Submittal/Transmittal

Date: 11/16/2017

Project: City of Beaverton - 2nd Floor TI

Project #: 17054 - 3252-18B

Location

Contractor:
Ross Builders Northwest, LLC
Bobbi Snow
2900 SW Cornelius Pass Rd., #654
Hillsboro, OR 97123
Phone:503-430-0316
Fax #: 503-746-6284

Subcontractor:
Portland Electrical Construction
1019 7th Street
Oregon, OR 97045

Phone: 503-655-2281
Fax:

Subcontractor:

Phone:
Fax:

Date Rec'd	To Arch	From Arch	Returned
11/16/17	11/16/17		

For Submittal to Architect: [X] Reviewed

For Return to Subcontractor:
- [ ] Reviewed
- [ ] Corrections Noted
- [ ] Revise and Resubmit

Reviewed only for general conformance with the design concept of the Project and general compliance with the information given in the Contract Documents. The review does not affect the Subcontractor's responsibility to perform all contract requirements with no change in contract price or time. Any actions shown are subject to the requirements of the plans and specifications. Subcontractor is responsible to confirm and correlate dimensions on the site for information that pertains solely to the fabrication processes for the means, methods, techniques, procedures, sequences and quantities necessary to complete the contract and for coordination of the work with all trades and the satisfactory performance of work. Any review is undertaken solely to satisfy Contractor's obligations, if any, to the Owner and shall not give rise to any claim by Subcontractor or other parties against Contractor, Architect or Owner.

Name Bobbi Snow Date 11/16/17

Submittal Number 26-1000 Electrical & 28 1000 Fire Alarm

Portland Electrical Construction, Inc.
1019 7th Street
Oregon City, Oregon 97045
P: 503.655.2281 | F: 503.655.5033
PortlandElectrical.com

LETTER OF TRANSMITTAL

To:	Ross Builders NW	**Project:**	Beaverton Bldg. 2nd Floor T.I.
Attn:	Bobbi Snow	**Job No.**	457
Phone No.	503.982.4188	**Date:**	11/15/2017

Subject: Electrical Divisions 26 & 28 Submittal Package E-01.r0

COPIES	SPEC	REV	TYPE	DESCRIPTION
Electronic	26 05 19	0	Product Data	Low Voltage Electrical Conductors & Cables
Electronic	26 05 26	0	Product Data	Grounding & Bonding for Electrical Systems
Electronic	26 05 33	0	Product Data	Raceways
Electronic	26 05 43	0	Product Data	Boxes
Electronic	26 29 23	0	Product Data	Occupancy & Vacancy Sensors
Electronic	26 09 24	0	Product Data	Daylighting Controls
Electronic	26 27 26	0	Product Data	Wiring Devices
Electronic	26 51 00	0	Product Data/Drawing	Lighting
Electronic	28 31 00	0	Product Data	Fire Detection & Alarm

Transmit: ☒ For Approval ☐ Approved as Submitted ☐ Approved as Noted ☐ As Requested
☐ Use and Info. ☐ Review and Comment ☐ For Price Quotation ☐ Other

Comments:

28 31 00 – Fire alarm shop drawings to be submitted at a later date pending approval of product data.

260519 - LOW VOLTAGE ELECTRICAL POWER CONDUCTORS & CABLES.r0
- 2.2 (c) - COMPRESSION LUG
- 2.2 (c) - MECHANICAL LUG
- 2.3 (a) - THHN COPPER
- 2.3 (d) - STEEL MC
- 2.3 (g) - SO CORD
- 2.4 (b) - WING-NUT

260526 - GROUNDING & BONDING FOR ELECTRICAL SYSTEMS.r0
- 2.2 (a) - COMPRESSION CONNECTOR
- 2.2 (a) - EXOTHERMIC CONNECTOR
- 2.2 (b) - PIPE GROUNDING CLAMP
- 2.3 (a) - GROUNDING BUSBAR
- 2.4 (a) - GROUNDING ELECTRODE CONDUCTOR
- 2.4 (b) - EQUIPMENT GROUNDING CONDUCTOR

260533 - RACEWAYS.r0
- 2.2 (a) - EMT
- 2.3 (a) - FMC
- 2.3 (b) - FMC FITTINGS
- 2.4 (a) - LFMC
- 2.4 (b) - LFMC FITTINGS
- 2.5 (a) - GROUND BUSHING
- 2.5 (a) - INSULATED BUSHING
- 2.5 (b) - EMT FITTINGS
- 2.5 (c) - EMT EXPANSION FITTING

260543 - BOXES.r0
- 2.2 (a-e) - OUTLET BOXES
- 2.2 (h) - NOISE CONTROL
- 2.3 - PULL & JUNCTION BOXES
- 2.5 (a) - CONDUIT BUSHING
- 2.5 (a) - KO SEAL
- 2.5 (a) - LOCKNUTS

260923 - OCCUPANCY & VACANCY SENSORS.r0
- NCM PDT 9 RJB
- nCOM KIT
- NPODM DX WH
- NPP16 D
- WSX D WH

11/15/2017

WSX PDT WH
WSX WH
260924 - DAYLIGHTING CONTROLS.r0
NCM ADCX RJB
262726 - WIRING DEVICES.r0
2.2 - WALL SWITCHES
2.3 (a) - DUPLEX RECEPTACLE
2.3 (b) - GFCI
2.4 - FINISH PLATES
2.6 (a) - IND. RAISED COVER
2.6 (b) - CAST BOX COVER
265100 - LIGHTING.r0
2' STRIP LED - ZL1D-L24-1500LM-FST-MVOLT-35K-80CRI-WH
4' STRIP LED - ZL1D-L48-3000LM-FST-MVOLT-35K-80CRI-WH
2'x4' TROFFER - 2VTL4R-40L-ADP-EZ1-LP835
FINELITE LED - S17-LED-VCF-PF-835-3FT
EXIT - LQM-S-W-3-G-120277-EL-N-M6
283100 - FIRE DETECTION & ALARM.r0
Genesis Wall Horns and Strobes
Overview
Standard Features
Application
Installation
Wiring
Current Draw
dBA output
Average Sound Output (dBA)
Light output - (effective cd)
Specifications
Candela Output
Ordering Information

PORTLAND ELECTRICAL CONSTRUCTION INC.

1019 7TH STREET
OREGON CITY, OR 97045
PHONE: 503-655-2281 FAX: 503-655-5033
OR CCB# 51764 WA EC PORTLEC023PE

DIVISION 26 – ELECTRICAL

SPECIFICATION SECTION:

- 260519 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS & CABLES

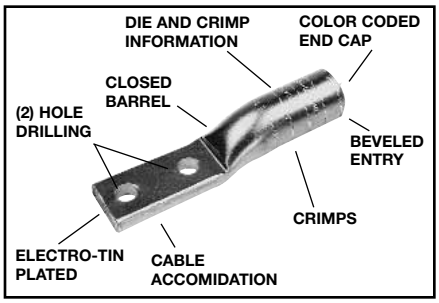
TYPE YA-A

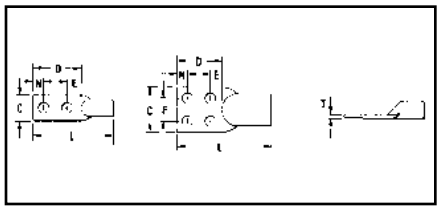
HYLUG™

UNINSULATED ALUMINUM COMPRESSION TERMINAL FOR ALUMINUM AND COPPER CONDUCTORS

2-HOLE AND 4-HOLE DESIGNS

UL Listed 90° C,
600 Volts to 35 kV◆





Type YA-A 2- and 4-hole pads inhibit connector rotation and increase area contact. These aluminum terminals have the same design features and benefits as the 1-hole YA-A with an added stud hole for a more secure termination to various types of equipment pads. They are dual-rated for use on both aluminum and copper conductors.

Catalog Number	Code Conductor	● Stud Size	● No. of Holes in Pad	Dimensions C	D	E & F	L	N	T REF.	Z Min.	Installation Tooling ▲ Dieless (# of crimps) Mechanical Tooling	Hydraulic HYPRESS	Y35, Y39, Y750, Y46* Die Number (# of crimps)	Color Code	▲ Die Index	Wire Strip Length
YA2CA9	2 str.	1/2	2-NEMA	.88	3.11	1.75	4.73	.63	.16	.73	MY29-3 (1)	Y644HS (1) Y81KFT (1) Y81KFTMBH (1) PAT81KFT-18V (1)	U2CABT (1)	Pink	348	1-1/8″
YA25A5	1/0 str.	3/8	2	.82	2.24	1.06	3.73	.63	.21	.55	MY29-3 (1)	Y644HS (1) Y81KFT (2) Y81KFTMBH (2) PAT81KFT-18V (2)	U25ART (1)	Tan	296	1-1/16″
YA25A7		1/2	2-NEMA	1.03	3.10	1.75	4.59	.63	.17	.72						
YA26A3	2/0 str.	1/2	2-NEMA	1.03	3.11	1.75	4.78	.63	.20	.73	MY29-3 (2)	Y644HS (1) Y81KFT (2) Y81KFTMBH (2) PAT81KFT-18V (2)	U26ART (2)	Olive	297	1-3/8″
YA26A5		3/8	2	.92	1.89	1.00	3.56	.44	.24	.45						
YA27A5	3/0 str.	1/2	2-NEMA	1.04	3.12	1.75	5.02	.63	.26	.74			U27ART (2)	Ruby	467	1-1/2″
YA27A7		3/8	2	1.04	1.89	1.00	3.79	.44	.26	.45						
YA28A5	4/0 str.	1/2	2-NEMA	1.17	3.11	1.75	5.19	.63	.30	.73			U28ART (2)	White	298	1-5/8″
YA28A7		3/8	2	1.17	1.89	1.00	3.97	.44	.30	.45						
YA29A3	250 kcmil	1/2	2-NEMA	1.26	3.11	1.75	5.28	.63	.33	.73	MY29-3 (2)		U29ART (2)	Red	324	1-5/8″
YA29A5		3/8	2	1.26	1.89	1.00	4.06	.44	.33	.45						
YA30A3	300 kcmil	1/2	2-NEMA	1.38	3.11	1.75	5.69	.63	.36	.73			U30ART (2)	Blue	470	1-3/4″
YA30A5		3/8	2	1.38	1.89	1.00	5.64	.44	.36	.45						
YA31A5	350 kcmil	3/8	2	1.52	1.89	1.00	4.85	.44	.39	.45		Y644HS (1) Y81KFT (3) Y81KFTMBH (3) PAT81KFT-18V (3)	U31ART (2)	Brown	299	2-1/8″
YA31A3		1/2	2-NEMA	1.52	3.11	1.75	6.07	.63	.39	.73						
YA32A5	400 kcmil	3/8	2	1.62	1.89	1.00	4.93	.44	.43	.94			U32ART (4)	Green	472	2″
YA34A3	500 kcmil	1/2	2-NEMA	1.62	3.15	1.75	6.80	.63	.46	.77		Y644HS (1) Y81KFT (4) Y81KFTMBH (4) PAT81KFT-18V (4)	U34ART (4)	Pink	300	2-5/8″
YA34A5		3/8	2	1.80	1.89	1.00	5.54	.44	.46	.45						
YA36A3	600 kcmil	1/2	2-NEMA	1.62	3.15	1.75	7.09	.63	.52	.77			U36ART (4)	Black	473	2-7/8″
YA36A5		3/8	2	1.97	1.89	1.00	5.83	.44	.52	.45						
YA39A7	700/750 kcmil 900 Compact AL +	3/8	2	2.05	1.89	1.00	5.81	.44	.43	.45			U39ART-2 (4)	Yellow	936	2-7/8″
YA39A5		1/2	2-NEMA	1.62	3.15	1.75	7.07	.63	.43	.77						
YA39AM2		1/2	2-NEMA	1.69	3.12	1.75	7.31	.63	.57	.74			P39ART** (4)	Red	301	2-7/8″
YA44A3	1000 kcmil	1/2	2-NEMA	1.65	3.15	1.75	7.76	.63	.66	.77	—	—	P44ART** (4)	Brown	302	3″
YA45A5	1250 kcmil	1/2	2-NEMA	1.65	3.15	1.75	7.76	.63	.66	.77			P44ART** (4)	Brown	302	3″
YA46A3	1500 kcmil	1/2	2-NEMA	3.09	3.16	1.75	8.75	.63	.81	.78			L46ART (2)	Red	478	2-3/4″
YA46A5	1500 kcmil	1/2	4-NEMA	3.09	3.16	1.75	8.75	.63	.81	.78						
YA48A3	2000 kcmil	1/2	2-NEMA	3.57	3.11	1.75	8.49	.63	.90	.73			L48ART (2)	Red	479	4-1/8″

- ● Contact BURNDY® or conductor, stud sizes and hole drillings not shown.
- ▲ See tooling section of this catalog for complete tool and die listings.
- ‡ Use Y60 BHU HYPRESS™ with L46ART and L48ART die sets. 90° C Rated.
- * Use PUADP-1 adaptor with U dies in Y46 HYPRESS™.
- ** P39ART and P44ART die sets for use with Y46 HYPRESS™ only. PUADP-1 adapter not required.
- \+ Tested with Y644HS and PAT644 dieless tools only and not UL Listed with any tool on 900 Compact Al.
- ◆ For applications greater than 2000 Volts consult cable manufacturer for voltage stress relief instructions.

Note: All dimensions shown are for reference only.

Y644HS DIELESS HYPRESS™ RANGE-TAKING CAPABILITIES

The following size HYDENT™ lugs and two way splices, when crimped with the Y644HS DIELESS HYPRESS™ tool, produce the following range taking capabilities:

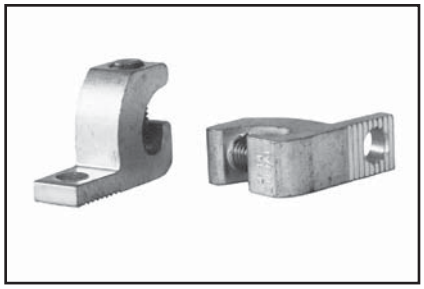
Aluminum Connectors					
Standard Wire Size	**Expanded Wire Range**	**Standard Wire Size**	**Expanded Wire Range**	**Standard Wire Size**	**Expanded Wire Range**
#6 AWG	#6 AWG	1/0 AWG	1/0 - #1 AWG	250 kcmil	250 kcmil - 1/0 AWG
#4 AWG	#4 - #6 AWG	2/0 AWG	2/0 - #1 AWG	300 kcmil	300 kcmil - 2.0 AWG
#2 AWG	#2 - #6 AWG	3/0 AWG	3/0 - #1 AWG	350 kcmil	350 kcmil - 3/0 AWG
#1 AWG	#1 - #2 AWG	4/0 AWG	4/0 - #1 AWG	400 kcmil	400 kcmil - 4/0 AWG
				500 kcmil	500 kcmil - 4/0 AWG
				600 kcmil	600 - 250 kcmil
				750 kcmil	750 - 500 kcmil

TYPE BGBL

LAY-IN QIKLUG™

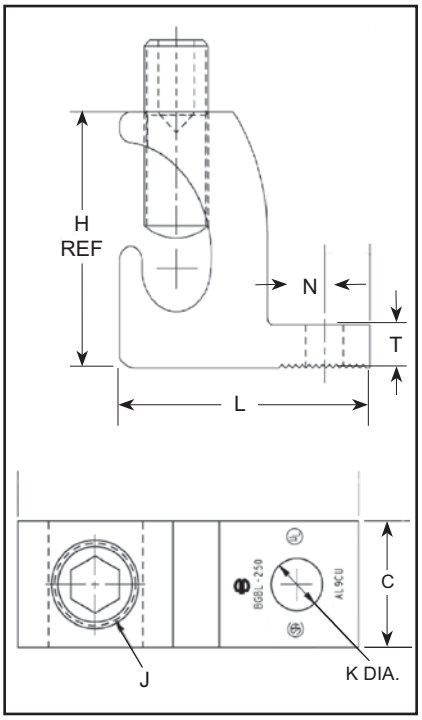
UL LISTED 90° C, 600 V

The Lay-In QIKLUG™, Type BGBL is manufactured from high strength 6061-T6 aluminum, and is ideally suited for grounding and bonding applications accommodating both copper and aluminum conductor sizes #14 AWG to 250 kcmil. The BGBL4SS with Stainless Steel screw is UL 467 Listed for grounding and bonding.



Features & Benefits

- UL 486B listed, AL9CU rated
  - ◊ For copper and aluminum conductor combinations up to 90° C, 600 Volt applications.
- UL Recognized for grounding and bonding
  - ◊ Ensures reliability.
- Electro-tin plated
  - ◊ Provides low contact resistance.
- Lay-in feature
  - ◊ Eases installation.



Catalog Number	Conductor Range	C	H	J	K	L	N	T	Hex Size
BGBL-4	14 - 4	0.38 [10]	0.78 [20]	1/4 - 28	0.22 [6]	1.07 [27]	0.19 [5]	0.15 [4]	Slot
BGBL4SS*	14 - 4	0.38 [10]	0.78 [20]	1/4 - 28	0.22 [6]	1.07 [27]	0.19 [5]	0.15 [4]	Slot
BGBL-1/0	14 - 1/0	0.60 [15]	1.17 [30]	3/8 - 24	0.27 [7]	1.50 [38]	0.30 [8]	0.22 [6]	Slot
BGBL-250	6 - 250 kcmil	0.80 [20]	1.79 [45]	9/16 - 18	0.33 [8]	2.20 [56]	0.40 [10]	0.30 [8]	5/16

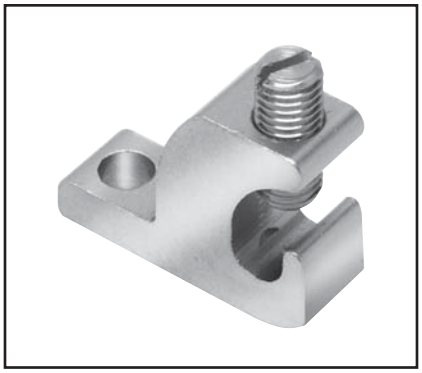
* Suitable for copper conductors only.

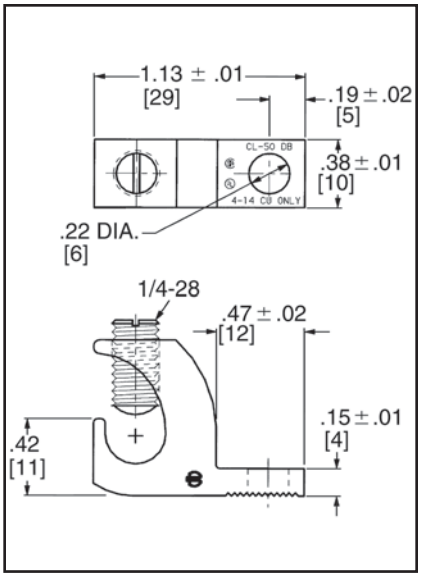
TYPE CL50-1 & CL50-1TN

COPPER LAY-IN QIKLUG™

For Copper

The Lay-In QIKLUG™ is manufactured from high strength pure electrolytic copper to ensure maximum strength and conductivity. UL467 Listed for direct burial in earth or concrete. The open-faced design allows for fast lay-in of the conductor without the need for cutting or breaking. Stainless steel screws used for excellent corrosion resistance.





Catalog Number	Conductor Range	Stud Hole
CL50-1	14 AWG-4 AWG	#10
CL50-1TN	14 AWG-4 AWG	#10

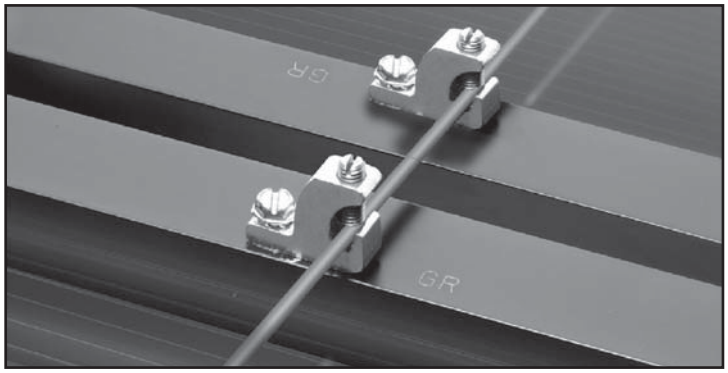


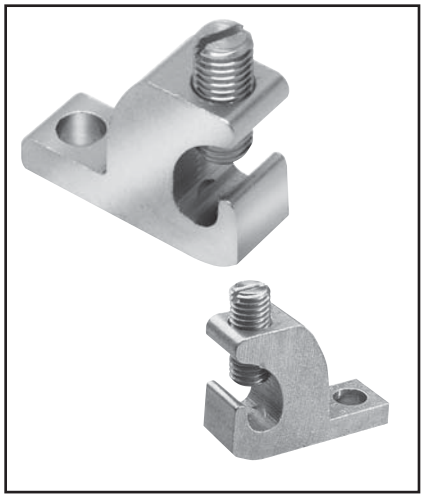
Photo above shows a typical solar panel installation using CL50-1 connectors.

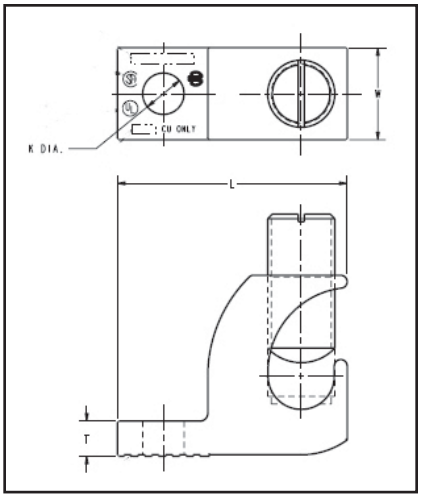
TYPE CL

COPPER LAY-IN QIKLUG™

For Copper

Manufactured for maximum strength and conductivity, these lay-in lugs allow for continuous runs of conductor and are well suited as terminations as well. Tin-plated, set screw style connectors, three sizes cover a range from #14AWG to 250 kcmil. CL3/0-516TN and CL250-516TN are UL Listed and CSA certified. CL1/0-14TN UL Listed for grounding and CSA certified. 90° C rated. Suitable for copper conductors only.





Catalog Number	Wire Range Copper	H	W	L	T	K Dia	Hex Size
CL1/0-14TN	#14 - 1/0 AWG	1.17	0.60	1.50	0.22	0.27	7/16-20 (Slotted)
CL3/0-516TN	#6 - 3/0 AWG	1.56	0.80	2.00	0.30	0.33	9/16-18 (0.25 Hex)
CL250-516TN	#6 AWG - 250 kcmil	1.79	0.80	2.20	0.30	0.33	9/16-18 (0.25 Hex)

Blue highlighted items are industry standard and most frequently ordered.

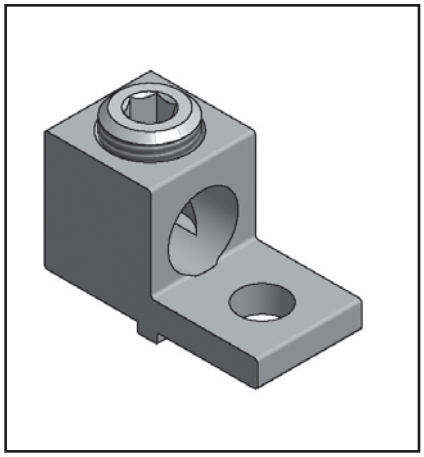
TYPES KA-UAR

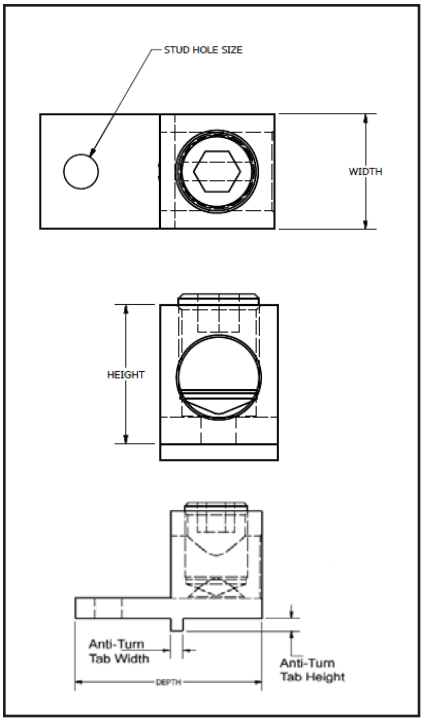
UNIVERSAL ANTI-ROTATE TERMINALS

(One Conductor)
For Aluminum and Copper Conductors

These dual-rated one-conductor lugs are constructed from high strength aluminum alloy and electro tin-plated to provide low contact resistance. These lugs also contain a bottom anti-turn tab.

AL9CU





Catalog Number	Wire Range Aluminum or Copper	Stud Hole Size	Depth	Width	Height	Tab Height	Tab Thickness	Recommended Tightening ▲ Torque (in-lb)
KA4UAR	14 - 4	1/4	1.16	0.50	0.55	.13	.13	45
KA25UAR	14 - 1/0	1/4	1.47	0.63	0.81	.13	.13	50
KA26UAR	14 - 2/0	1/4	1.47	0.63	0.81	.13	.13	120
KA30UAR	6 - 300	1/4	1.56	0.94	1.13	.09	.19	275
KA31UAR	6 - 350	5/16	1.19	1.00	1.13	.09	.19	275
KA36UAR	4 - 600	3/8	2.75	1.38	1.57	.19	.19	375

Listed torque values are for maximum conductor sizes accommodated. Consult UL486 Tables 7-4, 7-5, 7-6 for smaller conductor sizes.

