC	Double clamp	2 lb	10.50
U-30	Umbrella 30" diameter/storage length 20-3/4"	8 oz	26.50
U-43	Umbrella 43" diameter/storage length 29-1/4"	11 oz	37.50
BUP	Back-up plate	1 oz	.95
GG-2	Gaffer grip	10 oz	26.95

COMPU=PROMPT™

Color Computerized Prompting Systems

OPERATOR'S CONSOLE

Microcomputer — 8 bit, 6502 based, 2MHz, 64K RAM, certified to comply with FCC class B limits, Part 15, silent operation.

Operator's Monitor — 7" full color with tuner and video inputs and outputs.

Controller — Hand-held, cable may be extended, continuous speed control, speed ranges from 1/2 line to 30 lines per second, forward or reverse, start, stop, reset stopwatch.

Software — COMPU=PROMPT: disk, ROM cartridge, instruction manual, training guide. Word Processor: ROM cartridge, instruction manual.

Text Buffer — CP-1000: holds over 1000 lines of text, approximately 20 minutes reading time before needing to reload additional text from disk. CP-2000: reading time unlimited.

Floppy Disk Storage — Disk drive (for text storage) 5-1/4" single sided, double density, 96 or 180 kilobytes.

Automatic Text Formatting — Formats 20 character lines, will not break up words, choice of left-justified or centered text.

Character Set — Standard alpha-numeric with symbols, foreign and custom sets available, two font sizes.

On-Screen Indicators — Stopwatch/timer to 1/10 second, line counter, relative position indicator.

Editing — COMPU=PROMPT: On-screen line editor, insert/delete/replace. Word Processor: insert/delete/replace characters, move, duplicate, delete blocks of text, and search and replace.

Random Access — Instant reset to beginning of text, instant access for up to 35 pre-set text locations.

Printer (optional) — Several models available, print speed up to 160 characters per second.

Printer Interface — Centronics standard parallel with 4K buffer.

Modem Communications (optional) — Standard ASCII code. 300 or 1200 baud optional.

RS232C Serial Interface (optional) — for use with modem.

Video Distribution Amplifier (optional) — Provides clean video signal to additional monitors (one input, four outputs). If more than four outputs are necessary, additional amplifiers can be cascaded.

Power Requirements — 110V AC 60 Hz.

Power Consumption — 139W

Video Output — 1V p/p, noninterlaced NTSC compatible color composite video.

Case — ATA-rated with wheels, converts to operator console.

Dimensions: 26"H x 14.5"D x 19.5"W
(66cmH x 36cmD x 49.5cmW)

Weight: 37 lbs., (16.8 kg)

System Weight (in cases)

CP-1000: 75.5 lbs., (34.2 kg)

CP-2000: 151 lbs., (68.4 kg)



COMPU=PROMPT
OPERATOR'S CONSOLE



COMPU=PROMPT
DELUXE COLOR CAMERA
MOUNT SYSTEM

DELUXE COLOR CAMERA MOUNT SYSTEM

Quick Setup — The COMPU=PROMPT Camera Mount System was designed with a small 7" x 6" baseplate which can conveniently be left on the camera when the prompter is not in use. Once the plate is attached, mounting or removing the system is done in 2-3 minutes.

Compatible With Virtually All Camera Systems — COMPU=PROMPT's mount is completely adjustable on all axes, allowing a wide variety of cameras and lenses to be accommodated.

Balanced Mounting System — Every size camera will remain perfectly balanced thanks to the ingeniously adaptable counter-weight system created by COMPU=PROMPT.

Easy Access To Lens — COMPU=PROMPT's swing-away mirror allows access to the lens for lens changes or cleaning.

Compact Design For Easy and Safe Storage — COMPU=PROMPT's specially designed beamsplitter assembly and anti-glare hood fold flat for storage.

MONITOR

- 14" full color, 24.4 lb., (11.1 kg.)
- Modified to increase contrast and enhance readability.
- Normal or mirror-image display controlled by rear-mounted switch.
- Overscan switch vertically enlarges text on the display screen by 30%.
- Power and video supplied to monitor via duplex cable consisting of 18 gauge grounded power cable and Beldon RG59 video cable attached every 18".
- Power requirement: 110V 60 Hz.
- Power Consumption: 58W
- Video Input: 1V p/p NTSC compatible color composite video.

BEAM-SPLITTER ASSEMBLY

- Anti-glare Hood: Made of black Velcro cloth and aluminum, adjustable on three axes.
- Reflective Glass: Negligible optical distortion, 1/2 stop light loss, 70% transmission, 30% reflectance.
- Weight: 5.75 lbs., (2.6 kg.)

COUNTERWEIGHTS

- Lead weights with lockdown knob.
- Weight: 22 lbs. each (10 kg.)

CASES (optional)

COMPU=PROMPT Deluxe Camera Mount System is contained in two ATA-rated cases.

Large case has wheels and contains monitor, steel rods, cables, hood and mirror assembly.

Dimensions: 22.5"W x 20.5"D x 23.5"H
(57cmW x 52cmD x 60cmH)

Small case contains brass rods, camera mount baseplate and counterweights.

Dimensions: 13.5"W x 11"D x 10.5"H
(34.5cmW x 28cmD x 26.5cmH)

SHIPPING WEIGHT

Large Case: 84 lbs., (38.1 kg.)

Small Case: 79 lbs., (35.8 kg.)

National Sales and Rental

COMPU=PROMPT PODIUM MONITOR
SYSTEM ALSO AVAILABLE



COMPU=PROMPT

FIRST IN COMPUTERIZED PROMPTING

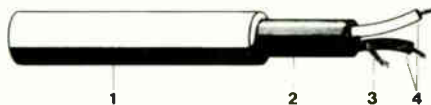
940 N. Orange Dr., Suite 209, Los Angeles, CA 90038
(213) 461-3113 CABLE: COMPROMPT

CONNECTRONICS CORP.

652 Glenbrook Road
Stamford, CT 06906
(203) 324-2889 Telex 643678 CONSORT BA STD

AUDIO CABLES

1. PVC jacket
2. Conductive thermoplastic shield
3. Drain wire for termination of shield
4. Two color-coded conductors



MUSIFLEX

• **Faster Wiring** • **Greater Flexibility** • **More Effective Shielding**

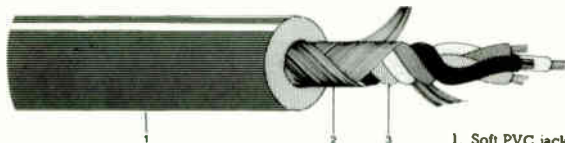
A new development in shielded cable that more than halves wiring time. Musiflex is used extensively in professional audio installations worldwide, and is also suitable for instrumentation, control and data applications.

11 Attractive Colors

Musiflex is available in red, blue, yellow, green, brown, gray, black, pink, orange, violet and white.

100M Reel \$98.00

Jacket	PVC 158°F to BS 6746 — TM2 Nominal radial thickness: 0.04 ins
Conductors	2x AWG 22 TCW (7/30) polyethylene insulated
Drain wire	AWG 22 TCW (7/30)
Nominal O/D	0.26 ins ± 5%
Capacitance	Between conductors: 19.20 pF per ft Conductor to shield 39.93 pF per ft

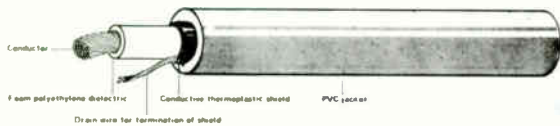


1. Soft PVC jacket
2. Double spiral Reussen shield
3. Four color-coded conductors

STAR QUAD

Star Quad microphone cable is designed for use in exceptionally noisy environments such as TV and film studios where conventional methods of shielding are inadequate to cope with thyristor noise, electro-mechanical interference or high levels of RFI. General construction features four insulated 24 AWG wires cabled together with a double spiral Reussen shield, covered with a flexible black PVC outer jacket.

100M Reel \$127.50



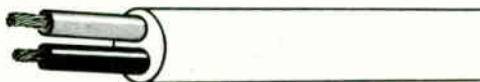
ROCKFLEX

• **Faster Wiring** • **More Effective Shielding** • **Greater Flexibility**

A new development in musical instrument cable. Rockflex is available in black, blue, red and yellow.

100M Reel \$98.00

Jacket	PVC 140°F Nominal radial thickness: 0.059 ins
Conductor	1x AWG 22 TCW (19/34)
Drain wire	1x AWG 22 TCW (9/34)
Dielectric	Foam polyethylene Nominal O/D of dielectric + conductor: 0.016 ins

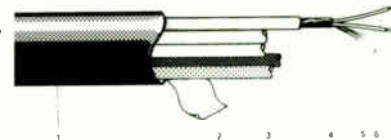


SPEAKERFLEX

A range of twin-core, PVC insulated and jacketed cables with plain, high-conductivity copper conductors for sound reinforcement, monitor systems, lighting control, communications, etc.

100M Reel — Speakerflex 75	..... \$ 46.60
Conductors: 19 AWG PCW (24/0.2mm 0.75mm ²)	
100M Reel — Speakerflex 150	..... 82.17
Conductors: 17 AWG PCW (30/0.25mm 1.50mm ²)	
100M Reel — Speakerflex 250	..... 136.97
Conductors: 13 AWG PCW (50/0.25mm 2.50mm ²)	

1. PVC jacket
2. Polyester film wrap for extra flexibility
3. Color-coded jacket
4. Conductive thermoplastic shield
5. Drain wire for termination of shield
6. Two conductors

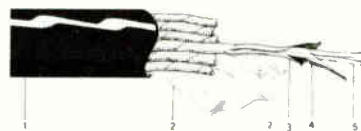


STUDIFLEX

Studiflex cable is designed for audio and studio installation use. This cable is fast to work with, it can help cut wiring time dramatically. Individual pairs are shielded with conductive thermoplastic, and each pair is jacketed in a different color for quick identification. Jacket and shield can be stripped in a single operation, exposing the two conductors and ground drain wire (all pre-tinned). Studiflex is available in single and multiple pair configurations.

100M Reel — 1 Pair: Black, Red, Blue, Yellow, Green, Gray, Pink, Brown	..... \$ 49.70
100M Reel — 4 Pair: Blue	..... 300.92
100M Reel — 8 Pair: Orange	..... 460.60
100M Reel — 16 Pair: Brown	..... 921.20

Jacket	PVC 158°F to BS 6746 — TM2 Nominal radial thickness: 0.047 ins
Conductors	AWG 24 (7/32) TCW Insulation: PVC 176°F to MIL W 76B LW-C24 (7) Nominal O/D of conductor + insulation: 0.045 ins ϕ
Nominal O/D	16 pair: 0.86 ins ± 5% 8 pair: 0.60 ins ± 5% 4 pair: 0.47 ins ± 5% 1 pair black: 0.20 ins ± 5% 1 pair other colors: 0.15 ins ± 5%



1. Tough flexible PVC jacket
2. Polyester film wrap for extra flexibility
3. Aluminum foil shield
4. Drain wire for termination of shield
5. Two color-coded conductors

MULTIPAIR

A range of Multipair cables designed for audio, instrumentation and data applications. Each pair of conductors is individually shielded and fully insulated from adjacent pairs.

100M Reel — MP1	1 pair: Gray	..... \$ 49.70
100M Reel — MP6	6 pair: Gray	..... 260.00
100M Reel — MP11	11 pair: Yellow	..... 439.40
100M Reel — MP15	15 pair: Green	..... 537.55
100M Reel — MP19	19 pair: Blue	..... 624.85
100M Reel — MP27	27 pair: Red	..... 936.85
100M Reel — MP31	31 pair: Black	..... 1214.85

1. PVC jacket
2. Conductive thermoplastic shield
3. Drain wire for termination of shield
4. Foam polyethylene insulation
5. Conductor



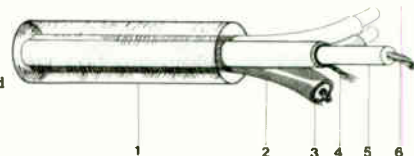
PHONOFLEX

Phonoflex is a single conductor, low capacitance cable designed for audio equipment interconnection and patch leads.

100M Reel \$71.00

Jacket	PVC 158°F to BS 6746 — TM2 Nominal radial thickness: 0.023 ins Jacket colors: red, black, blue, white
Conductor	24 AWG (7/32) TCW insulated with foam polyethylene Nominal O/D of conductor + insulation: 0.11 ins

1. PVC jacket
2. Individual PVC color-coded jacket
3. Conductive thermoplastic shield
4. Drain wire for termination of shield
5. Foam polyethylene insulation
6. Conductor



QUADFLEX

Quadflex is a low capacitance four-way interconnection cable designed to interlink audio equipment while avoiding a "rat's nest" of wires. An overall jacket contains four individually jacketed and shielded conductors, color-coded red, black, blue and white.

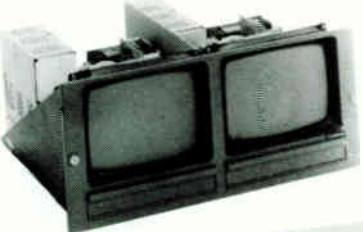
100M Reel \$368.00

CONRAC CORPORATION

CONRAC DIVISION

600 North Rimsdale Ave.
Covina, CA 91722
(818) 966-3511

MONOCHROME MONITORS



SNA SERIES



QQA SERIES

QQA SERIES: 15, 17 and 21-Inch Monochrome

A very high resolution, dynamic focus, monochrome display which is adjustable to lock on any field rate from 37 to 60 per second. It will lock on any three pre-selected, switch-selectable horizontal rates between 15 kHz and 37 kHz. Aspect ratio and frame size are continuously variable.

QQA Series High Resolution Monochrome 15" CRT	Price	Options Model QQA	Price
QQA15/N	\$3260.00	Video Reverse (Switchable)	\$225.00
QQA15/C	3490.00	Separate Horizontal and Vertical Drive	250.00
QQA15/Y	3500.00	Dual Video Input A/B	280.00
QQA15/RS	3570.00	600 μ sec vertical retrace option	100.00
17" CRT			
QQA17/N	\$3745.00	Accessories*	
QQA17/C	4090.00	M3	\$310.00
QQA17/Y	4100.00	M4	340.00
QQA17/RS	4185.00	M5	180.00
		M8	365.00
		M9	230.00
21" CRT			
QQA21/N	\$4395.00		
QQA21/C	4750.00		
QQA21/Y	4760.00		
QQA21/RS	4855.00		

DZB SERIES: 15-Inch Monochrome

A professional monochrome monitor designed for VTR over-console mounting. Front panel selector switch allows two matched video inputs to be viewed for picture comparison.

DZB Series Broadcast Monochrome 15" CRT	Price	Accessories*	Price
DZB15/N	\$2195.00	M3	\$310.00
DZB15/RS	2300.00	M4	340.00
DZB15/C	2360.00	M5	180.00
DZB15/Y	2390.00		

SNA SERIES: 9, 15, 17 and 23-Inch Monochrome

A family of 800-line high resolution monitors for broadcast, industrial and educational applications. Horizontal AFC time constant is compatible with helical-scan video tape recorders. Quick-disconnect circuit modules are common to all models. The 17-inch display features dynamic focus. Designed for operation at either 525 line, 60 field, or 625 line, 50 field, sync rates without modification. Also optionally available for high line rate operation.

SNA Series Monochrome 9" CRT	Price	Options Model SNA	Price
SNA9/N	\$1095.00	Yoke Rotation, 90° or 180°	\$100.00
SNA9/C	1200.00	Separate Horizontal and Vertical Drive	110.00
SNA9/RBL	1240.00	Tally Light	110.00
SNA9/RBR	1240.00	Non-Synchronous Operation	
SNA9/RC	1275.00	9", 17", 23" (Std. on 15")	145.00
SNA9/RXL	1275.00	Dynamic Focus 15"	170.00
SNA9/RXR	1275.00	Back Porch Clamp	195.00
SNA9/RKL	1275.00	Square Raster 9", 15" (Std. on 17" and 23")	195.00
SNA9/RKR	1275.00	Normal to Underscan	
SNA9/2R	2220.00	Switchable	195.00
15" CRT			
SNA15/NC	\$1375.00	20MHz Video Amplifier	265.00
SNA15/NR	1445.00	Differential Input	265.00
SNA15/R	1525.00	High Line Rates as available	310.00
SNA15/C	1540.00	Pulse Cross (not available on 23")	310.00
SNA15/RS	1630.00	Video Reverse (switchable)	325.00
SNA15/Y	1590.00	Dual Channel	
17" CRT w/Dynamic Focus			
SNA17/N	\$1560.00	Video Input	365.00
SNA17/R	1680.00	Etched CRT	30.00
SNA17/RS	1805.00	Accessories*	
SNA17/C	1805.00	SNA 17"	
SNA17/Y	1850.00	M3	\$310.00
23" CRT w/Dynamic Focus			
SNA23/C	\$1790.00	M6	285.00
SNA23/Y	1790.00	M7	220.00
		SNA 23"	
		M8	\$365.00
		M9	230.00

ENA SERIES: 9 and 12-Inch Monochrome

A cost effective, 650-line resolution monochrome display for industrial, data processing, and educational installations. Meets all EIA RS-170 specifications. Horizontal AFC is optimized to meet the requirements of industrial tape recorders. Chassis, rack or cabinet models available. A dual 9-inch model will fit in a 19-inch rack and requires only 8-3/4-inch of vertical rack space.

ENA Series Monochrome 9" CRT	Price	Options Model ENA	Price
ENA9/N	\$ 640.00	External Sync Input (switchable)	\$ 65.00
ENA9/C	740.00	Laminated Anti-glare	
ENA9/RBL	750.00	CRT Panel	65.00
ENA9/RBR	750.00	Non-synchronous	
ENA9/RKL	785.00	Shielding	125.00
ENA9/RKR	785.00	Differential Input	165.00
ENA9/2R	1335.00		
12" CRT			
ENA12/N	\$670.00		
ENA12/C	825.00		
ENA12/R	840.00		

NOTE: Letters in part number signify configuration: N for chassis-only ("naked"); RS for rack side; C for cabinet; Y for yoke mounting.
Prices and Specifications Subject to Change Without Notice.

CONRAC CORPORATION

CONRAC DIVISION

600 North Rimsdale Ave.
Covina, CA 91722
(818) 966-3511

COLOR MONITORS

6200 SERIES: 19 and 13-Inch Color

Class 1 master studio monitor incorporates fixed convergence precision in-line CRT, RGB and NTSC switchable inputs, optional comb filter and Conrac Colormatch™ phosphors. Other desirable professional features includes superb white field and brightness uniformities and pulse cross display. 19 and 13 inch models are available in cabinet, rack-slide or chassis-only configurations.

19" CRT		13" CRT	
NTSC with Comb Filter and RGB			
6242N19	\$4930.00	6242N13	\$4605.00
6242RS19	5120.00	6242RS13	4800.00
6242C19	5135.00	6242C13	4815.00
6242Y19	5185.00	6242Y13	4855.00
		PAL B European	Factory Quote



6200 SERIES

6100 SERIES: 19-Inch Color

The ultimate "master monitor" for professional broadcasting and teleproduction applications. Features a Colormatch, 625-line resolution, shadow-mask, CRT, beam current feedback, thirty-eight independent, and fully active convergence controls and optional comb filter which offers improved separation of chrominance and luminance and reduces cross-color distortions.

6100 Series Broadcast Color

19" CRT			
NTSC			
	Price	PAL B European	Price
6122N19	\$6980.00	6123N19	\$7090.00
6122RS19	7170.00	6123RS19	7240.00
6122C19	7280.00	6123C19	7345.00
6122Y19	7330.00	6123Y19	7385.00
NTSC with Comb Filter			
6142N19	\$8090.00	Accessories*	
6142RS19	8275.00	M3	\$310.00
6142C19	8385.00	M4	340.00
6142Y19	8425.00	M5	180.00



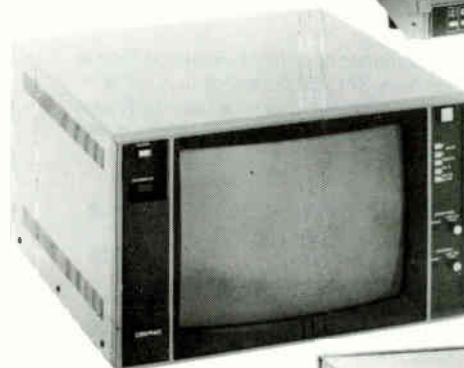
6100 SERIES

5700 SERIES: 13-Inch Color

A compact, 500-line resolution Colormatch, shadow-mask picture or data display monitor, with special controls and configuration for VTR over-console applications. All convergence controls are located in a pull-out drawer for full front access. Also available in rack and portable cabinet configurations. Available in NTSC color transmission standards, with optional vector output.

5700 Series Broadcast Color

13" CRT			
NTSC			
	Price	PAL B European	Price
5722N13	\$6450.00	5723N13	\$6620.00
5722RS13	6605.00	5723RS13	6770.00
5722C13	6660.00	5723C13	6820.00
5722Y13	6695.00	5723Y13	6860.00
NTSC with Comb Filter			
5742N13	\$7675.00	Accessories*	
5742RS13	7830.00	M3	\$310.00
5742C13	7885.00	M4	340.00
5742Y13	7920.00	M5	180.00
NTSC with Vector Output			
5732N13	\$7210.00	M8	365.00
5732RS13	7340.00	M9	230.00
5732C13	7435.00		
5732Y13	7465.00		



5700 SERIES

5200 SERIES 25-Inch Color

The 5200 Series display monitors are for audience viewing, corporate communications, and instructional applications. They feature a shadow-mask CRT, and preset controls for contrast and brightness. Available in NTSC color transmission standards, or in an RGB version for computer data/graphics applications.

25" CRT		25" CRT	
NTSC	Price	RGB	Price
5222C25	\$5795.00	5211C25	\$5065.00
5222Y25	5825.00	5211Y25	5095.00

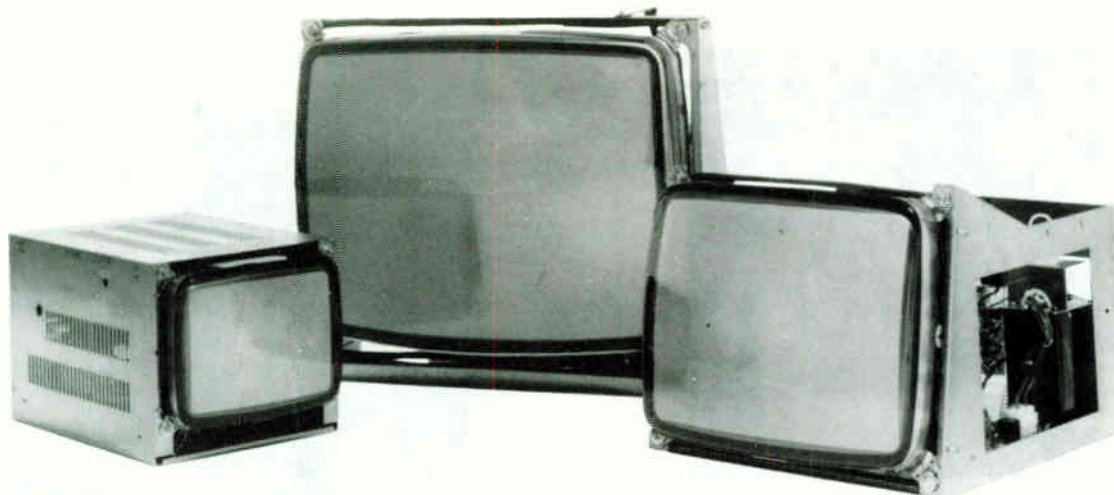


5200 SERIES

CONRAC CORPORATION

MONITORS

CONRAC DIVISION
600 North Rimsdale Ave.
Covina, CA 91722
(818) 966-3511



7000 SERIES COLOR VIDEO DISPLAY MONITORS

7000 SERIES: 19, 13 and 9-Inch Color High Resolution Video Display Monitors

Cost effective high resolution video displays ideally suited for business graphics, process control, CAD/CAM workstations and personal computers. Features 8 colors, precision in-line (PIL) CRT technology, high density shadow mask CRT, modular electronics, scan rates from 24kHz to 32kHz, TTL level signal inputs and optional cabinet.

7000 Series Color

9" CRT
7011N9 24.8kHz \$665.00

13" CRT
7011N13 24.8kHz \$865.00
7011N13 31.2kHz 895.00

19" CRT
7011N19 24.8kHz \$1495.00

2600 SERIES: 19, 15 and 9-Inch Monochrome Video Display Monitors

The 2600 Series of video display monitors is designed to bring high reliability, easy maintenance and superior picture quality to a wide variety of broadcast and computer graphics systems. With its high performance and high resolution, the 2600 meets the demands of computer aided design (CAD), computer-aided manufacturing (CAM), medical imaging, CATV, process control and other graphics systems.

2600 Series Monochrome

15" CRT
2600N15 \$1220.00
2600C15 1340.00
2600NR15 1380.00
2600Y15 1460.00

Options

Dual Video Input \$ 65.00
Inverted Video (switchable) 30.00
Pulse Cross 65.00
Normal to Underscan Switchable 45.00
Separate Horizontal and Vertical Drive 30.00
Rack Slides 130.00
Rack Shelf 60.00
Tally Lights 60.00
AFC Switchable 25.00
High Line Rates (specify) 125.00
Direct Etch CRT 30.00

Phosphors:

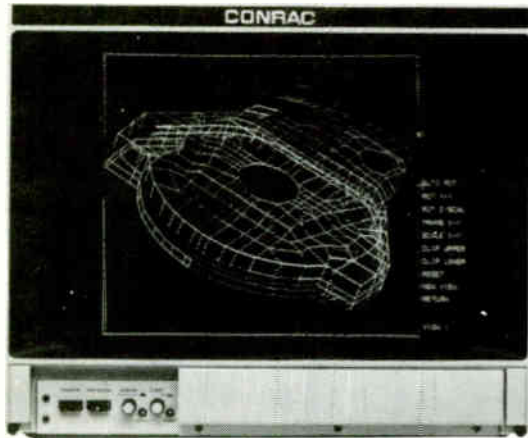
D6500°K \$155.00
P31, P39, P45 85.00
AR Filter (OCLI)

CONRAC CORPORATION

CONRAC DIVISION

600 North Rimsdale Ave.
Covina, CA 91722
(818) 966-3511

MONITORS



MODEL 7211



MODEL 2400

Model 7211 High-Resolution Color CRT Display

Conrac's finest color display offers our proprietary high-resolution circuitry, shadow mask CRT design, 0.31mm dot pitch, and 1080 horizontal pixels (at 1225-line scan), and accepts RGB composite video inputs in both EIA RS170 and EIA RS343 formats. 13" and 19" CRT models are available.

Here is why the 7211 keeps you in the forefront of technology...PIL technology. Conrac's Precision In-Line Gun provides easy setup and minimal maintenance. The gun design in the 7211 eliminates time-consuming reconvergence adjustments by a combination of very close gun manufacturing tolerances and corrections built into the tubes's yoke. As a result, when compared to a delta-gun design, the 7211 has fewer parts and needs less service.

Adaptive packaging...The 7211 size and compact shape are designed for greatest integrating flexibility. Our 19" display comes in two front panel heights—17.5" or 15.75"—and fits into the same space as our high-resolution monochromatic CRT display. For still greater flexibility, you can order the 7211 with no front panel and relocated controls, giving a 14-inch front height. Other configurations include rack-slide or cabinet options.

- 40 MHz video bandwidth
- Dynamic focus
- Designed to minimize service downtime
- Selectable scan frequencies
- Weight-saving aluminum frame improves heat dissipation
- Preset calibration controls
- High-density shadow mask CRT
- Worldwide power adaptability

Model 2400 High-Resolution Monochrome CRT Display

With features that represent the current state of technology, Conrac's best monochrome monitor meets the needs of many diverse applications for a high-resolution display. These include computer graphics and alphanumeric for CAD/CAM, process control, and similar systems. When equipped with its inverted video option, the 2400 is extremely well suited for medical imaging systems. Color-quality glass...A particularly impressive attribute of the 2400 is its combination of brightness with nearly perfect corner-focus characteristics. The reason is Conrac's use of color-quality glass, which permits higher voltages to enhance both focusing and brightness.

- Dynamic focus
- Selectable scan frequencies
- Application versatility
- Wide video amplifier bandwidth
- Preset calibration controls
- Electronic raster centering
- Differential video input
- Modular electronics packages
- Choice of cabinet, rack-slide, or chassis-only configurations

13" CRT	Homalite Filter	135.00
High Resolution Color	AR Filter (Laminated)	275.00
7211N13	Differential Input	85.00
7211RS13	Separate H & V Drives	100.00
7211C13	Dark Body CRT (19")	25.00
19" CRT	Dark Body CRT direct etch (19")	125.00
High Resolution Color	Dark Body CRT LP (19")	175.00
7211N19	Dark Body CRT LP & direct etch (19")	300.00
7211RS19	Internal/External Sync	
7211C19	Select Switch	50.00
Options	Tilt & Swivel Base	130.00
Long Persistence Phosphor	Touch System	2995.00
Direct Etch CRT		

19" CRT	13" & 15" CRT	Factory Quote
High Resolution Monochrome	Options	
2400N19	Dual Video Inputs	\$110.00
2400RS19	Inverted Video	95.00
2400C19	Front Panel Selectable	
	Scan Rates	165.00
	Switchable Underscan	95.00
	Option Combinations	Factory Quote
	P-31, P-39, P-40, P-45	
	Phosphor	100.00
	AR Filter (Laminated)	275.00

CONRAC CORPORATION

MONITOR

CONRAC DIVISION

600 North Rimsdale Ave.
Covina, CA 91722
(818) 966-3511

7311

65 kHz Raster Scan Color Graphic Display Monitor

FEATURES

- 65 kHz horizontal scan rate
- 60 Hz vertical refresh rate
- 1083 non-interlaced lines per frame
- Self-diagnostic status indicators
- Wideband video amplifier

APPLICATIONS

19-inch display for finely detailed, non-interlaced images generated for computer-aided design (CAD), computer-aided engineering (CAE), architecture, engineering and construction (AEC), computer-aided design and drafting (CAD/D) and other applications demanding highest resolution in full color.

Model 7311 can be supplied in full cabinet, rack-slide or chassis-only configurations, and can be custom-configured to meet specific OEM requirements.

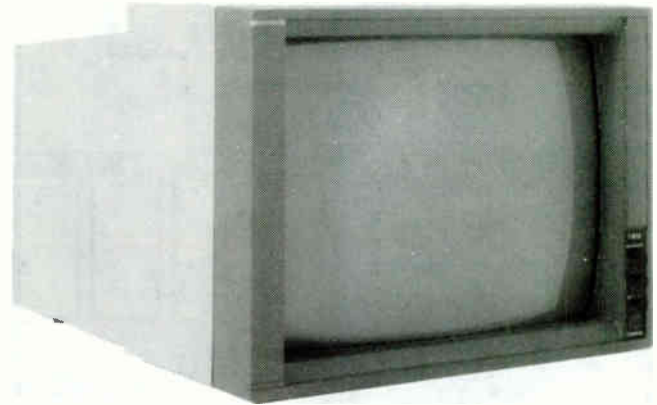
19" CRT

Ultra High Resolution Color

7311C19	\$4575.00
7311RS19	4550.00
7311N19	4325.00

Options

Long Persistence Phosphor	\$150.00
Direct Etch CRT	100.00
Homalite Filter	135.00
AR Filter (Laminated)	275.00
Tilt & Swivel Base	130.00
Internal/External Sync Select Switch	50.00



7311

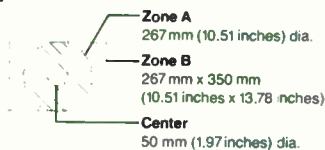
SPECIFICATIONS

Visual Performance

Resolution	1280H x 1024V format (non-interlaced).
CRT Pitch	0.31 mm.
Linearity and Geometry	Within a centrally located 10.5" (267 mm) circle, no point deviates by more than 2% from its proper position (Ball Chart Method).
Raster Size Regulation	Less than 1% change from zero to 100% APL at 20 fL.
Brightness	20 fL nominal - 45 fL maximum.

CONVERGENCE

Maximum Error by Zones:



Maximum Convergence Error:

Center	Zone A	Zone B
0.15 mm (0.006 in.)	0.4 mm (0.016 in.)	0.6 mm (0.023 in.)

Max CRT Display Area	Height 297 mm (11.6 inches). Width 396 mm (15.5 inches). Area 11598 mm ² (180 inches ²).
Aspect Ratio	4 to 3 standard. 1:1, 5:4 available within 350 mm x 267 mm rectangle.

Circuit Performance

Pulse Performance	Rise time = 5 nsec Fall time = 7 nsec
Black Level	Black level shift less than 1% change of peak

Stability	luminance from 10% to 90% APL.
Interface Performance	Better than 90%.
Scan Rates	Horizontal — 65 kHz ± 2.5 kHz Vertical — 47 Hz - 63 Hz.
Horizontal Retrace Time	30 μsec maximum.
Vertical Retrace Time	600 μsec maximum.

SYNC SELECTION

Sync Selection	Jumper plug on video processor board permits selection of either internal or external sync.
Internal	Composite horizontal and vertical sync combined on green video channel.
External	BNC connector for external composite horizontal and vertical sync.
Input Connections	Three separate BNC connectors for RGB inputs, each parallel-wired with a second BNC connector for loop-through operation, and switch-selectable impedance matching — high Z or 75 ohms.
External Sync	Single BNC connector for external sync input with parallel-wired second BNC connector for loop-through operation. Switch-selectable impedance matching — high Z or 75 ohms.

INPUT SIGNAL CHARACTERISTICS

Composite RGB Video	1 V p-p nominal. 1 V ± 6 db acceptable. Sync negative.
Non-composite RGB Video	7 V p-p nominal. 7 V ± 6 db acceptable. Black negative.
External Sync	4 V p-p nominal. 1.0 V to 8 V p-p acceptable. Negative going pulses.

CONTROLS

Operator Controls	Power, Degauss, Brightness
Maintenance and set-up controls	Located on PCB's.

General

OPERATING ENVIRONMENT

Temperature	32°F (0°C) to 122°F (50°C).
Humidity	10% to 90% relative non-condensing.
Altitude	Up to 10,000 Ft (3,000 meters).

POWER REQUIREMENTS

Voltage	90 - 132 VAC/180 - 265 VAC selectable.
Frequency	50 - 60 Hz ± 10%.
Power Consumption	200 watts maximum @ 117 VAC

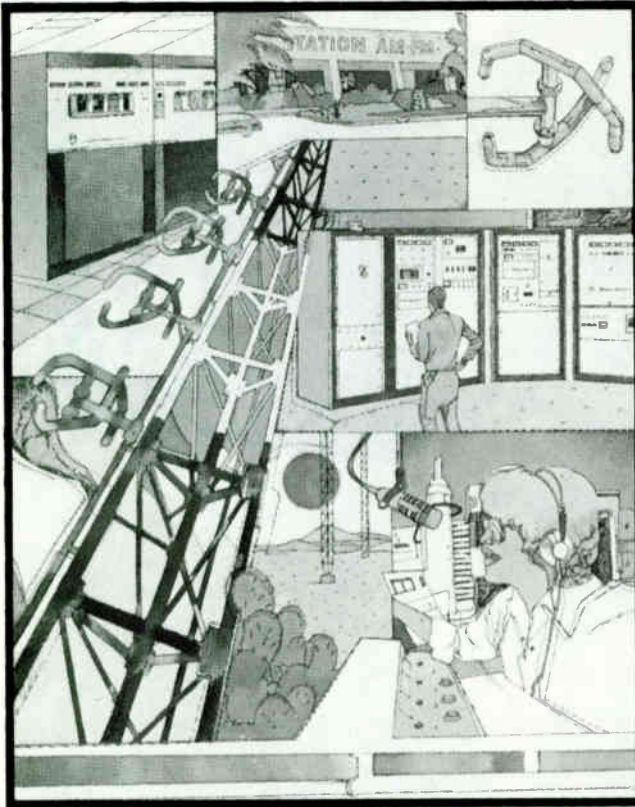
WEIGHT

Cabinet	68.00 lb. (30.91 kg).
Rack Mtg.	59.00 lb. no slides (26.82 kg). 66.00 lb. with slides (30.00 kg).
Chassis only	56.00 lb. (25.45 kg).

OPTIONS

- Naked, Cabinet or Rack Slide version.
- Anti-glare screen/contrast filters available.
- External horizontal and vertical drive 1-8 V negative.
- Digital Degaussing, On-Off & Brightness, remote or on chassis.
- Hard Copy output.
- External anti-glare filters: Polaroid, Sunflex, OCLI, Homolite.
- Direct etch CRT.

Call Continental for the best in AM & FM broadcast equipment.



© 1984 Continental Electronics Mfg. Co./5845

AM Transmitters

1 kW 10 kW
5 kW 50 kW

FM Transmitters

1.25 kW 27.5 kW
2.5 kW 40 kW
10 kW 50 kW
20 kW 55 kW
25 kW 60 kW

SW Transmitters

10 kW 100 kW
50 kW 250 kW

High Power Transmitters

100 kW 500 kW
150 kW 1,000 kW
250 kW 2,000 kW

Transmitter-Related

Equipment

Combiners
Dummy loads
Combiner & exciter controls
FM exciters
AM stereo exciters
FM antennas
Antenna transmission line
Phasing & coupling

Studio & Remote

Equipment

Audio processing
Remote pickup

STL

Transmitter remote control
Monitor & test
Consoles
Turntables
Turntable pick-up arms & cartridges
Turntable preamplifiers
Turntable cabinets
Cartridge tape systems
Reel-to-reel tape systems
Microphones & accessories
Studio speakers
Headphones
Patchcords & panels
Clocks & warning lights
Studio furniture

Engineering service & transmitter parts

Continental offers parts and engineering service for all Continental and Collins radio broadcast equipment.

24-hour service numbers:

(214) 327-4532, parts
(214) 327-4533, service
Telex: 73398
Cable: Contronics

Call your local District Sales Manager for Information (US radio stations)

Northeast	R. Clifford Rogers (518) 532-7488; PO Box 157; Schroon Lake, NY 12870
Southeast	Dave Hultsman (205) 822-1078; PO Box 26509; Birmingham, AL 35226 John Huston (704) 274-5298; 28 Park Ave.; Asheville, NC 28803
Midwest	Barry Ariaz (615) 822-0256; 106 Louann Ln.; Hendersonville, TN 37075 John D. Abdnour (815) 672-8585; PO Box 575; Streator, IL 61364 Jim Littlejohn (612) 479-2633; 670 N. Branch Rd.; Maple Plain, MN 55359
Southwest	Ken Perkins (303) 670-1049; 7846 S. Centaur Dr.; Evergreen, CO 80439 Steve H. Schott (214) 423-3644; PO Box 2008; Plano, TX 75074
Northwest	Tom T. Cauthers (503) 254-2818; 13333 SE Marsh Rd.; Sandy, OR 97055
West	Marvin (Muffin) Steelman (503) 772-3569; 2600 Judy Way; Medford, OR 97501

Canada, Hawaii and Puerto Rico are handled from the Home Office in Dallas, Texas

International Broadcast Stations

Call International Marketing Dept., Continental Electronics Mfg. Co.
(214) 381-7161 Telex: 73398 Cable: CONTRONICS
P.O. Box 270879 Dallas, Texas 75227

Continental Electronics

Continental Electronics Mfg. Co. Box 270879 Dallas, Texas 75227 (214) 381-7161



CONTROL VIDEO CORP.

SUBSIDIARY OF ADDA CORP.

130 Knowles Drive
Los Gatos, CA 95030
(408) 379-1500

SPOT REEL EDITING



SABER SPOT REEL ASSEMBLY

Features

- Eliminate time consuming spot reel editing
- Automatic formatting for all major satellite channels
- Avails list for easy traffic management
- Multiple or single source reels
- Frame accurate editing
- 1/2", 3/4" & 1" VTR interfaces
- User friendly CRT promoting ease of operation

The SABER will eliminate the costly time consuming task of building daily spot reels to be aired by manual or automated sequential playback systems.

The system consists of a CRT in which the operator programs the ID #'s of the spots to be edited and Control Video's Intelligent Controller which controls two VTRs and automatically performs the edits.

The system is time code based; the spot ID number and location of each spot is stored in a directory at the head of each source reel. The operator simply looks at the advertising schedule for the day and enters the spot ID numbers needed for each break. The SABER automatically formats the tape and alerts the operator of break "avails" and time overages.

Once the operator has entered all the information via the CRT, the "edit" command is given and the SABER automatically assembles the desired spot reel. If more than one source reel is needed, the SABER will "checkerboard" edit; that is, insert all those spots needed from the source tape already in the VTR. A listing of all the spots on the days spot reel can be accessed from the CRT. The edited tape can be used in any manual or automatic playback system.

REQUIRED EQUIPMENT

Control Video Corporation Configuration

SABER:

- 1 Control Video Chassis
- 1 Control Video SMPTE Writer
- 2 Control Video SMPTE Readers
- 2 VTR Controllers
- 1 Serial I.O. Board, SABER

Other Equipment

- 1 Terminal w/Keyboard
- 1 Source VTR
- 1 Editing VTR

Specifications

System Configuration	Z80 Microprocessor
Central Controller	Z80 Microprocessor
Device Interfaces	48K EPROM/RAM
Central Controller Mem	48K EPROM/RAM
Communication Format	Serial SMPTE RS422 Proposed Standard C9600 BD Until Standard Accepted
Communication Protocol	SMPTE Proposed Standard (Modified Until Standard Accepted)
Edit Decision List Format	Control Video
Edit Decision List Printout	Control Video
CRT Display Format	Control Video
No. of Devices Controllable	2
Edit Accuracy	Frame Accurate, Color Framed
Time Code Standards	SMPTE Drop/Non Drop Frame, Control Track
Television Standards	NTSC
Operator's Control	CRT-Keyboard ASCII
Motion Control Device	Multispeed Shuttle; Frame Accurate jog; Touch Activated Front Panel

POR

Prices and Specifications Subject to Change Without Notice.

B-319

1641 McGaw
Irvine, CA 92714-5661
(714) 250-1641

200 SERIES VIDEO EDITING SYSTEM

In a world where ideas are manipulated by the medium in which they are expressed; where soaring creativity can be grounded by technology; there comes a tool so sophisticated in design that once again the pure creative urge is set free...the 200 Series Video Editing Systems.

Each system in the 200 Series includes as standard the following features:

ActionMatch

ActionMatch calculates edit points to match action and sound anywhere within an edit segment. Audio-only or video-only inserts can be precisely matched to corresponding action or sound with joystick control and a single keystroke.

Amber Status Monitor

An amber status monitor is included with each 200 System. The amber display was chosen after extensive testing which showed that it produced minimum eye strain while causing the least distortion of an operator's color perception.

Auto Duration

Utilizes the trim register to set the edit duration relative to either an in or an out point. This simplifies back-timing, critical inserts and animation style sequences.

Auto/Manual Assembly

Auto Assembly provides for automatic editing of a sequence or an entire program following the instructions in the edit list. Any 200 Series editor will sequentially (in numeric order) auto assemble. Manual Assembly calls up the next edit automatically but actual performance of the edit relies on the operator. The 204 includes Checkerboard as well as Sequential Auto/Manual Assembly.

AutoMatch

AutoMatch allows the operator to create matching source and record inedit points at any location within the previous edit. This automatically provides match frame edits for A/B rolls and effect transitions.

Auto Scene Store

In this mode a single keystroke snapshots scene location by time code and reel number. Up to ninety-nine locations can be stored or listed. When recalled the time code address is readily available for high speed search or loading as an edit point.

Automatic Dialogue Replacement

ADR provides cue tones and a continuous audio record cycle for "looping" or post-dubbing of sound. It also can be used to replace video material.

Cleanit

Cleanit automatically cleans overlapped edits in the EDL one edit at a time during the off-line edit process. This program constantly checks the preceding edit to see if an overlap has occurred.

Color Framing

A Color Framing routine allows the edit system to monitor the color frame relationship for one-inch VTRs based on time code.

Control Track or SMPTE/EBU Time Code

The editing system has the capability to operate in either control track or industry standard SMPTE/EBU drop frame or non-drop frame time code. The system also operates with any combination of control track or SMPTE/EBU time coded tapes.

High Speed Search

High speed search allows the operator to program any tape time location (control track or SMPTE/EBU time code), and have the selected VTR search to that tape location.

List Scroll

List Scroll gives you joystick control to shuttle forward and backward through the edit list, including "cruise" for no-hands scrolling of EDL.

Manual Bump

Manual Bump allows for small

adjustments to rolling VTRs from the keyboard to achieve precise synchronization of multiple machines for syncroll.

Programmable Personality

Each model of VTR has an individual "personality" with regard to speed and response characteristics. In the 200 Series, personality switches tell the system what specific VTRs are connected, providing greater control in cueing and searching.

Smart Start

Smart Start learns the characteristics of the VTRs in the system and makes adjustments in the synchronization routines to accommodate variations in performance.

Split Audio/Video Edits

Split audio/video edits can be programmed with independent selection of audio and video in edit points.



200 SERIES

All 200 Series edit systems include keyboard console, status display monitor and electronic control unit. All systems include edit storage, auto assembly and basic list management.

	LIST
202 Sync Roll System stores 250 edit lines, includes three interfaces.	\$13,500.00
202T Time Code/Sync Roll System same as 202 but includes TCR Time Code Reader.	\$17,000.00
203 A/B Roll System interfaces with effects switchers; stores 250 edit lines; VTR sync roll capability, includes three interfaces.	\$19,000.00
203T Time Code / A/B Roll System same as 203 but includes TCR Time Code Reader.	\$22,000.00
204 Advanced List Management System stores 800 edit lines, VTR sync roll, 409, block move and comments; includes three interfaces.	\$25,000.00

CONVERSION KITS

CK-202/203 Conversion Kit upgrades 202 to 203; includes memory board.	\$ 6,500.00
CK-202/204 Conversion Kit upgrades 202 to 204; includes memory board and keycaps.	\$14,000.00
CK-203/204 Conversion Kit upgrades 203 to 204; includes memory board and keycaps.	\$ 7,000.00

ACCESSORIES AND OPTIONS

AVS-100 Audio Video Switcher cuts-only (required for multi-source cuts-only systems)	\$ 2,200.00
CG-100 Command Generator (Option for 104/204 only) Remotely commands peripheral devices.	\$ 1,500.00
CI-90 Character Inserter inserts time code digits into video being recorded, providing "Window Dubs".	\$ 1,500.00
DD-200 Dual Disk Drive	\$ 4,000.00
ICC-100/5' Interconnect Cable for parallel I/O	\$ 175.00
ICC-100/20' Interconnect Cable for parallel I/O	\$ 300.00
IFP-100 Interface Package specify VTR manufacturer and model number (1", 3/4", & 1/2").	\$ 1,000.00
JB-100 Junction Box required for multiple connections to parallel I/O e.g., TCR and switcher.	\$ 200.00
LL-100 Liplock Audio Pitch Corrector.	\$ 1,500.00
PIO-100 Parallel Input/Output provides parallel data to switcher, switcher interfaces, time code readers and CG-100. Must be purchased with switcher or switcher interface if no TCR in system.	\$ 500.00
RC-100 Reader Card provides one time code channel capability to TCR	\$ 800.00
RMK-200E rack mount kit for Electronic Control Unit.	\$ 250.00
RMK-200D rack mount kit for Disk Drive.	\$ 250.00
SE-100 Switcher Effects Unit audio follow video switcher with 23 wipe patterns.	\$ 7,000.00
SWI-100/110 Switcher Interfaces includes JB-100 and appropriate cables; specify model/manufacturer of switcher to be interfaced.	\$ 2,000.00
SWI-120 Switcher Interface includes JB-100 and appropriate cables; specify model/manufacturer of switcher to be interfaced.	\$ 3,000.00
TCR Time Code Reader (formerly TCR-100) includes three reader cards, PIO-100. Can be expanded for four channel capability.	\$ 4,500.00
200 Series Operators Manual	\$ 50.00
200 Series Operators and Maintenance Manual	\$ 125.00

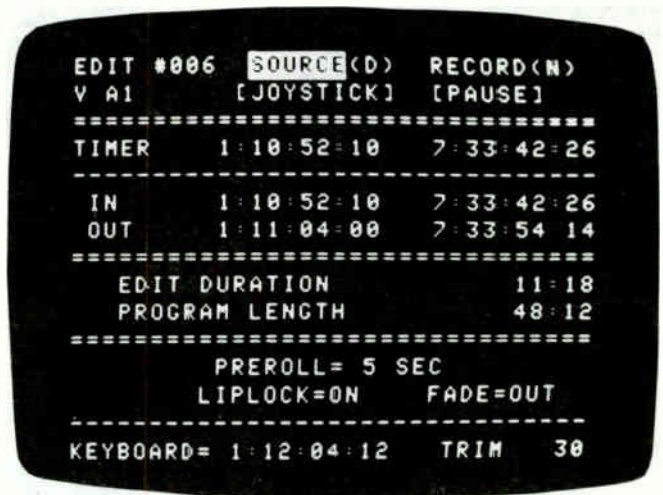
CONVERGENCE CORP.

1641 McGaw
Irvine, CA 92714-5661
(714) 250-1641

EDIT CONTROLLERS



ECS-90



ECS-90 SERIES

The ECS-90 is a low cost microprocessor-based editing system designed to bring sophisticated joystick editing within the budget of every videotape producer. It is a plug-in system that provides variable speed tape motion control with most 3/4" and 1/2" editing VTRs.

The multi-format ECS-90 is particularly suitable for high speed ENG (electronic news gathering), EJ (electronic journalism), remote production vans, educational and industrial productions, broadcast productions requiring a single source, and as an off-line system for commercial post production.

The ECS-90 can be used for single or dual monitor editing, remote VTR rolls, back-timed edits, animation and manual edit listing. The ECS-90 operates on control track or industry standard SMPTE/EBU time code, and is available in NTSC or PAL versions.

The ECS-90 is human-engineered for ease of operation and is the fastest editor available in the industry. The dedicated twelve-button keyboard permits quick initiation of edit functions and communication with the editor and its options, Liplock® audio pitch control, and BLADE™ black/fade module.

The ECS-90 standard package includes a status display generator for quick and convenient video monitor display of edit data, two CCA control cable assemblies (3/4" or 1/2" VTRs of customer's choice), one Operator's Manual and one Installation and Maintenance Manual.

FEATURES

- Plugs into most 3/4" and 1/2" VTRs
- Joystick control of tape speed
- Pulse Scan
- Interchangeable VTR formats
- High speed search
- Cruise
- Full VTR remote control
- Auto-tag
- Recall feature
- Built-in sync generator
- On-board computer
- Dynamic Edits
- Mark, set and trim in/out edit points
- Programmable pre- and post-rolls
- Insert or assemble edits
- Independent control of audio and video channels
- Control track or SMPTE/EBU time code
- Abort capability
- Status display generator
- Fastest edit controller available

ECS-90 Edit Control System

Price includes two CCA-90 Control Cable Assemblies, one Operator's Manual, and one Installation and Maintenance Manual. **\$4500.00**

ECS-90S "Super 90" Edit Control System

Includes two CCA-90 Control Cable Assemblies, Time Code Reader/Generator/Listener, one Operator's Manual, and one Installation and Maintenance Manual. **\$6500.00**

ACCESSORY

CI-90 Character Inserter

Inserts time code digits into video being recorded, providing "Window Dubs". **\$1500.00**

PLUG-IN OPTIONS

LL-90 Liplock™ Audio Pitch Corrector

Corrects audio pitch to provide intelligible audio dialog monitoring when tape is shuttled at fast or slow speeds. **\$1,200.00**

BL-90 Blade™ Black Generator And Fade Module

Fades up from and/or down to black at in or out edit points. Includes internal black burst generator for prerecording color black on video tapes. (Fades NTSC and PAL, Black Burst Generator NTSC only.) **\$925.00**

CCA-90 Control Cable Assembly

Interfaces ECS-90 to VTR. **\$650.00**

RGL-90 Time Code Reader/Generator/Listener

Can generate drop or non-drop frame SMPTE/EBU Time Code on Record VTR. Reads both Source and Record time code simultaneously. Lists edit decisions to RS-232C storage devices such as printers or disk drives. Includes everything necessary to upgrade an ECS-90 to a Super 90. **\$3000.00**

SPARE PARTS

ECS-90 or ECS-90S Operator's Manual **\$25.00**
 ECS-90 or ECS-90S Installation and Maintenance Manual **50.00**
 RMK-90C Rack Mount Kit **250.00**

Cool, Uniform, Color Perfect Lighting

Mini-Cool Heat-Free Video Light

Selected by
NASA



- Dramatically improves camera color performance
- Enriches color brilliance
- Quartz-halogen lamp
- Entirely portable
- 2 mounts standard equipment
- Choice of AC/DC operations
- Built-in safety features
- Teflon coated
- Wide range of accessories

**For pure...true...depth of field
projection don't light up without it!**



COOL-LUX
lighting ind. inc.

MINI-COOL BEST VIDEO LIGHT IN THE WORLD



NASA
flies the Mini-Cool® Light on every Space Shuttle Mission, mounted on a custom-made 16mm motion picture camera (shown at right).

PHOTO DIMMER

Controls brightness of Mini-Cool with FOS-1 Lamp. Reducing brightness greatly increases lamp life. For example, when lamp is dimmed to 32% max brightness, its life is increased 15 times! The scale directly shows the lamp life opposite slider position, and chart shows illumination & color temp. Supplied w/8-ft. cord.

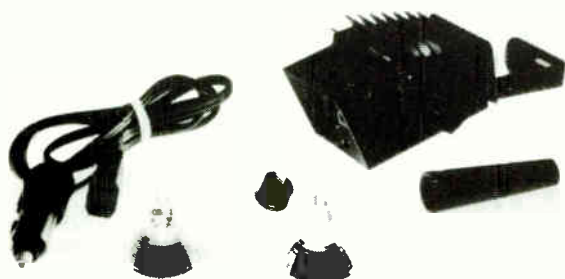
(C4456) \$29.95



MINI-COOL LIGHTS ARE AVAILABLE IN STANDARD PACK OR IN AC/DC PACK:

Mini-Cool Standard Pack (AC) includes (1) each: Mini-Cool Light, FOS-1 Lamp, Camera Adaptor & Handle. Supplied in Molded Foam Carton.
(C4441) \$129.50

Mini-Cool AC/DC Pack includes: All items in Standard Pack, plus FOS-9 Lamp, & 12V DC Adaptor Cord.
(C4453) \$159.50



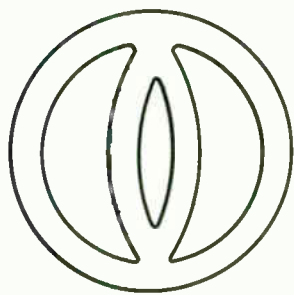
CONTENTS OF AC/DC PACK

MINI-COOL INTERCHANGEABLE LAMPS (Hrs.)

CAT. NO.	VOLTS	WATTS	BEAM TYPE	AV. LIFE	PRICE
FOS-1	120	250	FLOOD	50	\$26.95
FOS-2	30	200	FLOOD	50	26.95
FOS-3	12	100	FLOOD	50	29.95
FOS-4	12	50	FLOOD	4000	22.95
FOS-5	12	25	FLOOD	4000	22.95
FOS-6	12	50	SPOT	4000	22.95
FOS-7	12	25	SPOT	4000	22.95
FOS-8	12	75	SPOT	4000	22.95
FOS-9	12	75	FLOOD	4000	24.95
FOS-10	14.4	95	FLOOD	500	28.95

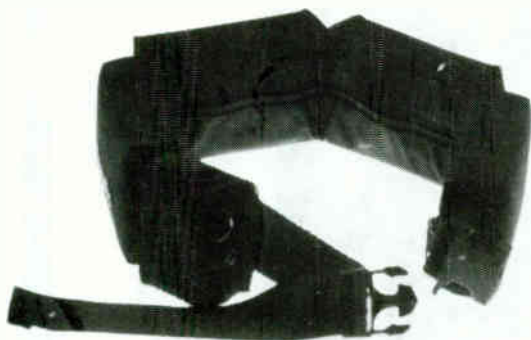
All Cool-Lux Lamps are quartz-halogen, permanently mounted in dichroic reflectors. A special coating on the reflector passes Ultraviolet and Infrared radiations, along with most of the heat generated by the lamp's filament, backwards through the reflector. Pure visible light is reflected forward onto the subject. Color temperatures among the different lamps available are all within 5 percent of 3200 degrees Kelvin. Thus their colors are precisely matched to the requirements of video tape and tungsten-type color film.

THESE ARE UNQUESTIONABLY THE FINEST AND MOST EFFICIENT LAMPS AVAILABLE FOR VIDEO AND FILM LIGHTING.



OLYMPIC

BATTERY BELTS (With Built-In Chargers)



**OLYMPIC L-13 12V, 13 AMPERE-HOURS
(C4457) \$279.95**



**OLYMPIC L-20 12V, 20 AMPERE-HOURS
(C4459) \$329.95**

These are the Finest Portable Power Sources available, with extra capacity for extended on-location use. They are made of top quality materials throughout, are very comfortable to wear and are extremely easy to operate and to recharge. Batteries are New Advanced-Technology Cells, made by Panasonic, which provide more running time per ampere-hour than batteries previously available. All components are Zipper-Accessible, and zipper has double closure devices so you can operate it from either end. Inner surfaces of belt are lined with a "Silky" material, for wearing comfort and to prevent friction damage to clothing. Two alternately-flashing

LED Indicator Lights tell you when batteries need recharging. Older belts rely on mechanical-movement meters, which are easily damaged by dropping. Our Solid-State Electronic System is virtually shock-proof. Output receptacle is cigarette-lighter type. Battery charger is built into the belt, you can't misplace it or forget it! Use these belts to power your light (or lights) alone, or to power your video camera and VCR, along with your light. You can power a 75-watt lamp for almost three hours with the Olympic L-20, and for almost two hours with the L-13 Model.

VIDEO AND PHOTO LIGHTING GUIDE



*There are many more accessories available for the Mini-Cool than those shown on these three pages. Our complete line is illustrated in the **Cool-Lux Professional Lighting Guide**, a unique introduction to Video Lighting and the Mini-Cool System. This informative document (16 pages, full color) can save you many times its modest cost. To get your copy, send \$3.50 to the address below. We will include a **FREE Certificate** worth \$5.00 on any purchase of Mini-Cool Lights or Accessories.*

COOL-LUX

lighting ind. inc.

5723 AUCKLAND AVE
N. HOLLYWOOD, CA 91601-2207
(818) 761-8181

Starpak

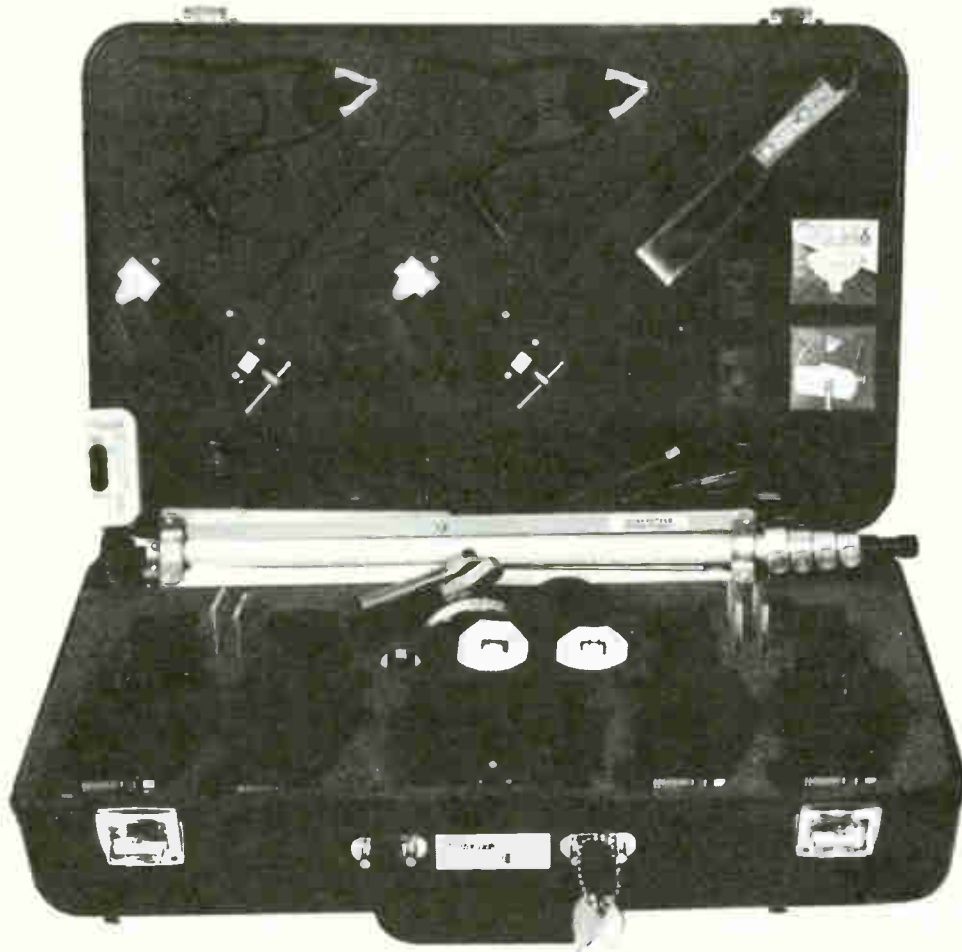
FOR STUDIO
WORK
OR LOCATION

Jacques Cousteau's Amazon series took one year to prepare and two years to shoot. Cinematographer Louis Prezelin who has been with the Cousteau team and The Calypso for many years says,

"The STARPAK is the most compact and best equipped lighting package in the market."



LOUIS PREZELIN



4 MINI-COOL™ LIGHTS

- 1 CASE WITH FOAM & KEYS
- 4 STAND ADAPTER
- 2 COLLAPSIBLE LIGHT STAND
- 2 LIGHT FRAMERS (Barn Doors)
- 6 FOS-1 LAMP (120-Volt, 250-Watt, Flood)
- 1 FOS-3 LAMP (12-Volt, 100-Watt, Flood)
- 1 FOS-9 LAMP (12-Volt, 75-Watt, Flood)

- 2 DIFFUSION LENS
- 2 DAYLIGHT FILTER
- 1 HANDLE
- 1 CAMERA ADAPTER
- 2 THREE WAY CUBE TAP
- 2 SCISSOR-CLIP MOUNT
- 1 PUTTY-KNIFE MOUNT

- 2 LARGE SLIDING CLAMP MOUNT
- 2 SPRING-CLAMP MOUNT
- 3 EXTENSION CORD
- 1 CIGARETTE-LIGHTER ADAPTER CORD
- 1 PHOTO DIMMER™
- 2 SPARE NYLON STRAIN RELIEFS
- 1 AUTO BATTERY ADAPTER CORD

Custom-fitted foam provides cavities for all above-listed items. Cavities are also provided for NEW MINI-COOL BARN DOORS and for small tools or accessories.

Starpak is ideal for studio or location shooting. MINI-COOLS operate from AC or DC power sources. AC power consumption (total for four lights) is less than nine amps.

Many times during the filming of the series, "AMAZON" only STARPAKS would permit the shooting of exceptional documents under the most precarious conditions.

Mini-Cools are used by NASA aboard space shuttle flights.



CINEQUIP INC.
275 MacPHERSON
TORONTO, CANADA M4V 1A4
(416) 920-5424

The Camera Mart, Inc.
456 W. 55th ST.
NEW YORK, NY 10019
(212) 757-6977/TELEX: 1-2078



coolight

5723 AUCKLAND AVENUE
N. HOLLYWOOD, CA 91601 • (818) 761-6116



COSTUME ARMOUR, INC.

Shore Road
P.O. Box 325
Cornwall-On-Hudson, NY 12520
(914) 534-9120

SCENIC BACKGROUNDS

COMMERCIAL, INDUSTRIAL & PORTRAIT PHOTOGRAPHY

EXHIBITS & DISPLAYS

MOTION PICTURE, T.V. & THEATRICAL SCENERY



Materials Used In Construction Of Scenic Backgrounds: All backgrounds illustrated are fabricated of heavy gauge vinyl (30 mil.), a self-extinguishing material that has been approved for use in areas of public assembly. The units which are available "ready-to-use" are those which have been permanently mounted onto sturdy wood frames. As noted below, all units are also available unframed for direct installation onto existing walls.

Paint Finish Selection: As explained in the catalog, most of the units shown are available in several alternative finishes. To obtain any style in a finish other than the one illustrated, merely indicate the particular unit desired (by name and number) then specify that it be painted in whichever alternative finish is desired. All units ordered by name and number alone will be painted as illustrated. As further noted below, all units are also available unpainted. On re-orders of the same style, because they are hand painted to order, all units are sometimes subject to slight variations in color and tone.

Custom Work: In addition to our stock items, we also fabricate customized backgrounds to meet any design specified, i.e. company names and logos, TV station call letters, etc. The size of the customized panels may range anywhere from 2' x 2' up to 4' x 12'. Estimates for custom work not mentioned below are available on request.

Shipping Time: These scenic panels are all made up to order; they are not kept in stock. Normally approximately four weeks is required between placing an order and the shipment of painted panels, whether framed or unframed. Unpainted, unframed-units can sometimes be shipped faster if required. All prices are F.O.B. Studio, Cornwall-on-Hudson, New York. Shipments are sent Freight Collect, via trucking companies or freight forwarders.

PRICES

Style No.	Style Name	Painted, Framed Ready-To-Use	Unpainted Unframed
101	Bamboo	\$155.00	\$ 75.00
110	Old English Wall	175.00	75.00
112	Old English Wall	175.00	75.00
201	French Provincial	175.00	75.00
	(Pilasters ea.)	120.00	50.00
202	English Oak Paneling	175.00	75.00
	(Pilasters ea.)	120.00	50.00
203	Spanish Paneling	175.00	75.00
204	Italian Provincial	175.00	75.00
205	Library Panel	245.00	75.00
207	Castilian	175.00	75.00
	(Pilasters ea.)	120.00	50.00
208	Baroque	175.00	75.00
	(Pilasters ea.)	120.00	50.00
209	Rococo	175.00	75.00
	(Pilasters ea.)	120.00	50.00
210	Fireplace	185.00	75.00
212	Florentine Bronze Doors	175.00	75.00
	(Pilasters)	120.00	50.00
215	Empire (not illus.)	175.00	75.00
220	Gothic Paneling	295.00	150.00
225	Roman Arch	250.00	150.00
	Roman Arch (Matching Panel — not illus.)	155.00	75.00
230	Colonial Brick Arch	375.00	150.00
235	Moorish Arch	325.00	150.00
306	Slate Roof Tiles	175.00	75.00
310	Western Quarry Stone (not illus.)	175.00	75.00
312	Barnwood Siding	155.00	75.00
314	Logs	155.00	75.00
315	Colonial Brick	215.00	75.00
316	Cedar Shingles	155.00	75.00
317	Split Shaker Shingles	155.00	75.00
318	Spanish Roof Tiles	175.00	75.00
319	Wood Clapboard Siding	155.00	75.00
320	New England Fieldstone	175.00	75.00
330	Stucco Wall	150.00	75.00
340	Bronze Gates (ea.) (not illus.)	120.00	50.00
345	Corinthian Column	170.00	80.00
346	Mosaic Tiles	150.00	75.00
315A	Colonial Brick 9'	225.00	75.00

Handling Fee Per Box \$12.00/2 Panels Per Box.

Prices and Specifications Subject to Change Without Notice.

B-325

COUNTRYMAN ASSOCIATES, INC.

417 Stanford Ave.
Redwood City, CA 94063
(415) 364-9988

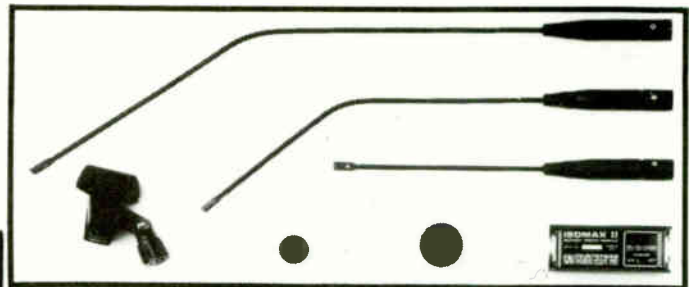
MICROPHONES



Type 85 FET Direct Box



Isomax TV-H



Isomax III

ISOMAX II ELECTRET MICROPHONE

Countryman Isomax II Series Microphones are precision electret condenser devices for professional recording and sound reinforcement. They feature:

- Excellent frequency response
- Wide dynamic range
- Very low noise
- Miniature size
- Phantom or battery power

The Isomax II is a new family of microphones engineered to expand the highly successful Isomax Pro series of directional devices and the EM 101, 102 and 202 series of omnidirectional devices. Never before has such precise control of directional characteristics been available from such miniature microphones. Four different pick-up patterns are available: (1) Cardioid, (2) Hypercardioid, (3) Bidirectional and (4) Omnidirectional. Please see polar charts on other side. The Countryman Isomax II series may be used in a wide variety of both general and exotic applications: Theater, broadcast, film, musical instrument, sound reinforcement and certain acoustical measurements.

Polar Patterns

Isomax II O: Omnidirectional (pressure microphone)

Isomax II C: Cardioid (unidirectional)

Isomax II H: Hypercardioid (super cardioid)

Isomax II B: Bidirectional (figure eight)

Isomax II O/C: Omnidirectional with Calibrated frequency response

Frequency Response

Isomax II O: 20Hz to 20kHz

Isomax II O/C: 20Hz to 15kHz +/-1.5dB

Isomax II C, H, B: 50Hz to 20kHz

Isomax II (O, C, H, B)\$265.95

TYPE 85 FET DIRECT BOX

- True ground isolation, even when phantom powered
- RF filtered on input and output
- Active circuit does not load pickups
- Indestructible extruded housing
- Recessed connectors and switches
- Battery or phantom powered
- Internal Pad for speaker bridging

The Type 85 FET Direct Box provides the ultimate way to connect Guitar Pickups, Contact Microphones, or Electric Instruments to a Recording or P.A. Console without loss of audio quality. Ordinary transformer type direct boxes load the signal from your pickup and result in distortion, loss of volume and a change in tone quality in the output of your amplifier as well as in the signal feeding the console. The Type 85 eliminates these bad effects by isolating your pickup with an FET Amplifier which reduces this loading by 500 times. By using the Type 85, you can be assured that the sound from your instrument will remain unchanged and the mixing console will receive the best possible signal.

Type 85 FET Direct Box\$232.95

Automatic phantom or 9V battery powered, XLR-3 output.

EM-301 PRESSURE MICROPHONE

The Countryman Model EM-301 Conference Table Microphone is a professional electret condenser device specifically designed for permanent installation in table top and other flush mounting applications. The very small diameter, (11/32"), of the EM-301 permits mounting of the microphone in a conference table in a most unobtrusive and aesthetically satisfactory manner. Every consideration has been given to engineering a high quality microphone which will "hear" but not be seen.

The Countryman EM-301 has excellent internal isolation of the microphone element from the case. This shock-mounting minimizes the mechanical pick-up of undesirable noises from pens, coffee cups, and fists striking the table. Because of the flat frequency response, high sensitivity and dynamic range of the Countryman EM-301, it is sensitive enough to pick up a whisper and yet it can clearly reproduce a shout without distortion.

Polar Pattern

Omnidirectional

Frequency Response

+/-1dB from 100Hz to 10kHz -3dB at 50Hz and 15kHz.

EM-301 Flush Mounting Pressure\$348.95

Microphone for tables and lecterns, phantom or battery powered balanced XLR-3 output.

ISOMAX III

Precision Isomax II type microphone mounted on a slim, semiflexible black metal extension tube (24" overall length). Choose omni, cardioid, hypercardioid or bidirectional. Has side looking type patterns. Great for drum overheads, cymbals and guitar.

Isomax III (O, C, H, B)\$294.00

ISOMAX IV-H

Cylindrical hypercardioid capsule mounted on a slim black semiflexible metal tube (24" overall length). Capsule has built-in vibration isolation and response optimized for high fidelity voice applications. Axial hypercardioid pattern. Excellent for podiums, pulpits, awards ceremonies, legislative and judicial benches etc.

Isomax IV-H\$434.00

ISOMAX TV-H

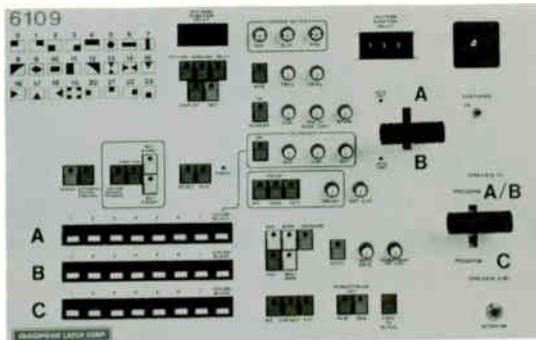
Hypercardioid Lavalier Microphone for TV and motion picture applications. Phantom powered, balanced output. For battery operation use Isomax Battery Power Module.

Isomax TV-H\$405.95

CROSSPOINT LATCH CORP.

95 PROGRESS STREET • UNION, NJ 07083
(201) 688-1510 • TELEX 9104901990

SWITCHERS/CONTROLLERS



6109/7209

400 EVENT REGISTERS, 100 PROGRAMMABLE SEQUENCES is available with the 6109/7209 combination. The switcher can store and run sequences varying analog functions smoothly and simultaneously. Sequences can be stored on disc or in editors. Sequences can be recalled by editors and triggered to run. Each Event can be programmed for smooth transitions of up to 999 frames, and in addition to that a delay of up to an additional 999 frames before the start of each smooth transition. Event registers can be recalled as static displays (switcher control panel status); 400 such registers are available. Or, the Editor can recall the registers and "run" them on the switcher from the status of one Event register to the next. Individual functions on the Stored Events can be altered with the unique "Edit" mode. The 7209 can be controlled fully by most editors by means of RS232 or RS422 serial ports, or with parallel interface.

This is a three bus switcher with a 32 pattern generator with automatic or manual operation. It has a built in RGB chroma keyer, and a second optional chroma keyer. It has a downstream keyer with edge, master fade to black, can dissolve from a bordered split wipe (or from a chroma keyer over a split wipe) to a third signal. It has a blanking processor with a unique test mode for system timing.

Available in Pal

6109 \$6,995. 7209 \$3,000. 99 SEQUENCE OPTION \$1,500.

6112, 6112BH and 6112AK

The 6112AK is a microprocessor controlled switcher with two mix effects systems each with 12 individually positionable patterns. The two fader arms can be programmed to control not only the pattern size (as with conventional switchers) but also positioner, border width etc., between two limits. When so programmed, when the fader arm is moved from one of its mechanical limits to the other, the pattern moves from one of its programmed electrical limits to the other. The programmed transition can be produced automatically by the microprocessor with duration times up to 999 frames. In addition to that the start of the transitions can be delayed up to 999 frames each. The two mix effects systems can be programmed with different duration and delay times and can be triggered simultaneously or independently. The 6112AK has a downstream matte key with invert and blink. The optional chroma keyer is available either in RGB or Encoded. The switcher has nine inputs including colorizer, pattern modulator, Mix-Wipe which is a combination of mix and wipe independently controllable, dual back porch clamps, and blanking processor. The 6112 can produce a wipe over a wipe, a wipe inside a wipe, a wipe over or behind a chroma key. The blanking processor completely removes color shifts at the end of a transition. The 6112AK is equivalent to the 6112 combined with the 6403.

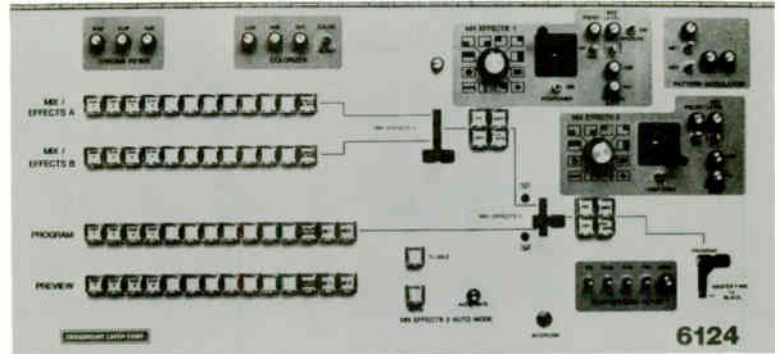
The 6112 has the same production features without the programmable features of the 6112AK.

The 6112BH is similar to the 6112 except for the incandescent lamp buttons.

All version of the 6112 can be used with the 6403 Editor interface. In addition the 6112 can also be used with the 7239 AUTO DRIVE TM and the 7203 Programmable Editor switcher interface. All versions operate with the 6800 Audio mixer.

Available in PAL

6112 \$7,995. 6112BH \$10,500. 6112AK \$10800.
Chroma Keyers (RGB or Encoded) \$1,050.



6124

A four bus 12 input switcher with illuminated push-buttons. A chroma keyer is standard (either RGB or encoded).

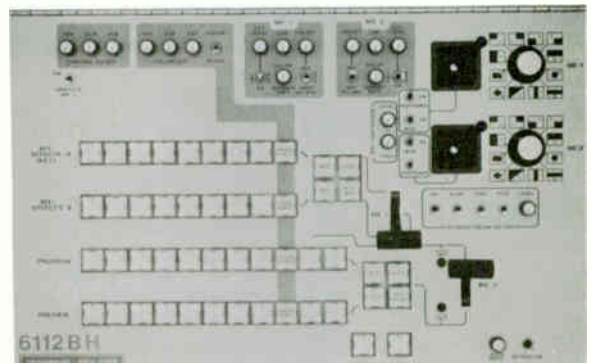
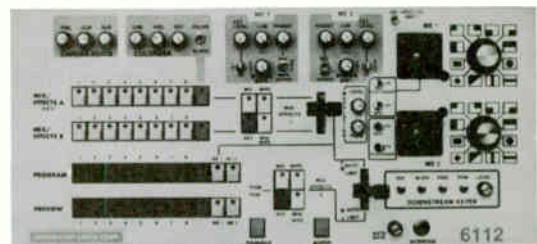
There are two independent mix effects systems, each with its own pattern generator and positioner, border generator (with individual luminance controls), keyer (with internal, external, and chroma key modes), hard or soft edge.

The downstream keyer mattes the incoming signal, and has blink and invert. The pattern modulator with adjustable amplitude and frequency, can be switched into either ME system. The colorizer has hue luminance and saturation controls, and drives both border generators with complimentary colors. The chroma keyer has a variable delay line which is adjustable from the front panel for optimum keying. It can be switched into either ME, allowing wipes and dissolves behind as well as over a chroma key.

The 6124 can be controlled by most editors by means of the 6403 Editor Switcher Interface. 6124A is available in 19" wide control panel with wide LED type buttons.

Available in PAL

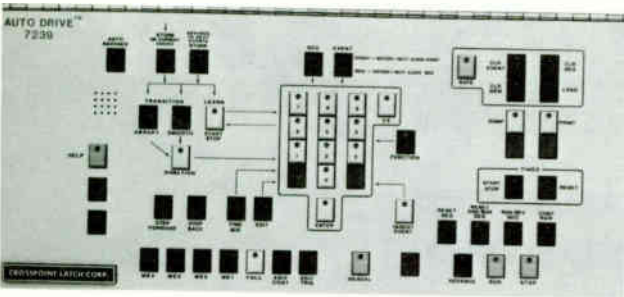
\$13,700.00



Prices and Specifications Subject to Change Without Notice.

CROSSPOINT LATCH CORP.

95 PROGRESS STREET • UNION, NJ 07083
(201) 688-1510 • TELEX 9104901990



7239 Auto Drive TM

Auto Drive is an extremely versatile programmable controller for the Crosspoint Latch "K" switchers. Its computer is capable of storing the configuration of the entire control panel and then making smooth or abrupt transitions from one configuration of the panel to the next. Each configuration is stored as an "event". Events can be grouped into sequences.

As a production tool, it enables artistic combinations of effects which could not possibly be achieved manually, to be generated with great precision and ease. Before editing, sequences can be programmed and then rehearsed live. Minor adjustments and trims (or major ones for that matter) can be made to the program. Events may be added, deleted or changed. Sequences of events may be called up and reviewed at random. Sequences may be stored one way and played back in reverse. Elaborate sequences may be set up slowly, at the convenience of the operator, then by programming a short duration for each event, the sequence can be run through rapidly and without mistakes. Programming 7239 Auto Drive is much faster than editing because no time is lost waiting for tapes to rewind and roll. By performing most of the effects before editing, a great deal of post production time is saved.

As an editing tool, the 7239 Auto Drive can be programmed to perform effects and switching for multiple roll edits. Since the programming is done with its own computer, interface with editors is very simple, via an RS232 serial port. The cost of a complex switcher to editor interface is eliminated.

AUTO DRIVE TM. is the most sophisticated controller in the industry. It has 256 Events each of which consists of the entire control panel of the switcher and any number of which can be grouped into sequences which can be run in either direction. Manual fader arm movements can be stored, then "run" with all analog functions being controlled smoothly from one switcher panel configuration to the next. Stored Events can be very easily modified, with the unique Crosspoint Latch "Edit" mode.

Interfaces with most Editors

\$12,500.

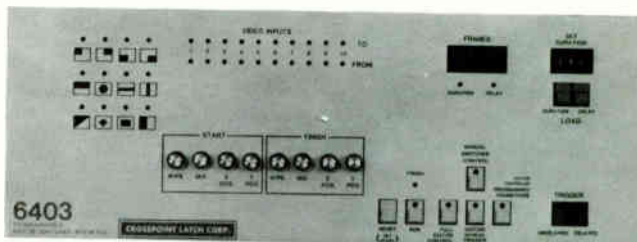


6800 Programmable VTR Audio Mixer

The 6800 has been designed primarily for use with VTR editing controllers. It can perform automatic cuts and mixes, with durations accurately programmable up to 999 frames. It has five stereo inputs with individual gain controls for each channel. The two channels (tracks) may be reversed at the output, or combined into either output channel. This allows the use of the SMPTE time code on the free audio channel of the recording VTR. The input selection may be manually overridden by switches on the front panel. Mixing may also be performed manually from the front panel, if required. Each output channel has a gain control with a center detent. A separate LED type VU meter is provided for each set of stereo inputs. Both mixers are simultaneously controlled by a single slider or by the automatic ramp generator.

\$3500.00

AUDIO & SYNC GENERATORS SWITCHERS/CONTROLLERS/



6403 Editor/Switcher Interface

The 6403 is an active interface unit which allows most Crosspoint Latch switchers to communicate directly with VTR editing controllers. It greatly enhances the versatility of the more sophisticated editors by increasing the capability of their effects and mix functions. It adds the capability of effects and mix to simple editors. It has programmable start to finish points, for effects and mixes, along with an internal duration counter which may be set from one to 999 frames.

The 6403 is very flexible. It has several modes of operations. In one mode it accepts and stores commands such as duration time, pattern selection, input selection, etc., directly from an editor; and then executes the commands at the required instant. In another mode, where greater capability than that afforded by the editor is required, the start and finish points may be set manually from the 6403 control panel. The editor then merely issues the run command at the appropriate time. This function is especially useful, since most editors, even those capable of A-B rolls can only produce complete wipes. The 6403 enables an edit to be performed with a pattern or a mix starting from any point and ending at any level (for instance a horizontal wipe which stops in the middle). This enables even the simplest editors, which are only capable of performing cuts, to execute partial wipes during the edit.

One of the problems inherent in most editor-switcher combinations, is that when duration time is defined, the effect or mix almost always starts late and finishes early. This results in a shorter duration than that specified. This problem is especially apparent on wipe patterns, because of the overrun necessary for positioners. The 6403 completely eliminates the problem. The start and finish points can be precisely defined even with an offset positioner.

Interfaces with most editors.

\$2750.00

Editor Module \$ 995.00

6006B Sync Generator

This is a complete sync distribution system, with a full set of distribution amplifiers included in the package.

There are four (independently) phase adjustable pulse amplifiers, switchable to either sync or horizontal drive. There are also five subcarrier distribution amplifiers, four of which are independently adjustable through a full 360 degrees.

Four black burst outputs are provided for genlock type cameras which are independently phase-adjustable for both horizontal and subcarrier from the front panel. 3-1/2" rack.

This unit is extremely compact, occupying only 1-3/4" of rack space. It is ideal for small studios, where in most cases, no additional drive distribution amplifiers are required.

\$1990.00

6006 Sync Generator

This unit features two black burst outputs, with the addition of NTSC full field color bars. 3-1/2" rack.

\$1990.00

6803 Audio Follow Mixer

This is an audio follow mixer for the 6112 and 6124 video switchers. It is similar to the 6800, but has no input selector button for break-away audio and no tone generator.

\$2500.00

CROSSPOINT LATCH CORP.

95 PROGRESS STREET • UNION, NJ 07083
(201) 688-1510 • TELEX 9104901990

6119

The 6119 is a 3 bus, 6 input switcher. This unit features 12 wipe patterns with positioner, soft edge and bordered wipes. There is a full spectrum colorizer. Includes blanking processor and test mode for system timing.

The 6119 has a unique EFFECTS DOWNSTREAM KEYS, which replaces the colored border with a matte key, (thus producing a matte key over an Effect, and this entire combination can be dissolved to black. The 6119 can dissolve from a bordered wipe to a third input.

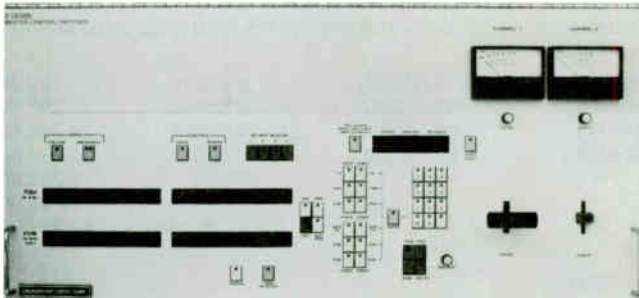
The 6119 also offers both manual and automatic transitions which can be external GPI interface. The standard switcher has genlock, four black burst outputs (to lock four other devices), and provision for expansion pattern generator.

Not available in PAL

6119 \$2,150

OPTIONS

- *RS107A Sync Generator **\$100**
- *Microprocessor Board for full RS232 or 422 Control **\$1,850**
- *Extended Pattern Generator **To be announced**



6150BK Master Control Switcher

Programmable microprocessor controlled switcher. Two events memory directly selectable on the control panel. Real time clock. Serial communication between control panel and electronics. Automatic or manual fader operation. With the addition of the SMART INTERFACE BOARD the 6150BK can be accessed serially from external programmer or computer. Single or dual channel audio. Sixteen inputs, with four input downstream keyer. Voice over with automatic 4 db "duck". Options for machine control, printer driver. Includes blanking processor and test mode for system timing.

\$12,500 Dual audio \$3,700.

6026

Encoded Chroma Keyer and Video mixer. 1-3/4" rack mountable, horizontal positioner, dual outputs for midstream and downstream chroma keying.

\$3500.00

6700 Matrix Switcher

This is an 8 input RGB Matrix switcher for selecting RGB inputs used for multiple camera chroma keying. Outputs of switcher goes into RGB chroma key inputs on switchers. Can be controlled from 6112, 6124 and 6139 switchers.

\$1990.00

SWITCHERS/CONTROLLERS/ AUDIO & SYNC GENERATORS

Model 8000 TIBEC™

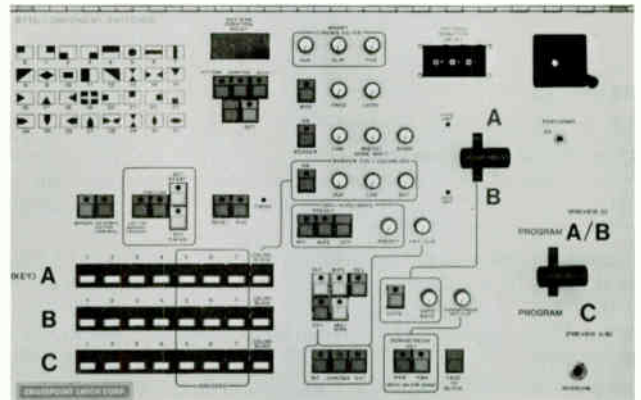
NEW

Time Base Corrector which can lock two VTR'S.

The 8000 makes it possible for the first time to have a full bandwidth, high quality A-B roll system with a single PBC.

The 8000 produces clearly recognizable pictures even when one VTR is in fast forward while the other is in rewind. It has a virtual "infinite window".

The 8000 can also be used in the conventional manner (one PBC for each VTR). Used in this way it is just a high quality PBC.



6116/7209 Microprocessor controlled COMPONENT SWITCHER

Basic unit has four EVENTS which can be simply programmed and run automatically under internal computer control. Each EVENT consists of the entire configuration of the control panel. The 7209 can run smooth transitions controlling all functions on the panel simultaneously. The 7209 interfaces with most editors, with the SMART INTERFACE BOARD.

The 6116 handles four component inputs (any format) and three encoded signals. The switcher will not perform effects between encoded and component formats without an external transcoder. The Y channel can handle both 7 encoded inputs (when not used for component signals). The switcher has an optional chroma keyer, 32 pattern generator, bordered wipes, a matte downstream keyer, fade to black, and three video buses permitting a dissolve from a split wipe to a third input. Includes blanking processor and test mode for system timing.

6116 \$10,995. 7209 \$3000. SMART INTERFACE BOARD \$1000.

6029 Genlock Unit

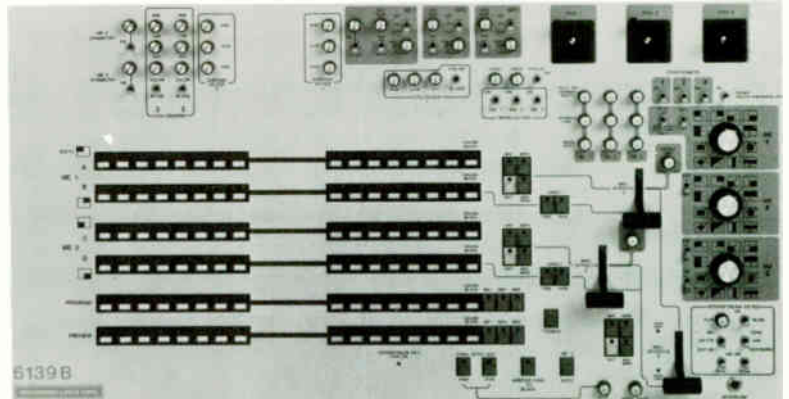
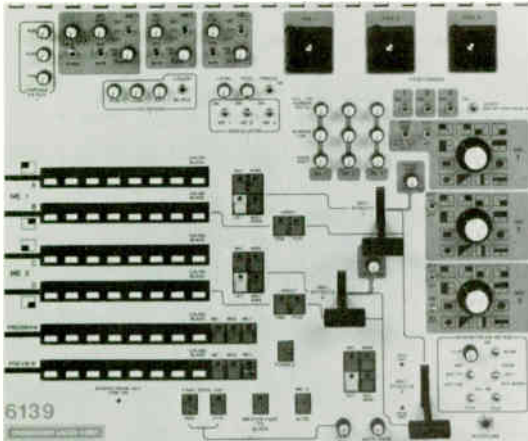
Generates sync and subcarrier from black burst or composite video. Locks to VTR. Automatic change over switch to external sync and subcarrier inputs on loss of video. Requires DC supplies derived from 6112, 6124, or 6139 switchers.

\$407.00

CROSSPOINT LATCH CORP.

95 PROGRESS STREET • UNION, NJ 07083
(201) 688-1510 • TELEX 9104901990

SWITCHERS/CONTROLLERS



6139 Series

8, 16, or 24 Inputs

LED or Illuminated Push Buttons

The illuminated push button versions have 32 patterns for each ME system, (instead of 12 each for the other version) and the pattern selection is by means of momentary illuminated push buttons.

This series of switchers has tremendous production power. Available in three sizes, 8, 16, and 24 inputs with either the illuminated, or the more cost effective LED type push buttons. A unique feature of the 8 input version (with LED buttons) is that it can be expanded in the field to a 16 input switcher.

All versions of the 6139 have six buses and three mix-effects systems; colorizer; pattern modulator with freeze; downstream keyer with edge and external border; quad split; master fade to black; spot-lite; mix pattern mode between ME1 and ME2; an effects unit which can either key or mix the program bus over the other three ME's or over quad split. A unique test mode (the simplest one ever conceived) for system timing and a blanking processor which completely eliminates color shifts on mixes and wipes are also standard on all units.

The 6139 "K" switchers can be controlled with AUTO DRIVE™, by far the most powerful controller in the industry, which stores the entire control panel status 256 times, learns manual fader movements, has unique "EDIT" Mode, and interfaces with most editors. **\$12,500.00**

Rotary and Matrix Wipe Option is available for the 16 and 24 input switchers. With this option it is possible to select a total of 96 patterns, which include matrix wipes (8x8) squares, rotary wipes and multiple patterns.

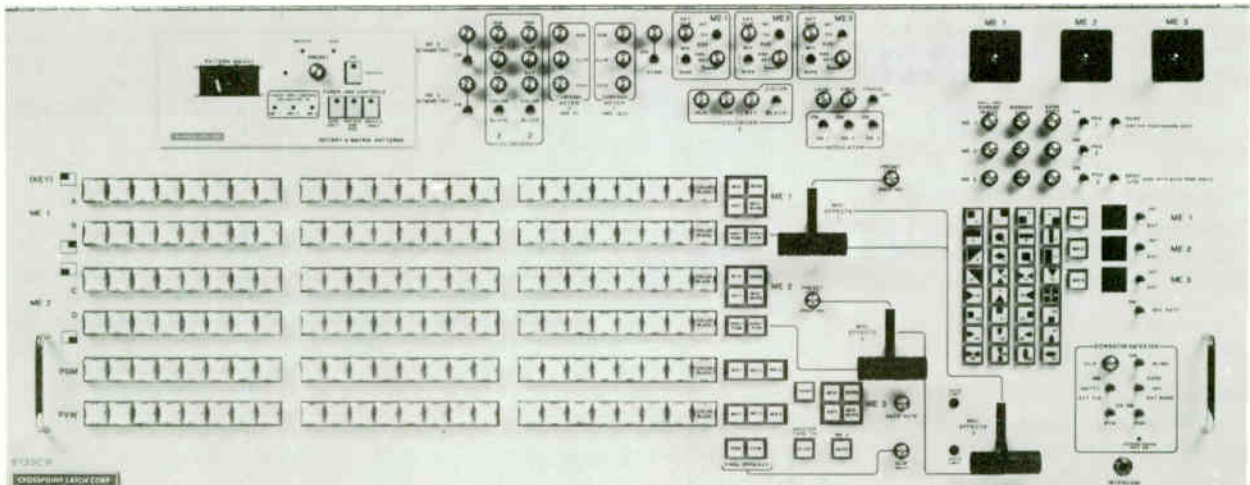
All switchers interface with most editing systems by means of the 6403 or 7200 interface unit.

Additional options include two chroma keys, RGB or encoded and dual colorizers.

6139	\$14,500.00	6139B	\$21,799.00
6139AK	16,000.00	6139BH	37,299.00
6139AH	22,500.00	6139BK	23,299.00
6139AHK	24,000.00	6139BHK	38,299.00
		6139C	28,299.00
		6139CK	29,799.00
		6139CHK	50,299.00

OPTIONS

Chroma Keyer (RGB or Encoded)	\$1050.00
Additional colorizer	500.00
6035 External Pattern Generator with rotary wipes	3000.00
6032 Remote control panel for dual colorizer	600.00



The Crown Pressure Zone Microphone® (PZM)® is an exciting new type of microphone designed to be used on surfaces such as a floor, wall, table, hard baffle, piano lid, or panel. PZM's work on a new principle — the Pressure Recording Process™. The active element in a PZM is an electret-condenser capsule, mounted so it faces a sound-reflecting plate or boundary.

The capsule is mounted in the "Pressure Zone" just above the boundary, a region where sound coming directly from the sound source combines in-phase with sound reflected off the boundary. The benefits are a wide, smooth frequency response free of phase interference, excellent clarity and "reach" (clear pickup of quiet distant sounds), a hemispherical polar pattern, and uncolored off-axis response.

An external power-supply interface is required for PZM operation: Crown PA-18 (transformerless), PX-18 (transformer), or PX-T (tubular in-line transformer). Lavalier models require a PX-TL (phantom powered) or PX-TLB (battery powered).

Crown makes several models of PZM's, some of which are described below:

PZM-30GP

The model 30GP is a general purpose version of the PZM, and includes an XLR connector mounted on a 5" x 6" plate. High, frequency response is emphasized for brilliance. Available in gold or black.

PZM-31S

A model similar to the PZM-30GP but with a flat response for natural reproduction. Available in silver.

PZM-6LP

A PZM designed for minimum visibility, with a 2-1/2" x 3" plate and permanently attached cable with XLR connector. Ideal for conference rooms, film-making, or video productions. Its boosted high-frequency response aids articulation. Available in gold or black.

PZM-6S

Similar to the PZM-6LP but with a flat response for natural reproduction. Available in silver.

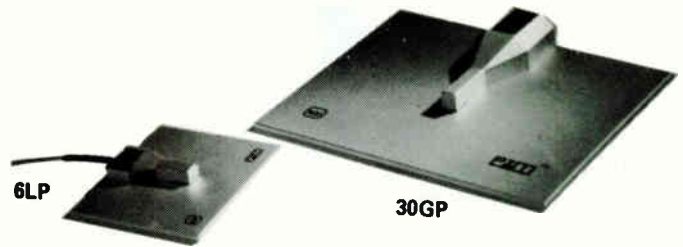
PZM-3LV

A PZM lavalier that looks like a tie bar, not a microphone. 15-foot permanently attached cable; TA4F connector. Available in champagne or black.

PZM-3LVR

A redundant PZM lavalier microphone to eliminate on-air downtime. Dual capsules and cables. Available in champagne or black.

PCC-160	surface-mounted supercardioid	\$249.00
PZM-30GP	gold or black, with PX-18 or PA-18 interface	\$359.00
	with PX-T interface	329.00
PZM-31S	with PX-18 or PA-18 interface	\$359.00
	with PX-T interface	329.00
PZM-6LP	gold or black, with PX-18 or PA-18 interface	\$359.00
	with PX-T interface	329.00
PZM-6S	with PX-18 or PA-18 interface	\$359.00
	with PX-T interface	329.00
PZM-3LV	champagne or black, with PX-TL or PX-TLB interface	\$239.00
PZM-3LVR	champagne or black, with two PX-TL or two PX-TLB interfaces	\$329.00



PCC 160



PZM-31S shown with PX-18





MICRO-TECH 1000

Stereo Power Amplifier

The Micro-Tech 1000 is a miniaturized, high-technology stereo power amplifier for professional sound reinforcement and studio monitoring.

The Micro-Tech can deliver 1000 watts continuous average power in mono mode with no more than 0.25% THD, into 1 or 4 ohms. A "parallel mono" switch combines the outputs of both channels to make a monophonic amplifier capable of 1000 watts into 1 ohm. By adding an internal jumper for the "bridge mono" configuration, the user can obtain 1000 watts into 4 ohms. In stereo mode, the Micro-Tech provides 280 watts per channel into 8 ohms, or 400 watts per channel into 4 ohms.

The grounded-bridge circuitry has many advantages over conventional designs to offer a high value. Patented Crown circuitry allows extreme voltage swings without putting output transistors in series; this provides lower distortion and greater reliability. Reliability is further enhanced by a redundant power supply. The Micro-Tech 1000 uses an "Output Device Emulator Protection" (ODEP) circuit which simulates the output transistors. With this circuit, the amplifier can detect and compensate for overheating and overload. The unit is also protected against output shorts, open circuits, mismatched loads, overall overheating, and high-frequency overloads.

Efficient heat sinking and a self-contained forced-air cooling system prevent overheating and prolong component life. The direction of airflow can be reversed, if necessary, to work with the rack cooling system, a feature unique to Crown. The dust filter located on the front of the unit is easily removed for cleaning or replacement.

General Specifications

Hum and noise (for 26 dB gain): 110 dB below rated output (A-weighted); 105 dB below rated output (20 Hz-20 kHz).

Hum and noise (for .775-volt input sensitivity): 105 dB below rated output (A-weighted).

Inputs: Balanced 1/4" phone jacks with adjustable gain.

Outputs: 5-way banana jacks for minimum power loss, on standard 3/4" centers.

Dimensions: 19" standard rackmount, 3-1/2" height, 16" behind mounting surface.

Stereo Specifications

Output power (2 ohms): 500 watts continuous average power per channel at 1 kHz with no more than 0.25% THD.

Output power (4 ohms): 400 watts continuous average power per channel at 1 kHz with no more than 0.25% THD. 350 watts + /- 1 dB per channel, 20 Hz-20 kHz with no more than 1% THD.

Output power (8 ohms): 280 watts continuous average power per channel at 1 kHz with no more than 0.25% THD. 250 watts per channel, 20 Hz-20 kHz, with no more than 0.1% THD.

Frequency response: + /- 0.1 dB 20 Hz-20 kHz at 1 watt into 8 ohms.

Harmonic distortion: Less than 0.05% from 20 Hz to 1 kHz and increasing linearly to 0.1% at 20 kHz delivering 250 watts into 8 ohms, per channel.

I.M. distortion: Less than 0.05% from 25 milliwatts to 250 watts into 8 ohms, per channel.

Slew rate: Greater than 13 volts per microsecond.

Input sensitivity: 0.775 volts for rated output power, optional 2.2 volts unbalanced for 250 watts into 8 ohms.

Parallel Mono Power Specifications

Output power (1 ohm): 1000 watts continuous average power at 1 kHz with no more than 0.25% THD.

Output power (2 ohms): 800 watts continuous average power at 1 kHz with no more than 0.25% THD.

Output power (4 ohms): 500 watts + /- 1 dB, 20 Hz-20 kHz, with no more than 1.0% THD.

Output power (8 ohms): 300 watts + /- 1 dB, 20 Hz-20 kHz, with no more than 1.0% THD.

Bridge Mono Power Specifications

Output power (4 ohms): 1000 watts continuous average power at 1 kHz with no more than 0.25% THD.

Output power (8 ohms): 800 watts continuous average power + /- 1 dB, 20 Hz-20 kHz, with no more than 1.0% THD.

Output power (16 ohms): 540 watts continuous average power + /- 1 dB, 20 Hz-20 kHz, with no more than 1.0% THD.

\$995.00

PS-400 Professional Power Amplifier

The Crown PS-400 power amp is designed exclusively for, built exclusively for, and available exclusively for professional sound systems. Into four ohms, it will provide 260 watts per channel; 520 watts into 8 ohms mono. It is tough, tested.

It is, in every sense, a Crown amplifier; powerful, out-of-the-box reliable; immune to damage from mismatches, shorted outputs, low impedance, or physical abuse. It is professional in every sense of the word.

Check the all-pro features:

- Terminal strips and phone jacks
- Ground separation strip. Stackable
- Mono-stereo switch, with binding posts conveniently positioned for quick conversion. Detented controls
- 10C distortion and signal-presence indicators

Low frequency interrupt (user defeatable by internal modification) which detects dangerous levels of sub-audio output. This sophisticated circuit tracks low-frequency amplitude to determine the allowable proportion of sub-audio output.

Four-second turn-on delay is user defeatable.

Low-cost plug-in option:

- Balanced active input
- Transformer input
- Autoformer output in 70 volt lines
- Fan cooling (one fan package ventilates several stacked amps)

The PS-400 is built around the Crown MULTI-MODE™ circuit design, which provides utmost reliability and sonic accuracy at all listening levels. The MULTI-MODE™ circuit, a three-stage AB+B design, functions at low levels as a nonswitching Class A amp. At middle power levels, the two-stage drivers continue as Class A devices with the output stages in Class B. At high power levels, the MULTI-MODE™ circuit drivers function in the AB mode, with output stages adding more Class B power. The MULTI-MODE™ design uses output devices efficiently and powerfully, minimizes amp distortion whether audible or test-bench detectable, and provides long-term reliability.

The PS-400 is ruggedly built for the most demanding service. 19" EIA rack mount. Baked enamel front panel. Massive, scratch resistant, black anodized aluminum heat sinks thermally coupled to the chassis. Carrying handles standard equipment.

The front-end of the PS-400 is designed around the Signetics 5532 dual low-noise op-amp which was especially designed for audio applications. After extensive testing, Crown selected the 5532 as offering better signal/noise, increased reliability and simpler assembly since it required no external compensation. This and other circuit improvements have made it possible to lower THD on the PS-400 by about one-third over previous designs.

The power transformer used in the PS-400 is a 1KW design to provide the reserve power needed to maintain high SPL's. **\$1179.00**

PS-200 Professional Power Amplifier

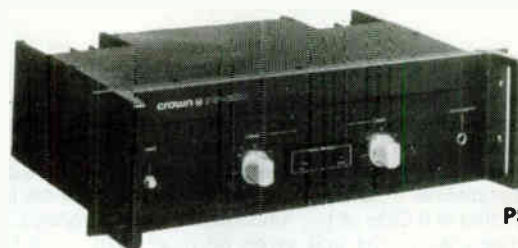
The Crown PS-200 power amp is designed as a lower power companion for the PS-400. Like the 400, the 200 is designed, built and available only for professional sound systems.

It delivers 135 watts per channel into 4 ohms, 270 watts into 8 ohms mono.

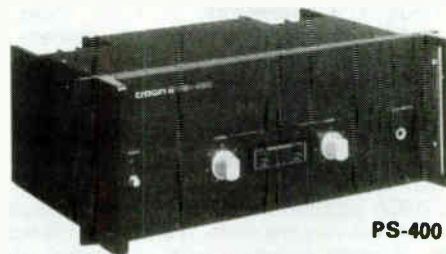
It is another powerful, all-day reliable Crown amplifier. It is unaffected by mismatches, shorted outputs, low impedance or physical abuse. It is totally professional.

Check the all-pro features:

- Terminal strips and phone jacks
- Ground separation strip. Stackable
- Mono-stereo switch, with binding posts conveniently positioned for



PS-200



PS-400

quick conversion. Detented controls

- Four-second turn-on-delay
- 10C distortion and signal-presence indicators

Low frequency interrupt (user defeatable by internal modification) which detects dangerous levels of sub-audio output. This sophisticated circuit tracks low-frequency amplitude to determine the allowable proportion of sub-audio output.

Four-second turn-on-delay is user defeatable.

Low-cost plug-in option:

- Balanced active input
- Transformer input
- Autoformer output in 70 volt lines
- Fan cooling (one fan package ventilates several stacked amps)

The PS-200 is built around the Crown MULTI-MODE™ circuit design, which provides utmost reliability and sonic accuracy at all listening levels. The MULTI-MODE™ circuit, a three-stage AB+B design, functions at low levels as a nonswitching Class A amp. At middle power levels, the two-stage drivers continue as Class A devices with the output stages in Class B. At high power levels the MULTI-MODE™ circuit drivers function in the AB mode, with output stages adding more Class B power. The MULTI-MODE™ design uses output devices efficiently and powerfully, minimizes amp distortion whether audible or test-bench detectable, and provides long-term reliability.

The PS-200 is ruggedly built for the most demanding service. 19" EIA rack mount. Baked enamel front panel. Massive, scratch resistant, black anodized aluminum heat sinks thermally coupled to the chassis. Carrying handles standard equipment.

The front-end of the PS-200 is designed around the Signetics 5532 dual low-noise op-amp which was especially designed for audio applications. After extensive testing, Crown selected the 5532 as offering better signal/noise, increased reliability and simpler assembly since it required no external compensation. This and other circuit improvements have made it possible to lower THD on the PS-200 by about one-third over previous designs.

PS-DF-2	(fans for PS-200 amplifier)	pair/\$89.00
PS-DF-4	(fans for PS-400 amplifiers)	pair/89.00
UMX-100	(70 volt line output autoformers PS-200 amplifier)	pair/69.00
UMX-200	(70 volt line output autoformers PS-400 amplifier)	pair/89.00
UMX-300A	(output autoformer mono PS-200 or D-150A-2)	89.00
PS-MODA	Transformer 600 ohm balanced input module	64.00
PS-MODX	Active 600 ohm balanced input module	69.00

D-75 Single or Dual Channel Power Amplifier

The Crown D-75 power amplifier, requiring only 1-3/4" (4.45cm) of vertical rack space, was designed to operate safely and continuously into a variance of load requirements. The D-75 provides 35 watts per channel minimum RMS (both channels operating) into an 8 ohm load over a bandwidth of 20Hz-20kHz at a rated sum total harmonic distortion that is 0.05% of the fundamental output voltage. The frequency response of the unit varies no more than +/-0.1dB from 20Hz-20kHz at 1 watt into 8 ohms. Features of the D-75 include active balanced inputs, Cannon XLR connectors, an easily accessible mono-stereo switch, and front panel LEDs indicating overloads and signal presence. A special feature of the D-75 is the provision for isolating chassis ground from electrical ground.



D-75
\$524.00

D-150A Single or Dual Channel Power Amplifier

The Crown D-150A is a single or dual channel power amplifier designed for precision amplification of frequencies from DC Hz to 20kHz. The design of the D-150A provides extremely low harmonic and intermodulation distortion with very low noise. A switch on the rear of the unit allows stereo or mono operation with no internal wiring changes. In the mono mode, the D-150A is capable of a 50 volt balanced line output. The unit operates on AC current from 120V to 240V.

The D-150A embodies the simplest and yet most accurate distortion display available in any audio product. The IOC — Input-Output Comparator—senses any form of amplifier non-linear behavior and reports its existence through front panel LEDs. Slew-induced distortion, protection circuit activation, and clipping distortion will all be detected by the IOC circuit at levels below the rated distortion of the amplifier. Thus, the amplifier becomes a valuable tool in the hands of the user to facilitate proper amplifier-speaker-environment matching, as well as a continuous monitor of the purity of the signal reproduction through the amplifier under actual operating conditions.

Stereo Output: 80W RMS per channel.



D-150A SERIES II
\$729.00

DC-300A Single or Dual Channel Power Amplifier

The Crown DC-300A is a single or dual channel power amplifier designed for precision amplification of frequencies from DC to 20 kHz, OH2 to 20 kHz. The design of the DC-300A provides extremely low harmonic and intermodulation distortion with very low noise. A switch on the rear of the unit allows stereo or mono operation with no internal wiring changes. In the mono mode, the DC-300A is capable of a 70V balanced line output. The unit operates on AC current from 120V to 240V.

The DC-300A embodies the simplest and yet most accurate distortion display available in any audio product. The IOC — Input-Output Comparator — senses any form of amplifier non-linear behavior and reports its existence through front panel LEDs. Slew-induced distortion, protection circuit activation, and clipping distortion will all be detected by the IOC circuit at levels below the rated distortion of the amplifier. Thus, the amplifier becomes a valuable tool in the hands of the user to facilitate proper amplifier-speaker-environment matching, as well as a continuous monitor of the purity of the signal reproduction through the amplifier under actual operating conditions.

The DC-300A contains output protection circuitry pioneered by Crown. This circuitry protects the unit completely against shorted, mismatched, or open loads and completely eliminates the need for DC fuses and mode switches to protect the amplifier. With this unique protection system, the DC-300A can safely drive any speaker load, resistive or reactive, with no fear of harming the amplifier. The speakers can be paralleled with no deterioration of sound quality since changing one load impedance only affects the maximum power available, not the ability of the amplifier to produce clean sound.



DC-300A SERIES II
\$1149.00

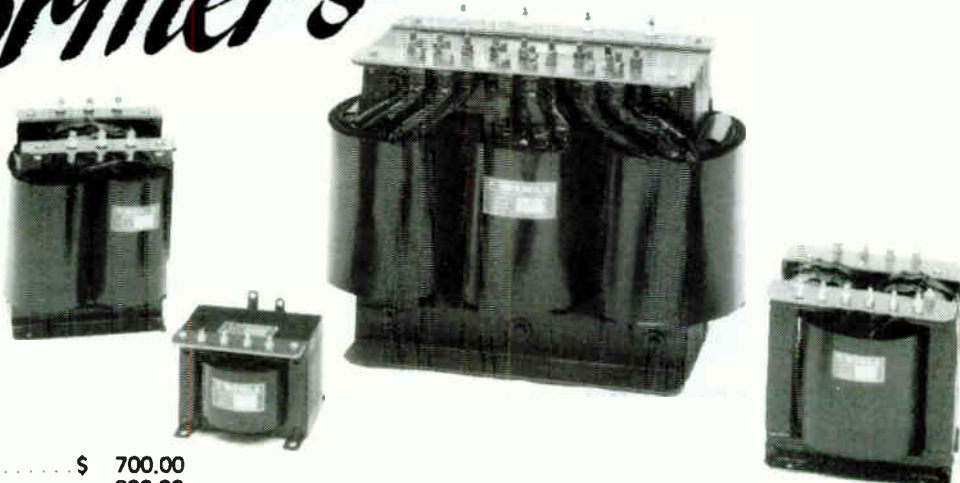
The DC-300A has two totally separate direct coupled amplifier circuits employing dual integrated circuit op amp input stages and silicon transistors in succeeding stages. The DC-300A exhibits essentially flat frequency and phase response down to DC and eliminates thumping from non-symmetrical wave forms. Output stages utilize Crown class AB + B circuitry in which the driver transistors carry the quiescent bias current while the output transistors serve only as boosters which sense and deliver large currents.

Stereo Output: 155W RMS per channel.

PETER DAHL CO. HAS *Transformers*

We specialize in FAST service for radio and TV stations that are "Off-The-Air" and in need of a transformer.

All transformers and chokes are guaranteed for 12 months! Many other Commercial Broadcast Transformers are also available. Call us for a free quotation.



CCA

FM-2500R Plate Transformer	\$ 700.00
FM-3000DS Plate Transformer	800.00
FM-4000E Plate Transformer	850.00

Collins

20T L V Plate Transformer	\$ 200.00
20V Bias Transformer, P/N 672-0392-00	150.00
20V-1-2-3 Plate Transformer, P/N 672-0385-00	550.00
20V L V Power Transformer, P/N 662-0046-00	125.00
20V-2 L V Power Transformer, P/N 672-0383-00	200.00
21E/M Bias Transformer, P/N 662-0001-00	175.00
21E Driver Plate Transformer, T-108	275.00
21E L V Power Transformer, P/N 672-0383-00	225.00
21 E Plate Transformer, P/N 662-0492-00	1500.00

Gates

BC-250G Plate Transformer, P/N 472-0234-000	\$ 350.00
BC-1E/F Audio Driver Transformer, T-12 or T-4	175.00
BC-1E/F LV Plate Transformer	175.00
BC-1E/F Plate Transformer, T-11	550.00
BC-1H Plate Transformer, P/N 472-0704-000	550.00
BC-1J/T LV Power Transformer, P/N 472-0454-000	175.00
T-7 or T-2	175.00
BC-1J Plate Transformer, P/N AP-10459E	550.00
BC-1 G/T Plate Transformer, P/N 472-0250-00, T-1	550.00
BC-1 Series Modulation Transformer	695.00
BC-1 Series Modulation Reactor, 40 HY at 600 MA DC	400.00
BC-5H/P Plate Transformer, P/N 472-0577-000	1200.00
BC-5 Series Modulation Transformer, P/N 478-0284-000	1350.00
BC-5 Series Modulation Reactor, 35 HY at 1.4 amp DC	650.00
BC-10H Modulation Transformer, P/N 478-0403-000	1750.00
BC-10-H Modulation Reactor, 20 HY at 2.7 amp DC and 265 VAC at 0.3 ADC	850.00
BC-10H Plate Transformer, P/N 472-0582-000	1750.00
FM-250 Plate Transformer	275.00
FM 1-B/C Plate Transformer, P/N E-11642 or P/N P-4353	575.00
FM-3G Plate Transformer, T-4	895.00
FM-20H3 Plate Transformer, P/N 472-0525-000	2250.00

Raytheon

RA-1000 LV Power Transformer	\$ 275.00
RA-1000 Plate Transformer	550.00

RCA

BTA-250M L V Plate Transformer, P/N 93663, T-4	\$ 100.00
--	-----------

BTA-250M Plate Transformer, P/N 93664, T-105	225.00
BTA-1 Plate Transformer	550.00
BTA-5H Main Plate Transformer, 6T1 Main, P/N MI-28069	750.00
BTA-5H Teaser Plate Transformer, 6T1 Teaser, P/N MI-28069	750.00
BTA-5H/10H Modulation Transformer, 1T4, P/N M949349	1750.00
BTA-5R Modulation Transformer, P/N B8415099	1250.00
BTA-5R Modulation Reactor, P/N M949350	650.00
BTA-5T Modulation Reactor, P/N 225954	750.00
BTA-10H Main Plate Transformer, 6T1 Main, P/N MI-28063-A	1500.00
BTA-10H Teaser Plate Transformer, 6T1 Teaser, P/N MI-28063-A	1500.00
TT-25 Plate Transformer, P/N MI-19072A	3600.00

Universal Replacement Transformer, Chokes & Modulation Reactors Manufactured By Peter W. Dahl Co., Inc. for General Purpose Applications

DC Filter Chokes

3.0 HY at 2.5 amps DC	\$ 300.00
5.0 HY at 1.0 amps DC	175.00
10.0 HY at 1.0 amps DC	200.00
10.0 HY at 2.5 amps DC	350.00
15.0 HY at 1.0 amps DC	250.00

Modulation Reactors

16 HY at 3.2 amp DC, for 10 KW Low Impedance Applications	\$1250.00
20 HY at 2.5 amp DC, for 10 KW High Impedance Applications	850.00
10 HY at 5.6 amp DC, for 25 KW Applications	1350.00

Modulation Transformers
Universal 1 KW Modulation Transformer for Collins 20V Series, RCA BTA-1 Series, Bauer 707, or any other 1 KW AM transmitter using PP 4-400A's in the modulator and parallel 4-400A's in the RF PA \$ 695.00

Wilkinson

FM-2500 Plate Transformer	\$ 550.00
---------------------------	-----------

PETER W. DAHL CO., INC. 4007 FORT BLVD., EL PASO, TEXAS 79930 (915) 566-5365

Prices and Specifications Subject to Change Without Notice.

B-335

5300 INTELLIGENT TIME PROCESSOR

With an optimum blend of state-of-the-art LSI and VLSI circuitry including a microcomputer, Datum has introduced the Model 5300 Intelligent Time Processor (ITP). This economical and flexible time processing package allows the user to make full use of his video resources in today's demanding broadcasting, post production, and industrial environments.

The Intelligent Time Processor can produce SMPTE/EBU time code simultaneously with user bits, vertical interval time code and video characters. The 5300 will operate in NTSC to the RS-170A specifications or in PAL to the EBU 3079-E specification.

A numeric key pad for data entry and high efficiency LED readouts combine to achieve an exceptionally attractive and highly functional front panel assembly. The slimline design occupies a minimum of standard rack cabinet space. All input and output signal connections are mounted on the rear panel.

The ITP reads standard serial code at speeds ranging from 1/3 to 90 times normal play speed in both directions without experiencing any frame decoding delay.

In addition, the system will automatically revert to reading vertical interval time code when reading down to still frame to insure complete code reading reliability.

STANDARD TIME CODE: MODEL 5300

The Intelligent Time Processor generates time code from data which is either preset through the front panel keyboard or dubbed from an external source. Special modes have been created which allow the 'user bits' portion of the code to update as an independent time generator or to be jam sync'd to serial time code from an external source. The ITP also produces color frame correct time code.

VERTICAL INTERVAL TIME CODE: MODEL 5301

This is an optional feature that provides the ITP with the capability to both generate & read VITC in the proposed industry standard. Any two lines in the vertical interval from line 10 through & including line 20 can be selected. In the read mode, the ITP decodes VITC independently of its recorded position in the vertical blanking interval.

TIME CODE CHARACTER GENERATOR: MODEL 5302

The optional time code character generator makes use of a black mask background for either recording or displaying characters in the video picture. The vertical and horizontal positioning of the characters is controllable from the front panel together with character height and width.

CONFIGURATION SUMMARY

5300 Standard T/C Reader/Generator	\$4150.00
5301 Vertical Interval Time Code	4550.00
5302 Character Generator	4550.00
5303 Includes all features	4950.00
Field Upgrade Kit VITC	500.00
Field Upgrade Kit CG	500.00

The ITP, a unique combination of demanding features for professional time processing, allows the user to make use of such features as time code dubbing, 'user bits' manipulation and synchronization, standard SMPTE/EBU and VITC generation and decoding, and clear, crisp video character display.

The TTL compatible input signals into the rear panel parallel connector permitting the ITP to be remotely controlled. A rear panel mounted toggle switch is used for selection of EIA RS170A/NTSC or PAL compatible video signals.



5350 SMPTE TIME CODE GENERATOR

The Datum Model 5350 generates industry standard time code in the SMPTE/EBU specified format. Front panel thumb wheel switches allow for user-definable setting of hours, minutes and seconds. Additional user accessible front panel switches allow for such useful functions as drop frame/non-drop frame format and generator start and stop.

The current time count is clearly displayed through the use of high efficiency red LED indicators located on the front panel.

Time code serial output is at the rear chassis through standard balanced XLR connectors. In addition, buffered parallel BCD code is also available for use with other Datum peripherals such as the Model 5370 time code character generator.

Code synchronization is achieved through a standard BNC connector requiring composite sync or video input reference to achieve properly locked time code. PAL ident connectors are also available.

A front panel indicator displays the presence of sync failure when it occurs. The Model 5350 and all of its features are combined in a standard 19" rack mount package requiring minimum panel space.



\$1850.00

5360 SMPTE TIME CODE READER

The Model 5360 Time Code Reader processes SMPTE/EBU time code ranging in speed from 1/5 to 60 times normal play speed from any compatible source. The translated information is displayed in hours, minutes, seconds and frames by highly efficient LED readouts mounted on the front panel.

The hold feature of the 5360 allows the user to 'freeze' the display for data logging purposes.

A front panel lamp indicates the presence of drop frame/non-drop frame code.

To prevent the unit from translating invalid data (due to occasionally poor input signal quality), the Model 5360 allows for the bypassing of one, two, four, or eight frames of code before the internal displays are updated. The time code reader rear panel has input facilities for balanced or non-balanced XLR video input. Buffered paralleled BCD output at TTL compatible levels is available from a rear panel connector for use by Datum's Model 5370 Time Code Character Generator and other external devices.



\$1550.00

5370 TIME CODE CHARACTER GENERATOR

Incorporating numerous user-defined functions in a compact 19" rack mountable package, the Datum Model 5370 is able to superimpose up to eight SMPTE/EBU time code characters and three alpha characters on a standard video signal.

The numeric characters reflect the SMPTE/EBU time code in hours, minutes, seconds and frames as translated through input sources such as the Datum Model 5360 Reader or the Model 5350 Time Code Generator. Additional rear connectors facilitate input for video background, composite sync and mixed output or characters only.

Front panel switches and controls facilitate character positioning vertically and horizontally in addition to character height and width selection.

As an added enhancement, the user may select either characters with mask, characters alone or remote control operation at the touch of a switch.

Three additional alpha characters can be superimposed by user selectable internal jumpers.

The Model 5370 Character Generator is fully compatible for use with Datum products and represents the state-of-the-art design in SMPTE/EBU time code equipment.



\$1680.00

Prices and Specifications Subject to Change Without Notice.

B-337



205 BVH UNIVERSAL FLUID HEAD

- Positive Tilt lock - Tilt Tension Control in addition to a full fluid system.
- Autoslip[®] provides self-adjusting breakaway free pan (no knobs to adjust). Allows smooth starts and stops on all pans, even fast "swish" pans.
- Extremely smooth pan and tilt movements.
- Camera platform 5 1/4" x 3 3/4".
- Leakproof and dustproof sealing.
- 3/4" - 16 camera screw
- Head weight 8 pounds.
- Hydralok[®] concentric, hydraulic tilt lock/tension device insures safe locking in any position.
- Designed to accept dual handles, second handle optional

\$1164.00



F-10 FLUID HEAD

Load Capacity 10 lbs.
Tilt Angle 90° Up-90° Down
Pan Rotation 360°
Height 4 1/2"
Width Overall 3 1/2"
Length 2"
Weight 1-1/3 lbs.
Platform Size 2" x 2 1/2"

\$99.00



MODEL FM-25 FLUID HEAD

Load Capacity 25 lbs.
Side Tilt 90° either side
Pan Rotation 360°
Height 5"
Weight 5 lbs.
Platform Size 4" x 4 1/4"

- Features
- 2 yr. warranty
 - Dual handle capability
 - Easily visible bubble level gauge
 - Extremely smooth pan & tilt movements w/2 handles

\$205.00

MODEL FM-15

Same as FM-25 but with lighter viscosity fluid for cameras under 15 lbs.



MODEL M-4 SPRING HEAD

Load Capacity 25 lbs
Tilt Angle ± 60°
Pan Rotation 360°
Height 4 1/2"
Width 2 1/2"
Length 4 1/2"
Weight 3 1/2 lbs
Material & Finish Black Anodized Alum

- Features
- 1/4" 20 Camera Screw
 - Dual Counterbalancing Springs
 - Pan Handle locks both tilt and pan

\$95.00



MODEL CC CRADLE HEAD

Load Capacity 25 lbs
Tilt Angle ± 45°
Pan Rotation 360°
Height 6 1/4"
Width 8"
Length 9"
Weight 5 lbs
Material & Finish Black Anodized Alum and Plated Steel Cradle

- Features
- Removable and adjustable camera platform for easy installation and perfect balance. Holds tilt without camera dumping

\$80.00



MODEL DSLA LEVELING ADAPTOR

Load Capacity 50 lbs.
Leveling adjustment ± 5°
Height 3 1/2"
Diameter 6 1/2"
Weight 2 lbs.
Material & Finish Black anodized aluminum

Quick and easy action. Locks securely. **\$140.00**



MODEL MH-1-S SPRING HEAD

Load Capacity 30 lbs
Tilt Angle 60° Up-90° Down
Pan Rotation 360°
Height 6"
Width 3 1/2"
Length 6"
Weight 4 1/2 lbs
Material & Finish Black Anodized Alum

- Spring loaded tilt to prevent camera "dumping"
- Pan and tilt lock independently of each other
- Pan handle with adjustable angle fits either side
- Leveling base allows 5" tilt in all directions
- Bubble level
- Friction drag adjustment of pan and tilt by spring loaded control knobs

\$141.00



MODEL MH-2 SPRING HEAD

Load Capacity 20 lbs
Tilt Angle 60° Up-90° Down
Pan Rotation 360°
Height 5 1/2"
Width 3 1/2"
Length 6"
Weight 2 1/2 lbs
Material & Finish Clear Anodized Alum

MODEL MH-2

Same as above except without spring

\$88.00
\$106.00



MODEL CM CRADLE HEAD

Load Capacity 50 lbs
Tilt Angle 20° Up-30° Down
Pan Rotation 360°
Height 6"
Width 5"
Length 14"
Weight 7 lbs
Material & Finish Black Anodized Alum

\$218.00

MODEL CS CRADLE HEAD

Same as above except
Load Capacity 40 lbs
Length 10"
Weight 6 lbs

\$218.00



MODEL HD-46 SPRING HEAD

Load Capacity 50 lbs
Tilt Angle 70° Up-90° Down
Pan Rotation 360°
Height 7 1/2"
Platform Size 4" x 6"
Weight 6 lbs
Material & Finish Black Anodized Alum

Internal Torsion Spring to prevent camera dumping

\$156.00



MODEL Q SPRING HEAD

Load Capacity 10 lbs
Tilt Angle ± 60°
Pan Rotation 360°
Height 3"
Width 4"
Length 4"
Weight 1 lb
Material & Finish Black Anodized Alum

- Features
- Counterbalancing spring to prevent camera dumping
 - Two camera screw locations

\$40.00



MODEL RTH TWO-WAY TILT HEAD

Load Capacity 10 lbs
Tilt Angle 30° Up-90° Down
Pan Rotation 360°
Height 5"
Width 2 1/2"
Length 2 1/2"
Weight 1 lb
Material & Finish Clear Anodized Alum

- Features
- Quick Change Camera Screw
 - Friction drag screw to prevent camera dumping

\$62.00



**THE CHALLENGER
 MODEL DG/H4
 TRIPOD/HEAD**
 Load Capacity 25 lbs.
 Minimum Height 34"
 Maximum Height 70"
 Elevation Adjustment 16"
 Geared Center Post 1 1/2" Dia
 Leg Diameters 1 1/2" x 1 1/4"
 Head Tilt Angles 60° Up-
 90° Down
 Spring Loaded Head 2 Springs
 Head Pan Rotation 360°
 Weight 8 lbs
 Material & Finish Clear and Black
 Anodized Alum
 Self-Locking Gear Mechanism

MODEL DG
 Same as above except without
 head **\$120.00**



**DOLLYPOD
 GEARED ELEVATION
 TROLLEY**
 Load Capacity 25 lbs
 Minimum Height 48"
 Maximum Height 66"
 Elevation Adjustment 18"
 Geared Center Post 1 1/2" Dia
 One Section Leg 1 1/2" Dia
 Wheels 5" Dia
 Weight 15 lbs
 Material & Finish Clear and Black
 Anodized Alum **\$300.00**



**MODEL ETVG-W
 GEARED ELEVATION
 TRIPOD**
 Load Capacity 75 lbs
 Minimum Height 40"
 Maximum Height 68"
 Base Spread at Max Ht 60"
 Base Spread at Min Ht 36"
 Elevation Adjustment 18"
 Geared Center Post 1 1/2" Dia
 Leg Diameters 1 1/2" x 2"
 Wheel Diameter 5"
 Weight 15 lbs
 Material & Finish Clear and Black
 Anodized Alum
 Available with wheels, wheels
 and spikes or points
 Split-collar lock for
 leg extension **\$520.00**



**MODEL D/Q
 LIFT COLUMN
 TRIPOD/SPRING HEAD**
 Load Capacity 15 lbs
 Minimum Height 30"
 Maximum Height 64"
 Elevation Adjustment 18"
 Lift Center Post 1 1/2" Dia
 Leg Diameters 1 1/2" x 1 1/4"
 Head Tilt Angle ±70° Spring
 Loaded
 Head Pan Rotation 360°
 Weight 5 lbs
 Material & Finish Clear and Black
 Anodized Alum
 • Two camera screw locations

MODEL DRG/Q
 Same as above except with gear
 elevating post **\$130.00**



**REDITILT MODEL RTG
 GEARED ELEVATION
 TRIPOD/HEAD**
 Load Capacity 15 lbs
 Minimum Height 28"
 Maximum Height 65"
 Elevation Adjustment 20"
 Geared Center Post 1 1/2" Dia
 Leg Diameters 1 1/2" x 1 1/4"
 Two-Way Tilt Head ±90°
 Head Pan Rotation 360°
 Weight 4 1/2 lbs
 Material & Finish Clear and Black
 Anodized Alum
 Head Features • "Quick Change"
 Camera Screw
 • Friction Drag
 Screw
 • One handle locks
 pan and tilt
 simultaneously
 • Removable Head **\$154.00**



**THE COMPAC
 MODEL CG GEAR ELEVATION
 TRIPOD**
 Load Capacity 30 lbs.
 Minimum Height 32"
 Maximum Height 67"
 Elevation Adjustment 16"
 Geared Center Post 1 1/2" Dia
 Outer Leg Section 3/4" x 1 1/2"
 Inner Leg Section 3/4" x 1"
 Weight 7 lbs
 Material & Finish Clear and Black
 Anodized Alum
 Adjustable Flat or Pointed Feet
 Accepts CW-1 Slip-On Wheels

MODEL C
 Same as above except with lift
 column center post **\$92.00**



**MODEL AG
 GEARED ELEVATION TRIPOD**
 Load Capacity 50 lbs
 Minimum Height 27 1/2"
 Maximum Height 58"
 Elevation Adjustment 20"
 Geared Center Post 1 1/2" Dia
 Outer Leg Section 2 1/4" x 1 1/4"
 Inner Leg Section 1" Dia
 Weight 10 lbs
 Material & Finish Clear and Black
 Anodized Alum
 Freeze-proof and stick-proof leg
 clamps **\$245.00**

MODEL A
 Same as above except with
 "Floating Action" spring loaded
 center post **\$172.00**



**MODEL PSG-4
 GEARED ELEVATION
 PEDESTAL**
 Load Capacity 100 lbs
 Minimum Height 34"
 Maximum Height 55"
 Elevation Adjustment 18"
 Geared Center Post 1 1/2" Dia
 Weight 30 lbs
 Steel Center Column 4" Dia
 Base Spread 32"
 All Swivel Wheels 5" Dia
 Material Cast Alum base,
 steel tube
 center post
 Finish Black Baked Enamel **\$469.00**

MODEL PS-34
 Same as above except with
 "Floating Action" spring loaded
 center post and central wheel
 brake control **\$409.00**



**TABLE OR CART
 COLUMN/HEAD
 MODEL DG/H4/TM**
 Load Capacity 25 lbs
 Elevation Adjustment 16"
 Geared Center Post 1 1/2" Dia
 Head Tilt Angles 60° Up-
 90° Down
 Spring Loaded Head 2 springs
 Head Pan Rotation 360°
 Weight 5 lbs
 Material & Finish Clear and Black
 Anodized Alum **\$143.00**

MODEL DG/TM
 Same as above except without H4
 head



**REDITILT SUPER MODEL RTS
 LIFT COLUMN TRIPOD/HEAD**
 Load Capacity 15 lbs
 Minimum Height 28"
 Maximum Height 65"
 Elevation Adjustment 20"
 Center Post 1 1/2" Dia
 Leg Diameters 1 1/2" x 1 1/4"
 Two-Way Tilt Head ±90°
 Head Pan Rotation 360°
 Weight 4 1/2 lbs
 Material & Finish Clear and Black
 Anodized Alum
 • "Quick Change" Camera Screw
 • Friction Drag Screw
 • One handle locks pan and tilt
 simultaneously
 • Reversible Center Post **\$94.00**



**MARK II
 GEARED ELEVATION
 TRIPOD**
 Load Capacity 40 lbs.
 Minimum Height 40"
 Maximum Height 84"
 Elevation Adjustment 18"
 Geared Center Post 1 1/2" Dia.
 Two-Section Leg Dia. 1 3/4" x 1 1/4"
 Weight 11 lbs
 Material & Finish Clear and Black
 Anodized Alum **\$245.00**



**MODEL BG
 GEARED ELEVATION TRIPOD**
 Load Capacity 60 lbs
 Minimum Height 40"
 Maximum Height 90"
 Elevation Adjustment 30"
 Geared Center Post 1 1/2" Dia
 Upper Leg Section 2 1/4" x 1 1/4"
 Lower Leg Section 1" Dia
 Weight 14 lbs
 Material & Finish Clear and Black
 Anodized Alum
 Freeze-proof and stick-proof leg
 clamps **\$281.00**

MODEL B
 Same as above except with
 "Floating Action" spring loaded
 center post **\$205.00**



**MODEL VLC-3S
 GEARED ELEVATION
 TRIPOD/SPRING HEAD**
 Load Capacity 24 lbs
 Minimum Height 58"
 Maximum Height 16"
 Elevation Adjust 18"
 Geared Center Post 1 1/2" dia
 Channel Legs 3 Sections
 Head Tilt ±70°
 Side Tilt 0° to 90°
 Head Pan Rotation 360°
 Weight 4 1/2 lbs
 Material & Finish Clear and Black
 Anodized Alum

Features
 • New toggle leg-lock
 • Center braced legs
 • Bubble level
 • Reversible center post **\$75.00**



**TABLE OR CART
 COLUMN/HEAD
 MODEL MARK II/H4 TM**
 Load Capacity 30 lbs.
 Elevation Adjustment 18"
 Geared Center Post 1 1/2" Dia.
 Weight 6 lbs
 Material & Finish Clear and Black
 Anodized Alum **\$270.00**

MODEL MARK II/TM
 Same as above except without
 H4 Head. **\$196.00**



**REDITILT MOVIE MODEL RTM
 LIFT COLUMN TRIPOD/HEAD**
 Load Capacity 15 lbs
 Minimum Height 28"
 Maximum Height 65"
 Elevation Adjustment 20"
 Center Post 1 1/2" Dia
 Leg Diameters 1 1/2" x 1 1/4"
 One-Way Head Tilt ±90°
 Head Pan Rotation 360°
 Weight 4 1/2 lbs
 Material & Finish Clear and Black
 Anodized Alum
 Head Features • "Quick Change"
 Camera Screw
 • Friction Drag
 Screw
 • One handle locks
 pan and tilt
 simultaneously
 • Reversible Center
 Post **\$96.00**



**REDITILT PRO MODEL RTP
LIFT COLUMN TRIPOD/HEAD**
 Load Capacity 10 lbs.
 Minimum Height 28"
 Maximum Height 65"
 Elevation Adjustment 18"
 Center Post 3/4" Dia.
 Leg Diameters 3/4" x 1/2"
 Two-Way Tilt Head ± 90°
 Head Pan Rotation 360°
 Weight 3 1/2 lbs.
 Material & Finish Clear and Black Anodized Alum.

- "Quick Change" Camera Screw
- Friction Drag Screw
- One handle set pan and tilt simultaneously
- Reversible Center Post

\$69.50



**REDITILT JUNIOR
MODEL RTJ
LIFE COLUMN TRIPOD/HEAD**
 Load Capacity 10 lbs.
 Minimum Height 23"
 Maximum Height 50"
 Elevation Adjustment 16"
 Center Post 3/4" Dia.
 Leg Diameters 3/4" x 3/8"
 One-Way Tilt Head ± 90°
 Head Pan Rotation 360°
 Weight 2 1/2 lbs.
 Material & Finish Clear and Black Anodized Alum.

- "Quick Change" Camera Screw
- Friction Drag Screw
- One handle locks pan and tilt simultaneously
- Reversible Center Post

\$49.50



**REDITILT MINI-20
MODEL RTM-20
LIFT COLUMN TRIPOD/HEAD**
 Load Capacity 10 lbs.
 Minimum Height 20"
 Maximum Height 52"
 Elevation Adjustment 12"
 Center Post 1/2" Dia.
 Three Section Leg Diameters 3/4" x 3/4" x 3/4"
 One-Way Tilt Head ± 90°
 Head Pan Rotation 360°
 Weight 2 1/2 lbs.
 Material & Finish Clear and Black Anodized Alum.

- "Quick Change" Camera Screw
- Friction Drag Screw
- One handle sets pan and tilt simultaneously
- Reversible Center Post

\$56.50

**UNIVERSAL DOLLY
MODEL W-4**

Load Capacity 50 lbs.
 Folds to 10" x 21"
 Circle Diameter 42"
 Wheel Diameter 5" & 3" x 13/16" tread
 Weight 7 lbs.
 Material & Finish Clear and Black Anodized Alum.

For all D & S Tripod except C and CG

\$90.00



**SLIP ON DOLLY FOR
COMPACT TRIPOD
MODEL CW-1**

Load Capacity 20 lbs.
 Wheel Diameter 5"
 Weight 6 1/2 lbs.
 Material & Finish Nickel Plated Steel

Easy on—Easy off
 Screw On Wheels
 No tools required
 Available with 3" Wheels & Deluxe Wheels

\$44.00



**DOLLY FOR A & B TRIPODS
MODEL W-3**

Load Capacity 60 lbs.
 Diameter Open Same as tripod spread
 Rubber Wheels 5" x 13/16" tread
 Weight 6 lbs.
 Material & Finish Anodized Alum.
 Dolly folds with tripod.

- Easily attached to tripod legs and center post

\$119.00



**MONOPOD
MODEL MONOPOD/
FRICTION HEAD**

Load Capacity 10 lbs.
 Minimum Height 31"
 Maximum Height 72"
 Leg Diameters 3/4" x 1"
 RTH Head ± 90° One Way Tilt
 Pan Rotation 360°
 Weight 1 1/2 lbs.
 Material & Finish Clear Anodized Alum.

- "Quick Change" Camera Screw
- Extension made secure with toggle lock instead of collet for strong support

\$39.50



**DOLLY SHELF
MODEL SD-3**

Load Capacity 30 lbs.
 Shape Equilateral Triangle
 Length of Sides 29"
 Rubber Wheel 3" Dia
 Weight 9 1/2 lbs.
 Material Steel
 Finish Baked Metallic Alum

Plugs on and off the legs of tripod
 Fits all D & S tripods except A, B & C series

\$79.00



MODEL SD-5

Same as above but with 5" Wheels

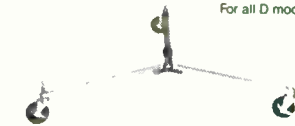
\$79.00

**WHEEL DOLLY
MODEL WD-3**

Load Capacity 20 lbs.
 Folds to 5" x 6" x 22"
 Circle Dia 36"
 Wheel Dia 3"
 Weight 4 1/2 lbs.
 Material Steel
 Finish Baked Metallic Alum

For all D model tripods

\$43.00



**MODEL WB-8
CAMERA MOUNT**

Camera Load Capacity 10 lbs.
 Height 5"
 Tilt Angle ± 90°
 Pan Rotation 360°
 Tubing Length 12"
 Tubing Diameter 1"
 Mounting Screw 1/4"-20
 Material & Finish Black Anodized Alum.

Special Features: • "Quick Change" Camera Screw can quickly convert to tamper-proof unit.

MAY BE MOUNTED ON CEILING, WALL OR TABLE

\$36.00



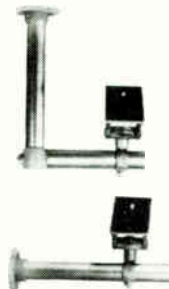
**MODEL UM-1
CAMERA MOUNT**

Camera Load Capacity 25 lbs.
 Tilt Angle ± 90°
 Pan Rotation 360°
 Height 15"
 Width 00
 Material & Finish Clear Anodized Alum.

Options Additional tube length and brace supports may be ordered

MAY BE MOUNTED ON CEILING, WALL OR TABLE

\$69.00

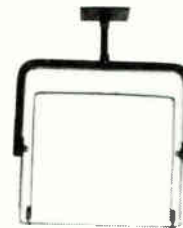


**MONITOR CEILING MOUNT
MODEL RCM-1**

Test Load Capacity 500 lbs.
 Tilt Angle ± 30°
 Rotation 360°
 Size 3 in. larger than monitor
 Weight 30 lbs.
 Material Steel
 Finish Brown Baked Enamel

Ceiling plate may be custom made to attach to existing ceiling

\$110.00



**MONITOR WALL MOUNT
MODEL RWM-3**

Test Load Capacity 500 lbs.
 Tilt Angle ± 30° Down
 Rotation 360°
 Size 3 in. larger than monitor
 Weight 30 lbs.
 Material Steel
 Finish Brown Baked Enamel

\$110.00

DELUXE WHEELS DX

Four inch double Ball Bearing Wheels with combined 360° Swivel Lock and Wheel Break, Step on locking lever for Positive lock and release

Add \$50.00 to List of any D & S Dolly





PROFESSIONAL PRODUCTS DIVISION

71 Chapel Street
 Newton, MA 02195
 (617) 964-3210 Telex 92-2522



160X COMPRESSOR/LIMITER

Provides the studio operator, broadcaster, or sound reinforcement specialist with outstanding performance and operational flexibility in a slim-line rack mount package. The 160X has all the features of our Model 160, and more. It is the only compressor/limiter that offers you the choice of Over Easy® or hard-knee operation, regardless of compression ratio selected. There's also a precision dual-display system with an expanded range for continuously monitoring gain reduction as well as input or output levels — a dbx exclusive.

FEATURES

- Switch selectable Over Easy or classic 160 hard-knee curve • Dual true rms display system: 19 LED display monitors input or output signal level over a 60dB range; 12 LED display indicates the amount of gain reduction over a 40dB range • Two units can be strapped for dual-channel tracking compression • Input and output connections via tip-ring-sleeve phone jacks as well as barrier strip connector • Infinity + compression provides negative gain control for "dynamic reversal" effects • Compression ratio continuously variable from 1:1 to ∞:1 to -1:1 • Separate detector input allows compression pre-emphasis and other effects • +24dBm input/output capability • Active balanced input provides hum and RF rejection • Provision for transformer or active balancing of output

160X Compressor/Limiter\$420.00

COMPRESSORS/LIMITERS



165A COMPRESSOR/LIMITER

Top of the line in dbx compressor/limiters. This single-channel unit is strappable for stereo operation, and offers a choice of manual or automatic attack and release rates for the ultimate in control. Its unique PEAKSTOP feature controls maximum peak levels with a minimum of audible distortion. With the dbx Over Easy compression curve, the 165A provides a smooth, natural transition into compression.

FEATURES

- Compression ratio continuously variable from 1:1 to ∞:1 • In automatic mode, attack and release times are determined by program material dynamics. In manual mode, attack and release rates allow the 165A to be used as peak, average or rms-detecting limiter • PEAKSTOP circuit prevents unwanted signal peaks from getting through • Separate detector input allows compression pre-emphasis and other effects • Each 165A is equipped with matched rms detectors for stereo-straping operation without the signal-summing errors associated with conventional strapped compressors • Analog rms meter is switchable to read input or output levels, or amount of gain reduction, over a 30dB range • Active balanced input provides hum and RF rejection • +24dBm input/output capability

165A Compressor/Limiter\$670.00

Input impedance	Signal input: 50kΩ, unbalanced; > 100kΩ, balanced Detector input: 230kΩ, unbalanced; > 460kΩ, balanced
Input level	+24dBm maximum
Output impedance	22Ω, designed to drive 600Ω or greater
Output level	+24dBm into 600Ω or greater
Threshold range	Variable from -40 to +20dBm (7.8mV to 7.8V RMS)
Compression ratio	Over Easy: Program dependent, affected by THRESHOLD, COMPRESSION RATIO settings (COMPRESSION RATIO control determines maximum compression ratio), continuously variable from 1:1 to ∞:1 to -1:1 Hard-knee: COMPRESSION RATIO setting defines exact compression ratio, continuously variable from 1:1 to ∞:1 to -1:1
Maximum compression	> 60dB
Threshold characteristic	Over Easy or hard-knee (switch selectable)
Attack time⁽¹⁾	Program dependent: 15ms for 10dB increase in input level (above threshold), 5ms for 20dB, 3ms for 30dB
Release time	Program dependent: varies automatically from 0-500ms, affected by settings of front panel controls
Output gain	Variable from -20 to +20dB
Slew rate	> 10V/μs
Dynamic range⁽²⁾	> 113dB
Equivalent input noise (unweighted)	< -89dBm, 20Hz-20kHz
Frequency response	+0, -1dB, 20Hz-20kHz
Distortion below⁽³⁾ threshold	2nd harmonic 0.07% 3rd harmonic 0.07%
Distortion above⁽⁴⁾ threshold	2nd harmonic 0.07% 3rd harmonic 0.2%
Metering	19 LED INPUT or OUTPUT display from -40 to +20dB, 12 LED GAIN REDUCTION display from -1 to -40dB
Meter zero set	-15dBm to +10dBm
Indicators	BELOW/threshold/ABOVE (green, yellow, red), INPUT (red), OUTPUT (red), SLAVE (yellow), BYPASS (red)
Controls and switches	THRESHOLD, COMPRESSION RATIO, OUTPUT GAIN, DISPLAY function switch, meter zero adjust, BYPASS switch, SLAVE switch, OVER EASY switch
Connectors	Input/output: TRS phone jacks and barrier terminal Detector: barrier terminal Strapping: TRS phone jack
Dimensions	1 1/4" H x 19" W x 9 1/4" D (4.4cm x 48.3cm x 18.4cm)
Weight	6.5 lbs (3.0 kg)
Power requirements	115/220 VAC ± 10%, 50-60Hz, 8W
Accessories	AB-1 active balanced output card

Input impedance	Signal input: > 22kΩ, balanced; 11kΩ, unbalanced Detector input: > 620kΩ, balanced; 310kΩ, unbalanced
Input level	+24dBm maximum
Output impedance	< 33Ω (active low impedance output)
Output level	+24dBm into 600Ω or greater
Threshold range	Variable from -40 to +10dBm (7.8mV to 2.5V RMS)
Compression ratio	Program dependent, affected by THRESHOLD, COMPRESSION RATIO settings (COMPRESSION RATIO control determines maximum compression ratio), continuously variable from 1:1 to ∞:1
Maximum compression	> 60dB
Threshold characteristic	Over Easy
Attack time⁽¹⁾	Manual mode: maximum attack rate variable from 1 to 400dB/ms Automatic mode: program dependent, 15ms for 10dB increase in input level (above threshold), 5ms for 20dB, 3ms for 30dB
Release time	Manual mode: maximum release rate variable from 10 to 4000dB/sec Automatic mode: program dependent, varies from 0-500ms, affected by settings of front panel controls
Output gain	Variable from -20 to +20dB
Slew rate	> 10V/μs
Dynamic range⁽²⁾	> 114dB
Equivalent input noise (unweighted)	< -90dBm, 20Hz-20kHz
Frequency response	+0, -1dB, 20Hz-20kHz
Distortion below⁽³⁾ threshold	2nd harmonic 0.05% 3rd harmonic 0.07%
Distortion above⁽⁴⁾ threshold	2nd harmonic 0.05% (auto or manual with attack and release controls centered) 3rd harmonic 0.2%
Metering	Analog meter range of -20 to +10dB, switchable to read INPUT, OUTPUT or GAIN CHANGE
Meter zero set	-10dBm to +10dBm
Indicators	BELOW/threshold/ABOVE (green, yellow, red), AUTO (yellow), SLAVE (yellow), PEAKSTOP (red), POWER (red)
Controls and switches	COMPRESSION, THRESHOLD, ATTACK, RELEASE, OUTPUT GAIN, PEAKSTOP, POWER, STEREO COUPLER, AUTO/manual, meter selector (INPUT, OUTPUT, GAIN CHANGE), SYSTEM BYPASS, meter zero adjust
Connectors	Input/output: barrier terminal Detector input: barrier terminal Stereo coupler: 12-pin connector
Dimensions	3 1/4" H x 19" W x 10 1/4" D (8.9cm x 48.3cm x 25.7cm)
Weight	8 lbs (3.6 kg)
Power requirements	117 VAC ± 10%, 50-60Hz, 25W
Accessories	CA-165 stereo coupling cable for two 165As

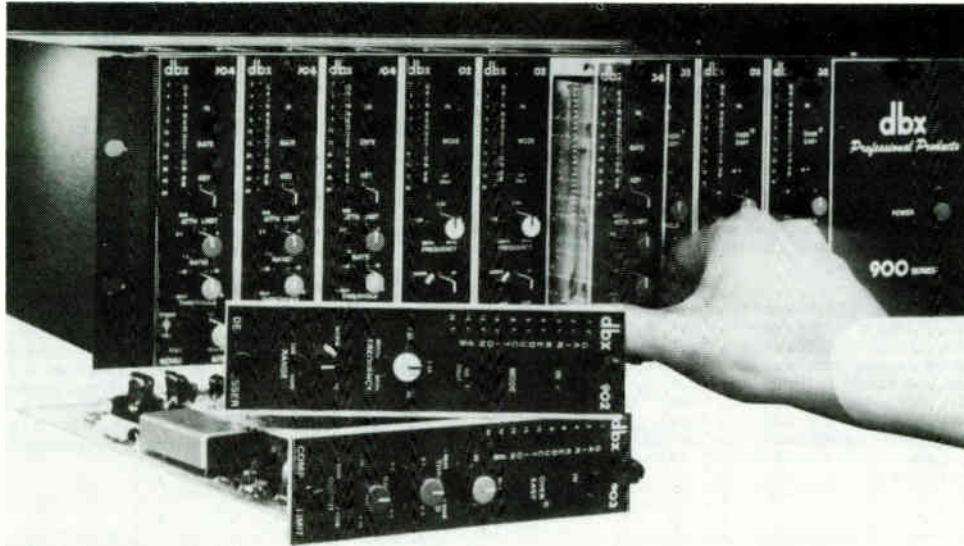
- 1 Measured in the infinite compression region of the threshold curve, time required to reduce signal by 63% of level increase (above threshold).
- 2 Defined as the difference between the maximum signal level and the "A" weighted noise floor as measured at the output (signal to noise).
- 3 Measured at 1kHz, 0dBm input and output.
- 4 Figures are typical at infinite compression, 1kHz, 0dBm input and output — 2nd harmonic is relatively unaffected by compression ratio, time constants and frequency, while 3rd harmonic decreases with slower time constants, higher frequencies and lower compression ratios.

Prices and Specifications Subject to Change Without Notice.



PROFESSIONAL PRODUCTS DIVISION
 71 Chapel Street
 Newton, MA 02195
 (617) 964-3210 Telex 92-2522

SIGNAL PROCESSING SYSTEM



900 SERIES MODULAR SIGNAL PROCESSING SYSTEM

The **Model 902 De-esser** can be used as a conventional broadband de-esser, or for attenuating only a user-determined portion of the high frequency range of the audio signal. Gain reduction is adjustable from 0 to -20 dB. A feature unique to the 902 (not found in other de-essers) is its continuous analysis of the input signal spectrum, thereby providing the exact amount of de-essing selected regardless of signal level. The 902 does not require recalibration for signal level changes. Just set it and forget it. **\$350.00**

The **Model 903 Compressor** gives you all the features you'd expect from dbx. And then some. For starters, you have at your command a unique new negative compression feature that actually begins reducing output volume once the threshold is exceeded. Signals are given a new and unusual sense of "punch". And the 903, like our acclaimed 165, is an Over Easy® compressor, with a soft knee threshold that increases compression ratio gradually over a range of several dB. It features true RMS level detection, continuously variable compression ratios, and a threshold that's adjustable from -40 dB to +20 dB. **\$350.00**

The **Model 904 Noise Gate** is the ultimate noise gate, with a combination of features not found on any other noise gate at any price. It features adjustable attack and release rates, threshold adjustment from -40 to +10 dB, attenuation limit adjustment from 0 to 60 dB, with dbx Over Easy® downward expansion for a smooth sound. It also features a KEY input that allows gating of one instrument by another.

The special PLM mode of the 904 allows users without automated consoles to put threshold programmed muting on solo channels. After the user sets the correct solo level on the console, the 904 will automatically keep the channel muted, eliminating spurious signals which frequently precede the solo itself. When the solo begins, the 904 will un-mute the channel, allowing the solo into the mix at the pre-set level. **\$350.00**

The **Model 905 Parametric Equalizer** offers a unique degree of equalization flexibility in a high density format without sacrificing true, fully parametric operation of all three filter bands. The overlapping bands each offer control of frequency, bandwidth (Q), and up to 15 dB of reciprocal cut or boost to provide exact, complementary filter action for most equalization needs. For problem situations requiring the removal of spurious signals, each of the bands can be independently switched into "infinite notch" mode without affecting the operation of the others. In situations where a shelving equalizer will produce better results than a peaking one, the 905's high and low bands can be

independently switched from peaking to shelving operation. The entire unit may be switch bypassed for instant before/after comparisons. The 905 is the complete equalizer package right at your fingertips. **\$370.00**

The **Model 907 Stereo Gated Compressor Slave**, when combined with the Model 903 compressor, provides a powerful new signal-processing tool for the broadcaster, studio, or production facility. To the 903's Over Easy performance (for inaudible transition into compression) the 907 adds a high-speed release gate and true-rms-detected stereo compression. Release gating prevents short-term signal drops from causing the limiter to modulate background noise. The audible benefits are substantial with both musical and spoken-word programs, especially when compression levels are high or the source material noisy. When the short-term rms value of an input signal falls below the front-panel-selectable gating threshold, the 903/907 "freezes" at its most recent amount of gain reduction, which is held until the signal returns to a level above the setting. There is also a calibrated release-rate trim on the 907 circuit board.

Dual matched rms detectors provide proper compression response for all stereo input signals regardless of phase relationships, and Blackmer voltage-controlled amplifiers (VCAs) enable accurate stereo tracking over a 60-dB range. The user can install his or her own detector-preemphasis networks in space provided on the circuit board.

Although each control of the 903/907 pair acts on both stereo channels, each channel individually can be hardwire-bypassed. For multi-band limiting, provision has been made on the 907 circuit board for tying the gate functions of all bands, which prevents the unnatural harmonic alterations caused by independent-gate operation during multi-band use. You can also defeat the gate for operation as a stereo limiter and configure the unit as a mono compressor/limiter with release gating. **\$290.00**

The **F-900 Powered Frame** accommodates eight operational and one spare module in just 5¼" of rack space. At home in the studio yet tough enough to withstand the rigors of the road, it is also flexible enough to let you reconfigure your system quickly and easily just by changing modules. Its heavy-duty power supply provides trouble-free operation. Wide double-sided gold-plated contact areas and bifurcated edged connectors ensure positive connection between PC board and motherboard and provide an extra measure of solder connections to the motherboard. Hookups are made through standard professional barrier-strip connectors, which are economical, reliable, and easy to use. **\$525.00**



PROFESSIONAL PRODUCTS DIVISION

71 Chapel Street
Newton, MA 02195
(617) 964-3210 Telex 92-2522

TYPE II NOISE-REDUCTION SYSTEMS FOR BROADCASTING

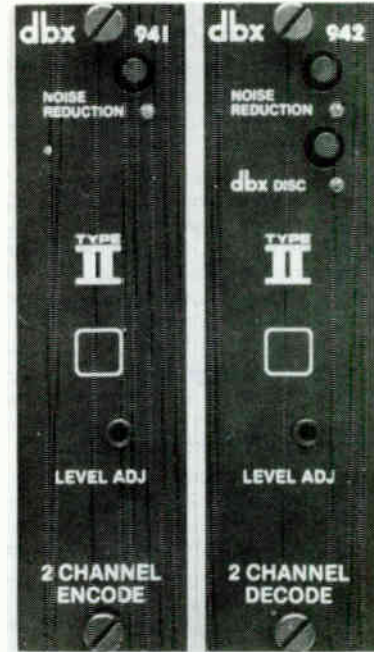
MODELS 941/942 and 140

941/942 FEATURES

- 40dB increase in dynamic range
- Hardwire bypass
- Modular design; easy to match channel and media needs
- Differential input
- Tolerant of frequency-response loss above 10 kHz
- 942 decodes dbx discs
- No calibration or pilot tones necessary
- Front-panel rec/play level adjustment for matching a wide range of nominal operating levels; no effect on performance
- True-rms-level detection for optimum encode/decode tracking, no phase-related errors

The model 941 is a 2-channel record (encode) and the 942 is a 2-channel play (decode) noise-reduction module for studio tape recorders and cartridge machines, VTRs/VCRs, microwave links or land lines, and other frequently noisy broadcast/transmission media. The advantage of having separate units for encode and decode is that the broadcaster may purchase them according to his needs, using (for example) only a few (perhaps one) 941s for production purposes but having multiple 942s dedicated for decoding individual carts in the control room. A similar advantage in microwave links would be to have the encoder at the head and the decoder at the transmitter site. Since they come in the convenient 5-1/4" standard size for use in the 900 or 208 mainframe, it is possible in large applications to have 16 decode channels (8 stereo modules) take up very little rack room.

941 \$260.00
942 270.00



941

942



140

140 FEATURES (Same features as above plus...)

- Rack mountable; low-profile (1-3/4" high)
- Differential input; provision for Jensen output-balancing transformers

The model 140 is a 2-channel record/play (encode/decode) professional-level noise-reduction unit for studio tape recorders and cartridge machines, VTRs/VCRs, microwave links or land lines, and other frequently noisy broadcast/transmission media. Each channel's encoder and decoder can be used independently at the same time, so

full (decode) monitoring is possible. Depending on the individual channel noise of the associated medium, the 140 can increase the transmission dynamic range by more than 40 dB using the dbx Type II format. This is achieved by compressing (encoding) the signal 2:1 and applying a carefully tailored frequency-response pre-emphasis during record, and expanding (decoding) the signal 1:2 with a precisely complementary deemphasis during playback. The companding is linear over a 100 dB range and requires no pilot tones or special calibration procedures.

140 \$590.00

525 SERIES

FEATURES

- Unique spectral-companding system
- Reduces noise from transmission channels by up to 50 dB
- Can be used with channels having as little as 26 dB of dynamic range
- Flat response 50 Hz to 15 kHz
- High performance: 0.1% tolerance resistors and capacitors
- Better than 35 dB midband separation (stereo-difference-channel applications)

The TV Noise-Reduction system is designed to preserve the quality of audio signals transmitted using the Zenith multichannel-television-sound transmission standard. The series comprises two units, a high-spec compressor (525CH), for encoding the audio signal before transmission, and a complementary high-spec expander (525EH), for decoding the signal after transmission. With a bandwidth of 50 Hz to 15 kHz, the system operates on both the stereo difference channel and

TV NOISE-REDUCTION CARDS

the second-audio-program (SAP) channel, where dynamic range may be as low as 26 dB. An improvement of more than 50 dB in S/N ratio in the transmission channel is possible, yet the user need not extend his present efforts to prevent overmodulation.

