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DATASHEET

NVISION Compact

Space and Cost Efficient Utility Routers

NVISION COMPACT
Space and Cost Efficient Utility Routers

Video routing innovations that simplify your workflows.

The NVISION Compact range is ideally suited to utility routing applications. They are available for all core formats, including triple rate 3G/HD/SD. The Compact Routers also have a built-in controller, eliminating the need for a costly external controller.

Triple Rate 3G/HD/SD

SMPTE ST 424 3 Gb/s models operate error free, with automatic reclocking data paths for 270 Mb/s, 1.483 Gb/s, 1.485 Gb/s, 2.967 Gb/s and 2.970 Gb/s rates. The 3 Gb/s routers protects your small router investment well into the future, with 1080p 50/60 support and Dolby E and DVB-ASI compliance.

Key Features

Extremely small form factor

- Ultra thin saves rack space
- 1 RU and 2 RU sizes
- Lightweight design
- Non-square router configurations for monitoring applications

Full line of utility routers

- Future-proof 3G/HD/SD
- DVB-ASI compliant
- Dolby E certified

Robust design

- Robust design for rugged conditions
- Highly reliable power supply over 500,000 hours MTBF
- Optional redundant power supply available
- Range operates with the entire NVISION router range

Powerful, free configuration tools

- Compact Router System Configurator (CRSC) software provides easy configuration of routers, including salvos and partitioning
- Software also allows programming of remote control panels, and configuration of network settings

Multiple control capabilities

- Ethernet and serial control
- Local button panel
- Remote control panel
- Graphical User Interface (GUI) panels
- Panel sizes include 32x32, 32x4, 32x1, 16x4, 16x2, 8x8

3G/HD/SD Digital Video

Key Features

- Triple rate 3G/HD/SD
- DVB-ASI compliant
- Router partitioning
- Scalable with the entire NVISION range of routers
- Highly reliable power supply (over 500,000 hours MTBF)
- Optional control panel

Ordering

CR3232-3GIG 32x32 3G/HD/SD serial digital video router, 2 RU

Router Control Panels

8x8 - 16x2 - 16x4 - 16x16 - 32x1 - 32x2 - 32x4 - 32x32

Key Features

- Control panels (CPs) are sold separately
- Local control panels or remote control panels
- Remote control panels are programmable

Control panel connectivity	RP16 (1 RU)	RP32 (2 RU)	Router (1 RU)	Router (2 RU)
8x8 1 RU (CP0808)	X		X	
16x2 1 RU (CP1602)	X		X	
16x4 1 RU (CP1604)	X		X	
16x16 1 RU (CP1616)	X		X	
32x1 1 RU (CP3201)	X			
32x4 2 RU (CP3204)		X		X
32x32 2 RU (CP3232)		X		X

Ordering

Note: Directly attaches to CR router or remote panel, except for CP3201 which only attaches to a RP16

CP0808 8x8 button panel 1 RU
CP1602 16x2 button panel for 1 RU
CP1604 16x4 button panel for 1 RU
CP1616 16x16 button panel for 1 RU
CP3201 32x1 button panel for 1 RU (requires purchase of RP16)
CP3204 32x4 button panel for 2 RU
CP3232 32x32 button panel for 2 RU

Remote Panel Expansion Kits

Note: Allows CP panel to operate separately and remotely via Ethernet. CP panel can be programmed using CRSC when mounted to an RP

RP16 Remote panel expansion kit for 1 RU
RP32 Remote panel expansion kit for 2 RU

Power Supply

CRPS1 Redundant power supply for compact routers and remote panels

Specifications

Electrical

AC input: 90-250 VAC, 50/60 Hz, auto-ranging
AC fuses: No user serviceable fuses
AC connectors: 2, 12 VDC with external modules
AC power: PS0001-00, HB0321-00, 50 W, one IEC 320
AC power usage: 35W nominal (32x32 3 Gig, SWB, SD)
Regulatory compliance: UL listed and CE compliant

Mechanical

Dimensions:

- 1 RU for 16x16 (45 mm / 1.75 in.) high
- 2 RU for 32x32 (89 mm / 3.5 in.) high – 483 mm (19 in.) wide, 35 mm (1.38 in.) deep, without control panel – Exception: analog audio 57 mm (2.25 in.) deep, without control panel

Weight: 4.4 kg (2 lbs.) 16x16, 8.8 kg (4 lbs.) 32x32
Mounting: EIA 310-C, 19 in (483 mm)
Grounding terminal: Cooper, accepts 14-6 AWG

Serial Control

Type: 1 Serial port
Standard: SMPTE ST 207, EIA-422, configurable
Connector: 1, DE-9