TYPE K2A-U

UNIVERSAL TERMINAL

(Two Conductor)
For Aluminum and Copper
Conductors

These dual-rated two-conductor lugs are constructed from high strength aluminum alloy and electro tin-plated to provide low contact resistance.

AL9CU

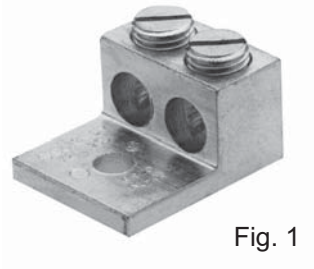


Fig. 1

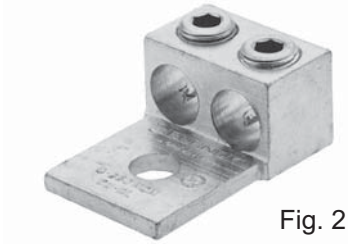


Fig. 2

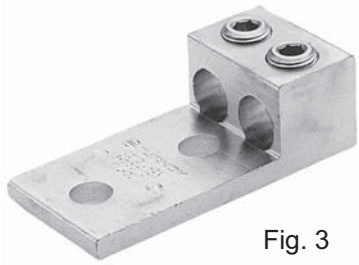
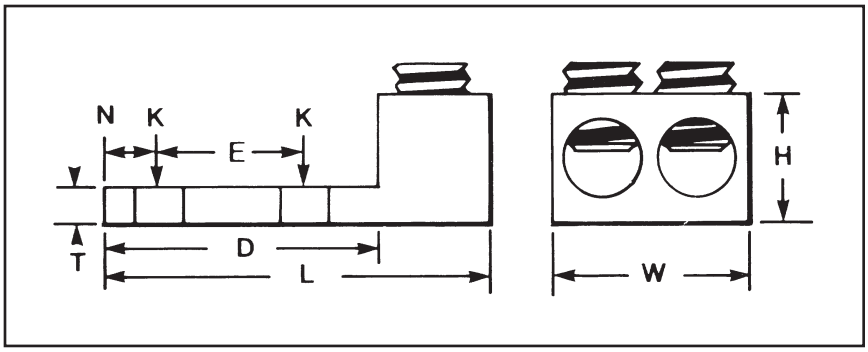


Fig. 3



Catalog Number*	Fig. No.	TWO: Wire Range (Aluminum or Copper)	Stud Hole Size	D	L	N	** W	E	T	** H	Recommended Tightening ▲ Torque (in-lb)
K2A25U	1	14 AWG-1/0	1/4	0.81	1.47	0.44	1.13	—	0.19	0.79	50
K2A26U	2	14 AWG-2/0 AWG	1/4	0.81	1.47	0.44	1.25	—	0.19	0.80	120
K2A29U	2	6 AWG-250 kcmil	3/8	1.50	2.56	0.50	1.66	—	0.25	1.20	275
K2A31U	2	6 AWG-350 kcmil	1/2	1.69	2.88	0.88	1.94	—	0.25	1.26	275
K2A36U	2	2 AWG-600 kcmil	1/2	1.75	3.20	0.63	2.41	—	0.44	1.58	375
K2A40U	2	300 kcmil-800 kcmil	5/8	1.66	3.38	0.88	3.19	—	0.50	1.95	500
K2A44U	2	500 kcmil-1000 kcmil	5/8	1.66	3.50	0.88	3.52	—	0.50	1.95	500
K2A31U-2N	3	6 AWG-350 kcmil	1/2	3.00	4.50	0.63	2.31	1.75	0.31	1.39	275
K2A36U-2N	3	2 AWG-600 kcmil	1/2	3.22	4.69	0.63	2.41	1.75	0.44	1.39	375
K2A40U-2N	3	300 kcmil-800 kcmil	1/2	3.03	4.75	0.63	3.19	1.75	0.50	1.95	375
K2A44U-2N	3	500 kcmil-1000 kcmil	1/2	3.03	4.75	0.63	3.19	1.75	0.50	1.95	375

* "N" indicates NEMA standard stud holes.
▲ Listed torque values are for maximum conductor sizes accommodated. Consult UL486 Tables 7-4, 7-5, 7-6 for smaller conductor sizes.
** Maximum dimension.

Blue highlighted items are industry standard and most frequently ordered.

TYPES K3A-U, KK3A-U

UNIVERSAL TERMINAL

(Three Conductor)
For Aluminum and Copper Conductors

Dual-rated three-conductor lugs are constructed from high strength aluminum alloy and electro tin-plated to provide low contact resistance.

AL9CU

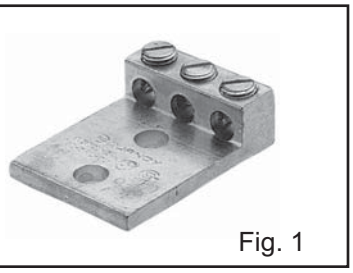


Fig. 1

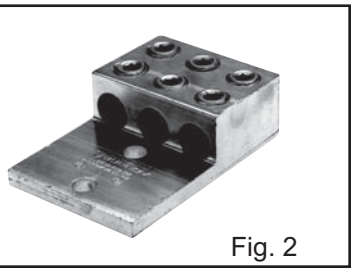
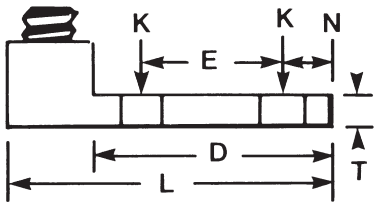
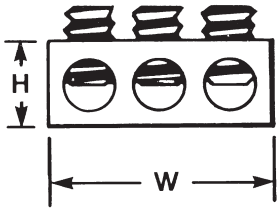


Fig. 2

Fig. 3

Fig. 4





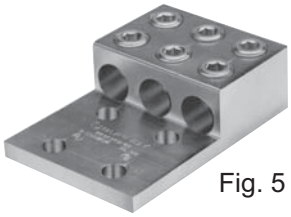


Fig. 5

Catalog Number**	Fig. No.	THREE: Wire Range (Aluminum or Copper)	K	Stud Hole Size	Dimensions							Rec. Tightening ▲ Torque (in-lb)
					D	L	N	W	E	T	H	
K3A2U-2*	1	14 AWG-2 AWG	11/32	5/16	1.63	2.19	0.34	1.59	0.88	0.19	0.62	50
K3A25U-2*	1	14 AWG-1/0	7/16	3/8	2.09	2.91	0.34	1.94	1.00	0.25	0.88	50
K3A26U-2N	3	14 AWG-2/0 AWG	9/16	1/2	3.06	3.75	0.63	1.95	1.75	0.19	1.79	50
K3A27U-2N	3	6 AWG-3/0 AWG	9/16	1/2	3.00	3.88	0.63	2.81	1.75	0.31	1.12	275
K3A29U-2N	3	6 AWG-250 kcmil	9/16	1/2	3.16	4.00	0.63	2.81	1.75	0.31	1.19	275
K3A31U-2N	3	6 AWG-350 kcmil	9/16	1/2	3.16	4.31	0.63	3.52	1.75	0.31	1.38	275
K3A36U-2N	3	2 AWG-600 kcmil	9/16	1/2	3.22	4.69	0.63	3.63	1.75	0.44	1.56	375
KK3A36U-2N	2	2 AWG-600 kcmil	9/16	1/2	3.00	5.50	0.63	4.22	1.75	0.38	1.52	375
KK3A40U-2N	2	300 kcmil-800 kcmil	9/16	1/2	3.34	6.19	0.63	4.81	1.75	0.56	1.89	375
KK3A44U-2N	2	500 kcmil-1000 kcmil	9/16	1/2	3.34	6.19	0.63	4.75	1.75	0.56	1.90	500
K3A2U-4*	4	14 AWG-2 AWG	11/32	5/16	1.63	2.19	0.34	1.59	0.88	0.19	0.62	50
K3A25U-4*	4	14 AWG-1/0	7/16	3/8	2.09	2.91	0.34	1.94	1.00	0.25	0.88	50
K3A27U-4N	4	6 AWG-3/0 AWG	9/16	1/2	3.00	3.88	0.63	2.81	1.75	0.31	1.12	275
K3A29U-4N	4	6 AWG-250 kcmil	9/16	1/2	3.00	4.00	0.63	2.81	1.75	0.31	1.19	275
K3A31U-4N	4	6 AWG-350 kcmil	9/16	1/2	3.00	4.31	0.63	3.00	1.75	0.31	1.38	275
K3A36U-4N	4	2 AWG-600 kcmil	9/16	1/2	3.22	4.69	0.63	3.63	1.75	0.44	1.56	375
K3A40U-4N	4	300 kcmil-800 kcmil	9/16	1/2	3.03	4.75	0.63	4.81	1.75	0.50	1.94	375
KK3A36U-4N	5	2 AWG-600 kcmil	9/16	1/2	3.00	5.50	0.63	4.22	1.75	0.38	1.52	375
KK3A40U-4N	5	300 kcmil-800 kcmil	9/16	1/2	3.34	6.19	0.63	5.34	1.75	0.56	1.89	500
KK3A44U-4N	5	500 kcmil-1000 kcmil	9/16	1/2	3.34	6.19	0.63	4.75	1.75	0.56	1.90	500

* Slotted screw.

** "N" indicates NEMA standard stud holes.

▲ Listed torque values are for maximum conductor sizes accommodated. Consult UL486 Tables 7-4, 7-5, 7-6 for smaller conductor sizes.

↝ All 4N items see note LIGHTNING PROTECTION INFO.

Blue highlighted items are industry standard and most frequently ordered.

SIMpull THHN™ THWN

600 Volts. Copper Conductor
Thermoplastic Insulation/ SIM Nylon Sheath
Heat, Moisture, Gasoline, and Oil Resistant II
Also Rated MTW and THWN-2
SIM Technology® for Easier Pulling

APPLICATIONS

Southwire SIMpull THHN or THWN-2 conductors are primarily used in conduit and cable trays for services, feeders, and branch circuits in commercial or industrial applications as specified in the National Electrical Code. Voltage for all applications is 600 volts. SIMpull THHN conductors are designed to be used without application of pulling lubricant. Allowable temperatures are as follows:

- THHN or T90 Nylon- Dry locations not to exceed 90° C
- THWN-2- Wet or dry locations not to exceed 90° C or locations not to exceed 75° C when exposed to oil
- TWN75- Wet locations not to exceed 75° C
- MTW- Wet locations or when exposed to oil at temperatures not to exceed 60° C or dry locations not to exceed 90° C (with ampacity limited to that for 75° C conductor temperature per NFPA 79)
- AWM- Dry locations not to exceed 105° C when rated and used as appliance wiring material

SPECIFICATIONS

Southwire SIMpull THHN® or THWN-2 or MTW (also AWM) comply with:

· ASTM - B3, B8 (7,19, 37, 61 Strands), B 787 (19 Wire Combination Unilay Strand)
· UL Standard 83, 1581, and 1063(MTW)
· T90 Nylon/TWN75 sizes through 1000 kcmil CSA C22.2 No. 75
· NOM-ANCE 90° C · Federal Specification A-A-59544
· National Electrical Code, NFPA 70 · VW-1 - Sizes 14 through 1 AWG
· CT rated in sizes 1/0 AWG and larger
· FT1
· AWM - Sizes 14 through 6 AWG. MTW available in stranded only
· NEMA WC-70 Construction Requirements
· RoHS/REACH Compliant

Construction

Southwire SIMpull THHN or THWN-2 or MTW copper conductors are soft annealed copper. #14 - 4/0 AWG uses a combination unilay strand and 250 kcmil and larger uses a compressed copper strand. The wire is insulated with a tough heat and moisture resistant poly vinyl chloride (PVC), over which a SIM (SLIKQWIK® Infused Membrane) nylon (polyamide) or UL Recognized equal jacket is applied. Available in black, white, red, blue, purple, green, yellow, orange, brown and gray. Some colors are subject to economic order quantity.Marked sunlight resistant in sizes 2 AWG and larger.
THWN-2 available in sizes 8 AWG and larger .
Sizes 14 - 10 AWG are available with SIMpull Technology only in SIMpull Barrel or CoilPAK configurations.

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SIMpull THHN

Conductor		Insulation Thickness (mils)	Jacket Thickness (mils)	Nominal O.D. (mils)	Approx. Weight per 1000' (lbs)	Allowable Ampacities+			
Size (AWG or kcmil)	Number of Strands					60° C	75° C	90° C	Standard Package
14*	1	15	4	102	15	15	15	15	AC
12*	1	15	4	119	23	20	20	20	AC
10*	1	20	4	150	36	30	30	30	AC
14*	19	15	4	109	16	15	15	15	AC
12*	19	15	4	128	24	20	20	20	AC
10*	19	20	4	161	38	30	30	30	AC
8	19	30	5	213	63	40	50	55	ABCD
6	19	30	5	249	95	55	65	75	ABCD
4	19	40	6	318	152	70	85	100	ABCD
3	19	40	6	346	189	85	100	115	ABCD
2	19	40	6	378	234	95	115	130	ABCD
1	19	50	7	435	299	110	130	145	ABCD
1/0	19	50	7	474	372	125	150	170	ABCD
2/0	19	50	7	518	462	145	175	195	ABCD
3/0	19	50	7	568	575	165	200	225	ABCD
4/0	19	50	7	624	718	195	230	260	ABCD
250	37	60	8	694	851	215	255	290	ABCD
300	37	60	8	747	1012	240	285	320	ABC
350	37	60	8	797	1174	260	310	350	ABC
400	37	60	8	842	1334	280	335	380	ABC
500	37	60	8	926	1655	320	380	430	ABCD
600	61	70	9	1024	1987	350	420	475	ABC
750	61	70	9	1126	2464	400	475	535	BC
1000	61	70	9	1275	3257	455	545	615	C

* Sizes 14 - 10 AWG available with patented Sim Technology® No Lube® jacket only in SIMpull® Wire Barrel or CoilPAK configurations.
+Allowable ampacities shown are for general use as specified by the 2011 Edition

Standard Package:
A - 2500' Reel
B - 1000' Reel

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of the National Electrical Code Section 310.15 and 240.4(D). Unless the equipment is marked for use at higher temperatures the conductor shall be limited to the following per NEC 110.14(C). 60° C - When terminated to equipment for circuits rated 100 ampers or less or marked for 14 - 1 AWG conductors. 75° C - When terminated to equipment for circuits rated over 100 ampers or marked for conductors larger than1 AWG. 90° C - THHN dry locations and THWN wet or dry locations for ampacity adjustment purposes using NEC section 310.15.	C - 500' Spool D - 5000' Reel

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Duraclad®
Type MC

14 AWG through 6 AWG Copper THHN/THWN Insulated Singles. Green Copper THHN Insulated Grounding Conductor. UL Listed. 600 Volts. Rated VW-1. Lightweight Steel Interlocked Armor. Also available in Blue Steel Armor.

APPLICATIONS

Southwire Duraclad® Type MC Cable is suitable for use as follows:

- Branch, feeder and service power distribution in commercial, industrial, institutional, and multi-residential buildings.
- Fished or embedded in plaster.
- Concealed or exposed installations.
- Environmental air-handling spaces per NEC 300.22(C).
- Places of Assembly per NEC 518.4 and theaters per NEC 520.5.
- Installation in cable tray and approved raceways.
- Under raised floors for information technology equipment conductors and cables per NEC 645.5(D) & 645.5(D)(2).
- Class I Div. 2, Class II Div 2, & Class III Div. 1 Hazardous Locations.

STANDARDS & REFERENCES

Southwire Duraclad® Type MC Cable meets or exceeds the following requirements:

- UL 83
- UL 1569
- UL 1685
- UL Online Product Guide Info - Metal-Clad Cable (PJAZ) (www.ul.com)
- Federal Specification A-A-59544
- NFPA 70 (National Electrical Code), Article 330
- Jacketed & Non Jacketed will both pass " UL Test" & "FT4/IEEE 1202" (70,000 Btu/hr) Vertical Cable Tray Flame Test
- Listed for use in UL 1, 2, and 3 Hour Through-Penetration Firestop Systems
- REACH/RoHS-2 (Chemical Limit) Compliant

CONSTRUCTION

Southwire Duraclad Type MC Cable is constructed with soft-drawn copper, Type THHN/THWN conductors and a green insulated grounding conductor. The conductors are cabled together and a binder tape bearing the print legend is wrapped on the assembly. Light weight galvanized steel interlocked armor is applied over the assembly. Blue steel armor is also available.

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One Southwire Drive, Carrollton, GA 30119, USA

Duraclad Type MC - Lightweight Steel Armor

CONDUCTOR SIZE AND COLORS	GROUNDING SIZE AND COLOR	STOCK NUMBER		WEIGHT (LBS/1000')	OVERALL DIAMETER (INCHES)
		COIL (250')	REEL (1000')		
SOLID CONDUCTOR COLORS 120/208V					
14-2 SOLID (BLACK/WHITE)	14 SOLID (GREEN)	55-17-15-01	55-17-15-02	115	.447
14-3 SOLID (BLACK/WHITE/RED)	14 SOLID (GREEN)	55-17-28-01	55-17-28-02	138	.464
14-4 SOLID (BLACK/WHITE/RED/BLUE)	14 SOLID (GREEN)	55-17-33-01	55-17-33-02	154	.502
12-2 SOLID (BLACK/WHITE)	12 SOLID (GREEN)	55-17-16-01	55-17-16-02	142	.475
12-3 SOLID (BLACK/WHITE/RED)	12 SOLID (GREEN)	55-17-29-01	55-17-29-02	172	.513
12-4 SOLID (BLACK/WHITE/RED/BLUE)	12 SOLID (GREEN)	55-17-34-01	55-17-34-02	201	.547
10-2 SOLID (BLACK/WHITE)	10 SOLID (GREEN)	55-17-17-01	55-17-17-02	197	.550
10-3 SOLID (BLACK/WHITE/RED)	10 SOLID (GREEN)	55-17-30-01	55-17-30-02	240	.588
10-4 SOLID (BLACK/WHITE/RED/BLUE)	10 SOLID (GREEN)	55-17-35-01	55-17-35-02	284	.631
STRANDED CONDUCTOR COLORS 120/208V					
12-2 STRANDED (BLACK/WHITE)	12 STRANDED (GREEN)	55-64-36-01	55-64-36-02	157	.495
12-3 STRANDED (BLACK/WHITE/RED)	12 STRANDED (GREEN)	55-36-32-01	55-36-32-02	187	.527
10-2 STRANDED (BLACK/WHITE)	10 STRANDED (GREEN)		55-39-67-02	213	.566
10-4 STRANDED (BLACK/WHITE/RED/BLUE)	10 STRANDED (GREEN)		56-10-24-02	307	.653
SOLID CONDUCTOR COLORS 277/480V					
12-2 SOLID (BROWN/GRAY)	12 SOLID (GREEN)	55-17-74-01		142	.475
12-2 SOLID (ORANGE/GRAY)	12 SOLID (GREEN)	55-32-42-02	55-32-42-03	142	.475
12-3 SOLID (BROWN/YELLOW/GRAY)	12 SOLID (GREEN)	55-32-51-02	55-32-51-03	172	.513
12-4 SOLID (BROWN/ORANGE/YELLOW/GRAY)	12 SOLID (GREEN)	55-32-44-02	55-32-44-03	201	.547
10-2 SOLID (ORANGE/GRAY)	10 SOLID (GREEN)	55-17-83-01	55-17-83-02	197	.550
10-2 SOLID (YELLOW/GRAY)	10 SOLID (GREEN)	55-17-82-01	55-17-82-02	197	.550
10-2 SOLID (BROWN/GRAY)	10 SOLID (GREEN)	55-32-50-02	55-32-50-03	197	.550
10-3 SOLID (BROWN/ORANGE//GRAY)	10 SOLID (GREEN)	55-32-52-02	55-32-52-01	240	.588
10-3 SOLID (BROWN/YELLOW/GRAY)	10 SOLID (GREEN)	55-17-87-01	55-17-87-02	240	.588
10-4 SOLID (BROWN/ORANGE/YELLOW/GRAY)	10 SOLID (GREEN)	55-32-45-02	55-32-45-01	284	.631
For allowable ampacities, refer to NEC 310.15. Also available with stranded conductors.					

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FEATURES

- Reduces installation costs up to 50% over pipe and wire.
- UL Classified 1, 2, and 3 hour Through Penetration Firestop Systems: W-J-3037, W-L-3110, W-L-3113, W-L-3117, W-L-3120, W-L-3121, W-L-3160, C-AJ-3115, C-AJ-3140, C-AJ-3142, C-AJ-3145, C-AJ-3173, C-AJ-3202, C-AJ-4065, C-AJ-4066, F-C-3038.
- Cable reverse wound on reel for ease of pulling and installation. When pulling from coils, pull from inside to ensure ease of installation.
- Anti-short bushings are not required for use with MC cable per the NEC and UL
- Available in stranded conductors.

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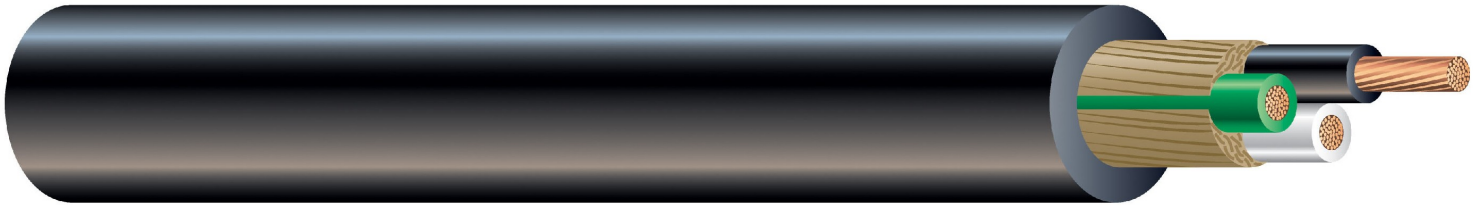
One Southwire Drive, Carrollton, GA 30119, USA

ROYAL ® SOOW

Royal ® 90°C Cord. 600 Volts.
Flexible Stranding. Flame and Ozone Resistant.
Black Jacket. Rated -40°C to 90°C .
RoHS Compliant. UL Listed and CSA Certified for Indoor and Outdoor Use.
Provides Premium Oil Resistance, Water Resistant and High Flexibility.
Excellent Abrasion Resistance.
NEC, Rated Extra-Hard Usage.



APPLICATIONS

Southwire Type SOOW Flexible Cords are permitted for use as specified by Article 400 and related articles of the 2014 National Electrical Code. Southwire Type SOOW Flexible Cords are designed for extra hard usage on industrial equipment, heavy tools, battery chargers, portable lights welding leads, marine dockside power, power extensions and mining applications.

SPECIFICATIONS

- UL 62
- CSA Standard 22.2 No. 49
- OSHA Acceptable
- MSHA Listed. Passes MSHA Flame Test - P07-KA070018-MSHA
- FT2 Flame Test
- Sunlight Resistance
- UL and CSA Listed for Water Resistant
- SOOW can also be used for special applications as outlined in NFPA 70 paragraph 501.140 Class I Division, 1 and 2 and paragraph 502.140 Class II Division 1 and 2 locations.

CONSTRUCTION

Southwire's Type SOOW Flexible Cords are manufactured using bare flexible stranded Class K copper conductors, with a heat, moisture and oil resistant EPDM rubber insulation. The insulated conductors are cabled with wax paper fillers. A tissue-paper separator is wrapped around the assembly to promote easy removal of the jacket. A heat, moisture and oil resistant flexible CPE jacket is extruded over the assembly to complete the construction.

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Viper Rubber Type SOOW Black

Conductor Size (AWG)	Conductor Stranding (#/AWG)	Nominal Insulation Thickness (in)	Nominal Jacket Thickness (in)	Nominal Overall Diameter (in)	Weight (lbs/1000ft)	Ampacity
18/2	16 X 30	0.030	0.060	0.350	71	10
18/3	16 X 30	0.030	0.060	0.370	81	10
18/4	16 X 30	0.030	0.060	0.400	95	7
16/2	26 X 30	0.030	0.060	0.375	80	13
16/3	26 X 30	0.030	0.060	0.400	98	13
16/4	26 X 30	0.030	0.080	0.420	115	10
14/2	41 X 30	0.045	0.080	0.510	151	18
14/3	41 X 30	0.045	0.080	0.540	174	18
14/4	41 X 30	0.045	0.080	0.580	210	15
12/2	65 X 30	0.045	0.095	0.585	198	25
12/3	65 X 30	0.045	0.095	0.610	232	25
12/4	65 X 30	0.045	0.095	0.660	281	20
10/2	104 X 30	0.045	0.095	0.635	247	30
10/3	104 X 30	0.045	0.095	0.670	301	30
10/4	104 X 30	0.045	0.095	0.720	363	25
8/3	65 X .0159	0.060	0.110	0.855	477	40
8/4	65 X .0159	0.060	0.125	0.950	616	35
8/5	65 X .0159	0.060	0.125	1.015	727	35
6/3	133 X .0142	0.060	0.125	0.955	670	55
6/4	133 X .0142	0.060	0.140	1.080	837	45
6/5	133 X .0142	0.060	0.140	1.200	1038	45
4/3	133 X .0179	0.060	0.140	1.160	956	70
4/4	133 X .0179	0.060	0.155	1.280	1225	60
4/5	133 X .0179	0.060	0.155	1.380	1424	60
2/3	168 X .0201	0.060	0.155	1.355	1310	95
2/4	168 X .0201	0.060	0.170	1.485	1712	80

Viper Rubber Type SOOW Black

2/5	168 X .0201	0.060	0.170	1.500	2078	80

Ampacity values are based on NEC Table 400.5(A) for sizes 18 AWG through 2 AWG.