The 525CH encoder will be used for broadcasting and for production-line testing of television sets. The 525EH decoder will be used for professional broadcast monitoring and as a reference on television production lines. Each unit complies with the recommendations of the FCC's Office of Science and Technology (Bulletin 60) on separation when used in the stereo difference channel.

Each 525 unit is a circuit board that requires an external power supply. In order to allow flexibility in transmission implementations, an external lowpass filter is required to prevent out-of-band signals from causing interference and/or crosstalk into other channels. **POR**

Prices and Specifications Subject to Change Without Notice.



PROFESSIONAL PRODUCTS DIVISION

71 Chapel Street
Newton, MA 02195
(617) 964-3210 Telex 92-2522

700 DIGITAL AUDIO PROCESSOR

dbx Companded Predictive Delta Modulation—or CPDM for short
It's not the first attempt at Delta Modulation audio recording. Just the first successful one. The particulars of this success can best be described one term at a time.

Precision Companding solves a major problem with delta modulation—limited dynamic range. The dbx 700 offers a dynamic range of more than 110 dB, resulting in an unbelievably low noise floor that's completely neutral-sounding. (Other forms of delta modulation have less dynamic range and may have a noise floor with a distinct tonal character.) The compander's novel design and the direct digital link between encoder and decoder guarantee not just that it cannot mistrack but that its overall performance is absolutely transparent.

Linear Prediction estimates a signal's future by monitoring its recent past. It does this 644,000 times a second. This further increases the dynamic range of our fixed delta modulator and prevents the audible noise modulation common in other forms of DM.

That's how dbx made DM sound so good to the trained ear. Our innovative circuitry also eliminates the need for complex anti-aliasing filters, along with a few other costly items which are necessary in PCM. That's why CPDM sounds so good to the studio owner.

The bottom line is the extraordinary sound quality of digital at a fraction of the cost of the competition. A cost so low that you can create a digital recording system with the dbx 700 Digital Audio Processor and a professional-quality VCR at a price comparable to that of a good two-track analog recorder.

Which means you don't have to be left in the dust of the digital revolution.

FRONT PANEL

Input Module

- Gain control switch-selectable among user-adjustable knob, screw-driver-adjustable trimmer, and non-adjustable internal reference on each channel
- Pre- and post-fader clip LEDs on each channel
- VCR analog-audio input, either direct-send or through a 2:1 compressor
- Record or play operating modes

Output Module

- Gain control switch-selectable among user-adjustable knob, screw-driver-adjustable trimmer, and non-adjustable internal reference on each channel
- Output-clip LEDs on each channel
- Headphone-level control knob and output jack
- Main output signal switch-selectable between digital decoder and VCR analog-audio tracks

Microphone Preamp Module (optional)

- Input gain selectable from 20 to 60 dB (in 10 dB steps) on each channel
- 48 volt phantom power switch on each channel
- Input source selectable between line or mike preamp on each channel

LED Display

- 30-LED column for each channel
- Switch-selectable among record level, signal level, and calibration

DIGITAL AUDIO PROCESSOR



Playback Status

- Error Correct LED indicates error-correction circuit activated
- Video Unlock LED indicates no video input
- Standby LED indicates unit not yet locked onto video signal
- Video Lock LED indicates video (audio) signal present and unit functioning

SPECIFICATIONS

Dynamic Range (maximum rms signal at 1 kHz to A-weighted noise 20 Hz to 20 kHz): 110 dB typical

The Same Unweighted Greater than 105 dB

Frequency Response (sine wave or pink noise, 100 mV input, Reference record position): 20 Hz to 20 kHz \pm 0.5 dB

Total Harmonic Distortion (THD), 1 V input, 1 kHz Less than 0.05%

Wow and Flutter Less than 0.01% unweighted; Less than .006% wrms

Anti-Aliasing Filters -3 dB at 37 kHz

Sampling Rate 644 kHz

Bit Rate 644 k-bits/sec

Mike Preamp (optional) Adds less than 1 dB of noise for all microphone impedances from 100 to 1k ohm

Maximum Input/

Output Levels +24 dBm

Inputs Line: 5k ohms, differential. Edit Audio: 20.5k ohms, differential. Video and Sync: 75 ohms. Microphone: 100k ohms, 6.8k ohms if phantom-powered

Outputs Line: 47 ohms, single-ended, designed to drive 600 ohms or greater; user can convert to electronically balanced outputs. Edit Audio: 100 ohms, single-ended. Video and Sync: 75 ohms. Headphone: 150 ohms

Dimensions 5-1/4" H x 19" W x 11-1/2" D

Power 115/230V, 50/60 Hz, 60 watts

Weight approx. 20 lbs.

Model 700 \$4600.00
710 Preamp Plug-in Module 370.00



5730 General Washington Drive
 P.O. Box 11268
 Alexandria, VA 22312
 (703) 354-3350
 Telex 90-1963 TWX 710-832-0273

***C-QUAM® AM STEREO SYSTEM**

ASE-1 AM Stereo Exciter

ASM-1 AM Stereo Modulation Monitor

C-QUAM Stereo Exciter and Stereo Modulation Monitor produce an AM stereo quadrature modulated signal having superior separation and low distortion throughout the audio spectrum. The ASE-1 Exciter and ASM-1 Monitor C-QUAM System is completely compatible with existing monaural receivers and multimode decoder receivers.

C-QUAM Stereo transmission system is a full spectrum system providing separation from 50 Hz to over 10 kHz. Its signal can be demodulated by simple envelope detectors to produce a low distortion monophoric audio signal while stereo receivers demodulate the same signal to full stereo.

The ASE-1 C-QUAM Exciter produces the signals needed for stereo operation of an AM broadcast transmitter. From stereo audio input, the Exciter generates an audio drive signal for the transmitter's modulator and an RF signal to replace the transmitter's crystal oscillator output.

ASE-1 Exciter circuitry includes all required processing features. Limiters are provided to prevent excessive positive and negative modulation. A blend processor makes high single channel modulation possible, by blending a little of each channel with the other. Additional processing is not necessary. Unlike FM stereo, C-QUAM AM modulation does not require pre-emphasis.

Meters and convenient controls simplify use of the ASE-1. Large lighted meters display either left and right audio levels or L + R and L-R audio levels, in dB and percentage modulation. The mode switch selects stereo or mono operation. The pilot switch controls the 25 Hz tone, allowing the tone to be turned off as required in testing. The switch labeled Day/Night selects one of two audio equalization circuits, adjusted to match separate, alternate transmitters. The equalization circuits also can be remotely selected through contacts on the rear panel.

The ASM-1 Stereo Modulation Monitor houses a high performance C-QUAM decoder which demodulates the RF sample. The ASM-1 provides all the demodulated signals necessary for annual proof of performance when used with standard AM proof equipment.

The demodulated signals available on the rear panel of the Monitor include L + R, L-R, Envelope Detector Output, and Left and Right audio, both balanced and unbalanced. The 25 Hz pilot tone used in the C-QUAM system also is available on a rear panel connector.

Front panel meters display the pushbutton selected parameters: positive and negative L + R, L-R, L and R modulation levels. Peak flashers indicate -100%, +125%, L-R Limit, and negative limit modulation conditions. Two additional thumbwheel controlled peak flashers can be set to flash at any desired level of modulation. The modulation meters and the thumbwheel controlled peak flashers are accessible through rear panel connectors for remote indication.

SPECIFICATIONS

The following is typical closed loop performance of the Exciter operating into the Monitor.

Stereo Separation:

35 dB minimum

Frequency Response:

L,R 40 Hz to 15kHz ± 1.0 dB

EXCITER

Audio Input:

Right 0 dBm to 10 dBm balanced 600 Ohms

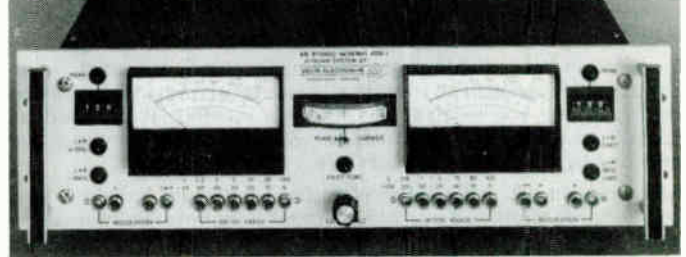
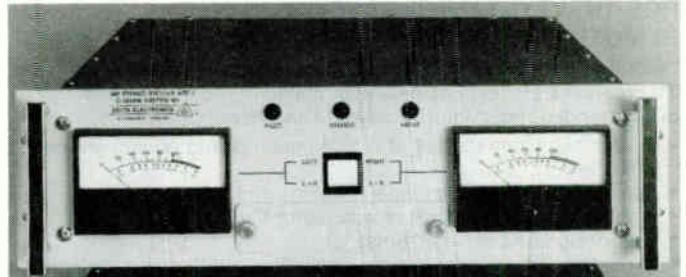
Left 0 dBm to 10 dBm balanced 600 Ohms

Both inputs adjustable with factory installed pad per customer requirements.

*Registered Trademark, Motorola, Inc.

*Mfg. under License from Motorola, Inc.

ASE-1



ASM-1

Meter Range:

-20 to +3 dB

0 dB = 100% modulation

RF Output:

Adjustable internally up to 5 watts into 50 ohms.

(L + R) :

Adjustable under cover on front panel via 10-turn potentiometer up to 16 dBm, 600 ohms balanced.

Phase Equalization:

Internally adjustable phase equalization is provided to compensate for phase variations in the transmitter chain.

MONITOR

RF Input:

Frequency crystal controlled

Input level 1 volt to 10 volts RMS

Impedance 50 ohms

Modulation Meters:

Meter range 0 to 133% -20 dB to +2 dB

Attenuator range 0 to -50 dB in -10 dB steps

Accuracy at 100% modulation 400 Hz ± 2% Meters switchable to + or - L, R, (L + R), (L-R)

Peak Modulation Indicators:

(L + R) Group:

-100% indicator internally set to flash when modulation exceeds -99%

+125% indicator internally set to flash when modulation exceeds +124%

Peak Indicator adjustable via thumbwheel switches from 30% to 150%. Modulation selectable via pushbutton switches + or -

(L-R) Group:

Negative limit set internally to flash at 1.46 radians or 83.67°

(L-R) limit set internally to flash when modulation exceeds 99%

Peak flasher adjustable via thumbwheel switches for 30% to 125%

Output BNC connectors on rear:

Remote Flashers (L + R), (L-R)

Remote Meters (L + R), (L-R)

Left Audio 600 ohms balanced and unbalanced

Right Audio 600 ohms balanced and unbalanced

(L + R), (L-R), and 25 Hz Pilot tone

\$11,700.00

Includes Installation



5730 General Washington Drive
 P.O. Box 11268
 Alexandria, VA 22312
 (703) 354-3350
 Telex 90-1963 TWX 710-832-0273

**RCS-1V
 REMOTE CONTROL SYSTEM**

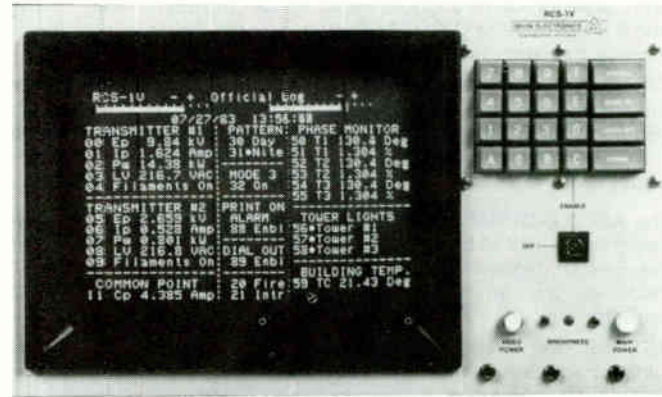
Delta Electronics RCS-1V Remote Control System provides radio and TV broadcast studio personnel with constant monitoring and control of unattended transmitter facilities. The system offers:

- Continuous video display of digital readings and equipment status indicators
- Automatic update of channel readings and status
- Highlighted out-of-tolerance and alarm flags
- User-designated screen format
- A number of system options including autologging, telephone access with voice synthesizer, and modulation bargraph displays

The RCS-1V is designed to eliminate the need for operator intervention in monitoring, and to simplify that intervention when control action is required. The operator interface is provided by a video display screen and keypad. The machine interface is provided by specialized input and output modules. System memory and logic are provided by integral microprocessors.

Measurement and status information from station equipment is read by the Remote Control System. The system interprets this information and makes it constantly available to the operator. No operator action is required for normal monitoring. Station log entries are simply copied from the screen, or the system can be equipped to print the log automatically.

Video flags and alarm messages alert the operator when a control action is required. Simple keypad pushbutton manipulations allow the operator to adjust equipment in response to instantaneous readings, and to change equipment status and operating modes as necessary. All control actions are confirmed by corresponding changes in screen display data.



RCS-1V

SPECIFICATIONS

RCS-1V Transmitter and Studio Unit:

- Height:** 10.5" (26.7cm)
- Width:** 19" (48.3cm) standard EIA rack mount
- Depth:** 20" (50.8cm) including mating connectors
- Color:** Light gray front panel, green phosphor display (optional white)
- Weight:** 36 lbs. (16.3kg)
- Power:** 115VAC + /-10%, 50/60Hz approximately 100 watts depending on options (optional 230VAC)
- Fuse:** 3AG-1A SLO BLO (0.5A for 230VAC)
- Battery Backup:** Video refresh memory, channel definition memory, and digital clock circuit are backed up by three C size alkaline cells. Estimated life: 2 years
- Modem Port:** RS-232C, 1200 baud full duplex, 25-pin miniature "D" receptacle
- Printer Port:** RC-232C, 50-19, 200 baud internally selected (nominally 4800 baud) 25-pin miniature "D" receptacle 20mA loop — TB1-4 and TB1-5
- External Video:** BNC female, 2.25V p-p non-interlaced composite video

I/O (Input/Output) Unit:

- Height:** 10.5" (26.7cm)
- Width:** 19" (48.3cm) standard EIA rack mount
- Depth:** 12" (30.5cm) including mating connectors
- Color:** Light gray front panel
- Weight:** 14 lbs. (6.4kg) plus optional cards
- Power:** Derived from RCS-1V transmitter unit
- Mounting:** Must be immediately above or below the RCS-1V transmitter unit or another I/O unit
- Number I/O Units per System:** Maximum 3 for up to 88 channels

MODEL RCS-1V REMOTE CONTROL SYSTEM

- Control Units**
- RCS-1V Transmitter Site Unit w/integral video display and bus buffer assembly **\$5750.00**
- RCS-1V Studio Site Control Unit w/integral video display .. **5000.00**

I/O Assembly

- RCS-1V I/O Chassis w/Mother Board **\$2150.00**
- 8-Channel Raise/Lower Board (D33-244) (Maximum of 2 per I/O Unit) **380.00**
- 8-Channel On/Off Board (D33-245) (Maximum of 1 per I/O Unit) **370.00**
- 16-Channel Status/Alarm Board (D33-252) (Maximum of 1 per I/O Unit) **160.00**
- 16-Channel Additional Status Board (D33-293) **215.00**
- 8-Channel Analog Input Board (D33-297-2) **390.00**
- Analog Antenna Monitor Board (D33-251) (Specify Monitor Model) **425.00**
- Digital Antenna Monitor Board (D33-285) **425.00**

System Options and Accessories

- Autologging Option. Includes electronics package, system cables, and Centronic 150-3 Serial Printer with paper. **\$2000.00**
- Modulation Display Option for transmitters and studio control units **750.00**
- Telephone Access Option. Includes electronics package, system cables, and station coupler w/power transformer ... **1450.00**
- Communications Modems, UDS-12/12, 1200 Baud, set of two, w/interconnect cables **2750.00**
- National Multiplex Model DC-3
- Digital Data Recorder **On Request**

DELTA ELECTRONICS



5730 General Washington Drive
 P.O. Box 11268
 Alexandria, VA 22312
 (703) 354-3350
 Telex 90-1963 TWX 710-832-0273



MODELS CPB-1/CPB-1A

Common Point Impedance Bridge

The Delta Electronics Model CPB-1 and CPB-1A Common Point Impedance Bridges* are operating impedance bridges similar to the Model OIB-1, but designed for permanent installation in your phasing equipment at the antenna common point. The CPB-1 will handle common point powers up to 5kW with 100% amplitude modulation on a continuous basis. The CPB-1A is designed for transmitter powers up to 50kW. Both instruments have two 4" dials calibrated directly in resistance and reactance. A panel meter is provided for use as a null detector. The R and X dials are manipulated as a normal bridge to give a null indication on the panel meter while the transmitter is operating at full or reduced power. The value of the common point resistance and reactance can then be read directly from the two dials.

CPB-1 Common Point Impedance Bridge, 5kW \$1850.00
 CPB-1A Common Point Impedance Bridge, 50kW 2200.00



MODEL OIB-1

Operating Impedance Bridge

The Model OIB-1 Operating Impedance Bridge* measures the operating impedance of the individual radiators, networks, transmission line sections, and common point of directional antenna systems while they are functioning under normal power. This "operating impedance" cannot be measured by usual impedance bridge methods because the systems characteristics are disrupted when the bridge is inserted in the circuit. The OIB-1 thus satisfies a critical requirement long felt by consulting and broadcast station engineers. In addition it has many applications in other fields that cannot be duplicated by any other instrument.

OIB-1 Operating Impedance Bridge
 (Specify lead length 12" or 18") \$1760.00
 Extended R and X Ranges 500.00
 Permits reading resistance to 1000 ohms.
 Reactance to 900 ohms. Includes recalibration.

MODEL RG-4

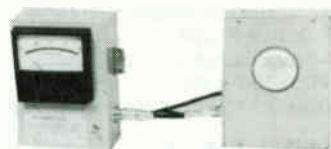
Receiver/Generator (for use with impedance bridges)

- High level output (2 watts into 50 ohm) • Sensitive receiver (10µV nominal) • Excellent receiver/generator isolation (greater than 120dB)
- Wide range of operating frequencies (100kHz to 30MHz) • Digital frequency synthesizer design • Keypad entry of operating frequencies
- Nine test frequency storage registers • Coincidence detector circuit
- Large LCD frequency readout • Gel-Cell battery pack and automatic charger (optional) • Heavy gauge aluminum case



Model	Order #	Description	Price
RG-4	915-0011-001	Receiver generator 120VAC with batteries	\$5095.00
RG-4	915-0011-002	Receiver generator 240VAC with batteries	5095.00
RG-4	915-0011-003	Receiver generator 120VAC less batteries	4995.00
RG-4	915-0011-004	Receiver generator 240VAC less batteries	4995.00

BROADCAST PRODUCTS



MODELS TCA-EX/EXR RF Ammeter Systems

TCA-N-EX. This model is a single-scale meter with external output. The system consists of a current transformer; a six-foot coaxial cable; and a meter box housing the meter movement, rectifier circuitry, and external output connector.

TCA-N-EXR, TCA-N/N-EXR. Meters with the "-EXR" suffix provide an auxiliary output connector along with an internal relay to ground the rectifier circuit (turn the meter off). The dual-scale models include a second relay for changing scales remotely.

Model	Order #	Description	Price
TCA-5-EX	924-0003-001	5 amp	\$450.00
TCA-10-EX	924-0003-002	10 amp	450.00
TCA-20-EX	924-0003-003	20 amp	450.00
TCA-40-EX	924-0003-004	40 amp	540.00
TCA-80-EX	924-0003-005	80 amp	540.00
TCA-10-EXR	924-0005-002	10 amp with on/off relay	500.00
TCA-20-EXR	924-0005-003	20 amp with on/off relay	500.00
TCA-40-EXR	924-0005-004	40 amp with on/off relay	600.00
TCA-80-EXR	924-0005-005	80 amp with on/off relay	600.00
TCA-5/10-EXR	924-0005-006	5 amp/10 amp dual scale	650.00
TCA-10/20-EXR	924-0005-007	10 amp/20 amp dual scale	650.00
TCA-20/40-EXR	924-0005-008	20 amp/40 amp dual scale	650.00
TCA-40/80-EXR	924-0005-009	40 amp/80 amp dual scale	780.00



MODEL OIB-3

Operating Impedance Bridge

The OIB-3 is an advanced version of the industry standard OIB-1 operating impedance bridge. It has all of the OIB-1 features plus an extended resistance and reactance range and an improved meter amplifier. It is built in a heavy drawn aluminum case and no additional carrying case is required.

OIB-3 Operating Impedance Bridge	\$2400.00
TC-1 Transport Case for OIB-1	280.00
D51-3-1 12" Replacement Leads for OIB-1 or OIB-3	100.00
D51-3-2 Replacement Leads for OIB-1 or OIB-3 (Changing lead length requires recalibration)	100.00
Recalibration Cleaning and recalibration of OIB-1, OIB-3 and CPB-1/1A	250.00
Repair labor and parts additional.	
Return authorization not required.	

Prices and Specifications Subject to Change Without Notice.

B-347



5730 General Washington Drive
 P.O. Box 11268
 Alexandria, VA 22312
 (703) 354-3350
 Telex 90-1963 TWX 710-832-0273

MODEL FMC-1

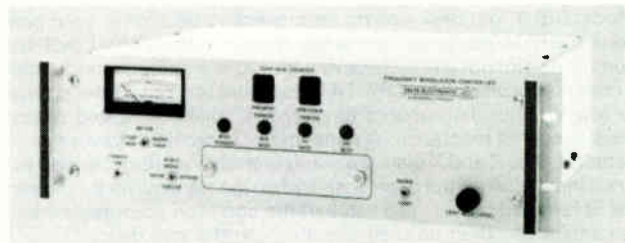
Frequency Modulation Controller

The Model FMC-1 Frequency Modulation Controller provides automatic control of the modulation levels of an FM broadcast transmitter or audio channel of a TV transmitter. The FMC-1 provides a closed loop system around the transmitter which allows the broadcast engineer to maintain modulation at the desired level despite variations in the audio level from different program sources and other system variances. Through gain is controlled by a digital attenuator maintaining true transparency at all gain settings. No clipping or compression is used.

By using a closed loop approach, the FMC-1 allows modulation levels to be maintained independent of audio program levels, output level variations of the stereo generator or other exciter/transmitter variations which may affect the audio baseband level.

Features

- Automatically controls the modulation level of an FM or Aural television transmitter to prevent excessive or undesirably low modulation
- Uses an input sample from the audio or composite output of modulation monitor
- Interfaces monaural or stereo composite signal with 600 ohm balanced input and output circuits
- Provides A +/-8dB window of adjustment of stereo, audio or composite
- Front panel meter indicates audio operating gain of system, and test modulation percentage
- Two one-digit counters with overflow indicators separately display over modulation peaks for



present and previous one minute count period • Recessed front panel controls provide adjustment of four modulation control levels and the audio level adjustment rates • Test mode checks operation of controller and facilitates parameter adjustment • Proof of performance tests may be conducted with unit in circuit • Reverts to hardwire through mode on power or circuit failure.

FMC-1S Single Channel

FMC-1D Dual Channel

ATS Option Available

MODELS TCT-1/TCT-2 and TCT-3

Toroidal Current Transformers

The TCT-1, TCT-2 and TCT-3 are precision toroidal current transformers designed primarily for obtaining sampling voltages for phase and magnitude measurements on broadcast arrays. The units are housed in rectangular aluminum shield enclosures with a 1-1/4" teflon lined pass hole through which the current carrying conductor is passed.

The TCT-1 and TCT-2 may both be used in the same system since they have identical tracking characteristics. The TCT-3 has somewhat different characteristics and preferably should not be mixed with the other two types.

TCT-1 Toroidal Current Transformer

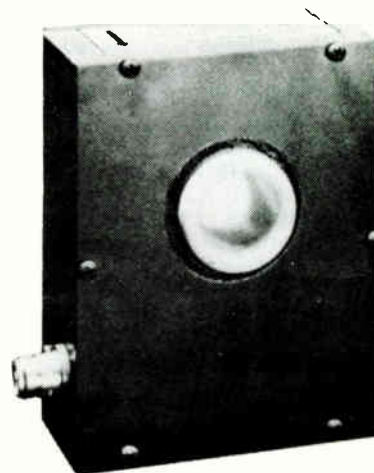
- 0.5V/amp. \$300.00
- High Voltage (HV) Model 500.00

TCT-2 Toroidal Current Transformer

- 0.25V/amp. \$300.00
- High Voltage (HV) Model 500.00

TCT-3 Toroidal Current Transformer

- 1.00V/amp. \$300.00
- High Voltage (HV) Model 500.00



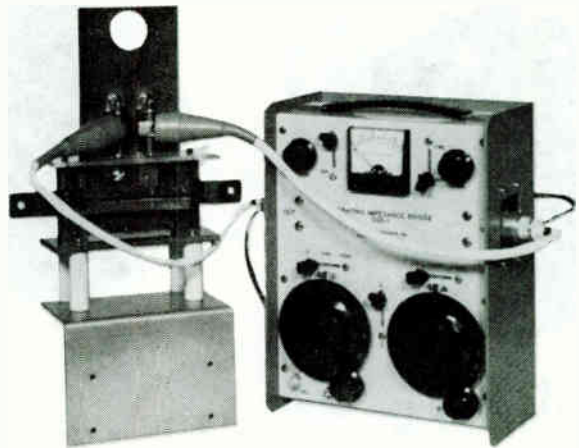


5730 General Washington Drive
 P.O. Box 11268
 Alexandria, VA 22312
 (703) 354-3350
 Telex 90-1963 TWX 710-832-0273

MODEL MJ-50

In-Line High Power Meter Jack and Accessories

The Delta Electronics Model MJ-50 Meter Jack is a make-before-break in-line jack assembly especially designed for permanent installation in broadcast antennas, transmission lines, and networks to permit the "hot" insertion of the Delta OIB-1 Operating Impedance Bridge or ammeter without interruption to normal program operation. The Meter Jack is rated for continuous operation at currents of up to 50 amperes and is insulated for 10kV RMS. Accessory plug panels are available for use with the OIB-1 and for all of the most commonly used ammeters. The BP-50 Bridge Panel is a plug panel designed for insertion in the Meter Jack and has terminals suitable for connection to the Delta OIB-1 bridge leads and is also rated for 50 ampere operation. The MP-308 as depicted above is a plug-panel for use with a Weston Model 308 Ammeter for "hot" ammeter insertion. Plug panels for use with other meters are also available on request.



MODEL MJ-50

- MJ-50** Meter Jack
- BP-50** Bridge Plug
- MP-308** Meter Plug

MODEL AMC-1

Amplitude Modulation Controller

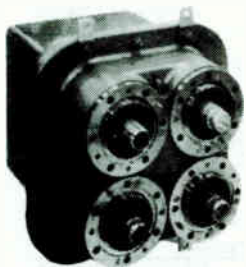
The Automatic Modulation Controller is the only modulation controlling system that provides a completely closed loop around the transmitter. The sampling of actual modulation levels after the PA output network assures precise adjustment for optimum modulation levels. The AMC-1 also keeps a digital count of positive and negative over-modulation bursts for both present and previous one minute periods.

AMC-1 Amplitude Modulation Controller
 (With ATS Option)

Now Available in a Stereo Version



MODEL AMC-1



Model 6740B/6742B
 3-1/8" Coaxial Transfer Switch

TRANSMISSION LINE SWITCHES

The manually or remotely operated Coaxial Transfer Switches are designed to change coaxial connections with a minimum of change-over or off-air-time. They can switch pairs of transmission lines in less than two seconds.

The Models 6730E and 6732E Coaxial Transfer Switches are manufactured for use with 1-5/8 in. 50-ohm transmission line. The 6740B and 6742B Coaxial Transfer Switches are designed for use with 3-1/8 in. 50-ohm transmission line. The Models 6730E and 6740B operate on 120V, 50/60Hz. The Models 6732E and 6742B operate on 220/240V, 50/60Hz.



Model 33630A
 Coaxial Switch Control Panel



Model 6730E/6732E
 1-5/8" Coaxial Transfer Switch

Transfer switches are used to switch transmitters, transmission lines, antennas, dummy loads and auxiliary equipment quickly and efficiently when failures occur, when operating procedure is changed, or during scheduled maintenance periods. They also simplify equipment tuning, testing, and emergency repairs by facilitating quick checks under actual operating conditions.

6700 Transfer Switches

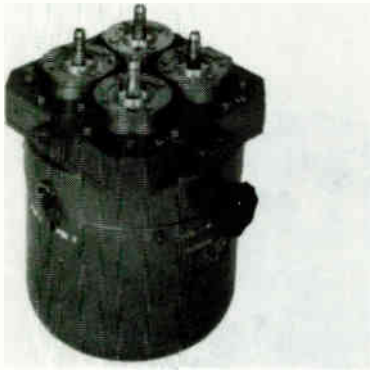
- 6730E** Coaxial Transfer Switch, 1-5/8", 120V, 50/60Hz
- 6732E** Coaxial Transfer Switch 1-5/8", 220/240V, 50/60Hz
- 6740B** Coaxial Transfer Switch 3-1/8", 120V, 50/60Hz
- 6742B** Coaxial Transfer Switch 3-1/8", 220/240V, 50/60Hz
- 33630A** Control panel for any Transfer Switch

Prices and Specifications Subject to Change Without Notice.

DIELECTRIC COMMUNICATIONS

Tower Hill Road
Raymond, ME 04071
(207) 655-4555

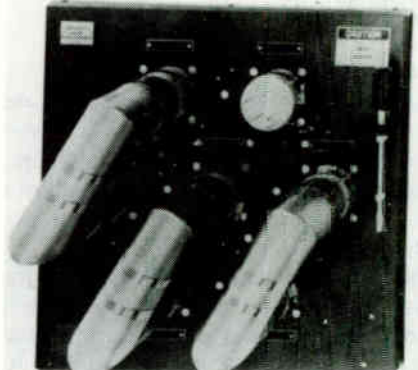
COAXIAL SWITCHES AND PATCH PANELS



**MOTORIZED
A 50000 SERIES**
1 5/8" and 3 1/8"



**MOTORIZED
80 SERIES**
4 1/16", 6 1/8" and 8 3/16"



**PATCH PANELS
80 SERIES**
1 5/8", 3 1/8", 4 1/16" and 6 1/8"

COAXIAL SWITCHES A 50000 SERIES

LINE SIZE	IMPEDANCE IN Ω	NUMBER OF PORTS	TERMINATION TYPE	MOTOR DRIVE VOLTAGE	CONTROL RELAY COIL VOLTAGE	CATALOG NUMBER	
1 5/8	50	4	EIA	115 VAC	12 VDC	A 50000-200	\$2115.00
1 5/8	50	4	EIA	115 VAC	24 VDC	A 50000-201	2115.00
1 5/8	50	4	EIA	115 VAC	115 VAC	A 50000-203	2115.00
1 5/8	50	4	EIA	230 VAC	12 VDC	A 50000-205	2235.00
1 5/8	50	4	EIA	230 VAC	24 VDC	A 50000-206	2235.00
1 5/8	50	4	EIA	230 VAC	115 VAC	A 50000-208	2235.00
1 5/8	50	4	EIA	230 VAC	230 VAC	A 50000-209	2235.00
1 5/8	50	3	EIA	115 VAC	12 VDC	A 50000-210	2060.00
1 5/8	50	3	EIA	115 VAC	24 VDC	A 50000-211	2060.00
1 5/8	50	3	EIA	115 VAC	115 VAC	A 50000-213	2060.00
1 5/8	50	3	EIA	230 VAC	12 VDC	A 50000-215	2180.00
1 5/8	50	3	EIA	230 VAC	24 VDC	A 50000-216	2180.00
1 5/8	50	3	EIA	230 VAC	115 VAC	A 50000-218	2180.00
1 5/8	50	3	EIA	230 VAC	230 VAC	A 50000-219	2180.00
3 1/8	50	4	EIA	115 VAC	12 VDC	A 50000-300	3000.00
3 1/8	50	4	EIA	115 VAC	24 VDC	A 50000-301	3000.00
3 1/8	50	4	EIA	115 VAC	115 VAC	A 50000-303	3000.00
3 1/8	50	4	EIA	230 VAC	12 VDC	A 50000-305	3100.00
3 1/8	50	4	EIA	230 VAC	24 VDC	A 50000-306	3100.00
3 1/8	50	4	EIA	230 VAC	115 VAC	A 50000-308	3100.00
3 1/8	50	4	EIA	230 VAC	230 VAC	A 50000-309	3100.00
3 1/8	50	3	EIA	115 VAC	12 VDC	A 50000-310	2900.00
3 1/8	50	3	EIA	115 VAC	24 VDC	A 50000-311	2900.00
3 1/8	50	3	EIA	115 VAC	115 VAC	A 50000-313	2900.00
3 1/8	50	3	EIA	230 VAC	12 VDC	A 50000-315	3000.00
3 1/8	50	3	EIA	230 VAC	24 VDC	A 50000-316	3000.00
3 1/8	50	3	EIA	230 VAC	115 VAC	A 50000-318	3000.00
3 1/8	50	3	EIA	230 VAC	230 VAC	A 50000-319	3000.00

HIGH POWER COAXIAL SWITCHES 80 SERIES

4 1/16	50	4	EIA	115 VAC	12 VDC	DC 485-640	\$5984.00
4 1/16	50	4	EIA	115 VAC	24 VDC	DC 485-641	5984.00
4 1/16	50	4	EIA	115 VAC	115 VAC	DC 485-643	5984.00
6 1/8	50	4	EIA	115 VAC	12 VDC	DC 685-640	8468.00
6 1/8	50	4	EIA	115 VAC	24 VDC	DC 685-641	8468.00
6 1/8	50	4	EIA	115 VAC	115 VAC	DC 685-643	8468.00
6 1/8	75	4	EIA	115 VAC	12 VDC	DC 687-640	8468.00
6 1/8	75	4	EIA	115 VAC	24 VDC	DC 687-641	8468.00
6 1/8	75	4	EIA	115 VAC	115 VAC	DC 687-643	8468.00
8 3/16	75	4	EIA	115 VAC	12 VDC	DC 887-640	9936.00
8 3/16	75	4	EIA	115 VAC	24 VDC	DC 887-641	9936.00
8 3/16	75	4	EIA	115 VAC	115 VAC	DC 887-643	9936.00

COAXIAL PATCH PANELS 80 SERIES

LINE SIZE	NUMBER OF PORTS	NUMBER OF U-LINKS	IMPEDANCE IN Ω	TERMINATION TYPE	CATALOG NUMBER WITHOUT INTERLOCKS	CATALOG NUMBER WITH INTERLOCKS*
1 5/8	3	1	50	EIA	DC 285-430	DC 285-431 \$ 927.00
1 5/8	3	1	50	UNFLANGED	DC 285-432	DC 285-433 927.00
1 5/8	4	2	50	EIA	DC 285-440	DC 285-441 1334.00
1 5/8	4	2	50	UNFLANGED	DC 285-442	DC 285-443 1334.00
1 5/8	7	3	50	EIA	DC 285-470	DC 285-471 1616.00
1 5/8	7	3	50	UNFLANGED	DC 285-472	DC 285-473 1616.00
3 1/8	3	1	50	EIA	DC 385-430	DC 385-431 1244.00
3 1/8	3	1	50	UNFLANGED	DC 385-432	DC 385-433 1244.00
3 1/8	4	2	50	EIA	DC 385-440	DC 385-441 1793.00
3 1/8	4	2	50	UNFLANGED	DC 385-442	DC 385-443 1793.00
3 1/8	7	3	50	EIA	DC 385-470	DC 385-471 2345.00
3 1/8	7	3	50	UNFLANGED	DC 385-472	DC 385-473 2345.00
4 1/16	3	1	50	EIA	DC 485-430	DC 485-431 1500.00
4 1/16	3	1	50	UNFLANGED	DC 485-432	DC 485-433 1500.00
4 1/16	4	2	50	EIA	DC 485-440	DC 485-441 2159.00
4 1/16	4	2	50	UNFLANGED	DC 485-442	DC 485-443 2159.00
4 1/16	7	3	50	EIA	DC 485-470	DC 485-471 2652.00
4 1/16	7	3	50	UNFLANGED	DC 485-472	DC 485-473 2652.00
6 1/8	3	1	50	EIA	DC 685-430	DC 685-431 1961.00
6 1/8	3	1	50	UNFLANGED	DC 685-432	DC 685-433 1961.00
6 1/8	3	1	75	EIA	DC 687-430	DC 687-431 1961.00
6 1/8	3	1	75	UNFLANGED	DC 687-432	DC 687-433 1961.00
6 1/8	4	2	50	EIA	DC 685-440	DC 685-441 2743.00
6 1/8	4	2	50	UNFLANGED	DC 685-442	DC 685-443 2743.00
6 1/8	4	2	75	EIA	DC 687-440	DC 687-441 2743.00
6 1/8	4	2	75	UNFLANGED	DC 687-442	DC 687-443 2743.00
6 1/8	7	3	50	EIA	DC 685-470	DC 685-471 4512.00
6 1/8	7	3	50	UNFLANGED	DC 685-472	DC 685-473 4512.00
6 1/8	7	3	75	EIA	DC 687-470	DC 687-471 4512.00
6 1/8	7	3	75	UNFLANGED	DC 687-472	DC 687-473 4512.00
8 3/16	7	3	75	EIA	DC 887-430	DC 887-441 5109.00
8 3/16	7	3	75	UNFLANGED	DC 887-440	DC 887-441 5109.00

* INTERLOCKS: DPDT Interlocks can be located between each port. Customer to specify number and location.

MANUAL COAXIAL SWITCHES 80 SERIES

1 5/8	3	NA	50	EIA	DC 285-534	\$1439.00
1 5/8	4	NA	50	EIA	DC 285-544	1525.00
3 1/8	3	NA	50	EIA	DC 385-534	2220.00
3 1/8	4	NA	50	EIA	DC 385-544	2325.00

COAXIAL SWITCH ACCESSORIES

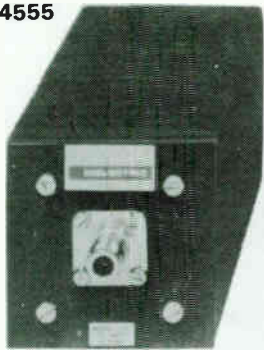
DESCRIPTION	CATALOG NO.	
Transformer 220 VAC to 115 VAC (included in the price of 220 VAC)	B 40715-501	\$113.00
Local Control Panel	C 48112-501	447.00
Adaptor 1 5/8 EIA to 1 5/8 Unflanged	B 44920-502	43.00
Adaptor 3 1/8 EIA to 3 1/8 Unflanged	B 44900-502	65.00
Adaptor 4 1/16 Bolt to 4 1/16 Unflanged	15751	65.00
Adaptor 6 1/8 EIA to 6 1/8 Unflanged	B 43916-501	105.00
Replacement Heater for 1 5/8 and 3 1/8 Pressurized Switch	A 40706-501	244.00

Note, Adaptors: One adaptor is required for each port.

DIELECTRIC COMMUNICATIONS

Tower Hill Road
Raymond, ME 04071
(207) 655-4555

TERMINATING RF LOAD RESISTORS



Model 4150
150 W



Model 4100
100 W



Model 4050
50 W



Model 4025
25 W



Model 4010
10 W



Model 4005
5 W

4000 Series Dry Loads Terminating Load Resistors Dry-Air Dielectric - 50 ohms

Dielectric RF Dry Loads range from 5-watt to 150-watt CW power ratings, and may be operated in any position. Unless otherwise requested, Dielectric RF Dry Loads are equipped with type-N female Quick Match connectors.

However, to be sure that all your requirements are satisfied, please specify the desired connector from the Ordering Information.

Model	CW Power Rating	VSWR	Frequency Range	Dimensions		
				H	W	D
				in. (cm.)		
4005	5W	1.05:1	DC-1000 MHz	1.25(3.18)	1.25(3.18)	2.75(6.98)
			1 GHz-4 GHz			
4010	10W	1.05:1	DC-1000 MHz	1.25(3.18)	1.25(3.18)	2.75(6.98)
			1 GHz-4 GHz			
4025	25W	1.05:1	DC-1000 MHz	1.50(3.81)	1.50(3.81)	4.19(10.64)
			1 GHz-4 GHz			
4050	50W	1.05:1	DC-1000 MHz	2.00(5.08)	2.00(5.08)	4.19(10.64)
			1 GHz-4 GHz			
4100	100W	1.05:1	DC-1000 MHz	3.50(8.89)	3.50(8.89)	4.80(12.19)
			1 GHz-4 GHz			
4150	150W	1.05:1	DC-1000 MHz	3.50(8.89)	3.50(8.89)	7.75(19.68)
			1 GHz-4 GHz			

Ambient air temperatures for CW power ratings is -40°C to $+45^{\circ}\text{C}$.



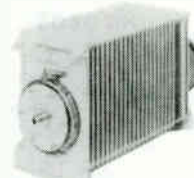
Model 5100
100W



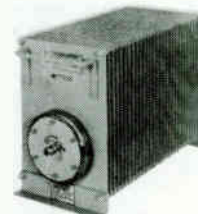
Model 5150
150W



Model 5250
250W



Model 5600
600W



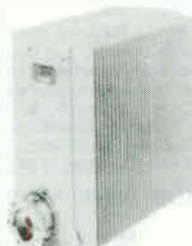
Model 5700
1000W



Model 5750
1500W



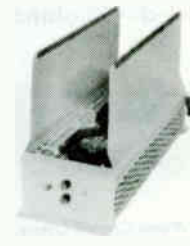
Model 5800
3000W



Model 5900
5000W



Model 5755
5000W
(with forced air
blower assembly)



Model BA-572
Forced Air Blower
Assembly

5000 Series Liquid-Air Loads

Ten models of these loads are available from 100-watt to 10,000-watt CW power ratings. Five of them—models 5750, 5755, 5800, 5900 and 5975—are equipped with thermal overload switches that interface to the user's interlock or other warning circuits.

Model	CW Power Rating	VSWR	Frequency Range	Dimensions			Weight lbs. (Kg.)
				H	W	L	
				in. (cm.)			
5100	180W	1.1:1	DC-1000 MHz	5.38(13.65)	3.50(8.89)	9.75(24.76)	5.5(2.5)
			1 GHz-4 GHz				
5150	150W	1.1:1	DC-1000 MHz	6.50(16.51)	3.75(9.53)	10.75(27.30)	6.5(2.9)
			1 GHz-4 GHz				
5250	250W	1.1:1	DC-1000 MHz	7.62(19.37)	4.00(10.16)	13.25(33.65)	8.5(3.8)
			1 GHz-4 GHz				
5600	600W	1.1:1	DC-1000 MHz	9.16(23.26)	6.00(15.24)	17.88(45.42)	23(10.4)
			DC-1000 MHz	11.25(28.57)	7.00(17.78)	20.00(50.80)	33(15.0)
5700	1000W	1.1:1	DC-1000 MHz	11.25(28.57)	7.00(17.78)	20.00(50.80)	33(15.0)
			DC-1000 MHz				
5750	1500W	1.1:1	DC-1000 MHz	13.25(33.66)	6.38(16.20)	21.25(53.98)	50(22.7)
5755*	5000W	1.1:1	DC-1000 MHz	18.13(46.05)	7.75(19.68)	24.63(62.56)	62(28.1)
5800	3000W	1.1:1	DC-1000 MHz	13.25(33.66)	12.00(30.48)	26.25(66.7)	69(31.3)
5900	5000W	1.1:1	DC-1000 MHz	23.50(59.69)	12.00(30.48)	26.25(66.7)	106(48.1)
5975*	10kW	1.1:1	DC-300 MHz	27.63(70.18)	12.00(30.48)	27.25(69.2)	152(68.9)
BA 572			Blower Assembly				

Ambient air temperatures for CW power ratings are -40° to $+45^{\circ}\text{C}$

*Equipped with forced air blower assembly—specify 115 or 230 VAC Input

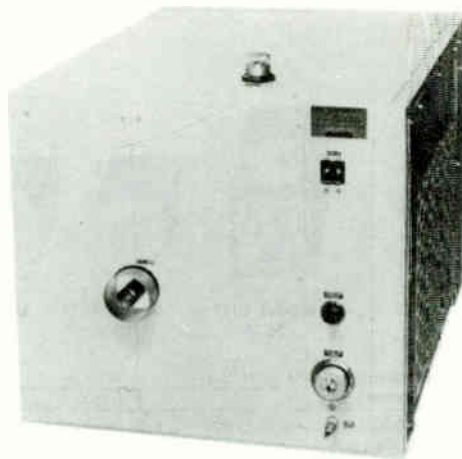
Prices and Specifications Subject to Change Without Notice.

B-351

DIELECTRIC COMMUNICATIONS

Tower Hill Road
Raymond, ME 04071
(207) 655-4555

TERMINATING RF LOAD RESISTORS



UNILoad
Heat Exchanger Load



6500 Series
Standard Heat Exchanger Load

6500 Series Heat Exchanger Loads Self Contained Water Cooled

Two versions of self-contained heat exchanger loads may be selected. One is the Standard Heat Exchanger with a coolant pressure gauge, sight glass, and casters for portability. The other is the economical UNILoad, without gauge and sight glass, and with casters offered only as an option. Both have the same performance characteristics.

TERMINATING LOAD RESISTORS - Heat Exchanger - Water Cooled - 50 ohms

Model	CW Power Rating	VSWR	Frequency Range	Input Connector	Dimensions			Weight* lbs. (kg.)
					H	W	D	
					in. (cm.)			
6510	10kW		all models	3/4" EIA fl.	29.00(73.66)	26.25(66.68)	39.00(99.06)	210 (95.2)
6511	10kW	1:1.1	DC-1000 MHz	3/4" unfl.	29.00(73.66)	26.25(66.68)	39.00(99.06)	210 (95.2)
6525	25kW			3/4" EIA fl.	32.00(81.28)	33.00(83.82)	37.00(93.98)	250 (113.4)
6526	25kW			3/4" unfl.	32.00(81.28)	33.00(83.82)	37.00(93.98)	250 (113.4)
6550	50kW			3/4" EIA fl.	41.8(106.2)	24.00(60.96)	48.00(1.22m)	380 (172.3)
6551	50kW			3/4" unfl.	41.8(106.2)	24.00(60.96)	48.00(1.22m)	380 (172.3)

UNILoads

6512	10kW		all models	3/4" EIA fl.	25.0(63.5)	26.25(66.68)	39.00(99.06)	200 (90.7)
6513	10kW	1:1.1	DC-1000 MHz	3/4" unfl.	25.0(63.5)	26.25(66.68)	39.00(99.06)	200 (90.7)
6527	25kW			3/4" EIA fl.	28.0(71.1)	33.00(83.82)	37.00(93.98)	240 (108.8)
6528	25kW			3/4" unfl.	28.0(71.1)	33.00(83.82)	37.00(93.98)	240 (108.8)
6552	50kW			3/4" EIA fl.	35.3(89.7)	24.00(60.92)	48.00(1.22m)	370 (167.8)
6553	50kW			3/4" unfl.	35.3(89.7)	24.00(60.92)	48.00(1.22m)	370 (167.8)

* includes coolant weight

Terminating Load Resistors— Water Cooled—50 ohms



6000 SERIES Water Cooled Loads

Several versions of water-cooled loads provide power dissipation for systems of 10,000-watt to 50,000-watt CW power ratings. The basic Series 6000 water-cooled load requires a water supply, and accepts a 1/2" pipe thread or 3/4" garden hose water connection. A family of control thermostats are available for use with these loads as listed in the 8200 Series of RF Load Accessories.

6600 Series Dolly Loads Water Cooled

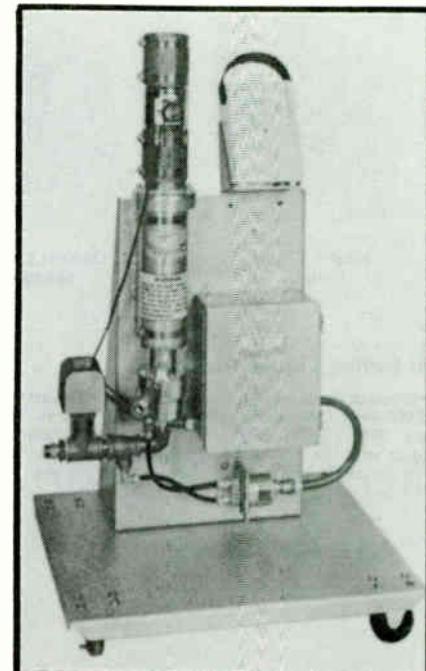
For transmitter buildings, Dielectric offers a Dolly Load in three models, with pressure and flow interlocks if desired. These loads can be wheeled easily from one location to another. Dolly Loads require a water supply and accept a 1/2" pipe thread or 3/4" garden hose water connection. Overall dimensions are: Height 31.5 in. (80.0 cm); Base—width 24.0 in., (61.0 cm), depth 20.0 in (50.8 cm); Dry Weight 64.0 lb (29.0 kg).

DOLLY LOADS - 6600 MODELS

Model	CW Power Rating	Minimum Flow Rate (Water)	RF Input
6610	10kW	4 GPM	3/8"
6625	25kW	6 GPM	3/8"
6650	50kW	10 GPM	3/8"

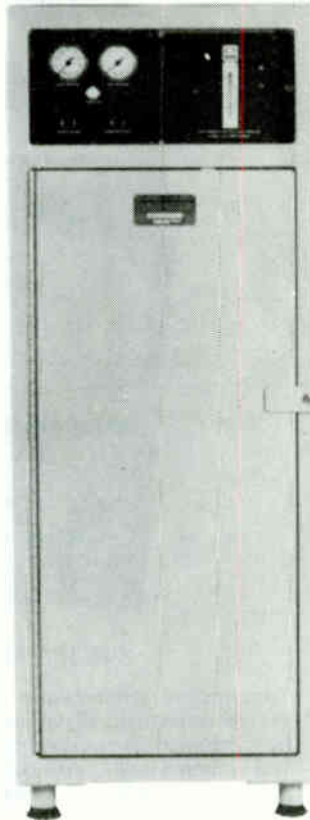
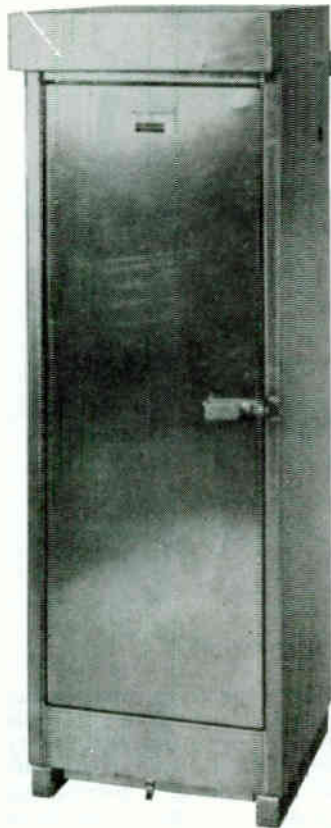
Either EIA flanged or unflanged available — specify when ordering

Model	CW Power Rating	VSWR	Frequency Range	Input Connector	Minimum Water Flow	Dimensions		Weight lbs. (kg.)
						OIA	L	
						in. (cm.)		
6010	10kW		all models	3/4" EIA fl.	4 GPM	5.19(13.18)	19.13(48.59)	18 (8.2)
6011	10kW	1:1.1	DC-1000 MHz.	3/4" unfl.	4 GPM	4.75(12.06)	19.13(48.59)	18 (8.2)
6015	15kW			3/4" EIA fl.	5 GPM	5.19(13.18)	19.13(48.59)	18 (8.2)
6016	15kW			3/4" unfl.	5 GPM	4.75(12.06)	19.13(48.59)	18 (8.2)
6025	25kW			3/4" EIA fl.	6 GPM	5.19(13.18)	19.13(48.59)	18 (8.2)
6026	25kW			3/4" unfl.	6 GPM	4.75(12.06)	19.13(48.59)	18 (8.2)
6050	50kW			3/4" EIA fl.	10 GPM	5.19(13.18)	19.13(48.59)	18 (8.2)
6051	50kW			3/4" unfl.	10 GPM	4.75(12.06)	19.13(48.59)	18 (8.2)



DIELECTRIC COMMUNICATIONS

Tower Hill Road
Raymond, ME 04071
(207) 655-4555



PRESSURIZATION EQUIPMENT

MODELS 1600 / 2400 / 4200

MODULAR POLE MOUNT AND INDOOR AIR DRYERS

RELIABLE-

- Guaranteed Dewpoint
- Humidity By-pass at 2% R. H.
- Capacity Overload Protection
- Full Emergency Output
- Power Failure Alarm

DURABLE-

- 125° to -60° (-32° Indoor) Operation
- Enlarged Cooling Fan
- Certified One Cu. Ft. Tank
- Shock Mounted Compressor

EASY REPAIR / DIAGNOSIS-

- Standard Modular Components
- Easy-test Dehydrator
- Individual Alarm Lights
- Quick Disconnects

POLE MOUNT ADDITIONAL FEATURES

- Compressor Excess Run Alarm
- Automatic Temp. Protection
- Lockable Cabinet
- Solid State Humidity Alarm

INDOOR MODEL ADDITIONAL FEATURES

- Solid State Humidity Alarm
- Lo-Pressure Alarm
- Full Alarm Lights
- Power Failure Alarm
- Optional Compressor Excess Run Alarm
- Power-On Indicator

MODEL	NORMAL FLOW (SCFD)	MAXIMUM FLOW (SCFD)	MAXIMUM OPERATING TEMPERATURE	MINIMUM OPERATING TEMPERATURE	POWER REQUIREMENTS		DIMENSIONS IN INCHES (HxWxD)	WEIGHT IN POUNDS	PRESSURE OUTPUT IN PSIG
					VOLTS	AMPS			
Pole Mount									
1600	1600	2300	125° F	-60° F	115	9*	53½ x 17¼ x 17¼	188	0-20
2400	2400	3500	125° F	-60° F	115	12*	53½ x 17¼ x 17¼	198	0-20
4200	2800	4200	125° F	-60° F	115	13*	53½ x 17¼ x 17¼	195	0-20
Indoor									
1600	1600	2300	125° F	32° F	115	9	46½ x 17¼ x 17¼	170	0-20
2400	2400	3500	125° F	32° F	115	12	46½ x 17¼ x 17¼	178	0-20
4200	2800	4200	125° F	32° F	115	13	46½ x 17¼ x 17¼	175	0-20

* Add 5 Amps when heater is on

† Standard on Pole Mount only

World-Wide Voltages Are Available

DIGITAL ENTERTAINMENT CORP. PROFESSIONAL DIGITAL AUDIO

A SUBSIDIARY OF
MITSUBISHI ELECTRIC SALES AMERICA, INC.

69 North Street
Danbury, CT 06810
(203) 744-3226 Telex 703547

MITSUBISHI DIGITAL AUDIO SYSTEMS

Mitsubishi Electric Corporation is proud to introduce The System, a complete interactive range of professional digital audio recording and electronic editing equipment designed for progressive studios in the forefront of recording technology. The digital master recorder is available in two configurations: the X-80 transportable model and the X-80A studio console model. The X-800 is a 32 channel recorder with additional channels for the recording of SMPTE code, address, and other data. The XE-1 is a comprehensive electronic editing and synchronizing system that enables the user to achieve the maximum benefit from the X-80 Series and X-800 recorders. The DDL-1 Digital Delay Unit is dedicated for use with the X-80 Series recorder and provides the essential preview and delayed program signals for disk mastering. This state of the art System offers outstanding technical performance coupled with ease of operation and flexibility in application. For example: the X-80 recorder is a cost effective method for studios to enter the world of digital recording and mastering, allowing cut and splice editing within the unit. (Electronic editing system not required.) The System's upward flexibility comes into play by offering full interactive electronic editing capability through the XE-1 Electronic Editor.

THE SYSTEM

The System is based on new technology. Comprised of the X-80 Series Master Recorders, the XE-1 Electronic Editing System, the X-800 32 Channel Recorder, and the DDL-1 Digital Delay Unit, the Mitsubishi Digital Audio System is the most advanced, cost-effective and complete system available to the music recording, broadcasting and film industries.

X-80 SERIES DIGITAL AUDIO MASTER RECORDERS

The new X-80 Series digital audio fixed-head tape recorders have ultra-wide dynamic range, wide and flat frequency response, ultralow distortion, complete freedom from wow and flutter, no tape hiss and dubbing without generation loss. They are also compact, reliable, simple to operate and maintain, and provide the outstanding advantages of tape cut-and-splice editing. And they are surprisingly affordable, costing much less than video cassette based digital audio recorders.

The X-80A (studio console type) and the X-80 (transportable type) use standard 1/4" tape running at 15 ips, giving one hour of recording from a standard 10" reel. Anyone familiar with analog mastertape recorders can operate them. And the error-correcting code is so sophisticated that errors do not produce any deterioration in audio quality.

But most important of all, standard cut-and-splice editing is possible, just as is done with an analog tape. Smooth and silent splices are ensured by sophisticated automatic cross-fade techniques that join the signals before and after the splice.

The X-80 tape format utilizes ten tracks across 1/4" tape. Eight PCM tracks (derived from the two audio program channels) are located across the width of the tape, with the analog cue and SMPTE tracks on the outside. A powerful combination of Cyclic Redundancy Code (to detect errors along the tape) and Reed-Solomon Code (error-correcting code across the width of the tape) ensures that all errors in the signals from one or two tracks can be fully corrected. Tape defects, dust or dirt rarely extend for more than one or two track-widths across the tape, so that under most normal conditions click noise from error signals cannot arise. When errors beyond the capacity of the RSC arise, the error signal is instantaneously detected and dealt with by muting and interpolation. For the large number of errors generated at a splice, other PCM recorders generally use muting, completely interrupting the signal. In the X-80 cross-fade techniques are used to avoid this interruption. This is effective even with a pure sine wave which constitutes the most severe test. In the normal musical signal, the result is completely inaudible, with a smooth transition between the signal before and after the splice.



X-80 TRANSPORTABLE MODEL

To completely eliminate all wow and flutter effects, synchronizing pulses are added to the signal being recorded. These pulses are generated by an internal quartz-crystal clock. When the signal is played back, it is first written directly into a buffer memory, and then read out with the recorded pulses in perfect synchronism with the same quartz-crystal clock. This means that the tape-speed control is as accurate as the quartz-crystal clock, making wow and flutter negligible. And, because wow and flutter are effectively eliminated, so is the objectionable inter-modulation distortion always associated with them.

Synchronizing pulses may be lost at a splice, with the danger of slipping out of synchronism (breaking the servo-loop). Mitsubishi eliminates this by a unique "dummy-pulse selection" method. Pulses are recorded at closer intervals than actually needed. When the phase shift associated with a splice is detected it is immediately compensated for by selecting a new pulse train (with the optimum phase) from among these "dummy" pulses. There is therefore no possibility of losing synchronization at a splice.

Although the X-80 Series Master Recorders use extensive computer technology, they look and operate just like analog recorders. The X-80 is designed by professional audio engineers for professional recording engineers. Anyone experienced with analog master recorders can operate them, using well-established techniques and profiting from accumulated experience.

The X-80A Console Master Recorder is similar in size and weight to most analog recorders, and can be freely and easily moved around the studio, or from one studio to another. The X-80 is even more compact: the transport and processing sections can be unplugged and carried separately for location recording.

The X-80 Series units are not sensitive to dust or dirt: two of the eight tracks could be seriously affected by accumulated dust or dirt before an audible deterioration is noticed. There is no need to meticulously clean the heads before each session, although daily check is recommended.

The CUE button on the deck section lets you hear the analog cue track, invaluable for locating edit points. The Edit button lets you "scrub" tape across the head by manipulating the tension arms. Manual "rocking" is also possible. The Slow-Wind feature is also a helpful addition: press the slow-wind button, and the tape will be spooled smoothly and evenly at a speed faster than normal playback. In this way the finished tape is always ready to store without fear of edge damage.

Reproduced with permission from materials ©1983 by Digital Entertainment Corp.

DIGITAL ENTERTAINMENT CORP. PROFESSIONAL DIGITAL AUDIO

A SUBSIDIARY OF
MITSUBISHI ELECTRIC SALES AMERICA, INC.

69 North Street
Danbury, CT 06810
(203) 744-3226 Telex 703547

X-80 SERIES (CONTINUED)

There is pushbutton selection of monitor functions, with a choice of CUE (monitor analog track for locating edit points) or TAPE (monitor of digital audio recording in progress). The special EE monitor allows the signal to be monitored after it has passed through the entire electronic signal processing system (record and play) excluding the actual magnetic recording portion.

Built-in speakers greatly facilitate monitoring for cut and splice tape editing without the need for external monitor facilities. Both recorders include a headphone amplifier.

PEAK-LEVEL AND VU METERS

Accurate monitoring of the peak-level setting is important because of the form that clipping distortion takes in digital audio systems. But with an available dynamic range of 90dB and no tape hiss, there is no need to operate with record levels bordering on the clipping point. With the accurate readings of the peak-level LED indicators, correct recorder headroom can be easily established on a case by case basis.

SMPT CODE TRACK

The Code Record Key (C-REC) enables SMPTE signals to be recorded either with the original recording, or afterward for precise synchronization with video and audio recorders, and with motion picture tracks. SMPTE code is recorded on a dedicated tape track.

DUBBING MASTERS

One of the key advantages to the X-80 Series recorders is the digital dubbing feature. Any number of mastertapes can be easily produced without suffering from the generation loss and added noise and distortion always associated with copying in the analog domain. Each successive digital copy is exactly identical with the original mastertape.

CUT AND SPLICE EDITING

Possibly the greatest convenience of all, the conventional cut and splice feature means that digital tapes prepared on the X-80 Series recorders can be edited in precisely the same way as analog tapes.

The mechanical simplicity of the fixed-head configuration combines with the ease of editing, to give digital audio recording the capabilities the entertainment industry has been waiting for. (Cut and splice editing is not possible in video cassette based systems.) The edit is actually a digital electronic crossfade of a 2.5 mS duration performed by an internal editing device each time the mechanical tape splice passes across the heads in playback.

MONITOR IN RECORD

The X-80 Series recorders "read after write" to provide instant monitoring during the actual recording for an exact indication of the tape signals. This is invaluable in assuring the operator that perfect recording is actually taking place. (Monitor from tape while recording is not possible in video cassette based systems.)

FULL COMPATIBILITY

Although the X-80 Series recorders utilize eight PCM tracks across the width of 1/4 inch tape, tapes made on different X-80 recorders are completely interchangeable. Alignment of the heads is performed at the factory to within a tolerance of 10 microns. The head assembly is mounted in a rigid heavy-duty diecast frame dimensionally stable to maintain the same precise limits.

ULTRA HIGH PRECISION

Every motor used in the X-80 Series recorders is a precision built DC servomotor. Constant tape tension and highly accurate tape guides reduce tape skewing treating the tape very gently. Tape loading is as simple as with analog recorders.



X-80A STUDIO CONSOLE MODEL

FERRITE HEADS

The heads are constructed of ferrite, with an ultra-smooth mirror-finish path surface that is "kind to tape" and resistant to wear, maintaining peak performance specifications for longer periods.

FAST ALIGNMENT

Changing of the head stack is easy and fast, maintaining no threat to compatibility with other recorders. Special test jacks are provided to make azimuth adjustment simple by the use of an oscilloscope.

ERROR CORRECTION

Digital drop out errors always occur in digital audio recording systems. A most important feature is the digital recorder's ability to correct such errors. In the X-80, the digital stereo channel program is recorded on eight PCM tracks through software-controlled interleaving of the digital audio data among tracks. Two of the eight tracks can be completely out of commission without affecting the stereo audio program. In the rare event of massive drop outs, the X-80 still conceals the errors by a combination of interpolation and muting. This powerful error correction system makes the X-80 Series the most reliable and advanced digital audio recorder available.

CUT AND SPLICE CORRECTION

"Razor blade" splice is detected by the X-80 as the tape passes across the heads, instantly computing the electronic correction and crossfade required to "fill-in" and correct the splice, without any audible deterioration. Once the X-80 tape editing is complete, the original can be copied digitally to a second tape without generation loss, providing for a library master without mechanical tape splices.

DIGITAL ENTERTAINMENT CORP. PROFESSIONAL DIGITAL AUDIO

A SUBSIDIARY OF
MITSUBISHI ELECTRIC SALES AMERICA, INC.

69 North Street
Danbury, CT 06810
(203) 744-3226 Telex 703547

THE X-800 32 CHANNEL RECORDING SYSTEM

The X-800 32-channel Digital Audio Recorder, utilizing standard one inch videotape at a tape speed of 30 ips, eliminates the limitations of earlier primitive digital audio multitrack recorders. Together with the X-80 Series Master Recorder, the X-800 offers producers and artists the most creative and versatile recording and mixdown facility ever designed. The tremendous potential of digital audio comes alive with ultralow distortion, wide flat frequency response, a dynamic range greater than 90 dB on each of 32 channels, and freedom from analog recording and storage degradation.

All 32 channels are available at all times for musical recording. There are separate additional tracks for SMPTE code, error correction and audio cue signals. There are even spare channels for data storage for innovative use in the future. Recordings made on one X-800 are completely interchangeable with those from another. This is important for the exchange of tapes between studios and for the recording engineer who records different sections of a project at different studios.

The X-800 takes over where the last generation of analog multichannel recorders left off. In addition to the indisputable superiority of its audio quality, a built-in microprocessor provides a comprehensive range of automatic, semi-automatic and preset/memory functions. Yet, despite its sophistication, it is immediately operable by anyone who is familiar with typical analog multichannel recorders.

With the internal patch panel of the X-800, digital ping-ponging is possible between each of the channels. A special connector for digital dubbing between the X-800 and the X-80 is provided.

Sync recording is easy with the X-800. Although the recording and playback heads are physically separated, both signals are synchronized within microseconds by a special digital buffer memory that delays the leading signal by precisely the right amount.

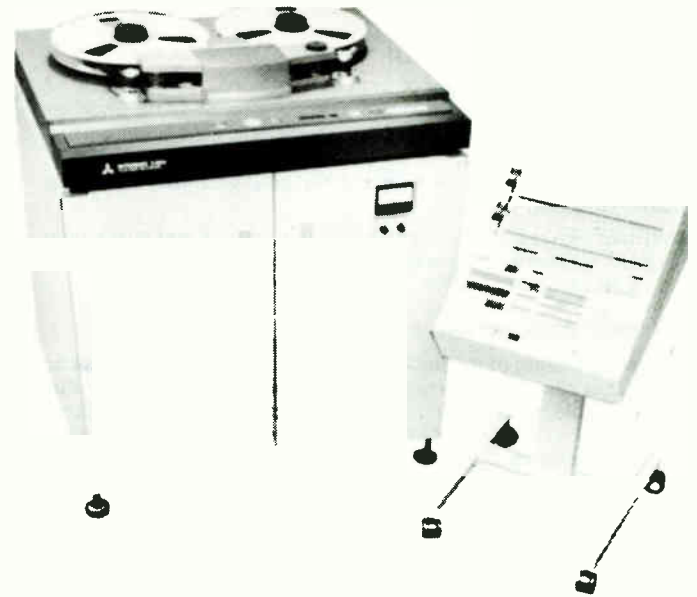
Real-time editing is a critically important feature of multichannel recording. To avoid the obtrusive click noise that affects crude direct coupled punch-in and punch-out (where the new digital signal directly replaces the corresponding section of the previous take), the X-800 uses an automatic cross-fade function. The internal computer notes the punch-in command and automatically begins precisely balanced fade-in and fade-out just before the changeover point. The electronic splices are completely inaudible and absolutely free from click noise.

The speed of the tape transport in the X-800 is controlled by a phase-locked feedback loop that locks the frequency of rotation of the capstan to a reference frequency derived from the internal crystal oscillator. Varying this reference frequency is a convenient and extremely accurate means of achieving the plus or minus 10% variation in tape speed needed for precise pitch alignment between vocalists and instruments or instrumental groups in sessions made on different days or under widely different conditions.

No need to "steal" a track for important tasks like SMPTE coding in critical sync recordings. All 32 channels are always available. A separate digital track is available for SMPTE coding to give perfect sync with motion-picture sound tracks or video tapes. Two analog CUE channels are useful in giving an audible signal at non-synchronous speeds (the PCM channels can only be monitored when the tape drive has been locked at rated speed under crystal oscillator servo control). The analog cue channels can therefore be used to locate specific events along the tape at any speed. Two extra digital channels are provided for future application. These data tracks may be used for storage of automation mixdown data or playback automation for broadcasting.

FREEDOM FROM WOW AND FLUTTER

Synchronizing pulses generated by an internal quartz-crystal oscillator are added to the signal being recorded. When the digital audio signal is played back, it is first written directly into a buffer memory and then read out with the playback pulses in perfect synchronism with the same quartz-crystal oscillator. This means that the levels of wow and



X-800 32 CHANNEL RECORDING SYSTEM

flutter are determined by the extremely high accuracy of the quartz-crystal "clock". With wow and flutter effectively eliminated, so is the objectionable intermodulation distortion associated with it.

ERROR CORRECTION CODE

The superiority of the Mitsubishi error-detecting and error-correcting codes adopted in the X-800 has been very clearly demonstrated in the two-channel X-80 Master Recorder. In the X-800 it is even more dramatically effective: 8 of the 32 signal-carrying channels could be affected by tape defects or dust and dirt before there would be any noticeable deterioration in audio quality in any channel. This is achieved by the use of extra error-correcting information recorded on additional tracks (two for every eight signal carrying tracks) giving an average of 1.25 tracks per channel. Unlike other digital recorders, which generally have only one track per channel and an error-correcting code that is recorded separately along with each track, the X-800 has an error-detecting Cyclic Redundancy Code (CRC) interleaved with the signal along each track and a powerful error-correcting Reed-Solomon Code (RSC) recorded across the width of the tape. This combination makes the X-800 nearly impervious to the effect of even serious dropouts. All errors can be detected and the great majority can be completely corrected. Massive errors can still be effectively concealed by automatic interpolation and muting techniques. Error concealment should only be necessary once every two or three hours of continuous use under normal operating conditions, and an audible mis-operation should arise only once every 60 years. The X-800 therefore operates completely free of error-induced noise.

TAPE TRANSPORT

All tape transport functions of the X-800 are under microprocessor control. The tape transport is a heavy-duty precision built unit and every motor used is a high-performance DC servomotor under accurate control to give the optimum tape tension and driving torque under all operating conditions. The tape is never subjected to any unnecessary strains, and never spills or flaps at the end of the reel. No pinch rollers are needed. The 1" tape remains in ideal contact with the carefully contoured head assemblies. Tape loading is simple and straightforward.

Reproduced with permission from materials ©1983 by Digital Entertainment Corp.

DIGITAL ENTERTAINMENT CORP. PROFESSIONAL DIGITAL AUDIO

A SUBSIDIARY OF
mitsubishi electric sales america, inc.

69 North Street
 Danbury, CT 06810
 (203) 744-3226 Telex 703547

X-800 (CONTINUED)

HEAD ASSEMBLY

The 45 track head assembly (40 PCM tracks, two analog, one SMPTE, and two data tracks) is a masterpiece of high precision. Built of ferrite, they have the advantage of an ultrasmooth mirror-finish surface kind to tapes and resistant to wear (so that initial performance specifications are retained for much longer than with softer materials like permalloy). The in-line configuration of the heads in the X-800 makes for easy field alignment. Together with the extremely powerful error-correction capability, this is more than adequate to ensure that recordings made on different X-800s are fully compatible. The one-track-per-channel configuration adopted by other digital audio recorders imposes such strict requirements on head alignment that no two tape recorders can be expected to satisfy them in exactly the same way, making recordings incompatible. The result is not just degradation of the audio signal, but even the complete loss of one or more channels. Recordings made on an X-800 suffer neither loss nor degradation, and are certain to be compatible from studio to studio and machine to machine.

AUTO LOCATOR

All event and locating functions of the X-800 are under microprocessor control. One glance at the control panel will tell the mixing engineer that he has a comprehensive, flexible and time-saving system at his fingertips. Simple, positive-action switches give instant control over individual channels, groups of channels, or all channels at once, with LED illumination to identify operating conditions. For ease of control, the numbered channels are arranged in two 16-channel banks, one above the other, with individual control of all necessary track functions. The channel banks are in turn subdivided into two groups: 1-8 and 9-16. This gives tremendous flexibility in allowing you to preset channel groupings and specific channel setup conditions.

Memories are provided that enable you to store and recall four 32-channel recording or monitoring setups. The Not Play mode corresponds with normal analog practice, where the console can be monitored as soon as the Play mode is left, without plugging or unplugging the mixing-console leads. This saves considerable time and effort.

An internal SMPTE generator and reader is provided, but the X-800 can also be switched to record a compatible external code. Alternatively, if SMPTE coding is not required, takes can be identified by counting tachometer pulses without the need to initiate specific code-track recording.

The All-Mute key sets all channel outputs to the muting mode. Variable speed is pushbutton controlled with indication of percentage change in tape speed. Switch selection between internal quartz-crystal oscillator, external quartz-crystal oscillator (from a second X-800, X-80 or XE-1), external VCO or 9.6kHz SMPTE clock signals is provided. In the SMPTE mode tape-position and take-time indication is given in minutes, seconds and frames, offering free compatibility with SMPTE time codes. Take time can be set with any keys: shift key, cue-mark key, auto-mark key or the ten-key pad. Offset keys enable preroll and postroll times to be set one or more seconds away from the event. Transfer keys are provided for indicated values between tape position and take time.

AUTO PUNCH-IN/PUNCH-OUT

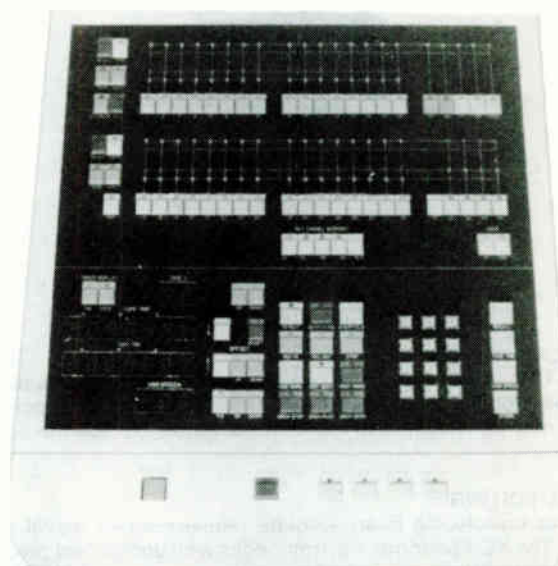
Punch-in and punch-out could hardly be simpler: it is just a matter of "punching" a button. With absolutely no degradation of audio quality, the punch-in and punch-out points are completely free of noise, allowing overdubs to be done at any point in the music. There are three modes available: the points may be selected (and programmed) "on the fly", or SMPTE locations may be entered at the keypad for automatic operation (the Auto-Repeat function allows rehearsal), or use the Auto-Mark feature. This innovative method storing the locations of "on the fly" performed punches for later recall or rehearsal makes real-time editing simpler than ever before.

100 MEMORIES

Up to 100 separate take times can be stored for immediate recall. Used with the comprehensive search functions, they eliminate hunting back and forth along the tape and free the mixing engineer for greater creativity.

COMPREHENSIVE SEARCH FUNCTION

In addition to the basic search and stop function, which allows the X-800 to move rapidly to any selected take and then pause, there is also a search to zero and stop mode, which winds the tape back to the start of recording. Most useful will be the search to play mode, in which the X-800 moves to the start of the selected take and automatically enters the play mode.



DIGITAL AUDIO SYSTEM

Dynamic Range	Better than 90 dB
Sampling Frequency	48 kHz
Quantization	16 bit linear
Frequency Response	20 Hz - 20 kHz
Distortion	Less than 0.05%
Line Input	+ 4 dBm nominal + 19 dBm max
Line Output	+ 4 dBm nominal + 24 dBm max

DIGITAL AUDIO HARDWARE

	X-800	X-80/X-80A
Digital Audio Channels	32	2
Tape Width	1"	¼"
Tape Speed	30 ips	15 ips
Record Time	1 hour	1 hour
Analog Cue Channels	2	1
SMPTE Channel	1	1
Data Channels	2	0

Reproduced with permission from materials ©1983 by Digital Entertainment Corp.

Prices and Specifications Subject to Change Without Notice.

B-357

DIGITAL ENTERTAINMENT CORP. PROFESSIONAL DIGITAL AUDIO

A SUBSIDIARY OF
MITSUBISHI ELECTRIC SALES AMERICA, INC.

69 North Street
Danbury, CT 06810
(203) 744-3226 Telex 703547

XE-1 ELECTRONIC EDITING SYSTEM

For the demanding requirements of full feature electronic editing and system control, the XE-1 Electronic Editor is an important addition to the cut-and-splice editing facilities already available on the X-80 Series recorders. The XE-1 is housed in a compact and convenient console also providing synchronizing facilities for X-80 and X-800 recorders.



XE-1 ELECTRONIC EDITING SYSTEM

MODULAR DESIGN

The XE-1's display monitor and keypad may be remotely mounted in a convenient location in or near the recording console. The processing section may be relocated to rackspace available outside the control room.

DIGITAL EDITING

Electronic crossfading is an absolute requirement of digital audio editing. The XE-1 performs electronic edits with unmatched precision and ease, simply by entering the appropriate locations by SMPTE code and specifying the electronic crossfade duration. Some musical edits may require a longer than normal electronic crossfade to smooth the edit. Accordingly, the XE-1 offers 20 different crossfade durations from 5 to 100 milliseconds in 5 mS steps, selectable from the keyboard.

SMPTE TIME CODE

The XE-1 generates and reads time code from its internal SMPTE generator. You may also use time code from an external source.

EDITPOINT WAVEFORM DISPLAY

For difficult edits, simply attach an oscilloscope and visually monitor the editpoint waveform for precise edit point matching.

DIGITAL FADER

In difficult edit operations, where levels are improperly matched, a digital fader is provided to exact matching. This fader may be used for fade-in and fade-out at any time or to ride the digital audio level while transferring digitally from the X-800 to the X-80 (and back).

AUTO LOCATOR

The XE-1 can control up to four X-80 Series recorders for maximum editing flexibility. Reading the SMPTE time code channels of the recorders, the XE-1 serves as an auto-locator, greatly simplifying the control and location of edit points. The X-800 can also be position controlled by the XE-1.

EDIT REHEARSAL

The XE-1 enables rehearsal of the edit before actual recording. Once the edit point is located and programmed, simply select the desired preroll time and rehearse the edit, making changes in level and crossfade duration until perfect. After entering the appropriate information into the XE-1, simply depress the Auto-Edit key and the edit will be performed automatically.

EDIT DATA MEMORY

The XE-1 has the ability to remember data for up to twenty edits. In the event of a power failure or at power shut off, internal battery backup protects the data storage.

FOUR CHANNEL SYNCHRONIZATION

The XE-1 provides synchronization of two X-80 Series master recorders for four-channel recording and playback.

X-800 RECORDER CONTROL

The XE-1 also serves as controller for the X-800 32 channel recorder, providing synchronization for editing and digital transferring to other recorders.

REAL TIME EDITING

The location of edit points can be done by monitoring the analog cue track of the recorder. This can be done at any speed and represents an exact position of the digital audio information.

ELECTRONIC EDITING AND MASTER DISTRIBUTION

The XE-1 Electronic Editing System is the most advanced and cost-effective digital audio editor available, offering innovative features not yet part of standard editing procedures. It performs critical and difficult edits quickly, reliably, and with operational ease. Designed to offer practical solutions to future editing problems, the XE-1 Editor represents a system for future growth, extending the horizon of capabilities for the creative audio editor and the progressive studio.

MULTITRACK EDITING WITH 2-TRACK

Begin by recording SMPTE code on both the X-800 and the X-80 tape. Then digitally dub the required program from one or two tracks on the X-800 to the X-80 recorder. Use the XE-1 to synchronize the two recorders and select the desired punch-in and punch-out points. The insert edit can now be performed automatically.

PRE-MIXING TO OPEN UP TRACKS

If all 32 channels of the X-800 have been filled up and more tracks are needed, simply mix certain tracks down through a high-quality analog console, recording onto two channels of the X-80 recorder. Digitally dub these two channels in perfect sync from the X-80 back to two channels of the X-800, thereby freeing up extra channels. The generation loss resulting from the mixdown through the analog console is negligible. The digital transfer from X-80 back to X-800 is without any generation loss whatsoever. (If two channels are already free on the X-800 recorder, simply record the mix onto those two tracks.)

MASTER COPYING WITH THE X-800

In the analog world, the performance of each track on the 1/2" 2-track recorder is significantly better than each track of the 24-track recorder. In the digital domain, the performance of each channel on the 32-track recorder is equal to that of the X-80 Master, with a better than 90 dB dynamic range. To produce master copies of the original master tape, simply transfer the master digitally to two channels of the X-800. Then copy the program digitally back to the X-80 recorder and make as many copies as needed.

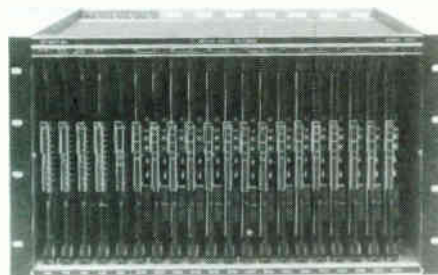
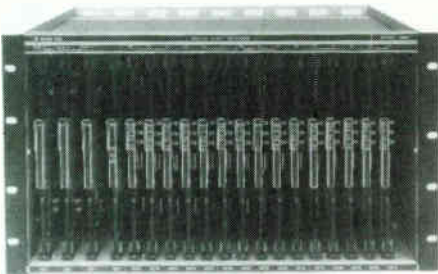
Di-Tech knows your needs aren't the same as every other broadcaster, so when we build equipment like audio and video routing switchers we build a whole line of them. That way you can select the exact matrix size and mechanical configuration that meets your requirements, for audio only, video only or audio-follow-video with 1, 2, or 3 channels of

- Video Presence Detectors
- Touch Tone Systems
- A/V Routing Switchers
- Audio Monitor Amplifiers

audio per input. So why settle for less when you can select Di-Techs surprisingly affordable equipment custom-tailored to your needs?

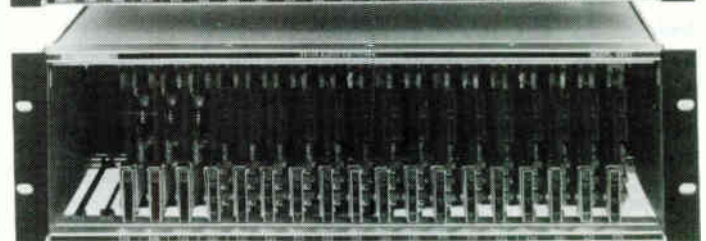
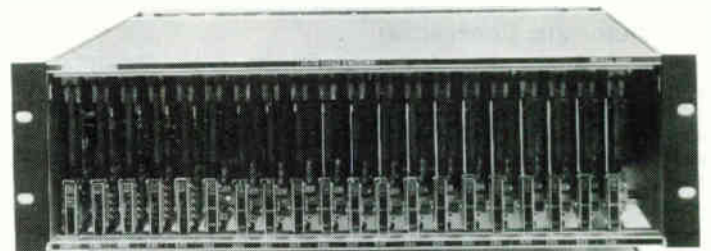
Whether the application be for radio or television station, mobile vans, remotes or unattended sites, Di-Tech has equipment for you.

- Transmission Line Supervision Amplifiers
- A/V Pulse Distribution Amplifiers
- Computerized Real-Time
- Weekly Event Controllers



Model 5840*

Video Assembly expandable beyond 40x15*
Audio Assembly expandable beyond 40x15*

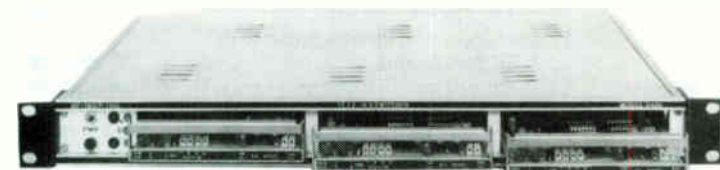


Model 5800*

Video Assembly expandable beyond 20x15*
Audio Assembly expandable beyond 20x15*

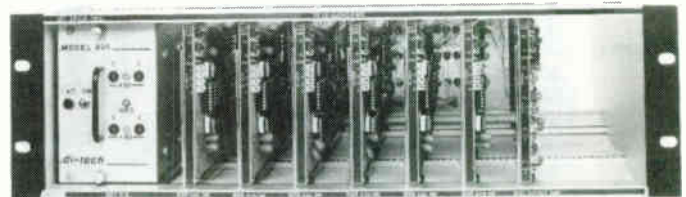
***Both Models 5800 and 5840 feature:**

- Up to 3 channels of audio per input within the same frame
- Expandable inputs and outputs beyond the stated matrix
- Audio only, video only or AFV; V.I. switching



Model 5400

Matrix Sizes: 4x1, 8x2, 12x2,
or 3-4x1 or 4x3, AFV



Model 5500

Matrix 16x2 to 28x2, AFV

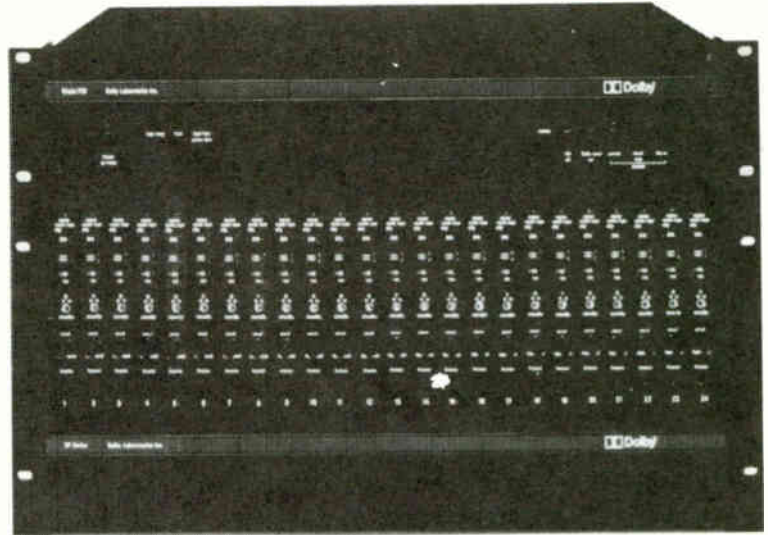
DOLBY LABORATORIES, INC.

731 Sansome St.
San Francisco, CA 94111
(415) 392-0300 Telex 34409

NOISE REDUCTION UNITS

SP Series Multi-track Noise Reduction Unit

The Dolby SP Series has been specifically designed for multi-track recording in music, radio and TV broadcasting applications. The SP Series provides up to 24 tracks of Dolby A-type noise reduction in only 12 1/4" of rack space. The SP Series' combination of compact size, ease of operation, and new features makes it ideal for equipping new recording facilities and upgrading existing ones. Separate regulated power supply unit with electronically-controlled output protection. Low-noise fan cooling. LED display for each track permits accurate Dolby level calibration. Front panel "UNCAL" control for each track permits rapid resetting of Dolby level for playback and punch-in on nonstandard-level tapes, then instant restoration of preferred studio Dolby level without recalibration. User-selectable option of "hard" or electronically-buffered bypass of individual tracks and of all tracks simultaneously. Discrete FET switching for reliable, noise-free routing of audio signals.



SP SERIES

Model 361 One Channel Record or Playback (with Automatic Changeover)

The Model 361 is a single processor unit with built-in changeover facilities. This model is designed to serve one recorder track during both recording and playback (with monitoring of line-in or the encoded tape signal during recording). The operating mode is set by push-button switches on the front panel. The use of Dolby 361 units in multi-track work is facilitated by the built-in provision for automatic record-play changeover, controlled from the recorder. **\$1350.00**



361

\$1350.00

Model 360 One Channel Record or Playback

The Model 360 is a basic single channel noise reduction processor. It can be used for either recording or playback, the operating mode being selected on installation by front panel push-button switches. When changing mode, signal re-connection at the rear of the unit is necessary. This model is designed for monitoring, editing and disk-cutting, or for applications requiring simultaneous record-playback facilities, where one unit is used in record and the other in playback. **\$1100.00**



360

\$1100.00

DOLBY NOISE REDUCTION PRODUCTS FOR FREE-STANDING APPLICATIONS

334	Dolby B-type noise reduction unit, two-channel for FM broadcast applications, encode or decode	\$ 1900.00
330	Dolby B-type noise reduction unit, two-channel encode or decode, for tape duplication	1900.00
360	Dolby A-type noise reduction unit, single-channel record or playback	1100.00
361	Dolby A-type noise reduction unit, single-channel record or playback (automatic changeover)	1350.00
SP Series	Dolby A-type noise reduction for multi-channel applications; price list available on request	
360	Single channel record or playback	1100.00
361	Single channel record or playback (automatic changeover)	1350.00
SP8	Eight track noise reduction unit	9400.00
SP16	Sixteen track noise reduction unit	15,400.00
SP24	Twenty-four track noise reduction unit	21,400.00
SP32	Thirty-two track package (SP24 plus SP8)	29,100.00
SP48	Forty-eight track package (2 x SP24)	41,100.00

330 SERIES—TWO CHANNEL AUDIO NOISE REDUCTION UNITS (B-TYPE)

330	Duplication processor includes CN.66 B-type noise reduction module	\$ 1900.00
330C	Duplication processor includes CN.219 C-type noise reduction module	2050.00

CN.66	B-type noise reduction module	900.00
CN.219B	C-type noise reduction module (retrofit for Model 330)	1050.00
334	B-type FM broadcast processor	1900.00
CN.101	'Dolby B' labels, per 1000	10.00

OPTIONAL ACCESSORIES FOR SP AND/OR 360 SERIES

CN.22	Noise reduction module	\$ 600.00
CN.35	NRM tester and test extender	650.00
CN.40	Half-speed noise reduction module	675.00
CN.55	Noise reduction module (for special applications)	600.00
CN.100	'Dolby A' labels, per 1000	10.00
Cat. 230	Carrier and interface card	425.00
PS2	Power supply unit (one included with each SP Series unit)	2200.00
Manual	Extra copy of manual (one provided with each unit)	20.00
Optional Accessories for MH Series still available		
CN.44H	Interface module for MH Series units	310.00
CN.45	Common facilities module for MH series units	190.00
CN.46	Common facilities module for MHX series units	80.00

STUDIO EQUIPMENT FOR SPECIAL APPLICATIONS

CN.43	Film sound processor (for use with 360 Series unit)	\$ 825.00
CN.98A	CCIR/ARM Noise weighting filter	350.00
OPU-1	Two channel optical film sound pre-amplifier unit	1500.00
E2	Single channel third-octave equalizer	1100.00
364	Single channel playback only NR unit for film applications	1000.00

DOLBY LABORATORIES, INC.

731 Sansome St.
San Francisco, CA 94111
(415) 392-0300 Telex 34409

NOISE REDUCTION UNITS

Two-channel Noise Reduction Modules

The Dolby Catalogue Numbers 221B and 226 noise reduction modules plug directly into professional 1" Type C video tape recorders in place of their original audio modules. They duplicate the record/play functions of the modules they replace while adding two independent channels of Dolby A-type noise reduction for audio tracks 1 and 2. Each channel's noise reduction function is independently switchable, and once installed and calibrated, operation of the modules is fully automatic.

The plug-in Dolby NR modules require no modification of the recorder, minimize installation and operational complexities, and maintain the spacesaving benefits of the Type C Format. In addition to providing the benefits of Dolby noise reduction, the modules also offer improved low-frequency response and record crosstalk compensation. With the addition of the Dolby CN 221B or 226, the audio performance of the VTR for which it is designed can rival that of professional audio recorders.

CN 234 Two-channel Dolby Noise Reduction Module for the Sony BVH 2000

The Dolby CN 234 has been designed to incorporate two channels of Dolby A-type noise reduction in the Sony BVH 2000 1" Type C video tape recorder. It plugs directly into the BVH 2000 in place of its AU-27 audio board, duplicating the noise reduction feature. No modification of the VTR is required, and once installed and calibrated, operation of the CN 234 is fully automatic.

Like the other Dolby noise reduction modules for other 1" VTR models, each channel's noise reduction function is independently switchable. In addition, an LED meter for each channel is built in to simplify Dolby level calibration. The CN 234 also features playback controls which permit temporary re-calibration for non-standard-level tapes without disturbing the standard studio calibration level.

Today there are more than 70,000 professional audio tracks throughout the world equipped with Dolby A-type noise reduction. An increasing number is to be found in teleproduction studios, as more and more teleproduction engineers find Dolby noise reduction vital to their efforts to improve television sound. The Dolby CN 234 has been designed to facilitate that effort, by minimizing the complexities of both adding and using Dolby noise reduction.



221B/226



CN 234

Dolby Noise Reduction Products for Incorporation Within One-inch VTRs

CN.221B	Two-channel noise reduction module for Sony BVH-1000 and BVH-1100 (includes 2 x CN.55, interface circuitry and record/play audio circuitry. Replaces Sony Audio 1 and 2 record/playback module; no modifications to VTR necessary)	\$2000.00
CN.226	Two-channel noise reduction module for Ampex VPR-2 and 2B (includes 2 x CN.55, audio circuitry for channels 1, 2, and 3. Replaces Ampex audio 1, 2, and 3, record/module; no modifications to VTR necessary)	2300.00
CN.234	Two-channel noise reduction module for Sony BVH 2000 (includes 2 x CN.55, and record/play audio circuitry). (Replaces Sony Audio 1 and 2 record/playback module; no modifications to VTR necessary).	2100.00

ACCESSORIES

CN.66	Dolby B-type noise reduction module, two-channel	\$900.00
CN.22	Dolby A-type noise reduction module, single-channel	600.00
CN.40	Dolby A-type noise reduction module, 1/2 speed	675.00
CN.55	Dolby A-type noise reduction module, single-channel (for use with CN.221, CN.226, and CN.234)	600.00
CN.233	Control interface (for use with CN.221 and CN.226)	300.00
CN.212	Backplane Adaptor for Ampex VPR-2 (used with CN.255 only)	100.00
CN.100	'Dolby A' labels per 1000	10.00
CN.101	'Dolby B' labels per 1000	10.00
CN.35	NRM tester and test extender for CN.22	650.00
CN.106	Cable assembly for interfacing Dolby Model 334 with Orban Optimod 8000	50.00

The Dorrrough Loudness Monitor



Dimensions: 8 1/4" X 27/8" X 5 1/2"

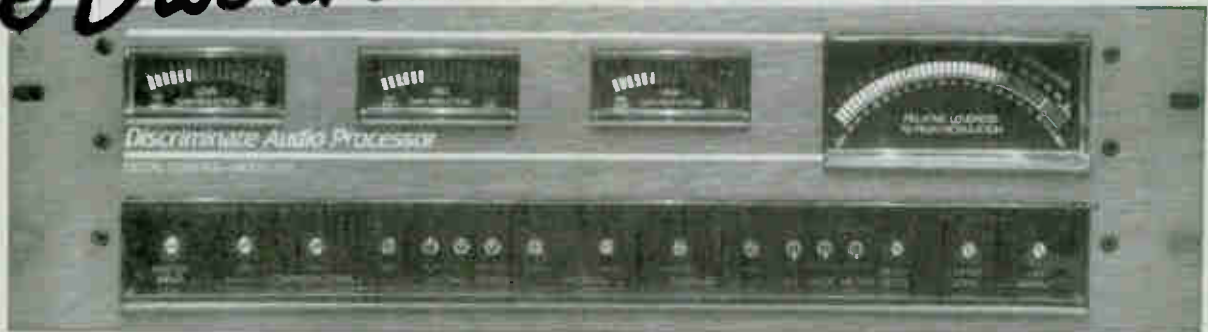
Model 40-A

Simultaneous display of Peak and Persistence functions.
With AM, FM, and TV

It's not just a third standard; It's becoming the standard.

Each day more broadcasters and production houses discover how accurate this visual display can be for achieving uniform loudness from source to source. Available as a single unit complete with power supply, dual or single rack mount, or small console mounting.

The Discriminate Audio Processor



Model 610

FM's Hottest

A complete processing package including its own stereo generator.

Beyond a doubt the most transparent, yet still the loudest processor developed.
The most technologically advanced unit on the market today.

DORROUGH ELECTRONICS

5221 Collier Place
Woodland Hills, California 91364
(818) 999-1132

Or a Dorrrough Distributor



B0-001 BOOSTER ONE

B0-002 BOOSTER TWO

B0-001 BOOSTER ONE

Features

- Amplify a standard carbon intercom headset up to 800%
- No battery
- No modifications
- Independent volume
- Talk switch
- New 1/4" male plug

B0-001 amplifies standard carbon head-sets using existing voltage. It senses the proper wiring in most 2 and 3 wire Carbon Intercom Systems. Communications are always maintained without constant ambient noise in the System. A newly engineered 1/4" male, 3-circuit plug seats snugly and does not intermit in most jacks. A removable belt clip adds to its convenience.

A Booster at each headset will improve total system performance with a minimum of effort.

The little black box that makes a big difference. Light-weight, rugged aluminum 3-1/4" x 2-1/8" x 1-1/8" with a 12 ft. retractable cord. Shp. Wt. 7 oz.

B0-001\$79.00

B0-002 BOOSTER TWO

Features

- Amplified Dynamic Headsets on a Carbon Intercom System
- No battery
- No modifications
- Talk switch
- Dynamic or Carbon Headsets

B0-002 achieves putting a Dynamic or Carbon headset on a 2-or 3-wire Carbon Intercom System without shielded wiring or additional power supplies. Like B0-001, no modifications in wiring are required. The mic output is also increased in Booster Two, along with hearing level increases as in Booster One.

Achieving the quality of Dynamic with the reliability of Carbon, expands the life and viability of the Carbon System. At 7.5 oz., this rugged, black aluminum case w/12 ft. cord and plug is a winner.

B0-002\$99.00

M-100 BOOSTER COMMAND

Features

- Operates on inexpensive wiring up to 1000 ft.
- On/Off switch with LED power indicator
- Isolated program audio input source
- Portable, lightweight - under 12 ozs.
- 1/4" ring, tip, sleeve intercom jacks
- Operates 6 common Carbon Intercom Headsets or more advanced Booster products using professional Dynamic Headsets
- Interconnects with most other intercom systems for expansion

Requirements

Power In: 9-35 VDC/500 m a. 2 conductor 1/8" mini phone plug

Carbon Headset: Mic 50 ohms/Ear 250 ohms

Dynamic Headset: Mic 150 ohms/Ear 275-600 ohms

Headsets In: 1/4" phone plug. Ring-positive (+). Tip-negative (-). Sleeve - N.C.

Program Feed: RCA - type phono plug

Weight: 11.5 ozs.

Case: Molded Styrene, Black

Dimensions: 6 x 3.15 x 1.84"

M-100\$145.00

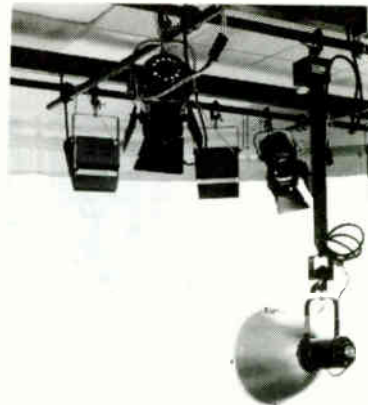


Electret Headset for use with the BOOSTER TWO ..\$39.00

SERVICES

Broadcast and Production Systems by professionals:

- ◆ Representing over 100 major suppliers.
- ◆ Systems Engineering and Installation.
- ◆ Lighting systems design for TV and Film.
- ◆ Broadcast Facility Design.
- ◆ Equipment appraisal.

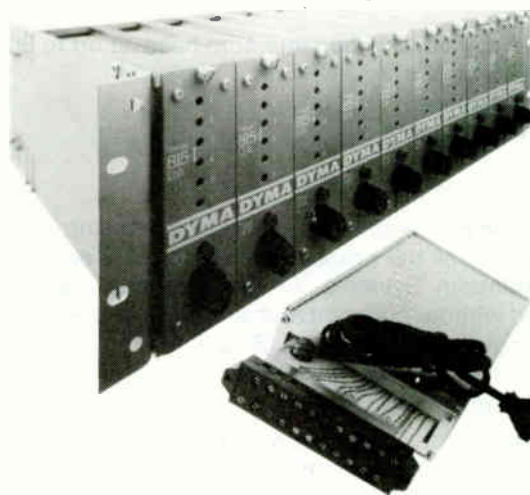


PRODUCTS

AUDIO DISTRIBUTION AMPLIFIERS

Highest Headroom, Greatest Density, Easiest Installation, Individually Powered.

Model 815 - 1 in 10 out, common gain adj.	\$298.00
Model 815I - 1 in 6 out, individual gain adj.	\$298.00
Model 815M - Monitor Amp, 12 watts RMS	\$298.00
Model 815F - Rack Frame, 10 Modules	\$180.00



AUDIO CONSOLES

The International - - 8 Mixing Channels, Rack Mount, Switchable Mic or Line, DA outputs, + 30dBm output.

Model M-1 - - - - 16 switchable inputs into 1 mono output. Handle lots of inputs in small space. \$2395

Model M-2 - - - - 8 inputs into 2 independent monaural mixers, ideal for editing suites. \$2695

Model S - - - - 8 stereo inputs into 1 stereo output. \$3295



AC LINE SURGE PROTECTORS

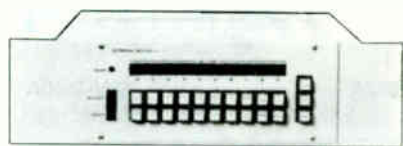
Our convenient package is still the best. Combines line conditioning and "hash" filter in compact units. Protect sensitive solid state electronics. Thousands in use by major computer and word processor manufacturers. Most models \$26.95. 6 models to choose from.



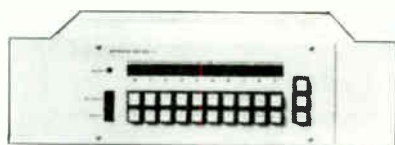
DYNAIR ELECTRONICS, INC.

5275 Market Street
San Diego, CA 92114
(619) 263-7711 TWX 910-335-2040

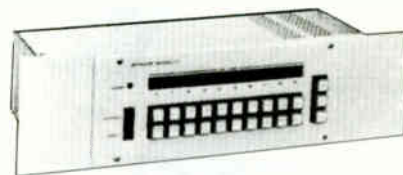
SOLID-STATE SWITCHING EQUIPMENT



SVA-100B



SAA-110A



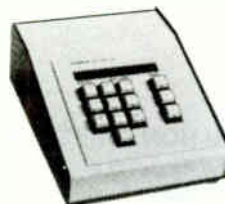
SCA-120A



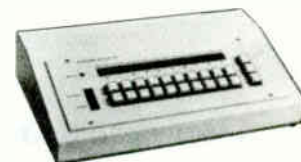
SVA-101B



SAA-111A



SCA-131A



SCA-122A

SERIES 10

The Series 10 Solid-State Video and Audio Switching Equipment provides 10-input/10-output high quality vertical interval monochrome or color video switching and on-air quality audio switching. Each 10 x 10 matrix is housed in a 5-1/4"H x 14-1/2"D x 19" rack mount chassis (13.34 x 36.83 x 48.26 cm) which includes power supply.

The control system is microprocessor-based and allows local and remote operation. Remote master and individual output bus control

panels are available to operate over a single coaxial cable control line. Up to four levels of switching, 1 video and 3 audios as an example, can be controlled locally and/or remotely. A total of 15 remote control panels may be used to control a system.

Models SVA-100B, SVA-101B, SAA-110A and SAA-111A include 10 Form A tally relays and facilities to control the slave matrices, Models SVA-102B and SAA-112A.

Notice: Series 10 equipment has been tested to show compliance with FCC Rules, Part 15, Subpart J, for Class A computing devices.

Video Switcher

SVA-100B. Self-contained, for local control. 10 inputs, 10 dual outputs with tally and regulated power supply. **\$4350.00**

Video Switcher

SVA-101B. Same as SVA-100B but for remote control operation only. Control by single coaxial comm. line. Requires remote control panel(s) option. **\$4060.00**

Video Switcher

SVA-102B. Same as SVA-101B but for slave control only. Controlled from switcher control bus only. (Model CC-1130A Control Bus Jumper Cable Assembly not included). Tally not provided. **\$3425.00**

Audio Switcher

SAA-110A. Self-contained, for local control. 10 input by 10 output with tally and regulated power supply. **\$4050.00**

Audio Switcher

SAA-111A. Same as SAA-110A but for remote control operation only. Control by single coaxial comm line. Requires remote control panel(s) option. **\$3760.00**

Audio Switcher

SAA-112A. Same as SAA-111A but for slave control only. Controlled from switcher control bus only. (Model CC-1130A Control Bus Jumper Cable Assembly not included). Tally not provided. **\$3125.00**

Master Remote Control Panel

SCA-120A. Rack mounting. For remotely controlling all 10 outputs of video and/or audio switchers. **\$900.00**

Master Remote Control Panel

SCA-122A. Desk top use. Same as SCA-120A except for housing. **\$900.00**

Single Bus Remote Control Panel

SCA-130A. Rack mounting. For remotely controlling 1 output of video and/or audio switchers. **\$675.00**

Single Bus Remote Control Panel

SCA-131A. Desk top use. Same as SCA-130A except for housing. **\$625.00**

Switcher Control Bus Jumper Cable Assembly

CC-1130A. Switcher Control Bus Jumper Cable Assembly for control of slave matrices, Models SVA-102B and/or SAA-112A. 24 inches (61 cm) in length. **\$120.00**

Termination

TC-260A. 75 ohm BNC Termination Plug for terminating looping video inputs. **\$10.00**



DA-1510A



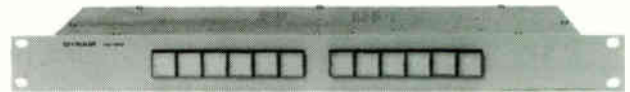
BP-1502A



SW-1540A



FR-1500A



VS-12D

SERIES 1500 VIDEO DISTRIBUTION AMPLIFIERS

Series 1500 distribution and switching products may be used as self-contained, stand alone units for desk top or custom mounting. For rack mounting applications, units can be installed in the Model FR-1500A Rack Mounting Frame which occupies only 1 1/4 inches (4.45 cm) of standard 19-inch rack space. All units are equipped with BNC type signal connectors unless otherwise noted. Mating connectors are not included.

DA-1510A

Video Distribution Amplifier. Provides four isolated 75 ohm source terminated outputs from one high impedance looping input.

- Input: 75 ohm unbalanced, high impedance looping, 1 V p-p, BNC connectors
- Outputs: 4, 75 ohm source terminated, 1 V p-p, BNC connectors
- Gain: Adjustable +/- 3 dB
- Frequency Response (ref. 1 MHz): 100 kHz-10 MHz: +/- 0.5 dB; 30 MHz: +1, -2 dB
- Tilt: Less than 1% line or field
- Differential Gain: 0.25% at 5 MHz, 10-90% APL, 1 V p-p output
- Differential Phase: 0.25° at 5 MHz, 10-90% APL, 1 V p-p output
- Hum and Noise: 65 dB RMS below 1 V p-p, 10 MHz bandwidth
- Size: Module only, 1-11/16" H x 5-3/4" W x 9" D (4.32 x 14.61 x 22.86 cm); mounted in MB-1504A desk mount, 2" H x 6" W x 9-1/4" D (5.08 x 15.24 x 23.50 cm)
- Power: 115/230 VAC +/- 10%, 50/60 Hz
- Net Weight: 2-1/2 pounds (1.13 kg)

\$300.00

FR-1500A

Rack Mounting Frame. Provides mounting for three (3) Series 1500 units in standard equipment racks. A captive screw fastener at the rear of the frame, and a guide pin at the front, secures each unit, allowing equipment to be used in mobile applications.

- Size: 1-3/4" H x 9-1/4" D x 19" rack mounting (4.45 x 29.21 x 48.26 cm)
- Net Weight: 2-1/2 pounds (1.13 kg)

\$100.00

BP-1502A

Blank Module. Fills one unused space in FR-1500A Frame

- Net Weight: 1-1/4 pounds (0.57 kg)

\$60.00

MB-1504A

Desk Mount Kit. For one Series 1500 unit. Includes rugged aluminum cover, rubber feet, and hardware.

- Net Weight: 13 ounces (0.37 kg)

\$30.00

PULSE DISTRIBUTION AMPLIFIERS

PD-1515A Pulse Distribution Amplifier

Provides 4 isolated, source terminated outputs from 1 high impedance looping input. Regenerative input, linear output. Normal output with up to 1000 ft. (305 m) Belden 8281 input cable.

- Input: 2-4 V p-p negative pulses, 75 ohm unbalanced differential, high impedance bridging, BNC connectors
- Common Mode Rejection: Greater than 60 dB, 50-400 Hz, +/- 30 V reference chassis ground
- Outputs: 2-4 V p-p negative pulses, 4 each 75 ohm source terminated, BNC connectors
- Output Return Loss: Greater than 35 dB at 5 MHz
- Output Isolation: Greater than 40 dB at 5 MHz
- Output

- Rise Time: 130 ns
- Gain: Adjustable to 2-4 V p-p
- Hum and Noise: 75 dB RMS below 4 V p-p
- Overshoot and Ringing: Less than 1.0%
- Tilt: Less than 1.0%
- Size: 1-11/16" H x 9" D x 5-3/4" W (4.32 x 22.86 x 16.61 cm); mounted in MB-1504A desk mount, 2" H x 9-1/4" D x 6" W (5.08 x 23.50 x 15.24 cm)
- Power: 115/230 V ac +/- 10%, 50/60 Hz
- Net Weight: 3 lbs. (1.36 kg)

\$325.00

EQUALIZERS

EQ-1530A Equalizer (Post Equalizing)

\$575.00

EQ-1531A Equalizer (Post Equalizing)

700.00

EQ-1532A Equalizer (Pre-Equalizer)

650.00

PASSIVE VIDEO SWITCHERS

Multiple input to single output locally controlled terminating video switchers. Units have extra contacts for user wiring of audio-follow or external cue lights.

VS-6D Video Switcher

Video Switcher. Provides passive switching of from one to six inputs to a single output. Incorporates switch-controlled terminations. Equipped with separate auxiliary switch section for user wiring of unbalanced audio, balanced audio, external cue lights, or other secondary functions. For lighted pushbutton operation, order LK-1541A Lighting Kit shown below.

- Inputs: Six (all except operating channel terminated in 75 ohms)
- Output: One
- Connectors: BNC
- Size: 1-3/4" H x 6-1/2" D x 19" W (4.45 x 16.51 x 48.26 cm)
- Net Weight: 2-1/2" pounds (1.13 kg)

\$225.00

VS-12D Video Switcher

Video Switcher. Same as VS-6D but with 12 inputs.

- Inputs: Twelve (all except operating channel terminated in 75 ohms)
- Output: One
- Connectors: BNC
- Size: 1-3/4" H x 6-1/2" D x 19" W (4.45 x 16.51 x 48.26 cm)
- Net Weight: 2-1/2 pounds (1.13 kg)

\$300.00

LK-1541A Optional Lighting Kit

Lighting Kit. For use with passive switchers. Provides 6 volts DC at 100 mA to power lamps provided with switcher. Calculator style plug-in transformer with 6 foot (1.82 meters) cable.

- Connector: Miniature male, 3.5 mm (mates with Switchcraft No. 41 jack provided on rear of switcher)
- Primary Power: 115 VAC, 60 Hz
- Net Weight: 6 ounces (0.17 kg)

\$20.00

SW-1540A 6-Input, 1-Output Passive Video Switcher

6-Input, 1-Output Passive Video Switcher. Switch controlled 75 ohm inputs. Separate auxiliary contacts included for user wiring of secondary switching functions. Lighted pushbuttons with use of LK-1541A Lighting Kit. Shown with optional MB-1504A.

- Inputs: 6 (all except input selected, 75 ohm terminated), BNC connectors
- Output: 1, BNC connector
- Switching: Break-before-make
- Size: Module only, 1-11/16" H x 9" D x 5-3/4" W (4.32 x 22.86 x 14.61 cm); mounted in MB-1504A desk mount, 2" H x 9-1/4" D x 6" W (5.08 x 23.50 x 15.24 cm)
- Net Weight: 2-1/2 lbs. (1.13 kg)

\$200.00

DYNAIR ELECTRONICS, INC. BROADCAST DISTRIBUTION EQUIPMENT

5275 Market Street
San Diego, CA 92114
(619) 263-7711 TWX 910-335-2040

SERIES 5300 DISTRIBUTION EQUIPMENT

Series 5300 Distribution Equipment mounts in a 5-1/4" x 19" rack-mounting frame (13.34 x 48.26 cm). The frame has a total of twenty mounting spaces. Two power supply modules can be used to provide redundant power supply operation. All amplifier modules include "on-board" power regulators, fuses and blown fuse indicators. AC input power is 115/230 VAC ± 10%, 50/60 Hz.

FR-5300B FRAME

Module Mounting Frame. Provides twenty spaces for Series 5300 modules. All modules can be installed without soldering. (Frame shown with modules installed.)

Size: 5-1/4" H x 14-1/4" D x 19" W Net Weight: 9 pounds . . . \$400.00

PS-5305B Power Supply Module

Power Supply Module. Mounts in FR-5300B Frame and provides unregulated dc for amplifier modules. Requires four spaces in frame. Two power supplies can be installed for redundant operation. \$500.00

AD-5370B 5-OUTPUT AUDIO DISTRIBUTION AMPLIFIER MODULE

High performance audio distribution amplifier module. Indefinite short circuit protection. Can be used in same frame with other Series 5300 modules. \$325.00

DA-5310B DUAL 1 INPUT-2 OUTPUT VIDEO DISTRIBUTION AMPLIFIER MODULE

Video Distribution Amplifier Module for high performance video systems. Two identical amplifier sections on one module, each providing 1 terminating input to 2, 75 ohm outputs. Equalization available for up to 1000 ft. (305 m) of cable.

- DA-5310B/10A Video DA, Non Equalized \$450.00
- DA-5310B/11A Video DA, Equal., Belden 8281, Unbal. In. \$75.00
- DA-5310B/21A Video DA, Equal., WECO 16 PEVL, Bal. In. \$75.00
- DA-5310B/22A Video DA, Equal., WECO 760, Bal. In. \$75.00

DA-5320B 5-OUTPUT VIDEO AND SUBCARRIER DISTRIBUTION AMPLIFIER MODULE

Video Distribution Amplifier Module for high performance video systems. Sync-Tip reference maintains dc level with changing APL. Equalization available for up to 1000 ft. (305 m) of cable.

- DA-5320B/10A Video DA, Non-Equalized \$395.00
- DA-5320B/11A Video DA, Equal., Belden 8281, Unbal. In. \$460.00
- DA-5320B/21A Video DA, Equal., WECO 16, PEVL, Bal. In. \$460.00
- DA-5320B/22A Video DA, Equal., WECO 760, Bal. In. \$460.00

DA-5330B 10-OUTPUT VIDEO AND SUBCARRIER DISTRIBUTION AMPLIFIER MODULE

Video Distribution Amplifier Module for high performance video systems. Sync-Tip reference maintains dc level with changing APL. Equalization available for up to 1000 ft. (305 m) of cable.

- DA-5330B/10A Video DA, Non-Equalized \$400.00
- DA-5330B/11A Video DA, Equal., Belden 8281, Unbal. In. \$470.00
- DA-5330B/21A Video DA, Equal., WECO 16 PEVL, Bal. In. \$470.00
- DA-5330B/22A Video DA, Equal., WECO 760, Bal. In. \$470.00

DA-5340B 4-OUTPUT VIDEO DISTRIBUTION AMPLIFIER MODULE

4-Output Video Distribution Amplifier Module and Frame Adapter for high performance video systems. 1 high impedance looping input and 4, 75 ohm outputs provided \$225.00

EQ-5350B POST-EQUALIZING AMPLIFIER MODULE

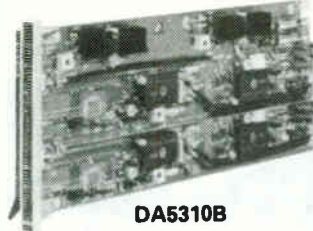
Post-Equalizing Amplifier Module. Provides up to 24dB of equalization at 8 MHz. Will equalize up to 3000 ft. (914.4m) of Belden type 8281 cable or 5000 ft. (1524 m) of WECO 16 PEVL. Provides 2,75 ohm outputs.

- EQ-5350B/51A Post-Equalizing Amp., Belden 8281, Unbal. In. \$550.00
- EQ-5350B/61A Post-Equalizing Amp., WECO 16 PEVL, Bal. In. 550.00

LA-5353B UNBALANCED TO BALANCED LINE AMPLIFIER MODULE

75 ohm unbalanced input, 124 ohm balanced line driving amplifier module. Available with pre-equalization for up to 2500 ft. (762 m) of WECO 16 PEVL cable to provide 7500 ft. (2286 m) equalized circuit when used with EQ-5350B/61A.

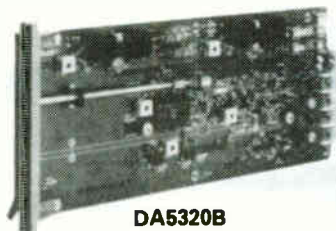
- LA-5353B/10A Line Amplifier, Non Equalized \$450.00
- LA-5353B/41A Line Amplifier, Equalized, WECO 16 PEVL \$20.00



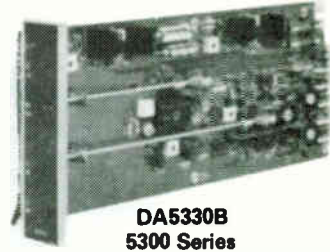
DA5310B



FR5300B



DA5320B



DA5330B
5300 Series

PD-5360B 5-OUTPUT PULSE DISTRIBUTION AMPLIFIER MODULE
Pulse Distribution Amplifier Module for high performance video systems. Regenerative input, linear output with controlled, adjustable, rise time. Front panel input pulse presence indicator. Normal output with up to 1000 ft. (305 m) Belden 8281 input cable. \$275.00

SERIES 5300 BLANK FILLER PANELS

- BP-5390A Blank Filler Panel. Mounts in FR-5300B Frame and fills one unused amplifier space. Net Weight: 4 oz. \$50.00
- BP-5391A Blank Filler Panel. Mounts in FR-5300B Frame and fills two unused amplifier spaces. Net Weight: 5 oz. \$60.00
- BP-5392A Blank Filler Panel. Mounts in FR-5300B Frame and fills four unused amplifier spaces. Net Weight: 6 oz. \$70.00

CC-5398A POWER SUPPLY SERVICE CABLE

Power Supply Service Cable. Allows power supply to be extended from frame for maintenance. \$175.00

CE-5396A MODULE EXTENDER

Module Extender for all Series 5300 modules (except power supply). Allows modules to be extended from frame for maintenance. Net Weight: 2 lbs. \$250.00

CN-9860A CABLE MATING CONNECTOR

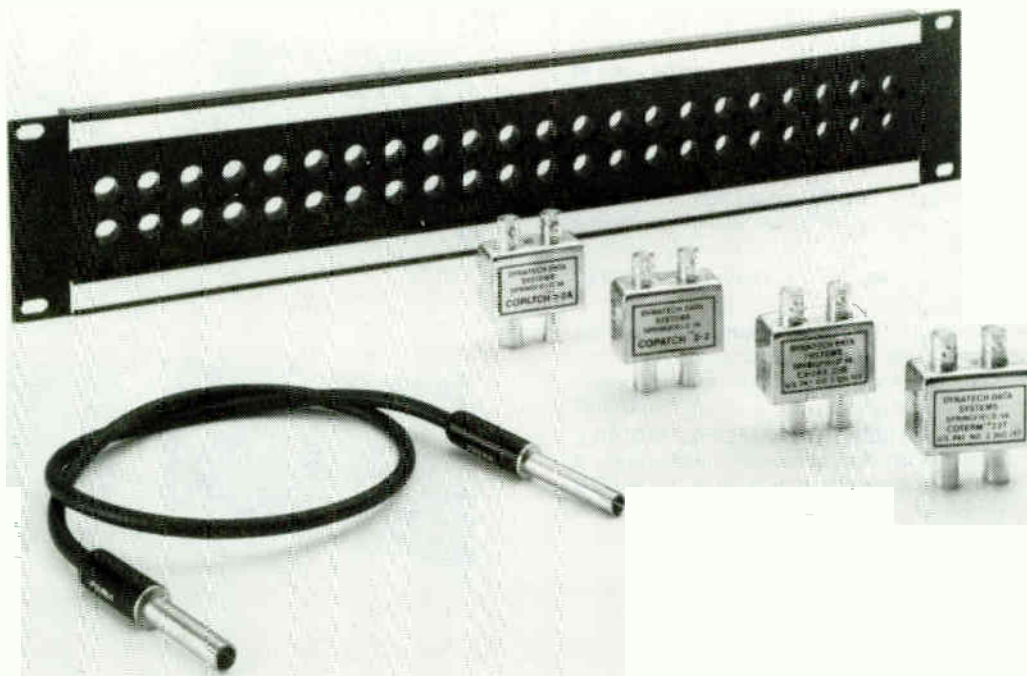
Cable Mating Connector. For use with Western Electric type 760 or equivalent 124 ohm balanced cable. Mates with Trompeter BJ-77 \$35.00

CN-9861A CABLE MATING CONNECTOR

Cable Mating Connector. For use with Western Electric type 16 PEVL or equivalent 124 ohm balanced cable. Mates with Trompeter BJ-77. \$35.00

- FA-5308A Frame Adapter, Power Supply, 18" Power Cord \$90.00
- FA-5309A Frame Adapter, Power Supply, 72" Power Cord \$95.00
- FA-5315A Frame Adapter, Unbal. In. 75.00
- FA-5316A Frame Adapter, Bal. In. 125.00
- FA-5325A Frame Adapter, Unbal. In. 75.00
- FA-5326A Frame Adapter, Bal. In. 90.00
- FA-5335A Frame Adapter, Unbal. In. 110.00
- FA-5336A Frame Adapter, Bal. In. 130.00
- FA-5345A Frame Adapter, Unbal. In. 60.00
- FA-5355A Frame Adapter, Unbal. In. 75.00
- FA-5357A Frame Adapter, Loop In. 80.00
- FA-5358A Frame Adapter, Term In. 75.00
- FA-5375A Frame Adapter, Audio 75.00
- SP-5359A Transient Protection 75.00

Prices and Specifications Subject to Change Without Notice.



COAXIAL PATCHFIELDS AND ACCESSORIES

The system consists of a high density patchfield that incorporates 22 channels in a standard 19 inch wide rack panel—either 1 3/4 or 3 1/2 inches high. Each circuit is connected to a patented COTERM® 22T jack which provides normal-thru connection without the use of patch cords or looping plugs. Patch cords may be inserted to break the normal-thru signal path and program cross connections. Sources that are patched out are automatically terminated within the jacks. Test probes may be used to enter the jack to sample the signal without interruption of the live circuit.

The Dynatech Coaxial Patching System provides normal-thru connections and self-termination within the jacks, as well as cross patching and non-interrupting on-line monitoring of live circuits.

COTERM® 22T (Normal-Thru, Self-Terminating) \$38.00

The COTERM 22T is a reliable, normal-thru patching and line terminating jack designed for rugged use and trouble-free service. It is available in 75 ohm impedance or optionally in 50 ohm impedance. It accepts standard BNC connectors on its rear terminals.

COJAX® 22B (Normal-Thru) \$34.00

The COJAX 22B is identical to the COTERM 22T in dimensions, quality and serviceability. It is a normal-thru patching jack without the internal self-termination feature.

COPATCH® 2-2A (Normally Terminating) \$38.00

The COPATCH 2-2A is a self-terminating jack without the normal-thru feature. It provides patchfield appearance of two standby source circuits. 75 or 50 ohm impedance.

COPATCH® 2-2 (Non-Terminating, Non-Normalling) \$34.00

The COPATCH 2-2 has neither the normal-thru or self-termination features. It provides two inputs to test equipment, trunk lines or other equipment.

All Coaxial Jacks may be interchanged for use in mixed patchfields.

COAXIAL PANELS

Panels are available in metal or phenolic either 1 3/4 or 3 1/2 inches high for standard rack mounting. Coterm, Cojax or Copatch jacks may be mounted interchangeably on all panels—each panel holds 22 jacks across the 19 inch width. 4 standard panels are available, consult factory for other sizes.

- Model 105-113-22 Aluminum 1 3/4" high x 19" wide \$46.00
- Model 105-114-22 Phenolic 1 3/4" high x 19" wide 65.00
- Model 105-115-22 Aluminum 3 1/2" high x 19" wide 52.50
- Model 105-112-22 Phenolic 3 1/2" high x 19" wide 73.50

COAXIAL PATCH CORDS

Model 105-057 — Standard Patch Cord constructed with soldered center pin and crimped sleeve shield connections to meet the highest standards of reliability. Standard lengths of 2, 3 and 4'; others available on special order.

PATCH CORDS, (Specify length—2, 3 and 4' standard)

- Model 105-057-Y (Patch plugs on both ends) \$23.00*
- Model 105-057-BNC-Y (Patch plug on one end, male BNC on opposite end) \$23.00*

- VIDEO COAXIAL CABLE, (Specify Length)
- Model 105-112-MM-Y (MM = BNC male connectors on both ends) \$23.00*

COAXIAL TEST PROBES

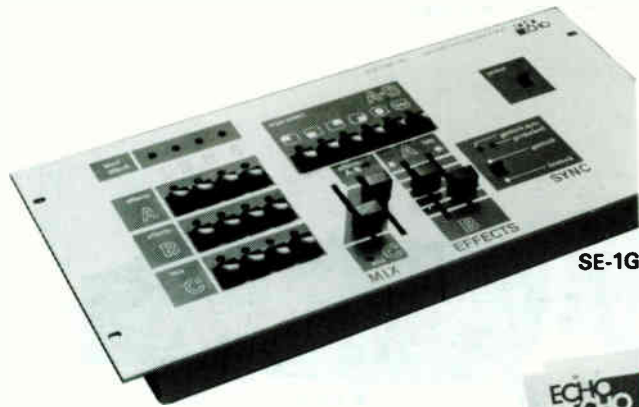
- TEST PROBES, (Specify Length—6' standard)
- Model 105-5-Y (Test probe tip on one end, standard patch plug on opposite end) \$23.00*
- Model 105-5A-Y (Test probe tip on one end, BNC male connector on opposite end) \$23.00*
- Model 105-5B-Y (Test probe tip on one end, UHF male connector on opposite end) \$23.00*

COAXIAL PLUGS

- Model 105-13—Dummy plug for opening normal-thru connections. \$11.50
- Model 105-14—Terminating plug for use with Cojax or Copatch 2-2 to terminate source in proper impedance. \$17.00

Y = length in feet; customer to specify.

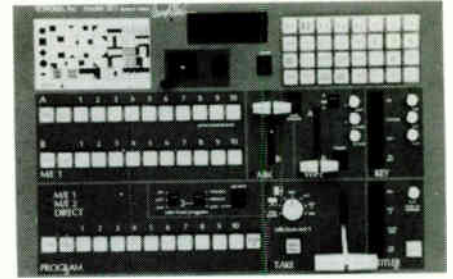
*Plus \$.50 per foot over 6 feet.



SE-1G



SE-2



SE-3

SE-1G

4 Input S.E.G. for use with up to 5 video sources, one of which may be a VCR playback. 4 blackburst outputs simplify system connections with the new genlockable B-411 cameras. Rack mount or desk top.

SE-1G \$1695.00

SE-2 VIDEO PRODUCTION SWITCHER

- Direct plug compatibility with many cameras
- Revolutionary Soft Take
- Built-in phase shifter and sync DA's
- Single box, only 3-1/2" depth

The SE-2 is the ideal switcher/special effects generator for medium sized color studios. Designed for ease of installation, the SE-2 includes many features which are normally purchased in separate boxes. A sub-carrier phase shifter and a complete set of five standard sync pulses are built-in at no extra cost. Another important feature is a 400-ns window of acceptable sync timing; this means that a slight mis-phasing of camera inputs has no effect instead of causing a lateral shift during effects.

SE-2 \$3195.00

SE-3 PRODUCTION SWITCHER

- Computer control of all switching and effects
- Contact closure editing interface (standard) will initiate any pre-programmed event
- 12 inputs, including black and background
- 3 mix-effects circuits, 2 border generators
- 1 color background, 2 color matte generators
- Front-panel programmable with up to 5000 steps
- Remote control panel with coax or 5-wire cable, or clamps together for single-box 19 x 12 x 7-1/4

- Quad splits
- Re-entrant effects
- ECHOLab's patented soft take
- 1-3/4 front panel depth

ECHOLab's revolutionary switcher/special effects generator, the SE-3, makes available exceptional performance for a low price. A powerful built-in Z-80 microcomputer replaces most of the digital logic found in other switchers and also allows user programming.

SE-3 with contact closure interface \$16,000.00

Options

Full Remote Control Interface **\$2225.00**
Chroma Keyer **1650.00**

SG-4A

Full genlock color sync generator with automatic sync and sub-carrier switches and vertical ratelock.

SG-4A \$945.00

CBB Full field color bars generator \$365.00

TIM Tally-Intercom Master, built-in 400.00

SE-2 SG-4A CBB "A" Combo 3995.00

SE-2 SG-4A "B" Combo 3695.00

SE-2 CBB "C" Combo 3560.00

The **EDCOR** Product Overview

WIRELESS MICROPHONE SYSTEM:

System available on the high VHF band. Transmitters are either hand held or pocket type lavalier. Many accessory items are available such as base station transmitters, pocket receivers, diversity antenna systems, tour kits, expansion battery packs, etc. Edcor has a full line of professional wireless microphone systems to fit your application.



- E COM 1** Transmitter, wireless (lavalier) \$500.00
- E COM 3** Receiver, use with E COM 1 transmitter 600.00

MICROPHONE/LINE MIXERS: A versatile line of MX+ series mixers that can be used for microphone inputs or line inputs. Economical, practical, and reliable with unchallenged performance.



- MX 100** 4 Channel mic. or line level mixer \$250.00
- MX 200** 8 Channel mic. or line level mixer 494.00

MICROPHONE VOICE GATED MIXERS: Microphone mixers that turn the channel on when in use. Minimizes background noise, cuts out unwanted discussions, allows greater acoustic gain. Variable voice level controls and channel turn off control provides the versatility you need.



- AL 100** 4 Channel voice gated mic. mixer \$330.00
- AL 201** 8 Channel voice gated mic. mixer 570.00

AUTOMATIC MICROPHONE MIXERS: The AM 401 is a true automatic microphone mixer. The channels gate on & off when in use or unused and the mixer gain changes with the number of microphones in use to allow maximum acoustic gain. The AM 401 has four channels but additional mixers are easily linked together to provide more integrated channels.



- AM 401** 4 Channel automatic microphone mixer \$900.00

ELECTRET OR CONDENSER PHANTOM POWER SYSTEM: The MPS 400 provides a no noise phantom power to either condenser or electret microphones. Each of the four channels have a separate power system with a selectable voltage and attenuation for those really hot mics.



- MPS 400** 4 Channel power supply, condenser/electret \$260.00

GLA AMPLIFIERS: The GLA amplifier line is economical yet fully professional in looks and performance. Five mixer amplifiers and two booster amplifiers provide a complete selection to fit your background music, paging, music on hold and small sound system needs. An excel-series of amplifiers to stock for your off the shelf delivery.

- GLA 35 35 Watt mixer amp. \$280.00
- GLA 60 60 Watt mixer amp. 332.00
- GLA 100 100 Watt mixer amp. 396.00



GLA 60

MA MIXER AMPLIFIERS: The MA amplifier line has modular inputs. Each of the three amplifiers in this line provide six input ports and the user may choose from a large selection of input modules. Professional, unchallenged performance and reliability make this a key building block in any sound system.

- MA 35T 35 Watt/transformer output \$342.00
- MA 65T 65 Watt/transformer output 498.00
- MA 125T 125 Watt/transformer output 608.00



MA 35T

PA POWER AMPLIFIERS: Of the three PA series power amplifiers, each has a single modular input port. Select the input module, hook up the system and recognize the POWER. A second key building block in any professional sound system.

- PA 50T 50 Watt/transformer output \$400.00
- PA 100T 100 Watt/transformer output 486.00
- PA 150T 150 Watt/transformer output 580.00



PA 50T

HA HEADPHONE AMPLIFIERS: Two models to choose from, each with stereo individual amplifiers on each channel. Professional sound, quality, and performance.

- HA 100 8 Channel stereo/mono headphone amplifier \$410.00
- HA 400 4 Channel stereo/mono headphone amplifier 247.00



HA 400

AUDIO MULTIPLEX SYSTEM: The AL 600 is an eight input, microphone or line level, multiplex system. An encoder accepts up to eight inputs and then multiplexes the information over a single microphone cable and reunites the individual inputs at the decoder and again provides the separate eight microphone or line level outputs. Ideal for adding additional microphones without having to add additional microphone cables.

- AL 600 8 Channel encoder & decoder multiplex \$856.00



AL 600

PHONE FOR MORE INFORMATION AND PRICING



16782 Hale Avenue • Irvine, Ca 92714
800 854-0259
714 863-1529



Prices and Specifications Subject to Change Without Notice.

B-371

MTG-550 LONGITUDINAL TIME CODE GENERATOR



A compact and versatile longitudinal time code generator packed with useful features. Outputs continuous serial SMPTE/EBU standard drop frame or non-drop frame time code with or without user bits for use in laying down longitudinally recorded time code tracks on video and audio tapes and magnetic film. Front panel thumbwheel switches for presetting starting time values and for manually entering user bit data. Front panel selectable slave mode allows starting count to be picked-up from a pre-existing time code track, an invaluable feature for generating continuous time code tracks in assembly editing applications and for reconstructing damaged sections of time code tracks. Accommodates a wide variety of sync references: AC line; NTSC, PAL or SECAM composite video. Additional features which make the MTG-550 an outstanding value include:

- Easily understood control panel with visual and audible status alarms/displays.
- Manual user bit entry with full hexadecimal capability.
- HOLD pushbutton that allows time code count to be frozen and resumed from front panel.
- Binary word and hexadecimal display modes.
- Selectable time code frame rate: 25 fps or 30 fps.
- Parallel BCD time and binary word output lines capable of driving TTL loads.
- Parallel binary word input lines.
- Compact, low power, high reliability design utilizing CMOS logic and EECO's exclusive custom LSI time code generator I.C.

MODEL NO.	DESCRIPTION	PART NO.	PRICE
MTG-551	NTSC	260182-01	\$3,660
MTG-552	PAL-B	260182-02	3,950
MTG-553	SECAM	260182-03	4,100

PTG-560 PORTABLE TIME CODE GENERATOR



A precision battery operated longitudinal time code generator expressly designed for portable use in ENG/EPF applications. Synchronized either to an internal crystal oscillator or to the video signal, the unit supplies continuous serial SMPTE/EBU standard time code with or without numerical user bits for use in laying down longitudinally recorded time code track simultaneous with recording of video/audio material under field production conditions. Dual function thumbwheel switches preset starting time values and also specify numerical user bit values. Two

TIME CODE READERS/ GENERATORS

switch selectable time code update modes are provided: time-of-day, in which time code updates continuously as long as power is on; and elapsed time, in which time code updates only when recording. Other design features and operating capabilities which uniquely qualify the PTG-560 for ENG/EPF include:

- Compact, lightweight and rugged packaging with mounting hardware designed for quick, secure piggyback installation on most popular portable VTRs.
- Operating temperature range of 32 to 104 degrees Fahrenheit for all-weather performance.
- Low power consumption design utilizing CMOS logic, EECO's exclusive custom LSI time code generator I.C., and an LCD time code display. 1000 hours typical operation from standard 9.0 volt battery.
- RESET pushbutton that clears time code value to zero.
- HOLD position on operating mode switch that allows time code count to be frozen and resumed manually.
- Bright electroluminescent backlight on LCD time code display that provides excellent readability at night and under low ambient light conditions.

MODEL NO.	PART NO.	PRICE
PTG-560	260236-01	\$1,895

TCR-650 TIME CODE READER



A full-feature time code reader capable of reading serial SMPTE/EBU standard drop frame or non-drop frame time code with or without user bits from video and audio tapes and magnetic film at forward or reverse speeds of 1/16th to 60 times normal play. The decoded time code is displayed on a front panel readout that is switchable between SMPTE/EBU time format and user bit format. Decoded time code is also output via serial and parallel interface ports for use by computer controlled editing systems and studio automation computer systems. At play speed, squared and buffered restored serial time code is output for use in time code dubbing. For added versatility, transport tachometer pulses can be used alone or in conjunction with SMPTE/EBU time code inputs to update the time code outputs and display. This capability allows time code synthesis from sprocketed equipment lacking provisions for a time code track, and also allows automatic switchover from time code input to tach pulse updating whenever invalid time code is detected. Additional features which make the TCR-650 a versatile performer include:

- Automatic frame rate detection circuit that automatically compensates for incoming time code rates of 24, 25 and 30 fps and for drop frame/non-drop frame format.
- Locally or remotely selectable frame blanking that suppresses frame display on front panel time code readout.
- Locally or remotely commandable HOLD that freezes time code/user bit display and outputs; terminating HOLD allows display and outputs to resume updating from current time code input value.
- Microprocessor technology and CMOS logic are employed to achieve compact size, low power consumption and operational flexibility.

MODEL NO.	DESCRIPTION	PART NO.	PRICE
TCR-651	Basic Unit	260202-03	\$3,660
TCR-652	With time code synthesis from tach pulses	260202-04	3,960

EECO Incorporated, 1601 E. Chestnut Ave., Santa Ana, CA 92701
Phone: (714) 835-6000, TWX 910-595-1550, Telex 67-8420
Prices and Specifications Subject to Change Without Notice.

VCG-750 VIDEO CHARACTER GENERATOR



A versatile microprocessor based reader/character generator that reads SMPTE/EBU standard time code from any source at speeds from zero to 60 times normal play. From this input, the unit extracts tape time and user bit data and outputs this data as video characters which may be "burned" into or superimposed over source video on a monitor. Reads longitudinal and vertical interval time code, with automatic switchover to VITC if longitudinal code becomes invalid. Features include:

- Compatible with 24, 25 and 30 fps drop frame and non-drop frame SMPTE/EBU time code inputs; frame rate and drop frame status are automatically detected and compensated for.
- All current video standards accepted as source video inputs (NTSC, PAL, and SECAM).
- Tape time and user bits may be displayed on monitor alone or together, and are independently positionable vertically and horizontally; "smart" positioning controls prevent displays from overlapping.
- Tape time display includes video field readout at play speed and below. Frame blanking command allows frame and field characters to be suppressed.
- Selectable character heights of 28 or 42 raster lines; variable density black background mask may be added for increased legibility.
- Remote HOLD command freezes displayed tape time/user bits; display updating resumes from current time code input value when HOLD is released.
- Parallel interface outputs decoded time code/user bit data for use by computer controlled editing systems, synchronizers or studio automation computers. All front panel enable/disable functions remote controllable via TTL interface.

MODEL NO.	DESCRIPTION	PART NO.	PRICE
VCG-751	Basic Unit	260225-01	\$3,660
VCG-752	With VITC Reader	260225-02	4,560

VIG-850 INTELLIGENT TIME CODE GENERATOR/READER



The do-everything time code instrument! Reads and decodes vertical interval time code (VITC) with user bits from input video at speeds from freeze frame to ± 45 times play. Generates continuous longitudinal time code and/or VITC, with or without user bits, from manually preset values, from external sources, slaved to decoded VITC from the reader or slaved to longitudinal time code input. Virtually any VITC/longitudinal time code conversion can be accomplished. A broadcast quality video inserter provides the means to insert generated VITC into source video. Display of generated and read time code and user bits, and a variety of informational and error messages is via a multi-function 8-digit front panel readout.

The VIG-850's primary application is generating, reading, converting and slaving vertical interval and longitudinal time code for indexing and syn-

chronizing videotaped programming. The unit's video inserter can suppress VITC present in incoming source video and re-insert slaved VITC into the outgoing source video, making the VIG-850 ideal for laying down continuous VITC on edited master tapes produced on VITC-only or mixed VITC/longitudinal time code video tape editing systems. A sampling of the VIG-850's many features includes the following:

- Flat membrane switch control panel with audible actuation feedback.
- Microprocessor control with sophisticated firmware that allows simultaneous reader/generator operation, guards against improper time code entries, prevents conflicting commands, inhibits operation in modes requiring signal inputs not available, and automatically switches certain signal inputs to backup sources if prime sources are not present.
- Front panel time code readout assignable between reader and generator, time-of-day or user bit display. Full hexadecimal capability and commandable frame blanking.
- HOLD command that freezes reader time-of-day/user bit display without affecting generator output updating.
- Time code output available via SMPTE bus for interface to computer-controlled editors, synchronizers and studio automation equipment.
- Compatible with NTSC and PAL/SECAM video standards.

MODEL NO.	PART NO.	PRICE
VIG-850	260234-01	\$5,490

VIR-950 VITC READER



An advanced time code reader capable of recovering and decoding SMPTE/EBU time code and user bits recorded in the video vertical blanking interval at tape speeds from freeze-frame to 45 times normal play, forward and reverse. Front panel time code readout is switchable from time code to user bits display. An additional readout element indicates the video field, providing indexing resolution to one half frame. Recovered time code is also output via a serial SMPTE bus for use by external equipment such as computer controlled editing systems and synchronizers. An automatic tach pulse update mode is provided, in which time code count is derived from transport tachometer pulses in the absence of readable VITC. Additional operating capabilities and design features which make the VIR-950 a versatile production tool include:

- Frame blanking function that suppresses display of frame and field digits in time code readout at high tape wind speeds or in response to local or remote blanking command.
- Local/remote HOLD command that freezes displayed tape time/user bits; display updating resumes from current time code input value when HOLD is released.
- Selectable VITC frame rate of 25 or 30 fps; selectable tach pulse rate ranging from 1 to 30 pulses/frame.
- Compatible with NTSC and PAL/SECAM video standards.
- SMPTE bus interface over which all front panel controls are remoted and decoded time code/user bit data and unit status are output.
- Microprocessor control with powerful firmware that prevents conflicting operator commands, checks and processes VITC in real time, automatically executes a complete self-test sequence at power-up and performs maintenance diagnostics on command.
- Compact, rack-mountable packaging. Flat membrane switch front panel.

MODEL NO.	PART NO.	PRICE
VIR-950	260235-01	\$2,770

EECO Incorporated, 1601 E. Chestnut Ave., Santa Ana, CA 92701
Phone: (714) 836-6000, TWX 910-595-1550, Telex 67-8420

Prices and Specifications Subject to Change Without Notice.

EECO

Incorporated

COMPUTER CONTROLS FOR VIDEO PRODUCTION

IVES™ VIDEO TAPE EDITING SYSTEM



IVES

IVES™ — the Intelligent Video Editing System, is not just an editor; it's a complete post-production system. In addition to performing precision single-source/single-record SMPTE/EBU code or control track editing, it also performs all the necessary pre- and post-edit tasks too. Tasks like automatically copying source tapes or edited master tapes to produce workprints and safety prints; automatically prestripping time code and video color-black onto tape stock; and audio mixing for voiceovers or background soundtrack. All in one affordable, easy-to-operate, self-contained package. No "a la carte" option pricing, no add-ons and no recabbling. For turn-key professional editing capability, IVES is the "intelligent" choice for any ENG, cable, corporate or institutional video operation.

VideoMaster™ Control One-Touch Editing

Marking and performing previews and edits couldn't get much simpler with EECO's unique multi-function VideoMaster control. Incorporating seven distinct motion control and preview functions into a single knob, the VideoMaster control can: search either VTR from still frame to maximum shuttle speed in forward or reverse, or at any selected cruise speed; mark edit-in or edit-out times for either VTR; and initiate open-end or closed-end previews. And one VTR can be left searching at a selected cruise speed while the VideoMaster knob is actively controlling the other VTR.

When you specify both edit-in and edit-out points for one of the VTRs, one edit point is all that's needed for the other VTR. The IVES system automatically calculates the fourth in or out time for you. Or, if an open-ended edit interval is what you want, simply leave the edit-out times for both VTRs unspecified.

FEATURES

Internal Routing Switcher: Eliminates clumsy and time consuming cable repatching. Automatically routes video and audio in response to Copy commands and in response to selections made at the VideoMaster control. Also responds to manual routing selections made at Display Video keys. Accommodates both single and dual monitor studio setups.

Programmable Relay Closure: Provides the means to activate external equipment (e.g., a cart deck) simultaneous with selected edits. Relay contacts close at start of edit, open at end of edit.

Auto-Tag: Back-to-back matched edits are easily performed using separate video and audio tag commands to exchange last edit-out time into next edit-in time.

Video and Audio Fade: Allows video fades from/to black and audio fades from/to silence to be separately programmed from the keyboard with ramp durations of 1 to 9 seconds.

Scene-Thru™ and Replay Commands: Scene-Thru replays any number of sequential edits from a designated starting point on the record VTR; Replay replays the last edit performed.

Go-To Command: Lets you search either VTR directly to a designated time code location.

Go-To Last In/Go-To Last Out Commands: Let you search to the last designated edit-in or edit-out point on either VTR.

Preview Out Command: Allows preview of the outgoing edit by cueing both VTRs to the edit-out time minus the pre-roll time.

EECO Incorporated, 1601 E. Chestnut Ave., Santa Ana, CA 92701
Phone: (714) 835-6000, TWX 910-595-1550, Telex 67-8420

Prices and Specifications Subject to Change Without Notice.

EECO Incorporated

COMPUTER CONTROLS FOR VIDEO PRODUCTION

IVES™ VIDEO TAPE EDITING SYSTEM

Definable System Parameters: Preroll time, postroll time, reel numbers, edit event numbers and control track editing starting time count are all user definable from the keyboard.

Printer Output: Print commands enable automatic hardcopy printer output of edit data as each edit is completed. Printout can be specified in CRT display format or CMX-compatible edit list format.

Recall Command: Lets you keep track of changes you make to existing edit data by allowing recall of the old value of the last data item changed.

Non-volatile Memory: When IVES is turned off during breaks or at the end of the day, all the information pertaining to the current edit is retained, and is immediately accessible when power is turned back on.

Auto Retry: If an edit is aborted due to VTR syncing problems, the IVES system automatically attempts the edit again, extending the preroll time to allow the VTRs a longer sync-up period.

PRE- AND POST-EDIT FUNCTIONS THAT MAKE IVES A COMPLETE POST-PRODUCTION SYSTEM:

Copy: Just one button starts an automatic sequence that makes a direct copy from the play VTR to the record VTR, or vice-versa. Both tapes are rewound to their beginnings before the copy starts, and all audio, video and SMPTE/EBU time code routing is accomplished automatically through the internal routing switcher.

Stripe Tape: Another powerful one-button command. Automatically stripes either the record or play tape with continuous SMPTE/EBU time code and/or video color-black and control track pulses. Before striping is begun, the tape(s) are rewound to the beginning and the starting count of the SMPTE/EBU code is preset to an operator designated value. All functions associated with the stripe tape sequence, including an NTSC sync generator, a video color-black generator and a SMPTE/EBU time code reader/generator for each VTR are included in the IVES system. An auxiliary video input jack is also provided for application of an externally generated color bar signal if color bars are desired instead of video color-black.

Record Time Code: Press this button and the designated play and/or record tapes are rewound to the beginning and then striped with continuous SMPTE/EBU time code. Starting count is automatically preset to an operator designated value before striping begins.

Audio Mixer and Monitor: Need to add audio background or voiceover to your edited master — The capability is right on the IVES control panel. The internal audio mixer with front panel level and mix controls allows you to blend audio from a front panel mic input or an auxiliary audio line input with play VTR audio output as it is routed to the record VTR input. A 2-watt audio amplifier with front panel volume control lets you monitor either VTR's audio.

EDITING SYSTEM



"SMART" INTERFACES INSURE SMOOTH INSTALLATION:

Two self-contained interfaces for popular 3/4" and 1 1/2" VTRs are supplied as standard equipment on IVES. The interfaces are of plug-in design to facilitate fast conversion to different types of VTRs; no VTR modifications are required. The interfaces are capable of serving in both a record or play capacity, as selected at time of installation, and all VTR manual motion controls are remoted to the IVES front panel.

MODEL NO.	PART NO.	PRICE
IVES™ (NTSC)	260237-02	\$7,450
IVES™ (PAL B)	260252-01	7,450

IVES™ SYSTEM ACCESSORIES

The EECO SP-10 Status Printer provides rapid printouts (120 CPS) of complete editing status information, while the EECO SM-9 Video Status Monitor (9" B/W) offers sharp displays of edit status information with 800 lines resolution.



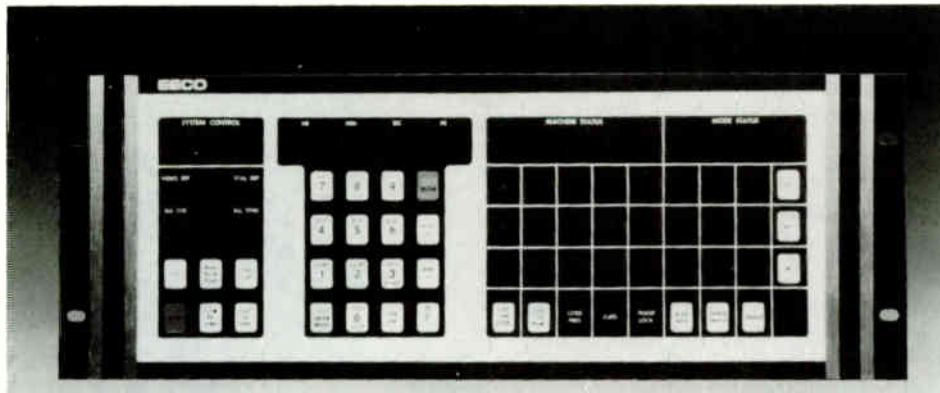
SM-9

MODEL NO.	PART NO.	PRICE
SP-10	260250-01	\$575
SM-9	260249-01	275
Option Cable-Interconnect	136455-01	\$150



SP-10

EECO Incorporated, 1601 E. Chestnut Ave., Santa Ana, CA 92701
Phone: (714) 835-6000, TWX 910-595-1550, Telex 67-8420
Prices and Specifications Subject to Change Without Notice.



MGS-100A

A frame-accurate, microprocessor-based SMPTE/EBU time code instrument that can simultaneously search up to three video/audio tapes to designated program points, cue them at these points and then lock them in phase-locked synchronized play. The MGS-100A offers a broad range of operating modes that can enhance the efficiency, precision and flexibility of virtually any video or audio tape production facility. A sampling of its many applications includes:

Video/Audio Synchronization—

- Matching video to audio for perfect lip sync.
- Audio sweetening.
- Stereo simulcasting.
- Layback of sweetened audio onto final edited video master.

Video/Video Synchronization—

- Simultaneous program presentation.
- Program sequence selection (off-line editing).
- Network program backup.
- On-line program editing.

Audio/Audio Synchronization—

- Expanding total number of synchronous tracks by syncing two or more multi-track decks.
- Maintaining precise synchronization during mixdowns.

THE MGS-100A SYNCHRONIZATION CYCLE:

Time code from up to three transports is read by the MGS-100A. One transport is designated as a master; the others, slaves. At the start of the sync cycle, the MGS-100A commands each transport to cue to a pre-designated point. As the transports roll from their cue points, the MGS-100A issues speed-up/slow-down commands to the slave transports until they are the same distance from their cue points as the master is from its cue point. When this is achieved, the slave transports resume normal play speed. From then on, the time code of all transports is constantly monitored by the MGS-100A to maintain the synchronous relationship. Once lockup is achieved, the frame rates of the slave transports are held to within ± 100 usec of the master. Identical time code need not be recorded on the tapes to be synchronized; the MGS-100A automatically compensates for time code differences and for mixed drop frame/non-drop frame formats.

A HOST OF USEFUL OPERATING FEATURES:

The MGS-100A offers a full complement of operating modes and convenience features to satisfy even the most demanding user. Yet, for all its technical sophistication, the MGS-100A is simple to operate. Some of the features that make the MGS-100A so versatile are outlined below.

Cue Point Selection: Key-in cue point assignments as SMPTE/EBU time values or mark them on-the-fly, on an individual transport basis or for all transports simultaneously.

Cue Search With Preroll: A one-button command searches all transports forward or reverse to pre-designated cue points and parks them at these

points or at a specified preroll distance ahead of these points. Preroll capability is especially useful when the cue point is used as a main entry or event trigger point, as it gives all transports time to sync prior to the cue point.

Sync Play Command: Commands all enabled transports to play forward from their current tape locations, with the slave transports seeking time intervals from their assigned cue points to match the master's current distance from its cue point. When this match-up is achieved, the slave transports remain phase-locked to the master.

Tape-to-Tape Offset Adjustment: Offset commands allow the servo of any transport to be slewed at a high or low rate in any time increment from one frame on up, plus or minus of the current sync point, to allow shifting the program material on one tape with respect to another without breaking sync.

Roll Back: A one-button command that tells all transports to roll backward for a designated distance, then play forward and synchronize to one another.

Chase Mode: The chase mode allows parallel control of one or both slave transports from the master transport's remote control panel. The slaves duplicate every action of the master automatically.

Time Code Triggered "Event" Relay Closures: An internal time code comparator can be programmed to initiate up to two relay contact closures and/or roll the second slave transport when the master transport's time code matches "event" time code values preset by the operator.

Time Code Scratchpad Memories: Three scratchpad memory registers are provided for temporary storage of time code values and to facilitate transfer of time code values from one register to another.

On-the-Run Transport Mode Changes: The operating mode of any transport can be changed while system operations are in progress. With few exceptions, there is no necessity for placing the system in stop mode prior to performing mode changes.

Interface Flexibility: The MGS-100A employs modular hardware organization and custom interface boards to accommodate a wide selection of popular professional video and audio transports. All transport control and status signals are opto-isolated, preventing ground-loop induced system noise or damage resulting from mis-mated interface connectors. There are provisions for removing the MGS-100A's control panel from its electronics chassis, and for connecting several remote control panels in parallel, providing the versatility to adapt to any studio layout.

UART Interface (RS-232): An optional serial UART interface allows all MGS-100A front panel control and indicator functions to be accessed by computer controlled editing systems and studio automation computers.

MODEL NO.	DESCRIPTION	PART NO.	PRICE
MGS-102A	2-Transport	260176-02	\$15,290
MGS-103A	3-Transport	260176-03	17,930

Price includes transport interfaces.

EECO Incorporated, 1601 E. Chestnut Ave., Santa Ana, CA 92701
Phone: (714) 835-6000, TWX 910-595-1550, Telex 67-8420

Prices and Specifications Subject to Change Without Notice.



STC-100

A highly flexible microprocessor-based search-to-cue controller designed for use with Ampex VPR-1 and VPR-2/2B VTRs, the STC-100 can designate, store and recall up to 99 separate cue points, and remotely control the VTR's record, normal speed play and full speed bi-directional shuttle functions. Cue points may be keyed-in via a number pad in SMPTE/EBU format, or they may be marked on-the-fly from SMPTE/EBU time code being read off a moving tape. Each designated cue point is automatically assigned a two-digit file number which may be keyed-in to recall the associated SMPTE/EBU time code address of the cue point, allowing the STC-100 to "rapid search" VTRs under its control to specific cue points.

INTERNAL MEMORY:

An internal memory with battery backup stores all cue point information. The memory can be dumped to or loaded from audio track 3 of the VTR under the STC-100's control, allowing cue point lists to be stored on the same tape as the program material to which they apply, for convenient recall. The entire 99 cue point capacity of the STC-100 memory occupies only 40 seconds of tape, so the list can easily be recorded onto the leader ahead of the program material, if desired.

APPLICATIONS:

The STC-100 has a wide range of uses in both live production and post-production. For sports, it can be used to rapidly designate cue points for "instant replay" at any time during recording or playback. It can increase the efficiency of spot commercial playback by allowing a series of commercials to be recorded on a single reel, with cue points designated at the beginning of each spot to allow rapid searching to those selected for playback. For postproduction, an entire library of still-frame recordings can be selected and the cue point information stored right on the video tape for recall during subsequent editing sessions. The list of STC-100 applications is limited only by the user's imagination.

MANUAL, STILL AND SLOW-MO OPERATION:

Cue points may be marked, assigned cue numbers and searched in manual, still and slow motion mode.

Manual: Provides normal remote control of the VTR via the STC-100's record, play, stop and shuttle buttons. Cue points may be marked or searched-to during any motion sequence.

Still: Allows up to 99 stills to be selected in an auto-assemble sequence, providing a rapid-access still store. Each still segment is 10 frames long. 99 recordings occupy approximately 33 seconds of real time (NTSC). Maximum access time is 5 seconds, with a ± 2 frame target accuracy.

Slow Motion: Similar to manual mode, except that the transport controls on the STC-100 are disabled. Transport control is provided by an Ampex SMC-60/100 slow motion controller, while cue points are marked and searched by the STC-100. Operating in conjunction with the STC-100, the SMC-60/100's memory is expanded from one auto cue point to 99. The SMC-60/100 plugs directly into the back of the STC-100.

SIMPLE INSTALLATION:

The STC-100 plugs directly into the VTR's remote connector, and may be remotored up to 100 feet. No VTR modifications are required.

MODEL NO.	PART NO.	PRICE
STC-100	260211-02	\$8,950

Includes 10' Interconnect Cable

ECONOLINE™ TIME CODE GENERATOR AND READER PERIPHERALS

ECONOLINE peripherals are designed for entry level post-production and editing applications and complement the EECO line of full features time code products.

MTG-55 MASTER TIME CODE GENERATOR

The MTG-55 eight-digit SMPTE/EBU longitudinal time code generator outputs serial time code. Time code is formatted in hours, minutes, seconds, and frames. The MTG-55 is an extremely useful instrument for indexing video and audio tapes for subsequent material location and editing. It also offers the following affordable features:

- Drop frame or non-drop frame operation.
- Color frame synchronization through a rear-mounted BNC connector. This feature permits using an external 15Hz color framing pulse.
- Loop-through video input/output connectors (BNC) to assure that time code transmission starts at the beginning of a frame, per ANSI-V98. 12M.
- A video input designed to accept composite video or composite sync.
- An XLR connector that provides for time code output on the rear panel.

The unit is 1-3/4" high and 10" deep. It has a standard 19" wide rack mount front panel. Power required is 117 VAC, 60Hz, 3 watts maximum

MODEL NO.	PART NO.	PRICE
MTG-55	260246-01	\$1,250

TCR-65 TIME CODE READER

The TCR-65 eight-digit SMPTE/EBU time code reader uses 0.4" red LED's to display time code in hours, minutes, seconds, and frames. You can use the TCR-65 to read and decode longitudinally recorded time code from video tapes, audio tapes, and magnetic film. Other affordable features of the TCR-65 include:

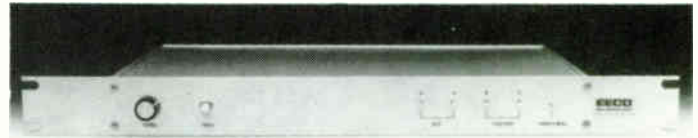
- Reads time code from a SMPTE/EBU time code generator or directly from a tape. The time code is read at 1/20 to 20 times normal playback speed, in either forward or reverse mode.
- Extreme accuracy when the TCR-65 is reading code from a time code generator that is locked to a color sub-carrier frequency.
- A momentary Hold switch that holds the tape time on the display at the point the Hold button is pressed. The data is displayed as long as the button is depressed—even when the input is reading or decoding time code.
- A digital error-detection system. The TCR-65 automatically switches to a frame-counting mode when a bad time code frame is detected. A pulse train, pulsing at the frame rate, then increments an internal counter that is loaded with the last valid data.



MTG-55



TCR-65



VCG-75

The TCR-65 is 1-3/4" high and 10" deep. It has a standard 19" rackmount front panel. Power required is 117 VAC, 60Hz, 4 watts maximum

MODEL NO.	PART NO.	PRICE
TCR-65	260247-01	\$1,250

VCG-75 VIDEO CHARACTER GENERATOR

The VCG-75 eight-digit video character generator reads SMPTE/EBU time code from video tape or other sources and outputs this data as video characters. The output data can be burned into or superimposed over the source video on a monitor. Time code is read at 1/20 to 20 times normal playback speed, in either forward or reverse mode.