Ethernet

Type: 10/100 Base-T
Standard: IEEE 802.3
Protocol: NVISION Ethernet protocol
Connector: 1, RJ45

Environmental Specifications

Operating temperature: 0 to 40° C (32 to 104° F)
Relative humidity: 0 to 90%, non-condensing

Video Reference Input

Type: Analog video reference
Standard: PAL, NTSC or tri-level sync
Connector: Loop through, BNC
Impedance: 75Ω or Hi-Z
Input level: 0.5 Vp-p to 2.0 Vp-p
Input return loss: ≥30 dB to 5 MHz

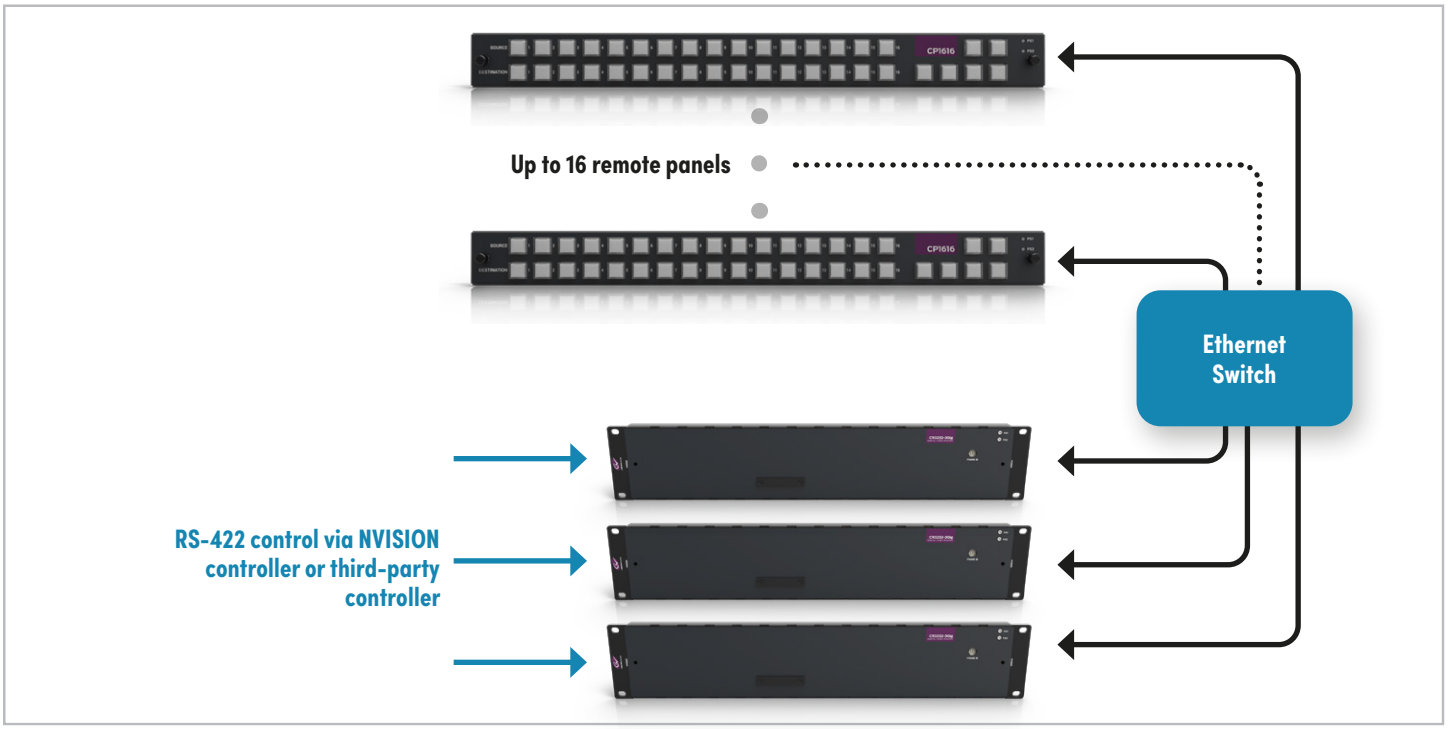
3G/HD/SD Inputs/Outputs

Type: High definition serial digital video
Standard: SMPTE ST 259-C, SMPTE ST 292 and SMPTE 424
Data rate: Auto reclocking at 270 Mb/s and 1.483, 1.485, 2.967, 2.970 Gb/s or auto bypass with pass-through from 19 Mb/s to 3 Gb/s
Note: Inputs do not reclock
Connector: BNC
Impedance: 75Ω
Cable equalization (for cables listed or equivalent cable): 400m (1,312 ft.) Belden 1694A, 250m (820 ft.) Belden 1855A at 270 Mb/s, 150m (492 ft.) Belden 1694A, 100m (328 ft.) Belden 1855A at 1.5 Gb/s, 100m (328 ft.) Belden 1694A, 45m (147 ft.) Belden 1855A at 3 Gb/s
Router path: Non-inverting
Output level: 800 mVp-p ±10 %
I/O return loss: >15 dB, 5 MHz to 1.5 GHz >10 dB, 1.5 GHz to 3 GHz
Output rise/fall time: ≤135 ps
Output overshoot: ≤10 % of amplitude max
Output alignment jitter: ≤0.3 UIpp from 100 kHz to 300 MHz
Output timing jitter: ≤2.0 UIpp from 10 Hz to 100 kHz

NVISION Compact Space and Cost Efficient Utility Routers

Flexible System Architecture and Control

The NVISION Compact router control panel system is highly scalable, and allows up to four routers to be controlled from up to 16 remote control panels without the use of an external controller. The routers are can be remotely controlled and monitored via a serial connection and over Ethernet, using NVISION protocols or other third-party control software.



Integration with NVISION router control system