#OF CONDUCTORS	COLOR SEQUENCE
2	BLACK, WHITE
3	BLACK, WHITE, GREEN
4	BLACK, WHITE, RED, GREEN
5	BLACK, WHITE, RED, GREEN, ORANGE

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greenSpec™
RoHS Compliant
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Wing-Nut® Wire Connectors

- Three color-coded models cover a full range of wire sizes from 18 to 6 AWG
- Specially designed contoured wings provide a secure grip for extra leverage on maximum wire combinations
- Live-action spring expands to accept wire shape and size with no pre-twisting required
- Square-wire spring threads directly onto conductors for fast, secure connections
- Deep skirt helps protect against flash-over and turned-back strands for maximum dielectric protection
- Tough, UL 94V-2 flame-retardant shell rated at 105°C (221°F)
- UL Listed to 486C and CSA Certified to C22.2 #188; comply with Federal Specification W-S-610E

Model	Color	Wire Combination Range	Wire Combination Range (mm)	Quantity	Cat. No.
451®	Yellow	600V* 18 to 10 AWG Min. 2 #18 Max. 3 #12	600V* ,75mm² to 6,0mm² Min. 2-,75mm² Max. 3-4,0mm²	Box of 100	**30-451**
				Jar of 225	**30-451J**
				Jar of 500	**30-651J**
				Carton of 1,000	**30-551**
				Keg of 5,000 (10 bags, 500 ea.)	**30-651**
				Barrel of 35,000	**30-851**
452®	Red	600V* 18 to 8 AWG **Min. 2 #18** **Max. 4 #10**	600V* ,75mm² to 10,0mm² Min. 2-,75mm² Max. 4-6,0mm²	Box of 100	**30-452**
				Jar of 300	**30-452J**
				Jar of 500	**30-652J**
				Carton of 1,000	**30-552**
				Keg of 5,000 (10 bags, 500 ea.)	**30-652**
				Barrel of 25,000	**30-852**
454®	Blue	600V* 14 to 6 AWG Min. 3 #12 Max. 1 #6 & 2 #8	600V* 2,5mm² to 16,0mm² Min. 3-4,0mm² Max. 2-16,0mm² w/1-4,0mm²	Box of 25	**30-454**
				Carton of 250	**30-554**
				Keg of 1,000 (10 bags, 100 ea.)	**30-654**
				Barrel of 10,000	**30-854**

*1,000V maximum in fixtures and signs

UL Wire Connector 774A LISTED Cu/Cu Only CSA CE

Greenie® Grounding Wire Connectors

- Designed for making ground connections and bonding non-metallic sheathed cable
- Contoured wings for maximum leverage
- Live-action, square-wire spring provides superior grounding connections
- Tough, UL 94V-2 flame-retardant shell
- UL Listed to 467 and CSA Certified to C22.2 #188; comply with Federal Specification W-S-610E

Model	Color	Wire Combination Range	Wire Combination Range (mm)	Quantity	Cat. No.
92®	Green	14 to 10 Min. 2 #14 Max. 4 #12	2,5mm² to 6,0mm² Min. 2-2,5mm² Max. 2-4,0mm² w/1-2,5mm²	Box of 100	**30-092**
				Jar of 150	**30-092J**
				Carton of 1,000	**30-192**
				Keg of 5,000 (10 bags, 500 ea.)	**30-292**
				Barrel of 25,000	**30-992**

Greenie® Grounding Connector fully meets the intent of the N.E.C. and specifically aids in compliance with the following:

UL Ground Connector 951L LISTED Cu/Cu Only CSA

ARTICLE 250: GROUNDING

250-146 Connecting Receptacle Grounding Terminal to Box

250-148 Continuity and Attachment of Equipment Grounding Conductors to Boxes
(B) Grounding continuity
(D) Nonmetallic boxes

See Page A-10 for more IDEAL Grounding Products!

PORTLAND ELECTRICAL CONSTRUCTION INC.

1019 7TH STREET
OREGON CITY, OR 97045
PHONE: 503-655-2281 FAX: 503-655-5033
OR CCB# 51764 WA EC PORTLEC023PE

DIVISION 26 – ELECTRICAL

SPECIFICATION SECTION:

- 260526 – GROUNDING & BONDING FOR ELECTRICAL SYSTEMS

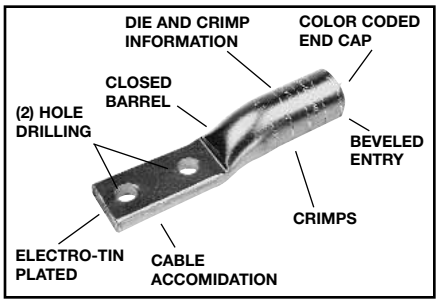
TYPE YA-A

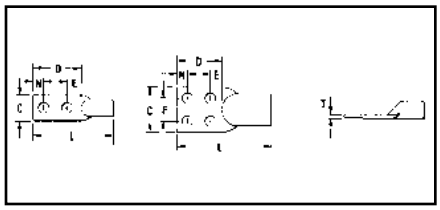
HYLUG™

UNINSULATED ALUMINUM COMPRESSION TERMINAL FOR ALUMINUM AND COPPER CONDUCTORS

2-HOLE AND 4-HOLE DESIGNS

UL Listed 90° C,
600 Volts to 35 kV◆





Type YA-A 2- and 4-hole pads inhibit connector rotation and increase area contact. These aluminum terminals have the same design features and benefits as the 1-hole YA-A with an added stud hole for a more secure termination to various types of equipment pads. They are dual-rated for use on both aluminum and copper conductors.

Catalog Number	Code Conductor	● Stud Size	● No. of Holes in Pad	Dimensions C	D	E & F	L	N	T REF.	Z Min.	Installation Tooling ▲ Dieless (# of crimps) Mechanical Tooling	Hydraulic HYPRESS	Y35, Y39, Y750, Y46* Die Number (# of crimps)	Color Code	▲ Die Index	Wire Strip Length
YA2CA9	2 str.	1/2	2-NEMA	.88	3.11	1.75	4.73	.63	.16	.73	MY29-3 (1)	Y644HS (1) Y81KFT (1) Y81KFTMBH (1) PAT81KFT-18V (1)	U2CABT (1)	Pink	348	1-1/8″
YA25A5	1/0 str.	3/8	2	.82	2.24	1.06	3.73	.63	.21	.55	MY29-3 (1)	Y644HS (1) Y81KFT (2) Y81KFTMBH (2) PAT81KFT-18V (2)	U25ART (1)	Tan	296	1-1/16″
YA25A7		1/2	2-NEMA	1.03	3.10	1.75	4.59	.63	.17	.72						
YA26A3	2/0 str.	1/2	2-NEMA	1.03	3.11	1.75	4.78	.63	.20	.73	MY29-3 (2)	Y644HS (1) Y81KFT (2) Y81KFTMBH (2) PAT81KFT-18V (2)	U26ART (2)	Olive	297	1-3/8″
YA26A5		3/8	2	.92	1.89	1.00	3.56	.44	.24	.45						
YA27A5	3/0 str.	1/2	2-NEMA	1.04	3.12	1.75	5.02	.63	.26	.74			U27ART (2)	Ruby	467	1-1/2″
YA27A7		3/8	2	1.04	1.89	1.00	3.79	.44	.26	.45						
YA28A5	4/0 str.	1/2	2-NEMA	1.17	3.11	1.75	5.19	.63	.30	.73			U28ART (2)	White	298	1-5/8″
YA28A7		3/8	2	1.17	1.89	1.00	3.97	.44	.30	.45						
YA29A3	250 kcmil	1/2	2-NEMA	1.26	3.11	1.75	5.28	.63	.33	.73	MY29-3 (2)		U29ART (2)	Red	324	1-5/8″
YA29A5		3/8	2	1.26	1.89	1.00	4.06	.44	.33	.45						
YA30A3	300 kcmil	1/2	2-NEMA	1.38	3.11	1.75	5.69	.63	.36	.73			U30ART (2)	Blue	470	1-3/4″
YA30A5		3/8	2	1.38	1.89	1.00	5.64	.44	.36	.45						
YA31A5	350 kcmil	3/8	2	1.52	1.89	1.00	4.85	.44	.39	.45		Y644HS (1) Y81KFT (3) Y81KFTMBH (3) PAT81KFT-18V (3)	U31ART (2)	Brown	299	2-1/8″
YA31A3		1/2	2-NEMA	1.52	3.11	1.75	6.07	.63	.39	.73						
YA32A5	400 kcmil	3/8	2	1.62	1.89	1.00	4.93	.44	.43	.94			U32ART (4)	Green	472	2″
YA34A3	500 kcmil	1/2	2-NEMA	1.62	3.15	1.75	6.80	.63	.46	.77		Y644HS (1) Y81KFT (4) Y81KFTMBH (4) PAT81KFT-18V (4)	U34ART (4)	Pink	300	2-5/8″
YA34A5		3/8	2	1.80	1.89	1.00	5.54	.44	.46	.45						
YA36A3	600 kcmil	1/2	2-NEMA	1.62	3.15	1.75	7.09	.63	.52	.77			U36ART (4)	Black	473	2-7/8″
YA36A5		3/8	2	1.97	1.89	1.00	5.83	.44	.52	.45						
YA39A7	700/750 kcmil 900 Compact AL +	3/8	2	2.05	1.89	1.00	5.81	.44	.43	.45			U39ART-2 (4)	Yellow	936	2-7/8″
YA39A5		1/2	2-NEMA	1.62	3.15	1.75	7.07	.63	.43	.77						
YA39AM2		1/2	2-NEMA	1.69	3.12	1.75	7.31	.63	.57	.74			P39ART** (4)	Red	301	2-7/8″
YA44A3	1000 kcmil	1/2	2-NEMA	1.65	3.15	1.75	7.76	.63	.66	.77	—	—	P44ART** (4)	Brown	302	3″
YA45A5	1250 kcmil	1/2	2-NEMA	1.65	3.15	1.75	7.76	.63	.66	.77			P44ART** (4)	Brown	302	3″
YA46A3	1500 kcmil	1/2	2-NEMA	3.09	3.16	1.75	8.75	.63	.81	.78			L46ART (2)	Red	478	2-3/4″
YA46A5	1500 kcmil	1/2	4-NEMA	3.09	3.16	1.75	8.75	.63	.81	.78						
YA48A3	2000 kcmil	1/2	2-NEMA	3.57	3.11	1.75	8.49	.63	.90	.73			L48ART (2)	Red	479	4-1/8″

- • Contact BURNDY® or conductor, stud sizes and hole drillings not shown.
- ▲ See tooling section of this catalog for complete tool and die listings.
- ‡ Use Y60 BHU HYPRESS™ with L46ART and L48ART die sets. 90° C Rated.
- * Use PUADP-1 adaptor with U dies in Y46 HYPRESS™.
- ** P39ART and P44ART die sets for use with Y46 HYPRESS™ only. PUADP-1 adapter not required.
- \+ Tested with Y644HS and PAT644 dieless tools only and not UL Listed with any tool on 900 Compact Al.
- ◆ For applications greater than 2000 Volts consult cable manufacturer for voltage stress relief instructions.

Note: All dimensions shown are for reference only.

Y644HS DIELESS HYPRESS™ RANGE-TAKING CAPABILITIES

The following size HYDENT™ lugs and two way splices, when crimped with the Y644HS DIELESS HYPRESS™ tool, produce the following range taking capabilities:

Aluminum Connectors					
Standard Wire Size	**Expanded Wire Range**	**Standard Wire Size**	**Expanded Wire Range**	**Standard Wire Size**	**Expanded Wire Range**
#6 AWG	#6 AWG	1/0 AWG	1/0 - #1 AWG	250 kcmil	250 kcmil - 1/0 AWG
#4 AWG	#4 - #6 AWG	2/0 AWG	2/0 - #1 AWG	300 kcmil	300 kcmil - 2.0 AWG
#2 AWG	#2 - #6 AWG	3/0 AWG	3/0 - #1 AWG	350 kcmil	350 kcmil - 3/0 AWG
#1 AWG	#1 - #2 AWG	4/0 AWG	4/0 - #1 AWG	400 kcmil	400 kcmil - 4/0 AWG
				500 kcmil	500 kcmil - 4/0 AWG
				600 kcmil	600 - 250 kcmil
				750 kcmil	750 - 500 kcmil

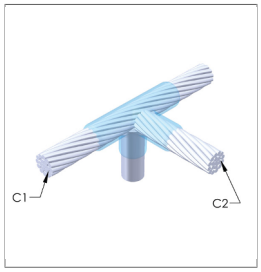
ERICO® CADWELD® ONE SHOT, Cable to Ground Rod

- Single use ceramic mold which eliminates the need for a graphite mold and handle clamp/frame
- Produces a permanent connection that will not loosen or corrode
- Fits plain copper-bonded, threaded copper-bonded, full-size galvanized and stainless steel ground rods
- NEC® compliant

Mold Family

GR

GT



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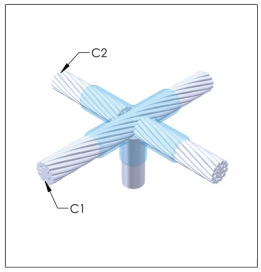

NX

Part Number	Mold Family	Ground Rod Diameter, Nominal	Ground Rod Diameter, Actual	Connection, Solid	Connection, Stranded
Welding Material Type: Traditional					
GR1141G	GR	1/2"	0.440" – 0.507"	#8, #6	#8
GR1141L	GR	1/2"	0.440" – 0.507"	#4, #3	#6, #4
GR1141V	GR	1/2"	0.440" – 0.507"	#2, #1	#3, #2
GR1161G	GR	5/8"	0.555" – 0.635"	#8, #6	#8
GR1161GF	GR	5/8"	0.555" – 0.635"	#8, #6	#8
GR1161L	GR	5/8"	0.555" – 0.635"	#4, #3	#6, #4
GR1161V	GR	5/8"	0.555" – 0.635"	#2, #1	#3, #2
GR1162C	GR	5/8"	0.555" – 0.635"	1/0, 2/0	#1, 1/0
GR1162G	GR	5/8"	0.555" – 0.635"	–	2/0
GR1162Q	GR	5/8"	0.555" – 0.635"	–	4/0
GR1181G	GR	3/4"	0.673" – 0.765"	#8, #6	#8
GR1181L	GR	3/4"	0.673" – 0.765"	#4, #3	#6, #4
GR1181V	GR	3/4"	0.673" – 0.765"	#2, #1	#3, #2
GR1182C	GR	3/4"	0.673" – 0.765"	1/0, 2/0	#1, 1/0
GR1182G	GR	3/4"	0.673" – 0.765"	–	2/0
GR1182Q	GR	3/4"	0.673" – 0.765"	–	4/0
GT1141G	GT	1/2"	0.440" – 0.507"	#8, #6	#8
GT1141L	GT	1/2"	0.440" – 0.507"	#4, #3	#6, #4
GT1141V	GT	1/2"	0.440" – 0.507"	#2, #1	#3, #2

Part Number	Mold Family	Ground Rod Diameter, Nominal	Ground Rod Diameter, Actual	Connection, Solid	Connection, Stranded
GT1161G	GT	5/8"	0.555" – 0.635"	#8, #6	#8
GT1161L	GT	5/8"	0.555" – 0.635"	#4, #3	#6, #4
GT1161LF	GT	5/8"	0.555" – 0.635"	#4, #3	#6, #4
GT1161V	GT	5/8"	0.555" – 0.635"	#2, #1	#3, #2
GT1161VF	GT	5/8"	0.615" – 0.635"	#2, #1	#3, #2
GT1162C	GT	5/8"	0.555" – 0.635"	1/0, 2/0	#1, 1/0
GT1162G	GT	5/8"	0.555" – 0.635"	–	2/0
GT1181G	GT	3/4"	0.673" – 0.765"	#8, #6	#8
GT1181L	GT	3/4"	0.673" – 0.765"	#4, #3	#6, #4
GT1181V	GT	3/4"	0.673" – 0.765"	#2, #1	#3, #2
GT1182C	GT	3/4"	0.673" – 0.765"	1/0, 2/0	#1, 1/0
GT1182G	GT	3/4"	0.673" – 0.765"	–	2/0
NT1141G	NT	1/2"	0.440" – 0.507"	#8, #6	#8
NT1141L	NT	1/2"	0.440" – 0.507"	#4, #3	#6, #4
NT1141V	NT	1/2"	0.440" – 0.507"	#2, #1	#3, #2
NT1161G	NT	5/8"	0.555" – 0.635"	#8, #6	#8
NT1161L	NT	5/8"	0.555" – 0.635"	#4, #3	#6, #4
NT1161V	NT	5/8"	0.555" – 0.635"	#2, #1	#3, #2
NT1181G	NT	3/4"	0.673" – 0.765"	#8, #6	#8
NT1181L	NT	3/4"	0.673" – 0.765"	#4, #3	#6, #4
NT1181V	NT	3/4"	0.673" – 0.765"	#2, #1	#3, #2
NX1141G	NX	1/2"	0.440" – 0.507"	#8, #6	#8
NX1141L	NX	1/2"	0.440" – 0.507"	#4, #3	#6, #4
NX1161G	NX	5/8"	0.555" – 0.635"	#8, #6	#8
NX1161G1T	NX	5/8"	0.555" – 0.635"	#8, #6, #2	#8
NX1161L	NX	5/8"	0.555" – 0.635"	#4, #3	#6, #4
NX1161V	NX	5/8"	0.555" – 0.635"	#2, #1	#3, #2
NX1181G	NX	3/4"	0.673" – 0.765"	#8, #6	#8
NX1181L	NX	3/4"	0.673" – 0.765"	#4, #3	#6, #4
NX1181V	NX	3/4"	0.673" – 0.765"	#2, #1	#3, #2
Welding Material Type: ERICO® CADWELD® PLUS					
GR1141GPLUS	GR	1/2"	0.440" – 0.507"	#8, #6	#8
GR1141LPLUS	GR	1/2"	0.440" – 0.507"	#4, #3	#6, #4
GR1141VPLUS	GR	1/2"	0.440" – 0.507"	#2, #1	#3, #2
GR1161GPLUS	GR	5/8"	0.555" – 0.635"	#8, #6	#8
GR1161LPLUS	GR	5/8"	0.555" – 0.635"	#4, #3	#6, #4
GR1161VPLUS	GR	5/8"	0.555" – 0.635"	#2, #1	#3, #2
GR1162CPLUS	GR	5/8"	0.555" – 0.635"	2/0, 1/0	#1, 1/0
GR1162GPLUS	GR	5/8"	0.555" – 0.635"	–	2/0
GR1162QPLUS	GR	5/8"	0.555" – 0.635"	–	4/0
GR1181GPLUS	GR	3/4"	0.673" – 0.765"	#8, #6	#8
GR1181LPLUS	GR	3/4"	0.673" – 0.765"	#4, #3	#6, #4
GR1181VPLUS	GR	3/4"	0.673" – 0.765"	#2, #1	#3, #2
GR1182CPLUS	GR	3/4"	0.673" – 0.765"	2/0, 1/0	#1, 1/0
GR1182GPLUS	GR	3/4"	0.673" – 0.765"	–	2/0
GR1182QPLUS	GR	3/4"	0.673" – 0.765"	–	4/0
GT1141GPLUS	GT	1/2"	0.440" – 0.507"	#8, #6	#8
GT1141LPLUS	GT	1/2"	0.440" – 0.507"	#4, #3	#6, #4
GT1141VPLUS	GT	1/2"	0.440" – 0.507"	#2, #1	#3, #2

Part Number	Mold Family	Ground Rod Diameter, Nominal	Ground Rod Diameter, Actual	Connection, Solid	Connection, Stranded
GT1142GPLUS	GT	1/2"	0.440" – 0.507"	–	2/0
GT1161GPLUS	GT	5/8"	0.555" – 0.635"	#8, #6	#8
GT1161LPLUS	GT	5/8"	0.555" – 0.635"	#4, #3	#6, #4
GT1161VPLUS	GT	5/8"	0.555" – 0.635"	#2, #1	#3, #2
GT1162CPLUS	GT	5/8"	0.555" – 0.635"	2/0, 1/0	#1, 1/0
GT1162GPLUS	GT	5/8"	0.555" – 0.635"	–	2/0
GT1181GPLUS	GT	3/4"	0.673" – 0.765"	#8, #6	#8
GT1181LPLUS	GT	3/4"	0.673" – 0.765"	#4, #3	#6, #4
GT1181VPLUS	GT	3/4"	0.673" – 0.765"	#2, #1	#3, #2
GT1182CPLUS	GT	3/4"	0.673" – 0.765"	2/0, 1/0	#1, 1/0
GT1182GPLUS	GT	3/4"	0.673" – 0.765"	–	2/0
NT1141GPLUS	NT	1/2"	0.440" – 0.507"	#8, #6	#8
NT1141LPLUS	NT	1/2"	0.440" – 0.507"	#4, #3	#6, #4
NT1141VPLUS	NT	1/2"	0.440" – 0.507"	#2, #1	#3, #2
NT1161G1TPLUS	NT	5/8"	0.555" – 0.635"	#8, #6, #2	#8
NT1161GPLUS	NT	5/8"	0.555" – 0.635"	#8, #6	#8
NT1161LPLUS	NT	5/8"	0.555" – 0.635"	#4, #3	#6, #4
NT1161VPLUS	NT	5/8"	0.555" – 0.635"	#2, #1	#3, #2
NT1181GPLUS	NT	3/4"	0.673" – 0.765"	#8, #6	#8
NT1181LPLUS	NT	3/4"	0.673" – 0.765"	#4, #3	#6, #4
NT1181VPLUS	NT	3/4"	0.673" – 0.765"	#2, #1	#3, #2
NX1141GPLUS	NX	1/2"	0.440" – 0.507"	#8, #6	#8
NX1141LPLUS	NX	1/2"	0.440" – 0.507"	#4, #3	#6, #4
NX1161G1TPLUS	NX	5/8"	0.555" – 0.635"	#8, #6, #2	#8
NX1161GPLUS	NX	5/8"	0.555" – 0.635"	#8, #6	#8
NX1161LPLUS	NX	5/8"	0.555" – 0.635"	#4, #3	#6, #4
NX1161VPLUS	NX	5/8"	0.555" – 0.635"	#2, #1	#3, #2
NX1181GPLUS	NX	3/4"	0.673" – 0.765"	#8, #6	#8
NX1181LPLUS	NX	3/4"	0.673" – 0.765"	#4, #3	#6, #4
NX1181VPLUS	NX	3/4"	0.673" – 0.765"	#2, #1	#3, #2

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WARNING
ERICO products shall be installed and used only as indicated in ERICO's product instruction sheets and training materials. Instruction sheets are available at www.erico.com and from your ERICO customer service representative. Improper installation, misuse, misapplication or other failure to completely follow ERICO's instructions and warnings may cause product malfunction, property damage, serious bodily injury and death.

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BURNDY

On Line Catalog

BURNDY Catalog Number	C11N
UPC Number	781810142288
Description	GRD CL BARE WIRE 1/2-1\"
Status	Active
Web Use	
BURNDY Product Line	

Dimensional	
Width (in)	.63 in[16]
Length (in)	2.25
Height (in)	1.81 in[46]
Pad Width (in)	.63
General	
Product Description	Cast Bronze Ground Clamp, Cable to Water Pipe or Copper Tube, 10 - 2 AWG, 1/2"- 1" Water Pipe
Conductor(s)	
Pipe Size (Range)	1/2 in-1 in
Copper Solid Size (Range)	10 AWG-2 AWG
Copper Stranded (Range)	10 AWG-2 AWG
Rebar Size (Range)	N/A
Physical	
Type of Hardware	Steel - Zinc Plated
Type of Plating	Unplated
Ground Strap	N
Plated (Yes or No)	N
For Armored Cable	N
Product Material	Bronze Alloy
Recommended Installation Torque - Wire Clamp	50
Recommended Installation Torque - Pipe	50
Approvals / Certifications	
UL Listed	Y
CSA Certified	Y
Rated for Direct Burial	N
ROHS Compatible	Compliant
UL Recognized	N
CULUS	N
Industry Standards	UL467
Documentation	

For further technical assistance, please contact us

BURNDY LLC - USA
47, industrial Park Drive

BURNDY Technical Servcies
47, industrial Park Drive

Hours: 8.00 AM - 5.00 PM
Monday - Friday
Phone: 000-346-4175

Grounding Bus Bars

EGBA Series – 1/4" Thick

Standard Configurations in Stock

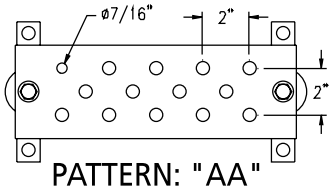
Busbars
- 1/4" thick copper
- ASTM B187-C11000
- Electro-tin plating available (add "T" to part number)

Brackets
- Type 304 stainless steel
- 1/8" thick

Insulators (Stand Off)
- Manufactured from a halogen-free, fiberglass-reinforced thermalset unsaturated polyester molded compound (BMC)
- Meet the requirements of UL® 94 V-0 for self-extinguishing materials
- Indoor rating: 600 volts

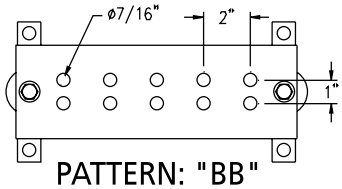
Fasteners
- 3/8" Type 304 stainless steel

- All bars shown include insulators, stainless steel brackets, stainless steel mounting bolts, and are UL Listed.
- All illustrations show bars of 12" length. Bars of longer lengths will have additional holes according to the pattern shown.
- Contact ERICO for additional ground bar configurations.