Using the VCG-75, you can correlate specific video frames with time code information without looking away from the video monitor. Other affordable features include:

- A front panel designed to put all of the necessary controls at your fingertips.
- Ability to adjust character size from 5% to 30% of screen size. Characters can also be positioned anywhere on the screen.
- Easy-to-read characters via black screen background with white characters. In addition, character brightness can be adjusted from very bright to barely visible.
- A display that includes a drop-frame indicator, in the form of a colon(:).
- Through a rear-mounted connector, remote inputs can be used to control the Hold function and two display blanking inputs. One blanking input blanks frames only and the other blanks the entire time display.

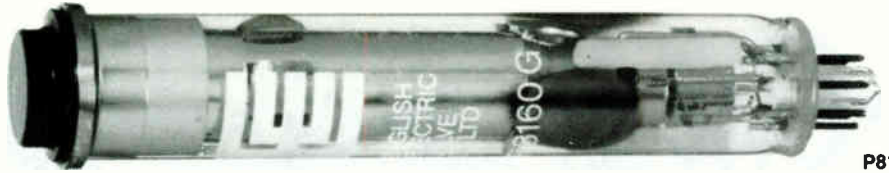
The VCG-75 is 1-3/4" high and 10" deep. It has a standard 19" wide rack mount front panel. The unit is powered by 117 VAC, 60Hz.

MODEL NO.	PART NO.	PRICE
VCG-75	260248-01	\$1,250



EEV, INC. 7 Westchester Plaza
Elmsford, NY 10523
(914) 592-6050 Telex 6818096

TELEVISION CAMERA TUBES



P8160

EEV TELEVISION CAMERA TUBES — 2/3" LEDDICONS[®]

Photoconductive camera tubes with high sensitivity lead oxide target, for high definition pick-up in monochrome and color broadcast cameras. Features of these tubes include very short lag, low dark current and unity gamma. All types have separate mesh connections.

Type Series	Suffix Letters *	Description	Direct Replacement For
P8160	B, G, R, M	Broadcast quality, designed for ENG, EFP and studio cameras.	XQ 1427
P8161	B, G, R, M	Standard quality, designed for ENG, EFP and studio cameras.	XQ 1428
P8460	B, G, R, M	Broadcast quality, diode gun, high resolution photolayer.	XQ 2427
P8461	B, G, R, M	Standard quality, diode gun, high resolution photolayer.	XQ 2428
P8462	B, G, R, M	Broadcast quality, diode gun. Low output capacitance (L.O.C.) contact permitting improved signal-to-noise ratio.	XQ 3427
P8463	B, G, R, M	Standard quality, diode gun. Low output capacitance (L.O.C.) contact permitting improved signal-to-noise ratio.	XQ 3438

EEV TELEVISION CAMERA TUBES — 1/2" LEDDICONS[®]

Type Series	Suffix Letters *	Description
P8470	B, G, R, M	Broadcast quality, diode gun magnetic focus, magnetic deflection, high resolution photolayer for new generation of ENG cameras with integral video recorder.

EEV TELEVISION CAMERA TUBES — 1" LEDDICONS[®]

All Types Have Separate Mesh Connections.

Type Series	Suffix Letters *	Description	Direct Replacement For
P8022	B, G, L, R, M, X	Variable light bias from light source in socket, front loading.	XQ 1070
P8024	RF	Similar to P8022 but with extended red response and infrared filter.	XQ 1075
	AR	Similar to P8022 but with extended red response and no infrared filter.	XQ 1074
P8142	B, G, L, R, M	Rear loading version of P8022 Series, with variable light bias from light source in socket.	XQ 1070/02
P8144	RF	Rear loading version of P8024RF, with variable light bias from light source in socket; extended red response and infrared filter.	XQ 1075/02
	AR	Similar to P8190 but with extended red response and no infrared filter.	XQ 2073/03
P8145	B, G, L, R, M	Rear loading version of P8025 Series, with variable light bias from light source in socket; high-light overload protection (H.O.P.) facilities.	XQ 1080
P8146	RF	Rear loading version of P8026RF. Variable light bias from light source in socket, highlight overload protection (H.O.P.) facilities; extended red response and infrared filter.	XQ 1085
	AR	Rear loading version of P8026AR. Variable light bias from light source in socket, highlight overload protection (H.O.P.) facilities; extended red response and no infrared filter.	XQ 1083
P8147	B, G, L, R, M	Similar to P8145 but with improved resolution and 190(mA) heater.	XQ 1500
P8148	RF	Similar to P8147 but with extended red response and infrared filter.	XQ 1505
	AR	Similar to P8147 but with extended red response and no infrared filter.	XQ 1503

* The complete type number comprises the Series number with appropriate suffix letter/letters as follows:

B Blue Channel L Luminance Channel R Red Channel The letters IG added to the above indicate Industrial Grade.
G Green Channel M Monochrome X Medical In the case of monochrome tubes, the letter M is usually omitted from the type number.

® Registered EEV Trademark

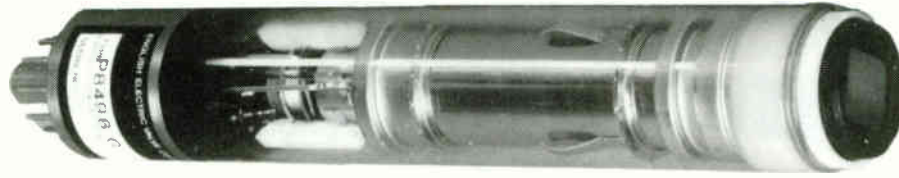
Prices and Specifications Subject to Change Without Notice.

B-379



EEV, INC. 7 Westchester Plaza
Elmsford, NY 10523
(914) 592-6050 Telex 6818096

TELEVISION CAMERA TUBES



P8496

EEV TELEVISION CAMERA TUBES — 1" LEDDICONS®

All Types Have Separate Mesh Connections

Type Series	Suffix Letters *	Description	Direct Replacement For
P8190	B, G, L, R, M	Diode gun tube with variable light bias from light source in socket. Front loading.	XQ 2070/02
P8191	RF	Similar to P8190 but with extended red response and infrared filter.	XQ 2075/03
P8196	B, G, L, R	Rear loading version of P8190. Diode gun and variable light bias from light source in socket.	XQ 2070/02
P8197	RF	Similar to P8196 but with extended red response and infrared filter.	XQ 2075/02
	AR	Similar to P8196 but with extended red response and no infrared filter.	XQ 2073/02
P8442	B, G, L, R	Diode gun tube with variable light bias from light source in tube base. Rear loading. Low output capacitance (L.O.C.) version of P8196.	XQ 3070
P8443	RF	Similar to P8442 but with extended red response and infrared filter.	XQ 3075
	AR	Similar to P8442 but with extended red response and no infrared filter.	XQ 3073
P8490	B, G, L, R, X	Improved diode gun tube with 190(mA) heater. Variable light bias from a lamp in the tube base. Front loading. P8490X optimized for digital fluoroscopy.	XQ 2170/03
P8491	RF	Similar to P8490X but with extended red response and infrared filter.	XQ 2175
	AR	Similar to P8490 but with extended red response and no infrared filter.	XQ 2173
P8496	B, G, L, R, X	Improved diode gun tube with 190(mA) heater. Variable light bias from a lamp in the tube base. Rear loading. P8496X optimized for digital fluoroscopy.	XQ 2170/02
P8497	RF	Similar to P8496 but with extended red response and infrared filter.	XQ 2175
	AR	Similar to P8496 but with extended red response and no infrared filter.	XQ 2173

EEV TELEVISION CAMERA TUBES — 30mm LEDDICONS®

All Types Except P8000 Series Have Separate Mesh Connections

Type Series	Suffix Letters *	Description	Direct Replacement For
P8000	B, G, L, R, M, X	30mm diameter, integral mesh.	55875
P8130	B, G, L, R, M, X	Coaxial construction, fixed internal light bias.	XQ 1020
P8130H	G, L, R, M	High resolution version of the P8130 Series.	XQ 1020
P8131	B, G, L, R, M	Coaxial construction, variable internal light bias.	XQ 1410
P8131H	G, L, R, M	High resolution version of the P8131 Series.	XQ 1410
P8132	RF	Similar to P8130 but with extended red response and infrared filter.	XQ 1025R
	AR	Similar to P8130 but with extended red response and no infrared filter.	XQ 1023R
P8133	RF	Similar to P8131 but with extended red response and infrared filter.	XQ 1415R
	AR	Similar to P8131 but with extended red response and no infrared filter.	XQ 1413R

* The complete type number comprises the Series number with appropriate suffix letter/letters as follows:

B Blue Channel L Luminance Channel R Red Channel The letters IG added to the above indicate Industrial Grade.
G Green Channel M Monochrome X Medical In the case of monochrome tubes, the letter M is usually omitted from the type number.

® Registered EEV Trademark

B-380

Prices and Specifications Subject to Change Without Notice.



EEV, INC. 7 Westchester Plaza
Elmsford, NY 10523
(914) 592-6050 Telex 6818096

TELEVISION CAMERA TUBES



EEV TELEVISION CAMERA TUBES — 30mm LEDDICONS®

All Types Except P8000 Series Have Separate Mesh Connection

Type Series	Suffix Letters *	Description	Direct Replacement For
P8135	B, G, L, R, M	Coaxial construction with variable light bias. Highlight overload protection (H.O.P.) facilities.	XQ 1520
P8136	B, G, L, R, M	Coaxial construction with fixed light bias. Highlight overload protection (H.O.P.) facilities.	XQ 1520
P8137	RF	Similar to P8135 but with extended red response and infrared filter.	XQ 1525
	AR	Similar to P8135 but with extended red response and no infrared filter.	XQ 1523R
P8138	RF	Similar to P8136 but with extended red response and infrared filter.	XQ 1525
	AR	Similar to P8136 but with extended red response and no infrared filter.	XQ 1523R
P8400	B, G, L, R, M	Coaxial construction, variable light bias controlled by an integral potentiometer in the tube base.	XQ 1410
P8400H	G, L, R, M	High resolution version of the P8400 Series.	XQ 1410
P8401	RF	Similar to P8400 but with extended red response and infrared filter.	XQ 1415
	AR	Similar to P8400 but with extended red response and no infrared filter.	XQ 1413
P8420	B, G, R	Coaxial diode gun tube with light bias lamp controlled by an integral potentiometer in the tube base. Reduced area scan for improved geometry, registration and noise. Dynamic beam control (D.B.C.) facilities.	XQ 3410
P8421	RF	Similar to P8420 but with extended red response and infrared filter.	XQ 3415
	AR	Similar to P8420 but with extended red response and no infrared filter.	XQ 3413
P8436	B, G, L, R	Tetrode gun tube with highlight overload protection (H.O.P.) facilities. Light bias lamp controlled by an integral potentiometer in the tube base. High resolution photolayer.	
P8438	RF	Similar to P8436 but with extended red response and infrared filter.	
	AR	Similar to P8436 but with extended red response and no infrared filter.	
P8440	B, G, L, R, M	Diode gun tube with light bias lamp controlled by an integral potentiometer in the tube base. Dynamic beam control (D.B.C.) facilities.	
P8441	RF	Similar to P8440 but with extended red response and infrared filter.	
	AR	Similar to P8440 but with extended red response and no infrared filter.	
P8450	B, G, L, R	Coaxial, diode gun tube with light bias lamp controlled by an integral potentiometer in the tube base. Low output capacitance (L.O.C.)	
P8451	RF	Similar to P8450 but with extended red response and infrared filter.	
	AR	Similar to P8450 but with extended red response and no infrared filter.	
P8452	B, G, L, R, X	Similar to P8450 but with improved diode gun and 190(mA) heater. P8452X is a medical quality tube, optimized for digital fluoroscopy.	
P8453	RF	Similar to P8452 but with extended red response and infrared filter.	
	AR	Similar to P8452 but with extended red response and no infrared filter.	

* The complete type number comprises the Series number with appropriate suffix letter/letters as follows:

B Blue Channel L Luminance Channel R Red Channel
G Green Channel M Monochrome X Medical

The letters IG added to the above indicate Industrial Grade.

In the case of monochrome tubes, the letter M is usually omitted from the type number.

® Registered EEV Trademark

Prices and Specifications Subject to Change Without Notice.

B-381



EEV, INC. 7 Westchester Plaza
Elmsford, NY 10523
(914) 592-6050 Telex 6818096

TELEVISION CAMERA TUBES

Ruggedized Vidicons for Difficult Environments



EEV TELEVISION CAMERA TUBES — 1" VIDICONS

Separate Mesh, Magnetic Focus and Deflection For Telecine Applications

Type Series	Application	Characteristics	Blemish Standard	Heater Current at 6.3V (mA)	Photo-Surface	Direct Replacement For
8507A (P841)	Broadcast, educational and high quality industrial.	Color response similar to human eye. High sensitivity at all light levels. Moderate sensitivity to red up to 900nm. Short lag.	1st Grade	600	ii	
8541A (P842)	Broadcast, educational and high quality industrial.	Color response similar to human eye. High sensitivity at all light levels. Moderate sensitivity to red up to 900nm. Short lag.	1st Grade	95	ii	XQ 1042 XQ 1240 XQ 1291
8572A (P843)	Color or monochrome telecine and caption scanning. Can be selected for use in PE24 and PE240 cameras. Available with anti-halation faceplate stud.	High sensitivity but very short lag at high light levels. Resistant to image retention.	1st Grade	600	i	
P8038	Color telecine, selected for use in TK28 and similar cameras.	High sensitivity and short lag. Signal output and resolution uniform over whole raster.	1st Grade	95	ii	XQ 1240 4809

EEV TELEVISION CAMERA TUBES — 1" VIDICONS

Electrostatic Focus and Magnetic Deflection

Type Series	Application	Characteristics	Blemish Standard	Heater Current at 6.3V (mA)	Photo-Surface	Direct Replacement For
8134	Broadcast and industrial, compact monochrome.	Industrial grade tube.	†	95	ii	
8134V1/4811	Broadcast, color, telecine. Can be supplied in matched sets for RCA TK27 camera.	Uniform sensitivity and geometry for multi-tube color cameras. It can be selected for use in the red, blue or green channels.	1st Grade	95	ii	BC 8134

EEV TELEVISION CAMERA TUBES — 1½" VIDICONS

Electrostatic Focus and Magnetic Deflection

Type Series	Application	Characteristics	Blemish Standard	Heater Current at 6.3V (mA)	Photo-Surface	Direct Replacement For
8480	Color or monochrome cameras, telecine and high grade industrial.	Low deflection power, negligible electrostatic focusing power. Reduced camera size by eliminating focus coil. High resolution.	1st Grade	95	i	BC 8480
8480V1/4810	High quality color cameras such as RCA TK27.	Similar to 8480 but tested to closer limits for signal uniformity, beam astigmatism and other characteristics.	Selected	95	i	BC 8480

† Specific tube grades and electrical parameters can be negotiated.

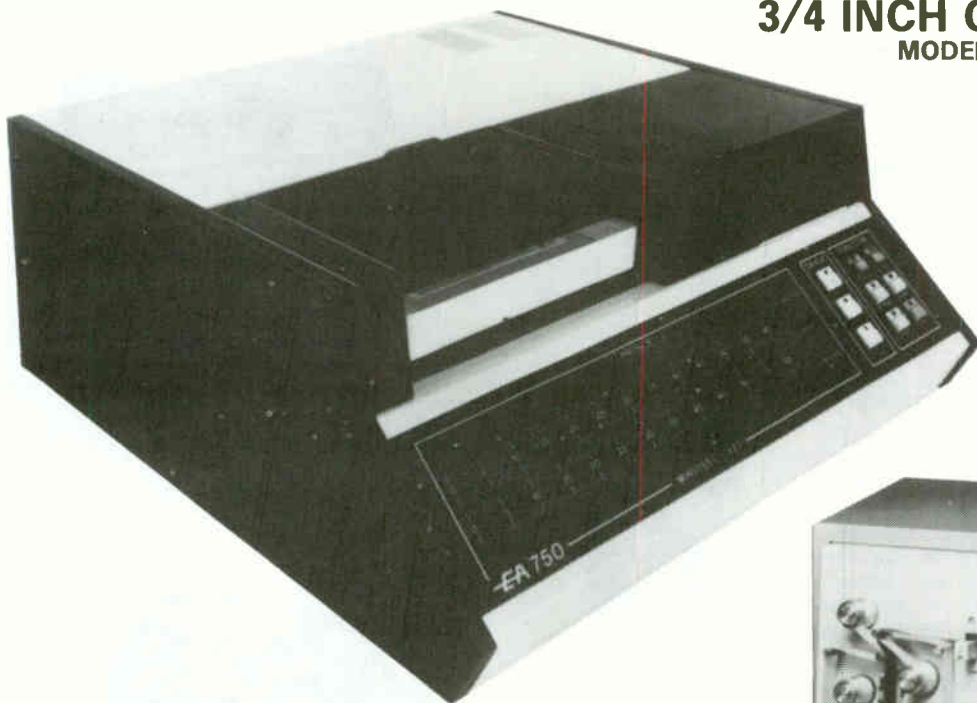
Elcon

DISTRIBUTED EXCLUSIVELY BY
TELEVISION EQUIPMENT ASSOCIATES, INC.

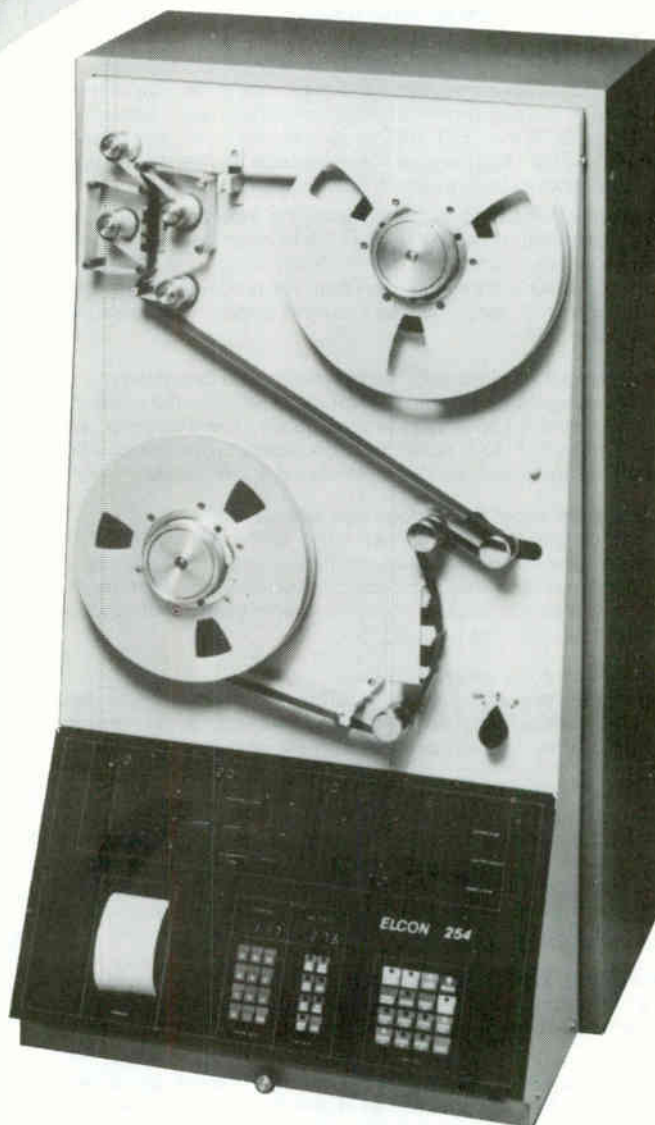
Box 393
S. Salem, NY 10590
(914) 763-8893 TWX 710-575-2600

VIDEO TAPE CLEANER/EVALUATOR

3/4 INCH CASSETTES MODEL EA750



ONE INCH TAPE MODEL EA 254



The Elcon Tape Evaluators are fully automatic, high-speed tape cleaners and profilers, specifically designed and precision-engineered for professional tape maintenance and evaluation. The Elcon offers a unique LED linear display system that makes thorough tape evaluation quick and easy. Push-button accessing of three pre-established acceptance levels simplifies classification into common categories, i.e., "Master Stock", "Commercial", and "Dub" quality, making this system particularly suited to operation by non-technical personnel. In one pass, tapes are cleaned, evaluated and rewound in 1/10 the normal running time.

Operation is fully automatic. The machines shuttle tape from head to tail end, cleaning only. The tape reverses automatically. On the rewind pass, the tape is cleaned a second time, and, if profile has been selected, the tape is degaussed and profiled electronically.

Electronic profiling will locate and identify damaged tape areas by illuminating the appropriate section on the LED linear display panel. The panel is divided into three illuminated channels representing the "Top Edge", "Video", and "Bottom Edge" of the tape. These channels are calibrated in 1/4 minute segments. No light indicates that the number of defects is below the predetermined acceptability level.

After a tape has been profiled, the operator evaluates the tape by pressing the buttons labeled A, B and C. These alter the display illumination to reflect three separate user-programmed acceptance levels.

ELECTROHOME ELECTRONICS

809 Wellington, St.
N. Kitchener, Ontario, Canada N2G 4J6
(519) 744-7111 Telex 069-55449

COLOR LARGE SCREEN DATA/GRAPHICS VIDEO DISPLAY

Model ECP 1000 + Color Projector for Computer Graphics/Data or Video Tapes

Electrohome ECP 1000 is the ideal projection system for ceiling mounted installation.

But it is also very portable—unlike other color projection units.

The difference results from our breakthrough in Laser Aligned Dichroics (LAD) that automatically converges colors within the unit and projects a brilliant image through a single lens.

So it takes only a few minutes for a non-technical person to set up ECP 1000 for a perfect presentation.

Other systems have three lenses and dozens of controls that must be separately and meticulously adjusted to converge colors on the screen. Since that can take hours of work by a trained technician, those other systems weren't really designed to provide portable convenience and versatility.

Whether you use it in a permanent installation or as a portable system, ECP 1000 performance must be seen to be believed.

It projects computer graphics in brilliant color and sharp detail. High resolution, together with 40 and 80 character display, makes computer data easy to read.

The most advanced system for today is so advanced, it's ready for tomorrow. Because it was designed as a computer projection system, it also provides the ultimate performance from video tapes, video discs and off-air signals. In fact, ECP 1000 is ready for the next generation of high definition video. And because it's so portable and can be set up in minutes, any room can be a teleconference centre.

- **Conveniently portable or convenient ceiling mount.**

You can make frequent use of your ECP 1000 system because you can readily move it from room to room and from meeting to meeting. The easy-rolling cart has a compressed system for precise and effortless height adjustment. A special ceiling mount is available for more permanent installations.

- **Readily adapted to most color and monochrome computers.**

ECP 1000 is compatible with most corporate and personal computer terminals. Because it can project monochrome as well as color, you can benefit from ECP 1000 portability and superb projection of video tapes even before you make the move to color computers.

- **No guess work about what plugs into where.**

No one can possibly make a mistake when setting up an ECP 1000 presentation. One cable plugs all computer and video tape signals, as well as remote control, into the projection unit. Other systems not designed for portability have as many as twelve cables that confuse the set-up and clutter the meeting room.

- **Only three operating controls.**

Once again—there's no guesswork. The on/off brightness and contrast controls are clearly identified and readily accessible at the rear of the unit. Or they can be operated with the remote control unit.

- **Adaptable to various screens.**

For further versatility, your ECP 1000 can be operated with front and rear screens of various sizes—including those you may already be using for your film and slide presentations. Or for ultimate performance, use the special Electrohome curved high brightness screen. ECP 1000 electronically adjusts the image size to different screen sizes at the turn of a knob.

- **Automatic positioning in relation to screen.**

As with all color computer and video tape projection systems, the unit must be correctly positioned in relation to the screen for precise optical focus.

With other systems that can be a matter of trial and error. But there's no guesswork with ECP 1000 and it takes only seconds. Two rangefinder lights project arrows on the screen. When the two arrows meet to form an X, you know the projection unit is in the correct position for proper focus.



- **One external lens makes the portable difference.**

This is the most dramatic breakthrough that makes ECP 1000 so portably different from comparable systems. Laser Aligned Dichroics (LAD) converges all colors within the unit and projects the image through a single lens. Other systems have three separate lenses and dozens of controls that must be meticulously adjusted by a technician to converge colors on the screen.

- **No need to dim the lights.**

The image is bright and clear even with normal or partially subdued lighting—especially if you use the curved high brightness screen.

- **One-button remote control automatic switching between computer and video tape images.**

You just touch one button to move back and forth between computer and video tape segments of the presentation. The effect is smooth and professional with no delays or adjustments because image frequency and size are locked in as you switch from computer to video.

- **Removable modules simplify service.**

Most functions are contained in four modules that are readily removed by a service technician to simplify maintenance procedures.

ECP 1000 +	.....	\$14,800.00
ECP 1000 +	NTSC Decoder .....	.995.00
ECP 1000 +	Cart .....	.495.00
ECP 1000 +	Ceiling Mount .....	.200.00
Extension Cable (For NTSC Decoder 25')	.....	.90.00
VS6-56	Curved 6 ft. Screen .....	.495.00
EL-56	Elevating Legs .....	.120.00
EL-56	PC Color Interface .....	.449.00
EL-56	BNC to 10-pin Cable Accessory .....	.155.00

ELECTROHOME ELECTRONICS

809 Wellington, St.
N. Kitchener, Ontario, Canada N2G 4J6
(519) 744-7111 Telex 069-55449

MONOCHROME VIDEO MONITORS

Electrohome's full range of monochrome video monitors is designed to international performance standards. Cabinets are constructed of a new Steltex textured steel for added durability. Attractive beige and earth brown tones have been utilized to further enhance the styling of each monitor design.

FEATURES

- Front operated A—B switching
- 18 MHz bandwidth
- Scanguard* circuit for size stability
- Primary and major secondary controls front accessible
- Internal/External sync capability
- Excellent black level stability
- Common mode rejection
- AC cord winder (9", 12", 15", 17")
- Switchable power supply for 110/220/240 volt operation
- Universal AC interlock
- Long life LED pilot light
- Wide variety of options

*Scanguard is a special Electrohome development for EVM 19/20 models to keep picture sizes constant over a wide range of brightness changes.

EVM-920	9" Monitor, 20 lbs.	\$ 571.00
EVM-920P31	9" Monitor P31, 20 lbs.	607.00
EVM-1220	12" Monitor, 33 lbs.	645.00
EVM-1220P31	12" Monitor P31, 33 lbs.	683.00
EVM-1519	15" Monitor, 39 lbs.	711.00
EVM-1719	17" Monitor, 48 lbs.	792.00
EVM-2319	23" Monitor, 80 lbs.	939.00
EVM-2319AG	23" Monitor with anti-glare, 85 lbs.	971.00
EVM-2319P31	23" Monitor P31, 80 lbs.	987.00
EVM-2319P31AG	23" Monitor with anti-glare, 85 lbs.	1029.00

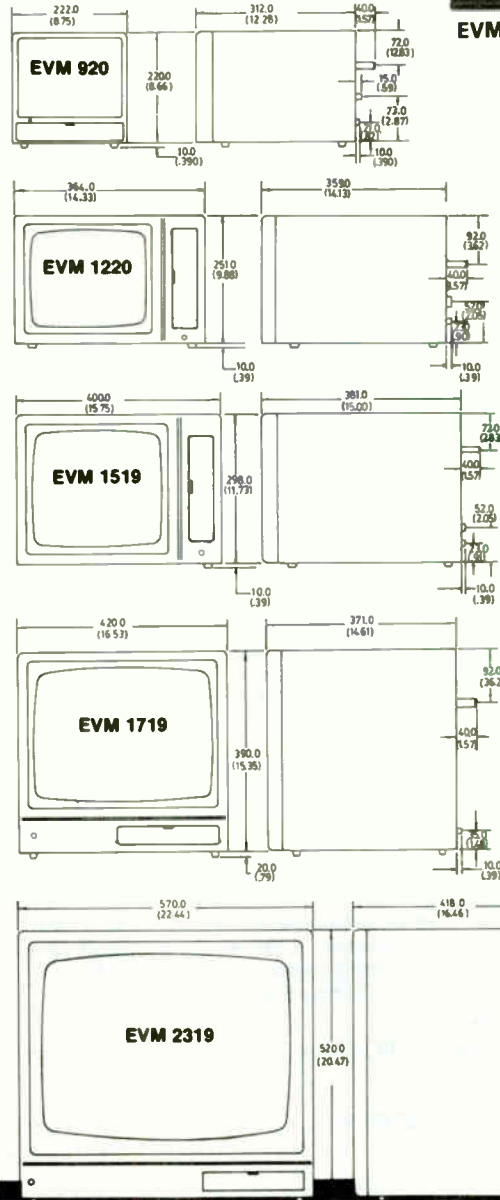
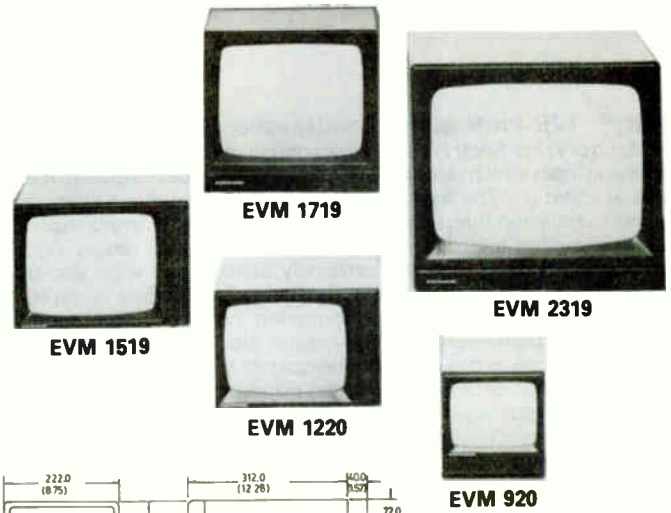
ACCESSORIES

ECM-3	Ceiling Mount for 17" and 23", 16 lbs.	\$ 75.00
EWM-1	Wall Mount Adaptor for ECM-3, 13 lbs.	65.00
EMS	Mobile Stand, 24 lbs.	175.00
RAK-9A	9" Rackmounting Kit, 7 lbs.	70.00
WMA-9	Waveform Mounting Kit for use with RAK-9A, 5 lbs.	35.00
RAK-12	12" Rackmounting Kit, 9 lbs.	70.00
RAK-15	15" Rackmounting Kit, 9 lbs.	70.00
RAK-17	17" Rackmounting Kit, 10 lbs.	70.00

	CRT Diagonal (Phosphor)	CRT Display Area	Unit Weight (Unpacked)
EVM 920	8.55 in. 217.4 mm	38 in. ² 245.2 cm ²	17 lbs. 7.65 kg.
EVM 1220	11.69 in. 296.9 mm	74 in. ² 477 cm ²	25 lbs. 11.2 kg.
EVM 1519	13.86 in. 352.0 mm	100 in. ² 645 cm ²	29 lbs. 13.0 kg.
EVM 1719	16.25 in. 412.75 mm	141 in. ² 909.4 cm ²	39 lbs. 17.5 kg.
EVM 2319	22.31 in. 566.7 mm	282 in. ² 1819 cm ²	71 lbs.* 31.9 kg.

*Add 5 lbs. extra for face plate on tubes with antiglare panels.

RAK 9A 18.97"(L) (482.0 mm); 8.75"(H) (222.0 mm); 5 lbs. (2.3 kg.)
RAK 12 18.97"(L) (482.0 mm); 10.47"(H) (266.0 mm); 7 lbs. (3.2 kg.)
RAK 15 18.97"(L) (482.0 mm); 12.20"(H) (310.0 mm); 7 lbs. (3.2 kg.)
WMA 9 3 lbs. (1.4 kg.)

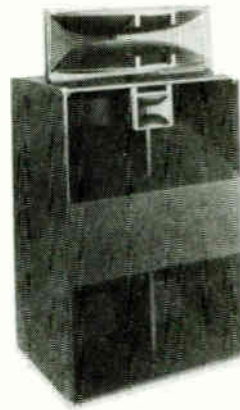




Electro-Voice®
 A GULTON COMPANY
 600 Cecil Street
 Buchanan, MI 49107
 (616) 695-6831

LOUDSPEAKER SYSTEMS

SENTRY® IVB



SENTRY® 100EL

Sentry® IVB Professional Loudspeaker System

The Electro-Voice Sentry® IVB incorporates many new and innovative design ideas which represent a significant advance in state-of-the-art speaker design. The 3-way, all horn loaded system offers absolute minimum distortion through all frequencies while providing unequalled efficiency and uniformity over the entire frequency range. With high power handling capacity, extremely uniform and wide dispersion, and linear frequency response, the Sentry® IVB offers versatility for applications in not only studio monitoring, but in high level sound reinforcement, high level playback systems, etc. The Sentry IVB professional system was designed for one-quarter to one-half space use. The unit should be as close to reflecting planes as possible so that out of phase low-frequency irregularities from the reflected wave may be avoided.

SPECIFICATIONS

Frequency Response: 50 to 18,000Hz
 Impedance: 8 ohms nominal
 Power Handling Capacity: 50 Watts
 Finish: Utility Black
 Dimensions: 27-3/4"W x 20-5/8"D x 50-3/4"H
 Weight: 148 lbs (67kg)

SENTRY® 100A



SENTRY® 505

Sentry® IVB	\$1285.00
HFSA High Frequency	475.00
LFSA Low Frequency	950.00

Sentry 500/505 Professional Monitor Systems

These systems have been designed for the broadcast/recording studio engineer. The design meets the needs of professionals by combining high efficiency with extended low-frequency response, high-power capacity across the entire frequency range, uniform frequency response and constant directivity. Each system employs a Super-Dome™ tweeter capable of handling 25 watts of input power, while reproducing program material with response out to 18kHz.

Frequency Response: 40 to 18,000Hz
 Impedance: 8.0 ohms
 Long-Term Average Power-Handling Capacity (at 8 ohms) (40 to 4,000 Hz) 100 watts

Sentry® 500

The Sentry 500 was designed for 1/4- to 1/2-space use. The speaker system should be mounted as close as possible to floor/ceiling and/or wall surfaces. When coupled with the WB23 wall mount kit, the Sentry 500 can be integrated into virtually any environment.

Dimensions: 23-3/4"H x 27"W x 13"D
 Weight: 70 lbs

Sentry® 500	\$499.00
WB23 Wall Mount Kit	27.00

Sentry® 505

The Sentry 505 must be used in quarter-space to achieve specified low-frequency performance. Installation of the system on a wall can be accomplished with the mounting brackets included with the system. It is possible to mount the Sentry 505 so that the drivers are angled at 60° or 30° from vertical.

Dimensions, 30° from vertical: 19.50"H x 25.63"W
 Top: 18.75"D
 Bottom: 7.50"D
 60° from vertical: 18.75"H x 25.63"W
 Top: 19.50"D
 Net Weight: 60 lbs

Sentry® 505	\$499.00
--------------------------	----------

Sentry® 100EL Professional Powered Monitor System

The Sentry 100EL powered monitor speaker system combines the advantages of the Sentry 100A monitor with a self-contained, high-performance power amplifier. It is designed with the broadcast/recording studio engineer in mind, although it is well suited for a wide variety of professional applications. It offers uniform frequency response and dispersion across a wide range, extended low-frequency response.

A Super-Dome™ tweeter is used to reproduce program material at high levels, with response out to 18kHz and uniform dispersion (120° at 5kHz). The low-frequency section is an 8" direct radiator woofer installed in an optimally vented enclosure. The Sentry 100EL is housed in a utility cabinet wrapped in a special scratch-resistant, matte black vinyl. The cabinet size is intentionally designed for rackmounting. When coupled with the SRB-7 rack mount/wall mount kit, the Sentry 100EL can be integrated into virtually any environment that demands conservation of space such as mobile recording studio facilities. The steel-reinforced grille is covered with a custom gray cloth.

Sentry® 100EL	\$499.00
----------------------------	----------

Sentry® 100A Monitor Speaker System

The Sentry® 100A monitor speaker system meets the needs of professionals with high efficiency and extended low-frequency response, high power capacity across the entire frequency range, uniform frequency response and dispersion, all in a compact, no-frills package. The Sentry 100A is housed in a utility cabinet wrapped in a special, scratch-resistant, matte black vinyl. The cabinet size is intentionally designed for rack mounting. With the SRB-7 rack mount/wall-mount kit, the Sentry 100A can be integrated into virtually any environment that demands conservation of space such as mobile recording studio facilities. The steel-reinforced grille is covered with a custom gray cloth.

SPECIFICATIONS

Frequency Response: 45 to 18,000Hz
 Impedance: 6 ohms
 Long-Term Average Power-Handling Capacity (above 40Hz): 30 watts
 Dimensions: 17.25"H x 12.00"W x 11.125"D
 Net Weight: 28 lbs

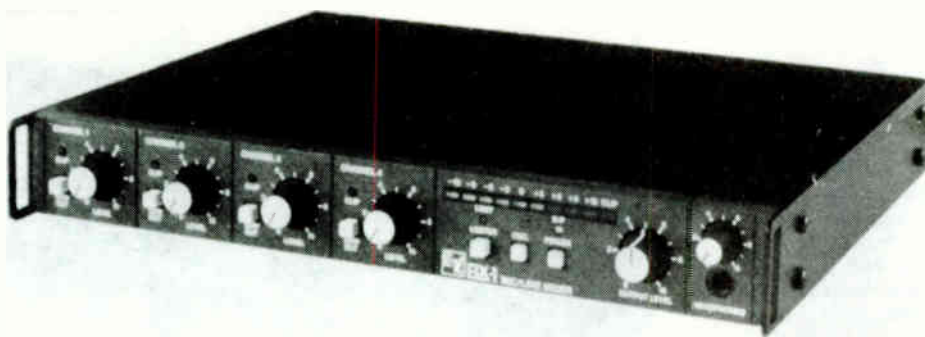
Sentry® 100A	\$249.00
SRB-7 Rack mount/Wall mount Brackets	25.00
(100EL, 100A)	

Reprinted with permission from materials in part © GULTON INDUSTRIES, INC. 1984



Electro-Voice®
 A GULTON COMPANY
 600 Cecil Street
 Buchanan, MI 49107
 (616) 695-6831

MIXER



ELX-1

ELX-1™ AUDIO MIXER

Whether your need is for a compact high-performance studio mixer, for production or editing, or for a battery operable mixer that's designed to be where the action is.

Features

- Rackmounts in one rack unit (1.75") with optional RM-1 brackets
- Powerable from AC line, internal batteries, or external source, with automatic switch-over
- Electro-Pulse® indicator shows power status and battery condition
- Detachable line cord and supplied shoulder strap
- All metal case construction
- Four balanced transformerless inputs, switchable to mike or line level
- Extensive RF shielding and protection circuitry
- Input controls set actual gain of preamps for optimum noise performance with any input signal
- Phantom power available at microphone inputs
- Low-cut filters switchable at each input
- Push buttons used throughout, no intermittent slide switches
- LED clip indicator at each input, three-color bargraph meter shows peak output level and has clip indicator
- Switchable output limiter prevents clipping; Yellow LED lights when limiting occurs
- 1kHz tone oscillator
- Transformer-isolated output; split windings present signal to 5-way binding posts and XLR-type jack
- One output switchable to mike or line level
- Headphone output, with separate power amp and level control, can drive any headphones or a cue speaker
- Two 1/4" stacking jacks allow interconnecting other mixers; modifiable for insert patching
- 1/4" auxiliary input jack for fifth input or for stacking additional mixers
- Input control color-coding markers supplied; may be coordinated with EV 379-series colored windscreens

SPECIFICATIONS

Frequency Response, any input to any output:	30Hz - 20kHz +0, -1dB
THD; any output:	20Hz - 20kHz at +4dBu <.15% 50Hz - 20kHz at +18dBu <.15% 20Hz - 20kHz at +18dBu <.1%
Stack or Headphone Output:	
Noise, EIN, MIC Input, MAX Gain, 150-Ohm Source:	-129dBu
Maximum Voltage Gain, Mic Input to Main Outputs:	91dB
Mic Input to Headphone Output:	82dB
Mic Input to Stack Output:	63dB
Common Mode Rejection:	> 70dB at 100Hz > 60dB at 20Hz - 20kHz
Phantom Power:	30VDC, 3.6K Equiv. Source Res., Mic Input Only
Low Cut Filters, Slope:	6dB/Octave
Corner Frequency:	100Hz
Clip LED's:	Light 1dB below clipping, follow supply voltage
Limiter Threshold (Changeable):	+ 15dBu
Oscillator, Frequency:	1kHz
PPM LED Display, (Changeable to Vu), Range:	-12dBu to Clipping
Rise Time:	10 mS
Fall Time:	3 s
Shorting Protection:	Any output may be shorted indefinitely without causing damage
Operating Temperature Range:	-20°C to +60°C -4°F to 140°F
Power Requirement, AC:	100-130 VAC, 60Hz Also available 200-250 VAC, 50/60Hz, 85-130VAC, 50/60Hz, 12W maximum
Batteries:	Uses Three 9V Batteries Battery Life approx. 8 hours Neda 1604A, Mallory MN1604, Eveready 522
External DC:	24-45 vDc 100 mA maximum
Dimensions:	1-3/4H x 12-7/8W x 11-3/4D
Weight:	5.5 lbs. w/batteries and cord
ELX-1 Audio Mixer.....	\$515.00



Electro-Voice®
A GULTON COMPANY
 600 Cecil Street
 Buchanan, MI 49107
 (616) 695-6831

MIXERS

8400 / 8200 SERIES

High-Performance Mixing Consoles

The 8400/8200 Series Mixers are high-performance/high-value consoles designed for fixed or portable professional sound reinforcement systems. Features and performance make them appropriate for broadcasting and recording applications. All models have left, right, mono, monitor, auxiliary 1 and auxiliary 2 outputs, all with unbalanced and transformer isolated connections. Transformer isolation reduces hum and noise caused by ground loops.

8400/8200 GENERAL FEATURES

- Equal headroom in all stages for optimum noise performance
- Gain-calibrated level controls for visual check of mixer stage gain
- Optimum circuit design to reduce harmonic and intermodulation distortion to inaudible levels
- Transient performance not slew-rate or power-bandwidth limited under any operating conditions, 20-20,000Hz
- Space-saving compact design with optimum tilt

8400 Series

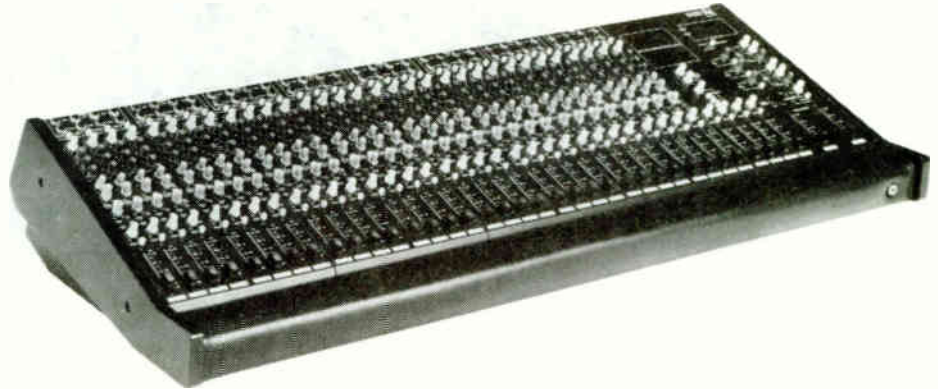
Six fluorescent bargraph meters calibrated for 0dB = +4dBm at transformer isolated outputs.

8200 Series

Two illuminated VU meters calibrated for 0Vu = +4dBu at transformer isolated outputs.

8400/8200 INPUT SECTION FEATURES

- Separate microphone and line preamps and connectors, switch selectable
- 48-volt phantom power for microphone inputs
- Circuitry to accommodate input levels from speech with distant microphones to close miking of rock music
- Continuously variable input gain controls with 11 detents for quick and accurate resetting
- Preamplifiers with -129dBu equivalent input noise, high gain and very low distortion
- Three-band EQ with switchable midrange center frequency. Shelving frequencies are 100Hz and 10kHz; midrange center frequencies are 600Hz and 3.5kHz
- Three auxiliary send controls modifiable at each input for pre- or post-EQ or fader
- Center detents for equalizer and pan controls
- Send and return jacks on each input, for insertion of external signal processing devices
- Pre-fader solo system modifiable to post-fader, with LED indicator and metering



MODEL 8432



MODEL 8208

8400 SUB-GROUP SECTION FEATURES

- Fader, pan control, send/return jacks and solo switch for each subgroup
- Separate tape input with level and balance controls
- Assignable "talkback" input for house or stage communications

8400/8200 OUTPUT SECTION FEATURES

- Independently adjustable mono output, plus stereo
- Stacking input jacks for all buses, to link with other mixers
- Powerful headphone amp with level control, mono switch and solo interrupt
- Two effects-return inputs with level, pan and monitor-send controls

8400/8200 CONNECTIONS

- All microphone inputs have female XLR 3-type connectors. Pin 2 is positive, pin 3 is negative
- The six transformer-isolated outputs have male XLR-3 type connectors. Pin 2 is positive, pin 3 is negative
- The left and right tape input jacks are RCA phono jacks
- The headphone connection is a three-conductor 1/4" phone jack. The tip is the left channel; the ring is the right channel
- All other connections on the mixer are two-conductor 1/4" phone jacks

- All stacking jacks are line-level inputs except the solo control jack, which will switch the headphones and light the indicator LED when a 10,000 ohm resistance is connected from the tip contact to ground

8400/8200 DIMENSIONS

- 8.5"H x 18.4"D

8400 SERIES

4 Subgroups, L/R + mono, phantom power, solo, talk back, tape input, fluorescent meters, transformer-isolated outputs, 100dB max. gain.

8408 8 Channels, 21.5"W \$3210.00

8416 16 Channels, 31.5"W 4185.00

8424 24 Channels, 41.5"W 6160.00

8432 32 Channels, 51.5"W 7700.00

8200 SERIES

L/R + mono, phantom power, solo, VU meters, transformer-isolated outputs, 88dB max. gain.

8208 8 Channels, 16.5"W \$2140.00

8212 12 Channels, 21.5"W 2580.00

8216 16 Channels, 26.5"W 3165.00



Electro-Voice®
A GULTON COMPANY
 600 Cecil Street
 Buchanan, MI 49107
 (616) 695-6831

MICROPHONES

RE50

Shockproof Dynamic Omnidirectional

The RE50 was designed expressly for hand-held news-gathering work. It has the same tailored frequency response and high output level as the famous 635A.

SPECIFICATIONS

- Frequency Response: 80 - 13,000Hz • Impedance: 150 ohms
- Output: 55dB • Diaphragm: EV Acoustalloy® • Case: Aluminum
- Finish: Fawn beige micomatte • Size: 7-3/4" (197mm) long; 1-15/16" (49mm) max. diameter; 1" (25mm) shank diameter
- Weight: 9-1/2 oz. (269 g) • Cable: 15' (4.6m) Switchcraft A3F conn.
- Included: 301A clamp, metal carrying case **\$156.00**

RE55

Dynamic Omnidirectional

The RE55 has the widest frequency response of all E-V DYNAMIC microphones, 40-20,000Hz. A classic design, the RE55's heritage goes back over twenty-five years to the original 655 which changed the broadcast industry's idea of what a dynamic microphone could do.

SPECIFICATIONS

- Frequency Response: 40-20,000Hz • Impedance: 150 ohms
- Output: -57dB • Diaphragm: EV Acoustalloy® • Case: Steel
- Finish: Fawn beige micomatte • Size: 10-1/2" (266.7mm) long; 1-7/32" (30.9mm) max. diameter; 3/4" (19mm) shank diameter
- Weight: 8-1/2 oz. (241 g) • Cable: 15' (4.6m) Switchcraft A3F conn.
- Included: 310A clamp, metal carrying case **\$259.00**

RE85

Shock-Mounted Miniature Dynamic Omnidirectional

Here's a lavalier microphone that offers professionals in the TV industry great protection from cord and case-conducted mechanical noise. The RE85 has an internally shock-mounted microphone capsule which is "floating" in high-compliance rubber inside the durable steel case. "Slippery" cable and case finishes reduce transmission of mechanical disturbances to the shock mount. Response is tailored for the lavalier chest position.

SPECIFICATIONS

- Frequency Response: 90-10,000Hz • Impedance: 150 ohms
- Output: -61dB • Diaphragm: EV Acoustalloy® • Case: Steel
- Finish: Champagne • Size: 2-5/8" (67mm) long; 59/64" (23mm) max. diameter • Weight: 8 oz. (229 g) • Cable: 30' (9.14m) • Included: Neck cord, tie clasp, cable belt clip, protective pouch **\$157.00**

RE30/RE34

Condenser Microphones

The RE30 and RE34 microphones were engineered specifically for electronic news gathering (ENG) and electronic field production (EFP). The RE30 is an omnidirectional microphone with carefully tailored frequency response extending from 40 to 15,000Hz. It is finished in a rugged non-reflective black. The RE34 is a cardioid microphone with an exceptional front-to-back ratio and frequency response from 40 to 15,000Hz. Except for pickup pattern, both the RE30 and RE34 offer the same features.

These microphones offer provision for both line-level and mike-level operation, switchable at the microphone. This permits either the RE30 or RE34 to work into virtually any kind of audio input including balanced and unbalanced microphone inputs and the line-level inputs of microwave and fiber optic transmitters. The microphones will also drive and hold telephone lines for remote broadcast or field reports.*

The Electro-Pulse/Phantom "Q" LED indicator in the handle serves several useful functions. A constant glow indicates the presence of phantom power. A pulsing light indicates operation on battery power, with the timing of the pulses measuring remaining power. Slight modification of the phantom power source allows use of this LED as a cue or tally light for announcer signaling purposes. Both the RE30 and RE34 are supplied with a stand clamp and a protective zippered pouch.

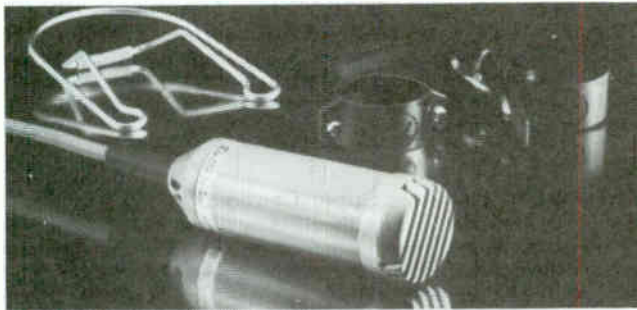
*F.C.C. — approved interconnect may be required in the U.S.

SPECIFICATIONS

- Frequency Response: 40-15,000Hz • Output Impedance, Line Level Mode: Less than 200 ohms • Mike Level Mode: -54dB • Power: Phantom (12.5V at 15mA minimum); 9V "transistor radio" battery (not supplied) • Tubular Barrel: Aluminum and steel • Finish: Satin black
- Size: 12.38" (314.5mm) long; 1.88" (47.8mm) max. diameter
- Weight: 11.8 oz. (335 g) with battery **RE30/34 \$400.00 ea.**



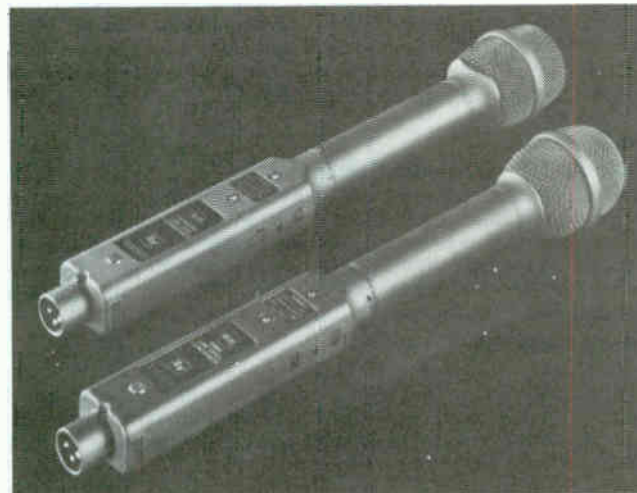
RE50



RE55



RE85



RE30/RE34

Prices and Specifications Subject to Change Without Notice.

B-389



Electro-Voice®
A GULTON COMPANY
600 Cecil Street
Buchanan, MI 49107
(616) 695-6831

MICROPHONES



RE10



RE11



RE16



RE18



RE20

RE10

Variable-D® Dynamic Super-Cardioid

A fine, moderate-cost microphone for sound reinforcement, broadcasting, choir pickup and stage work. The RE10 is similar in design to the RE15, but meets requirements where somewhat more unit-to-unit variability is acceptable.

SPECIFICATIONS

- Frequency Response: 90-13,000Hz • Impedance: 150 ohms
- Output: -56dB • Diaphragm: EV Acoustalloy® • Case: Steel
- Finish: Fawn beige micomatte • Size: 6-3/4" (172mm) long; 1-3/8" (35mm) max. diameter; 3/4" (19mm) shank diameter • Weight: 6 oz. (170 g) • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 310A clamp, metal carrying case **\$177.85**

RE11

Variable-D® Dynamic Super-Cardioid

An excellent microphone for broadcast and quality sound reinforcement, the RE11 is a modestly priced unit with many of the features of the RE16 but where the most precise unit-to-unit matching is not necessary.

SPECIFICATIONS

- Frequency Response: 90-13,000Hz • Impedance: 150 ohms
- Output: -56dB • Diaphragm: EV Acoustalloy® • Case: Steel
- Finish: Fawn beige micomatte • Size: 7-3/8" (187mm) long; 1-25/32" (45mm) max. diameter; 3/4" (19mm) shank diameter
- Weight: 8 oz. (227 g) • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 310A clamp, metal carrying case **\$190.00**

RE15

Variable-D® Dynamic Super-Cardioid

Literally born in a Hollywood TV studio, the performance and reliability of the RE15 have made it the workhorse directional microphone for broadcast and high-quality sound reinforcement.

SPECIFICATIONS

- Frequency Response: 80-15,000Hz • Impedance: 150 ohms
- Output: -56dB • Diaphragm: EV Acoustalloy® • Case: Steel
- Finish: Fawn beige micomatte • Size: 6-9/16" (167mm) long; 1-3/8" (35mm) diameter; 3/4" (19mm) shank diameter • Weight: 6 oz. (170 g) • Cable 15' (4.6m) Switchcraft A3F conn. • Included: 310A clamp, metal carrying case **\$267.00**

RE16

Variable-D® Dynamic Super-Cardioid

Another professional favorite, the RE16 is like the RE15 except it has a different blast filter. An integral part of the RE16, the blast filter makes possible the closest hand-held use without any "P-pops". In all other respects, the RE16 is like the RE15. Its rugged, mechanically "nested" design is highly resistant to damage.

SPECIFICATIONS

- Frequency Response: 80-15,000Hz • Impedance: 150 ohms
- Output: -56dB • Hum Pickup Level: -125dBm (re: .001 gauss field)
- Diaphragm: EV Acoustalloy® • Case: Steel • Finish: Fawn beige micomatte • Size: 7-3/8" (187mm) long; 1-25/32" (45mm) max. diameter; 3/4" (19mm) shank diameter • Weight: 8 oz. (227 g) • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 310A clamp, metal carrying case **\$280.00**

RE18

Shock-Mounted Variable-D® Dynamic Cardioid

The RE18 is a direct descendant of the popular RE15 and RE16 microphones. While maintaining the accurate frequency response characteristics and super-cardioid polar pattern of the RE15, the RE18 has added an integral shock mount for even better performance.

SPECIFICATIONS

- Frequency Response: 80-15,000Hz • Impedance: 150 ohms
- Output: -57dB • Diaphragm: EV Acoustalloy® • Case: Steel
- Finish: Silver tone beige • Size: 7" (178mm) long; 1-25/32" (41mm) max. diameter; 3/4" (19mm) shank diameter • Weight: 8 oz. (230 g) • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 312B stand adaptor, protective vinyl carrying pouch **\$291.00**

RE20

Variable-D® Dynamic Cardioid

The RE20 was created especially for critical recording, broadcast, and sound reinforcement applications which require response that extends to the frequency extremes. Combined with a subtle elevation of response in the 5000 to 15,000Hz range, the RE20 provides performance heretofore available only from the most expensive condenser microphones.

SPECIFICATIONS

- Frequency Response: 45-18,000Hz • Impedance: 150 ohms (changeable to 50 or 250 ohms) • Output: -57dB • Diaphragm: EV Acoustalloy® • Case: Steel • Finish: Fawn beige micomatte • Size: 8-17/32" (216.7mm) long; 2-9/64" (54.4mm) max. diameter; 1-15/16" (49.2mm) body diameter • Weight: 1 lb., 10 oz. (737 g) • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: Stand adaptor, metal carrying case **\$515.00**



Electro-Voice®
A GULTON COMPANY
600 Cecil Street
Buchanan, MI 49107
(616) 695-6831

MICROPHONES



DS35



CO15P



CO90

DS35 Single-D Dynamic Cardioid

Created especially for the professional entertainer, the DS35 has become a connoisseur's microphone. Its Single-D design emphasizes the low frequencies in up-close, handheld applications.

SPECIFICATIONS

• Frequency Response: 60-17,000 Hz • Impedance: 150 ohms • Output: -60 dB • Diaphragm: EV Acoustalloy®, polystyrene Volumetric Dome • Case: Steel • Finish: Fawn beige micomatte • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 312A clamp, metal carrying case • Size: 7-1/4" L (184mm) x 1-7/8" max. diameter (48mm) x 3/4" shank diameter (19mm) • Weight: 9.2oz. (261 grams).
DS35 **\$166.50**

CO15P Phantom Powered Condenser (Electret) Omnidirectional

The CO15P is the finest omnidirectional microphone we manufacture. Its element is used in precision real-time acoustic analyzers. Response extends from below 20 to 20,000 Hz. Unlike typical "omnidirectional" microphones, the CO15P maintains true omnidirectional performance at the highest frequencies.

CO15E

The CO15E includes all components shown. The CO15E eliminates the battery/transformer housing, for direct interface with wireless transmitter, miniature recorder, etc.



CO90P



CO94

SPECIFICATIONS

• Frequency Response: 20-20,000 Hz • Impedance: 150 ohms • Output: -45 dB • Case: Steel • Finish: Fawn gray micomatte • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 315A windscreen, 310A clamp, metal carrying case • Size: 6-13/16" L (173mm) x 1-1/16" max. diameter (27mm) x 3/4" shank diameter (19mm) • Weight: 7.5 oz. (213 grams).

CO15P **\$297.00**
CO15E **114.50**

CO90/CO90E Miniature Condenser (Electret) Omnidirectionals

Perfect for today's broadcasting and wide-range sound reinforcement systems. They are more reliable and more versatile than other condenser lavaliers. The two-conductor cable incorporates two nylon stay cords for high breaking strength. The cable-to-case interface is built to last. If there is an accident, the cable assembly is field replaceable.

The CO90 includes all components shown. The CO90E eliminates the battery/transformer housing, for direct interface with wireless transmitter, miniature recorder, etc.

SPECIFICATIONS

• Frequency Response: 40-15,000 Hz • Impedance: 150 ohms • Output: -57 dB • Operating Voltage: 1.1-1.8V Battery • Battery Life: Over 1000 hours • Case: Mike, brass; electronics, aluminum; battery/transformer housing, steel • Finish: Fawn beige micomatte • Mike Size: .851" L (21.6mm) x .415" max. diameter (10.5mm) • Cable: Mike to battery housing, 6' (1.83m) • Weight: 4 oz. (114 grams) complete, less battery; 8 oz. (23 grams) less battery/transformer housing & belt clip • Included: Tie clasp, 385 windscreen, protective pouch, belt clip.

CO90 **\$150.00**
CO90E **100.00**

CO90P Miniature Condenser Omnidirectional

The CO90P is a phantom-powered version of the popular CO90, for no-battery-to-fail reliability.

SPECIFICATIONS

• Frequency Response: 90-10,000 Hz • Impedance: 150 ohms • Output: -61 dB • Diaphragm: EV Acoustalloy • Case: Steel • Finish: Champagne • Size: 2-5/8" L (67mm) x 59/64" max. diameter (23mm) • Weight: 8 oz. (229 grams) • Cable: 30' (9.14m) • Included: Neck cord, tie clasp, cable belt clip, protective pouch.

CO90P **\$182.50**

CO94 High Performance Miniature Condenser (Electret) Omnidirectional

The CO94 does not have the limited dynamic range typical of miniature microphones powered by low-voltage batteries. A CO94 is typically 10 dB greater in sensitivity than conventional designs and will accept 20 dB greater input SPL before overload (141 dB). Thus, the CO94 may be used where other miniature microphones are simply unacceptable. A high-pass filter cuts off unwanted noise below 80 Hz. The CO94 may be phantom or battery powered, including a dual-power mode where a battery ensures against loss of signal should the phantom power fail.

SPECIFICATIONS

• Frequency Response: 70-16,000 Hz • Impedance: 150 ohms • Output: -56 dB • Operating Voltage: 1.1-1.8V Battery • Battery Life: Over 1000 hours • Case: Steel & high-impact plastic • Finish: Fawn beige micomatte • Size: Mike, 13/32" diameter (10.3mm); 1/4" deep (6.4mm); electronics, 1-1/2" L (38.1mm) x 17/32" W (13.5mm) x 3/8" D (9.5mm) • Weight: Mike, 1 oz. (2.8 grams); Electronics, 1/4 oz. (7.1 grams) • Included: 385 windscreen, belt clip, tie clip adaptor, metal carrying case.

CO94 **\$242.00**



Electro-Voice®
 A GULTON COMPANY
 600 Cecil Street
 Buchanan, MI 49107
 (616) 695-6831

PROFESSIONAL MICROPHONES



635A

635A Dynamic Omnidirectional

The 635A is quite simply the most rugged, durable microphone we manufacture. The 635A's moderately high output level (-55dB) is appropriate for a broad range of studio and field applications. Its response has been specially shaped for up-close vocals.

SPECIFICATIONS

- Frequency Response: 80-13,000Hz • Impedance: 150 ohms
- Output: -55dB • Diaphragm: EV Acoustalloy® • Case: Steel
- Finish: Fawn beige micomatte • Size: 5-15/16" (151mm) long; 1-13/32" (36mm) diameter • Weight: 6 oz. (170 g) • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 312A clamp

635A \$103.00



649B

649B Miniature Dynamic Omnidirectional

Created especially for TV, the small, lightweight 649B is the most popular dynamic lavalier available. The turned aluminum case and nested mechanical parts offer traditional E-V ruggedness. Frequency response is tailored for balanced performance in the lavalier chest position.

SPECIFICATIONS

- Frequency Response: 80-10,000Hz • Impedance: Lo-Z (150 ohms)
- Output Level: -61dB (0dB = 1mW/10 dynes/cm²) • Case: High-tensile, lathe-turned aluminum • Finish: Non-reflecting gray • Cable: 30' (9.1m), two-conductor, shielded, brown synthetic rubber-jacketed cable • Size: .75" (19mm) diameter; 2.25" (57.2mm) long • Net Weight: 1.1 oz. (31 g), less cable and neck cord assembly

649B \$153.75



DL42

DL42 Cardiline® Dynamic Unidirectional

The DL42 is state-of-the-art in superdirectional dynamics. "Cardiline" is E-V's patented combination of line and cardioid design. Compared to other "shotguns", the DL42 has more uniform response in the critical mid and high frequencies and much more uniform directivity.

SPECIFICATIONS

- Frequency Response: 50-12,000Hz • Impedance: 150 ohms
- Output: 50dB • Diaphragm: E-V Acoustalloy® • Case: Aluminum and steel • Finish: Fawn beige micomatte • Size: 16-3/4" (425mm) long; 3-3/4" (95mm) max. diameter • Weight: 1 lb., 11 oz. (800 g) complete; 13 oz. (369 g) mike only • Cable: Special coil cord to extend from mike connector (Switchcraft A3M) to shock mount bail for mechanical isolation • Included: Screw-on handle, windscreens, shock mount and carrying case

DL42 \$589.50



DO54

DO54 Dynamic Omnidirectional

Based on the RE55, the DO54 is a moderately priced microphone with essentially flat response over its rated frequency range of 50-18,000Hz. It is useful in applications where the RE55 would excel but where the 1/3-octave additional response below 50Hz is not required, or where small microphone-to-microphone variation is acceptable.

SPECIFICATIONS

- Frequency Response: 50-18,000Hz • Impedance: 150 ohms
- Output: -58dB • Diaphragm: E-V Acoustalloy® • Case: Steel
- Finish: Fawn beige micomatte • Cable: 15' (4.6m) Switchcraft A3F conn. • Size: 5-3/4" (146mm) long; 1-1/8" (29mm) max. diameter; 3/4" (19mm) shank diameter • Weight: 6.5 oz. (184 g) • Included: 310A clamp, metal carrying case

DO54 \$155.00

DO56 Shock-Mounted Dynamic Omnidirectional

The DO56 is a shock-mounted omnidirectional microphone for hand-held broadcast and sound reinforcement applications. All handling noises and cord vibration are isolated from the microphone element.

SPECIFICATIONS

- Frequency Response: 80-18,000Hz • Impedance: 150 ohms
- Output: -61dB • Diaphragm: E-V Acoustalloy® • Case: Steel and aluminum • Finish: Silver tone beige • Cable: 15' (4.6m) Switchcraft A3F conn. • Size: 6-1/4" (159mm) long; 1-15/32" (37mm) max. diameter; 3/4" (19mm) shank diameter • Weight: 6.5 oz. (185 g) • Included: 312B stand adaptor, protective vinyl carrying pouch

DO56 \$130.00
 DO56L (long case) 147.00



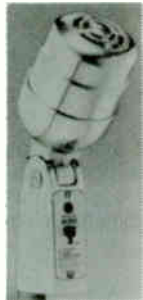
Electro-Voice®
 A GULTON COMPANY
 600 Cecil Street
 Buchanan, MI 49107
 (616) 695-6831

GENERAL PURPOSE MICROPHONES

Omnidirectional Microphones

631B Dual-Impedance Dynamic Omnidirectional

A commercial version of E-V's famous professional 635A, the 631B is intended for the home recording enthusiast as well as various music/sound reinforcement and public address applications. Has a unique removeable on/off switch. When removed the 631B is always in the on mode. **\$108.00**



630 Dual-Impedance Dynamic Omnidirectional

Incredibly rugged. The ever-present 630 model, seen at work in public address, dispatching, call systems, remote pickups, recording visual education, auditoriums, schools, churches, amateur radio, police and general communications. Good for both music and speech. **\$114.00**

647CLS Miniature Dynamic Omnidirectional

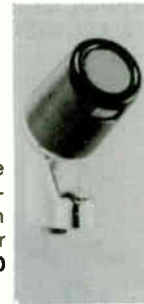
Here's an all-purpose lavalier microphone of extremely rugged construction, ideally suited for lecture halls, churches, even broadcasting. The 647CLS is low impedance and features a locking on/off switch. It is also available in high or low impedance without a switch as the 647CH and 647CL respectively. Use it handheld on a neck cord or on a gooseneck. **\$121.00**
647CH 108.00
647CL 108.00



Noise-cancelling Microphones

607L Noise-Cancelling Differential Dynamic Cardioid

The 607L is a stud-mounted microphone specially designed for PA, dispatching/paging systems and other environments with high noise levels. Mount on gooseneck or pipe. **\$82.00**



602FL Noise-Cancelling Dynamic Hand-Held

The 602FL is designed for 2-way radio, PA and paging. **\$79.00**
602FH 79.00

625ST Noise-Cancelling Dynamic Handset

For 2-way radio/industrial applications, the 625ST is a noise-cancelling handset designed for high articulation speech transmission under high-noise conditions. **\$177.00**



622L Noise-Cancelling Dynamic Cardioid

The 622L is similar to the 621 but features a noise-cancelling element. The 622 is perfect for communications, dispatching or paging use in noisy environments. Switch is movable making it touch-to-talk or grip-to-talk. **\$98.50**

Paging and Communication Microphone



600EL Dynamic Hand-Held

The 600EL is seen everywhere. It is an ideal microphone for mobile uses such as in cabs, with police radios, amateur radio, CB and marine radios. The 600EL is equally at home in PA and paging systems. A high-impact Cycloc plastic case fits the hand and survives rough use. The tough switch has been life-tested over a quarter million operations and has contacts for external relay. A spring strain relief greatly improves cord life over competitive mikes. The 600EH, a high impedance version of this mike, is also available. **\$64.00**
600EH 64.00



634BSRL Dynamic Omnidirectional

The 634BSRL is an excellent low-impedance microphone for gooseneck, paging and language labs. It has a double-pole/double-throw, push-to-talk switch with contacts for external relays. The switch is lockable. The 634BSRL is threaded 5/8"-27 for gooseneck or boom mounting.

Is also available as model number 634BL which has all the superb benefits of the 634BSRL, but without the switch. **\$50.00**
634BL 46.00



621L Dynamic Omnidirectional

Suitable for both communications and paging, the 621 is found in amateur radio, CB, aeronautical and commercial base stations. And its wide response plus built-in switch make it right for multiple installations such as council and board meeting halls. The switch is a double-pole/double-throw, push-to-talk-type with contacts for external relay. A high impedance version of the 621L, the 621H, is also available. **\$93.00**

621H 93.00

Prices and Specifications Subject to Change Without Notice.

B-393



Electro-Voice®
A GULTON COMPANY
 600 Cecil Street
 Buchanan, MI 49107
 (616) 695-6831

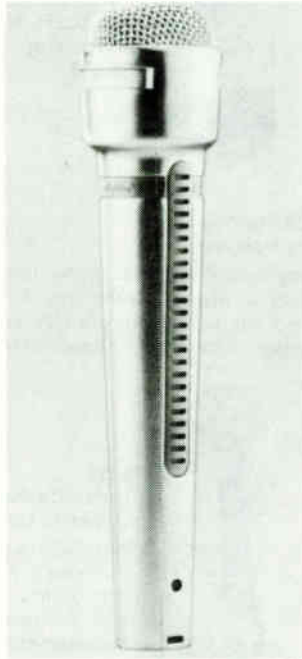
MICROPHONES



1772



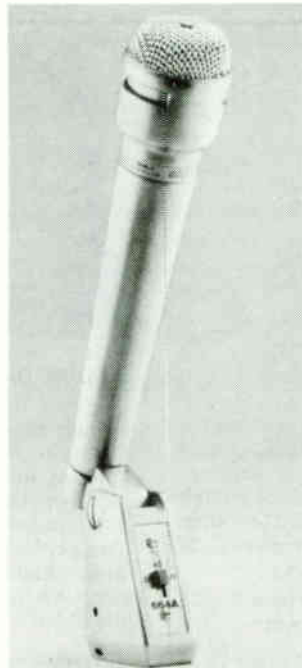
627C



660



681



664A

1772

The 1772 combines incredible gain-before-feedback with extremely high output (-49dB). Excellent for podiums, hand-held vocals with superior performance in large rooms solving many feedback problems. Phantom or battery powerable. Memraflex™ grille.

1772 \$171.00

1777A

Though possible only in fragile "studio only" mikes, these Lo-Z shock mounted condensers combine incredible durability with extremely wide frequency response. The phantom power 1777A can also be battery powered and features a bass contour switch to control bass boosting proximity effect. Memraflex™ grille.

1777A \$192.00

1777A-LC 182.00

1776B-LC 153.00

681

Dual impedance, chrome plated for extra protection from acid produced in hand-held applications. Has bass boost and "open" sound so much in demand by vocalists. Features rugged construction, Memraflex™ grille, locking on-off switch and dynamic element.

681 \$138.50

671BH/671BL/671BL-LC

Outperforms competitive hand-held mikes costing much more. Dynamic 671BH (Hi-Z), 671BL (Lo-Z) features excellent gain-before-feedback, locking on-off switch, Memraflex™ grille and rugged construction.

671BH \$108.00

671BL 108.00

671BL-LC 98.00

627C

Respected low-profile, dynamic, dual-Z microphone with locking on-off switch and satin chrome finish.

627C \$98.50

658H/658L/658L-LC

E-V quality in a truly inexpensive hand-held microphone. Available in Hi (658H) or Lo (658L), featuring: detachable cable, steel windscreen, internal shock mounting, smooth wide-range response. When price is important, why settle for less.

658H \$71.90

658L 66.50

658L-LC 56.50

660/660A/664A

Known as the "Buchanan Hammers" because of their incredible durability. Dual-Z members of the E-V family of Continuously Variable-D® microphones, i.e., at 3 feet or 3 inches from instrument or voice, you'll hear the same clear uncolored sound. The 660A is gray. 660 and 664A are satin chrome with 664A stud mounted for security.

660 \$108.00

660A 108.00

664A 128.00

644

This gray, dual-Z shotgun microphone has a highly directional Cardiline® pickup pattern. Above 700 Hz cancellation exceeds 20 dB providing excellent rejection of random noise, reverberation and feedback without sacrificing smooth frequency response.

644 \$275.00

NOTE: LC means Less Cable



Electro-Voice®
A GULTON COMPANY
 600 Cecil Street
 Buchanan, MI 49107
 (616) 695-6831

MICROPHONES

PRO-LINE MICROPHONES

Each Pro-Line microphone is packaged with the musician in mind. The soft carrying case not only protects the microphone but also protects your other equipment from damage that might result from contact with metal cases. We know that each musician and sound man has his own special requirements, so we package PL microphones without cables.

VOCAL MICROPHONES

PL88L Dynamic Cardioid Microphone

Like all Pro-Line cardioid mikes, the PL88 offers just the right amount of up-close bass boost. An on/off switch is provided for those performers who require one. The PL88L is low impedance for professional applications. For serious home recordists or others needing a high impedance model, the PL88H is also available. Both are finished in an attractive snow gray color with a contrasting charcoal grille.

PL88L \$96.00
PL88H 96.00

PL91A Dynamic Cardioid Microphone

The heart of one of E-V's most popular microphones has been refined and redesigned specifically for performers.

The PL91A has excellent directional, anti-feedback performance, and it can really stand up to physical abuse. Its output level (-60 dB) helps prevent amplifier overload. The PL91A outperforms competitive mikes that cost much more.

Also featured on the PL91A is the locking on-off switch preferred by sound men. A tough diecast case is finished in snow gray with contrasting charcoal Memraflex grille. Professional Lo-Z. \$137.50

PL95A Dynamic Cardioid Microphone

The rugged steel case is finished in a non-reflecting snow gray. The PL95A incorporates an effective "pop" filter protected by our exclusive Memraflex steel grille screen. Professional low impedance, with an output level of -60 dB that helps prevent amplifier input overload. \$189.50

PL76B Condenser Cardioid Microphone

The PL76B's FET impedance converter circuitry offers ultra-low noise and low distortion at high sound pressure levels (under 1% at 130 dB). It is powered by a common 1.5-V AA size cell. A non-reflecting snow gray finish covers the diecast case. \$197.00

PL78 Condenser Cardioid Vocal Microphone

The PL78 is a Single-D, cardioid, low impedance, electret condenser microphone featuring smooth frequency response in a rugged diecast case. The PL78 can be powered using an internal battery or any phantom power source between 24 and 48 volts. An on/off switch is provided to mute the microphone in either battery or phantom power. The PL78 is designed to provide superior gain-before-feedback in live entertainment use.

PL78 \$208.00

PL80 Dynamic Super-Cardioid Microphone

Its crisp high end and clear bass enhance the voice without compromising vocal quality. A super-cardioid pattern results in better gain-before-feedback than virtually any other dynamic microphone. In fact, the PL80 is a superior vocal mike in just about every performance category.

The PL80 has a snow gray finish and contrasting charcoal Memraflex grille. Professional Lo-Z with integral blast filter to guard against P-popping. \$222.50

PL77B Condenser Cardioid Microphone

Phantom or Battery Powered

For those who want more control over the bass-boosting proximity effect preferred by many entertainers, the PL77B features a two-position bass contour switch. The 77B has superior feedback control and an integral blast filter, protected by a Memraflex grille, protects against "P-popping". The finish is non-reflecting snow gray. \$231.50



PL88L **PL78** **PL11** **PL20** **PL9** **BK-1**

INSTRUMENT MICROPHONES

PL5 Dynamic Omnidirectional Microphone

A professional instrument mike, ideal for super high sound pressure levels, like close miking of amplified guitar, bass drums, or synthesizers.

The PL5 has a built-in pop filter, and low sensitivity to handling and cable noise. The high -55 dB output level lets you drive any low-impedance input. And Lo-Z lets you use long cables without high-frequency rolloff.

The rugged steel case is finished in non-reflecting gray. And the PL5 features the new, super tough Memraflex steel grille screen. \$120.50

PL6 Dynamic Super-Cardioid Microphone

The broad, smooth frequency response of the PL6 makes it ideal for miking brass, reeds, percussion, or piano. It has professional low impedance and an unusually high -56 dB output level. Housed in a rugged diecast case finished in non-reflecting gray, the PL6 features the new Memraflex grille screen. \$133.00

PL9 Dynamic Omnidirectional Microphone

The PL9 is a professional Lo-Z, high-output (-58 dB) microphone that compares in performance with other omnidirectionals costing several times the price. Its rugged turned steel case is attractively finished in non-reflecting gray. And the PL9 has the new super tough Memraflex steel grille screen. \$176.50

BK-1 Condenser Cardioid Microphone

The BK-1 is a Single-D electret condenser cardioid microphone featuring smooth frequency response in a rugged diecast case. The BK-1 can be powered using batteries or any phantom power source between 24 and 48 volts. An on/off switch is provided to mute the microphone in either mode, and, in the battery mode, open the power connection to conserve battery life. \$187.00

PL11 Dynamic Super-Cardioid Microphone

The PL11's big blast filter cuts way down on "pops", making it useful for vocalists who like its natural, high-intelligibility sound. And the super tough Memraflex grille screen keeps its shape. The PL11 is Lo-Z, with high output (-56 dB). Its durable turned steel case is finished in non-reflecting gray. \$218.50

PL20 Dynamic Super-Cardioid Microphone

The PL20 was created for critical recording and musical sound reinforcement applications which require response that extends to frequency extremes. A subtle elevation of response in the 5,000 to 15,000 Hz range, provides performance heretofore available only from the most expensive condenser mikes. \$595.00

PRO-LINE ACCESSORIES

541 25' Cable	\$25.75
542 25' Cable w/3 Connectors	29.40
543 Cable Switch Connector	38.85
544 50' Cable	45.70
PLC-25X 25' Cable	18.90
PLC-25P 25' Cable	18.90
PLC-25T 25' Cable	15.75

Prices and Specifications Subject to Change Without Notice.

B-395



Electro-Voice®
A GULTON COMPANY
 600 Cecil Street
 Buchanan, MI 49107
 (616) 695-6831

MICROPHONE ACCESSORIES



301	1" Clamp, black RE 30, RE 34	\$8.20
301A	1" Clamp, gray	8.20
307	Shock mount for 3/4" dia. microphones	52.50
309	Shock mount for RE20 and SE15B	68.40
310	3/4" Clamp, black (635A, 649B, DO54, DS35, PE15A, RE10, RE11, RE15, RE16, RE55, 631B)	8.20
310A	3/4" Clamp, gray (same applications as 310)	8.20
312	3/4" Snap-out Clamp, black (same applics. as 310)	8.20
312A	3/4" Snap-out Clamp, gray (same applics. as 310)	8.20
312B	3/4" Snap-out Clamp, beige (DO56, RE18, 627C)	8.20
313A	Shock mount for 3/4" diameter microphone	30.75
314	Windscreen (RE10, RE15)	17.40
314E	Windscreen (635A, 631B) Pop only for 664A, 660	8.20
315A	Windscreen (foam—CH15E, CO15E, CS15E)	8.20
337	Windscreen (626, 627)	10.00
338	Windscreen (foam-RE18)	17.40
340	Security Clamp—3/4" dia. mikes	19.50
351	Windscreen (DO56), Popfilter (RE18)	9.25
355A	Windscreen (RE55, DO54, 654A, 655C)	8.20
358	Stand Clamp, tapered (660, 671, 658, 681)	9.25
360	Windscreen (660, 661, 664A)	16.75
370	Barrier Adaptor Plate—(Surface mounting plate for CO94, CO90, CO90P)	4.15
376	Windscreen (DS35), 1776, 1777, 658, 671, 681), Popfilter (RE11, RE16)	14.25
380	10 dB Attenuator	38.00
381	Switch/Connector Cable 15'	39.50
390	Dual microphone tie clasp (CO90, CO90P, CO94)	7.00
379	Colored Windscreens (PS35, RE11, RE16, RE50, 1777A, 1776B, 661, 671B, 658)	8.20

Specify Color

379-1 Charcoal, 379-2 Red, 379-3 Orange, 379-4 Yellow, 379-5 Green, 379-6 Blue, 379-7 Violet.

400	Desk Stand, for all stud or clamp-type mikes	19.75
411	Stage Mike Mount	18.80
422	Desk Stand, clamp-type mike (CS15, DO54, DO56, DS35, PE15A, RE10, RE11, RE15, RE16, RE18, RE50, RE55, 340, 635A, and 649B)	20.50
423A	Desk Stand, 5/8"—27 threaded 5" riser	17.25
428	Touch-to-Talk Stand DPDT, 5/8"—27 thread	54.25
456	Single Carrying Case (Universal: fits all variations of 626, 627, 631, 660, 661, 664, 670, 671, 672)	21.00
502C	Matching Transformer, Lo to Hi-Z, inline	33.50
502CP	Matching Transformer, Lo to Hi-Z, w/plug	33.50
506A	Adaptor (converts 1776 and 1776A to phantom powerable)	19.25
513A	Low-frequency cutoff filter for use with Lo-Z mikes	97.50
520	100 Hz Cutoff Filter, with Professional 3-Pin Connectors, microphone end	30.75
521	25' Professional Cable, with Professional 3-Pin Connectors, both ends	35.00
522	Extension cable—designed for CO94, 10 ft. long, .09 in. diameter	26.50
523	4.5V Alkaline battery—1776 (12 per box)	45.00
524A	Windscreen (664)	16.75
AC24M	Remote AC power supply for condenser microphones from standard 117VAC power. Expandable in multiples of four to accept up to 10 microphones by using AC24S Expander Modules	138.60
AC24S	Expander Module (cannot be used without AC24M)	116.90
BS9	9 volt battery supply for the SE15B and PE15A	70.95
CA10	10 dB attenuator for use between mike capsule and electronics (C515P, CO15P)	37.90
CO9PM	Power module for CO85A, CO90*	73.80
CO9R	Replacement cable assembly for CO90/CO90E, CO903, CO94	32.00

*Connects to Phantom powers

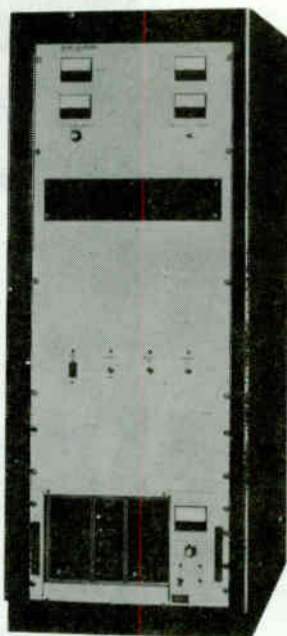


P.O. Box 68
White Haven, PA 18661
(717) 443-9575

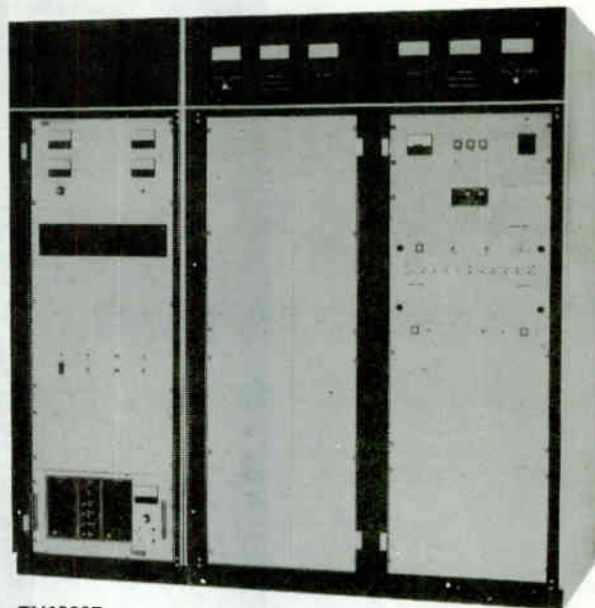
TRANSLATORS



TV10A



TV100D



TV1000D

VHF SOLID STATE TELEVISION TRANSLATORS

10 WATT

Features

- Quality Color Performance • Completely Solid State Circuit Design • Visual to Aural Ratio Control • Low Noise Pre-amplifier • 50 dB Dynamic Range AGC • FCC type accepted • Dual Auto On Sensing (carrier and sync sense) • Front panel monitoring of AGC voltages • Interchangeability of plug-ins without retuning • Single plug-in channel selection • Modular design • Optional remote interrogator

The EMCEE Models TV10A/V and TV-10A/U, 10 watt VHF television translators have been designed to meet the stringent requirements of today's performance-minded broadcaster. High reliability and excellent color performance are achieved through the use of the latest solid state integrated circuit design methods. Both models employ mast mounted, cable powered low noise preamplifiers (with preselection). The low noise preamplifiers assure the ultimate in the reception of distant signals, while minimizing down lead loss.

Type TV10D/V
VHF Input, 10 Watt Output . . . \$9,170.00
Type TV10D/U
UHF Input, 10 Watt Output . . . 9,900.00

100 WATT

Features

- 50 dB dynamic range AGC • 100% solid state circuit design • Quality color performance • Low noise pre-amplifier • FCC type accepted • Dual Auto On Sensing (carrier and sync sense) • Front panel monitoring of AGC voltages • Interchangeability of plug-ins without retuning • Single plug-in channel selection • Modular design • Optional remote interrogator

The EMCEE TV 100 Series of 100% solid state 100 watt VHF translators have been designed to provide the ultimate in reliability and performance and features modular construction with all necessary circuits for automatic, unattended and trouble free NTSC, SECAM, or PAL color operation. The unprecedented performance achieved through the use of the most advanced circuitry also provides multihop system standards previously unattainable. Both models include mast mounted preamplifiers with preselection to assure maximum reception of distant signals and minimize down-lead losses.

The TVA100 watt solid state amplifier is available separately for use with an existing driver which will provide approximately .6 watts peak sync drive power.

Type TV100D/V
VHF Input (Bands I and III) . . . \$19,600.00
Type TV100D/U
UHF Input (Bands IV and V) . . . 20,200.00
Type TVA100
100 Watt Amplifier 11,850.00

1000 WATT

Features

- 50 dB dynamic range Adaptive AGC • Low noise pre-amplifier • Automatic turn on • Quality color performance • 1000 Watt Amplifier portion also available separately • Dual Auto On Sensing (carrier and sync sense) • Front panel monitoring of AGC voltages • Interchangeability of plug-ins without retuning • Single plug-in channel selection • Modular design • Optional remote interrogator • Digital control circuitry with control ladder display

The EMCEE TV1000 series of VHF translators offers the ultimate in reliability and performance. Featuring solid state modular construction with all necessary circuits for automatic unattended NTSC, SECAM, or PAL color operation. The unprecedented performance achieved through the use of the most advanced solid state circuitry also provides multi-hop system standards previously unattainable. Translator models employ mast mounted preamplifiers with preselection to assure the maximum reception of distant signals while minimizing down lead losses.

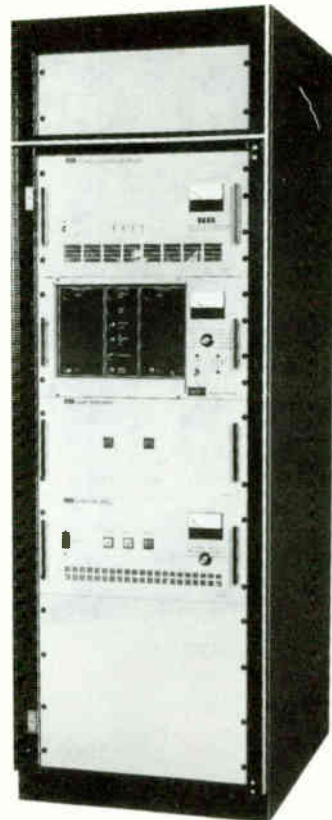
The TVA1000, 1000 watt amplifier is available separately for use with an existing driver providing 50 watts peak sync drive power, and features a ceramic tetrode with inherently low intermodulation products.

Type TV1000D/V
VHF Input (Bands I and III) . . . \$72,800.00
Type TV1000D/U
UHF Input (Bands IV and V) . . . 72,100.00
Type TVA100
1000 Watt Amplifier 51,900.00

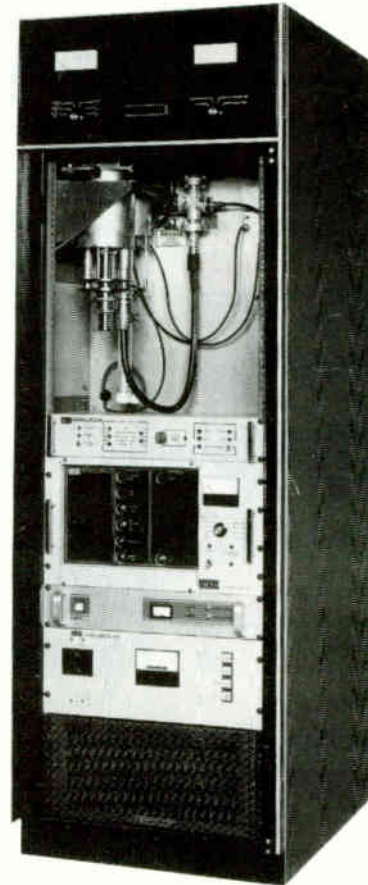


P.O. Box 68
White Haven, PA 18661
(717) 443-9575

TRANSLATORS



TU100S



TU-1000

UHF TV TRANSLATORS

Features

- Quality Color Performance • Completely Solid State • Low Noise Preamp Included
- 50db Dynamic Range Adaptive AGC
- FCC TYPE Accepted • Dual Auto On Sensing (carrier and sync sense) • Front panel monitoring of AGC voltages • Interchangeability of plug-ins without retuning
- Single plug-in channel selection • Modular design • Optional remote interrogator

These "All Solid State" translators and amplifiers are designed for automatic unattended operation in remote areas where reliability and performance are prime considerations. The TU1A/V and TU1A/U incorporate VSWR protected emitter ballasted silicon power amplifier transistors and low noise high dynamic range "front end" transistors.

High reliability and excellent color performance have been achieved by incorporation of the latest solid state circuitry. All translators include an outdoor low noise pre-amplifier (which incorporates a channel pre-selector) to optimize signal to noise ratio. All power supplies are electronically regulated to allow for line voltage variations.

The EMCEE TU100 Series is a solid state, modular translator line with all the features necessary for automatic, unattended NTSC or PAL color operation. Models are completely solid state.

Each 100 watt UHF translator is contained in a single cabinet and operates on the dual conversion principle to convert the input signal to a 45 MHz IF frequency.

Low noise, remote mounting preamplifiers assure the ultimate reception of distant signals and minimize antenna lead loss.

The EMCEE TU1000 series of UHF translators offers the ultimate in reliability and performance. Featuring solid state modular construction with all necessary features for automatic unattended NTSC, SECAM or PAL color operation. The unprecedented performance achieved through the use of the most advanced solid state circuitry also provides multi-hop system standards previously unattainable.

Both models employ mast mounted pre-amplifiers with preselection to assure the maximum reception of distant signals while minimizing down lead losses.

The TOA1000CP, 1000 watt amplifier is available separately for use with an existing driver providing approximately 60 watts peak sync drive power and features a ceramic tetrode with inherently low intermodulation products.

PRICING

1 WATT (Not Pictured)

Type TU1D/U	1 Watt UHF TV Translator \$	8,230.00
Type TU1D/U	1 Watt UHF TV Translator	8,820.00

10 WATT (Not Pictured)

Type TU10D/U	UHF Input,	10 Watt Output	\$14,990.00
TU10D/V	VHF Input,	10 Watt Output	14,410.00
TUA10A	10 Watt UHF Amplifier		6,130.00

100 WATT

Type TU100S/U	Input Ch. 14-83	\$21,000.00
Type TU100S/V	Input Ch. 2-13	20,500.00

1000 WATT

Model TU1000D/U	UHF Input (Bands IV and V) . . .	\$62,500.00
Model TU1000D/V	VHF Input (Bands I and III)	62,000.00
Model TOA1000CP	1000 Watt Amplifier	45,500.00

EMT

DISTRIBUTED EXCLUSIVELY BY
GOTHAM AUDIO CORPORATION

741 Washington Street
New York, NY 10014
(212) 741-7411
West Coast Office (818) 841-1111

LIMITERS



EMT 266X

EMT 266X

Transient Limiter

Limiting amplifier with pre-delay of the signal to be controlled and adaptive pre-emphasis.

The EMT 266X Transient Limiter enables absolute limiting of even rapidly rising wavefronts (transients) and the shortest signal peaks. The unit can be employed to advantage with radio transmitters, for record cutting, and in cassette dubbing. For FM and T.V. broadcasts, an adaptive pre-emphasis option is available to prevent overdriving beyond the permissible deviation limit, as would otherwise occur due to the pre-emphasis stage ahead of the transmitter.

The EMT 266X Transient Limiter delays the program to be limited by about 0.3 msec. The input for the control process is extracted from the program signal before the delay is initiated. The control information can thus be fully formulated before the signal to be limited reaches the control stage.

A specially derived transient-response function prevents the appearance of perceptible "holes" in the modulation. Similarly, the release characteristics have been optimized with reference to human auditory perception for fixed or programmable release times.

Technical Data

Inputs	balanced, floating
Input impedance	min. 5kohms
Nominal input level	-20 to +15dB, continuously adjustable in two plug-in ranges
Maximum input level	+24dB (Δ 12,28V)
Outputs	balanced, floating
Output impedance	max. 40 ohms
Nominal output level	-20 to +15dB, continuously adjustable in two plug-in ranges
Maximum output level	+22dB on min. 200 ohms (Δ 9.76V)
Frequency response without adaptive pre-emphasis	30Hz to 15kHz, \pm 0.3dB, -0.5dB at the band limits
Signal-to-noise ratio, rms, unweighted, referred to nominal level without adaptive pre-emphasis	92dB
with adaptive pre-emphasis, measured after de-emphasis	87dB

9 266 023	Transient Limiter, mono	\$2960.00
9 266 022	Transient Limiter, mono, with adaptive pre-emphasis	\$3330.00
9 266 020	Transient Limiter, stereo, with adaptive pre-emphasis	\$4530.00
9 266 021	Transient Limiter, stereo	\$3790.00

EMT 277 DX Limiter

Control amplifier with pre-delay for use in the modulation of AM transmitters.



EMT 277 DX-LIMITER

With the EMT 277DX-Limiter, overdriving of AM transmitters may be effectively prevented. Absolute protection against control voltage peaks is achieved by employing the transient-limiter principle. (Note the description of the EMT 266X Transient Limiter).

In addition, a compressor/expander is employed with a controlled program-dependent release time, to permit the highest possible increase of the average modulation. Two separate adjustments for compressor gain and ratio may be set and activated through an external contact. In this manner, separate adjustments may be made for day and night operation to compensate for differing propagation conditions, or separate settings may be provided for speech and music, when an appropriate detector precedes the input of the EMT 277 DX-Limiter.

OPTIONS

AM Band-Pass

A band-pass filter with a bandwidth of 60Hz to 4.5kHz may be inserted. Without this filter, the unit exhibits a wideband frequency response.

Adaptive Presence

Boosting the frequency band immediately below the steep rolloff point of 4.5kHz (mentioned above) produces the impression of a wider frequency response. In the EMT 277 DX-Limiter, this boost is produced not with a fixed filter but instead by means of a program-dependent adaptive presence network.

Polarity Reverse

This feature insures that the input signal always arrives at the transmitter with the proper polarity when different limiting thresholds are in use for the two half-waves. The polarity of the input signal is corrected inaudibly.

TECHNICAL DATA

Input	balanced	
Input impedance	min. 5kohms	
Nominal input level, continuously adjustable	-20 to +15dBm	
Max. input level	+24dBm	
Output	balanced	
Output impedance	max. 40ohms	
Nominal output level, continuously adjustable	-20 to +15dBm	
Max. output level	+21dBm, or 6dB above nominal level	
Frequency response	30Hz to 15kHz, or 60Hz to 4.5kHz determined by plug-in filter	
Signal-to-noise ratio, referred to nominal level	72dB RMS, unweighted	
Distortion (at nominal level over entire frequency range)	max. 0.25%	
9 277 000	Version for 19" rack mounting	\$4340.00
Accessories		
7 277 012	AM Band-Pass	\$479.00
7 277 004	Adaptive Presence	\$569.00
7 277 013	Polarity Reverse	\$496.00

EMT

DISTRIBUTED EXCLUSIVELY BY
GOTHAM AUDIO CORPORATION

741 Washington Street
New York, NY 10014
(212) 741-7411
West Coast Office (818) 841-1111

TURNTABLES



EMT 938

Broadcast Disk Reproducer

Turntable in tabletop cabinet with direct drive and quick starting of the platter. The cabinet serves as the installation base for stationary operation.

The EMT 938 Broadcast Disk Reproducer fulfills user requirements for highest reliability at the lowest possible cost.

The platter of the 938 Broadcast Disk Reproducer is driven directly, i.e., the platter shaft is rigidly connected to the rotor of the motor, mounted concentrically underneath. The fact that no elastic coupling is employed in the drive system makes possible an extremely rapid platter acceleration, and thus the "quick starts" so necessary for broadcast programming, without the use of an auxiliary platter.

Operation is controlled with the "Start/Stop" and "Tone Arm Lift" buttons. The rotary switch to the right enables the speeds 33-1/3, 45 and 78 rpm to be selected. The rotary knob to the left of the buttons is the main power switch.

The motor drive circuitry and the equalizer amplifiers are located on printed circuit boards, which may be swiveled out for servicing. The amplifiers produce a nominal level of 1.55V (+6dB) on 200 ohms (max. +21dB), and they are equipped with a circuit for muting during run-up. The monitor outputs, mono and stereo, continuously deliver the necessary level for cueing.

The chassis of the 938 Broadcast Disk Reproducer is spring mounted in its supporting frame to achieve the necessary mechanical absorption characteristics without employing additional external damping measures.

9 938 110 Turntable and amplifiers for TSD 15 pickup \$2380.00

9 938 120 Turntable and amplifiers for 47k ohm pickup \$2400.00

EMT 948

Broadcast Turntable

Direct drive turntable, ready to install, with fast start and back cueing of platter, remote control capability.

The EMT 948 Broadcast Turntable has been conceived for ease of operation and highest reliability.

The platter is directly driven on the shaft of a special Hall commutated motor. A high-precision magnetic tachogenerator delivers a reference frequency which is proportional to the rotational speed for precise phase control of the drive system. The direct drive system provides exceptionally stable speed characteristics; because of the rigid coupling of the rotor to the platter and the high motor torque, individual syllables may be spot cued.

Pickup cartridges with built-in magnifying lens are preferred for use with the turntable. The proven 929 Tone Arm is statically and dynamically balanced in all directions and is insensitive to chassis vibrations and mechanical shocks.

Operation is controlled with three buttons: "Start/Stop", "Reverse Rotation", and "Tone Arm Lift Motor". Speed selection is accomplished with rotary switch. These and other functions, such as variable speed and Mono/Stereo switching, can be directed by remote control through a 36-pole connector.

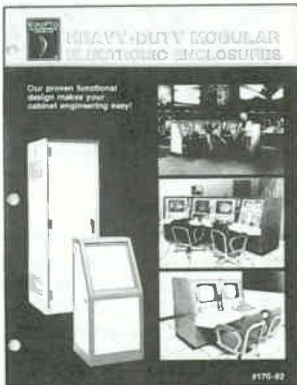
The chassis of the 948 is spring-mounted in its supporting frame to achieve the required mechanical absorption characteristics without additional damping. The use of a newly conceived constructional element, a stiff ring, inhibits all rotational oscillations.

9 948 110 Turntable and amplifiers for TSD 15 pickup \$3440.00

9 948 120 Turntable and amplifiers for 47k ohm pickup \$3415.00

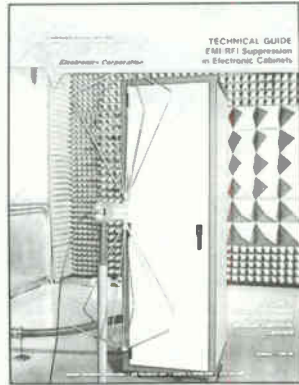
Searching for top quality electronic cabinets and computer furniture?

You've just found the best!



Heavy Duty Electronic Cabinets

Our top-of-the-line enclosures. Modular, very rugged. Sway-proof corners. Sag-proof doors. Moveable angle support channels. Superior finishes. Meets MIL Spec.



EMI/RFI Stainless Steel Shielded Cabinets

New stainless steel heavy duty shielded cabinets solve EMI/RFI/EMP suppression problems. Meets high degree of attenuation demanded by MIL Specs and TEMPEST.



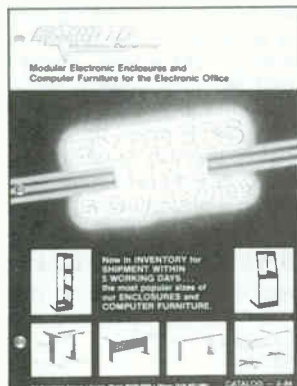
Challenger Electronic Cabinet System

Our most popular cabinet line. Modular, all-welded construction. Many accessories — fans, blowers, etc. Universal removable side panels. Competitively priced.



Solid System Electronic Cabinets

Identical to our Challenger line with one exception — the side panels are not removable. The benefit is added economy for the single-bay user.



Express Line 5 Day Service

For shipment within 5 working days, Equipto Electronics now stocks the most popular sizes of the Heavy Duty, Challenger and Quiptron lines. New special 12-page catalog gives details.



Quiptron Computer Furniture

New, high quality line of ergonomically designed modular work stations. CRT stands, printer stands, storage drawer and pedestal compartments. Available with static control tops and accessories.



Instrument Cabinets

Modular, stackable, clean contemporary styling, rugged construction. 60 standard sizes (2 widths, 3 depths, 10 heights). Available in steel or aluminum.



Modular Electronic Desk Systems

For your heavy duty applications. Strong, rugged electronic desks with unique trapezoidal pylon design. Concealed wiring, removable panels. Two heights, seven widths. Many accessories.

These Technical Manuals and Catalogs are available at no charge. Simply select the specific titles you want and drop a note on your company letterhead, to:

Committed to Quality Since 1960
EQUIPTO
 Electronics Corporation

351 Woodlawn Avenue
 Aurora, IL 60506-9988
 (312) 897-4691



142 Sierra Street
El Segundo, CA 90245
(213) 322-2136

CLOCKS/TIMERS

70 SERIES CONSOLE MOUNT CLOCKS AND TIMERS

ES 172 Six Digit—12 Hour Clock. Three setting controls: Fast Advance, Slow Advance, and Hold. **\$166.00**

ES 174 Six Digit—24 Hour Clock. Otherwise identical to the ES 172. **\$166.00**

ES 370 Four Digit, One Hundred Minute Up/Down Timer. Six controls: Count Up, Count Down, Stop, Minutes Advance, Seconds Advance, Reset. **\$211.00**

ES 371 Up/Down Timer. Similar to the ES 370 except with Leverwheel Preset capability for faster setting of the desired time. **\$335.00**

ES 570 Four Digit, Sixty or 100 Minute Timer. Select 60 or 100 minute mode on rear connector. Start, Stop and Reset controls. Runs continuously unless stopped. Reset will return all displays to zero. Unit will run if reset while running or will stay at zero if reset when stopped. **\$166.00**

ES 572 Six Digit—12 Hour Clock or Timer. Five controls: Start, Stop, Reset, Fast Advance, Slow Advance. Will run continuously to 12:59:59. Advances to 1:00:00 and continues as clock unless stopped or advanced. **\$202.00**

ES 574 A 24 hour version of ES 572. **\$202.00**

ES 575 Exactly like ES 570, with the addition of a "freeze" button. When the button is released, the display "catches up" with the correct elapsed time.

Dimensions: 2.16"H x 4.5"W x 4.13"D. **\$202.00**

ES 562/564 SIX DIGIT CLOCK/TIMER WITH MEMORY

ES 562/564 is a combination six digit clock and 24 hour timer with memory, allowing the user to set the clock to the correct time of day, switch to timer mode, then switch back to time of day by pushing one button; time of day will be correctly displayed, in hours, minutes and seconds. Six pushbutton controls are mounted on the top of the unit, near the front of the desk-top case. When panel mounting is specified, they will be mounted on the front panel, below the display. The controls may also be remoted, through two rear-mounted five pin connectors (Option R or Option D). These controls are Reset, Timer, Fast/Start, Slow/Stop, Hold and Clock.

Display: Six digits of .55" Planar Gas Discharge Display. **\$329.00**

ES 112AL/124AL DIGITAL CLOCK

ES 112 (12 hr.) and **ES 124** (24 hr.) are solid state, six digit clocks. Can drive 80 Series and 90 Series slaves. Displays are gas discharge, .55" high.

Dimensions: 2-1/2"H x 8"W x 6"D. **\$173.00**

80 SERIES JUMBO CLOCKS AND TIMERS

Large, bright 1" gas discharge displays provide effortless long distance viewing from 40 feet.

ES 182 Six Digit—12 Hour Clock. Three rear-mounted setting controls: Fast Advance, Slow Advance, and Hold. **\$286.00**

ES 184 Six Digit—24 Hour Clock. Otherwise identical to the ES 182. **\$286.00**

ES 380 Four Digit, 100 Minute Up/Down Timer Displays minutes and seconds, with rear-mounted connector to allow remote wiring of six momentary SPST Controls: Count up, Count Down, Stop, Minutes Advance, Seconds Advance and Reset. Other features similar to ES 301. **\$332.00**

ES 381 Up/Down Timer. Similar to ES 380, except that leverwheel preset is used. **\$437.00**

ES 580 Four Digit, 60 Minute Timer Displays minutes and seconds. Rear connector allows remote wiring of three momentary SPST controls: Start, Stop and Reset. Reset returns all displays to zero, and timer will continue to run from zero if reset while running.

80 Series slaves are also compatible with other ESE clocks and timers: ES 112/124, 301, 302 and 510.

Dimensions: 4.45"H x 10.38"W x 6.58"D. **\$239.00**

ES 510L FOUR DIGIT 60 MINUTE TIMER

ES 510 is a four digit, sixty minute timer (59:59) with Start, Stop and Reset controls. If stopped, display will hold time reading and when restarted will continue with next count from last displayed figure. If reset while running, timer will continue to run. ES 510 can drive 80 Series and 90 Series Slaves.

Dimensions: 2-1/2"H x 6"W x 6"D. **\$166.00**

B-402



ES 562/564



ES 391



ES 992/994

ES 207 VIDEO DISTRIBUTION AMPLIFIER

ES 207 Video Distribution Amplifier answers the "one more unit" question with a versatile little package that can be tucked anywhere, either temporarily or permanently. Controls are available through the top plate with a miniature screwdriver for video gain, D.C. level and HF equalization. A very wide range of chroma level control can be obtained with the DA. Output video is expected to be set for 0 volts D.C. on the blanking or porch level, with video extending positive and sync negative. Nominal input and output signal level is 1 volt p-p. Typical gain-control range is from 1/2 volt to 1-1/2 volts p-p. **\$175.00**

ES 232 TIME CALCULATOR

ES 232 is an eight digit, 24 hour, Up/Down Timer/Time Calculator displaying Hours, Minutes, Seconds, and Frames (30 frames per second) on bright red .4" LED's. In the Calculator mode, data may be added or subtracted, or stored in memory, or recalled from memory. There are 10 memory locations available. Data may be added or subtracted from the timer value, while the timer is counting either up or down, but not while the timer is stopped. When stopped, data moved from calculator to time serves to preset the timer. In the timer mode, ES 232 counts up or down, and can be reset while running or stopped. It can be preset to any number in the 24 hour range. While timer is running or stopped, it is possible to enter the value into memory without disturbing the operation. It is also possible to recall a value from memory and add or subtract while timer is counting up or down. ES 232 uses 24 keys, mounted on a desktop case, measuring 2"H x 5"W x 6"D. **\$250.00**

90 SERIES 2-INCH DISPLAYS VIEWABLE AT 60 FEET

ES 391 Presettable Up/Down Timer. 100 Minute Range, Displays Minutes and Seconds, uses Leverwheel Preset. Controls are Count Up, Count Down, Stop, Reset and Preset.

Dimensions: 4.45"H x 10.38"W x 6.58"D. **\$511.00**

ES 590 Sixty Minute Timer Displays Minutes and Seconds. Rear-mounted connector provides for wiring to user's single pole, momentary, push-button controls—Start, Stop and Reset. Reset returns all displays to zero, and timer will continue to run from zero if reset while counting.

Dimensions: 4.45"H x 10.38"W x 6.58"D. **\$358.00**

ES 992/994—6 Digit Clocks. ES 992 (12 hr.) and ES 994 (24 hr.) Hours and Minutes on Two Inch Gas Discharge Displays, Seconds on One Inch Gas Discharge Displays. Three top-mounted setting controls—Fast Advance, Slow Advance, and Hold.

Dimensions: 5"H x 12"W x 3-1/2"D. **\$471.00**

ES 301/302 100 MINUTE UP/DOWN TIMERS

ES 301 is a four digit, one hundred minute timer (99:59) with six controls: Count Up, Count Down, Stop, Minutes Advance, Seconds Advance, Reset. Counting can be activated up or down or set back to zero. When "Stop" control is pressed, the four digit display is held. Counting direction (up or down) can be changed or time can be reset to zero without stopping the count. The ES 301 can drive 80 Series and 90 Series Slaves. Displays are gas discharge .55" high.

With the ES 302, the user can preset times much faster than with the ES 301, because lever-wheel type switches are used for the preset feature. The ES 302 can drive 80 Series and 90 Series Slaves.

Dimensions: ES 301: 2-1/2"H x 8"W x 6"D. **\$246.00**

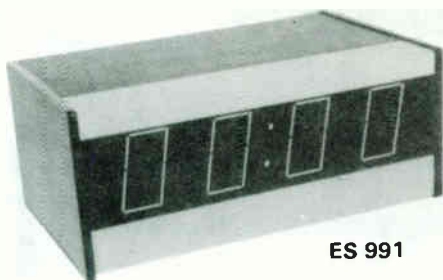
ES 302: 2-1/2"H x 10"W x 6"D. **\$317.00**

Prices and Specifications Subject to Change Without Notice.



142 Sierra Street
El Segundo, CA 90245
(213) 322-2136

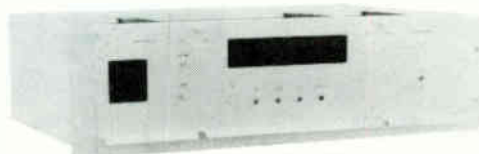
CLOCKS/TIMERS



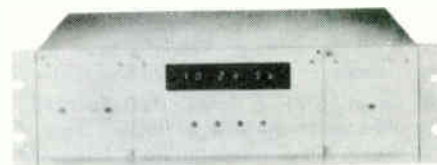
ES 991



ES 192/194



ES 199



ES 160

MASTER CLOCKS

ESE Masters provide a means of keeping all time displays in the system in agreement, through the use of a Serial Time Code. Only one pair of wires is needed to distribute the time code to all remote serial input displays. An ESE Master Clock System can operate digital displays, clocks with sweep second hands, printers, and in addition, tell your computer what time it is. Twelve hours of standby battery operation is standard in ES 160 and 160/1.

ES 160. Mounted in a 5 1/4" relay rack panel & chassis, displays six digits of time information on .4" LED displays, in 12 hour format. The ES 160 has 3 sec. per month accuracy. Its standard output is serial BCD, CMOS compatible, and drives ES 161, 166, 171, 991 or 993 Remote Displays w/o buffering. All inputs & outputs are through rear-mounted connectors. Dimensions: 5 1/4"H x 19"W x 15"D. **\$1103.00**

ES 160/1. One second per month version of ES 160. **\$1286.00**

ES 199. Our most accurate Master, providing better than .5 seconds per month. It contains a 10 MHz receiver, with audio output, to synchronize with WWV at the push of a button. WWV transmits a 1000 Hz tone at the start of each minute, except for the first minute of each hour, when a 1500 Hz tone occurs. If the button is pushed and held during this time, the seconds' counters of the clock will be reset to zero. The ES 199 is supplied with an antenna, battery and charger. An external sync input connector is provided, to allow introduction of a periodic logic "0" or contact closure at a once per second or slower rate. In order to simplify maintenance, test points are provided on the 1000 Hz decoder board, to allow re-calibration of the oscillator using only an oscilloscope. The serial output will drive 100 ES 161, 166, 171, 991 or ES 993 Remote Displays. Dimensions: 5 1/4"H x 19"W x 15"D. Electrical: 117V AC, 50/60 Hz. Options: B (CMOS, 5V), J, One pps Output, Relay Closure on Hour and 1/2 Hour, Impulse Driver (ES 162). **\$1500.00**

ES 192L/ES 194L. The most economical Masters, ES 192L (12 Hr.) and ES 194L (24 Hr.) are constructed using ES 112 or ES 124 digital clocks and adding the ES 167L Serial Time Code Generator to provide the output needed to drive Remote Serial Displays ES 161, 166, 171, 991 and 993. Displays are 6" incandescent type. Dimensions: 2 1/2"H x 8"W x 6"D **\$341.00**

Accessories

ES 161 Remote Digital Display decodes serial time data and displays six digits of time on .55" Gas Discharge Displays, in either 12 or 24 hour format. Dimensions: 8"W x 2 1/2"H x 6"D. **\$173.00**

ES 162 Impulse Driver plugs into the ES 160 chassis, and can drive 20 Impulse Clocks. Designed so that if power fails, impulse always comes on with the same polarity when power is restored. **\$210.00**

ES 164 Remote Digital Impulse Display is similar to the ES 161 except that the ES 164 derives its count command from the ES 162 Impulse Driver, or any impulse clock drive circuits already installed. Dimensions: 8"W x 2 1/2"H x 6"D. **\$256.00**

ES 165 Impulse Driver was designed to provide synchronized power to the ES 168 Impulse Clocks. It is capable of driving 50 ES 168 clocks, and will keep them running accurately through twelve hours of power failure. The ES 165 derives its synchronizing pulse from any one pulse per second source, such as an ESE Master Clock, and can also accept the once per second, alternating 12 or 24 volt impulses from an existing impulse clock system. **\$200.00**

ES 166 Jumbo 1" Clock Display features six digits of one inch Gas Discharge Displays in 12 or 24 hour format. Receives serial time code input from any ESE Master Clock or ES 167. Dimensions: 10 1/2"W x 4 1/2"H x 6 1/2"D. **\$267.00**

ES 167A Serial Time Code Generator is an integral part of ES 160, 190, 192L/194L and 196 Master Clocks, this unit can be added to many other ESE products, including ES 112, 124, 182, 184, 992, 994, 750, 751, 753, 754 and all 780 Series Time Programmers. Drives ES 161, 166, 171, 991 or 993 Remote Displays. **\$153.00**

ES 168 Impulse Clock operates from the 8 pps output of the ES 165 impulse Driver. As many as 50 ES 168s can be connected to a single driver, and they will continue to run during a power outage of at least 12 hours. **\$135.00**

ES 171 Console Mount Remote Display receives the serial time code generated by any ESE Master Clock, or any ESE product containing the ES 167 serial time code generator, and displays it on bright red .3" LEDs. Dimensions: 2 1/4"H x 4 1/2"W x 4"D. **\$166.00**

Impulse Clock. When a sweep second hand is desired specify the 3201 .003 "Extra Flat" Impulse Clock. It has a 12 inch dial protected by a glass cover and metal bezel and is approximately one inch thick. As many as twenty impulse clocks can be driven by a Master Clock which has ES 162 as an accessory. **\$211.00**

ES 991 4-Digit Serial Input Slave decodes serial time data and displays four digits of time on large 2" Gas Discharge Displays. Dimensions: 10 1/2"W x 4 1/2"H x 6 1/2"D, Desk Top Case. **\$341.00**

ES 993 6-Digit Serial Input Slave features four digits of 2" high Gas Discharge Displays, and two digits (Seconds) of 1" Gas Discharge Displays. Receives serial time code input from any ESE Master Clock or ES 167. Dimensions: 5"H x 12"W x 3"D (Wall Mount). **\$471.00**



142 Sierra Street
El Segundo, CA 90245
(213) 322-2136

TIME CODE READERS PROGRAMMERS/LEVEL INDICATOR

TIME CODE READERS

ES 253 SMPTE Time Code Reader is an eight-digit SMPTE Time Code Reader displaying Hours, Minutes, Seconds and Frames. **\$477.00**

ES 254 SMPTE Time Code Reader is a bi-directional, multi-speed eight-digit reader, displaying Hours, Minutes, Seconds and Frames on .4" red LED displays. **\$709.00**

ES 255 is a bi-directional, multi-speed, eight-digit SMPTE Code Reader, that can add the information to a video stream for recording time code on the video portion of a tape, or for displaying it on a monitor. Reading speed is 1/20 to 20 times playback speed. **\$1045.00**

ES 256 "Smart" SMPTE Time Code Reader. The ES 256 is a bi-directional multi-speed, eight digit SMPTE Time Code Reader which displays Hours, Minutes, Seconds and Frames on .4" red LED's. The ES 256 incorporates a digital error detection system: When a bad frame of time code is detected, the unit will switch to a frame-counting mode. **\$995.00**

ES 257 SMPTE Time Code Reader/Comparator is capable of making two comparisons, as established by the two sets of thumbwheels located on the front panel. By specifying option "B" (four-line parallel BCD, 5V CMOS compatible), additional comparisons may be made by connecting one or more ES 258 "expander" units. **\$875.00**

ES 258 SMPTE Time Code Comparator has been designed as an "expander" for the ES 257. Two sets of eight-digit thumbwheels are located on the front panel, to allow comparison of two SMPTE code locations. **\$395.00**

ES 280 Audio Time Code Generator/Reader is a 10 Digit Audio Time Code Generator/Reader, capable of laying down a serial BCD time code on audio tape in the Generator Mode, and recovering and displaying it in digital form in the Reader Mode. The code has been designed by ESE. It is not a standard code, such as SMPTE or IRIG. The frequencies used to produce the code have been selected to be compatible with cartridge machines as well as other tape recording and playback equipment. Amplitude adjustment assures the right amount of signal for the particular machine being used. **\$525.00**

VIDEO TIME AND DATE GENERATORS

ES 206 Video Time and Date Generator has been designed to allow the addition of Time and Date information to a video signal. Two rear-mounted video jacks permit "looping" the video information through the 206 to add the data. **\$495.00**

ES 261 SMPTE Time Code Generator is a pre-settable, eight-digit SMPTE/Time Code Generator, capable of Drop Frame or Non-Drop Frame operation. **\$788.00**

PROGRAMMERS

780 Series Ram Time Programmers are the most cost-effective way of programming more than eight events. They are flexible, easy to use, and provide 32 events (expandable to 96) in 5-1/4" of rack space.

780 Series units operate from the power line with a backup crystal time base and 72 hour battery/charger as an integral part of the equipment.

STANDARD UNITS

Eight Digits of Programming Capability

ES 780 10 Days, 10 Outputs, Hours, Minutes, Seconds **\$1500.00**
ES 781 100 Days, Hours, Minutes, Seconds **1365.00**
ES 782 16 Outputs, Hours, Minutes, Seconds **1575.00**

Six Digits of Programming Capability

ES 783 Hours, Minutes, Seconds **1300.00**
ES 784 100 Days, Hours, Minutes **1300.00**
ES 785 100 Days, Minutes, Seconds **1525.00**
ES 786 16 Outputs, Hours, Minutes **1525.00**
ES 787 16 Outputs, Minutes, Seconds **1525.00**

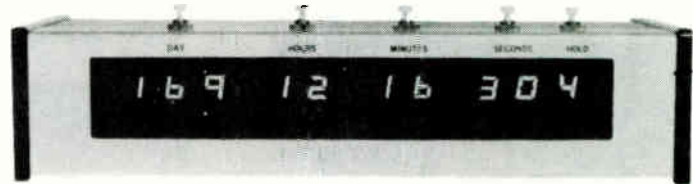
Four Digits of Programming Capability

ES 788 Hours, Minutes **1250.00**
ES 789 Minutes, Seconds **1250.00**

The size of the unit is 5-1/4"H x 19"W x 10"D — Relay Rack construction, totally enclosed, with a screen top.



ES 255



ES 280



ES 206

ES 790 Microprocessor-Based Programmable Timer is a 1,000 event, 32 channel, microprocessor-based programmable clock. Events occur as reed relay contact closures (single pole, normally open). These closures may be all momentary, all latching, or 16 of each, at the user's option. A simple modification allows the use of 16 double pole relays, instead of 32 single pole relays.

1,000 time events can be programmed into the memory and they can be entered randomly, as opposed to chronologically.

An internal crystal with battery and battery charger is provided for uninterrupted operation.

The size of the unit is 5-1/4"H x 19"W x 10"D.

ES 790 is totally enclosed in a rack mounting chassis with a screen top. **\$2190.00**

750 Series Thumbwheel Programmer Comparators are recommended when programming up to eight time events. Thumbwheel switches are set to compare the time information from an ESE Clock or Timer.

An output (event) occurs each time the thumbwheel switch setting agrees with the time display.

One set of thumbwheels is required for each event. The standard 750 Series units are enclosed in a 3-1/2" high relay rack panel and chassis.

STANDARD UNITS

ES 750L ES 112 and one 6 Digit Program **\$330.00**
ES 751L ES 124 and one 6 Digit Program **330.00**
ES 753L ES 112 and two 4 Digit Programs (Hrs. & Min.) **394.00**
ES 754L ES 124 and two 4 Digit Programs (Hrs. & Min.) **394.00**
ES 756L ES 510 and one 4 Digit Program (Min. & Sec.) **325.00**
ES 758L ES 510 and two 4 Digit Programs (Min. & Sec.) **410.00**

AUDIO LEVEL INDICATOR

ES 214 Dynamic Audio Level Indicator is a highly accurate audio level indicator, which is designed to simulate the action of a conventional VU-Meter but with superior dynamic characteristics. The LED meter is five to one hundred times faster in responding to complex waveforms than the mechanical meter without sacrificing the familiar meter "movement."

SPECIFICATIONS

Number of Indicators: 14 LED Lamps in 3 colors. Scale: +4, +3, +2, +1dB-Red. 0dB-yellow. -1, -2, -3, -5, -7, -10, -15, -20, -25dB-Green.
Input Impedance: 2200 ohms at maximum sensitivity. 6800 ohms at +8dBm "House Level", 10,000 ohms at minimum sensitivity.

Input Circuit: Transformer isolated, balanced bridging.

Frequency Response: 20-20kHz ± 1dB (all modes).

Rise Times: Less than 250 MicroSec (Peak Mode), less than 25 MilliSec (Fast Averaging Mode). Approximately 300 MilliSec (Optional VU Standard).

Fall Time: (All Modes) About 300 MicroSec from full scale.

Modes of Operation: Peak Reading. Fast Averaging (Apparent Loudness). Slow Averaging (USA VU-Standard). **\$119.00**



FA-400 NTSC Digital Time Base Corrector

- Full color frame memory function
- Compact, lightweight unit specially designed for professional video systems
- Outstanding timebase correction together with automatic/manual field 1 and field 2 freeze, and remote control capabilities
- Corrects errors in 1/2" and 3/4" VTRs, or any V-lock or non-V-lock source
- A full processing amp
- Optional remote control
- Includes a built-in RS-170A standard sync signal generator with gen-lock function

FA-400 Digital Time Base Corrector (NTSC) **\$5950.00**



FA-420 Digital Time Base Corrector

- Compact, lightweight unit
- Full feature digital time base correction
- Full color frame memory
- Capable of correcting errors in 1/2" and 3/4" VTRs, or any V-lock or non-V-lock source
- TBC processes color in either the HETERO or VTR SC modes
- Optional remote control unit allows full operation away from the FA-420
- Full processing amp allows control of video level, chroma level, chroma phase, set-up and freeze operation
- Comes with built-in digital DOC and a RS-170A standard sync signal generator with gen-lock function

FA-420 Digital Time Base Corrector w/Color Frame Memory **\$8450.00**



FA-410 Digital Time Base Corrector

- PAL/SECAM, NTSC standards
- 16H wide range time base correction for a large variety of popular VTRs (such as the 3/4" U-format, VHS and Betamax) in studio and production use today
- Designed especially for ENG and field production applications
- Component encoding of luminance and color difference signals
- Either external sync referenced or non-capstan servoed VTRs are corrected
- Portable small size and low weight
- Unbeatable low cost compared with other available equipment with less capability in many instances
- Digital luminance/chroma delay correction
- Composite and non-composite outputs
- Chroma noise reduction with comb filtering
- Built-in sync pulse generator
- LED input level display
- White clip function
- Optional digital DOC is available (standard for NTSC)
- Dimensions: 16.92"W x 3.46"H x 19.88"D (430 x 88 x 505mm) (19" rack type)

FA-410 Digital Time Base Corrector (NTSC) **\$7950.00**
w/Dropout Compensator
DT Option for Sony BVU-820 **\$400.00**



FA-430 Digital Time Base Corrector/Image Processor

- Full feature processing for 3/4" and 1/2" VTR formats
- Includes Time Base Correction, Image Enhancement, Digital Color Correction and Noise Reduction
- System consists of the basic 19" rack-mount main control unit and a compact remote controller containing controls for all correction functions
- Incorporates the major design and performance features of the Model FA-410
- Combines both H detail enhancement and selective noise reduction to provide pleasing pictures with appearance of greater bandwidth
- Color correction allows RGB correction to compensate for poorly aligned camera white & black levels as well as for camera-to-camera differences in shooting the same scene
- Special Black Stretch circuit that provides improved contrast in low light level scenes
- Allows directors to "paint" scenes to create special moods by changing overall picture hue
- Time Base Correction capabilities provide professional broadcast level performance
- Composite or non-composite video outputs, built-in sync pulse generator, and composite sync and VTR subcarrier outputs
- Dub-In, Dub-Out mode for editing and duplicating

FA-430 Time Base Corrector & Image Processor **\$12,500.00**



TSG-5000



DEC-100



ENC-100



CCS-4200



CCS-4300

CCS-4300 Color Corrector with Full Broadcast Processing Amp

- Full broadcast specifications
- 19" Rackmounting processor & remote control unit
- Independent RGB controls for both white & black levels
- Vertical blanking set in 1H steps range 10H to 21H
- Designed for color balancing and leveling in production, post production and telecine operations

CCS-4300 Color Corrector \$6000.00

TSG-5000 Sync Pulse and Signal Generator

- Highly advanced sync pulse and signal generator with excellent performance
- PAL, NTSC standards
- H drive, V drive, composite blanking, composite sync, burst flag and vertical sync/2 outputs (plus PAL pulse for PAL).
- Superior gen-lock capability for an external composite video signal
- Gen-lock to either composite video (black burst) or composite sync and subcarrier (plus PAL pulse for PAL)—mode of the gen-lock operation is indicated by LED lamp on the front panel
- When gen-lock operation is off, built-in sync generator will be operative
- Optional CB-5000 Color Bar Generator and BC-5000 Background Color Generator are available (both generators are plug-in module type)—remote control capability of hue, saturation and luminance for the background color
- Dimensions: 16.92"W x 3.46"H x 13.19"D (430 x 88 x 335 mm) (19" rack type)

TSG-5000 Sync Pulse and Signal Generator \$3400.00
Color Bar Generator 1100.00
Back Color Generator 700.00

ALC-4100 Automatic Level Controller

- PAL, NTSC standards
- Correction of video output level differences
- Automatic gain control
- Separate control for video, sync and burst signals

ALC-4100 Automatic Level Controller \$3450.00

DEC-100 RGB Decoder

- Converts standard NTSC video signals to RGB components, primarily used to provide Chroma key inputs on switchers or to mix with RGB Graphic Systems
- Converts composite video inputs from cameras and VTRs, etc. and provides RGB component signals as well as Sync outputs

DEC-100 RGB Decoder \$1900.00

ENC-100 Color Encoder

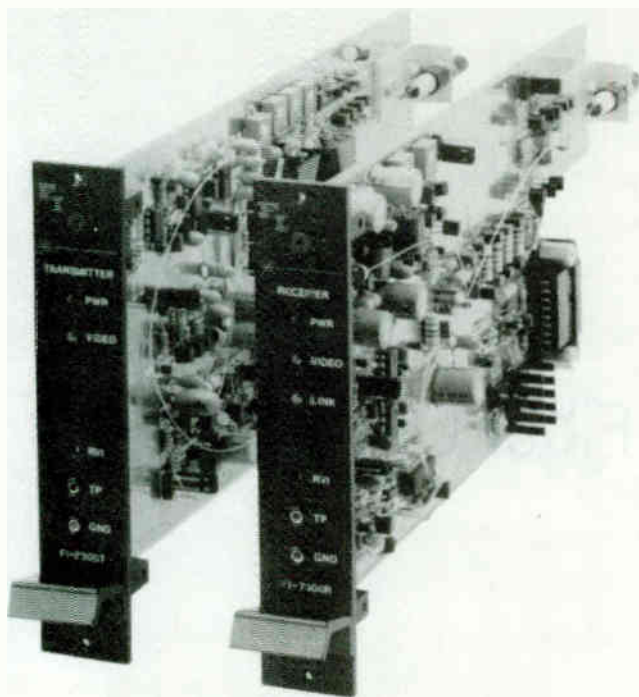
- Especially designed to incorporate with the FVW-910, in conjunction with the CC-910, CS-710 and VTW-600 in conjunction with the CU-600, resulting in effective performance
- Encodes analogue or digital RGB signals input
- Special mixing is performed providing certain and distinct superimposition
- Both NTSC and PAL standards are available
- Dimensions: 16.92"W x 1.75"H x 12.6"D (430 x 44 x 320 mm)

ENC-100 Color Encoder \$2000.00

CCS-4200 Color Corrector

- Highly advanced color corrector for professional use
- PAL, NTSC standards
- Composed of the main process unit and remote control unit
- Variations in the color balance and video level caused by the surrounding conditions in ENG, EFP, etc. are finely corrected
- For correction of color tone differences, gamma, gain and black balance adjusters are provided
- For correction of video signal level, video level, chroma level, set-up and burst phase adjusters are provided
- Three operation modes: by-pass, operation, and off
- DIF/BAL mode switch: DIF is for adjusting live camera and VTR output; BAL is for adjusting film camera output
- Gamma on/off switch
- Inferior sync and burst signals improvement
- Each adjuster includes neutral center clip
- Dimensions: Main Process Unit 16.92"W x 1.75"H x 18.11"D (430 x 44.5 x 460 mm) (19" rack type)
- Remote Control Unit 9.84"W x 2.17"H x 3.86"D (250 x 55 x 98 mm)

CCS-4200 Color Corrector \$5000.00



Analog Fiber Optic Modules

video

MODELS FI-7300T And FI-7300R ANALOG FIBER OPTIC MODULES (Video)

The FI-7300 analog link consists of two modules; the transmitter (FI-7300T) and the receiver (FI-7300R). Each unit can be plugged into the FI-7000MF mainframe from which operating power is derived.

The FI-7300 link is intended for the transmission of high quality analog signals over large distances, with exceptionally low signal degradation.

The link can be used for the distribution of studio quality video signals through areas of high electromagnetic interference or where the advantages of the small size of optical fiber cable are significant.

Front panel indicators and test points provide easy monitoring of link performance.

Specifications

INPUT

Type
 Common mode rejection, 60 Hz
 Common mode range

Input return loss

OUTPUT

Number of outputs
 Output impedance
 Output return loss
 Output to output isolation
 Module to module isolation
 S/N ratio
 at -27 dBm of received optical
 power
 DC on output

Loop-through
 >40 dB
 ± 12 volts referenced
 to chassis ground
 >40 dB to 5 MHz

2 per receiver module
 75 ohms $\pm 1\%$
 >30 dB to 5 MHz
 >30 dB to 5 MHz
 >60 dB to 5 MHz

>60 dB weighted
 <50 millivolts in AC-
 coupled mode

DC restored

<50 millivolts, over
 entire APL range

PERFORMANCE

Differential Distortion
 (with composite signal and
 transmitter input clamp
 activated).

Phase

<0.5°

Gain

<1.0%

Frequency response:

10 Hz to 5.9 MHz

± 0.15 dB

2 T Pulse to bar

$\pm 1\%$

Field tilt composite field square
 wave

<1%

Line tilt

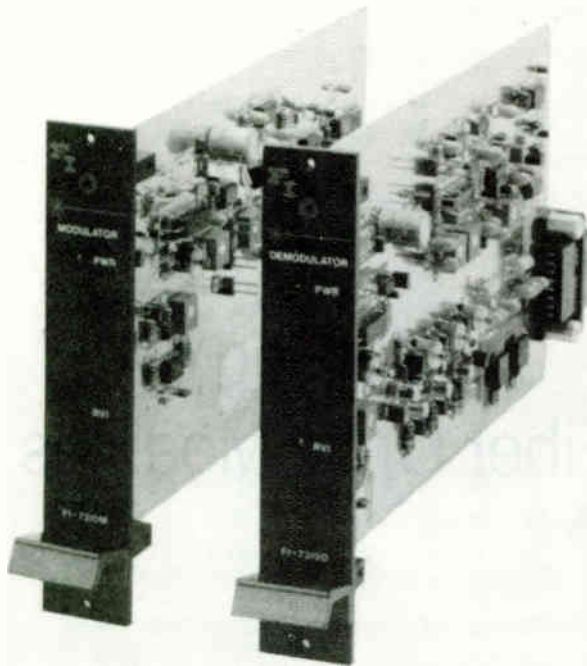
<1%

Relative Chrominance-to-
 Luminance distortion (without
 filter)

<15 nanoseconds

Prices and Specifications Subject to Change Without Notice.

B-407



Analog Fiber Optic Modules

audio

MODELS FI-7310M And FI-7310D ANALOG FIBER OPTIC MODULES (Audio)

The FI-7310 voice analog link consists of two modules; the modulator (FI-7310M) and the demodulator (FI-7310D). Each unit can be plugged into the FI-7000MF mainframe from which operating power is derived.

The FI-7310 link is primarily intended for the transmission of a baseband video signal along with its associated audio over a single fiber.

The modulator FM modulates an RF subcarrier with the audio signal. The FM modulated subcarrier is then summed with the video in the transmitter module. The receiver module separates the audio FM signal from the video; the audio FM is then demodulated by the demodulator.

Specifications

INPUT

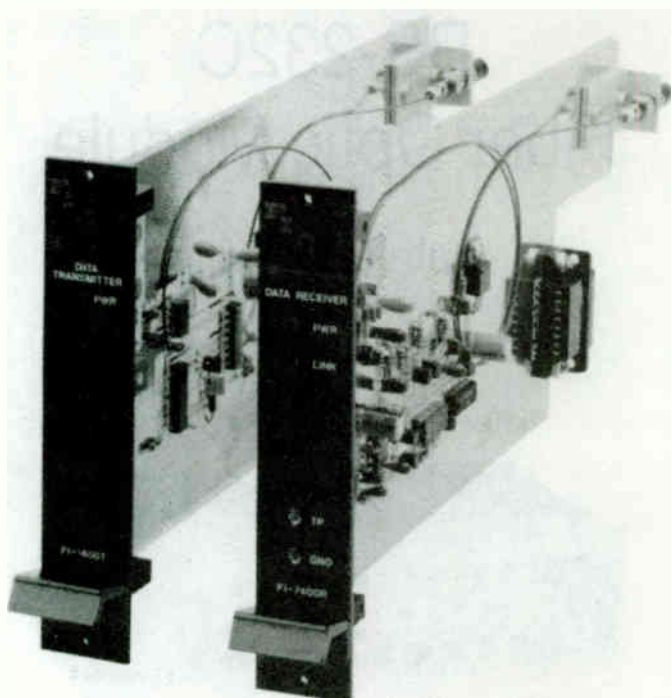
Type	Terminated. Line impedance of 600 ohms
Connector	Input 3 pin audio XLR male; Output 3 pin audio XLR female
Common mode rejection, 60 Hz	> 40 dB
Maximum common mode voltage	> ± 5 volts
Maximum 600 ohm level	+ 18 dBm

OUTPUT

Line impedance	600 ohms
Maximum line output Driving 600 ohms	+ 18 dBm

PERFORMANCE

Distortion (at maximum output level) THD, 15 Hz to 15 KHz	< 1%
Frequency response	30 Hz to 15 KHz
Crosstalk, video in audio	-57 dB
Signal-to-noise; (referenced to maximum audio output level, with no video input)	70 dB



Digital Fiber Optic Modules

data 0-10 Mb/s

- TTL Input Levels
- Data Rates from 0 to 10 Mb/s - NRZ
- Low Cost
- Low Bit Error Rate
- Single Supply
- Link Quality Monitor
- Long Distance (up to 5Km)
- Arbitrary Data Format
- Optical Port Connector

MODELS FI-7400T And FI-7400R DIGITAL FIBER OPTIC MODULES (data 0-10 Mb/s)

The FI-7400 digital fiber optic data link was designed for digital data transmission over single fiber channels. The modules can be plugged into the FI-7000MF mainframe from which operating power is derived.

Bipolar integrated circuits and a high radiance LED convert TTL level inputs to optical pulses at data rates from DC to 10

Mb/s NRZ. An internally coded mode of operation produces a 3-level coded optical signal for reception and decoding by the receiver. This 3-level optical signal places no restriction on data format over the data range of DC to 10 Mb/s NRZ while allowing for wide dynamic range and high sensitivity at the receiver.

Features

- TTL input levels
- Data rates from 0 to 10 Mb/s - NRZ
- Low Cost
- Low bit error rate
- Single supply
- Link quality monitor
- Long distance (up to 5Km)
- Arbitrary data format
- Optical port connector

Specifications

Data rate	0 to 10.0 Mb/sec
Input data	TTL NRZ or RZ
Output Data	TTL NRZ or RZ
Optical Rise/ Fall time	20 nsec max
Optical Output Power	30 uW min
Optical Input Power	.2 uW min for 10 ⁻⁹ BER
Electrical Risetime	20 n sec
Electrical Falltime	7 n sec
Jitter	25 n sec typ
Permitted Link Loss	22 dB (No margin)
Optical Wavelength	830 nm (nominal)
Operating temperature	0° to 40°C



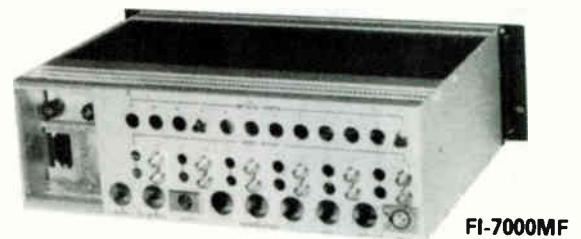
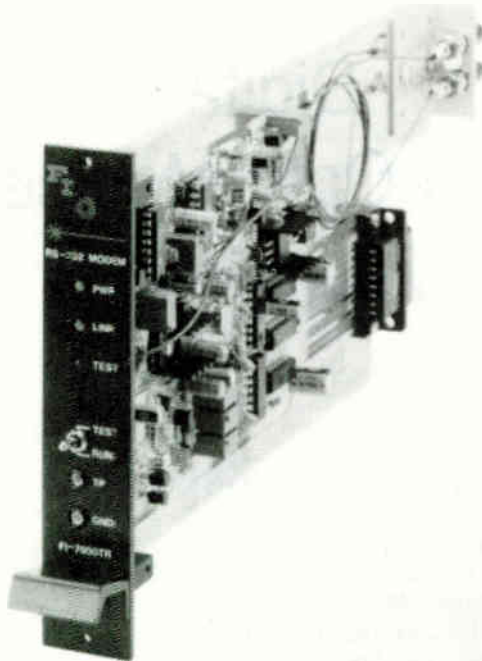
FOUNDATION ELECTRONIC INSTRUMENTS INC.

24 Colonnade Road
Nepean, Ontario K2E 7J6 Canada
(613) 226-4000 Telex 053-4153

FIBER OPTIC MODULES

RS-232C Fiber Optic Module

data 0-56 Kbs



MODEL FI-7500TR RS-232C FIBER OPTIC MODULE (data 0-56 Kbs)

The FI-7500TR fiber optic modem is designed for full duplex asynchronous data transmission at rates of 0 to 56 Kb/s. Each modem module can be plugged into the FI-7000MF mainframe from which operating power is derived. The electrical connections for the data signals are made on the rear panel of the mainframe using a standard 25-pin RS-232C connector.

The FI-7500TR communicates in full duplex over a single fiber, thus offering a substantial saving in fiber costs.

FI-7000MF MAINFRAME

The FI-7000MF Mainframe is designed to be installed in a standard 19" (48.26 cm) rack. Mounting is included with each tray. Modules are installed in the mainframe as shown in the front view.

Specifications

Connector	25 pin RS-232C
Electrical Signal Input/Output	EIA RS-232C
Data Rate	0 to 56 Kb/sec
Transmission Medium	Single Fiber Optical Cable
Distance	3,000 meters (longer distances optional)
Error Rate	<10 ⁻⁹
Optical wavelength	830 nm (Nominal)
Operating temperature	0° to 40° C



MINI-FILL KITS



MFK4 KIT SHOWN

Includes:

- (1) MF12V Mini Fill
- (1) VB12V Battery
- (1) VBCV Charger
- (1) MFDF Dichroic Filter
- (1) Battery Shoulder Strap
- (1) MFCC Carrying Case

MFK4 Kit \$514.95
 Other Kits From 295.00

VB SERIES 12 VOLT at 4AH

FREZZI POWER SYSTEMS



Model VB12
 "slow-charge"
 battery pack
 \$165.00*

Model VB12V
 "fast-charge"
 battery pack
 \$225.00*

*Includes VBCV 115V only charger

"HIGH-TECH" BATTERY PACKS



Model VBSO
 "camera-mounted"
 battery pack
 \$245.00*
 with additional
 XLR4 connector
 \$255.00*

Model VB4X
 "fast-charge"
 battery pack
 with XLR4 connector
 \$235.00*

LP90 leather
 pouch
 w/belt loops
 \$38.00*



Mini-fill shown powered by the popular BP-90. Model LP-90 leather pouch with belt loops is available.



Mini-Fill Lighting & Power SYSTEMS



NEW

DUAL LIGHT CONFIGURATION



- Standard 12V Mini-Fill \$149.95
- 30 Volt Mini-Fill 154.95
- MFDF Dichroic Filter 88.00
- MFCC Carrying Case 80.00

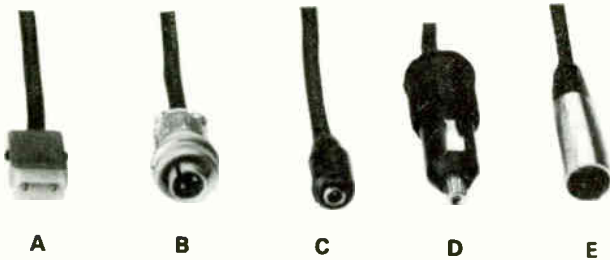
- DMF12 (12 Volt) \$295.00
- DMF30 (30 Volt) 298.00

COMPARE THESE UNIQUE MINI-FILL FEATURES:

- Extremely lightweight — only 12 ozs.
- Compact size — 2" x 4-1/4"
- Operates from any 12-14.4 or 30 volt battery*
- Utilizes the latest high efficiency multi-mirror lamps — (20-100 watts)
- Completely serviceable • Field tested • Field proven
- Mounts on camera, pistol grip or lightstand
- Dual-lighthouse configuration from one power source
- Rugged construction— Built by Frezzolini® — The world leader in portable lighting and power

*EXV 100W bulb for 12V battery only

YOUR CHOICE OF POWER CONNECTOR



MINI-FILL MODEL

- A MF12V — Frezzi Amp Connector
- B MF30 — 2-Pin Amphenol (30V)
- C MF12C — BP-90 In-Line
- D MF12P — Cigarette Lighter Type
- E MF4X or MF5X — XLR (4 or 5 Pin)



Shown with convenient Flip-up Dichroic Filter. Model MFDF and diffused front surface.
Optional MFDF Dichroic Filter \$88.00

MINI-FILL LAMP GUIDE

Lamp Code	Volts	Watts	Life (Hrs.)	Color Temp.	Typical Center Candlepower	Beam Spread
BAB	12	20	2000	2925°K	480	FLOOD
EKP	30	80	25	3350°K	1750	FLOOD
ESX	12	20	2000	2925°K	3300	NARROW SPOT
EXN	12	50	3000	3050°K	1500	FLOOD
EXS	30	200	50	3300°K	9400	FLOOD
EXT	12	50	3000	3050°K	9150	NARROW SPOT
EXV	12	100	50	3350°K	3300	FLOOD
EXZ	12	50	3000	3075°K	3000	NARROW FLOOD
EYC	12	75	3500	3050°K	2000	FLOOD
EYF	12	75	3500	3050°K	11500	NARROW SPOT



Intermixed or same packs

FREZZI™ MULTIPLE BATTERY CHARGING STATIONS "We custom-design per your specific charging requirements"

MODEL MBC-2 (All Feature Model)

Fast-charges five (5) Frezzolini® or Anton/Bauer 12-14.4V nickel-cadmium battery packs in less than one (1) hour while simultaneously charging eight (8) additional Frezzolini®, Sony, JVC or Panasonic VTR battery packs overnight. Universal AC inputs. Deluxe shipping case available. Weight: 45 lbs.

MBC-2 \$2400.00

MODEL MBC-4A

Fast charges (5) Frezzolini® or Anton/Bauer 12-14.4V battery packs.

MBC-4A \$1595.00

MODEL MBC-5, Charges Eight (8) BP-90 Type Batteries Simultaneously

- Universal AC inputs
- Compact size
- Line-isolated
- Current-sensing LED's
- Other models available for all VTR or camera battery packs

Charge eight (8) BP-90 type battery packs simultaneously in 14 hours with Frezzolini® Model MBC-5 Charging Station. Universal AC Inputs. Weight: 8 lbs.

MBC-5 \$495.00

MODEL MBC-4

Fast charges (1 Hr.) five (5) Frezzolini® or Anton/Bauer 12-14.4V nickel-cadmium battery packs while simultaneously charging eight additional Sony BP-90 type battery packs in 14 hours. Universal AC Inputs. Deluxe shipping case available. Weight: 45 lbs.

MBC-4 \$2090.00

OVERNIGHT TRICKLE CHARGERS

BC-122S (For FBP-20/44/60) \$ 80.00

BC-124S (For BP-90) 80.00

CR-1 (Current Regulated For BP-90 & BP-12/13/14) 115.00

FTC-12/13/14 (For BP-12/13/14) 80.00

Frezzolini™ Power Belts for 30 Volt Sun Gun

30 Volt DC Operation With Frezzolini™ Model F-30-EC And F-30-EXFA High-Capacity Battery Belts

- Full 4AH capacity using selected nickel-cadmium cells.
- Operates 30V 250W DYG lamp for 30 minutes.
- Batteries housed in rugged aluminum cassettes which are mounted on a genuine leather belt.
- Built-in overnight charger (14 Hrs.)
- Model F-30-EXFA has fast-charge capability (1 Hr.) w/optional Frezzolini™ BC-30C fast charger.
- Fuse and circuit-breaker protection.
- Weight: 10 lbs.

Model F-30 EC \$545.00

Model F-30-EXFA 595.00

FL250 Lighthead 195.00

FLDF-101 Swing-Away Dichroic Filter 88.00

30 Volt DC Operation With Model EC-30 High-Capacity Battery Packs

- 30VDC at 4AH
- Operates 30V 250W DYG lamp 30 minutes.
- Fast charge capability (1 Hr.).
- Built-in overnight charger (12 Hrs.).
- Rugged steel case.
- Weight: 10 lbs.
- Premium-grade selected nickel-cadmium cells used.

Model EC-30 \$695.00

OPTIONAL: BC-30 One (1) Hour Fast Charger 395.00



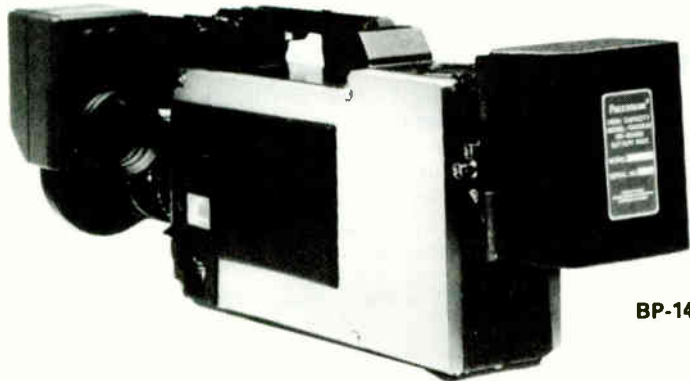
MBC-5



Model F-30 EC power belt powering Frezzolini-Lite™ Model FL-250 with optional swing-away dichroic filter



EC-30



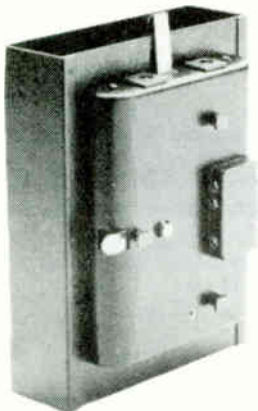
BP-14



BP-142
14.4 VOLT



FBP90/90FC



HM 90

FREZZI ON BOARD™ BATTERY PACKS
"Superior To Camera-Manufacturer-Supplied"

FEATURES:

- Battery mounts direct to camera-manufacturer-supplied Anton/Bauer bracket or optional Frezzolini® camera battery mounting bracket.
- No cables or modification required.
- Full 4AH capacity—only premium selected nickel-cadmium cells used.
- Custom-designed mounting brackets available.
- Rugged welded aluminum case.
- Lightweight 2AH models available.
- Internal fuse & thermal protection—internal spare fuse included for field replacement.
- Complete charge compatibility with camera-factory-supplied charge systems, or Frezzolini® fast, overnight or multiple battery chargers available.

Frezzi On-Board™ BP-12 4AH, 12 volt	\$455.00
Frezzi On-Board™ BP-13 4AH, 13.2 volt	475.00
Frezzi On-Board™ BP-14 4AH, 14.4 volt	495.00
Frezzi On-Board™ BP-122 2AH, 12 volt	275.00
Frezzi On-Board™ BP-132 2AH, 13.2 volt	285.00
Frezzi On-Board™ BP-142 2AH, 14.4 volt	295.00

All battery packs have fast charge (1 Hr.) capability.

Frezzi™ Premium-Grade Direct Replacement for Sony BP-90 Battery Packs

Models: FBP-90 and Fast Charger Model FBP-90 FC

- Full 4AH capacity using premium-grade selected nickel-cadmium cells.
- Rugged & serviceable plastic case.
- Fuse & thermal protection
- Internal spare fuse for field replacement.
- High discharge capability to power 100W lightheads.
- Weight 3.5 lbs.
- Complete charge compatibility with:
 - Sony BC-210 charger.
 - Frezzi BC-124S overnight charger.
 - Frezzi MBC-5 8-battery overnight charger
 - Frezzi BC-77UB 1 hr. fast charger w/HV fast-charge adaptor cable.
- Plus other Frezzi fast/slow multi-battery charging stations.

Model FBP-90	\$275.00
Model FBP-90 FC	330.00

Frezzi™ Custom-Designed BP-90/FBP-90 Mounting Brackets

BATTERY PACK MOUNTING BRACKETS

Model	
HM 90	Brackets mount to Anton/Bauer or Frezzolini® \$198.00 battery bracket

Betacam Battery Mounting Bracket (Not Shown)

Model: HMBVV1
Bracket mounts to the upper rear portion of the recorder, and accepts BP13/BP132 batteries or BP90 when used with HM90.
Model HMBVV1 \$105.00



Frezzolini Electronics Inc.

7 Valley St.
Hawthorne, NJ 07506 USA
(201) 427-1160 TWX 710-988-4142

CHARGERS

Frezzi™ Dual Channel AC Adaptor and Fast Charger

General:
The new Frezzolini® Model RPS-2 Dual-Channel combination power supply/fast charger consists of two (2) totally independent power sources. Each power source has the capability of either functioning as a precise regulated power supply for ENG Camera/VTR Power or switching over to a ni-cad battery fast charger. Either one or two battery packs are simultaneously fast charged with automatic high-charge termination when the battery packs reach full charge.

SPECIFICATIONS

AC Input	115/230 VAC +/- 10% 50/60Hz
Regulated DC Output	13.25 VDC (3.0 Amps Max. each channel)
Line Regulation	+/- .05% for 10% line change
Load Regulation	+/- .05% for 50% load change
Output Ripple	5.0mV Pk-Pk maximum
Overload Protection	Automatic current limit/foldback
Fast Charge Time	12.0V battery-75 minutes 14.4V battery-180 minutes
Size	8 1/2" x 5" x 5 1/2"
Weight	8.5 lbs.

Model RPS-2 \$ 895.00



RPS-2



BC-77UB

Frezzi™ Single-Battery Universal Fast Chargers

MODEL BC-77U/MODEL BC-77UB SINGLE-BATTERY UNIVERSAL FAST CHARGERS

General:
The new line of Frezzolini® Universal fast chargers were specifically designed to fast-charge (1 Hr.) all models of Frezzolini® 12V and 14.4V 2-6AH battery packs. The Frezzi™ chargers also have the capability to safely fast-charge Anton/Bauer 12V and 14.4V nickel-cadmium on-board battery packs. All chargers are transformer-type line-isolated and designed per European IEC-65 safety code specifications. The chargers are constructed of heavy-gauge aluminum in a compact size to withstand abuse in the field. The universal feature of this charger enables operation anywhere in the world.

Model BC-77U/BC-77UB \$395.00



RPS-3

Frezzi On Board™ AC Adaptor

MODEL RPS-3 AC ADAPTOR

General:
The Frezzolini® Model RPS-3 AC Adaptor is specifically designed to power ENG/EPF cameras consuming up to 50 watts of power. Model RPS-3 is a "State-Of-The-Art" switcher power supply with additional RFI/EMI line suppression filters. AC adaptors mount directly to the Frezzolini® or Anton/Bauer Battery Brackets with no modifications or adaptor cables required.

SPECIFICATIONS

AC Input	117/234 VAC 50/60Hz +/- 10%
DC Output	RPS-3 13.25VDC at 4A
Line Regulation (10% line change)	RPS-3 +/- .10%
Load Regulation (50% load change)	RPS-3 +/- .2%
Output Ripple (Pk-Pk Max.)	RPS-3 10mV
Overload Protection	Automatic current limit/foldback
Weight	RPS-3 2lbs.
Size	5.0" x 4.0" x 3.4"

Model RPS-3 \$595.00



350 Fifth Ave.
New York, NY 10118
(212) 736-3335 Telex ITT 423298

VIDEO TAPE



Fuji features 1-inch "C" format videotape in hard plastic shippers. The rigid, flame-retardant cases are available in 10 1/2-inch and 14-inch sizes with built-in handles. Fuji H621 videotape is acclaimed for its reliability, particularly under adverse conditions.

H621 Professional 1-Inch Videotape

Fuji H621 1-inch video tape gives you better color, better S/N ratio, fewer dropouts, longer life, lower abrasion, and lower jitter from the capstan and drum. You get better results on the master, and with each subsequent generation you make.

High-density particles of Fuji's exclusive BERIDOX (Berthollide iron oxide) are specially sensitized, then held together and fastened to the tape's backing material with Fuji's special U-binder. The backing material has uniform thickness and an extremely fine finish to prevent edge damage during winding, and is treated to reduce static. Fuji H621 provides superb performance in virtually any recording or playback situation.

For extra protection, a flame retardant shipping case is also available.

Length	Recording Time	Reel	Carton Quantity	Case
1640'	34 Min	8"	5	FRS or carrying case
3170'	66 Min	9"	5	FRS or carrying case
4620'	96 Min	10.5"	5	FRS or carrying case
5070'	105 Min	10.5"	5	FRS only
6070'	126 Min	14"	2	FRS only
7540'	157 Min	14"	2	FRS only
9100'	189 Min	14"	2	FRS only

All the above lengths are available in the Type C Format. The 34 min., 66 min., 96 min., and 120 min. lengths are available in the Type B Format.

H701E Professional 2-Inch Videotape

Fuji H701E is a specially-formulated 2-inch video tape designed to provide superior performance in all high band applications, especially in mastering and duplicating situations which require the use of third and fourth generation tapes.

Working with broadcast industry experts from around the world, Fuji has developed a tape which significantly improves upon previous tape technology.

- Exceptionally low chroma noise: up to 3 dB higher color S/N than standard quality tapes
- Resistance to banding, even with worn video heads
- Lower capstan and drum jitter
- Precise control of particle size and exceptionally smooth tape surface
- An improved back coating for greater anti-static protection
- Improved uniformity of the backing thickness and tape finish to avoid tape edge damage when winding
- Precise control of coercivity for uniform recording and playback results

Fuji H701E meets or exceeds SMPTE guidelines

Length	Recording Time	Reel	Carton Quantity	Case
1650'	22 Min	8"	2	FRS or carrying case
2550'	34 Min	10.5"	2	FRS or carrying case
4950'	66 Min	12.5"	2	FRS or carrying case
7200'	96 Min	14"	2	FRS or carrying case



350 Fifth Ave.
New York, NY 10118
(212) 736-3335 Telex ITT 423298

VIDEOCASSETTES



H521 BR Professional U-Matic Videocassettes

Fuji's new H521 BR is a high grade version of our H521 which is already considered to be the top of the line as far as 3/4" inch videocassettes go. Fuji has now taken U-Matic tape technology a step further by suppressing dropouts to the absolute minimum technically possible—less than 4 per minute. We've also boosted video and color S/N performance a maximum of +2 dB over the H521. Fuji's H521 BR is the ultimate 3/4 inch video cassette.

BR KCA-30, BR KCA-60, BR KCS-10, BR KCS-20

H521 Professional U-Matic Videocassettes

Employing its new backcoating technology, Fuji has recently developed the "H521", the highest quality U-matic videocassette available to professional producers and broadcasters. With the dramatic reduction in dropouts and increased durability, the H521 becomes the most ideal U-matic cassette around, delivering the sharpest, cleanest picture—just what professional broadcasters expect and demand. The H521—the reliable 3/4-inch videocassette that can stand up to the toughest of operating conditions. Its outstanding features include:

KCA-10, KCA-15, KCA-20, KCA-30, KCA-60, KCS-10, KCS-20



H421/H321 Professional Super HG Videocassettes

In response to the introduction of 1/2-inch ENG and EFP video systems, Fuji now offers new professional-use 1/2-inch videocassettes: Fuji Super HG H421 (for the M-format) and H321 (for the BETACAM format).

Model #	Size	Recording Time
H421	T-120	20 Min.
H421	T-60	10 Min.
H321	L-500	20 Min.
H321	L-250	10 Min.



Super XG H451 VHS/H351 Beta

Proudly dubbed "The Master Tape". A magnetic layer 2.7 times higher in density than Super HG ensures the highest possible image and sound quality.

"Additionally, a new binder developed specifically for the Super XG features the lowest friction co-efficient of any binder yet available, enhancing reliability and durability to the maximum."

VHS: T-120, T-60 BETA: L-500, L-250



Super HG VHS/Beta

The pioneer of super high-grade videocassettes. Exclusive DURO-BACK backcoating realizes both super picture quality and excellent running stability.

VHS Videocassettes

T-20 T-80
T-30 T-100
T-40 T-120
T-60 T-160

BETA Videocassettes

L-125 L-500
L-250 L-750
L-370 L-830



VHS/Beta Videocassettes

Renowned Fine Grain BERIDOX magnetic particles ensure vivid, life-like color reproduction. Stable images—even after hundreds of playbacks—are guaranteed.