For the highest level of control flexibility, the NVISION Compact routers can be integrated with the NVISION's router control system. Field proven in hundreds of installations worldwide with millions of hours of continuous operation, the NVISION router control system is the ultimate for mission-critical applications. Designed to grow with your needs, it offers a full complement of user interface options, full redundancy, and an easy-to-use Java-based configuration editor. Its flexible and scalable architecture offers a choice of several core system controllers, and a wide variety of highly configurable hardware and virtual control panels.

Flexible System Configuration

The NVISION Compact Router System Configurator (CRSC) software is included with every router. This Java-based software provides all the tools and flexibility needed to custom tailor compact router systems to optimize and improve the efficiency of your facility. The software can configure IP settings, partition routers into multiple levels, program remote control panels for device level control, build salvos, and reconfigure large routing networks to meet changing facility workflows. Configurations can be devised offline, and easily uploaded over a network to the system.

Intuitive help system

Configurator has simple help screens and menus to guide users through each step.

NVISION COMPACT CQX

3G/HD/SD Router with Clean and Quiet Switching

Audio/video routing innovations that simplify your workflows.

The NVISION Compact CQX is a 16x8 router which offers clean and quiet outputs for performing seamless video and audio transitions. The CQX provides two clean and quiet outputs for 3G/HD/SD signals, and six auxiliary outputs are available for preview or monitoring. It also offers support for up to 16 channels of embedded audio.

The CQX's unique design supports ±3 line buffer, which reduces the need for costly timing equipment. The line buffer allows the router to realign sources which are grossly out of time, and switch them with minimal delay. This switching is performed without any video artifacts or audio pops that are typically associated with a transition of this nature.

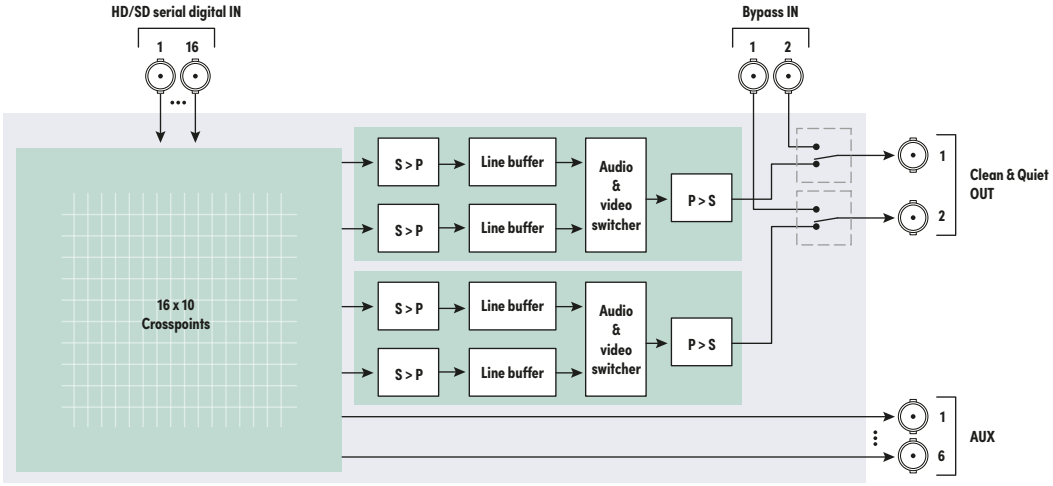
Robust, compact and affordable, the NVISION Compact CQX is ideal for disaster recovery backup and bypass master control applications. It can also be used as a low-cost alternative to a master control system. Several transition types are available, including V-fade, cut-fade, fade-cut and crossbar.