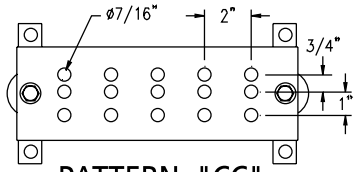
PATTERN: "AA"

EGBA14412AA	4" x 12"



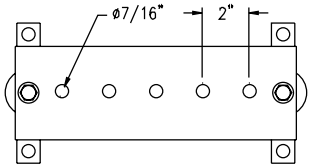
PATTERN: "BB"

EGBA14212BB	2" x 12"
EGBA14412BB	4" x 12"



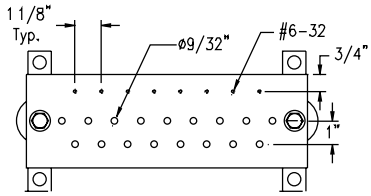
PATTERN: "CC"

EGBA14412CC	4" x 12"
EGBA14420CC	4" x 20"
EGBA14424CC	4" x 24"



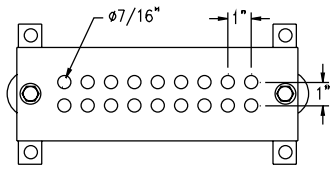
PATTERN: "EE"

EGBA14112EE	1" x 12"
EGBA14212EE	2" x 12"



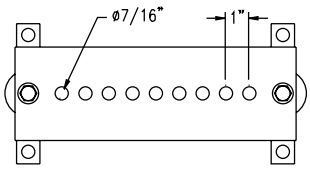
PATTERN: "FF"

EGBA14410FF	4" x 10"



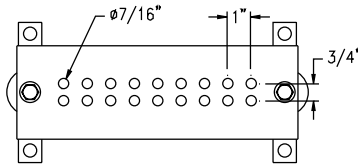
PATTERN: "GG"

EGBA14412GG	4" x 12"
EGBA14424GG	4" x 24"



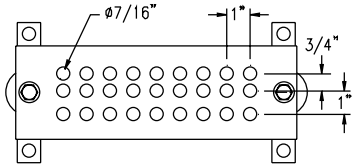
PATTERN: "HH"

EGBA14212HH	2" x 12"



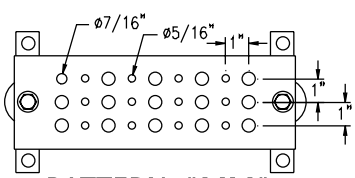
PATTERN: "JJ"

EGBA14215JJ	2" x 15"



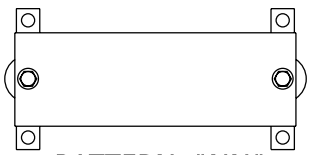
PATTERN: "LL"

EGBA14412LL	4" x 12"
EGBA14424LL	4" x 24"



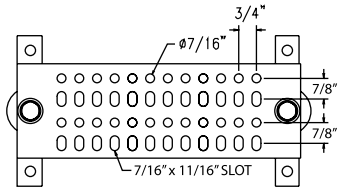
PATTERN: "MM"

EGBA14424MM	4" x 24"



PATTERN: "NN"

EGBA14212NN	2" x 12"
EGBA14224NN	2" x 24"
EGBA14412NN	4" x 12"
EGBA14420NN	4" x 20"
EGBA14424NN	4" x 24"



PATTERN: "QQ"

EGBA14420QQ	4" x 20"
EGBA14424QQ	4" x 24"

ERITECH® Grounding Bus Bars

TGB & TMGB Series – 1/4" Thick

Standard Configurations in Stock

Busbars
- 1/4" thick copper
- ASTM B187-C11000
- Electro-tin plated

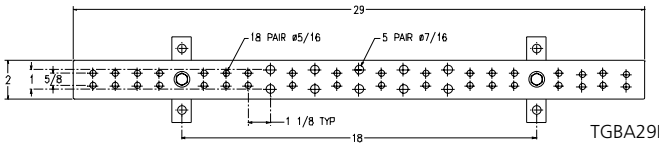
Brackets
- Type 304 stainless steel
- 1/8" thick

Insulators (Stand Off)
- Manufactured from a halogen-free, fiberglass-reinforced thermalset unsaturated polyester molded compound (BMC)
- Meet the requirements of UL® 94 V-0 for self-extinguishing materials
- Indoor rating: 600 volts

Fasteners
- 3/8" Type 304 stainless steel

- All bars shown include insulators, stainless steel brackets, stainless steel mounting bolts and are UL Listed.
- All TGB and TMGB bars meet ASTM B187-C11000 Standard for copper, and ANSI/TIA/EIA-J-STD-607.

Electro-Tin Plated Bars



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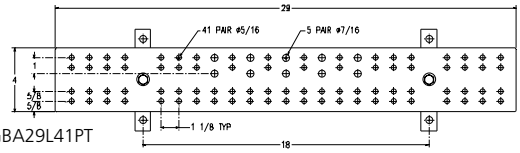

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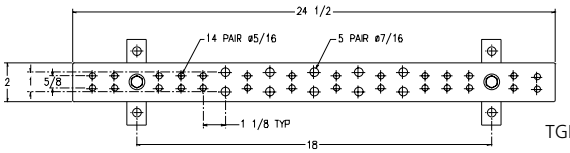

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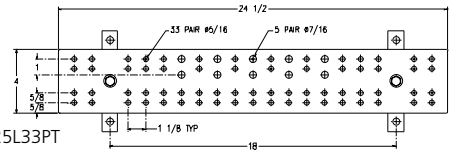

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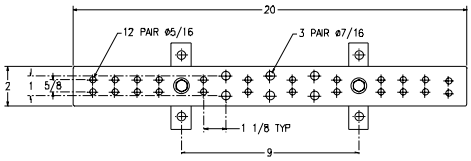

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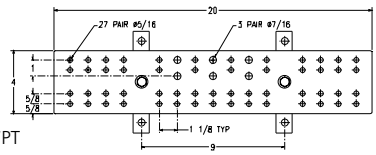

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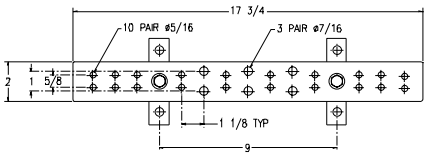

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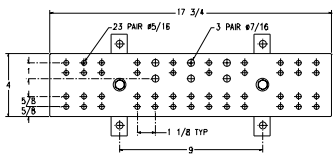

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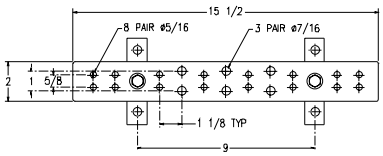

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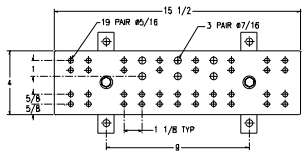

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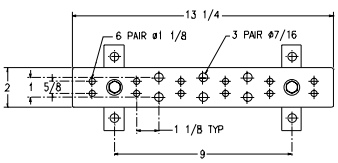

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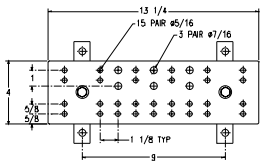

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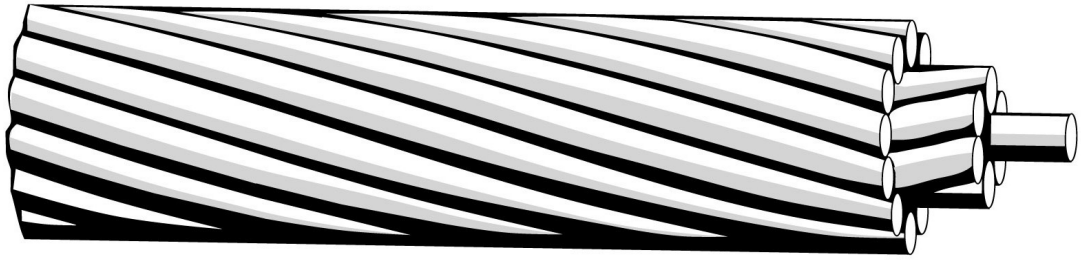
Bare Copper Wire and Cable

Bare Copper Conductor. Solid and Stranded .



APPLICATIONS

Solid and stranded (classes AA and A) bare copper are suitable for overhead transmission and distribution applications. Stranded conductor of greater flexibility (classes B and C) are suitable for uninsulated hook up, jumpers, and grounds in electrical construction. Soft Drawn copper is unilay construction.

SPECIFICATIONS

Southwire's bare copper wire and cable meets or exceeds the following ASTM specifications:

- B-1 Hard-Drawn Copper Wire.
- B-2 Medium-Hard Copper Wire.
- B-3 Soft or Annealed Copper Wire.
- B-8 Concentric-Lay-Stranded Hard, Medium-Hard or Soft Copper Conductor.
- B-33 Tinned Conductors
- B-787 19 Wire Combination Unilay-Stranded Soft copper wire.

CONSTRUCTION

Bare copper, solid or stranded. Available in tempers hard, medium-hard, or soft. Stranded conductors are concentrically stranded in hard and medium-hard tempers and are Combination Unilay stranded in the soft-drawn temper.

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Bare Copper

Size (AWG)	Weight (lbs/1000 ft)	Diameter (mils)	Circular Mil Area (mils)	Hard Drawn		Medium-Hard Drawn		Soft-Drawn (Annealed)		Allowable Ampacity+
				Rated Strength> (lbs)	DC Resistance (ohms/1000 ft) @20°C	Rated Strength (lbs)	DC Resistance (ohms/1000 ft) @20°C	Rated Strength (lbs)	DC Resistance (ohms/1000 ft) @20°C	
SOLID										
14	12.4	64.1	4110	213.5	2.626	166.6	2.613	124.2	2.525	--
13	15.7	72	5180	268.0	2.083	208.8	2.072	156.6	2.003	--
12	19.8	80.8	6530	336.9	1.652	261.2	1.643	197.5	1.588	--
11	24.9	90.7	8230	422.9	1.310	327.6	1.303	249.0	1.260	--
10	31.4	101.9	10380	529.2	1.039	410.4	1.033	314.0	.999	--
9	39.6	114.4	13090	661.2	.824	514.2	.820	380.5	.792	--
8	50	128.5	16510	826.0	.653	643.9	.650	479.8	.628	95
7	63	144.3	20820	1030.0	.518	806.6	.515	605.0	.498	105
6	79.4	162	26240	1280.0	.411	1010.0	.409	762.9	.395	125
5	100.2	181.9	33090	1591.0	.326	1265.0	.324	961.9	.313	145
4	126.3	204.3	41740	1970.0	.258	1584.0	.257	1213.0	.249	170
3	159.3	229.4	52620	2439.0	.205	1984.0	.204	1530.0	.197	195
2	200.9	257.6	66360	3003.0	.163	2450.0	.162	1929.0	.156	225
1	253.3	289.3	83690	3688.0	.129	3024.0	.128	2432.0	.124	260

+Ampacity based on 75°C conductor temperature; 25°C ambient temperature; 2 ft./sec. wind in sun.

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Bare Copper

Size (AWG)	Stranding	Stranding Class	Weight (lbs/1000 ft)	Diameter (mils)		Hard Drawn		Medium-Hard Drawn		Soft-Drawn (Annealed)		Allowable Ampacity+
				Individual Wires	Complete Conductor	Rated Strength (lbs)	DC Resistance (ohms/1000 ft) @20°C	Rated Strength (lbs)	DC Resistance (ohms/1000 ft) @20°C	Rated Strength (lbs)	DC Resistance (ohms/1000 ft) @20°C	
STRANDED												
8	7	B	51	49	146	777	.6663	610	.6629	499	.6408	95
6	7	B	81	61	184	1228	.4191	959	.4169	794	.4030	130
4	7	A, B	128.9	77	232	1938	.2636	1505	.2622	1320	.2534	170
3	7	A, B	162.5	87	260	2433	.2090	1885	.2079	1670	.2010	200
2	7	A, B	204.9	97	292	3050	.1660	2360	.1650	2110	.1578	230
1	7	A	258.4	109	328	3801	.1316	2955	.1309	2552	.1252	265
1/0	7	A, AA	326.1	123	368	4752	.1042	3705	.1037	3221	.1002	310
2/0	7	A, AA	410.9	138	414	5926	.08267	4640	.08224	4062	.07949	355
2/0	19	B	410.9	84	418	6690	.08267	4765	.08224	4024	.07949	355
3/0	7	A, AA	518.1	155	464	7366	.06556	5812	.06522	5118	.06304	410
4/0	7	A, AA	653.3	174	522	9154	.05199	7278	.05172	6459	.04999	480
4/0	19	B	653.3	106	528	9617	.05199	7479	.05172	6453	.04999	480
250	19	A	771.9	115	574	11360	.04400	8836	.04378	7627	.04231	530
250	37	B	771.9	82	575	11600	.04400	8952	.04378	7940	.04231	530
300	19	A	926.2	126	628	13510	.03667	10530	.03648	9160	.03526	590
350	19	A	1080.6	136	679	15590	.03143	12200	.03127	10680	.03022	650
500	37	A, B	1543.8	116	814	22510	.02200	17550	.02189	15240	.02116	810
600	37	A, AA	1852.5	127	891	27020	.01834	21060	.01825	18300	.01763	910
750	61	A, B	2315.6	111	998	34090	.01467	26510	.01459	22890	.01410	1040
1000	61	A, B	3087.5	128	1152	45030	.01100	35100	.01094	30500	.01058	1240

+Ampacity based on 75°C conductor temperature; 25°C ambient temperature; 2 ft./sec. wind in sun.

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SIMpull THHN™ THWN

600 Volts. Copper Conductor
Thermoplastic Insulation/ SIM Nylon Sheath
Heat, Moisture, Gasoline, and Oil Resistant II
Also Rated MTW and THWN-2
SIM Technology® for Easier Pulling

APPLICATIONS

Southwire SIMpull THHN or THWN-2 conductors are primarily used in conduit and cable trays for services, feeders, and branch circuits in commercial or industrial applications as specified in the National Electrical Code. Voltage for all applications is 600 volts. SIMpull THHN conductors are designed to be used without application of pulling lubricant. Allowable temperatures are as follows:

- THHN or T90 Nylon- Dry locations not to exceed 90° C
- THWN-2- Wet or dry locations not to exceed 90° C or locations not to exceed 75° C when exposed to oil
- TWN75- Wet locations not to exceed 75° C
- MTW- Wet locations or when exposed to oil at temperatures not to exceed 60° C or dry locations not to exceed 90° C (with ampacity limited to that for 75° C conductor temperature per NFPA 79)
- AWM- Dry locations not to exceed 105° C when rated and used as appliance wiring material

SPECIFICATIONS

Southwire SIMpull THHN® or THWN-2 or MTW (also AWM) comply with:

· ASTM - B3, B8 (7,19, 37, 61 Strands), B 787 (19 Wire Combination Unilay Strand)
· UL Standard 83, 1581, and 1063(MTW)
· T90 Nylon/TWN75 sizes through 1000 kcmil CSA C22.2 No. 75
· NOM-ANCE 90° C · Federal Specification A-A-59544
· National Electrical Code, NFPA 70 · VW-1 - Sizes 14 through 1 AWG
· CT rated in sizes 1/0 AWG and larger
· FT1
· AWM - Sizes 14 through 6 AWG. MTW available in stranded only
· NEMA WC-70 Construction Requirements
· RoHS/REACH Compliant

Construction

Southwire SIMpull THHN or THWN-2 or MTW copper conductors are soft annealed copper. #14 - 4/0 AWG uses a combination unilay strand and 250 kcmil and larger uses a compressed copper strand. The wire is insulated with a tough heat and moisture resistant poly vinyl chloride (PVC), over which a SIM (SLIKQWIK® Infused Membrane) nylon (polyamide) or UL Recognized equal jacket is applied. Available in black, white, red, blue, purple, green, yellow, orange, brown and gray. Some colors are subject to economic order quantity.Marked sunlight resistant in sizes 2 AWG and larger.
THWN-2 available in sizes 8 AWG and larger .
Sizes 14 - 10 AWG are available with SIMpull Technology only in SIMpull Barrel or CoilPAK configurations.

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SIMpull THHN

Conductor		Insulation Thickness (mils)	Jacket Thickness (mils)	Nominal O.D. (mils)	Approx. Weight per 1000' (lbs)	Allowable Ampacities+			
Size (AWG or kcmil)	Number of Strands					60° C	75° C	90° C	Standard Package
14*	1	15	4	102	15	15	15	15	AC
12*	1	15	4	119	23	20	20	20	AC
10*	1	20	4	150	36	30	30	30	AC
14*	19	15	4	109	16	15	15	15	AC
12*	19	15	4	128	24	20	20	20	AC
10*	19	20	4	161	38	30	30	30	AC
8	19	30	5	213	63	40	50	55	ABCD
6	19	30	5	249	95	55	65	75	ABCD
4	19	40	6	318	152	70	85	100	ABCD
3	19	40	6	346	189	85	100	115	ABCD
2	19	40	6	378	234	95	115	130	ABCD
1	19	50	7	435	299	110	130	145	ABCD
1/0	19	50	7	474	372	125	150	170	ABCD
2/0	19	50	7	518	462	145	175	195	ABCD
3/0	19	50	7	568	575	165	200	225	ABCD
4/0	19	50	7	624	718	195	230	260	ABCD
250	37	60	8	694	851	215	255	290	ABCD
300	37	60	8	747	1012	240	285	320	ABC
350	37	60	8	797	1174	260	310	350	ABC
400	37	60	8	842	1334	280	335	380	ABC
500	37	60	8	926	1655	320	380	430	ABCD
600	61	70	9	1024	1987	350	420	475	ABC
750	61	70	9	1126	2464	400	475	535	BC
1000	61	70	9	1275	3257	455	545	615	C

* Sizes 14 - 10 AWG available with patented Sim Technology® No Lube® jacket only in SIMpull® Wire Barrel or CoilPAK configurations.
+Allowable ampacities shown are for general use as specified by the 2011 Edition

Standard Package:
A - 2500' Reel
B - 1000' Reel

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Southwire is a registered trademark of Southwire Company

of the National Electrical Code Section 310.15 and 240.4(D). Unless the equipment is marked for use at higher temperatures the conductor shall be limited to the following per NEC 110.14(C). 60° C - When terminated to equipment for circuits rated 100 ampers or less or marked for 14 - 1 AWG conductors. 75° C - When terminated to equipment for circuits rated over 100 ampers or marked for conductors larger than1 AWG. 90° C - THHN dry locations and THWN wet or dry locations for ampacity adjustment purposes using NEC section 310.15.	C - 500' Spool D - 5000' Reel

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PORTLAND ELECTRICAL CONSTRUCTION INC.

1019 7TH STREET
OREGON CITY, OR 97045
PHONE: 503-655-2281 FAX: 503-655-5033
OR CCB# 51764 WA EC PORTLEC023PE

DIVISION 26 – ELECTRICAL

SPECIFICATION SECTION:

- 260533 – RACEWAYS

Electrical Metallic Tubing (EMT) and True Color™ EMT

E-Z Pull® EMT

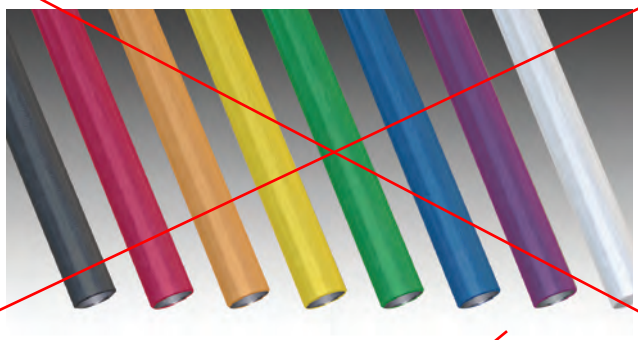
- Hot galvanized steel using patented inline Flo-Coat® process for long lasting exterior protection
- E-Z Pull interior coating provides a smooth raceway for fast, easier wire-pulling
- Excellent mechanical protection for conductors
- Ductility for faster and easier bending
- Optimal EMI shielding characteristics
- Listed to Underwriters Laboratories Safety Standard UL 797
- Manufactured in accordance with ANSI C80.3
- Available in sizes 1/2 (16) - 4 (103)

Quality Electrical Metallic Tubing

True Color™ EMT

- All the benefits of E-Z Pull EMT
- Instant identification of multiple circuits
- Fire Alarm® Red EMT
- Healthcare Green EMT
- Data Com Blue EMT
- Available in 8 colors
- Available in sizes 1/2 (16) - 4 (103)

Identify Important Circuits Instantly!



True Color™ Applications

Black EMT
- Blends in dark colored areas

Fire Alarm® EMT
- Emergency circuits
- Fire alarm and Security systems

Orange EMT
- Construction/research areas
- Fiber optic systems
- Auto repair/maintenance

Yellow EMT
- High voltage wiring
- Caution areas
- Special equipment

Green EMT
- Hospital and healthcare areas
- Nurse call stations
- Critical circuits

Blue EMT
- Low voltage wiring
- Data com/video
- Network security

Purple EMT
- Specialty wiring systems
- Security systems

White EMT
- Blends in light colored areas

Silver EMT
- Standard Use
- Contemporary architecture

Project Information

Company Name: _____
Address: _____
City: _____
State & Zip: _____
Phone: _____
Project Name: _____
City: _____
State: _____

Electrical Metallic Tubing (EMT) and True Color™ EMT

FEATURES & SPECIFICATIONS

Manufactured for Long Life

Allied Tube & Conduit® EMT is precision manufactured from high grade mild strip steel for exceptional durability and long-lasting life. Allied EMT is hot galvanized using a patented inline Flo-Coat® process. This process combines zinc, a conversion coating, and a clear organic polymer topcoat to form a triple layer of protection against corrosion and abrasion.

E-Z Pull® EMT combines strength with ductility, providing easy bending, cutting and joining while resisting flattening, kinking and splitting. Available in sizes 1/2 (16) - 4 (103).

Coatings

Allied's EMT (Electrical Metallic Tubing) has a special low friction ID coating called E-Z Pull that greatly improves the slip properties between conduit and wire. With E-Z Pull EMT, wire pulls through the EMT smoothly and easily, making installation easier and faster.

EMI Shielding

Allied EMT is very effective in reducing electromagnetic field levels for encased power distribution circuits, shielding computers and other sensitive electronic equipment from the effects of electromagnetic interference.
For more information on EMT shielding, visit www.alliedeg.com to obtain the **GEMI** (**G**rounding and **E**lectro-**M**agnetic **I**nterference) software analysis program.

Codes & Standards Compliance

Allied EMT is listed to Underwriters Laboratories Safety Standard UL 797 and meets ANSI C80.3. These standards have been adopted as federal specifications in lieu of WWC 563. EMT is recognized as an equipment grounding conductor by NEC Section 250-118. Documentation for compliance with NEC Article 250 is also available in the **GEMI** (**G**rounding and **E**lectro-**M**agnetic **I**nterference) analysis software and related research studies found at the www.alliedeg.com website.

Installation of EMT shall be in accordance with the National Electrical Code and the UL listing information. Allied EMT is listed in category FJMX. Master bundles conform to NEMA Standard RN2.

Specification Data

To specify Allied EMT, include the following: Electrical Metallic Tubing shall be equal to that manufactured by Allied Tube & Conduit Corporation. EMT shall be hot galvanized steel O.D. with an organic corrosion resistant I.D. coating, and shall be listed to UL Safety Standard 797 and manufactured in accordance with ANSI C80.3.

Electrical Metallic Tubing (EMT) and True Color™ EMT

Listed to Underwriters Laboratories Safety Standard UL 797
Manufactured in accordance with ANSI C80.3

Trade Size	Metric Designator	Outside Diameter[1]		Nominal Wall Thickness[2]		Approximate Weight Per 100 Ft. (30.5M)		Red and Galvanized Master Bundle Quantity		True Color** Bundle Qty.	
		in	mm	in	mm	lb	kg	ft	m	ft	m
1/2	16	0.706	17.93	0.042	1.07	30	13.6	7000	2135	3500	1066.8
3/4	21	0.922	23.42	0.049	1.24	46	20.9	5000	1525	2500	762.0
1	27	1.163	29.54	0.057	1.45	67	30.4	3000	915	1500*	457.2
1-1/4	35	1.510	38.35	0.065	1.65	101	45.8	2000	610	2000	609.6
1-1/2	41	1.740	44.20	0.065	1.65	116	52.6	1500	457.5	1500	457.2
2	53	2.197	55.80	0.065	1.65	148	67.1	1200	366.0	1200	365.7
2-1/2	63	2.875	73.03	0.072	1.83	216	98.0	610	186.1	610	185.9
3	78	3.500	88.90	0.072	1.83	263	119.3	510	155.6	510	155.4
3-1/2	91	4.000	101.60	0.083	2.11	349	158.3	370	112.9	370	112.7
4	103	4.500	114.30	0.083	2.11	393	178.3	300	91.5	300	91.5

[1]Outside diameter tolerances: +/- .005 in. (.13mm) for trade sizes 1/2 (16mm) through 2 (53mm);
+/- .010 in. (.25mm) for trade sizes 2-1/2 (63mm);
+/- .015 in. (.38mm) for trade size 3 (78mm);
+/- .020 in. (.51mm) for trade sizes 3-1/2 (91mm) and 4 (103mm).