VHS Videocassettes

T-30 T-120
T-60 T-160
T-90

BETA Videocassettes

L-125 L-500
L-250 L-750
L-370

Head Cleaners
VCL-10/VHS

BCL-10/BETA



FUJINON

672 White Plains Rd.
Scarsdale, NY 10583
(914) 472-9800

ZOOM LENSES/ ACCESSORIES

2/3-Inch Format Zoom Lenses and Accessories for ENG/EFP, Studio and Field Productions



A14x8ESM



A3.5x6.5RM



A14x9ERM w/PJ



A30x11ESM

2/3" Format Zoom Lenses

Model No.	F	Focal Length	Built-in Extension	MOD	Horizontal Field of View	Filter Size	Optional Converters		Weight Weight	Optional Pattern Projector
							Wide	Tele.		
A3.5x6.5RM	1.7	6.5 ~ 23mm	—	0.3m	68°11' ~ 21°39'	82mm	—	—	1.4kg	
A7x7RM	1.7	9 ~ 108mm	—	0.3m	64°18' ~ 10°03'	86mm	0.8X	1.6X	1.6kg	
A10x10RM	1.6	10 ~ 100mm	—	1.0m	47°30' ~ 5°03'	72mm	0.8X	1.85X	1.3kg	
A12x9ERM	1.7	9 ~ 108mm	—	0.95m	52°06' ~ 1°45'	72mm	0.8X	1.85X	1.5kg	
A14x9ERM	1.7	9 ~ 126mm	2X	0.8m	52°06' ~ 4°00'	77mm	0.8X	1.85X	1.5kg	X
A16x9.5ERM	1.8	9.5 ~ 152mm	—	0.95m	49°42' ~ 3°19'	77mm	0.8X	1.85X	1.36kg	
A17x9ERM	1.7	9 ~ 153mm	2X	0.9m	52°06' ~ 1°39'	86mm	0.8X	1.6X	1.84kg	X
A22x12.5ERM	2.0	12.5 ~ 275mm	2X	1.8m	38°47' ~ 0°55'	107mm	—	—	3.8kg	
A14x8ESM	1.5	8 ~ 112mm	2X	0.7m	57°37' ~ 4°30'	—	—	—	10.6kg	X
A17x8.5ESM	1.5	8.5 ~ 145mm	2X	0.7m	56°44' ~ 1°44'	—	—	—	10.6kg	X
A30x11ESM	1.6	11 ~ 330mm	2X	1.7m	43°36' ~ 0°35'	—	—	—	9.1kg	X
A44x9.5ESM	1.2	9.5 ~ 420mm	2X	2.5m	50°44' ~ 0°28'	—	—	—	25.5kg	X
A44x9.5ESM	1.4	9.5 ~ 420mm	2X	2.2m	49° 7' ~ 1° 5'	—	—	—	14.6kg	X
A44x9.5ESM	1.7	9.5 ~ 420mm	2X	1.7m	49°42' ~ 1°12'	—	—	—	11kg	X

Accessories:

Servo Zoom:
Extension Cable
Grip Zoom Demand
Mounting Clamp

Manual Zoom:
Zoom Manual Module
Flexible Cable
Zoom Handle
Mounting Clamp

Servo Focus:
Focus Servo Module
Extension Cable
Focus Servo Demand
Mounting Clamp

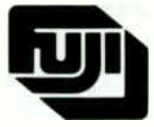
Manual Focus:
Focus Manual Module
Flexible Cable
Focus Handle
Focus Manual Demand
Mounting Clamp



S14x6.6ERM

New 1/2" Format Zoom Lenses

Model No.	F	Focal Length	Built-in Extension	MOD	Horizontal Field of View	Filter Size	Optional Converters		Weight
							Wide	Tele.	
S3.5x6.5RM	1.4	4.8 ~ 17mm	—	0.3m	67°22' ~ 21°19'	72mm	—	—	1.50kg
S12x6.6RM	1.4	6.6 ~ 80mm	—	0.95m	62°26' ~ 5°43'	72mm	0.8X	1.85X	1.35kg
S12x6.6ERM	1.4	6.6 ~ 80mm	2X	0.95m	62°26' ~ 5°43'	72mm	0.8X	1.85X	1.40kg
S14x6.6ERM	1.4	6.6 ~ 92mm	2X	0.8m	51°44' ~ 3°59'	77mm	0.8X	1.85X	1.48kg
S16x7RM	1.4	7 ~ 112mm	—	0.95m	49°42' ~ 3°19'	77m	0.8X	1.85X	1.36kg



FUJINON

672 White Plains Rd.
Scarsdale, NY 10583
(914) 472-9800

ZOOM LENSES

1-Inch and 1-1/4-Inch Zoom Lenses for Studio and Field Productions



P17x16.5ESM



R44X



P14x16.5ESM

1-Inch Format Zoom Lenses

Model No.	F	Focal Length	Built-in Extender	MOD	Horizontal Field of View	Pattern Proj.	Iris	Operation Zoom	Focus	Weight
R14x2.5ESM	1.6	12.5 ~ 175mm	2X	0.75m	54°13' ~ 2°06'	OPT	Servo	Manual/ Servo	Manual/ Servo	25kg
R17x12.5ESM	1.6	12.5 ~ 212mm	1.5X, 2X	0.75m	54°13' ~ 1°17'	OPT	Servo	Manual/ Servo	Manual/ Servo	24kg
R20x10.5ESM	1.6	10.5 ~ 210mm	1.5X, 2X	0.75m	62°44' ~ 3°29'	OPT	Servo	Manual/ Servo	Manual/ Servo	20.5kg
R30x16ESM	1.8	16 ~ 500mm	2X	2.5m	43°36' ~ 0°44'	OPT	Servo	Manual/ Servo	Manual/ Servo	27kg
R44x13.5ESM	1.8	13.5 ~ 350mm	2X	2.5m	50°44' ~ 0°28'	OPT	Servo	Manual/ Servo	Manual/ Servo	25.5kg

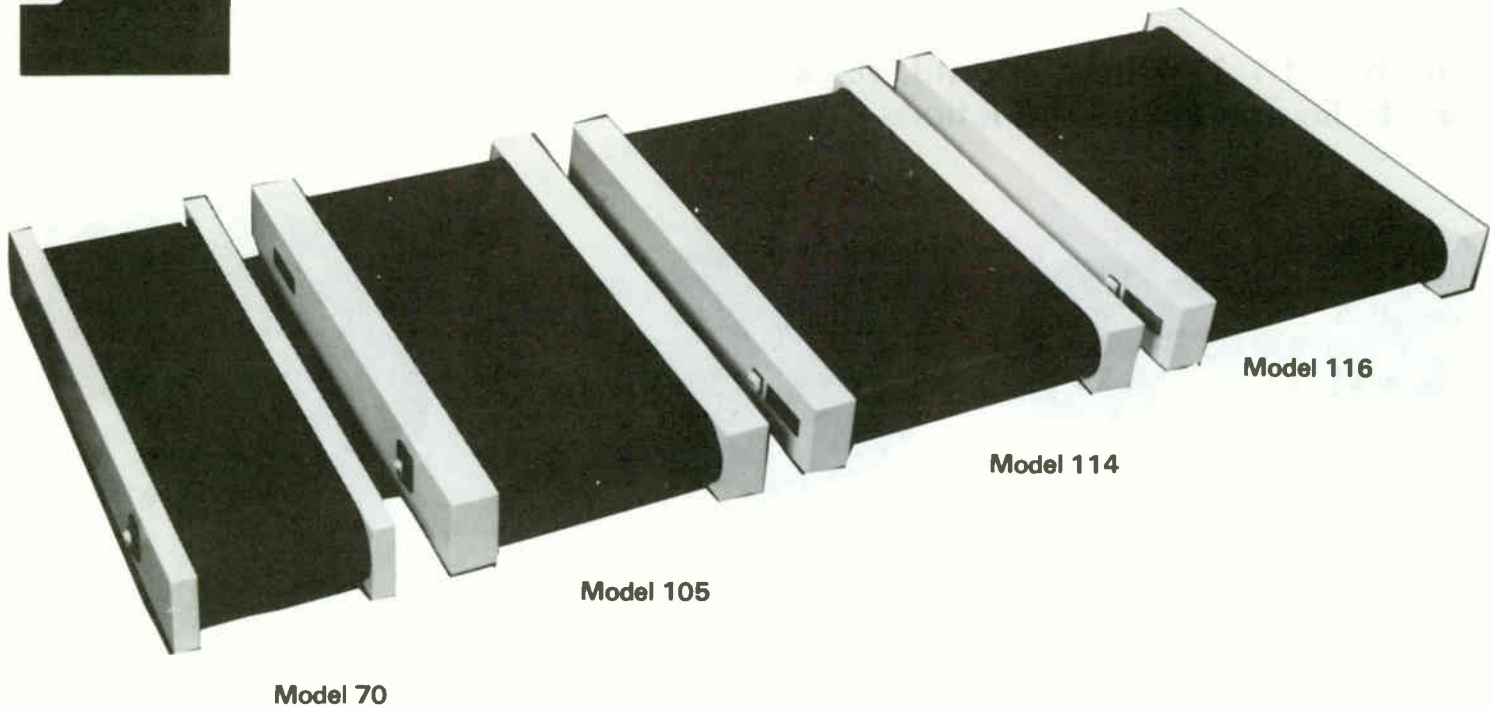
1-1/4-Inch Format Zoom Lenses

Model No.	F	Focal Length	Built-in Extender	MOD	Horizontal Field of View	Pattern Proj.	Iris	Operation Zoom	Focus	Weight
F14x16.5ESM	2.1	16.5 ~ 230mm	2X	0.75m	54°50' ~ 2°08'	OPT	Servo	Manual/ Servo	Manual/ Servo	25kg
P17x16.5ESM	2.1	16.5 ~ 280mm	1.5X, 2X	0.75m	54°50' ~ 3°30'	OPT	Servo	Manual/ Servo	Manual/ Servo	21kg
P20x14ESM	2.1	14 ~ 280mm	1.5X, 2X	0.75m	62°53' ~ 3°20'	OPT	Servo	Manual/ Servo	Manual/ Servo	20.5kg
P30x20ESM	2.2	20 ~ 620mm	2X	2.5m	46°20' ~ 0°47'	OPT	Servo	Manual/ Servo	Manual/ Servo	28kg
P44x18ESM	2.4	18 ~ 800mm	2X	2.5m	50°44' ~ 0°28'	OPT	Servo	Manual/ Servo	Manual/ Servo	25.5kg



4200 N. 48th
Lincoln, NE 68504
(402) 464-5911 Telex 438-068

DEGAUSSERS



Garner Degaussers Can Completely Erase Audio Reels, Cartridges & Computer Tapes

Just touch the power button and place any reel, cartridge, cassette or disk on the endless belt. In four seconds it delivers a clean erasure that will meet the most stringent standards. You'll save valuable time and do a better job of erasing..we guarantee it.

All models available in 220, 230 and 240 VAC/50 Hz.
Erasure Level (all models) -80 dB nominal.

Method of Operation: Tapes are passed on continuous belt over high flux coils and deposited at the end of the machine.

Thermal Protection: Overheating is prevented by automatic cut-off switch, which reactivates after cool-down period.

SPECIFICATIONS:

Overall Dimensions	Model 70	Model 105	Model 114	Model 116
Length	27½"	27½"	27½"	27½"
Width	10"	16"	19"	21"
Height	5"	5"	5"	5"
Weight	60 lbs.	80 lbs.	115 lbs.	127 lbs.
Max Reel Diameter	7"	10½"	14"	16"
* Power	*117 VAC 4 amps	*117 VAC 4 amps	*117 VAC 4 amps	*117 VAC 4 amps
PRICE	\$990.00	\$1390.00	\$2190.00	\$2390.00

* All models available in 220, 230 & 240 VAC / 50 Hz

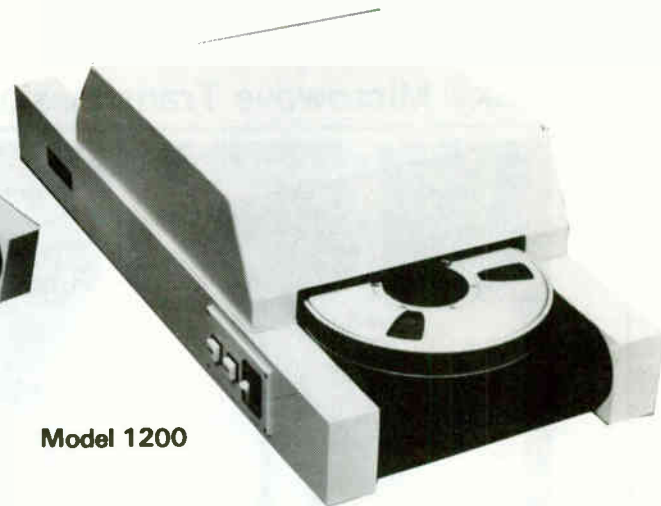
DEGAUSSERS

4200 N. 48th
Lincoln, NE 68504
(402) 464-5911 Telex 438-068

garner



Model 1400



Model 1200

The Standard In Video and Computer Degaussers

Garner serves the video and computer industries with a full line of automated video tape erasers engineered for both the speed and effectiveness professionals demand.

Depth of Erasure: Garner's erasure of a heavily saturated, high coercivity tape is the standard of the industry.

Speed: Erases high-energy tape completely in 5 to 15 seconds. Other erasers take many times that long.

Ease of Operation: No one beats Garner's ease of operation. Just touch the "on" switch and place the tape on the conveyor. There are no drawers, no spindles and no height adjustments.

Dependability, Guaranteed. For over 13 years, Garner has set the standard for tape erasers. Just one look at the rugged construction shows you why.



Model 270

SPECIFICATIONS:

Overall Dimensions	Model 270 (for 1/2" to 3/4" cassettes)	Model 1200 (for 1" reels and cassettes up to 10 1/2" in diameter)	Model 1400 (for 1" reels and cassettes up to 14" in diameter)
Length	28 1/2"	33 1/2"	33 1/2"
Width	16"	20 1/4"	23 3/4"
Height	9"	11"	11"
Weight	90 lbs.	140 lbs.	160 lbs.
Max Reel Diameter	8 1/2"	10 1/2"	14"
* Power	*120 VAC	*208/220 VAC	*208/220 VAC
Erasure Level	-75 dB	-90 dB	-90 dB
PRICE	\$2,985.00	\$4,850.00	\$5,750.00

* All models available in 220, 230 & 240 VAC / 50 Hz

Prices and Specifications Subject to Change Without Notice.

B-421



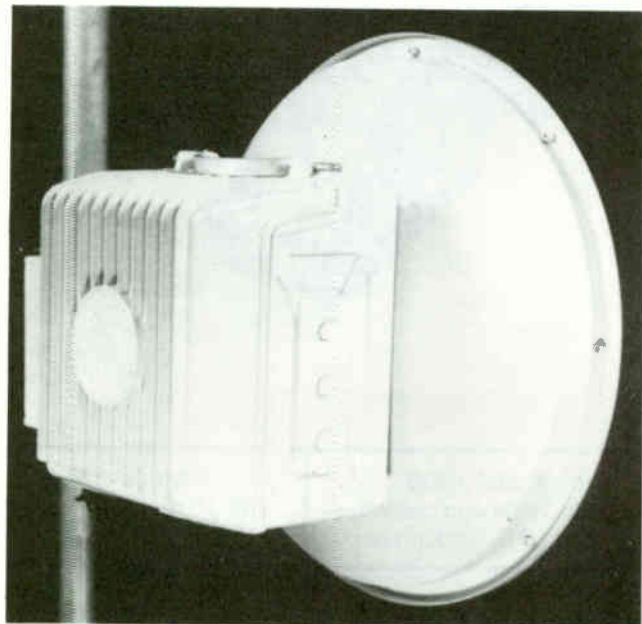
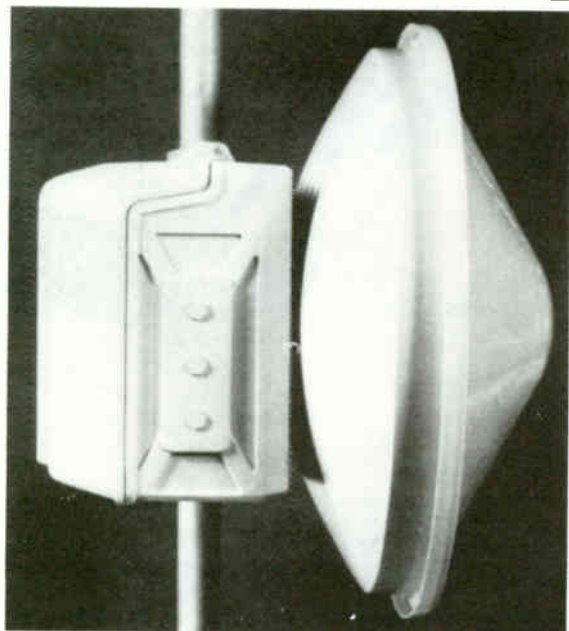
GENERAL ELECTRIC

MICROWAVE PRODUCTS DEPARTMENT

316 E. Ninth Street
Owensboro, KY 42301
(800) 438-2583 Ext. 30
Telex 213-021 GECTPD OWE

TRANSMISSION SYSTEMS

Gemlink® Microwave Transmission Systems



PVL 2000 23 GHz Band FM Video GEMLINK System

DESCRIPTION:

This FM video microwave link is compatible with NTSC (RS 250B) and PAL color standards, and is capable of 525/625 line video with up to two audio subcarriers.

The PVL 2000 GEMLINK system eliminates the right-of-way complications associated with laying coaxial cable, and its communications range of more than ten miles makes it economical for many previously unfeasible applications.

The PVL 2000 incorporates advanced K-band Gunn diode microwave technology developed for critical military demands and delivers simple, highly reliable microwave performance.

The PVL 2000 system features total solid state design and includes features such as AGC and ALC. Operating power supply options include AC or DC. The low-maintenance, high performance modular electronics means easy installation and trouble-free operation.

SYSTEM BENEFITS:

- **COST EFFECTIVE**
 - Low equipment cost
 - Low installation cost
 - Low maintenance cost
- **NTSC/PAL (RS 250B) VIDEO**
 - 525/625 line standard
 - Up to three audio subcarriers
 - Simplex or duplex operation
- **SIMPLE, QUICK INSTALLATION**
 - Line of sight transmission
 - Easy FCC license approval (Part 94 and Part 21)
 - Elimination of coaxial cables
- **SECURE, UNOBTRUSIVE & JUST AS PERMANENT AS YOUR NEEDS**
 - No waveguide to cut
 - Small FCC type A- 2' and 4' diameter antennas
 - System easily movable when you relocate
- **RELIABLE PERFORMANCE**
 - High power, 100 mW typical
 - Field proven over a wide range of applications and environments
 - Sold in more than 30 countries
 - General Electric expertise - first to obtain FCC type acceptance for 23 GHz transmission systems

Reprinted with permission from materials © 1984 GENERAL ELECTRIC COMPANY

Prices and Specifications Subject to Change Without Notice.



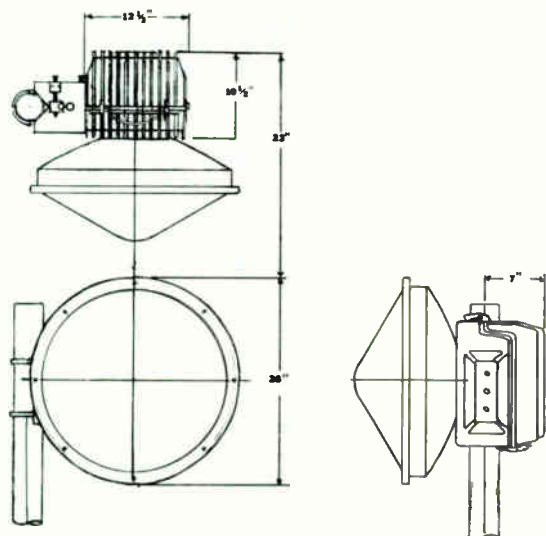
GENERAL ELECTRIC

MICROWAVE PRODUCTS DEPARTMENT

316 E. Ninth Street
Owensboro, KY 42301
(800) 438-2583 Ext. 30
Telex 213-021 GECTPD OWE

TRANSMISSION SYSTEMS

Gemlock® Microwave Transmission Systems (Cont'd)



FCC DATA:

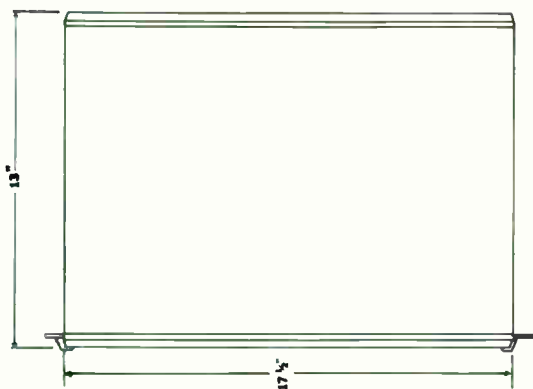
Licensing: Type accepted under Part 94 and Part 21 FCC Rules and Regulations. License - FCC form 402 (Part 94) and FCC forms 435 and 436 (Part 21)

Spurious Response: Per Part 94 FCC Rules and Regulations.

Frequency Range: Part 94 21.8 to 22.4 GHz
23.0 to 23.6 GHz
Part 21 21.2 to 21.8 GHz
22.4 to 23.0 GHz

Emission Designation: 20,000 F9

Type Acceptance #: B2T8QW GEMLINK VII



INSTALLATION NOTES:

Outdoor Mounting: Adapter bracket assembly supplied for 1 1/2" to 3 1/4" cylindrical surface.

Enclosures: All outdoor modules are moisture and dust resistant

RF Cabling: Max. of 500 ft. RG11U (total for each end) customer supplied

Power Cabling: Customer supplied (Belden #9367 PVC or Belden #83753 Teflon)

Interconnections: Mating connectors for power cables supplied (ms type).

Hardware not Supplied: Coaxial cable, power cable to outdoor module, mounting "U" bolts, BNC connectors, and mounting pole. (optional items)



Reprinted with permission from materials © 1984 GENERAL ELECTRIC COMPANY

Prices and Specifications Subject to Change Without Notice.

B-423



GENERAL ELECTRIC

MICROWAVE PRODUCTS DEPARTMENT

316 E. Ninth Street
Owensboro, KY 42301
(800) 438-2583 Ext. 30
Telex 213-021 GECTPD OWE

TRANSMISSION SYSTEMS

Gemlock® Microwave Transmission Systems (Cont'd)

GENERAL:

System: Available as a simplex system or a single aperture duplex system

Frequency Range: Part 94 21.8 to 22.4 GHz
23.0 to 23.6 GHz
Part 21 21.2 to 21.8 GHz
22.4 to 23.0 GHz

FCC Type Acceptance: B2T8QW GEMLINK VII

FCC Emission Designator: 20,000 F9

Capacity: 525/625 line video/audio subcarriers (3)

Video Emphasis: As per ANSI/EIA RS250B

Modulation: FM

Power supply: 24 VDC, 48 VDC, 115 VAC, 230 VAC

Power consumption-fully equipped: Simplex: 50 watts - transmitter
60 watts - receiver
Duplex: 80 watts per end

ANTENNA:

Type: Waveguide fed parabolic reflector

Category A 2' diameter 4' diameter

Gain: +40dBi Typical +46dBi Typical

Beamwidth: 1.7° Less than 1°

ENVIRONMENTAL:

RF Unit

Ambient Temperature Operational: -30°C to +50°C
(-22°F to +122°F)

Storage: -40°C to +60°C
(-40°F to 140°F)

Relative humidity: Up to 100%

Altitude: Up to 10,000 feet (3,048 meters)

Signal Processor

Ambient Temperature operational: 0°C to +50°C
(32°F to +122°F)

Relative Humidity: 95%

Altitude: 10,000 feet (3,048 meters)

PHYSICAL:

RF enclosure: 14" x 12" x 12" (35.5 cm x 30.5 cm x 30.5 cm)

Control unit (indoor): 3.5" x 14" x 18" (8.9 cm x 35.5 cm x 45.7 cm) (2 rack units high)

WEIGHT:

RF Unit: 40 pounds (18 kg)

Signal Processor: 15 pounds (7 kg)

MOUNTING:

Will fit cylindrical shafts (pipe) up to 3 7/8" (9.8 cm) (outside diameter)

TRANSMITTER:

Signal source: Gunn oscillator

Power output (at antenna port): 100 mW (20dBm) maximum

Frequency stability: -30° to +50°C = ±0.03%

Isolation from antenna: 20 dB minimum

Modulation means: Varactor diode

Modulation deviation: Approximate 6 MHz P/P

Modulation sensitivity: Approximate 4 MHz/volt

RECEIVER:

Type: Superheterodyne

Local Oscillator: Solid state Gunn diode

Intermediate frequency: 230 MHz

Noise figure: 12dB

Image rejection: 50 dB (RF preselection)

IF Bandwidth: 30 MHz

Receiver threshold: -76 dBm/37 dB weighted S/N

BASEBAND:

Bandwidth: 10 MHz

Demodulator: PPL detector

VIDEO:

Input impedance: 75 ohms unbalanced

Output impedance: 75 ohms unbalanced

Input level: .2V to 2V P/P (IV nominal)

Output level: 1V P/P (140 IRE units)

Frequency response: 10KHz to 5 MHz = ±5%

Differential gain: 10 to 90 APL = ±2%

Differential phase: 10 to 90 APL = ±1 degree

Signal to noise ratio: 60 dB
at -35 dBm RSL 10KHz to 5MHz, EIA/CCIR weighted

Signal to Hum ratio: 53 dB
(P-P luminance signal/PP Hum DC to 10 KHz)

AUDIO:

3 channels-FM modulated

Subcarrier frequency options: 7.5 MHz
6.2 MHz
6.8 MHz

Subcarrier deviation: 100 KHz P/P @ 1000 Hz @ 0 dBm input

Audio input/output level range: 0 dBm/+10 dBm

Audio input/output impedance: 600 ohms balanced or unbalanced

Audio frequency response: 40 Hz to 15 KHz (RS)

Total harmonic distortion: less than 1%

Signal to noise ratio: 60 dB

OPTIONS:

- Up to three plug-in audio subcarriers
- 24VDC, 48VDC, 115VAC, 230VAC power
- Simplex-Duplex Operation

Reprinted with permission from materials © 1984 GENERAL ELECTRIC COMPANY
Prices and Specifications Subject to Change Without Notice.



G K C RESEARCH & DEVELOPMENT

3231 N. Main
P.O. Drawer CC
Stafford, TX 77477
(713) 499-1879

AUDIO PRODUCTS

TELE-COUP MODEL 200

(Phantom powered microphone amplifier for use in telephone systems)

The entire amplifier is constructed inside the Switchcraft connector. By inserting it into any professional microphone whether of the dynamic or the condenser type having a 200 ohms impedance and a sensitivity of 100 microvolts, and connecting the other side of cable with the alligator clips to the telephone transmitter contacts, it directly replaces the carbon microphone \$89.50



MODEL 200



MODEL 250

TELE-COUP MODEL 250

(Phantom powered microphone-cassette amplifier for use in telephone systems)

This compact, versatile, all integrated circuit unit is designed for the radio and television news reporter who requires feeding a combination of live reporting and a cassette recording through telephone lines.

• Dimensions: 2-1/4" H x 1-3/8" W x 1-1/8" D \$89.50



M-15

ELECTRET CONDENSER SHOTGUN MICROPHONE M-15

- Frequency Response: 50 Hz-15,000 Hz
- Output: Balanced, XLR-3 type connector
- Maximum sound pressure level: 115 dB
- Power supply: 1.5 V AA battery
- Sensitivity: -45 dB
- Output Impedance: 250 ohms
- Directivity: Super-Directional
- Battery Life: 3000 hours
- Dimensions: 15" L and 3/4" Diameter

It comes in a case with battery, mic holder, wind screen and 20 ft. 2 conductor shielded rubber cable with XLR-3 type connector . . \$179.50

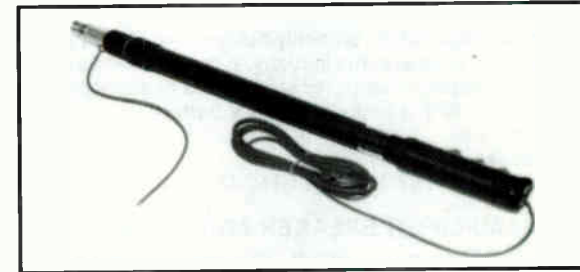


MODEL AC-60

UNIVERSAL DIGITAL CRYSTAL SYNC MODEL AC-60

It provides 1 V 60 cycle sync signal. Compatible with all Nagras, Stellavox, Tandberg, and Uher recorders, also can be used with Multi Channel recorders. Derives power from enclosed 9 V battery, barely consumes 5 mA including the LED indicator. Comes with battery.

• Dimensions: 4-1/2" H, 2-1/4" W, 1-1/4" D. Weighs 8 ozs. . . \$175.00



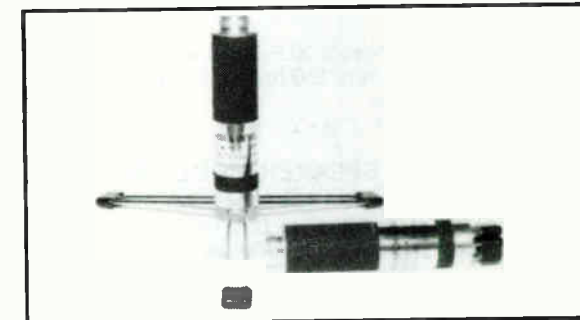
MODEL F-5

MINI MIC FISHPOLE MODEL F-5

This fishpole is specially designed for newswork. Constructed for durability and toughness, it is also lightweight and versatile, making it easy to handle and carry. The three heavy duty aluminum tubes are telescopic and collapsible, 4 feet in length when extended and 20 inches when collapsed. It comes with a miniature two conductor shielded flex rubber cable. \$79.50

COLLAPSIBLE MICROPHONE STAND MODEL 2

A unique design for a mic stand, it is lightweight and sturdy, quickly and easily set up. It is a 4 inch long cylinder 7/8" in diameter. To use simply pull and spread the hinged legs stored inside the cylinder. It accepts standard mic-holders with 5/8" x 27" threads. \$15.00



MODEL 2



G K C RESEARCH & DEVELOPMENT

3231 N. Main
P.O. Drawer CC
Stafford, TX 77477
(713) 499-1879

AMPLIFIERS/SPEAKERS

MICROPHONE BOOSTER AMPLIFIER MODEL 300

Extremely compact, integrated circuit construction, primarily designed for telephone program feeding. It also has many other uses in the broadcast industry. It comes with belt clip and battery.

- Low impedance mic input female XLR-3 connector
- 600 ohms balanced line output (binding posts)
- Power requirement: 9 V battery
- Dimensions: 4-1/4"H x 1-1/2"W x 1-1/4"D \$89.50



MODEL 300



MODEL 400

DUAL IMPEDANCE MONITOR AMPLIFIER MODEL 400

All integrated circuit amplifier, designed for the broadcast industry, features the dual impedance switchable output. It comes with belt clip and battery.

- Balanced input 2K ohms female XLR-3 connector
- Switchable output 8 ohms or 600 ohms, two phone jacks 1/4" and Tini
- Powered by 9 V battery
- Dimensions: 4-1/4"H x 2-1/4"W x 1-1/4"D \$125.00

MONITOR AMPLIFIER MODEL 500

A high quality all integrated circuit amplifier, widely used by broadcast engineers on remotes and motion picture sound men on location. It features two output phone jacks and a belt clip for the convenience of the operator. Battery included.

- Input 1 K ohms
- Output 8 ohms
- Powered by 9 V battery
- Dimensions: 4-1/4"H x 2-1/4"W x 1-1/4"D \$89.95



MODEL 500



MODEL 600

MONITOR AMPLIFIER MODEL 600

High fidelity all integrated circuitry, widely used by broadcast engineers as IFB amplifier and by sound men in the ENG and motion picture fields. It features the switchable dual power output, and comes with belt clip and battery.

- Balanced input 2K ohms female XLR-3 connector
- Output 8 ohms, two phone jacks 1/4" and Tini
- Power output switchable from 250 mW to 500 mW
- Powered by 9 V battery
- Dimensions: 4-1/4"H x 2-1/4"W x 1-1/4"D \$125.00

MONITOR AMPLIFIER SPEAKER MODEL 700

All integrated circuit amplifier, primarily designed for ENG applications and it has many other uses in the industry. It can be used as a speaker amp., speaker headphone amp., or strictly as a headphone monitor amplifier. It comes with a belt clip and 9 V battery.

- Input 1 K ohms
- Output impedance 8 ohms
- Dimensions: 4-1/4"H x 2-1/4"W x 1-1/4"D \$125.00



MODEL 700



MODEL 800

MONITOR AMPLIFIER SPEAKER MODEL 800

High fidelity all integrated circuit amplifier, designed for the demanding engineer who requires quality, ruggedness and portability. It features a 4" speaker, powered by 9 V battery or external power supply up to 12 V DC.

- Balanced input 2K ohms female XLR-3 connector
- Power output switchable from 250 mW to 1/2 W
- Output impedance 8 ohms
- Dimensions: 7-1/2"W x 5-1/2"H x 2-1/4"D \$200.00

MONITOR AMPLIFIER SPEAKER MODEL 900

A quality, compact amplifier features 3" speaker, powered by 9 V battery or external power supply up to 12 V DC. It can be used as a speaker amp., speaker headphone amp. or as a headphone monitor amplifier.

- Balanced input 2K ohms female XLR-3 connector
- Power output switchable from 250 mW to 1/2 W
- Output impedance 8 ohms, two phone jacks 1/4" and Tini
- Dimensions: 5-1/4"H x 3-1/4"W x 1-1/2"D \$150.00



MODEL 900



G K C RESEARCH & DEVELOPMENT

3231 N. Main
P.O. Drawer CC
Stafford, TX 77477
(713) 499-1879

MIXERS/AMPLIFIERS

UNIVERSAL MICRO MIXER MODEL UMC-4

(Compatible with all ENG recorders)

- All integrated circuits, wide flat frequency response
- 4 low impedance balanced microphone inputs female XLR-3 connectors
- Line input (RCA phone jack)
- Output: Switchable male XLR-3 connector, balanced line level or mic level
- Clipper limiter circuitry (defeatable)
- Built-in tone oscillator
- Monitor headphone 1/4" jack
- Standard 3/4" VU meter
- Derives power from enclosed standard 9 V alkaline battery
- External power input jack for battery or well filtered DC supply up to 12 V
- All connectors are American standard
- Die cast aluminum body with black-texture finish
- Dimensions: 5-1/4"W x 4-3/4"H x 2-3/8"D
- Weight: 1-3/4 lbs. \$550.00



MODEL UMC-4

2 CHANNEL MINI MIC MIXER MODEL M-3

A microphone mixer booster designed for the one man operation, compatible with all Mini-Cam recorders.

- Integrated circuit construction
- 2 low impedance female XLR-3 mic inputs
- 1 mic level output
- Powered by enclosed 9 V alkaline battery
- Die cast aluminum body with black-texture finish
- Dimensions: 4-1/4"H x 2-1/4"W x 1-1/4"D \$250.00



MODEL M-3



MODEL DA-5

DISTRIBUTION AMPLIFIER MODEL DA-5

All integrated circuit, compact, lightweight, and versatile. It is used for audio distribution or as a headphone monitor amplifier.

- One 2K ohms balanced line input female XLR-3 connector
- Input level control
- Five 600 ohms balanced line outputs male XLR-3 connectors
- Derives power from enclosed standard 9 V alkaline battery
- External power input jack for DC supply up to 12 V
- Die cast aluminum body with black-texture finish
- Dimensions: 5-1/4"H x 3-1/4"W x 1-1/2"D \$250.00

MIC-LINE AMPLIFIER MODEL 100

All integrated circuits, low noise, wide flat frequency response. It is widely used in the broadcast industry. An internal helipot is provided to adjust amplifier level output. It comes with belt clip and battery.

- Low impedance mic input female XLR
- 600 ohms balanced line output male XLR
- Line level output "adjustable" 0 dB to +8 dB
- Power requirement: 9 V battery
- Dimensions: 4-1/4"H x 2-1/4"W x 1-1/4"D \$125.00



MODEL 100



MODEL 150

MIC-LINE AMPLIFIER MODEL 150

This amplifier is designed for the broadcast engineer who desires quality, versatility and reliability. Ideal for use with long cables from mic to mixer, from mic to telephone line or from mic to microwave system. It features a built-in clipper limiter circuitry, also a headphone monitor output. Comes with belt clip and battery.

- Low impedance mic input female XLR
- 600 ohms balanced line output male XLR
- Line level output adjustable 0 dB to +8 dB
- 600 ohms headphone monitor output (Tini jack)
- Clipper limiter (defeatable)
- Power requirement: 9 V battery
- Dimensions: 4-1/4"H x 2-1/4"W x 1-1/4"D \$175.00



G K C RESEARCH & DEVELOPMENT

3231 N. Main
P.O. Drawer CC
Stafford, TX 77477
(713) 499-1879

MIC/LIGHT BRACKETS

MIC/LIGHT BRACKETS FOR THE ENG MINI-CAMERAS

(Fig. T, U, W, X, Y, Z)

Heavy duty, lightweight aluminum construction. All brackets feature a shock mount microphone stud assembly and 1/2" diameter light post. Accommodates the Mini-Pro and other portable lights. Can be installed in a matter of seconds and easily removed for storing camera in fitted case.

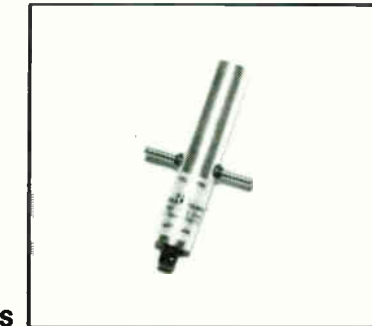
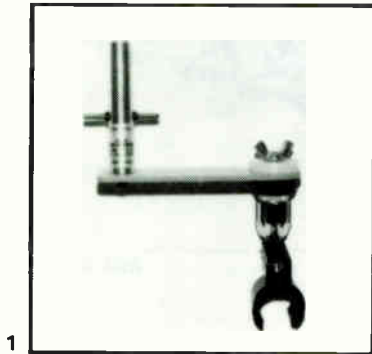
LIGHT BRACKET MODEL UNV-50 (Fig. S)

A 1/2" diameter light post with 1/4" x 20" threads screw and a pin type ratchet in the center for easy installation.

Mic/light Bracket (model S-50) for Sony BVP-3 camera	Fig. 1	\$69.50
Mic/light Bracket (model S-50) for Sony DXC-M3 camera	Fig. 1	69.50
Mic/light Bracket (model R-5) for RCA TK-76 camera	Fig. T	69.50
Mic/light Bracket (model R-10) for RCA TK-76 B or C camera	Fig. U	69.50
Mic/light Bracket (model R-15) for RCA TK-86 camera	Not shown	69.50
Mic/light Bracket (model IK-1) for Ikegami HL-77 camera	Fig. Y	69.50
Mic/light Bracket (model IK-2) for Ikegami HL-79 camera	Fig. W	69.50
Mic/light Bracket (model IK-2) for Ikegami HL-79 D camera	Fig. W	69.50
Mic/light Bracket (model IK-3) for Ikegami 350 camera	Fig. X	69.50
Mic/light Bracket (model IK-4) for Ikegami 83 camera	Fig. X	69.50
Mic/light Bracket (model IK-5) for Ikegami ITC-730 camera	Fig. X	69.50
Mic/light Bracket (model IK-6) for Ikegami EC-35 camera	Fig. X	69.50
Mic/light Bracket (model IK-7) for Ikegami HL-78 A camera	Fig. Y	69.50
Mic/light Bracket (model IK-8) for Ikegami HL-79 E camera	Fig. X	69.50
Mic/light Bracket (model JV-1) for JVC KY-2000 camera	Fig. Y	69.50
Mic/light Bracket (model JV-2) for JVC KY-2020 camera	Fig. Y	69.50
Mic/light Bracket (model JV-3) for JVC KY-2700 camera	Fig. W	69.50
Mic/light Bracket (model SP-7) for Sharp XC-700 camera	Fig. T	69.50
Mic/light Bracket (model A-1) for Asaca ACC-2000 camera	Fig. T	69.50
Mic/light Bracket (model H-2) for Hitachi SK-80 camera	Fig. T	69.50
Mic/light Bracket (model H-4) for Hitachi SK-90 camera	Fig. T	69.50
Mic/light Bracket (model H-5) for Hitachi SK-91 camera	Fig. Z	69.50
Mic/light Bracket (model H-8) for Hitachi FP-40 S camera	Fig. X	69.50
Mic/light Bracket (model H-10) for Hitachi FP-22 camera	Fig. X	69.50
Mic/light Bracket (model H-12) for Hitachi FP-21 camera	Fig. X	69.50
Mic/light Bracket (model T-10) for Toshiba PK-60 camera	Fig. X	69.50
Light Bracket (model UNV-50) for the following cameras:	Fig. S	25.00

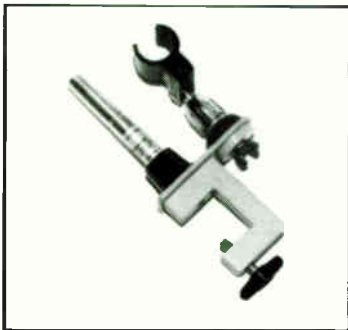
Sony Betacam BVP-1, BVP-3, DXC-M3, BVP-110, BVP-200, BVP-250, BVP-300, BVP-330. Thomson MC-301, MC-501, MC-601A, CSF. Fujinon 14X. JVC KY-1900 CH. RCA HC-1. Panasonic AK-100.

If you require a bracket for a camera not listed, please call or write. We may be able to help you.



1

S



T



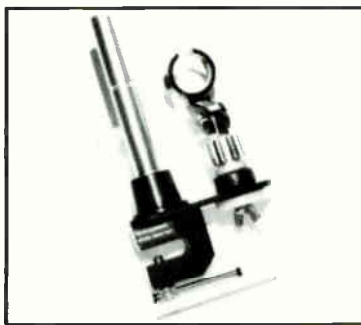
U



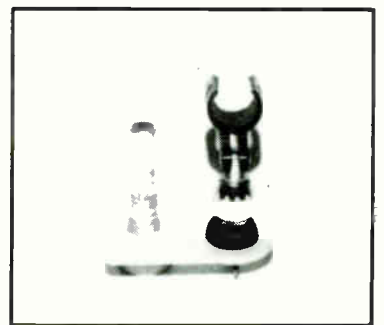
W



X

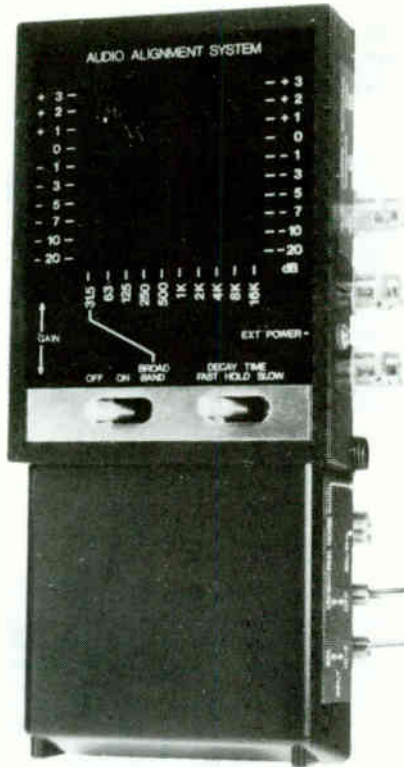


Y



Z

P.O. Box 115
West Redding, CT 06896
(203) 938-2588



LL-10

LL-10 REAL TIME ANALYZER

Converts Your Oscilloscope Into An Audio Spectrum Analyzer

Model LL-10 is a Real Time Audio Spectrum Analyzer that presents a 10-band Real Time display on any oscilloscope and has an additional self-contained LED readout. Each of the 10 bands is set on an ISO center frequency and the 10 bands covers the entire audio spectrum from band centers of 32Hz to 16K. Scope measurements from -43dBm to +10dBm are available with the LL-10. Both a standard balanced line input at 600 Ohms impedance, and a Hi-Z input at 33K Ohms are provided. An additional feature is the built-in pink noise generator which allows analysis of all bands at the same time.

The LL-10 has proved a real time-saver for the broadcast engineer. By making use of a pink noise tape, or its own built-in pink noise generator, he can rapidly see the entire audio spectrum for inspection or alignment of tape machines or other equipment. For example, the performance or adjustment of pick-up cartridges and turntable preamps can readily be accomplished when an LL-10 is used in conjunction with a test recording. With regard to noise reduction, not only will the pink noise real time analyzer display show problems from misadjusted bias and/or equalization, but it will also show immediately whether there is any noise reduction mistracking. An additional

application that has proved useful to broadcast engineers is the use of an all-band display and pink noise to rapidly take line level measurements of remote pick-up transmitters and receiver systems. The LL-10 shows the levels across all 10 bands, simultaneously, and the effect on each band as the bias is adjusted. Bias adjustments can be made in less than 30 seconds. With this technique it is no longer necessary to check back and forth from one frequency to another with a signal generator. EQ adjustments are made just as easily.

SPECIFICATIONS

Measurement Range (Line Input): -41 to +8dBm

Display Channels: 10

Center Frequencies (Hz): 32, 63, 125, 250, 500, 1K, 2K, 4K, 8K, 16K

Center Frequency Accuracy: Typically 3%

Filters: ANSI Class II

Relative Flatness Channel to Channel: ± 1.0 dB

SPL Display (Broadband): Relative broadband in 32 Hz channel with relative spectrum display in all other channels

Weighting: Flat

Detector Decay (500 Hz Band): Slow: 2.2 dB/sec

Fast: 18 dB/sec

Hold Function: Short duration display freeze

Display Range LED Display: 23 dB VU type scale

Display Range via Scope Outputs: -43 to +10 dBm

Scope Setting: Vertical: 1V/Div

Horizontal: .33mS/Div

Line Inputs: Hi-Z In: 33K Ohms impedance

Balanced Input: 600 Ohms impedance. Both Hi-Z and Balanced Inputs have a range of

-41 to +8 dBm (6.9mV to

1.9V RMS)

Outputs: Scope via BNC connectors

Sync: Pulse coinciding with

31 Hz channel scan

Comp: Spectrum display with

linear scale

Pink Noise: Via 1/4" jack, 10K ohms impedance -18 dBm

(98mV RMS)

Microphone: Not provided. Requires

phantom power source pre-

amp such as Gold Line PHT-2

which provides 12V phantom

powering in conjunction with

a balanced low impedance mic

pre-amp.

Power: External supply via 2.5mm jack

12V nominal at 40-80mA

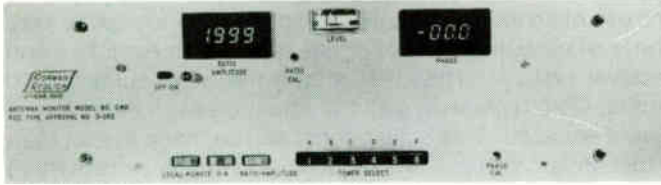
•10 \$339.95

GORMAN- REDLICH

6 Curtis Street
Athens, OH 45701
(614) 593-3150

BROADCAST EQUIPMENT

ANTENNA MONITORS



These monitors are state-of-the-art instruments of unequalled accuracy (.5% or better on ratio and .5° or better on phase) and stability. With typical modulation the true ratio readout of these monitors is a factor of 10 more stable than instruments that measure normalized amplitude, and their phase readouts are rock solid. Phase sign is automatic, no extra operation. In addition to the analog DC outputs for remote control the Model CMR has a multiplexed BCD digital output which can be used to drive the Remote Indicator Model CMR-1. RF inputs have dual protection. Gas discharge tubes across the sample line terminations plus relay protection.
IN STOCK — AVAILABLE FOR IMMEDIATE DELIVERY.

REMOTE INDICATOR

The Model CMR-1 may be used for hardwire remote control and remote reading of the Model CMR Antenna Monitor. The two units are connected by a multiconductor cable up to 1500 feet long. No weekly calibrating necessary, no pots to adjust.
IN STOCK — AVAILABLE FOR IMMEDIATE DELIVERY.



Model CMR-1

Price \$430.00

WEATHER RADIO

Sensitivity .28 microvolts for 12 dB quieting. All 3 frequencies. Alert tone demutes receiver, closes relay and gates audio to 600 ohm rear terminals. Another set of rear terminals has continuous 600 ohm (0dBm) audio output. Double conversion crystal controlled, crystal filter in first I.F., ceramic filter in second I.F. Dual gate MOS FET front end. 50 ohm coaxial input. Adjacent channel (± 25 kHz) down 70 dB. 19" rack mount, 3-1/2"H, all metal enclosure.
IN STOCK — AVAILABLE FOR IMMEDIATE DELIVERY.

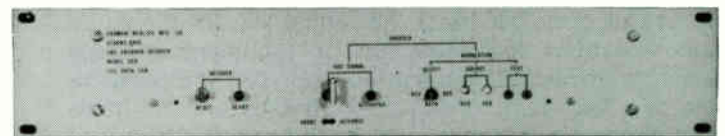


Model CRW

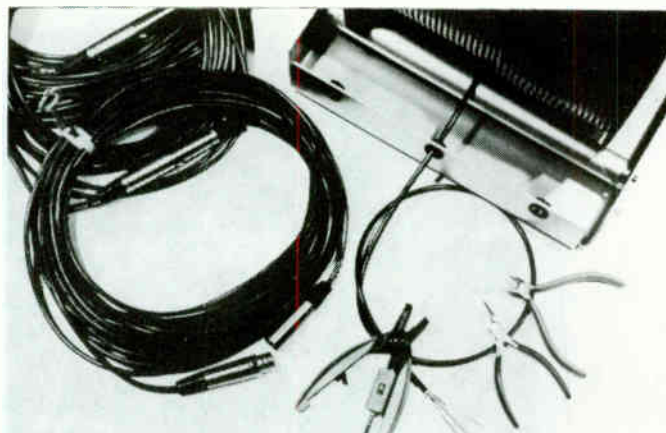
Price \$425.00

EBS EQUIPMENT

- Model CEB Encoder-Decoder **\$425.00**
 - Model CEB Encoder Only **295.00**
 - Model CE Encoder with Stereo Option **320.00**
 - Model CD Decoder (required for LPTV) **250.00**
 - Encoder FCC Type Accepted
 - Decoder FCC Certified
 - Exceeds FCC Specifications
 - Receiver can be supplied to drive Decoder **100.00**
- All interconnections to the EBS equipment are made through a barrier terminal block. No special connectors necessary.
IN STOCK — AVAILABLE FOR IMMEDIATE DELIVERY.



**Model CEB
Encoder-Decoder**



AUDIO CABLES

Until Gotham became involved in audio cables, this important aspect of recording and broadcasting was left to a few large companies whose sights were aimed at the mass market. Such features as flexibility, resistance to cold weather, ease of stripping and soldering, color brightness but dull, matte finish, shielding to the ever increasing RFI fields, and last but not least, a neutral odor, were simply unavailable.

A look at commonly available cables shows that the highest number of individual strands used by any major manufacturer for conductor is 37, while the 3-conductor cable listed here is made up of 96 strands of split-hair thin 0.05 mm diameter copper. This combined with two non-woven, Reusen layers of shielding provides both a high degree of RF rejection and suppleness.

With today's popular phantom powering, which requires a

third conductor to complete the powering circuit, it no longer suffices to use the shield as this conductor. Any microphone cable with a broken shield is fine for use with dynamic microphones, but fails to operate phantom powered condenser microphones. To avoid this danger, a third conductor tied to the ground pin and shield on both ends will assure proper powering under all conditions at a minimal additional cost. Three-conductor cables also produce more uniformly round cables.

Color coded microphone cables, when combined with like colored foam pop screens permit easy identification in sound reinforcement situations using hand held microphones. It's easy to keep track of whose microphone is controlled by which console fader, simply by color coding the faders to match the cable and pop screen colors.

MICROPHONE CABLES

Manufactured of 3-conductor, double Reusen layer shielded, extremely supple cable with Switchcraft® Q-G connectors. Ideal for all studio and remote purposes. Available in (0) "Velvet" black, (1) brown, (2) red, (4) yellow, (5) green, (6) blue, (8) gray and (9) white.

IC-3/10	10' extension cable	\$ 13.00
IC-3/25	25' extension cable	16.20
IC-3/50	50' extension cable	22.50
IC-3/100	100' extension cable	35.20

IC-3 cables of any lengths available on special order. Call your dealer for prices and minimum quantities.

IC-4/25	25' Swivel cable for U-87 and U-89 (like U-67 swivel w/XLR insert)	\$90.00
IC-5/33	33' extension cable for USM-69 (5 conductor)	35.00
IC-6/33	33' swivel cable for USM-69 (5 conductor)	95.00

RF-PROOF SHIELDED CABLE

GAC-3/1	3-cond.; 0.190" diam	\$248.00 per 300m spool (984 ft) or \$1.10/m (\$0.335/ft)
GAC-3/1/0	"Velvet" black: 0.288" dia.	\$190.00 per 229m spool (750 ft) or \$1.10/m (\$0.335/ft)
GAC-2/10	10-pair double shielded cable; 0.60" dia.	\$4.20/m (\$1.27/ft)
GAC-2/19	19-pair double shielded cable; 0.75" dia.	\$8.00/m (\$2.52/ft)
GAC-2/27	27-pair double shielded cable; 0.93" dia.	\$11.35/m (\$3.46/ft)

All Gotham cables are extremely supple and will show minimum stiffening in cold weather. GAC .3/1 is available in "Velvet" black (3/1/0), brown (3/1/1), red (3/1/2), yellow (3/1/4), green (3/1/5), blue (3/1/6), gray (3/1/8), and white (3/1/9).

MODEL 100 PRODUCTION SWITCHER

The Professional Video Switcher that's a chip off the old block.

The Model 100 has all the inherited family characteristics of its bigger brothers — quality, performance, and a comfortable drive. Although designed for the professional video market, the Model 100 has all the qualities expected in the most sophisticated markets.

QUALITY... It begins with quality inherited from twenty-five years of industry leadership — quality you can see and feel. The pattern positioner is the same used in our biggest switchers. Then, from the illuminated pushbutton switches to the effects transition lever, the Model 100 feels like its bigger brothers. Sturdy, Solid. So transitions are smooth in your hand and on the screen. And waveform stability assures circles stay round, and squares stay square, even when greatly reduced.

PERFORMANCE... We use the same time-proven technology as in our advanced 1680s and 300s, for "works-right-out-of-the-box" performance. The heart of the video processor is a proprietary chip designed for critical production performance. Five years ago we stopped using the chip most commonly used in other switchers. And for the Model 100, we developed a new hybrid integrated circuit, specifically for better keying and wipes. Its performance has proven so superior, we are putting it in all future switchers. Even our most expensive.

A COMFORTABLE DRIVE... The control panel is as easy to use for a newcomer as an old pro. Much of the logic for creating multi-level effects is built into the control memory. So you can drive it without learning its logic. And with its preview system, you always know where you are. And where you are going.

FEATURES

With all the production features needed for basic programming, we expect the Model 100 will follow in family footsteps, becoming the industry standard in professional video production.

If you've been waiting for quality, performance and a comfortable drive before buying a compact switcher, call us today. And put the power of our new Model 100 Switcher on your production team.

STANDARD FEATURES

Unique Three Bus Multi-Level Mix/Effects System:

- Eight looping video inputs, plus black and color background.
- DSK Preview, overrides look-ahead preview system.
- Cut or mix key transitions with independent frame rate auto transition.

Master Fade-to-Black and Pulse Processor, Featuring:

- Independent frame rate auto transition for Fade-to-Black.
- Preview system that shows program output when Fade-to-Black is engaged.



- Pulse Processor re-inserts blanking from black burst on program output for stable output and recordings.
 - Standard contact closure editor interface (GPI) to each of the three auto transitions or a fourth "select" line which allows selection of any one.
 - Program and Preset buses for background transitions.
 - Video key bus for luminance keying, chroma keying, and pattern inserts, over the background transition.
 - Look-Ahead Preview System that shows the next effect; Wipe transition preview.
 - Auto transition, adjustable 0-999 frame, lever arm transition or cut button.
 - Ten wipe patterns, with modifiers:
Hard or soft edges
Hard or soft bordered edges
Pattern Reverse
Pattern Aspect
Rate controlled positioner
Preset Pattern size
 - Independent Matte Generator for key fill and pattern borders.
- Video Keyer, featuring:**
- Video or Matte fill
 - External key input
 - Optional RGB chroma keyer
 - Key invert
 - Key mask using pattern generator
 - Preset Pattern insert filled from key bus

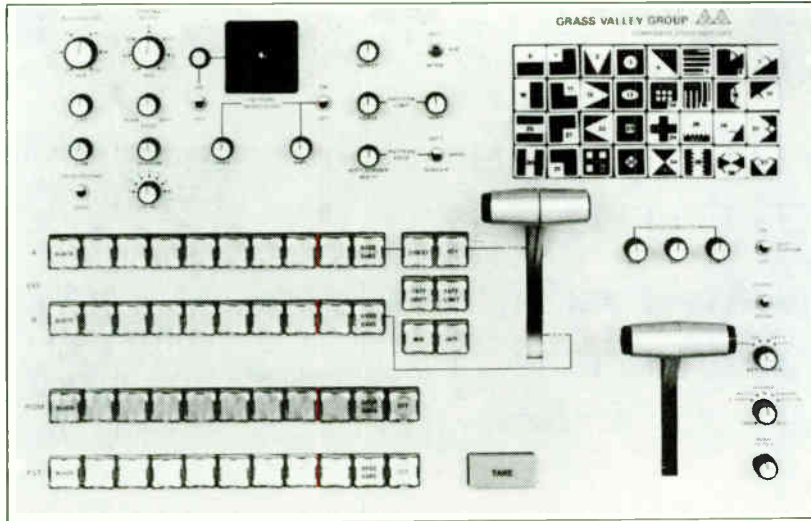
Standard Downstream Keyer, featuring:

- Key input from the video key bus or an external key input.
- Key fill from an external video source or the independent DSK matte generator.
- BORDERLINE® Generator option for black or white title borders, drop shadows, or matte filled outline.
- Key invert.
- Key mask using pattern generator.
- Optional serial interface (RS 232/422) for external computer control.
- Optional pulse regenerator for system timing

MECHANICAL SPECIFICATIONS

- Control panel can sit on desk top (17" wide, 14" deep), or with rack mount adaptor, can be placed in modular rack enclosures (requires eight rack units).
- Electronics frame requires three rack units and 20" depth.
- Single 15 conductor control cable.
- Full tally system.
- Selectable power ranges from 100 to 240 volts, 50 or 60 Hz.

Contact local Grass Valley Sales Office for Prices



**Model 1600-1LCV
 Component Video Switcher**

The 1600-1LCV is a compact, flexible and economical component switching system, functionally very similar to the popular 1600-1L switcher for composite systems. The switcher uses three parallel switching and processing paths, operating on equal (full) bandwidth R, G and B signals. Careful design allows for excellent tracking of the three processors. Most of the system employs standard 1600 Series modules.

FEATURES

- Component video quality
- Ten inputs, four output buses (optional transcoders required for each active input)
- Complete mix/effects system with modulated positioner, color matte generator, and rotary pattern generator
- Flip-flop mixer with cutbar
- Black generator
- Color background generator
- Camera tally system

The primary switching matrix is arranged in a 10-input, 4-output configuration. Buses 1 and 2 supply input signals to the mix/effects system, the output of which is available as an input to buses 3 and 4 — program (PGM) and preset (PST). Sources selected on the PST bus may be transferred to the PGM bus by operation of the cutbar. Alternatively, lap dissolve transitions may be made between the same two buses by means of the lever assembly using the flip-flop technique.

The mixing and special effects system provides mix or wipe transitions between sources, to a keyed insert, or to a preset pattern. Proportional (linear) control elements are used for all modes of operation; mix, wipe, and key. The proportional elements allow soft wipe and vignette effects to be generated; the degree of softness is ad-

justable from the panel. The mix/effects system is complete, in that it contains its own pattern generator, modulated positioner, and color matte generator.

Matte keys can be enhanced by use of an optional BORDERLINE generator, which provides a symmetrical or drop shadow black edge to inserts. The borderline unit also has an outline-only mode.

The shadow key operates in conjunction with the RGB chroma key option. Shadow chroma keying allows lifelike, noise-free shadows to be included in chroma keyed inserts; the shadows cast by the foreground subject can be electronically added to the background scene so as to provide a high degree of realism. Other options for the 1600-1LCV include an audio-follow-video system which operates in conjunction with the PGM and PST buses. Models are available for 525/60 and 625/50 systems.

SPECIFICATIONS

(Basic System)

INPUT CHARACTERISTICS:

Note: Each active input requires an input transcoder. See ordering information.

Video Input: R, G, B or Y, R-Y(V), B-Y(U) or Y.I.Q. (Input formats individually selectable.) R, G, B and Y inputs 1Vp-p composite or 0.714Vp-p (0.7Vp-p for 625/50 versions) non-composite. Components input gain adjustable to accommodate "scaled to Y" components (e.g., "Betacam") or unscaled components. All inputs must be synchronous. All inputs 75 ohm terminating. Each transcoder provides a monochrome (Y) signal for input monitoring. 1Vp-p composite.

Pulse Input: Sync & Blanking 1.8V — 6.0Vp-p, high impedance bridging.

OUTPUT CHARACTERISTICS:

Outputs Available:

PGM: 2xRGB Composite
 2x Y, C₁, C₂ Selectable Standard with optional program output transcoder (R, G, B or Y, R-Y(V), B-Y(U) or Y, I, Q) Composite or non-composite. (Both sets of outputs identical.)

2x Y, C₁, C₂ as above, with optional second output transcoder.

PVW: 2x RGB Composite
 2x Y, C₁, C₂, as above, with optional preview output transcoder.

Impedance: 75 Ω ±1% source terminated

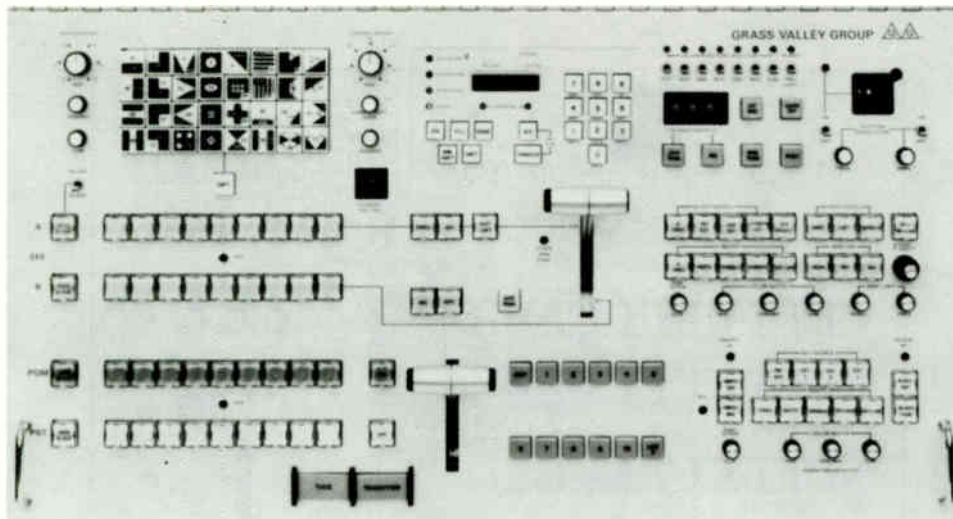
Level: R, G, B and Y outputs 1Vp-p composite or 0.714Vp-p (0.7Vp-p for 625/50 systems) non-composite, w/transcoder.

Components outputs gain adjustable to provide "scaled to Y" or "unscaled" outputs.

- 1600-1LCV-525 \$37,500.00
- 1600-1LCV-625 37,500.00

OPTIONS

- RGB chroma keyer with shadow key and input matrix \$1850.00
- BORDERLINE® generators 2490.00
- Flip-flop mixer AFV system 9260.00
- Parallel edit interface with 8 x 2 audio mixer 8300.00
- Input transcoders for all current standards 975.00
- Program output transcoders 900.00
- Preview output transcoder 900.00
- Test bar generator and differential alignment system 1800.00



MODEL 1600-1XN

A compact, high performance video switching system intended for use in small studios, remote vehicles, or in post production applications. A fully integrated E-MEM II effects memory system provides assistance to the operator through storage of effects, auto transitions, effects dissolves and effects sequence programming.

Model 1600-1XN Basic System \$36,500.00

- Ten inputs, four output busses
- Rotary and standard wipes
- Complete Mix/Effects (M/E) system with modulated positioner, color matte generator, and pattern generator
- E-MEM™ II system with sE-QUENCER programming system
- Four Auto transitions
- Flip-flop mixer with cut bar
- Downstream keyer
- Color black and background generator
- Non-sync inhibit system
- Camera tally system

OPTIONS

- RGB chroma keyer with shadow key **\$1850.00**
- Encoded chroma key system **2880.00**
- RGB switching matrix **900.00**
- Borderline® generators **2490.00**
- Flip-flop mixer AFV system **9260.00**
- Pulse regenerator
- Parallel edit interface with 8 x 2 audio mixer **8300.00**
- E-MEM serial interface **1565.00**
- E-DISK floppy disk storage **5990.00**
- E-MEM audio system **15,500.00**

SPECIFICATIONS

Input Characteristics

- Video Level: 1V p-p composite or .714V p-p noncomposite
- Pulse Level: 4V p-p ±6dB
- Subcarrier: 2V p-p ±3dB
- Return Loss
 - Video: ≥ 40dB (5MHz sweep)
 - Pulse: ≥ 30dB (T-Pulse)
- Hum Attenuation: ≥ 26dB referenced to 1V p-p hum
- Maximum Hum Level: 1.5V p-p
- Clamp APL Response: ≤ 2mV shift for 10-90% change

Output Characteristics

- Impedance: 75Ω ±1%, source terminated
- Level: 1V p-p composite, nominal
- DC on Output: ±50mV blanking to ground
- Return Loss: ≥ 40dB, 5MHz sweep
- Isolation: ≥ 35dB, 5MHz sweep

Mechanical and Power

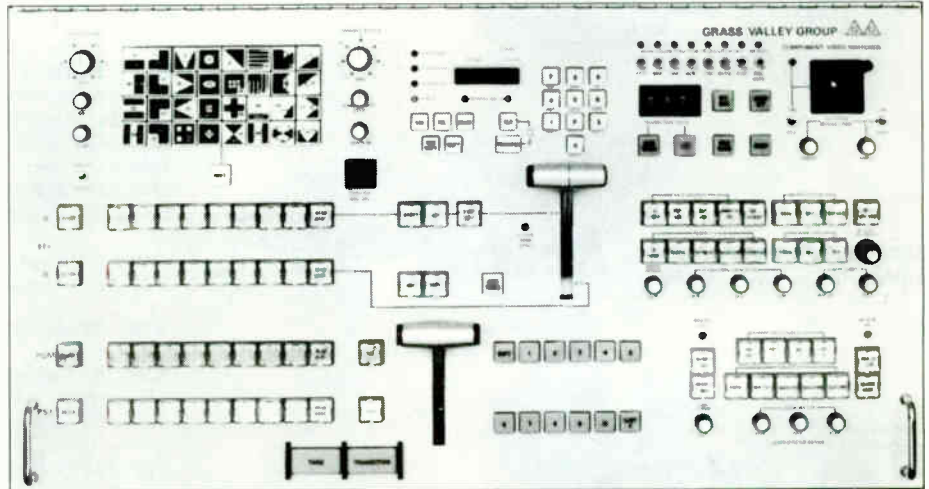
- Control Panel: 15.3"H x 28"W x 5.25"D (38.9 x 71.2 x 13.4cm)
- Rack Mounted Equipment: 15.75"H x 19"W x 18"D (40 x 48.3 x 45.7cm)
- Power Supply: Above dimensions include power supply; no additional air circulation space needed
- Input Power: 120 or 240Vac ±10%, 50/60Hz
- Power Consumption: 225VA approximate
- Connectors, Video: BNC
- Tally Relay Contacts: 2A, 28V, resistive load
- Gross Shipping Weight: approximately 200lb/90kg

**Model 1600-1XCV
 Component Video Switcher**

The 1600-1XCV is a compact, high performance component video switching system intended for use in small studios, remote vehicles, or in post production applications. A fully integrated E-MEM effects memory system provides assistance to the operator through storage of effects, auto transitions, effects dissolves and effects sequence programming. The 1600-1XCV uses standard 1600 Series modules to provide three parallel switching and processing paths, operating on equal (full) bandwidth R, G, and B components. Careful design allows excellent tracking accuracy for accurate and stable performance.

FEATURES

- Component video quality
- Ten inputs (including black and color background)
- 4 output buses: M/E-1 A & B, PGM, and PST
- Complete Mix/Effects (M/E) system with modulated positioner, color matte generator, and pattern generator
- E-MEM II system with SE-QUENCER programming system
- Four Auto transitions
- Flip-flop mixer with cut bar
- Downstream keyer
- Black and color background generator
- Camera tally system



SPECIFICATIONS

(Basic System)

INPUT CHARACTERISTICS:

Note: Each active input requires an input transcoder. See order information.

Video Input: R, G, B or Y, R-Y(V), B-Y(U) or Y, I, Q.

(Input formats individually selectable.)
 R, G, B and Y inputs 1Vp-p composite or 0.714Vp-p (0.7Vp-p for 625/50 versions) non-composite. Components input gain adjustable to accommodate "scaled to Y" components (e.g., "Betacam") or unscaled components. All inputs must be synchronous. All inputs 75 ohm terminating. Each transcoder provides a monochrome (Y) signal for input monitoring. 1Vp-p composite.

Pulse Input: Sync & Blanking
 1.8V — 6.0Vp-p, high impedance bridging.

OUTPUT CHARACTERISTICS:

Outputs Available:

PGM: 2x RGB Composite
 2x Y, C₁, C₂. Selectable Standard, with optional program output transcoder (R, G, B or Y, R-Y(V), B-Y(U) or Y, I, Q) Composite or non-composite.
 (Both sets of outputs identical.)

2x Y, C₁, C₂ as above, with optional second output transcoder.

PVW: 2x RGB Composite
 2x Y, C₁, C₂ as above, with optional preview output transcoder.

Impedance: 75 Ω ± 1% source terminated

Level: R, G, B and Y outputs 1Vp-p composite or 0.714Vp-p (0.7Vp-p for 625/50 systems non-composite w/transcoder.

Components outputs gain adjustable to provide "scaled to Y" or "unscaled" outputs.

STANDARD E-MEM II SYSTEM

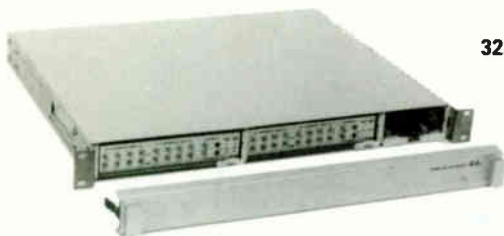
An E-MEM II system is standard on every 1600-1XCV. The E-MEM II system provides assistance to the operator through storage of effects (all controls and pushbuttons) in any of twenty registers. The stored effects can be recalled instantly at the touch of a button. This permits rapid effects sequences in live production or precise recalls for iterative post production work.

- 1600-1XCV-525 \$56,500.00
- 1600-1XCV-625 56,500.00

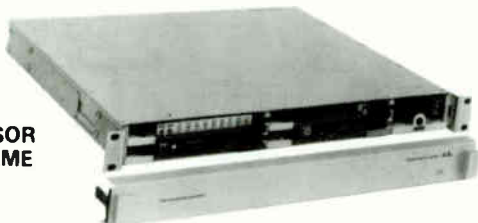
OPTIONS

- RGB chroma keyer with shadow key and input matrix \$1850.00
- Borderline® generators 2490.00
- Flip-flop mixer AFV system 9260.00
- Parallel edit interface with 8 x 2 audio mixer 8300.00
- E-MEM serial interface 1565.00

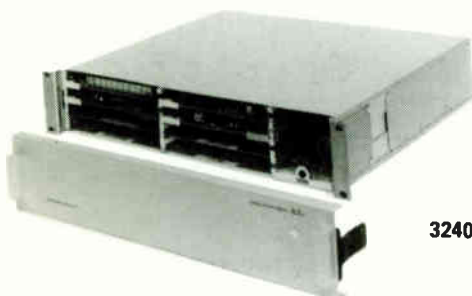
- E-DISK floppy disk storage 5950.00
- E-MEM audio system 15,500.00
- Input transcoders for all current standards 975.00
- Program output transcoders 900.00
- Preview output transcoder 900.00
- Test bar generator and differential alignment system 1800.00



3220-LC2 COMPLETE UNIT



**3240-10 VIDEO PROCESSOR
 IN ONE RACK UNIT FRAME**



3240-20 VIDEO PROCESSOR



3274A



**3247A RACK MOUNT
 REMOTE CONTROL PANEL**

Model 3220 Linearity Corrector

3220-LC1 Assembly in 1-RU tray, power supply, one 3220 module, AC line cord, remote connector, module extender, two instruction manuals. **\$2025.00**

3220-LC2 Assembly in a 1-RU tray, power supply, two 3220 modules, AC line cord, remote connector, module extender, two instruction manuals. **\$3020.00**

The Model 3220 Linearity Corrector compensates for differential gain and differential phase non-linearities of visual television transmitters or other video systems. Whether used alone, or as an accessory to the 3240 Video Processor, the Linearity Corrector features:

- Differential phase correction • Differential gain correction • Operate or bypass modes • Four adjustment steps in gain and phase • Threshold and slope step adjustments • Negligible adjustment interaction

Model 3240 Video Processing Amplifier

3240-10 Video Processor in 1-RU tray, AC power cord, module extender, two instruction manuals. **\$4595.00**

3240-20 Video Processor in 2-RU tray, two AC power cords, module extender, two instruction manuals. **4995.00**

3240-201 Pulse DA-1A module; Option-202 may not be used. **995.00**

3240-202 Pulse DA-2 module; Option-201 may not be used. **495.00**

3240-203 Video AGC module; Option-204 may not be used. **895.00**

3240-204 VIR AGC module; Option-203 may not be used. **995.00**

3240-205 3220 Linearity Corrector; Options-206-207 may not be used. **995.00**

3240-206 Relay bypass module; Option-205 may not be used. **275.00**

3240-207 External Reference module; Option-205 may not be used. **995.00**

3240-101 Fade-to-black control with 8 meters (26') connecting cable. **465.00**

3240-102 Console type Remote Control panel with 8 meters (26') of connecting cable. Option-103 may not be used. **525.00**

3240-103 Rack mounting Remote Control panel with 8 meters (26') of connecting cable. Option-102 may not be used. **525.00**

3240-104 Delegate Remote Control panel with one meter (3.3') of connecting cable. Options-101 or -102 may also be used. **695.00**

3240-105 Console type Remote Control parts kit with 8 meters (26') of connecting cable. **275.00**

The Model 3240 Video Processing Amplifier is a high performance sync and blanking regenerative amplifier designed for signal processing in studio, master control, remote, and transmitter locations.

Features

- SC/H phasing • Full regeneration of sync and burst • Adjustable blanking width • Soft and hard clippers • Cable equalization option • Selectable line deletions: 10-21 • Sin² pulse edges • Color black output option • Optional accessories

The basic 3240-10 system is a fully functional processing amplifier, available in one rack unit (RU = 1.75") height. Controls are available on the card edge or at a remote control point.

The compact and rugged construction, coupled with low power consumption and wide supply voltage range, make it ideal for remote van applications. All active components are accessible from the front of the rack.

Conservative ratings, and a sealed air design that keeps contamination out, will assure years of trouble free service.

The expandable 3240-20 system in the two-RU frame contains four additional cells for accessories. The accessories are plug-in modules that complement the basic processor. The frame has been prewired to accept the accessories, and power is supplied from the 3200A Power Supply.

The 3240-20 system in the two-RU frame contains four additional cells for accessories. The accessories are plug-in modules that complement the basic processor. The frame has been prewired to accept the accessories, and power is supplied from the 3200A Power Supply.

The 3240-20 system in the two-RU frame contains four additional cells for accessories. The accessories are plug-in modules that complement the basic processor. The frame has been prewired to accept the accessories, and power is supplied from the 3200A Power Supply.

The 3240-20 system in the two-RU frame contains four additional cells for accessories. The accessories are plug-in modules that complement the basic processor. The frame has been prewired to accept the accessories, and power is supplied from the 3200A Power Supply.

Model 3274A Borderline Generator

3274A-10 Borderline Generator in 1-RU tray, power supply, AC line cord, module extender, two instruction manuals, and a 1.75"H x 19"W (4.45 x 48.3cm) control panel with 8m (26') of control cable. **\$3995.00**

3274A-11 Borderline Generator in 1-RU tray, power supply, AC line cord, module extender, two instruction manuals, and a 2.25"H x 6.95"W (5.72 x 17.6cm) control panel with 8m (26') of control cable. **3995.00**

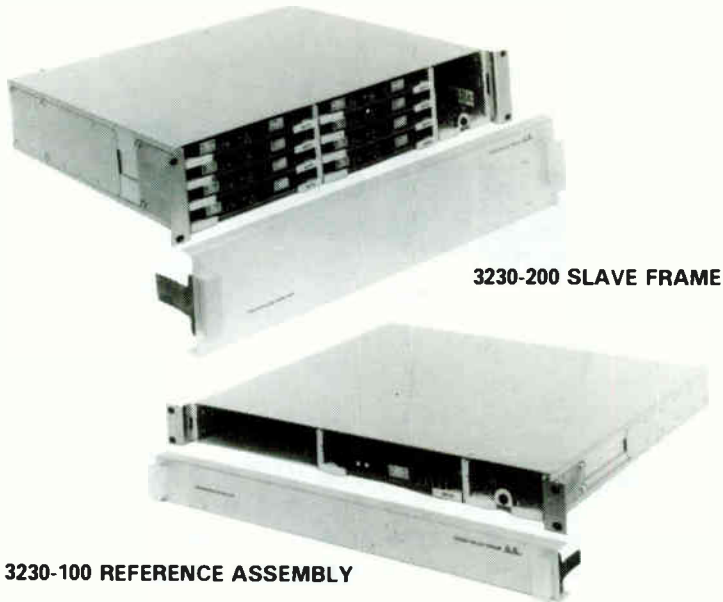
3274A-101 Nonsynchronous Detector submodule. **255.00**

3274A-102 Matte Insert Colorizer module. **925.00**

The Model 3274A Borderline Generator is a caption inserting device normally installed at the output of studio production switching systems.

Features

- External matte • Complete downstream keyer • Matted inserts • Three modes of caption enhancement • Insert fade-in and fade-out operation • Optional matte colorizer • Optional non-sync detector



3230-100 REFERENCE ASSEMBLY

3230-200 SLAVE FRAME

Model 3230 Isophasing System

3230-100 Reference Assembly in 1-RU tray, AC power cord, module extender, two instruction manuals. The system can drive up to four slave assemblies (3230-200) and up to 32 isophasing amplifiers (3230-201). **\$1475.00**

3230-200 Slave Tray with cells for eight 3230 modules, 3200 power supply, three 24" coax cables, and AC line cords. A maximum of four 3230-200's may be ordered with one 3230-100. **\$45.00**

3230-201 3230 Isophasing Distribution Amplifier (one); maximum is eight per slave assembly, 32 per system. **\$35.00**

3230-205 Remote indicator panel for up to 16 isophasing DA's in two trays. Two maximum per system. Eight meters (26') of cable included. **\$70.00**

The Model 3230 Isophasing System provides automatic video delay as part of a precision distribution amplifier.

The 3230 distribution system automatically adjusts the timing of input signals for precision color phase timing at the input of a switching or mixing center.

The system will remove daily drifts and reduce the usual source timing requirements to coarse timing. The automatic timing does not effect the critical subcarrier horizontal relationship specified by RS170A.



3252A TRAY REAR

Model 3252A Genlocking Sync Pulse Generator

3252A-SG1 Dual sync system consisting of two 3252A Sync Generators with power supplies and Pulse DA-1A, 3257A Automatic Changeover Switch with power supply, module extender, remote connectors, and two instruction manuals. **\$12,740.00**

3252-SG2 Dual sync system consisting of two 3252A Sync Generators with power supplies and Pulse DA-2, 3257A Automatic Changeover Switch with power supply, module extender, remote connectors, and two instruction manuals. **\$11,740.00**

3252A Single Sync Generator, power supply, module extender, remote connector, and two instruction manuals. **\$450.00**

3252A-201 Pulse DA-1A module **\$95.00**

3252A-202 Pulse DA-2 module **\$95.00**

Note: One Pulse DA (DA-1A or DA-2) is required for operation.



3256A TRAY REAR



3257A TRAY REAR



3258 FRONT PANEL



3258 TRAY REAR

Model 3256A Non-Genlocking Sync Pulse Generator

3256A Tray with modules, power supply, AC line cord, remote connector, module extender, two instruction manuals. **\$1995.00**

3256-201 Pulse DA-1A with sin² pulses, two color black outputs and test output. **\$95.00**

3256-202 Pulse DA-2 with ramp shaped pulses, and two color black outputs. **\$95.00**

3256-213 Encoded Subcarrier module; converts the slave sync generator to a master sync generator. **\$365.00**

Note: One Pulse DA (DA-1A or DA-2) is required for operation.

Model 3257A Automatic Changeover Switch

3257A Rack mounted switching matrix, power supply, AC power cord, remote connector, module extender, and two instruction manuals. **\$2250.00**

The Model 3257A Automatic Changeover Switch can automatically transfer between the outputs of two sync generators when a "fault" output condition is detected.

Features

- Manual and automatic switching
- Sensing on output lines
- Mechanical and electrical transfer
- Visual and remote alarms
- Eight programmable detectors
- Unique switching application in a one-RU package.

Eight detectors in the module sense eight of the nine outputs. All detectors adjust between 2 or 4V pulses, and 1 or 2V subcarrier signals. One detector can sense a low level, steady state signal such as color black or encoded subcarrier. Any or all detectors may be switched off.

Model 3258 SC/H Phase Meter

3258 SC/H Phase Meter with power supply, module extender and two instruction manuals. **\$2995.00**

The Model 3258 SC/H Phase Meter is a measurement instrument specifically designed to aid in establishing and maintaining an SC/H phased video system. It has two video inputs plus a color frame pulse (VI) input, which are used to measure absolute SC/H phase of either video input, the difference between the two video inputs, and absolute SC/H phase of either video input with respect to an externally applied house reference color frame pulse (VI).

The Model 3400 Utility Video Distribution Amplifier has differential input circuitry which can reject common mode voltages up to +/-10V, six outputs and gain adjustment between -2 and +3dB. It is operated in an AC coupled mode.

The amplifier is designed for use in small systems that do not require cable equalization. It is intended to be used as a utility amplifier to cost-effectively distribute video in small facilities.

The Model 3401V Video Distribution Amplifier is a general purpose differential input, six-output, cable equalizing module. It is capable of equalizing up to 500 feet of Belden 8281/9231 or WE724 with appropriate equalizer cards. The amplifier has current mode input circuitry, which provides +/-30V common mode range, and may be operated in either an AC or DC coupled mode. In the DC mode a +/-150mV offset adjustment is provided for system balancing.

The Model 3402V-A Precision Video Distribution Amplifier has differential input circuitry, six outputs, and cable equalizing capability. It is capable of equalizing up to 1,000 feet of Belden 8281/9231 or WE724 with the appropriate equalizing cards. The amplifier has voltage mode input circuitry with a +/-4V common mode range. The amplifier is designed for use in large systems where extremely low distortion and precise timing are essential.

The Model 3403V Clamping Distribution Amplifier is a general purpose unit providing differential input, six outputs, clamping and cable equalizing capability. It is capable of equalizing up to 1,000 feet of Belden 8281/9231 or WE724 with appropriate equalizer cards. The amplifier has current mode input circuitry, which provides an extremely high common mode range of +/-30V.

The Model 3407 Subcarrier Distribution Amplifier is designed for installations where phase control and/or level stabilization of color subcarrier are required. The 3407 regenerates color SC on zero crossings and provides 360° of highly stable phase adjustment. Output level is adjustable for nominal 1V or 2V operation. Input circuitry is identical to Model 3401V.

The Model 3410 Pulse Distribution Amplifier regenerates and shapes tv pulses, and selectively provides stable delay adjustments from 400ns to 3.5ns. It is designed to operate with nominal pulse levels of 1V to 4V. The amplifier provides normal outputs when fed with as much as 1000 feet of Belden 8281/9231 or WE724 cable. The amplifier's current mode input amplifier is identical to the Model 3411V.

The Model 3411V Linear Pulse Distribution Amplifier provides differential input, cable equalizing capability, and optional pulse shaping. The unit is specifically designed for use in television systems where pulse timing is critical; that is, installations where the SC/H phase relationship must be accurate. The amplifier has a looping current mode differential input stage with +/-30V common mode range, as does the 3410, above.

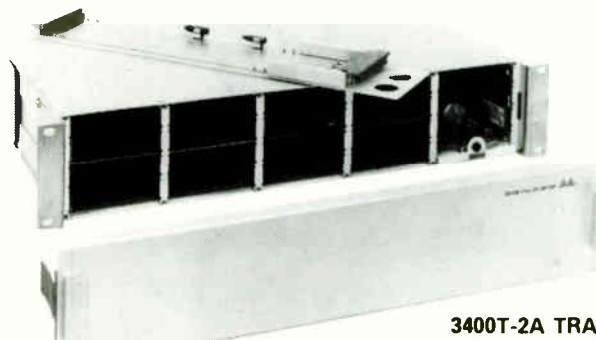
The Model 3421V Long Cable Equalizing Video Amplifier is a differential input three-stage device which can equalize up to 2,100 feet of Rg59b/u, 3,000 feet of Belden 8281, 3,900 feet of Rg 11/u or Rg 11A/u, or 5,400 feet of Belden 8213 cable with the appropriate plug-in equalizers.

The Model 3430V Video Delay Distribution Amplifier is a high performance video delay module with a differential input, six outputs, and optional cable equalization. It is capable of equalizing up to 500 feet of Belden 8281/9231 or WE724 with appropriate equalizer cards. The 3430V has a looping current mode differential input stage with +/-30V common mode range, and may be operated in either an AC or DC coupled mode. In the DC mode a +/-150mV offset adjustment is provided for system balancing.

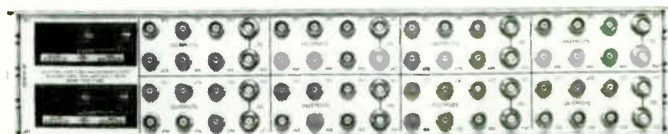
Variable Equalizer Models in the 3400 Series allow rapid adjustment with a single front card edge control. This makes the 3400 variable equalizer models good for mobile operations and situations where setup with unknown cable lengths is required.

3400 Series Distribution Amplifiers

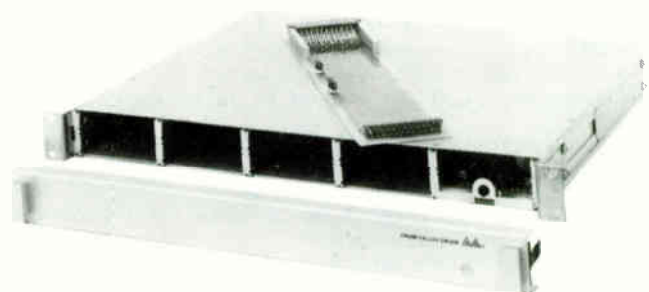
3400 Utility video distribution amplifier.	\$255.00
3401V General purpose video distribution amplifier.	375.00
3402V-A Precision video distribution amplifier.	435.00



3400T-2A TRAY



3400T-2A TRAY REAR



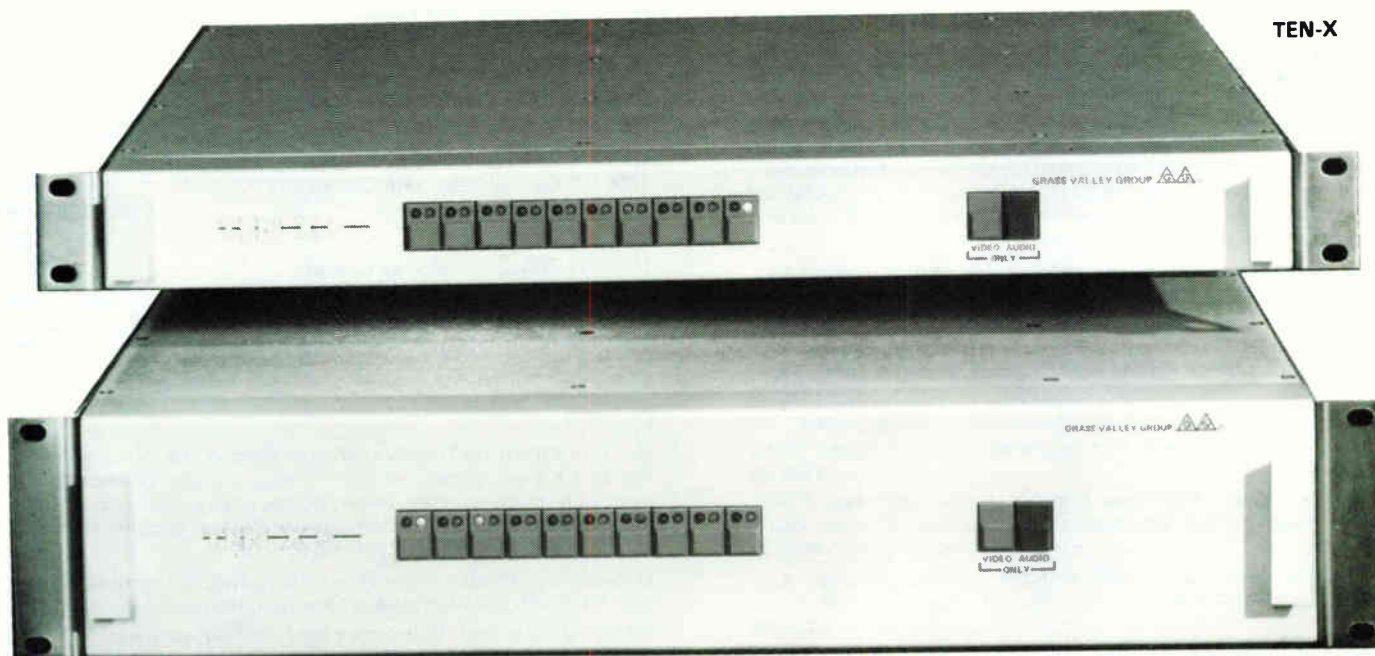
3400T-1A TRAY



3400T-1A TRAY REAR

3403V Clamping video distribution amplifier.	\$535.00
3407 Subcarrier distribution amplifier.	395.00
3410 Regenerating pulse distribution amplifier.	395.00
3411V Linear pulse distribution amplifier.	295.00
3411V-101 Pulse shaping filter.	45.00
3421V Long cable equalization distribution amplifier.	455.00
3430V-350 Video Delay Amplifier with up to 350ns of adjustable delay.	775.00
3430V-550 Video Delay Amplifier with up to 550ns of adjustable delay.	845.00
3430V-750 Video Delay Amplifier with up to 750ns of adjustable delay.	895.00
3400T-1A 3400 DA tray (1 RU) housing up to four distribution amplifiers, power supply, module extender.	695.00
3400T-2A 3400 DA tray (2 RU) housing up to eight distribution amplifiers, power supply, module extender.	835.00
3400T-1B 3400 DA tray (1 RU) housing up to eight 3421V distribution amplifiers, power supply, module extender.	695.00

Note: Two instruction manuals are supplied for each type of amplifier.

**TEN-X****TEN-X II****TEN-X™ Series Program Quality 10x1 Routing Switchers**

Versatility: The TEN-X™ is a 10x1 routing switcher housed in a one-rack unit frame. It is available in video only, audio only, video-plus-audio or video-plus-relay module.

More versatility: The TEN-X™ II is a 10x1 routing switcher housed in a two-rack unit frame. The TEN-X II will permit the use of video, plus the addition of either three audio modules, three relay modules or any combination thereof.

As an option, the TEN-X II can house dual power supplies.

FEATURES

The TEN-X Series may be controlled locally or remotely. Two different types of local control panels are available; one for video-only (or audio-follow-video operation) and another for audio breakaway operation.

When configured for remote control operation, the local control panel is replaced by a blank front cover. Both AFV and audio breakaway remote control panels are available, or you may choose to build your own. Control is wire-per-crosspoint with switching accomplished using a momentary closure to ground. Tally information is returned on the same wires as switching control. The control/tally lines may be operated and read by external TTL logic, if required. The TEN-X operates by local and remote control panels simultaneously.

Video input signals are independently DC-restored, blanking to ground level. Switching is timed to line 10 of the vertical interval of the last selected source.

FET audio crosspoints ensure virtually silent audio switching. +24dBu maximum input/output level facilitates integration of the TEN-X into practically any broadcast audio environment.

Modular Construction: All modules plug into a common motherboard and the frame has no wiring harness. This results in ease of maintenance and reliability.

10x1 Video Crosspoint Module

Selects 1 of 10 video inputs and switches this signal to an output buss. All inputs are D.C. restored. Crosspoint switching occurs during line 10 of last video.

10x1 Audio Crosspoint Module

Selects 1 of 10 balanced audio inputs and routes this signal to a balanced output buss. The system gain is unity and accepts signal levels up to +24dBu (12.3 volts RMS amplitude).

10x1 Relay Module

Two isolated contacts per input are switched to two isolated common busses. This module is interchangeable with the 10x1 audio crosspoint module. It allows you to have a tally relay for activating external tally module devices, a bidirectional data switch or an audio relay crosspoint module capable of switching balanced audio sources.

Power Supply Module

Provides power for the 10x1 video, audio and relay modules. The power supply furnishes unregulated filtered +/-16V* direct current to the TEN-X frame power distribution busses. Power regulation is accomplished on the individual plug-in modules.

*Nominal for 115V or 220 VAC input.

Model Ten-X™ Routing Switchers Basic System

The Ten-X is a high performance 10x1 switcher housed in a one-RU rack mounting package. It is available in audio-only, video-only and video/audio configurations. The Ten-X may be controlled locally or remotely. Two different types of local control panels are available: one for video-only (or audio-follow-video operation) and another for audio breakaway operation. When configured for remote control operation, the local control panel is replaced by a blank front cover. Both AFV and audio breakaway remote control panels are available. Both local and remote control panels can be operated simultaneously.

TNX-10 10x1 Video-Only basic switcher for remote control use, 110-120V. Does not include remote control panel. Includes Blank Front Cover.	\$1080.00
TNX-11 10x1 Video/Audio basic switcher for remote control use, 110-120V. Does not include remote control panel. Includes Blank Front Cover.	1380.00
TNX-11-2 10x1 Video/Audio basic switcher for remote control use, 220-240V. Does not include remote control panel. Includes Blank Front Cover.	1380.00
TNX-12 10x1 Audio-Only basic switcher for remote control use, 110-120V. Does not include remote control panel. Includes Blank Front Cover.	1025.00
TNX-12-2 10x1 Audio-Only basic switcher for remote control use, 220-240V. Does not include remote control panel. Includes Blank Front Cover.	1025.00
TNX-20 10x1 Video-Only switcher with local standard control panel, 110-120V.	1230.00
TNX-20-2 10x1 Video-Only switcher with local standard control panel, 220-240V.	1230.00
TNX-21 10x1 Video/Audio switcher with local standard control panel, 110-120V.	1480.00
TNX-21-2 10x1 Video/Audio switcher with local standard control panel, 220-240V.	1480.00
TNX-22 10x1 Video/Audio switcher with local breakaway control panel, 110-120V.	1500.00
TNX-22-2 10x1 Video/Audio switcher with local breakaway control panel, 220-240V.	1500.00
TNX-23 10x1 Audio-Only switcher with local standard control panel, 110-120V.	1185.00
TNX-23-2 10x1 Audio-Only switcher with local standard control panel, 220-240V.	1185.00
TNX-201 Standard Local Control Panel.	250.00
TNX-305 3"x4" Slot Mount standard remote control panel.	525.00
TNX-905 3"x4" Slot Mount standard remote control panel for Ten-X II.	550.00
TNX-211 Breakaway Local Control Panel.	275.00
TNX-301 Standard Remote Control Panel.	170.00
TNX-311 Breakaway Remote Control Panel.	215.00
TNX-401 25 Conductor Control Cable for remote control panel (specify length).	32.25 plus 2.50/meter
TNX-402 25 Conductor Remote Control Connector Kit.	22.00
TNX-501 Module Extender.	75.00
TNX-502 Video Crosspoint Module.	395.00
TNX-503 Audio Crosspoint Module.	325.00
TNX-504 Relay Module.	310.00
TNX-505 Power Supply Module, 110-120V.	185.00
TNX-505-2 Power Supply Module, 220-240V.	185.00
TNX-600 One Rack Unit Frame with 110-120V power supply.	680.00
TNX-600-2 One Rack Unit Frame with 220-240V power supply.	680.00
TNX-601 One Rack Unit Blank Front Cover.	110.00

Ten-X with RS232/422 Control

TNX-50 Video-Only, no Control Panel.	\$2775.00
TNX-60 Video-Only, with STD Local CP.	2945.00
TNX-61 Video-Only with BKwy Local CP.	2970.00
TNX-301 STD Remote CP.	170.00
TNX-311 BKwy Remote CP.	215.00
TNX-401 Control Cable with Connectors.	32.25
	plus 2.50/meter

TNX-402 Connector Kit.	22.00
TNX-701 RS422/232 Module (spare).	755.00

All 2 RU Frames above supplied with video crosspoint module single power supply, and RS-232/422 control module. Add up to 2 audio crosspoint and/or relay modules and dual power supply, as required.

Ten-X II

The Ten-X II is a 10x1 routing switcher housed in a 2 rack unit frame. The Ten-X II will permit the use of video, plus the addition of either three audio modules, three relay modules or any combination thereof. As an option, the Ten-X II can house dual power supplies by ordering an additional TNX-505 or TNX-505-2.

TNX-70 Two rack unit Video-Only routing switcher for remote control use, 110-120V. Does not include remote control panel.	\$1325.00
TNX-70-2 Two rack unit Video-Only routing switcher for remote control use, 220-240V. Does not include remote control panel.	1325.00
TNX-80 Two rack unit Video-Only routing switcher with single 110-120V power supply and local standard control panel.	1515.00
TNX-80-2 Two rack unit Video-Only routing switcher with single 220-240V power supply and local standard control panel.	1515.00
TNX-81 Two rack unit Video-Only routing switcher with single 110-120V power supply and local breakaway control panel.	1535.00
TNX-81-2 Two rack unit Video-Only routing switcher with single 220-240V power supply and local breakaway control panel.	1535.00
TNX-801 50 Conductor Control Cable for Ten-X II remote control panel (specify length).	52.00 plus 3.95/meter
TNX-802 50 Conductor Remote Control Connector Kit for Ten-X II.	40.00
TNX-901 Standard Remote Control Panel for Ten-X II switcher.	215.00
TNX-911 Breakaway Remote Control Panel for Ten-X II switcher.	260.00
TNX-602 Two rack unit Blank Front Cover.	150.00

TNX-100

The TNX-100 Interfaces with the Grass Valley Group Model 100 Production Switcher via the Serial Interface Port to provide an Audio Follow/Breakaway Switching System.

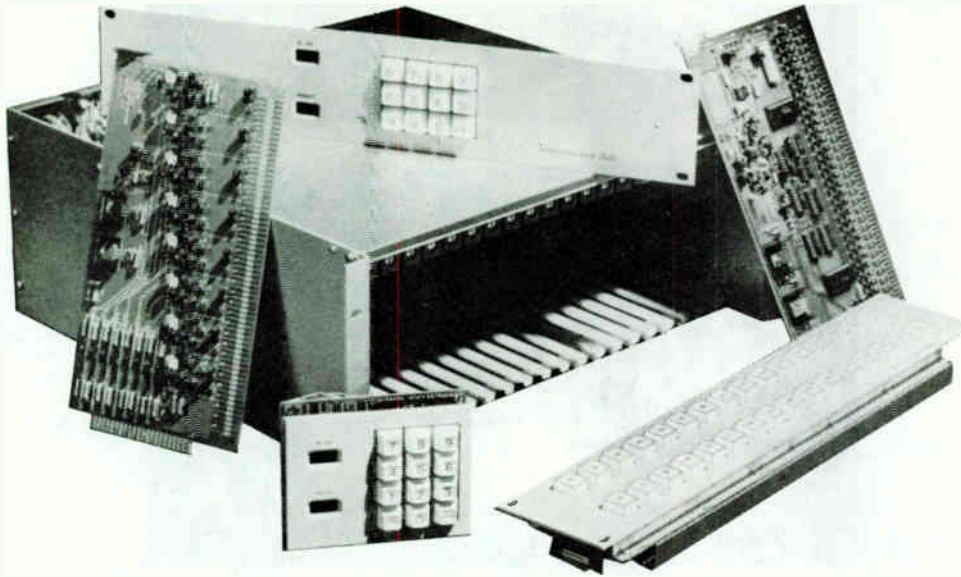
TNX-100 Two rack unit routing switcher.	\$3295.00
Including:	
1 TNX-502 Video Crosspoint Module	
1 TNX-503 Audio Crosspoint Module	
1 TNX-505 Power Supply Module	
1 TNX-702 RS422 Module with SMPTE TNX-100 Software 9-pin	
1 9-Pin Interconnect Cable, 2 meters or 10 meters long (specify length)	
1 Local Breakaway Control Panel	

Spare Module

TNX-702 RS422 Module.	\$755.00
-----------------------------------	-----------------

Instruction Manuals

A90-086800-00 1 RU.	\$50.00
A90-086811-00 2 RU.	50.00
A90-086820-00 RS422/232 2 RU.	50.00



400 SERIES ROUTING SWITCHERS

FEATURES

- High performance • DC restored inputs • Vertical interval switching • Destination oriented matrices • Expandable • Built-in short term memory protection

OPTIONS

- Additional audio matrices • Tally relay systems • Special control systems • Dual power supplies • Expansion systems

The basic video switching matrix is arranged in a 32-input by 16-output format. A complete frame contains 21 printed circuit modules consisting of four input buffer amplifiers, sixteen crosspoint modules, and an interface module. Each buffer contains eight DC restorers together with other circuitry to drive eight 32 by 1 crosspoint modules. The latter also contain the line driving amplifiers. The interface module is used to "marry" the video matrix with other matrices, e.g., audio and tally.

The mounting frame employs exclusive Grass Valley Group zero insertion force connectors for mating the input buffer amplifiers to the crosspoint modules via the frame-mounted mother board. Modules are removed by a quarter turn screw on the front of each connector.

Since all video crosspoints for an output bus are contained on a single module, the system is thus destination oriented. A failure in a crosspoint module only affects one output bus; all other busses continue to operate normally. It is not necessary to switch the system off when removing modules.

The audio switching matrices are similar to video switching matrices; consisting of input buffer modules, crosspoint modules, and a single interface module. The buffer modules utilize differential input circuitry to provide up to 80 dB of common mode rejection at 60 Hz. Grass Valley group can supply systems with audio input and/or output transformers at extra cost — on special order.

It should be noted from the specifications that the audio system will operate at levels up to +24 dBm at 600 ohms or +30 dBm at 150 ohms — with full performance.

A tally relay matrix is available to provide contact closures corresponding to input sources. The system can be enabled on a bus by bus basis.

On special order, Grass Valley Group can provide matrices with relays corresponding to each crosspoint. The latter are particularly useful in distributing special control signals through a routing switcher.

The power supply system is unique. AC line current is first rectified to provide 48 volts direct current. This voltage is then converted to 15 volts DC by means of high efficiency DC to DC converters for distribution to the matrices. The latter also provide regulation.

The 48 volt rectifiers, as well as the DC to DC converters, are plug-in modules for ease of maintenance. Systems can be supplied with dual rectifiers fed from separate AC inputs for maximum system protection. A 400 Series routing switcher can also be fed directly from (nominal) 48 volt direct current sources.

System crosspoint status can be maintained by an optional battery system. Short term protection (nominally 1 minute) is inherent in the standard system as a result of the CMOS memory elements employed.

The flexible control concept employed in the 400 Series allows systems to be addressed in two basic ways; (1) on an individual bus-by-bus basis, and (2) by means of a single X-Y panel for control of all buses.

Several types of panels are offered for controlling individual output buses. These consist of panels with momentary illuminated push-buttons corresponding to input sources, panels employing thumb-wheel preset, LED status indicators and a take button, and 10-digit keyboards with LED status indication.

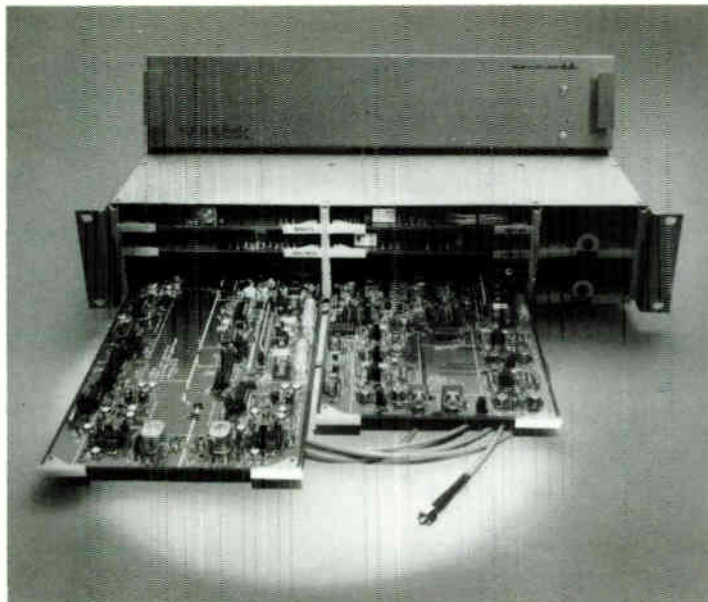
The X-Y control panel provides the means for both input selection and output assignment. This method of control operates via the input/output data port available on each matrix, as opposed to addressing the individual control bus connectors used with the panels described above. The data port also can be used for controlling systems via a computer.

A unique feature of the control system allows several panels to be paralleled on a single output bus, even panels of different types, e.g., keyboard and pushbutton. The only limitation to paralleling panels is the current available for lighting lamps.

Special control panels can be provided on a custom-built basis. Consult Grass Valley Group with your requirements.

Output expansion of a basic 32x16 system requires that input sources be distributed to each frame.

Grass Valley Group's modular approach to routing switcher requirements allows users to start with a small system and expand as needs change. It is not necessary to initially purchase additional frames, power supplies, or other equipment to accommodate future expansion.

**3291 COMPLETE UNIT WITH
DUAL CHANNEL AUDIO OPTION****Models 3290/3291 Wavelink®****Fiber Optic Communications System**

The Model 3290 is the broadband transmission component of the Wavelink system. It provides a full wideband 10MHz channel to accommodate any signal requiring such a bandwidth, for instance high-quality video. Incoming coaxial cable can be equalized by the 3290 with the addition of an optional submodule. The 3290 consists of an LED or laser-based transmitter, a receiver employing an APD detector, and compact mounting trays built to accommodate transmit and receive modules with their power supplies. The mounting trays are available in one rack-unit (RU, 1.75 inches) or two rack-unit heights. One RU tray package houses up to three transmitter or receiver modules or one laser transmitting system. Two RU tray packages will house up to six transmitter or receiver modules, or two laser transmitting systems, plus two power supplies for back-up redundancy.

3291

The Model 3291 is the multichannel transmission component of the Wavelink system. Like the 3290, the 3291 consists of an LED or laser-based transmitter and an APD-based receiver. In addition to a 5.8MHz video channel, the 3291 includes the multiplexing capability for two optional subchannels of audio and/or data. The Model 3291 also provides adjustable equalization of incoming and outgoing coaxial signal cables as an option. All 3291 receiving systems and LED-based transmitting systems are housed in two rack-unit mounting trays. Each of the two rack-unit trays will accommodate three transmit or receive systems. Laser-based transmitting systems are housed in either one or two rack-unit trays, one laser transmitting system being accommodated by each rack-unit of height.

3291 Audio, Data, and Alarm Options

Each option consists of plug-in modulator and demodulator modules which are fully interchangeable with the other option modules. The modulator module plugs into the frame of the transmitting system, while the demodulator module is housed in the standard two rack-unit frame used in the receiving system. Audio options use a unique

FM-on-FM modulation scheme to enhance the signal-to-noise performance. The baseband audio signals are individually preemphasized and modulated at 100kHz; one channel is then frequency modulated on a 9.8MHz carrier, and the other (dual audio systems) on an 8MHz carrier.

For the data option, serial asynchronous data (up to 20kbits/second) is accepted at the data modulator via an RS232 interface. The data is bandlimited to 500kHz to limit the spectral width of the modulator output, and then FM modulated on a 9.8MHz carrier. The audio/data option combines the features of the single audio and data options. Audio specifications are the same as for the dual audio option, and the data specifications remain unchanged. The GV43 audio option supports transmission of two channels of audio on carriers of 5.8MHz and 6.4MHz for common carrier applications; and 6.2MHz and 6.8MHz for satellite link applications.

Before transmission, each option channel is summed with the video channel on the exciter or LED transmitter module, and the resulting waveform is frequency modulated on a carrier of 24MHz. At the receiver the FM signal is demodulated and separated into its video, audio, and/or data components. The demodulator modules perform further FM demodulation and baseband filtering to restore the original audio or data signals. For the dual audio and the audio/data options, the audio output amplifier may be configured for a 600 ohm (20 dBm) or low impedance (50 ohm) balanced output. For the single audio option a choice of 600 ohm, 150 ohm, or a low impedance (50 ohm) balanced output is provided. The data output is available via an RS232-compatible interface. An optional alarm provides relay closures if a video input at the transmitter becomes disconnected, an optical carrier is absent at the receiver, or a redundant power supply fails.

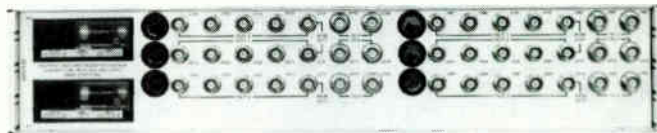
Repeaters

Laser-based 3290/91 repeaters allow transmission distances to be greatly extended.

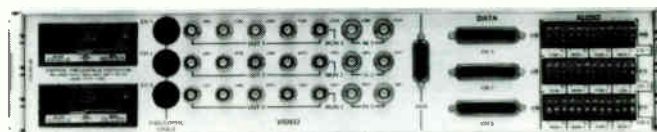
MODELS 3290/3291 WAVELINK® (Cont'd)

3290 Transmitters, Repeaters and Receivers

3290-201	830 NM LED Transmitter Module	\$ 1,200.00
3290-10L	830 NM Laser Transmitter	5,750.00
3290-301	1300 NM LED Transmitter Module	3,300.00
3290-10P	1300 NM Laser Transmitter, 1 RU	9,800.00
3290-20P	1300 NM Laser Transmitter, 2 RU	19,390.00
3290-1SP	1300 NM Single-Mode Laser Transmitter	12,300.00
3290-1RL	830 NM Laser Repeater	6,000.00
3290-1RLK	830 NM Laser Repeater w/Monitor Out	6,500.00
3290-1RP	1300 NM Laser Repeater	11,000.00
3290-1RPK	1300 NM Laser Repeater w/Monitor Out	11,500.00
3290-1RSP	1300 NM Single-Mode Laser Repeater	13,500.00
3290-1RSPK	1300 NM Single-Mode Laser Repeater w/Monitor	14,000.00
3290-202	830 NM APD Receiver Module	1,200.00
3290-302	1300 NM APD Receiver Module	2,300.00



3290 2 RU TRAY REAR



3291 2 RU TRAY REAR

3290 Options

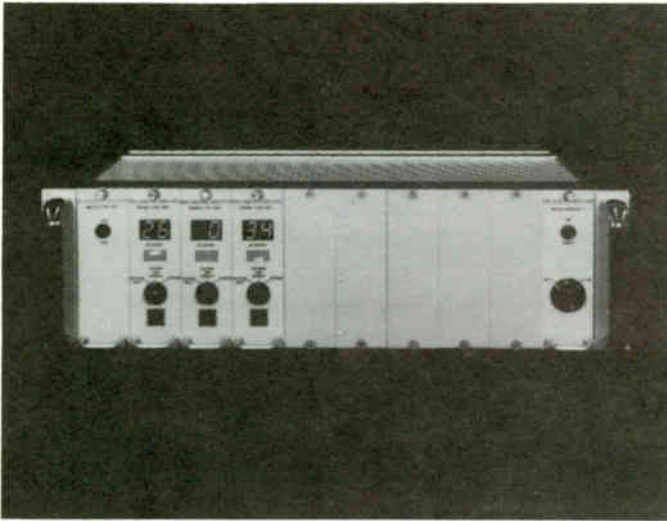
3290-10	1 RU LED Tray, 1 AC Power Supply	\$725.00
3290-20	2 RU LED Tray, 1 AC Power Supply	895.00
3290-21	2 RU LED Tray, 2 AC Power Supplies	1,140.00
3290-22	2 RU Laser Tray, 1 AC Power Supply	995.00
3290-PS1	AC Power Supply	245.00
3290-DCPS-12	12V DC Power Supply	600.00
3290-DCPS-24	24V DC Power Supply	600.00
3290-DCPS-48	48V DC Power Supply	600.00
3290-230	Alarm Card	450.00
3290-EX3	3290 Extender Card	100.00
3290-001	3 Meter Fiber Optic Test Cable w/Conn	65.00

3291 Transmitters, Repeaters and Receivers

3291-201	830 NM LED Transmitter Module	\$ 1,400.00
3291-10L	830 NM Laser Transmitter	5,950.00
3291-301	1300 NM LED Transmitter Module	3,500.00
3291-10P	1300 NM Laser Transmitter, 1 RU	10,000.00
3291-20P	1300 NM Laser Transmitter, 2 RU	19,790.00
3291-1SP	1300 NM Single-Mode Laser Transmitter	12,500.00
3291-1RL	830 NM Laser Repeater	6,000.00
3291-1RLK	830 NM Laser Repeater w/Monitor Out	6,500.00
3291-1RP	1300 NM Laser Repeater	11,000.00
3291-1RPK	1300 NM Laser Repeater w/Monitor Out	11,500.00
3291-1RSP	1300 NM Single-Mode Laser Repeater	13,500.00
3291-1RSPK	1300 NM Single-Mode Laser Repeater w/Monitor	14,000.00
3291-202	830 NM APD Receiver Module	1,400.00
3291-302	1300 NM APD Receiver Module	2,500.00

3291 Options

3291-20	2 RU LED Tray, 1 AC Power Supply	\$ 895.00
3291-21	2 RU LED Tray, 2 AC Power Supplies	1,140.00
3291-22	2 RU LED Laser Tray, 1 AC Power Supply	995.00
3291-PS1	AC Power Supply	245.00
3291-DCPS-12	12V DC Power Supply	600.00
3291-DCPS-24	24V DC Power Supply	600.00
3291-DCPS-48	48V DC Power Supply	600.00
3291-230	Alarm Card	450.00
3291-EX3	3291 Extender Card	100.00
3291-001	3 Meter Fiber Optic Test Cable w/Conn	65.00
3291-203	Single Audio Modulator	550.00
3291-204	Single Audio Demodulator	550.00
3291-205	Dual FM Audio Modulator	995.00
3291-206	Dual FM Audio Demodulator	995.00
3291-207	RS-232-C Data Modulator	500.00
3291-208	RS-232-C Data Demodulator	500.00
3291-209	Audio/Data Modulator	995.00
3291-210	Audio/Data Demodulator	995.00
3291-215	GV43 Dual Channel Audio Modulator	1,500.00
3291-216	GV43 Dual Channel Audio Demodulator	2,000.00
3291-115	Filter for GV43 Dual Audio Modulator	250.00
3291-116	Filter for GV43 Dual Audio Demodulator	250.00
3291-117	Filter Bypass	100.00



CPC-700

CPC-700 Code Phase Corrector

The location of SMPTE Time-Code on the cue track of a video tape and its relationship to other signals on the tape is specified by ANSI V98. 12M-1981. Although the Time-Code start of address as originally recorded may meet the specified tolerance of + one H line, an out of phase condition can develop due to video signal processing (TBC's) and the changing of the audio/video head relationship, among other things. When automatic editing is involved, a large enough displacement of the code with respect to the picture can cause the computer to reject the time code and prevent editing.

Measures, displays, and corrects the phase difference between the Cue-Track Frame Code and the Video to allow computer acceptance. One 703-1 and 703-2 modules are required for each playback VTR. Compatible with both NTSC and PAL.

\$1395.00 plus \$995.00 for both 703-1 & 703-2 modules

The equipment rack provides space for one to eight Code-Phase-Corrector Modules. One of these modules is required for each playback VTR machine in the edit bay.

Features:

SERIES 700 rack frame houses all modules. POWER SUPPLY plug-in module 701-1 provides the required power to all modules in the unit. FRAME PULSE GENERATOR plug-in module 702-1 supplies the sync timing to the Code Phase Corrector modules. CODE PHASE CORRECTOR plug-in module 703-1. TWO DIGIT DISPLAY shows the number of bits the Time Code is out of phase. Range is + 40 bits. A blinking point between the two digits indicates data is being sampled and corrected.

VIE-224 Vertical Interval Encoder

Converts longitudinal Edit Code Input to VITC for insertion into one or more video lines. Incorporates Code Time Base Correction techniques. **\$3450.00**

Features:

USER-BIT UPDATE switch offers choice of updating a time code used in the user bit section. ENCODE/OFF switch indicates when the V.I.T.C. is encoding. USER/TIME switch allows the selection of either Time or User-Bits for display. DISPLAY of time or User-Bits information of 8 Digit Hexadecimal characters. BLANK/FRAMES switch allows blanking of the two frames digits. SYNC/CUE indicates whether video sync and/or input code is present. DROP FRAME/NON DROP FRAME indicates the type of code being received.



VIE-224



VID-225

VID-225 Vertical Interval Decoder

Decodes both longitudinal and/or Vertical Interval Time Code and outputs information as longitudinal Time Code at a rate proportional to either input and acceptable to most edit computers. **\$3950.00**

A new SMPTE longitudinal code is outputted at a rate proportional to either input. Therefore VITC input can be used from freeze frame to full wind and be automatically interfaced to most existing edit controllers, SMPTE longitudinal generators, readers and character generators, etc.

Selection of the two codes can be automatic or manual, allowing the maximum advantage of both codes in various situations. At tape speeds below 1/4 play speed, the unit outputs longitudinal data at a 1/4 rate when VITC is present and will squelch if an absence of time code is required by the edit controller when the tape is stopped.

The VITC data is also available for use in encoding other video equipment.

Features:

DROP FRAME/NO DROP FRAME displays the type of Time Code being received. FRAME number thumbwheel is an eleven position switch to select the unit frame number for de-multiplexed User-Bit display or to display ALL frames of User-Bits. DISPLAY/FREEZE is an alternate switch to freeze the display. TIME/USER switch allow the selection of either Time or User-Bits for display. DISPLAY of Time or User Bit information of 8 Digit Hexadecimal characters. FRAMES/BLANK switch allows blanking of the two frames digits. FIELD 1—FIELD 2 split indicator shows which field of the V.I.T.C. code is being received. V.I.T.C./CUE split indicator shows the source of data being transmitted on the Code Output. POWER button is an alternate toggle switch to turn the instrument ON and OFF.

GRAY ENGINEERING LABORATORIES

504 W. Chapman Ave., Suite P
Orange, CA 92668
(714) 997-4151



DT-113



DR-107B



DR-107 Font

NOTE: 5 Yr. Warranty on All Products Including Parts and Labor.

SMPTE Data Receiver & Character Generator

DR-107. The DR-107 offers an unusual number of capabilities in a minimum space at an economy price. All controls are on the front panel. In addition, there are internal selectors for DROP FRAME status on the monitor, choice of monitor up-date change, and free running of time in the absence of code.

Character heights may be varied from 8 to 64 lines in four increments, and the widths may be adjusted to the preferred aspect ratio. The characters may be plain or boxed. Characters may be inserted in the Vertical Interval, offering greater versatility to recording or transferring of tapes. Lines 12 through 19 are used in the Vertical Interval so no interference will occur. Size: 1-3/4" High Standard 19" relay panel x 9-1/2" deep excluding plugs.

SMPTE Time Code Transmitter

DT-113. SMPTE Edit Code is generated from a master clock which may be selected for DROP FRAME count by a front panel switch. User Bits may be inserted from a parallel 32 line input. TIME or USER BITS can be displayed on an 8-Digit hexadecimal readout. The master clock may be reset or loaded to a time on an 8-Digit thumb-wheel switch. The clock can be stopped by a HOLD button.

The clock and transmitted code can be synchronized to the 60 Hz line or to Video/Sync frames. Code start is within the HNSI spec. (1 H-Line in the Vertical Interval). The clock can be synchronized to the color burst phase for odd or even frame count when the sub-carrier is in phase. Size: 1-3/4" High Standard 19" relay panel x 9-1/2" deep excluding plugs.

TIME CODE EQUIPMENT

Code Reader and Video Character Generator

DR-103. Data Receiver and Character Generator. Reads and displays edit-code and equivalent film-frames on video monitor and has three switchable units \$4550.00

DR-107B. Data Receiver and Character Generator. Reads and displays time or user bits on video monitor 2795.00

DR-115. Data Receiver and 4 Channel Character Generator. Provides 4 separate video character displays from one edit-code input for iso-camera productions 4250.00

DR-120. Data Receiver, Character Generator, Identifier and Demultiplexer. Reads and displays time, multiplexed user bits, and video source I.D. on video monitor 3150.00

DR-122. Data Receiver and Dual Character Generator. Allows simultaneous video display of both time code and user-bits with video source identification capability 4450.00

Code Reader and Local Display

DR-109. Data Receiver, Display and Demultiplexer. Reads and displays time or multiplexed user bits on 8 digit hex readout . . . \$2795.00

TCR-119. Time Character Reader. Reads video characters in the stop or slow VTR speed and converts to serial time code for automatic computer editing 3950.00

TBC-117. Edit Code Time Base Corrector. Converts wide-band erratic code input to a truly regenerated "ANSI" spec code output. . . 3900.00

Code Generators

DT-104F. Data Transmitter. Similar version of the DT-104A that provides for NTSC and PAL compatibility, Color Frame Sync, advanced Slave (jam-sync) decoding and a choice of Field or Frame Rate Time Code \$5950.00

DT-113. Data Transmitter. Transmit code at 30, 25, or 24 frame counts; color frame sync mode, local hex display, user-bit input; code start accuracy to +/-1 H line 2995.00

CC-114. Code Comparator. Compares a pre-set time with an incoming Time Code to produce an editing signal on coincidence. Must be used with any Gray Time Code Reader. 2330.00

User-Bit Equipment

MC-110. User Bit Modifier and Combiner. Combines time codes serially from two independent sources using user bits for the second time code \$2595.00

MD-111. User Bit Modifier, Display and Demultiplexer. Modifies multiplexed user bits on incoming edit code from a 32-line parallel input 3295.00

UBE-118. User Bit Encoder. a 10-channel multiplexer that encodes user-bits from parallel inputs. Encoder for DT-104, DT-113, or MD-111 2550.00

Safe Area Generator

VR-116. Video Reticle Generator. Allows precise positioning of titles and graphics from dead center to the edge of verticle and horizontal blanking \$2595.00

VR-121. Video Reticle Generator. Similar to VR-116 with the addition of monitor linearity check, variable reticle size and position with memory and recall and a keying switch to set reticle areas from white to black 3950.00

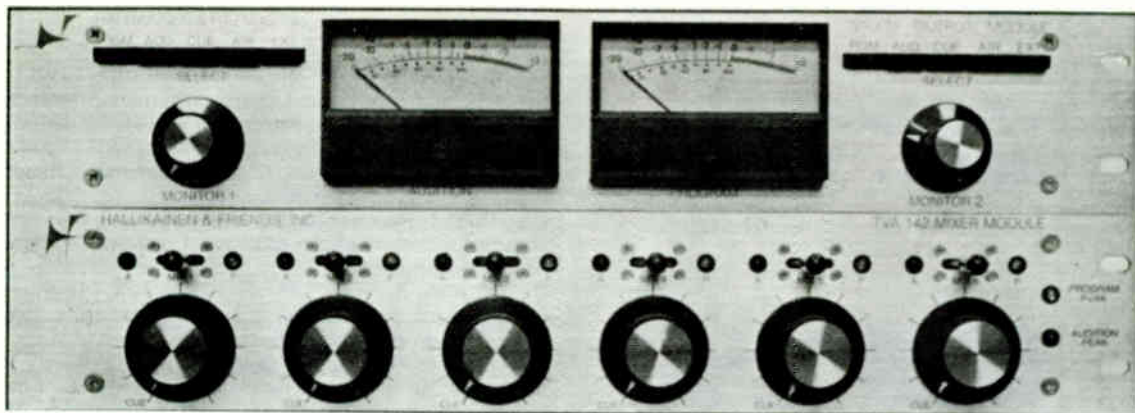
Code-Phase-Measurement

CPI-123. Code Phase Indicator. Measures the difference between an actual code frame start on a VTR versus ANSI spec of +/-1 H. Line to insure computer compatibility 2100.00

Hallikainen & Friends

141 Suburban Road
San Luis Obispo, CA 93401
(805) 541-0200

TELEVISION AUDIO SYSTEM



TVA Series Audio Systems

- High quality audio
- Rack-mount construction
- Audio-follow-video plus manual control
- Noiseless audio switching
- Mic & line mixing
- Monitor speaker outputs
- Expandable to 36 inputs
- Comprehensive monitoring and metering facilities
- Three output D.A.s on program and audition channels

The H & F Series combines Audio-Follow-Video and manual control in a flexible audio system consisting of rack-mountable components which can provide for your present and future audio mixing requirements. The system is expandable to 36 balanced inputs in groups of six. It offers balanced audition, program, and cue outputs plus two monitor channels.

The TVA 142 is the mixing stage of the H & F television audio system. Each TVA 142 Mixer Module has six balanced mic or line inputs with individual gain controls. Audio routing to the program and audition channels is controlled either manually or with the audio-follow-video feature. In the AFV mode, the video switcher, through ground switching, activates a noiseless control circuit sending audio to either the program or audition channels or both. Front panel LED indicators show how each input has been assigned. Manual operation is easily accomplished with a premium grade lever switch above each input gain control. Audio levels are monitored with peak flashers. The TVA 142 provides three outputs, program and audition to feed a line and a cue output for local use. The TVA 142 will serve as a stand alone mixer for many applications.

The TVA 132 Output Module provides three line level distribution amplifier outputs for multiple program and audition feeds. It offers accurate VU meters on both program and audition channels. One TVA 132 module can, when used with one to six TVA 142 Mixer modules, provide two separate audio mixes with metering. This can be very useful when one program is "on-air" and a second one is to be simultaneously recorded. The TVA 132 meters, feeds, and monitors while the TVA 142 affords individual level control and tally indicators.

Television Audio System

TVA 132 Output Module with Power Amplifiers	\$1495.00
TVA 132-1 Output Module with 600 ohm Monitors	1300.00
TVA 142 Mic-Line Mixer Module	1590.00
TVA 142-1 Mic-Line Mixer (Manual Overrides AFV)	1670.00

TECHNICAL SPECIFICATIONS

Output Module TVA 132

Number of inputs 36 maximum, in units of 6 each

Number of outputs	3 Program balanced 600 ohm DA outputs 3 Audition balanced 600 ohm DA outputs 1 balanced 600 ohm Cue output 1 10 Watt, 8 ohm Monitor 1 1 10 Watt, 8 ohm Monitor 2
Option 1	Replace 10 Watt monitor amps with 600 ohm balanced outputs
Monitor inputs Meters	Program, Audition, Cue, Air, Aux. 2 large VU meters for program and audition, OVU internally adjustable for 0dBm to +8dBm line out
Output levels	+8dBm nominal for all balanced outputs
Distortion, Noise, Response, for program audition and cue channels, See corresponding specs in TVA 142	

Mixer Module TVA 142

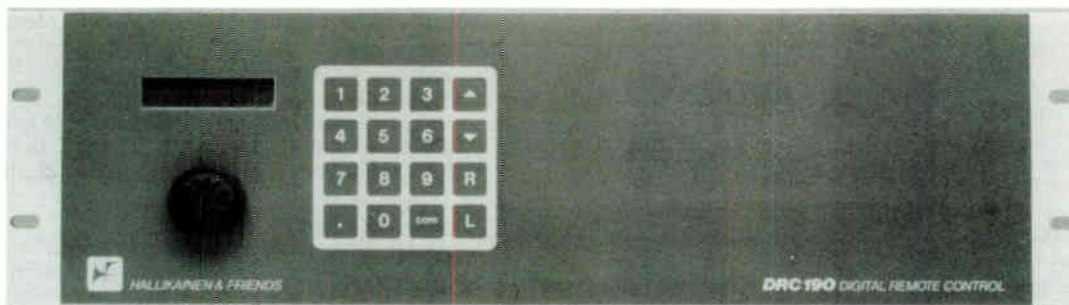
Number of inputs	6 balanced assignable mic or line level
Input sensitivity	-10dB line, -58dB mic
Input impedance	15K bridging line, 150 ohms mic
Number of outputs	1 each Program, Audition, Cue
Outputs: Pgm, Aud, and Cue	+8dBm, 600 ohms balanced
Maximum undistorted Output	+22dBm
Distortion, at 8dBm to 22dBm	0.25% or less
Signal to noise, unweighted	74dB line, 60dB mic
Frequency response at 8dBm	+/-1dB 20Hz to 20kHz
Crosstalk	-82dB at 1kHz

Unless otherwise specified, all specifications and measurements are referenced to 1kHz, +8dBm output level. 0dB = 0.775V.

Audio follow control	Ground switched, 12 volts open circuit
Control output (Tally)	Ground switched 28VDC, 500mA max., open collector transistor
Indicators	Long life LED status indicators
Automatic control	Automatically follows video switcher—each mixer input is able to feed program & audition (preview) simultaneously.
Peak Flashers	Program and Audition. Adjustable threshold.

Power and Size

AC power requirements	100 to 130VAC, 1/2 amp, 60Hz
Size	Standard EIA 3-1/2 inch (88.1mm) Rack panel, chassis, 10-3/4 inch (273mm) deep, clear anodized aluminum.



- Alphanumeric LCD prompts operator for required input and displays resulting read-ins (with label, units and decimal point)
- Speaker provides audio signal for keypad operation, and intercom between sites in the system
- 16 key membrane keypad for manual operation
- RS232 port for computer access
- Optional IEEE488 port for test equipment

DRC 190 DIGITAL REMOTE CONTROL

The DRC 190 Digital Remote Control can be operated manually, or, with the addition of standard computer peripherals, will monitor, display, and print all relevant readings including phase, relative amplitude, calculated ratios and deviations. Upon finding a parameter out of limits, the DRC 190 can be programmed to print the reading, make appropriate adjustments, then print the corrected reading along with a notation of the adjustment. With the addition of a modulation controller the DRC 190 can be programmed to meet FCC requirements for full ATS and, with distortion analysis equipment, test and log Proof of Performance data, automatically.

The system is based on the Motorola 6802 microprocessor. The use of a microprocessor vastly simplifies the hardware design, thereby reducing system costs. The DRC 190 uses standard peripheral chips and bus architecture so design updates may be easily implemented by merely changing EPROMs. This insures the user that he will not be stuck with an obsolete system as integrated circuit design advances.

Unlike other systems that employ different hardware at the studio and transmitter sites, the DRC 190 studio and trans-

mitter units are interchangeable, further reducing design and manufacturing expenses. The result is a low cost manual remote control that can expand to provide automated capabilities no other system has, at any price.

SPECIFICATIONS

Manual or automated operation:
RS232 port provided for computer access.

Programmable in BASIC to meet your stations requirements.

Includes enough RAM for standard control and logging, can be expanded to full ATS.

10 analog metering inputs

10 Raise outputs

10 Lower outputs

10 "Channel Selected" outputs
each expandable to 100 channels.

Optional IEEE488 port provided for automated test equipment.

Complete 10 Channel Remote Control System . . . \$3700.00

FEATURES

A/D Converter

4.5 digit modified dual slope with 10.5 ppm/C degree tempco ref.

Calibration

Keyboard entered calibration scaling and curve.

Sample

+/-2 VDC max, +/-100 V maximum common mode.

Analog Multiplexer Reed Relays.

Control Out Open Collector transistors, 0.5A, 30 VDC max.

Failsafe

A failsafe output at each site with A/D board is user programmed to respond or ignore each possible site.

Control Lockout

Control from any group of sites can be locked out at each site.

Channels 10, expandable to 100 in groups of 10.

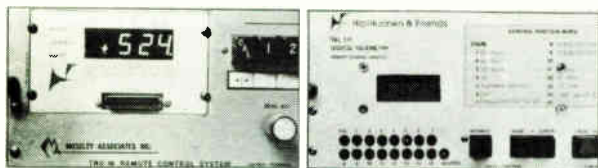
Communications

1200 bits/second, half duplex, voice grade link. Strappable 2 or 4 wire, 2 isolated inputs and 2 isolated outputs for microwave relay stations. Open Collector transistor to key external radio transmitter.

Applications Program Language Microsoft Floating Point Basic.

Serial I/O RS232/C at programmable baud rate.

Optional Parallel I/O IEEE488 Instrumentation bus.



TEL 171 Digital Telemetry

The TEL 171 converts your Moseley TRC-15AW or TRC-15AR to digital metering transmission, a method that eliminates the offset and gain drift in the analog metering. A local display in the transmitter control unit duplicates the readings displayed by the studio control unit. This permits one-man weekly meter calibration.

The system consists of printed circuit boards which substitute directly for the audible metering generator, the audible metering demodulator, and the meter. The local display for the transmitter control unit includes a replacement front panel and a liquid crystal display printed circuit board.

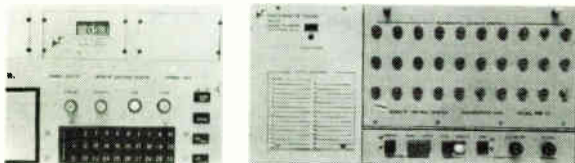
Installation is quick and simple since the same PC mounting hardware is used, and the same wiring harness connects to the new boards.

3-1/2 digit (-1999 to +1999) displays are used. These easily read displays are updated twice a second. Should the metering carrier be lost, or a framing or parity error occur, the display at the studio will blank and a front panel LED will indicate the problem.

Through the use of digital transmission and displays, we eliminate the error inherent in analog transmission, and simplify the task of remote meter calibration and meter reading.

Moseley, our neighbors down the road, make a good remote control. We can make it better.

TEL 171 Digital Telemetry Adaptor for Moseley TRC-15A **\$800.00**



TEL 172 Digital Telemetry

The TEL 172 converts your Moseley PBR-30AW or PBR-30AR to digital metering transmission, a method that eliminates the offset and gain drift in the analog metering.

A local display mounted in the transmitter control unit duplicates the readings displayed by the studio control unit. This permits one-man weekly remote meter calibrations. The system consists of five printed circuit boards that substitute directly for the metering oscillator, audible metering processor, SCU metering processor, metering demodulator, and the analog meter.

Installation is quick and simple since the same motherboards connect to the new boards.

3-1/2 digit (-1999 to +1999) displays are used. These easily read displays are updated twice a second. Should the metering carrier be lost, or a framing or parity error occur, the display at the studio will indicate the presence of an error, and the Read lamp on the PBR-30 will extinguish.

Through the use of digital transmission and display, we eliminate the error inherent in analog transmission, and simplify the task of remote meter calibration and meter reading.

Moseley, our neighbors down the road, make a good remote control. We can make it better.

TEL 172 Digital Telemetry Adaptor for Moseley PBR-30 **\$920.00**

TEL 171 SPECIFICATIONS

H & F 1211TT Telemetry Transmitter

Substitutes for Moseley 51 A5416 Audible Metering Generator.

A/D Conversion

Resolution: 3-1/2 digits (-1999 to +1999)

Conversion Rate: 2 conversions/second

Accuracy: Limited by temperature stability of reference (LM399 H)

.05% of reading +/- 1 count, 0 degrees C to 50 degrees C

Full Scale Sensitivity: 2 Volts for +1999 indication.

Data Transmission

Bit Rate: 300 Baud

Character Rate: 4 characters per conversion

Word Rate: One word per conversion (2/s), each conversion transmitted once with idle time between conversions.

Character Format: Start bit, six data bits, even parity bit, two stop bits. First four data bits carry digit code in BCD (except on half digit where three bits carry +/-, 0 or 1, and out of range indications). Last two data bits identify digit (00 half digit, 11 is last digit).

Word Format: Digits transmitted in order (0, 1, 2, 3). Data channel idle between conversions.

Encoding: FSK, 1270 Hz Mark, 1070 Hz Space.

Output Level: +1 dBm into 600 ohms, adjustable (line), and 5 V p-p open circuit, Z = 2.2 K (subcarrier).

Display

3-1/2 digit LCD local display.

Power Requirements

Floating + 15: 35 mA

Floating -15: 30 mA

+ 5: 0.2 mA

+ 15: 30 mA

H & F 1221TR Telemetry Receiver

Substitutes for Moseley 51 A5420 Audible Metering Demodulator.

Minimum Receive Level: -40 dBm (7.7 mV)

Data Output: Character parallel, negative 250 uS strobe, carrier, parity, and framing alarms. All TTL levels.

Power Requirements: 5V, 100 mA

H & F 1231TD Telemetry Display

Substitutes for Moseley meter.

3-1/2 digit LED display with PROM programmed decimal points. All metering and control data presented on front panel connector for logging or ATS.

Power Requirements: +5 V, 400 mA

TEL 172 SPECIFICATIONS

A/D Conversion

Resolution: 3-1/2 digits (-1999 to +1999)

Conversion Rate: 2 conversions/second

Accuracy: Limited by temperature stability of reference and reference voltage divider to +/- 10 ppm/Celsius degree +/- 1 count.

Full Scale Sensitivity: 1.999 volts for indication of 1999.

Data Transmission

Bit Rate: 150 Baud

Character Rate: 4 characters per conversion

Word Rate: One word per conversion (2/s), each conversion transmitted once with idle time between conversions.

Character Format: Start bit, six data bits, even parity bit, two stop bits. First four data bits carry digit code in BCD (except on half digit, where three bits carry polarity, 0 or 1, and out of range indications). Last two bits identify digit (00 is half digit, 11 is least significant digit).

Word Format: Digits transmitted in order (0, 1, 2, 3). Data channel idle between conversions.


Encoding: FSK, 1258 Hz Mark, 1168 Hz Space.

Output Level: 0 dBm, adjustable.

Data Display

Local Display: 3-1/2 digit "calculator type" LED display without decimal points.

Studio Display: 3-1/2 digit LCD display with decimal points (PROM programmed) and error indication.

 **HARRIS**

**Broadcast
Equipment
Catalog**

FOREWORD

Harris Corporation, Broadcast Group, presents a Short Form Catalog. Our latest all-products catalog features television and radio transmitting equipment, audio and video studio products, program and broadcast microwave equipment. The comprehensive product line represented on these pages meets virtually every requirement of the television and radio broadcaster.

The Harris sales network and service facilities are extensive. International market activities are coordinated by the International Sales Department in Quincy, Illinois with representatives located throughout the world.

Among the nation's 500 largest corporations, Harris is a world leader in the communications industry. Two separate operating arms of the Broadcast Group produce specialized products for the broadcaster. Harris Video Systems, located in Sunnyvale, California, manufactures an extensive line of digital video products. Harris Broadcast Microwave Operation, Mountain View, California, manufactures ENG receivers, miniature portable microwave receivers and transmitters.

Drawing on the considerable resources of research centers within Harris, the Broadcast Group has ready access to a large staff of professional scientists and engineers, in addition to maintaining an impressive engineering and service organization in Quincy.

Harris' reputation stands on the products in this catalog. Harris values your patronage, and will strive for continued excellence in product design and execution, in an innovative posture that fosters the advancement of the broadcast industry.



HARRIS

MEDIUM WAVE BROADCAST TRANSMITTER



VP-100A 100,000 Watt Medium Wave Broadcast Transmitter

- Overall efficiency better than 65%
- Exclusive Pulse Duration Modulator (PDM)* for high level plate modulation
- Redundancy in solid state circuits
- Vapor phase cooling for quiet operation and extended tube life
- Only five tubes, with three tube types
- Designed for a wide climate range

Featuring Harris' exclusive high level Pulse Duration Modulator*, the VP-100A provides the finest performance of any medium wave broadcast transmitter in the same power range on the market today ...at significantly lower operating costs.

EFFICIENCY EXCEEDS 65%. The VP-100A has an unusually high overall efficiency of more than 65%. This is made possible by the almost 90% efficiency of the Pulse Duration Modulator—and means about one-third less power consumption than other high level plate modulated 100 kilowatt transmitters.

HIGH AVERAGE MODULATION CAPABILITY. The transmitter is capable of sustained high average modulation such as that experienced with trapezoidal audio processing—which means greater loudness at the receiver without increased transmitter carrier power. This is a feature of the high efficiency, DC coupled PDM modulator that avoids the use of large, inefficient transformers in the modulation process. Another feature of this high efficiency series type modulator is convenient front panel carrier power adjustment over a wide range.

ONLY FIVE TUBES. The entire transmitter employs just five tubes—with a modern ceramic 4CV100,000C power tetrode in the modulator and final RF power amplifier sockets. All power supplies utilize long-life solid state silicon rectifiers. High quality components, conservatively rated, are used throughout the VP-100A to assure greatest reliability.

VAPOR PHASE COOLING. Cooling by the Vapor Phase method produces quiet operation by eliminating the need for large blowers—the heat exchanger is cooled by a two horsepower blower. This method of cooling also extends tube life by helping to eliminate "hot spots" and by maintaining tube anode temperatures far below those attained by other methods.

DESIGNED FOR WIDE RANGE OF CLIMATES. The transmitter will give top performance in a wide range of climates—from hot and humid, to dry and dusty. With Vapor Phase cooling, ducting outside air into the transmitter is not necessary. All transformers and similar components are hermetically sealed, encased, or vacuum impregnated. All high power radio frequency networks contain silver-plated inductors and vacuum capacitors.

GREATLY REDUCED FLOOR SPACE. Due to the high efficiency of the transmitter and the elimination of large iron core components (no modulation transformer and reactor), the VP-100A requires only 7.0 square meters (76 square feet) of floor space. Careful cabinet design provides easy accessibility to all components.

*U.S. Patent



VP-100A Specifications

POWER OUTPUT: 100,000 watts nominal unmodulated, capable 110,000 watts.

RF FREQUENCY RANGE: 535 kHz to 1620 kHz.

RF OUTPUT IMPEDANCE: 230 ohms, unbalanced.

RF FREQUENCY STABILITY: +5 Hz.

SPURIOUS AND HARMONIC EMISSION: Less than 50 mW.

CARRIER SHIFT: Less than 5% at 100% modulation at 1,000 Hz.

AUDIO FREQUENCY RESPONSE: +1.5 dB from 40 to 10,000 Hz referenced to 1,000 Hz at 95% modulation.

AUDIO FREQUENCY DISTORTION: Less than 3% from 40 to 10,000 Hz at 95% modulation.

NOISE: 55 dB below 100% modulation at 1,000 Hz.

AUDIO INPUT LEVEL: 10 dBm \pm 2 dB for 100% modulation.

AUDIO INPUT IMPEDANCE: 600/150 ohms, balanced or unbalanced.

MODULATION LEVEL: 100% sinusoidal, 10 minutes, 50 to 5,000 Hz.

TRAPEZOIDAL MODULATION: Less than 5% tilt or overshoot, 100 Hz to 2,000 Hz.

POWER INPUT: Any specified voltage 380V to 480V, 3 phase, 50 or 60 Hz.

POWER CONSUMPTION: 155 kW—No modulation
160 kW—30% modulation
215 kW—100% modulation

POWER FACTOR: 95%.

VOLTAGE REGULATOR: Electronic voltage regulation for all power supplies other than high voltage.

OVERALL EFFICIENCY: 65% at average modulation

TUBES: Two 4CV100,000C; two 4CX1500A; one 2CX10,000F.

TEMPERATURE RANGE: 0-50°C ambient air temperature

HUMIDITY: 95% relative humidity, maximum.

STORAGE TEMPERATURE: -35°C to +60°C (with no water in system).

ALTITUDE: Up to 1,829 meters (6,000 feet) above sea level.

CABINET DATA: Each of two cabinets measures 1.83 meters (6 feet) wide, 1.37 meters (4.5 feet) deep, and 1.98 meters (6.5 feet) high. The heat exchanger adds another 1.06 meters (3.5 feet) in height.

Ordering Information

VP-100A, 100,000 watt medium wave transmitter with one set of tubes, crystals and silicon rectifiers, for operation from 380 to 480 volts, 3 phase, 50 or 60 Hz 994-7651-001

MW-50C 50,000 Watt Medium Wave Broadcast Transmitter

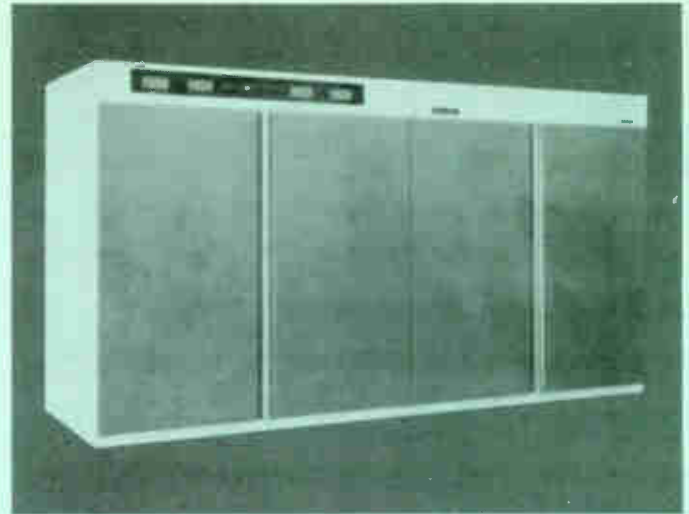
- Pulse Duration Modulation* (PDM) eliminates costly, inefficient modulation transformer and reactor
- Greater than 60% overall efficiency for reduced operating costs
- DC coupled modulator section provides unsurpassed low frequency square wave performance
- Automatic modulation tracking minimizes adjustments
- No slew induced distortion possible
- Only two tube types used...minimizes spares inventory
- Excellent cabinet accessibility for ease of service

The Harris MW-50C delivers overall performance superior to any other 50 kilowatt medium wave broadcast transmitter. The transmitter is high level plate modulated, using Harris' patented, highly efficient Pulse Duration Modulator (PDM). This, in combination with a number of other outstanding features, makes the MW-50C the most advanced 50 kilowatt AM transmitter in the world.

Specifications

Power Output:	50,000 watts (rated), 60,000 watts (capable). Convenient power reduction through 10,000 watts.
RF Frequency Range:	535 kHz to 1620 kHz, supplied to frequency as ordered.
RF Output Impedance:	50 ohms unbalanced (higher on special order).
RF Output Terminal:	3-1/8" EIA 50 ohm flange.
RF Frequency Stability:	± 10 Hz.
RF Harmonics And Spurious Emissions:	Exceeds FCC and CCIR specifications.
Carrier Amplitude Regulation:	Less than 2% at 100% modulation (measured at 1000 Hz).
Audio Intermodulation Distortion:	3.0% or less, 60/7000 Hz 4:1, SMPTE standard at 55 kW operation at 50% modulation.
Audio Frequency Response:	± 1.0 dB, from 20 to 12,500 Hz referenced to 1,000 Hz at 95% modulation at 55 kW with Besel filter out.
Squarewave Overshoot:	Less than 3.0% using 1000 Hz 6 dB clipped sinewave at 90% modulation.
Total Harmonic Distortion (Unenhanced) ¹ :	Less than 2.5%, 20 to 10,000 Hz at 95% modulation at 55 kW. 3% at 25 to 10 kW.
Squarewave Tilt:	Less than 8% at 20 Hz at 60% modulation.
Compression Ratio:	4/1 dB at 3 dB of enhancement; -95%, +125% modulation.
Positive Peak Capability:	+125% with program modulation at 55 kW.
Noise (Unweighted) ² :	-60dB or better below 100% modulation. Typical -62 dB.
AM Stereo Operation:	Incidental Quadrature Modulation (IQM) is down 25 dB or better at 95% modulation.
Audio Input:	600 ohms at 0 to + 10 dBm for 100% modulation, unenhanced; +16 dBm with enhancement activated.
Power Input:	480V ± 5%, 3 phase, 60 Hz. Available for 380V ± 5%, 3 phase, 50 Hz.
Power Consumption ³ :	80 kW at 0% modulation; 87 kW at 30% modulation; 110 kW at 100% modulation.

*Patented
B-452



Overall Efficiency:	Better than 60% at average modulation.
Power Factor:	95%.
Tubes Used:	(2) 4CX35,000C; (2) 4CX1500A.
Monitor Provision:	An unmodulated sample is provided for freq monitor and a modulated sample for modulation monitoring.
Remote Control:	Self-contained interface for extended or remote control.
Air Flow:	5200 CFM total by internal blowers.
Operating Acoustical Noise:	Better than 70 dBA acoustic rating 3 ft. from front of transmitter.
Temperature Range ⁴ :	-20°C to +50°C.
Humidity:	95%.
Altitude:	Up to 3,048 meters (10,000 feet) above sea level. Higher on special order.
Size ⁵ :	78"H x 144"W x 48"D (2.0 x 3.7 x 1.2m) (transmitter cabinet). External components include high voltage power supply and wall mounted circuit breaker assembly.
Floor Space:	Main transmitter assembly 48 square feet (4.5 square meters). Power supply 15 square feet (1.4 square meters).
Weight (Approx.):	
Main Transmitter Assembly:	Net unpacked 5,000 lbs. (2268 kg). Domestic packed 6,000 lbs. (2722 kg). Export packed 7,200 lbs. (3266 kg).
Power Supply:	Net unpacked 1,370 lbs. (622 kg). Domestic packed 1,500 lbs. (681 kg). Export packed 1,800 lbs. (817 kg).

1. If transmitter is operated into a bandwidth limited antenna system, distortion at the higher modulation frequencies may degrade.
2. Noise measured over the band 20 Hz to 20 kHz, with line to line voltages of the supply line balanced. Noise may degrade with line voltage unbalance.
3. Typical power consumption figures are for 50 kilowatts output and for optimum transmitter adjustment. For higher output powers and/or transmitter misadjustments, power consumption may be higher.
4. Maximum operating temperature derates linearly to +29°C (84.2°F) at 10,000 feet AMSL (3048 meters).
5. Does not include height of output connector, which may be removed for transport.

Ordering Information

MW-50C, with one set of tubes and 2 crystals, 60 Hz 994-8832-001
MW-50C, with one set of tubes and 2 crystals, 50 Hz 994-8832-002
Recommended spare parts kit for MW-50C transmitter . . 994-8909-001

Prices and Specifications Subject to Change Without Notice.

MEDIUM WAVE BROADCAST TRANSMITTER

HARRIS
P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

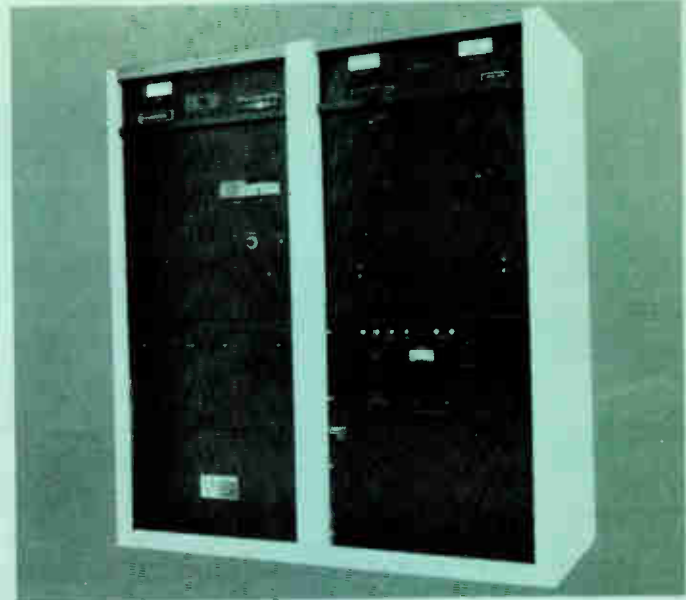
MW-10B 10,000 Watt Medium Wave Broadcast Transmitter

- Pulse Duration Modulation* (PDM) eliminates costly, inefficient modulation transformer and reactor
- Unsurpassed low frequency square wave performance
- Automatic modulation tracking minimizes adjustments
- No significant overshoot...yielding maximum modulation capability
- No Slew Induced Distortion possible
- High modulator and PA efficiency yields low power consumption
- Only two tube types
- Produces faithful transmission of today's demanding formats in a cost effective manner

The Harris MW-10B delivers overall performance superior to any other 10 kilowatt medium wave broadcast transmitter. The transmitter is high level plate modulated, using Harris' patented, highly efficient Pulse Duration Modulator (PDM). This, in combination with a number of other outstanding features, makes the MW-10B the most advanced 10 kilowatt AM transmitter in the world.

Specifications

Power Output:	(Rated) 10,000 watts. (Capable) 11,000 watts. FCC type accepted at 10,000, 5000, 2500 and 1000 watts.
Modulation Method:	Pulse Duration Modulation.
Carrier Shift:	(At 95% modulation with 400 Hz tone) 2% or less.
Audio Input:	(For 95% modulation) +10 dBm, ± 2 dB.
Audio Input Impedance:	600 ohms balanced.
Audio Frequency Response:	± 1 dB, 20 to 10,000 Hz. (Response referred to 1 kHz, 95% modulation, with modulations at other frequencies held to same percentage. Response may degrade at higher modulating frequencies if transmitter is operated into a bandwidth limited antenna system.)
THD Distortion¹:	2% or less at 95% modulation, 20 to 10,000 Hz unenhanced.
RF Harmonics:	Meets or exceeds FCC and CCIR requirements.
Spurious Output:	-80 dB or better.
RF Frequency Range:	535 to 1605 kHz. Supplied to one frequency as ordered.
RF Output Impedance:	50 ohms, unbalanced. Other output impedances available on special order.
RF Output Connector:	1-5/8" male EIA flange. Other types of output connectors available on special order.
Maximum VSWR:	1.3 to 1.
Noise²:	Unweighted, 60 dB below 100% modulation. Weighted (CCIR Rec. 468-1), 70 dB below 100% modulation.
Positive Peak Capability:	125% at 11 kW output, when modulated with processed program type material.
Negative Peak Capability:	95%.
Frequency Stability:	± 20 Hz or less over operating temperature range.
Supply Voltage:	200/500 volts, 3 phase, 60 Hz, closed delta/wye or 350/430 volts, 3 phase, 50 Hz, 4 wire wye.
Line Voltage Regulation And Variation:	5% maximum.
Line Voltage Unbalance²:	4% maximum.



Power Consumption (10 kW Carrier)³:

(Typical) 20.5 kW, 0% modulation; 22.1 kW, 50% tone modulation; 28.0 kW, 100% tone modulation. (Maximum) 22.1 kW, 0% modulation; 24.3 kW, 50% tone modulation; 30.8 kW, 100% tone modulation.

Power Factor:

95% or better.

Ambient Temperature Range⁴:

-20° to +50°C (-4° to +122°F) at sea level. Decreases 3.5° per 1,000 feet of altitude (84°F at 10,000 feet).

Maximum Relative Humidity:

95%.

Maximum Altitude For Full Power Rating:

10,000 feet AMSL (3048 meters). Transmitters for operation above 10,000 feet AMSL require special order.

Size⁵:

78" H x 72" W x 32" D
(198 x 183 x 81.3cm)

Weight:

Unpacked, 1500 lbs. (680.4 kg) approx. Domestic packed, 1900 lbs. (861.8 kg) approx. Export packed, 2150 lbs. (975.2 kg) approx.

Cubage:

120 cu. ft. (3.4 cu. meters) packed, approx.

Finish:

Blue, white and black.

Tubes Used:

(1) 3CX15,000H3 and (1) 4CX15,000A.

Remote Control:

Normal terminal board interface.

1. Distortion measured at 95% modulation, or less, down to 25%. If transmitter is operated into a bandwidth limited antenna system, distortion at the higher modulating frequencies may degrade.
2. Noise measured over the band 20 Hz to 20 kHz, with line to line voltages of the supply line balanced. Noise may degrade to 56 dB below 100% modulation with line voltage unbalance not exceeding 4%.
3. Typical power consumption figures are for 10 kilowatts output and for optimum transmitter adjustment. For higher output powers and/or transmitter misadjustments, power consumption may be higher.
4. Maximum operating temperature derates linearly to +29°C (84.2°F) at 10,000 feet AMSL (3048 meters).
5. Does not include height of output connector, which may be removed for transport.

Ordering Information

MW-10B Transmitter with one set of operating tubes and two crystals, for 200-250 Volts or 350-430 Volts, 3 phase, 60 Hz operation 994-8624-004
MW-10B Transmitter with one set of operating tubes and two crystals, for 200-250 Volts or 350-430 Volts, 3 phase, 50 Hz operation 994-8624-006
Recommended spare semiconductor kit 990-1018-001
Low voltage and filament voltage regulator, and line voltage regulator for MW-10B available. *Patented

Prices and Specifications Subject to Change Without Notice.

B-453

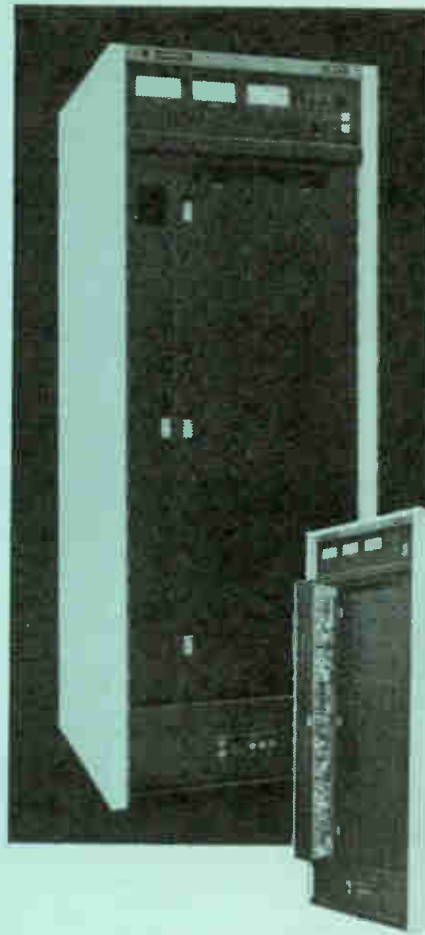


HARRIS

P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

MEDIUM WAVE BROADCAST TRANSMITTER

SX-1 1000 Watt
SX-2.5 2500 Watt
SX-5 5000 Watt
**All Solid-State Medium Wave
Broadcast Transmitters**



Spectrum analyzer response of Flat-Pass output network maximizes mono and stereo performance.



The SX Series transmitters brings a wealth of diagnostic information to your fingertips through the microprocessor keypad located on the front panel.

Low level plug-in circuit boards are conveniently housed on a vertical slide-out drawer for easy maintenance.

FEATURES

- 100% solid-state for highest reliability
- Exceptionally high operating efficiency offers direct power cost savings over other designs
- New concept dual microprocessor control and status monitoring simplifies operation and service
- Flat-Pass output network for exceptional phase and amplitude linearity
- Designed for stereo operation (optional)
- Unique air handling system lowers maintenance time

The entire SX Series of solid-state AM transmitters are based on a rigid design philosophy. Central to this concept are the commitments to achieve:

- The highest possible audio performance
- The highest possible overall efficiency
- Maximum reliability
- Optimum stereo performance

The SX Series broadcast transmitters are in a class by themselves. They are computer designed and computer tested, with their own self-contained dual status and control computers. The SX Series are 100% solid-state and not affected by loss of emission, shorted elements or other problems found in tube type transmitters.

EASE OF INSTALLATION AND SERVICE

The SX Series arrive ready for installation. Included is a wall mounted AC disconnect panel designed to interface with the station's electrical distribution system. Installation is essentially positioning the SX Series transmitter and making final AC, RF and audio connections. No special air handling systems are required.

TODAY'S TRANSMITTER FOR TODAY'S BROADCASTER

Exceptionally high overall efficiency; maximum reliability; improved audio performance; full service microprocessor control and status monitoring; readiness for AM stereo, these are just a few of the features in the SX broadcast transmitter. Never before has Harris incorporated as many benefits in today's transmitter for today's broadcaster, with an advanced design to ensure years of reliable operation.