The CQX features two separate emergency bypass inputs with relays to ensure critical signal passage, even in the event of a power outage.

The NVISION Compact CQX is based on the same durable and scalable design as the rest of the NVISION Compact router range. It can operate as a standalone unit, and can also be driven by an external control system.

Key Features

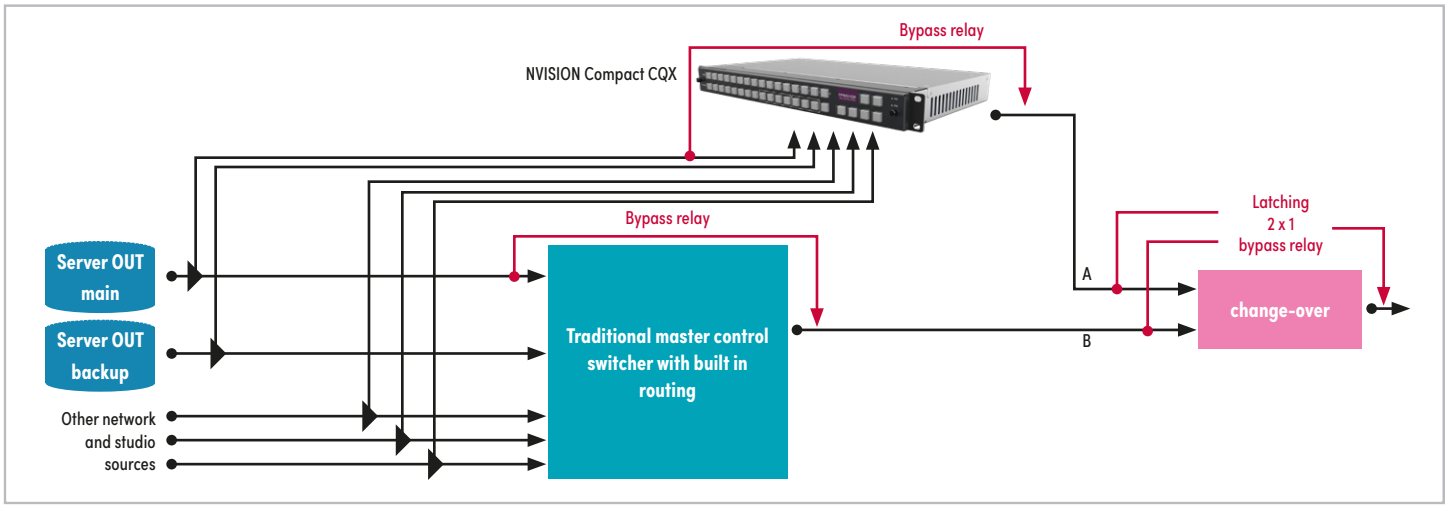
- Unique design supports a ±3 line buffer, reducing the need for costly timing equipment
- 16 inputs, 2 clean and quiet outputs, 6 auxiliary outputs
- Support for 16 channels of embedded audio
- V-fade, cut-fade, fade-cut and crossbar transitions
- Choice of three transition rates
- GPI/O interface for simple external control and alarms
- Two bypass inputs with relays guarantee signal passage in the event of power failure
- Serial port supports NVISION router serial protocol for automation control