*Blue trade size 1 master bundle size: 3000 ft / 915 m
** Other Color Trade Sizes 2 - 4 are available thru special order
NOTE: Length = 10 ft. (3.05m) with a tolerance of +/- .25 in. (6.35 mm)

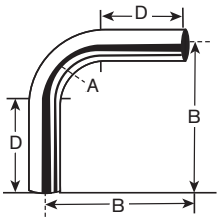
NOTE: Special orders are non-cancelable, non-returnable and non-refundable

Electrical Metallic Tubing (EMT) Elbows

EMT 90° Elbows

Listed to Underwriters Laboratories Safety Standard UL 797
Manufactured in accordance with ANSI C80.3

Trade Size	Metric Designator	Radius (A)[1]		Offset (B)[2]		Straight (D)[1]		Approximate Weight Per 100 Pieces		Standard Package
		in	mm	in	mm	in	mm	lb	kg	
1/2	16	4	102	5 7/8	149	1 1/2	38	25	11.3	25
3/4	21	4 1/2	114	7	178	1 1/2	38	46	20.9	50
1	27	5 3/4	146	8 3/4	222	1 7/8	48	84	38.1	25
1 1/4	35	7 1/4	184	10 1/8	257	2	51	144	65.3	20
1 1/2	41	8 1/4	210	11 3/4	298	2	51	193	87.5	15
2	53	9 1/2	241	14	356	2	51	296	134.3	10
2 1/2	63	10 1/2	267	16 1/4	413	3	76	504	228.6	1
3	78	13	330	18 3/4	476	3 1/8	79	701	318.0	1
3 1/2	91	15	381	21 1/4	540	3 1/4	83	1047	474.9	1
4	103	16	406	23 3/8	594	3 3/8	86	1310	594.2	1

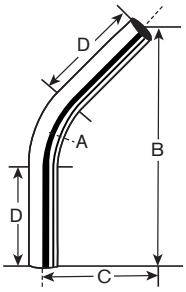


[1]Minimum requirement as per UL Standard
[2]Dimensions and weights are approximate
Sizes 2-1/2 (63) and larger shipped in palletized cartons or bulk.
Also available in the following Degrees (60°, 45°, 30°, 22-1/2°, 15° & 11-1/4°)

EMT 45° Elbows

Listed to Underwriters Laboratories Safety Standard UL 797
Manufactured in accordance with ANSI C80.3

Trade Size	Metric Designator	Radius (A)[1]		Offset (B)[2]		Offset (C)[2]		Straight (D)[1]		Approximate Weight Per 100 Pieces		Standard Package
		in	mm	in	mm	in	mm	in	mm	lb	kg	
1/2	16	4	102	6 1/8	156	2 1/2	64	1 1/2	38	18	8.2	25
3/4	21	4 1/2	114	7 3/8	187	3 1/8	79	1 1/2	38	33	15.0	50
1	27	5 3/4	146	8 3/4	222	3 5/8	92	1 7/8	48	56	25.4	25
1 1/4	35	7 1/4	184	10 1/8	257	4 1/8	105	2	51	97	44.0	20
1 1/2	41	8 1/4	210	13 1/8	333	5 3/8	137	2	51	145	65.8	15
2	53	9 1/2	241	13 1/8	333	5 1/2	140	2	51	185	83.9	10
2 1/2	63	10 1/2	267	17 1/2	445	7 1/4	184	3	76	360	163.3	1
3	78	13	330	17 1/2	445	7 1/4	184	3 1/8	79	438	198.7	1
3 1/2	91	15	381	26 1/8	664	10 7/8	276	3 1/4	83	873	396.0	1
4	103	16	406	26 1/4	667	10 7/8	276	3 3/8	86	983	445.9	1



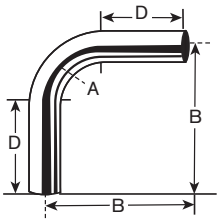
[1]Minimum requirement as per UL Standard
[2]Dimensions and weights are approximate
Sizes 2-1/2 (63) and larger shipped in palletized cartons or bulk.
Also available in the following Degrees (90°, 60°, 30°, 22-1/2°, 15° & 11-1/4°)

NOTE: Special orders are non-cancelable, non-returnable and non-refundable

Electrical Metallic Tubing (EMT) Elbows

EMT Large Radius 90° Elbows

Listed to Underwriters Laboratories Safety Standard UL 797
Manufactured in accordance with ANSI C80.3



Trade Size	Metric Designator	Radius (A)		Offset (B)[2]		Straight (D)[2]		Approximate Weight Per 100 Pieces	
		in	mm	in	mm	in	mm	lb	kg
1	27	12	305	20 5/8	524	8 5/8	219	201	91.2
1	27	15	381	24 1/4	616	9 1/4	235	235	106.6
1	27	18	457	27 7/8	708	9 7/8	251	268	121.6
1	27	24	610	34 5/8	879	10 5/8	270	329	149.2
1	27	30	762	41	1041	11	279	385	174.6
1	27	36	914	46 3/4	1187	10 3/4	273	436	197.8
1	27	42	1067	54	1372	12	305	503	228.2
1	27	48	1219	60 1/4	1530	12 1/4	311	558	253.1
1 1/4	35	12	305	20 5/8	524	8 5/8	219	303	137.4
1 1/4	35	15	381	24 1/4	616	9 1/4	235	354	160.6
1 1/4	35	18	457	27 7/8	708	9 7/8	251	404	183.3
1 1/4	35	24	610	34 5/8	879	10 5/8	270	497	225.4
1 1/4	35	30	762	41	1041	11	279	581	263.5
1 1/4	35	36	914	46 3/4	1187	10 3/4	273	657	298.0
1 1/4	35	42	1067	54	1372	12	305	758	343.8
1 1/4	35	48	1219	60 1/4	1530	12 1/4	311	842	381.9
1 1/2	41	15	381	24 1/4	616	9 1/4	235	406	184.2
1 1/2	41	18	457	27 7/8	708	9 7/8	251	464	210.5
1 1/2	41	24	610	34 5/8	879	10 5/8	270	570	258.6
1 1/2	41	30	762	41	1041	11	279	667	302.6
1 1/2	41	36	914	46 3/4	1187	10 3/4	273	754	342.0
1 1/2	41	42	1067	54	1372	12	305	870	394.6
1 1/2	41	48	1219	60 1/4	1530	12 1/4	311	967	438.6
2	53	15	381	24 1/4	616	9 1/4	235	518	235.0
2	53	18	457	27 7/8	708	9 7/8	251	592	268.5
2	53	24	610	34 5/8	879	10 5/8	270	728	330.2
2	53	30	762	41	1041	11	279	851	386.0
2	53	36	914	46 3/4	1187	10 3/4	273	962	436.4
2	53	42	1067	54	1372	12	305	1110	503.5
2	53	48	1219	60 1/4	1530	12 1/4	311	1233	559.3
2 1/2	63	18	457	27 7/8	708	9 7/8	251	864	391.9
2 1/2	63	24	610	34 5/8	879	10 5/8	270	1062	481.7
2 1/2	63	30	762	41	1041	11	279	1242	563.4
2 1/2	63	36	914	46 3/4	1187	10 3/4	273	1404	636.9
2 1/2	63	42	1067	54	1372	12	305	1620	734.8
2 1/2	63	48	1219	60 1/4	1530	12 1/4	311	1800	816.5

[2]For information only, not a requirement as per UL Standard

Chart continued on the next page

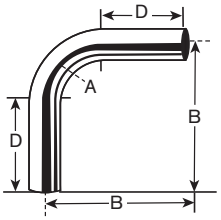
Sizes 2-1/2 (63) and larger shipped in palletized cartons or bulk.
Also available in the following Degrees (60°, 45°, 30°, 22-1/2°, 15° & 11-1/4°)

NOTE: Special orders are non-cancelable, non-returnable and non-refundable

Electrical Metallic Tubing (EMT) Elbows

EMT Large Radius 90° Elbows (continued)

Listed to Underwriters Laboratories Safety Standard UL 797
Manufactured in accordance with ANSI C80.3



Trade Size	Metric Designator	Radius (A)		Offset (B)[2]		Straight (D) [2]		Approximate Weight Per 100 Pieces	
		in	mm	in	mm	in	mm	lb	kg
3	78	15	381	24 1/4	616	9 1/4	235	921	417.8
3	78	18	457	27 7/8	708	9 7/8	251	1052	477.2
3	78	24	610	34 5/8	879	10 5/8	270	1293	586.5
3	78	30	762	41	1041	11	279	1512	685.8
3	78	36	914	46 3/4	1187	10 3/4	273	1710	775.7
3	78	42	1067	54	1372	12	305	1973	895.0
3	78	48	1219	60 1/4	1530	12 1/4	311	2192	994.3
3 1/2	91	18	457	27 7/8	708	9 7/8	251	1396	633.2
3 1/2	91	24	610	34 5/8	879	10 5/8	270	1716	778.4
3 1/2	91	30	762	41	1041	11	279	2007	910.4
3 1/2	91	36	914	46 3/4	1187	10 3/4	273	2269	1029.2
3 1/2	91	42	1067	54	1372	12	305	2618	1187.5
3 1/2	91	48	1219	60 1/4	1530	12 1/4	311	2908	1319.1
4	103	24	610	34 5/8	879	10 5/8	270	1932	876.4
4	103	30	762	41	1041	11	279	2260	1025.1
4	103	36	914	46 3/4	1187	10 3/4	273	2555	1158.9
4	103	42	1067	54	1372	12	305	2948	1337.2
4	103	48	1219	60 1/4	1530	12 1/4	311	3275	1485.5

[2]For information only, not a requirement as per UL Standard
Sizes 2-1/2 (63) and larger shipped in palletized cartons or bulk.
Also available in the following Degrees (60°, 45°, 30°, 22-1/2°, 15° & 11-1/4°)

NOTE: Special orders are non-cancelable, non-returnable and non-refundable

Galflex® - Type RWS

(Reduced Wall Steel Flexible Metal Conduit)

Steel Flexible Metal Conduit. High Strength Steel Strip.
UL Recognized Component in 5/16". UL Listed in 3/8" through 3".
CSA Certified for Trade Sizes 5/16" and 3/8" Available Upon Request.

APPLICATIONS

Galflex® Type RWS (Reduced Wall Steel) Flexible Metal Conduit is suitable for the following installations:

- Environmental air-handling spaces per NEC® 300.22(C)
- Power and lighting branch circuit conductors and cables for connecting receptacles, luminaires, equipment, office partitions, etc.
- Metal raceway for wires and cables per NEC® (ANSI/NFPA-70) Article 348
- Motor feeder, branch, and control circuit conductors and cables
- Class 1, Class 2, Class 3 Remote-control, signaling, and power-limited circuit conductors and cables
- Fire alarm system conductors and cables of power-limited or non-power-limited fire alarm circuits
- Voice, data, communications and video cables including CATV and optical fiber cables
- Concealed or exposed installations per NEC® Article 348 and the applicable NEC® provisions
- Elevators, hoistways, and escalators per NEC® 620.21
- As a grounding conductor for lengths up to 6 feet (20A max) as per 2011 NEC® 250.118(5)
- Electric signs and outline lighting per NEC® 600.7, 600.31 (1000 volts or less), and 600.32 (>1000 volts)
- Hazardous location, Class 1, Div. 2, for flexible connectors only per 2011 NEC® 501.10(B)(2) & 501.30(B)
- UL 1, 2, & 3 Hour Through-Penetration Firestop Sytems: C-AJ-1462, C-AJ-1463, C-AJ-1464, W-L-1308, and W-L-1309

STANDARDS & REFERENCES

- UL Listed per UL 1, Standard for Safety for Flexible Metal Conduit, ANSI/UL-1 for 3/8" through 3"
- CSA Certified per CSA 22.2 No. 56 per Canadian Electrical Code C22.1 Section 12-1000 for 5/16" and 3/8" trade sizes only
- Meets federal specification WW-C-566c
- NEC Type Designation - Article 348, Type FMC (flexible metal conduit)

CONSTRUCTION

Galflex® Type RWS is manufactured with a galvanized, corrosion resistant, high strength steel alloy. The metal strip is helically formed into a continuously interlocked flexible metal conduit that can withstand impact and crushing forces.

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Galflex - Type RWS

Trade Size (Inches)	Approximate Weight (lbs/100 ft)	Inner Diameter Min./Max. (inches)	Outer Diameter Min./Max. (inches)	Approx. Bend Radius* (Inches)	Standard Coil Length (feet)	Standard Reel Length (feet)
5/16*	16	0.312 / -	.0470 / 0.510	3.5	100	1000
3/8	18	0.375 / 0.393	.0560 / 0.610	4	100 / 250	1000
1/2	27	0.625 / 0.645	0.860 / 0.920	4	100	500 / 1000
3/4	34.5	0.812 / 0.835	1.045 / 1.105	5	100	500 / 1000
1	57	1.000 / 1.040	1.300 / 1.380	6	50	400
1-1/4	68	1.250 / 1.300	1.550 / 1.630	8	50	250
1-1/2	78	1.500 / 1.575	1.850 / 1.950	10	25	150
2	133	2.000 / 2.080	2.350 / 2.450	12	25	100
2-1/2	165	2.500 / -	2.860 / 3.060	15	25	100
3	197	3.000 / -	3.360 / 3.560	18	25	100
3-1/2**	231	3.500 / -	3.860 / 4.060	21	25	100
4**	264	4.000 / -	4.360 / 4.560	24	25	100

* Trade size 5/16" is provided as UL Recognized construction.
** Trade sizes 3-1/2" and 4" are non-UL.
Note: Trade Sizes 3" and smaller are UL Listed.
Minimum bend radius based on NEC Chapter 9 (other bends).

FEATURES

- Provides mechanical protection for conductors and cable
- For use with listed connectors intended for NEC Type FMC (Flexible Metal Conduit)
- Smooth interior for easy wire pulling
- High strength steel construction
- Hot-dipped, heavy zinc coating for rust/corrosion resistance
- Superior crush proof qualities
- Built in flexibility for simplified positioning

ADDITIONAL APPLICATIONS

- Listed wired fixtures per NEC 410.77(C)
- Raised floors for connection of information technology per NEC 645.5(D)(2) and 645.5(D)
- Places of assembly and theaters per NEC Articles 518 and 520
- Cranes and hoists per 2005 NEC 610.11(C)

ONLINE CERTIFICATIONS AND TOOLS

- UL Online Certifications Directory (www.ul.com)
- CSA Online Certifications Directory (www.csa.ca)
- UL Guide Information - Flexible Metal Conduit (DXUZ)
- CSA Product Information - Flexible Metal Conduit (1811-01)

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STRAIGHT SQUEEZE CONNECTORS - MALLEABLE IRON

Straight Squeeze Connectors Insulated

Straight Squeeze Connectors Uninsulated

CATALOG NUMBER	TRADE SIZE	UNIT CARTON QTY.	SHIP CARTON QTY.	UPC BAR CODE
Straight Squeeze Connector, Insulated – *Malleable Iron*				
3301	3/8"*	—	50	—
3302	1/2"	—	50	—
3302-8	1/2"	1	25	IIIIIIII
3303	3/4"	—	25	—
3303-8	3/4"	1	20	IIIIIIII
3304	1"	—	25	—
3304-8	1"	1	5	IIIIIIII
3305	1-1/4"	—	25	—
3306	1-1/2"	—	25	—
3308	2"	—	10	—
3310	2-1/2"	—	1	—
3312	3"	—	1	—
3314	3-1/2"	—	1	—
3316	4"	—	1	—
Straight Squeeze Connector, Uninsulated – *Malleable Iron*				
2101	3/8"*	—	50	—
2102	1/2"	—	50	—
2102-8	1/2"	1	25	IIIIIIII
2103	3/4"	—	25	—
2103-8	3/4"	1	20	IIIIIIII
2104	1"	—	25	—
2104-8	1"	1	5	IIIIIIII
2105	1-1/4"	—	25	—
2106	1-1/2"	—	25	—
2108	2"	—	10	—
2110	2-1/2"	—	1	—
2112	3"	—	1	—
2114	3-1/2"	—	1	—
2116	4"	—	1	—

** For 1/2" knockout*

APPLICATIONS

- For use in dry locations to bond flexible metal conduit to a box or enclosure

PRODUCT FEATURES

- All malleable construction insures mechanical protection for the raceway
- Electro zinc plated for added corrosion protection
- UPC bar coded fittings are individually polybagged with a preprinted UPC-A bar code and packaged in pre-scored tear top cartons for an attractive presentation

COMPLIANCE

- c UL us
  UL Listed E195969

90˚ SQUEEZE CONNECTORS - MALLEABLE IRON

90˚ Squeeze Connectors Insulated

90˚ Squeeze Connectors Uninsulated

INSULATED CATALOG NUMBER	UNINSULATED CATALOG NUMBER	TRADE SIZE	UNIT CARTON QTY.	SHIP CARTON QTY.	UPC BAR CODE
90˚ Squeeze Connector, Insulated and Uninsulated – *Malleable Iron*					
3201	**2201**	3/8"*	—	50	—
3202	—	1/2"	—	25	—
—	**2202**	1/2"	25	100	—
3202-8	**2202-8**	1/2"	1	25	IIIIIIII
3203	**2203**	3/4"	—	25	—
3203-8	**2203-8**	3/4"	1	20	IIIIIIII
3204	**2204**	1"	—	25	—
—	**2204-8**	1"	1	5	IIIIIIII
3205	**2205**	1-1/4"	—	10	—
3206	**2206**	1-1/2"	—	5	—
3208	**2208**	2"	—	5	—
3210	**2210**	2-1/2"	—	1	—
3212	**2212**	3"	—	1	—
3214	**2214**	3-1/2"	—	1	—
3216	**2216**	4"	—	1	—

** For 1/2" knockout*

APPLICATIONS

- For use in dry locations to bond flexible metal conduit to a box or enclosure

PRODUCT FEATURES

- All malleable construction insures mechanical protection for the raceway
- Electro zinc plated for added corrosion protection
- UPC bar coded fittings are individually polybagged with a preprinted UPC-A bar code and packaged in pre-scored tear top cartons for an attractive presentation

INSULATED AND UNINSULATED COMPLIANCE

- c UL us
  UL Listed E195969

Titan® - Type UL

(Liquidtight Flexible Metal Conduit)

**Liquidtight Flexible Metal Conduit. UL Listed.
CSA Listed. Oil-Resistant. Sunlight-Resistant.
Temperature Rated -30°C to 80°C.**

APPLICATIONS

Titan® Type UL Liquidtight Flexible Metal Conduit is suitable of the following installations:

- For the installation and protection of electrical conductors in circuits of 600 Volts nominal, or less
- Used in industrial and commercial applications for conveyors, blowers, cranes, air conditioners, machine tooling and lubrication equipment
- Where the conditions of installation, operation, or maintenance require flexibility or protection from liquids, vapors, solids, or weather
- Applications requiring movement, crossover connections, or tight bends
- Exposed or concealed locations
- For use as a grounding conductor per NEC® 250.118(7)
- For flexible connections to swimming pool, spa, and hot tub motors per 2011 NEC® 680.21(A)(3) & 680.42(A)(1)
- Electric signs and outline lighting supply and secondary-circuit per 2011 NEC® 600.31 (1000 Volts or less) & NEC® 600.32 (over 1000 Volts)
- For use in Hazardous locations - see Additional Applications Section on following page for more details

STANDARDS & REFERENCES

- NEC® Type designation - Type LFMC (Liquidtight Flexible Metal Conduit)
- ANSI / NFPA-70, NEC Article 350
- UL Listed to Underwriters Laboratories Standard ANSI / UL-360 for Liquidtight Flexible Steel Conduit
- CSA Listed to CSA 22.2 No.56 for use per the Canadian Electrical Code C22.1 Section 12-1300

CONSTRUCTION

Titan® Type UL is manufactured with a spiral wound strip of heavy gauge, corrosion-resistant, hot-dipped galvanized steel. For 3/8" through 1-1/4" trade sizes, the core is constructed with a square locked steel strip with an integral copper-bonding strip enclosed within the steel convolutions. For 1-1/2" through 4" trade sizes, the core is constructed with a fully interlocked steel strip. A rugged, flame retardant, flexible PVC jacket is extruded over the steel core. The grey jacket resists oils, mild acids and exposure to sunlight. Also available in other colors subject to minimum runs.

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Titan - Type UL

Trade Size (Inches)	Approximate Weight (lbs/100 ft)	Inner Diameter Min./Max. (inches)	Outer Diameter Min./Max. (inches)	Approx. Bend Radius* (Inches)	Standard Coil Length (feet)	Standard ReelLength (feet)
3/8	27	0.484 / 0.504	0.690 / 0.710	4	100	600
1/2	31	0.622 / 0.642	0.820 / 0.840	4	100	500/1000
3/4	40	0.820 / 0.840	1.030 / 1.050	5	100	500/1000
1	76	1.041 / 1.066	1.290 / 1.315	6	100	400
1-1/4	102	1.380 / 1.410	1.630 / 1.660	8	50	250
1-1/2	103	1.575 / 1.600	1.865 / 1.900	10	50	150
2	145	2.020 / 2.045	2.340 / 2.375	12	50	100
2-1/2	197	2.480 / 2.505	2.840 / 2.875	15	25	100
3	265	3.070 / 3.100	3.460 / 3.500	18	25	-
3-1/2	300	3.500 / 3.540	3.960 / 4.000	21	25	-
4	333	4.000 / 4.040	4.460 / 4.500	24	25	-

* Minimum bend radius based on NEC Chapter 9, Table 2 (other bends) per Article 350.

FEATURES

- A protective thermoplastic outer jacket which seals out water, liquids, abrasives, alcohol, coolants, corrosive fumes and gases, dirt, grease, mineral acids, nonconcentrated fixed alkalines, petroleum oils, salt air and spray, and weather
- Smooth metal interior for easy wiring pulling
- UV sunlight resistant jacket
- Rated for temperature range of -30°C to 80°C, 60°C Oil (-22°F to +176°F, 140°F Oil)
- Accepts standard metallic liquidtight fittings
- Rated for direct burial applications including concrete encasement

ADDITIONAL APPLICATIONS

- In Hazardous Locations - where necessary for flexible connections within hazardous locations in accordance with the following:
  - Class I, Div. 2 - NEC® 501.10(B)(2) & 501.30(B)
  - Class II, Div. 1 - NEC® 502.10(A)(2) & 502.30(B)
  - Class II, Div. 2 - NEC® 502.10(B)(2)
  - Class III, Div. 1 - NEC® 503.10(A)(2) & 503.30(B)
  - Class III, Div. 2 - NEC® 503.10(A)(2)
- Permitted for equipment grounding in sizes 3/8" through 1-1/4" in lengths not exceeding 6 feet per NEC® 250.118(6)
- Floating building feeders and services per NEC® 553.7(B)
- Boatyards & Marinas in accordance with NEC® 555.13
- Cranes & Hoists in accordance with NEC® 610.11(C)

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- For Elevator, Dumbwaiters, Escalators, Moving Walks, Wheel Chair Lifts & Stairway Chair Lifts in accordance with NEC® 620.21 (where expressly permitted)
- Under raised floors in data processing areas per NEC® 645.5(D) & 645.5(D)(2)
- Service entrance in lengths up to six feet per NEC® 230.43(15)

ONLINE CERTIFICATIONS AND TOOLS

- UL Online Certifications Directory (www.ul.com)
- CSA Online Certifications Directory (www.csa.ca)
- UL Guide Information - Flexible Metal Conduit, Liquidtight (DXHR)
- CSA Product Information - Conduit-Flexible Metal, Liquidtight Conduit (1812-03)

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STRAIGHT CONNECTORS

Insulated
Steel/Malleable Iron

Uninsulated
Steel/Malleable Iron

INSULATED CATALOG NUMBER	UNINSULATED CATALOG NUMBER	TRADE SIZE	UNIT CARTON QTY.	SHIP CARTON QTY.	UPC BAR CODE
Straight - Insulated and Uninsulated – *Steel/Mallealble Iron*					
3511RAC*	—	3/8”	25	100	—
—	3401	3/8”	50	200	—
—	3401-8	3/8”	1	15	IIIIIIII
3512RAC	3402	1/2”	50	200	—
3512-8	3402-8	1/2”	1	15	IIIIIIII
3513RAC	3403	3/4”	25	100	—
3513-8	3403-8	3/4”	1	10	IIIIIIII
3514RAC	3404	1”	—	10	—
3514-8	3404-8	1”	1	5	IIIIIIII
3515RAC	3405	1-1/4”	—	10	—
3516	3406	1-1/2”	—	5	—
3518	3408	2”	—	5	—
3520	3410	2-1/2”	—	1	—
3522	3412	3”	—	1	—
3524	3414	3-1/2”	—	1	—
3526	3416	4”	—	1	—

45˚ CONNECTORS

Insulated
Steel/Malleable Iron

Uninsulated
Steel/Malleable Iron

INSULATED CATALOG NUMBER	UNINSULATED CATALOG NUMBER	TRADE SIZE	UNIT CARTON QTY.	SHIP CARTON QTY.	UPC BAR CODE
45˚ Insulated and Uninsulated – *Steel/Malleable Iron*					
3561*	3441*	3/8”	—	25	—
3562	3442	1/2”	—	25	—
3563	3443	3/4”	—	25	—
3564	3444	1”	—	10	—
3565	3445	1-1/4”	—	10	—
3566	3446	1-1/2”	—	5	—
3568	3448	2”	—	5	—