ORDERING INFORMATION

SX-1 TRANSMITTER , complete with all solid-state devices, crystal oscillator, technical manual.	
Specify frequency	994-8581-001
SX-1 Transmitter , complete with all solid-state devices, frequency synthesizer, technical manual.	
Specify frequency	994-8581-003
Recommended spare semiconductor kit	990-1013-001
Spare crystal	444-XXXX-000
Ancillary Equipment	
AM-90 modulation monitor	994-8424-001
Potomac AT-51 test set	700-0499-000
SX-2.5 TRANSMITTER , complete with all solid-state devices, crystal oscillator, technical manual.	
Specify frequency	994-8582-001
SX-2.5 Transmitter , complete with all solid-state devices, frequency synthesizer, technical manual.	
Specify frequency	994-8582-003
Recommended spare semiconductor kit	990-1013-001
Spare crystal	444-XXXX-000
Ancillary Equipment	
AM-90 modulation monitor	994-8424-001
Potomac AT-51 test set	700-0499-000
SX-5 TRANSMITTER , complete with all solid-state devices, crystal oscillator, technical manual.	
Specify frequency	994-8583-001
SX-5 Transmitter , complete with all solid-state devices, frequency synthesizer, technical manual.	
Specify frequency	994-8583-003
Recommended spare semiconductor kit	990-1014-001
Spare crystal	444-XXXX-000
Ancillary Equipment	
AM-90 modulation monitor	994-8424-001
Potomac AT-51 test set	700-0499-000

**HARRIS**P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

SX-1 SPECIFICATIONS

Power Output: (Rated 1000 watts. (Capable) 1100 watts. Power reduction through 100 watts.

RF Frequency Range: 535 kHz through 1620 kHz. Supplied to one frequency as ordered.

Carrier Frequency Stability: A) Crystal Oscillator — ± 20 Hz over temperature range. B) Frequency Synthesizer (optional) — ± 10 Hz over temperature range.

RF Output Impedance: 50 ohms unbalanced. Will match into a VSWR of 1.5:1 at carrier.

RF Output Terminal: Female N connector.

Carrier Amplitude Variation: (Carrier Shift): Less than 2% at 100% modulation at 1000 Hz.

RF Harmonics: Exceeds FCC and CCIR specifications.

Type Of Modulator: Patented Polyphase PDM.

Audio Frequency Response: +0.5 dB, -1.5 dB from 20 to 12,500 Hz at 95% modulation with Bessel filter out, ref. 1000 Hz.

Audio Harmonic Distortion: 95% modulation, 20 Hz to 12.5 kHz: 1% or less at 1 kW; 1.5% or less at 500W; 2.0% or less at 250W; 3.0% or less at 100W.

Audio Intermodulation Distortion: 95% modulation, 60/7000 Hz, 1:1 or 4:1 ratio: 1.5% or less at 1 kW; 1.5% or less at 500W; 2% or less at 250W; 3% or less at 100W.

Squarewave Overshoot: 5% or less at 400 Hz and 90% modulation with Bessel filter.

Squarewave Tilt: 5% or less at 20 Hz at 90% modulation.

Noise (Unweighted): Better than 60 dB below 100% modulation.

Positive Peak Capability: 125% positive peak program modulation capability at 1.1 kW.

AM Stereo Specifications: Incidental phase: 0.2 radian average IPM at 95% envelope modulation at 1 kHz; 0.5 peak radians.

Audio Input: -10 to +10 dBm (adjustable) transformerless, 600 ohms balanced.

AC Voltage Input: 197-251 VAC, 48 to 63 Hz, single phase. $\pm 5\%$ from nominal line voltage to maintain full performance.

PA Efficiency: 85% or better.

Overall Efficiency: 535-1200 kHz, 66% $\pm 2\%$; 1200-1620 kHz, 70% $\pm 2\%$.

Power Consumption ¹: 1.5 kW at 0% modulation at 1000 watts. 2.2 kW at 100% tone modulation at 1000 watts carrier. 1.9 kW under average programming conditions.

Spurious Output: Exceeds FCC and CCIR requirements.

Monitor Provisions: 10 volts RF (RMS) modulated output sample at 50 ohms (High/Medium/Low) power.

Remote Control: Self-contained interface for most remote control or facility control systems.

Ambient Temperature Range: -20°C to +50°C (derate upper limit 2°C per 1000 feet altitude).

Ambient Humidity Range: To 95% non condensing.

Air Flow: Free convection.

Altitude: Sea Level to 13,000 feet (4000 meters).

Operating Acoustical Noise: Better than 45 dBA.

Size: 72"H x 28"W x 30"D (1830 x 712 x 762 mm).

Weight: (Unpacked), 400 lbs. (181 kg) — approximate. Domestic packed, 600 lbs. (275 kg) — approximate. Export packed, 700 lbs. (320 kg) — approximate.

Cubage: 68.7 cubic feet (2 cubic meters) packed.

Colors: Black and white.

Type Of Active Components: 100% solid state.

Power Supply: Self-contained, dry.

¹A/C Mains requirements of 3.5 kVA with a minimum of 5% voltage regulation.

Note: The above audio performance may be degraded should the transmitter be operated into a bandwidth restricted antenna system.

SX-2.5 SPECIFICATIONS

Power Output: (Rated) 2500 watts. (Capable) 2750 watts. Power reduction through 250 watts.

RF Frequency Range: 531 kHz through 1620 kHz. Supplied to one frequency as ordered.

Carrier Frequency Stability: A) Crystal Oscillator: ± 20 Hz over temperature range. B) Frequency Synthesizer (optional): ± 10 Hz over temperature range.

RF Output Impedance: 50 ohms unbalanced. Will match into a VSWR of 1.5:1 at carrier.

RF Output Terminal: 7/8" EIA male flange connector.

Carrier Amplitude Variation: (Carrier Shift): Less than 2% at 100% modulation at 1000 Hz.

RF Harmonics And Spurious Emissions: Exceeds FCC and CCIR specifications.

Type Of Modulator: Patented Polyphase PDM.

Audio Frequency Response: +0.5 dB, -1.5 dB from 20 to 12,500 Hz at 95% modulation with Bessel filter out, ref. 1000 Hz.

Audio Harmonic Distortion: At 95% modulation: 1.0% or less at 2.5 kW, 20 to 12,500 Hz; 1.5% or less at 1000 watt operation, 20 to 12,500 Hz; 3% or less at 250 W, 20 to 12,500 Hz.

Audio Intermodulation Distortion: 2.0% or less at 2.5 kW, 60/7000 Hz 4:1, SMPTE standards at 80% modulation.

Squarewave Overshoot: Less than 5% at 400 Hz at 90% modulation with Bessel filter.

Squarewave Tilt: Less than 5% at 20 Hz at 90% modulation.

Noise (Unweighted): Better than 60 dB below 100% modulation.

Positive Peak Capability: 125% positive peak program modulation capability at 2750 watts.

AM Stereo Specifications: Incidental Quadrature Modulation (IQM): Better than 24 dB below 95% modulation of L + R channel at 1 kHz.

Audio Input: -10 to +10 dBm, transformerless 600 ohms balanced, continuously adjustable.

AC Voltage Input: 197-251 VAC, 48 to 63 Hz, single phase.

Overall Efficiency: 65% or better at 2500 W.

Power Consumption ¹: 3.85 kW at 0% modulation at 2500 watts. 5.8 kW at 100% tone modulation at 2500 watts carrier. 5.4 kW under average programming conditions.

Monitor Provisions: 10 volts RF (RMS) modulated output sample at 50 ohms (High/Medium/Low) power.

Remote Control: Self-contained interface for most remote control or facility control systems.

Ambient Temperature Range: -20°C to +50°C AMSL (derate upper limit 2°C per 1000 feet altitude).

Ambient Humidity Range: To 95% non condensing.

Air Flow: 250 CFM fan.

Altitude: Sea Level to 13,000 feet (4000 meters).

Operating Acoustical Noise: Better than 64 dBA acoustic rating, 3 feet from transmitter.

Size: 72"H x 28"W x 30"D (1830 x 712 x 762 mm).

Weight: (Unpacked), 450 lbs. (204 kg) — approximate. Domestic packed, 650 lbs. (298 kg) — approximate. Export packed, 750 lbs. (343 kg) — approximate.

Cubage: 68.7 cubic feet (2 cubic meters) packed.

Colors: Black and white.

Type Of Active Components: 100% solid-state.

Power Supply: Self-contained, dry.

¹For AC service connection, please provide 8.2 KVA with a minimum of 5% voltage demand regulation.

Note: The above audio performance may be degraded should the transmitter be operated into a bandwidth restricted antenna system. Also, all specifications are referenced to operation at 2500 watts except when noted.

SX-5 SPECIFICATIONS

Power Output: (Rated) 5000 watts. (Capable) 5600 watts. Power reduction through 500 watts.

RF Frequency Range: 531 kHz through 1620 kHz. Supplied to one frequency as ordered.

Carrier Frequency Stability: A) Crystal Oscillator — ± 20 Hz over temperature range. B) Frequency Synthesizer (optional) — ± 10 Hz over temperature range.

RF Output Impedance: 50 ohms unbalanced. Will match into a VSWR of 1.5:1 at carrier.

RF Output Terminal: 7/8" EIA male flange connector.

Carrier Amplitude Variation: (Carrier Shift): Less than 2% at 100% modulation at 1000 Hz.

RF Harmonics And Spurious Emissions: Exceeds FCC and CCIR specifications.

Type Of Modulator: Patented Polyphase PDM.

Audio Frequency Response: +0.5 dB, -1.5 dB from 20 to 12,500 Hz. Reference 1000 Hz with Bessel filter out.

Audio Harmonic Distortion: 1.5% or less at 5 kW, 20 to 12,500 Hz at 95% modulation. 2% or less at 1000 watts operation, 20 to 12,500 Hz at 95% modulation. 3% or less at 500 watts, 20 to 12,500 Hz at 95% modulation.

Audio Intermodulation Distortion: 1.0% or less, 60/7000 Hz 1:1, 2% or less, 60/7000 Hz 4:1, SMPTE standards at 5 kW operation at 95% modulation.

Squarewave Overshoot: Less than 5% at 400 Hz.

Squarewave Tilt: Less than 5% at 20 Hz at 90% modulation.

Noise (Unweighted): Better than 60 dB below 100% modulation, 1000 Hz at 5 kW.

Positive Peak Capability: 125% positive peak program modulation capability at 5600 watts.

AM Stereo Specifications: Incidental Phase: 0.2 Average (Radians) at 95% Envelope Modulation at 1 kHz; 0.5 Peak (Radians).

Audio Input: -10 to +10 dBm, transformerless 600 ohms balanced, continuously adjustable.

AC Voltage Input: 197-251 VAC, 48 to 63 Hz, three phase, 3 wire or 341 to 434 VAC, three phase, 4 wire, 48 to 63 Hz, +5% from nominal line voltage to maintain full performance.

Overall Efficiency: Better than 65%.

Power Consumption ¹: 7.7 kW at 0% modulation at 5000 watts. 11.6 kW at 100% tone modulation at 5000 watts carrier. 10.4 kW under average programming conditions.

Monitor Provisions: 10 volts RF (RMS) modulated output sample at 50 ohms (High/Medium/Low) power.

Remote Control: Self-contained interface for most remote control or facility control systems.

Ambient Temperature Range: -20°C to +50°C AMSL (derate upper limit 2°C per 1000 feet altitude).

Ambient Humidity Range: To 95% non condensing.

Air Flow: 500 CFM fan.

Altitude: Sea Level to 13,000 feet (4000 meters).

Operating Acoustical Noise: Better than 64 dBA acoustic rating, 3 feet from transmitter.

Size: 72"H x 28"W x 30"D (1830 x 712 x 762 mm).

Weight: (Unpacked), 500 lbs. (230 kg) — approximate. Domestic packed, 700 lbs. (320 kg) — approximate. Export packed, 800 lbs. (370 kg) — approximate.

Cubage: 68.7 cubic feet (2 cubic meters) packed.

Colors: Black and white.

Type Of Active Components: 100% solid-state.

Power Supply: Self-contained, dry.

¹For AC service connection, please provide 14 KVA with a minimum of 5% voltage demand regulation.

Note: The above specifications apply to operation at 5 kW except where noted. Furthermore, the above audio performance may be degraded should the transmitter be operated into a bandwidth restricted antenna system.

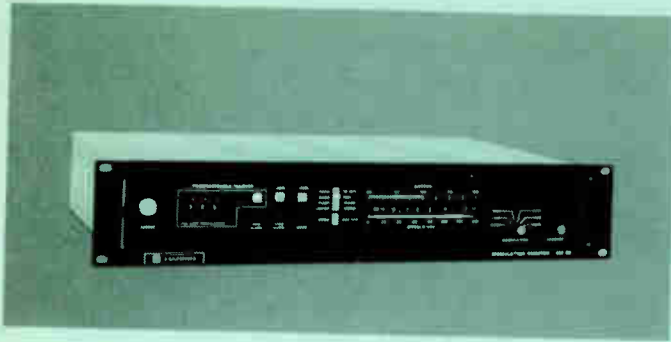
Harris Maintains A Policy Of Continuous Improvement On Its Equipment
And Therefore Reserves The Right To Change Specifications Without Notice.



HARRIS

P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

MEDIUM WAVE MODULATION/ FREQUENCY MONITORS



AM-90 Medium Wave Modulation Monitor

The new Harris AM-90 Modulation Monitor is designed for continuous monitoring of the amplitude modulation envelope in the 450 kHz to 30 MHz frequency range. This sensitive instrument assures strict compliance with FCC rules and regulations. The AM-90 Modulation Monitor is an all solid-state self-contained rack mounted unit consisting of compact mainframe and two printed circuit cards. All controls are front panel mounted. Connections to a remote unit, primary power and RF inputs are mounted on the rear of the chassis.

Specifications

Frequency Range: 450 kHz to 30 MHz

RF Input: 1.0 V RMS to 10.0 V RMS

Power Input: 115 VAC \pm 15%, 50-60 Hz (230 VAC \pm 15% available)

MODULATION INDICATION

Display Meter: 0% to 100% on negative peaks.
0% to 140% on positive peaks.

Flasher Frequency Response: +0%, -5%; 20 Hz to 20 kHz

Flasher Accuracy: \pm 1% at 1 kHz

AUDIO TEST OUTPUTS

Frequency Response: +0 dB, -0.5 dB; 20 Hz to 20 kHz

Distortion: 0.15% maximum at 99% modulation, 1 kHz audio, 450 kHz to 1.8 MHz carrier; 0.50% maximum, 1.8 MHz to 30 MHz carrier

Signal-To-Noise: 75 dB minimum referenced to 100% sine wave modulation

ELECTRONICALLY BALANCED OUTPUT

Output Impedance: 75 ohms balanced

Output Level: +10 dBm into 600 ohms at 100% sine wave modulation

INSTRUMENT OUTPUT

Output Impedance: 100 ohms (unbalanced)

Output Level: 5 volts RMS into 10K ohms at 100% sine wave modulation

Modulation Calibration: Built-in calibration, digitally synthesized RF source, +125% and -100% modulation, RMS value 111% \pm 0.1%

Remote Output: For meter and flasher indications at another location, use Harris' remote meter panel 994-8487-001

GENERAL

Size: 19" long x 3.5" high x 13.5" deep (48cm x 9cm x 34cm). Mounts in standard relay rack

Weight: 15 lbs. (6.82 kg). Export Packed: approx. 20 lbs. (9 kg)

Ambient Temperature Range: -20°C to +55°C (-4°F to 131°F)

Humidity: 95% maximum (non-condensing)

Altitude: 10,000 feet maximum (3048 meters)

Ordering Information

AM-90 Solid-State AM Modulation Monitor 994-8424-001
AM-90 Remote Meter Panel 994-8487-001

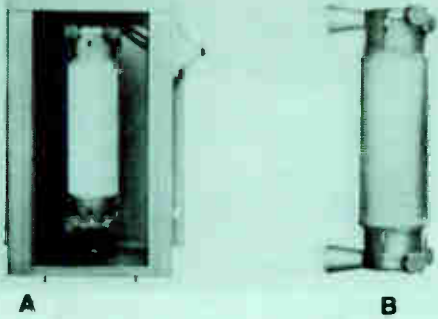
It's Harris who has it all!

- Most advanced and complete line of radio and television broadcast equipment.
- 24-hour-per-day, 365-days-per-year emergency service and parts.
- 24-hour-per-day technical and engineering consulting assistance.
- More than 30,000 different items in inventory, from 2,000 manufacturers.
- One responsible point of contact.
- Proven reputation for product quality and service responsiveness.

FOR A COMPLETE LINE OF RADIO AND TELEVISION BROADCAST
EQUIPMENT NEEDS AND SERVICE
CALL HARRIS

MEDIUM WAVE ANTENNA ACCESSORIES

Tower Light Isolation Chokes



(20 AMP AC RATING)

Most popular of all tower light isolation chokes. Available in 2 or 3 wire models and in open type, or weatherproof as illustrated. Wound on heavy triple X tubing with mica-by-pass condensers on each circuit end. Inductance approximately 350 uH. 3" stand-off insulators are part of coil. (Weatherproof type), 24" high, 17 $\frac{3}{4}$ " wide, 10 $\frac{1}{4}$ " deep. Illustration on left shows weatherproof unit with front cover removed.

ORDERING INFORMATION

- Tower Choke, 2 wire, weatherproof,
Fig. A994-3937-001
Tower Choke, 3 wire, weatherproof,
Fig. A994-3938-001
Tower Choke, 2 wire, open type,
Fig. B994-3935-001
Tower Choke, 3 wire, open type,
Fig. B994-3936-001

FEED-THRU BOWLS



FEED-THRU BOWL ASSEMBLY

A large feed-thru bowl with 50 kW modulated rating. Available in single and double units and with solid or hollow studs as listed below. Bowls are Alsimag. Hardware, heavy brass. Velutex seals are provided for weathertight installation.

ORDERING INFORMATION

- Solid stud, 2 bowls, for walls
to 10 $\frac{1}{2}$ " thick994-2870-001
Same as above but hollow stud ..994-3254-001
Solid stud, single bowl, for
walls 1" thick994-5280-001
Same as above but hollow stud ..994-5281-001

RF Contactors

Harris offers a complete line of RF contactors of both the mechanical and vacuum variety.

The popular mechanical contactors, that handle a wide range of medium wave antenna applications, are available from stock.

DIODE TYPE REMOTE METER EQUIPMENT

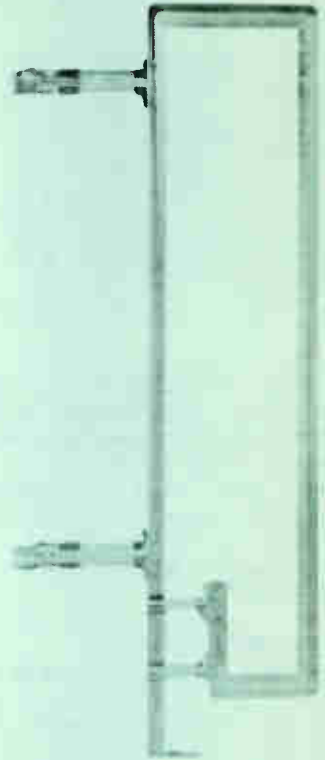


For remote indication of RF current. Consists of a carefully constructed pickup loop attached through a short coaxial cable to a solid-state rectifier assembly. RF current is measured without breaking the main lead. No AC power is required. May be used with any good 1 MA DC meter. Power range: 250 watts to 50,000 watts. Frequency range: 540 kHz to 1600 kHz.

ORDERING INFORMATION

- Diode remote meter unit,
less meter994-6112-001
0-1 MA METERS
Meter 3" sq. case,
scale 0-3 R.F. amperes632-0418-000
Meter 3" sq. case,
scale 0-6 R.F. amperes632-0405-000
Meter 3" sq. case,
scale 0-8 R.F. amperes632-0420-000
Meter 3" sq. case,
scale 0-10 R.F. amperes632-0421-000
Meter 4" sq. case,
scale 0-3 R.F. amperes632-0424-000
Meter 4" sq. case,
scale 0-8 R.F. amperes632-0426-000
Meter 4" sq. case,
scale 0-10 R.F. amperes632-0361-000
Meter 4" sq. case,
scale 0-15 R.F. amperes632-0428-000
NOTE: Other meter scale ranges available at
extra cost. Above for use with diode remote
unit, not thermocouple.

Heavy Duty Sampling Loop



This is a very rugged fixed non-shielded RF sampling loop. It is heavily galvanized after welding, and is fitted with large steatite insulators and heavy duty tower leg clamps for easy and positive mounting. Complete with type female "N" jack. For 50 to 70 ohm sampling line.

ORDERING INFORMATION

- Heavy duty sampling loop994-6126-001

ISOLATION COILS

Harris manufactures several types of sampling loop isolation coils to meet the needs of the directional array and associated monitoring system.

Standard units available use either $\frac{1}{2}$ inch or $\frac{3}{8}$ inch phase stabilized foam transmission line. The isolation coils are available with an optional resonating capacitor. The unit can be mounted on a flat aluminum wall panel or housed in a weatherproof enclosure.

Prices and Specifications Subject to Change Without Notice.

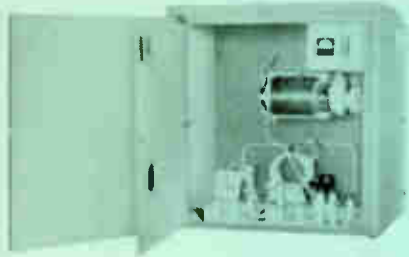


HARRIS

P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

AM ANTENNA COUPLERS/ ACCESSORIES

Weatherproof 5-10 KW Antenna Coupling Units



Housed in aluminum cabinet with double front doors. Large coils combined with capacitors of generous voltage and current ratings to assure a lifetime of service under extreme heat or cold. A large antenna lead in bowl is provided. Mounting is with metal flanges on the back of the tuning unit for attachment to wooden poles set in ground or for mounting on wall.

SPECIFICATIONS

CARRIER POWER: 5,000 watts or 10,000 watts AM, as ordered.

FREQUENCY: 525-1,700 kHz as ordered.

LINE IMPEDANCE: 50 ohms

TO MATCH: Series fed tower of from 70° to 100° electrical length.

CIRCUIT: Full Tee Network.

WEIGHT: Approximately 200 lbs.

SIZE: 38" high, 37" wide, 21½" deep.

ORDERING INFORMATION

Antenna Coupling Unit, 5 kW994-5309-001

Antenna Coupling Unit, 10 kW . . .994-5309-002

NOTE: When ordering, state carrier frequency, transmission line impedance, power, tower height and tower measurements, if known. Couplers to match unusual loads such as short or tall towers, shunt feed, etc., are available on special order, at extra cost.

RF ANTENNA METERS

Internal thermocouple standard scale. Weston Model 308, three-inch square case. Other ranges not listed below are available with many carried in stock. Also expanded scale meters in inventory.

ORDERING INFORMATION

Meter, 0-3 R.F. amperes634-0206-000

Meter, 0-6 R.F. amperes634-0238-000

Meter, 0-8 R.F. amperes634-0209-000

Meter, 0-10 R.F. amperes634-0210-000

Test Jacks



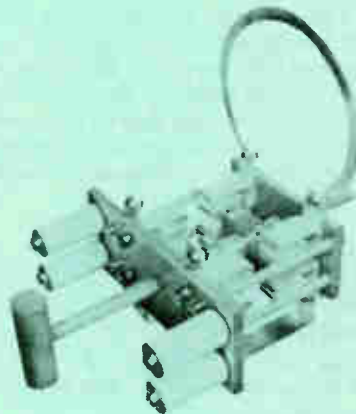
Harris manufactures both a medium power and high power RF test jack for use in several medium wave antenna network applications. The medium power test jack (shown at left) is rated for 35 amperes while the high power version (shown at right) is rated for 100 amperes. These units are constructed to assure maintenance free operation.

ORDERING INFORMATION

Medium Power Test Jack994-3280-002

High Power Test Jack994-3280-003

METER SHORTING SWITCH



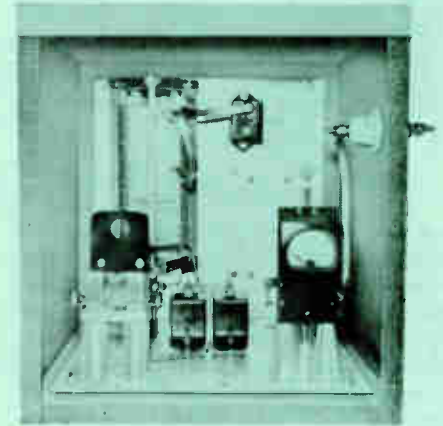
A heavy duty, make-before-break meter shorting switch of the plunger or push type. Heavy bronze tempered spring grips on both sides assure accuracy and durability.

ORDERING INFORMATION

Meter Shorting Switch, rating 15 amperes994-3493-001

Meter Shorting Switch, rating 40 amperes (shown above)994-6527-001

Weatherproof Series — FED Antenna Coupler, 1250 Watts



Recommended for broadcast transmitter powers of 1,000, 500 and 250 watts, 100% modulated. Heavy edgewound coil has generous inductance for a Tee network along with fixed mica capacitors supplied. Extra room is provided to install either diode or thermocouple remote metering equipment. Heavy duty meter shorting switch eliminates antenna meter from the circuit when not in use for lightning protection. Meter is observed through plexiglass porthole. Front door of cabinet has been removed for illustrative purposes.

SPECIFICATIONS

CARRIER POWER: Up to 1250 watts AM.

FREQUENCY: 525-1700 kHz as ordered.

LINE IMPEDANCE: 50 ohms.

TO MATCH: Series-fed tower of from 70° to 100° electrical length.

CIRCUIT: Full Tee Network.

WEIGHT: 98 lbs.

SIZE: 20" high, 20¼" wide, 18¾" deep.

ORDERING INFORMATION

Antenna Coupler with antenna meter994-3494-001

NOTE: When ordering, state transmission line impedance, frequency, tower height, and tower measurements, if known. Couplers to match unusual loads such as short or tall towers, shunt feed, etc., are available on special order at extra cost.

SHORT WAVE BROADCAST TRANSMITTER

SW-50A 50,000 Watt Short Wave Broadcast Transmitter

- High level Pulse Duration Modulation
- Exceeds 57% overall efficiency
- 10-Channel pre-set tuning, crystals included
- Low power consumption
- Only five tubes for 50 kW
- Vapor phase cooling
- Designed for trapezoidal programming
- Minimum floor space
- Full front and rear accessibility

Harris' SW-50A is a high-level, plate modulated short wave broadcast transmitter, featuring automatic 10-channel pre-set tuning. Utilizing the exclusive Pulse Duration Modulator, the SW-50A provides higher efficiency, lower operating costs and overall performance superior to that of any other short wave transmitter in the 50 kilowatt power range. The transmitter is capable of operating at any frequency between 3.2 and 22 MHz.

Specifications

POWER OUTPUT: 50,000 watts nominal unmodulated.

RF FREQUENCY RANGE: 3.2 to 22.0 MHz.

METHOD OF TUNING: Manual, or selection of 10 pre-set channels.

RF OUTPUT IMPEDANCE: 300 ohms balanced, 2.0 to 1 maximum VSWR.

RF FREQUENCY STABILITY: $\pm 1 \times 10^{-6}$ (± 22 Hz at 22 MHz).

SPURIOUS AND HARMONIC EMISSION: Less than 50 mW.

CARRIER SHIFT: Less than 2% at 95% modulation at 1000 Hz.

AUDIO FREQUENCY RESPONSE: ± 1.5 dB from 50 to 10,000 Hz referenced to 1000 Hz at 95% modulation.

AUDIO FREQUENCY DISTORTION: Less than 3% from 50 to 10,000 Hz at 95% modulation.

NOISE: 55 dB below 1000 Hz, 100% modulated level.

AUDIO INPUT LEVEL: 0 dBm ± 2 dB for 100% modulation.

AUDIO INPUT IMPEDANCE: 600/150 ohms, balanced or unbalanced.

MODULATION LEVEL: 100% sinusoidal, 60 minutes, 500-5000 Hz.

TRAPEZOIDAL MODULATION: Less than 5% tilt or overshoot, 100 Hz to 2000 Hz measured using 12 dB clipped sine wave.

POWER INPUT: Any specified voltage 380V to 480V, 3 phase, 50 or 60 Hz. Phase unbalance 5%, Regulation 5%.

POWER CONSUMPTION:

No modulation	89 kW
30% modulation	92 kW
100% modulation	130 kW

POWER FACTOR: Greater than 95%.

VOLTAGE REGULATOR: Electronic voltage regulation for all power supplies other than high voltage.

OVERALL EFFICIENCY: 57% or greater @ average modulation.

TUBES: Two 4CV50,000E, two 4CX1500A, one F-1099.



SW-50A with front doors removed.

TEMPERATURE RANGE: 0 to +50°C ambient air temperature. Sea level decrease 2°C/1000 ft. altitude (38°C @ 6000 ft.)

HUMIDITY: 95% relative humidity, maximum.

STORAGE TEMPERATURE: -35°C to +60°C.

ALTITUDE: Up to 1829 meters (6000 feet) above sea level.

CABINET DATA: The two cabinets measure 366 cm (12 feet) wide, 137 cm (4.5 feet) deep, and 304 cm (10 feet) high.

Ordering Information

SW-50A, 50,000 watt short wave broadcast transmitter, with remote heat exchanger 994-8630-001



HARRIS

P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

SHORT WAVE BROADCAST TRANSMITTER

SW-100A 100,000 Watt Short Wave Broadcast Transmitter

- High level Pulse Duration Modulation for exceptional audio performance
- Overall efficiency exceeds 55% - for reduced operating costs
- Only three tube types used - reduces spare stocking costs
- Pre-set channel tuning in 20 seconds or less, minimizes programming disruption
- Vapor phase cooling provides constant anode temperature resulting in extended tube life
- Front and rear cabinet accessibility eases maintenance

Harris' SW-100A is a high-level, plate modulated short wave broadcast transmitter, featuring automatic 10-channel pre-set tuning. Utilizing the exclusive Pulse Duration Modulator, the SW-100A provides higher efficiency, lower operating costs and overall performance superior to that of any other short wave transmitter in the 100 kilowatt power range. The transmitter is capable of operating at any frequency between 3.2 and 22 MHz.

SW-100A Specifications

POWER OUTPUT: 100,000 watts nominal unmodulated.

RF FREQUENCY RANGE: 3.2 to 22.0 MHz.

METHOD OF TUNING: Manual, or selection of 10 pre-set channels.

RF OUTPUT IMPEDANCE: 300 ohms balanced, 2.0 to 1 maximum VSWR.

RF FREQUENCY STABILITY: $\pm 1 \times 10^{-6}$ (± 22 Hz at 22 MHz).

SPURIOUS AND HARMONIC EMISSION: Less than 50 mW.

CARRIER SHIFT: Less than 2% at 95% modulation at 1000 Hz.

AUDIO FREQUENCY RESPONSE: ± 1.5 dB from 50 to 10,000 Hz referenced to 1,000 Hz at 95% modulation.

AUDIO FREQUENCY DISTORTION: Less than 3% from 50 to 10,000 Hz at 95% modulation.

NOISE: 55 dB below 1,000 Hz, 100% modulated level.

AUDIO INPUT LEVEL: 0 dBm ± 2 dB for 100% modulation.

AUDIO INPUT IMPEDANCE: 600/150 ohms, balanced or unbalanced.

MODULATION LEVEL: 100% sinusoidal, 10 minutes, 500-5000 Hz.

TRAPEZOIDAL MODULATION: Less than 5% (tilt or overshoot, 100 Hz to 2000 Hz measured using 12 dB clipped sine wave).

POWER INPUT: Any specified voltage 380V to 480V, 3 phase, 50 or 60 Hz
Phase unbalance 5%, Regulation 5%.

POWER CONSUMPTION:

No modulation	180 kW
30% modulation	190 kW
100% modulation	250 kW



SW-100A, Rear Doors Removed
(Air Plenum Not Shown)

POWER FACTOR: Greater than 95%.

VOLTAGE REGULATOR: Electronic voltage regulation for all power supplies.

OVERALL EFFICIENCY: 55% @ average modulation.

TUBES: Two 4CV100,000E, two-4CX1500A; one F-1099.

TEMPERATURE RANGE: 0 to +50°C ambient air temperature.

HUMIDITY: 95% relative humidity, maximum.

STORAGE TEMPERATURE: -35°C to +60°C.

ALTITUDE: Up to 1829 meters (6000 feet) above sea level.

CABINET DATA: The two cabinets measure 366 cm (12 feet) wide, 137 cm (4.5 feet) deep, and 304 cm (10 feet) high.

ORDERING INFORMATION

SW-100A, 100,000 watt short wave broadcast transmitter, with remote heat exchanger994-8629-001

MX-15 Maximum Signal FM Exciter

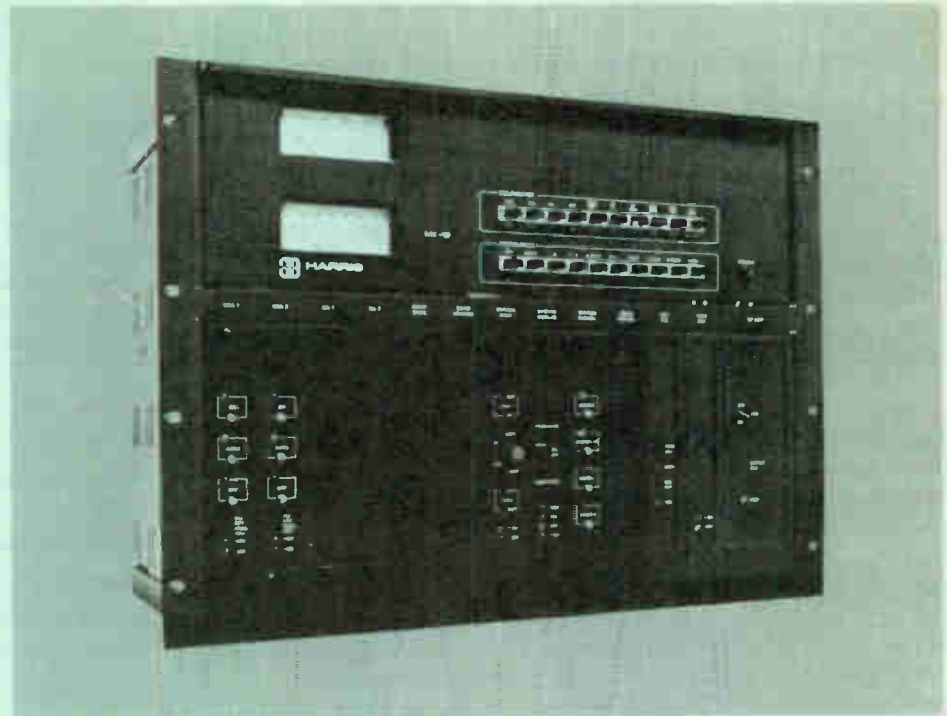
- Improved ultra linear VCO yields -80 dB FM S/N, and .02% Intermodulation Distortion for maximum signal clarity
- DSM (Digitally Synthesized Modulation) Stereo Generator provides 50 dB separation minimum, typically 60 dB midband, for increased stereo realism
- DTR* (Dynamic Transient Response) stereo generator filter maximizes modulation level without overmodulating
- Automatic stereo pilot phase control* and digital circuitry provide long term adjustment-free performance
- Balanced floating composite input minimizes system interface problems
- Available as an FCC type accepted 15 watt transmitter

*Patented

Continuing in its trend-setting tradition, Harris has incorporated state-of-the-art refinements in exciter technology to introduce the MX-15 FM Exciter. Using various advanced techniques, such as DRT (Dynamic Transient Response) and DSM (Digitally Synthesized Modulation), the MX-15 Exciter provides the broadcaster with new levels of excellence in audio performance.

Specifications

GENERAL
POWER OUTPUT 3 watts to 15 watts continuously variable
FREQUENCY RANGE 87.5 MHz to 108 MHz (tested to one specified frequency (exciter programmable to 50 kHz channel spacing))
RF OUTPUT IMPEDANCE 50 ohms, open and short circuit proof
OUTPUT CONNECTION Female BNC
FREQUENCY STABILITY 300 Hz 0 to 50 C temperature compensated reference oscillator
TYPE OF MODULATION Direct carrier frequency modulation (DCFM)
MODULATION CAPABILITY 100 kHz
AC INPUT POWER 100 to 130 VAC or 200 to 250 VAC 60 Hz or 50 Hz 150 watts
RF HARMONICS Suppression meets all FCC requirements for 10 watt and 15 watt educational transmitter requirements
ALTIMETER RANGE 15,000 feet
AMBIENT TEMPERATURE RANGE 0 to 50 C (operational to 20 C)
OVERALL CABINET SIZE 17 7/8" Wide (44 cm) x 14" High (35 cm) x 12" Deep (30 cm) 19" EIA rack mounting standard
FINISH Black
CONSTRUCTION Main printed circuit boards individually enclosed plug-in modules. Module service extender board included.
AUDIO/CONTROL CONNECTIONS Two 18 terminal barrier strips parallel by 36 pin and socket connectors. RFI bypassing on input/output lines
MODULATION METER 10 position, fast rise time AC metering (adjustable to meet FCC ballistics)
MULTIMETER 10 position, DC metering
TOTAL METERING FUNCTIONS 20
REMOTE METERING PROVISIONS PA voltage, PA current, forward power, reflected power



STATUS INDICATION 27 independent LED indicators (when equipped with all options)
WIDEBAND COMPOSITE OPERATION
COMPOSITE INPUT One balanced floating input
COMPOSITE INPUT IMPEDANCE 200 ohms resistive
COMPOSITE INPUT CONNECTOR Female BNC
COMPOSITE INPUT LEVEL: 1.0 volt RMS nominal for 75 kHz deviation
EXTERNAL SCA GENERATOR INPUTS Jp to two unbalanced inputs (optional)
COMPOSITE FM SIGNAL TO NOISE 90 dB below 100% modulation (reference 400 Hz @ 75 kHz deviation with 75 microsecond de-emphasis 20 Hz to 200 kHz bandwidth)
COMPOSITE HARMONIC DISTORTION 0.1%
COMPOSITE INTERMODULATION DISTORTION 0.2% (60 Hz/7 kHz 1:1 tone pairs)
COMPOSITE CCIF INTERMODULATION DISTORTION All distortion products below 80 dB (reference 14 kHz/15 kHz test tone pair)
COMPOSITE AMPLITUDE RESPONSE +0.1 dB, 30 Hz 53 kHz
ASYNCHRONOUS AM SIGNAL TO NOISE 73 dB below reference carrier with 100% AM modulation @ 400 Hz, 75 microsecond de-emphasis (FM modulation -75 kHz @ 400 Hz)
MONAURAL OPERATION
AUDIO INPUT IMPEDANCE 600 ohms balanced resistive transformer less, adaptable to other impedances
INPUT FILTER Controlled response low pass filter, defeatable
AUDIO INPUT LEVEL -10 dBm -1 dB for 100% modulation at 400 Hz
AUDIO FREQUENCY RESPONSE Standard 75 microsecond FCC pre-emphasis curve 0.5 dB, 31 Hz 15 kHz Selectable flat 25 or 50 microsecond pre-emphasis
HARMONIC DISTORTION 0.15%, 30 Hz to 15 kHz de-emphasized
INTERMODULATION DISTORTION 0.45%, 60 Hz 7 kHz test tone pair, 4:1 ratio
CCIF INTERMODULATION DISTORTION All distortion products down 70 dB (reference 14 kHz/15 kHz test tone pair)
FM SIGNAL TO NOISE RATIO 80 dB below 100% modulation (reference 400 Hz @ 75 kHz deviation measured 20 Hz to 200 kHz bandwidth 75 microsecond de-emphasis)

STEREO OPERATION
TYPE OF MODULATION Digitally Synthesized Modulation (DSM)
AUDIO INPUT IMPEDANCE Left and right channels 600 ohms balanced resistive transformerless, adaptable to other impedances
AUDIO INPUT LEVEL -10 dBm -1 dB for 100% modulation
AUDIO FREQUENCY RESPONSE (Left and right) standard 75 microsecond FCC pre-emphasis curve 0.5 dB, 30 Hz 15 kHz Selectable flat 25 or 50 microsecond pre-emphasis
INPUT FILTERING 15 kHz low pass filter, 45 dB rejection at 19 kHz
OVERSHOOT PROTECTION Harris patented Dynamic Transient Response (DTR) filter. Defeatable for test purposes
AUDIO TRANSIENT RESPONSE 2% maximum overshoot beyond steady state
HARMONIC DISTORTION (Left or right) 0.2% or less, 30 15 000 Hz
INTERMODULATION DISTORTION (Left or right) 0.1% 60 Hz/7 kHz test tone pair, 4:1 ratio
CCIF INTERMODULATION DISTORTION (Left or right) all distortion products down 80 dB (reference 14 kHz, 15 kHz test tone pair)
STEREO SEPARATION 50 dB, 30 Hz 15 kHz, typically 60 dB at midband frequencies
DYNAMIC STEREO SEPARATION 48 dB under normal programming conditions
LINEAR CROSSTALK 52 dB
NON LINEAR CROSSTALK 80 dB
76 KHZ SUPPRESSION 68 dB
38 KHZ SUPPRESSION 73 dB
FM NOISE (Left or right) 74 dB minimum below 100% modulation (reference 400 Hz, 75 microsecond de-emphasis, 75 kHz deviation, measured 30 Hz @ 15 kHz bandwidth)
PILOT OSCILLATOR Crystal controlled
PILOT PHASE Harris patented automatic pilot phasing circuit
PILOT STABILITY 19 kHz 1 Hz 0 to 50 C
OPERATIONAL MODES Stereo, mono (left and right), mono (left), mono (right) - remountable
SCA OPERATION
MODULATION Direct FM
FREQUENCY OF OPERATION 41 or 67 kHz programmable, any frequency between 25 and 75 kHz on special order
FREQUENCY STABILITY 500 Hz
MODULATION CAPABILITY 7.5 kHz
AUDIO FREQUENCY RESPONSE 41 kHz and 67 kHz AC coupled input, 150 microsecond pre-emphasis 1 dB standard Selectable flat 50 or 75 microsecond pre-emphasis DC coupled input No pre-emphasis DC to 4 kHz 1.5 dB
AUDIO INPUT IMPEDANCE 600 ohms balanced (AC coupled) Also 2000 ohms DC coupled unbalanced input through rear BNC connector
AC INPUT LEVEL -10 dBm -1 dB for 100% modulation at 400 Hz 600 ohms
DC INPUT LEVEL 1.0 volt peak for 5 kHz deviation
INPUT FILTERING Programmable LPF, 4.5 kHz, standard 3 kHz 5 kHz, 7.5 kHz selectable Low pass filter defeatable
HARMONIC DISTORTION 0.1%, 30-4 500 Hz 5 kHz deviation
INTERMODULATION DISTORTION 1%, 60 Hz/7 kHz, 1:1 ratio (audio low pass filter and pre-emphasis bypassed)
FM NOISE (Main channel not modulated) 63 dB (reference 100% modulation) 5 kHz deviation @ 400 Hz
CROSSTALK (SCA to main or stereo sub-channel) 60 dB or better
CROSSTALK (Main or stereo sub-channel to SCA) 57 dB below 5 kHz deviation of SCA with mono or stereo channels modulated by frequencies 30 Hz 15 kHz SCA demodulated with 150 microsecond de-emphasis
CROSSTALK SCA to SCA (41 kHz/67 kHz) 50 dB demodulated with 150 microsecond de-emphasis
AUTOMATIC MUTE LEVEL Variable from 0 to 30 dBm
MUTE DELAY Adjustable 0.5 to 20 seconds
INJECTION LEVEL 1% to 30% of composite level (adjustable)

Ordering Information

- MX-15 Exciter for wideband composite operation, 19-inch rack mounted 994-7950-003
- Mono option (add for mono operation) 994-8019-001
- DSM Stereo Generator with DTR Filter (add one for stereo operation) 994-8020-001
- SCA Generator (add one for each SCA service, specify 67 or 92 kHz) 994-7992-002
- External SCA Generator Jumper Card
(for use with externally mounted SCA Generator) 994-8377-001



HARRIS

P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

SCA GENERATOR

MX-15 Multi-Purpose SCA Generator

- Designed for operation on 67 kHz or 92 kHz (with other frequencies available) to meet the new applications of SCA service
- Improved carrier mute decay circuit considerably reduces annoying SCA receiver squelch pops
- Transformerless audio input stage improves SCA aural performance
- DC coupled data input port provides accurate transmission of digital information
- Automatic MX-15 SCA/composite level control maintains maximum main channel modulation

The MX-15 multipurpose SCA generator is designed to meet the expanded needs of today's SCA service requirements, and is ideal for high quality aural service or for accurate transmission of digital data.

Expanded Range Of Operation

The MX-15 multipurpose SCA generator can be user programmed to operate on 67 kHz or 92 kHz by simply positioning a jumper plug. Other operating frequencies can be easily accommodated upon request. Two SCA generators, one on 67 kHz and the other on 92 kHz, can simultaneously operate with stereo. The MX-15 exciter accommodates additional SCA channels through the composite input.

Improved Aural Performance

The transformerless audio input stage improves aural performance in comparison with other designs. Stations will note lower harmonic distortion for improved SCA fidelity.

The transformerless input stage is low pass filtered to meet the technical needs of the SCA information transmitted. A 4.5 kHz low pass response is provided as standard. This can be easily changed for 3 kHz, 5 kHz or 7.5 kHz response, or may be defeated if desired.

The MX-15 multipurpose SCA generator meets the precise transmission requirements of stations transmitting digital information. A rear mounted BNC input connector DC couples the digital data to the SCA generator's FM modulator for precise transmission quality.

Improved Mute Decay Circuit

SCA operators recognize that abrupt muting of the SCA carrier may cause an annoying "pop" in the SCA receivers. Harris has incorporated a carrier mute decay circuit to eliminate this objectionable noise.

In addition to the mute decay circuit, stations may select the mute delay time constant they desire—anywhere between 0.5 seconds and 20 seconds. Automatic mute threshold level can also be adjusted between 0 and -30 dBm in order to meet varying input levels.

Automatic Composite Level Adjustment

The MX-15 exciter and multipurpose SCA generator work as an effective system to automatically maintain maximum main channel modulation at all times. Here's how: When the SCA generator is activated, the composite level is automatically lowered to allow for insertion of the SCA channel. The converse is also true. Stations need not compromise 10% to 30% of modulation when SCA is not used continuously.

Expanded Applications

Whether you are planning to use your SCA channel for conventional aural services (such as background music), or are looking at some of the new expanded applications possible today, the Harris MX-15 multipurpose SCA generator meets your needs.

Specifications

MODULATION: Direct FM

FREQUENCY OF OPERATION: Selectable 67 kHz or 92 kHz. Any frequency between 25 kHz and 92 kHz available on special order.

FREQUENCY STABILITY: ± 500 Hz.

MODULATION CAPABILITY: ± 7.5 kHz.

AUDIO FREQUENCY RESPONSE: 67 kHz and 92 kHz AC coupled input, 150 microsecond pre-emphasis, ± 1 dB, standard. Selectable flat, 50 or 75 microsecond pre-emphasis. DC coupled input: No pre-emphasis: DC to 4 kHz ± 0.5 dB.

AUDIO INPUT IMPEDANCE: 600 ohms balanced transformerless (AC coupled). Also 2000 ohms DC coupled unbalanced input through rear BNC connector.

AC INPUT LEVEL: +10 dBm, ± 1 dB for 100% modulation at 400 Hz @ 600 ohms.

DC INPUT LEVEL: 1.0 volt peak for 5 kHz deviation.

INPUT FILTERING: Programmable LPF, 4.5 kHz standard. 3 kHz, 5 kHz, 7.5 kHz selectable. Low pass filter defeatable.

HARMONIC DISTORTION: 0.5%, 30-4500 Hz, ± 5 kHz deviation.

INTERMODULATION DISTORTION: 1%, 60 Hz/7 kHz, 1:1 ratio (audio low pass filter and pre-emphasis bypassed).

FM NOISE: (Main channel not modulated) -63 dB (reference: 100% modulation = ± 5 kHz deviation at 400 Hz).

CROSSTALK: (SCA to main or stereo sub-channel) -60 dB or better.

CROSSTALK: (Main or stereo sub-channel to SCA) 57 dB below ± 5 kHz deviation of SCA with mono or stereo channels modulated by frequencies 30 Hz-15 kHz, SCA demodulated with 150 microsecond de-emphasis).

CROSSTALK: SCA to SCA (41 kHz/67 kHz) 50 dB demodulated with 150 microsecond de-emphasis.

AUTOMATIC MUTE LEVEL: Variable from 0 to -30 dBm.

MUTE DELAY: Adjustable 0.5 to 20 seconds.

CARRIER MUTE DECAY: Greater than 30 milliseconds.

INJECTION LEVEL: 1% to 30% of composite level (adjustable).

Ordering Information

Multi-Purpose SCA Generator (specify 67 or 92 kHz)994-7992-002

FM BROADCAST TRANSMITTERS

HARRIS
P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

FM-300K	300 Watt
FM-1K	1 Kilowatt
FM-3.5K	3.5 Kilowatt
FM-5K	5 Kilowatt
FM-10K	10 Kilowatt
FM-20K	20 Kilowatt
FM-25K	25 Kilowatt
FM-40K	40 Kilowatt
FMD-50K	50 Kilowatt (Dual)

FM BROADCAST TRANSMITTERS

STANDARD FEATURES

- MX-15 Exciter with ultra linear modulated oscillator for minimum distortion, maximum signal clarity
- Digitally Synthesized Modulation stereo generator provides excellent midband separation for increased stereo realism
- Dynamic Transient Response (DTR*) stereo generator filter maximizes modulation level without overshoot

*Patented

FM-300K

Solid-State 300 Watt FM Transmitter

FM-300KD

Solid-State Main/Alternate 300 Watt FM Transmitter

Harris' 300 watt FM transmitter is available in two configurations; the standard model (FM-300K) or the dual FM-300KD which can be equipped for one of three configurations.

1. Separate 300 watt transmitters operating on different frequencies for two program channels.
2. Main/alternate main configuration where one transmitter acts as a full backup to the other transmitter permitting uninterrupted program service should one unit fail.
3. Combined operation yielding 600 watts of power for program services requiring increased coverage area.

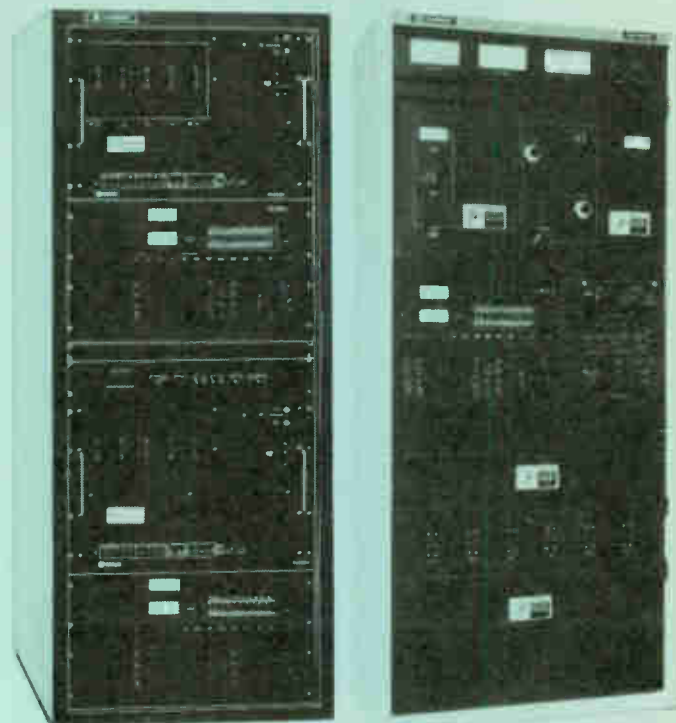
Both the FM-300K and the FM-300KD are housed in a single 24 inch wide cabinet. Since the FM-300K only contains one transmitter, the extra cabinet space may be used for monitoring and test equipment.

Both transmitters are 100% solid-state for top reliability and represent one of the first all-solid state 300 watt broadband transmitters ever developed. Harris was the first equipment manufacturer to introduce an all solid-state radio broadcast transmitter; the MW-1, one kilowatt AM transmitter. The same solid-state transmitter engineering experience that has given the MW-1 an excellent reliability and performance track record brings you the Harris FM-300K/KD.

FM-1K

1 Kilowatt FM Broadcast Transmitter

The FM-1K employs Harris' advanced-design MX-15 solid-state exciter to provide the cleanest and the loudest FM signal of any one-kilowatt FM transmitter available today. The DSM (Digitally Synthesized Modulation) stereo generator allows the transmitter to provide stereo separation of 50 dB minimum, 30-15,000 Hz, while the DTR (Dynamic Transient Response) filter permits a 2 to 6 dB increase in loudness, with no degradation of audio quality, by limiting overshoot to 2% or less.



FM-300KD

FM-3.5K

FM-3.5K

3.5 Kilowatt FM Broadcast Transmitter

When considering 3.5 kW FM transmitters, local service FM broadcasters in general have two major requirements; long term reliability and audio performance. Without question the Harris FM-3.5K meets these crucial requirements and more.

POWER TO MEET YOUR TRANSMISSION SYSTEM'S REQUIREMENT

The Harris FM-3.5K can provide any output power from 800 to 3800 watts. This full range allows you to select the most effective antenna size, tower height and transmission line combination to meet your coverage requirements.

The FM-3.5K consumes only 7 kW of power at 3.5 kW output. Based on an 18 hour broadcast day and a typical power charge of \$0.08 per kilowatt hour, this represents an operating cost of only \$10.08 per day.

Even at full 3.5 kW output, the FM-3.5K requires only single phase AC power. Unlike other transmitters in this power range, there is no need to bring in costly 3-phase AC service to your facility.

FM-5K/10K/20K

5/10/20 Kilowatt FM Broadcast Transmitters

The Series features the advanced-design MX-15 exciter. The Harris 5 kW, 10 kW or the 20 kW. FM series provides the cleanest and the loudest stereo signal of any FM transmitter in their power range. The DSM (Digitally Synthesized Modulation) stereo generator allows the transmitter to provide stereo separation of 48 dB minimum, 30-15,000 Hz, while the DTR (Dynamic Transient Response) filter permits a 2 to 6 dB increase in loudness, with no degradation of audio quality, by limiting overshoot of 2% or less. Add to this high efficiency plus conservatively rated components and you have truly exceptional FM transmitters.



HARRIS

P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

FM BROADCAST TRANSMITTERS



FM-25K



FMD-50K

FM-25K 25-Kilowatt FM Broadcast Transmitter

Harris' technology has combined advances in both tube and transistor designs, to bring you a major step forward in high-power FM transmitters. Transistors are now available which provide 50 watts of RF power at reasonable gain and low junction temperatures. By combining several of these transistors in wideband RF circuits, enough power can be generated to drive an advanced high-gain Eimac tetrode tube, the 8990. This tube, when grid driven in a grounded cathode, quarter-wave cavity, can produce 25 kilowatts with 350 watts of drive at nearly 80% plate efficiency.

The FM-25K, 25 kilowatt FM transmitter reflects Harris' design philosophy that FM transmitters should deliver RF power efficiently, should not limit exciter performance, and should integrate dependable solid-state control logic. In the FM-25K, these features are teamed with efficient, single-tube design, and with the high performance MX-15 exciter.

The FM-25K was designed for applications with tower limitations or specific coverage requirements. The higher RF power output reduces the number of antenna bays required for a given ERP; and fewer bays mean a reduction in windloading and mounting area, so that tower size and/or height may be reduced. Also, fewer antenna bays, with less gain, can mean improved close-in coverage and the elimination of null fills.

FM-40K 40-Kilowatt FM Broadcast Transmitter

Reliability through redundancy, that's the story on Harris' FM-40K, 40 kilowatt transmitter.

The basic FM-40K transmitter system consists of two 20 kilowatt amplifiers, and a center control cabinet containing the MX-15 exciter, and provides redundancy in all areas except the exciter and isolation amplifier. In case emergency operation is required, you stay on the air at one-quarter normal power output.

The complete 40 kilowatt FM transmitter system includes an optional Automatic Exciter Switching Kit and RF Output Switching Kit, and provides total redundancy. Should a malfunction occur anywhere in the system, you are still on the air at one-half normal power.

In the basic system, outputs of each amplifier are coupled through harmonic filters to the output combining network. This hybrid network sums the two 20 kilowatt signals to produce a 40 kilowatt output to the transmission line. However, the two amplifiers remain isolated from each other.

With the addition of the Automatic Exciter Switching Kit, automatic backup exciter protection is provided. And with the further addition of the RF Output Switching System, power output becomes one-half the normal output during emergency operation. Either or both of these options may be included in the FM-40K at the time you order, or added later in the field.

FMD-50K 50-Kilowatt Dual FM Broadcast Transmitter

The FMD-50K dual 50 kilowatt transmitter offers real protection against off-air time through redundancy, and through extensive use of solid-state circuitry. Only two tubes are employed in the entire FMD-50K high-gain, highly efficient 8990 tetrodes used as the final power amplifiers. The 8990 uses a wavy fin radiator which provides exceptional cooling at reduced air requirements, for quiet operation. The quarter-wave PA cavity design eliminates troublesome sliding contacts for tuning, and assures wide RF bandwidth. This results in a signal path that is transparent to the MX-15 exciter.

The basic FMD-50K transmitter consists of two 25 kilowatt amplifiers, and a center control cabinet. It provides redundancy in all areas except the exciters. In case emergency operation is required, you stay on the air at one-quarter normal power output. An even higher level of redundancy is achieved in the complete FMD-50K through an optional arrangement of switches, sensors and circuits that make the FMD-50K totally redundant from audio input to RF output.

The FMD-50K with the RF output switching option provides the capability of automatically switching either transmitter directly to the antenna, thus providing one-half normal operating power in the event of a transmitter malfunction.

With the addition of the automatic exciter switching option, automatic backup exciter protection is provided. Also, an optional RF input patch panel is available to connect either exciter directly to either transmitter by bypassing all of the automatic exciter switching equipment.

Prices and Specifications Subject to Change Without Notice.

FM BROADCASTING TRANSMITTERS

SPECIFICATIONS

	FM-300K FM-300KD	FM-1K	FM-3.5K	FM-5K	FM-10K	FM-20K	FM-25K	FM-40K	FM-50K
GENERAL POWER OUTPUT:	300 watts	1 kw	800 to 3800 watts	1.0 to 5.1 kw	10 kw	10 kw to 20 kw	10 kw to 25 kw	20 kw to 40 kw	20 kw to 50 kw
FREQUENCY RANGE:	87.5 to 108 MHz, tuned to specified operating frequency.								
RF OUTPUT IMPEDANCE:	50 ohms.								
OUTPUT TERMINATION:	TypeN fem.	1-5/8" EIA flange	3-1/8" EIA flange.				6-1/8" EIA flange.		
FREQUENCY STABILITY:	± 300 Hz 0° to 45°C TCXO.								
TYPE OF MODULATION:	Direct Carrier Frequency Modulation (DCFM).								
MODULATION CAPABILITY:	± 100 kHz. 133% ± 100 kHz.								
AC INPUT POWER:	208 to 245 VAC, 50 to 60 Hz. Single phase, ± 5% variation.								
		AC INPUT POWER: 208/240 V, 60 or 50 Hz, single phase, three-wire. Power consumption: 2100 watts (approx.). 115/230 V, 60 or 50 Hz, 150 watts for MX-15.							
			AC INPUT POWER: 197/250 V, 60 or 50 Hz, single phase, two-wire. Power consumption: 7000 watts (approx.). 60 or 50 Hz, 150 watts for MX-15.						
			AC INPUT POWER: 208/240 V, 3-phase, 60 Hz (50 Hz available.) Power consumption (approx.): 10 kW consumption at 5 kW output. 115/230 V, 60 or 50 Hz, 150 watts for MX 15.						
			AC INPUT POWER: 208/240 V, 3-phase, 60 Hz (50 Hz available.) Power consumption 17,000 watts (approx.): 115/230 V, 60 or 50 Hz, 150 watts for MX-15.						
			AC INPUT POWER: 208/240 V, 3-phase, 60 Hz. (50 Hz available on special order.) Power consumption: 30,000 watts (approx.). 115/230 V, 60 or 50 Hz, 150 watts for MX-15.						
			AC INPUT POWER: 208/240 V, 3-phase, 50/60 Hz and 360/415 V, 3-phase, 50/60 Hz, 4-wire. Power consumption: 40 kW typical.						
			AC INPUT POWER: 208/240 V, 3-phase, 60 Hz. (50 Hz available on special order.) Power consumption: 60,000 watts (approx.). 115/230 V, 60 or 50 Hz, 150 watts for MX-15, for an overall efficiency of approx. 66%.						
			AC INPUT POWER: 208/240 V, 3-phase, 50/60 Hz, 360/415 V, 3-phase, 50/60 Hz. Power consumption: 80,000 watts (approx.). 115 V as available.						
RF HARMONICS:	Suppression meets all FCC requirements.								
ALTITUDE:	12,000 ft.	10,000 ft.	10,000 ft. / 60 Hz 7500 ft. / 50 Hz	7500 ft.	10,000 ft.	7500 ft.	10,000 ft.	7500 ft.	10,000 ft.
AMBIENT TEMPERATURE RANGE:	0°C to +50°C.	-20°C to +45°C.							
MAXIMUM VSWR:	1.2:1	1.7:1	2.0:1	1.7:1					
OVERALL CABINET SIZE:	Approx. 27-3/4"W x 71-3/4"H x 29-3/4"D (70.5cm x 182.3cm x 75.6cm).								
		OVERALL CABINET SIZE: 29"W x 78"H x 33"D (74cm x 198cm x 84cm).							
		OVERALL CABINET SIZE: 33"W x 72"H x 34"D (84cm x 182cm x 99cm).							
		SIZE: Transmitter cabinet, 42"W x 78"H x 33"D (107cm x 198cm x 84cm).							
		SIZE: Transmitter cabinet, 42"W x 78"H x 33"D (107cm x 198cm x 84cm).							
		SIZE: Transmitter cabinet, 42"W x 78"H x 33"D (107cm x 198cm x 84cm). HV power supply cabinet: 30"W x 49"H x 30"D (76cm x 125cm x 76cm).							
		SIZE: Transmitter cabinet, 42"W x 78"H x 33"D (107cm x 198cm x 84cm). HV power supply cabinet: 30"W x 49"H x 30"D (76cm x 125cm x 76cm).							
		SIZE: Transmitter cabinet, 34.6"W x 71.7"H x 31.0"D (87.8cm x 182.1cm x 78.7cm). HV power supply cabinet: 48.0"W x 60.2"H x 24.2"D (121.9cm x 152.9cm x 61.5cm).							
		SIZE: Transmitter. 113"W x 78"H x 33"D (287cm x 198cm x 84cm). HV power supply cabinets (2): each 30"W x 49"H x 30"D (76cm x 125cm x 76cm).							
		SIZE: Transmitter: 90.2"W x 72"H x 30.5"D (229cm x 183cm x 77.5cm). HV power supply cabinets: (each) 48"W x 60.2"H x 24.2"D (122cm x 153cm x 61.5cm).							
FINISH:	White, blue and black.								

Prices and Specifications Subject to Change Without Notice.

B-465



HARRIS
 P.O. Box 4290
 Quincy, IL 62305-4290
 (217) 222-8200

**FM BROADCASTING
 TRANSMITTERS**

SPECIFICATIONS (Cont'd)

	FM-300K FM-300KD	FM-1K	FM-3.5K	FM-5K	FM-10K	FM-20K	FM-25K	FM-40K	FM-50K
PILOT OSCILLATOR:	Crystal controlled.								
PILOT PHASE:	Harris patented automatic pilot phasing circuit.								
PILOT STABILITY:	19 kHz + 1 Hz 0° to 50°C.								
OPERATIONAL MODES:	Stereo, mono (left and right), mono (left), mono (right)—remoteable.								
SCA OPERATION									
MODULATION:	Direct FM.								
FREQUENCY OF OPERATION:	67 or 92 kHz programmable, any frequency between 25 and 92 kHz on special order.								
FREQUENCY STABILITY:	± 500 Hz.								
MODULATION CAPABILITY:	± 7.5 kHz.								
AUDIO FREQUENCY RESPONSE:	67 kHz and 92 kHz AC coupled input, 150 microsecond pre-emphasis ± 1 dB, standard. Selectable flat, 50 or 75 microsecond pre-emphasis. DC coupled input: No pre-emphasis: DC to 4 kHz ± 0.5 dB.								
AUDIO INPUT IMPEDANCE:	600 ohms balanced (AC coupled). Also 2000 ohms DC coupled unbalanced input through rear BNC connector.								
AC INPUT LEVEL:	+ 10 dBm, ± 1 dB for 100% modulation at 400 Hz @ 600 ohms.								
DC INPUT LEVEL:	1.0 volt peak for 5 kHz deviation.								
INPUT FILTERING:	Programmable LPF, 4.5 kHz standard. 3 kHz, 5 kHz, 7.5 kHz selectable. Low pass filter defeatable.								
HARMONIC DISTORTION:	0.5%, 30-4,500 Hz ± 5 kHz deviation.								
INTERMODULATION DISTORTION:	1%, 60 Hz/7 kHz, 1:1 ratio (audio low pass filter and pre-emphasis bypassed).								
FM NOISE:	(Main channel not modulated)—63 dB (reference: 100% modulation = ± 5 kHz deviation at 400 Hz).								
CROSSTALK:	(SCA to main or stereo sub-channel) -60 dB or better.								
CROSSTALK:	*57 dB	*57 dB	*55 dB	*55 dB	*55 dB	*55 dB	*57 dB	*52 dB	*57 dB
	(Main or stereo sub-channel to SCA) * below ± 5 kHz deviation of SCA with mono or stereo channels modulated by frequencies 30 Hz-15 kHz, SCA demodulated with 150 microsecond de-emphasis.								
CROSSTALK:	SCA to SCA (67 kHz/92 kHz) —50 dB demodulated with 150 microsecond de-emphasis.								
AUTOMATIC MUTE LEVEL:	Variable from 0 to -30 dBm.								
MUTE DELAY:	Adjustable 0.5 to 20 seconds.								
INJECTION LEVEL:	1% to 30% of composite level (adjustable).								

	FM-300K FM-300KD	FM-1K	FM-3.5K	FM-5K	FM-10K	FM-20K	FM-25K	FM-40K	FM-50K	
MONAURAL OPERATION										
AUDIO INPUT IMPEDANCE:	600 ohms, balanced, resistive, transformerless, adaptable to other impedances.									
INPUT FILTER:	Controlled response low pass filter, defeatable.									
AUDIO INPUT LEVEL:	+ 10 dBm \pm 1 dB for 100% modulation at 400 Hz.									
AUDIO FREQUENCY RESPONSE:	Standard 75 microsecond FCC pre-emphasis curve \pm 0.5 dB, 30 Hz-15 kHz. microsecond pre-emphasis. Selectable: flat, 25 or 50									
HARMONIC DISTORTION:	0.15%, 30 Hz to 15 kHz de-emphasized.									
INTERMODULATION DISTORTION:	0.1%	0.1%	.045%	.15%	.1%	0.1%	0.1%	.15%	.045%	
CCIF INTERMODULATION DISTORTION:	All distortion products down 70 dB (reference 14 kHz/15 kHz test tone pair).									
FM SIGNAL TO NOISE RATIO:	80 dB below 100% modulation (reference 400 Hz @ \pm 75 kHz deviation, measured 20 Hz to 200 kHz bandwidth, 75 microsecond de-emphasis).									
STEREO OPERATION										
TYPE OF MODULATION:	Digitally Synthesized Modulation (DSM).									
AUDIO INPUT IMPEDANCE:	Left and right channels: 600 ohms, balanced, resistive, transformerless, adaptable to other impedances.									
AUDIO INPUT LEVEL:	+ 10 dBm, \pm 1 dB for 100% modulation.									
AUDIO FREQUENCY RESPONSE:	(Left and right) standard 75 microsecond FCC pre-emphasis curve \pm 0.5 dB, 30 Hz-15 kHz. Selectable: flat, 25 or 50 microsecond pre-emphasis.									
INPUT FILTERING:	15 kHz low pass filter, 45 dB rejection at 19 kHz.									
OVERSHOOT PROTECTION:	Harris patented Dynamic Transient Response (DTR) filter. Defeatable for test purposes.									
AUDIO TRANSIENT RESPONSE:	2% maximum overshoot beyond steady state.									
HARMONIC DISTORTION:	(Left or right) 0.2% or less, 30-15,000 Hz.									
CCIF INTERMODULATION DISTORTION:	(Left or right) 0.1% 60 Hz/7 kHz test tone pair, 4:1 ratio.									
CCIF INTERMODULATION DISTORTION:	*80 dB	*80 dB	*75 dB	*80 dB	*80 dB	*75 dB	*75 dB	*70 dB	*80 dB	
	(Left or right) all distortion products down * (reference 14 kHz/15 kHz test tone pair).									
STEREO SEPARATION:	*50 dB	*50 dB	*50 dB	*48 dB	*50 dB	*48 dB	*50 dB	*48 dB	*48 dB	
	* 30 Hz-15 kHz; typically 60 dB at midband frequencies.									
DYNAMIC STEREO SEPARATION:	48 dB under normal programming conditions.									
LINEAR CROSSTALK:	-52 dB	-50 dB	-50 dB	-50 dB	-50 dB	-48 dB	-50 dB	-50 dB	-52 dB	
NON-LINEAR CROSSTALK:	-60 dB	-60 dB	-60 dB	-60 dB	-60 dB	-60 dB	-60 dB	-60 dB	-60 dB	
76 kHz SUPPRESSION:	-68 dB	-68 dB	-68 dB	-68 dB	-68 dB	-68 dB	-68 dB	-68 dB	-68 dB	
38 kHz SUPPRESSION:	-73 dB	-73 dB	-73 dB	-73 dB	-73 dB	-73 dB	-73 dB	-73 dB	-73 dB	
FM NOISE:	*-74 dB	*-70 dB	*-72 dB	*-74 dB	*-70 dB	*-72 dB	*-72 dB	*-74 dB	*-74 dB	
	(Left or right) * dB minimum below 100% modulation. Reference: 400 Hz, 75 microsecond de-emphasis, \pm 75 kHz deviation, measured 30 Hz to 15 kHz bandwidth.									





HARRIS
 P.O. Box 4290
 Quincy, IL 62305-4290
 (217) 222-8200

SPECIFICATIONS (Cont'd)

FM BROADCASTING TRANSMITTERS

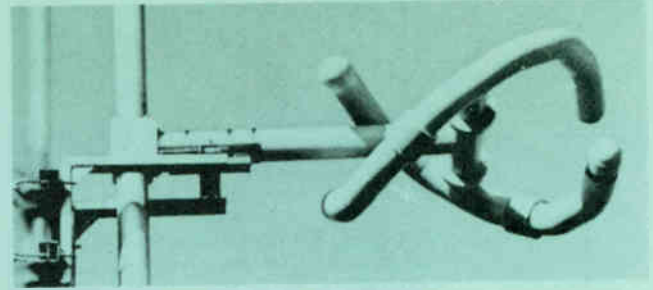
	FM-300K FM-300KD	FM-1K	FM-3.5K	FM-5K	FM-10K	FM-20K	FM-25K	FM-40K	FM 50K								
WEIGHT & CUBAGE:		WEIGHT & CUBAGE: Export: 1300 lbs. (590kg). Domestic: 1050 lbs. (476kg). 104 cu. ft. (2.9 cu. m).	WEIGHT & CUBAGE: Export: 980 lbs. (445kg). Domestic: 880 lbs. (400kg). Cubage—Export: 46.7cu. ft. (1.322 cu. m).	WEIGHT AND CUBAGE: Export: 2100 lbs. (953kg). Domestic: 1700 lbs. (771kg). 120 cubic feet.	WEIGHT & CUBAGE: Export: 2200 lbs. (998kg). Domestic: 1800 lbs. (817kg). 120 cu. ft.	WEIGHT & CUBAGE: Export: 2800 lbs. (1270kg). Domestic: 2300 lbs. (1043kg). 141 cu. ft.	WEIGHT & CUBAGE: (Estimated) Export: 3000 lbs. (1361kg). Domestic: 2700 lbs. (1225kg). Cubage: 150 cu. ft.	WEIGHT & CUBAGE: Export: 6800 lbs. (3087kg). Domestic: 6000 lbs. (2724kg). 270 cu. ft. (7.5 cu. m).	WEIGHT & CUBAGE (Approximate): Export: 7000 lbs. (3178kg). Domestic: 6800 lbs. (3087kg). Cubage: 400 cu. ft. (11.3 cu. m).								
WIDEBAND COMPOSITE OPERATION																	
COMPOSITE INPUT:	One balanced floating input.																
COMPOSITE INPUT IMPEDANCE:	2000 ohms resistive.																
COMPOSITE INPUT CONNECTOR:	Female BNC.																
COMPOSITE INPUT LEVEL:	1.0 volt RMS nominal for ± 75 kHz deviation.																
EXTERNAL SCA GENERATOR INPUTS:	Up to two unbalanced inputs (optional).																
COMPOSITE FM SIGNAL TO NOISE:	80 dB below 100% modulation (reference 400 Hz @ ± 75 kHz deviation with 75 microsecond de-emphasis, 20 Hz to 200 kHz bandwidth).																
COMPOSITE HARMONIC DISTORTION:	.08%		.15%		.08%												
COMPOSITE INTERMODULATION DISTORTION:	.02%	.1%	.02%		.1%	.02%	.1%	.02%									
COMPOSITE CCIF INTERMODULATION DISTORTION, All distortion products below:	80 dB	77 dB	80 dB		75 dB	80 dB	75 dB	80 dB									
COMPOSITE AMPLITUDE RESPONSE:	± 0.1 dB, 30 Hz-53 kHz.																
ASYNCHRONOUS AM SIGNAL TO NOISE:	65 dB below reference carrier AM modulation 100% output power: (300 watts).																
		ASYNCHRONOUS AM SIGNAL TO NOISE: 50 dB below reference carrier AM modulation 100% output power: 15 watts.															
			ASYNCHRONOUS AM SIGNAL TO NOISE: 55 dB below reference carrier AM modulation 100% output power.														
				ASYNCHRONOUS AM SIGNAL TO NOISE: 50 dB below reference carrier AM modulation 100% output power: 15 watts.													
					ASYNCHRONOUS AM SIGNAL TO NOISE: 50 dB below reference carrier AM modulation 100% output power.												
						ASYNCHRONOUS AM SIGNAL TO NOISE: 52 dB below reference carrier AM modulation 100% output power: 15 watts.											
							ASYNCHRONOUS AM SIGNAL TO NOISE: 55 dB below reference carrier AM modulation 100% output power.										
								ASYNCHRONOUS AM SIGNAL TO NOISE: 50 dB below reference carrier AM modulation 100% output power.									
									ASYNCHRONOUS AM SIGNAL TO NOISE: 73 dB below referenced carrier AM modulation 100% output power: 15 watts.								

ORDERING INFORMATION

FM-300K , 300 Watt All Solid-State Transmitter, mounted in a 24" cabinet, for 50/60 Hz operation. 50 ohm type N female connector, equipped for wide band operation	994-8296-001
FM-300KD , Basic, Two Identical 300 Watt All Solid-State Transmitters, mounted in a single 24" cabinet, for 50/60 Hz operation, 50 ohm type N female output connectors. Equipped for wide band operation with STL	994-8297-001
FM-1K , 1 kW FM transmitter with MX-15 exciter, for wideband operation, 50/60 Hz	994-8046-001
Mono generator (add for mono operation)	994-8019-001
DSM stereo generator with DTR (add for stereo operation)	994-8020-001
SCA generator (add for SCA operation, specify 41 or 67 kHz)	994-7992-001
FM-3.5K , 3500 Watt FM Broadcast Transmitter with MX-15 Exciter for wideband operation, 197 to 250 VAC, Single Phase 50 or 60 Hz (specify)	994-8766-001
Options	
Constant Voltage Filament Regulator Transformer	472-0586-000 for 60 Hz
	472-1244-000 for 50 Hz
Spare 4CX3500A PA Tube	374-0169-000
Mono Generator (Add For Mono Operation)	994-8019-001
Harris DSM Stereo Generator (For Stereo Operation)	994-8020-001
Harris SCA Generator (67 or 92 kHz Operation)	994-7992-002
FM-5K , 5 kW FM transmitter with MX-15 exciter, for wideband operation, 60 Hz	994-8049-003
As above, except for 50 Hz operation	994-8049-006
Mono generator (add for mono operation)	994-8019-001
DSM stereo generator with DTR (add for stereo operation)	994-8020-001
SCA generator (add for SCA operation, specify 67 or 92 kHz)	994-7992-002
FM-10K , 10,000 watt FM transmitter with MX-15 exciter, for wideband operation, 60 Hz	994-8051-005
As above, except for 50 Hz operation	994-8051-006
Mono generator (add for mono operation)	994-8019-001
DSM stereo generator with DTR (add for stereo operation)	994-8020-001
SCA generator (add for SCA operation, specify 67 or 92 kHz)	994-7992-002
FM-20K , 20,000 watt FM broadcast transmitter with MX-15 exciter, for wideband operation, 60 Hz	994-8052-002
Mono generator (add for mono operation)	994-8019-001
DSM stereo generator with DTR (add for stereo operation)	994-8020-001
SCA generator (add for SCA operation, specify 67 or 92 kHz)	994-7992-002
FM-25K , 25,000 watt FM broadcast transmitter with MX-15 exciter, for wideband operation, 50/60 Hz (specify 50 or 60 Hz)	994-8258-001
Spare tube	374-0151-000
Mono generator (add for mono operation)	994-8019-001
DSM stereo generator with DTR (add for stereo operation)	994-8020-001
SCA generator (add for SCA operation, specify 67 or 92 kHz)	994-7992-002
Extended Control Panel for FM-25K	994-8475-001
FM-40K , 40 kilowatt FM transmitter, basic system, for wideband operation, 60 Hz	994-8053-002
Automatic exciter/isolation amplifier switching kit	994-6876-001
RF output switching package	994-6877-001
Monaural generator (add for mono operation)	994-8019-001
DSM stereo generator with DTR (add for stereo operation)	994-8020-001
SCA generator (add for SCA operation, specify 67 or 92 kHz)	994-7992-002
50 kilowatt air-cooled test load	700-0317-000
50 kilowatt water-cooled test load	700-0239-000
FMD-50K , dual 50 kilowatt FM transmitter, with automatic RF output switching, for wideband operation	994-8455-001
FMD-50K , dual 50 kilowatt FM transmitter, basic system, for wideband operation	994-8455-002
Automatic exciter switching option (does not include second exciter)	994-8456-001
MX-15 exciter (does not include generator modules)	994-7950-004
Monaural generator (add for mono operation)	994-8019-001
DSM stereo generator with DTR (add for stereo operation)	994-8020-001
SCA generator (add for SCA operation, specify 67 or 92 kHz)	994-7992-002
RF input patch panel	994-8473-001

**FMXH High Power, High Performance
Circularly Polarized FM Antenna**

- Horizontal circularity is typically ± 2 dB when pole mounted or face mounted on a 24" tower for uniform signal coverage
- Excellent bandwidth minimizes degradation to stereo and SCA channels
- High power handling capability provides flexibility in transmission system design
- Rugged brass construction and silver-plated inner-conductor connectors insure long, trouble-free service
- Standard corrosion-resistant steel support brackets and hardware
- Antenna pattern optimization available to meet exact requirements



Specifications And Ordering Information

"A" MODEL, 3/8" INTERBAY LINE, 3/8" ELEMENT STEM										
Harris Part No.	No. of Bays	Power Gain	DB Gain	Type Feed	Female 50 OHM Input	Power Input Capability	Calculated Weight	Calculated Wind Load	Calculated Weight with Radome and Brackets	Calculated Wind Load with Radome and Brackets
710-0473-000	FMXH-1AE	0.4611	3.3623	End	3/8"	32kW	119	147	190	364
710-0474-000	FMXH-2AE	0.9971	0.0128	End	3/8"	32kW	230	314	381	752
710-0475-000	FMXH-2AC	0.9971	0.0128	Center	3/8"	39kW	255	329	390	759
710-0476-000	FMXH-2AC6	0.9971	0.0128	Center	6/8"	64kW	306	431	441	995
710-0477-000	FMXH-3AE	1.5588	1.9278	End	3/8"	32kW	341	480	573	1,140
710-0478-000	FMXH-4AE	2.1332	3.2903	End	3/8"	32kW	452	647	764	1,528
710-0479-000	FMXH-4AC	2.1332	3.2903	Center	3/8"	39kW	477	662	773	1,535
710-0480-000	FMXH-4AC6	2.1332	3.2903	Center	6/8"	64kW	528	768	824	1,780
710-0481-000	FMXH-5AE	2.7154	4.3384	End	3/8"	32kW	563	814	956	1,915
710-0482-000	FMXH-6AE	3.3028	5.1888	End	3/8"	32kW	574	981	1,147	2,304
710-0483-000	FMXH-6AC	3.3028	5.1888	Center	3/8"	39kW	699	996	1,156	2,310
710-0484-000	FMXH-6AC6	3.3028	5.1888	Center	6/8"	64kW	750	1,106	1,207	2,565
710-0485-000	FMXH-7AE	3.8935	5.9034	End	3/8"	32kW	785	1,148	1,339	2,692
710-0486-000	FMXH-8AE	4.4872	6.5197	End	3/8"	32kW	896	1,315	1,530	3,080
710-0487-000	FMXH-8AC	4.4872	6.5197	Center	3/8"	39kW	921	1,330	1,439	3,086
710-0488-000	FMXH-8AC6	4.4872	6.5197	Center	6/8"	64kW	972	1,443	1,490	3,348
710-0489-000	FMXH-10AC	5.6800	7.5435	Center	3/8"	39kW	1,143	1,663	1,923	3,862
710-0490-000	FMXH-10AC6	5.6800	7.5435	Center	6/8"	64kW	1,194	1,780	1,974	4,134
710-0491-000	FMXH-12AC	6.8781	8.3747	Center	3/8"	39kW	1,365	1,997	2,305	4,638
710-0492-000	FMXH-12AC6	6.8781	8.3747	Center	6/8"	64kW	1,416	2,118	2,356	4,919
"B" MODEL, 4/8" INTERBAY LINE, 4/8" ELEMENT STEM										
710-0493-000	FMXH-1BE	0.4611	3.3623	End	6/8"	40kW	165	214	229	434
710-0494-000	FMXH-2BE	0.9971	0.0128	End	6/8"	56kW	303	420	431	860
710-0495-000	FMXH-2BC	0.9971	0.0128	Center	6/8"	80kW	342	481	470	921
710-0496-000	FMXH-3BE	1.5888	1.9278	End	6/8"	56kW	441	626	633	1,286
710-0497-000	FMXH-4BE	2.1332	3.2903	End	6/8"	56kW	579	831	835	1,712
710-0498-000	FMXH-4BC	2.1332	3.2903	Center	6/8"	112kW	618	892	874	1,775
710-0499-000	FMXH-5BE	2.7154	4.3384	End	6/8"	56kW	717	1,037	1,037	2,138
710-0500-000	FMXH-6BE	3.3028	5.1888	End	6/8"	56kW	855	1,242	1,239	2,564
710-0501-000	FMXH-6BC	3.3028	5.1888	Center	6/8"	112kW	894	1,303	1,278	2,625
710-0502-000	FMXH-7BE	3.8935	5.9034	End	6/8"	56kW	993	1,448	1,441	2,990
710-0503-000	FMXH-8BE	4.4872	6.5197	End	6/8"	56kW	1,131	1,654	1,643	3,416
710-0504-000	FMXH-8BC	4.4872	6.5197	Center	6/8"	112kW	1,170	1,715	1,682	3,475
710-0505-000	FMXH-10BC	5.6800	7.5435	Center	6/8"	112kW	1,446	2,126	2,086	4,325
710-0506-000	FMXH-12BC	6.8781	8.3747	Center	6/8"	112kW	1,722	2,537	2,490	5,175
"C" MODEL, 6/8" INTERBAY LINE, 4/8" ELEMENT STEM										
710-0507-000	FMXH-1CE	0.4611	3.3623	End	6/8"	40kW	211	273	274	493
710-0508-000	FMXH-2CE	0.9971	0.0128	End	6/8"	80kW	416	533	544	973
710-0509-000	FMXH-3CE	1.5888	1.9278	End	6/8"	120kW	621	793	813	1,453
710-0510-000	FMXH-4CE	2.1332	3.2903	End	6/8"	120kW	826	1,053	1,082	1,933
710-0511-000	FMXH-5CE	2.7154	4.3384	End	6/8"	120kW	1,031	1,313	1,351	2,413
710-0512-000	FMXH-6CE	3.3023	5.1888	End	6/8"	120kW	1,236	1,573	1,620	2,893

FOOTNOTES—(Apply to all models) 1 Horizontal and vertical power gain and dB gain are the same 2 Power input capability up to 2,000 ft above mean sea level Derating required above 2,000 ft 3 Windload based on 50.33 PSF 112 m.p.h. actual wind velocity NOTE: Brackets included in weight and windload calculations 4 Heaters add 4 lbs. to each half loop for a single bay Heater box, hardware, interbay connecting A.C. cable, and copper conduit add a total of 7 lbs. to each bay The total effect of adding heaters is 15 lbs. per bay level

FMXH Options

- FMXH Radomes 710-0530-000
- FMXH Electrical Deicers (less control sensor) 710-0532-000
- Mounting Brackets for Special Tower Configurations
- FMXH Pattern Optimization for a 24 inch uniform cross sectional tower
- FMXH Custom Pattern Measurement and Optimization for other structures

Prices and Specifications Subject to Change Without Notice.

FMXL Low Power, High Performance Circularly Polarized FM Antenna

- Horizontal circularity is typically ± 2 dB when pole mounted or face mounted on a 24" tower for uniform signal coverage
- Excellent bandwidth provides excellent performance for stereo and SCA channels
- Power handling capability provides flexibility in transmission system design
- Rugged brass construction and silver-plated inner-conductor connectors insure long, trouble-free service
- Standard corrosion-resistant steel support brackets and hardware
- Antenna pattern optimization available to meet exact requirements



Specifications And Ordering Information

Harris Part No.	No. of Bays	Power Gain	DB Gain	Type Feed	50 OHM Input	Input Rating	Lbs. Weight	Lbs. Wind Load	Calculated Weight with Radome and Brackets	Calculated Wind Load with Radome and Brackets
710-0513-000	FMXL-1E	0.4611	3.3632	END	1 $\frac{5}{8}$ "	9kW	57	102	88	228
710-0514-000	FMXL-2E	0.9971	0.0128	END	1 $\frac{5}{8}$ "	9kW	114	212	171	461
710-0515-000	FMXL-3E	1.5588	1.9278	END	1 $\frac{5}{8}$ "	9kW	170	323	253	693
710-0516-000	FMXL-4E	2.1332	3.2903	END	1 $\frac{5}{8}$ "	9kW	227	433	336	926
710-0517-000	FMXL-5E	2.7154	4.3384	END	1 $\frac{5}{8}$ "	9kW	283	543	418	1,158
710-0518-000	FMXL-6E	3.3028	5.1888	END	1 $\frac{5}{8}$ "	9kW	340	654	501	1,391
CENTER FED										
710-0519-000	FMXL-2C	0.9971	0.0128	CENTER	3 $\frac{1}{8}$ "	12kW	152	302	204	538
710-0520-000	FMXL-3C	1.9278	1.5588	OFF CENTER	3 $\frac{1}{8}$ "	12kW	207	412	287	770
710-0521-000	FMXL-4C	2.1332	3.2903	CENTER	3 $\frac{1}{8}$ "	12kW	260	509	371	1,002
710-0522-000	FMXL-5C	2.7154	4.3384	OFF CENTER	3 $\frac{1}{8}$ "	12kW	317	620	452	1,235
710-0523-000	FMXL-6C	3.3028	5.1888	CENTER	3 $\frac{1}{8}$ "	12kW	373	730	534	1,467
710-0524-000	FMXL-7C	3.8935	5.9034	OFF CENTER	3 $\frac{1}{8}$ "	12kW	430	840	617	1,700
710-0525-000	FMXL-8C	4.4872	6.5197	CENTER	3 $\frac{1}{8}$ "	12kW	486	950	699	1,932
710-0526-000	FMXL-9C	5.0826	7.0608	OFF CENTER	3 $\frac{1}{8}$ "	12kW	543	1,060	782	2,164
710-0527-000	FMXL-10C	5.6800	7.5435	CENTER	3 $\frac{1}{8}$ "	12kW	599	1,171	864	2,397
710-0528-000	FMXL-11C	6.2783	7.9785	OFF CENTER	3 $\frac{1}{8}$ "	12kW	656	1,281	947	2,630
710-0529-000	FMXL-12C	6.8781	8.3847	CENTER	3 $\frac{1}{8}$ "	12kW	713	1,391	1,029	2,862

FOOTNOTES. 1. Horizontal and vertical power gain and dB gain are the same. 2. Power input capability up to 2,000 ft. above mean sea level. Derating required above 2,000 ft. 3. Wind load based on 112 mph wind velocity (50.33 psf) and the wind blowing normal to the side of the antenna. Weight and wind load calculations include brackets, interbay line and the transformer section. Calculations based on the frequency of 95 MHz. 4. Heaters add 4 lbs. to each half loop for a single bay. Heater box, hardware, interbay connecting A.C. cable, and copper conduit add a total of 7 lbs. to each bay. The total effect of adding heaters is 15 lbs. per bay level.

FMXL Options

The following options are available for the FMXL antenna in order to meet special requirements. Your Harris representative can provide you with additional information.

- FMXL Radomes 710-0531-000
- FMXL Electrical Deicers (less control sensor) 710-0533-000
- Mounting Brackets for Special Tower Configurations
- FMXL Pattern Optimization for a 24 inch uniform cross sectional tower
- FMXL Custom Pattern Measurement and Optimization for other structures

FMH Super-Power Circularly Polarized FM Antenna

- High input power rating permits flexibility in transmitting system design
- Capable of multi-station operation
- Excellent bandwidth characteristics minimize VSWR and related signal degradation
- Internal element feed point minimizes weather related VSWR problems
- Rugged brass element construction, along with stainless steel support brackets and hardware, impedes corrosion

ANTENNA MODELS. The Harris FMH super-power FM antenna is available in three versions. The "A" version uses a 3-1/8" element feed stem, and 3-1/8" rigid interbay line. It is available in 3-1/8" end fed, 3-1/8" center fed and 6-1/8" center fed models, in arrays of up to 16 bays.

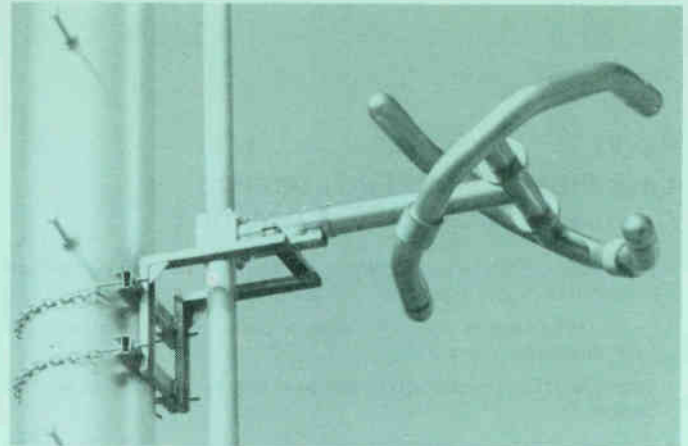
The FMH "B" version uses a 4-1/8" element feed stem, and a 4-1/8" rigid interbay line. It is available in either 6-1/8" end fed or 6-1/8" center fed models in arrays of up to 12 bays.

The FMH "C" version uses a 4-1/8" element feed stem, and a 6-1/8" rigid interbay line, with 6-1/8" end feed. It is available in arrays of up to 6 bays.

Each antenna is supplied with a 6-foot input transformer. The input is 50 ohm EIA with either a 3-1/8" flange or a 6-1/8" flange, depending on the model type. All antennas are completely assembled and tuned to the customer's frequency at the factory. Also, pressure testing is done at that time to assure the customer of a leak-free antenna, provided the antenna is properly installed by a qualified erector and is free of damage.

MOUNTING. Stainless steel mounting brackets and hardware are supplied for standard constant cross section towers having less than 4 ft. face or steel poles at no additional cost. Brackets for mounting on tapered towers are available at additional cost.

DIMENSIONS. Each FMH element is approximately 47-1/2 inches long, and 30 inches high. Weight is approximately 57 pounds per element with line block.



FMH OPTIONS. The following options are available for the FMH antenna in order to meet special requirements. Your Harris representative can provide you with additional option information for your consideration.

- DC shorting stub for lightning protection.
- FMH radomes or electrical deicers.
- Mounting brackets for special tower configurations.
- FMH custom pattern measurements and optimization.

"B" Model, 4-1/8" Interbay Line, 4-1/8" Element Stem

TYPE NO.	POWER GAIN ¹		FEMALE 50 OHM INPUT	POWER ² INPUT CAPABILITY	CALCULATED WT. [LBS]	CALCU- ³ LATED WIND-LOAD [LBS]
	POWER	dB				
FMH-1BE	0.4611	-3.3623	6 1/8"	40kW	159	201
FMH-2BE	0.9971	-0.0128	6 1/8"	56kW	297	407
FMH-2BC	0.9971	-0.0128	6 1/8"	80kW	336	468
FMH-3BE	1.5888	1.9278	6 1/8"	56kW	435	613
FMH-4BE	2.1332	3.2903	6 1/8"	56kW	573	818
FMH-4BC	2.1332	3.2903	6 1/8"	112kW	612	879
FMH-5BE	2.7154	4.3384	6 1/8"	56kW	711	1024
FMH-6BE	3.3028	5.1888	6 1/8"	56kW	849	1229
FMH-6BC	3.3028	5.1888	6 1/8"	112kW	888	1290
FMH-7BE	3.8935	5.9034	6 1/8"	56kW	987	1435
FMH-8BE	4.4872	6.5197	6 1/8"	56kW	1125	1641
FMH-8BC	4.4872	6.5197	6 1/8"	112kW	1164	1702
FMH-10BC	5.6800	7.5435	6 1/8"	112kW	1440	2113
FMH-12BC	6.8781	8.3747	6 1/8"	112kW	1716	2524

"A" Model, 3 1/8" Interbay Line, 3 1/8" Element Stem

TYPE NO.	POWER GAIN ¹		FEMALE 50 OHM INPUT	POWER ² INPUT CAPABILITY	CALCULATED WT. [LBS]	CALCU- ³ LATED WIND-LOAD [LBS]
	POWER	dB				
FMH-1AE	0.4611	-3.3623	3 1/8"	32kW	114	137
FMH-2AE	0.9971	-0.0128	3 1/8"	32kW	225	304
FMH-2AC	0.9971	-0.0128	3 1/8"	39kW	250	319
FMH-2AC6	0.9971	-0.0128	6 1/8"	64kW	301	421
FMH-3AE	1.5588	1.9278	3 1/8"	32kW	336	470
FMH-4AE	2.1332	3.2903	3 1/8"	32kW	447	637
FMH-4AC	2.1332	3.2903	3 1/8"	39kW	472	652
FMH-4AC6	2.1332	3.2903	6 1/8"	64kW	523	758
FMH-5AE	2.7154	4.3384	3 1/8"	32kW	558	804
FMH-6AE	3.3028	5.1888	3 1/8"	32kW	669	971
FMH-6AC	3.3028	5.1888	3 1/8"	39kW	694	986
FMH-6AC6	3.3028	5.1888	6 1/8"	64kW	745	1096
FMH-7AE	3.8935	5.9034	3 1/8"	32kW	780	1138
FMH-8AE	4.4872	6.5197	3 1/8"	32kW	891	1305
FMH-8AC	4.4872	6.5197	3 1/8"	39kW	916	1320
FMH-8AC6	4.4872	6.5197	6 1/8"	64kW	967	1433
FMH-10AC	5.6800	7.5435	3 1/8"	39kW	1138	1653
FMH-10AC6	5.6800	7.5435	6 1/8"	64kW	1189	1770
FMH-12AC	6.8781	8.3747	3 1/8"	39kW	1360	1987
FMH-12AC6	6.8781	8.3747	6 1/8"	64kW	1411	2108

"C" Model, 6-1/8" Interbay Line, 4-1/8" Element Stem

TYPE NO.	POWER GAIN ¹		FEMALE 50 OHM INPUT	POWER ² INPUT CAPABILITY	CALCULATED WT. [LBS]	CALCU- ³ LATED WIND-LOAD [LBS]
	POWER	dB				
FMH-1CE	0.4611	-3.3623	6 1/8"	40kW	205	260
FMH-2CE	0.9971	-0.0128	6 1/8"	80kW	410	520
FMH-3CE	1.5888	1.9278	6 1/8"	120kW	615	780
FMH-4CE	2.1332	3.2903	6 1/8"	120kW	820	1040
FMH-5CE	2.7154	4.3384	6 1/8"	120kW	1025	1300
FMH-6CE	3.3028	5.1888	6 1/8"	120kW	1230	1560

FOOTNOTES-(Apply to all models)

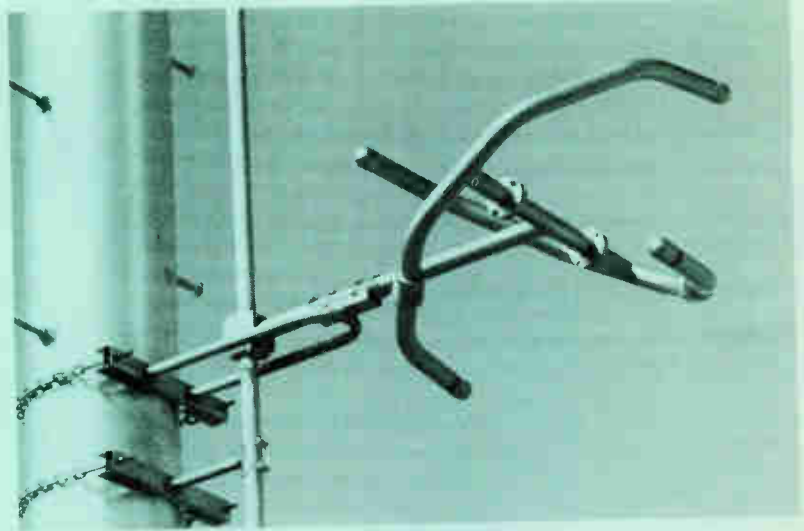
1. Horizontal and vertical power gain and dB gain are the same. 2. Power input capability up to 2,000 ft. above mean sea level. Derating required above 2,000 ft. 3. Windload based on 50/33 PSF. 112 m.p.h. actual wind velocity. NOTE: Brackets included in weight and windload calculations.

FML LOW POWER CIRCULARLY POLARIZED FM ANTENNA

- High input power rating permits flexibility in transmitting system design
- Rugged brass element construction with stainless steel support brackets impedes corrosion to insure long, trouble-free life
- Excellent bandwidth minimizes VSWR and related signal degradation
- Custom pattern optimization service available to meet special requirements

The Harris low power FML circularly polarized FM antenna features excellent bandwidth characteristics and the same rugged construction as Harris' higher-power FM antennas to insure top service and long life.

ANTENNA MODELS. Two versions of the FML are available. The "E" version is an end fed model mounted on 1-5/8", 50 ohm rigid line. The "C" version is center fed, and uses 3-1/8", 50 ohm rigid line.



FML LOW POWER CIRCULARLY POLARIZED FM ANTENNAS

TYPE NO.	POWER GAIN ¹		TYPE FEED	FEMALE 50 OHM INPUT	POWER ² INPUT CAPABILITY	CALCULATED WEIGHT [LBS.]	CALCU- ³ LATED WIND LOAD [LBS.]
	POWER	dB					
FML-1E	0.4611	-3.3623	END	1-5/8"	9 kW	57	102
FML-2E	0.9971	-0.0128	END	1-5/8"	9 kW	114	212
FML-3E	1.5588	1.9278	END	1-5/8"	9 kW	170	323
FML-4E	2.1322	3.2903	END	1-5/8"	9 kW	227	433
FML-4C	2.1322	3.2903	CENTER	3-1/8"	12 kW	260	509
FML-5E	2.7154	4.3384	END	1-5/8"	9 kW	283	543
FML-5C	2.7154	4.3384	OFF CENTER	3-1/8"	12 kW	317	620
FML-6E	3.3028	5.1888	END	1-5/8"	9 kW	340	654
FML-6C	3.3028	5.1888	CENTER	3-1/8"	12 kW	373	730
FML-7E	3.8935	5.9034	END	1-5/8"	9 kW	396	764
FML-7C	3.8935	5.9034	OFF CENTER	3-1/8"	12 kW	430	840
FML-8E	4.4872	6.5197	END	1-5/8"	9 kW	453	874
FML-8C	4.4872	6.5197	CENTER	3-1/8"	12 kW	486	950
FML-9C	5.0826	7.0608	OFF CENTER	3-1/8"	12 kW	543	1060
FML-10C	5.6800	7.5435	CENTER	3-1/8"	12 kW	599	1171
FML-11C	6.2783	7.9785	OFF CENTER	3-1/8"	12 kW	656	1281
FML-12C	6.8781	8.3747	CENTER	3-1/8"	12 kW	712	1391
FML-13C	7.4785	8.7381	OFF CENTER	3-1/8"	12 kW	769	1501
FML-14C	8.0800	9.0741	CENTER	3-1/8"	12 kW	825	1612

FOOTNOTES. 1. Horizontal and vertical power gain and dB gain are the same. 2. Power input capability up to 2,000 ft. above mean sea level. Derating required above 2,000 ft. 3. Wind load based on 112 mph wind velocity (50/30 psf) and the wind blowing normal to the side of the antenna. Weight and wind load calculations include brackets, interbay line and the transformer section. Calculations based on the frequency of 95 MHz.

FML OPTIONS. The following options are available for the FML antenna in order to meet special requirements. Your Harris representative can provide you with additional information for your consideration.

- DC shorting stub for lightning protection.
- FML radomes or electrical deicers.
- Mounting brackets for special tower configurations.
- FML custom pattern measurements and optimization.

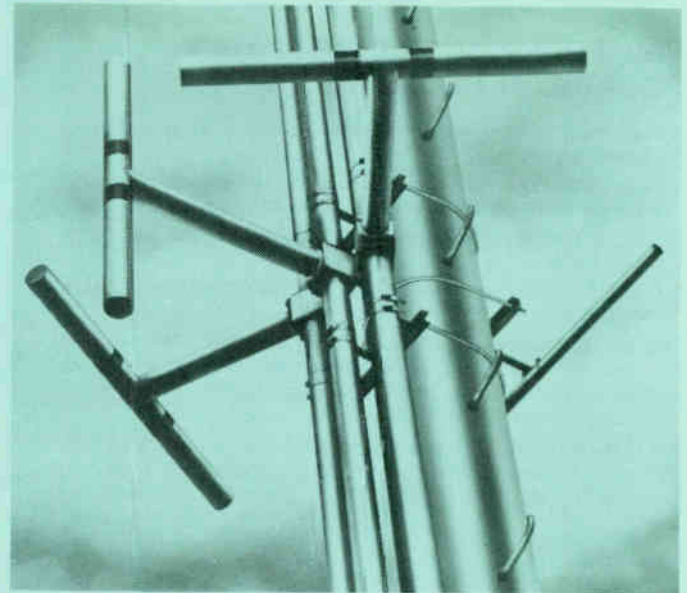
DIRECTIONAL DUAL POLARIZED FM ANTENNA

- Pattern factory tested for proven results
- Deicers not needed in most environments, eliminating associated maintenance and operating costs
- Excellent bandwidth characteristics minimize VSWR problems
- Rugged brass element construction, with stainless steel support brackets, impedes corrosion

Harris' FMD-(X) is a directional dual polarized FM antenna designed for pole mounting. It is available with up to eight bays and with either 1- 5/8 inch or 3- 1/8 inch EIA 50 ohm female input. The "X" in the type number indicates the number of bays. The suffix "A" following the complete type number signifies 1- 5/8" input and the suffix "B" indicates 3- 1/8" input. (Example—FMD-4A is a 4-bay antenna with 1- 5/8" input).

UP TO 40 KW INPUT POWER. The maximum power input capability for the "A" series is 12 kilowatts. The maximum power input capability for the "B" series is 20 kilowatts for a single bay, and 40 kilowatts for two (2) through eight (8) bays.

The interbay lines use 3- 1/8 inch rigid, with three such lines used between bays, two for the horizontal element feeds and one for the vertical element feeds. A combiner, for combining the three transmission line feeds, is used below the bottom bay. A six foot transformer section is used immediately below this combiner.



ORDERING INFORMATION. Orders for the Harris Dual Polarized Directional FM Antenna should specify the desired true azimuth orientation, maximum ERP permitted, radiated power limitations and their true orientation, transmission line efficiency (or specify the type of transmission line and its length), and the transmitter power output capability. Such antenna pattern requirements are normally specified by the stations's consultant. Ideally, a copy of the FCC construction permit should be supplied so that the manufacturer can assure full compliance with the requirements of such authorization relative to the antenna.

Electrical And Mechanical Data

HARRIS TYPE NO.	INPUT POWER RATING KW	FEMALE INPUT FLANGE	POLE LENGTH FT	WEIGHT POLE AND ANTENNA LBS	TOTAL WIND LOAD [BASED ON 50/33 PSF] LBS	OVER-TURNING MOMENT FT LBS	HEIGHT ELEC-TRICAL CENTER ABOVE TOWER TOP FT	BOLT CIRCLE DIAMETER INCHES
FMD-1A	12	1 5/8 "	20	606	796	9595	16	9
FMD-1B	20	3 1/8 "	20	626	832	10000	16	9
FMD-2A	12	1 5/8 "	30	2240	1821	30024	21	17
FMD-2B	40	3 1/8 "	30	2260	1856	30593	21	17
FMD-3A	12	1 5/8 "	40	2994	2557	54917	26	17
FMD-3B	40	3 1/8 "	40	3014	2593	55682	26	17
FMD-4A	12	1 5/8 "	50	4245	3490	89308	31	17
FMD-4B	40	3 1/8 "	50	4265	3526	90254	31	17
FMD-5A	12	1 5/8 "	62	5901	4680	153210	38	17
FMD-5B	40	3 1/8 "	62	5921	4716	154407	38	17
FMD-6A	12	1 5/8 "	72	7956	5523	208204	43	17
FMD-6B	40	3 1/8 "	72	7976	5559	209581	43	17
FMD-7A	12	1 5/8 "	82	9250	6350	271315	48	17
FMD-7B	40	3 1/8 "	82	9270	6386	272872	48	17
FMD-8A	12	1 5/8 "	92	11305	7192	343159	53	17
FMD-8B	40	3 1/8 "	92	11325	7227	344847	53	17

CBR

Cavity Backed Radiator Circularly Polarized FM Antenna

- The ideal antenna for multistation FM operations
- Wide bandwidth provides low VSWR across the FM band
- Superb horizontal circularity and excellent vertical pattern control insure uniform coverage
- High power handling capabilities provide wide latitude in transmission system design
- Wire-grid cavity design minimizes windloading and the associated cost impact on the support structure
- Available in one, two, three or four around configuration to meet the required coverage contour
- Fully assembled and tested at Harris' full capability antenna test range to insure top performance

The Harris Cavity Backed Radiator (CBR) antenna offers ideal characteristics to FM stations desiring the advantages of combined station operation or to stations requiring special directional coverage. Extensive field experience has proven the CBR to be the best approach to circularly polarized FM transmission.

The Harris Cavity Backed Radiator consists of a crossed dipole radiator fed in phase quadrature and mounted within a circular cavity. Rotating RF energy is produced when the cavity is excited by the dipole elements. The signal emanating from the cavity is right-hand circular. The field rotates clockwise as viewed in the direction of propagation. Cavity size is principally determined by beamwidth requirements. A beamwidth of 90 degrees is required for a 4-around array and 120 degrees is required for a 3-around array, (measured at the half-voltage coordinates).

GRID CAVITY

The cavity used in the Harris circularly polarized FM antenna is a welded steel galvanized grid. The cavity grid is supported from a center mounting plate, which also serves as a mounting for the dipole assembly and for attachment of the unit to the supporting structure.

The use of grid cavities and aerodynamic design significantly reduce weight and windload requirements on the supporting structure. This often represents substantial savings in support structure cost compared with other panel style antenna designs.

MULTISTATION OPERATION

Multistation FM operation where two or more stations share the same antenna has increased in popularity due to the inherent cost savings which can be realized. Multistation operation can be achieved only with the wide bandwidth characteristics the Harris CBR antenna offers.

These characteristics are achieved through the use of a broadband radiating element in conjunction with high power hybrid junctions. A VSWR plot of a Harris CBR antenna is shown on the facing page.

Harris also offers the associated combining equipment necessary for multistation operation. Harris' experience with multiplexer installations insures proper combiner operation to optimize the operation of stereo and SCA services.



AZIMUTH CIRCULARITY

For omnidirectional operation, the shape of the standard azimuth pattern will vary from omni by less than ± 2.0 dB for three-sided tower configurations. With a four-around antenna array, the typical circularity will be comparable.

Stations employing directional arrays will find one of the several patterns available to be ideally suited to their specific needs.

ELEVATION PATTERN

The unique design of the CBR antenna offers precision control of the elevation pattern which is critical in auto receiver reception. Vertical pattern contouring to introduce beam tilt and null fill may be provided by means of standard phase and power distribution techniques.

HIGH POWER CAPABILITIES

The Harris CBR antenna is designed for high power operation enabling station flexibility in transmission system design. Harris' conservative power rating insures adequate design headroom for long term reliability.

The Harris CBR antenna can be configured with one or two input ports. This feature allows the top and bottom six bays of a typical twelve bay antenna to be fed by two independent transmission lines. Should standby operation be necessary, one half of the system may be used at reduced power.

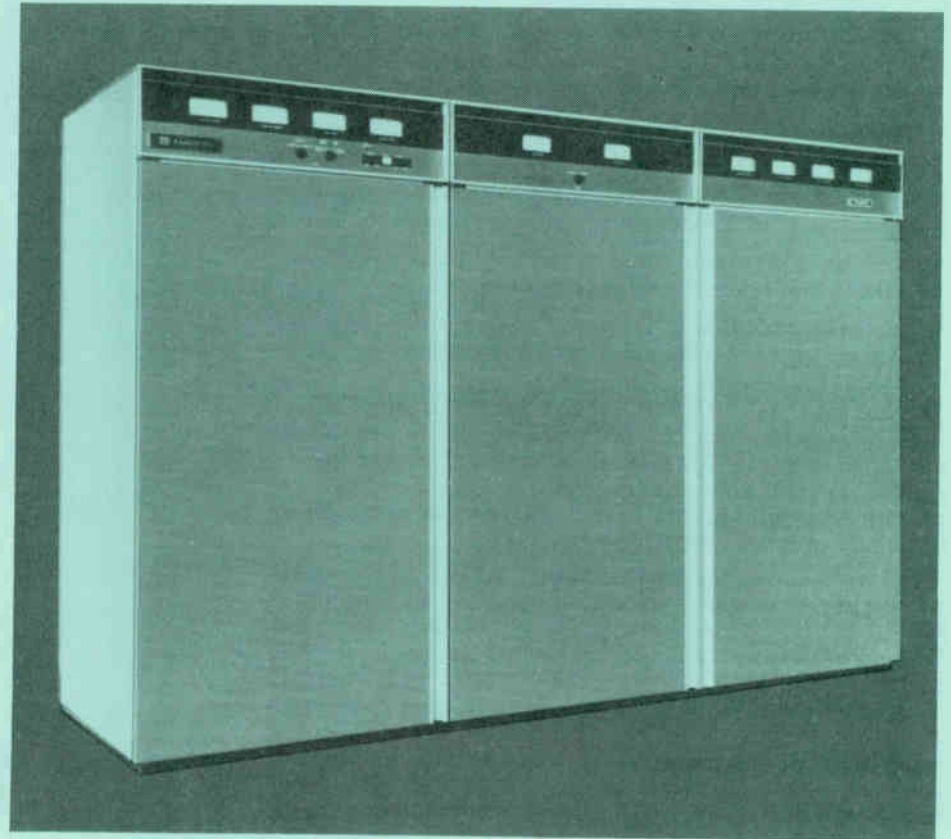
TV-20L 22.5 Kilowatt TV-30L 30 Kilowatt VHF Low Band Color Television Transmitter

- Straightforward design for high reliability and stability
- Advanced SAW filter, built-in receiver equalizer eliminates separate correction modules
- Unique Quadrature Corrector cancels tube distortions
- Ultra-linear driver with solid-state IPAs for maximum reliability and signal transparency
- Highly linear IF Modulation of the visual and aural carriers for superior color and sound reproduction
- Automatic power control insures essentially constant power output
- Emergency multiplex option

Harris' TV-20L, 22.5 kilowatt and TV-30L, 30 kilowatt low band VHF television transmitters are the most cost-effective TV transmitters available in their power range. Their straightforward design requires less complicated circuitry to meet the high performance standards demanded by today's discriminating broadcaster. And less complicated circuitry means greater reliability, the type of year-in, year-out dependability broadcasters need for impressive bottom line results.

The ultra-linear driver employs a broadband Class A solid-state IPA and a single conservatively-operated tetrode to drive the final visual amplifier. This linear design insures the maximum signal transparency required for premium quality broadcasting.

The solid-state visual and aural IPAs not only enhance reliability, but also reduce tuning requirements, as they contain broadband amplifiers so that periodic bandpass adjustment is not required. They are fully protected against damage caused by overloads or load variations. For added transmitter protection, RF drive is applied over a one to two second interval, which permits DC voltage stabilization before full RF drive application to power amplifiers. The IPAs are fully metered for monitoring and maintenance, while excellent cooling helps maintain long transistor life.



In the visual exciter, Harris employs its advanced VIDEO* SAW vestigial sideband filter (CCIR M only) and a unique Quadrature Corrector to insure the highest level of picture quality.

These compact transmitters require only three tubes, visual PA, visual driver and aural PA, to provide a 22.5 kilowatt visual and a 4.5 kilowatt aural output and 30 kilowatt visual and a 6 kilowatt aural output. Under normal operating conditions the quick heat tubes permit transmitter turn-on within 120 seconds; faster turn-on times are possible in an emergency. A circulator between the visual stages minimizes retuning requirements after a tube change.

In addition to the ultra-linear driver, solid-state IPAs and VIDEO SAW filter, Harris'

TV-20L and TV-30L incorporate such features as IF Modulation, true linear operation of power amplifiers, and a solid-state visual exciter/modulator to provide the finest color performance available today.

As no envelope delay correction or adjustments are required for the sideband filter and receiver equalizer, stability, reliability and color quality are greatly enhanced. Frequency adjustment, power output control and amplifier tuning are straightforward and uncomplicated, while conservatively-rated components assure long-term "hands-off" operation and minimum maintenance.

The transmitter employs a single-ended visual PA (9007 tetrode) and DC filaments in every visual stage for an excellent signal-to-noise ratio.



HARRIS

P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

DUAL VHF LOW BAND COLOR TELEVISION TRANSMITTERS

TVD-40L 45 Kilowatt TVD-60L 60 Kilowatt Dual VHF Low Band Color Television Transmitters

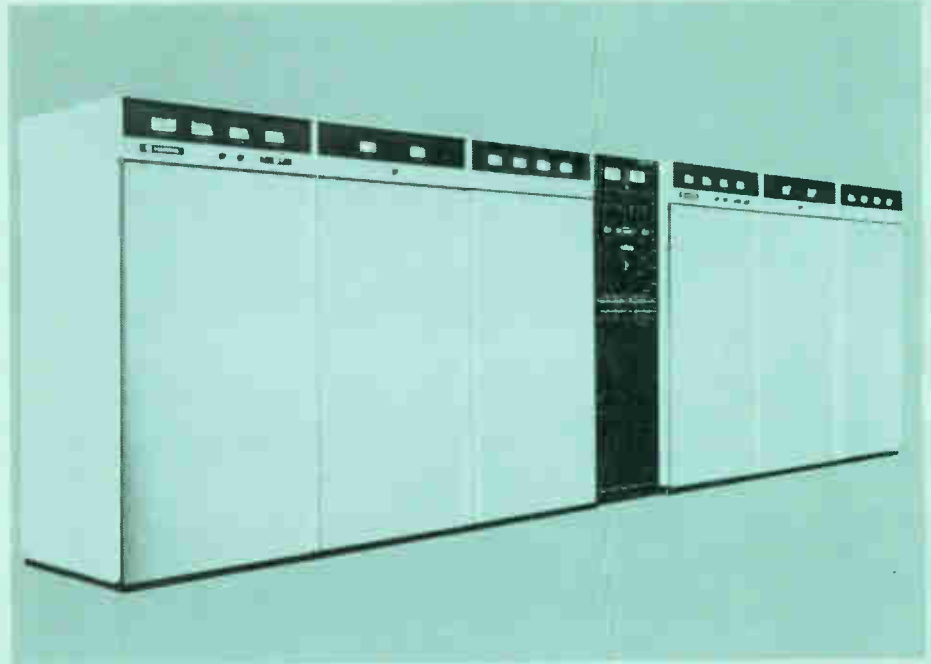
- Ultra-linear drivers with solid-state IPAs for maximum reliability and signal transparency
- Two independent, complete transmitters for total redundancy and on-the-air reliability
- "Hot" standby exciters, modulators and sideband filter for maximum redundancy
- Harris Dualtran output switching system allows parallel, single transmitter or alternate/main operation
- Advanced Transversal SideBand (TSB) filters, no group delay, no tuning adjustments required
- IF Modulation of the visual and aural carriers
- Superior color performance, with minimal correction circuitry
- Ideal for circularly polarized applications
- Easily interfaced with ATS and remote control systems

The Harris TVD-40L, 45 kilowatt and the TVD-60L, 60 kilowatt dual low band VHF TV transmitters are designed for television broadcasters who want the utmost in reliability and performance, with the flexibility for remote control or automatic operation. Ideal for circularly polarized applications, this powerful dual transmitter incorporates such state-of-the-art features as ultra-linear drivers with solid-state IPAs and Harris Transversal SideBand (TSB) filters.

The TVD-40L consists of two completely independent 22.5 kilowatt transmitters operating in parallel, and the TVD-60L consists of two completely independent 30 kilowatt transmitters operating in parallel, both combined through the Harris Dualtran RF switching system.

Each of the two ultra-linear drivers employs a broadband Class A solid-state IPA and a single conservatively-operated tetrode to drive the final visual amplifier. This means maximum linearity and signal transparency without the need for complicated correction circuitry...for unmatched reliability and maintainability.

Surface acoustic wave technology is applied to vestigial sideband filtering in the visual exciters. The Harris Transversal SideBand filter displays a near-ideal bandpass function for Systems M (FCC) and B bandwidths. This, combined with the filter's true linear phase characteristic, offers excellent reproduction of pulse waveforms and encoded information.



With the TVD-40L and TVD-60L you get two visual exciter/modulators, two aural exciter/modulators, two TSB filters, two solid-state visual and aural IPAs, two visual and aural PAs, and two HV power supplies, in short, total redundancy. Complete reliability.

The Dualtran switching system is factory assembled in one cabinet, and can be supplied to interface with either a hybrid or a notch diplexer.

IF (intermediate frequency) Modulation, low-level sideband filtering, true linear operation of power amplifiers and solid-state visual and aural exciter/modulators combine to provide outstanding color and sound fidelity. As no envelope delay correction or adjustments are required for the solid-state Transversal SideBand filter(s), stability, reliability and color quality are greatly enhanced.

Frequency adjustment, power output control and amplifier tuning are straightforward and uncomplicated, while conservatively rated components assure long-term "hands-off" operation.

In the event of a malfunction of one-half of the parallel combination, the Harris TVD-40L and TVD-60L offer automatic and instantaneous reduction to one-fourth authorized power. This function will occur without interruption of the carrier. With the touch of a button, half-power operation is achieved in less than two seconds.

Visual and aural exciters are connected in a hot standby condition, and will automatically switch in less than 10 milliseconds in case of failure in either unit. In all modes, aural follows visual for simplified logic control and reliable operation.

Four modes of operation may be obtained electrically by means of control pushbuttons on the output switcher; by control buttons on the transmitter control panel; or by remote control.

These are:

- Transmitters A and B combined On-Air.
- Transmitter A On-Air and transmitter B into the station loads.
- Transmitter B On-Air and transmitter A into the station loads.
- Transmitters A and B combined to the station loads (test mode).

The switching operation from one mode to any other mode requires less than two seconds.

When using a notch diplexer, three other operating modes may be selected manually by changing links on the Dualtran output switching cabinet: transmitters A and B combined and diplexed to the station load; transmitter A diplexed into the station load; and transmitter B diplexed into the station load.

DUAL VHF LOW BAND COLOR TELEVISION TRANSMITTERS



HARRIS

P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

SPECIFICATIONS

TVD-40L

TVD-60L

VISUAL PERFORMANCE

POWER OUTPUT:
LOAD IMPEDANCE:
FREQUENCY RANGE:
CARRIER FREQUENCY STABILITY:¹

System M/NTSC

45 kW peak.
50 ohms. Output connectors: 3/8" EIA standard.
54-88 MHz (Channels 2-6).
±250 Hz (maximum variation over 30 days).
±2 Hz with optional precise frequency control.

60 kW peak.

REG. OF RF OUTPUT POWER (All black to all white pic.):
VARIATION OF OUTPUT (over one frame):
VISUAL SIDEBAND RESPONSE:²

3% or less relative to sync peak.
Less than 2%.
- 3.58 MHz -42 dB or better
- 1.25 MHz and lower -26 dB or better
- 0.75 MHz to +4.10 MHz ±0.5 dB
+ 4.18 MHz +0.5, -1 dB
+ 4.75 MHz and higher -30 dB or better
±0.75 dB.

FREQUENCY RESPONSE VS. BRIGHTNESS:³

VISUAL MODULATION CAPABILITY:

DIFFERENTIAL GAIN:⁴

INCIDENTAL PHASE MODULATION:

LINEARITY (LOW FREQUENCY):⁵

DIFFERENTIAL PHASE:⁴

SIGNAL-TO-NOISE:

Hum and low frequency:⁶
Periodic noise 10 kHz to 5.2 MHz:⁶
Total random and periodic noise unweighted:

0%.
3% or better.
±3° or better relative to blanking.
1.0 dB or better.
±1° or better.
-55 dB or better peak to peak.
-40 dB peak to peak.

K-FACTORS:

EQUIVALENT ENVELOPE DELAY:

-55 dB RMS or better relative to sync peak.
2T 2%, 20T less than 5% baseline disturbance.
0.2 to 2.1 MHz ±40 ns
at 3.58 MHz ±25 ns
at 4.18 MHz ±60 ns

VIDEO INPUT LEVEL:

HARMONIC RADIATION:

(referenced to FCC standard curve)
75 ohm, -30 dB or better return loss up to 5.5 MHz
-80 dB relative to peak of sync.

AURAL PERFORMANCE

POWER OUTPUT:⁷

LOAD IMPEDANCE:

AUDIO INPUT LEVEL:

FREQUENCY DEVIATION:

INPUT IMPEDANCE:

PRE-EMPHASIS:

FREQUENCY RESPONSE:

DISTORTION:⁸

FM NOISE:⁹

INTERCARRIER PHASE MODULATION (noise):⁸

AM NOISE:

SYNCHRONOUS AM NOISE:⁹

FREQUENCY STABILITY:¹⁰

9 kW.
50 ohms. Output connector: 1/8" EIA standard, unflanged.
±10 dBm, ±2 dB.
±25 kHz.
600 ohms, balanced.
75 microseconds.
±0.5 dB rel. to pre-emphasis curve, (30-15,000 Hz).
0.5% THD or less with ±25 kHz deviation from 30-15,000 Hz.
-60 dB RMS or better rel. to ±25 kHz dev.
-46 dB RMS or better rel. to ±25 kHz dev.
-55 dB RMS rel. to 100% amplitude modulation of aural carrier.
-40 dB RMS or better.
±20 Hz (maximum variation over 30 days).

12 kW.

SERVICE CONDITIONS

AMBIENT TEMPERATURE:¹¹

AMBIENT HUMIDITY RANGE:

ALTITUDE:

PHYSICAL AND MECHANICAL DIMENSIONS:

-10° to +50° C (14° to 122° F).
0 to 95% relative humidity.
Sea level to 10,000 feet.
Transmitters (2): each 98.3" W x 32" D x 72" H. Weight each: 2,200 lbs. Switcher cabinet (without side panels): 22 1/8" W x 24 5/8" D (with front and rear doors) x 72" H. Weight: 300 lbs. RF Output Switcher: 48" W x 34" D x 72" H. Weight: 1,350 lbs. Power Supplies (2): each 57" W x 34" D x 54.25" H. Weight each: 1,500 lbs.

7500 feet.

ELECTRICAL REQUIREMENTS:

Power input: 208/240 volts, ±11 volts, 3 phase, 50/60 Hz. Power consumption: 112 kW, black picture; 96 kW, average picture.

Power input: 208/240 volts, ±11 volts, 3 phase, 50/60 Hz. Power consumption: 132 kW, black picture; 108 kW, average picture.

¹ After initial aging of 60 days.

² Response specified for transmitter operating into a resistive load of 1.05 VSWR or better.

³ Measured using 20% p.p. amplitude swept video modulation with pedestal set at black 10%, white 90% with reference to grey level 50%. All percentages relative to blanking to white excursion.

⁴ Measured with 5-step riser signal from 75% to 12.5% of sync peak. Sub-carrier mod. percentage 12.5% peak to peak.

⁵ Measured with a 5-step riser signal. Test signal No. 3 CCIR REC 421-3.

⁶ Noise measured with respect to a blanking to white transition.

⁷ Capable of additional 0.5 dB power output above rated output to compensate for diplexer loss.

⁸ After de-emphasis.

⁹ Rel. to 100% amplitude modulation at rated deviation.

¹⁰ Relative to frequency offset of 4.5 MHz (System M), from the visual carrier, after initial aging of 60 days.

¹¹ Derate 2° C per 1000 feet (305 meters) altitude above sea level.

Ordering Information

TVD-40L, 45 kW dual VHF-TV transmitter for System M standards service, Channels 2-6, with operating tubes, semiconductors, crystals, VSB filter, harmonic and color notch filters, output combiner, input and output switchers 994-8609-001

TVD-60L, 60 kW dual VHF-TV transmitter for System M standards service, Channels 2-6, with operating tubes, semiconductors, crystals, VSB filter, harmonic and color notch filters, output combiner, input and output switchers 994-8616-001



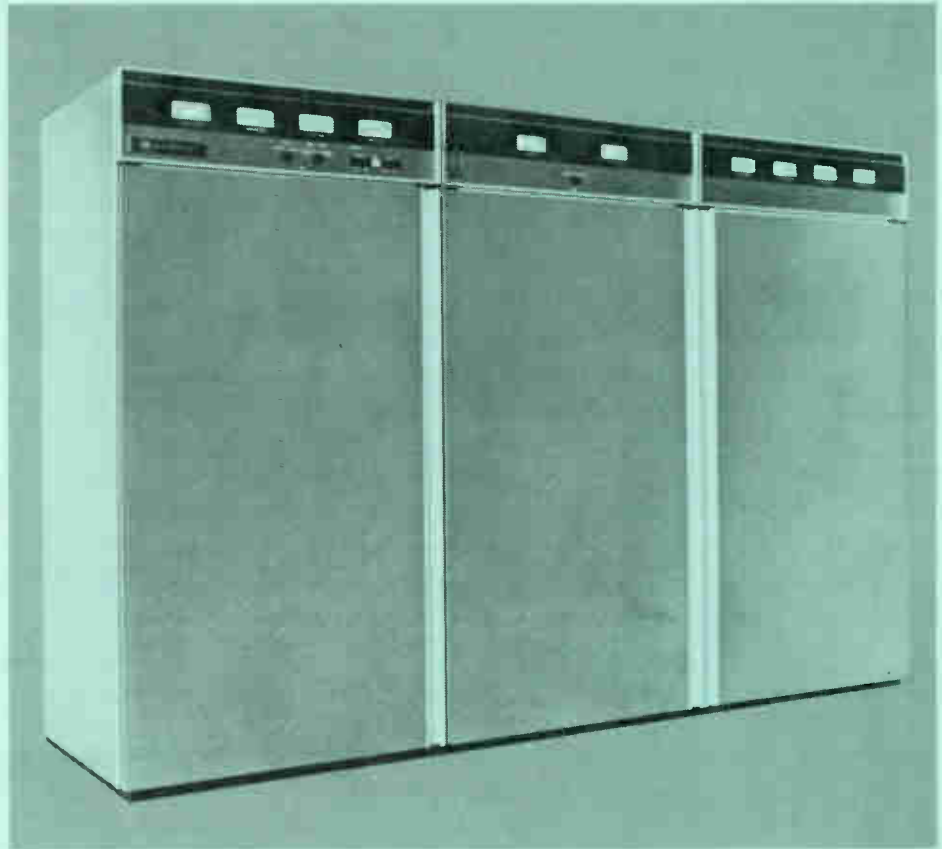
HARRIS

P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

VHF HIGH BAND COLOR TELEVISION TRANSMITTERS

TV-35H 35 Kilowatt TV-50H 50 Kilowatt VHF High Band Color Television Transmitter

- Straightforward design for high reliability and stability
- Advanced new SAW filter, built-in receiver equalizer eliminates separate correction modules
- New Quadrature Corrector cancels tube distortions
- Ultra-linear driver with solid-state IPAs for maximum reliability and signal transparency
- Highly linear IF Modulation of the visual and aural carriers for superior color and sound reproduction
- Automatic power control insures essentially constant power output
- Emergency multiplex option



Harris' TV-35H, 35 kilowatt and the TV-50H, 50 kilowatt high band VHF television transmitters, are the most cost-effective TV transmitters available in their power range. Their straightforward design requires less complicated circuitry to meet the high performance standards demanded by today's discriminating broadcaster. And less complicated circuitry means greater reliability...the type of year-in, year-out dependability broadcasters need for impressive bottom line results.

The ultra-linear driver employs a broadband Class A solid-state IPA and a single conservatively-operated tetrode to drive the final visual amplifier. This linear design insures the maximum signal transparency required for premium quality broadcasting.

The solid-state visual and aural PIAs not only enhance reliability, but also reduce tuning requirements, as they contain broadband amplifiers so that periodic bandpass adjustment is not required. They are fully protected against damage caused by overloads or load variations. For added transmitter protection,

RF drive is applied over a one to two second interval, which permits DC voltage stabilization before full RF drive application to power amplifiers. The PIAs are fully metered for monitoring and maintenance, while excellent cooling helps maintain long transistor life.

In the visual exciter, Harris employs its advanced VIDEO* SAW vestigial sideband filter (CCIR M only) and a new Quadrature Corrector to insure the highest level of picture quality.

These compact transmitters require only three tubes: visual PA, visual driver and aural PA, to provide a 35 kilowatt visual and a 4.5 kilowatt aural output or a 50 kilowatt visual and a 5 kilowatt aural output. Under normal operating conditions, the quick heat tubes permit transmitter turn-on within 120 seconds; faster turn-on times are possible in emergency conditions. A circulator between the visual stages minimizes returning requirements after a tube change.

In addition to the ultra-linear driver, solid-state IPAs and VIDEO SAW filter, the transmitters incorporate such features as IF Modulation, true linear operation of power amplifiers, and a solid-state visual exciter/modulator, to provide the finest color performance available today.

As no envelope delay correction or adjustments are required for the sideband filter and receiver equalizer, stability, reliability and color quality are greatly enhanced. Frequency adjustment, power output control and amplifier tuning are straightforward and uncomplicated, while conservatively-rated components assure long-term "hands-off" operation and minimum maintenance.

The transmitter employs a single-ended visual PA (8984 tetrode), and DC filaments in every visual stage for an excellent signal-to-noise ratio.

*Visual IF Delay Equalized Output

VHF HIGH BAND COLOR TELEVISION TRANSMITTERS



HARRIS

P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

SPECIFICATIONS

TV-35H

TV-50H

VISUAL PERFORMANCE

POWER OUTPUT:
LOAD IMPEDANCE:
FREQUENCY RANGE:
CARRIER FREQUENCY STABILITY:¹

System M/NTSC

(Systems B/PAL and B SECAM specifications available on request.)

35 kW peak.
50 ohms. Output connectors: 3/8" EIA standard.
174-216 MHz (Channels 7-13).
±250 Hz (maximum variation over 30 days).
±2 Hz with optional precise frequency control.

50 kW peak.

REG. OF RF OUTPUT POWER (All black to all white pic.): 3% or less relative to sync peak.

2%

VARIATION OF OUTPUT (over one frame):

VISUAL SIDEBAND RESPONSE:²

Less than 2%.
- 3.58 MHz - 42 dB or better
- 1.25 MHz and lower - 26 dB or better
- 0.75 MHz to + 4.10 MHz ± 0.5 dB
+ 4.18 MHz + 0.5, - 1 dB
+ 4.75 MHz and higher - 30 dB or better
± 0.75 dB.

± 0.4 dB

-40 dB

FREQUENCY RESPONSE VS. BRIGHTNESS:³

VISUAL MODULATION CAPABILITY:

DIFFERENTIAL GAIN:⁴

INCIDENTAL PHASE MODULATION:

LINEARITY (LOW FREQUENCY):⁵

DIFFERENTIAL PHASE:⁴

SIGNAL-TO-NOISE:

Total random and periodic noise unweighted:

K-FACTORS:

EQUIVALENT ENVELOPE DELAY:

0%.
3% or better.
± 3° or better relative to blanking.
1.0 dB or better.
± 1° or better.

± 1.5°

-60 dB

VIDEO INPUT LEVEL:

HARMONIC RADIATION:

AURAL PERFORMANCE

POWER OUTPUT:⁶

LOAD IMPEDANCE:

AUDIO INPUT LEVEL:

FREQUENCY DEVIATION CAPABILITY:

INPUT IMPEDANCE:

PRE-EMPHASIS:

FREQUENCY RESPONSE:

DISTORTION:⁷

FM NOISE:

INTERCARRIER PHASE MODULATION (noise):⁷

AM NOISE:

SYNCHRONOUS AM NOISE:⁸

FREQUENCY STABILITY:⁹

SERVICE CONDITIONS

AMBIENT TEMPERATURE:¹⁰

AMBIENT HUMIDITY RANGE:

ALTITUDE:

PHYSICAL AND MECHANICAL DIMENSIONS:

4.5 kW.
50 ohms. Output connector: 3/8" EIA standard, unflanged.
+ 10 dBm, ± 2 dB.
± 50 kHz.
600 ohms, balanced.
75 microseconds.
± 0.5 dB rel. to pre-emphasis curve, (30-15,000 Hz).
0.5% THD or less with ± 25 kHz deviation from 30-15,000 Hz.
- 60 dB RMS or better rel. to ± 25 kHz dev.
- 46 dB RMS or better rel. to ± 25 kHz dev.
- 55 dB RMS rel. to 100% amplitude modulation of aural carrier.
- 40 dB RMS or better.
± 20 Hz (maximum variation over 30 days).

5 kW.

ELECTRICAL REQUIREMENTS:

0° to + 50° C (32° to 122° F).
0 to 95% relative humidity.
Sea level to 7,500 feet.
Trans.: 106" W x 32.2" D x 72" H. Weight:
2,385 lbs. Power supply:
69.9" W x 33.9" D x 54" H. Weight: 3,000 lbs.
Power input: 208/240 volts, ± 11 volts,
3 phase, 60 Hz. Power consumption (typical): 78 kW, black picture,
10% aural; 66 kW, average picture (50% APL), 10% aural; power
factor better than 0.97.

Power input: 455/480/505 volts, ± 11
volts, 3 phase, 60 Hz.
Power consumption: Average picture
(50% APL): 85 kW. Black picture:
107 kW.

¹ After initial aging of 60 days

² Response specified for transmitter operating into a resistive load of 1.05 VSWR or better.

³ Measured using 20% p p amplitude swept video modulation with pedestal set at black 10%, white 90% with reference to grey level 50%. All percentages relative to blanking to white excursion.

⁴ Measured with 5-step riser signal from 75% to 12.5% of sync peak. Sub-carrier mod. percentage 12.5% peak to peak

⁵ Measured with a 5-step riser signal. Test signal No. 3 CCIR REC 421-3.

⁶ Capable of additional 0.5 dB power output above rated output to compensate for diplexer loss.

⁷ After de-emphasis

⁸ Ref to 100% amplitude modulation at rated deviation

⁹ Relative to frequency offset of 4.5 MHz from the visual carrier, after initial aging of 60 days

¹⁰ Derate 2° C per 1000 feet (305 meters) altitude above sea level.

Ordering Information

TV-35H, 35 kW VHF-TV transmitter for System M service, Channels 7-13, complete with operating tubes, semiconductors, crystals, required pre-correction circuitry, low-level vestigial sideband filter, harmonic and color notch filters, 208/240 volts, 60 Hz	994-8498-001
TVD-70H, 70 kW dual VHF-TV transmitter for System M service, Channels 7-13, complete with operating tubes, semiconductors, crystals, required pre-correction circuitry, low-level vestigial sideband filter, harmonic and color notch filter, output combiner, input and output switchers, 208/240 volts, 60 Hz	994-8667-001
TV-50H, 50 kW VHF-TV transmitter for System M service, Channels 7-13, complete with operating tubes, semiconductors, crystals, required pre-correction circuitry, low-level vestigial sideband filter, harmonic and color notch filters, 480 volts, 60 Hz	994-8745-001
TV-50H, 42 kW VHF-TV transmitter for System B service, 174-230 MHz (Channels E5-E12, Band III), complete with operating tubes, semiconductors, crystals, required pre-correction circuitry, low-level vestigial sideband filter, harmonic filter, 308/415 volts, 50 Hz	994-8745-002



HARRIS

P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

DUAL VHF HIGH BAND COLOR TELEVISION TRANSMITTERS

TVD-70H (70kW) TVD-100H (100kW) Dual VHF High Band Color Television Transmitters

- Ultra-linear drivers with solid-state IPAs for maximum reliability and signal transparency
- Two independent, complete transmitter for total redundancy and on-the-air reliability
- "Hot" standby exciters, modulators and sideband filters for maximum redundancy
- Harris' Dualtran output switching system allows parallel or single transmitter operation
- Ideal for circularly polarized applications
- Advanced new SAW filter — built-in receiver equalizer eliminates separate correction modules
- New Quadrature Corrector cancels tube distortions
- Notch diplexer included

The TVD-100H and TVD-70H television transmitters are designed for Channels 7-13 and Channels E5-E12. These transmitters are made up of two separate and independent 50kW or 35kW transmitters whose visual and aural outputs are combined to provide the high power required for maximum ERP with circularly polarized antennas. The TVD-70H and TVD-100H transmitters are identical except for the high voltage power supplies.

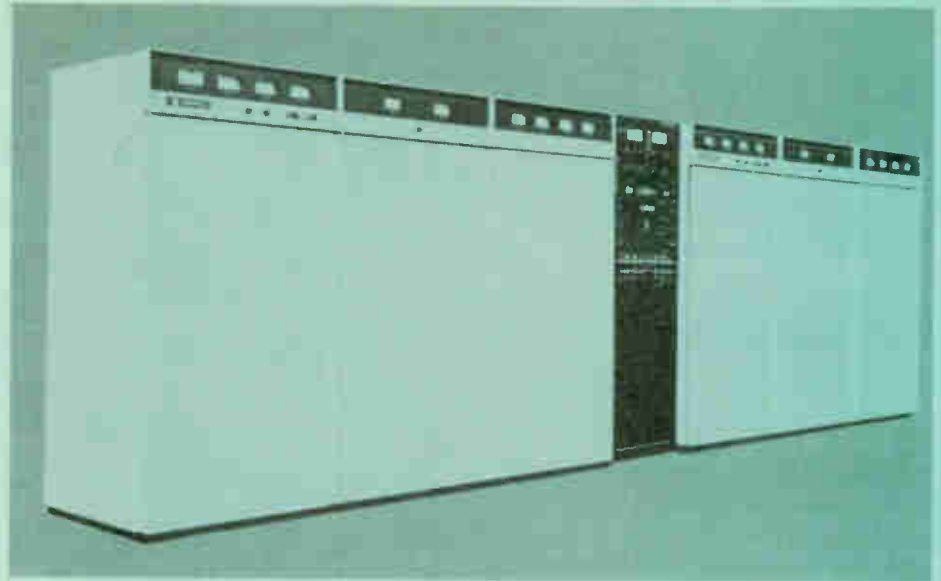
In addition to the two complete transmitters, these high power dual transmitters are equipped with a control cabinet located between the transmitters and a Dualtran RF System that is normally located behind the transmitters.

"A + B Air": This is the normal operating mode in which the two visual and aural transmitters are combined and fed to the antenna line through the diplexer.

"A + B Test": In this mode the combined aural and combined visual signals are connected to dummy loads for testing.

"A Air": In this mode the "A" transmitter is connected to the antenna line through the diplexer while the "B" transmitter is connected to the test loads.

"B Air": This mode is identical to the "A Air"



mode except that the "B" transmitter is connected to the antenna line while the "A" transmitter is connected to the test loads.

The "A Air" and "B Air" modes may also be used to operate the two transmitters in a main/alternate main configuration. In this configuration the full output power capability of each transmitter is available to feed the antenna line while the second transmitter is kept in a hot or cold reserve status.

The Dualtran concept that Harris has used for many years in lower power transmitters is now applied to high power transmitters. The 100kW Dualtran RF System is a factory assembled, tested and optimized coaxial system that contains all of the components necessary for operating the dual transmitters in the modes described above. A 100kW notch diplexer is also supplied as part of this system for combining the aural and visual signals together for feeding the antenna line.

All of these components are mounted in an open frame cabinet for ease of handling and simple installation.

Parallel operation of the two identical transmitters provides the redundancy needed to prevent any loss of air time. If one of the two transmitters should malfunction, the transmitter output power automatically decreases 6dB with no interruption in service. If desired, the Dualtran RF System may be switched to a single transmitter mode that will provide the full power output capability of that single transmitter.

The dual transmitters may be completely controlled and monitored from a remote

location by a Harris Facilities Control System or by any standard remote control hardware. The Dualtran RF System mode switching may also be accomplished by remote control.

The Dualtran RF System is equipped with three water cooled test loads. Each test load is equipped with a calibrated in-line wattmeter. In addition, the water lines for each load are equipped with thermometer wells for precise calorimetric power measurements.

The Dualtran RF System also contains all directional couplers and voltage probes necessary for internal metering and monitoring of the transmitter operation. Extra couplers and probes are included for connection to monitoring and test equipment. A 4 port 6-1/8" manual patch panel (optional) permits use of the visual load for diplexer output testing.

Every Harris dual transmitter contains two MCP-2 visual and aural exciters. The RF output of one set of exciters is split into two signal paths and fed to both transmitters through the splitting and phasing networks. An exciter switcher automatically switches to the reserve exciters in the event of a malfunction. The exciter outputs are on-carrier, providing maximum redundancy of the important exciter circuitry. All low level circuits are 100% redundant, including video processors, modulators, VSB filters, IF correctors, oscillators and up-converters.

The RF Input Patch Panel provides the capability of driving any transmitter from any exciter for test purposes or in the event of malfunction in the exciter switcher or phasing and control panel.

DUAL VHF HIGH BAND COLOR TELEVISION TRANSMITTERS



HARRIS

P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

TVD-100H And TVD-70H SPECIFICATIONS

	TVD-100H	TVD-70H
VISUAL POWER OUTPUT:	100 kW peak (System M). 84 kW peak (System B). Up to 14 kW (20 kW optional).	70 kW peak (System M). 60 kW peak (System B). Up to 12 kW.
AURAL POWER OUTPUT:	480 volts, +5%, 3 phase, 60 Hz or 380/415 volts, +5%, 3 phase, 50 Hz.	208/240 volts, +5%, 3 phase, 60 Hz or 380/415 volts, +5%, 3 phase, 50 Hz.
ELECTRICAL REQUIREMENTS:		
POWER CONSUMPTION (Typical at 10% aural):	172 kW.	134 kW.
Average Picture (50% APL):	216 kW.	158 kW.
Black Picture:		
Specifications below apply to both the TVD-70H and TVD-100H.		
PHYSICAL AND MECHANICAL DIMENSIONS:	Transmitter cabinets (2): each 106" W x 32" D x 72" H. (269 cm x 82 cm x 183 cm). Weight (each): 2385 lbs. (1082 kg). Power supplies (2): each 70" W x 35" H x 52" D. (178 cm x 89 cm x 132 cm). Weight (each): 2600 lbs. (1179 kg). Central control cabinet: 22" W x 25" D x 72" H. (56 cm x 62 cm x 183 cm). Weight: 300 lbs. (136 kg). RF output switcher system: 122" W x 48" D x 80" H. (310 cm x 122 cm x 203 cm). Weight: 1800 lbs. (816 kg).	
VISUAL PERFORMANCE	System M/NTSC	
TYPE EMISSION:	A5C Negative.	
FREQUENCY RANGE:	174-216 MHz, Channels 7-13.	
VIDEO INPUT IMPEDANCE:	75 Ohms.	
VIDEO INPUT LEVEL:	0.7 to 2.0 volts, peak to peak, sync negative.	
RF LOAD IMPEDANCE:	50 Ohms, diplexer output connector: 6 1/2" EIA, flanged.	
AM NOISE:	Systems B/PAL and B/SECAM	
Total random and periodic noise unweighted:	A5C Negative.	
Hum and low frequency:	174-230 MHz, Channels E5-E12.	
Periodic noise 10 kHz to 5.2 MHz:	75 Ohms.	
MODULATION CAPABILITY:	0.7 to 2.0 volts, peak to peak, sync negative.	
REGULATION OF OUTPUT POWER:	50 Ohms, diplexer output connector: 6 1/2" EIA, flanged.	
VARIATION OF OUTPUT OVER ONE FIELD:	-55 dB RMS or better relative to sync peak.	
	-52 dB or better peak to peak.	
	-40 dB peak to peak.	
	0%, sync equal to 100%.	
	Less than 2% (black to white picture).	
	Less than 2% at sync peak (measured with a field square wave signal with reference to sync peak voltage.)	
	Less than ±.75 dB.	
	10% or better.	
	-3.58 MHz -42 dB.	
	-1.25 MHz -26 dB.	
	-0.75 to 4.10 MHz ±0.4 dB.	
	4.18 MHz +0.4, -1 dB.	
	4.5 MHz -35 dB or better.	
	4.5 MHz and higher -40 dB.	
	3% or better.	
	±1° or better.	
	2% maximum.	
	5% or less total baseline disturbance.	
	Less than 2% total distortion.	
	Less than 2% total variation.	
	±1.5° or less relative to blanking.	
	0.5 to 2.1 MHz ±40 ns	
	at 3.58 MHz ±25 ns	
	at 4.18 MHz ±60 ns	
	±250 Hz (maximum variation over 30 days).	
	= 80 dB or better below peak of sync.	
	F3.	
	±20 Hz (for 30 days relative to frequency offset of 4.5 MHz from visual carrier).	
	50 Ohms.	
	600 Ohms, balanced.	
	+10 dBm, ±2 dB.	
	±25 kHz	
	±.5 dB relative to 75 microsecond pre-emphasis.	
	Less than 0.5% from 30 to 15,000 Hz with ±25 kHz deviation.	
	-55 dB or better relative to 100% AM modulation.	
	-60 dB or better relative to ±25 kHz deviation.	
	Less than 1% relative to 100% AM modulation from 30 to 15,000 Hz, with ±25 kHz deviation.	
	-46 dB or better relative to ±25 kHz deviation.	
	-10° to +50° C (14° to 122° F).	
	0 to 95% relative humidity	
	Sea level to 7500 feet (2286 meters)	
	(Derate 2° C per 1000 feet above sea level).	
	F3.	
	±20 Hz (for 30 days relative to frequency offset of 5.5 MHz from visual carrier).	
	50 Ohms.	
	600 Ohms, balanced.	
	0 to +20 dBm	
	±50 kHz.	
	±.5 dB relative to 50 microsecond pre-emphasis.	
	Less than 1% from 30 to 15,000 Hz with ±50 kHz deviation; less than 2% for ±70 kHz deviation.	
	-55 dB or better relative to 100% AM modulation.	
	-60 dB or better relative to ±50 kHz deviation.	
	Less than 1% relative to 100% AM modulation from 30 to 15,000 Hz, with ±50 kHz deviation.	
	-46 dB or better relative to ±50 kHz deviation.	
	-10° to +50° C (14° to 122° F).	
	0 to 95% relative humidity.	
	Sea level to 2286 meters (7500 feet).	
	(Derate 2° C per 300 meters above sea level).	

Ordering Information

TVD-100H, 100 kW VHF-TV transmitter for CCIR System M service, 174-216 MHz, Channels 7-13, 480 volts, ±5%, 60 Hz, with operating tubes, transistors, IC's, solid-state rectifiers, crystals, required precorrection circuitry, low level sideband filter, harmonic filters, input and output switchers, power combiners, dual exciter sets, high power notch diplexer, and stepdown transformers	994-8457-001
TVD-100H, 84 kW VHF-TV transmitter for CCIR System B service, 174-230 MHz (Band III), 380/415 volts, ±5%, 50 Hz. Includes same as above, with line frequency inverters added	994-8457-002
TVD-70H, 70 kW VHF-TV transmitter for CCIR System M service, 174-216 MHz, Channels 7-13, 208/240 volts, ±5%, 60 Hz, with operating tubes, transistors, IC's, solid state rectifiers, crystals, required precorrection circuitry, low level sideband filter, harmonic filters, input and output switchers, power combiners, dual exciter sets, high power notch diplexer	994-8667-001
TVD-70H, 60 kW VHF-TV transmitter for CCIR System B service, 174-230 MHz (Band III), 380/415 volts, ±5%, 50 Hz. Includes same as above, with stepdown transformers and line frequency inverters added	994-8667-002

Prices and Specifications Subject to Change Without Notice.

UHF Color Television Transmitters

- Variable Visual Coupler for higher klystron efficiency
- Advanced new SAW filter, built-in receiver equalizer eliminates separate correction modules
- New Quadrature Corrector cancels klystron distortions
- High efficiency 5-cavity klystrons
- Highly linear IF Modulation of the visual and aural carriers for superior color and sound reproduction
- Mod Anode Pulser for increased transmitter efficiency
- Straightforward design for high stability, reliability
- Low-loss waveguide diplexer
- Emergency multiplex operation minimizes off-air time

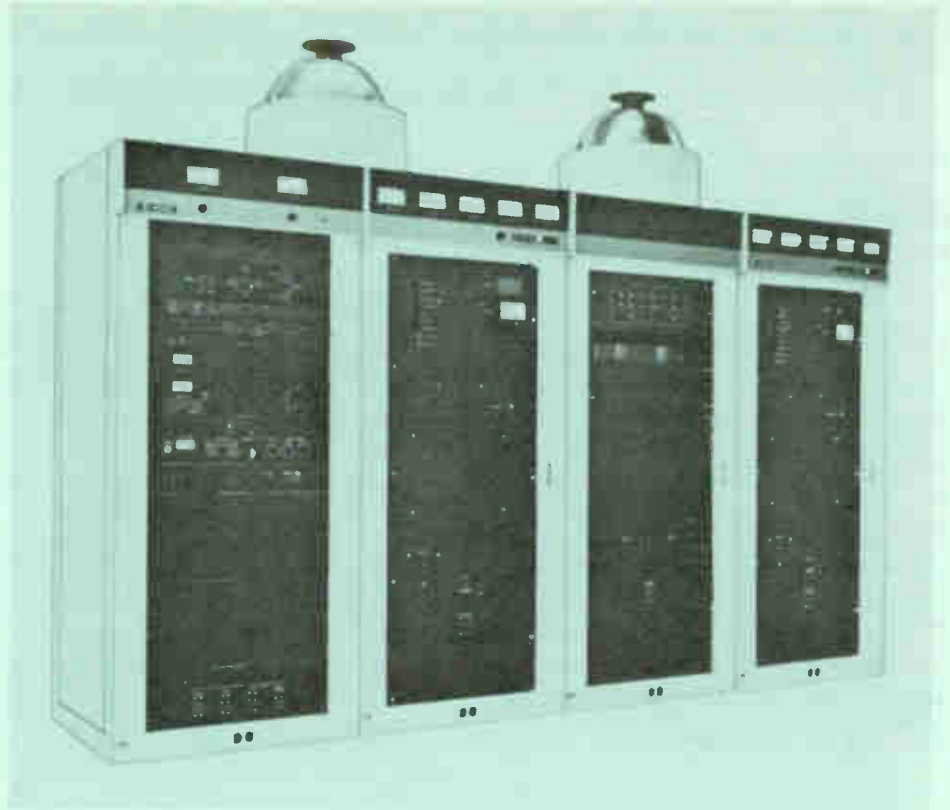
TVE-30 30 Kilowatt UHF Color Television Transmitter

The Harris TVE-30 is designed to meet the critical performance standards demanded by today's discriminating broadcaster. State-of-the-art technology, such as Harris' VIDEO* SAW receiver equalized filter and the Quadrature Corrector, is used to provide the highest levels of performance, reliability and stability. This performance level assures standard and subscription television broadcasters the best quality picture and sound, now and in the future.

The TVE-30 transmitter includes a newly developed device that significantly reduces power consumption. This is the Variable Visual Coupler (VVC), which greatly increases the visual klystron's operating efficiency over previously used fixed couplers.

Several other energy-saving devices are also standard in the TVE-30, including "H" type high-efficiency klystrons, the Mod Anode Pulser, and a high-efficiency aural klystron coupler.

For maximum efficiency, high power RF losses are kept to a minimum by using a 100% waveguide diplexer and color notch filter.



TVE-60S

The Harris TVE-60S, 60 kilowatt UHF-TV transmitter, incorporates all of the latest efficiency-improving technologies to help keep power costs down. At 60 kilowatts peak visual power with 10% aural, total power consumption is only 130 kilowatts.

The TVE-60S visual amplifier uses a single Varian 5-cavity VKP-7550 "S" Series klystron for a full 60 kilowatt visual power output. This super-high-efficiency, high-power integral cavity klystron utilizes a new modified-cavity Q tuning technique for maximum beam efficiency.

TVE-60S 60 Kilowatt UHF Color Television Transmitter

The VKP-7550 "S" Series klystron is an improved version of the popular Varian VA-950 "H" Series klystron currently in use in hundreds of UHF transmitters worldwide. For redundancy, the aural amplifier uses an identical klystron.

To further increase beam efficiency of the VKP-7550S, the TVE-60S includes as standard a variable visual coupler (VVC). This device, installed on the output of the klystron, is tuned to optimize coupling to the output transmission line for 60 kilowatt power output at reduced klystron beam current. For maximum aural efficiency, a high-efficiency aural klystron coupler is also

included as standard. Another energy saving device included as standard with the TVE-60S is a mod anode pulser.

TVE-120S 120 Kilowatt UHF Color Television Transmitter

The Harris TVE-120S is designed to meet the critical performance standards demanded by today's discriminating broadcaster; State-of-the-art technology, VIDEO* SAW receiver equalized filter and the Quadrature Corrector.

The TVE-120 transmitter includes the Variable Visual Coupler (VVC), which greatly increases the visual klystron's operating efficiency.

Standard in the TVE-120, are "S" type high-efficiency klystrons, the Mod Anode Pulser, and a high-efficiency aural klystron coupler.

High power RF losses are kept to a minimum by using a waveguide visual combiner, a 100% waveguide diplexer and color notch filter.

*Visual IF Delay Equalized Output

UHF COLOR TELEVISION TRANSMITTERS



SPECIFICATIONS

	TVE-30	TVE-60S	TVE-120
VISUAL PERFORMANCE			
POWER OUTPUT: ⁴	30 kW peak.	60 kW peak.	120 kW peak.
LOAD IMPEDANCE:	50 ohms. Cabinet output connector: 3-1/8" EIA flanged, (Channels 14-51); 6-1/8" EIA flanged, (Channels 52-69). Diplexer output connector: 6-1/8" EIA flanged.	—	50 ohms. Harmonic filter output connector: 6-1/8" EIA flanged. Diplexer output connector: EIA Waveguide WR1800 (Ch. 14-19); WR1500 (Ch. 20-47); WR1150 (Ch. 48-69).
FREQUENCY RANGE:	470-806 MHz (Channels 14-69).	—	—
FREQUENCY STABILITY: ¹	± 500 Hz (maximum variation over 30 days).	—	—
REG. OF RF OUTPUT POWER (black to white pic.):	Less than 2%.	—	—
VARIATION OF OUTPUT (over one frame):	Less than 2%.	—	—
VISUAL SIDEBAND RESPONSE: ^{2,8}	-3.58 MHz	—	—
	-1.25 MHz and lower	—	—
	-0.75 MHz to +3.58 MHz	—	-42 dB or better
	+4.18 MHz 0 to -2 dB	0 to -2.5 dB	-20 dB or better
	+4.5 MHz	—	± 0.5 dB
	+4.75 MHz and higher	—	0 to -2 dB
	± 0.75 dB.	—	-35 dB
	0%.	—	-40 dB or better
FREQUENCY RESPONSE VS. BRIGHTNESS: ³	0.5 dB or better.	—	—
VISUAL MODULATION CAPABILITY:	1.0 dB or better.	—	—
DIFFERENTIAL GAIN: ⁴	± 3°.	—	—
LINEARITY (LOW FREQUENCY): ⁵	± 2° or better relative to blanking.	—	—
DIFFERENTIAL PHASE: ⁴	5% or less of sync peak within ± 300 ns of leading/trailing edge.	—	—
INCIDENTAL PHASE:	-50 dB (RMS) or better below sync level.	-55 dB	-50 dB
SYNC OVERSHOOT:	2T 2%, 20T less than 5% baseline disturbance.	—	—
SIGNAL TO NOISE RATIO:	0.5 to 2.1 MHz ± 40 ns	—	—
K-FACTORS:	at 3.58 MHz ± 25 ns	—	—
EQUIVALENT ENVELOPE DELAY:	at 4.18 MHz ± 60 ns	—	—
	(referenced to standard curve-FCC)	—	—
VIDEO INPUT:	75 ohm, -30 dB or better return loss up to 5.0 MHz.	-70 dB	-80 dB
HARMONIC RADIATION:	-80 dB.	—	—
AURAL PERFORMANCE	6 kW.	12 kW	22 kW at diplexer output (Ch. 14-15) 11 kW at diplexer output (Ch. 52-69)
POWER OUTPUT: ⁶	50 ohms. Cabinet output connector: 3-1/8" EIA unflanged.	—	—
LOAD IMPEDANCE:	+ 10 dBm, ± 2 dB.	—	—
AUDIO INPUT:	± 50 kHz.	± 100 kHz	50 kHz
FREQUENCY DEVIATION CAPABILITY:	600 ohms.	—	—
INPUT IMPEDANCE:	75 microseconds.	—	—
PRE-EMPHASIS:	± 0.5 dB rel. to pre-emphasis (30-15,000 Hz).	—	—
FREQUENCY RESPONSE:	0.5% THD or less with ± 25 kHz deviation.	—	—
DISTORTION: ⁷	-59 dB or better rel. to ± 25 kHz dev.	—	—
FM NOISE: ⁷	-46 dB RMS or better rel. to ± 25 kHz dev.	—	—
INTERCARRIER PHASE MODULATION:	-55 dB relative to 100% modulation.	—	—
AM NOISE:	± 20 Hz.	—	—
FREQUENCY STABILITY: ⁸	+ 2°C to + 50°C (36° to 122°F).	—	—
SERVICE CONDITIONS	0 to 95% relative humidity.	—	—
AMBIENT TEMPERATURE:	Sea level to 7,500 feet (2286 meters).	—	—
AMBIENT HUMIDITY RANGE:			
ALTITUDE:			

- After initial aging of 60 days.
- Response specified for transmitter operating into a resistive load of 1.05 VSWR or better.
- Measured using 20% p.p. amplitude swept video modulation with pedestal set at black 10%, white 90% with reference to grey level 50%. All percentages relative to blanking to white excursion.
- Measured with 5-step riser signal from 75% to 12.5% of sync peak. Sub-carrier mod. percentage 12.5% peak to peak.
- Measured with a 5-step riser signal.
- Measured at output of optional diplexer.
- After de-emphasis.
- Relative to frequency offset of 4.5 MHz.

TVE-30
Physical & Mechanical Dimensions/ Electrical Requirements
 94"W x 63"D x 72"H (240 x 160 x 183 cm). Weight: 4100 lbs. (1864kg). Power supply 63"W x 47"D x 51"H (160 x 119 x 130 cm). Weight: 4700 lbs. (2133kg). Heat exchanger: 96"W x 48"D x 78"H (244 x 122 x 198 cm). Weight: 4000 lbs. (1816kg). Power input: 440/460/480 volts, 3 phase, 60 Hz. Power consumption (typical): 90kw (10% aural), 99kw (20% aural). Power factor: better than 90%.