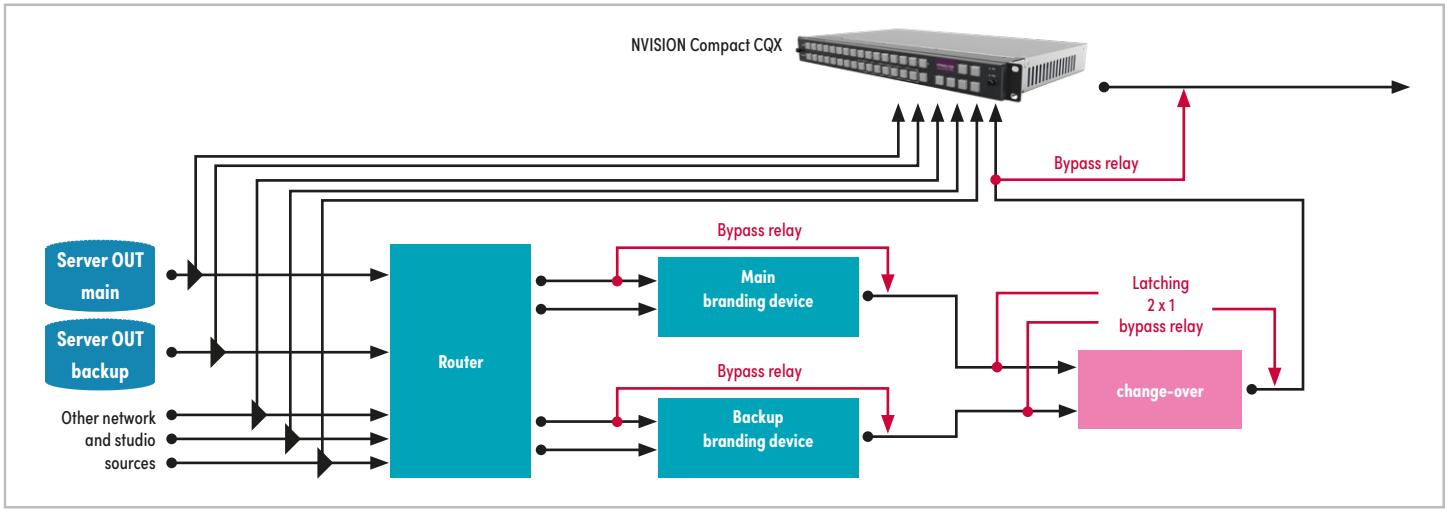
Compact CQX Functional Block Diagram

Typical “Clean and Quiet” Switching Applications

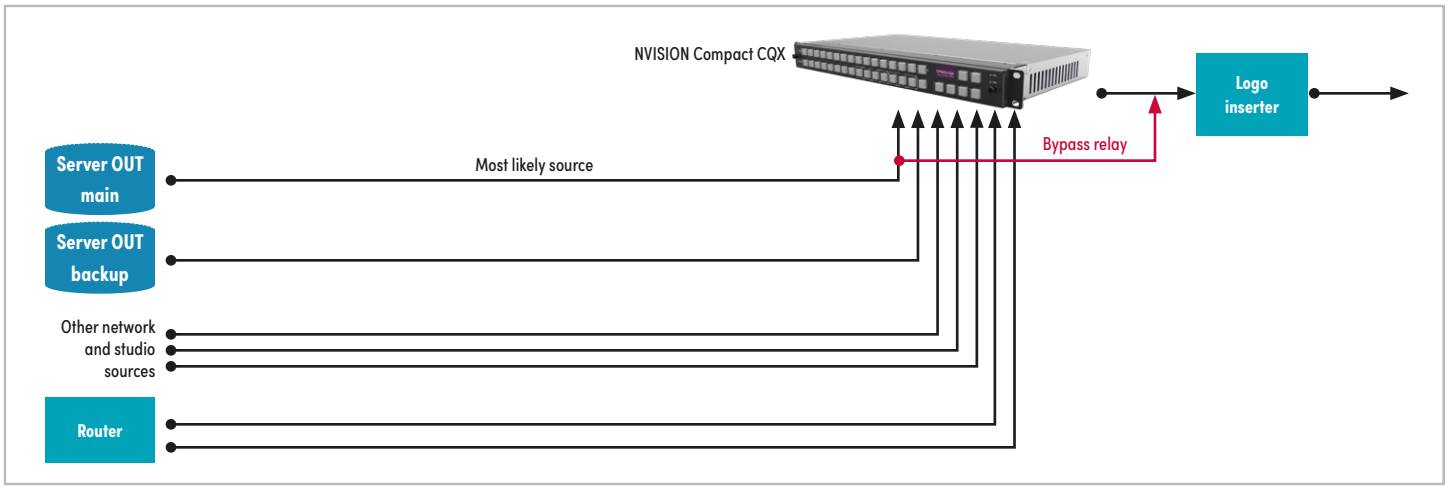
Master control backup/bypass using parallel backup switcher & downstream 2 x 1 change-over



Speciality channel backup/bypass using downstream backup switcher



Simple master control



Specifications

Electrical

AC input: 90-250 VAC, 50/60 Hz, auto-ranging

AC fuses: No user serviceable fuses

AC connectors: 2, 12 VDC with external modules

AC power: PS0001-00, HB0321-00, 50 W, one IEC 320

AC power usage: 33W nominal

Regulatory compliance: UL listed and CE compliant

Mechanical

45 mm (1.75 in.) high

482.6 mm (19 in.) wide

257.81 mm (10.15 in.) depth without a control panel attached

Weight: 4.4 kg (2 lbs.) for 16x16, 8.8 kg (4 lbs.) for 32x32

Mounting: EIA 310-C, 483 mm (19.0 in.)