** 1/2” Trade size hub*

APPLICATIONS

- For use in outdoor or indoor locations on flexible metallic liquidtight conduit and Type B flexible nonmetallic liquidtight conduit
- Use to positively bond the conduit to a box or enclosure
- RACO® liquidtight connectors are suitable for use in Class I, Div 2; Class II, Div 1 & 2; and Class III, Div 1 & 2 hazardous locations

PRODUCT FEATURES

- Patented split gland-ring is designed to slip onto the conduit quickly and to grip the jacket of the conduit, speeding installation, assuring a perfect seal, and preventing pullouts
- All components are reusable - RACO® liquidtight connectors may be easily disassembled and reused after years of service
- Sealing washer (included) provides a liquidtight seal when terminating the connector in a threadless opening
- Heavy duty locknut included with every RACO® liquidtight connector assures continuity of ground
- All steel/iron components are zinc electro plated for added corrosion protection
- UPC bar coded fittings are individually polybagged with a preprinted UPC-A bar code and packaged in pre-scored tear top cartons for an attractive presentation

BODIES

- 3/8” to 1” Steel, 1-1/4” to 4” Malleable Iron

NUTS

- 3/8” to 1” Steel, 1-1/4” to 4” Malleable Iron

COMPLIANCES

- UL - Standard 514B
  U L LISTED E195969
- CSA - C22.2 #18

SEE END OF SECTION (PG B107-B108) FOR DETAILED DRAWINGS »

90° CONNECTORS

Insulated
Steel/Malleable Iron

Uninsulated
Steel/Malleable Iron

APPLICATIONS

- For use in outdoor or indoor locations on flexible metallic liquidtight conduit and Type B flexible nonmetallic liquidtight conduit
- Use to positively bond the conduit to a box or enclosure
- RACO® liquidtight connectors are suitable for use in Class I, Div 2; Class II, Div 1 & 2; and Class III, Div 1 & 2 hazardous locations

PRODUCT FEATURES

- Patented split gland-ring is designed to slip onto the conduit quickly and to grip the jacket of the conduit, speeding installation, assuring a perfect seal, and preventing pullouts
- All components are reusable - RACO® liquidtight connectors may be easily disassembled and reused after years of service
- Sealing washer (included) provides a liquidtight seal when terminating the connector in a threadless opening
- Heavy duty locknut included with every RACO® liquidtight connector assures continuity of ground
- All steel/iron components are zinc electro plated for added corrosion protection
- UPC bar coded fittings are individually polybagged with a preprinted UPC-A bar code and packaged in pre-scored tear top cartons for an attractive presentation

BODIES

- 3/8" to 1" Steel, 1-1/4" to 4" Malleable Iron

NUTS

- 3/8" to 1" Steel, 1-1/4" to 4" Malleable Iron

COMPLIANCES

- UL - Standard 514B
  U L LISTED E195969
- CSA - C22.2 #18

INSULATED CATALOG NUMBER	UNINSULATED CATALOG NUMBER	TRADE SIZE	UNIT CARTON QTY.	SHIP CARTON QTY.	UPC BAR CODE
90° Insulated and Uninsulated – *Steel/Malleable Iron*					
3541RAC*	3421*	3/8"	25	100	—
—	3421-8*	3/8"	1	15	IIIIIIII
3542	3422	1/2"	25	100	—
3542-8	3422-8	1/2"	1	15	IIIIIIII
3543	3423	3/4"	25	100	—
3543-8	3423-8	3/4"	1	10	IIIIIIII
3544	3424	1"	—	10	—
3544-8	3424-8	1"	1	5	IIIIIIII
3545	3425	1-1/4"	—	10	—
3546	3426	1-1/2"	—	5	—
3548	3428	2"	—	5	—
3550	3430	2-1/2"	—	1	—
3552	3432	3"	—	1	—
3556	3436	4"	—	1	—

** 1/2" Trade size hub*

SEE END OF SECTION (PG B108) FOR DETAILED DRAWINGS »

STRAIGHT CONNECTORS

Insulated
Die Cast Zinc

Uninsulated
Die Cast Zinc

INSULATED CATALOG NUMBER	UNINSULATED CATALOG NUMBER	TRADE SIZE	UNIT CARTON QTY.	SHIP CARTON QTY.	UPC BAR CODE
Straight - Insulated and Uninsulated – *Die Cast Zinc*					
3511DC*	—	3/8"	50	200	—
—	**3401DC***	3/8"	50	200	—
3512DC	**3402DC**	1/2"	50	200	—
3513DC	**3403DC**	3/4"	25	100	—
3514DC	**3404DC**	1"	—	10	—
3515DC	**3405DC**	1-1/4"	—	10	—
3516DC	**3406DC**	1-1/2"	—	5	—
3518DC	**3408DC**	2"	—	5	—
3520DC	—	2-1/2"	—	1	—
3522DC	—	3"	—	1	—
3524DC	—	3-1/2"	—	1	—
3526DC	—	4"	—	1	—

90° CONNECTORS

Insulated
Die Cast Zinc

Uninsulated
Die Cast Zinc

90° Insulated and Uninsulated – *Die Cast Zinc*					
3541DC*	**3421DC***	3/8"	25	100	—
3542DC	**3422DC**	1/2"	25	100	—
3543DC	**3423DC**	3/4"	25	100	—
3544DC	**3424DC**	1"	—	10	—
3545DC	**3425DC**	1-1/4"	—	10	—
3546DC	**3426DC**	1-1/2"	—	5	—
3548DC	**3428DC**	2"	—	5	—
3550DC	—	2-1/2"	—	1	—
3552DC	—	3"	—	1	—
3554DC	—	3-1/2"	—	1	—
3556DC	—	4"	—	1	—

** 1/2" Trade size hub*

APPLICATIONS

- For use in outdoor or indoor locations on flexible metallic liquidtight conduit and Type B flexible nonmetallic liquidtight conduit
- Use to positively bond the conduit to a box or enclosure

PRODUCT FEATURES

- Patented split gland-ring is designed to slip onto the conduit quickly gripping the jacket of the conduit, speeding installation, assuring a perfect seal, preventing pullouts
- All components are reusable - RACO® liquidtight connectors may be easily disassembled and reused after years of service
- Sealing washer (included) provides a liquidtight seal when terminating the connector in a threadless opening
- Heavy duty locknut included with every RACO® liquidtight connector assures continuity of ground

COMPLIANCE

- c UL us
  Conduit Fittings
  3HNN

Arlington Industries, Inc.
www.aifittings.com • E-mail: sales@aifittings.com
800/233-4717 • FAX 570/562-0646

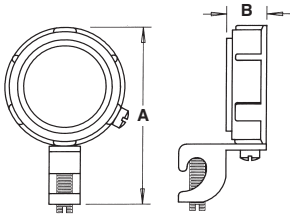
Insulated Metal Grounding Bushings

With dual rated CU-AL C-clamp grounding lug. Zinc die-cast. 150° C rated.

Threaded Type

CATALOG NUMBER	UPC/DCI/NAED MFG #01 8997	TRADE SIZE	GROUND MIN	WIRE MAX	UNIT PKG	STD PKG	DIM A	DIM B	THREADS/ INCH
450	00450	1/2	14	4	25	100	1.896	.475	14
451	00451	3/4	14	4	25	100	2.082	.520	14
452	00452	1	14	4	25	100	2.364	.575	11-1/2
453	00453	1-1/4	14	4	20	80	2.702	.635	11-1/2
453100	01453	1-1/4	14	1/0	20	20	2.702	.635	11-1/2
454	00454	1-1/2	14	2	20	80	3.120	.760	11-1/2
454100	01454	1-1/2	14	1/0	20	20	3.120	.760	11-1/2
455	00455	2	14	2	10	50	3.650	.755	11-1/2
455100	01455	2	14	1/0	10	10	3.650	.755	11-1/2
456	00456	2-1/2	14	2/0	5	20	4.705	.960	8
456250	01456	2-1/2	6	250MCM	10	10	4.705	.960	8
457	00457	3	14	2/0	5	20	5.275	.920	8
457250	01457	3	6	250MCM	10	10	5.275	.920	8
458	00458	3-1/2	14	2/0	5	20	6.266	.930	8
458250	01458	3-1/2	6	250MCM	5	5	6.266	.930	8
459	00459	4	14	2/0	5	20	6.268	.950	8
459250	01459	4	6	250MCM	5	5	6.268	.950	8
4591	04591	5	8	2/0	5	5	7.050	.990	8
4591250	45912	5	2	250MCM	5	5	7.050	.990	8
4592	04592	6	8	2/0	5	5	8.125	.975	8
4592250	45922	6	2	250MCM	5	5	8.125	.975	8

E75814 LR49636

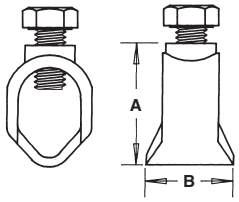


Ground Rod Clamps

Conductor range 8 sol.-2 str. Approved for direct burial. Solid brass alloy with bronze screw.

CATALOG NUMBER	UPC/DCI/NAED MFG #01 8997	ROD SIZE	UNIT PKG	STD PKG	DIM A	DIM B
780	00780	1/2	25	25	1.250	.875
781	00781	5/8	25	100	1.275	.593
782	00782	3/4	25	25	1.445	1.030

E75814 LR49636



POLYPROPYLENE - INSULATED BUSHINGS

Applications

- For use on threaded Rigid/IMC conduit
- Bushings provide a smoothly rounded surface at the entrance of raceways

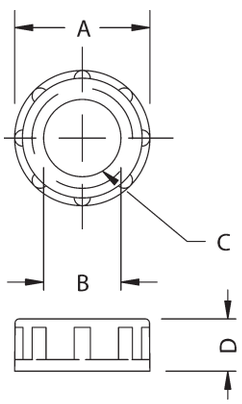
Product Feature

- Insulating bushings are made of high impact polypropylene that is temperature rated at 105° C

Compliances

- UL – Standard 514B
- CSA – C22.2 #18

INSULATING BUSHINGS
POLYPROPYLENE



A = O.D.
B = I.D.
C = Thread size
D = Thickness

ORDERING INFORMATION - DIMENSIONS

INSULATING BUSHINGS - POLYPROPYLENE

CATALOG NUMBER	TRADE SIZE	UNIT CTN. QTY.	SHIP CTN. QTY.	UPC BAR CODE
1402	1/2”	100	400	—
1403	3/4”	100	400	—
1404	1”	50	200	—
1405	1-1/4”	—	25	—
1406	1-1/2”	—	25	—
1408	2”	—	25	—
1410	2-1/2”	—	10	—
1412	3”	—	10	—
1414	3-1/2”	—	5	—
1416	4”	—	5	—
1420	5”	—	5	—
1424	6”	—	5	—

DIMENSIONS

CATALOG NUMBER	A	B	C THD. SPEC.	D
1402	1-1/16”	19/32”	1/2”-14 NPT	23/64”
1403	1-19/64”	25/32”	3/4”-14 NPT	13/32”
1404	1-5/8”	1”	1”-11-1/2 NPT	31/64”
1405	1-61/64”	1-9/64”	1-1/4”-11-1/2 NPT	31/64”
1406	2-3/16”	1-33/64”	1-1/2”-11-1/2 NPT	31/64”
1408	2-41/64”	1-61/64”	2”-11-1/2 NPT	35/64”
1410	3-1/4”	2-21/64”	2-1/2”- 8 NPT	5/8”
1412	3-29/32”	2-29/32”	3”- 8 NPT	11/16”
1414	4-13/32”	3-11/32”	3-1/2”- 8 NPT	11/16”
1416	4-15/16”	3-53/64”	4”- 8 NPT	11/16”
1420	5-63/64”	4-15/16”	5”- 8 NPT	49/64”
1424	7-1/16”	5-15/16”	6”- 8 NPT	49/64”

SET SCREW CONNECTORS - STEEL

Insulated Connectors

Uninsulated Connectors

INSULATED CATALOG NUMBER	UNINSULATED CATALOG NUMBER	TRADE SIZE	UNIT CARTON QTY.	SHIP CARTON QTY.	UPC BAR CODE
Set Screw Connectors – *Steel*					
2122	2002	1/2”	50	500	—
2122-8	2002-8	1/2”	1	25	IIIIIIII
2123	2003	3/4”	25	250	—
2123-8	2003-8	3/4”	1	20	IIIIIIII
2124	2004	1”	25	100	—
2124-8	2004-8	1”	1	10	IIIIIIII
2125	2005	1-1/4”	—	20	—
2126	2006	1-1/2”	—	20	—
2128	2008	2”	—	20	—
2160	2140	2-1/2”	—	5	—
2162RAC	2142	3”	—	1	—
2164	2144	3-1/2”	—	1	—
2166	2146	4”	—	1	—
U.S. MADE **Set Screw Connectors – *Steel***					
2122US	2002US	1/2”	50	250	—
2123US	2003US	3/4”	25	125	—
2124US	2004US	1”	20	100	—
2125US	2005US	1-1/4”	5	25	—
2126US	2006US	1-1/2”	5	25	—
2128US	2008US	2”	—	5	—
2160US	2140US	2-1/2”	—	5	—
2162US	2142US	3”	—	1	—
2164US	2144US	3-1/2”	—	1	—
2166US	2146US	4”	—	1	—

APPLICATIONS

- For use in dry locations to bond EMT conduit to a box or enclosure
- RACO® Steel set screw connectors provide concrete-tight connections when taped
- RACO® Set screw connectors are suitable for applications above 600V

PRODUCT FEATURES

- All steel construction insures mechanical protection for the raceway
- Tri-head screws (1/2” to 2” trade sizes) may be installed using a slotted, Phillips, or Robertson head screwdriver
- 2-1/2” to 4” trade sizes are also UL listed for use on Rigid/IMC conduit, allowing for design and installation flexibility
- All components are zinc electroplated for corrosion protection
- 1/2” to 1” trade sizes have one set screw, 1-1/4” to 4” trade sizes have two set screws
- UPC bar coded fittings are individually polybagged with a preprinted UPC-A bar code and packaged in pre-scored tear top cartons for an attractive presentation

COMPLIANCES

1/2” - 2”

- c UL us - Standard 514B
  C22.2 # 18

2-1/2” - 4”

- UL - Standard 514B
  U L LISTED E195969, E195970

EMT COUPLINGS

SET SCREW COUPLINGS - STEEL

Couplings

APPLICATIONS

- For use in dry locations to couple two ends of EMT conduit
- RACO® Steel set screw couplings provide concrete-tight connections when taped
- RACO® Set screw couplings are suitable for applications above 600V

PRODUCT FEATURES

- All steel construction insures mechanical protection for the raceway
- Tri-head screws (1/2" to 2" trade sizes) may be installed using a slotted, Phillips, or Robertson head screwdriver
- 2-1/2" to 4" trade sizes are also UL listed for use on Rigid/IMC conduit, allowing for design and installation flexibility
- All components are zinc electroplated for corrosion protection
- UPC bar coded fittings are individually polybagged with a preprinted UPC-A bar code and packaged in pre-scored tear top cartons for an attractive presentation

COMPLIANCES

1/2" - 2"

- cULus - Standard 514B C22.2 # 18

2-1/2" - 4"

- UL - Standard 514B U L LISTED E195969, E195970

CATALOG NUMBER	TRADE SIZE	UNIT CARTON QTY.	SHIP CARTON QTY.	UPC BAR CODE
Set Screw Couplings – *Steel*				
2022	1/2"	50	500	—
2022-8	1/2"	1	25	IIIIIIII
2023	3/4"	25	250	—
2023-8	3/4"	1	20	IIIIIIII
2024	1"	25	100	—
2024-8	1"	1	10	IIIIIIII
2025	1-1/4"	5	25	—
2026	1-1/2"	—	20	—
2028	2"	—	20	—
2150	2-1/2"	—	5	—
2152	3"	—	1	—
2154	3-1/2"	—	1	—
2156	4"	—	1	—
U.S. MADE **Set Screw Couplings – *Steel***				
2022US	1/2"	50	250	—
2023US	3/4"	25	125	—
2024US	1"	10	50	—
2025US	1-1/4"	—	5	—
2026US	1-1/2"	—	5	—
2028US	2"	—	5	—
2150US	2-1/2"	—	5	—
2152US	3"	—	1	—
2154US	3-1/2"	—	1	—
2156US	4"	—	1	—

SEE END OF SECTION (PG B91) FOR DETAILED DRAWINGS »

STRAPS - STEEL

One Hole Push-on Straps

Two Hole Straps

APPLICATION

- For use in mounting EMT conduit

PRODUCT FEATURES

- All stamped steel construction insures mechanical protection
- RACO® steel one hole straps snap on to the conduit, allowing the installer to easily position the strap before mounting
- Oversized bolt holes make alignment of the fastener quick and easy
- All straps are zinc electro plated for corrosion protection

COMPLIANCE

- UL - Listed
  E195968 (2082 - 2088)

CATALOG NUMBER	TRADE SIZE	UNIT CARTON QTY.	SHIP CARTON QTY.	UPC BAR CODE
One Hole Push-on Straps Stamped – *Steel (cULus)*				
2082	1/2”	100	1000	—
2083	3/4”	50	500	—
2084	1”	50	500	—
2085	1-1/4”	—	50	—
2086	1-1/2”	—	50	—
2088	2”	—	25	—
1337	2-1/2”	—	25	—
1339	3”	—	25	—
1340	3-1/2”	—	10	—
1341	4”	—	10	—
Two Hole Straps Stamped – *Steel*				
2092	1/2”	—	100	—
2093	3/4”	—	100	—
2094	1”	—	100	—
2095	1-1/4”	—	50	—
2096	1-1/2”	—	50	—
2098	2”	—	25	—
2239	2-1/2”	—	25	—
2240	3”	—	25	—
2241	3-1/2”	—	25	—
2242	4”	—	10	—

SEE END OF SECTION (PG B96) FOR DETAILED DRAWINGS »

TX Expansion Fittings

For Electrical Metallic Tubing (EMT).

NEC:
Listed for Ordinary Locations

Applications

- To allow for expansion and contraction in a run of electrical metallic tubing (EMT).

Features

- A maximum of 4" conduit movement is provided (2" in either direction)
- These fittings, less the EMT connectors and conduit nipple, are our Type AX expansion fittings which are listed by Underwriters Laboratories, Inc., for use with rigid conduit when used with bonding jumpers.
- Concretetight

Standard Finishes

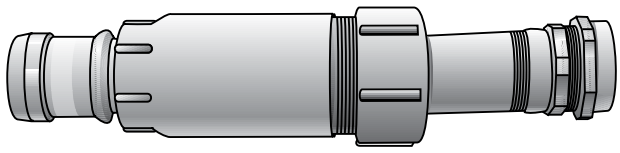
- Basic Type AX expansion fitting is Hot Dip Galvanized. Other metal parts are Zinc Plated

Options

- Type AX and Type AX-8 expansion fittings are available in copperfree (4/10 of 1% max.) aluminum. Add suffix **-A** after Catalog Number (Example: AX-50A). Use ABJ jumpers.

NEC Certifications and Compliances

- UL Standard: ANSI/UL 514B
- UL Listed: 14895
- NEMA: FB-1



Type TX Provides for 4" EMT Movement

EMT Size	Catalog Number	24" Bonding Jumper Catalog Number
1/2	**TX-50**	**BJ-0507-24**
3/4	**TX-75**	**BJ-0507-24**
1	**TX-100**	**BJ-1012-24**
1-1/4	**TX-125**	**BJ-1012-24**
1-1/2	**TX-150**	**BJ-1520-24**
2	**TX-200**	**BJ-1520-24**
2-1/2	**TX-250**	**BJ-2530-24**
3	**TX-300**	**BJ-2530-24**
3-1/2	**TX-350**	**BJ-3540-24**
4	**TX-400**	**BJ-3540-24**

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OREGON CITY, OR 97045
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OR CCB# 51764 WA EC PORTLEC023PE

DIVISION 26 – ELECTRICAL

SPECIFICATION SECTION:

- 260534 - BOXES

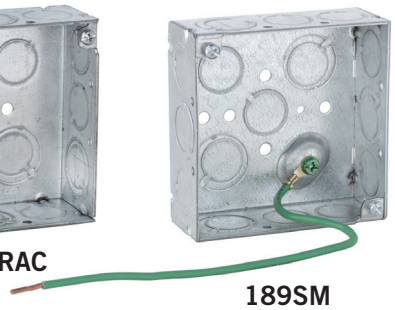
SQUARE BOXES & COVERS

4" SQUARE BOXES – WELDED WITH CONDUIT KO'S

181

189, 8189

189RAC


189SM

911-9

APPLICATIONS

- RACO® Boxes are installed in walls or ceilings for lighting fixtrues, switches or receptacles
- Square boxes are used where multiple conductor runs are split into two or more directions to bring power to a number of electrical devices

PRODUCT FEATURES

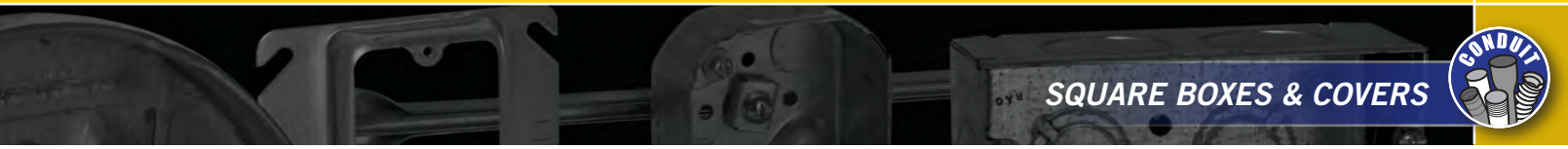
- Combination screw heads provide for faster installation
- TKO® Knockouts allow for design and installation flexibilit.
- Red boxes, covers and extensions for dedicated life safety alarm circuits

COMPLIANCE

- UL File E195978
- All RACO single gang, two gang, 4" square, and single gang gangable U.L. listed steel boxes are acceptable for use in 2-hour fire rated walls. For additional information, consult U.L. "Fire Resistance Directory" or the U.L. website at www.ul.com
- 600V Per U.L. 514-A, suitable for use without a bonding jumper in circuits up to 600 volts

CAT. #	DESCRIPTION	CUBIC INCHES (CM³)	KNOCKOUTS		STD. PKG.	BAR CODE
			SIDES CONDUIT	BOTTOM CONDUIT		
4" Square Box, 1-1/2" Deep – *Welded with Conduit KO's*						
181	—	21.0 (344.1)	(8) 3/4"	(1) 1/2", (4) 3/4"	50	—
189	600V, Raised Ground	21.0 (344.1)	(8) 1/2", (4) TKO®	(2) 1/2", (2) TKO®	50	—
8189	600V, Raised Ground	21.0 (344.1)	(8) 1/2", (4) TKO®	(2) 1/2", (2) TKO®	50	IIIIIIII
189RAC	600V	21.0 (344.1)	(8) 1/2", (4) TKO®	(2) 1/2", (2) TKO®	50	—
189SM	600V, Raised Ground, 10" #12 Stranded Copper Pigtail	21.0 (344.1)	(8) 1/2" (4) TKO®	(2) 1/2" (2) TKO®	50	IIIIIIII
911-9	600V, Raised Ground, Painted Red	21.0 (344.1)	(8) 1/2" (4) TKO®	(2) 1/2" (2) TKO®	50	—

SEE END OF SECTION (PG A67) FOR DETAILED DRAWINGS »



4" SQUARE BRACKETED BOXES – WELDED WITH CONDUIT KO'S

196, 8196

8197

199

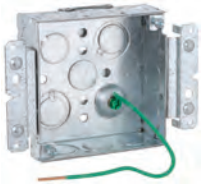
208, 8208

193, 8193

189F

189H, 189HS

189HWP


189M

227 BOX-LOC®

CAT. #	DESCRIPTION	CUBIC INCHES (CM³)	KNOCKOUTS		STD. PKG.	BAR CODE
			SIDES CONDUIT	BOTTOM CONDUIT		
4" Square Bracketed Boxes, 1-1/2" Deep – *Welded with Conduit KO's*						
196	600V, FS, Flush	21.0 (344.1)	(6) 1/2" (3) TKO®	(3) 1/2" (2) TKO®	25	—
8196	600V, FS, Flush	21.0 (344.1)	(6) 1/2" (3) TKO®	(3) 1/2" (2) TKO®	25	IIIIIIII
8197	600V, FH, Flush	21.0 (344.1)	(6) 1/2" (3) TKO®	(3) 1/2" (2) TKO®	25	IIIIIIII
199	600V, FS, Flush	21.0 (344.1)	(6) 3/4"	(1) 1/2" (4) 3/4"	25	—
208	600V, W, Flush	21.0 (344.1)	(6) 1/2" (3) TKO®	(3) 1/2" (2) TKO®	25	—
8208	W, Flush	21.0 (344.1)	(6) 1/2" (3) TKO®	(3) 1/2" (2) TKO®	25	IIIIIIII
193	600V, B, Flush	21.0 (344.1)	(6) 1/2" (3) TKO®	(3) 1/2" (2) TKO®	25	—
8193	600V, B, Flush	21.0 (344.1)	(6) 1/2" (3) TKO®	(3) 1/2" (2) TKO®	10	IIIIIIII
189F	600V, Raised Ground, 8" #12 Solid Copper Pigtail, UBS Farside Support	21.0 (344.1)	(8) 1/2" (4) TKO®	(2) 1/2" (2) TKO®	50	—
189H	600V, Raised Ground, 8" #12 Solid Copper Pigtail, UBS, HM	21.0 (344.1)	(6) 1/2" (3) TKO®	(2) 1/2" (2) TKO®	20	—
189HS	Raised Ground, 10" #12 Stranded Copper Pigtail, UBS, HM	21.0 (344.1)	(6) 1/2" (3) TKO®	(2) 1/2" (2) TKO®	20	—
189HWP	600V, Raised Ground, UBS, HM	21.0 (344.1)	(6) 1/2" (3) TKO®	(2) 1/2" (2) TKO®	20	—
189M	600V, Raised Ground, 8" #12 Solid Copper Pigtail, UBS, HM	21.0 (344.1)	(4) 1/2" (2) TKO®	(2) 1/2" (2) TKO®	20	—
227	600V, MS, Flush, BOX-LOC®, Provided with Far-side support (part #978)	21.0 (344.1)	(6) 1/2" (3) TKO®	(3) 1/2" (2) TKO®	25	IIIIIIII