TVE-60S
Physical & Mechanical Dimensions/ Electrical Requirements
 126"W x 63"D x 72"H (320 x 160 x 183 cm). Weight: 4100 lbs. (1860kg). Power supply: 75 1/2"W x 51 1/4"D x 69 1/2"H (191 x 131 x 177 cm). Weight: 8400 lbs. (3810kg). Heat exchanger: 96"W x 48"D x 78"H (244 x 122 x 198 cm). Weight: 4000 lbs. (1816kg). Power input: 440/460/480 volts, 3 phase, 60 Hz. Power consumption (typical): 130kw (10% aural), 144kw (20% aural). Power factor: better than 90%.

TVE-110
Physical & Mechanical Dimensions/ Electrical Requirements
 157 1/2"W x 63"D x 72"H (400 x 160 x 183 cm). Note: hoods and steam weirs are higher than cabinet (height varies with channel). Approximate weight: 6500 lbs. (2948kg). Power supplies (2): each 73 1/2"W x 52"D x 53 1/2"H (187 x 132 x 137 cm). Approx. weight: 7750 lbs. (3515kg). Heat exchangers (2): each 96"W x 48"D x 78"H (plus ducting) (244 x 122 x 198 cm). Approx. weight: 4000 lbs. (1816kg). Power input: 440/460/480 volts, 3 phase, 60 Hz. Power consumption (typical): 245kw (10% aural). Power factor: better than 90%.

Ordering Information

TVE-30, 30 kW UHF-TV transmitter for FCC standards service, Channels 14-69, with semiconductors, crystals, VSB filter, harmonic and color notch filters, Mod Anode Pulser, Variable Visual Coupler, notch diplexer 994-8721-001
 TVE-60S, 60 kW UHF-TV transmitter, for FCC standards service, Channels 14-69, with semiconductors, crystals, VSB filter, harmonic and color notch filters, Mod Anode Pulser, Variable Visual Coupler. 994-8868-001

Ordering information for CCIR systems other than "M" available on request.

TVE-120S, 120 kW UHF-TV transmitter for FCC standards service, Channels 14-69, with semiconductors, crystals, VSB filter, harmonic and color notch filters, Mod Anode Pulser, Variable Visual Coupler. 994-8916-001



HARRIS

P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

UHF-TV EXCITER RETROFIT

UHF-TV EXCITER RETROFIT PACKAGE

- MCP-2U visual exciter for highly superior color performance
- Wideband, linear aural exciter for high fidelity audio transmission
- Stable, drift-free operation reduces tuning and maintenance
- Fully assembled and tested for easy installation at transmitter site
- Excellent performance for subscription television stations (STV)

The Harris UHF-TV Exciter Retrofit Package (E.R.P.) is designed specifically for use as an exciter/driver for non-Harris klystron transmitters...permitting users of older non-Harris transmitters to enjoy state-of-the-art performance.

STANDARD EXCITER RETROFIT PACKAGE

The standard Exciter Retrofit Package consists of a Harris MCP visual exciter, a Harris MCP aural exciter, and a solid-state visual/aural amplifier. A notch diplexer phase equalizer is also included. All equipment is mounted in a 24-inch rack cabinet and is inter-connected. Special configurations, such as dual exciters, can also be supplied. Drawer slides are used so that exciters may be easily pulled out for adjustment purposes.

VISUAL EXCITER

The Harris MCP-2U visual exciter incorporates Harris' new VIDEO* SAW filter (CCIR M only), which provides vestigial sideband shaping, plus the required FCC group delay pre-correction. This new filter eliminates conventional receiver equalizers that require periodic maintenance with special test equipment. The visual exciter also uses a unique Quadrature Corrector that compensates for several types of klystron non-linearities, such as differential gain, incidental phase and intermodulation distortions.

POWER RATING

The Exciter Retrofit Package output power is 10 watts visual and 5 watts aural, which is adequate power for most klystrons currently being used in television transmitters.

ASSEMBLY AND TESTING

The Exciter Retrofit Package is fully assembled and tested at the Harris factory before shipment. Factory test data sheets and complete technical manuals are shipped with each Package.

INSTALLATION SERVICES

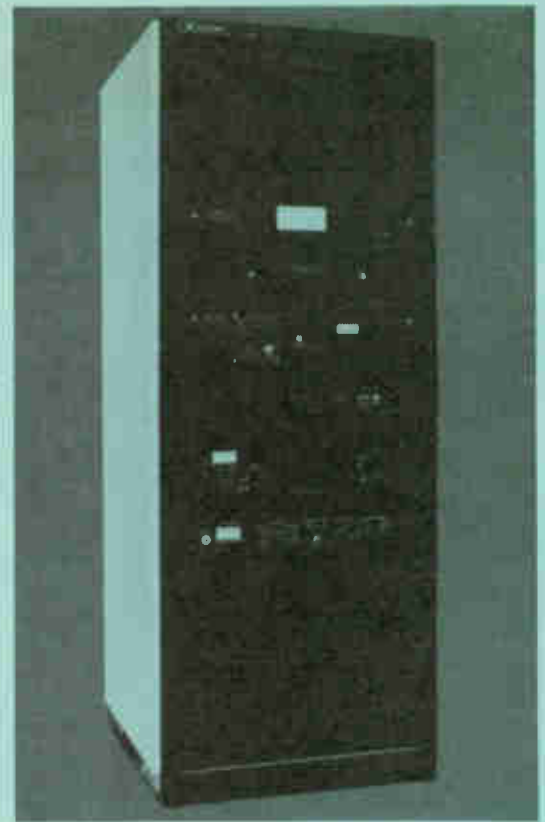
The services of a Harris field engineer are included with each E.R.P. (48 contiguous states only) to assist the station engineers in the installation and check-out of the Package with the transmitter. The Harris proof of performance (included) will be in a form sufficient to aid the customer in obtaining FCC type acceptance of the hybrid exciter/transmitter.

*Visual IF Delay Equalized Output

Ordering Information

UHF Exciter Retrofit Package for use as klystron driver in non-Harris transmitters. 10 watts visual, 5 watts aural. Please specify transmitter type, channel and offset 790-XXXX-XXX

Options available include: (1) dual exciters with automatic exciter switcher, and (2) emergency multiplex.



Specifications

VISUAL EXCITER

POWER OUTPUT:
FREQUENCY RANGE:
VIDEO INPUT:
Level:
Impedance:

SYSTEM M/NTSC

0.75 watt peak.
470-806 MHz (Channels 14 through 69).
1 volt peak-to-peak, ± 3 dB.
75 ohms, unbalanced.

Complete visual exciter specifications available on MCP-2U page.

VISUAL AMPLIFIER

POWER OUTPUT:
FREQUENCY RANGE:
CLASS OF OPERATION:
OUTPUT VSWR:

10 watts peak.
470-806 MHz (Channels 14 through 69).
Class A, solid state.
1.2:1 maximum.

AURAL EXCITER

POWER OUTPUT:
FREQUENCY RANGE:
AUDIO INPUT:
Level:
Impedance:

0.5 watt average.
470-806 MHz (Channels 14 through 69).
 ± 10 dBm, ± 2 dB.
600 ohms, balanced.

SUB-CARRIER INPUT:

Range:
Deviation:
Level:

30 kHz to 100 kHz
 ± 5 kHz.
1 volt RMS.

Impedance:

FREQUENCY RESPONSE:
DISTORTION:
FM NOISE:

10K ohms, unbalanced
 ± 0.5 dB maximum.
0.5% maximum.
 -60 dB maximum.

AURAL AMPLIFIER

POWER OUTPUT:
FREQUENCY RANGE:
OUTPUT VSWR:

5 watts average
470-806 MHz (Channels 14 through 69).
1.5:1 maximum.

CORRECTION CAPABILITY

INCIDENTAL PHASE:
DIFFERENTIAL PHASE:
DIFFERENTIAL GAIN:

$\pm 10^\circ$
 10°
3 dB.

NOTE: Overall transmitter performance is dependent on klystron tuning and operation, diplexers and external harmonic filters. Consequently, overall performance is not guaranteed, but performance similar to current Harris UHF transmitters can be anticipated.

UHF TELEVISION ANTENNAS

HARRIS
 P.O. Box 4290
 Quincy, IL 62305-4290
 (217) 222-8200

QUADRAPOWER UHF Television Antenna

- Unlimited range of patterns
- Omnidirectional gains up to 45
- High power handling capability
- Radomes for reduced windloading
- High reliability, low maintenance
- Factory assembled and tested, no field tuning required

Harris' Quadrapower antennas are panel type antennas specifically designed for high power UHF transmission with omnidirectional patterns.

The antenna consists of four panels per bay mounted on a square mast section. The antenna may be top mounted on a tower or the panels may be supplied without the mast for side mounting on a tower or other structure.

Starting with the original Harris Zig-Zag antenna design, Harris re-engineered the antenna to provide the Quadrapower's improved performance and mechanical specifications. Smooth vertical patterns are the result of computer-aided optimization of the feed system and panel pattern shape. Lower windloading is achieved by the addition of radome covers that give the antenna a nearly cylindrical profile.

The mast is constructed of structural quality steel, the panels are of structural grade aluminum to minimize weight, and the radiating elements are sturdy "Copperweld" steel supported by low-loss insulators. The RF transparent radomes are of fiberglass construction, and are color impregnated so that they never require painting. All materials used in the antenna are corrosion resistant to insure long life, low maintenance and optimum performance.

CUSTOM PATTERNS

Because of its multiple panel construction, the Quadrapower antenna can easily provide an unlimited number of directional patterns in the horizontal plane. This high degree of pattern flexibility enables the Harris antenna engineers to custom design a pattern to meet the specific requirements of each station. This pattern shaping permits the most efficient use of available transmitter power to cover a geographic area.

Computer-aided design is used extensively to rapidly and accurately calculate nearly any desired pattern.

RADOMES

Quadrapower antennas may be equipped with radome covers that significantly reduce windloading and eliminate the need for electrical deicing. The radome covers effectively protect the antenna elements from

precipitation, and are constructed so that they can be easily removed for inspection or maintenance of one antenna panel at a time.

Electrical deicing is available on non-radomed Quadrapower antennas.

INPUT CONNECTIONS AND POWER RATINGS

The standard input connector is 6-1/8", 75 ohm coax line to permit power levels up to 75 kilowatts. Since the antenna feed system is conservatively designed for safe high power operation, 8-3/16" coax, 9-3/16" coax, waveguide or dual 6-1/8" coax input connectors can be supplied for input power levels of 110 kilowatts or greater.

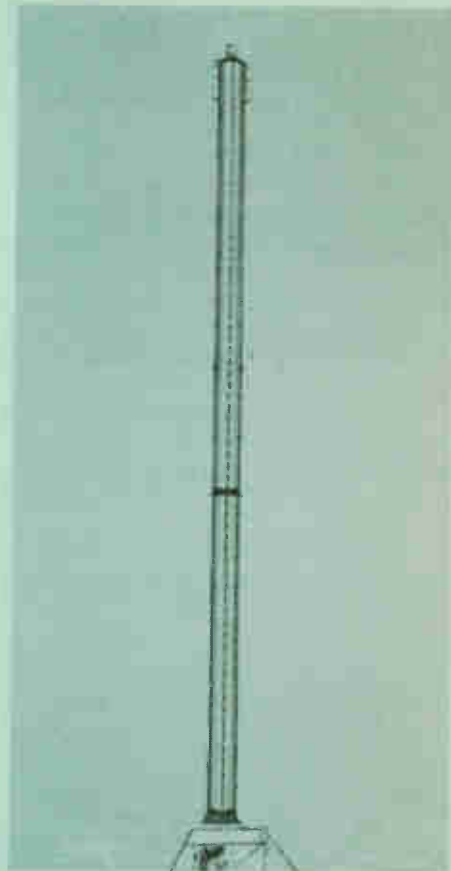
ASSEMBLY AND TESTING

To insure the best possible performance, every Quadrapower antenna is completely assembled and tested at the Harris antenna facility in Palmyra, Missouri. In addition to the testing of each panel and bay, the entire antenna is tested for correct azimuth pattern, elevation pattern and VSWR.

Length permitting, Quadrapower antennas are shipped fully assembled. The factory assembly and testing, along with one-piece shipping, minimize installation time required after delivery to the antenna site.

FILING INFORMATION AVAILABLE

Complete specifications and filing information are available on request. Harris antenna engineers are also available by telephone to discuss your specific antenna requirements.



Ordering Information

When ordering UHF Quadrapower antennas, please specify channel number, pattern, beam tilt and null fill. Antennas supplied with lightning protector, beacon cable and prime coating on mast. Assistance with antenna assembly and ground test also supplied. Beacon, painting and ground support structures are not included.

TAZ-24U three bay Quadrapower antenna	994-7623-001
TAZ-24U three bay Quadrapower antenna with deicing	994-7623-002
TAZ-24UR three bay Quadrapower antenna with radomes	994-7623-003
TAZ-31U four bay Quadrapower antenna	994-7624-001
TAZ-31U four bay Quadrapower antenna with deicing	994-7624-002
TAZ-31UR four bay Quadrapower antenna with radomes	994-7624-003
TAZ-38U five bay Quadrapower antenna	994-7625-001
TAZ-38U five bay Quadrapower antenna with deicing	994-7625-002
TAZ-38UR five bay Quadrapower antenna with radomes	994-7625-003
TAZ-45U six bay Quadrapower antenna	994-7626-001
TAZ-45U six bay Quadrapower antenna with deicing	994-7626-002
TAZ-45UR six bay Quadrapower antenna with radomes	994-7626-003

Note: One bay and two bay UHF Quadrapower antennas and VHF Quadrapower antennas are available on request. All antennas are F.O.B. Harris' antenna facility, Palmyra, Missouri.

Options And Accessories

Input Connectors:	Dual 6-1/8", 8-3/16", 9-3/16" or waveguide.
Input Power:	Up to 150 kilowatts.
Rosemount Ice Warning System:	Consists of Model 871CB1 Ice Detector and Model 524B1 Controller.



HARRIS

P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

UHF TELEVISION TRANSMITTING ANTENNAS

WAVESTAR™ UHF Television Slotted Waveguide Transmitting Antenna (Omnidirectional)

- Waveguide design for highest reliability
- High power handling capability for maximum ERP...for use with transmitters up to 240kW
- Highly circular pattern provides uniform coverage in all directions
- High mechanical strength and rigidity minimize picture variations caused by wind sway
- Waveguide or coaxial input connection
- Assembled and tested at the largest, most comprehensive broadcast antenna test range in the world

The Harris Wavestar antenna is the first television broadcast antenna to employ waveguide technology. For many years, waveguide has been recognized as having many advantages over coaxial transmission line, now these advantages are also available in UHF-TV antennas. They include: simpler construction; higher power handling capability; and higher reliability. Although the Wavestar is of a unique waveguide construction, it performs in the same manner as coaxial antenna designs.

This new slotted waveguide antenna is the ultimate in design simplicity. Unlike coaxial antennas, it has no center conductor, bullets or insulators, fewer components mean higher reliability and longer life.

POWER RATING

Because of its waveguide design, the Wavestar antenna is inherently capable of handling in excess of 240 kilowatts. The overall power handling capability is limited only by the size of the input feed system coaxial line.

Power is transferred from the tower transmission line by an input feed adaptor at the base of the antenna, just below the tower top. The Wavestar can be supplied with an input connection to match nearly any coaxial or waveguide transmission line. The operating channel and the desired power rating of the antenna input will determine the optimum input connection.

For power ratings up to 80kW, the Wavestar is supplied with a 6-1/8" 75 ohm coaxial

input. For higher power ratings, the Wavestar can also be supplied with 8-3/16" or 9-3/16" coaxial input connections. The Wavestar can also be fed directly from rectangular or circular waveguide, thus eliminating the power handling and high frequency limitations of coaxial line.

PATTERNS

The TWS-30 is designed for a highly circular azimuth pattern for uniform radiation in all directions. The power gain of 30 can provide over 1500kW of radiated power from 55-60kW transmitters, 3000kW from 110-120 kW transmitters, and the maximum 5000kW of radiated power from 220-240kW transmitters.

Elevation pattern shapes approximate the ideal cosecant-squared shape required for uniform field strength versus distance from the transmitting location.

The Wavestar design minimizes variations in beam tilt, or "beam rocking", over the channel width, thereby preventing large variations in radiated power at different frequencies within the channel.

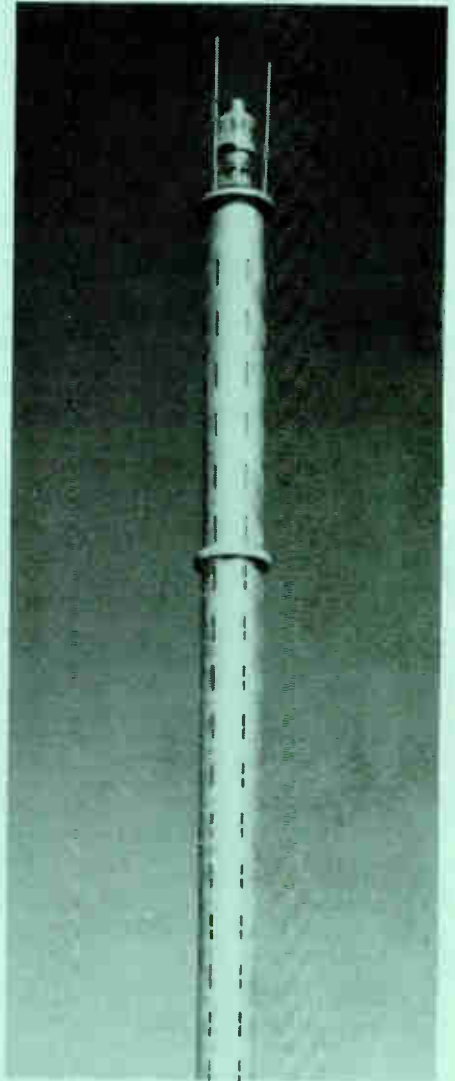
CONSTRUCTION

The Wavestar is a hollow galvanized steel cylinder with six rows of slots around the circumference of the antenna. Depending on the channel, two or three sections are stacked vertically to achieve the required gain. Fiberglass climbing steps are used to prevent pattern distortions that might be caused by metal steps.

The TWS-30 is designed for top mounting. It is constructed of structural steel that provides the high strength needed to prevent wind swaying (which causes reception problems such as color flutter in receivers). The standard Wavestar is engineered for wind up to 125 miles per hour (65/43 PSF) to provide excellent mechanical safety margins. The antenna is designed in accordance with the American Institute of Steel Construction Code and EIA Standard RS-222C.

The Wavestar slots are covered by Teflon radomes to protect the slots from ice build-up and subsequent performance degradation. Electrical de-icing is normally not required, which means substantial savings in installation and operating costs. For extremely severe icing environments, radome heaters can be provided.

The antenna is galvanized after fabrication, insuring that all surfaces inside and outside are protected from corrosion. In addition, the Wavestar is primed and finish painted before shipment.



HARRIS ANTENNA FACILITY

The Wavestar is assembled and tested at the Harris antenna test range...the largest, most comprehensive facility of its kind. Situated atop a 230-foot bluff, with test transmitters located up to 3 miles away on flat, unobstructed Mississippi River bottom lands, the uncluttered range offers ideal conditions for testing, approaching the "free space" situation of an installed antenna. The test range, with its sophisticated test equipment, is ideal for testing broadcast antennas, and provides accurate comparisons between theoretical predictions and actual antenna performance.

UHF TELEVISION TRANSMITTING ANTENNAS

WAVESTAR™ UHF Television Slotted Waveguide Transmitting Antenna (Cardioid Pattern)

- Waveguide design for highest reliability
- High power handling capability
- Cardioid pattern provides for maximum ERP with 110kW transmitter
- Teflon® radomes eliminate requirements for electrical deicing
- High mechanical strength and rigidity minimize picture variations caused by wind sway
- Assembled and tested at the largest, most comprehensive broadcast antenna test range in the world

The Harris Wavestar antenna is the first television broadcast antenna to employ waveguide technology. For many years, waveguide has been recognized as having many advantages over coaxial transmission line, now these advantages are also available in UHF-TV antennas. They include: simpler construction; higher power handling capability; and higher reliability. Although the Wavestar is of a unique waveguide construction, its performance is similar to coaxial antenna designs.

This new slotted waveguide antenna is the ultimate in design simplicity. Unlike coaxial antennas, it has no center conductor, slot couplers, bullets or insulators, and fewer components mean higher reliability and longer life.

POWER RATING

Because of its waveguide design, the Wavestar antenna is inherently capable of handling in excess of 110 kilowatts. The overall power handling capability is limited only by the size of the input feed system coaxial line.

Power is transferred from the tower transmission line by an input feed adaptor at the base of the antenna, just below the tower top. The standard design is a coax to waveguide transition with 8-3/16", 75 ohm input for Channels 14-56 or 6-1/8", 75 ohm for Channels 57-69. Waveguide input can be provided for Channels 57-69 when higher power input is desired.

PATTERNS

The TWS-30C azimuth pattern is cardioid, or skull shaped, for maximum radiation in one direction. A peak power gain of 60 permits the maximum permissible five megawatts ERP from 110-kilowatt transmitters.

Elevation pattern shapes approximate the ideal cosecant-squared shape required for uniform field strength versus distance from the transmitting location.

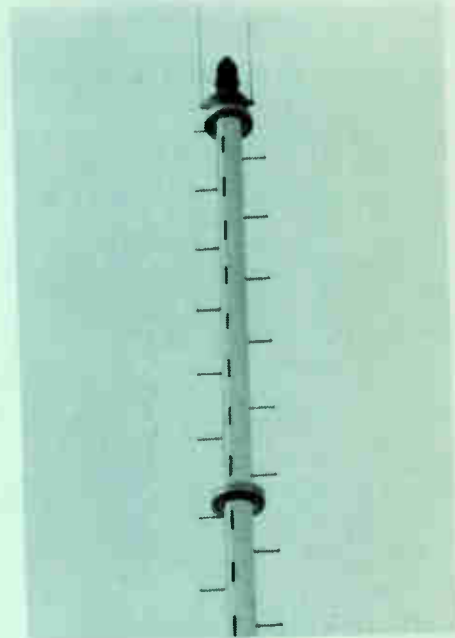
The Wavestar design minimizes variations in beam tilt, or "beam rocking", over the channel width, thereby preventing large variations in radiated power at different frequencies within the channel.

CONSTRUCTION

The Wavestar is a hollow galvanized steel cylinder with a single row of slots on one side of the antenna. Depending on the channel, two or three sections are stacked vertically to achieve the required gain. Fiberglass climbing steps are used to prevent pattern distortions that might be caused by metal steps.

The antenna is designed for low tip deflection to minimize wind swaying that causes reception problems such as color flutter in receivers. The standard Wavestar is engineered for wind up to 125 miles per hour (65/43 PSF), which results in excellent mechanical safety margins.

The Wavestar slots are covered by Teflon® radomes to protect the slots from ice buildup and subsequent performance degradation. Electrical deicing is not required, which means substantial savings in installation and operating costs. The antenna is galvanized after fabrication, insuring that all surfaces inside and outside are protected from corrosion. In addition, the Wavestar is primed and finish painted before shipment.



Wavestar antenna with Teflon radomes removed to show size and spacing of the slots.

Electrical Specifications

Channel Range: 14-69 (470-806 MHz).
Peak Power Gain: 60 (17.8 dB).
Input Connector: 8-3/16", 75 ohm (Channels 14-56); 6-1/8", 75 ohm (Channels 57-69). Waveguide input available.

Input Power Rating (with 20% aural): 136 kW to 104 kW (Channels 14-56). 80 kW to 56 kW (Channels 57-69).

Input VSWR:
Visual Carrier: 1.05 to 1.
Color Sub-carrier: 1.08 to 1.
Rest of Channel: 1.10 to 1.

Mechanical Specifications

Channel	Antenna Height (ft.)	Radiation Center (ft.)	Moment (a) (ft.-lbs.)	Shear (a) (lbs.)	Weight (lbs.)
14	76.7	36.0	115,500	3,080	10,300
20	71.6	33.5	94,100	2,690	8,900
25	67.9	31.6	84,400	2,550	8,500
30	64.6	29.9	71,100	2,250	7,500
35	61.6	28.4	60,000	1,990	6,500
40	58.9	27.1	54,800	1,900	6,300
45	56.4	25.9	46,500	1,670	5,500
50	54.2	24.7	40,300	1,500	4,900
55	52.1	23.9	37,200	1,450	4,700
60	50.2	22.7	32,800	1,310	4,200
65	48.4	21.9	30,500	1,270	4,000
69	47.1	21.2	28,900	1,230	3,900

Specifications for other UHF channels available on request. Specifications subject to change without notice.
(a) Windload data for 50.33 PSF including effect of beacon.

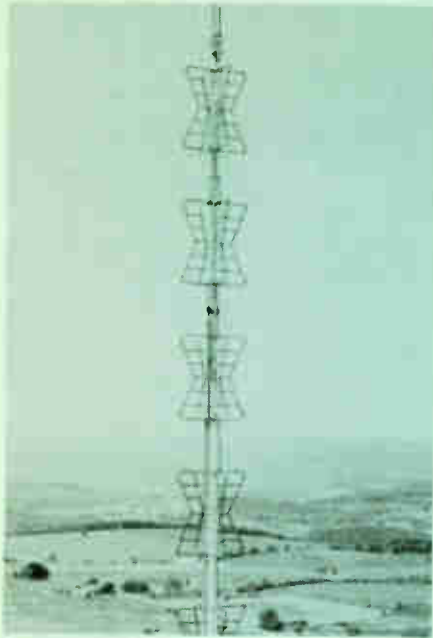
Ordering Information

TWS-30C Wavestar antenna, cardioid pattern. Includes: assistance with antenna reassembly and ground check at customer's site; beacon cable; and finish painting. Beacon and ground support structure not included. Please specify channel number, beam tilt and null fill. 994-8807-001



HARRIS

P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200



BATWING VHF Television Antenna

- Field tested and proven designs
- Multi-channel operation available
- Factory assembly
- Copper feed lines
- Galvanized mast and radiators
- Rugged mechanical design
- Conservative electrical design

The Harris VHF Batwing antenna has been widely used in television broadcasting service for many years. This well-proven design provides broadcasters with fine performance and long, reliable service.

The antenna consists of four "Batwing" radiators per bay, which are bolted to a cylindrical mast section. The antenna is engineered for top mounting on a tower, but smaller antennas are frequently side mounted for standby antenna service.

The radiators and the mast are hot-dipped galvanized steel, and corrosion-resistant components are used throughout to prevent electrical and mechanical degradation. The radiators are solidly bolted to the mast, which is ground potential for maximum lightning protection.

PATTERNS

The Batwing antenna normally provides a circular, or omnidirectional, radiation pattern in the horizontal plane. For special locations, the antenna design can be customized to provide a peanut, or figure-eight, pattern. A notch diplexer and phasing equipment are required for these special patterns.

Vertical plane patterns can be provided with beam tilt and null fill to satisfy nearly all special requirements.

MULTI-CHANNEL OPERATION

The inherently wide bandwidth and high power handling capability of the Batwing

antenna make it suitable for transmitting two multiplexed television signals within the same channel group.

INPUT CONNECTIONS

The Harris Batwing antenna is normally fed by two 3-1/8", 50-ohm transmission lines. The 90° phasing between lines is normally provided by a hybrid diplexer that is available as an accessory.

As an option, the antenna can be equipped to accept a signal from a single transmission line. In this case, a notch diplexer is required for combining the aural and visual transmitter signals.

DEICERS

Batwing antennas are not severely affected by moderate amounts of icing because of the

inherently low feed point impedance. Deicers are recommended, however, in areas where severe icing may be expected.

ASSEMBLY AND TESTING

Each Batwing antenna is completely assembled and tested at the Harris antenna facility in Palmyra, Missouri. After assembly and test, the antenna may be partially disassembled to facilitate shipping; however, shorter antennas may be shipped in one piece. The factory assembly and testing minimize installation time required after delivery to the antenna site.

FILING INFORMATION

Complete specifications and filing information are available on request. Harris antenna engineers are also available by telephone to discuss your specific antenna requirements.

Electrical Specifications

Channel Range:	54-88 MHz (FCC Ch. 2-6); 174-216 MHz (FCC Ch. 7-13).
Power Gain:	1 to 6, Ch. 2-6; 1 to 12, Ch. 7-13.
Input Connector:	Dual 3-1/8", 50 ohm.
Input Power Rating:	102 to 120 kW, TAB-6L. 70 to 77 kW, TAB-12H.
Input VSWR:	
Visual Carrier:	1.05 to 1.
Color Subcarrier:	1.08 to 1.
Rest of Channel:	1.10 to 1.
Circularity:	± 2dB.
Deicer Power:	3 kW per bay, Ch. 2, 3; 2 kW per bay, Ch. 4-6; 1 kW per bay, Ch. 7-13; 208/240 VAC, 60 Hz.

Ordering Information

When ordering Harris Batwing antennas, please specify channel number, pattern, beam tilt and null fill. Antennas supplied with lightning protector, beacon cable and finish painting in international orange. Assistance with antenna assembly and ground test also supplied. Beacon and ground support structures are not included.

TAB-1L single bay Batwing antenna, Ch. 2-6	994-7602-001
TAB-3L three bay Batwing antenna, Ch. 2-6	994-7604-001
TAB-4L four bay Batwing antenna, Ch. 2-6	994-7605-001
TAB-5L five bay Batwing antenna, Ch. 2-6	994-7606-001
TAB-6L six bay Batwing antenna, Ch. 2-6	994-7607-001
TAB-2H two bay Batwing antenna, Ch. 7-13	994-7603-001
TAB-6H six bay Batwing antenna, Ch. 7-13	994-7608-001
TAB-12H twelve bay Batwing antenna, Ch. 7-13	994-7609-001

Note: Two bay antennas for Ch. 2-6 available on request. One, four, eight and ten bay antennas for Ch. 7-13 available on request. All antennas are F.O.B. Harris' antenna facility, Palmyra, Missouri.

Options And Accessories

Rosemount Ice Warning System:	Consists of Model 871CB1 Ice Detector and Model 425B1 Controller.
Input Connector:	Single line input.
Pattern:	Peanut, or figure-eight
Hybrid Diplexer:	26 kW, Ch. 2-6. 66 kW, Ch. 2-6. 15 kW, Ch. 7-13. 55 kW, Ch. 7-13.

Test Range Pattern Measurements

Single Bay Rental Antennas Available on Request

Prices and Specifications Subject to Change Without Notice.

LOW BAND VHF-TV TRANSMITTING ANTENNAS

HARRIS
 P.O. Box 4290
 Quincy, IL 62305-4290
 (217) 222-8200

TAV-5L AND TAV-5LE Circularly Polarized Low Band VHF-TV Transmitting Antennas

- Low windload design for lower tower and installation cost
- TAV-5LE directly replaces Batwing antenna
- Excellent axial ratio — reduces ghosting effects
- Upper-lower feed system for maximum redundancy
- Radomed feed points and baluns-maximum protection from ice and corrosives
- Requires no electrical deicing

TAV-5L

The TAV-5L is a five-bay CPV antenna designed for excellent circularly polarized performance and for low windload. Each bay of the antenna consists of three crossed vee dipoles mounted at 120° intervals around a vertical mast. As a direct result of the precise tailoring of the radiated pattern of the vee dipoles, the TAV-5L has superb axial ratio characteristics.

The antenna is designed for maximum ERP (Effective Radiated Power) using today's 60-kilowatt low band television transmitters.

TAV-5LE

The TAV-5LE antenna is designed specifically as a replacement for the commonly used six-bay Batwing horizontally polarized antenna. The 5LE's radiation center, mechanical characteristics and tower bury section are engineered so that a Batwing antenna may be easily replaced on an existing tower. The 5LE's "extended radiation center" is slightly higher than the 5L to place it within two meters of existing Batwing antennas.

PATTERNS

Elevation pattern contouring to introduce beam tilt and null fill may be provided by means of standard phase distribution techniques. Control of the elevation pattern is accomplished with no degradation of the axial ratio. For omnidirectional stations, the shape of the azimuth pattern will vary from circular less than ±2 dB.

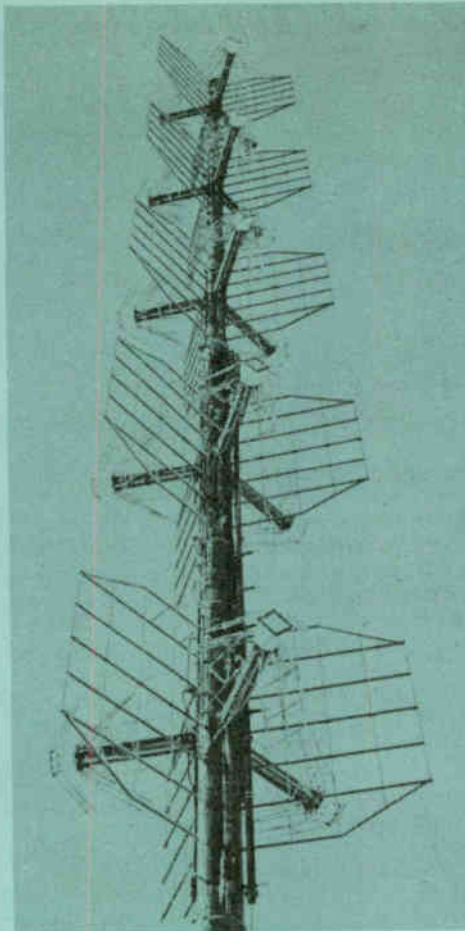
RADOMES

Fiberglass radome covers are standard, and protect the feed point and balun from exposure to moisture, ice and atmosphere corrosives. Consequently, the antennas are not subject to performance degradations caused by the environment.

INPUT CONNECTIONS

The standard 5L antennas are supplied with dual 3/8", 50 ohm input connections. The upper two bays and lower three bays of the antenna are each fed by a separate, independent transmission line. This feature permits using one-half of the antenna in an emergency situation (with appropriate patching) with only a minor reduction in signal strength. The TAV-5L may also be supplied with a single input connection.

All 5L antenna masts are hot dip galvanized and all hardware is stainless steel for excellent corrosion protection. In addition, all antennas are primed and finish painted before assembly.



TAV-5L/5LE Electrical Specifications

FREQUENCY RANGE: 54-88 MHz
CHANNELS: 2-6, E2-E4
INPUT POWER RATING: 70 KW VISUAL
 WITH 20% AURAL
INPUT CONNECTOR: DUAL 3/8", 50 OHM
INPUT VSWR:
 VISUAL CARRIER: 1.05 to 1
 COLOR SUB-CARRIER: 1.08 to 1
REMAINDER OF CHANNEL: 1.10 to 1
CIRCULARITY: ± 2.0 dB
AXIAL RATIO: 2 dB

	POWER GAIN (PER POLARIZATION)	NULL FILL (PERCENT)
2.40	3.80 dB	7%
2.39	3.78 dB	10%
2.35	3.71 dB	15%
2.29	3.60 dB	20%
2.19	3.40 dB	25%
2.08	3.18 dB	30%

NOTE: Gain may vary slightly with channel.

TAV-5L Mechanical Specifications

CHANNEL	ANTENNA (a) HEIGHT-(FT)	RAD. CENTER (FEET)	MOMENT (FT-LBS)	SHEAR (LBS)	WEIGHT (LBS)
2	81.5	41.4	230,000	7,500	13,300
3	75.5	38.0	197,000	7,050	11,500
4	69.0	34.7	161,000	6,050	9,500
5	62.25	30.9	126,000	5,350	8,200
6	59.0	29.1	111,000	5,050	7,700

NOTE: a) Height includes 4 foot lightning protector.
 b) Windloads for 50/33 PSF EIA wind.

TAV-5LE Mechanical Specifications

CHANNEL	ANTENNA (a) HEIGHT-(FT)	RAD. CENTER (FEET) (b)	MOMENT (FT-LBS)	SHEAR (LBS)	WEIGHT (LBS)
2	85.0	44.9	252,000	7,850	14,500
3	82.5	45.0	241,000	7,750	13,000
4	69.75	35.4	163,000	6,250	11,000
5	67.0	35.6	147,000	5,850	9,500
6	65.5	35.6	139,000	5,700	9,200

NOTE: a) Height includes 4 foot lightning protector.
 b) Radiation center within 2 meters of corresponding 6 bay Batwings.
 c) Bury section same as 6 bay Batwing.
 d) Windloads for 50/33 PSF EIA wind.

Ordering Information

When ordering, please specify channel number, pattern, beam tilt, and null fill. Antennas supplied with lightning protector, beacon cable and finish painting in international orange. Assistance with antenna assembly and ground test also supplied. Beacon and ground support structures not included. Standard antenna is bury mounted.

TAV-5L five-bay CPV antenna 994-8798-001
TAV-5LE five-bay CPV antenna 994-8799-001

NOTE: Four and six bay CPV antennas for Channels 2-6 are available. All antennas are F.O.B. Harris' antenna facility, Palmyra, Missouri.

Options And Accessories

Input Connector: Dual 4/16" or single line.
 Pattern: Directional.
 Notch Diplexer: TD-60L, 66 kW rating, Channels 2-6.
 Antenna Mounting: Flange mounted.



HARRIS

P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

VHF TELEVISION ANTENNA

CPV

Circularly Polarized Television Antenna

- Top mount design
- Excellent axial ratio — reduces ghosting effects
- High power handling capabilities
- Requires no electrical deicing
- Superb horizontal circularity
- Excellent control of vertical pattern
- Directional pattern capability
- Antenna elements are at DC ground potential for lightning protection
- Dual or single line input

In addition to its outstanding mechanical specifications, the Harris CPV antenna also features excellent circularity (standard omnidirectional pattern varies less than ± 2 dB); low axial ratio (less than 2 dB); VSWR less than 1.05:1 at visual carrier and below 1.1:1 over each channel; directional horizontal pattern capability; and a variety of vertical patterns that may be tailored to specific coverage requirements. Harris has spent years in research and development of the CP concept for TV broadcasting, so that the current design now combines optimum circularly polarized performance with all of the regular features of the Harris line of television antennas.

With the Harris CPV, picture quality may be improved through ghost reduction. Also, increased signal-to-noise ratios may be achieved whether the viewer uses a CP receiving antenna, conventional rabbit ears or an ordinary outside receiving antenna.

DESIGN

Each bay of the CPV consists of three crossed vee dipoles mounted at 120° intervals around a vertical mast. These dipoles are separated by three vertical grids which isolate the vee dipoles and provide horizontal beam shaping. Each set of crossed dipoles is fed in phase quadrature to produce rotating RF energy. The signal emanating from each set of dipoles is considered right hand circular since the field rotation is clockwise as viewed in the direction of propagation.

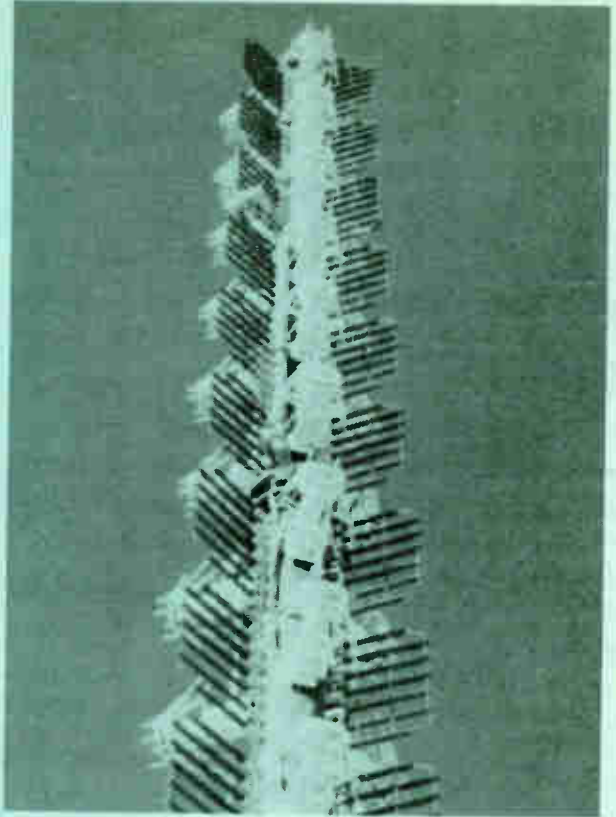
The Harris CPV is available with power ratings up to 100 kilowatts, and a special wideband flat dipole is used to safely handle the required power levels. Each dipole is mechanically supported and fed from special baluns for both vertical and horizontal polarization.

RADOMES

Fiberglass radome covers are standard, and protect the radiating elements from exposure to moisture, ice and atmospheric corrosives. Consequently, the CPV antenna is very insensitive to performance degradations caused by the environment. As the need for electrical deicing is eliminated, substantial annual savings in power costs can result—in addition to the initial savings in not having to purchase deicer elements, transformers and wiring.

AXIAL RATIO

The CPV has superb axial ratio characteristics as a direct result of the precise tailoring of the radiated pattern of the vee dipoles. Axial ratio, the ratio of the major and minor axes of the polarization ellipse, critically defines the quality of a radiating element. When circularly polarized receiving antennas are used by the viewer, reflected signals may be attenuated, thereby reducing ghosting effects.



VERTICAL PATTERN

Vertical pattern contouring to introduce beam tilt and null fill may be provided by means of standard phase distribution techniques—such as those used in many successful Batwing installations. Control of the vertical pattern is accomplished with no degradation of the axial ratio. Therefore, contoured vertical patterns are available much the same as in conventional horizontally polarized TV antennas.

HORIZONTAL CIRCULARITY

For omnidirectional stations, the shape of the horizontal pattern will vary from circular by less ± 1.5 dB for Ch. 7-13; 2.0 dB for Ch. 2-6. Stations employing directional arrays will find one of the several patterns available to be ideally suited to their specific need.

INPUT CONNECTIONS

The CPV antennas are uniquely designed in a manner that permits the use of either single or dual transmission lines. This feature permits maximum flexibility for the broadcaster who is replacing an existing antenna or planning a completely new installation.

The standard TAV-6L low band CPV antenna is supplied with dual $3\frac{1}{8}$ " 50 ohm input connections. The upper and lower halves of the antenna are each fed by a separate, independent transmission line, a feature that permits using one-half of the antenna in an emergency situation (with appropriate patching) with only a minor reduction in signal strength. The TAV-6L may also be supplied with a single input connection.

The standard TAV-12H high band CPV antenna is supplied with a single $6\frac{1}{8}$ " 50 ohm input connection. The TAV-12H may also be supplied with a dual line input, which will permit feeding power to one-half of the antenna in an emergency.

All CPV antenna masts are hot dip galvanized and finish painted before assembly. All hardware is stainless steel for excellent corrosion protection.

VHF TELEVISION ANTENNAS



TAV-6L Electrical Specifications

Channel Range: FCC Channels 2-6 (54-88 MHz).
Power Gain (10% Null Fill): 2.92 (4.65 dB) per polarization.
Input Connector: Dual 3-1/8", 50 ohm.
Input Power Rating: 70 kW visual with 20% aural.
Input VSWR:
 Visual Carrier: 1.05 to 1.
 Color Sub-carrier: 1.08 to 1.
 Rest of Channel: 1.10 to 1.
Axial Ratio: 2 dB.
Circularity: ± 2 dB.

TAV-12H Electrical Specifications

Channel Range: FCC Channels 7-13 (174-216 MHz).
Power Gain (15% Null Fill): 5.81 (7.64 dB) per polarization.
Input Connector: Single 6-1/8", 50 ohm.
Input Power Rating: 75 kW visual with 20% aural.
Input VSWR:
 Visual Carrier: 1.05 to 1.
 Color Sub-carrier: 1.08 to 1.
 Rest of Channel: 1.10 to 1.
Axial Ratio: 2 dB.
Circularity: ± 1.5 dB.

TAV-6L Mechanical Specifications

Channel	Antenna Height (ft.)	Rad. Center (feet)	Moment (ft.-lbs.)	Shear (lbs.)	Weight (lbs.)
2	95.5	46.25	337,000	9,450	16,000
3	88.0	42.33	291,000	8,900	15,000
4	80.5	38.75	232,000	7,650	13,000
5	74.0	35.25	174,000	6,700	11,000
6	70.0	32.60	164,000	6,450	10,100

Note: Antennas are designed in accordance with the American Institute of Steel Construction Code. The loading data shown in the table is based on a wind pressure of 50 lbs. per sq. ft. acting normal to flat surfaces. Loading data includes windload effects for beacon (not provided by Harris), and also bury sections if not flange mounted.

TAV-12H Mechanical Specifications

Channel	Antenna Height (ft.)	Rad. Center (feet)	Moment (ft.-lbs.)	Shear (lbs.)	Weight (lbs.)
7	69.0	32.7	172,750	5,275	9,150
8	68.2	32.3	169,400	5,250	9,050
9	65.0	30.7	155,550	5,050	8,800
10	64.2	30.3	152,250	5,000	8,750
11	60.7	28.6	136,550	4,725	8,000
12	60.7	28.6	136,550	4,725	8,000
13	59.0	27.7	130,700	4,650	7,600

Note: Antennas are designed in accordance with the American Institute of Steel Construction Code. The loading data shown in the table is based on a wind pressure of 50 lbs. per sq. ft. acting normal to flat surfaces. Loading data includes windload effects for beacon (not provided by Harris), and also bury sections if not flange mounted.

Low Band CPV Ordering Information

When ordering Harris low band CPV antennas, please specify channel number, pattern, beam tilt and null fill. Antennas supplied with lightning protector, beacon cable and primer coating. Assistance with antenna assembly and ground test also supplied. Beacon, painting and ground support structures not included. Standard antenna is bury mounted.

TAV-6L six bay CPV antenna, Channels 2, 3 994-8602-00X
TAV-6L six bay CPV antenna, Channels 4, 5 and 6 994-8602-0XX

Note: Four and five bay CPV antennas for Channels 2-6 are available on request. All antennas are F.O.B. Harris' antenna facility, Palmyra, Missouri.

Options And Accessories

Input Connector: Dual 4-1/16" or single line.
Pattern: Directional.
Test Range Pattern Measurements
Notch Diplexer: TD-60L, 66 kW rating, Ch. 2-6.
Antenna Mounting: Flange mounted.

High Band CPV Ordering Information

When ordering Harris high band CPV antennas, please specify channel number, pattern, beam tilt and null fill. Antennas supplied with lightning protector, beacon cable and finish painting in international orange. Assistance with antenna assembly and ground test also supplied. Beacon and ground support structures not included. Standard antenna is flange mounted.

TAV-12H twelve bay CPV antenna, Channels 7-13 994-8707-001
TAV-12H twelve bay CPV antenna, Channels 7-13, as above, except with dual 3-1/8", 50 ohm input 994-8707-002

Note: 8, 10, 14, 16 and 18 bay CPV antennas for Channels 7-13 are available on request. All antennas are F.O.B. Harris' antenna facility, Palmyra, Missouri.

Options And Accessories

Input Connector: Dual 3-1/8" or dual 4-1/16", 50 ohm.
Pattern: Directional.
Test Range Pattern Measurements
Notch Diplexer: TD-100H, 100 kW rating, Ch. 7-13.
Impedance Transformer: 6-1/8" 50 ohm to 6-1/8" 75 ohm.
Power Splitter for Dual Line Feed
Antenna Mounting: Bury mounted.



HARRIS

P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

AUDIO CONSOLE



MEDALIST-10, 10 Channel



MEDALIST-8, 8 Channel

MEDALIST 8, 10 or 12 Channel Dual Stereo Audio Consoles

- Plug-in, interchangeable attenuator modules provide quick replacement, even with unskilled personnel
- Choice of rotary or linear attenuators for the best performance by your operating staff
- Mic input available on any channel to provide individual station configuration of console channel assignments
- Up to 3 sources into each input channel to eliminate patch panels and external switching panels
- Virtually transparent performance assures the best possible signal quality and listener satisfaction
- 25 dB minimum headroom in all circuits provides excellent stereo sound, even with the VU meters pinned
- Excellent RFI/EMI immunity assures noise-free signal of your programming, without interference from nearby stations
- Ideal for stereo on-air and production applications where you want the cleanest signal in the area

The Harris Medalist Series of dual stereo audio consoles is ideal for AM and FM on-air and production applications. The Harris Medalist-12 offers facilities for up to 36 sources into 12 input channels. It provides full visibility of all output signal levels via five dedicated meters for Program, Audition, and Mono/Sum. It also has mounting provisions for one or two up/down counters, synchronous clock or master clock readouts. The Medalist-10 allows facilities for up to 30 sources into 10 input channels. The

Medalist-8 has the capability for 24 sources into 8 input channels. Microphone capability on all input channels makes the Medalist audio console an attractive choice for small TV operations. Other applications include Cable TV, post-production facilities and sound distribution systems. Features typically found only in more expensive modular audio consoles are standard in the Harris Medalist. Multiple input selectors are provided for headphone and monitor circuits. And the best in human engineering is evident in the choice and location of front panel components.

RELIABILITY

A heavy duty power supply with plenty of reserve capacity is included in the Medalist console. The components in the supply have power and voltage ratings well above nominal requirements to assure optimum reliability and long life. Burned-in ICs, selected and screened for important operating parameters, are used for high reliability and stability in the various signal paths.

Top line components such as the DBX™ VCAs, Penny and Giles attenuators and Schadow switches provide unquestioned reliability and performance in their respective areas of the console. Even the quick connect AMP Barrel Terminals for the input and output connections are gas tight and were selected for reliability as well as for convenience.

YOU SPECIFY THE STYLE OF PLUG-IN ATTENUATORS

You may select either rotary or linear Penny and Giles or alternate, lower cost attenuators with 100 millimeter (four inch) throw in your Harris Medalist audio console. In either con-

figuration, the plug-in, interchangeable attenuator modules offer operating ease and new dimensions of service convenience.

TRANSPARENT PERFORMANCE

Active transformerless balanced input and output circuits give the Medalist virtually transparent performance rarely matched in competitive consoles of any size. The frequency response is very flat, with no transformers to cause rolloff or sharp rise in distortion within the audio passband.

AMPLIFIER COMPLEMENT

Two microphone preamps with plug-in connections are provided as standard equipment. A pan pot on the output of the preamps sets the desired left/right stereo mix. Additionally, two stereo program amplifiers are included for the Program and Audition line outputs. Other amplifiers provided are: A stereo headphone amplifier capable of driving either low or high impedance phones; a line level stereo amplifier to drive the optional external monitor speaker amplifier; and a powerful cue amplifier with built-in speaker.

SWITCHING PHILOSOPHY

All front panel switching on the Harris Medalist audio console is effected through high quality pushbutton switches. Large, rectangular buttons aid comfortable, positive operation.

MEETING IMPORTANT CRITERIA

In the tradition of all Harris audio consoles, the Medalist is a skillful blend of engineering advances, no-compromise performance, and user-friendly design—all wrapped in a functional, cost competitive package. This innovative audio console merits serious consideration in present or future plans to update your facility.

SPECIFICATIONS

OUTPUT CHANNELS:

Stereo PROGRAM and AUDITION, plus optional mono SUM channel with +8 VU output level (+4 VU and 0 VU field adjustable).

INPUT CHANNELS:

12 total on the Medalist-12, 10 on the Medalist-10 and 8 on the Medalist-8. Stereo line level, or mono mic level with pan-pot for left/right imaging.

INPUT CIRCUITS:

Medalist-12, 36 total; Medalist-10, 30 total; Medalist-8, 24 total. Has three-position source selector in each input channel with the first position of each group capable of mic input for up to 8 mics in the Medalist-8, 10 in the Medalist-10 and 12 in the Medalist-12. The second and third positions on the last two input channels of each console are capable of remote line operation, with program cue feed down the line before being switched into the console. All others are for line level sources such as cart machines, reel-reel and turntables.

STANDARD AMPLIFIER COMPLEMENT:

2 microphone preamps, 2 stereo program line amplifiers, stereo headphone amplifier, stereo monitor driver (to optional external speaker power amplifier), and mono/sum cue amplifier with built in speaker.

OUTPUT CIRCUITS:

2 stereo plus optional mono/sum program line level outputs, stereo driver @ .25 volt nominal output (10V maximum, external power amplifier required), stereo headphone feed for external power amplifier (if more than 2 watts/channel internal headphone amplifier is desired).

INPUT IMPEDANCES:

MICROPHONE: 5K ohms or better, balanced
CART MACHINES, ETC.: 8K ohms or better, balanced
EXT 1, EXT 2: 8K ohms or better, balanced
NETWORK: 620 ohms terminated, balanced

SOURCE IMPEDANCES:

MICROPHONE: 150/250 ohms
CART MACHINES, ETC.: 150/600 ohms
EXT 1, EXT 2: 150/600 ohms
NETWORK: 600 ohms

OUTPUT IMPEDANCES:

PGM, AUD, MONO: 20 ohms, resistive
MONITOR FEED: 50 ohms maximum, resistive
PROGRAM CUE TO REMOTE LINES: Approx. 2K ohms, resistive
EXTERNAL PHONE FEED: 50 ohms maximum, resistive

LOAD IMPEDANCES:

PGM, AUD, MONO: 150/600 ohms
MONITOR FEED: 1K ohms or greater
PROGRAM CUE TO REMOTE LINES: Approx. 2K ohms, resistive
EXTERNAL PHONE FEED: 1K ohms or greater

GAIN:

MIC TO LINE: 94 dB \pm 2 dB* with controls @ minimum attenuation
TAPE TO LINE: 30 dB \pm 2 dB* with controls @ minimum attenuation
*May be changed with circuit value changes

FREQUENCY RESPONSE:

MIC TO LINE: +0, -0.5 dB, 20 Hz to 20 kHz
TAPE TO LINE: +0, -0.25 dB, 20 Hz to 20 kHz
BANDPASS: -3 dB @ 3 Hz and 100 kHz

TOTAL HARMONIC & IM DISTORTION:

PGM, AUD, MONO: 0.05% maximum, 20 Hz to 20 kHz @ 8 dBm output
0.1% maximum, 20 Hz to 20 kHz @ +18 dBm output
Clipping Level: +26 dBm/600 ohms, or higher

SIGNAL TO NOISE:

MIC TO LINE: 77 dB (or better) below +18 dBm output with -50 dBv input level, for typical proof measurements; -127 dBv (or better) equivalent input noise with 20 Hz to 20 kHz bandpass and normal control settings
TAPE TO LINE: 95 dB (or better) below +18 dBm output with +14 dBv input level and normal control settings
MONITOR & PHONE FEED: Approx. same as TAPE TO LINE

CUE AMPLIFIER OUTPUT:

6 watts with complex wave into 8 ohm speaker

HEADPHONE AMPLIFIER:

2 watts per channel with complex wave into 8 ohm phones, 7 volts RMS into phones of 600 ohms or greater.

POWER REQUIREMENTS:

125 watts max. for Medalist-12; 100 watts max. for Medalist-10; 80 watts max. for Medalist-8.

SIZE:

MAINFRAME: 513 mm (20 in.) deep x 278 mm (11 in.) high.
Width: Medalist-12 — 1241 mm (49 in.)
Medalist-10 — 1038 mm (41 in.)
Medalist-8 — 835 mm (33 in.)

POWER TRANSFORMER/FUSE ASSEMBLY: 152 mm (6 in.) deep x 133 mm (5¼ in.) high (with 25 ft. interconnecting cable, plugs on each end).

WEIGHT:

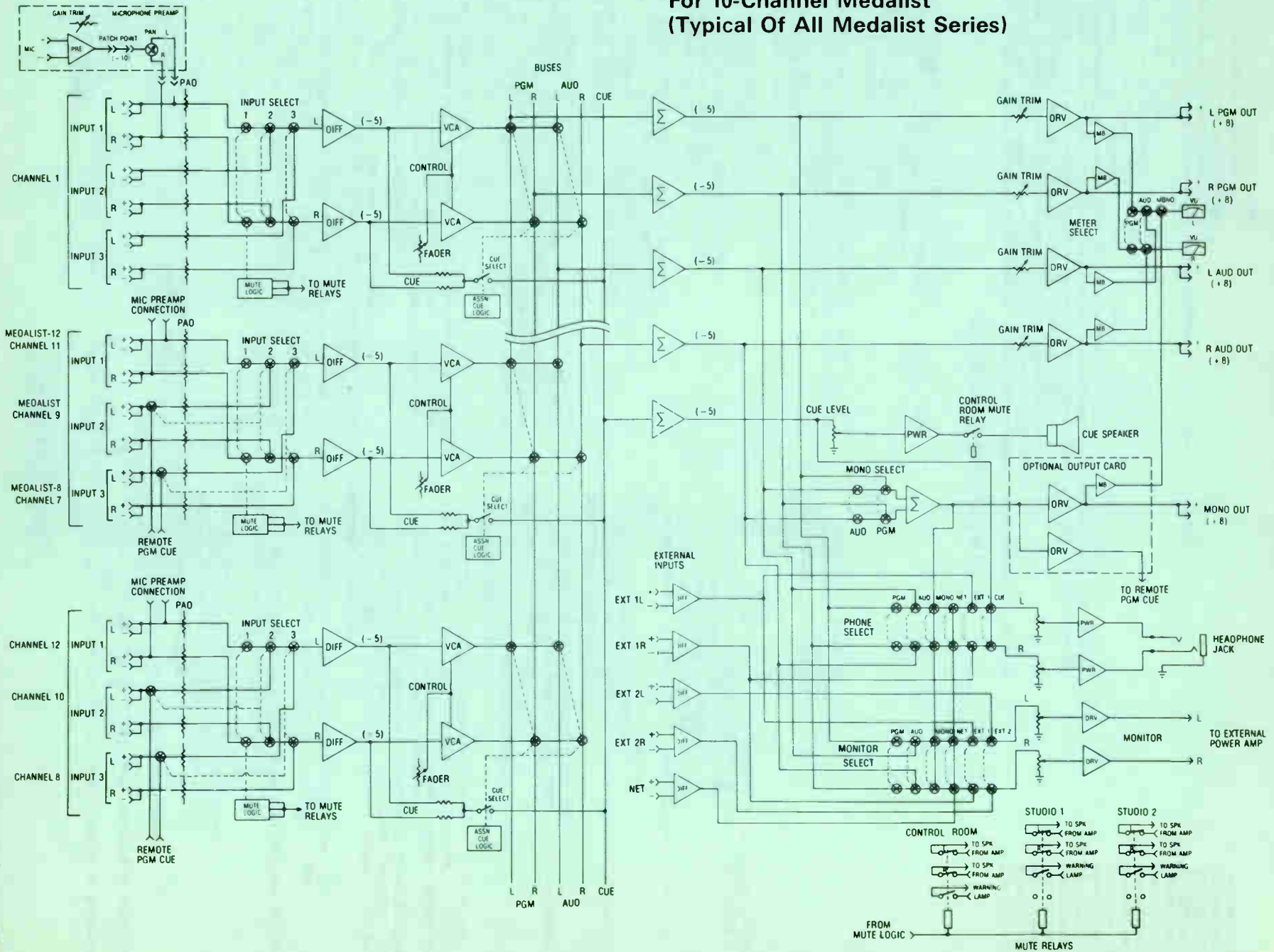
Medalist-12 — 36 kg (80 lbs.)
Medalist-10 — 31 kg (69 lbs.)
Medalist-8 — 27 kg (60 lbs.)

ORDERING INFORMATION

Medalist-12 console, with two stereo program amplifiers, two mic preamplifiers, less input channel attenuators	994-8835-001
Medalist-12 4-digit, 100-minute up/down timer with .3" LED display and 3 controls	436-0248-000
Medalist-12 6-digit, 12 hour line synch. clock with .3" LED display and 3 controls	436-0249-000
Medalist-12 6-digit, remote display for ESE master clocks with serial time code	436-0250-000
Medalist-10 console, with two stereo program amplifiers, two mic preamplifiers, less input channel attenuators	994-8758-000
Medalist-8 console, with two stereo program amplifiers, two mic preamplifiers, less input channel attenuators	994-8759-001
Stereo program amplifier for Mono/Sum and remote program cue	994-8776-001
Additional microphone preamps	994-8775-001
Penny & Giles linear attenuators*	994-8762-001
Penny & Giles rotary attenuators*	994-8763-001
Alternate linear attenuator*	994-8812-001
Alternate rotary attenuator*	994-8811-001
Blank attenuator module (use when less than full complement of attenuator modules specified)	994-8826-001
Remote start switch, momentary action	992-6281-001
Remote start switch, alternate action	992-6282-001
BGW-75 dual monitor power amplifier	740-0606-000

*May be intermixed; order up to 10 total

Harris Medalist Functional Block Diagram For 10-Channel Medalist (Typical Of All Medalist Series)



HARRIS
P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200



Prices and Specifications Subject to Change Without Notice.

PHONO PREAMPLIFIER

HARRIS
P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

PX-91 Mastering Quality Phono Preamp

- Dual mono or stereo operation
- Extremely low transient intermod and dynamic distortion, assures faithful reproduction of even the most demanding disc cuts
- High accuracy equalization and excellent response, +0.25 dB maximum from ideal RIAA curve
- Polypropylene equalization components insure excellent transient response
- All integrated circuits burned in and factory tested for high reliability
- Low noise design for dead quiet mastering operation
- High input overload immunity, 630 mV at 1 kHz insures adequate headroom and extraordinary quality

Excellent audio fidelity in the broadcast chain is of vital concern to broadcasters. The phono preamplifier is a critical component in this chain. The advent of inexpensive integrated circuit technology has produced an array of low cost phono preamplifiers which advertise excellent steady-state performance. However, static measurements do not adequately describe dynamic listening criteria.

The new Harris PX-91 Mastering Quality Phono Preamp is the result of a careful evaluation of the performance requirements of broadcast phono preamplifiers.

SPLIT EQUALIZATION

Broadcast phono preamps generally employ only a single stage for equalization and amplification. These designs suffer from inadequate feedback loop gain due to the stringent requirements imposed by RIAA equalization and the gain required for a usable output level.

The Harris PX-91 Mastering Quality Phono Preamp splits the equalization and amplification requirements into two separate stages. This allows considerably more conservative operation of each amplifier stage to insure excellent transient performance. The first stage buffers the phono cartridge, provides equalization time constants of 3180 and 318 microseconds, and supplies a small amount of overall gain. Unlike composite amplifier preamps, this first stage is DC coupled to the cartridge, eliminating a coupling capacitor that can easily degrade the small signal level present.

The 7950 μ sec and the 75 μ sec time constants are provided by a passive interstage network. This output is directly coupled to the second stage which provides the additional gain necessary to bring the cartridge level up to line level. It is electronically balanced, provides 20 dB of variable gain range and an output capability in excess of +20 dBV into a 600 ohm load.



NOISE

The Harris PX-91 Phono Preamp design effort has been supplemented by an equally extensive measurement program. The unit is subjected to a battery of tests which completely and unambiguously define its actual performance. Typical noise is 85 dB below 10 mV input level, 600 ohm termination, which approaches the theoretical limit of performance. In addition, 1/3 octave analysis reveals a smooth noise vs. frequency curve, indicating hum- and pop-free performance.

FREQUENCY RESPONSE

The 2 stage design of the Harris PX-91 allows for theoretically perfect equalization. Use of the finest 1% film and foil polypropylene capacitors and 1% metal film resistors insures compliance with the ideal IEC-RIAA curve within 0.25 dB.

DISTORTION

The static and transient distortions of the Harris PX-91 Phono Preamp are so low that they are difficult or impossible to measure. Over one year of solid research into low noise amplifier design and transient distortion culminated in the production of this preamplifier.

Distortion in the Harris Phono Preamp was measured with classical and modern techniques that more closely approximate auditory perception. Swept two-tone Intermodulation Distortion and Transient Intermodulation Distortion test results were limited by modern state-of-the-art test equipment performance, not by the performance of the preamp.

OTHER FEATURES

Amplifier slew rates are better than 15V/ μ sec, more than adequate for the small signal levels involved. Adjustable gain and capacitive cartridge loading assure optimum performance with any moving magnetic cartridge. The power supply is regulated and doubly filtered to eliminate power line transients from the preamp output. Conservative operation of all components provides trouble-free operation, even in brownout or surge conditions. Professional XLR output connec-

tors eliminate RFI prone barrier strips. RCA type phono input connectors assure RF immunity and compatibility with quality tone arms.

Specifications

Input Impedance: 47K ohms in parallel with 100pf to 300pf, adjustable in 50pf steps.

Input Stage Overload: 630 mV RMS (1.78 vPP) at 1 kHz.

Maximum Input Sensitivity: 3.2mV RMS for +4 dBV output.

Output Impedance: 100 ohm, electronically balanced, resistive.

Maximum Output Level: +20 dBV.

Frequency Response: Within ± 0.25 dB of standard IEC-RIAA curve, 20 Hz to 20 kHz.

Harmonic Distortion: Less than 0.02%, 20 Hz to 20 kHz, +10 dBV output. Typically less than 0.005%.

Intermodulation Distortion: Less than 0.02%, 60 Hz/7 kHz, 4:1 ratio, +10 dBV output. Typically less than 0.008%.

Transient Intermodulation Distortion: Less than 0.01%, CCIF two tone method, 20 Hz difference frequency. Typically less than 0.002%, DIM-100 sine/square (Otal) method below 0.05% measurement limit.

Signal To Noise: Greater than 80 dB below 10 mV RMS input reference, 20 Hz to 20 kHz, 600 ohm input termination. Typically: 85 dB below 10 mV input, 600 ohm terminated, non-weighted, 90 dB below 10 mV input, 600 ohm terminated, A weighted.

Equivalent Input Noise: -122 dBV, 20 Hz to 20 kHz, 600 ohm terminated.

Audio Slew Rate: ± 15 V/ μ sec.

Gain: 32-52 dB, continuously variable.

Channel Separation: Greater than 70 dB.

AC Power: 117 VAC/234 VAC, 50/60 Hz, 4 watts.

Audio Input Connectors: RCA phono jacks.

Audio Output Connectors: Male XLR type.

Size: 10.5"L x 2.25"H x 4"W
(267mm x 57mm x 102mm).

Weight: Domestic packed, 3.25 lbs. (1.5 kg).

Cubage: 2 cubic feet.

Ordering Information

Harris PX-91 Mastering Quality Phonograph Preamp for dual
mono or stereo operation 994-8915-001



HARRIS

P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

PROGRAM CONTROL

HARRIS 9000 PROGRAM CONTROL SERIES

- Video editing and display
- **MULTI-FILE™** Program Memory
- Jock-assist countdown clock with 10-second warning
- Automatic power failure restart
- Built-in time announce control
- Interfaces to all popular random access machines
- Ready sensing to prevent dead air
- Crystal-controlled 7-day clock
- Simple one-time bulletin insertion
- Operator "error sensing"
- Automatic voice track control
- Programmable fade-under for talk-over
- Software logic — your safeguard against future obsolescence
- Front panel access to test points and adjustments
- Full function monitoring and audition
- Optional logging, which provides discrepancy diagnostics
- 25 Hz detection included for all reel-to-reel sources
- Ready for most syndicated programming services
- Four "coffee pot" function relays included
- Micro-computer versatility
- Complete system remote control
- Dual silence sensors
- Stereo and sum-channel mono outputs
- Emergency back-up operation panel



• Three distinct systems available, offering the broadcaster a complete selection to meet his particular requirements • **MULTI-FILE™** Program Memory saves you time...and money • Easy-to-understand video display of current system status • Conversational messages • No special skills required to operate system • Live-assist features and ease of operation meet the needs of today's fast-paced combo operator • Advanced micro-computer design • Operationally and environmentally proven... hundreds of Harris' systems in field use.

As the originator of micro-computer program automation, Harris has drawn on its years of experience, and taken the next step forward to give you more flexible, more convenient, more reliable, and easier to operate systems than any available before. Harris 9000 systems will handle any format flawlessly, yet are so easy to understand, and so easy to program that even the most non-technical person in your station will readily see how they work and appreciate their help.

With many exclusives, from live-assist features to the truly advanced **MULTI-FILE™** Program Memory, the Harris 9000 Series is definitely the most advanced concept in program automation, and the best there is at its job—helping you improve your results, on the air and on the bottom line.

UNLIMITED FLEXIBILITY TO HANDLE ANY FORMAT...

With the wide variety of program formats that are on the air today, a system must have great versatility if it is to be able to handle any one of them. Harris' 9000 systems have that versatility.

No programming is too complicated—or too simple. They will faultlessly handle everything from fast-paced "lots-of-music, lots-of-talk" programming to a more simple sequence of reel-to-reel events integrated with commercials at the proper times. In addition, the Harris 9000 enables management to achieve its goal of minimizing the time and errors associated with entering commercials and other schedule changes.

EFFICIENCY AT EVERY STAGE...

The Harris 9000 aggressively pursues maximum efficiency at every stage of station operation. The video terminal provides necessary information—very complete yet very simple—for schedule entry and review. Even during editing, a status display informs the operator of the on-air situation, alerting him to possible problems. Conversational messages provide easy-to-understand prompting regarding the nature of errors. The keyboard layout, developed from Harris' experience in hundreds of installations, is aimed at fast and reliable scheduling.

The purpose of radio program control equipment is to maximize station profits through greater operating efficiency and through the presentation of a more saleable program product. That's pretty basic, but that's what it's all about...saving time...improving your product...increasing your profits.

That's what the Harris 9000 Program Control is all about, too. It has been designed to give you the best tool available to increase the efficiency and effectiveness of your staff, while providing the opportunity to improve your sound—whatever your format may be.

PROGRAM CONTROL

HARRIS
P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

SIMPLIFIED SCHEDULE ENTRY WITH MULTI-FILE PROGRAM MEMORY...

The need to separate commercials from repetitive format elements was partially satisfied with the use of sub-routines, a concept developed by Harris and now widely copied throughout the industry. With the MULTI-FILE Program Memory, Harris' 9000 has vastly improved on a good idea, providing a real solution to an error-prone, time-consuming problem.

Commercial schedules, music rotations, repetitive format elements and special programs are all independent schedules which must be integrated to create the broadcast day. MULTI-FILE Program Memory provides independent files for these schedules, eliminating the need to refer to unrelated material. Traffic, for instance, no longer needs to know where to go after a commercial cluster. Traffic keeps the commercial file, the music director keeps the playlist file, etc. This is a real time-saver.

The Harris 9000 with MULTI-FILE Program Memory keeps things simple by integrating these various schedule files, according to plan and always on time. The operator can highlight on the video screen the look-ahead display of entries from any particular file; in addition, a bar graph can be displayed, distinctly illustrating the integration of upcoming schedule files. The innovative use of graphics in the Harris 9000 is not only of great assistance to the operator, but minimizes effort in the area of operator training.

IMPECCABLE EXECUTION...

Today's competitive operation can't afford to waste time deciding whether or not a format change is possible. The Harris 9000 Program Control knows that any format is possible, and concentrates on impeccable execution. "Tighter playlist control...more consistent air sound...increased ratings" are broadcaster comments that are frequently made about Harris' program control equipment.

Live or automated operation is no longer the issue when the end result is a significant advantage in ratings and revenues. The Harris 9000 provides multiple overlaps, dependable voice-track synchronization, plus solid support for the fast-paced live announcer.

Live-assist means never having to keep a program log, stack carts or cue records. A countdown timer, complete with a ten-second warning, helps maintain a tight sound. Insertion of unscheduled material is easy. This is live-assist that really aids your on-air talent and encourages more creative performance.

9000 Series Control Terminal

Programming and operating instructions are communicated to the system from a terminal that may be located up to 150 feet from the system electronics. The terminal provides continuous video display of various operational functions, and is also used for editing purposes.

Upper area shows on-air status, real time, and the next scheduled event

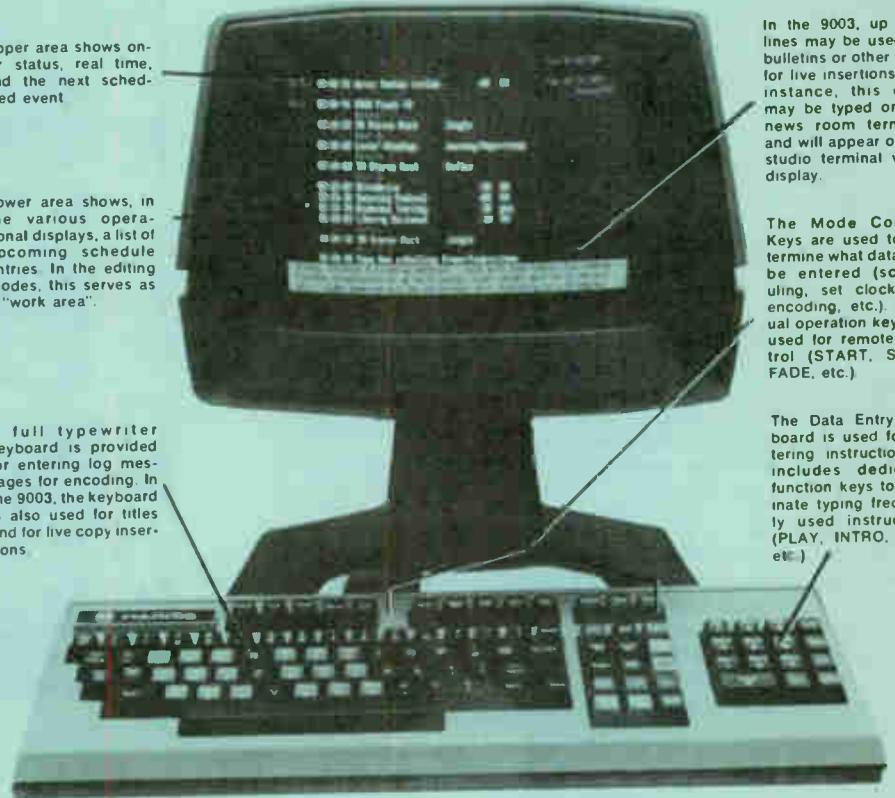
Lower area shows, in the various operational displays, a list of upcoming schedule entries. In the editing modes, this serves as a "work area".

A full typewriter keyboard is provided for entering log messages for encoding. In the 9003, the keyboard is also used for titles and for live copy insertions.

In the 9003, up to 3 lines may be used for bulletins or other copy for live insertions. For instance, this copy may be typed on the news room terminal and will appear on the video terminal display.

The Mode Control Keys are used to determine what data is to be entered (scheduling, set clock, log encoding, etc.). Manual operation keys are used for remote control (START, STOP, FADE, etc.).

The Data Entry Keyboard is used for entering instructions. It includes dedicated function keys to eliminate typing frequently used instructions (PLAY, INTRO, LINK, etc.).



YOUR CHOICE OF SYSTEMS TO MEET YOUR PARTICULAR REQUIREMENTS. The Harris 9000 Series is composed of three distinct systems, each showing a progressive increase in programming capability. The 9001 is a basic program control system which can be used for any automation requirement. It uses a single video terminal, and has a 1,999-event memory, which is expandable up to 9,999 events. The 9002 fills all program control requirements, plus has the ability to interface with an external business system, and can be programmed from totally independent terminals. It has a 1,999-event memory, expandable up to 9,999 events. The 9003 handles even the most sophisticated format faultlessly.

The Harris 9000 Series has been designed to expand as your needs expand. All 9000 Series models can easily be upgraded in the field to a higher numbered model.

THE HARRIS 9001. The 9001 has the full mainframe, audio switcher and heavy-duty power supply already in use in hundreds of installations worldwide. The 1,999-event memory (expandable to 9,999 events) and the 7-day clock allow you to program for a weekend or an entire week ahead. The simple keyboard and plain-text programming assure

mastery of system operation by most station personnel in less than a day. Dual-intensity video allows highlighting of the schedule items chosen by the operator. The types of highlighted entries could be commercial clusters, music sets, contest/promos—any file from the MULTI-FILE Program Memory.

Among the many other important 9001 features are: automatic power failure restart, time announce control, network join, ready sensing to prevent dead air, remote control and countdown clock for live-assist, bulletin insertion, "coffee pot" function relays, and MULTI-FILE Program Memory.

THE HARRIS 9002. In addition to the many features of the 9001, the 9002 includes dual flexible-disk drives to increase the memory capability and to provide a permanent memory storage medium.

Another key innovation is the ability of the 9002 to support totally independent terminals. Using MULTI-FILE Program Memory, the traffic director and program director can have their own files in the program memory. Now they can both edit their respective areas of event memory simultaneously! And, while this is happening, data can be received or transmitted to an external business system using the port provided for this purpose.

Prices and Specifications Subject to Change Without Notice.

B-499

**9000 SERIES
CONTROL ELECTRONICS**

THE HARRIS 9003. The Harris 9003 has revolutionized the role of program control in radio broadcasting by integrating the program system into the planning process—extending the benefits of program control beyond the operations level to everyone concerned with the on-air product.

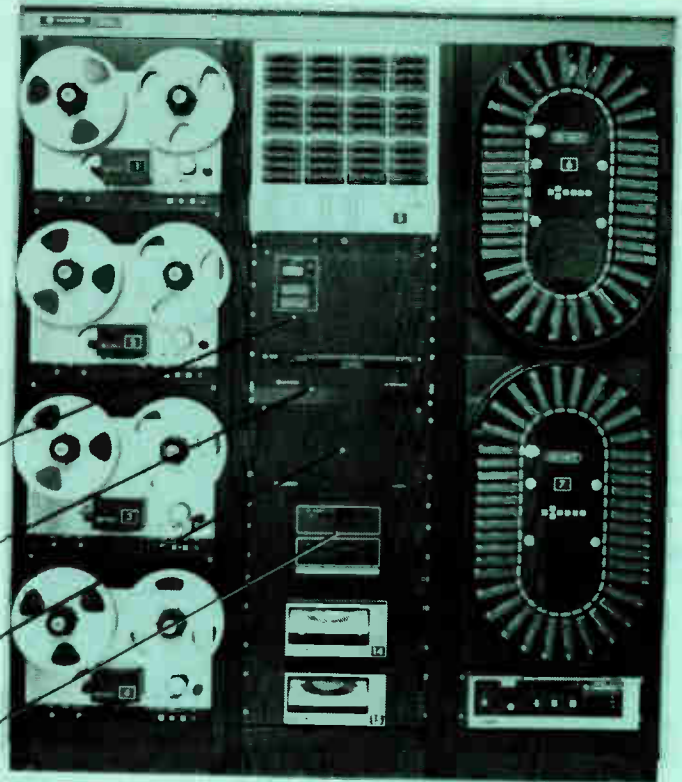
The Traffic Director can enter on the CRT display a new commercial order. He selects an account number, enters time, anticipated running time and the desired description, which will also appear on the display (and optionally on the log). The Traffic Director may also specify one of several live copy tags to be associated with the announcement, and that tag will also appear on the control room terminal. All further references can then be made using the account number.

With the plain-text title display feature, the music director no longer has to wonder if the system will air the recurrent record he wants following a commercial break. With Harris 9003 in charge of a random access music library, it is now possible to specify the names of the music selections. Instead of a "Play 05-27" indication, an operator will see that the scheduled selection is "Sara by Fleetwood Mac", along with other information, on the same line, such as intro/running time and chart position.

As more stations seek to better localize their syndicated programming, there is a need for periods of live programming; this may be for drive time or news blocks. In any case, the Harris 9003 is ideal for the live operator. The display shows the name of a song or commercial that is on the air, plus the names

At right is a typical system for use with a program service. Music is on reel-to-reel. Commercials (and other cartridge material) are in the instant access Instacart (5) and the random access Go-Carts (6 & 7). When time-announcement is used, deck 14 has even numbered minutes and deck 15 has odd numbered minutes. The system electronics require only half of a standard rack for mounting.

- A. The computer mainframe includes the monitor panel and control electronics.
- B. The solid-state Audio Switcher houses source modules, dual silence sensors, program amplifiers, faders and 25 Hz-filters.
- C. Computer-grade power supply.
- D. Dual flexible-disk drives for increased memory storage capabilities (9002 and 9003).



and starting times of upcoming scheduled events.

The system software is contained on the disk. In the unlikely event of disk failure, the system defaults to programmed Read-Only Memory (EPROM) chips located on the single 8080 CPU board; it would then operate similarly to the Harris 9002.

Going beyond the traditional role of the program system, the Harris 9003 brings significant benefits to the broadcaster—cost reduction due to reduced workload at the planning stage; improved on-air performance from scheduling flexibility; reduction in lost revenue due to scheduling errors; and improved operator performance due to easier system operation.

Major System Capabilities

Harris 9000 Series Model	Standard No. of Days or Days Operation (Walkaway)	Stand. No. of Days with Optional Memory Expansion	Interfaces with Business Automation	Countdown Clock	Independent Editing/Prog. Terminals	Logging	Plain-Text Programming	Plain-Text Title Display	Live Copy Display
9001	3*	15*	Optional	Programmable	Yes (Optional)	Optional	Yes	No	No
9002	3-15*	15-31*	Yes	Programmable	Yes (Optional)	Included	Yes	No	No
9003	31**	Not Applicable	Yes	Automatic	Yes (Optional)	Included	Yes	Yes	Yes

*Based on average of 50 events per hour

**Based on average of 110 events per hour.

FACILITIES CONTROL

HARRIS
P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

HARRIS 9100 FACILITIES CONTROL For TV Or Radio

- Building block concept allows a wide variety of applications, from complete automatic facilities control (including ATS), to simple remote or local control
- Reduces operating expenses
- Improves transmission quality
- Improves transmission system reliability
- Offers automatic security measures to protect your capital investment
- Allows automatic control of building environment
- Handles time-related functions automatically, tower lights on/off, etc.

The Harris 9100 is a facilities control system designed to improve your performance, protect your investment and cut your operating costs. The Harris 9100 in its various configurations can provide intelligent remote control; automatic transmitter control; automatic logging; plant protection through intrusion and fire alarms; automatic control of such items as tower lights and building temperature; and automatic exercising of standby equipment.

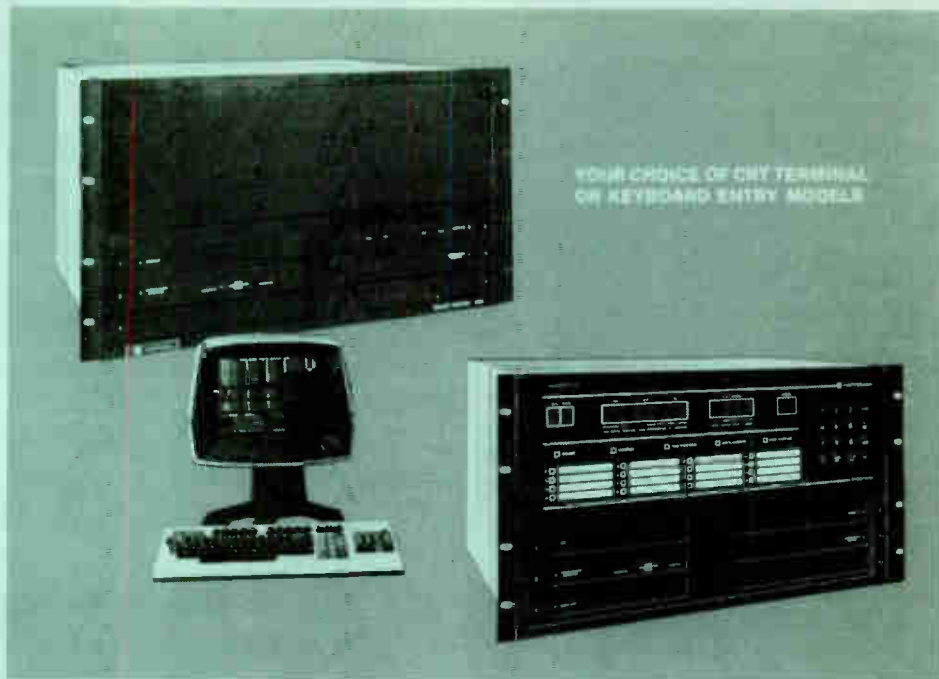
In short, the Harris 9100 Facilities Control provides surveillance over your transmission system and your physical plant, and offers protection from costly failures wherever they may occur.

The system is composed of a family of micro-computer controlled "building blocks" which determine the configuration, based on a specific application. Whether your need is to monitor and control a single co-located site or to operate up to three remote sites from a single location, the Harris 9100 Facilities Control has the flexibility to meet your requirements. No matter what the size of your operation—whether you're AM, FM or TV—you will find many beneficial applications for the Harris 9100 Facilities Control to help improve your profitability.

WHAT HARRIS 9100 CAN DO FOR YOU

There are three major areas where Harris 9100 Facilities Control can provide significant savings and/or improvements in a station's operation—1) manpower allocation, 2) protection, and 3) equipment performance. Let's take a closer look at each of these for specific examples.

Improved Manpower Allocation. The FCC requires monitoring and adjusting the broadcast transmission to assure compliance with technical standards. In addition, it is imperative that optimum use be made of the equipment while simultaneously protecting it from catastrophic failure. These requirements have been complicated by the increasing use of remote transmitter sites which, while ideal for transmission, are not conducive to manned operation.



The trend in both radio and television has been toward delegation of the transmission system to operations personnel. Remote control equipment has been used increasingly as the only acceptable alternative to a full-time staff at the remote site. This has been a cost-effective approach for management, consistent with the increased stability and reliability of transmitting equipment. However, this approach does not provide the continuous monitoring which can spot trouble about to happen, which can provide trend analysis through careful parameter logging and which can allow operation at peak performance without rule violation.

The first responsibility of operations personnel is usually to the program chain. Even in those stations with a full-time transmitter engineering staff, monitoring the transmitter system may give way to higher priorities of equipment maintenance and repair.

The Harris 9100 Facilities Control meets all existing and currently proposed FCC regulations governing the monitoring, adjustment and remote control of radio and television transmitters. It can offer very valuable assistance to your operators for flawless transmission monitoring, adjustment and logging—freeing them for more effective work elsewhere.

Operation, Equipment and Plant Protection. The broadcaster is faced with potentially costly mishaps on a daily basis. One such area is violation of FCC rules and the resulting fines, particularly since Congress has dramatically

raised the amount of maximum fines. This potential for higher fines has also increased as more stations operate their equipment at the legal maximum power and modulation levels, and operate with lower skilled, often untrained operators.

The transmission system also must meet its own rules in terms of what constitutes safe operation. Careful monitoring together with the proper action and associated alarms, as provided by the Harris 9100 Facilities Control, can help prevent operation outside the legal limits, or costly equipment failures with resulting lost air time.

Additional protection can be provided for the entire physical plant with monitoring and alarms for intrusion or fire which may lead to reduced insurance premiums for these sites.

Improved Performance. Maximizing equipment life and minimizing FCC violations are not the only advantages of Harris 9100 Facilities Control. In an increasing number of markets, large and small, operating equipment at the maximum levels is a key to the successful competition for higher ratings and increased revenues. Even the most stable transmission system needs the attention of the Harris 9100 to operate at peak performance over extended periods of time with minimum equipment problems, and without FCC rule violations.

Another area for improved performance with the Harris 9100 is in trend analysis. Long-range tracking of very accurate readings helps locate problem areas in the transmission system and pinpoint areas for improvement.

How Harris 9100 Facilities Control Is Used

Remote Control. The Harris 9100 Facilities Control opens a new dimension in remote control, providing intelligent surveillance and decision-making. Channels are automatically scanned and compared with pre-programmed limits; and alarms are initiated or corrective action taken, as appropriate. Power can be computed using the indirect method of power determination and the Harris 9100 can serve either as an efficiency monitor or as the primary means of power control.

Automatic logging of all parameters can be performed on a regular basis, eliminating periodic interruptions of station personnel. Also, the logger fully records out-of-limits conditions when they occur.

Time-initiated switching may be employed for power levels, changing control limits, checking tower lights, and other time-oriented functions.

Automated Transmission System (ATS).

The Harris 9160 and 9161 Automatic Control Unit (ACU) provides for ATS operation with its power and modulation control, yielding additional benefits to management. Relaxed operator restrictions will give greater flexibility in the selection of staff and duties; the FCC requirement for a person to be present for monitoring can now easily be met by utilizing a receptionist, switchboard operator or guard. Under existing and currently proposed ATS rules, there will be a reduction in requirements for routine inspections, meter readings and logging requirements. And there will be much less anxiety concerning the reliability of switching power modes in AM stations, very often a problem where "combo" operators are employed.

To sum it up, the Harris 9100, operating under ATS rules, will provide cost savings considerably beyond those provided by remote control, through more efficient use of manpower.

Facilities Control. The Harris 9100 Facilities Control is a true systems approach to the transmission system and related physical plant. Up to three remote sites can be controlled from a single common control unit at the studio. In addition to control of the transmission system, related functions can be surveyed and controlled. Heating, air conditioning and ventilation equipment can be monitored. Backup equipment can be exercised and performance logged, all on an automatic basis. And temperature sensors and intrusion alarms can be constantly on guard for plant protection. By combining the

monitoring and control of all functions, the Harris 9100 Facilities Control will profitably produce greater consistency, precision and reliability of operation than is obtainable with existing manually operated equipment. In addition, the Harris 9100 will allow maximum operation of the transmission system to provide the most competitive broadcast signal in your market.

The Harris 9100 Facilities Control design is based on over half-a-century of experience by Harris in the broadcast equipment field—and the quality is backed by the most experienced service organization in the industry.

Harris 9100 Facilities Control Components



Studio Unit (9120). Location: studio facility. Function: communicates with the Transmitter Unit (9130) or the Automatic Control Unit (9160) to provide monitoring and control of the transmitter facility.



Transmitter Unit (9130). Location: transmitter site. Function: provides remote control of the transmission facility when used with a Studio Unit (9120) or an Automatic Control Unit (9160). Allows remote control from a studio facility or from another transmitter facility. Alternate function: provides local control of the transmission facility.



Automatic Control Unit (9160). Location: transmitter or studio site. Function: provides automatic facility control—i.e., intelligent remote or automatic control of transmitter (ATS), building environment, security measures, etc.

CRT Terminal Models



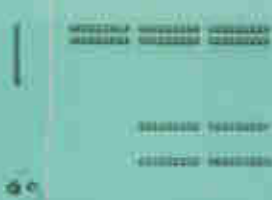
Studio Unit (9121). Location: studio facility. Function: communicates with the Automatic Control Unit (9161) to provide monitoring and control of the transmitter facility.

Automatic Control Unit (9161). Location: transmitter or studio site. Function: provides automatic facility control—i.e., intelligent remote or automatic control of transmitter (ATS), building environment, security measures, etc.

Options



Monitor and Alarm Panel. Used in conjunction with the Automatic Control Unit (9160), provides minimal monitoring and control in compliance with FCC ATS rules for monitor and alarm points



Channel Expansion Panel. Offers additional channels for the Transmitter Unit (9130) and Automatic Control Units (9160 and 9161). Each panel adds 8 telemetry, 16 status and 16 command functions. Up to 7 Channel Expansion Panels may be added to each 9130, 9160 and 9161 unit.

Multi-Site Module (not shown). Allows a Studio, Transmitter or Automatic Control Unit to communicate with up to three remote sites.



Extel

TI-820

Loggers. Extel (300 baud), for 9120, 9130 or 9160; Texas Instruments TI-820 (9600 baud), required on 9121 and 9161. Optional on other models.

9100 FACILITIES CONTROL INFORMATION

	9120	9130	9160	9121	9161		9120	9130	9160	9121	9161
Keyboard or CRT Terminal I/O	KBD	KBD	KBD	CRT	CRT	Maximum status input display per display group	16	16	16	128	128
Communicates with remote sites, display and control identical to unit at remote site	XX	XX	XX	XX	XX	User-defined CRT displays, messages, logs and log headings	—	—	—	—	XX
User-assignable time functions	—	5	64	—	64	DCA type channel squaring	—	XX	XX	—	XX
Limits monitoring and executive action, number of analog channels	—	5	all	—	all	Calculation channels	—	—	3*	—	6
Status monitoring and alarm	—	all	all	—	all	Can interface with MONITOR and ALARM PANEL (used for ATS only)	no	no	opt	no	no
Status monitoring/alarm and executive action channels	—	—	all	—	all	Multi-site module	opt	opt	opt	opt	opt
15-step series functions	—	—	4	—	4	Log printer (opt.) minimum CPS	30	30	30	150	150
5-step mini-series functions	—	—	—	—	6	CHANNEL EXPANSION PANELS, units included + maximum (opt.) add-on	—	1 + 7	1 + 7	—	1 + 7
Modulation level control	—	—	XX	—	XX	Analog input channels per CHANNEL EXPANSION PANEL (CEP)	—	8	8	—	8
Separate data bases	—	—	3	—	3	Number of control relays with 5A-120VAC contacts per CEP	—	16	16	—	16
Separate partitions	—	—	4	—	6	Number of (opto-isolated) status input channels per CEP	—	16	16	—	16
Logging capability	opt.	XX	XX	XX	XX	Automatic system restoration after power failure and return	—	—	XX	—	XX
Real-time clock—hrs/min/sec	1 day	1 day	1 day	7 day	7 day	Auto link switching capability	—	XX	XX	—	XX
CRT entry of scaling factors	—	—	—	—	XX	Battery backup for user program	opt	opt	opt	opt	opt
Momentary or latching relay action at mode entry	—	XX	XX	—	—	*1 calculation channel per data base					
Assignable momentary or latching relay action via CRT terminal	—	—	—	—	XX						

TYPICAL 9100 FACILITIES CONTROL SYSTEMS

For ATS OPERATION

- A. 9160 Automatic Control Unit + (N) Channel Expansion Panels
9100 Monitor and Alarm Panel
9100 Battery Backup for 9160
- B. 9161 Automatic Control Unit/CRT + (N) Channel Expansion Panels
9121 Studio Control Unit/CRT I/O Terminal
9100 Battery Backup for 9161 and 9121 (2)

For INTELLIGENT REMOTE CONTROL

- A. 9130 Transmitter Control Unit + (N) Channel Expansion Panels
9120 Studio Control Unit (Keyboard I/O)
9100 Logging Electronics Package

Extel 30 CPS Log Printer

9100 Battery Backup for 9130 and 9120 (2)

- B. 9160 Automatic Control Unit + (N) Channel Expansion Panels
9120 Studio Control Unit (Keyboard I/O)
9100 Logging Electronics Package
Extel 30 CPS Log Printer
Battery Backup for 9160 and 9120 (2)

- C. 9161 Automatic Control Unit/CRT + (N) Channel Expansion Panels
9121 Studio Control Unit/CRT I/O Terminal
TI-820 150 CPS Log Printer
9100 Battery Backup for 9161 and 9121 (2)

Ordering Information

9161 Automatic Control Unit	994-8494-001
9121 Studio Control Unit	994-8493-001
9160 Automatic Control Unit	994-8232-001
9120 Studio Control Unit	994-8233-001
9130 Remote Control Unit	994-8234-001

Channel Expansion panel for 9130, 9160 and 9161 Control Units	994-8240-001
9100 Monitor and Alarm Panel for 9160 Automatic Control Unit	994-8244-001
Extel Log Printer (9120, 9130, 9160)	749-0051-000
Texas Instruments TI-820 Log Printer	749-0072-000
9100 Multi-Site Module	994-8241-001

Prices and Specifications Subject to Change Without Notice.

DISK DRIVE/EARTH STATION CONTROLLER



9100 Facilities Controller Disk Memory Option

- Reduces operational display time
- Changeable diskettes provide non-volatile memory for user flexibility and file security
- Dual disk drives increase system reliability and provide user with file copy capability

The addition of the Floppy Disk Drive Memory Option provides some unique system enhancements. Greater software security results from having a non-volatile memory in the form of diskettes which can be reproduced for storage. The time required to receive operational displays is significant for large information displays.

TIMELY CONTROL AND MONITORING

The Harris 9100 CRT based Facilities Control System engages in a continual data exchange between sites to provide up-to-the-minute monitoring and control. This surveillance may include control of the transmitter facility, building environment, security measurers, etc.

The 9100 Disk Memory Option is available to enhance the standard CRT based facilities controller with large-scale non-volatile memory. This protects all user entered programming, including multiple site information. In addition, the operation speed of the 9100 System is improved via accelerated display time of user entered programming.

The 9100 Disk memory operates as an option to all Harris CRT based Facilities Control systems.

Specifications

DUAL FLOPPY DISK DRIVE SYSTEM

Height: 10 inches (25.4 cm)

Width: 19 inches (48.5 cm) rack mount

Depth: 13.5 inches (34.3 cm)

Weight: 18.5 lbs. (8 kg)

Spindle Speed: 300 RPM ($\pm 3\%$)

Sectoring, GCR Encoding: 5 $\frac{1}{4}$ inch soft sectored

Density (inner track): 6.380 bits/inch

ENVIRONMENTAL*

Temperature Range: 32°F to 131°F—0°C to 55°C (operating)

Relative Humidity: 5% to 95% non-condensing (operating)

Altitude: To 10,000 feet (3048 meters)

* Typically located in a controlled studio environment, which is dust and contaminant free.

Ordering Information

9100 Disk Memory Option 994-8675-001

B-504

Prices and Specifications Subject to Change Without Notice.



One of 24 CRT displays available on command, which gives detailed status information on earth satellite parameters.

9165 Advanced Earth Station Facilities Controller

- Can be used for on-site, remote site, and multi-site applications
- Programmable switching from transponder to transponder and satellite to satellite for up to 525 signal paths
- Controls 6.1, 9, or 11 meter Harris antennas
- Signal switching can be pre-programmed for up to one week
- System will handle up to 8 frequency agile Harris video receivers, up to 4 frequency agile Harris video exciters, and up to 4 tunable HPAs (High Power Amplifiers)

For the satellite broadcaster who desires maximum control, flexibility and documentation in his operation, the Harris 9165 Advanced Earth Station Facilities Controller is an ideal choice.

BUILT-IN VERSATILITY

While the standard 9100 Automatic Control Units contain up to eight CEPs (Channel Expansion Panels), the 9165 Advanced Earth Station Facilities Controller replaces one CEP with an ACP (Antenna Control Panel). The remaining CEPs may be assigned any of various "housekeeping" and monitoring duties. Additionally, the 9125 Studio Control Unit accesses all parameters remotely via microwave or telco data circuits.

COMMANDING DEGREE OF CONTROL

The Antenna Control Panel in the Harris 9165 is designed to interface with Harris 6.1, 9, or 11 meter satellite antennas, providing remote control of azimuth, elevation and polarization. Most remarkable is the software approach which allows a 24-entry file format accessing antenna position, frequency tuning for up to eight receivers, four exciters and four HPAs (High Power Amplifiers). This data can be retrieved on manual command or by time clock function. For a further degree of operating latitude, all individual units may be addressed separately and independently. All automatic functions found in the Harris 9100 Facilities Control (limits monitoring, series functions, partitioning, etc.) apply here as well.

Specifications

FOR MAIN FRAME AND CEP, SPECIFICATIONS ARE THE SAME AS FOR THE 9100 FACILITIES CONTROL.

Antenna Control Panel: Accommodates Harris SSL (Studio to Satellite Link) antenna system utilizing the 7022 Control Electronics Package.

Also accommodates 8 Harris 6521 or 6522 frequency agile receivers, 4 Harris frequency agile exciters and 4 Varian VZJ-2700 klystron HPAs (High Power Amplifiers).

Power: 117 VAC $\pm 10\%$, 50 watts

Dimensions

Height: 14 inches (35.5 cm)

Width: 19 inches (48.5 cm) rear rack mounted

Depth: 4 inches (10.2 cm)

Ordering Information

9165 Advanced Earth Station
Facilities Controller 994-8681-001
9125 Earth Station Studio Controller Unit 994-8688-001

ANTENNA CONTROL SYSTEM



9135 ANTENNA CONTROL SYSTEM

- Pre-stored antenna positions
- Position/Receiver changes on a time-corrected basis
- Full-computer control of antenna position
- Control of up to 16 output relays (Manual or time)
- Monitoring of 8 analog channels and 16 status inputs



The 9135 computer-based antenna control system gives the Harris receive-only satellite earth station operator complete control through pre-programmed time corrections or manual operation.

A CRT terminal provides monitoring capability of the antenna. The CRT displays the current antenna position (azimuth, elevation and polarization), the transponder and format for each of the four receivers in use, plus additional status fields. As many as 50 user-programmed antenna positions may be defined in the computer for immediate reference. A 365-day program-ahead feature allows memory storage of changes in antenna position or receiver channels.

Status Checks

The CRT will display the values of eight analog channels, and the decimal position may be individually set for each channel. The system will also monitor 16 status inputs, and display the status of each on the CRT. If desired, each input can be programmed for alarms. One of these inputs can be programmed to cause a site-specific message to appear on the CRT screen. The next time correction is displayed at the bottom of the CRT display. An optional color CRT will highlight alarms and other important messages in red. Other values and messages will be shown in appropriate colors.

Manual Control

The CRT can be used to manually control any aspect of the antenna, or changes can be programmed to make time-based antenna adjustments. Up to four receivers can be controlled by the computer. Both the antenna position and the transponder setting of any receiver can be changed automatically by the computer. Changes to receivers and antenna position can be made independently.

ANTENNA CONTROL SYSTEM SPECIFICATIONS

OPERATING ENVIRONMENT

RELATIVE HUMIDITY: 5% to 95% non-conducting

ALTITUDE: 0 to 10,000 feet

TEMPERATURE: 0 to 50 degrees C

SIZE: 19" wide x 18.5" deep x 12.12" high

WEIGHT: 36 lbs.

REAL TIME CLOCK

Day: Seconds, minutes, hours

Calendar: Days, months, years

Accuracy: ±10 seconds per month

ELECTRICAL SPECIFICATIONS

STANDARD: Three RS232C, async, 300 to 19.2K baud

DISPLAY: 12" video monitor

KEYBOARD: Standard ASCII, with keypad

POWER: 115/230 volts AC, 50/60 Hz, ±10%, 260W max.

ANALOG INPUT: 8

INPUT RANGE: ±2.000V

COMMON MODE: + Signal ±4V

ACCURACY: ±10 mV over input range

DIFFERENTIAL INPUT CONNECTOR: 37 Pin D

STATUS GENERAL PURPOSE: 16, optional signal fan-out barrier strip

SYSTEM CONTROL: Direct drive 30V hold-off sync mA

CONNECTOR: 37 Pin D

SYSTEM STATUS: Direct TTL inputs with pull up resistors to +5V, or opto isolation couplers

ANTENNA CONTROL I/O

Accommodates Harris 91350U Outside Electronics Box located on antenna pad. Includes command outputs, position and status inputs for AZIMUTH, ELEVATION, and POLARIZATION control of antenna. Requires one each 25 conductor cable, two each 3 conductor shielded, and one each 5 conductor shielded. Connectors are one each 25 PIN female, and one each 15 PIN male.

RECEIVER INTERFACE: TTL compatible current sink control

CAPACITY: Up to 4 receivers (Harris 6521 or 6522). Two receiver interfaces included as standard. Eight signals; 6 BCD frequency select; 1 polarity select; 1 frequency spacing select

RATING: TTL levels

CONNECTOR: 20 pin ribbon cable at board end, 9 pin D male connector when appropriate interface cable is used.

ORDERING INFORMATION

Harris 9135 computer based antenna control system
(with 12-inch green-on-black CRT control terminal) 994-8833-001
Optional 12-inch color CRT control terminal 749-0178-000



HARRIS

P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

FACILITY CONTROLLER COMMUNICATIONS OPTION

9100 HIGH SPEED COMMUNICATIONS OPTION

- 400% improvement in communications speed for the Harris 9100 Facility Controllers
- Easy to install
- Reliable transmission of control information
- Choice of conditioned or unconditioned telephone lines, 2- or 4-wire circuits
- RS-232C Industry standard communication interface

With the installation of the High Speed Communications Option, your Harris 9100 Facility Control Units can communicate four times faster between the studio and remote sites. This 9100 option replaces the clock modem, which runs at 30 characters per second (300 BAUD), with a new clock board and RS-232 board which connects to industry standard modems.

MODEMS: The appropriate 9100 High Speed Communications Option should be ordered for each end of the communications link. The option contains a clock board and a board with three RS-232 ports and appropriate cables. These cables connect an RS-232 port from the 9100 at the remote site to a 202T or 212A (or equivalent) modem. The modem at the remote site is connected via telephone line to a similar modem at the studio control site. This is connected to one of the ports on the High Speed Option in the 9100 studio control system.

Telephone lines may be C2 conditioned or unconditioned, depending on the transmission rate desired. Over unconditioned lines, a transmission rate of 300, 600 or 1200 BAUD (approximately 120 cps) can be supported. C2 conditioned lines can support transmission rates of 300, 600, 1200 or 1800 BAUD (180 cps). The 202T modem requires a 4-wire circuit. The 212A modem requires a 2-wire circuit.

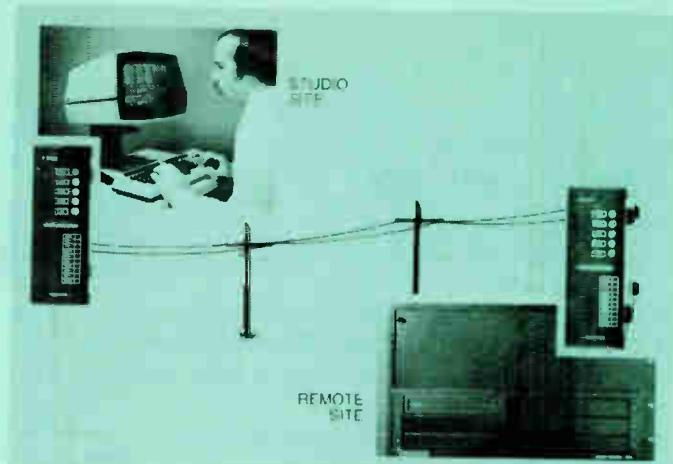
With these connections, information on monitored alarms and inputs is communicated almost instantaneously to the studio control site for display. Commands are returned with equal speed and accuracy.

The High Speed Communications Option can be ordered with the 9100 Facility Control, or may be added at any time in the future when system configuration requirements change.

SPECIFICATIONS

(212A MODEM)

HIGH SPEED MODE: 1200 bps + 1.0% to 2.5%, character-asynchronous format; 1200 bps, synchronous format.



OPERATING MODE: Full duplex at all speeds.

LINE INTERFACE: 2-wire switched network.

INTERFACE VOLTAGES: Per EIA RS-232C.

AC POWER: 117 volts \pm 10%, 60 Hz \pm 5%, 9.5 VA maximum.

AMBIENT TEMPERATURE: 40 degrees F (4 degrees C) to 120 degrees F (50 degrees C).

RELATIVE HUMIDITY: 20% to 90% at 75 degrees F (25 degrees C); 20% to 40% at 120 degrees F (50 degrees C).

WEIGHT: (Stand-alone unit) 5 lbs. (2.3 kg)
(Rack mount unit) 1 lb. 6 oz. (0.6 kg)
(Wall mount transformer) 14 oz. (0.4 kg)

DIMENSIONS:

(Stand-alone unit): 2.3"H x 6.37"W x 11.65"D
(Rack mount unit): 7.0"H x 19.0"W x 11.65"D

(202T MODEM)

FCC REGISTRATION NUMBER: A0794S-67622-DM-N

OPERATION: Asynchronous, serial binary

MODES: Simplex, half-duplex, full-duplex

DIGITAL INTERFACE: EIA standard RS-232C

LINE INTERFACE: Two- or four-wire private line

LINE IMPEDANCE: 600 ohms nominal

DATA RATE: 300, 600, 1200 bps with unconditioned line;
300, 600, 1200 or 1800 bps with C2 conditioned line.

ENVIRONMENT: Storage: -30 degrees to +70 degrees C
Operating: 0 degrees C to 45 degrees C

Altitude: 10,000 ft. maximum

Humidity: 20-95% non-condensing

DIMENSIONS: 2"W x 4"H x 7.5"D

AC POWER: 117 volts \pm 10%, 60 Hz \pm 5%, 9.5 VA maximum

ORDERING INFORMATION

In order to utilize the new Harris 9100 High-Speed Communications option you will need:

One High-Speed Package located at the studio.

Order No. 994-8828-02—Studio Package includes (1) RS-232 board; (1) clock/interface board; (3) RS-232 Cables; (1) ribbon cable.

One High-Speed Package of each remote site.

Order No. 994-8828-001—Remote Site Package includes (1) RS-232 board; (1) clock/interface board; (1) RS-232 cable; (1) ribbon cable

Two 202T modems for each remote site.

Order No. 746-0057-000—202T modem (order two)

or

Two 212A modems for each remote site.

Order No. 746-0043-000—212A modem (order two)

BROADCAST MICROWAVE

ENG/EJ/EFP (Portable) System Equipment



An FV13MP miniature-portable, frequency-agile video and sound transmission system replacing existing cable or bulky equipment.

FV-MP "Mini-Link" Series: Lightweight, Compact, Fully Self-contained One-way microwave-radio system that offers both terminal and repeater-station service. Capacity is a single color-video channel (either 525-Line NTSC or 625-Line PAL, PAL-M or SECAM) and one or two full-quality program-audio subcarrier channels. AC, -24 VDC or portable-battery powered; with a multi-purpose charger.

May be tripod or, optionally, rack mounted. Accessories include antennas, transport cases, narrow-band pre-select filters, power cables, Diplexers, etc.

Available for following RF bands (GHz) (up to 12 channels in the selected band):

FV2MP	1.700-1.915 and 1.990-2.110
FV2.5MP	2.300-2.690
FV6MP	6.425-6.525
FV7MP	6.875-7.125
FV8MP	7.125-8.500
FV11MP	10.550-11.700
FV12MP	11.700-12.200 and 12.200-12.700
FV13MP	12.700-13.250

Transmitter RF Power Output:

FV2/2.5MP	1 watt (+30 dBm)
FV6/7MP	1 watt (+30 dBm)
FV8MP	0.8 watt (+29 dBm)
FV11/12/13MP	63 mW (+18 dBm)

Receiver Noise Figure:

FV2/2.5MP	6.0 dB (w/o pre-select filter)
FV7/8MP	6.0 dB
FV11/12/13MP	10.5 dB (with pre-select filter) 8.5 dB (w/o pre-select filter)

FCC type accepted for Parts 21, 74, 78 and 94.

Reference

Form 7604 (FV2/2.5MP)
 Form 7610 (FV7 thru 13MP)



Type 60732: Transmitting RF Power Amplifier for 1.990 to 2.110 GHz. Provides 12 watts of RF output power with an input drive range of 0.1 to 2.0 watts. The unit is designed for installation directly at the transmitter antenna. The amplifier is contained in a weather-resistant, pressurizable housing. Coordinates with the transmitter of the FV2MP Miniature Portable Microwave-Radio system.

RF Input/Output connectors are Type N (female).

Operates from an external source of -24 VDC.

Reference

Form 7905 (Type 60732 RF Power Amplifier)



FV2G "Challenger": A portable microwave-radio transmitter that is similar to the FV2/2.5G Global IX™ Transmitter. The major difference concerns the reduced RF bandwidth 1.990 to 2.110 GHz and the higher, 3-watt (+34.8 dBm) RF output power of the Challenger. The RF band, generally, limits service to 525-Line NTSC operation. Accessories, limited to the requirements of the restricted RF bandwidth, are essentially the same as those offered for the Global IX™ Transmitter.
 FCC type accepted for Part 74.



GLOBAL IX™ Transmitter shown with **Optional Parabolic Quick-Disconnect Antenna.**

FV2/2.5G "Global IX™": Portable Microwave-Radio Transmitter for the frequency band 1.990 to 2.700 GHz (uses up to 16 separate frequency plans, with each plan having up to 60 RF channels). The transmitter is lightweight, compact, self-sufficient, weather-resistant, and adaptable to both indoor and outdoor use. RF power output is +34.5 dBm (2.8 W) typical and +33.5 dBm (2.2 W) minimum.

Applications include ENG/EJ/EFP services and other services requiring a mobile ground or airborne link. Capacity is one 525- or 625-Line color-video signal and two high-quality program audio subcarriers. Baseband interface with camera and audio-initiating equipment is standard. Accessories include a selection of antennas, tripod, battery pack, etc.

Programmable FM-subcarrier line frequencies. AC or Battery powered. Transmitter Frequency Stability ± 0.005%. Standard Video or 70 MHz IF Input; can be used in repeater applications. Remote or Local Control — Local or remote monitor and control features available. In addition to remote monitoring of transmitter status, the following functions can be controlled: On/Standby and Frequency Selection. Construction — Mechanically constructed for operation in extreme environmental conditions and helicopter applications. Multi-level shielding is provided for RFI environments.

Input operating voltage to the transmitter can be either +10.5 to +16 VDC (car battery or camera-belt power pack) or 115/230 VAC, 50/60 Hz (selectable by a switch in the power supply.)

FCC type accepted for Part 74.

Reference

Form 8175 (FV2/2.5G Transmitter)



HARRIS

P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

BROADCAST MICROWAVE

FV-MF Series: Miniaturized baseband, self-contained microwave transmitter terminals that require only three vertical spaces on a 19" equipment rack. RF Power Output is typically 1 watt (+30 dBm). May be optionally configured for up to two FM audio/program subcarrier channels. The 2/2.5GHz transmitter may be factory-arranged for 525-Line NTSC or 625-Line PAL, PAL-M or SECAM service. The 8GHz version is limited, on a standard basis, to NTSC-type operation.

Applications include ENG/EJ/EFP service in mobile vans, aircraft or helicopters, fixed-plant utilization for surveillance and security systems, and repeater-station functions. Readily adaptable to Government and specialized military observation and training functions.

For operation from a power source of:
FV2/2.5MF: +28, -24, -48 VDC or 117/220 VAC, 50/60 Hz.

FV8MF: -22 to -28 VDC or 117/220 VAC, 50/60 Hz.

Type 60828: Transmitting RF power Amplifier for the 2 and 2.5 GHz bands. A built-in AGC circuit assures a constant output power level with input drive variations. Typically, 12 or 15 watts RF output power depending on frequency band. Drive level requirement as low as 0.1 watt.

For frequency bands 1.990-2.110 GHz or 2.301-2.690 GHz.

Requires two vertical mounting spaces on a 19" equipment rack. RF Input/Output connectors are Type N (Jack).

Operates from a source of 115/230 VAC, 50/60 Hz, or from positive or negative 21 to 30 VDC.

Coordinates with the FV2/2.5 Miniature Fixed Transmitter and the Transmitters of the FV2MP and FV2.5MP Miniature Portable systems.

Reference

Form 8181 (Type 60828 Power Amplifier)

FV8FA: Miniature Fixed, Frequency-Agile Baseband Microwave Receiver for low-noise receiving applications. Coordinates with the FV8MF Transmitter. Instantaneously phase locks to any manually-selected frequency (0.1 MHz steps) in the receiver's RF band of operation.

For operation in the microwave bands: 7.125-7.800 or 7.800-8.500 GHz.

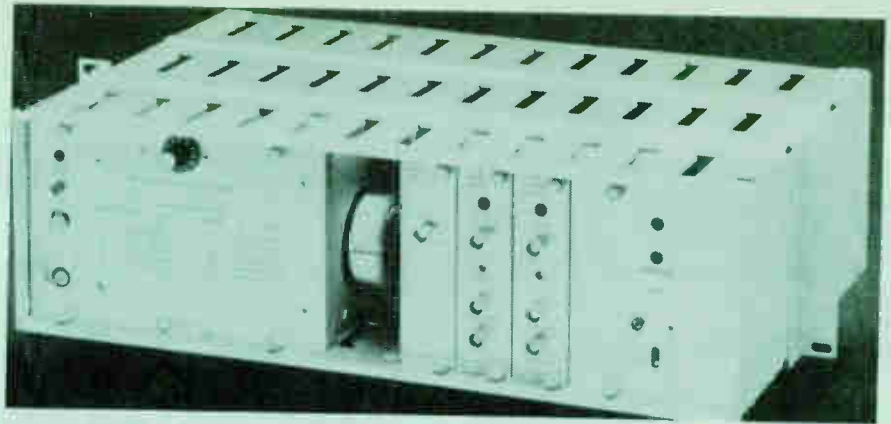
Capacity is one NTSC color video signal and up to two optional program-audio subcarriers.

Requires only three vertical mounting spaces in a 19" equipment rack. Operates from a power source of either 115/230 VAC, 50/60 Hz or from positive or negative 22 to 29 VDC. Noise figure is a 9 dB, maximum.

Reference

Form 8076 (FV8FA Receiver)

B-508



Shown is the compact, lightweight, frequency-agile 2/2.5 GHz video and sound transmitter for ENG/EJ applications including helicopters, mobile broadcast vans and repeater stations.

Available Frequency Bands:

FV2/2.5MF: 1.990-2.110 GHz, 2.450-2.690 GHz (up to 12 discrete frequencies, any one of which is selected by a switched-crystal oscillator). Coordinates with FV-MP Miniature-Portable Receivers, FV-F Fixed Receivers or FV2/2.5CR Central Receivers.

FV8MF: 7.125-8.500 GHz (one predesigna-

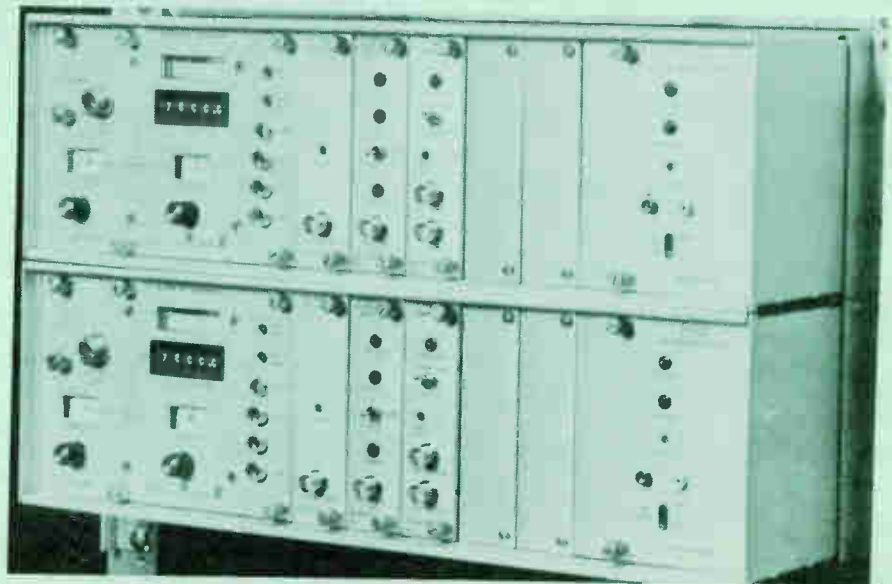
ted and pretuned frequency). Usually coordinates with a companion FV8FA Frequency-Agile Receiver.

Reference

Form 7728 (FV2/2.5MF Transmitter)
Form 8180 (FV8MF Transmitter)
Form 8076 (FV8FA Receiver)



60828 Amplifier



A Pair of Rack Mounted FV8FA Receivers

Prices and Specifications Subject to Change Without Notice.

BROADCAST MICROWAVE



Fixed Wideband Microwave-Radio Transmission Systems

FV-CR Series: Microwave-radio Central Receivers for Electronic Newsgathering (ENG) applications. Miniaturized, frequency-agile, low-noise, narrow-band, and designed specifically for video and program-audio pick up from "at-the-scene" news crews. Coordinates with FV-MP, FV-MF and FV-G portable ENG transmitter equipment within the total "live" news collection network.

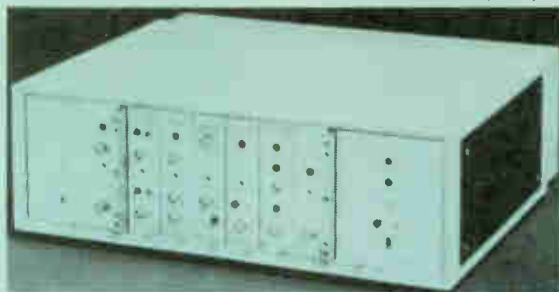
Frequency Bands:

FV2CR 1.990-2.110 GHz (for 525-Line NTSC service)

FV2.5CR 2.300-2.690 GHz (for either 525-Line NTSC or 625-Line PAL, PAL-M or SECAM service)

FV7CR 6.425-6.525 and 6.875-7.125 GHz (for either 525-Line NTSC or 625-Line PAL, PAL-M or SECAM service)

FV8CR 7.125-7.425 GHz (for either 525-Line NTSC or 625-Line PAL, PAL-M or SECAM service)



Operates from 115/220 VAC, 50/60 Hz, or from -24 or +28 VDC. Capacity is one color video signal and up to two FM program-audio subcarrier channels.

21 Synthesized RF Channels for FV2CR (up to 60 channels in the other bands), Instantaneous Phase Lock — locally or remotely selected. Noise Figure 3 dB at 2 GHz, 4 dB at 2.5 GHz and only 6 dB at 7 or 8 GHz. Narrow-band IF SAW Filter — for "state-of-the-art" split-channel operation. 78 to 81 dB (depending on band) Dynamic Input Signal Level

Range — crews operate from maximum range to within the shadow of the receiver's antenna. Auxiliary IF Output — for heterodyne interconnection where desired. RFI Shielding — for operation in an interfering environment. Fully Alarmed — with dry contacts for remote indication.

Reference

Form 7903 (FV2CR Central Receiver)
Form 8006 (FV2.5CR Central Receiver)
Form 8007 (FV7CR and FV8CR Central Receivers)

Low-Noise Receiving Preamplifier

Type 60576: Low-Noise Receiving Preamplifier — General-purpose device used with 2/2.5 GHz receiving antenna systems requiring long transmission lines. Suitable for numerous ENG/EJ/EP applications. Is "out-of-band" protected by a combline input filter. Amplifier is isolator coupled.

Equipped for remotely-controlled amplifier bypassing when a strong input signal is present or should an amplifier failure occur. Mounted in a weather-resistant box; RF Input/Output connectors are Type N (Jack).

Amplifier operates from an external source of -21 VDC, regulated. The optional bypass relay operation requires a source of -21 to -24 VDC or a ground indication.

Frequency Range Options (GHz)	Noise Figure (dB, max.)	Gain (dB, min.)
1.990-2.110	3.0	20
2.300-2.500	3.5	19
2.450-2.690	3.5	19

Reference

Form 7729 (Type 60576 Low-Noise Preamplifier)



Program Audio Subsystem

FV43-02: FM Transmission Channel System is a high-quality baseband subcarrier facility designed to allow up to five broadcast-quality program audio channels to be transmitted over a microwave-radio or video-cable system simultaneously with a composite NTSC or CCIR television signal. The FV43 equipment provides transmit-only and receive-only terminals for coordinated subcarrier transmission in the range 5.8 through 8.59 MHz. The equipment is Bell-System compatible and operates, end-to-end, with the FV43-01 Diplexer.

Operates from 115/220 VAC, 50/60 Hz, or from -24 or -48 VDC. Has no front-panel controls; requires no operating adjustments after initial performance check. Requires 2 (with up to 2 channels) or 4 (up to a total of 5 channels) vertical mounting spaces on a 19" equipment rack.

Interfaces with standard video and audio line levels and impedances. Normally arranged for 75-ohm video or diplexed video and subcarrier input and output impedances. Option-



ally, is available with user-selectable 75 and 124-ohm impedances.

Available Channel Subcarrier Frequencies (MHz):

Bell System Network: 5.8, 6.4
Std US FM Subcxrs: 6.2, 6.7, 7.5, 8.2
Std. Canadian wide-band FM Subcxrs: 5.6, 6.17, 6.8, 7.67, 8.3
Std. Canadian narrow-band FM Subcxrs: 5.35, 5.8, 6.17, 6.7, 7.7
CCIR FM Subcarriers: 7.02, 7.5, 8.065, 8.59

EIA-quality NTSC 525-line or CCIR 625-line television service over microwave-radio, video cable, CATV/CARS head-end, or satellite transmission media. 5 MHz pass-

band for NTSC or 6 MHz passband for PAL, PAL-M or SECAM.

Optionally equipped for low-noise, low-distortion, flat response 15 kHz audio subcarrier channels in the 5.8 through 8.59 MHz range. Utilizing two specific frequency plans, here referred to as the Standard Canadian plans, frequencies in a wideband or narrow-band spectrum can be optionally equipped. Audio Pre-emphasis/De-emphasis — 75 μ s for North American Standard or 5 μ s for CCIR.

Reference

Form 7725 (FV43-02 FM Trans. Chan. System)



HARRIS

P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

BROADCAST MICROWAVE

Fixed Wideband Microwave-Radio Transmission Systems

Features

- Non-protected or Monitored Hot-Standby Protected service. May be configured for frequency diversity operation or space/hybrid diversity receiving.
- TV version for 525-Line NTSC or 625-Line PAL, PAL-M or SECAM color systems.
- Radio-System noise and continuity-pilot monitors.
- 70-MHz Modulation and Demodulation (IF) interface.
- May be equipped for engineering order wire and for radio and station-keeping alarm and supervisory facilities, or multiplexed voice and data VF channels on baseband subcarriers.
- Up to five FM or AM Subcarrier Channels.
- Optional video clamper/amplifier.

FCC type accepted for Parts 21, 74, 78 and 94.

Reference

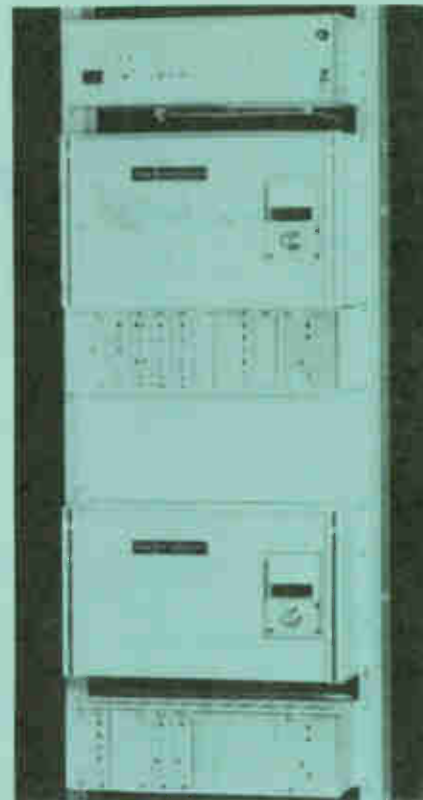
- Form 7411 (FV-F Radio)
- Form 7430 (FV40 Vid. Transm. Equip)
- Form 7621 (FV44 Radar-Remoting Equip)

FV-F series: One-way microwave terminals and heterodyne repeaters. Combined with FV40 Video Transmission Equipment for STL, Inter-city and Satellite Backhaul video/audio program transmission—and used with FV44 Video Transmission Equipment for Vessel Traffic Management System (VTMS) or Air Traffic Control (ATC) Radar-Remoting services.

Available mounted on 19-inch Equipment Rack or Rack Cabinet, or on shipping bars for field installation on existing rack facilities. For operation from a power source of 117 or 220 Vac, 50/60 Hz, or from -24 or -48 Vdc.

For operation in any one of the following frequency bands (GHz):

FV2F	1.990-2.110, 1.700-1.850, 1.850-1.990, 1.700-2.100, 1.900-2.300
FV2.5F	2.300-2.500, 2.500-2.700
FV6/7F	5.925-6.425, 6.425-7.125, 6.875-7.125
FV8F	7.100-7.800, 7.700-8.500
FV11/12/13F	10.7-11.7, 11.7-12.2, 12.2-12.7, 12.7-13.25



Features

- Standard video and audio equipment levels and impedances.
- Video clamper is standard.
- Non-protected and protected assemblies are available.
- 7-dB noise figure at 7 GHz and only 9 dB at 13 GHz.
- A number of 7 or 13-GHz systems can be placed on the same equipment rack, or cross-band configurations.
- All modules plug in. Radio is easy to maintain.
- Radio-System noise and continuity-pilot monitors.
- May be equipped for engineering order wire and for radio and station-keeping alarm and supervisory facilities.

FCC type accepted for Parts 21, 74, 78 and 94.

FV-FB series: One-way Baseband microwave terminals and drop/insert remodulating repeaters—for TV Broadcast STL and many economical multi-hop services. The FV13FB radio also offers superior performance as the CARS head-end system in the Cable Television Relay Service. May also be used with FV-F Heterodyne Repeaters for medium-haul inter-city service.

Available mounted on 19-inch Equipment Rack or Rack Cabinet, or on shipping bars for field installation on existing rack facilities. For operation from a power source of 117 or 220 Vac, 50/60 Hz, or from -24 or -48 Vdc.

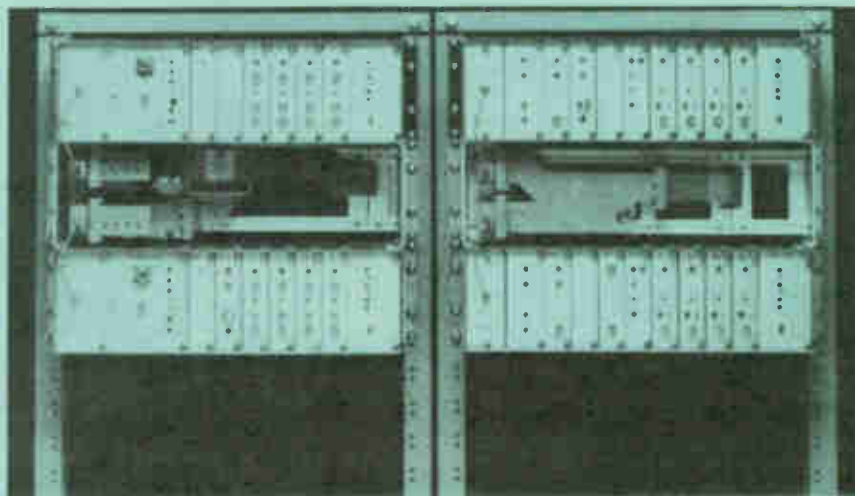
Operating Frequency Bands:

FV7FB	6.875-7.125 GHz
FV13FB	12.700-13.250 GHz

Capacity: One 525-Line NTSC color TV channel plus a maximum of four FM audio (program) subcarriers.

Reference

- Form 8375 (FV7FB)
- Form 8377 (FV13FB)



Satellite Microwave-Radio Up-Link Equipment

TYPE 60950 Ku Band Video Exciter: Consists of two interrelated shelf assemblies; the 60946 Video Exciter Modulator and the 60945 Video Exciter Upconverter. The Modulator assembly accepts an NTSC composite color signal and up to three multiplexed 15-kHz audio program channels. Two standard subcarrier line frequencies are used; 6.2 MHz (Chan. 1) and 6.8 MHz (Chan. 2). When required, Channel 3 line frequency is selected from a compatible plan. The resulting frequency-modulated video/audio line signal is centered at 70 MHz and drives the Upconverter assembly. The triple-conversion upconverter RF output signal is channeled within the band 14 to 14.5 GHz. Nine hundred and ninety nine-channel selection is available by front-panel thumb-wheel manipulation or from a remote location. Video/audio baseband inputs and RF output levels and impedances are designed to current industry standards for this form of equipment.



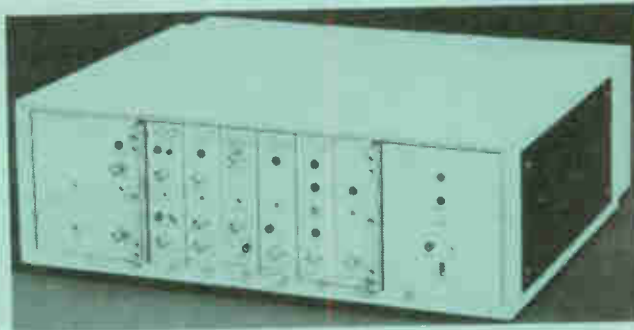
60950

A spreading waveform generator is incorporated in the video path, ahead of the modulator, for producing a 1-MHz p-p spectral energy spreading, at a 30-Hz rate, of the FM modulator's unmodulated and modulated, combined carrier output signal. Total installation space for the Exciter is six vertical mounting spaces on a 19-inch equipment

rack. (A four-space version is planned for early 1984.) The exciter operates from a source of 117/220 Vac, 50/60 Hz.

Reference

Please contact your local Harris Sales Engineer.



60367

System Accessories

TYPE 60367: PORTABLE TEST UNIT, while suitable for numerous high-quality fixed and portable microwave-radio test application, is primarily intended as a temporary modem for drop and/or insert transmission service, or testing, at an IF repeater of a fixed, heterodyne microwave system. Composite video and program audio appear as separate line interfaces, at standard input and output levels and impedances. Radio interconnection is at the conventional 70-MHz IF point.

- Self-contained Deviation Test Unit for setting modulation deviation of the FM radio carrier.
- Plug-in circuit modules of the portable tester are interchangeable with those of the FV40 video transmission/modem equipment that usually is used with FV-series microwave—provides spares backup for emergencies.

Reference

Form 7801 (60367 Port. Test Unit)

TYPE 60888-series Portable Microwave-Radio Parabolic (reflector/feed) and Rod Type Antennas: For Harris Broadcast Microwave's family of portable radio systems.

Features

- 1.99 to 13.25-GHz range, with Reflector Diameters of 14, 25, 50, and 72 inches. Also 2 and 4-foot Rods and for the low-frequency bands.
- Quick Mounting and Disconnect fittings.
- Interchangeable Feeds: Circular polarization; some feeds can also be operated in a linear-polarization mode.
- Rugged Design, Reliable Operation in most outdoor Environments.

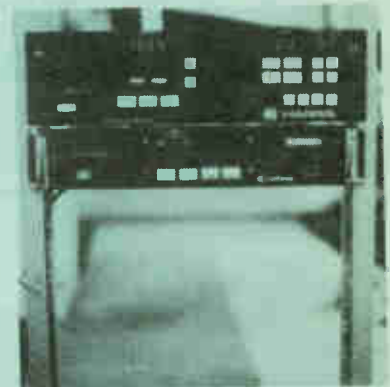
Reference

Form 8275 (Portable Microwave Antennas)

TYPE GTS-04C Ultra-lightweight, Low-cost Tracking Antenna System for ENG Central Receiving. Manufactured for Harris Broadcast Microwave by EMP, inc. (Electro-Magnetic Processes, Inc.). A single-axis tracking system using a multi-mode (dual-beam) antenna may be directed (steered) locally (manual) or on a programmed unattended basis, as a master, slave or stand-alone unit; uses the associated ACU-6 Series Microprocessor-Based Antenna Control Unit.



GTS-04C



60888

May be ordered for either the 1.435 to 2.300-GHz band or the 2.200 to 2.400-GHz band. Offers various remote interface options, for either serial or parallel low-bit-rate control line operation.

Antenna Performance:

	High Gain	Low Gain
Gain:	22 dBi at 1485 MHz 26 dBi at 2250 MHz	10 dBi, nominal
Bandwidth:	12° at 1485 MHz 8° at 2250 MHz	65°, nominal
Rotation:	Continuous (no limits)	
Feed		
Polarization:	RHCP (LHCP optional)	

Reference

Please see your local Harris Sales Engineer.

- FM Subcarrier Frequency-Plan Options (MHz):**
- | | |
|----------------------------|-----------------------------------|
| 6.2, 6.7, 7.5, 8.2 | Std. U.S. FM Subcxrs. |
| 6.17, 6.8, 7.67, 8.3 | Std. Canadian Subcxrs. |
| 7.02, 7.5, 8.065, 8.59 | CCIR FM Subcxrs. |
| | Earth Station Applications. |
| 5.14, 5.36, 5.79, 6.2, 6.8 | Narrow-band Operation (ENG). |
| 4.83 | Bell System Network Transmission. |
| 5.8, 6.4 | |

Optional Pilot Frequencies (MHz): 6.199, 8.500, 9.023, 11.88, or 13.627.

Video Service: 525-line or 625-line composite mono-chrome or color, with or without sound subcarrier, sync negative transmission mode, emphasis is standard CCIR/Bell System weighting.

Features

- For 5 or 6-MHz video (525-line NTSC No. American or 625-line PAL/PAL-M/SECAM International Service.)
- For all standard FM program subcarrier frequencies. Special frequencies are available on order.
- Light-weight, weatherproof mechanics. Covered metal case.
- Operates for -24 or -48 Vdc, or from 115 or 220 Vac, 50/60 Hz.

Prices and Specifications Subject to Change Without Notice.



HARRIS

P. O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

ENG/EFP CAMERA

TC-90 ENG/EFP CAMERA

The Harris TC-90 brings out the best in your cameraperson...and your pictures. The just-right camera balance makes sure-footed shooting from even the most difficult angles a snap. And the super lightweight adds to the ease of handling and eliminates fatigue as a factor on long days in the field.

Better yet, the TC-90 provides excellent pictures, like a studio camera. It uses three LOC, mixed field 1/2" (13mm) diode gun Plumbicon® tubes, an extremely stable f/1.4 prism and exclusive FET preamps for outstanding picture performance. The TC-90 reproduces colors the way you actually see colors, and the pictures have a sharpness and clarity you rarely get from a portable camera. Even the reds are clearly defined. With most cameras, anything red tends to become a little fuzzy; with the TC-90, an exclusive contours-from-red* circuit maintains sharp detail on all red objects.

A terrific balancing act

The TC-90 could be smaller, but we deliberately designed it just a little longer than it had to be, making it slightly tail-heavy to counterbalance the weight of the lens. It also has a low center of gravity that makes the TC-90 practically cling to a cameraperson's shoulder. Then there's the weight, only 8.2 pounds without viewfinder, lens and battery.

It may be the most rugged camera there is.

Lightweight as it is, the TC-90 may be the toughest camera you can buy. Every part was selected or designed to take a beating. The case is built of a graphite composite that needs no maintenance and should never need repair.

FCC radiation certification.

The TC-90 has passed the FCC radiation test with flying colors, and is suitably labelled to conform to Part 15 Subpart J FCC Rules and Regulations for Type A equipment.

Tubes — smaller is better.

The LOC (low output capacitance), mixed field 1/2" diode gun Plumbicon tubes used in the TC-90 provide registration performance so much better than 2/3" magnetic tubes that the additional complication of computer-controlled geometry correction is not required.

Pictures with "snap".

From its exclusive f/1.4 prism to its sophisticated use of Large Scale Integrated (LSI) circuits, the TC-90 is designed to deliver outstanding picture clarity as well as perfect colorimetry under all lighting conditions.

Auto white balance in 0.3 second.

When the auto white balance switch is activated, with the TC-90's test signal inserted, you will get a perfect white balance for 3200°K scene color temperature. Or, when the auto white switch is activated with scene content, a perfect white balance is achieved for that scene content in 0.3 second. This is stored in memory until reset.

Auto black balance assures perfect colorimetry.

When the TC-90's black balance switch is momentarily activated, the lens iris closes automatically, the blacks are balanced in 0.3 second, and the lens opens to its previous iris setting. This ensures perfectly balanced individual black levels for red, green and blue channels, which are stored in memory until reset.

Comet tail suppression.

The TC-90 employs comet tail suppression circuits to minimize the effects of bright scene highlights.

The TC-90 delivers a S/N of at least — 60dB.

An outstanding S/N ratio of -60dB is achieved at light levels as low as 56 foot-candles at f/1.4.



TC-90

Simultaneous contours from red and green.

Other cameras offer contouring on only one color at a time. The TC-90 provides contours out of green and red simultaneously to enhance image sharpness over a wide color spectrum.

Genlock with precise SC/H phasing.

With three LSIs in the RS-170A sync generator system, timing is quick, accurate and at the proper relationship between horizontal sync and color subcarrier. The TC-90 genlocks to either a composite color or black-burst signal.

Built-in color bar and stairstep test signals.

The TC-90 has built-in full field or split field color bars that meet or exceed all NTSC specifications.

High-fidelity microphone amplifier.

The TC-90 includes a built-in microphone preamplifier to supply line level audio to all VTRs.

Built-in RTS-compatible intercom amplifier.

The TC-90 camera head has a built-in RTS-compatible intercom amplifier.

Runs on very little power from a big array of sources.

You can power the TC-90 on DC voltage from +10.5 to +15 volts, from any of six sources: 1) two-ampere/hour on-board battery pack; 2) four-ampere/hour on-board battery pack; 3) VTR/VCR battery; 4) an AC-to-DC converter power pack which attaches like a battery pack; 5) a battery belt; 6) any automotive 12-volt DC power supply with negative ground.

You get more than a good view on the 1-1/2" diagonal CRT in the TC-90 viewfinder.

An oscilloscope-type display provides an actual video waveform, which, with a 100% exposure cursor line, lets you make precise manual iris adjustments. You can turn it off when you don't want it. Four LEDs in the viewfinder give you four different warnings: 1) the VTR/VCR is in record mode; 2) end-of-tape of VTR/VCR not connected to camera; 3) VTR/VCR battery low; 4) on-board camera battery low.

A filter for any type of shot.

The TC-90 has a built-in 5-position filter wheel to allow the camera operator great flexibility for color temperature compensation and scene illumination correction.

With the "Smart Package"™ option, the TC-90 may just be the smartest ENG/EFP camera available anywhere.

Add the exclusive Smart Package™ option to the TC-90, and you get microprocessor time code generation that lets you record SMPTE and VITC time codes as you shoot. The Smart Package also adds diagnostics, auto centering and encoder balance. No diopter lenses or special test charts are needed for the automatic adjustment of these parameters, only normal scene content is required.

COLOR STUDIO TELEVISION CAMERAS

HARRIS
 P.O. Box 4290
 Quincy, IL 62305-4290
 (217) 222-8200

C SERIES COLOR STUDIO TELEVISION CAMERAS

The Harris C Series offers a wide range of choices to give you the exact camera configuration that best fits your production needs. Now you can have a camera that is essentially custom designed for your operation. You make the choices...and you get exactly what you want.

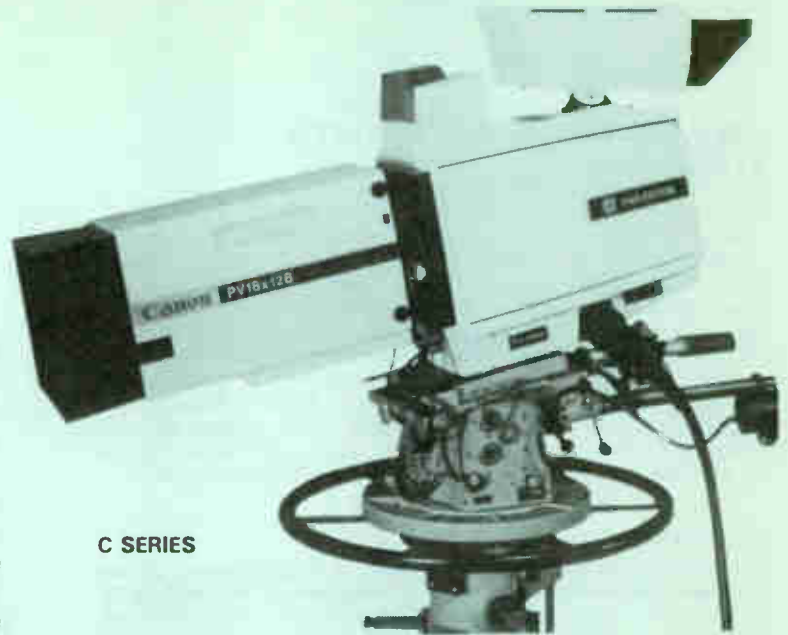
The basic C Series model is a manual setup camera with automatics. The C Series also offers a full computer-controlled automatic setup version that features a separate computer in each camera for simultaneous setup and greater flexibility. The basic model may be upgraded in the field to full computer setup capability as your requirements change.

The C Series operates with TV-81 multicore cable, Triax cable or TV-81 mini multicore cable. This gives you the flexibility of utilizing camera cable that may already be in place in your facility or at remote sites. All types of pickup tubes designed for the 25mm format can be accommodated. These include standard Plumbicons®, Diode Gun Plumbicons, ACT Plumbicons and Saticons. Choose the tube that best fits your operating environment. From your local newscast to a remote sports event, the C Series offers a lens to "bring it home". 10:1 to more than 42:1 zoom ranges are available from all major lens manufacturers.

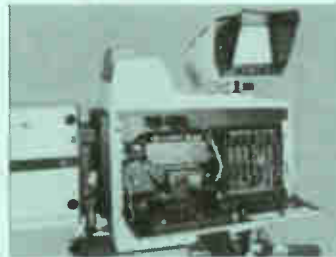
- Color fidelity and picture integrity of the Harris C Series cameras are unsurpassed. High resolution with low lag, high sensitivity, low noise, unique contouring from red and green simultaneously, highlight handling that virtually eliminates comet-tailing, and variable contrast give you color as you really see it, and clean sharp video even under the most severe lighting conditions.
- Harris C Series cameras are designed for easy operation from the control panel on through to the camera head.
- The Harris C Series cameras are reliable, rugged and ready to operate over long periods of time with minimal engineering attention.
- In the C Series computer setup model, 48 operator functions are controlled by the computer and adjusted according to preset parameters. Each camera has a built-in independent computer to eliminate camera interdependence in multi-camera installations.

TC-80C Manual Studio Camera without Tubes and Lens

TC-85C Computer Studio Camera without Tubes and Lens



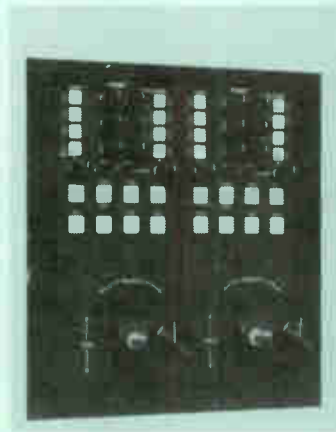
C SERIES



Camera-head modules are readily accessible for servicing, and controls are front-edge mounted.



Utility panel provides connections for test equipment and external intercoms, tallies, monitors.



Joystick remote control panels.



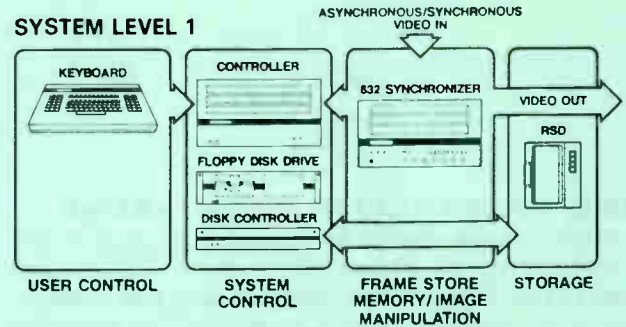
Operator's view of Harris C Series tiltable, rotatable viewfinder showing electronic-generated safe-title area and variable grease pencil window.

IRIS II DIGITAL STILL STORE SYSTEM

SYSTEM LEVEL 1

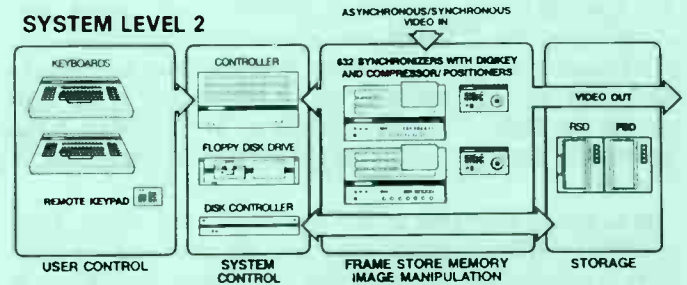
One user station with 260 stills available.
 Digital noise reduction included.

You can store stills from video tape recorders, video cameras, character generators, network feeds, and reflective art, virtually any video input, from a free-standing keyboard. The space-saving 80 Mbyte removable disk drive (RSD) will store up to 260 images on a small, removable disk pack. This allows you to remove the disk pack for security, or use at another location. You, or a computer, can access images as quickly as they are stored. The System Controller (SCU) coordinates the system via an Intel Multibus™ * based Z8000 micro-computer. The Floppy Disk Drive allows easily updated software control, while the Disk Controller (DCU) gives you the freedom to add up to 8 disk drives as your image storage requirements increase.



SYSTEM LEVEL 2

Two user stations with 780 stills available, plus digital keying, picture compression/positioning, digital noise reduction and remote keypad. IRIS II, in this configuration, allows two users to store stills and build/retrieve lists simultaneously. A Remote Keypad has also been added which can be slaved to the master keyboard, or used independently for limited space applications. This level 2 system is completed with the addition of: 1) a 160 Mbyte fixed disk drive (FSD) to give you 520 more stills. 2) Another 632 Frame Synchronizer to provide preview and line capability, plus montage effects.

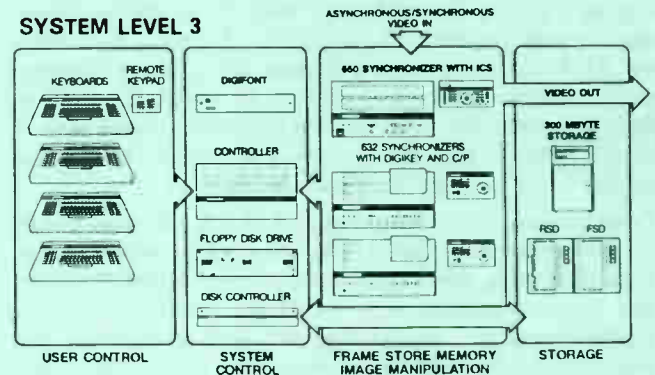


SYSTEM LEVEL 3

Four user stations with 1776 stills available. Also equipped with production graphics/effects, high resolution titling, digital keying, DNRs, picture compression/positioning, and a remote keypad. This level system has Harris' new four-frame synchronizer, the 650, and the Iris Composition Station (ICS) for exciting production graphics. ICS gives you:

- Variable compression and 2X expansion
- Joystick positioning and cropping
- Variable aspect ratio
- Infinite border and background color
- Soft border capability
- H & V inversion
- Cut and paste
- Digital keyer with 17ns resolution
- Removable memory modules
- Frame-to-field interpolation

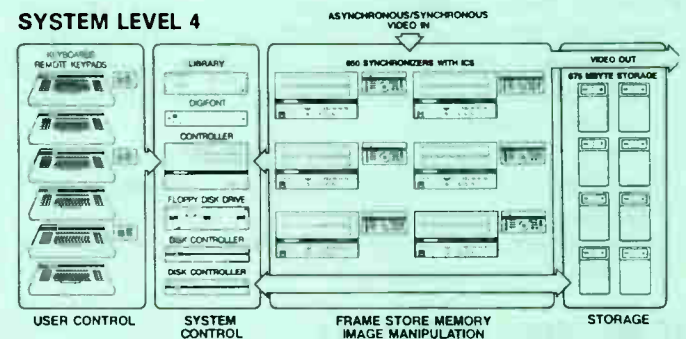
Digifont, a 35ns resolution character generator, has also been added. With Digifont, you can preformat any titling sequence, and then key the titles over Iris II stills. Digifont, in combination with Digkey, lets you retitle background slides hundreds of times with no perceptible degradation.



SYSTEM LEVEL 4

Six user stations and 3 remote keypads, with over 17,000 stills. A full complement of production graphics/effects, high resolution titling, digital keying, DNRs, picture compression/positioning, and a library management system.

Here it is. The ultimate Iris. The Library Management System we've added has the most powerful routines of any in existence. Over 80,000 stills can be cataloged, either on or off-line. Retrieval is simple, because you can catalog stills under five categories, and search each category with an unlimited number of keywords. Library entry information is stored on a Winchester-type drive which can be instantly accessed via any of the six user stations.





The crop box indicates the image area to be used in the composition.



The cropped image area is first expanded, then traced and keyed (cut and pasted) over another background still.



The new image is compressed, given a border, then overlaid upon another existing still that includes a digitized keyed-in title w/drop shadow.



It's easy to create complex effects with first generation resolution on the ICS. Any number of stills, with effects, can be generated and keyed over each — here into an area (black box) that is also used to define a transparent drop shadow.

NOTE: All effects illustrated were made on an IRIS Composition System and photographed directly off a monitor. No simulations were used.

Who now offers exciting effects for graphics production on your IRIS Still Store?

Harris' IRIS Composition System — ICS — is the newest component in the IRIS family of still store systems. The ICS gives you a wide range of effects.

- Compression
- Expansion
- Variable aspect ratio
- Hard and soft borders
- Continuously variable border width/color
- Internal matte generator
- Opaque and transparent overlay
- Cut and paste
- Joystick positioning and cropping
- Luminance keyer with adjustable polarity and key level

The ICS can store up to 9 sets of effects in removable, erasable Archive Modules. So you can recall your best effects — at the touch of a button.

Who gives you the freedom to build graphics with unlimited layers?

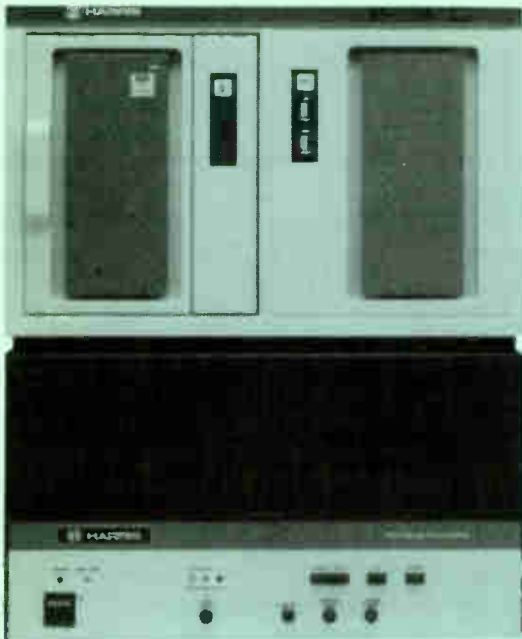
With the ICS, an unlimited number of images can be manipulated and overlaid. And because it's all done digitally, there is no generation loss in image quality, from the first layer to the last.

Who gives you the ability to digitally key characters and irregular shapes without tying up your switcher?

With the ICS keyer, any video source (character generator, camera, internal color generator, or another IRIS still) can be keyed into a background still under control of an external key signal. In the ICS dynamic keying mode, key signals corresponding to irregular shapes can be created to allow cutting and pasting of one piece of a still into another — all while maintaining first generation quality. For more information, or to arrange for a demonstration, contact:

Harris Studio Division, Video Systems Operation,
1255 Ease Arques Ave., Sunnyvale, CA 94086
(408) 737-2100 Telex: 4992172

For your information, our name is Harris.



The IRIS C, including one RSD/FSD drive and framestore, take up less than 24 inches of rack space.



The 5-1/4" x 6" Mini-Controller interfaces with an interactive monitor screen and allows recall, store, browse, erase, build, edit, and print operations.

IRIS C, DIGITAL STILL STORE SYSTEM

Several years ago an ambitious engineering program began that resulted in the world's most flexible and powerful digital still store system, Harris' IRIS II. Built with component-coded framestores and designed to evolve as the needs of the industry changed, it offered six simultaneous users, each with preview/program output, library management, production graphics and effects, field-to-frame interpolation, titling, digital keying, picture compression/positioning, digital noise reduction and on-line storage for over 17,000 stills. It also interfaced to many types of fixed and removable media disk drives.

Now, the evolution continues with IRIS C, a new version that maintains the broadcast quality signal performance and rigorous system design standards of IRIS II, yet offers a compact still store at significantly lower cost to the facility that does not need large storage capacity or six-user flexibility.

Two simultaneous users and a compact package

IRIS C will support two simultaneous users with dual channel capability for both. This

means that each user has both preview and program capability. And, installation in cramped spaces like mobile vans is easy because IRIS C occupies less than 24 inches of rack space.

A new quad framestore synchronizer with optional transition effects for increased flexibility

IRIS C incorporates the Model 654 framestore which contains four frames of component-coded memory and up to four NTSC encoders to produce four separate outputs. (The 654 is available as either a 2 or 4 output unit, and the 654-2, two output unit can be expanded to the 654-4, four output unit by field retrofit). The 654 transitions option provides dissolves and left/right, up/down wipes with programmable transition frame rates between pairs of outputs. When two users are operating IRIS C, transitions can be utilized by each user independently, and transitions can also be programmed into sequence lists. This advanced framestore synchronizer also provides time base correction and optional RGB input/output.

Control Flexibility

IRIS C can be operated by the new Mini-Controller or the IRIS II keyboard. The interactive menu screen of the Mini-Controller allows a first time user to be instantly effective with the system. IRIS C also provides an RS232 control port for full remote control from a host computer or editing system. A parallel printer port is also provided, allowing all the on-line library information as well as sequence lists, IDs and descriptions, to be printed.

Built-in, on-line Library Management

No index cards or hand written lists. The on-line library system catalogs stills using a six character numeric or alpha numeric ID, in addition to a description of up to 20 characters. Alpha numeric ID provides much more flexibility than other systems. For example, "News" stills may have ID's that start with "N", or "Basketball" stills with "B". Users may store their stills by their initials or other mnemonic identification.

PRODUCTION SWITCHER

HARRIS
P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200



The IRIS Composition System (ICS) provides a full range of production graphics and effects for both IRIS C and IRIS II. Two ICSs may be used simultaneously on the IRIS C. The removable, erasable Archive Module (right) can store up to nine sets of effects.



IRIS C's optional full-function keyboard provides color-codings and familiar ASCII key layout. Stills may be cataloged numerically, alpha numerically, or by description in the library.

IRIS COMPOSITION SYSTEM (ICS)

Compatible with IRIS II

IRIS C stored picture data is compatible with IRIS II, so the pictures stored by the IRIS C in your van are perfectly interchangeable with the pictures stored by the IRIS II in your studio.

Exciting effects available

The IRIS Composition System (ICS) option, available on both IRIS II and IRIS C, provides a wide range of effects:

- Compression
- Expansion
- Variable aspect ratio
- Hard and soft borders
- Continuously variable border width/color
- Internal matte generator
- Opaque and transparent overlay
- Cut and paste
- Joystick positioning and cropping
- Luminance keyer with adjustable polarity and key level (keyed signals may be colorized)
- Dynamic key mode — continuous keying for creative camera copy-stand techniques
- Field-to-frame interpolation

The ICS can store up to 9 sets of effects in removable, erasable Archive Modules. You can recall your best effects at the touch of a button or have them automatically recalled

by a sequence list. The Archive Module is also compatible with IRIS II.

With the ICS, an unlimited number of images can be manipulated and overlaid. And because it's all done digitally, there is no generation loss in image quality, from the first layer to the last.

With the ICS keyer, any video source (character generator, camera, internal color generator, or another IRIS still) can be keyed into a background still under control of an external key signal. In the ICS dynamic keying mode, key signals corresponding to irregular shapes can be created to allow cutting and pasting of one piece of still into another — without tying up your switcher.

Media Flexibility

The constantly changing demands of the video industry's customers make storage media flexibility a necessity. IRIS C is compatible with many media storage drives from CDC.* Any two drives (below) may be used.

80 MB	RSD (cartridge)
160 MB	FSD
300 MB	SMD
340 MB	FSD
675 MB	FMD

The IRIS Series Still Stores; evolving to keep you in the lead as your needs change.

HVS manufactures digital electronic equipment for television broadcast and post-production. Our products range from hardworking Time Base Correctors used throughout the video industry, to the sophisticated digital still store and image manipulation systems described here. So if you're looking for the newest in special effects to enhance your programming, or for a cost-effective solution to almost any signal processing problem, look to a company that is famous for its innovative products and high-level product support.

For more information or a demonstration, contact:

**Harris Studio Division,
Video Systems Operation,
1255 East Arques Avenue,
Sunnyvale, CA 94086
(408) 737-2100
Telex: 4992172.**

*Control Data Corporation

**HARRIS**P.O. Box 4290
Quincy, IL 62305-4290
(217) 222-8200

IRIS II SPECIFICATIONS

Physical and Electrical

Unit	Power	Size	Weight
Disk drive (RSD & FSD)	250 watts	10 2" h x 8 5" w x 23" d (25.9 cm x 21.6 cm x 76.2 cm)	60 lb 27.27 kg
Disk drive (SMD & FMD)	1000 watts	36" h x 23" w x 36" d (91.44 cm x 58.42 cm x 91.44 cm)	550 lb 249.47 kg
Systems controller	180 watts	12.25" h x 19" w x 25" d (31.11 cm x 48.26 cm x 63.5 cm) Includes space for one RSD/FSD drive	51 lb 23.18 kg
Quad Framestore (654)	550 watts	10.5" h x 19" w x 22" d (26.67 cm x 48.26 cm x 55.88 cm)	50 lb 22.68 kg
Keyboard	5 watts	4" h x 19" w x 10" d (10.16 cm x 48.26 cm x 25.40 cm)	10 lb 4.54 kg
Mini-controller	5 watts	5.25" h x 6" w x 4" d (13.33 cm x 15.24 cm x 10.16 cm)	2.3 lb 1.04 kg
ICS Panel	50 watts	5.25" h x 11.5" w x 13" d (13.34 cm x 29.21 cm x 33.02 cm)	5 lb 2.27 kg

Model 654-2 Two Output Framestore Synchronizer
Model 654-4 Four Output Framestore Synchronizer

* One drive fits inside system controller

GENERAL

Signal Inputs	
Video	1 V p-p stable direct or unstable heterodyne, composite
RGB (Optional)	0.7 V p-p into 75 ohms
Genlock	1 V p-p composite video or composite sync and subcarrier High impedance looping.