Grounding terminal: Cooper, accepts 14-6 AWG

Serial Control

Type: 1 serial port

Standard: SMPTE ST 207, EIA-422, configurable

Connector: 1, DE-9

GPIO

Connector: DB25 (16 inputs, 4 outputs)

Ethernet

Type: 10/100 Base T

Standard: IEEE 802.3

Protocol: NVISION Ethernet protocol

Connector: 1, RJ45

Environmental Specifications

Operating temperature: 0 to 40° C (32 to 104° F)

Relative humidity: 0 to 90%, non-condensing

Cooling: Front serviceable fan tray

Video Reference Input

Type: Analog video reference

Standard: PAL, NTSC, or tri-level sync

Connector: Loop through, BNC

Impedance: 75Ω or Hi-Z

Input level: 0.5 Vp-p to 2.0 Vp-p

Input return loss: ≥30 dB to 5 MHz

SD Inputs/Outputs

Type: Standard definition serial digital video

Standard: SMPTE ST 259

Data rate: Auto reclocking at 270 Mb/s or auto bypass with pass-through from 19 Mb/s to 360 Mb/s (Note: inputs do not reclock)

Connector: BNC

Impedance: 75Ω

Cable equalization:

- 350m (1,148 ft.) Belden 1694A
- 200m (656 ft.) Belden 1855A, or equivalent cable, at 270 Mb/s

Router path: Non-inverting

I/O return loss: >15 dB, 5 to 540 MHz

Output level: 800 mVp-p ±10%

Output rise/fall time: 600 ps +10%

Output overshoot: ≤10% of amplitude max

Output alignment jitter: ≤0.2 UIpp from 1.0 kHz to 27 MHz

Output timing jitter: ≤0.2 UIpp from 10 Hz to 1.0 kHz

SD and HD Inputs/Outputs

Type: High definition serial digital video

Standard: SMPTE ST 259, SMPTE ST 344 and SMPTE ST 292

Data rate: Auto reclocking at 270 Mb/s and 1.483 and 1.485 Gb/s or auto bypass with pass-through from 19 Mb/s to 1.5 Gb/s (Note: inputs do not reclock)

Connector: BNC

Impedance: 75Ω

Cable equalization:

- 150m (492 ft.) Belden 1694A
- 85m (278 ft.) Belden 1855A, or equivalent cable, at 1.5 Gb/s

Router path: Non-inverting

Output level: 800 mVp-p ±10 %

I/O return loss: >15 dB, 5 MHz to 1.5 GHz

Output rise/fall time: ≤270 ps

Output overshoot: ≤10 % of amplitude max

Output alignment jitter: ≤0.2 UIpp from 100 kHz to 150 MHz

Output timing jitter: ≤1.0 UIpp from 10 Hz to 100 kHz

3G/HD/SD Inputs/Outputs

Type: High definition serial digital video

Standard: SMPTE ST 259-C, SMPTE ST 292 and SMPTE ST 424

Data rate: Auto reclocking at 270 Mb/s and 1.483, 1.485, 2.967, 2.970 Gb/s or auto bypass with pass-through from 19 Mb/s to 3 Gb/s
(Note: inputs do not reclock)

Connector: BNC

Impedance: 75Ω

Cable equalization (for cables listed or equivalent cable):

- 400m (1,312 ft.) Belden 1694A, 250m (820 ft.) Belden 1855A at 270 Mb/s
- 150m (492 ft.) Belden 1694A, 100m (328 ft.) Belden 1855A at 1.5 Gb/s
- 100m (328 ft.) Belden 1694A, 45m (147 ft.) Belden 1855A at 3 Gb/s

Router path: Non-inverting

Output level: 800 mVp-p ±10 %

I/O return loss:
>15 dB, 5 MHz to 1.5 GHz >10 dB, 1.5 GHz to 3 GHz

Output rise/fall time: ≤135 ps

Output overshoot: ≤10 % of amplitude max

Output alignment jitter: ≤0.3 UIpp from 100 kHz to 300 MHz

Output timing jitter: ≤2.0 UIpp from 10 Hz to 100 kHz

Video Transition Rates

(slow = 3 sec., medium = 2 sec., fast = 1 sec.)

1080i59.94, NTSC: slow 90, medium 60, fast 30 frames

1080i50, PAL: slow 75, medium 50, fast 25 frames

720p50: slow 150, medium 100, fast 50 frames

720p60: slow 180, medium 120, fast 60 frames

Specifications subject to change without notice

Ordering

Clean and Quiet Switches

CR1602-3GIG-CQX

16x8 3G clean and quiet switch, 1 RU

Power Supply

CRPS1

Redundant power supply for Compact Routers and Remote panels

Control Panel*

CP1602-CQX

16x8 control panel for CQX

Remote Panel Expansion Kits

RP16

Remote panel expansion kit for 1 RU

Note: Allows CP panel to operate separately and remotely via Ethernet. CP panel can be programmed using CRSC when mounted to an RP

* Must be purchased with each NVISION Compact CQX, mounts to the front of the switcher or to a RP16 for remote control.