APPLICATIONS

- RACO® Boxes are installed in walls or ceilings for lighting fixtrues, switches or receptacles
- Square boxes are used where multiple conductor runs are split into two or more directions to bring power to a number of electrical devices

PRODUCT FEATURES

- Reference the Box Selection section in the front of this catalog for complete description of bracket types and features
- BOX-LOC® (MS) Bracket Box is a snap to install. Place the bracket on the open side of the stud first. Slots in the bracket engage the lip of the stud and actually crimp it as you press the bracket on the stud, quickly locking it in place
- TKO® Knockouts allow for design and installation flexibility
- UBS Support - Welded to box, preset bend points to work with wall thickness 2-1/2" to 6"

COMPLIANCE

- UL File E195978
- All RACO single gang, two gang, 4" square, and single gang gangable U.L. listed steel boxes are acceptable for use in 2-hour fire rated walls. For additional information, consult U.L. "Fire Resistance Directory" or the U.L. website at www.ul.com
- 600V Per U.L. 514-A, suitable for use without a bonding jumper in circuits up to 600 volts

SQUARE BOXES & COVERS

4" SQUARE EXTENSION RINGS

201, 8201

202

203, 8203

911-6

187

207

APPLICATIONS

- RACO® Extension rings provide a means for adding cubic capacity or as an outlet box for surface conduit

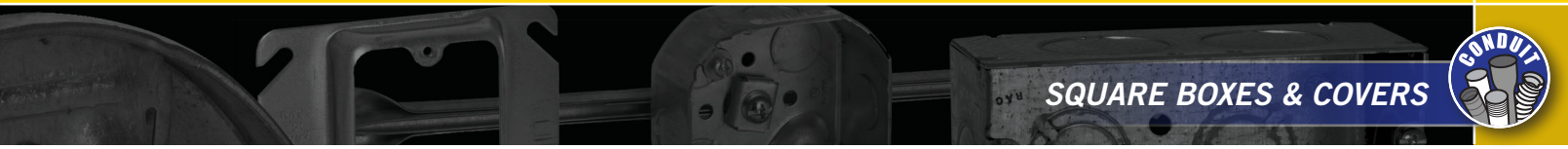
PRODUCT FEATURES

- Combination screw heads provide for faster installation
- Red boxes, covers and extensions for dedicated life safety alarm circuits
- RACO® 187 can be positioned to accommodate one or two switch boxes

COMPLIANCE

- UL File E195978

CAT. #	DESCRIPTION	CUBIC INCHES (CM3)	KNOCKOUTS		STD. PKG.	BAR CODE
			SIDES CONDUIT	BOTTOM CONDUIT		
4" Square Extension Rings, 1-1/2" Deep – *Drawn with Conduit KO's*						
201	—	22.5 (368.7)	(12) 1/2"	—	50	—
8201	—	22.5 (368.7)	(12) 1/2"	—	25	IIIIIIII
202	—	22.5 (368.7)	(8) 3/4"	—	50	—
203	—	22.5 (368.7)	(8) 1/2", (4) 3/4"	—	50	—
8203	—	22.5 (368.7)	(8) 1/2", (4) 3/4"	—	25	IIIIIIII
911-6	Painted Red	22.5 (368.7)	(8) 1/2", (4) 3/4"	—	50	—
187	Attaches to Switch Boxes	22.5 (368.7)	(8) 1/2", (4) 3/4"	—	25	IIIIIIII
4" Square Extension Rings, 2-1/8" Deep – *Welded with Conduit KO's*						
207	—	30.3 (496.5)	(6) 1/2", (6) 3/4"	—	25	—



4" SQUARE BOXES – WELDED WITH CONDUIT KO'S

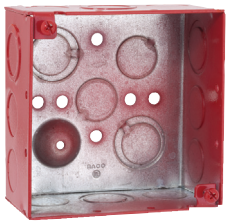
232, 8232

232RAC

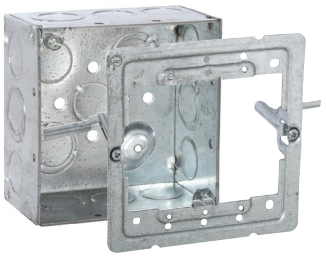
231, 8231

233, 8233

232SM



911-3



232-OW

CAT. #	DESCRIPTION	CUBIC INCHES (CM³)	KNOCKOUTS		STD. PKG.	BAR CODE
			SIDES CONDUIT	BOTTOM CONDUIT		
4" Square Box, 2-1/8" Deep – *Welded with Conduit KO's*						
232	600V, Raised Ground	30.3 (496.5)	(8) 1/2", (4) TKO®	(2) 1/2", (2) TKO®	25	—
8232	600V, Raised Ground	30.3 (496.5)	(8) 1/2", (4) TKO®	(2) 1/2", (2) TKO®	25	IIIIIIII
232RAC	600V	30.3 (496.5)	(8) 1/2", (4) TKO®	(3) 1/2", (2) TKO®	25	—
231	—	30.3 (496.5)	(8) 3/4"	(1) 1/2", (4) 3/4"	25	—
8231	—	30.3 (496.5)	(8) 3/4"	(1) 1/2", (4) 3/4"	25	IIIIIIII
233	—	30.3 (496.5)	(8) 1"	(3) 1/2", (2) 3/4"	25	—
8233	—	30.3 (496.5)	(8) 1"	(3) 1/2", (2) 3/4"	25	IIIIIIII
232SM	600V, Raised Ground, 10" #12 Stranded Copper Pigtail	30.3 (496.5)	(8) 1/2", (4) TKO®	(2) 1/2", (2) TKO®	25	IIIIIIII
911-3	600V, Painted Red	30.3 (496.5)	(8) 1/2", (4) TKO®	(2) 1/2", (2) TKO®	25	IIIIIII
232-OW	600V, Raised Ground, Old Work, 4" Sq. Box Mounting of One or Two Device Applications	30.3 (496.5)	(8) 1/2", (4) TKO®	(2) 1/2", (2) TKO®	25	IIIIIIII

APPLICATIONS

- RACO® Boxes are installed in walls or ceilings for lighting fixtures, switches or receptacles
- Square boxes are used where multiple conductor runs are split into two or more directions to bring power to a number of electrical devices

PRODUCT FEATURES

- Combination screw heads provide for faster installation
- TKO® knockouts offer greater flexibility with RACO patented combination 1/2" and 3/4" knockout
- Red boxes, covers and extensions for dedicated life safety alarm circuits

COMPLIANCE

- UL File E195978
- All RACO single gang, two gang, 4" square, and single gang gangable U.L. listed steel boxes are acceptable for use in 2-hour fire rated walls. For additional information, consult U.L. "Fire Resistance Directory" or the U.L. website at www.ul.com
- 600V Per U.L. 514-A, suitable for use without a bonding jumper in circuits up to 600 volts

U.S. Patent 7,300,025, B2 (232-OW)

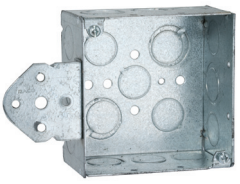
SQUARE BOXES & COVERS

4" SQUARE BOXES – WELDED WITH CONDUIT KO'S

236

237

235, 8235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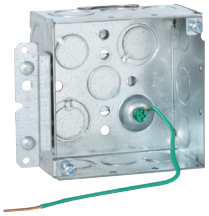
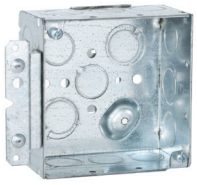
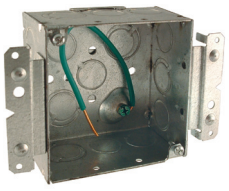
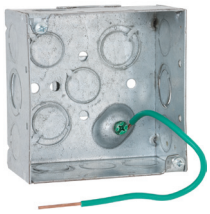
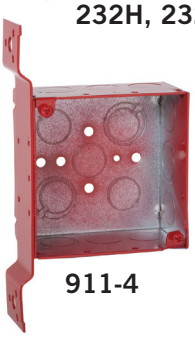

232H, 232HS


232HWP, 8232HWP


232M


232F

238 BOX-LOC®


911-4

APPLICATIONS

- RACO® Boxes are installed in walls or ceilings for lighting fixtures, switches or receptacles
- Square boxes are used where multiple conductor runs are split into two or more directions to bring power to a number of electrical devices

PRODUCT FEATURES

- Reference the Box Selection section in the front of this catalog for complete description of bracket types and features
- BOX-LOC® (MS) Bracket Box is a snap to install. Place the bracket on the open side of the stud first. Slots in the bracket engage the lip of the stud and actually crimp it as you press the bracket on the stud, quickly locking it in place
- Combination screw heads provide for faster installation
- TKO® knockouts offer greater flexibility with RACO® patented combination 1/2" and 3/4" knockout
- UBS Support - Welded to box, preset bend points to work with wall thickness 2-1/2" to 6"
- Red boxes, covers and extensions for dedicated life safety alarm circuits

CAT. #	DESCRIPTION	CUBIC INCHES (CM³)	KNOCKOUTS		STD. PKG.	BAR CODE
			SIDES CONDUIT	BOTTOM CONDUIT		
4" Square Box, 2-1/8" Deep – *Welded with Conduit KO's*						
236	600V, FM, Flush	30.3 (496.5)	(6) 3/4"	(1) 1/2", (4) 3/4"	25	IIIIIIII
237	600V, FM, Flush	30.3 (496.5)	(6) 1/2", (3) TKO®	(3) 1/2", (2) TKO®	25	IIIIIIII
235	600V, TS, Flush	30.3 (496.5)	(6) 1/2", (3) TKO®	(3) 1/2", (2) TKO®	25	—
8235	TS, Flush,	30.3 (496.5)	(6) 1/2", (3) TKO®	(3) 1/2", (2) TKO®	25	IIIIIIII
251	B Flush	30.3 (496.5)	(6) 1/2", (3) TKO®	(3) 1/2", (2) TKO®	25	—
232H	Raised Ground, 8" #12 Solid Copper Pigtail, UBS, HM	30.3 (496.5)	(8) 1/2" (4) TKO®	(2) 1/2" (2) TKO®	25	—
232HS	Raised Ground, 10" #12 Stranded Copper Pigtail, UBS, HM	30.3 (496.5)	(8) 1/2" (4) TKO®	(2) 1/2" (2) TKO®	25	—
232HWP	Raised Ground, UBS, HM	30.3 (496.5)	(8) 1/2", (4) TKO®	(2) 1/2", (2) TKO®	25	—
8232HWP	Raised Ground, UBS, HM	30.3 (496.5)	(8) 1/2", (4) TKO®	(2) 1/2", (2) TKO®	25	IIIIIIII
232M	600V, Raised Ground, 8" #12 Solid Copper Pigtail, UBS, HM	30.3 (496.5)	(8) 1/2" (4) TKO®	(2) 1/2" (2) TKO®	25	—
232F	600V, Raised Ground 8" #12 Solid Copper Pigtail, UBS	30.3 (496.5)	(8) 1/2" (4) TKO®	(2) 1/2" (2) TKO®	25	—
238	BOX-LOC®, MS, Flush, Provided with Far-side support (part #978)	30.3 (496.5)	(6) 1/2" (3) TKO®	(3) 1/2" (2) TKO®	25	IIIIIIII
911-4	FM Bracket, Painted Red	30.3 (496.5)	(6) 1/2", (3) TKO®	(3) 1/2", (2) TKO®	25	—

COMPLIANCE

- UL File E195978
- All RACO single gang, two gang, 4" square, and single gang gangable U.L. listed steel boxes are acceptable for use in 2-hour fire rated walls. For additional information, consult U.L. "Fire Resistance Directory" or the U.L. website at www.ul.com
- 600V Per U.L. 514-A, suitable for use without a bonding jumper in circuits up to 600 volts

SEE END OF SECTION (PG A67) FOR DETAILED DRAWINGS »

SQUARE BOXES & COVERS

4" SQUARE COVERS

752, 8752, 8752-5

753, 8753, 8753-5

911-8

787

774, 775, 8775 782

771, 8771, 772, 8772 773, 8773, 768, 8768

785, 786

APPLICATIONS

- RACO® covers are used to close an outlet box
- Raised device covers are used for mounting switches or receptacles

PRODUCT FEATURES

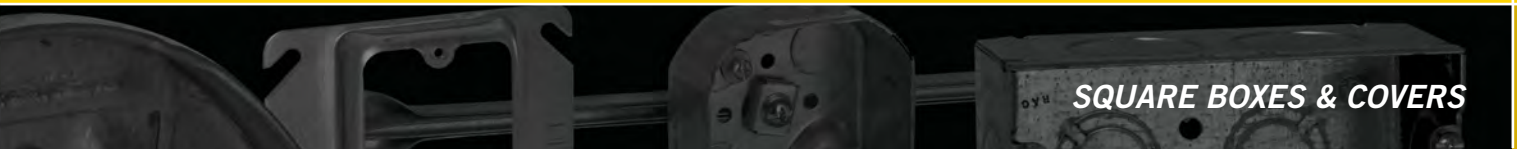
- Red boxes, covers and extensions for dedicated life safety alarm circuits
- Angled mounting slots compensate up to 12° for box misalignment

COMPLIANCES

- UL File E195978
- CSA File LR-1082

CATALOG #	DESCRIPTION	CUBIC INCHES (CM3)	STD. PKG.	BARCODE
4" Square Flat Covers				
752	Flat, Blank	—	50	—
8752	Flat, Blank	—	50	IIIIIIII
8752-5*	Flat, Blank	—	50	IIIIIIII
753	Flat, 1/2" KO in Center	—	50	—
8753	Flat, 1/2" KO in Center	—	50	IIIIIIII
8753-5*	Flat, 1/2" KO in Center	—	50	IIIIIIII
911-8	Flat, Blank, Painted Red	—	50	IIIIIIII
4" Square Single Device Covers				
787	Flat	—	25	IIIIIIII
771	Raised 1/4"	1.5 (24.6)	100	—
8771	Raised 1/4"	1.5 (24.6)	25	IIIIIIII
782	Raised 1/2" Tile	3.5 (57.3)	25	IIIIIIII
772	Raised 1/2" Drawn	3.5 (57.3)	100	—
8772	Raised 1/2" Drawn	3.5 (57.3)	50	IIIIIIII
768	Raised 5/8"	4.5 (73.7)	50	—
8768	Raised 5/8"	4.5 (73.7)	25	IIIIIIII
773	Raised 3/4"	5.5 (90.1)	50	—
8773	Raised 3/4"	5.5 (90.1)	25	IIIIIIII
774	Raised 1"	7.5 (122.9)	25	IIIIIIII
775	Raised 1-1/4"	9.5 (115.6)	25	—
8775	Raised 1-1/4"	9.5 (115.6)	25	IIIIIIII
785	Raised 1-1/2"	11.3 (185.2)	25	—
786	Raised 2"	14.5 (237.6)	25	—

**5 Bundles of 10 – sold in carton quantities only*



4" SQUARE COVERS

791

777, 8777-0

778, 8778

769, 8769

779, 8779

780

781, 8781

795, 796

CATALOG #	DESCRIPTION	CUBIC INCHES (CM^3)	STD. PKG.	BARCODE
4" Square Two Device and Tile Covers				
791	Flat	—	25	IIIIIIII
777	Raised, 1/4", Drawn	3.0 (49.2)	50	—
8777-0	Raised, 1/4", Drawn	3.0 (49.2)	10	IIIIIIII
778	Raised, 1/2", Drawn	5.5 (90.1)	50	—
8778	Raised, 1/2", Drawn	5.5 (90.1)	25	IIIIIIII
769	Raised, 5/8", Drawn	7.3 (119.6)	50	—
8769	Raised, 5/8", Drawn	7.3 (119.6)	25	IIIIIIII
779	Raised, 3/4", Drawn	8.8 (144.2)	50	—
8779	Raised, 3/4", Drawn	8.8 (144.2)	25	IIIIIIII
780	Raised, 1", Drawn	12.0 (196.6)	25	IIIIIIII
781	Raised, 1-1/4", Drawn	15.0 (245.8)	25	—
8781	Raised, 1-1/4", Drawn	15.0 (245.8)	25	IIIIIIII
795	Raised, 1-1/2", Welded	15.5 (253.9)	25	—
796	Raised, 2", Welded	20.5 (335.9)	25	—

APPLICATIONS

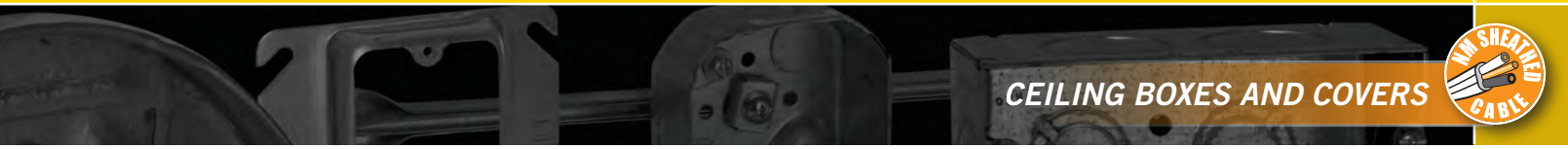
- Raised device covers are used for mounting switches or receptacles
- Low voltage partitions may be added to conduit-type boxes to divide power from voice/data

PRODUCT FEATURES

- Angled mounting slots compensate up to 12° for box misalignment

COMPLIANCE

- UL File E195978
- CSA File LR-1082



3-1/2" OCTAGON BOXES – DRAWN

112

119

APPLICATIONS

- RACO® Octagon Boxes are used in the installation of ceiling or wall lighting fixtures

PRODUCT FEATURES

- Combination screw heads provide for faster installation
- Reference the Box Selection section in the front of this catalog for complete description of bracket types and features

COMPLIANCE

- UL File E195978

CAT. #	DESCRIPTION	CUBIC INCHES (CM3)	KNOCKOUTS			RECOMMENDED MAX. LOADS		STD. PKG.	BAR CODE
			CABLE PRIOUTS	SIDES CONDUIT	BOTTOM CONDUIT	CEILING FAN (DYNAMIC) LBS.	FIXTURE (STATIC) LBS.		
3-1/2" Octagon Box, 1-1/2" Deep – *Drawn with Nonmetallic Sheathed Cable Clamps*									
112	—	11.8 (193.4)	4	(2) 1/2"	(1) 1/2"	No	50	25	IIIIIIII
119	TS Bracket, 1/2"	11.8 (193.4)	4	(1) 1/2"	(1) 1/2"	No	50	25	IIIIIIII

110

111

APPLICATIONS

- RACO® Octagon Boxes are used in the installation of ceiling or wall lighting fixtures
- Extension rings provide a means for adding additional cubic capacity or as an outlet box for surface conduit

PRODUCT FEATURES

- Combination screw heads provide for faster installation
- Reference the Box Selection section in the front of this catalog for complete description of bracket types and features

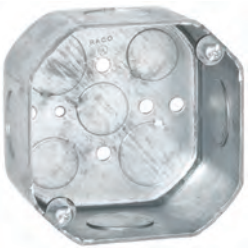
COMPLIANCE

- UL File E195978

CAT. #	DESCRIPTION	CUBIC INCHES (CM3)	KNOCKOUTS			RECOMMENDED MAX. LOADS		STD. PKG.	BAR CODE
			CABLE PRIOUTS	SIDES CONDUIT	BOTTOM CONDUIT	CEILING FAN (DYNAMIC) LBS.	FIXTURE (STATIC) LBS.		
3-1/2" Octagon Box, 1-1/2" Deep – *Drawn with Conduit KO's*									
110	—	11.8 (193.4)	—	(4) 1/2"	(1) 1/2"	No	50	25	IIIIIIII
3-1/2" Octagon Extension Ring, 1-1/2" Deep – *Drawn with Conduit KO's*									
111	—	11.8 (193.4)	—	(4) 1/2"	—	No	—	25	IIIIIIII

4" OCTAGON DEEP BOXES – DRAWN WITH CONDUIT KO'S

165



166

167

167TS

APPLICATIONS

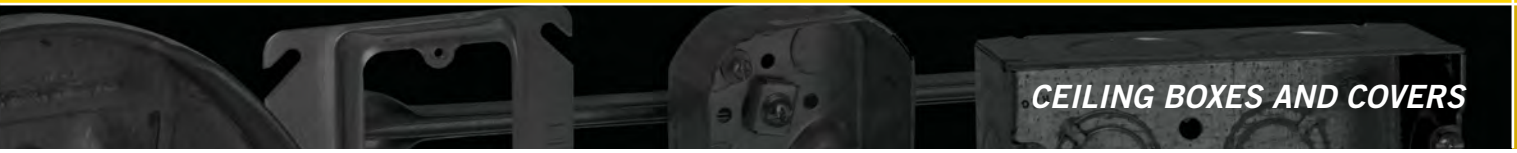
- RACO® Octagon Boxes are used in the installation of ceiling or wall lighting fixtures
- Combination screw heads provide for faster installation

COMPLIANCE

- UL File E195978

CAT. #	DESCRIPTION	CUBIC INCHES (CM³)	KNOCKOUTS		RECOMMENDED MAX. LOADS		STD. PKG.	BAR CODE
			SIDES CONDUIT	BOTTOM CONDUIT	CEILING FAN (DYNAMIC) LBS.	FIXTURE (STATIC) LBS.		
4" Octagon Box, 2-1/8" Deep – *Drawn with Conduit KO's*								
165	—	21.5 (352.3)	(4) 1/2"	(5) 1/2"	No	50	50	IIIIIIII
166	—	21.5 (352.3)	(4) 3/4"	(3) 1/2", (2) 3/4"	No	50	50	—
167	—	21.5 (352.3)	(2) 1/2", (2) 3/4"	(3) 1/2", (2) 3/4"	No	50	25	—
167TS	TS Bracket, 1/2" Setback	21.5 (352.3)	(1) 1/2", (2) 3/4"	(3) 1/2", (2) 3/4"	No	50	25	—

SEE END OF SECTION (PG A69) FOR DETAILED DRAWINGS »



OCTAGON AND ROUND COVERS

722, 8722-5

724, 8724-5

729

731, 8731-5

5652-1

5653-1

5654-1

CATALOG #	DESCRIPTION	PKG. TYPE	STD. PKG.	BARCODE
4" Octagon and Round Covers				
722	Flat, blank	—	50	IIIIIIII
8722-5*	Flat, blank	—	50	IIIIIIII
724	Flat, 1/2" KO	—	50	IIIIIIII
8724-5*	Flat, 1/2" KO	—	50	IIIIIIII
729	Flat, toggle switch	—	50	IIIIIIII
731	Flat, duplex receptacle	—	25	IIIIIIII
8731-5*	Flat, duplex receptacle	—	50	IIIIIIII
5" Round Steel Closure Plates				
5652-1	Off-white, screw and universal mount strap	Shrink	10	—
5653-1	Off-white, (2) 8-32 screws, direct mount to fixture outlet box	Shrink	10	—
5654-1	Off-white, fixture stud and universal mount strap	Shrink	10	—

**5 Bundles of 10 – sold in carton quantities only*

APPLICATIONS

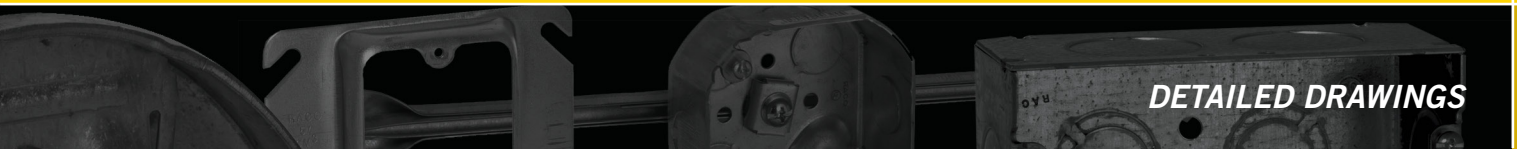
- Covers are used to close an outlet box
- Switches or receptacles may be installed into octagon boxes by using covers 729 or 731

PRODUCT FEATURES

- 5" round covers feature state-of-the-art powder coat paint finish which provides a light texture finish and scratch resistance

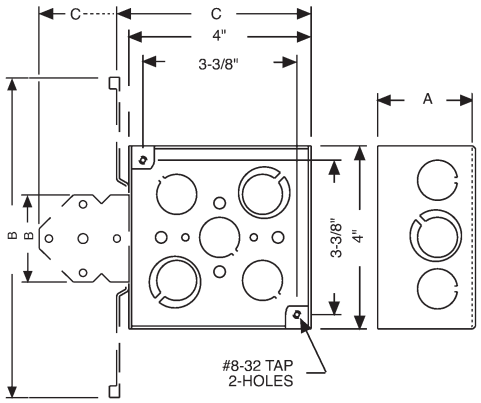
COMPLIANCE

- UL File E195978
- CSA File LR-1082 (722, 729, 731)