SIGNAL OUTPUTS

	654-2	654-4
Video Outputs	2	4
Key Outputs	2	4
RGB	2	4
Sync and Blanking Outputs		4 V p-p

STABILITY

Residual Luma TBE	± 10 ns with 50 dB S/N input ± 20 ns with 40 dB S/N input
Residual Chroma TBE	± 2° with 50 dB S/N input ± 4° with 40 dB S/N input

PERFORMANCE

Video Bandwidth	Luma ±0.2 dB to 4.2 MHz Chroma 1.25 MHz
S/N ratio (p-p signal to RMS noise) (R/S noise meter with bandpass filter, SC Trap and 10 kHz LPF)	57 dB (avg)
Differential phase	1.0°
Differential gain	1%
2T K factor	1%
C/L delay	17 ns max

ELECTRICAL AND ENVIRONMENTAL

Ambient temperature	10°-40°C
Humidity	10%-90% non-condensing
A.C. voltage	115 V ± 10%, 50/60 Hz
A.C. power	550 W

All specifications subject to change without notice

SystemOn-line storage capacity
4264 Max NTSC

Number of users up to two maximum, additional user stations may be allocated to an RS232 computer interface. Up to 2 disk drives in any combination

Storage/recall format field or frame storage with field 1, field 2, or frame recall

Number of fields per drive	
80 MB RSD	260
160 MB FSD	520
300 MB SMD/FSD	996
340 MB FSD	1100
675 MB FMD	2132

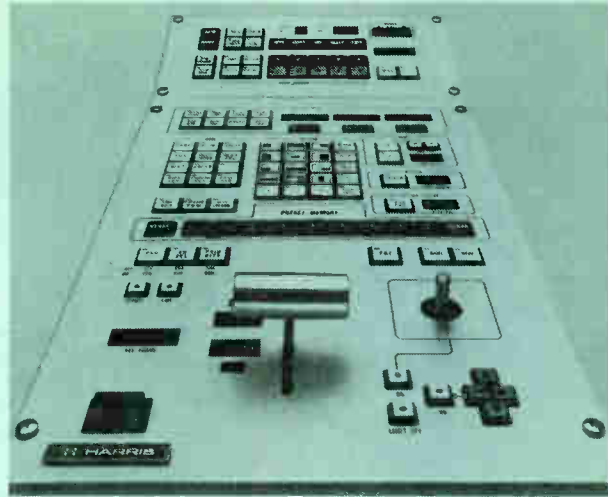
Library (Provided as standard)

On-board library system capable of cataloging and recalling stills by identification number (six characters numeric or alpha numeric) or by description (up to 20 characters)

Parallel Printer Port Centronix and T1 compatible

For your information our name is Harris.

EFFECTS SYSTEM



HDE 100/150/200

DIGITAL VIDEO EFFECTS SYSTEM

Harris introduces the HDE 200. This easy-to-use production tool features a 150 event bubble memory and easily upgradeable multi-channel capability. It is also available in two expandable versions, the HDE 100 and HDE 150. So now your effects capability can expand with your needs, and you can stay within your budget.

HDE 100 Features

- Variable Squeeze and Compression
- Slide/Push
- Split and Compression Split
- H & V Invert
- Freeze/Stop Action
- Programmable Multi-Pix Freeze
- Posterization
- Mirror/Reflect
- Montage
- Separate Border/Background
- Variable Aspect Ratio
- Fader Limiter
- Preset Effect Registers

HDE 150

All the effects of the HDE 100, plus:

- Variable Expansion/Zoom
- Programmable Trajectory
- Multi Move
- Mosaic (Tile)
- Flip/Tumble
- Wipe Follow
- Chroma Key Tracking
- Auto Operation of up to 150 Programmed Events
- On-Board Event Memory with Battery Back-up
- Removable Event Bubble Memory
- Editor Interface

HDE 200

All the effects of the HDE 150, plus:

- Automatic Input Switching
- Strobe Caption
- Decay
- Prewired for Dual Channel Option

Specifications

GENERAL

Signal processing system	PCM binary-coded signal processing
No. of bits per word	8 bits
Sampling frequency	14.3 MHz
Input signals	NTSC composite sync or monochrome signal: 1 V p-p, 75 ohms
Input key signal	0.7 V p-p or TTL
Output signals	NTSC composite sync, 1 V p-p, 75 ohms, 4 outputs
Output key signal	0.7 V p-p, 75 ohms, 3 outputs
External Reference	Black Burst: 0.3 V p-p Composite Video: 0.3 V p-p, high impedance SYNC: 4 V p-p SC: 2 V p-p

SIGNAL PERFORMANCE

Video input return loss	≥30 dB at 3.58 MHz
Reference input return loss	≥30 dB at 3.58 MHz
Video output return loss	>28 dB at 3.58 MHz
Frequency response	1 kHz to 5.0 MHz: ±0.2 dB >7.5 MHz: ≤ -40 dB
(A/D, D/A only)	
K factor	≤1%
Diff gain	2%
Diff phase	2°
Signal-to-noise ratio	50 dB/rms (quantizing noise included)
Periodic noise	≤30 mV p-p
Hum	≤ -50 dB

Adjustable ranges

Video level	Adjustable to 0.7 V p-p with input of 0.56 to 0.84 V p-p
Chroma level	±10%
Set-up	0 to 17.5 IRE
Burst phase	360°
HUE	±20°
SYNC level	0.3 V ±0.1 V
Burst level	0.3 V ±0.1 V

MECHANICAL & ENVIRONMENTAL

Dimensions	Video Processor: 11.7" (30 cm) H x 19" (48 cm) W x 17.6" (45 cm) D System Controller: 5.9" (15 cm) H x 19" (48 cm) W x 17.6" (45 cm) D Control Panel: 17.2" (44 cm) H x 7.8" (20 cm) W x 5.9" (15 cm) D
EMI: Conducted & Radiated	Meets FCC Class A specifications
Operating temperature	0°C to 40°C
Spec temperature	10°C to 30°C
Power requirements	110 V ±10%, 220 V ±10%, 50/60 Hz

HDE 100	.....	\$47,000.00
HDE 150	.....	\$55,250.00
HDE 200	Single Channel	\$79,000.00
HDE 200	Dual Channel	\$135,000.00

FRAME SYNCHRONIZERS/ TIME BASE CORRECTORS



HVS 632



HVS 690

HVS 690 Frame Synchronizer and Time Base Corrector STANDARD FEATURES:

- Freeze frame or freeze field for production versatility
- Dropout compensation to clean up bad tapes
- Line-by-line velocity compensation with look-ahead for high accuracy correction with direct signals
- Preset proc amp level controls for complete control over input video
- Hysteresis circuitry for smooth signal handling
- Transparent signal performance for perfect originals and clean, crisp dubs
- Industry standard components to speed maintenance
- 3.5 inch height to conserve rack space, or to make tabletop use more convenient
- Auto-freeze when incoming signal is lost to reduce output video disturbance
- Automatic mode switching between stable and unstable inputs to reduce operator set-up time
- Built-in TBC for heterodyne and direct signals for complete versatility with all formats



HVS 516WB

Part #	Product	Price
7-16154-01	HVS 690	\$14,850.00
1-10440-01	Quad Head Switch Amplifier	295.00
1-11203-00	FM Sampler for D.O.C.	95.00
1-18244-01	C-MOD (option)	350.00
1-18253-01	C-MOD (retrofit)*	500.00
7-11245-01	Fiberglass Shipping Case	275.00
5-14113-01	Operators Manual	50.00
5-14114-01	Maintenance Manual	75.00
1-18140-01	Spare Parts Kit	975.00

HVS 632/DNR NTSC

Frame Synchronizer and Time Base Corrector

Frame Synchronizer and Time Base Corrector which offers superb performance with outstanding flexibility. It operates with time base stable direct color, and monochrome signals and also time base unstable heterodyne or monochrome signals. The unit is shipped as a stand-alone unit with manuals and rack slides.

- Stable or unstable inputs
- "Dual Mode" hot switching
- Smooth handling of odd field edits
- Compensation for lost video
- Picture freeze
- High noise immunity
- Exceptional write clock range
- RGB mode
- Digital interface
- Convenient front panel operation
- Easy maintenance

Part #	Product	Price
7-18482-01	HVS 632/DNR	\$21,800.00
7-13106-03	Compress/Positioner	4500.00
TBA	Spare Parts Kit	2500.00
5-16356-01	Maintenance Manual	125.00
5-16357-01	Operators Manual	50.00
7-16212-01	Remote Control	2000.00
7-16391-01	Digikey	4500.00
1-14745-01	Rackmount for C/P and/or Remote Control Panel	75.00
	HVS 632C (RGB)	24,800.00
	HVS 632/DNR Package (includes C/P, Digikey and Remote Control)	27,990.00

HVS 516WB Digital Time Base Corrector (Wide Band)

The HVS 516WB is a broadcast quality, NTSC digital time base corrector. This wide-band TBC gives the user of any non-segmented, heterodyne VTR all the proven advantages of modern digital video processing, plus the bandwidth to handle the extended frequency response of the new generation VTRs.

ENG/EFP, CATV, Production and Post-production applications benefit from the 516WB's component-coded processing techniques and 4 x Fsc sampling in terms of excellent time base error handling characteristics and reduced video noise levels. The 516WB, based on HVS's experience with over 8000 digital TBCs, is our most advanced and reliable 516 yet.

The HVS 516WB accepts an input video signal, separates it into component form, digitizes and stores it. The signal is then encoded, clocked out at a corrected rate and referenced to either an external or an internal sync generator. The result is a time base corrected video signal.

Part #	Product	Price
7-11852-03	HVS 516WB	\$9800.00
1-13093-01	H & V Blanking (option)	295.00
7-13591-01	H & V Blanking (kit)	468.00
7-11245-01	Fiberglass Shipping Case	275.00
5-11853-02	Operators Manual	50.00
5-11854-02	Maintenance Manual	75.00
TBA*	Spare Parts Kit	1345.00
1-11203-00	FM Sampler for D.O.C. (kit)	95.00

*To Be Announced

TIME BASE CORRECTOR



Model 550

HVS 550 Digital Time Base Corrector

The Harris 550 operates with all capstan servo heterodyne video recorders, from the older, non-subcarrier feedback machines to the new highband VCRs. 3.58 feedback and process modes are both available to offer superb performance over a wide range of VTRs.

For easy editing, the 550 will handle 10X shuttle speeds. And its full remote panel is small enough so that two can fit side-by-side in a 1 1/4" rack space.

The 550's 8-bit, 4xfsc architecture provides virtually-transparent signal performance, while its 16-line memory and Automatic Vertical Advance handles large gyro errors with ease. A built-in proc amp, plus RS-170A sync output circuitry, allow complete operator control of video signals and gen-lock of external equipment.

This new TBC is also FCC certified for radiated and conducted EMI.

To keep down-time to a minimum the 550 is designed with features that make it ultra reliable and, at the same time, quick and easy to repair.

- Printed circuit signal paths, versus wire harnesses
- Redundant circuit board contacts
- Front-removable, three-board architecture
- Shields integral with the chassis, not the PCBs
- Sturdy, two-piece package

HVS 540 Time Base Corrector

The 540 is a low cost TBC similar to the HVS 550 except it operates in the 3.58 MHz (subcarrier) feedback mode only.

SPECIFICATIONS

- **Signal Inputs**
Video: 0.5 to 1.5 V p-p into 75 ohms, 525 lines, 60 fields/sec
Video input return loss: greater than 43 dB at 3.58 MHz
DOC: 1 V p-p RF, 75 ohm terminating
- **Signal Outputs**
Video out 1: 1 V p-p into 75 ohm comp. video by-passable
Video out 2: 1 V p-p into 75 ohm comp. video not by-passable
ADV VTR Sync Out: 0.3 V or 4 V p-p into 75 ohm
VTR 3.58 feedback: 1 V p-p into 75 ohm
- **Memory Architecture**
Sampling rate: 4 X subcarrier
Quantizing: 8 bit
Memory capacity: 98K bits
Time base correction window: 16 H lines

Signal Performance

- **Frequency response**
3.58 feedback mode: +/- 0.5 dB from 10 Hz to 4.2 MHz less than 3 dB down at 5 MHz
Process mode: luminance 2.5 MHz (550 only)

- Differential gain: 2%
- Differential phase: 2°
- Low frequency linearity: 0.2 dB
- Tilt
Field rate: 1%
Line rate: 1%
- K factor
3.58 feedback mode: 2T 1%/20T 1% baseline error
Process mode: 2T 5%/20T 3% baseline error (550 only)
- Signal-to-noise ratio (p-p signal to RMS noise): 59 dB (ave.)
- Residual time base error
3.58 feedback mode: Luma +/- 20 ns, Chroma +/- 2 ns
Process mode: +/- 3 ns relative to burst (550 only)

Mechanical, Environmental and Power

- Dimensions: 19" x 3.5" x 16.75" (48.3 x 8.8 x 42.55 cm)
- Weight: 27 lbs. (62.3 kg)
- Operating temperature: 32°F to 104°F (0°C to 40°C)
- Spec temperature: 50°F to 104°F (10°C to 40°C)
- Storage temperature: 14°F to 140°F (-10°C to 60°C)
- Altitude: sea level to 12,000 feet (3,700 M)
- Max humidity: 95% relative non-condensing
- Power requirements: 100, 120, 220 or 240 V +/- 5%, -10% 50-60 Hz 175 watts

VARIABLE TRACKING OPTION FOR 540/550 TBCs

The new Variable Tracking (VT) option allows either TBC to be used with slow-motion heterodyne VTRs such as the Sony BVU 820 with its Dynamic Tracking mode. The 540VT and 550VT will dynamically track from 1x reverse play speed to 3x forward play speed and will hold color lock to +/- 5x shuttle speed. In addition, the 540VT and 550VT will enable the VTR to present a stable picture in "pause" as well as present a viewable picture in fast forward and rewind modes (+/- 40x normal speed). Included with the option, an interconnect harness compatible with the Sony BVU 820.

Part #	Product	Price
7-18000-02	HVS 540 (16L)	\$6450.00
	HVS 540VT (16-L)	6950.00
7-18000-01	HVS 550 (16L)	7950.00
	HVS 550VT (16-L)	8450.00
7-18478-01	Remote Control (540/550)	975.00
5-18043-01	Operators/Maintenance Manual (540/550)	75.00



**HUGHES ELECTRONIC
DEVICES CORPORATION**
P.O. Box 1985
Grass Valley, CA 95945 USA
(916) 273-9524 Telex 364412

AUDIO/VIDEO DISTRIBUTION

ADA-200/ADA-201 Audio Distribution Amplifier

- Differential Input
- Balanced Outputs
- Six Outputs
- Ultra Low THD
- Wide Range
- Modular

The ADA-200 Audio Distribution Amplifier is a modular, high-performance amplifier designed to meet the rigorous requirements of the broadcast industry.

Each module has tandem output stages containing LF256H operational amps and MPS-U05 /U55 output transistors in tracking loops, providing very low THD and high output drive capacity. The amplifier response profile allows distribution of SMPTE time code without modifications. The ADA-200 can be used with ADF-200 or AVF-150 frames, and APS-155 power supplies.

ADA-200 \$245.00
ADA-201 245.00

ARA-202/ARA-203 Audio Distribution Amplifier

- Remote Gain
- Differential Input
- Balanced Outputs
- Six Outputs
- Wide Range
- Modular

The ARA-202 Remote Gain Audio Distribution Amplifier provides remote gain adjustment using a single 10 K potentiometer to ground. Internal jumpers provide ± 3 dB, ± 6 dB, or ± 9 dB remote ranges in addition to the local ± 3 dB adjustment. Differential input, and six balanced outputs with advanced, tandem tracking loops in the output stages, provide very low THD and transparent signal distribution. The ARA-202 may be used in any HEDCO Audio Distribution Frame and/or mixed with standard Audio Line Amplifiers.

ARA-202 \$325.00
ARA-203 325.00

VDA-100 Video

- Differential Looping Input
 - Six Identical Outputs
 - High Performance
 - Multi-Purpose DA
- \$235.00**

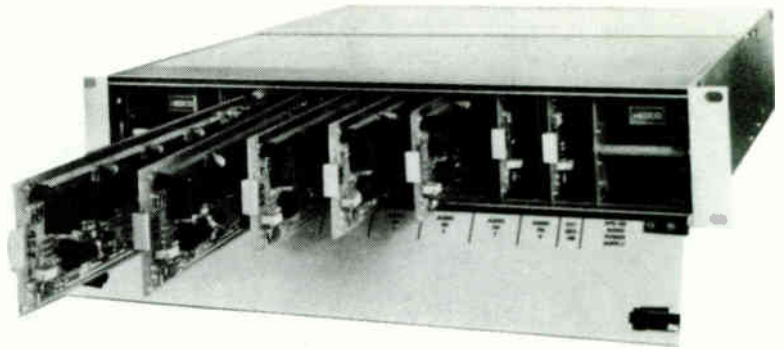
EDA-102 Equalizer

- Up to 1000 feet of 8281 Cable
- Four Pole Equalization
- Six Identical Outputs
- Operator-proof

The EDA-102 has a plug-in, four-pole cable submodule (CEQ-100) which allows for individual peaking circuits to compensate for various types of cable. The equalizing submodule has a security clip which prevents misadjustment of response on an installed EDA. Gain and DC adjustments are accessible for local operations.

The EDA-102 plugs into the standard VDF-100 or AFV-150 frame, and can be mixed with other video or pulse amplifiers in the same frame.

\$285.00



CDA-104 Clamper

- Back Porch Clamp
- Differential Looping Input
- Six Identical Outputs
- Optional Cable
- Equalizer

The CDA-104 clamping DA provides up to 45 dB of hum rejection with a fast forward clamp pulse derived from input composite video. For set-up, clamping may be bypassed with a front panel switch. The CEQ-100 cable equalization submodule may be added to the CDA-104 clamping DA to provide additional compensation for up to 1000 feet of 8281 cable. The front panel gain control provides level adjustments without affecting response or clamping. The CDA-104 can be mixed with other video or pulse DA's in the same frame.

\$325.00

Option: CEQ-100 1000 Foot Cable Equalizer

SCA-105 Subcarrier

- Differential Looping Input
- Phase Adjustable
- Six Identical Outputs
- Regenerated S/C

The SCA-105 provides regenerated, low distortion subcarrier, and 360° of subcarrier phase control.

The SCA-105 has a differential input with over 80 dB hum rejection at 60 Hz. Subcarrier is switched through one of four 90° phase shifters, and a three-pole filter that recovers only the fundamental frequency. Fine phase is adjusted prior to phase shifting and filtering.

The SCA-105 uses the standard VDF-100 or the AFV-150 frame. **\$270.00**

LDA-108

- Linear Low Delay
- Six Identical Outputs
- AC Coupled Input
- Looping Input

A linear pulse DA with less than 20ns transition time from loop-thru input to six outputs. Designed to complement RS-170A pulse distribution, the LDA-108 has very low group delay. A pulse presence detector with LED indicators and remote line is optional.

Useable for 1V p-p video, 2V p-p subcarrier or 4V p-p pulses. The LDA-108 uses the standard VDF-100 or AFV-150 frame. **\$165.00**

Options: PPD-100 Horiz. Sync Detector, PPD-101 Vert. Sync Detector

SDA-107 Sync Strip

- Sync from Video
- Sin² Transitions
- Six Identical Outputs
- Looping Input

The SDA-107 provides output sync at 4V p-p levels with 120ns sin² transitions from any video input.

Input signals are passed through a sync strip filter submodule (SSF-100) mounted on a PDA-108 module. Sync level detector (PPD-100) indicates low level signals with local LED's and remote closure to ground.

The SDA-107 series can be mixed with other video or pulse amplifiers in the same frame.

\$215.00

Versions: SDA-107 NTSC/Horiz., SDA-117 NTSC/Vert., SDA-127 PAL/Horiz.

Frames

Each 2RU frame is prewired for easy expansion. One power supply is required for each tray. An optional, "plug-in" redundant supply is available. Separate AC inputs and CB/switches are standard.

ADF-200 Audio frame is prewired for eight audio DA's and two APS-155 audio power supplies. **\$550.00**

AVF-150 Audio/video frame is prewired for four audio DA's, four video DA's plus two APS-155 audio power supplies. **\$575.00**

VDF-100 Video frame is prewired for eight video DA's and two VPS-154 video power supplies. **\$575.00**

Module Extender

An optional module extender, Model DEX-160, is available to provide maintenance adjustments and ease of trouble shooting. The DEX-160 may be used with all audio, pulse, and video distribution amplifiers. **\$40.00**

Power Supplies

Two types of power modules are used in the distribution equipment: APS-155 with audio equipment, and VPS-154 with video units. Each supply provides regulated outputs from selectable 115V/60 Hz or 230V/50 Hz lines.

APS-155 \$245.00
VPS-154 245.00



**HUGHES ELECTRONIC
DEVICES CORPORATION**
P.O. Box 1985
Grass Valley, CA 95945 USA
(916) 273-9524 Telex 364412

ROUTING SWITCHERS

MRC-16/4V MRD-16/4A

- 16 or 8 Inputs
- Up to 4 Output Buses
- Up to 4 Channels
- Audio, Video, AFV
- Dual Power Supplies
- Vert. Interval Switch
- Diff Audio In/Out
- Meets AVR-1 Specs



RCP-105 CONTROL PANEL provides four buses of 16 LED/switches. Uses single wire per crosspoint lines and closure to ground contacts. The 2 RU panel requires on cable per bus.



RCP-101 CONTROL PANEL provides 16 LED/switches for control of one bus. Single wire per crosspoint lines connect through the remote connectors and activate with closure to ground.

ORDERING INFORMATION

SIZE	VIDEO	AUDIO
8 Inputs/1 Out	MRC8/1	MRD8/1
8 Inputs/2 Out	MRC8/2	MRD8/2
8 Inputs/3 Out	MRC8/3	MRD8/3
8 Inputs/4 Out	MRC8/4	MRD8/4
16 Inputs/1 Out	MRC16/1	MRD16/1
16 Inputs/2 Out	MRC16/2	MRD16/2
16 Inputs/3 Out	MRC16/3	MRD16/3
16 Inputs/4 Out	MRC16/4	MRD16/4

CONTROL PANELS

- RCP-101 Panel, 16 Inputs, 1 Bus
- RCP-105 Panel, 16 Inputs, 4 Buses
- CAB-2 Cable for RCP-101, RCP-105

OPTIONS

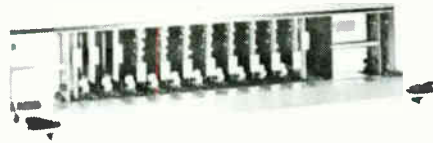
- REX-161 Extender Module
- VPS-154 Redundant Video P.S.
- APS-155 Redundant Audio P.S.

MRI-24/2V MRJ-24/2A

- 16 or 24 Inputs
- 1 or 2 Buses Out
- Audio/Video/AFV
- Multiple Levels
- 2 RU Frames
- Plug In Modules
- Meets AVR-1 Specs

ORDERING INFORMATION

SIZE	VIDEO	AUDIO
16 Inputs/1 Out	MRI16/1	MRJ16/1
24 Inputs/1 Out	MRI24/1	MRJ24/1
16 Inputs/2 Out	MRI16/2	MRJ16/2
24 Inputs/2 Out	MRI24/2	MRJ24/2



MRC/MRD 16/4 Audio/Video Routing Switchers are modular and bus oriented. The MRC/MRD switchers provide premium switching quality in either Audio, Video or AFV configurations. The MRC Video switcher features vertical interval switching based on last video plus video transparency. The MRD Audio switcher features differential inputs and outputs and operation at levels up to +240dBm.



MRC REAR PANEL is equipped with loop thru inputs and two outputs per bus. The frame is prewired for all 4 buses and has parallel control connectors for use with either the RCP-101 or RCP-105 panels. The 2 RU frame is fully equipped for dual power supplies.



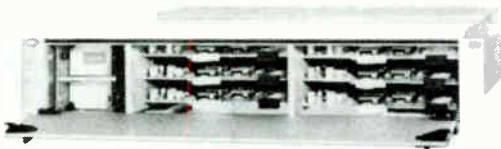
MRD REAR PANEL is equipped with RDI block terminals for ease of rack wiring. Parallel control connectors allow additional levels of audio or multiple control panels. The MRD frame is wired for two ABM-8's, eight ACM-8's, 2 control logic, and two APS-155 modules.



RCP-109 CONTROL PANEL is equipped with 40 LED/switches to control one bus. Two RU panel mounts in standard 19 inch rack. May be used for video, audio or AFV control.

ORDERING INFORMATION

SIZE	VIDEO	AUDIO
24 Inputs/1 Out	MRE24/1	MRF24/1
32 Inputs/1 Out	MRE32/1	MRF32/1
40 Inputs/1 Out	MRE40/1	MRF40/1
24 Inputs/2 Out	MRE24/2	MRF24/2
32 Inputs/2 Out	MRE32/2	MRF32/2
40 Inputs/2 Out	MRE40/2	MRF40/2



MRI/MRJ 24/2 AUDIO AND VIDEO Routing Switchers provide one or two buses which are individually controlled by remote panels. The combined buffer, crosspoint, output amplifier modules completely isolate the buses and are front panel accessible. Each switcher is compact and provides auxiliary bus switching using single wire per crosspoint control.

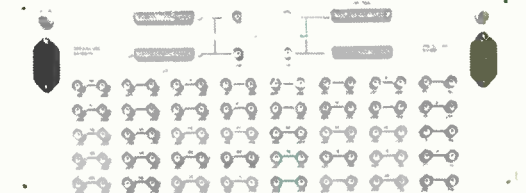


MRI REAR PANEL is prewired for 24 BNC looping inputs and dual outputs on both buses. Frame space for one VPS-154 power supply and six VSM900 video switcher modules. Dual control connectors for each bus allows looping of control to additional frames.

MRE-40/2V MRF-40/2A

- 24 to 40 Inputs
- 1 or 2 Buses Out
- Audio/Video/AFV
- Multiple Levels
- 4 RU Frames
- Dual Power Supplies
- Meets AVR-1 Specs

MRE/MRF 40/2 AUDIO AND VIDEO Routing Switchers provide one or two buses which can select from either 24, 32, or 40 buffered inputs. Each bus uses standard crosspoint and buffer modules in 8 input increments. AFV systems may be configured with up to three levels of audio. Excellent audio and video transparency using standard components.



MRE REAR PANEL is prewired for 40 BNC looping inputs and dual outputs on both buses. Frame space for up to four VPS-154 power supplies, two logic, five VBM8 buffers, and ten VCM8 crosspoint modules. Dual control connectors on each bus for looping to additional frames.

MRF REAR PANEL is prewired for 40 audio differential inputs and two differential audio outputs per bus. Frame space for up to four APS-155 power supplies, two logic, five ABM8 buffers, and ten ACM8 crosspoint modules. Dual control connectors and separate AC inputs.

RCP-111 CONTROL PANEL is equipped with 24 LED/switches to control one bus. Single RU panel mounts in standard 19 inch rack and provides single wire per crosspoint control.

CONTROL PANELS

- RCP-109 Panel, 40 Inputs, 1 Bus
- RCP-110 Panel, 32 Inputs, 1 Bus
- RCP-111 Panel, 24 Inputs, 1 Bus
- CAB-4 Cable for RCP-109, RCP-110
- CAB-3/4 Cable for RCP-111

OPTIONS

- REX-161 Extender Module
- VPS-154 Redundant Video P.S.
- APS-155 Redundant Audio P.S.



RCP-111 CONTROL PANEL is equipped with 24 LED/switches to control one bus. Single RU panel mounts in standard 19 inch rack and provides video, audio or AFV control with LED status display. HEDCO remote panels contain a minimum of electronics for operations.

OPTIONS

- REX-162 Extender Module

CONTROL PANEL

- RCP-111 Panel, 24 Inputs, 1 Bus
- CAB-3 Cable for RCP-111

MRJ REAR PANEL is prewired for 24 audio differential inputs and two differential outputs per bus. Frame space for one APS-155 power supply and six ASM900 audio switcher modules. Also has dual control connectors for each bus for AFV operation or for use with multiple panels.

Prices and Specifications Subject to Change Without Notice.



HUGHES ELECTRONIC DEVICES CORPORATION

P.O. Box 1985
Grass Valley, CA 95945 USA
(916) 273-9524 Telex 364412

ROUTING SWITCHERS

SRB 8/1 V

- 8 Video Inputs
- Broadcast Quality
- LED Indicators
- Single RU Frame
- Remote Option
- Meets AVR-1 Specs



SRB-8/1 VIDEO ONLY Routing Switcher is our plain vanilla unit. Frame houses one VSM-9 and one VPS-153 module with front panel access for maintenance. Local front panel displays video status on LED's. Compact rack mounting with excellent performance.



REAR PANEL shows loop thru BNC video inputs which exhibit greater than 50dB return loss. Dual video outputs have better than 0.1% diff. 0.1% diff G and 0.1dB response. Equipped with captive AC cord and remote plug for parallel control.

ORDERING INFORMATION

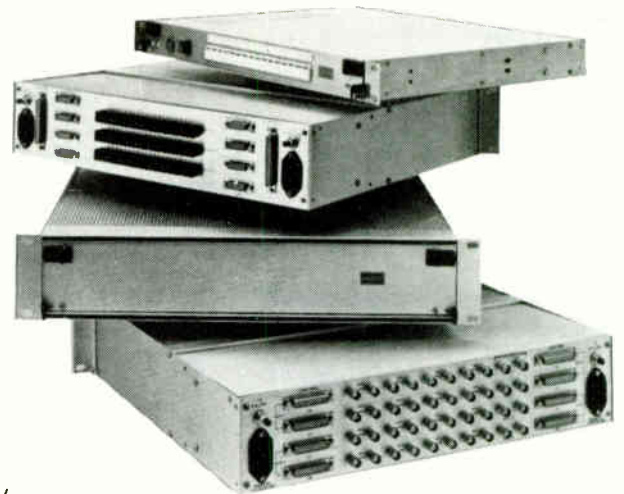
SRB 8/1 8 input, Video Only

OPTIONS

- RCP-100 Remote 8/1 Panel
- CAB-1 Cable for RCP-100
- SRX-162 Extender Module
- LCP-100 Local Control Panel



RCP-100 REMOTE PANEL has 8 LED/switches mounted in 19 inch single RU panel. Single wire per crosspoint control.



SRB-182 AFV

- 8 Video Inputs
- 8 Audio Inputs
- AFV Operation Only
- One RU Frame
- Remote Option
- Meets AVR-1 Specs



The **SRB-182 AFV** Switcher frame construction is identical to the SRB 8/1 above except for the rear panel. Audio Follow Video operation is standard and controlled locally by LED/switches mounted on the front panel. Audio response of 0.1dB from two outputs with < 0.1% THD at levels up to +24dBm over the range of 20 Hz to 20 kHz.



REAR PANEL of the SRB-182 AFV Switcher shows loop thru BNC video inputs and dual video outputs. Audio inputs and outputs are thru an RDI terminal block for ease of wiring. Equipped with captive AC cord and remote plug for parallel AFV control.

ORDERING INFORMATION

SRB-182AFV Complete 8 Input AFV

OPTIONS

- RCP-100 Remote 8/1 Panel
- CAB-1 Cable for RCP-100
- SRX-162 Extender Module
- LCP-100 Local Control Panel

SRB-281

- Dual Audio
- 8 Input Groups
- Separate Control
- Diff Audio In/Out
- Two Remote Panels
- Meets AVR-1 Specs



SRB-281 DUAL AUDIO Switcher provides two independent 8 input, dual output audio switchers in a single RU frame. Frame houses one VPS-150 power supply and two ASM-9 audio modules with fold down front panel access. LED/switches provide local control and status. Excellent audio transparency in both channels.



REAR PANEL Of the SRB-281 shows an independent set of RDI terminal blocks for each audio group. Remote operation for each group is controlled by single wire per crosspoint contact to ground, through the rear mounted connectors. Equipped with a captive AC cord and fuse protection. All audio input and output connections are balanced.

ORDERING INFORMATION

SRB-281 Dual Audio, 8 + 8 Inputs

SRB-181 Equipped as one channel

OPTIONS

- LCP-100 Local Control Panel
- RCP-102 or Remote Dual 8 + 8 Panel
- RCP-100 (2 ea.) Remote 8/1 Panel
- CAB-1 (2 ea.) Cable for above
- SRX-162 Extender Module

RCP-102 REMOTE PANEL has two sets of 8 LED/switches mounted in 19 inch single RU panel. Requires two CAB-1 cables.



SRB-481

- Dual Video
- 8 Input Groups
- Separate Control
- Vertical Interval
- Two Remote Panels
- Meets AVR-1 Specs

ORDERING INFORMATION

SRB-481 Dual Video, 8 + 8 Inputs

SRB-381 Equipped as one channel

OPTIONS

- RCP-102 or Remote Dual 8 + 8 Panel
- RCP-100 (2 ea.) Remote 8/1 Panel
- CAB-1 (2 ea.) Cable for above
- SRX-162 Extender Module
- LCP-100 Local Control Panel
- LCP-102 Local Control Panel

SRB-481 DUAL VIDEO Switcher provides two independent 8 input, dual output video switchers in a single RU frame. Frame houses one VPS-151 power supply and two VSM-9 video modules with fold down front panel access. Independent vertical interval switching on last video.



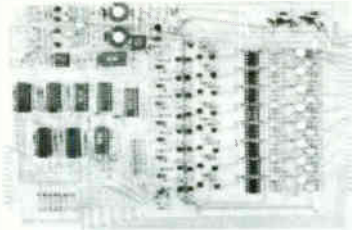
REAR PANEL of the SRB-481 shows an independent set of BNC looping inputs and dual outputs for each video group. Contact closure to ground on a single wire per crosspoint through the individual rear mounted connectors provides parallel remote control. Equipped with a captive AC cord and fuse protection.



**HUGHES ELECTRONIC
DEVICES CORPORATION**
P.O. Box 1985
Grass Valley, CA 95945 USA
(916) 273-9524 Telex 364412

ROUTING SWITCHERS

COMMON MODULES



ASM-900 Audio Switch Module contains 8 high impedance input buffers, 8 transistor switches, and dual balanced outputs. Levels of +24dBm and 0.1% THD with 0.1dB response over 20 to 20 kHz.



ABM-8 Audio Buffer Module contains 8 individual differential balanced inputs with 80dB CMR at up to +24dBm input levels. Individual buffers with DC offset adjustments drive isolated motherboard paths to crosspoint modules.



ACM-8 Audio Crosspoint Module contains 8 T-style transistor crosspoints, audio output driver and bus control logic. Dual output driver has true 600 ohm impedance at up to +24dBm with THD 0.1% and 0.1dB response to 20 kHz.



VBM-8 Video Buffer Module contains 8 individually powered high impedance buffers. Each buffer drives a motherboard path and provides constant level video for up to eight crosspoint modules. Fully compensated for loop thru inputs.



VCM-8 Video Crosspoint Module contains 8 T-style transistor crosspoints, video output driver, and bus control logic. Dual outputs are gain adjustable -3dB and have < 0.1% diff G, < 0.1% diff θ , and 0.1dB response. Wire per crosspoint control logic.



VSM-900 Video Switch Module contains 8 high impedance input buffers, 8 transistor switches, and dual 75 ohm 0.1% outputs. Switcher exhibits 0.1° diff, 0.1% diff G and 0.1B response.



VPS-152 Power Supply provides ± 24 VDC and ± 12 VDC with fold back current limiting for single rack unit frames. Line inputs can be strapped for 115V/60Hz or 230V/50Hz.

SRE 16/1 AFV

- 16 or 8 Inputs
- Video/Dual Audio
- Built-in Breakaway
- Dual LED Indicators
- Two RU Frame
- Prewired Frame
- Meets AVR-1 Specs

ORDERING INFORMATION

SRE-16/1AFV Dual AFV, 16 Inputs

SRE-8/1AFV Only 8 Inputs, Dual AFV

OPTIONS

RCP-121 Remote 16/1 AFV Panel

CAB-4 Cable for RCP-121

SRX-162 Extender Module

LCP-221 Local Control Panel



SRE-16/1 STEREO AFV Routing Switcher offers two levels of audio follow video with local or optional remote control. Frame houses 2 each VSM-9, 4 each ASM-9 and single APS-155 modules, with fold down front panel access. Local front panel displays audio and video status with red/green LED's. Breakaway stereo audio controlled as single selection.



REAR PANEL shows loop thru BNC video inputs and RDI terminal blocks used for audio inputs and outputs. Plug in power connector and remote connectors are quick disconnect style. Remote connector provides full access to all features.

Use the **RCP-121 Remote Control Panel** to provide Remote Breakaway or AFV operations. LED indicators provide parallel status information.

SRA 16/1 AFV

- 16 or 8 Inputs
- Video, Audio, AFV
- Built-in Breakaway
- Dual LED Indicators
- Single RU Frame
- Meets AVR-1 Specs

ORDERING INFORMATION

SRA 16/1AFV Complete 16 Input AFV

SRA 16/1A Only 16 Audio Inputs

SRA 16/1V Only 16 Video Inputs

SRA 8/1AFV Only 8 Inputs AFV

SRA 8/1A Only 8 Audio Inputs

SRA 8/1V Only 8 Video Inputs

OPTIONS

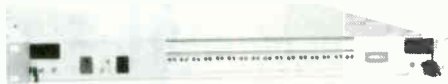
RCP-121 Remote 16/1AFV Panel

CAB-2 Cable for RCP-121

SRX-162 Extender Module

LCP-101 Local Control Panel

LCP-121 Local Control Panel with audio breakaway



SRA-16/1 AFV Routing Switcher offers breakaway audio or video with local or optional remote control. Frame houses 2 each VSM-900, 2 each ASM-900 and single VPS-152 modules, with fold down front panel access. Local front panel displays individual audio and video status with red/green LED's. Hold down breakaway feature prevents accidental operations.



REAR PANEL shows loop thru BNC video inputs and dual video output. Audio connector is a quick disconnect style yet provides access for differential inputs and outputs. Captive AC cord. Remote control connector provides full access to all features.



RCP-121 provides identical remote control of audio and video as the local panel plus parallel LED status indicators. Rack mounting, single RU construction.

MODELS	Input Groups	Output	Video	Audio	AFV	AFV Breakaway	Size (RU)	Special	See Page
SRA	16, 8	1	●	●	●	●	1		3
SRB-8/1	8	1	●	●			1		4
SRB-162	8	1	●	●	●		1		4
SRB-281	Dual 8	1, 2		●	●	◇	1		5
SRB-481	Dual 8	1, 2	●		●	◇	1		5
SRE	16, 8	1	●	Dual		●	2		3
SRG	256,***,8	2	●		●	◇	12		‡‡
SRH	256,***,8	2		●	●	◇	12		‡‡
SRU-16/1	16, 8	1	●				2	Delay	6
SRU-YRGB	8	3, 4	●				2	RGB	7
MRA	8	1-8	●		●	◇	2		8
MRB	8	1-8	●		●	◇	2		8
MRC	16, 8	1-4	●		●	◇	2		9
MRD	16, 8	1-4		●	●	◇	2		9
MRE	40, 32, 24, 16, 8	1, 2	●		●	◇	4		10
MRF	16, 8	1, 2		●	●	◇	4		10
MRI	24, 16, 8	1, 2	●		●	◇	2		11
MRJ	24, 16, 8	1, 2		●	●	◇	2		11

Custom panels will be quoted upon request.

● Standard Feature
● Standard Option
◇ Specialized Option
‡‡ Described Elsewhere

Specifications subject to change without notification.



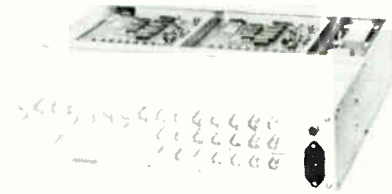
HUGHES ELECTRONIC DEVICES CORPORATION

P.O. Box 1985
Grass Valley, CA 95945 USA
(916) 273-9524 Telex 364412

ROUTING SWITCHERS

SRU-16/1 DELAY

- 16 or 8 Video Inputs
- 25 to 125ns Input Delay
- 25 to 125ns Input Delay
- 65 to 165ns BG Out Delay
- BG Switching/Timing
- Compliments UltiMatte®



SRU-16/1 DELAY switcher provides either 16 or 8 input transfer delays and a delayed switched output. Delays are adjustable over a 100ns range to compensate for cabling and BG transit time through the UltiMatte. The two RU frame contains 2 each VSM-900 Video Switch module, 2 each VDM-9 Video Delay Module, and one VPS-154 Power Supply.



BACK PANEL shows the 16 looping BNC inputs plus delayed and non-delayed switched output. Delayed outputs are positioned below the looping inputs. The control connector provides the interface to the RCP-101 Control Panel.



RCP-101 CONTROL PANEL provides 16 LED/switches for control of the switched output. Panel is single RU high and mounts in standard 19 inch racks.

SPECIFICATIONS

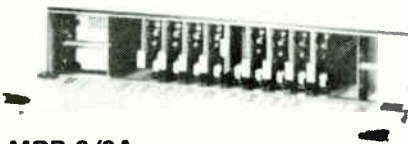
Refer to HEDCO AVR-1 Specs except for:
Frequency Response: 100K to 5MHz, ±0.2dB
Differential Phase: <0.2° (10 to 90 APL)
Differential Gain: <0.2% (10 to 90 APL)

ORDER INFORMATION

- SRU-16/1 DELAY Complete 16 Input with 16 Input Delays plus BG Delay
- SRU-8/1 DELAY Equipped as 8 Input with 8 Input Delays plus BG Delay
- RCP-101 Control Panel for 16 Inputs
- CAB-2 Cable for RCP-101
- OPTION
- SRX-162 Extender Module

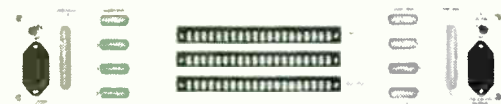
MRA-8/8V

- 8 Inputs
- Up to 8 Output Buses
- Up to 4 Channels
- Audio, Video, AFV
- Dual Power Supplies
- Vert. Interval Switch
- Diff Audio In/Out
- Meets AVR-1 Specs



MRB-8/8A

MRA/MRB 8/8 AUDIO And VIDEO Routing Switchers provide 8 buses which can select from 8 buffered inputs. Each bus including control logic, transparent switches and output amplifier is contained on one module. A separate buffer module feeds signals through a motherboard to each crosspoint module. Frame has space for redundant power supply and all modules are removable from the front.



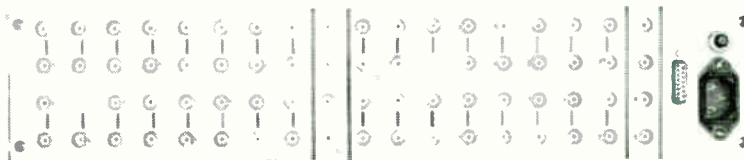
MRA REAR PANEL shows the eight looping inputs and dual outputs on each bus. Frame space for two redundant VPS-154 power supplies, one VBM8 buffer module and eight VCM8 crosspoint modules. Individual connectors for looping and bus control. Separate AC inputs.

SRU-YRGB

- YRGB or RGB Switching
- Single Control Panel
- Dual Outputs per Bus
- Two RU Frame
- Compliments UltiMatte®
- Meets AVR-1 Specs



SRU-YRGB Video Switcher consists of four individual 8 input, one bus VSM-900 switchers in a two RU frame. Outputs are simultaneously controlled by one RCP-100 panel to provide Y, R, G, B switching. Dual outputs on each bus allow monitoring and direct feeds. Unit may be used for 3 channel RGB switching by removal of one VSM-900 module.



BACK PANEL shows four groups of 8 loop thru BNC inputs for Luminance (Y), Red (R), Green (G), and Blue (B). Each channel has dual outputs. Equipped with a standard AC connector and a 1 Amp Circuit Breaker/Switch.



RCP-100 CONTROL PANEL provides 8 LED/switches for singular control of all channels. Panel is single RU high and mounts in a standard 19 inch rack.

ORDERING INFORMATION

- SRU-YRGB 4 Channel YRGB Video Switcher
- SRU-RGB 3 Channel RGB Video Switcher
- RCP-100 Control Panel for 8 Inputs
- CAB-1 Cable for RCP-100
- OPTION
- SRX-162 Extender Module



MRB REAR PANEL shows the RD1 terminal blocks for audio differential inputs and outputs. Frame contains space for two APS-155 power supplies, one ABM8 buffer and eight ACM8 crosspoint modules. Individual connectors for bus control plus looping connectors. Separate AC inputs.



RCP-104 CONTROL PANEL controls up to eight buses using individual rotary pushbuttons plus take pushbuttons for selections. Panel is standard 19 inch width and required only one RU of space. LED indicators.

ORDERING INFORMATION

SIZE	VIDEO	AUDIO
8 Inputs/1 Out	MRA 8/1	MRB 8/1
8 Inputs/2 Out	MRA 8/2	MRB 8/2
8 Inputs/3 Out	MRA 8/3	MRB 8/3
8 Inputs/4 Out	MRA 8/4	MRB 8/4
8 Inputs/5 Out	MRA 8/5	MRB 8/5
8 Inputs/6 Out	MRA 8/6	MRB 8/6
8 Inputs/7 Out	MRA 8/7	MRB 8/7
8 Inputs/8 Out	MRA 8/8	MRB 8/8

RCP-100 CONTROL PANEL is equipped with LED/switches for control of 8 inputs on one bus. Up to eight panels may be used at separate locations for video, audio or AFV operations. Single wire per crosspoint.

CONTROL PANELS

- RCP-100 Panel, 8 Inputs, 1 Bus
- RCP-102 Panel, Dual 8 In for 2 Buses
- RCP-104 Panel, TW/Take for 8 Buses
- CAB-1 Cable for RCP-100, RCP-102
- CAB-3 Cable for RCP-104 (2 RQD)

OPTIONS

- REX-161 Extender Module
- VPS-154 Redundant Video P.S.
- APS-155 Redundant Audio P.S.



**HUGHES ELECTRONIC
DEVICES CORPORATION**
P.O. Box 1985
Grass Valley, CA 95945 USA
(916) 273-9524 Telex 364412

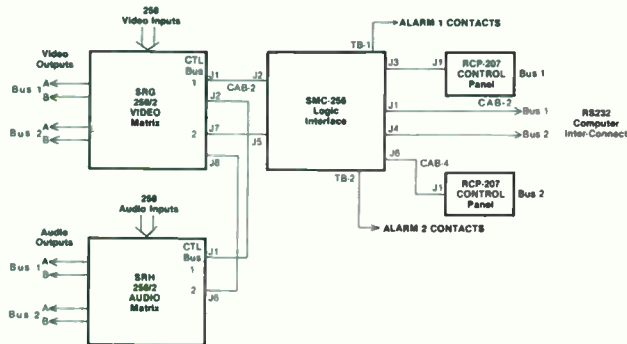
MONITORING SWITCHERS

**SRG-128/4 VIDEO / SRH-128/4 AUDIO
SRG-256/2 VIDEO / SRH-256/2 AUDIO
LARGE INPUT MONITORING SWITCHERS**

SRG-256/2: 256 input, 2 bus video switcher.
SRH-256/2: 256 input, 2 bus audio switcher.
SRG-128/4: 128 input, 4 bus video switcher.
SRH-128/4: 128 input, 4 bus audio switcher.
Includes **SMC-256** Logic Interface — One for 256 inputs,
Two for 128 inputs.

SRG/H 256/2 AUDIO/VIDEO SWITCHER

- Features**
- Automatic Scan Alarm
 - Remote Computer Control
 - Modular Input Configurations
 - Input Skip Program



LARGE INPUT MONITORING SWITCHER

SMC-256 Logic Interface

The SMC-256 Logic Interface uses two MC6803 Micro-processors which are programmed to execute all commands from the RCP-207 panels plus operations via the RS232-C computer link. Communication using the remote computer link is via standard ASCII parallel code. Two completely separate computers are housed in a one RU frame, each with NOVRAM™ memory for "SKIP" retention during power failures plus external alarm contacts.

VDS-182 Buffer Crosspoint

The VDS-182 Buffer Crosspoint module contains selection logic, eight buffers, two sets of eight crosspoints and a card select crosspoint. Standard transistor arrays are used for switching and buffer functions.

VOA-182 Output Amplifier

The VOA-182 Output Amplifier contains two independent output amplifiers and signal detectors. Each section uses standard components and logic elements for ease of maintenance.

RCP-207 Control Panel Local Functions (optional)

- Take:** Activate bus to keyboard entry.
- Audio Only:** Causes audio SRH switcher to follow independently.
- Skip:** Allows any input to be bypassed in SCAN or SCAN ALARM.

- Reset:** Stop operations and switch to input one.
- Scan:** Sequentially switch each input to an output bus at scan rate.
- Scan Alarm:** Scan while monitoring for video or audio present. Reverts to HOLD when signal loss is detected.
- Hold:** Manual or Automatic selection causes steady display of last input.
- Continue:** Continue in SCAN or SCAN ALARM.

Options

- RCP-207:** Remote panel — Two for 256 inputs, Four for 128 inputs.
- VPS-156:** Redundant Power Supply, Video + 15V.
- APS-256:** Redundant Power Supply, Audio + 28V. Cabling: One of each type listed is required for each bus. Specify length.
- CAB-2:** RS-232 Computer cable. Up to 50m. Matrix to Logic Interface cable. Up to 10m.
- CAB-4:** Remote panel to Logic Interface cable. Up to 20m.

NOVRAM is a trademark of XICOR, INC.



**HUGHES ELECTRONIC
DEVICES CORPORATION**
P.O. Box 1985
Grass Valley, CA 95945 USA
(916) 273-9524 Telex 364412

ROUTING SWITCHERS

IRS 48 x 48 AUDIO/VIDEO INTERMEDIATE SIZE ROUTING SWITCHER IRS 24 x 24 VIDEO AND 3 CHANNEL AUDIO INTERMEDIATE ROUTING SWITCHER

IRS 48 x 48/IRS 24 x 24 FEATURES

- No Fans or Blowers are required. Thermal design provides for efficient heat removal. All integrated circuits are state-of-the-art, require very little power and are mounted in high quality I.C. sockets. All components are Off-Shelf and most Dual Sourced, available from an electronic parts house near your location.
- All modules are identified by matrix card slot for the Computer Software, not by individual module. Permits total type interchange.
- Back-Plane Inputs and Outputs (Signal I/O) modules are direct plug-in, with no intervening cables or wires to cause signal degradation or timing changes which complicate future maintenance problems.
- Each module has close tolerance on-board voltage regulators for maximum isolation characteristics. The input to each regulator is fused and its output is protected by automatic thermal shutdown and current limit.
- The Video Buffer has Differential Inputs to assure a high degree of common mode or Hum Rejection.
- The Video channels use Vertical Interval Switching featuring Back Porch Clamping to assure bounce-free switching between signals with widely different APLs. No SC traps are used. The circuit is designed to clamp only when there is a difference in DC levels, thus helping to maintain excellent system transparency.
- Audio Input is Balanced Differential for either balanced or unbalanced sources, has input impedance greater than 50K ohms and operates at levels up to +24dBm.
- Dunker circuit gives "pop free" on-line Audio switching.

IRS 48 x 48

System can start as small as 12 x 12, single channel, and expand to 48 Inputs by 96 Outputs with up to four channels of Audio, Video and Time Code in any combination.

The IRS is available as individual Video, Audio 1, Audio 2, and/or Time Code Matrices with a maximum capacity of 48 inputs by 48 outputs in just 17 rack units, (29.75").

IRS 24 x 24

Can start as small as 12 x 12, single channel, and expand to 24 Inputs by 24 Outputs with up to three channels of Audio.

IRS CONTROL PANELS

This series of control panels can be used on all HEDCO microprocessor based routing switchers. Control is via shielded twisted pair (balanced) using RS 422 protocol, MPU 6803 based.

RCP-301: Basic single bus control panel. Keypad entry, Audio follow Video.

RCP-302: Single bus control panel. Keypad entry, separate Audio and Video selection.

RCP-303: X-Y control panel. Keypad entry for control of all buses. Audio follow Video.

RCP-304: Single bus control panel. Keypad entry, separate Video and two channel Audio selection.

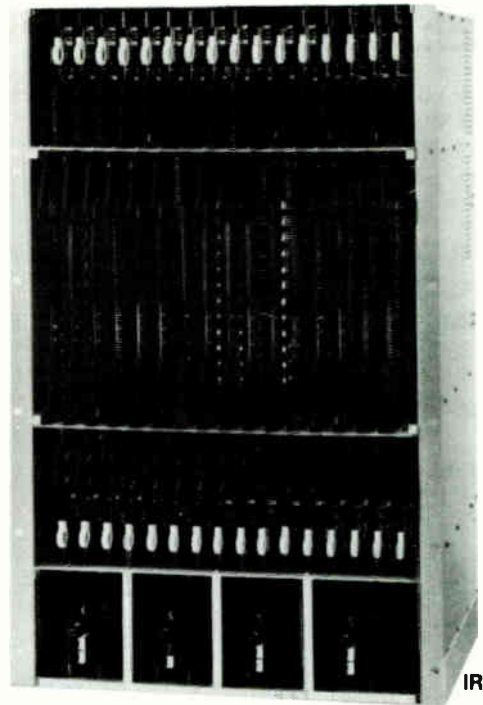
RCP-311: 1 R.U., 16 pushbutton "shot box" panel. Buttons can be easily programmed to access any 16 inputs of 24, all levels.

RCP-306: X-Y control panel. Keypad entry for control of all buses. Separate Video and two channel Audio selection.

RCP-307: Single bus control panel. Keypad entry, separate Video and three channels of Audio.

RCP-310: 2 R.U. 48 pushbuttons. (IRS 48 x 48 only)

RCP-305: 1 R.U. 24 pushbuttons. (IRS 24 x 24 only)



IRS 24 x 24

IRS FRAMES

Both Models' Switchers are contained in 17 rack units 29.75".

IRS MODULES

!VI-611 Video Input Buffer

- Back porch clamp
- Differential inputs
- Equalization for 200' of 8281 or equivalent cable
- On board power supply regulation
- 6 buffers per module

!XP-144 Audio or Video Crosspoint

- 12 x 12 array
- Crosspoints are transistor arrays in IC sockets
- Vertical interval switching (refer to house sync)
- On board power supply regulation

!VO-612 Video Output Amplifier

- On board power regulation
- 6 output amplifiers per module
- Two separate full level outputs per amplifier
- Output gain unity, ± 3 dB adjustable

!AI-601 Audio Input Buffer

- Accepts balanced or unbalanced audio lines
- Differential inputs
- S/N ratio > 90dB
- On board power regulation
- 6 buffers per module

!AO-602 Audio Output Amplifier

- 600 ohms or 150 ohms outputs
- 6 output amplifiers per module
- Two separate full level outputs per amplifier
- +24dBm max. at 600 ohms; +27dBm max. at 150 ohms

!CL-412 Computer

- One required for each 12 buses
- On board diagnostics
- Non-volatile E² RAM for unlimited memory retention
- MPU 6803 based at 76.8 Kbaud

!CI-401 Bus Interface

- One required for each 12 buses
- Uses RS-422 bi-directional controls
- Change module for RS-232-C

Reprinted with permission from materials by Copyright © 1983, HUGHES ELECTRONIC DEVICES CORP.



THE MATCHBOX

The MATCHBOX is the ideal way to correctly interconnect "HiFi" or Semi-Pro (IHF standard) equipment with professional studio gear. The Matchbox is a bi-directional unit, with four independent amplifiers providing full stereo input and output interface. Two amplifiers convert a stereo IHF HI-Z unbalanced source to LO-Z balanced outputs at studio level. A second pair of amplifiers converts a stereo balanced studio line source to unbalanced IHF outputs to feed the inputs of an IHF device. All circuitry is active and direct-coupled for absolute sonic transparency. The Matchbox is compact and lightweight, allowing it to be permanently mounted to most cassette recorders, tuners, portable mixers, etc.

- Gain is adjustable to +20dB
- +26 dBm maximum output level
- .008% distortion, 90dB S/N
- All active direct coupled circuitry
- Does not load or ground studio lines

- Self contained regulated power supply
- Provides extra AC outlet for convenience
- Made with high quality U.S.A. components

MATCHBOX Specifications:

General

- Power input: 115 VAC, 4 watts
- Fuse: .1 amp, internal
- Dimensions: 6.25" x 3.75" x 2.25"
- Weight: 2 lbs.
- Adjustments: Studio Output level adjustable via front panel access holes

Electrical

- | | IHF Input to STUDIO Output | STUDIO Input to IHF Output |
|-----------------------|----------------------------|----------------------------|
| • Input Level: | -10dBv to 0dBv, nominal | 0dBm to +8dBm, nominal |
| • Input Imped: | 25K ohms, unbalanced | 10K ohms, balanced |
| • Gain/Loss | +6dB to +20dB, adjustable | -14dB, fixed |
| • Output Level: | 0 to +8dBm nom, +26dBm max | -10dBv nom, +20dBv max |
| • Output Load: | 600 ohms or greater, bal | 2K ohms or greater, unbal |
| • Freq Response: | DC-20 kHz, +/-0.25dB | DC-20 kHz, +/-0.25dB |
| • Distortion: | .008% at any level | .008% at any level |
| • Noise Level: | 85dB below +4dBm output | 75dB below -10dBv output |
| • Number of Channels: | 2, "Left" and "Right" | 2, "Left and "Right" |

The Matchbox \$195.00



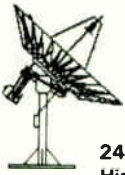
UNIVERSAL TURNTABLE CONTROLLER

The Universal Turntable Controller is a control interface unit for use in conjunction with Technics (SP10, SP15, SP25, SL1200 MKII) and Russco direct drive professional turntables.

The "UTC" adds remote control facilities to these turntables. It converts the turntable's "single button" control logic so that separate Start and Stop switches can be used to operate the turntable. The UTC also provides outputs to drive 24VDC tally lamps for Run and Stop mode indication. The turntable's start-stop switch can still be used for cueing records, and the Universal Turntable Controller will always remain "in sync". It easily connects to the turntable with just three wires, and may be controlled by either momentary switches or CMOS circuitry. One UTC will control two turntables.

- Works with most console remote control facilities, or use "outboard" switches
- Tally lamp outputs accommodate illuminated pushbuttons
- No contact bounce or false operation
- CMOS circuitry is RF immune...no relays
- Self contained regulated power supply
- One UTC controls two turntables

Universal Turntable Controller \$175.00



HERO COMMUNICATIONS

2470 W. 8th Avenue
Hialeah, FL 33010
(305) 887-3203 Telex 51-4712

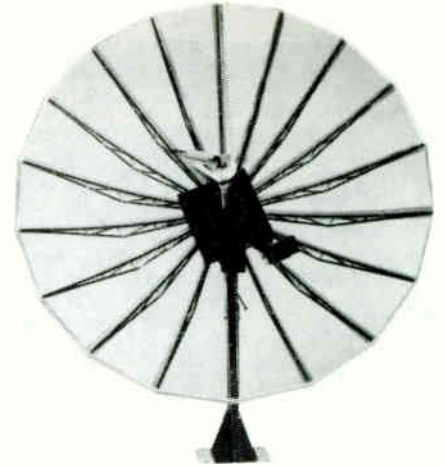
ANTENNAS

SUPER-TENNA™

High quality reception and durability. Now available, a horizon to horizon 10 and 13 foot Super-Tenna. Hero Communications offers as standard equipment a horizon to horizon motorized polar mount on all six of their antennas, 3 meter, 4 meter, 5 meter, 6 meter, 7.65 meter and 9.75 meter.



POLAR MOUNT



SUPER-TENNA 10 ft.

ANTENNA SPECIFICATIONS

ELECTRICAL:	3 METER 10 FT.	4 METER 13 FT.	5 METER 16 FT.	6 METER 20 FT.	7.65 METER 25 FT.	9.75 METER 32 FT.
Operating Frequency	3.7 to 4.2 GHz	3.7 to 4.2 GHz	3.7 to 4.2 GHz	3.7 to 4.2 GHz	3.7 to 4.2 GHz	3.7 to 4.2 GHz
Antenna Gain at 4 GHz	40.6 dbi	43.0 dbi	44.5 dbi	46.5 dbi	48.4 dbi	51.7 dbi
Beam Width (-3 db)	1.4°	1.38°	1°	.8°	.63°	.43°
First Side Lobe Exceeds FCC	32-25 Log 0	32-25 Log 0	32-35 Log 0	32-25 Log 0	32-25 Log 0	32-25 Log 0
Antenna Noise Temperature	31°k	34°k	35°k	35°k	35°k	32°k
F/D Ratio	0.3	0.3	0.375	0.375	0.365	0.3
Antenna Efficiency	73%	73%	65%	68%	65%	80%

REFLECTOR: Computer designed flattened expanded aluminum shaped to exact parabolic contours. Aluminum prefabricated trussed ribs for shape rigidity at designed wind loads up to 125 MPH. Aluminum structural LNA mount, adjustable for focus and alignment. 180° coverage through motorized polar mount: upgrade for tracking of inclined orbit satellites available for 5, 6, 7.65 and 9.75 meter Super-Tennas — optional.

BASE: Fabricated structural steel welded members, designed for 125 MPH wind normal to dish. Elevation adjustments for exact latitude, rough and fine. Azimuth correction adjustment built-in for low rise satellites. Motor driven horizon to horizon polar tracking system, Standard Equipment.

*.3F/D antennas afford you the advantage of achieving higher efficiency with less interference.

SHIPPING SPECIFICATIONS

Weights & Measurements Of Shipping Cartons

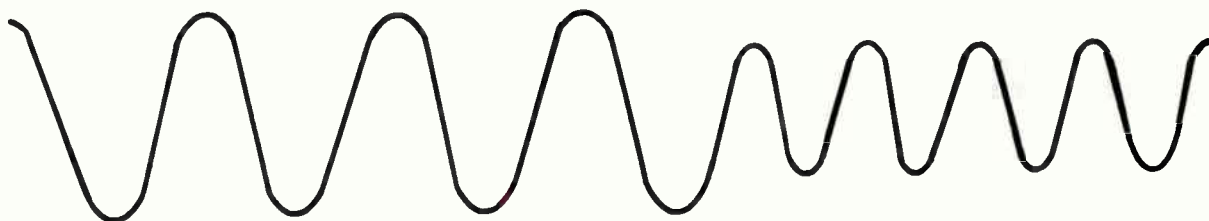
10 ft. Antenna (3 meters) Number Of Boxes: 2 Total Shipping Weight: 270 lbs.	13 ft. Antenna (4 meters) Number Of Boxes: 2 Total Shipping Weight: 300 lbs.
---	---

DIMENSIONS:

Box 1 64" x 30" x 10-1/2"	Box 2 34" x 31" x 18"	Box 1 87-1/2" x 36-1/2" x 13"	Box 2 34" x 31" x 18"
-------------------------------------	---------------------------------	---	---------------------------------

DIMENSIONS:

Prices and Specifications Subject to Change Without Notice.



Overvoltage - Undervoltage Deal With It.

Proper and steady voltage is essential to the operating efficiency and tube life of a transmitter. Automatic voltage regulators are the most overlooked components of a transmitter installation. Don't ignore your transmitter's needs.

**USE THE AVR
MOST SUPPLIED BY
TRANSMITTER MANUFACTURERS:
PESCHEL
AUTOMATIC
VOLTAGE REGULATORS**

Models Available

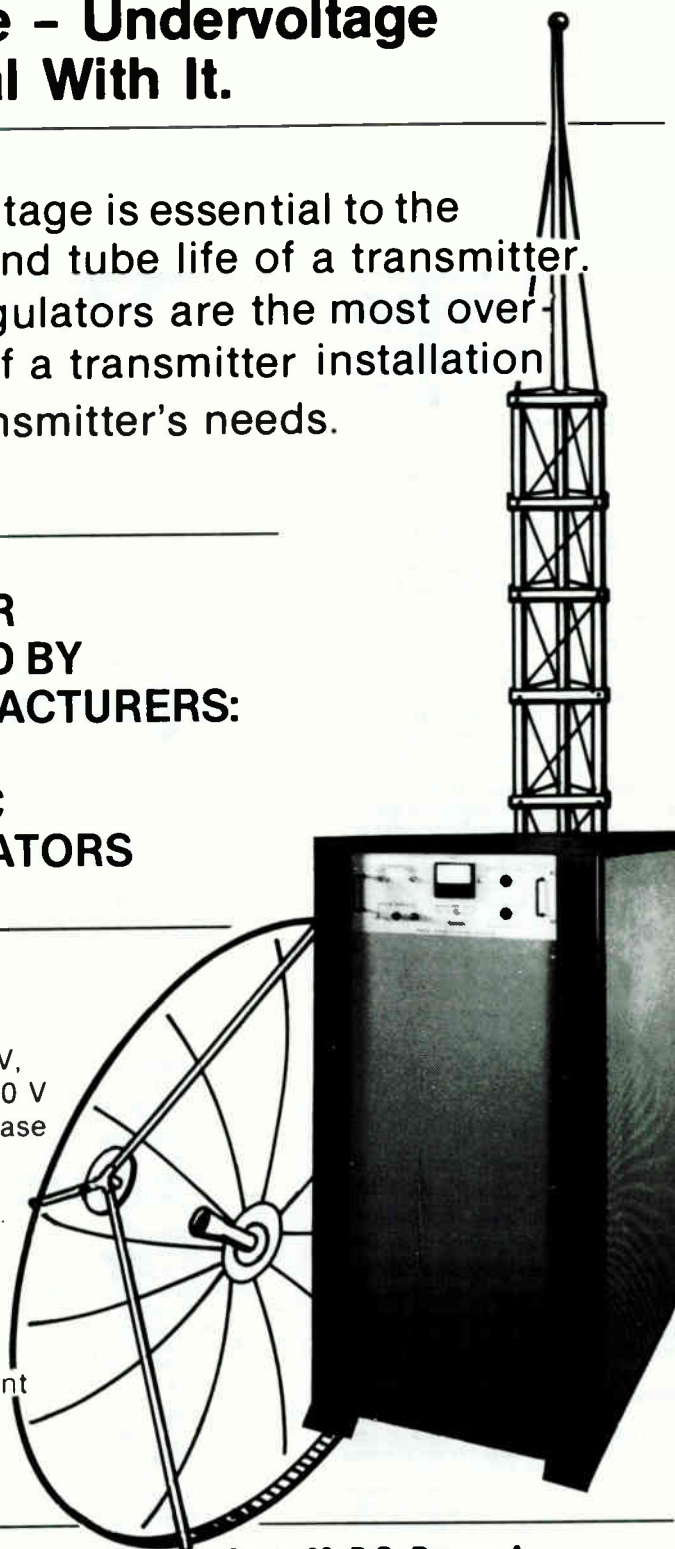
Voltage: 240 V, 380 V, 415 V,
480 V, 2400 V, 4160 V
Single & Three-Phase

Input Ranges: +9/-14%, ±20%
Correction Rate: Up to 20 volts/sec.

Amps: 40 A - 900 A

Options:

Individual Phase Control
Line Bypass Switch
Special Output Adjustment
(50-100%)
Custom Design



Route 22, P.O. Drawer A
Brewster, New York 10509
Phone: (914) 279-8091
Twx: 710-574-2420 HIPO BRWS NY

175 Crossways Park W.
Woodbury, NY 11797
(516) 921-7200

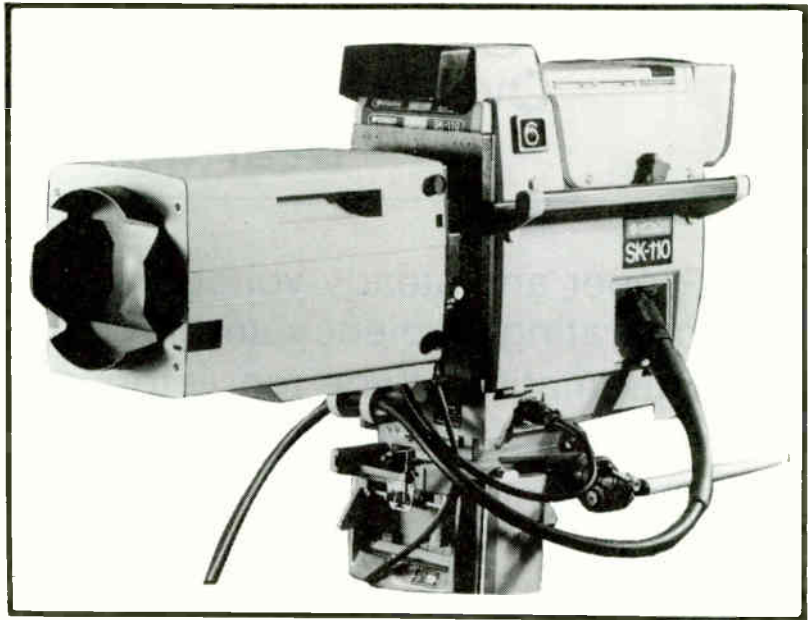
SK-110 Broadcast Quality Camera

CAMERA HEAD

- **Highly efficient prism optics:** A newly developed f1.8 prism optics are used in conjunction with 1-1/4" Plumbicon* tubes to provide a high signal-to-noise ratio of 54 dB at 2000 lux and f5.6. The optical filters have been dust-proofed to virtually eliminate dust problems.
- **Six-position ND and color filter discs:** Two filter discs, one for ND filters and the other for color filters have been provided, with independent filter selection possible from both the RCU and the SCU. The discs are servomotor driven and may be rotated in either direction.
- **Improved registration and optical axis accuracy:** By using an independent four-corner adjustable dynamic registration compensation unit, compensation to within 0.05% over the entire picture area is possible. This can be achieved by means of either the auto-setup or the remote control from the SCU. The compensation data is stored in RAM memory with a back-up battery. The optics, coil assemblies and zoom lens are mounted as a unit to ensure that mechanical distortion does not affect the optical system or coil assemblies and to eliminate the effects of external mechanical stresses on registration and optical axis accuracy.
- **Comet tails eliminated by ABO (Automatic Beam Optimizer):** The Hitachi developed ABO circuit allows the beam current to be increased up to 16 times versus only 4 times the normal setting for conventional systems, a limitation imposed by considerations of picture quality. This means that comet tails can be eliminated without the usual accompanying misregistration, loss of resolution, and increase in dark current.
- **High-performance viewfinder:** A bright, high-resolution CRT has been used in the viewfinder to provide an easy-to-view image even for outdoor shooting. The viewfinder can be tilted from +25° to -45° and rotated +/-90° to set it at any arbitrary angle.
- **Easy-to-use video select button:** R, G, B, minus G, and two return video signals (AUX-1 and AUX-2) can be switch-selected as the viewfinder video signal.
- **Convenient monitor output on the camera head:** A separate video output has been provided on the camera head to be used for floor monitors, etc.
- **Red and green tallies:** The viewfinder is provided with both red and green tallies, the red one for live shooting and the green one used for VTR recording.
- **Built-in microphone amplifier:** The camera head is provided with a built-in microphone amplifier with limiter. The audio output is balanced to prevent the pickup of noise from the camera cable.
- **Test signals provided to simplify setup:** Test signals are used for easy calibration of the output of each amplifier stage. The signals are applied in sequence, starting from the process amplifier and walking back until the preamplifier is calibrated. The test signals may be applied to the input of the pre-amplifier first stage, process amplifier-1 and process amplifier-2, and consist of a 100% and 200% level sawtooth waveform which can be used for level calibration as well as verification of gamma, knee point, slope and clipping point.
- **Designed for easy servicing:** The camera head and CCU PC boards are simple to remove and marked on both sides, making parts easy-to-find for quick servicing or inspection. Another serviceability feature is a coil assembly that can be removed while the camera is mounted to the dolly.

CCU

- **Compact design:** The CCU is designed as a dedicated camera control unit for computer controlled cameras. Both the video processing section and the computer section have been housed in one compact package.
- **Linear matrix masking:** A built-in linear matrix masking circuit is provided and ensures faithful color reproduction and easy tone matching among cameras.
- **High-performance contour corrector:** Compensation signals derived from the R and G channels provide clear, crisp images of even red subjects. The contour correction signals are automatically processed to match the type of subject, maintain optimum compensation and ensure natural images.



SK-110

- **Standby mode operation:** Three operating modes have been provided to reduce power consumption and extend the life of the pickup tubes and CRT.
 - (1) **CCU POWER:** Main power supply is switched on; the CCU is operating.
 - (2) **POWER:** The camera head is on and the heaters of the pickup tubes and CRT are supplied with 50% of the normal voltage.
 - (3) **BEAM:** The pickup tube beams are switched on and the camera operates.
- **Genlock:** The SK-110 is genlocked to an external sync signal when composite sync and subcarrier signals are applied. Horizontal and subcarrier phases can be adjusted manually. If required, genlocking by means of a black burst signal can also be provided.
- **Built-in SMPTE/VIT color bar generator:** A color bar generator conforming to the latest SMPTE standards has been built-in for convenient adjustment of monitors. Also built-in is a VIT color bar generator, allowing monitoring of the characteristics of the encoder and the transmission line while on the air.
- **High-reliability LSI process amplifier:** Camera picture quality is greatly effected by the stability of the process amplifiers used. LSI process amplifiers have been used in the SK-110 camera to provide stable operation with respect to temperature variations and eliminate variations between channels. They provide both picture quality and high reliability and represent the most advanced step in a camera of this class.
- **Special effects:**
 - (1) The horizontal and vertical deflection currents can be independently reversed, a feature useful in picking up mirror images.
 - (2) The video polarity of the R, G, and B signals can be independently inverted.
 - (3) A circuit has been provided which can be used to provide swinging of horizontal deflection by means of an externally applied low frequency signal.
- **Encoder with variable gamma (contrast):** Gamma control of luminance and chrominance signals is linked and can be adjusted by remote control, making adjustment of the picture contrast very easy, even under such difficult conditions as those encountered outdoors.
- **Iris:** In the Auto Iris mode the lens iris is automatically adjusted according to subject illumination. In manual mode, the center value and adjustment range of the iris are set by the sense and range controls of the SCU or RCU. This feature makes operation in the studio where light variations are small extremely simple. The iris values are visible on the SCU and RCU LED display.

AUTOMATIC SETUP

- **Zero method control:** The zero method of control is capable of controlling the R, G, and B channels, thus eliminating the troublesome manual adjustment of the G channels required in the G channel reference method. The system has been completely automated, and a parallel control system can set up multiple cameras simultaneously in just 2 minutes.
- **Control of multiple cameras:** By using a DSU for every group of six cameras, up to 24 cameras can be controlled with just one SCU. By adding a TSU control capabilities can be expanded up to 42 cameras using two SCUs, providing all the flexibility you will ever need.
- **Automatic setup modes:** Five automatic setup modes have been provided; full, registration, color balance, G-reference, and white balance. These can be selected from to suit the picture conditions at the time. In addition, manual control from either the SCU or RCU is possible, with all normal operational controls accessible manually.
- **Data files:** Five data files are provided except for the AUTO data file. Automatic setup data is automatically stored in the AUTO data file. It is possible to store or erase the manual setup data from the SCU in the five data files by operating the entry or reject switch.
- **Fault diagnosis:** Fault diagnosis of the camera video system, power supply and pulse system is performed automatically to detect failures. Diagnosed results are printed out on the typewriter. This system has greatly simplified camera maintenance by providing quick and accurate information on failures.
- **Quick check:** When the SCU Check switch is depressed, registration (G-reference) and color balance (G-reference) are automatically checked and, if the required accuracy is not being obtained, the readjustment is automatically made.
- **Scroll display and automatic setup status display:** The results of the fault diagnosis and the quick check are displayed on a scrolled picture monitor character display. The scrolling display may be stopped at any desired point for viewing. The status of the automatic setup function (controlled parameters and their status) may also be viewed on the picture monitor character display.
- **Remote control:** The SCU, TSU, DSU, and CCU may be connected with just three twisted-pair cables and be separated from one other by up to 1000m (3000 ft.). The CCU and RCU may be connected using three twisted-pair cables and separated up to 100m (300 ft.). If the power supply is provided externally to the RCU the distance to the CCU can be extended up to 1000m (3000 ft.).

\$78,000.00

175 Crossways Park W.
 Woodbury, NY 11797
 (516) 921-7200

SK-970
Full Auto-Setup Compact Studio Camera

The Hitachi SK-970 is an epochmaking, 2/3-inch, 3-tube studio camera with full auto setup functions built into a compact size and a light weight of 55 lbs. (25 kg). The camera satisfies all the requirements necessary for studio and field applications; i.e. excellent picture quality, great ease of operation and extremely high reliability.

The auto setup system controls every parameter related to color balance and registration to provide the highest picture quality at all times. In addition, the system controls on-line, real-time compensation for registration errors caused by a change in lens zooming and focusing or in prism temperature, ensuring high picture quality.

Since a microcomputer is built into the camera, the camera can be set up both automatically and manually either at the camera itself or from an RCU (Remote Control Unit) through a BSU (Base Station Unit). A DCU (Digital Command Unit) is also provided to constitute a system configuration best suited to each application anywhere at any time.

The SK-970 employs the same auto setup system as that of the sister camera SK-97 EFP camera, and can be used in combination with the SK-97. In addition, the SK-970 can be controlled by the SK-110 full auto setup studio camera system too.

The SK-970 features not only high performances but also much flexibility for system configuration.

FEATURES
Excellent Picture Quality

- High performance pickup tubes
- High resolution over entire Screen — 600 TV lines at center
- High signal-to-noise ratio — 58dB (NTSC); 55dB (PAL)
- Improved prism optics
- ABO (Automatic Beam Optimizer)
- Encoder with dynamic contrast (Variable Gamma)
- High-precision static and dynamic registration
- Linear matrix masking

Great Ease of Operation

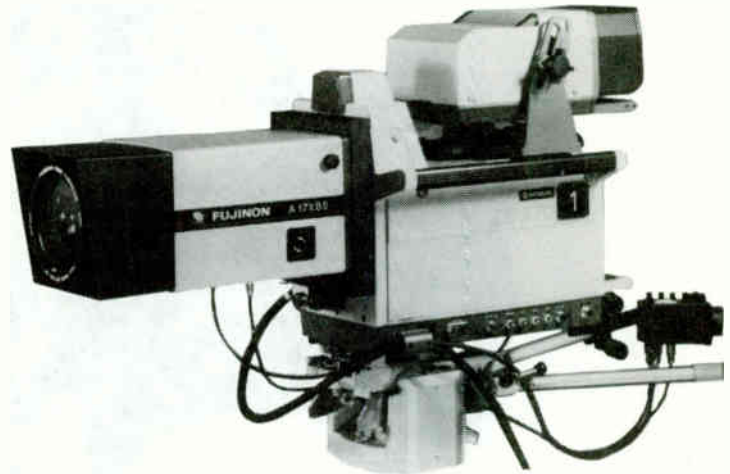
- Compact and lightweight system
- Auto iris
- Two filter disks
- 7-inch VF with various functions
- Viewfinder character display
- +9/+18 dB high-gain switch
- Centralized control panel
- Outputs of four pictures at camera
- Chroma keying outputs
- SMPTE/EBU color bar output
- Hi-Fi microphone amplifier
- Two-wire/Four-wire intercom system

Versatile Auto Setup System

- Zero method control
- Auto setup mode selection
- Data files
- Fault diagnosis
- RCU (Remote Control Unit)
- Auto/Manual setup by camera itself

Triaxial Digital Command System Available

When an optional digital command system consisting of the MU-970 multi adaptor and the DU-970 DCU is used, all the camera operations can be remotely controlled from the RCU or the SK-110's SCU through a single triaxial cable and also the camera power can be transmitted through the cable.



The MU-970 is built into the camera and the DU-970 of half-rack size is located near the BSU. When a Felten 2.5 LS/11.5 cable is used, both are separated by up to 1.1 miles (1.8 km).

Since an FM frequency multiplexed transmission is used for video, audio and command signals, the system ensures excellent transmission quality, especially high signal-to-noise ratio for video and audio signals and high reliability for command signals. Transmission of the selected monitoring video signal (PIX/WFM/CK) is possible as a standard.

Superior Serviceability

The pickup tubes are rear-loaded for ease of replacement. In particular, the R and the B channel tube can be simply replaced by removing the top and the bottom cover of the camera respectively.

All of the electronic circuitries are divided by functions into printed circuit boards with silk printing on both sides, and major circuit boards are inserted into a PCB harness with mother board connections.

General-purpose electrical parts are selected for ease of maintenance and particularly, ICs having a second source are used.

SK-970-3 Full Auto Set-Up Self-Contained Studio Camera for broadcast field/studio use with LOC D.G. Plumbicons, Less Lens.

Package Includes:
 SK-970 Camera Head, Built-in Auto Set-Up
 XQ-3427RGB LOC D.G. Plumbicons
 VF-710 4" Viewfinder
 SVM-SK-970 Service Manual

\$49,400.00
SK-970-3 Full Auto Set-Up ENG/Studio Camera Less Lens.

Package Includes:
 SK-970 Camera Head, Built-in Auto Set-up
 XQ-3427RGB LOC D.G. Plumbicons
 VF-710 4" Viewfinder
 BU-97 Base Station Unit
 RU-97 Remote Control Unit
 SVM-970 Service Manual
 Standard Accessories

\$58,900.00
DIMENSIONS AND WEIGHT

	Width		Height		Depth		Weight approx	
	mm	in	mm	in	mm	in	kg	lb
Camera	230	9.1	455	17.9	440	17.3	25	55.0
BSU	210	8.3	180	7.1	350	13.8	13	28.6
RCU	76	3.0	360	14.2	160	6.3	3.8	8.4



SK-97 Full Auto Setup EFP Camera

The Hitachi SK-97 is an epoch-making, 2/3-inch, 3-tube, portable color camera with full auto setup functions. The camera satisfies all the requirements necessary for a portable camera in EFP and studio applications; ie. excellent picture quality, great ease of operation and extremely high reliability.

The SK-97 employs the same auto setup system as that of the sister camera SK-970 for studio portable use, and can be used in combination with the SK-970. In addition, the SK-97 can be controlled by the SK-110 full auto setup studio camera system too.

The SK-97 weighs approximately 13.2 lbs. (6 kg) excluding a lens in spite of improvement in performance and addition of the auto setup functions.

Excellent Picture Quality

- High Performance Pickup Tubes
- High Resolution over Entire Screen — 600 TV Lines at Center
- High Signal-to-Noise Ratio — 58dB (NTSC); 55dB (PAL)
- Improved Prism Optics
- ABO (Automatic Beam Optimizer)
- Encoder with Dynamic Contrast (Variable Gamma)
- High-Precision Static and Dynamic Registration
- Linear Matrix Masking

Great Ease of Operation

- Auto Iris
- Two Filter Disks
- High-Brightness, High-Resolution Viewfinder
- Viewfinder Character Display
- Power Supply Options
- Preheat/Operate Switch
- +9/+18 dB High-Gain Switch
- Centralized Control Panel
- Chroma Keying Outputs
- Selectable YIQ/RGB Outputs
- SMPTE/EBU Color Bar Output
- Hi-Fi Microphone Amplifier
- Two-Wire/Four-Wire Intercom System

Versatile Auto Setup System

- Zero Method Control
- Auto Setup Mode Selection
- Data Files
- Fault Diagnosis
- RCU (Remote Control Unit)
- Auto/Manual Setup by Camera Itself

Digital Command System Available

When an optional digital command system consisting of the MU-97 multi adaptor and the DU-97 DCU is used, all the camera operations can be remotely controlled from the RCU or the SK-110's SCU through a single coaxial cable. The MU-97 is attached to the camera side cover and the DU-97 of half-rack size is located near the BSU.

B-534

In addition, when a TX-97 triaxial adaptor is used together with the above units, power transmission as well as camera control is possible through a single triaxial cable of up to 1.4 miles (2.3 km) in case of using a Felten 2.5 LS/11.5 cable.

Superior Serviceability

The pickup tubes are rear-loaded for ease of replacement. In particular, the R and the B channel tube can be simply replaced by removing the top and the bottom cover of the camera respectively.

All of the electronic circuitries are divided by functions into printed circuit boards with silk printing on both sides, and major circuit boards are inserted into a PCB harness with mother board connection.

SK-97-3A Full Auto Set-Up EFP/Studio Camera For Broadcast Use with LOC D.G. Plumbicon (XQ3427RGB), Less Lens.

Package Includes:

- SK-97 Camera Head, Built-in Auto Set-up
- XQ-3427RGB LOC D.G. Plumbicon
- VF-154 1.5" High Resolution V.F. w/Diagnosis Display
- AP-40U A/C Adaptor
- TA-97 Tripod Adaptor
- CL-97 Carrying Case
- SVM-SK-97 Service Manual
- Standard Accessories

\$39,500.00

Accessories

- CB-97 Battery Bracket **\$ 95.00**
- DP-40 Battery (2 Hour) **475.00**
- BC-40 Battery Charger for SP-40 **70.00**
- C-201VD 2m/6 ft. VTr Cable 14-pin **280.00**
- C-201VC 2m/6 ft. VTR Cable for HR-100 **310.00**
- MH-97 Microphone Holder **180.00**
- C-400M Microphone Cable **80.00**
- RC-97 Rain Proof Cover **280.00**

DIMENSIONS AND WEIGHT

	Width		Height		Depth		Weight approx.	
	mm	in	mm	in	mm	in	kg	lb
Camera	100	3.9	280	11.0	355	14.0	6	13.2
BSU	210	8.3	180	7.1	350	13.8	13	28.6
RCU	76	3.0	360	14.2	160	6.3	3.8	8.4
DU-97	210	8.3	133	5.2	350	13.8	8.5	18.7
MU-97	30	1.2	155	6.1	345	13.6	1.6	3.5
TX-97	110	4.3	170	6.7	43	1.7	0.9	2.0

Prices and Specifications Subject to Change Without Notice.



FP-60S Studio Color TV Camera

The Hitachi FP-60S Color TV Camera adopts a newly developed prism optics and three 1-inch SATICON™ pickup tubes, and features superb resolution, signal-to-noise ratio and color rendition. The camera head is of sturdy die-cast aluminum construction and can be used in field applications under severe operating conditions as well as studio use.

Features

Prism optics and 1-inch SATICON™ tubes

The newly developed prism optics and 1-inch SATICON™ tubes provide a high signal-to-noise ratio of 52 dB and a high resolution of 600 TV lines.

Built-in automatic beam optimizer

Built-in automatic beam optimizer developed by Hitachi extends dynamic range and reduces comet tail.

Built-in bias light

The built-in bias light reduces lag.

Built-in test signals

Input and output levels for each module can be easily adjusted by the built-in test signals, also color encoder can be easily set without vectorscopes by special test signals.

Tiltable viewfinder

The viewfinder is tiltable and its 7 inch diagonal CRT offers easy viewing. Also a higher grade viewfinder is available for extra high illumination and resolution applications (option).

Dual method for color temperature compensation

Color temperature is compensated both by optical conversion filter for high color reproductivity and electrical method for high sensitivity. ND filter is built-in.

Built-in shading compensators

The built-in compensation circuit for modulation shading and black shading.

Built-in iris servo amplifier

Light volume coming into the camera is kept optimum by combined built-in iris servo amplifier and zoom lens. Manual control is also available.

Extra video gain

Extra video gain (+ 6 dB and + 12 dB) is available for applications in low light areas.

Built-in contour corrector

Sharp and clear pictures can be obtained through the built-in vertical contour correctors of H-detail and 1H delay types. A 2H-Vertical contour corrector is available (option).

Auto white balance

High quality picture can be maintained for many hours through the use of digital memory automatic white balance.

Painting

To get color balance between cameras, "Painting" function is provided. The painting can also be switched off.

Masking amplifier (optional)

Optional masking amplifier is provided for subtle color reproduction adjustment.

Automatic wobbling circuits

Automatic wobbling circuits are built-in for easy beam alignment.

Negative G. signal for registration adjustment

Negative G. signal is provided for easy registration adjustment.

R, G and B signal outputs

Outputs of R, G and B non-composite signals are available as the signals for chroma key.

A level meter

Black level and black balance can be easily set by a level meter.

Built-in color bar generator

Color bar generator is built-in for color adjustment between cameras and adjustment of color monitors. Switching of active video and color bar can be made from the remote control panel.

Saticon Prism Studio Camera	
FP-60S	3 Tube Studio Camera with 1" Saticons, features Prism Optics, ABO, Built-in Test Signals, Painting Controls, RGB Outputs and 7" Studio Viewfinder
	Complete package includes: HP-60 Camera Head • (1/2) H9325 Saticon VM-701 7" Viewfinder • C-1205 50' Cam. Cable • A-404 1H Vert. Enhancer • CCU-60 Cam. Control Unit • ROP-60 Remote Panel • C-1103 30' ROP Cable SVM-60 Service Manual . . . \$25,670.00
FP60S-2H	Same as above, includes: A424 2H Vertical Enhancer 27,500.00
FP-60SR-2H	Same as FP60S except with A424 2H Vertical Enhancer and VF-702 7" Viewfinder w/ Rotator 27,900.00
Accessories	
A-401	Internal Sync. Module \$287.00
A-431N	Genlock Module 774.00
A-407	Masking Unit 347.00
VF-702	1" Viewfinder w/ Rotator 1400.00
TA-60	Tripod Adaptor 230.00
Lenses	
K10X15RW-1	Fujinon 10:1 15-150mm f1.8 Auto Iris Lens . . . \$3975.00
R14X14ESM	Fujinon 14:1 14-196mm Manual Focus, Manual Zoom with Mounting Plate 17,450.00
	Servo Focus, Manual Zoom with Mounting Hardware 19,200.00
	Servo Focus, Servo Zoom with Mounting Hardware 20,450.00
	Servo Focus, Manual Zoom with Shot Box and Mounting Plate 20,100.00
	Servo Focus, Servo Zoom with Shot Box and Mounting Plate 22,350.00

175 Crossways Park W.
Woodbury, NY 11797
(516) 921-7200



Z-31

Z-31 3-TUBE PORTABLE COLOR CAMERA

The Hitachi ENG/EFP Color Camera Z-31 is a three-tube auto set-up portable camera for production houses, schools, business, etc.

The Z-31, a sister camera of the FP-22, is improved in picture quality, temperature stability, and automatic set-up adjustments by a microcomputer. Character display function is newly designed to the Z-31 for ease of camera operation. Also features prism temperature sensor. Studio accessories and triax digital command systems are all available as options.

SPECIFICATIONS

HIGH PICTURE QUALITY

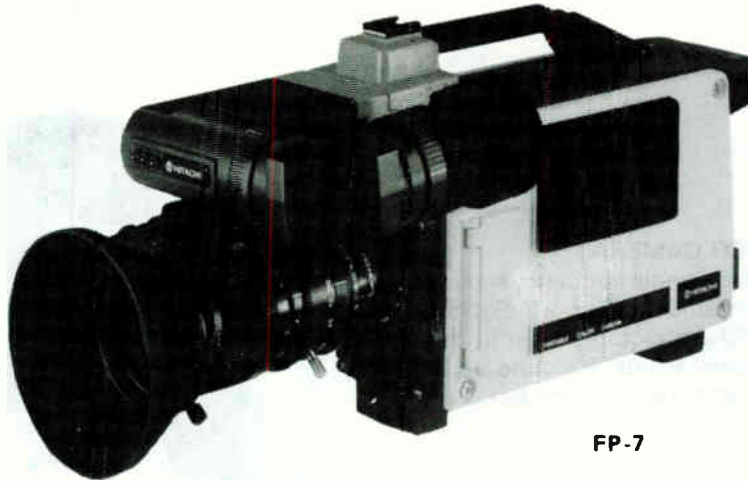
- Resolution:** Newly developed three 2/3" LOC MS Saticon tubes are employed. MS: Electromagnetic focus/electrostatic deflection type.
- Registration:** New MS Saticon tubes reduce registration errors. Registration compensation circuit is provided.
- S/N:** LOC MS type Saticon tubes are employed.
- Enhancer:** 2H (standard).
- Gamma Correction:** Variable gamma correction.

- Viewfinder Display:** LED: Tally (T), Battery (B), High gain (A), and Write mode (W).
CRT: Signal level (tiger stripe).
Mode: WHT, Gain, and CAM/BAR.
Alarm: DLT OFF, BAR.
Diagnosis: Auto set-up data.
Malfunction of automatic set-up: Next required operation is indicated.

ESSENTIAL FUNCTIONS

- Mon Out:** Yes
- Level Ind:** Yes (tiger stripe)
- ENC:** I.Q.
- Title Memory:** Yes
- Memory Backup:** Lithium Battery
- Beam Splitter:** Prism f/1.4
- Pickup Tube:** 2/3" LOC MS Saticon
- Opt. Filter:** 3200, 5600, 5600 + 1/8, ND, CAP
- Sensitivity:** f/4 2000 lux
- Resolution (G):** 650 TV Lines
- Registration:** 0.1, 0.2, 0.4%
- S/N (NTSC):** 58dB (typical)
- Hi Gain:** +9dB, +18dB
- Enhancer:** 2H
- Bars:** EIA Split Bar
- ENC (NTSC):** I.Q.

- Z-31 Without Lens, including Auto Set-up \$6800.00
- Z-31 With 15:1 Zoom Lens and Auto Set-up 8000.00



FP-7

FP-7 COLOR VIDEO CAMERA

High performance and multi-purpose single-tube color camera equipped with a 5MHz high band Saticon tube and a 10x power zoom lens.

Features

- CAM/BAR select switch
- Masking circuit
- Auto white balance and preset function
- Turret type color temperature compensation filter and filter position display
- Built-in genlock unit
- Servo zoom and servo iris type 10x f/1.6 lens
- VTR interface
- High gain select switch
- Independent monitor output
- Low power consumption

The FP-7 is developed mainly for broadcasting and sophisticated commercial applications and is provided with high performance and function which are equal to those of a 3-tube color camera. Not only a single set operation with a VTR but also system operation using several cameras can be performed by combining the camera with the remote operation panel (OP-77).

High Resolution Pick-Up Tube

The high band Saticon (2/3", 5MHz) offers the wide frequency band width of the luminance signal and high horizontal resolution of 360 lines.

2H Contour Corrector

The same 2H contour corrector used in a 3-tube color camera offers high vertical resolution.

High Sensitivity and Signal-to-Noise Ratio

A single carrier frequency separation system and a low noise preamplifier are incorporated to yield a very high signal-to-noise ratio of 50dB. Even when the quantity of light is insufficient at open aperture, setting the high gain switch to +12dB and using a 10x f/1.6 lens enable an object to be shot under subject illumination of down to 23 lux.

Color Shading Correction

The FP-7 is provided with the color shading correction circuit to produce a flat picture regardless of the frequency separation system. With this circuit, corner color shadings are reduced to a minimum.

Vertical and Horizontal False Signal Reduction

The vertical and horizontal false signals are reduced to obtain a high picture quality almost the same as that of a 3-tube color camera.

Color Reproduction

Since each of four channels (Y, R, G and B) is provided with a processing amplifier which controls color signal waveform, the color signals are balanced and the color reproduction distortion resulting from changing a pick-up tube is reduced.

- Power Requirements: 12V DC
 Power Consumption: Approx. 10W (incl. viewfinder)
 Weight: 10.1 lbs. (4.6 kg)
 including lens and viewfinder
 Dimensions: 3.94"W x 8.66"H x 9.05"D
 (100 x 220 x 230mm) **\$2195.00**

Optional Accessories

- | | |
|---------------------|------------------------------|
| GM-5N/P | 4.5" viewfinder |
| AP-60U | AC adaptor |
| N10x10BRM-7 (f/1.6) | 10x servo zoom lens |
| ZL-20W | Remote control unit for lens |
| DP-10 | Battery pack |
| BA-7 | Battery adaptor |
| AP-61 | AC adaptor/charger |
| TA-1 | Tripod adaptor |
| C-152CC (15m) | Camera cable |
| C-502CC (50m) | Camera cable |
| C-201CE (VHS) | VTR cable |
| C-201VE (U-matic) | VTR cable |
| C-501CE (VHS) | VTR cable |
| C-501VE (U-matic) | VTR cable |
| MC-7 | Microphone |
| OP-77U | Remote operation panel |
| CL-77 | Carrying case |

FP-5 PORTABLE COLOR VIDEO CAMERA

The FP-5 portable color camera is a single frequency separation type high-sensitivity color camera using 1/2" Saticon tube which ensures clear and sharp pictures even in dim light. It also has auto focus, auto/manual iris, auto white balance, character generator, genlock and color bar.

Features
Beautiful and Clear Picture

Since this camera uses a Saticon tube and a bias light just like television cameras used for the broadcasting industry, it is possible to obtain clear pictures with a minimum of after-image or noise even in dimly lighted scenes. Horizontal resolution is 250 lines at center and S/N ratio is 45dB.

Built-in Genlock Unit

For EFP and ENG applications, the camera can be used in genlock with other cameras by feeding the genlock input signal to the Genlock connector on the optional Remote Operation Panel.

Auto Focus Functions

The auto focus system enables the focus adjustment automatically. Thanks to this function, the focus operation is extremely easy.

CAM/BAR Select Switch

Since the color bar generator necessary for studio use camera is built-in, camera output signals or color bar signals are easily selected by the CAM/BAR select switch.



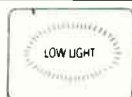
8x Zoom Lens with Macro Function

The lens is a 8x zoom lens with auto/manual iris. Since it has a macro function, extreme close-up shooting is possible.

Character Display by Microcomputer System

Titles, date, time and stopwatch can be displayed in the viewfinder screen and also recorded along with pictures.

Alarm Display on the Electronic Viewfinder

Phenomena	Battery run-down	White balance is unbalanced	Insufficient illumination
Display			

VTR Remote Function

The VTR functions: Record, Play, Forward and Reverse Search, Slow, Still, Record check can be controlled from the camera.

Auto White Balance

White balance adjustment is achieved by simply pressing down the white balance switch.

Fade-In/Out Switch

The picture and sound automatically fade in or out by one touch control.



FP-5

Boom-Type Condenser Microphone

A boom-type unidirectional electret condenser microphone is provided as an accessory. This microphone is removable.

Electronic Viewfinder can be Attached to Right or Left Side

The electronic viewfinder can be mounted on either the right or left side of the camera, depending on which side is most convenient for you. The viewfinder can be tilted to any position.

Low Power Consumption

The consumption is approx. 6.8W. As it is low, VTR's battery lasts longer. To reduce power consumption, this camera also has a Standby switch.

Power Consumption: Approx. 6.8W (when the power zoom, Auto focus and color bar generator are not operated)

Dimensions: 81W x 172H x 286.5D mm (excluding the electronic viewfinder and accessory microphone.)

Weight: Approx. 3.2kg (including electronic viewfinder and microphone)

\$1800.00
Optional Accessories

GM-5N/P	4.5" viewfinder
SA-5	Studio adaptor (for GM-5N/P mounting attachment)
C-502CC	Camera cable (50m)
C-152CC	Camera cable 15m
C-501VF	VTR cable 5m
C-201VF	VTR cable 2m
AP-4	AC adaptor
C-102CT	Extension cable (10m)
ZL-5WM	Lens cable kit
OP-5	Remote control functions; Master black, Iris, Camera cable select switch, Camera/Bar select switch, Intercom, Intercom level, Tally, (max. cable length; 50m)

\$1280.00



175 Crossways Park W.
Woodbury, NY 11797
(516) 921-7200

PRODUCTION VIDEOTAPE RECORDER/PLAYER

HR-210 1-INCH HELICAL VTR

Broadcast 1" VTR designed for mastering and post production houses and high-end industrial applications

Features

- Retracting entrance guide system greatly reduces tape loading difficulties
- Air support tape guide system prevents the tape from contact with the heads
- No-contact head drum extends the usable life of tape and heads, effectively preventing head clogging
- "PRO" tape path serves to reduce tape dropouts ("PRO" Protective Reverse Oxide)
- Adjustment-free head replacement no need for any special gauges, soldering or adjustments
- Optional HST (Head Scan Tracking) system for variable speed playback from 1/4 to 1-1/2X play speed.
- Both video and audio confidence
- Protection cover for tape transport
- Built-in cable compensator
- Optional dual tape timer
- Accurate and easy-to-operate editing system
 - Color framing
 - Cue shift
 - Split edit
 - Insert/assemble editing
- Autochroma standard
- Deviation marker for accurate and easy modulation setting
- Built-in color processor (option)
- Common head for PB/REC
- Video sync heads standard
- Audio spot erase
- Optional 4th audio track (EBU Type "C")
- Fully servo-controlled tape tension system with direct drive DC reel motors
- Reel brake release button (foot switch is option)
- Tape speed override for editing or network delay sync
- Spot reel capability with no switch operation
- Remote control of TBC (TC-200B) on the VTR operation panel
- Shuttle/Jog combination knob
- Tape transport light to make tape threading made easier in a darkened room
- Front access circuit modules for easy maintenance and adjustment
- Rugged tape transport of a precision aluminum alloy casting

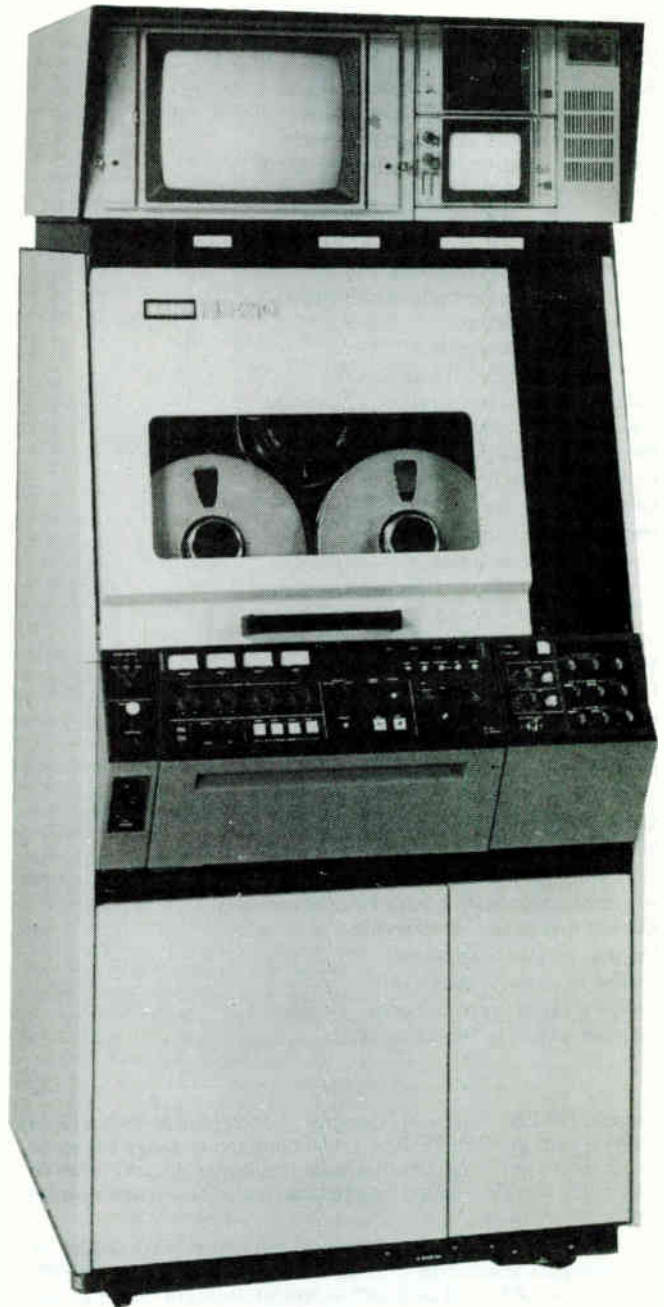
HR-210

\$80,400.00

Hitachi Production Console (HPC) System. Studio Console System Model Recorder/Reproducer Conforms to SMPTE Type "C" Standards. Standard Features are Slow Motion, Video and Audio confidence, Edit Frame Shift, Full TBC Controls on Console, Three Selectable Remote Control Parts and Monitoring Bridge, Less Monitors

Includes:

HR-200B Transport
 TC-200B Digital TBC
 CN-210 Production Console
 SL-20 Slow Motion
 Take-up Reel and Set of Extender Cards Operations/Service Manual





HR-230

High Performance 1-Inch Production VTR

- High quality recording/reproduction
- Interchangeability with all Type C tapes
- 2-hour/3-hour reel operation selectable
- -1 to +3 times variable play speed (option)
- Built-in 4Hp-p TBC (option)
- Auto setup of optimum record current
- Video confidence (simultaneous playback)
- DG/DP compensation circuit
- Deviation marker for modulation setting
- Auto chroma function
- Built-in cable compensator
- Auto setup of optimum bias current
- Audio confidence (simultaneous playback)
- Linked left-right volume control possible
- Peak level display by LED
- Audio spot erase function
- Built-in monitor speaker
- Digital servo system
- Quick start of tape travel
- Hand advance of tape under servo control
- Automatic color framing
- Any size of reel usable without servo switching
- PRO (Protective Reverse Oxide) tape path
- Non-contact head drum in standby and FWD/REW modes
- Retracting entrance and exit guides
- Escape tension mechanism
- Retracting master erase head
- Automatic audio head cover opening and closing
- Built-in monitor select buttons
- Controls with unity setting and center click
- Various displays for ease of operation
- Assemble/insert editing with 1-frame accuracy
- Split edit and forced edit possible
- Cue shift and variable preroll
- Preview and review operation
- Change and display of edit data
- Edit point setting by ten-key entry

The Hitachi HR-230 is a newly designed 1-inch helical-scan VTR in accordance with the SMPTE Type C standard and provides the same highly acclaimed performances that made the former HR-200 series so popular with many new added features that make it even more useful for various applications.

The HR-230 inherits the same features as the former models such as the tape transport designed by CAD to assure stable tape travel, the PRO (Protective Reverse Oxide) tape path to protect oxide surface of a tape, the air support system to reduce resistance to tape travel, and the retracting entrance guide for ease of tape loading. In addition to these features, air tension arm posts are newly adopted to further reduce resistance to tape travel and an escape tension mechanism and retracting exit guide, to make tape loading more simple and accurate in combination with the retracting entrance guide.

Only by changing the mounting position of reel motors, both of the 3-hour and 2-hour reel operations are possible; the former for desk-top and console configurations, and the latter for rackmount configuration.

Other performances improved, and functions added, are two micro-processors which independently control the operation system and servo system, -1 to +3 times variable play speed and its memory function (option), auto setup function of the optimum video record and audio bias currents, variable play time function which can increase or decrease program time, master/slave control function, reduction of tape accelerating time and lock-in time, incorporation of 4Hp-p TBC (option), various alarms and error messages for ease of fault diagnosis and maintenance, etc.

The HR-230 can be used in any configuration of desk-top, console and rackmounting and is most suitable for broadcast station, production house and other high end industrial and educational applications.

HR-230-1

- Package Includes:**
HR-230 — Recorder/Player
TC-030 — Plug-In Digital TBC
Take Up Reel
Set of Extender Boards
Service Manual

Price
\$57,900.00

HR-230-2

- Package Includes:**
HR-230 — Recorder/Player
TC-230 — Digital TBC
SL-30 — Slow Motion
(Head Scan Tracking)
Take Up Reel
Set of Extender Boards
Service Manual

Price
\$78,800.00



**HR-100
PORTABLE 1-INCH HELICAL VTR**

The Hitachi HR-100 is a portable video tape recorder designed in accordance with the SMPTE Type C Standard. In addition to tape interchangeability with the table model HR-200, the HR-100 offers interchangeability with other 1-inch, C-standard helical video tape recorders. While it is simple to operate, the HR-100 delivers all the required functions for professional use. Its small size, light weight and rugged construction provide excellent reliability, and it is ideal for ENG and EFP application.

• **A Portable VTR, Meeting SMPTE Type C Standard**

The HR-100 is completely interchangeable with the table model HR-200. Tapes recorded by the HR-100 can be reproduced by other 1-inch C-standard tape recorders.

• **Small In Size, Light In Weight**

The tape transport of uniblock construction, the housing of one-piece construction and printed circuit board holder combine to make the HR-100 sturdy, small in size, and light in weight.

• **Low Power Consumption**

Switching-type motor drive amplifiers for the drum, capstan and reels are provided for improved efficiency. In addition, switching regulators and the extensive use of C-MOS ICs help to reduce power consumption.

• **Excellent Environmental Characteristics**

- a) No parts except the heads contact the magnetic surface of the tape—sharply reducing the possibility of dropouts.
- b) Small overall wrap angle in the tape path for smooth tape movements.
- c) A digital servo circuit which is resistant to temperature and aging.
- d) An FM modulator with an AFC circuit.

• **Automatic Assemble-Edit Function**

The HR-100 has a built-in automatic assemble-edit function which automatically rewinds the tape at the end of recording, and gives it a correct backspace. This feature permits complete assemble-editing merely by repeated REC button operation at the camera.

• **60-Minute Operation From Built-in Battery**

The HR-100 can operate on a nickel cadmium battery (12V, 6AH) for over 60 minutes. Battery operation allows for complete mobility in field production. The HR-100 also operates on an external DC power supply.

• **Video Confidence**

Video signals can be simultaneously monitored during recording so that you can ascertain that you are actually recording the signals you want.

• **Built-In Time Code Generator**

Built-in SMPTE time code generator permits you to record hours, minutes, seconds and the number of frames established previously.

HR-100. Portable Model Type "C" Recorder. Portable Battery operated Recorder conforms to all SMPTE Type "C" standards. Features Video Confidence Head, Sync Head, Built-in Time Code Generator, Back Space Editor and Digital Servo System. . . \$26,225.00

Including: Take-up Reel, Operation/Service Manuals, Set of Extender Cards.

Accessories:

AP-10 AC Adaptor	\$500.00
BT-10 1 Hour Plug-in Battery	500.00
BU-10 Battery Unit (1 or 2 Batteries additional)	1200.00
BC-10 1 Hour Quick Charger	500.00
BC-10/2 1 Hour Dual Quick Charger	850.00
CP-11 Color Playback Stabilizer	2300.00
RB-10 Remote Control Unit With Combination Jog/Shuttle LED Display, Edit Controls, Standby and Power Switch	500.00
WC-10 Winter Heating Cover	490.00
CL-10 Carrying Case	317.00
VH-10 Spare Video Head Assemble	900.00
SPK-10 Spare Parts Kit	1150.00
AL-12N Alignment Tape	500.00
SVM-HR-100 Service Manual (Spare)	60.00
SVM-TC-200B Service Manual (Spare)	60.00

175 Crossways Park W.
Woodbury, NY 11797
(516) 921-7200

DIGITAL STORAGE OSCILLOSCOPES

VC-6041 40MHz/2 Channels 4000 Words/Channel

Features

- Suitable for repetitive frequencies up to 40MHz
- Storage of transient event of up to 10MHz with pre-triggering
- Storage of long-term data
- High-definition storage display
- CRT = 6" square with 12kV acceleration potential. Useful Screen Area: 8 x 10div (1 div = 10mm), Non Storage Function • Vertical Deflection = Bandwidth and Rise time: DC to 40MHz (-3dB), 8.8ns or less (normal), DC to 7MHz (-3dB), 50ns or less (magnifier), Deflection Factor: 5mV/div to 5V/div \pm 3%, 10 steps (normal), 1mV/div to 1V/div \pm 5%, 10 steps (magnifier), Modes: CH1, CH2, ALT, CHOP, ADD, DIFF • Horizontal Deflection = Time Base: 0.2 μ s/div to 0.2s/div \pm 3%, 19 steps. Maximum sweep rate to 20ns/div with magnifier extended • X-Y Operation (CH1: X, CH2: Y) = Phase Difference: 3° or less from DC to 50kHz, Digital Storage Function • Memory Capacity: 4.096 word/channel x two channels, Vertical Resolution: 8 bit, Horizontal Resolution: 400 steps/div, Maximum Sampling Speed: 40MHz (single trace mode), 20MHz (dual trace mode), 10MHz (single sweep mode) • Data Acquisition (Data update method) = Normal Storage Mode, Average Mode, Hold Mode, Single Sweep, Roll Mode, Data Save, Pretrigger, Data Output Analog Output, Digital Output, Cursor Display, X-Y Display • Power Supply = AC100V/120V/220V/240V \pm 10%, 50Hz or 60Hz • Dimensions = 13.1"W x 7.6"H x 18.7"D (330 x 190 x 470mm) • Weight = 15kg/31 lbs.

VC-6041\$5855.00

VC-6015 1MHz/2 Channels 1000 Words/Channel

Features

- Usable as both a conventional oscilloscope and a digital storage scope
- Pretriggering allows capture of events before the trigger point
- Convenient free-run mode for use in recording repeating events
- A hold function maintains one stored waveform while another is captured
- Recording function enables a pen recorder to be used to create a hard copy of stored waveforms
- CRT = 6" square with 2kV acceleration potential Display Area: 8 x 10 div (1 div = 10mm) • Memory = Memory Capacity: 1000 words/channel (1 word = 8 bit), Writing Speed: 1 μ s/word to 10ms/word • Vertical Deflection = Sensitivity: 5mV/div to 5V/div \pm 5% 10 calibrated steps, Bandwidth: DC to 10MHz-3dB (oscilloscope mode), DC to 100kHz-3dB (storage mode), Modes: CH1, CH2, DUAL, ADD, DIFF (oscilloscope modes), DUAL, CH1 (CH2 HOLD), CH2 (CH1 HOLD) • X-Y Operation (CH1: X, CH2: Y) = Phase Difference: DC to 50kHz within 3° • Horizontal Deflection = Sweep Time: 1 μ s/div to 0.2s/div \pm 3% (oscilloscope mode), 0.1ms/div to 1s/div \pm 3% (storage mode), Max Sweep Rate: 100ns/div at x 10 Magnifier extends (oscilloscope mode) • External Output = Recorder: CH1, CH2 full-scale \pm 4V • Power Supply = AC100V/120V/220V/240V \pm 10% • Dimensions = 12.3"W x 7.1"H x 16.2"D (310 x 180 x 410mm) • Weight = 10kg/22 lbs.

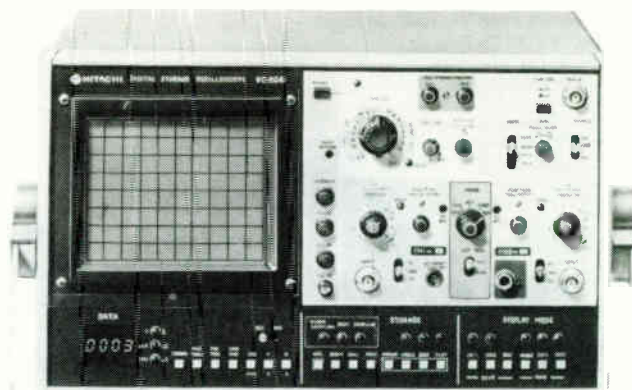
VC-6015\$2095.00

STORAGE OSCILLOSCOPE

V-134 DC 10MHz, Dual Trace

- CRT = 5" round with 2kV acceleration potential • Recording Speed = 25div/ms or more, Fast: 50div/ms or more • Vertical Deflection = Sensitivity: 5mV/div to 5V/div (10 steps) \pm 3%, Max. Sensitivity: 1mV/div to 1V/div (10 steps) \pm 5% at x 5 Magnifier extends, Bandwidth: DC to 10MHz (-3dB), DC to 7MHz (-3dB) at x 5 Mode: CH1, CH2, DUAL, ADD, DIFF • Horizontal Deflection = Sweep Time: 2 μ s/div to 2 sec/div (10 steps) \pm 3%, Max. Sweep Rate: 200ns/div at x 10 Magnifier extends • X-Y Operation (CH1: X, CH2: Y) = Phase error: 3° from DC to 50kHz • Dimensions = 10.9"W x 7.5"H x 15.8"D (275 x 190 x 400mm) • Weight = 10kg/22 lbs.

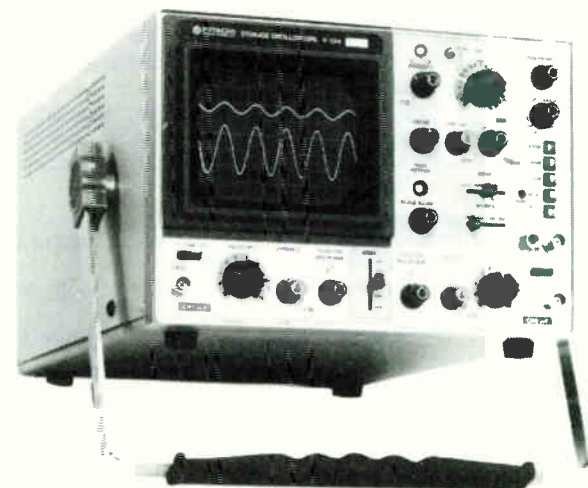
V-134\$1620.00



VC-6041



VC-6015



V-134

175 Crossways Park W.
Woodbury, NY 11797
(516) 921-7200

READOUT OSCILLOSCOPE

V-1100 DC ~ 100MHz 4 Trace, Delayed Sweep

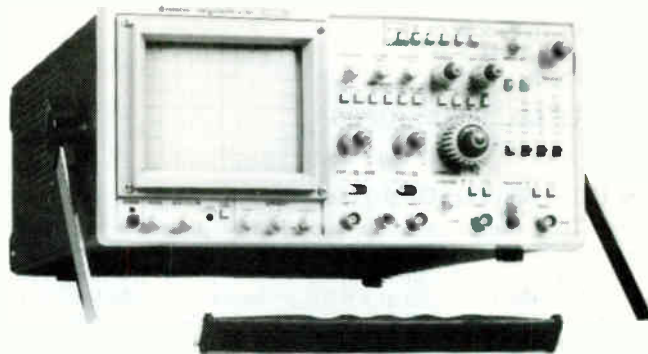
Three Digital Display Functions

- The AC voltage (50Hz ~ 10MHz), DC voltage, and frequency (120Hz ~ 99.9MHz) of the Channel 1 input signal can be measured and the results displayed digitally on the CRT screen
- An electronic CRT screen cursor may be used to digitally display such values as ΔT , $1/T$, phase, ground potential (Vabs), ΔV , and ratio (%)
- The sweep and vertical axis sensitivity setting values are displayed digitally on the CRT screen
- Dimensions: 13"W x 6.3"H x 16"D
- Weight: 22 lbs.

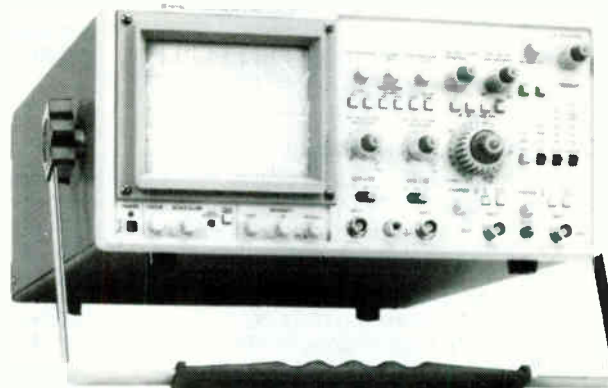
V-1100 \$2790.00

V-1100 Specifications

Readout functions	Digital Measurement functions	DVM	DC voltage: Corresponds to screen AC voltage: 50Hz ~ 10MHz	CH1 only	Display: 3 digits + units
	Frequency counter	Frequency: 0.12kHz ~ 99.9MHz			
	Cursor Readout	REF. Δ cursors	Voltage Vabs: REF ~ GND Voltage V: Δ ~ REF Amplitude ratio: % (5 div = 100%) Time T: Δ ~ REF Phase: Deg (5 div = 360°) Frequency: $1/T = \Delta$ ~ REF		
Panel setting Value displays		Vertical axis: V/div, INVERT, ADD, BWL, UNCAL, MAG Sweep speed: s/div, UNCAL, MAG conditions Other: delay time and trigger source			
GND REFERENCE FUNCTION	Ground line display		CH1 and CH2 displays are possible. (the ground level is displayed as an intensified line)		



V-1100



V-1070

V-1070 DC ~ 100MHz 4 Trace, Delayed Sweep

The V-1070, a low cost version of the V-1100, using the built-in micro-computer, displays the panel setting information on the CRT as follows:

Vertical deflection factors, uncalibrated warning, magnification warning, vertical input coupling, band limiter, CH2 inversion, horizontal sweep times for both A time and B time bases and trigger sources for both, uncalibrated warning for A sweep time, sweep magnification warning, delay time and 10X probe indicators for CH1 and CH2.

Further vertical deflection factors and sweep times are displayed on the CRT with the converted values at the magnified modes automatically. Dimensions: 13"W x 6.3"H x 16"D. Weight: 22 lbs.

V-1070 \$2295.00

V-1050F DC ~ 100MHz, Quad Trace, Delayed Sweep

• CRT = 6" square with 20kV acceleration potential • Vertical Deflection = Sensitivity: 5mV/div to 5V/div $\pm 2\%$, Max. Sensitivity: 0.5mV/div $\pm 4\%$ at x 10 Magnifier extends, Bandwidth: DC to 100MHz (-3dB), DC to 5MHz (-3dB) at x 10 Magnifier extends, Modes: CH1, CH2, ALT, CHOP, ADD (DIFF) • Horizontal Deflection = A Time Base: 20ns/div to 0.5s/div $\pm 2\%$, B Time Base: 20ns/div to 50ms/div $\pm 2\%$, Max. Sweep Rate to 2ns/div at x 10 Magnifier extends, Display Modes: A, A inten, ALT, B • X-Y Operation (CH1: X, CH2: Y) = Phase Error: 3° from DC to 2MHz • Dimensions = 310W x 180H x 410Dmm • Weight = 9.3kg/20.5 lbs.

V-1050F \$1595.00

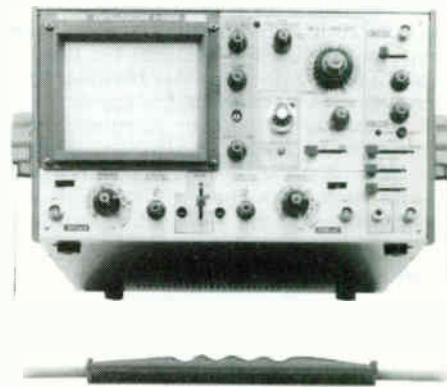
V-650F DC ~ 60MHz, Dual Trace Delayed Sweep

• CRT = 6" square with 10kV acceleration potential • Vertical Deflection = Sensitivity: 5mV/div to 5V/div $\pm 3\%$, Max. Sensitivity: 1mV/div $\pm 5\%$ x 5 Magnifier extends, Bandwidth: DC to 60MHz, DC to 10MHz at x 5 Magnifier extends, Modes: CH1, CH2, ALT, CHOP, ADD (DIFF) • Horizontal Deflection = A Time Base: 50ns/div to 0.5s/div $\pm 3\%$, B Time Base: 50ns/div to 50ms/div $\pm 3\%$, Max. Sweep Rate: 5ns/div at x 10 Magnifier extends, Display Modes: A, A inten, B • X-Y Operation (CH1: X, CH2: Y) = Phase Error: 3° from DC to 50kHz • Dimensions = 12.2"W x 7.1"H x 16.1"D (310 x 180 x 410mm) • Weight = 9.3kg/20.5 lbs.

V-650F \$1195.00



V-1050F



V-650F

Prices and Specifications Subject to Change Without Notice.

PORTABLE OSCILLOSCOPES

V-509 DC ~ 50MHz, Dual Trace Delayed Sweep

• CRT = 3.5" square with 12kV acceleration potential • Vertical Deflection = Sensitivity: 5mV/div to 5V/div \pm 3%, Max. Sensitivity: 1mV/div \pm 3% at x 5 Magnifier extends, Bandwidth: DC to 50MHz (-3dB), DC to 10MHz (-3dB) at x 5 Magnifier extends, Modes: CH1, CH2, ALT, CHOP, ADD (DIFF) • Horizontal Deflection = A Time Base: 0.1 μ s/div to 0.2s/div \pm 3%, B Time Base: 0.1 μ /div to 2ms/div \pm 3%, Max. Sweep Rate: 10ns/div at x 10 Magnifier extends, Display Modes: A, A inten, B • X-Y Operation (CH1: X, CH2: Y) = Phase Error: 3° from DC to 100kHz • Dimensions = 8.5"W x 4.3"H x 13.8"D (215 x 110 x 350mm) • Weight = 5kg/11 lbs.

V-509 \$1399.00
AD-509 Battery Pack for V-509 300.00

V-209 DC ~ 20MHz, Dual Trace

• CRT = 3.5" square with 1.5kV acceleration potential • Vertical Deflection = Sensitivity: 5mV/div to 5V/div \pm 3%, Max. Sensitivity: 1mV/div \pm 3% at x 5 Magnifier extends, Bandwidth: DC to 20MHz (-3dB), DC to 5MHz (-3dB) at x 5 Magnifier extends, Modes: CH1, CH2, ALT, CHOP, ADD (DIFF) • Horizontal Deflection = Time Base: 0.5 μ s/div to 0.2s/div \pm 3%, Max. Sweep Rate: 50ns/div at x 10 Magnifier extends • X-Y Operation (CH1: X, CH2: Y) = Phase Error: 3° from DC to 100kHz • Dimensions = 8.5"W x 4.3"H x 13.8"D (215 x 110 x 350mm) • Weight = 4.5kg/9.9 lbs.

V-209 \$945.00

V-059B DC ~ 7MHz, Single Trace

• CRT = 3.5" square with 1.5kV acceleration potential • Vertical Deflection = Sensitivity: 50mV/div to 2V/div \pm 3%, Max. Sensitivity: 10mV/div to 20mV/div \pm 3% at x 5 gain, Bandwidth: DC to 7MHz (-3dB), DC to 2MHz (-3dB) at x 5 gain • Horizontal Deflection = Time Base: 10 μ s/div to 20ms/div \pm 3%, Max. Sweep Rate: 1 μ s/div at x 10 Magnifier extends • Dimensions = 7.8"W x 3.35"H x 11.5"D (198 x 85 x 292mm) • Weight = 2.9kg/6.4 lbs.

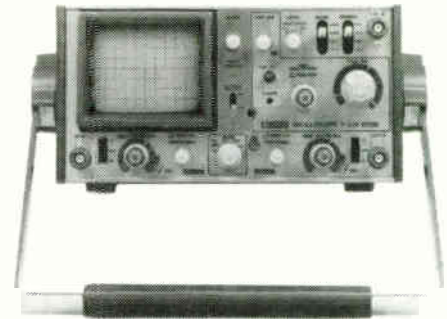
V-059B \$1200.00
AD-058B Battery Pack for V-059B 200.00

TELEVISION WAVEFORM MONITOR

V-099 (Type NTSC)

• CRT = 3.5" square with 2kV acceleration potential • Vertical Deflection = Frequency Response at 1V Full Scale or 4V Full Scale: Flat ... Response from 25Hz to 5MHz within \pm 5% of response at 50kHz, IRE ... Response per 1958 IRE STD 23S-1 \pm 10%, 3.58 Band Pass ... Response at 3.58MHz does not vary between flat and 3.58 Band Pass by more than 1% • Horizontal Deflection = 2V Sweep: Equal to Frame Rate at applied Video or External Sync. 2V Mag Sweep: X20 within \pm 10%, 2H Sweep: Equal to half line rate of applied Video or External Sync, 1 μ s/div Sweep: \pm 3% (Accuracy) • DC Restoration = Clamp Time: Back Porch • Dimensions = 5.8"W x 3.5"H x 15.6"D (145 x 88 x 395mm) • Weight = 4kg/8.9 lbs.

V-099 \$1350.00
AD-099 Battery Pack for V-089/099 250.00



V-209



V-099



V-089

VECTORSCOPE

V-089 (Type NTSC)

• Chrominance Processing = Chrominance Bandwidth: Subcarrier Frequency (Fsc)/3.579545MHz Pull in Range: Within 100Hz of Fsc, Pull in Time: Within 1 second with subcarrier frequency within 100Hz of Fsc, Phase Shift with Subcarrier Frequency change: Less than or equal to 1° from Fsc to Fsc + 50Hz or from Fsc to Fsc - 50Hz, Change: Less than or equal to 1° from unity to 2 times unity or from unity to one-half unity • Amplifier = Maximum input Voltage: \pm 5V, VARGAIN Control Range: X0.5 ~ X5.0, Input Return Loss: Greater than or equal to 40dB down, 5MHz • External Sync = Input signal requirement 1.6 to 4.5V composite sync. input impedance 15K ohm \pm 10% • Dimensions = 5.8"W x 3.5"H x 15.6"D (145 x 88 x 395mm) • Weight = 4kg/8.9 lbs.

V-089 \$1684.00
AD-099 Battery Pack for V-089/099 250.00

175 Crossways Park W.
Woodbury, NY 11797
(516) 921-7200

V-211 DC ~ 20MHz, Single Trace

- CRT = 6" square with internal graticule • Vertical Deflection = Sensitivity: 5mV/div to 5V/div \pm 3%, Max. Sensitivity: 1mV/div to 1V/div \pm 5% at x 5 Magnifier extends, Bandwidth: DC to 40MHz (-3dB) DC to 7MHz (-3dB) at x 5 Magnifier extends, Modes: Single Trace • Horizontal Deflection = Sweep Time: 0.2 μ s/div to 0.2s/div \pm 3%, Max. Sweep Rate: 100ns/div at x 10 Magnifier extends • X-Y Operation (CH1: X, CH2: Y) = Phase Error: 3° from DC to 10kHz • Dimensions = 12.3"W x 5.2"H x 14.6"D (310 x 130 x 370mm) • Weight = 6.0kg/13.3 lbs.



V-211 DC

V-222 DC ~ 20MHz, Dual Trace

- CRT = 6" square with internal graticule • Vertical Deflection = Sensitivity: 5mV/div to 5V/div \pm 3%, Max. Sensitivity: 1mV/div to 1V/div \pm 5% at x 5 Magnifier extends, Bandwidth: DC to 20MHz (-3dB) DC to 7MHz (-3dB) at x 5 Magnifier extends, Modes: CH1, CH2, ALT, CHOP, ADD • Horizontal Deflection = Sweep Time: 0.2 μ s/div to 0.2s/div \pm 3%, Max. Sweep Rate: 100ns/div at x 10 Magnifier extends • X-Y Operation (CH1: X, CH2: Y) = Phase Error: 3° from DC to 50kHz • Dimensions = 12.3"W x 5.2"H x 14.6"D (310 x 130 x 370mm) • Weight = 6.5kg/14.4 lbs.



V-222 DC

V-422 DC ~ 40MHz, Dual Trace

- CRT = 6" square with internal graticule • Vertical Deflection = Sensitivity: 5mV/div to 5V/div \pm 3%, Max. Sensitivity: 1mV/div to 1V/div \pm 5% at x 5 Magnifier extends, Bandwidth: DC to 40MHz (-3dB), DC to 7MHz (-3dB) at x 5 Magnifier extends, Modes: CH1, CH2, ALT, CHOP, ADD • Horizontal Deflection = Sweep Time: 0.2 μ s/div to 0.2s/div \pm 3%, Max. Sweep Rate: 20ns/div at x 10 Magnifier extends • X-Y operation (CH1: X, CH2: Y) = Phase Error: 3° from DC to 50kHz • Dimensions = 12.3"W x 5.2"H x 14.6"D (310 x 130 x 370mm) • Weight = 6.5kg/14.4 lbs.



V-422 DC

V-422\$925.00

V-212 DC ~ 20MHz, Dual Trace

- CRT = 6" square with internal graticule • Vertical Deflection = Sensitivity: 5mV/div to 5V/div \pm 3%, Max. Sensitivity: 1mV/div to 1V/div \pm 5% at x 5 Magnifier extends, Bandwidth: DC to 20MHz (-3dB) DC to 7MHz (-3dB) at x 5 Magnifier extends, Modes: CH1, CH2, ALT, CHOP, ADD • Horizontal Deflection = Sweep Time: 0.2 μ s/div to 0.2s/div \pm 3%, Max. Sweep Rate: 100ns/div at x 10 Magnifier extends • X-Y Operation (CH1: X, CH2: Y) = Phase Error: 3° from DC to 50kHz • Dimensions = 12.3"W x 5.2"H x 14.6"D (310 x 130 x 370mm) • Weight = 6.0kg/13.3 lbs.



V-212 DC

V-212\$615.00

V-203F DC ~ 20MHz, Dual Trace Delayed Sweep

- CRT = 5.5" square with internal graticule • Vertical Deflection = Sensitivity: 5mV/div to 5V/div \pm 3%, Max. Sensitivity: 1mV/div to 1V/div \pm 5% at x 5 Magnifier extends, Bandwidth: DC to 20MHz (-3dB), DC to 7MHz (-3dB) at x 5 Magnifier extends, Modes: CH1, CH2, DUAL, ADD (DIFF) • Horizontal Deflection = Sweep Time: 0.2 μ s/div to 0.2s/div \pm 3%, Delay Time: 1 μ s to 100ms, Max, Sweep Rate: 100ns/div at x 10 Magnifier extends, Display Mode: NORM, INTEN, DELAY • X-Y Operation (CH1: X, CH2: Y) = Phase Error: 3° from DC to 50kHz • Dimensions = 11"W x 7.5"H x 15.8"D (275 x 190 x 400mm) • Weight = 8.5kg/18.8 lbs.



V-203F DC

V-203F\$749.00

V-353F DC ~ 35MHz, Dual Trace Delayed Sweep

- CRT = 5.5" square with internal graticule • Vertical Deflection = Sensitivity: 5mV/div to 5V/div \pm 3%, Max. Sensitivity: 1mV/div \pm 5% at x 5 Magnifier extends, Bandwidth: DC to 35MHz (-3dB), DC to 7MHz (-3dB) at x 5 Magnifier extends, Modes: CH1, CH2, DUAL, ADD (DIFF) • Horizontal Deflection = Sweep Time: 0.2 μ s/div to 0.2s/div \pm 3%, Delay Time: 1 μ s to 100ms, Max. Sweep Rate: 20ns/div at x 10 Magnifier extends, Display Modes: NORM, INTEN, DELAY • X-Y Operation (CH1: X, CH2: Y) = Phase Error: 3° from DC to 50kHz • Dimensions = 11"W x 7.5"H x 15.8"D (275 x 190 x 400mm) • Weight = 8.5kg/18.8 lbs.



V-353F DC

V-353F\$949.00

Prices and Specifications Subject to Change Without Notice.

HOWE AUDIO PRODUCTIONS, INC.

AUDIO CONSOLES

3085 A Bluff Street
Boulder, CO 80301
(303) 444-4693 (800) 525-7520

SERIES 9000 CONSOLES

Howe Audio Series 9000 . . . a new concept in consoles. The only modular consoles that do not require the broadcaster to purchase an expensive mainframe.

The Series 9000 consoles are available in sizes from 8 to 22 channels. Check these features and compare them with the other modular consoles:

- 3 inputs per channel
- 3 outputs per channel, including mix-minus
- Each channel can be either mic or line level
- TTL Digital Logic for machine controls, assignable to each of your input selections
- Membrane switches for spill and dust proof service
- Linear faders designed to resist spillage
- VCA level control for the cleanest audio possible
- LED Status indicators for each channel function
- Standard analog V.U. meters
- Optional Vacuum Fluorescent meters
- Built-in Cue speaker
- Built-in Headphone Amp
- Your choice of a clock or timer standard in smaller units
- Both clock and timer standard in larger units

The Series 9000 consoles are expandable at any time by adding more channel modules, adding to the metering section, and adding options such as another clock or timer, another cue speaker, a 10 by 1 routing switcher, 1 into 5 distribution amplifier, and many others.



OPERATING MODE:	Stereophonic. Two independent stereo program outputs, separate mix-minus output, monaural (L+R) program output
MIXING CHANNELS:	22 Maximum
PRIMARY INPUT CIRCUITS:	Three per channel all inputs accept -60dBm nominal levels, each channel input adjustable active balanced. All line inputs are 10,000 ohms or greater, bridging
SECONDARY INPUT CIRCUITS:	One on-air input, two auxiliary inputs. 0 dBm nominal level, adjustable, active balanced
PRIMARY OUTPUT CIRCUITS:	Program 1 outputs (L&R) active balanced, factory set at +4 dBm, peak at +26 dBm. Output adjustable from 0 dBm to +10 dBm for 0-level meter deflection Program 2 outputs (L&R) active balanced, factory set at +4 dBm, peak at +26 dBm. Output adjustable from 0 dBm to +10 dBm for 0-level meter deflection
SECONDARY OUTPUT CIRCUITS:	Monitor outputs (L & R) at 0 dBv nominal, unbalanced (30 watts/channel into 8 ohm speakers with optional power amplifier module) Headphone outputs (L&R), 1/4" stereo front panel jack, 5 watts RMS nominal into 8 ohms Cue speaker outputs, 10 watts nominal into internal 8 ohm speakers
FREQUENCY RESPONSE:	All outputs plus or minus 0.1 dB, 20 Hz to 20,000 Hz at normal maximum output
TOTAL HARMONIC DISTORTION:	All outputs 0.025% nominal or lower, 20 Hz to 20,000 Hz at normal output, fader at normal operating position
INTERMODULATION DISTORTION:	All outputs Better than 0.04% using standard 60 and 7000 Hz tones in a 4-to-1 amplitude ratio
CLIP POINT:	-26 dBm
OVERALL SIGNAL-TO-NOISE RATIO:	All circuits Noise lower than -85 dB below normal maximum output, A-WTD, RMS (ASA)
PROG 1/PROG 2 OUTPUT NOISE IN A 20-20,000Hz UNWEIGHTED PASSBAND (OUTPUT TERMINATED IN 600 OHMS):	-90 dBm or better with one channel on, fader at normal operating position, input terminated -124 dBm equivalent input noise (microphone channels) -76 dBm or better all channels on and all faders maximum
ATTENUATOR TRACKING:	Plus or minus 0.25 dB, left-vs-right program 1 or program 2, any channel Plus or minus 0.25 dB program 1-vs-program 2, left or right, any channel Fader at mid-position or full on
CHANNEL SEPARATION:	Better than 70 dB, 20 Hz to 20,000 Hz
POWER:	117/230VAC, 50/60 Hz, 75 watts, single-phase with safety ground
FINISH:	Earth-Tone Lexan® finish. Solid hardwood trim with oil- and urethane-sealed finish
SIZE:	Dependent on number of channels
WEIGHT:	Dependent on number of channels

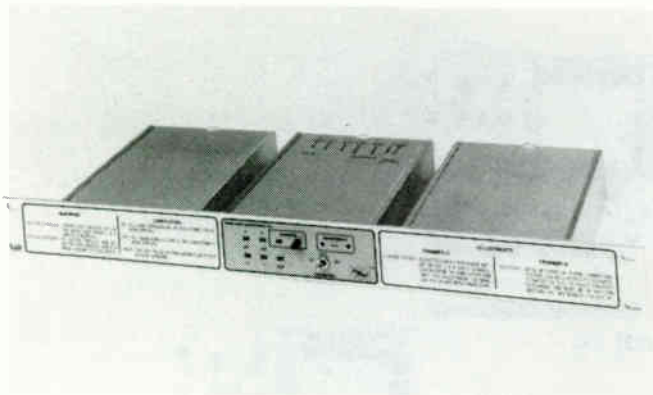
SERIES 9000

- 8 Channel.** Includes monitor control section choice of clock or timer, mono cue speaker, 24 inputs \$ 8,550.00
- 10 Channel.** Includes 2 cue speakers, 30 inputs \$ 9,767.50
- 12 Channel.** Includes mono cue speaker and both clock and timer, 36 inputs \$12,460.00
- 14 Channel.** Includes clock, timer, stereo cue, 42 inputs \$13,800.00
- 16 Channel.** Includes clock, timer, aux. meter, for mix-minus and mono outputs, dedicated meters for Program 1 and Program 2, 48 inputs \$15,780.00
- 18 Channel.** Includes clock, timer, aux. meter, stereo cue speakers, dedicated meters for Program 1 and Program 2, 54 inputs \$17,355.00
- 20 Channel.** Includes full metering, 3 clock or timer positions, stereo cue, 60 inputs \$20,119.00
- 22 Channel.** Includes full metering, 3 clock or timer positions, stereo cue, 66 inputs \$21,825.00

NOTE: For vacuum Fluorescent metering, add \$200 per console. Special orders will be quoted by the factory if variations to standard equipment are desired.

PHASE CHASER™

- OP 2100. Single PHASE CHASER module in 19" rack mount. Requires power from 7000 Series Console, or OP 1515 power supply, included \$ 1,200.00



Series 2100 Phase Chaser™

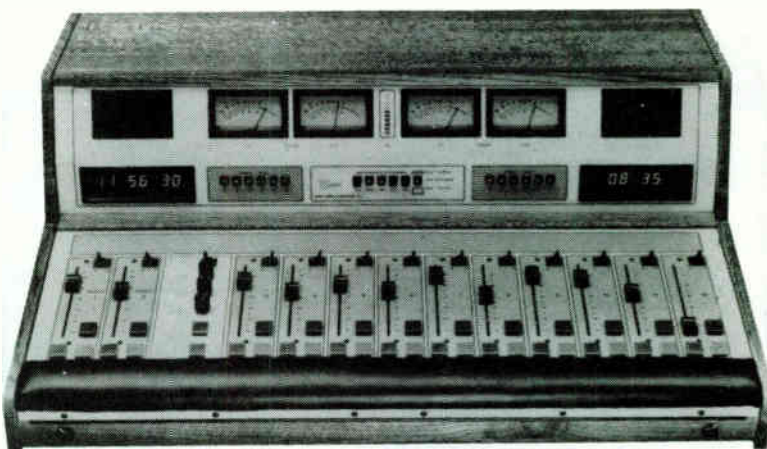
Designed to correct phase errors in stereo sources. The Phase Chaser™ utilizes a sophisticated cross-correlator system to achieve accurate tracking of left and right channels. Phase errors in cart machines, reel-to-reel tape decks, or any other stereo source are effectively eliminated, without any signal degradation. The Phase Chaser™ is ideal in AM stereo applications, and is currently being used by many major broadcasters.

3085 A Bluff Street
 Boulder, CO 80301
 (303) 444-4693 (800) 525-7520

7500 Stereo Consoles

Howe Audio 7500

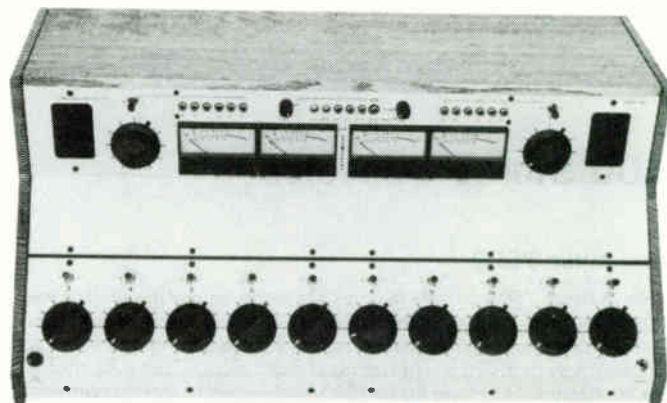
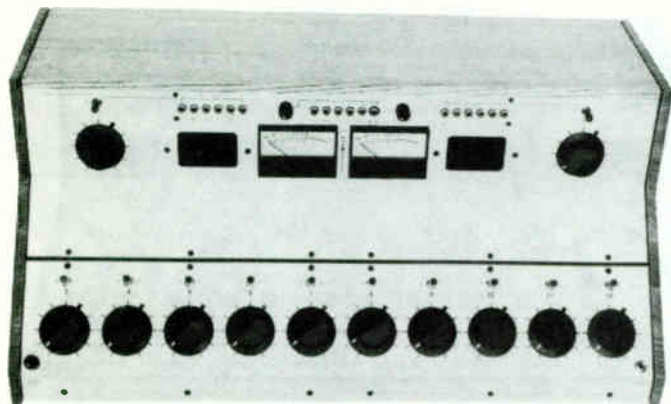
The Howe Audio 7500 console features the same, simple design that we have used for years, coupled with high quality slide faders and totally digital remote start and stop controls. The console is designed using the best VCA technology, a simple, virtually RFI immune audio section, and easy-to-use Molex connectors. The Howe Audio 7500 console has 12 stereo channels, 22 total inputs, one mono and 2 stereo outputs.



Specifications

OPERATING MODE:	Stereophonic
MIXING CHANNELS:	12 total
PRIMARY INPUT CIRCUITS:	22 total: 10 inputs accept -60 dBm to +20 dBm nominal levels, each input adjustable, active balanced; 12 pushbutton inputs (routed to 2 mixing channels) accept -20 dBm to +20 dBm nominal levels, each input adjustable, active-balanced All line inputs are 10,000 ohms or greater, bridging
SECONDARY INPUT CIRCUITS:	One on-air input, two auxiliary inputs, 0 dBm nominal level, adjustable, unbalanced
PRIMARY OUTPUT CIRCUITS:	Program outputs (L & R) active-balanced, factory set at +4 dBm, peak at +20 dBm. Output adjustable from 0 dBm to +10 dBm for 0-level meter deflection Audition outputs (L & R) active-balanced, factory set at +4 dBm, peak at +20 dBm. Output adjustable from 0 dBm to +10 dBm for 0-level meter deflection
SECONDARY OUTPUT CIRCUITS:	Monitor outputs (L & R) at 0 dBv nominal, unbalanced (30 watts/channel into 8 ohm speakers with optional power amplifier module) Headphone outputs (L & R), 1/4" stereo front panel jack, 5 watts RMS nominal into 8 ohms Cue speaker outputs (L & R) 10 watts nominal into internal 8 ohm speakers
FREQUENCY RESPONSE:	All outputs: plus or minus .25 dB, 20 Hz to 20,000 Hz at normal maximum output
TOTAL HARMONIC DISTORTION:	All outputs: 0.05% nominal or lower, 20 Hz to 20,000 Hz at normal output, fader at normal operating position.
INTERMODULATION DISTORTION:	All outputs: Better than 0.08% using standard 60 and 7000 Hz tones in a 4-to-1 amplitude ratio
OVERALL SIGNAL-TO-NOISE RATIO:	All circuits: Noise lower than -70 dB below normal maximum output, A-WTD, RMS (ASA)
PROG/AUD OUTPUT NOISE IN A 20-20,000 HZ UNWEIGHTED PASSBAND (OUTPUT TERMINATED IN 600 OHMS):	-74 dBm or better with one channel on, fader at normal operating position, input terminated. -124 dBm equivalent input noise (microphone channels). -68 dBm or better with all channels on, and all faders maximum
ATTENUATOR TRACKING:	Plus or minus .25 dB, left-vs-right, audition or program, any channel. Plus or minus .25 dB, audition-vs-program, left or right, any channel Fader at mid-position to full on
CHANNEL SEPARATION:	Better than 66 dB, 20 Hz to 20,000 Hz
POWER:	117/230VAC, 50/60 Hz, 75 watts, single-phase with safety ground
FINISH:	Earth-tone Lexan® finish. Solid hardwood trim with oil- and urethane-sealed finish.
SIZE:	33" wide, 23" deep, 10-1/2" high
WEIGHT:	80 lbs

\$9995.00



7000 Stereo Consoles

Howe Audio 7012

The Howe Audio 7012 is a twelve-fader, twenty-two input console with stereo program, audition, and mono program outputs. Careful attention to operator efficiency has been given to the design of the 7012. The control panel is sloped for comfortable operation from a standing or sitting position. Each program-audition switch contains extra contacts for the convenience of the user.

A peak-reading, ten-position LED meter is located in the middle of the upper panel. The meter is connected to the "air" position of the monitor to give the operator convenient visual indication of the modulation levels.

The 7012 is more than a console. It is an eye-catching piece of studio furniture. Its hardwood cabinet blends with any decor. The subtle earth-tone control panels will add just the right touch to your control room.

Howe Audio 7012A

The Howe Audio 7012A adds the versatility of left and right audition meters. An operator can then insure perfect segues, do off-air production, monitor remote lines, and perform many other tasks. Like the 7012, the 7012A also has ample space for user additions on a fully removable 4" x 31" panel above the control knobs. The Howe Audio consoles have several unique features including a "monitor dim" system that lowers the volume of the control room monitors as the control room microphone pot is opened.

The 7012 and 7012A display the Howe Audio philosophy of simplicity. The graphics, the arrangement of the multiple and single source channels, the comfortable "feel" of the console, all lead to fewer air mistakes and greatly reduced announcer fatigue.

7000 STEREO CONSOLES

7012	12-channel, 22-inputs, 2VU meters	\$6400.00
7012A	12-channel, 22-inputs, 4VU meters	6800.00
7512A	12-channel slide-fader, 4VU meters	9995.00
7512F	12-channel slide-fader, 6 fluorescent meters	1030.00

ACCESSORIES

702P	Stereo Turntable Preamp (Phantom-powered from 7000 Series Console).	\$200.00
701MA	Monitor Amplifier for 7000 Series Console. FET Power Amplifier, 30 watts/channel.	200.00
701TC	Telephone Coupler with built-in limiter. (Phantom powered from 7000 Series Console).	200.00

i e m MAGNETIC RECORDING HEADS

25 Years of Research, Development, and Production

PROFESSIONAL SERIES PS 650/651

- Standard Replacements for AG350, 440, 600, ATR 100, Scully 280-B, M-56, M-79
- All metal construction
- Mono — \$75.00; Stereo — \$90.00



FERRITE ERASE

- Dual gaps for high output tapes
- Complete erasure over full tape width
- All audio/video formats

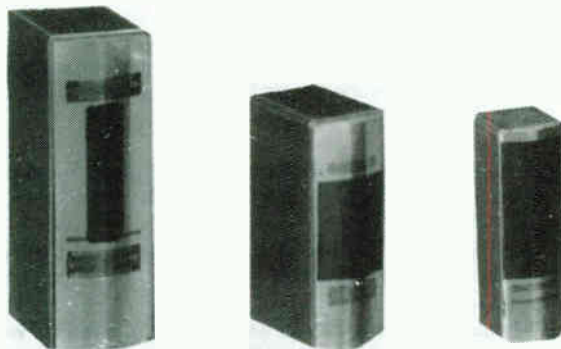


MASTER SERIES

- Instrumentation quality
- 15/32-30 ips operation
- Improved frequency response

SMPTE TIME CODE

- FM 989-2 1.5mV output @15kHz
- Neopilot 989-3 1.2mV output @60Hz
- Metal cores for sensitivity
- Ceramic wear shoes for head life



AUDIO/CONTROL STACKS

- Standard and custom designs
- C, U-Matic, VHS standards
VTR 1200, 2000
VPR-2, BVU 400, 800

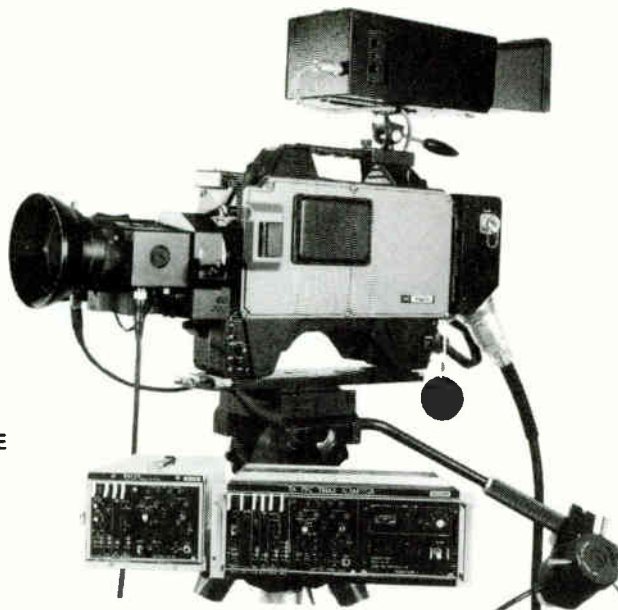
HEAD ASSEMBLY For AG-350

- Subplate with solenoid lifters
- Quick change head plate with integral tape guiding



We Also Offer A Relapping Service

- Free evaluation
- 24 hour turn around
- Electrical and optical inspection



HL-79E

IKEGAMI HL-79E ENG/EFP Color Television Cameras

The Ikegami HL-79E establishes a new standard of comparison for high quality ENG/EFP color television cameras. Although it is smaller and lighter than its HL-79 series predecessors, it uses the same proven and available 2/3-inch pick-up tubes while achieving important performance improvements in the areas of sensitivity, signal-to-noise ratio, registration accuracy, resolution and R.F.I. immunity. Picture quality is further enhanced by new circuit features such as chroma aperture correction, dynamic detail correction, automatic highlight compression and knee aperture correction. The improved performance and picture quality enhancement result in a camera with overall performance rivaling that of the competitor's studio cameras; hand-held or tripod supported versions are available.

Set-up of the HL-79E can be accomplished manually using conventional internal adjustments, by using the optional ADC-79E Auto Set-up Digital Control (at cable separation up to 30 meters) rapid automatic set-up of registration and level functions are possible. The ADC-79E also permits manual adjustment of numerous camera functions without the requirement for removal of the camera covers.

FEATURES

RFI Immunity

Up to 10 volts per meter (140dB) from 100kHz to 600MHz for the entire camera surface (not including lens port).

Chroma Aperture Correction

Generates aperture correction signal when Green information is absent from the signal, results in improved sharpness of picture in Red and Blue content areas.

Dynamic Focus

Parabolic modulation of electrostatic focus voltage improves corner resolution.

Dynamic Detail Correction

Parabolic modulation of detail correction signal improves corner picture sharpness.

Knee Aperture Correction

Expands horizontal video frequency response in highlight areas of

picture to compensate for aperture correction fall-off due to gamma compression of correction signal.

Performance Parameters

Various fundamental performance parameters have been emphasized to achieve the superior performance desired by today's program originators.

Sensitivity

Standard sensitivity is 2000 lux at f/5.0 Maximum sensitivity at + 18dB video gain is 20 lux at f/1.4 (using 89.9% reflectance chart).

Signal-to-Noise Ratio

-59dB is achieved with low input capacitance tubes using conventional measuring techniques (0dB video gain).

Registration

Deviation of Red and Blue with respect to Green is within 0.05% in Zone 1, 0.1% in Zone 2, and 0.3% outside of Zone 2 as a result of the Quadrant Geometry Correction Circuit used.

Resolution

By operating the pick-up tube in a high voltage mode, center resolution of 650TVL limiting and corner resolution of 500TVL limiting is achieved (using Diode Gun pick-up tubes, measured at 2000 lux illumination on a standard RETMA resolution chart.).

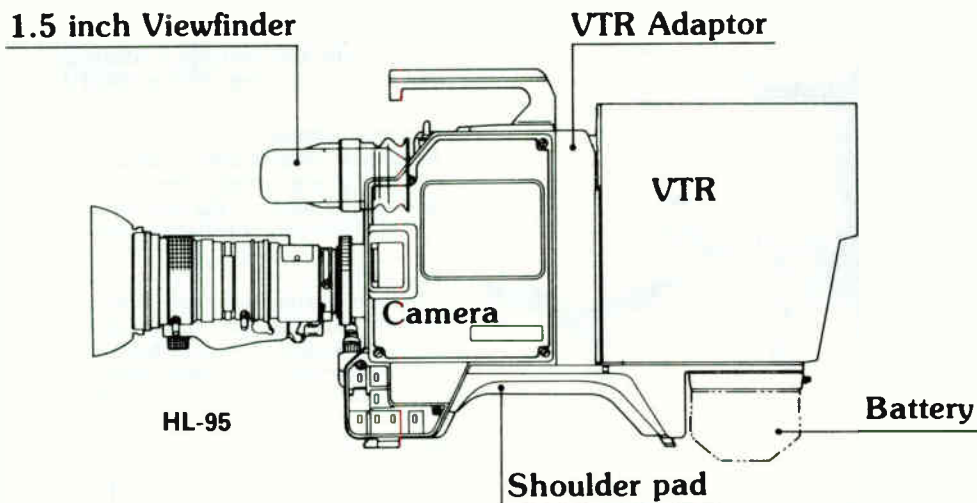
Viewfinder Resolution

Crisp, high contrast pictures are assured by the use of an improved cathode-ray tube.

Output Signal Characteristics

In accordance with EIA Standard RS-170A, blanking pulse widths and SC-H phase relationship adjustable.

HL-79ESL Saticon 3 tube, low capacitance
HL-79EAL XQ3427 Tubes
HL-79EA XQ2427 Tubes
HL-79E XQ1427 Tubes



KEGAMI HL-95 UNICAM®

If you're confused by the many tape formats and conflicting manufacturers claims, relax. Ikegami's new HL-95 Unicam® is the only universal camera system that accepts all professional on-board VCR formats, 1/4-inch and 1/2-inch, and solves your buying puzzle by putting the picture you want into place.

Engineered to offer performance beyond the most rigid expectations, the HL-95 utilizes new 2/3-inch SM diode gun Plumbicons®, resulting in a camera with higher sensitivity and S/N ratio, greater resolution, lower operating power requirements and less registration error than previously possible in a camera of its size and weight.

The HL-95 is also available as a stand-alone ENG camera, and in systems configurations using Triax or multi-core cable base stations, or with the ML-95 ENG Microwave Link. Once you examine the HL-95 Unicam®, you'll agree that the system flexibility and picture quality puts it in a class all by itself. The standard of excellence continues at Ikegami.

FEATURES

- High sensitivity: Max. 24dB
- Small size: 155D x 95W x 250H mm
- Weight: 3.0kg (Camera + 1.5" VF)
- Full shading correction: Black and white
- Dynamic focus correction
- Flare correction
- Geometry correction
- Color matrix
- Knee aperture correction
- Viewfinder:
 - White balance indication
 - Battery warning indication
 - Tally (REC) indication
 - Gain up indication
 - Stand-by indication
 - Lens extender indication
 - Audio level indication (CH1, CH2)
 - Tape remaining time indication
 - Filter position indication
- Color bars: Split field, in accordance with RS-189
- Sync generator: RS-170A, adjustable H. V Blanking

- Automatics:
 - Auto iris
 - Auto iris close
 - Auto white balance
 - Auto beam control
 - Auto highlight compression

SPECIFICATIONS (RATING)

Input Signal	
Return signal:	VBS/V5 1.0V p-p 75 ohms
External sync (G/L):	Option VBS/BBS 1.0V p-p/0.45V p-p (using the optional adaptor)
Power:	DC 12V
Output Signal	
Composite signal:	VBS 1.0V p-p 75 ohms
Monitor signal:	RGB, R-G, B-G, ENC
Pick-up tubes:	2/3" SM Diode Gun Plumbicon®
Filter:	3000°K, 5600°K, 5600°K + 25% ND, CAP
Lens mount:	Bayonet, interchangeable with HL-79

(PERFORMANCE)

Sensitivity:	2000 lux F4.5
S/N ratio:	60dB
Resolution:	More than 650 TVL
Registration:	Zone 1 0.05%
	Zone 2 0.1%
	Zone 3 0.2%
Geometric distortion:	Less than 1.5%
Power consumption:	12W
Ambient temperature:	-20°C - +50°C (-4°F - +122°F)

SYSTEM

(WEIGHT)	
Camera (includes VF and Shoulder Pad)	3.0kg
VTR Adaptor	0.6kg
Lens	1.5kg
VTR (BOSCH 1/4")	2.9kg
Battery	1.0kg
Total	9.0kg

Plumbicon® : Registered Trademark of N.V. Philips.

IKEGAMI ELECTRONICS, INC.

37 Brook Avenue
Maywood, NJ 07607
(201) 368-9171

BROADCAST COLOR VIDEO CAMERA



Ikegami HK-357A

The following systems are contained in the camera head: sync generator, video processing and deflection circuitry, detail corrector and color encoder. Self-contained operation only requires application of AC power to the camera head. The genlock module for the camera permits synchronization of the self-contained camera to an external system from a single VBS or BBS signal.

Pickup tubes

Three types of 25mm Plumbicons® may be utilized: conventional XQ-1070; high resolution ACT XQ-1500; and the newly developed diode gun Plumbicon® XQ-2070, the picture output is of very high resolution, low lag, low noise and wide dynamic range; ACT Plumbicons® reduce comet-tailing from highlight signals as much as 32 times above normal peak video levels.

DBS and DBF circuit

A DBS (dynamic beam stretch) circuit and a dynamic focus circuit are employed. The DBS circuit improves beam starvation 4 stops over the iris range. Dynamic beam focus (DBF) circuit reduces tube beam landing errors and improves corner modulation.

Base Station

The base station performs 4 essential functions: camera head remote control, genlock control to external reference synchronization, monitoring and camera power supply.