NVISION CR6400 SERIES

Digital Router Series

Video routing innovations that simplify your workflows.

The NVISION CR6400 Series compact router from Grass Valley fits 64 inputs and 64 outputs in a slim 2 RU frame and is an ideal choice for small facilities, trucks, stadiums or any location that is space-constrained, such as editing suites, post-production and playout facilities. The robust matrix supports its 64-squared matrix thanks to the introduction of DIN connectors rather than the typical BNC connectors.

These durable and ultra-reliable routers contain hot swappable modules for easy serviceability and are tested for performance from 0-45° C (32-113° F).

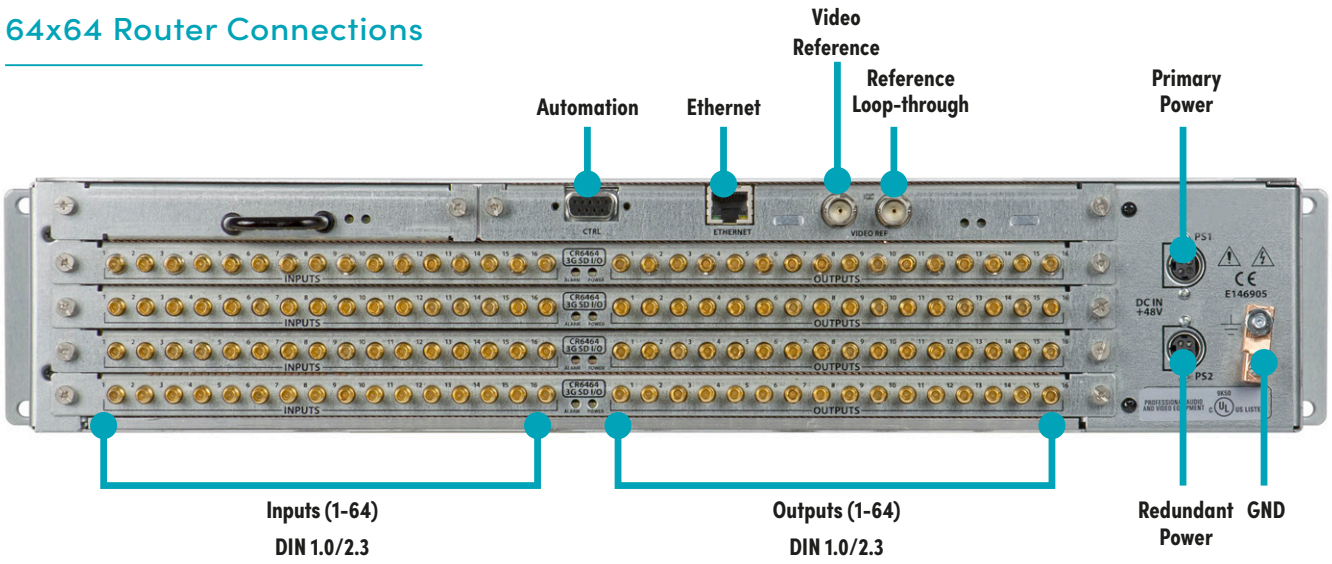
These 64 square routers can be fitted with a local control panel, the CP6464, a 2 RU, 64 button control panel, which connects seamlessly to the front of the router. These control panels can also be fitted on the 2 RU RP32 for remote panel control.

The space-saving nature of the CR6400 Series provides the power and flexibility of a larger, enterprise-class router. Owners of the new CR6400 series get the reliability and advanced technology the NVISION name is known for and the flexibility to fit into even the most complex workflows, integrating easily with multiviewers, signal processing platforms and master control switchers.

Key Features

- DIN connectors
- High-density 64x64 matrix in 2 RU
- Optional, redundant power supply
- Broadcast quality components for superior signal performance
- Rugged design to smoothly handle both movement and temperature extremes
- Local control panel option, CP6464, mounts to the front of the router or can be used for remote access using an RP32
  - Operates with or without external control system
- Field serviceable modules are hot swappable
  - Crosspoint card
  - Control card
  - Input and output cards
  - Fan module

64x64 Router Connections



Specifications

Electrical

DC power:

External power supply: 2 VDC ± 10%, 5A

Power consumption:

- 77W max (CR6464-3G-SDI router)
- 55W max (CR6464-AES router)

Dimensions:

Height: 8.1 mm (3.47 in.), fits EIA 2 RU (88.9 mm / 3.50 in.)