With monitor signal selection made at the base station, all conventional picture and waveform monitoring functions may be interlaced from camera head to base station, either by multicore or triax cable, using normal video output channels.

Gen Lock system

There is additional equipment versatility for field operation: the system can gen lock to VBS/BBS or sync and SC signals. An innovative gen lock system employs no digital commands. As such, it provides very stable gen lock with minimal jitter and phase errors in the color subcarrier and horizontal timing pulse. This holds true when triax or multicore cable is employed. Should external reference signals be cut off, or any other irregularity, a built-in detector automatically triggers the digital command to change over from gen lock to internal sync to continue output signals without interruption.

Chroma key

Formed key signal can be applied through the monitor channel from the base station. Hue and clip can be remote controlled.

Knee control

There are four pre-set positions for level compression: OFF, A, B, C. Adjustment for changed scene conditions is instantly effected. Easy return to pre-set position without test equipment use.

Price Upon Request

B-552

Miscellaneous

Detail Gain Control by four preset controls from the base station. Automatic Phase Control and Cable Compensation. High Optical Efficiency Prism Beam Splitter. Geometry Correction Circuits permit precise registration. Signal to Noise Ratio Exceeds 53dB. Viewfinder is fully tiltable and rotatable. 1" diode gun tube allows a performance response of more than 70% at 400 TV lines.

Easy maintenance

All camera modules (card types) and control functions are located on one side of the camera. Connectors are also located on the camera sides rather than on the bottom. Further, no relay is used in the HK-357A, extremely enhancing maintenance and reliability.

Zoom lens

Diascope-equipped lenses are available. These permit automatic setup of video and deflection functions without use of an external test chart. Using an Ikegami one-touch lens mount, the zoom lens of HK-357A can be connected directly with the camera head, removing a cumbersome zoom connection cable.

Auto module

Auto iris/auto color balance (white and black) modules are incorporated in the camera head. This makes possible fully automatic operation of self-contained or systems camera. The detection circuit in the auto iris is capable of sensing peak video or APL, or variable combinations of peak and APL.

Various correction circuits

White and black shading correction circuit compensates for both bias light and tube shading. An adjustable white clip circuit prevents and excessive video signal from causing video amplifier overload. Level suppression circuitry (knee control) permits the video processing amplifier to accommodate scenes of high contrast ratio. Reproduction of bright backgrounds is rendered without overload, while information in the shadow areas is amplified with full resolution and without added noise. A continuously-variable gamma correction circuit ensures accurate gamma tracking adjustment. Flare compensation allows for increased black level due to variation of scattered light on the pick-up tube face plate as the lens iris opens.

Control by microcomputer

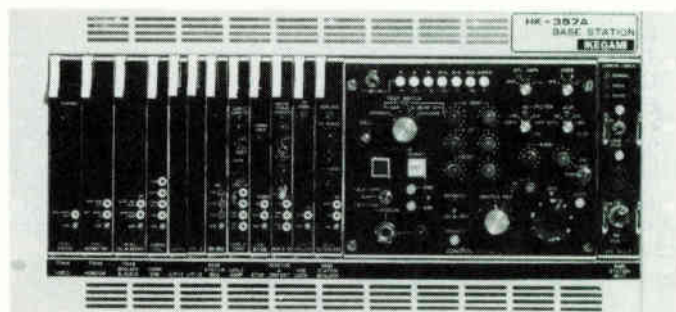
Push-button auto set-up controls at either Base Station (control panel/control box) side or auto set-up box side permit adjustment of registration, black balance, gamma correction, and much more, and all of this happens within 60 seconds for each unit.

As many as six cameras can be controlled, regardless of which cable mode is employed for individual cameras. Each camera unit supplies power to the corresponding data unit, which retains data in its memory.

Registration error between set up on diascope pattern and through the lens image due to lens color aberrations can now be minimized by new program.

Once the lens error information is stored in the DAC unit memory, it should not require update except in the case of tube replacement or DAC unit change.

Preset function has been added for registration allowing the camera to be registered manually and this information can be entered in memory.



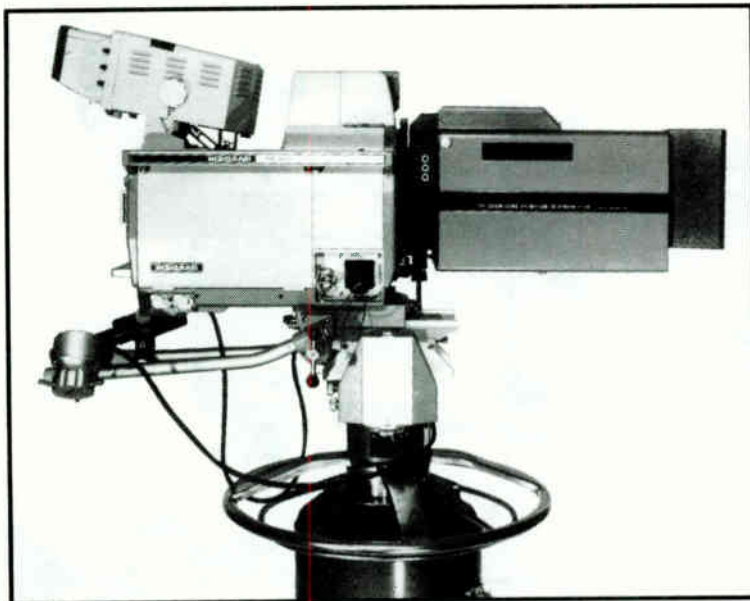
• Universal Base Station (19" x 8-3/4" x 20")

Prices and Specifications Subject to Change Without Notice.

IKEGAMI ELECTRONICS, INC.

37 Brook Avenue
Maywood, NJ 07607
(201) 368-9171

BROADCAST COLOR VIDEO CAMERA



Ikegami HK-322

The fully automatic television camera. IKEGAMI introduces its newest and most advanced studio color camera: The IKEGAMI HK-322, a fully automatic television camera system. The HK-322's Master Control Panel contains a computer to perform all of the setup functions automatically.

Several other TV cameras have computerized automatic setup controls—but it takes a lot more than just a computer to produce top quality color.

Ikegami has that extra something: color technology. So, when you get an HK-322, you're not just getting a fully automatic camera — you're getting excellent picture quality, superior craftsmanship, and many non-computerized, automatic correction functions.

Television cameras aren't just a sideline at Ikegami — they're the mainstay of our business. And when it comes time to choose the camera that's going to show off your productions best, remember IKEGAMI: the TV-Camera Specialists.

Camera head

Camera setup functions performed by the digital control system contained within the MCP. This information is stored in a camera memory system. The camera becomes a "black box", requiring essentially no internal adjustments.

Among the design highlights included are:

- Precise geometry of less than 0.1% distortion
- Superior registration accomplished digitally resulting in minimal errors, maintained with 0.05% throughout the entire picture area
- Independently adjustable bias lights for R, G and B channels
- 8 pre-programmable zoom lens and diascope error correction modes
- ND and Color Correction filter wheels quickly removable "CASSETTE fashion" for easy maintenance or special effects filter insertion
- Zoom lens heater power is available when the head power is turned off
- Video and power is provided for a video prompter system
- Dual tally system
- Two channel return video
- Dual Mic amplifiers
- S/N ratio of 56dB
- Horizontal resolution — 60% performance response at 400 TV lines.

Camera Control Unit

Similarly to the camera head, the CCU's memory system retains the setup control data from the MCP. The "black box" concept permits the mounting of the CCUs out of the control area. Several features are to be noted:

- Totally automatic cable compensation for up to 600m of small diameter multicore cable
- Plug in FM Triax system with an operational range of 1500m
- Digitally controlled automatic shading correction
- R/G/B Detail corrector employs a novel design. Picture detail is no longer lost in red or blue picture content as is common with the "contour out of green" principle
- Chromakey (option)
- Negative video (option)
- Color Corrector (option)

Automatics

Basic automatics, other than CPU setup, include:

- Auto White Balance
- Auto Iris Control
- Dynamic Beam Stretch
- Auto Cable Comp.
- Auto Pedestal Control
- Auto DTL Level Control
- Auto Optical Cap.

Special Effects

- H and V deflection reversal, with stored linearity correction
- Negative video permits R/G/B video polarity reversal
- Horizontal deflection modulation for "dream scenes."
- Scene compression and expansion for improving high contrast and/or hazy scenes
- Various effects may be stored in a data file. Up to 8 presets may be retrieved on command

The OCP controls the camera during normal "on air" operation

After initial setup, each camera may be operated by it's individual OCP, independently of the MCP.

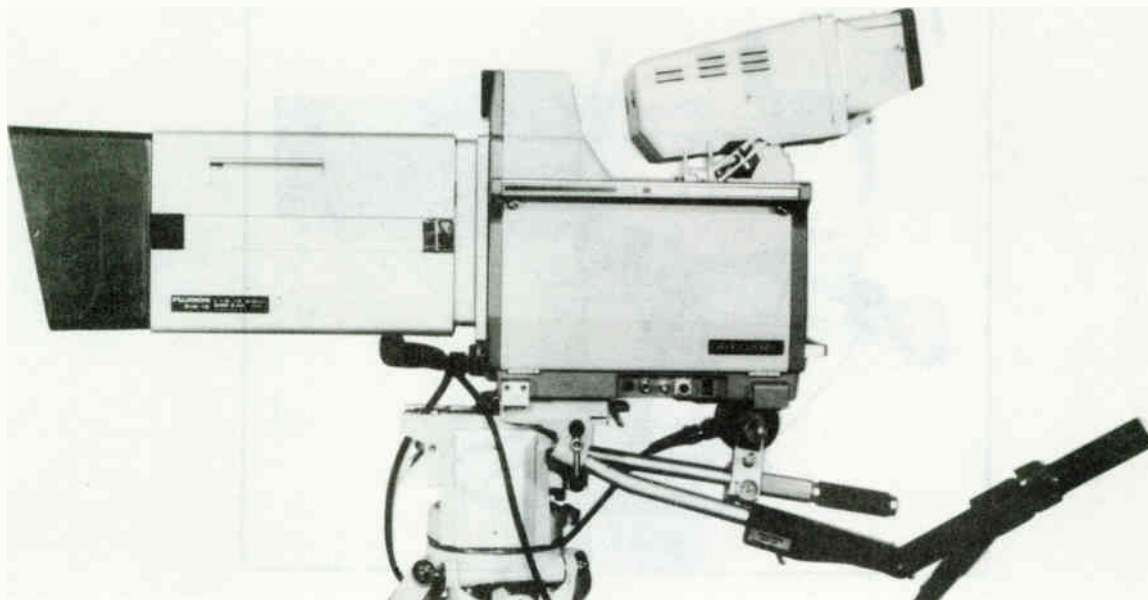
One Master Control Panel can control up to 10 cameras directly by using a Camera Selector Unit (CSU). By the addition of a Studio Selector Unit and other CSUs, up to 10 camera groups or a total of 100 cameras may be controlled by a single MCP. For backup purposes, a second MCP may be connected in parallel.

In addition, to provide up to 10 studio parallel Automatic Setup capability, additional CPUs may be added for each of the studios.

IKEGAMI ELECTRONICS, INC.

37 Brook Avenue
Maywood, NJ 07607
(201) 368-9171

BROADCAST COLOR VIDEO CAMERA



Ikegami HK-302

The Ikegami HK-302 is the workhorse camera for studios that want network-grade color at an affordable price.

With the HK-302, you'll be getting a standard, rugged, reliable studio camera. You'll find the HK-302 easy to use because it's compact and light in comparison with other studio cameras. Yet, just the right amount of automatic controls have been left to make superb color with a minimum attention from a video operator.

Performance

PICK-UP TUBES

The HK-302 uses three 2/3" Low-capacity Diode-Gun Plumbicons®. Diode-Gun tubes XQ-2427, or equivalent may also be ordered.

OPTICAL SYSTEM

The color-separation prism is tops in efficiency and performance. We've mounted the yoke assemblies directly on the optical block to prevent any mechanical registration errors. Bias light can be introduced through the prism if not available from the pick-up tubes. An IR filter assures correct colorimetry with extended red PbO's.

QUALITY COLOR

The HK-302 has an adjustable matrix to improve overall colorimetry of the pick-up tubes and prism, and to provide high fidelity chromatic performance. Both black shading and amplitude modulated shading circuits are employed to produce a uniform field.

DETAIL CORRECTOR

A 2H-delay detail corrector enhances the picture vertically and horizontally. Noise suppressor and threshold circuits maintain a high S/N ratio of 57 dB.

DYNAMIC BEAM STRETCH

Ikegami's DBS (Dynamic Beam Stretch) circuit minimizes comet-tailing.

SYNC SYSTEM

The HK-302 satisfies EIA RS-170A standards which prescribe relationships for horizontal and subcarrier phases for correct color framing. Horizontal blanking width and vertical blanking width can be adjusted over a wide range. The HK-302 has an internal sync generator. Genlock is possible using VBS or BBS as an external sync signal, or from sync and subcarrier input signals.

Price Upon Request

CONTRAST EXPANSION CIRCUIT

Produces a sharper image in fog or haze—400 TV lines, 50% performance response.

Improves pick-up tube beam landing errors, resulting in excellent corner focus.

VIEWFINDER

A tiltable, high resolution 6" viewfinder is standard. A high-brightness, 7" viewfinder is optional.

Easy operations

SET-UP

To simplify camera setup, there are four types of test pulses: preamp set, gain set, gamma set, and reference pulse. Speedy and exact setup is possible. The video circuits can be checked with the pick-up tubes turned off or removed.

COLOR BAR GENERATOR

A split-field color bar generator facilitates simplified encoder adjustments.

AUTO IRIS

To assist the video operator in fast changing scenes, auto iris circuitry may be activated by a switch on the control panel.

FILTERS

Two independent filter wheels contain five sets each of ND filters and color temperature conversion filters. The filters can be selected either manually at the camera head or controlled electrically from the CCU.

CABLE COMPENSATION

Video frequency equalization is adjustable in 50 meter steps. Timing is automatically corrected.

CCU MULTIPLEXER

Digital multiplexing of camera control signals vastly reduces the amount of conductors used in a camera cable, thus reducing its size requirement.

LENSES

Normally, the HK-302 uses a 2/3" studio zoom lens; it can, however, take a 1"-studio or 2/3"-ENG zoom lens. Lenses are easy to mount on the HK-302's quick disconnect wedge mount.



SC-500 STUDIO CAMERA

A new economical professional studio color-TV.

The new viewfinder camera, employs three 2/3" pickup tubes and a prism-optics system to produce pictures of superb clarity and color fidelity. The sturdily built, easy-to-service camera can be relied on to keep performing under the most demanding studio conditions.

Features

- Dynamic focus to ensure superior corner resolution
- Deflection distortion corrector for extremely low registration error
- Detail corrector for crisp, sharp images
- Black and white full shading correction
- Video matrix to provide accurate color matching between cameras
- Servo-controlled filter disc
- +6/ +12dB video gain switch
- Dynamic beam stretch
- Return video
- Level suppression to accommodate high-contrast scenes

Automatic Features

- Automatic centering control
- Automatic iris with weighting system
- Auto cap for tube protection
- Auto white and black balance
- Auto black level
- A newly developed non-volatile memory retains all the automatic correction data for several years, even when power is removed.

A zebra-pattern video signal indicator in the viewfinder ensures optimum matching of video signals and a built-in split-field color-bar generator is provided. A character display in the viewfinder permits easy monitoring of camera status while the camera is being used.

Fully modular construction is employed to simplify service and maintenance. Plug-in printed-circuit boards, divided according to circuit function, are utilized. All major controls are located in front of each unit to facilitate adjustments.



ITC-730A

IKEGAMI ITC-730A

Ikegami introduces the ITC-730A, a compact, professional, and economical camera capable of consistently producing quality pictures of fast-breaking events. The ITC-730A is the perfect answer for the cost-conscious TV station or cable operation that wants a multi-purpose, high-quality ENG/EFP camera that's easy to maintain.

PERFORMANCE FEATURES

- Saticon II pick-up tubes
- A built-in high-speed (f/1.4) prism beamsplitter produces pictures with excellent sensitivity, resolution, colorimetry, and high sensitivity (f/4.0 at 2000 lux)
- A high-performance FET is built into the coil assembly to offer pictures with an excellent signal-to-noise ratio of -57dB
- A bias light is incorporated to reduce lag, designed especially for critical low-light scenes
- A 2H detail corrector assures an excellent, crisp, sharp image
- The camera employs a deflection distortion corrector to make images with extremely low registration error
- To ensure superior corner resolution, a dynamic focus is employed

OPERATIONAL FEATURES

- The lightweight camera head is well balanced on the shoulder, so there is no feeling of fatigue during extended operation
- Rugged camera head: The camera head is made from a tough, magnesium diecast alloy
- The lens mount is the same size as that on the ITC-350A and HL-79D cameras. Perfect interchange among lenses is possible—meaning you can use a wide variety of ENG-type high magnification lenses with any of these cameras
- An auto iris control system is used to enable iris control from peak to average levels
- The auto iris closes automatically to protect the camera pickup tubes from damage whenever the power is cut off
- To maintain optimum video quality under all indoor and outdoor conditions, the ITC-730A incorporates a color temperature filter wheel. Indoors: 3200°K, Outdoors (cloudy weather): 5600°K, Outdoors (sunny weather): 5600°K + 25% ND, CAP: Blind

SYSTEM CONNECTION FEATURES

- A built-in genlock feature (standard) makes external sync (VBS/BBS signals) operation possible by a coaxial cable
- When the supply of genlock signals stop, the camera is automatically switched over to the internal sync operation
- There is easy control of subcarrier phase and horizontal sync phase at the camera head
- Horizontal and vertical blanking widths can be controlled separately
- SC-H phase relationship meets EIA RS-170A
- Gamma correction is continuously adjustable in each video channel to permit easy matching to other cameras
- By connecting the CCU-730A, a variety of remote control operations, such as those shown below, are possible

- | | |
|------------------------------------|---|
| 1) Iris | 8) Color bar switching phase |
| 2) Manual/Auto switch-over of iris | 9) Subcarrier phase control |
| 3) Master pedestal | 10) Horizontal sync phase control |
| 4) R/B pedestal | 11) Nor/Mid/High (0/ + 9/ + 18dB) Gain switchover |
| 5) Painting with R/B-knob | 12) Camera call |
| 6) Painting with R/B-knob | 13) R/B H-centering |
| 7) Auto white setting | 14) R/B V-centering |

- The 5-inch viewfinder is equipped with a tilting mechanism mount for studio use. (A 1.5-inch viewfinder for portable use is also available.)

CAMERA CONTROL UNIT

- The ITC-730A CCU mounts into a 19" rack, height is 3.5"
- The CCU-730A compensates for cable lengths up to 300 meters. Cable diameter is 13mm. Cable compensation positions are 15/100/200/300 meters
- The standard unit can be operated from Camera Head power, a battery, or other DC power source
- Horizontal phase is automatically controlled by APC (Auto Phase Control) system regardless of cable length
- Utilizes a power source with a remote sensing function which automatically supplies a fixed voltage to camera head, regardless of cable length
- RGB signals (with one channel provided for each), simultaneously fed out from the CCU, may be utilized for chroma key signals

IKEGAMI ELECTRONICS, INC.

37 Brook Avenue
Maywood, NJ 07607
(201) 368-9171

COLOR TELECINE CAMERAS

TTC-150 System

High grade 3-tube prismatic color camera

The ITC-240 high performance color camera forms the central part of this unique system. Colorimetry, picture resolution and shading are uniformly excellent. A highly compact prism optical multiplexer and automatic light control unit is utilized on a rigid rack frame.

Superior quality images are obtained from the slide projector, super/single 8 mm film projector and 16 mm film projector. An opaque card projector can be optionally employed.

Field lens system construction makes possible easy, cost saving camera assimilation in existing systems. Moreover, adjustment is simpler than most competitive systems. S/N ratio better than 47dB, horizontal resolution of 550 lines or better at center.

Pedestal construction on rigid channel base

Individual pedestals are provided for each main component. Mechanical vibration originating in one pedestal cannot spread to other units of the island. A standard 19-inch rack is employed for the camera pedestal, the lower half of which is available for accommodating other equipment.

Standard axis height

A standard optical axis height of 1220mm facilitates interchangeable use with broadcast-quality projectors.

SPECIFICATIONS

Overall Construction

Floor stand type on channel base with standard 1220mm optical axis height

Camera Rack

Standard 19" width rack type

Optical Multiplexer

Fixed half-mirror prism type

Auto Light Controller

ALC-710 Variable density ND

ALC ND Filter

Transmissivity 0.92 to 92%

Telecine Control

(1) Remote/local control selection

Panel Function

(2) Slide projector lamp on/off; (3) Slide change normal/reverse selection; (4) Slide change; (5) 16mm film projector start/stop (6) 16mm film projector lamp on/off; (7) 8mm film projector start/stop; (8) 8mm film projector lamp on/off

Power Supply Unit

(1) Control relay system; (2) 24 VDC power supply; (3) 2 channels Audio input; (4) 2 channels Audio output; (5) Color corrector by RGB

Overall Dimension

1512 x 1875 x 1636mm

Overall Weight

160 kg approx.

Power Requirement

120 VAC, 60 Hz

OPTIONAL AUDIO AND VIDEO MONITOR PANEL

Audio Inputs

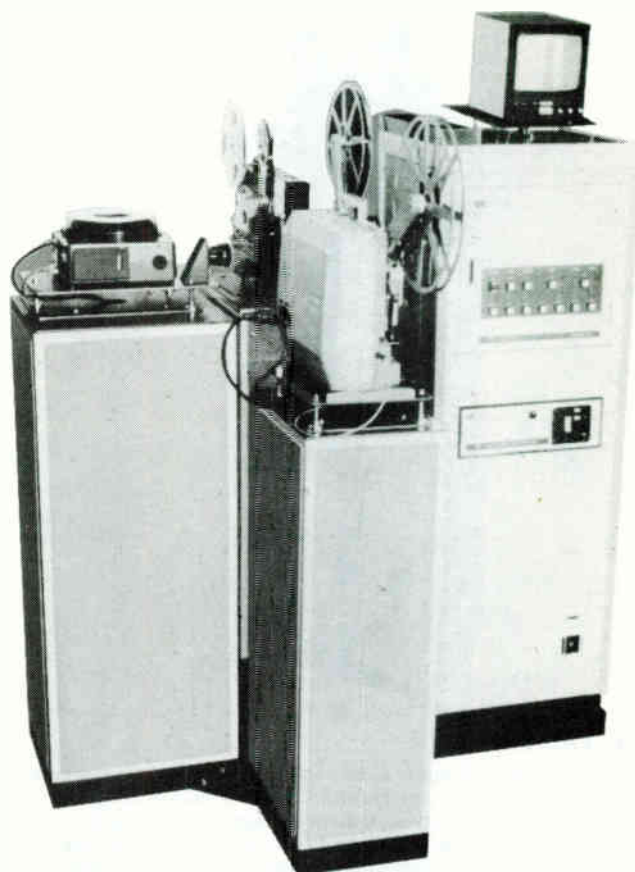
2 channels, 600 ohms 0 dB unbalanced

Audio Outputs

2 channels, 600 ohms 0 dB balanced

Audio Monitor

Monitor speaker built-in VU meter built-in



TTC-150

Video Inputs

G, B, R, ENC, Aux. and EXT. G

Video Monitor Select

G, B, R, -G, Enc., Aux.

Waveform Monitor Mode

G/B, G/R, B/R, Enc., Aux., Ext. G, Super Seq.

Video Outputs

(1) Picture monitor output; (2) Waveform monitor output

COLOR CAMERA SECTION

TCS-15/24 Telecine Camera Chassis Consists of: Camera Head Mount Assembly, TMP-15 Prism Multiplexer Unit, ALC-710 Auto Light Controller, Local Control Panel with cable, Camera Taking Lens (F:4.5, 90mm), CCU Rack Mounting Chassis for Head Color Camera System

ITC-240S Color Camera System

TPU-15 Power Supply Unit w/Color Corrector

TCR-15/24 Telecine Camera Rack Consisting of Rack with Ventilation Fan, Tally Lamp, Monitor Panning Mount and Blank Panels

TCB-15/3 Telecine Channel Base

TCP-15/8 Telecine Pedestal for 8mm Film Projector

TCP-15/16 Telecine Pedestal for 16mm Film Projector

TMU-15 Audio and Video Monitoring Panel

TRC-15 Telecine Remote Control Unit

TRC-1515 15m Remote Control Cable w/Conn.

TRC-1530 30m Remote Control Cable w/Conn.

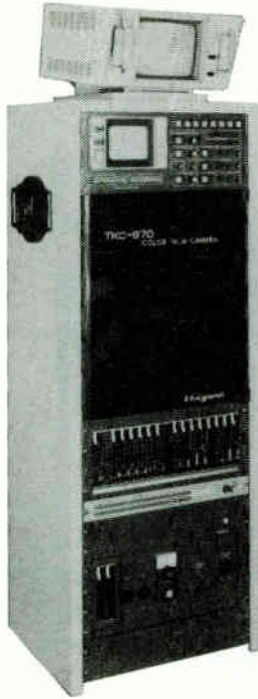
TRC-1540 40m Remote Control Cable w/Conn.

TRC-1550 50m Remote Control Cable w/Conn.

IKEGAMI ELECTRONICS, INC.

37 Brook Avenue
Maywood, NJ 07607
(201) 368-9171

COLOR TELECINE CAMERAS



Ikegami TKC-970

The TKC-970 is one of Ikegami's best color telecine camera systems. Featuring top-quality picture, faithful color reproduction and high reliability, it answers today's demands from professionals for a top-grade telecine camera, adopting 1" tubes with electromagnetic focus and electromagnetic deflection systems. The TKC-970 employs a prism splitting system with 86 x 115mm image size. Thanks to the adoption of space focusing on an object, any dust adhering to the lens seldom appears as such on the picture. When a telecine camera with the same image size is replaced by the TKC-970, related equipment previously used can be employed without modification. By selecting a field lens, the TKC-970 can be freely combined with various projectors. Further, equipment layout planning can be effected with due regard to operability.

TOP-QUALITY PICTURE, FAITHFUL COLOR REPRODUCTION

- By adopting a Pre-Pre-amplifiers system employing high S/N FETs, the S/N ratio has been greatly upgraded.
- Registration has also been further enhanced by employing newly designed yoke assemblies and a registration corrector.
- Thanks to adopting dynamic focus, resolution at the corners has been improved. (700 lines at center; 600 lines at corners).
- The TKC-970 is provided with a black shading correction circuit.
- White shading correction is available in three modes.
- A bias light incorporated in the TKC-970 reduces lag in dark picture areas.
- A crisp, high-quality picture is attained by employing an optical black and a flare compensation circuit.
- A horizontal/vertical detail corrector with an auto-edge circuit constantly provides appropriate corrected pictures.

VARIOUS AUTOMATIC SYSTEMS

Added to the conventional automatic systems (ALC, AWL, ABL, optical black, etc.) are incorporated new automatic systems.

- The edge circuit in the detail corrector circuit is provided with auto level control for assuring constant, most rational correction.
- Auto Light Control (ALC) is incorporated in the TKC-970's optical system.
- Auto Color Balance functions—Auto White Balance (AWB), Auto Gamma Balance (AGB), and Auto Black Balance (ABB)—are provided. These balance controls maintain the best color-balance pictures during On-Air.

COLOR CORRECTION CONTROLS

- An optional color corrector unit permits correction of hue and saturation of R, G, B, Y, C, and M respectively. Also, this unit is available in three presetting modes.
- The masking unit is provided for correct color matching among cameras.
- A gamma selector is included on the TKC-970 control panel. Overall gamma of 0.55, 0.6, 0.65 and 0.7 may be applied according to the status of the film material.

HIGH RELIABLE CONTROL SYSTEM

- Since all controls from the exterior are stored in the camera, an abrupt power failure does not require readjustment.
- A digital semiconductor in the control system, including a monitor circuit, greatly enhances reliability.
- Multiplexer control is possible from the camera thanks to the multiplexer select switch on the control panel.

EASY-TO-OPERATE MONITOR SYSTEM

Selection is made from the following items through piano-key-touch operation.

- PM Select; R, G, B, R-G, B-G, -G and ENC.
- WFM Select; PRE SUP, PRE SEQ, PROCE SUP, PROCE SEQ, PROCE RG, PROCE BG, ENC.
- When the camera power supply is turned OFF and then turned ON again, PM Select is automatically set to 'ENC', while 'PROCE SEQ' is automatically selected on the WFM Select.
- The SEQ indication employs a horizontal system.

COMBINABLE WITH OTHER EQUIPMENT

Two types of field lenses are available, and the projection direction (right and left) for the TKC-970 can be selected, enabling a combination with various projectors. For 16 mm film projectors, an aplanatic TV film lens (f:67 mm, F:2.5) is available.

EASY OPERATION AND MAINTENANCE

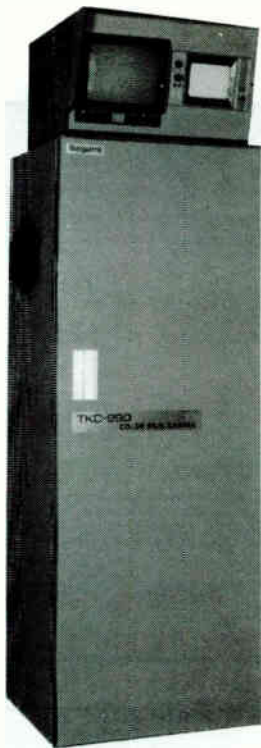
- A test chart, test pulse, and color bar are incorporated respectively in the optical system, amplifier system, and encoder.
- Preamp and process-amp are composed of separate R, G, B amplifiers of the same structure, greatly facilitating replacement and maintenance.
- Since all dual-in-line IC's are socket types, replacement and maintenance of semiconductors are facilitated.
- The target voltmeter employs digital display.
- The ND filter position is indicated by LED.
- Various check meters for power supply voltage are provided.
- Two timers (camera operation time display and tube operation time display) are provided.
- The registration corrector circuit is incorporated for easy registration control.
- Beam setting at 150% can be easily effected by means of a Beam Set switch.

VARIOUS PROTECTIVE CIRCUITS

- Camera Tube Protection: Automatic camera tube protection is provided in case of sweep failure either horizontal and vertical scanning.
- Camera tube heater voltage is lowered during Beam-Off.
- Should short-circuiting occur, the power supply is restricted by internal protection, preventing hazards.

IKEGAMI ELECTRONICS, INC.

37 Brook Avenue
Maywood, NJ 07607
(201) 368-9171



TKC-990 The High-Performance Telecine Camera With Computer Control

The Ikegami TKC-990 is a new multipurpose broadcast telecine camera suitable for "on-line" applications, such as local viewing or direct on-air broadcast and "off-line" applications, such as tele-production and video tape recording. For on-line applications, film characteristics can be uncorrected, manually corrected or automatically corrected.

For off-line applications, detailed operator scene-by-scene corrections can be established and stored for retrieval during subsequent playback of the film and transfer to video tape.

Outstanding performance and stability characteristics have been incorporated into the TKC-990. Setup, operation and maintenance controls for the camera, as well as color corrections for film types and corrections to normalize projector characteristics are microcomputer controlled and stored.

A 6-vector adjustable color matrix permits colorimetry setting to user preferences and match between cameras. The camera's built-in test pattern projector assures standardized setting of geometry and level parameters; simple centralized control of multiple cameras is made feasible by digitally addressing the memories built into each camera's body.

A sequential manual setup mode, fully automatic setup mode, as well as a rapid pre-operational auto check of user selected set-up parameters is available.

Performance Features

Optical System

- A built-in pattern projector permits computer control to get the same setting conditions among different cameras
- Large image field lens built into camera body assures long-term stability of optical alignment. Two (2) focal lengths are available
- Built-in neutral density wheel with fast attack rate for automatic white level control

COLOR FILM CAMERA

- Color separation is accomplished by a prism beam-splitter, with high transmission efficiency, minimum color shading, minimum ghosting and color errors
- Bias lighting to reduce pickup tube lag at low light levels is introduced via the prism. R/G/B bias lights, individually adjusted, are utilized
- Yoke is mounted directly on the optical block to minimize registration errors

Pickup Tubes

- Vidicon or Saticon® tubes, operated in the high voltage mode are usable to provide high resolution (700 TVL at center)
- A new and improved coil assembly together with dynamic beam focus (DBF) to reduce beam landing errors, results in improved corner focus and resolution (typically 600 TVL in corners)
- Digital deflection and shading circuitry optimizes overall registration geometric distortion and shading performance and also assures ease of tube replacement. The registration is within 0.05% and is stored in digital memory

Operational Automatic Features

The TKC-990 is capable of automatically correcting the video signal generated to reduce or correct problems due to various film errors. Without prior programming, electronic analysis and adjustment of the R/G/B video signals developed by the camera accomplish auto color balance by correcting white, gamma, and black. The automatic White Balance (AWB), Automatic Gamma Balance (AGB), and Automatic Black Balance (ABB) functions are coordinated with auto level compensation functions which are Auto Light Control (ALC), Auto White Level (AWL), and Auto Black Level (ABL).

Maintenance Conveniences

To simplify manual camera check-out, the TKC-990 is provided with the following:

- For monitoring purposes, the camera provides 2 sets of picture monitor (PXM) signals, 2 sets of waveform monitor (WFM) signals and the necessary keying signals for type 528 (or equivalent) waveform monitor
- For precision pickup tube adjustment, a synchronized focus wobble circuit is employed for the beam alignment procedure
- For accurate raster positioning, deflection overscan is available
- A new SMPTE color bar is built in

Specifications:

Rating:

Camera tube: 1" Vidicon tube or 1" Saticon® tube
Optical system: Dichroic prism system (Bias light for RGB built in) (Pattern projector built in) Image size: 86 x 115 (mm)

Input signal:

BBS 0.45 Vp-p, 75 ohm or high impedance
Sync 4 Vp-p (negative), 75 ohm or high impedance
SC 2 Vp-p (sinewave), 75 ohm or high impedance

Output signal:

Line output 4 channels (VB or VBS), 75 ohm
Video monitor 2 channels, 75 ohm
Waveform monitor 2 channels, 75 ohm
Power requirements: AC 100V, 110V, 120V, 240V; 50/60Hz
Power consumption: 600VA approx. (incl. picture monitor and waveform monitor)

Tally input:

Ambient temperature: DC 24V or contact closure
Weight: 0° + 40° C
200 kg (approx.) (incl. picture monitor and waveform monitor)

Dimensions:

W: 550; H: 1,500; D: 430 (mm)

RH SERIES COLOR MONITORS

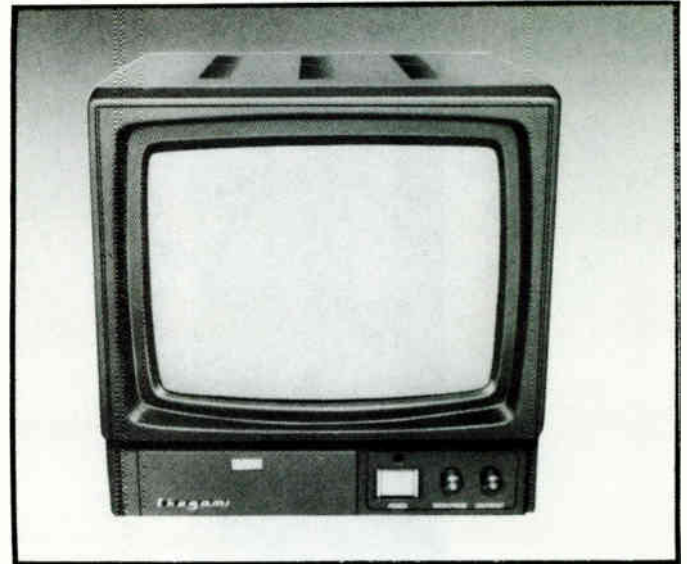
For professional high-quality color reproduction IKEGAMI "RH" Series Color Monitors TM14-2RHA and TM20-8RH.

These two high-resolution color TV monitors are faithfully serving hundreds of satisfied customers around the world where precise color monitoring is an absolute necessity. The comb filter in the decoder, the high-resolution CRT, the excellent stability and durability, and the facilitated maintenance . . . all these merits put the TM14-2RHA and TM20-8RH at the top of their field.

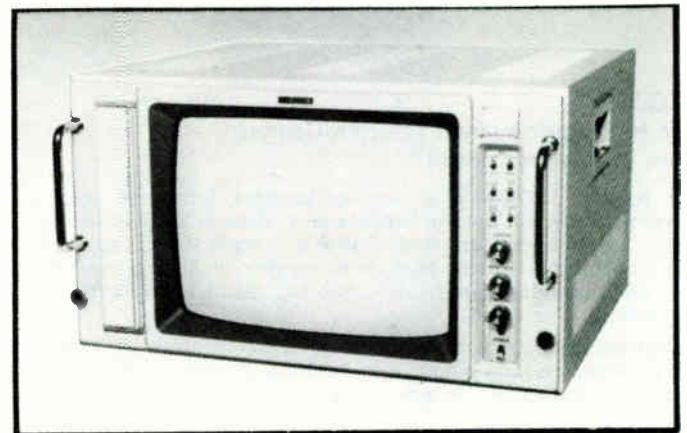
Installable in 19" rack mounts, IKEGAMI "RH" Series Color Monitors are widely applicable for color monitoring from the studio, control room, telecine room to remote O.B. van, and other uses.

FEATURES

- **High resolution CRT**
High-resolution color cathode ray tube provides bright, clear pictures. Highly condensed dots (dot pitch: 1/2 (TM14-2RHA), 1/1.5 (TM20-8RH) of that of conventional color monitors) promise excellent picture quality — more than 600 TV lines at center.
- **19" rackmount**
Installable in 19" rackmount by applying chassis tracks.
- **Comb filter**
A comb filter prevents deterioration of resolution in reproducing color signals. The number of TV lines is more than 600 at the screen center.
- **AFPC system**
An AFPC (Automatic Frequency Phase Control) system is adopted in the color lock circuit for accurately detecting color phase demodulation and ensuring faithful color reproduction.
- **Pulse cross circuit**
A pulse cross circuit is contained to facilitate VTR sync signal checking. The vertical delay and horizontal delay can also be effected independently.
- **Sync gate lock system**
The sync gate lock system in brightness pulse causes no influence on linearity. Also, since picture output is DC-restored by a feedback gate clamp, the black level is stabilized and input signals are always faithfully reproduced.
- **Normal/underscan function**
A normal/underscan function is provided.
- **Preset brightness/contrast**
By presetting, the fixed level of brightness and contrast can be gained merely by switching, resulting in easy operation.
- **Remote control**
Color/monochrome selection, video input selection, sync selection, and black level compensation of setup signal can be remote controlled.
- **Active convergence circuit**
Adopting an active convergence circuit, screen adjustment has been greatly facilitated.
- **Countdown pulse drive system**
Employing a countdown pulse drive system in the vertical sync circuit, excellent interlacing is assured, while vertical sync regulation becomes unnecessary.
- **Degauss circuit**
An incorporated degauss circuit avoids the influence of a magnetic field. Wherever a monitor is installed, by merely operating a switch, any magnetic influence can be shut out.
- **Optional functions**
 1. RGB operation
 2. Switching between RGB and NTSC operation
 3. R-Y and B-Y signal outputs (TM14-2RHA)



TM20-8RH



TM14-2RHA/N

14" and 20" Series 8RH Monitors - Delta Gun Tube

- TM14-2RHA/N. 14" NTSC Rack Mount, Less Case and Chassis Tracks
- TM14-2 RHA/N/RGB. 14" NTSC/RGB Rack Mount, Less Case and Chassis Tracks
- TM20-8RH/N. 20" NTSC, Less Case, Requires T-TM20 for Rack Mounting
- TM20-8RH/N/RGB. 20" NTSC/RGB, Less Case, Requires T-TM20 for Rack Mounting

Optional Accessories for Series RH

- T-TM14. Rack Mount Chassis Tracks for all TM14-2RHA
- T-TM20. Rack Mount Chassis Tracks for all TM20-8RH
- HC-TM14. Case for all TM14-2RHA
- C-TM20. Case for all TM20-8RH

IKEGAMI ELECTRONICS, INC.

37 Brook Avenue
Maywood, NJ 07607
(201) 368-9171

COLOR MONITORS

9-SERIES COLOR MONITORS — In Line Gun CRT Type

Now, broadcasters have a second line of high-resolution color monitors to choose from; IKEGAMI's 9-Series Color Monitors. Like the RH-Series, these monitors were built to serve the professional. The 9-Series offer you in-line gun CRT's that do away with the bother of always having to adjust the convergence. You'll find the 9-Series easier to maintain with convenient pull-out panels on the front of the monitors. And to put you in step with the 80's, the 9-Series have a new streamlined look coupled with the merit of low power consumption.

FEATURES

- In Line Electron Gun: The CRT has an in-line electron gun; thus eliminating the need for convergence adjustments.
- High-Resolution CRT: The display produces crisp, precise images because the monitors use a fine-pitch, dot-mask CRT. A black matrix effect is provided on the CRT screen, enabling pictures to be displayed with a high contrast ratio even under bright lights — more than 600 TV lines at center.
- Pulse Cross Circuit: For observing sync signals, a pulse cross circuit with three functions has been included V. DELAY, H. DELAY, and V.H. DELAY
- Protective Circuits: The power supply and high voltage circuits are equipped with excess-current and excess-load protection, to prevent the CRT from being damaged. Sweep failure detection circuits are also utilized for CRT protection
- Signal Generator: Internal cross-hatch signal generator facilitates a convenient means of checking deflection linearity
- Video Input System: A 3 video input system is used with a selector switch located on the front panel
- Signal Demodulation: The IQ standard is used for color signal demodulation; remarkably faithful color signals are reproduced
- Automatic Frequency Phase Control: Extremely accurate color locking is possible with AFPC system
- Keyed Back-Porch Clamp System: A keyed back-porch clamp system is used, to prevent black level fluctuation.
- Comb Filter: The monitors have a comb filter for maintaining high-resolution in color images. Color trap/comb filter selection is possible
- Degauss Circuit: Internal degaussing circuit is provided. In addition, the CRT is equipped with a magnetic shield to prevent interference from external magnetic fields.
- Residual Subcarrier Test: A switch is provided for checking if residual subcarrier is present on the incoming signal
- Matrix Switching: A matrix switching circuit is provided to reproduce color similar to a TV receiver or NTSC standard
- Selectable Time Constants: Three types of horizontal-AFC time constants are selectable
- Optional Functions: RGB operation, Switching between RGB and NTSC operation

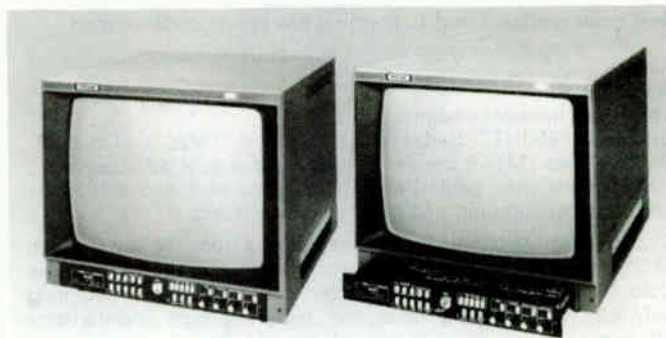
10" SERIES RH MONITORS

The TM10-9RH portable professional color monitor complements Ikegami's broad range of 14" (13V), 20" (19V) and 25" (23V) broadcast color monitors. Using a 10" (8.5V) high resolution shadow mask cathode ray tube with a self-converging in-line gun, the TM10-9RH can be operated from AC or DC Power and is available in cabinet or rackmountable versions. The rackmountable versions are 8-3/4" high and are furnished in single, dual, single with adjacent WFM space or single with adjacent Vectorscope space configurations.

American standard matched phosphors are utilized in NTSC versions of the TM10-9RH. Features including pulse cross, keyed back porch clamp, pre-set contrast/hue/saturation/brightness controls, on-demand degaussing, aperture correction, dual video inputs, sync mode selection, color/monochrome selection, individual electron gun cut-off switches, remote control capability, etc. are standard.



TM14-9RH



TM20-9RH

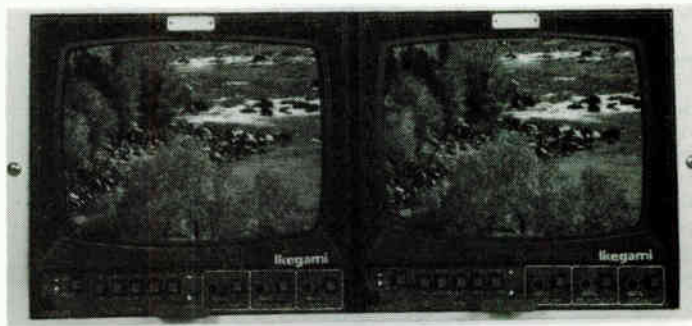
14" and 20" SERIES 9RH MONITORS — In Line Tube

TM14-9RH/N 14" NTSC - Rackmount
(less case and chassis tracks)

TM14-9RH/N/RGB 14" NTSC/RGB Rackmount
(less case and chassis tracks)

TM20-9RH/N 14" NTSC - Rackmount
(less case and chassis tracks)

TM20-9RH/N/RGB 14" NTSC/RGB Rackmount
(less case and chassis tracks)



TM10-9RH

8-SERIES COLOR MONITORS

IKEGAMI "EIGHT" Series Color Monitors TM25-8, TM20-8R, TM16-8, TM14-8, and TM14-8R are all solid-state, high-precision color TV monitors complying with the NTSC Color Television System. Available in four different screen sizes, these Series Color Monitors are specially designed for professional application in TV studios, promising high-fidelity color reproduction and ease of control for precise video monitoring. Adopting a three-unit modular design for facilitated maintenance and inspection, each unit can be easily fit into any standard "EIGHT" Series regardless of the CRT size, reducing spare units required for efficient continuous monitoring operation to a bare minimum — one set to be precise.

TM20-8R and TM14-8R are installable in 19" rackmounts.

Every model in the "EIGHT" Series boasts high reliability and excellent color rendition, not to mention low power consumption.

FEATURES

- **Three-unit modular design**

Standard "EIGHT" Series color monitors TM25-8, TM20-8R, TM16-8, and TM14-8 consist of a decoder unit, a deflection unit, and a power unit; while TM14-8R consists of a decoder/power unit, a deflection unit, and a convergence board.

Since the standard units are all the same size from TM14-8 through TM25-8, each unit can be installed in any standard "EIGHT" Series Color Monitor regardless of the screen size, consequently requiring only one set of spare units and featuring high maintenance efficiency.

- **Pulse cross circuit**

A pulse cross circuit is contained to facilitate VTR sync signal checking. The vertical delay and horizontal delay can also be effected independently.

- **Normal/underscan function**

Normal/underscan function is provided.

- **Preset brightness/contrast**

By presetting, the fixed level of brightness and contrast can constantly be gained merely by switching, resulting in easy operation.

- **Active convergence circuit**

Adopting an active convergence circuit, screen adjustment has been greatly facilitated.

- **Countdown pulse drive system**

Employing a countdown pulse drive system in the vertical sync circuit, excellent interlacing is assured, while vertical sync regulation becomes unnecessary.

- **Remote control**

Color/monochrome selection, video input selection, sync selection, and black level compensation of setup signal can be remote controlled.

- **Degauss circuit**

An incorporated degauss circuit avoids the influence of a magnetic field. Wherever a monitor is installed, by merely operating a switch, any magnetic influence can be shut out.

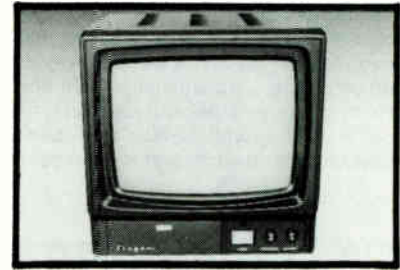
- **PLL system**

Since a highly stable PLL (Phase Lock Loop) system is adopted in the horizontal sync circuit, horizontal sync regulation is no longer required.

- **Keyed back-porch clamp system**

To eliminate black level fluctuation, a keyed back-porch clamp system is adopted in the video output circuit, promising constant highly stabilized pictures.

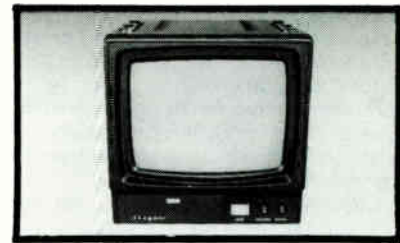
- Horizontal resolution at more than 600 TV lines at center.



TM25-8C

Dimensions: W677 x H617 x D596mm, W2'2-5/8" x H2'1/4" x D1'11-1/2"

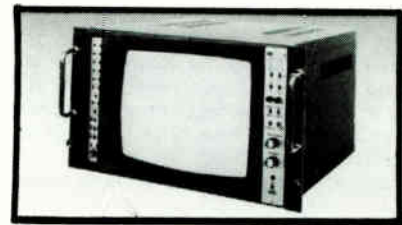
Weight: 65kg, 143 lb.



TM20-8R

Dimensions: W484 x H447 x D502mm, W1'7" x H1'5-5/8" x D1'7-3/4"

Weight: 45kg, 99 lb.



TM14-8R

Dimensions: W483 x H265 x D414mm, W1'7", H10", D1'4-1/8"

Weight: 28kg, 62 lb.

IKEGAMI ELECTRONICS, INC.

37 Brook Avenue
 Maywood, NJ 07607
 (201) 368-9171

COLOR MONITORS

IKEGAMI 10-SERIES HIGH RESOLUTION DELTA GUN COLOR MONITORS

TM14-10RH/TM20-10RH

The 10-Series of high resolution color monitors were developed specifically for higher image quality in TV production and are available in 13V and 19V versions. The high-resolution delta-gun CRT has realized high-resolution, high brightness, and the newly developed convergence circuit greatly facilitates convergence adjustment and operation.

Functions include:

- 3 video inputs each with bridging BNC connectors
- External sync input with a bridging BNC connector
- Pulse cross for examination of horizontal and vertical blanking interval
- Underscan/overscan selection switch
- Switchable AFC time constants for 2 msec, 0.5msec, and 7msec
- Push-button control for degaussing CRT Shadow Mask
- Blue phase verification — The Blue Gun On/Off switch facilitates chroma level and hue adjustments
- Preset controls for contrast, brightness, chroma level, and hue
- Residual sub-carrier verification, for evaluation of input signal condition
- Color/monochrome selection switch, to facilitate white balance adjustment
- Trap/Comb selection switch
- Corrective Matrix permits rotation of color decoding vectors towards NTSC aim points
- Multi-turn potentiometers are used for RGB Background controls, GB Gain control, Preset controls, and Height/Width controls for easy operation
- A tally lamp is provided

19" Rackmountable

TM14-10RH's are available in cabinet or rack configurations occupying 10-1/2" height. The TM20-10RH configurations are available in cabinet or rack configuration occupying 15-3/4" height.

Remote Controls

Video A/B/C
 Sync INT/EXT
 Color/Monochrome
 Tally On/Off
 V-VS Control



TM14-10RH



TM20-10RH

Controls found in pull-out drawer

TM14-10RH	TM20-10RH
• Operate-Setup Select	• Height/Width (Wide and U-Scan)
• Tally INT/EXT Power Select	• Delay Bright
• Height/Width (Wide and U-Scan)	• Aperture
• H/V Centering	• H/V Centering
• G/B Gain	• Convergence
• R/G/B Background	• R/G/B Background
• Convergence	• G/B Gain
	• Video Front Selector Cross Hatch
	• Video Local or Remote Select
	• AFC Select 2ms or VAR (0.5ms or 7ms)
	• Residual Subcarrier Verification on/off
	• Trap-Comb Select
	• Operate-Setup Select
	• Matrix In-Out Select
	• Tally INT/EXT Power Select
	• Hue/Chroma/Brightness/Contrast Preset

IMAGE VIDEO, LTD.

705 Progress Ave., Unit 46
 Scarborough, Ont., Canada M1H 2X1
 (416) 438-3940 Telex 065-25392

MASTER CONTROL

AUTOMATED MASTER CONTROL—MODEL 8100

Off The Shelf Broadcast Automation

Image Video now offers the world's first really practical automated master control system for broadcast applications.

The System is built around two components—a full capability master control (on-air) switcher with the most advanced features in the industry, and a state-of-the-art, plug-in automation system. The Automation Package has been kept to a minimal size with full function through the use of a Z-80® microprocessor. The Automation System simply plugs into the switcher matrix—no further hardware is required. So the master control switcher can be bought and used manually until volume makes the Automation System desirable.

The Design is based on six years experience in producing custom systems for major television and radio stations world-wide. All of the most advanced functions to date have been incorporated—you no longer have to sacrifice one function to get another. And because the Image Video Automation System is based on proven engineering, standard components and off the shelf hardware, your total package price is extremely competitive with units offering far less capability.

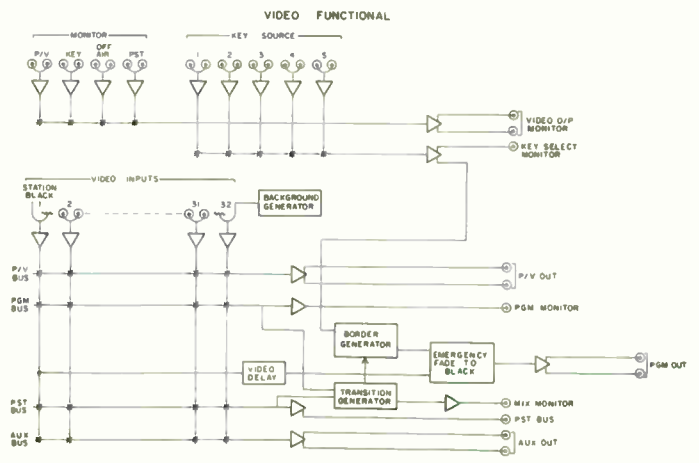
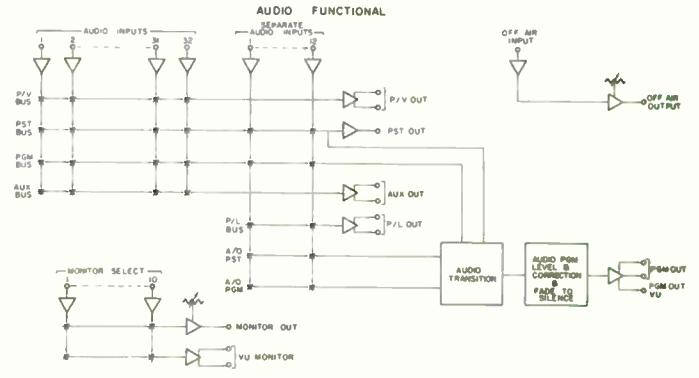
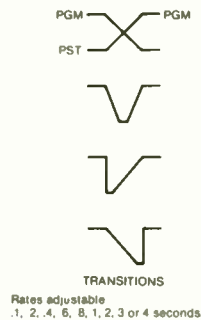
The System can interface with business systems for direct entry of accounting, traffic and other functions. Floppy discs are used for storage of daily programming and can be programmed with standard equipment off-line. A full 24 hours' events can be handled.

A printer is easily connected and back up processor is available.



Highlight Features:

- Electronic Digital Clock Timer indicates real time, elapsed time and countdown in 12 or 24 hour time modes. Provides for automatic time freeze as program events occur
- Automatic Pre Roll allows for stabilization of related equipment with adjustment increments of .01 seconds to 10 seconds maximum for each of the 30 inputs. Individual pre roll settings are achieved via a touch pad and protected against power loss.
- 4 Audio/Video Transition Modes
- Adjustable Transition Rates
- Start Facility on all Audio Inputs Available
- 40 Audio and 30 Video Inputs
- Audio/Video Married or Separate Operation
- Manual Fader Control
- Emergency Fade to Black for Video and Audio
- Audio and Video Preview Bus
- Separate Key Input Bus
- Colour Defeat Function
- Border Generator
- Matte Generator and Background Generator
- 5 Input Key Source Select and Monochrome Keyer
- 10 Separate Audio Inputs
- Continuously Variable Audio Over/Under Ratio
- Audio Level Correction Facility
- Comprehensive Audio Monitoring Facilities
- 48K of Ram for Data Storage
- 16K of ROM for Program Storage
- Dual 8" Floppy Discs for Off-Line Storage
- CRT Terminal For Data Entry and Status Display
- Line Printer for "As Aired Log" Available
- Optional 2nd CRT Entry and Display System and a Stand Alone Entry Disc Package



Z-80 is a registered trademark of Zilog Corporation

IMAGE VIDEO, LTD.

705 Progress Ave., Unit 46
 Scarborough, Ont., Canada M1H 2X1
 (416) 438-3940 Telex 065-25392

MODEL 8200 FEATURES

ELECTRONIC DIGITAL CLOCK TIMER
 Indicates real time, elapsed time, and countdown in 12 or 24 hour time modes. Provides for automatic time freeze as programme video events occur. Initiates transition to new source.

AUTOMATIC PRE-ROLL
 Allows for stabilization of related equipment with adjustment increments of .01 seconds to 10 seconds maximum for each of 30 inputs.

4 AUDIO/VIDEO TRANSITION RATES (PROM based)

Crossover, V-Fade, Cut-down and fade-up, fade down and cut-up.

START FACILITY ON ALL AUDIO INPUTS AVAILABLE

30 AUDIO/VIDEO INPUTS PLUS BLACK, BACKGROUND, SILENCE, and Audio Follow pushbutton.

5 DSK SOURCES AND LUMINANCE KEYS

4 VIDEO MONITOR INPUTS

SEPARATE DSK INPUT BUS

EMERGENCY FADE-TO-BLACK and SILENCE

BORDER GENERATOR

Matte, outline, border, drop shadow, key invert, border white, and fast or slow mix.

12 SEPARATE AUDIO/AUDIO OVER/PRELISTEN INPUTS

10 AUDIO MONITOR INPUTS

PPM METERS FOR AUDIO MONITOR AND PROGRAM LEVEL (PAL only)

CONTINUOUSLY VARIABLE (SLIDER)

AUDIO OVER/UNDER RATIO

AUDIO LEVEL CORRECTION FACILITY

COMPREHENSIVE AUDIO MONITORING FACILITY

ANNOUNCEMENT LEVEL CONTROL

REHEARSAL MODE

Allows production setup without affecting on-air program

12 PATTERNS AVAILABLE ON PATTERN SELECTOR (PAL only)

RGB KEYS (PAL only)

FULLY COMPUTERIZED SYSTEM

Permits increased reliability with four separate microprocessor control with individual memories.

Separate electronics and control systems for preset and program. System is functional even if panel control of the program bus fails; events can be taken on air by manual fader or Take pushbutton.

COMPUTER INTERFACE AVAILABLE

For control and monitoring devices e.g. another control panel, log printer, modem for remote control (telephone initiated preset selection and transition etc.), machine control.

SELF-DIAGNOSTICS BY MICROPROCESSORS

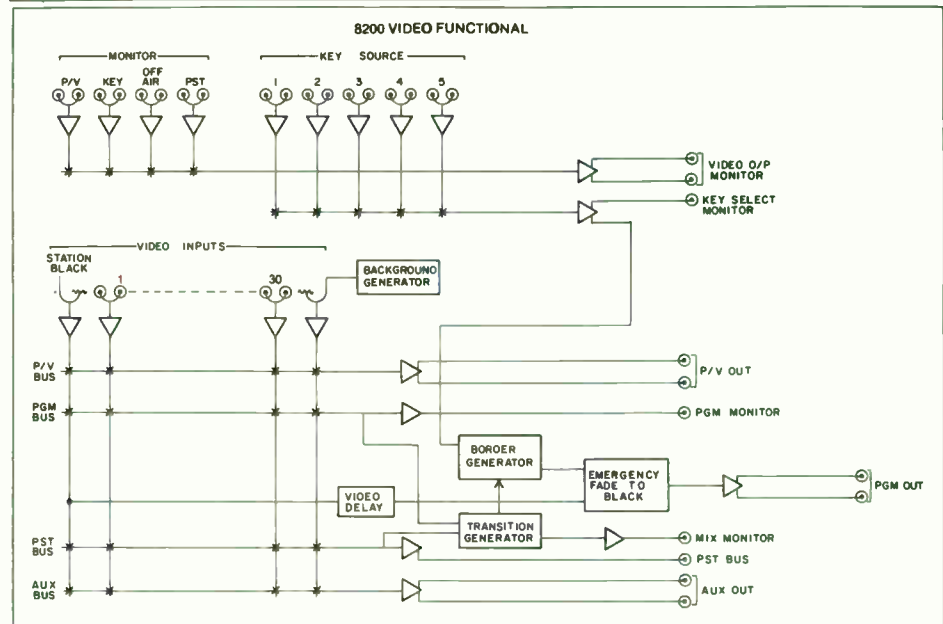
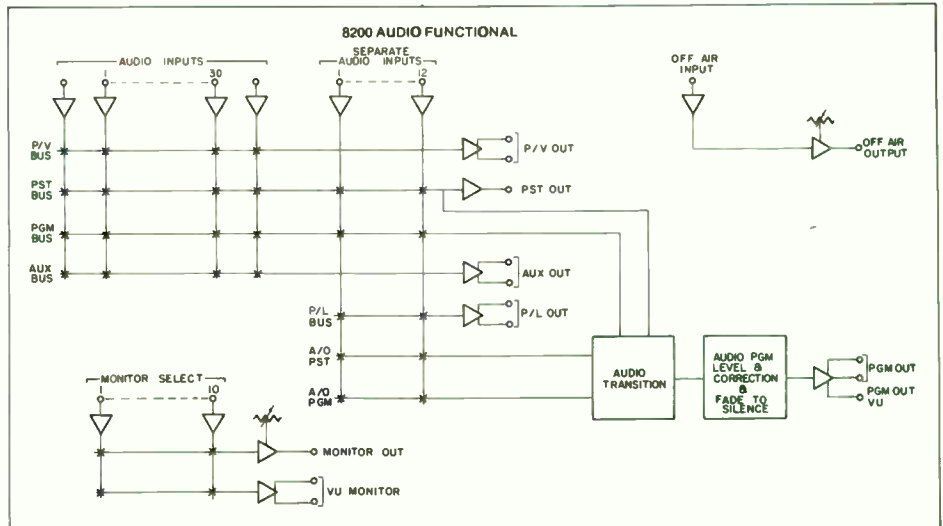
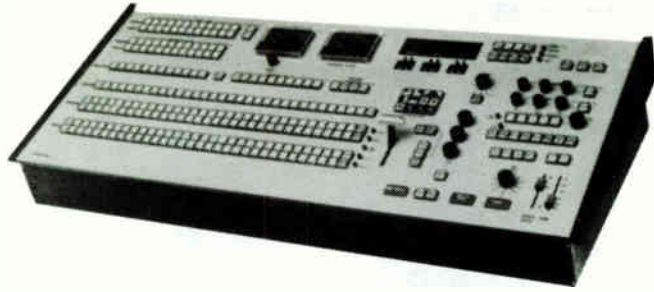
PROGRAMMABLE MODES OF TAKE OPERATION

PROGRAMMABLE MODES OF AUDIO OPERATION

STEREO AUDIO OPTIONALLY AVAILABLE INTELLIGENT START-UP AFTER POWER FAILURE

Maintains status after short power failure. Comes up black and silence after long power failure.

MASTER CONTROL



Electrical Power

120/240 VAC \pm 10%,
 50/60 Hz

Video

Number of Inputs 30 (standard)
 Input Signal Level 1V p-p Composite
 Input Impedance Bridging 75 Ohms
 Differential Gain 1%, 10 to 90% APL
 Differential Phase 1°, 10 to 90% APL
 Crosstalk -56db @ subcarrier - all inputs and buses hostile except input and bus under test.

Frequency Response \pm 0.1 dB to 5 MHz
 \pm 0.3 dB to 8 MHz
 Signal to Noise Ratio 70 dB rms to 1V p-p

Electronic Frame 21 rack units

Audio

Number of Inputs 30 Standard, 12 Separate
 Input Signal Level + 8 dBm nominal
 + 18 dBm test
 + 24 dBm maximum

Input Impedance 30K balanced
 Frequency Response \pm 0.5 dB, 20 Hz to 20KHz

Harmonic Distortion 0.1% at + 18 dBm
 Crosstalk 70 dB to 15KHz

Signal to Noise Ratio Better than -90 dB relative to + 18 dBm

Monitor Amplifier 10W output

Prices and Specifications Subject to Change Without Notice.

B-565

IMAGE VIDEO, LTD.

705 Progress Ave., Unit 46
Scarborough, Ont., Canada M1H 2X1
(416) 438-3940 Telex 065-25392

MACHINE CONTROL SYSTEMS

4100 Machine Assignment System

- Handles up to 160 Machines • Up to 24 Control Panels • Up to 25 Machines per Panel • Up to 35 levels of switching • Master start of preset functions • Tally of Remote/Local control • Communication via coaxial cable • Plug-in modules for flexibility and easy maintenance • Status generator and printer facility

System Controller

The organization is built around the System Controller which is made up of two sections; the Assignment Controller, and the Machine Controller. Each section contains a microprocessor and they communicate with each other via a multi-conductor cable in parallel format.

The Assignment panels all contain a microprocessor and communicate with the Assignment Controller via coaxial cable. The Assignment Controller handles the assignment of control panels and machine interfaces.

The control panels also all have a microprocessor and communicate with the Machine Controller via coaxial cable. The Machine Controller handles communications between the control panels and the machine interfaces.

Machine Assignment Panel

The machine assignment panel permits the assignment of any control panel to control any machine (VTR, Telecine) through the machine interface unit. It effectively interconnects the various control panels and the machine interfaces.

Assignment is made by simply entering the machine number and then the control panel number. Pressing ASSIGN completes the assignment. A machine cannot be assigned to more than one control panel. The communications link between a machine and a control panel is broken by entering the machine number and pressing CANCEL.

The machine and control panel numbers are three characters and do not have to be in any specific order.

Machine Interface

The machine interface is a two rack unit assembly capable of remotely controlling the functions of a machine. It consists of five Relay Tally Boards, a DIP Switch Board, a Line Driver Tally Board, and a Microprocessor Board.

Each Relay Tally Board is capable of seven levels of relays and seven return tallies. Pushbutton functions, e.g. Fastforward, are associated with each relay.

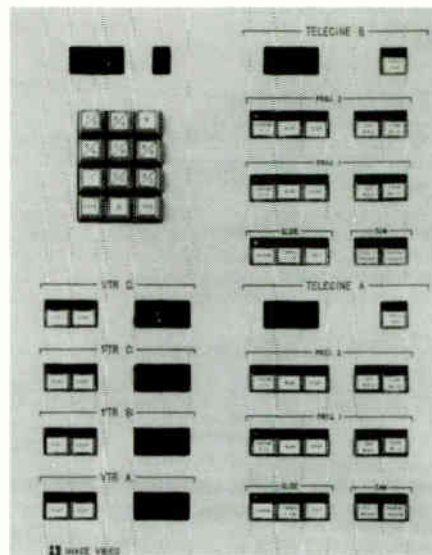
The Microprocessor Board communicates with the outside world and operates the relays etc.

The DIP Switch Board has DIP Switches for machine number assignment, relay close time, and baud rate etc.

The Line Driver Tally Board controls the remote tallies and confirms the presence of the power supplies.

Five 38-pin connectors at the rear of the frame interfaces between the relay boards and the actual machines being controlled.

VTR interfaces normally consist of 7 levels of control and Telecines normally have 21 levels. However, up to 35 levels may be controlled. The control is buffered via floating (form C type) relay contacts and the tally from the machine with an optical isolator.



Machine Assignment Panel



Machine Assignment System

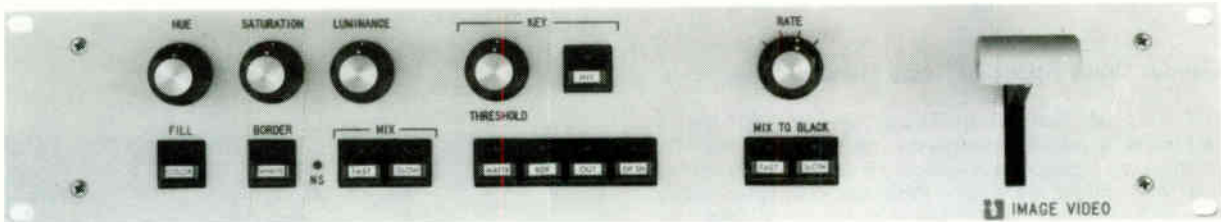
Control Panel

This desk mount panel provides control of the machines assigned to it. The number of machines to be controlled varies depending on specific customer requirements. The standard configuration is 3 VTRs with 7 levels of control and 2 Telecines with 21 levels of control each. Special control panels with up to 25 machines and 35 functions per machine may be specially ordered.

A three character alphanumeric display shows which machine is assigned to the bus. The machine numbers do not have to follow any specific order and there can be a total of 160 machines in a system. The numbers assigned to the machines should be specified at the time of ordering. A blank machine number indicates that no machine is assigned.

Operations may be preset on all of the busses of the control panel and with one button, the MASTER START, all the selected functions will be taken. Functions are preset by holding down the PRESET button and depressing the desired functions. Preset functions can be cleared by holding down the PRESET button and depressing the function button again. Presets can also be cleared when they are initiated by the MASTER START button.

A coaxial cable is used to interconnect the control panel and the System Controller. Clare Pendar or Shadow type pushbuttons are available.



8105 Border Generator

The Image Video Ltd. Border Generator provides bordering facilities controlled from a remote control panel. One special feature is the elimination of bothersome dither associated with camera originated graphics.

Features

- Built-in colour fill generator locks in the incoming video
- Borders graphics or character generators
- Eliminates dither when bordering camera originated graphics
- Built-in linear keyer provides cut or auto-mix of key into program video
- Remote control panel with facilities for border, outline, colour fill key, drop shadow, invert key, and variable key threshold control
- Optional master fade to black

Specifications

Input	
Inputs	Program, Key, and Black (usually tied externally to Program input).
Input Signal Level	1 V p-p \pm 1 db
Input Impedance	Bridging 75 ohms
Outputs	
Program Outputs	1
Preview Outputs	1
Output Impedance	75 ohms
Differential Gain	0.5%, 10 to 90% APL
Differential Phase	0.5°, 10 to 90% APL
Frequency Response	\pm 0.1 dB to 5 MHz
	+ 0.2, -0.5 dB to 8 MHz
Output Signal Level	1V p-p
Power	120/240 VAC \pm 10%
Dimensions	
Electronics Rack	3 1/2" high, 19" wide, 15" deep
Remote Control Panel	1 3/4" high, 19" wide, 4 1/2" deep

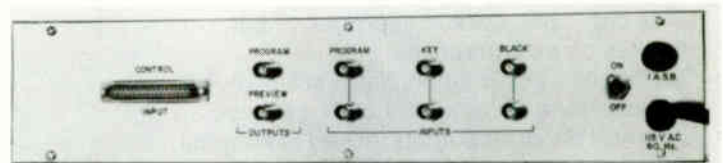


IMAGE VIDEO, LTD.

705 Progress Ave., Unit 46
Scarborough, Ont., Canada M1H 2X1
(416) 438-3940 Telex 065-25392

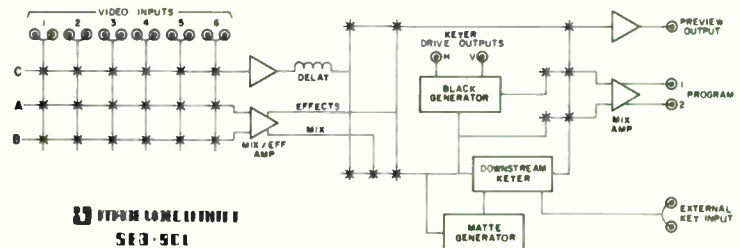
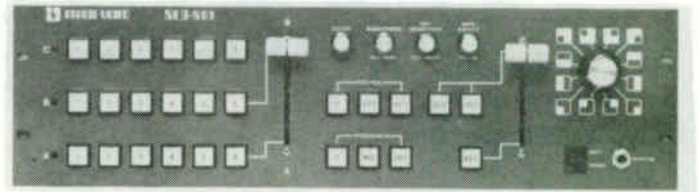
COLOR SPECIAL EFFECTS GENERATOR

SEG-801-Studio Color Special Effects Generator

With full NTSC color specifications, the Image Video SEG-801 Studio Color Special Effects Generator is designed to meet the needs of VTR post production. It will function as a standard 6 input video switcher with basic mix and effects transition. With the downstream key function, basic matte keys and fade to blacks can be performed with non-synchronous sources (non time based VTR's). It's easy to follow front panel design is engineered to enable the operator to concentrate on the creative rather than the technical aspect of production.

FEATURES

- 7 video inputs (including Ext. Key), loop thru
- Total solid state vertical interval switching
- Momentary contact, illuminated pushbuttons used throughout
- Full NTSC color specifications
- Total of 5 busses (including PV & PGM out busses)
- Versatile configuration with M/E, A/B and C Aux. allow cut buss operation and total preview of all inputs plus EFF and KEY
- Mix Functions
 - Fade In/Out
 - Lap dissolve
 - Superimpose
- Effects Functions
 - 12 regular wipes with adjustable aspect ratio
 - external matte key
 - Normal and Inverted key
- Built in color/mono matte generator locked to input video. Requires no external drives or subcarrier
- Built in black generator with downstream fade to black capability. Locked to program input, requires no external drives
- Downstream keyer for normal or invert keys and provision for dissolving in or cutting in key
- External H&V drive outputs locked to program video for external monochrome key camera allow full color matte key inserts on program video even with non capstan servo VTR program source and no external sync gen. or gen. lock required.
- Full electronic tally with dry contact closures
- Fully solid state includes 180 transistors, 77 diodes, 40 integrated circuits and 2 bridge rectifiers
- Self contained unit with standard 19 inch rack mount capability



TECHNICAL SPECIFICATIONS

VIDEO INPUTS Input signal level Input impedance Number of inputs	1V p-p nominal composite 75 ohm loop thru BNC connectors 6 plus ext. key video in
SYNC AND DRIVE INPUTS	None required
VIDEO OUTPUT Signal level Impedance Number of outputs	1V p-p nominal composite 75 ohm BNC connectors 2 program 1 preview
DRIVE OUTPUTS Signals provided Impedance Signal level Connectors	H and V drive for key camera 75 ohm source terminated 4V p-p BNC
CHARACTERISTICS Frequency response Gain Differential gain Differential phase Crosstalk Line and field tilt Signal to noise ratio Path length accuracy	10 MHz \pm 1 db Unity Less than 1% 10-90% APL Less than 1 10-90% APL Better than 52 db at 3.58 MHz Less than 1% Better than 60 db RMS below 1V p-p \pm 1 at 3.58 MHz
GENERAL Tally system Intercom Power requirements Weight Dimensions Mounting Operating temperature Operating humidity	6 camera—dry contact closures Front Panel Jack 117V AC 60 Hz Nom 35VA 13 pounds 19 x 5.2 x 13.8 behind panel Rack or desktop 0 to 50 C 0 to 95%

IMAGE VIDEO, LTD.

705 Progress Ave., Unit 46
 Scarborough, Ont., Canada M1H 2X1
 (416) 438-3940 Telex 065-25392

ROUTING SWITCHER

9100 SERIES ROUTING SWITCHER

FEATURES

Video

- Outputs of individual 16 x 4 cards are disabled when not required so that crosstalk for 256 x 256 is same as for 16 x 1
- All module interconnections are made via 75 ohms coax for controlled transmission characteristics
- System is easily timed because of short internal bus systems
- Vertical interval switching controlled by a single feed of sync or composite video to the controller
- All plug-in boards have overcurrent protection so that a short circuit failure only affects the board concerned
- All addressed boards (i.e. crosspoints and controller) identify their position in the matrix by backplane wiring — no adjustments or prom changing required
- Output cable equalization
- Input cable equalization
- True confidence tally

Audio

- Balanced throughout — drivers, crosspoints, intermodule transmission lines and outputs
- + 24dBm input and output levels with 600 ohms output impedance
- 50 ohms output impedance optional
- Audio-follow-video or full breakaway of audio/time code
- Multiple level audio available
- Extended bandwidth audio (100kHz)
- Click/transient free switching
- Over current protection
- True confidence tally

Control

- Accommodate all 6100/6200 series control panel types and options
- Battery retention of status during power fail (in controller module)

Power

- Modular plug-in power supplies
- Power supply backup system with built-in failure alarm system, continuous operation with one failed supply
- Simple, rugged, fan-cooled supplies offer reliable operation
- Over-temperature protection/alarm system prevents failure of system due to cooling failure

A new generation of routing switchers designed for medium to large routing systems. Its modular construction facilitates easy expansion up to 256 inputs with an unlimited number of outputs. Any combination of video, audio, and time code matrices are available.

All controls are microprocessor based with processors located in both the control panels and the matrix controller. Battery retention of status during power failure is provided and control panels are available in button per crosspoint, X-Y, thumbwheel, keypad, or combinations of these. RS232 and IEEE-488 control ports can be supplied when computer interface is desired.

Video Configuration

Input Distribution Amplifiers restore DC and provide input cable equalization up to 1000 feet. The input feed is then split into four 75 ohm outputs. 75 ohm coaxial cable is used for all inter-module connections. This provides controlled transmission characteristics.

SPECIFICATIONS

Electrical

Power..... 120/240 VAC 50/60Hz

Video

Input
 Input Signal Level..... 1V P-P
 Input Impedance..... Bridging 75ohms
 Return Loss..... > 46db to 5 MHz
 Number of Inputs..... 256

Output
 Level..... 1V P-P
 Number of Outputs per Bus..... 2
 Impedance..... 75 ohms
 Isolation..... > 40db to 5 MHz
 Level Difference..... < 1%

Frequency Response..... < 0.1db to 5 MHz
 + 0.5db to 10MHz
 Hum..... .60db below 1V P-P
 Gain..... Unity
 Gain Range..... ± 1db
 Line Tilt..... < .25%
 Field Tilt..... < .25%
 Differential Gain (10-90% APL)..... < .25°
 Differential Phase (10-90% APL)..... < .25°
 Switching Timing..... Vertical Interval
 Crosstalk..... > 60db to 4.2 MHz
 Noise (RMS)..... > 70db below 1V P-P
 Path Length Differential..... ± 1 degree

Audio

Input
 Input Signal Level..... + 24dbm MAX
 Input Impedance..... > 30K Balanced
 Common Mode Rejection..... > 82db at 60Hz

Output
 Number of Outputs per Bus..... 3
 Impedance..... 600 ohms ± 2% Balanced
 Frequency Response..... + 0.3db 20Hz to 20KHz
 Total Harmonic Distortion..... < .02% 20Hz to 20KHz, + 18dbm
 < .2% 20Hz to 20KHz, + 24dbm
 Max Signal/Noise Ratio..... > 96db
 Output Gain Range..... Unity ± 3db
 Crosstalk..... > 75db @ 15KHz



MODEL 9100



VIDEO CROSSPOINT FRAME



AUDIO CROSSPOINT FRAME



CONTROL PANEL

Each video crosspoint frame is arranged in a 16-input by 64-output format. A crosspoint frame consists of sixteen 16 x 4 cards each with output buffers for 75 ohm cable. There is also a control buffer card. All addressed crosspoint cards identify their position in the matrix by backplane wiring thus eliminating DIP switch adjustments or PROM changing. Crosspoint cards may be removed and reinserted without switching off the system.

The combiner frame consists of sixteen 16 x 1 combiner cards. This, in conjunction with the crosspoint frames, makes up a 256 x 16 format. Output equalization adjustment is provided for up to 1000 feet of cable.

Audio Configuration

Each audio crosspoint frame consists of two 16-input buffer cards which drive sixteen 32 x 8 crosspoint cards. This results in a 32 x 128 frame format. There is also a control card in each frame for interfacing to the microprocessor controller. Differential input circuitry provides 82dB of common mode rejection at 60Hz.

The audio combiner cards each contain two 8 x 1 combiners. The frame consists of sixteen combiner cards to accommodate expansion up to 256 inputs by an unlimited number of outputs. Extended audio bandwidth (100kHz) allows use of time code channels.

Control Configuration

Control panels communicate with a system controller. The switcher modules are then controlled by a parallel control bus via the control card in each frame. Redundant control is possible by paralleling two control modules on the control bus in a master/slave configuration.

A wide variety of microprocessor based control systems are available including button per crosspoint, X-Y, thumbwheel, keypad, or combinations of these. All systems may be equipped with interrogation, numeric only or alphanumeric display on the control panels, CRT status displays, and rack mount alphanumeric displays.

Image Video designs control panels to meet the requirements of the particular customer. We can custom design one for your special application.

IMAGE VIDEO, LTD.

705 Progress Ave., Unit 46
 Scarborough, Ont., Canada M1H 2X1
 (416) 438-3940 Telex 065-25392

BROADCAST ROUTING SWITCHER



6010 10 X 1 Self-Contained Broadcast Routing Switcher

Description:

The 6010 self contained switcher is a high quality 10 x 1 suitable for use throughout the television or radio plant, from production to monitoring applications. The flexible configuration and control system frees the Engineer from handbuilt or customized equipment procurement.

Configuration:

- Basic switcher is 10 x 1, video only, mono or stereo audio only or AFV with mono or stereo audio in one rack unit.
- One or both audio channels may be replaced with time code or control bus.
- Basic switcher may be expanded to 20 x 1 or more with additional 6010's and one control interconnection.
- Remote control via shielded audio pair may be factory installed or field installed later (no soldering or adjustments required).
- Tally is optionally available (one open collector per input).
- Parallel BCD control optionally available for automation interface.

Features:

- Relegendable pushbuttons with gold contacts and LED indicators.
- Two outputs per bus, video and audio.
- Loop through video inputs.
- Bridging audio inputs.
- Vertical interval switching.
- Hinged front panel for easy access to plug-in modules.
- Low power consumption.
- Second audio channel may be retrofitted.
- All electronic switching.

Technical Specifications

Electrical	
Power	120/240VAC ± 10%, 50/60Hz, 12VA
Video Input	
Input Signal Level	1VP-P
Input Impedance	Bridging 75ohms, Loop through
Return Loss	> 46db to 4.2MHz
Number of Inputs	10 + Extension
Video Output	
Level	1VP-P
Number of Outputs	2
Impedance	75 ohms
Isolation	> 36db to 4.2MHz
Level Difference	< 1%
Frequency Response	< 0.1db to 5MHz + 0.5db to 10MHz
Hum (P.P.)	65db below 1 VP-P
Gain	Unity
Output Gain Range	± 1db
Line Tilt	< .2%
Field Tilt	< .2%
Differential Gain (10-90% APL)	< .25%
Differential Phase (10-90% APL)	< .25%
Switching Timing	Vertical Interval
Crosstalk	60db to 4.2MHz
Noise (RMS)	70db below 1 VP-P
Audio Input	
Input Signal Level	+ 8dbm nominal + 24dbm MAX
Common Mode Rejection	> 60db at 60Hz
Input Impedance	> 20K Balanced
Number of Inputs	10 + Extension
Audio Output	
Number of Outputs	2
Impedance	600 ohms Balanced
Frequency Response	+ 0.3 db 20Hz 20KHz
Total Harmonic Distortion	< .2% 20Hz-20KHz @ + 24dbm
Maximum Output Level	+ 24dbm
Hum and Noise	> 78db below + 8dbm
Gain	Unity
Gain Range	± 3 db
Crosstalk	> 70db @ 20KHz
Physical Dimensions	
Height	1 3/4"
Width	19" Rackmount
Depth	15" including connectors
Video connectors	BNC
Audio connectors	D Sub-miniature
Remote control connectors	2-3 Pin DIN
Tally connector	D Sub-miniature



Rear Panel Facilities

- | | | |
|-------------------------------------|--|-------------------------|
| 1. Audio channel 2 in/out connector | 4. Extension control connector (for bus extension) | 8. Extension input loop |
| 2. Audio channel 1 in/out connector | 5. Tally out / BCD control in connector | 9. Power switch |
| 3. Remote control connector | 6. Two video outputs | 10. Fuse |
| | 7. Ten video input loops | 11. Power cord |

IMAGE VIDEO, LTD.

705 Progress Ave., Unit 46
Scarborough, Ont., Canada M1H 2X1
(416) 438-3940 Telex 065-25392

Control Panel Features

- Coax Cable Control Line
- Audio Cable Control Line Optional
- Multipanel per Line
- Large selection of control panel configurations
- Audio and Video may be selected married or unmarried on some panels
- Multilevel unmarried control panels available
- Standard 8 bit word serial communications
- Alpha numeric entry and display available on some panels
- Single or multi destination control panels available on some models
- Will operate the switcher up to 2000 feet using coax
- Multi source electronic components used, no hybrids, custom I.C.'s or mask programmable ROMs
- Custom panel requirements easily accommodated
- Milled plate aluminum used on front panels
- All front panels are brushed, deep etched and clear anodized
- Legends custom engraved and filled black



CP-1 DESK TOP PANEL

IV CP-1/X

The CP-1/X is either a full matrix or restricted Keypad control panel. The "X" designation indicates full matrix control panel. If a digit is substituted for "X" then this digit identifies the total number of destinations which the panel controls. These destinations must be specified when ordering, but may be changed later by recoding a PROM. The panel is complete with 7 segment LED readouts for BUSS, VIDEO PRESET, AUDIO PRESET, VIDEO STATUS and AUDIO STATUS. Selection of new source may be 1 of 4 modes; Audio follow Video, Audio only, Video only or Audio/Video unmarried. The unit is built in a desk top configuration.

IV CP-1/CX

This panel is similar to the CP-1/X, except the Keypad is coded for alpha input selection instead of numeric.

IV CP-1/XK

This panel is similar to the CP-1/X, except the TAKE function is disabled by the use of a lock and key.

IV CP-1/CXK

This panel is similar to the CP-1/X and also includes the features of the CP-1/CX and the CP-1/XK.



CP-2 RACK MOUNT PANEL

The CP2/X, XK, CX, CXK, are similar to the CP-1 but rack mounted. In addition, the CP-2 Panel can be restricted to any nine destinations, selected by DIP switches (provided) or may control the full matrix.

ROUTING SWITCHER CONTROL PANELS



CP-4/3 CONTROL PANEL

IV CP-3/1

Single thumbwheel control panel with access to all inputs on one destination. Complete with TAKE pushbutton and 7-segment LED status readout. Simultaneous audio and video selection. Desk top mounted box.

IV CP-4/X

Rack mounted control panel. Thumbwheel input selection with TAKE pushbutton and numeric status display. Simultaneous audio and video selection.

A number (1 through 9) substituted for X indicates the total number of destinations the panel controls. Separate thumbwheel selection and status readout for each destination.

IV CP-5/X

Shadow pushbuttons with gold contacts and relegendable caps. Mounted in a brushed anodized aluminum panel. Pushbuttons available in multiples of 10 to a maximum of 50.

IV CP-6/X

Same as CP-5/X but with Clare Pendar S180 series illuminated pushbuttons.

IV CP-7

Salvo panel capable of 10 presets. MASTER TAKE pushbutton for simultaneous take of preset inputs. Status, and preset numeric displays. Simultaneous or separate audio and video.

IV CP-7/C

Same as IV CP-7 but with coded (alphanumeric) keypad.



CP-8/4 CONTROL PANEL

IV CP-8/4

Controls one destination only. Has four overrides and four breakaway levels. Alphanumeric thumbwheel selection and alphanumeric display.

IV CP-9/1, IV CP-9/2

Similar to IV CP-4/1, IV CP-4/2 but with alphanumeric thumbwheel and numeric status display

IV CP-10

Alpha thumbwheel with unmarried audio-video operation. Six overrides and numeric status. Single destination control.

IV CP-11

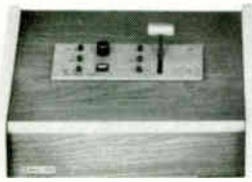
Six destination control panel. Married audio/video operation only. Alphanumeric display. Preset function and alpha coded keypad.

IV CP-12

Alphanumeric coded keypad and status display. Six overrides. Simultaneous audio/video, or separate audio and video functions.

IMAGE VIDEO LTD.

705 Progress Ave., Unit 46
Scarborough, Ont., Canada M1H 2X1
(416) 438-3940 Telex 065-25392



MODEL 7001C

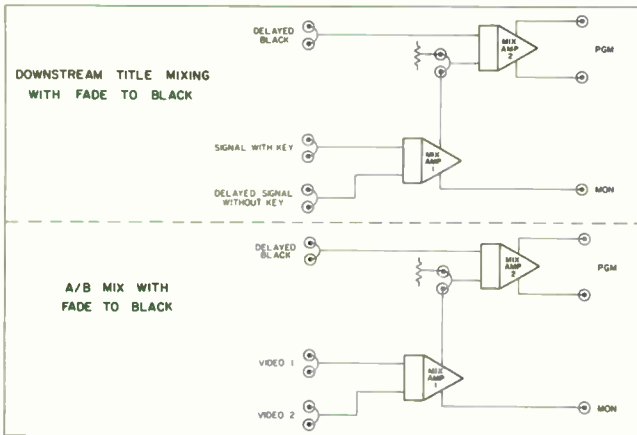
MODEL 7001C — DUAL VIDEO MIX AMP

Features

- Two separate video mixing amplifiers housed in a single rack unit
- Remote control panel
- Mix amps may be independently operated or cascaded
- Operates on synchronous video source — no external sync requirements
- Control and tally output on same connector on rear panel
- Standard AUTO-MIX permits variable rate and automatic mix on amp 1
- Easily conformed to existing system
- Audio-follow-video option available
- Manual fader on amp 2

The Dual Video Mix Amp — Model 7001C incorporates two independent video mixing amplifiers housed in a single rack unit and controlled from a remote panel.

The Model 7001C meets all broadcast specifications and is ideal for use in downstream title mixing and A/B mixing applications.

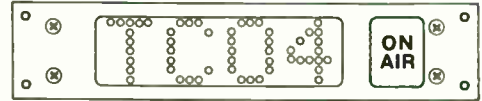


TYPICAL APPLICATIONS

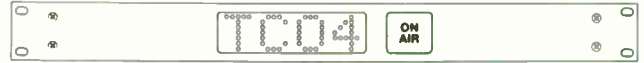
SPECIFICATIONS

Video Inputs	Four, 1V p-p, 75 ohms terminating
Video Outputs	Four, 1V p-p, (2 outputs per amp)
Frequency Response	± 0.2 dB to 5MHz, ± 0.5 dB to 8MHz
Diff. Phase	$< 1.5^\circ$ (10-90% APL)
Diff. Gain	$< 1.5^\circ$ (10-90% APL)
Crosstalk	> 55 dB at 3.58MHz
Tilt (Vert & Horiz)	$< 1\%$
Signal to Noise	> 60 dB
Path Length	25ns (through one amplifier)
Path Length Differential	$< 1^\circ$
Tally Output	Open Collector pull down
Electrical	117/230V, 50/60Hz
Electronics Frame	1 rack unit (1-3/4" x 19" x 10")
Control Panel	7" x 3" x 3-1/2"
Video Connector	BNC
Control and Tally Connector	D-Sub miniature

AUDIO/VIDEO COMPONENTS



MODEL 7707 — WALL MOUNTED UNIT



MODEL 7707 — RACK MOUNTED UNIT

MODEL 7707 — UNIVERSAL UNDER MONITOR DISPLAY

The basic system consists of 2 components: the monitor display driver and the monitor status displays.

FEATURES

Driver Frame

- Two rack units high
- Will drive up to 9 displays
- Connects to displays by 37 pin flat ribbon cable
- Connects directly to the Routing Switcher or to an RS232 interface unit
- On Air Tally inputs connected by 25 pin D type connector — the user supplies the contact closures only
- Internal Power Supply

Display Unit

- Single rack unit high
- Available in both rack and wall-mounted design
- Rack mounted units are available in a number of formats to accommodate the picture monitor layout: displays can be located in the center, to the left or right side, or two displays per panel

The system is a four character alpha-numeric display with "On Air" indicator. It is designed for source identification in conjunction with picture monitors. The system can be driven directly from Routing or Master Control Switchers or, with an optional RS232 interface, can be driven from any routing or master control switcher that has a tally output. Display units are available in both rack and wall mount.

MODELS 601, 602 10X1 PASSIVE ROUTING SWITCHERS

Video Model 601 AFV Switcher

Transparent signal path ensures the integrity of the audio/video signal.

Video signal is fed through the switcher with excellent crosstalk specs and high stability with no noise interference. And, there is unity transmission gain. Input video is via isolated BNC connectors and is terminated with built-in 75 ohms 1% resistors. Selected input is indicated by an orange strip on input pushbuttons.

Crosstalk	Better than 40dB at 4.2MHz (All other inputs hostile)
Physical Dimensions	19" x 1-3/4" x 4"

Model 602 Dual Audio Switcher

Each audio input is terminated with built-in 600 ohms resistors. The inputs and outputs are brought to the panel via two 25-pin D-type connectors for wiring convenience. There is no degradation of the input signal.

Crosstalk	Better than 70dB at 20kHz (All other inputs hostile)
Physical Dimensions	19" x 1-3/4" x 4"

Ordering Information

For 10 x 1 audio follow video	Model 601
For 10 x 1 dual audio	Model 602

IMAGE VIDEO, LTD.

UNIVERSAL SERIAL DATA READER

705 Progress Ave., Unit 46
Scarborough, Ont., Canada M1H 2X1
(416) 438-3940 Telex 065-25392



7100 UNIVERSAL SERIAL DATA READER

The lack of a reliable method of monitoring serial interface data is a major problem in troubleshooting complex multi-processor control systems.

A solution to this problem is the Image Video UNIVERSAL SERIAL DATA READER (U.S.D.R.). The U.S.D.R. is capable of reading and displaying serial data in real time by simply looping into the suspected problem line. The unit is set to the predefined parameters of that line and that data may be viewed in either hexadecimal or binary format as preferred. Triggering is valid on detection of a unique word (HEX byte) and may be checksum qualified if necessary.

Operation

Three operational modes are alternately selected by the MODE key.

Mode 1 Setup



MODE 1

MODE 1 causes the displayed setup data to be latched into the U.S.D.R.'s control routine.

The required hexadecimal (unique word) trigger byte is entered by pressing the TRIG key followed by two digits.

A requirement when reading checksum qualified data is the frame length byte. Press the LEN key and enter the number of bytes per frame (including the unique word and checksum bytes). For operator convenience this number is expressed in decimal format, three to ninety-nine being valid.

The offset byte is used to set the KEY byte (starting point for the data display). Press the OFFSET key and enter the number of bytes offset from the trigger byte. Again this number is expressed in decimal format, zero to the frame length being valid.

MODE 2 Hex Status

This mode displays the hexadecimal status of four bytes of data from the line with the KEY byte appearing in readouts seven and six and KEY + 1, KEY + 2, KEY + 3 bytes appearing in readouts five through zero respectively. The most significant nibble appears in the lefthand display of each of the four pairs. For proper interpretation of the display none of the error tallies should be on.

MODE 3 Binary Status

Mode 3 shows the binary status of one byte of data from the line at the KEY byte. The eight displays show the status of the eight bits of the KEY byte with the most significant bit appearing in readout seven and the least significant bit in readout zero. For proper interpretation of the display none of the error tallies should be on.

Error Indication

Four error tallies are provided to alert the operator to possible false data detection; FRAME error, OVERRUN error, PARITY error, and CHECKSUM error.

DIP switches select O/E parity, inhibit parity, and select one of eight baud rates.

IMAGE VIDEO, LTD.

705 Progress Ave., Unit 46
Scarborough, Ont., Canada M1H 2X1
(416) 438-3940 Telex 065-25392

MONITORING PANELS

7105 Silence Monitor

Features

- Expandable two to ten channels in single rack unit enclosure
- Immediate alarm warning indicator
- Audible and visual alarm (after preset time lapse)
- Remote alarm outputs
- Cancelling/non-cancelling resettable audible alarm
- Simple setup procedure
- Low cost
- 110/220V operation

Specifications

- Number of Detectors Multiples of 2, up to 10 max
- Audio Input Impedance 600 ohms balanced, bridging
- Acceptable Input Level +24dBm to -68dBm
- Trip Threshold Range Adjustable from -20dBm through -68dBm
- Detection to Alarm Time Delay 0 sec through 2 mins, 35 sec in 5 sec increments
- Remote Alarm Outputs 1 per detector, Open-collector active low 150mA, 30V max
- Size 1-3/4" high, 19" wide, 15" deep

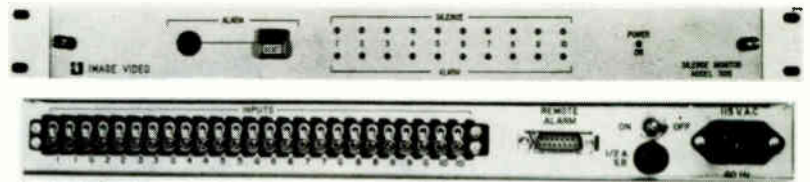
VMP-1 Voltage Monitor Panel



- Monitors up to 128 DC voltages
- Digital circuitry throughout
- Adjustable display rate
- Software adjusted alarm tolerances
- Continuous and automatic monitoring

Options

- 01 Basic unit c/w AC power supply, local alarm and remote alarm connectors, seven segment LED display
- 02 Eight character alphanumeric display c/w supporting circuitry.
- 03 Battery backup for above
- 04 Printer dump circuitry to allow hard copy of information displayed
- 05 CRT interface to continuously display data on BW monitor



The Image Video Audio Silence Monitor automatically monitors up to ten audio inputs and issues audible and visual alarms if any input falls below a preset level. It is a compact, low cost, single rack unit product incorporating many unique features and is particularly suited for use in isolated, non-supervised areas.

Operation

Each silence detector channel can be set to trip at any level from -20dBm through -68dBm. Individual alarm delays are switch settable from 0 seconds through 2 minutes, 35 seconds. As the audio level falls below the detector threshold, the amber warning LED of the channel lights. If this condition persists for a period determined by that channel's delay setting, the red alarm LED lights, the remote output goes low and an audible warning is issued.

Remote alarm outputs are provided for each channel. These outputs will sink up to 150mA at up to 30V and are open-collector, active-low enable. They may be used for a variety of purposes as the customer desires. The remote alarms may be individually disabled.

The audible alarm can be manually reset. However, a simple strap feature permits automatic reset when the alarm disappears. Conversely, the automatic reset can be inhibited so that the operator will know that silence occurred when no one was in attendance.

The Image Video Voltage Monitor is a microprocessor based unit capable of monitoring up to 128 individual D.C. voltage sources both continuously and automatically. Circuitry is digital throughout, eliminating the need for adjustment and improving reliability.

Alarm tolerances are set via a software (PROM) adjustment and may contain both upper and lower limits. A channel failure is announced through a local sonic alarm and silenced with a pushbutton. Both alarm and reset functions are remoted through a rear panel connector.

The standard unit is equipped with LED type seven segment displays, indicating channel number and voltage. Display rate is adjusted by a front panel control.

Several enhancements are available as factory installed options.

Operation

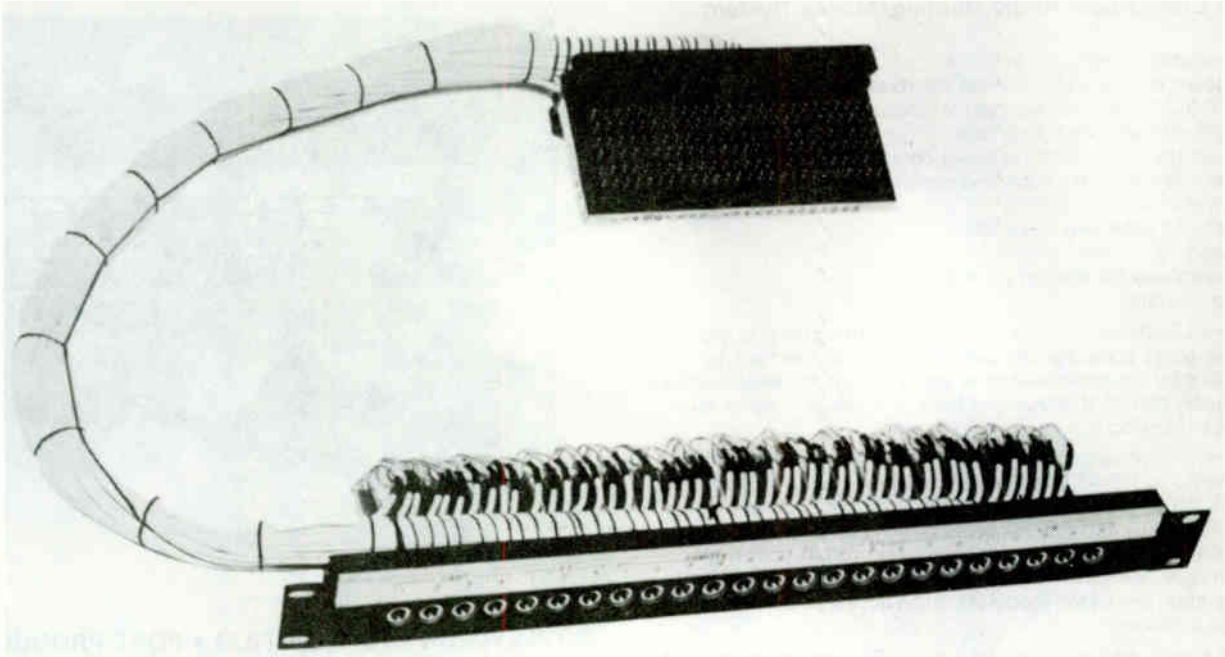
Normal (Standby) Mode. In this mode, the DISPLAY RATE control is rotated fully CCW and CHANNEL and VOLTAGE displays are blanked. The green STBY lamp indicates that the microprocessor is scanning all of the channels.

Alarm Mode. If for any reason an input voltage falls outside its tolerance range, the red displays illuminate indicating the channel that failed and its present voltage. Simultaneously the remote and local alarms are switched on. If more than one channel failure exists each faulty channel is displayed in turn at a fixed rate which may be overridden by the DISPLAY RATE control.

The audible alarm can be cancelled at any time by the ALARM RESET pushbutton, however, the displays will remain active until a no-fault condition is restored.

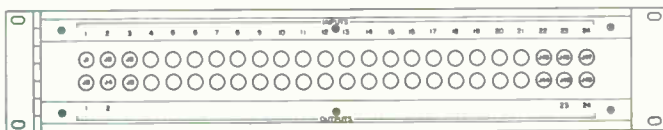
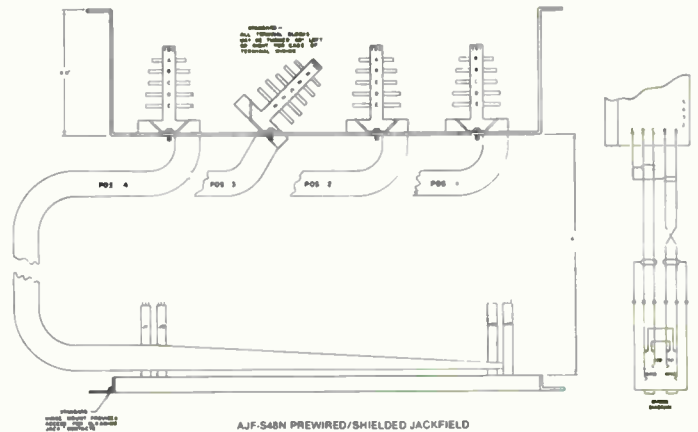
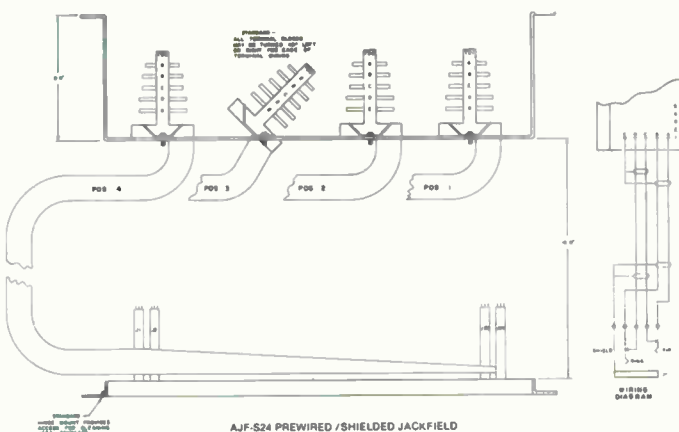
Examine Mode. The Voltage Monitor may also be used as a maintenance tool, even if no alarms are present. A slight CW rotation of the DISPLAY RATE control allows the displayed channel's voltage to be shown permanently. A further CW rotation allows the channels to be sequentially stepped at a variable rate. It should be noted that at all times, no matter what operational mode is selected, ALL channel voltages are ALWAYS MEASURED.

Model AJF-S24 and AJF-S48N Prewired (Shielded) Jackfields



The Image Video Models AJR-S24 and AJF-S48 are prewired (shielded) single Audio Jackfield Assemblies, containing PJ339 type jacks. The AJF-S24 has 24 jacks while the AJF-S48 has 48 jacks. The jacks are mounted on a hinged panel designed for standard 19" relay rack mounting.

- The hinge allows access for cleaning contacts without total removal from the rack.
- Large 5/8" wide ident strips are provided covered with a clear plexiglass overlay.
- The Jack Ring, Tip, and Sleeve are prewired to a terminal block.
- The terminal block is mounted on a swivel bracket for easy terminal wiring.
- Mounting rails are provided with each set of four jackfields.



NOTE:
 1. PANEL SIZE 4" WIDE BY 3.6 HIGH (2 PL.)
 2. JACKS ARE MOUNTED VERTICALLY IN 21 TO 41
 3. JACKS ARE MOUNTED ON CBS CENTERS

Terminal Blocks may be wired to any one of four positions. Please specify when ordering.
 E.G. Qty-2 AJF-S24-Position 1, Position 2.



1552 Laurel Street
San Carlos, CA 94070
(415) 592-8055

Integrated Media Systems

SERIES 200

Computer Controllable Audio Routing/Mixing System

FEATURES

- 256 configurable crosspoints in 5-1/4"
- Four on-board memories for pre-set matrixes
- Standard RS-232 and external contact closure port (GPIB)
- Optional RS-422 and MIDI Interface
- Local or remote, single and multilevel control panels
- Crosspoint and destination oriented control panels
- Vertical interval salvo switching
- Multiple source summing capabilities
- Unsurpassed audio performance
- Plug-in assemblies for ease of maintenance
- Three year warranty

The IMS Smart Switcher is an advanced audio routing/mixing system featuring the most powerful and versatile control interface in the industry. This third generation switcher will operate with, and/or slave to most industry standard equipment for audio-follow video or automation directed systems.

External control is possible thru a number of standard and optional ports. The optional RS-422 serial interface provides frame accurate switching of the entire matrix via delayed and real time command structures. The GPIB and RS-232 ports provide additional outboard control interface capabilities for signal processing and post-production requirements. Manual control panels interconnected via a party line control system permit the Model 200 to be accessed from as many as 32 remote locations.

Model 200 Smart Switcher can contain up to 256 crosspoints in 3 RU complete with plug-in power supply. Typical matrixes can include 32 x 8, 8 x 21, 16 x 16 in groups of eight. The system can also be configured in multi-levels, i.e. stereo, time code etc. Units can be easily stacked, and there is no limit to expansion.

All IMS switchers are designed for maximum reliability, and serviceability. Careful selection of components, plug-in multi-regulated power supply and ultra-reliable DIN connectors insure long term durability and maintainability.

As multi-channel, multi-level protocol demands grow, the bank switchable CPU controller with 96K of memory, has the power to meet the most demanding interface and performance requirements. The control card will accept a number of standard and semi-custom daughter boards. The daughter boards will provide such interfaces as: RS-422 (Ampex standard), MIDI port, telephone control, IEEE 488, and slave interface to other switchers.

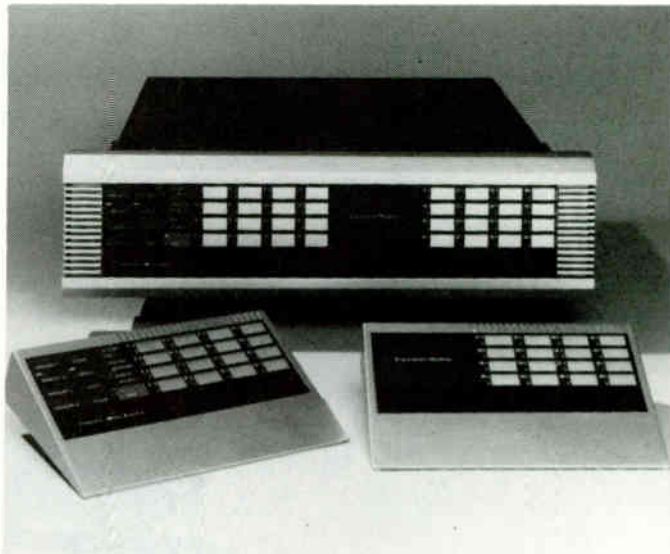
Manual Control

The IMS party line control system enables the use of up to 32 remote control stations. Microprocessor-control provides nearly instantaneous communications. A take command is executed at the next vertical interval with up to 16 controllers. This design allows true real-time use during production or post production. Standard controllers include re-legendable X-Y crosspoint-oriented switch panels, and multi-level destination oriented switch panels. The party line system has a matrix scratch pad allowing the user to set up an entire matrix and either store it off line or take it to the program at any time. Four system memories are provided to store complete matrix configurations.

GPIB Control

The GPIB port allows the switcher to be controlled by devices such as a real time clock, an automation system, or an editor/synchronizer. For radio stations this means that network feeds can be switched with millisecond accuracy. Complex audio assignments can be pre-programmed and done instantly under editor control or synchronizer event control for post production.

Smart Switcher



TELEVISION • RADIO • FILM • POST PRODUCTION...

RS-422 Control

An optional RS-422 serial port is available for more sophisticated control. This port allows communication with such devices as the Ampex Ace editor, or the Sony BVE 5000 editor.

RS-232 Control

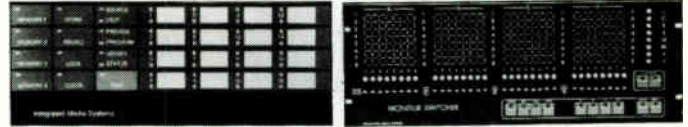
An RS-232 port provides a VDT approach to displaying current matrix configurations as well as system diagnostics. This port will also allow more sophisticated software control via the use of microcomputers.

SPECIFICATIONS

Freq. Resp.:	± .3dB 10Hz-30kHz
Crosstalk:	-80dB
Input/Output Isolation:	-80dB
CMR:	-80dB
S/N Ratio:	-110dB re. max. input
THD:	< .01% 20Hz-20kHz re. max. input
	< .01% 20Hz-20kHz re. +8dBu op. level
IMD (SMPTE)	< .005% re. max. input
Max. input level:	+28dBu bal. or unbal.
Max. output level:	+26dBu balanced
Channel gain/loss:	± 10dBu adjustable
Input impedance:	> 20K Ω
Output impedance:	< 100 Ω balanced
Minimum load impedance:	600 Ω
Dimensions:	5.25" x 19" x 18" deep
Gross Weight:	45 lbs.
Power requirements:	150 watts

Series 200 \$5595.00

ROUTING/MIXING SYSTEMS



POST PRODUCTION CONTROLLER

CUSTOM CONTROLLERS AVAILABLE



DESTINATION CONTROLLER

SERIES 200 CONT'D

Control

As multi-channel, multi-level protocol demands grow, the bank switchable CPU controller with 96K of memory has the power to meet the most demanding interface and performance requirements. The control card will accept a number of standard and semi-custom daughter boards. The daughter boards will provide such interfaces as: RS-422 (Ampex standard), MIDI port, telephone control, IEEE 488, and slave interface to other switchers.

Manual Control

The IMS party line control system enables the use of up to 32 remote control stations. Microprocessor-control provides nearly instantaneous communications. A take command is executed at the next vertical interval with up to 16 controllers. This design allows true real-time use during production or post production. Standard controllers include re-legendable X-Y crosspoint-oriented switch panels. The party line system has a matrix scratch pad allowing the user to set up an entire matrix and either store it off line or take it to the program at any time. Four system memories are provided to store complete matrix configurations.

GPIB Control

The GPIB port allows the switcher to be controlled by devices such as a real time clock, an automation system, or an editor/synchronizer. For radio stations this means that network feeds can be switched with millisecond accuracy. Complex audio assignments can be pre-programmed and done instantly under editor control or synchronizer event control for post production.

RS-422 Control

An optional RS-422 serial port is available for more sophisticated control. This port allows communication with such devices as the Ampex Ace editor, or the Sony BVE 5000 editor.

RS-232 Control

An RS-232 port provides a VDT approach to displaying current matrix configurations as well as system diagnostics. This port will also allow more sophisticated software control via the use of micro-computers.

SPECIFICATIONS

Freq. Resp.: ± .3dB 10Hz-30kHz
Crosstalk: -80dB
Input/Output Isolation: -80dB
CMR: -80dB
S/N Ratio: -110dB re. max. input
THD: < .01% 20Hz-20kHz re. max. input
 < .01% 20Hz-20kHz re.
 + 8dBu op. level
 < .005% re. max. input

IMD (SMPTE)

Max. input level: + 28dBu bal. or unbal.
Max. output level: + 26dBu balanced
Channel gain/loss: ± 10dB adjustable
Input impedance: > 20K ohms
Output impedance: < 100 ohms balanced
Minimum load impedance: 600 ohms
Dimensions: 5.25' x 19' x 18' deep
Gross Weight: 45 lbs.
Power requirements: 150 watts

SERIES 200 PRICE LIST

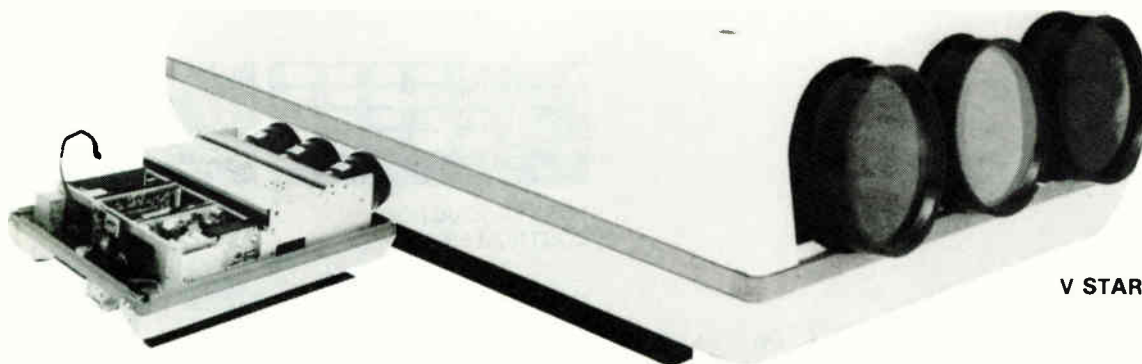
	Price
Complete Assemblies (with controller)	
8001000-AA 8 x 8 Smart Switcher	\$3,695.00
8001000-AB 16 x 8 Smart Switcher	4,695.00
8001000-AC 24 x 8 Smart Switcher	5,995.00
8001000-AD 32 x 8 Smart Switcher	6,995.00
8001000-AE 16 x 16 Smart Switcher	6,695.00
Basic Assemblies (without controller)	
8001000-BA 8 x 8 Smart Switcher	\$2,995.00
8001000-BB 16 x 8 Smart Switcher	3,995.00
8001000-BC 24 x 8 Smart Switcher	4,995.00
8001000-BD 32 x 8 Smart Switcher	5,995.00
8001000-BE 16 x 16 Smart Switcher	5,995.00
Remote Controllers	
8015000-01 16 x 16 X-Y Controller	\$795.00
8015500-01 16 Channel Expansion Unit	495.00
Spare Assemblies	
8001400-01 Plug-In Power Supply	\$ 700.00
8001200-AA Matrix I/O P.W.A.	1,200.00
8001100-01 Main CPU	975.00

NEW

MODEL 400 SERIES

- 10-1/2" Card Cage
- Cards Contain Same Information as Series 200
- 1280 Crosspoints
- Outboard Power Supply

400 Series \$21,500.00



V STAR 5

V STAR 5 GRAPHICS, VIDEO AND DATA PROJECTOR FEATURES

- Three-lens refractive optics
- Video Format: Multi-standard — PAL, SECAM, NTSC 3.58, NTSC 4.43. Automatic sense and display
- Registration: 13-zone (1%)
- Accepts positive or negative logic
- Horizontal syncs delay
- High/low intensity
- Improved computer blue resolution (green in blue ratio adjustable from 0 to 50%)
- Scanning rates: NTSC (525 lines, 60 field), CCIR (625 lines, 50 field)
- Horizontal: 15625-17500 (standard frequency); 16500-17500 (second frequency)
- Vertical: 50/60Hz automatic adjustable up to 100Hz (standard frequency); 60-100Hz (second frequency)
- Interlaced or non-interlaced syncs
- Self-diagnostic indicators
- Keystone correction: + /- 25°

SYSTEM CONTROLS

Local:

- 9-zone registration; focus — red, green, blue; tube cut-off switch — red, green, blue, G2 voltage — red, green, blue; contrast; brightness; color; tint (NTSC mode only); decoder (NTSC 3.58/NTSC 4.43); video/RGB; fast/slow sync select (for VCR use)

Remote: (up to 300 feet)

- Controls on Remote Control Box: Brightness contrast, saturation and hue controls; switch for following modes: RGB Analog (S on green); RGB TTL; RGB Analog external S; video; (NTSC mode only); decoder (NTSC 3.58/NTSC 4.43); fast/slow sync select (for VCR use)
- Vertical and horizontal scanning frequencies; standard and adjustable frequencies select.

SPECIFICATIONS

Optical Characteristics

- Light Output: maximum 450 lumens
- Minimum Screen Size: 3' x 4'
- Maximum Screen Size: Using Delta II-D lenses 6' x 8'. If Delta II-M lenses are used it will enlarge to 25' wide
- Geometrical: Error measured horizontally and vertically + /- 1%
- Throw Distance: 1.5X screen width
- Screen Application: Front or rear projection. Flat or curved screen (Flat screen — 180° viewing angle without loss of brightness)
- Simplified Scan Reversal: Capable of ceiling, floor and rear-screen applications

MECHANICAL AND ELECTRICAL LAY-OUT

- Lenses: Delta II-D (Delta II-M optional)
- Cathode Ray Tubes: 5"
- Face Plate: Liquid cooled
- Deflection and Convergence Yokes: Low impedance convergence yokes without fixed magnets
- Switchmode Power Supply: Dual switch mode power supply using: — Self oscillating circuit for frequency independent voltages. Driven oscillating circuit for frequency dependent voltages
- EHT Generator: 34.7 KV stabilized and separated from horizontal deflection circuit
- Focus Modulation: Function of horizontal scanning, vertical scanning and beam current
- X-ray Protection: Special mounting leadcab and improved leadglass
- Signal Source: RGB Analog, RGB-TTL and Composite Video. Plus 2 built-in-crosshatch generators
- Video Input Connectors: 2 BNC connectors looped through 75 ohm termination switch 1V p-p + /- 6dB
- RGB (S) Analog Circuit: Input selector: switch RGB Analog/ RGB-TTL
- RGB (S) Input: 4 BNC connectors: Red 0.7V p-p + /- 3dB; Green 0.7 V p-p + /- 3dB (1V p-p + /- 3dB if sync on green); Blue 0.7V p-p + /- 3dB; Syncs 1V p-p or 4V p-p + /- 3dB switchable (All inputs are 75 ohm terminated)
- Sync Switch: External or sync or green
- Remotely switchable: Between RGB Analog, RGB-TTL and Composite Video
Input: D-type 9 pin connector
- Resolution: 850 lines RGB
- Geometry: + /- .5% in circle equal to picture height; 1% outside circle
- Size: 9.25" x 22.25"W x 32.6"L
- Light Weight: 81.5 lbs
- Power Requirements: 110 VAC/220 VAC, + 10% - 15%. Frequency independent 40Hz to 100Hz
- Power Consumption: 250 W. maximum

\$9,995.00

INFORMATION TRANSMISSION SYSTEMS

375 Valley Brook Rd.
McMurray, PA 15317
(412) 941-1500



ITS-20

ITS-20 UHF EXCITER/MODULATOR

FEATURES

- Double balanced diode mixer modulation
- SAW Filter — bypassable for broadband testing
- Accurate 4.5 MHz visual to aural separation
- Loop-thru connectors for STV compatibility — amplitude and phase linearity correctors
- 1 CPM, differential phase, sync stretch correcting allowed
- Automatic level control
- Variable automatic gain control
- Remote controllable — centralized interfacing control panel design
- Aural/Visual ON, OFF, RAISE, LOWER functions
- S/N ratio of 58 dB
- rF of 20 kHz-150 kHz
- Power Supply: 117VAC ± 10%, 60 Hz
- 19" x 24" x 17-1/2"; Wt. 60 lbs.

The ITS-20 is a true broadcast quality exciter/modulator designed for use with UHF klystron transmitters. It provides separate visual and aural outputs of three watts each.

ITS-20 (Basic Model) \$21,000.00

Controls

The distribution of AC power is made from the Control Panel which contains the main circuit breaker as well as separate circuit breakers for each tray assembly. Controls for visual and aural power control are also located on the Control Panel. The Control Panel is also the centralized interface point for remote control. All metered parameters as well as significant status indications are available at a set of terminal boards located at the rear of the Control Panel. Provided at this point are remote contact closure commands for the following functions:

- Aural On
- Aural Off
- Visual On
- Visual Off
- Aural Raise
- Aural Lower
- Visual Raise
- Visual Lower
- Video Raise
- Video Lower

Packaging

The ITS-20 is comprised of a control panel and four 19 inch slide-out trays: Modulator, Upconverter, 3 Watt Visual Amplifier, and 3 Watt Aural Amplifier. Each assembly is 3 1/2 inches high for a total front panel height of 17 1/2 inches.

Visual Performance

Power Output	3 Watts
Output Impedance	50 Ohms, Type N
Frequency Range	470 to 806 MHz
Carrier Stability	± 250 Hz (Per Month)
Reg. of RF Output Power	2%
Variation of Output (over 1 frame)	2%
Sideband Response	
- 1.25 MHz and below	- 26 dB
- .075 MHz to + 4.18 MHz	± 0.5 dB
+ 4.75 MHz and higher	- 26 dB
Frequency Response vs. Brightness	± 0.2 db
Visual Modulation Capability	1%

TV EXCITERS/ TRANSMITTER

Differential Gain	2%
Incidental Phase Modulation	± 1°
Linearity (Low Frequency)	2%
Differential Phase	± 2°
Signal-to-Noise Ratio	58 dB
2t K-Factor	2%
12.5T Baseline Disturbance	4%
Envelope Delay	± 30 ns
Video Input	75 Ohms (loop-thru)

Aural Performance

Power Output	3 Watts
Frequency Deviation	± 75 kHz Capability
Frequency Response	± 0.5 dB
Distortion	0.5%
FM Noise	- 60 dB
AM Noise	- 55 dB
Aural to Visual Separation	± 250 Hz
Audio Input	
Level	+ 10 dBm, ± 2 dB
Impedance	600 Ohms, Balanced
Frequency Range	30 Hz - 15 kHz
Broadband Composite Audio Input	
Level	1V Peak, Nominal
Impedance	75 Ohms, Unbalanced
Frequency Range	30 Hz - 150 kHz
Subcarrier Input	
Level	1V Peak, Nominal
Impedance	75 Ohms, Unbalanced (or high impedance)
Frequency Range	20 kHz - 150 kHz

General

Line Voltage	117V, ± 10%, 60 Hz
Power Consumption	150W
Ambient Temperature	0 to + 50°C
Dimensions (WxDxH)	19"x24"x17 1/2"
Weight	60 lbs.

ITS-11/16

AURAL VHF EXCITER (Stereo Compatible)

FEATURES

- Balanced audio input — rF ± .5 dB over 30 Hz - 15 kHz 75 sec pre-emphasis
- Unbalanced composite audio input — rF ± .25 dB over 30 Hz - 120 kHz
- 10 ~ 100 mW adjustable output power
- FM S/N ratio > 60 dB (AM ratio > 56 dB)
- Synchronous amplitude modulation
- Low distortion

ITS-11 \$ 8,250.00
ITS-16 8,250.00

ITS-610

10W ITFS TRANSMITTER

FEATURES

- All solid state construction for stability and reliability
- SCA input for aural subcarriers
- Broadband aural input for multi-channel sound service
- Incidental carrier phase modulation correction for hue accuracy and excellent transient response
- Low level diplexed to provide a simpler and more reliable system
- Centralized system controls for simplified operation
- Slide-out tray construction for ease of access

The ITS-610 is a state-of-the-art 10W ITFS transmitter designed with the total cost of ownership in mind. Cost elements associated with installation, operation and maintenance have all been given consideration. The result is an effective blend of reliability, maintainability and performance. Features have also been included to reduce potential add-on costs. The built-in interfaces for signal scramblers, multi-channel sound and remote control can prove to be very valuable if any of these types of operation are to be used.

Solid State Construction
ITS-610 \$15,500.00

Prices and Specifications Subject to Change Without Notice.

B-581

INNOVATIVE TELEVISION EQUIPMENT

TRIPODS

6445 De Soto Ave.
P.O. Box 681
Woodland Hills, CA 91365
(818) 888-9421 Telex 181028

ITE-T1 WOOD TRIPOD (Miller Senior Model) Ball Leveling Bowl

Camera/Head Load Capacity 20 lbs. (6 kg)
Maximum Height 59 in. (147.5 cm)
Leg Angle up to 85°
Folded Length 35 in. (87.5 cm)
Folded Width 5 in. (12.5 cm)
Weight 8 lbs. (3.6 kg)
Finish Natural Wood and Black Wrinkle



Optional Accessories

\$415.00

ITE-TS1 Spreader;
ITE-CB1 Claw Ball;
ITE-RFP Rubber Foot Pads

ITE-T2 STUDIO/REMOTE TRIPOD

Camera/Head Load Capacity 60 lbs. (27 kg)
Minimum Height 29 in. (72.5 cm)
Maximum Height 65 in. (162.5 cm)
Minimum Folded Length 32 in. (80 cm)
Minimum Folded Width 7 in. (17.5 cm)
Maximum Leg Angle 35°
Weight 12 lbs. (5.4 kg)
Finish Anodized Aluminum and Black Wrinkle



Optional Accessories

\$350.00

ITE-SPS Spike Set; ITE-RFP Rubber Foot Pads

ITE-T3 ENG. TRIPOD Ball Leveling Bowl

Camera/Head Load Capacity 25 lbs. (11.25 kg)
Minimum Height 15 in. (37.5 cm)
Maximum Height 62 in. (155 cm)
Minimum Folded Length 28 in. (70 cm)
Minimum Folded Width 6 in. (15 cm)
Maximum Leg Angle 80°
Weight 7 lbs. (2.25 kg)
Finish Black Wrinkle



Includes Rubber Foot Pads; Adjustable Spreader; Spike Set

\$425.00

Optional Accessories: ITE-CB3 Claw Ball

ITE-T4 WOOD TRIPOD (Miller Light Pro Mini Model) Ball Leveling Bowl

Camera/Head Load Capacity 50 lbs. (22.5 kg)
Maximum Height 65 in. (162.5 cm)
Leg Angle up to 80°
Folded Length 40 in. (100 cm)
Folded Width 6 1/2 in. (16.25 cm)
Weight 12 lbs. (5.4 kg)
Finish Natural Wood and Black Wrinkle



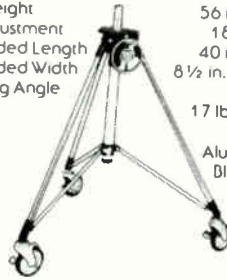
Optional Accessories

\$695.00

ITE-TS4 Spreader; ITE-CB3 Claw Ball; ITE-RFP Rubber Foot Pads

ITE-T5 ELEVATION TROLLEY

Camera/Head Load Capacity 50 lbs. (27 kg)
Minimum Height 38 in. (95 cm)
Maximum Height 56 in. (140 cm)
Elevation Adjustment 18 in. (45 cm)
Minimum Folded Length 40 in. (100 cm)
Minimum Folded Width 8 1/2 in. (21.25 cm)
Maximum Leg Angle 34°
Weight 17 lbs. (7.65 kg)
Finish Anodized Aluminum and Black Wrinkle

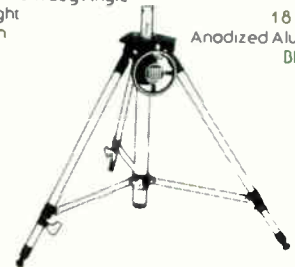


Optional Accessories

\$495.00

ITE-T6 ELEVATION TRIPOD

Camera/Head Load Capacity 50 lbs. (22.5 kg)
Minimum Height 29 in. (72.5 cm)
Maximum Height 65 in. (162.5 cm)
Elevation Adjustment 18 in. (45 cm)
Minimum Folded Length 33 in. (82.5 cm)
Minimum Folded Width 8 1/2 in. (21.25 cm)
Maximum Leg Angle 33 1/2°
Weight 18 lbs. (8.1 kg)
Finish Anodized Aluminum and Black Wrinkle



Optional Accessories

\$495.00

ITE-T8 ENG TRIPOD Ball Leveling Bowl

Camera/Head Load Capacity 40 lbs. (18 kg)
Minimum Height 20 in. (50 cm)
Maximum Height (at maximum leg spread) 68 in. (170 cm)
Minimum Folded Length 34 in. (85 cm)
Minimum Folded Width 7 in. (17.5 cm)
Leg Angle up to 80°
Weight 10 lbs. (4.5 kg)
Finish Anodized Aluminum and Black Wrinkle



Optional Accessories

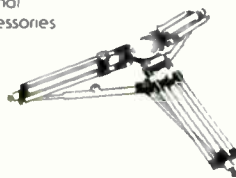
\$695.00

ITE-CB3 Claw Ball; ITE-RFP Rubber Foot Pads

Includes removable, adjustable spyder (tyrod) assembly, quick-action toggle leg locks, leg spikes

ITE-T9 TRIPOD—MINI Ball Leveling Bowl

Camera/Head Load Capacity 30 lbs. (13.5 kg)
Minimum Height 13 1/2 in. (33.75 cm)
Maximum Height 29 in. (72.5 cm)
Minimum Folded Length 21 in. (52.5 cm)
Minimum Folded Width 7 in. (17.5 cm)
Leg Angle up to 80°
Weight 8 lbs. (3.6 kg)
Finish Anodized Aluminum and Black Wrinkle



Includes removable, adjustable spyder (tyrod) assembly

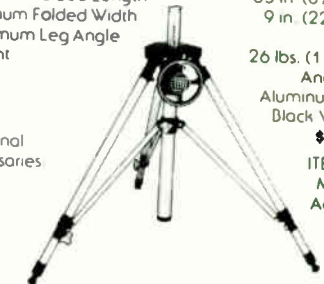
\$695.00

Optional Accessories

ITE-CB3 Claw Ball; ITE-RFP Rubber Foot Pads; ITE-SPS Spike Set

ITE-T10 ELEVATION TRIPOD

Camera/Head Load Capacity 140 lbs. (63 kg)
Minimum Height 28 in. (70 cm)
Maximum Height 59 in. (147.5 cm)
Elevation Adjustment 18 in. (45 cm)
Minimum Folded Length 35 in. (87.5 cm)
Minimum Folded Width 9 in. (22.5 cm)
Maximum Leg Angle 33 1/2°
Weight 26 lbs. (11.7 kg)
Finish Anodized Aluminum and Black Wrinkle



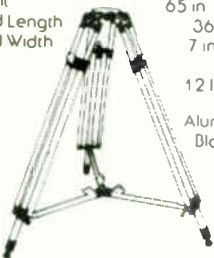
Optional Accessories

\$795.00

ITE-H25T Mitchell Adapter

ITE-T12 TRIPOD Pro Model—Ball Leveling Bowl

Camera/Head Load Capacity 50 lbs. (22.5 kg)
Minimum Height 24 in. (60 cm)
Maximum Height (at maximum leg spread) 65 in. (162.5 cm)
Minimum Folded Length 36 in. (90 cm)
Minimum Folded Width 7 in. (17.5 cm)
Leg Angle up to 80°
Weight 12 lbs. (5.4 kg)
Finish Anodized Aluminum and Black Wrinkle



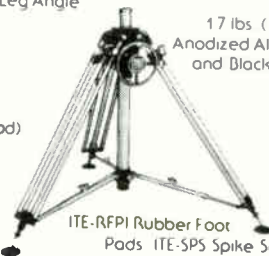
Includes removable, adjustable spyder (tyrod) assembly

\$695.00

ITE-CB3 Claw Ball; ITE-RFP Rubber Foot Pads; ITE-SPS Spike Set

ITE-T13 ELEVATION TRIPOD

Camera/Head Load Capacity 60 lbs. (27 kg)
Minimum Height 24 in. (60 cm)
Maximum Height (at maximum leg spread) 83 in. (207.5 cm)
Elevation Adjustment 18 in. (47.5 cm)
Minimum Folded Length 36 in. (90 cm)
Minimum Folded Width 9 in. (17.5 cm)
Maximum Leg Angle 35°
Weight 17 lbs. (7.65 kg)
Finish Anodized Aluminum and Black Wrinkle



Includes adjustable spyder (tyrod) assembly

\$850.00

Optional Accessories

ITE-RFP Rubber Foot Pads; ITE-SPS Spike Set

ITE-T14 FIELD TRIPOD

Camera/Head Load Capacity 140 lbs. (63 kg)
Minimum Height 25 in. (62.5 cm)
Maximum Height 45 in. (112.5 cm)
Minimum Folded Length 34 in. (85 cm)
Minimum Folded Width 9 in. (17.5 cm)
Maximum Leg Angle 38°
Weight 20 lbs. (9 kg)
Finish Black Wrinkle



Includes Mitchell base footpad/spike/spherical ball set

\$650.00

Reproduced with Permission from Material Copyright © 1983 by INNOVATIVE TELEVISION EQUIPMENT

Prices and Specifications Subject to Change Without Notice.

INNOVATIVE TELEVISION EQUIPMENT

6445 DeSoto Ave.
P.O. Box 681
Woodland Hills, CA 91365
(818) 888-9421 Telex 181028

ITE-H11 FLUID HEAD (Miller Super "8" Model)

Camera Load Capacity	10 lbs (4.5 kg)
Tilt Angle	± 80°
Pan Rotation	360°
Height	5 in (12.5 cm)
Width	3 1/2 in (8.75 cm)
Length	4 in (10 cm)
Weight	2 lbs (9 kg)
Base	Flat

\$385.00

Optional Accessories: Claw Ball leveling

ITE-H15 FLUID HEAD (Miller V.G. 50 Model)

Camera Load Capacity	40 lbs. (18 kg)
Tilt Angle	± 75°
Pan Rotation	360°
Height	6 3/4 in (16.9 cm)
Width	6 in (15 cm)
Length	7 in (17.5 cm)
Weight	8 lbs (3.6 kg)
Base	Flat

\$1300.00

Optional Accessories: Pro Claw Ball leveling dual handles, quick-release assembly

ITE-D3 DOLLY

Load Capacity	90 lbs (40.5 kg)
Folded Length	26 in (65 cm)
Folded Width	12 in (30 cm)
Height	7 in (17.5 cm)
Diameter	42 in (105 cm)
Wheel Diameter	5 in (12.5 cm)
Weight	17 lbs (7.65 kg)
Finish	Black Wrinkle

\$485.00

ITE-D6 DOLLY

Load Capacity	60 lbs (27 kg)
Folded Length	23 in (57.5 cm)
Folded Width	6 in (15 cm)
Height	6 in (15 cm)
Diameter	41 in (102.5 cm)
Wheel Diameter	5 in (12.5 cm)
Weight	7 lbs (3.15 kg)
Finish	Black Wrinkle

\$265.00

Accessories Available:
ITE-D6G comes equipped with cable guards

ITE-D8 DOLLY

Load Capacity	250 lbs (157.5 kg)*
Folded Length	31 in (75 cm)
Folded Width	16 in (40 cm)
Height	12 in (30 cm)
Diameter	48 in (120 cm)
Wheel Diameter	8 in (20 cm)
Weight	35 lbs (15.75 kg)
Finish	Black Wrinkle

\$995.00

Optional Accessories: Low Boy Hi Hat (19 in (47.5 cm) off floor), cable guards

*Load capacity when used with Low Boy Hi Hat 130 lbs (58.5 kg)

ITE-WA2	Wedge Adapter - H2	185.00
ITE-WA5	Wedge Adapter - H5	250.00
ITE-WP	Wedge Plate	125.00
ITE-WP100	Wedge Plate - H100	130.00
ITE-RH2	Right Hand Zoom Handle for H2	95.00
ITE-RH5	Right Hand Zoom Handle for H5	115.00
ITE-RH9AC	Right Hand Zoom Handle for H9AC	110.00
ITE-RH10	Right Hand Zoom Handle for H10	115.00
ITE-H2/6TH	Telescopic Handle for H2 and H6	165.00
ITE-RHM	Right Hand Handle for H12, H14, H15 and H16	80.00
ITE-H910P	Adapter - for H9AC and H10 to P6	165.00
ITE-H25T	Adapter - for H2, H5 and H6 to T6, T10, T13 and P7	110.00
ITE-H910CB	Adapter - for H9AC and H10 to T3, T4, T8 and T12	150.00
ITE-MHT	Adapter - for M Heads to T2, T5, T6, T10 and T13	85.00
ITE-CW	Counterweight Set (40 lbs.) for P4 and P5	215.00

Reproduced with Permission from Material Copyright © 1983 by INNOVATIVE TELEVISION EQUIPMENT

HEADS/PEDESTALS/DOLLIES/ACCESSORIES

ITE-H14 FLUID HEAD (Miller Light Pro Model)

Camera Load Capacity	30 lbs (13.5 kg)
Tilt Angle	± 80°
Pan Rotation	360°
Height	5 1/2 in (13.75 cm)
Width	6 1/2 in (16.25 cm)
Length	5 1/2 in (13.75 cm)
Weight	8 lbs (3.6 kg)
Base	Flat

\$1095.00

Optional Accessories: Pro Claw Ball leveling dual handles, quick-release assembly

ITE-H12 FLUID HEAD (Miller Senior "F" Model)

Camera Load Capacity	20 lbs (9 kg)
Tilt Angle	± 80°
Pan Rotation	360°
Height	5 in (12.5 cm)
Width	4 in (10 cm)
Length	4 1/2 in (11.25 cm)
Weight	5 lbs (2.25 kg)
Base	Flat

\$675.00

Optional Accessories: Claw Ball leveling dual handles, quick-release assembly

ITE-H16 FLUID-DAMPENED HEAD

Camera Load Capacity	25 lbs (11.25 kg)
Tilt Angle	± 90°
Pan Rotation	360°
Height	6 in (15 cm)
Width	6 in (15 cm)
Length	6 in (15 cm)
Weight	6 lbs (2.7 kg)
Base	Pro Claw Ball

\$1995.00

Includes Standard ITE-QR Quick Release Adaptor

Optional Accessories: Dual handles

ITE-D3G DOLLY

Load Capacity	90 lbs (40.5 kg)
Folded Length	26 in (65 cm)
Folded Width	12 in (30 cm)
Height	7 in (17.5 cm)
Diameter	42 in (105 cm)
Wheel Diameter	5 in (12.5 cm)
Weight	17 lbs (7.65 kg)
Finish	Black Wrinkle

\$535.00

Includes cable guards

ITE-D7 DOLLY

Load Capacity	250 lbs (112.5 kg)
Folded Length	29 in (72.5 cm)
Folded Width	15 in (37.5 cm)
Height	9 in (22.5 cm)
Diameter	45 in (112.5 cm)
Wheel Diameter	6 1/2 in (16.25 cm)
Weight	25 lbs (11.25 kg)
Finish	Black Wrinkle

\$875.00

Includes adjustable cable guards

ITE-D20 DOLLY

Load Capacity	25 lbs (11.25 kg)
Folded Length	19 in (47.5 cm)
Folded Width	12 in (30 cm)
Height	9 in (22.5 cm)
Diameter	37 in (92.5 cm)
Wheel Diameter	4 in (10 cm)
Weight	7 lbs (3.15 kg)
Finish	Anodized Aluminum

\$100.00

ITE-H10OFD FLUID DRAG HEAD

Camera Load Capacity	250 lbs (112.5 kg)
Tilt Angle	± 53°
Pan Rotation	360°
Height	8 1/2 in (21.25 cm)
Width (less handles)	12 in (30 cm)
Length (less handles)	14 in (35 cm)
Weight	31 lbs (13.95 kg)
Base	Mitchell Type

\$2920.00

Includes telescopic control handle; zoom stub handle; quick-release, lever-action wedge adaptor (requires ITE-WP100 wedge plate)

Optional Accessories: Right-hand telescopic handle

ITE-D5 DOLLY

Load Capacity	60 lbs (27 kg)
Folded Length	23 in (57.5 cm)
Folded Width	6 in (15 cm)
Height	6 in (15 cm)
Diameter	42 in (105 cm)
Wheel Diameter	5 in (12.5 cm)
Weight	7 lbs (3.15 kg)
Finish	Black Wrinkle

\$345.00

ITE-TS TRIPOD SPREADER (For ITE/Miller -T1 and -T4 Tripods)

This spreader is constructed of sturdy, lightweight aluminum. It will retain tripod legs from a diameter of 3/2 to 4 1/2 inches (80-120 cm). Weight is 3 pounds (1.35 kg).

\$285.00

HI HATS

ITE-HH6 (Mitchell-Type Mount)

Camera Load Capacity	300 lbs (135 kg)
Height	6 in (15 cm)
Maximum Width	7 1/2 in (18.75 cm)
Mounting Bolt Circle	6 1/2 in (16.25 cm)
Bolt Attachment Size	3/8 in (.94 cm)
Finish	Black Wrinkle

\$150.00

ITE-MHH (Miller "Pro Doll" Dolly)

Camera Load Capacity	40 lbs (18 kg)
Height	6 in (15 cm)
Maximum Width	7 in (17.5 cm)
Mounting Bolt Circle	6 1/2 in (16.25 cm)
Bolt Attachment Size	3/8 in (.94 cm)
Finish	Black Wrinkle

\$165.00

ACCESSORIES

ITE-RFPM	Rubber Foot Pad Set - for T1, T3, T4 and T8	95.00
ITE-RFPI	Rubber Foot Pad Set - for T2, T12 and T13	115.00
ITE-CB1	Claw Ball Assy - for T1	70.00
ITE-CB3	Claw Ball Assy - for T3, T4, T8 and T12	145.00
ITE-QR	Quick Release Adapter Assy	160.00
ITE-QRP	Quick Release Adapter Plate	40.00
ITE-EXT	Extender Plate for Balance of Studio/ENG Camera	50.00
ITE-SPS	Spike Set - for T2, T6, T10, T12 and T13	45.00
ITE-CTH	Shipping Case for T3, T4, T6, T8, T10, T12 and T13	370.00
ITE-CD2	Tripod with H9AC, H10, H12, H14, H15 and H16 Head	290.00
ITE-CH2	Shipping Case for D5, D6 and D7 Dolly	320.00
ITE-FTC	Shipping Case for H2, H5, H6, H9AC and H10 Pan/Tilt Head with Handles and Accessories	340.00
	Fiber Tube Case	135.00

INTERAND CORPORATION

3200 W. Peterson Ave.
Chicago, IL 60659
(312) 478-1700 Telex 91022-15279
INTERANDCO CGO

IMAGE STORAGE/TRANSCIVER AND PROCESSOR

FASTSCAN 200

Multipoint Freeze-Frame Transceiver and Image Processor

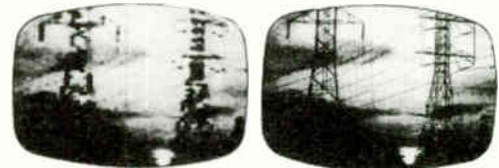
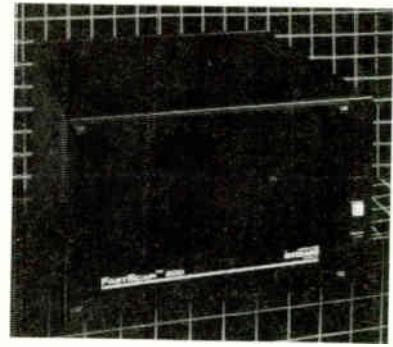
FEATURES

- A true communicating image processor
- Can accept future transmission/compression programs
- Easy to use
- Compact
- Microprocessor-based
- Remote control
- Full color
- High resolution - 640 by 480 pixels
- Fast transmission - initial image in 4 seconds (V2.3)
- Automatic error detection/correction
- Compatible with other members of the DISCON family
- Upgradeable

FastScan 200 is the entry level member of the DISCON™ family. Both affordable and upgradeable, it allows users to transmit to multiple locations any image that can be captured by a video camera or created by a video compatible professional computer. FastScan 200 systems can be used in a stand-alone network or as part of a DISCON 700 or 1000 network.

FastScan (with Image Processor Program 2.3) transmits the initial image over ordinary telephone lines to multiple sites in 4 seconds. As users discuss the image, the system adds color and detail. High resolution allows decision-makers to review such complex images as blueprints, mechanical parts, circuit boards, molded pieces, financial documents, seismic charts, typewritten copy, and photographs. Advanced Image Processor Programs can be installed as they are made available.

FASTSCAN 200 \$14,000.00



4 Sec.
Initial Image

21 Sec.
First Color



47 Sec.

Completed Image

FastScan Transmission Time*
(Using Image Processor Program 2,3)

IMAGE FILE™ II Video Image Storage System

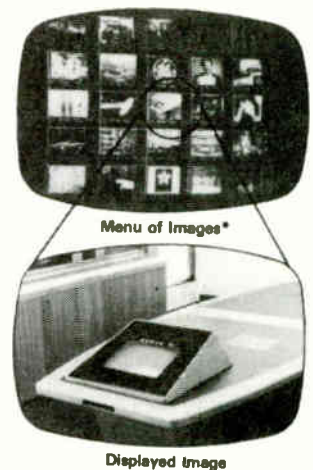
FEATURES

- Easy to use
- "Help" menu
- Remote control
- Instant image storage and retrieval
- Automatically generated menu of images, including record of date and time of storage
- Automatic display mode
- Automatic send mode
- Tape drive for image backup and restore
- Capacity expandable from 200 to 1400 full-color high resolution images

A significant addition to DISCON™ 1000, 700, or FastScan™ 200, Image File allows storage and retrieval of any image that can be captured by a video camera or created by a video compatible professional computer. With expansion modules, up to 1400 full-color high resolution images can be stored, any of which can be called up on DISCON display terminals in less than three seconds.

Using FastScan, images can be transmitted over ordinary telephone lines and remotely stored in Image Files at all locations. Users can then call up any of these images simultaneously at all sites for fast, effective problem-solving and telepresentations. Images can also be sequenced for automatic display at all sites to create a remote electronic slide show.

IMAGE FILE II \$15,000.00



*Unretouched Photo From Display Monitor

™ TRADEMARKS OF INTERAND CORPORATION

INTERAND CORPORATION

3200 West Peterson Avenue
Chicago, IL 60659
(312) 478-1700
Telex 91022-15279-INTERANDCO CGO

VIDEO TELECONFERENCING ANIMATION SYSTEMS

DISCON 1000

CONTROL
CENTER

TELESTRATOR 100

DOCUMENT
STATION

DISCON 1000 Document Station/Control Center

Because the DISCON 1000 is essentially a distributed processor that uses visual data (video), the background material can be provided by the host of information systems available. Computer graphics systems with RGB output or word processor "pages" with RS 170 output will be fed directly into the DISCON 1000 and provide great flexibility for the application materials that can be used as the background image. Naturally, with a microprocessor based system, disk drives of various sizes can either provide video storage for the "viewgraphs" for one presentation prior to an event or store hundreds of images of all teleconferences pertaining to a specific project throughout its life. Unlike all other teleconferencing approaches which provide an "electronic meeting" alternative to travel, DISCON is a decision making system that becomes a natural part of management information systems and communications activities.

The Control Center mounted graphics processor features multipoint communications controller, digitizing sensor surface with switching control for video input and output, seven color graphics option and color background image displayed on 19" RGB monitor.

DISCON 1000\$62,000.00

DISCON 725

DISCON 725 is a compact, modular, integrated teleconferencing system designed for the small conference room, desktop, or even the plant floor. DISCON 725 combines the full-color, high resolution tranceiver capabilities of FastScan™ with the seven color annotation capabilities of the DISCON 500.

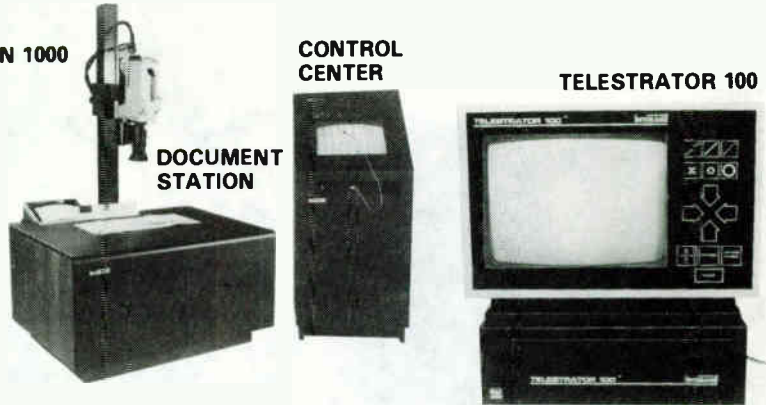
Any image that can be captured by a video camera or created by a video compatible professional computer can be shared by decision-makers at remote locations. With a touch of the stylus to the DISCON Interactive Graphics Display, users can draw directly onto the video image and instantly transmit graphics over ordinary telephone lines. The DISCON display can also be used as a color display terminal for a professional computer.

DISCON 725\$44,000.00

DISCON 500

The DISCON 500 is designed to operate in conjunction with a customer's own pre-installed freeze-frame video conferencing system and provides the same interactive graphics capability as the DISCON 1000. It also operates as a stand-alone audiographics system utilizing the same unique color and symbol characteristics as described with the DISCON 1000. The DISCON 500 consists of a display unit including a stylus-controlled sensor surface, a color monitor and an electronic microprocessor module. While the DISCON 500 does not provide error correction and network control of the background images supplied by the customer's freeze-frame system, it does retain these features for the superimposed graphics which conference participants add to such images. The DISCON 500 offers the same ability to annotate in multiple colors and symbols as the DISCON 1000. The DISCON 500 can also be used as an "electronic blackboard" in which there is no background image. Principal blackboard applications are expected to be in tele-teaching and as an added component to ordinary voice-only telephone conferences.

NTSC System\$23,300.00
PAL System24,800.00



DISCON 725



TELESTRATOR 440

TELESTRATOR™ 440

FEATURES:

- 13-inch diagonal color monitor
- Stylus selection of modes and symbols
- Symbol and mode indication in upper right corner of screen on Local display only
- Local stylus-selectable crosshair for exact stylus positioning
- Moving symbol mode ("write-thru" cursor)
- Eraser with exact-size symbol
- Adjustment-free stylus calibration
- Digital accuracy and repeatability
- Color options
- Variable symbol size option
- Variable symbol orientation option
- Symbol animation option
- Customized menu selection with personality modules
- Remote control options
- High resolution (1024 x 480) for smooth graphics

Basic System including 12 customer-specified standard symbols and expansion capability.

NTSC System\$19,600.00
PAL System20,600.00

TELESTRATOR™ 100

Monochrome Graphics (colorizable)

FEATURES:

- 13-inch diagonal color monitor
- All symbol and mode selection by stylus
- Symbol and mode indication in upper-right corner of screen on Local display only
- Local crosshair (stylus selectable) for exact stylus positioning
- "Write-thru" cursor mode -- moving symbol
- Eraser with exact size symbol
- Automatic stylus calibration -- no adjustments required
- Digital accuracy and repeatability
- High resolution (1024 x 480) for smooth graphics

Complete NTSC (525 line, 60 Hz.) system\$13,500.00
Complete PAL (625 line, 50 Hz.) system\$14,500.00



"A Bold Beginning"

Creativity You Can Depend On!

Today, a new group with vision and dedication is working to expand the quality and creative limits of video. This new group, known as Intergroup Video Systems, recognizes that their ultimate success will depend upon satisfying the needs of video users. Therefore, they established three important goals for all Intergroup products: each must be innovative, quality-crafted and user-friendly.

Introducing Intergroup's New 5-Year Limited Warranty And 30-Day Return Policy

Intergroup Video Systems also recognizes that their products must be dependable. That's

why each Intergroup product is backed by a 5-year limited warranty. And to go one step further, Intergroup is offering a 30-day return policy. The video user can purchase an Intergroup product with complete confidence.

Innovation And Craftsmanship

Intergroup Video Systems manufactures a complete line of video production and switching equipment including: production switchers, master control switchers, routing switchers and audio and video terminal equipment.

Call toll free today 1-800-874-7590 to find out more about Intergroup products backed by a 5-year limited warranty and 30-day return policy.

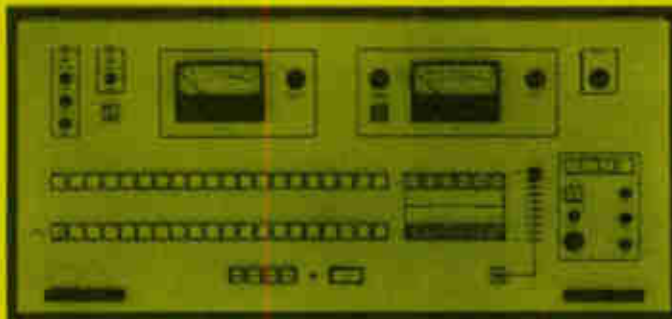


"Creativity You Can Depend On"

INTERGROUP VIDEO SYSTEMS, INC.
P.O. BOX 1495 / GAINESVILLE, FL 32602 U.S.A.
SALES: (800) 874-7590 / IN FLORIDA (904) 373-6783
TWX 810-825-2307

"Creativity You Can Depend On"

2101 NE 31st Ave.
P.O. Box 1495
Gainesville, FL 32602
(904) 373-6783 (800) 874-7590
FAX 810-825-2307



MODEL 899

899 Master Control Switcher

- 15 to 40 inputs including Color Black
- Equalizing Input Amplifiers with +/-15° Phase Adjust
- 5 Breakaway Audio Inputs with Auto Cart Start
- Audio Over/Under
- Auto Transition Audio/Video Mixer, cut or 3 mix rates
- Downstream Keyer with 4 Input Selector, Colorizer and Key Edging
- Non-Sync Detector with Mix Transition Inhibit
- Program VU Meter and Level Adjust
- Audition and Program Monitor Amplifiers with Gain Controls
- Live/Air Input Selector to Program Monitor Amplifier
- Audition VU Meter
- Time Display
- Tally System
- Master Fade to Black/Pulse Processing

The Model 899 Master Control Switcher combines the Model 1100 series routing switcher matrix with state-of-the-art electronics to provide both a master control switcher and a routing switcher matrix. Based on the 1100 series router matrix, the 899 uses two output buses for its audio follow video matrix. The additional output buses (3 minimum) may be used for preview or routing using standard 1100 series controllers. Equalizing amplifiers simplify color timing of the system. The 899 is also available in various input sizes from 15 to 30 inputs.

The Program bus allows for direct cuts at any time. The Preset/Audition bus allows auditioning of any of the inputs and presetting of the next event. The auto transition system allows for cuts and for audio and video mix transitions between the Preset and Program busses. Mix transitions of one-half, one and two second rates may be preselected, but will be inhibited if a non-synchronous source is selected. A downstream key edger with four input selector, colorizer and outline, shadow and border edging is standard.

Both switching busses provide 5 breakaway audio inputs with auto cart start which may be used with any 600 ohm source. A variable ratio audio mix between Program and Preset is provided when audio over/under is activated. A program VU meter and program level control and program and audition 5 watt monitor amplifiers with gain controls on the panel are standard.

OPTIONS

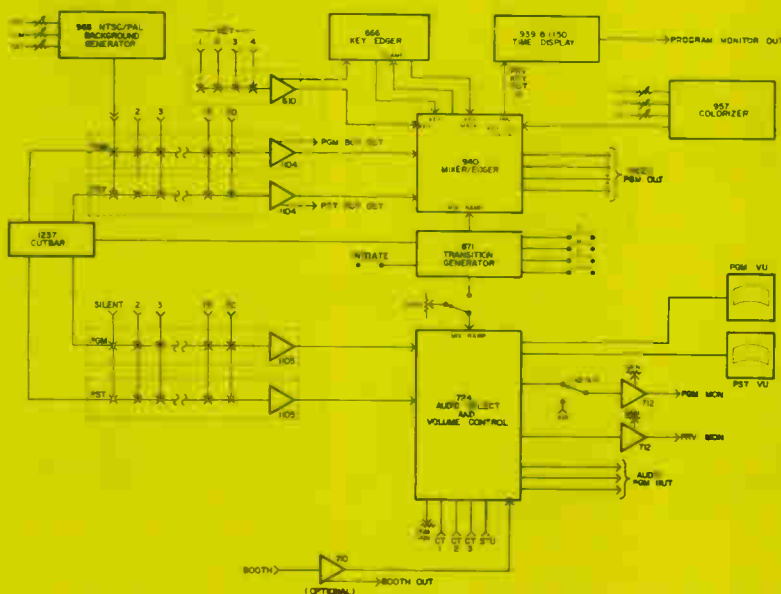
- Model 810 Booth Mic Pre-Amplifier: Provides booth mic level setting prior to air
- Model 868 Machine Control Logic
- Model 883 Video Tape Machine Control
- Model 884 Film Island Control
- Computer interface to operate the 899, consult factory

899-10 Master Control Switcher with 10 Inputs	\$13,900.00
899-15 Master Control Switcher with 15 Inputs	15,900.00
899-20 Master Control Switcher with 20 Inputs	20,100.00
899-25 Master Control Switcher with 25 Inputs	25,750.00
899-30 Master Control Switcher with 30 Inputs	28,575.00

800 SERIES OPTIONS:

810 Booth Preamp	675.00
825 Auxiliary Bus with Controller (limit 3)	2,050.00
825-S Stereo Auxiliary Bus with Controller (limit 3)	2,700.00
868 Machine Control Logic	2,890.00
883 Video Tape Machine Controller	510.00
884 Film Island Controller	675.00
SA Stereo Audio Option	5,250.00
Additional Manual	125.00
Spare Parts Kit	650.00
Additional Cable	20.00/ft

MODEL 899
VIDEO FLOW DIAGRAM



"Creativity You Can Depend On"

2101 NE 31st Ave.
P.O. Box 1495
Gainesville, FL 32602
(904) 373-6783 (800) 874-7590
TWX 810-825-2307



MODEL 831

831 Master Control Switcher

FEATURES

- Ten AFV Inputs including Blackburts/Colorizer
- Five Breakaway Audio Inputs with Auto Cart Start
- Audio Over/Under
- Auto Transition Audio/Video Mixer, Cut or 3 Mix Rates
- Downstream Keyer with 4 Input Selector, Colorizer and Key Edging
- Non-Sync Detectors with Mix Transition Inhibit
- Program VU Meter and Level Adjust
- Audition and Program Monitor Amplifiers with Gain Controls
- Time Display (Count-up Event Timer)

The Model 831 Master Control Switcher with audio follow video utilizes state-of-the-art circuitry and construction techniques to maximize operation convenience, flexibility and accuracy.

The Model 831 utilizes a 10 in and 2 output AFV matrix which allows for direct cuts on the Program bus at any time. The Preset/Audition bus allows auditioning of any of the inputs and presetting of the next event. The auto transition system allows for cuts and for audio and video mix transitions between the Preset and Program busses. Mix transitions at one-half, one and two second rates may be preselected but will be inhibited if a non-synchronous source is selected. A downstream key edger with 4 input selector, colorizer and outline, shadow and border edging is standard.

Both switching busses provide 5 breakaway audio inputs with auto cart start which may be used with any 600 ohm source. A variable ratio audio mix between Program and Preset is provided when audio over/under is activated. A Program VU meter, Program level control and Program and Audition 5 watt monitor amplifiers are standard.

OPTIONS

- Model 847 Computer Editor Interface to operate the 831, consult factory
- Additional Cable (specify length)

831 Master Control Switcher

NTSC	\$11,700.00
Additional Cable	10.00/ft.
Additional Manual	75.00
Spare Parts Kit	400.00

MODEL 831 VIDEO FLOW DIAGRAM