Width: 482.6 mm (19.0 in.)

Depth:

- 258.6 ±0.25mm (10.18 ±0.01 in.), enclosure
- <273.1 mm (10.75 in.) from front of rack to extended ground screw

Weight:

- 5.35 kg (11.8 lbs.) with no I/O cards, without control panel
- 6.94 kg (15.3 lbs.) with 4 I/O cards, without control panel

Connectors

Power: 2 connectors, DIN 4

Ethernet: 1 connector, 10/100BaseT, RJ-45 jack

RS-422: 1 connector, 9-pin D type, usage determined by software, SMPTE 207M

Video reference: 2 connectors, BNC, 75Ω

Optional control panel: Two 2×60 connectors

Removable module:

- 4 I/O card slots at rear
- 1 crosspoint card slot at rear
- 1 control card slot at rear
- 1 fan module removable at the front
- I/O module types: SDI, AES

Grounding terminal: Copper, accepts 14–6 AWG

CR6400 Power Supply

AC power: 120–240 VAC, 50–60 Hz, up to 2.0A

DC power: 48 VDC, 160W max, 3.34A max

Ripple and Noise: <240 mVp-p

Efficiency: Typically 94%

Weight: 0.66 kg (1.45 lbs.)

Regulatory: UL listed and CE compliant.

CR Series Digital Video Specifications*

Input & output impedance: 75Ω

- > 400 m, Belden 1694A or equivalent, 270 Mb/s SD-SDI
- > 150 m, Belden 1694A or equivalent, near 1.5 Gb/s HD-SDI
- > 100 m, Belden 1694A or equivalent, near 3.0 Gb/s 3G-SDI

3G-SDI Specification Detail

- 3G-SDI Auto re-clocking: 270 Mb/s, and 1.483, 1.485, 2.966, and 2.970 Gb/s, or auto bypass
- Pass-through: 10 Mb/s to 3.0 Gb/s

Input return loss: > 15 dB, 5 MHz to 1.5 GHz

Output level: 800mV pp ± 10%

Output offset: 0VDC ± 0.5V

Output rise/fall time: < 135 ps

Output overshoot: ≤ 10% of amplitude

Output timing jitter: < 0.2 UI p-p

Output alignment jitter: < 0.3 UI at 100 kHz

Output return loss: > 10 dB, 1.5 GHz to 3.0 GHz

HD-SDI Specification Detail

- HD-SDI (SWB) Data rates: up to 1.5 Gb/s, reclocking at 143, 177, 270, 360 & 540 Mb/s and 1.483 & 1.485 Gb/s rates, automatic bypass for other rates

Input & output impedance: 75Ω

Cable equalization: up to 150m Belden 1694A or equivalent cable, at 1.483 Gb/s and 1.485 Gb/s, and 400m at 143–540 Mb/s

Input return loss: > 15 dB, 5 MHz to 1.5 GHz

Output level: 800mV pp ± 10%

Output offset: 0VDC ± 0.5V

Output rise/fall time: < 270 ps (20% to 80%)

Output overshoot: < 10% of amplitude

Output jitter: < 0.2 UI p-p

Output return loss: > 15 dB, 5 MHz to 1.5 GHz

SD-SDI Specification Detail

- SD-SDI Data rates: auto reclocking at 143, 177, 270, 360 & 540Mb/s and automatic bypass for other rates

Input & output impedance: 75Ω

Cable equalization: up to 300m Belden 1694A or equivalent cable

Input return loss: ≥ 15 dB, 5 to 540 MHz

Output level: 800mV pp ± 10%

Output offset: 0VDC ± 0.5V

Output rise/fall time: 0.4 to 1.5 ns

Output overshoot: ≤ 10% of amplitude

Output jitter: ≤ 0.2 UI p-p

Output return loss: ≥ 15 dB, 5 MHz to 540 MHz

* All compact SD, HD, and 3G video routers support DVB-ASI

Ordering

CR6464-3GIG

64x64 single link 3G HD serial digital video router, 2 RU

CP6464

XY button panel for 2 RU 64x64

CRPS1

Redundant power supply for RP32

CRPS2

Redundant power supply for 64x64 compact routers, 160W

CR-FAN-1

Compact router speed control, fan module – spare

RP32*

Remote panel expansion kit for 2 RU

*The RP32 will be used as the remote control panel base unit to mount the CP6464 for remote control.