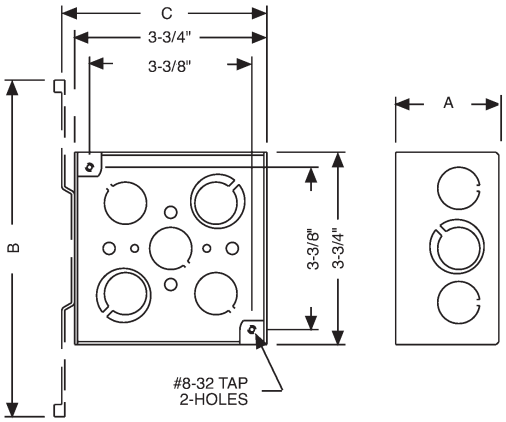
SQUARE BOXES

4" SQUARE CONDUIT BOXES



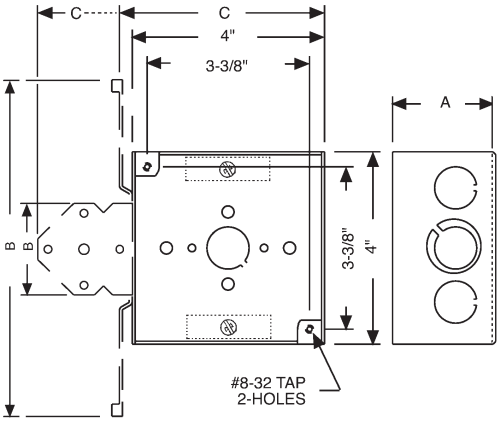
CAT. #	DIMENSIONS		
	A (INSIDE)	B	C
181	1-1/2"	-	-
185	1-1/4"	-	-
187	1-1/2"	-	-
199	1-1/2"	6-7/8"	4-3/8"
202	1-1/2"	-	-
204	1-1/2"	-	-
207	2-1/8"	-	-
226	1-1/2"	-	-
227	1-1/2"	4-5/8"	5-1/2"
236	2-1/8"	7-5/8"	4-3/8"
237	2-1/8"	7-5/8"	4-3/8"
238	2-1/8"	4-5/8"	5-1/2"
239	2-1/8"	-	-
251	2-1/8"	1-31/32"	6"
8197	1-1/2"	7-3/8"	4-3/8"
189, 8189	1-1/2"	-	-
189F	1-1/2"		
189H	1-1/2"	3-1/8"	4-15/16"
189HS	1-1/2"	3-1/8"	4-15/16"
189HWP	1-1/2"	3-1/8"	4-15/16"
189M	1-1/2"	3-1/8"	4-15/16"
189RAC	1-1/2"	-	-
189SM	1-1/2"	-	-
190, 8190	1-1/2"	-	-
191, 8191	1-1/2"	-	-
192, 8192	1-1/2"	-	-
192SM	1-1/2"	-	-
193, 8193	1-1/2"	1-31/32"	6"
196, 8196	1-1/2"	6-7/8"	4-3/8"
201, 8201	1-1/2"	-	-
203, 8203	1-1/2"	-	-
208, 8208	1-1/2"	6-13/16"	5-15/16"
231, 8231	2-1/8"	-	-
232, 8232	2-1/8"	-	-
232F	2-1/8"	-	-
232H	2-1/8"	3-1/8"	4-15/16"
232HS	2-1/8"	3-1/8"	4-15/16"
232HWP	2-1/8"	3-1/8"	4-15/16"
232M	2-1/8"	7"	4-15/16"
232-OW	2-1/8"	-	-
232RAC	2-1/8"	-	-
232SM	2-1/8"	-	-
233, 8233	2-1/8"	-	-
235, 8235	2-1/8"	7"	4-5/16"
911-3	2-1/8"	-	-
911-4	2-1/8"	7-5/8"	4-3/8"
911-6	1-1/2"	-	-
911-9	1-1/2"	-	-

3-3/4" SQUARE CONDUIT BOXES



CAT. #	DIMENSIONS		
	A (INSIDE)	B	C
255	3-1/2"	7-5/8"	3-3/4"
911-1	3-1/2"	7-5/8"	3-3/4"
256	3-1/2"	-	-
911-2	3-1/2"	-	-

4" SQUARE CABLE BOXES

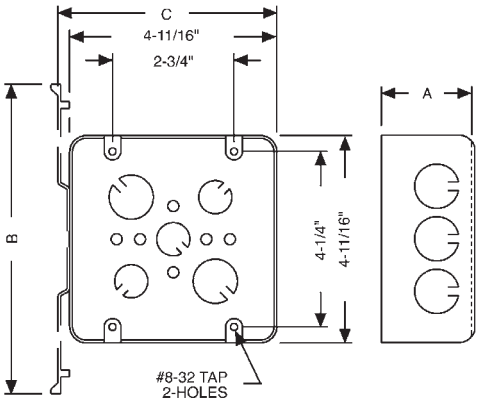


CAT. #	DIMENSIONS		
	A (INSIDE)	B	C
223	1-1/2"	6-7/8"	4-3/8"
224	1-1/2"	1-31/32"	6"
225	1-1/2"	1-31/32"	6"
228	1-1/2"	4-5/8"	5-1/2"
229	1-1/2"	4-5/8"	5-1/2"
242	2-1/8"	-	-
243	2-1/8"	4-5/8"	5-1/2"
248	1-1/2"	-	-
249	2-1/8"	1-31/32"	6"
211, 8211	1-1/2"	-	-
213, 8213	1-1/2"	-	-
213HWP	1-1/2"	3-1/8"	4-15/16"
218, 8218	1-1/2"	6-7/8"	4-3/8"
240, 8240	2-1/8"	7"	4-5/16"
241, 8241	2-1/8"	7"	4-5/16"
248HWP	2-1/8"	3-1/8"	4-15/16"

DETAILED DRAWINGS

SQUARE BOXES

4-11/16" SQUARE CONDUIT BOXES

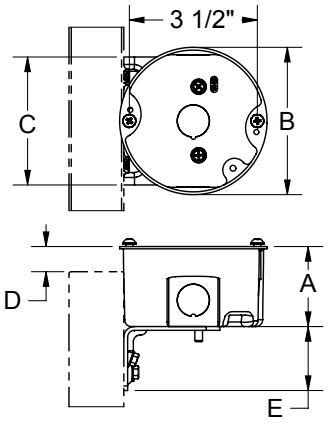


CAT. #	DIMENSIONS		
	A (INSIDE)	B	C
245	1-1/2"	-	-
246	1-1/2"	-	-
247	1-1/2"	-	-
250	1-1/2"	-	-
254	2-1/8"	7-5/8"	5-1/16"
258	2-1/8"	-	-
259	2-1/8"	-	-
260	3-1/4"	-	-
262	2-1/8"	-	-
266	2-1/8"	4-5/8"	6-3/16"
257, 8257	2-1/8"	-	-
257F	2-1/8"	-	-
257H	2-1/8"	-	-
257HS	2-1/8"	-	-
257M	2-1/8"	-	-
257SM	2-1/8"	-	-
258SM	2-1/8"	-	-
265, 8265	2-1/8"	-	-
911-12	2-1/8"	-	-
911-15	3-1/4"	-	-

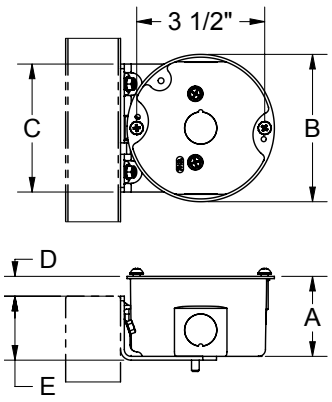
CEILING FAN SUPPORT PRODUCTS

CEILING FAN SUPPORT BOXES

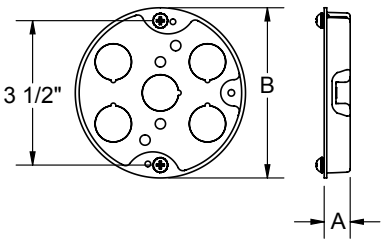
291-1, 294, 294-1 (New Work)



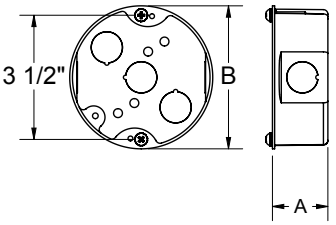
294, 294-1 (Old Work)



295 and 295-1



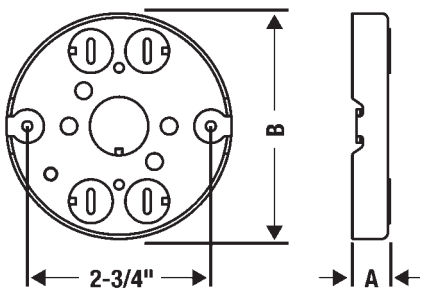
296 – 299



CAT. #	DIMENSIONS				
	A (INSIDE)	B	C	D	E
291-1	1-1/2"	4"	3-1/2"	1/2"	1-3/4"
294, 294-1	2-1/8"	4"	3-1/2"	1/2"	1-3/4"
295, 295-1	1/2"	4"	-	-	-
296, 296-1	1-1/2"	4"	-	-	-
299	2-1/8"	4"	-	-	-

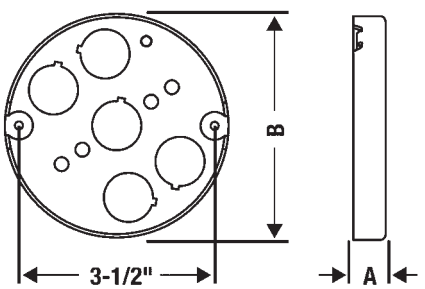
CEILING PANS

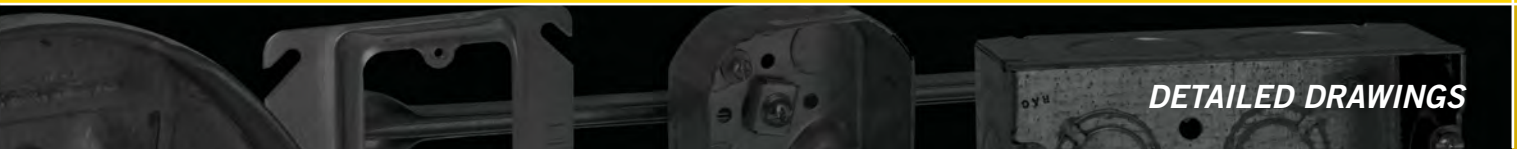
CEILING PANS – 3-1/2"
287, 292 AND 8292



CAT. #	DIMENSIONS	
	A (INSIDE)	B
287	11/16"	3-3/8"
292	1/2"	3-3/8"
8292	1/2"	3-3/8"
293	1/2"	4"
8293	1/2"	4"

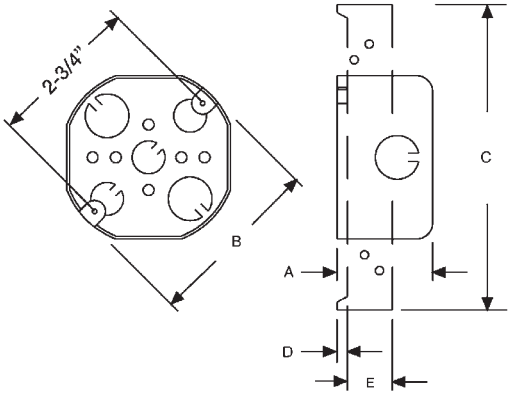
CEILING PANS – 4"
293 and 8293





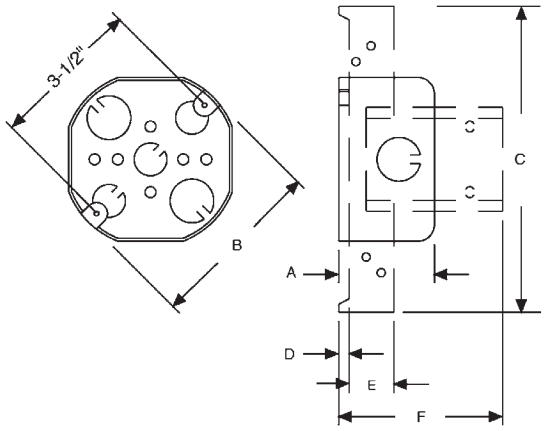
OCTAGON BOXES

3-1/2" OCTAGON BOXES



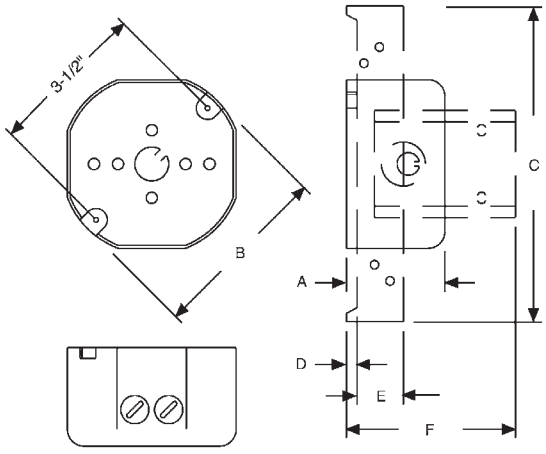
CAT. #	DIMENSIONS				
	A (INSIDE)	B	C	D	E
110	1-1/2"	3-1/2"	-	-	-
111	1-1/2"	3-1/2"	-	-	-
112	1-1/2"	3-1/2"	-	-	-
119	1-1/2"	3-1/2"	7"	-	1-1/16"

4" OCTAGON CONDUIT BOXES



CAT. #	DIMENSIONS					
	A (INSIDE)	B	C	D	E	F
125, 8125	1-1/2"	4"	-	-	-	-
126	1-1/2"	4"	-	-	-	-
127	1-1/2"	4"	-	-	-	-
127TS	1-1/2"	4"	7"	1/2"	1-1/16"	-
128	1-1/2"	4"	-	-	-	-
130	1-1/2"	4"	-	-	-	-
131RAC	1-1/2"	4"	-	-	-	-
158	1-1/2"	4"	2-3/8"	-	-	3-1/8"
165	2-1/8"	4"	-	-	-	-
166	2-1/8"	4"	-	-	-	-
161	1-1/2"	4"	7"	1/2"	1-1/16"	
167	2-1/8"	4"	-	-	-	-
167TS	2-1/8"	4"	7"	1/2"	1-1/16"	-

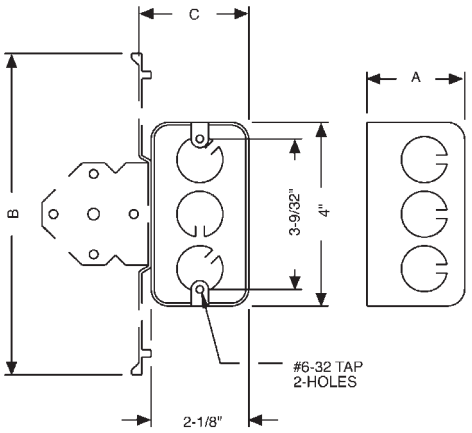
4" OCTAGON CABLE BOXES



CAT. #	DIMENSIONS					
	A (INSIDE)	B	C	D	E	F
145	1-1/2"	4"	-	-	-	-
146	1-1/2"	4"	-	-	-	-
150	1-1/2"	4"	-	-	-	-
153	1-1/2"	4"	-	-	-	-
155	1-1/2"	4"	7"	1/2"	1-1/16"	-
157	1-1/2"	4"	2-3/8"	-	-	3-1/8"
160	1-1/2"	4"	2-3/8"	-	-	3-1/8"
164	1-1/2"	4"	7"	1/2"	1-1/16"	-
175	2-1/8"	4"	-	-	-	-
176	2-1/8"	4"	2-3/8"	5/8"	-	3-3/4"
177	2-1/8"	4"	7"	1/2"	1-1/16"	-

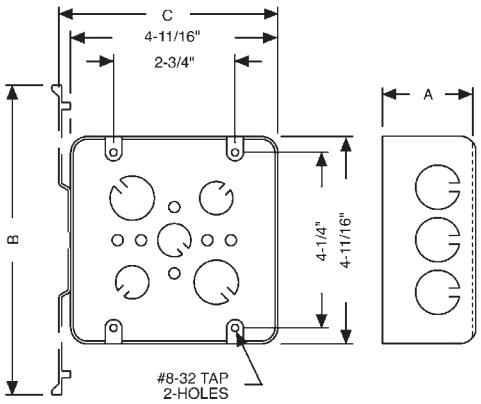
HANDY BOXES AND SWITCH BOXES

HANDY BOXES



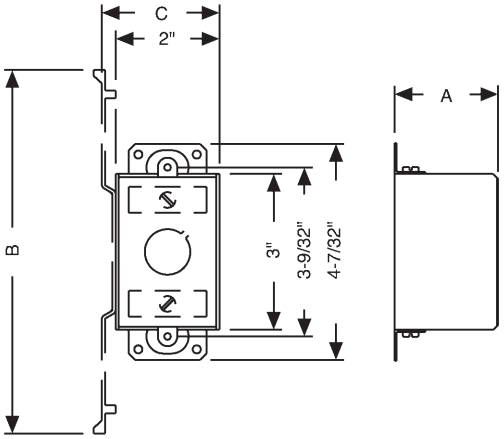
CAT. #	DIMENSIONS		
	A (INSIDE)	B	C
661	1-7/8"	6-7/16"	2-7/32"
662	1-7/8"	7"	2-3/8"
655	1-1/2"	1-31/32"	4-1/8"
670RAC	2-1/8"	-	-
8670	2-1/8"	-	-
674	2-1/8"	-	-
678	2-1/8"	7"	2-3/8"
650, 8650	1-1/2"	-	-
650CSA	1-1/2"	-	-
653	1-1/2"	-	-
660, 8660	1-7/8"	-	-
611	1-7/8"	-	-
660SM	1-7/8"	-	-
663, 8663	1-7/8"	-	-
663SM	1-7/8"	-	-
665	1-7/8"	-	-
671	2-1/8"	6-7/16"	2-7/32"

2-GANG HANDY BOXES / SWITCH BOXES

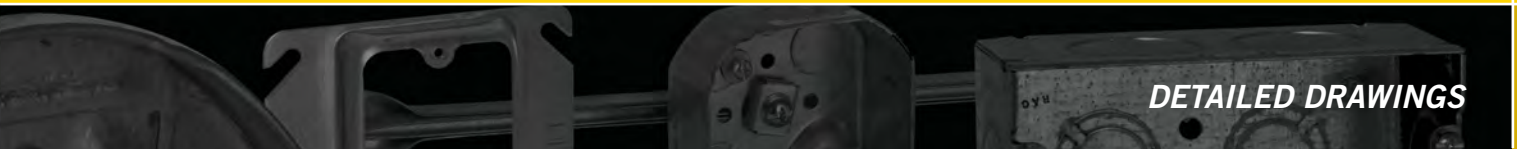


CAT. #	DIMENSIONS				
	A (INSIDE)	B	C	D	E
680	2-1/8"	4"	4"	-	-
681	2-1/8"	4"	4"	7"	4-9/32"
683	2-1/8"	4"	4"	-	-
685	2-1/8"	4"	4"	7"	4-9/32"

SINGLE GANG AND GANGABLE CONDUIT SWITCH BOXES

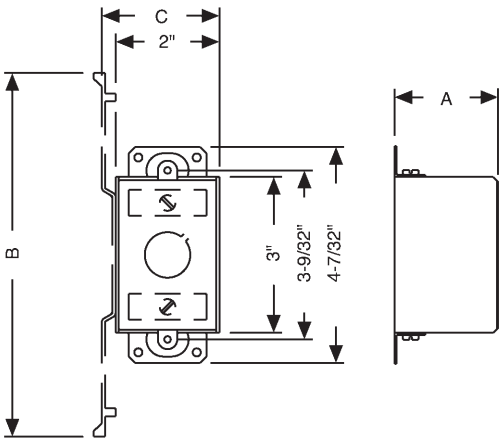


CAT. #	DIMENSIONS		
	A (INSIDE)	B	C
400	1-1/2"	-	-
420	2"	-	-
501	2-1/2"	-	-
502	2-1/2"	1-31/32"	4"
503	2-1/2"	-	-
505	2-1/2"	7"	2-13/64"
506	2-1/2"	-	-
508	2-1/2"	-	-
509	2-1/2"	-	-
560	2-3/4"	-	-
561	2-3/4"	-	-
562	2-3/4"	7"	2-13/64"
565	2-3/4"	-	-
591	3-1/2"	-	-
592	3-1/2"	-	-
500, 8500	2-1/2"	-	-
504, 8504	2-1/2"	7"	2-13/64"
590, 8590	3-1/2"	-	-



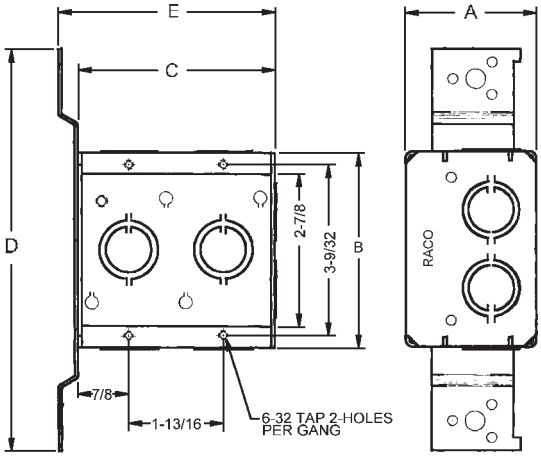
SWITCH BOXES

SINGLE GANG AND GANGABLE CABLE SWITCH BOXES



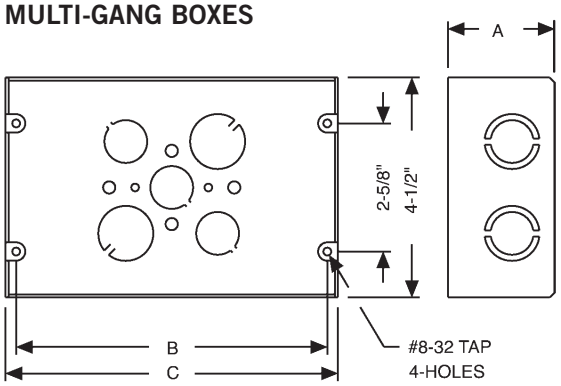
CAT. #	DIMENSIONS		
	A (INSIDE)	B	C
410	1-1/2"	-	-
440	2"	-	-
445	2"	-	-
471	2-1/4"	-	-
473	2-1/4"	-	-
487	2-1/4"	-	-
512	2-1/2"	-	-
517	2-1/2"	-	-
518	2-1/2"	-	-
519	2-1/2"	-	-
522	2-1/2"	1-31/32"	5-3/64"
523	2-1/2"	-	-
526	2-1/2"	1-3/8"	3-13/32"
528	2-1/2"	-	-
529	2-1/2"	1-31/32"	5-3/64"
531	2-1/2"	7"	2-13/64"
540	2-1/2"	1-31/32"	4"
545	2-1/2"	-	-
564	2-3/4"	7"	2-13/64"
567	2-3/4"	-	-
574	2-3/4"	7"	2-13/64"
600	3-1/2"	-	-
603	3-1/2"	1-31/32"	4"
604	3-1/2"	7"	2-13/64"
605	3-1/2"	7"	2-13/64"
524, 8524	2-1/2"	7"	2-13/64"
570RAC	2-3/4"	-	-
601, 8601	3-1/2"	-	-
601G	3-1/2"	-	-

MULTI-DEVICE SWITCH BOXES



CAT. #	DIMENSIONS				
	A (INSIDE)	B	C	D	E
686	2-1/2"	3-3/4"	5-9/16"	7-5/8"	5-31/32"
687	2-1/2"	3-3/4"	7-3/8"	7-5/8"	7-25/32"

MULTI-GANG BOXES



CAT. #	DIMENSIONS		
	A (INSIDE)	B	C
941	2-1/2"	6-3/8"	6-13/16"
942	2-1/2"	8-3/16"	8-5/8"
943	2-1/2"	10"	10-7/16"
944	2-1/2"	11-13/16"	12-1/4"
945	2-1/2"	13-5/8"	14-1/16"
951	1-5/8"	6-3/8"	6-13/16"
952	1-5/8"	8-3/16"	8-5/8"
953	1-5/8"	10"	10-7/16"
954	1-5/8"	11-13/16"	12-1/4"
955	1-5/8"	13-5/8"	14-1/16"
956	1-5/8"	15-7/16"	15-7/8"
957	1-5/8"	17-1/4"	17-11/16"
958	1-5/8"	19-1/16"	19-1/2"

Insulpads
PC 6120

- Polymers and Butyl Rubber
- Gray
- 100% Solid
- Low Odor
- Temperature Range: -20° F. to 180° F.
- Sound Barrier
- Non Hardening
- Flexible
- Forms Watertight Seal

CAT NO	UPC	SIZE	STD	MSTR	WT/STD	UNIT
68	15250	1/8" x 6" x 8"	100	100	33.80#	C

Duct Seal
PC 6130

- UL Listed
- Adheres to Most Clean Surfaces
- Non Toxic / Asbestos Free

Duct Seal (Prest "O" Seal) is used to seal around junction box flashings, service masts, etc. It is heavy mastic, which is flexible and can be pressed into any shape to form a water and airtight seal.

CAT NO	UPC	SIZE	STD	MSTR	WT/STD	UNIT
LHD1	17230	1 lb	50	50	50.00#	Ea
LHD5	17235	5 lb	10	10	50.00#	Ea

Handi-Foam Expanding Sealant
PC 6190

- Seals To Prevent Air And Moisture Infiltration
- Seals The Building Envelope
- Improves Building Efficiencies By Sealing Penetrations
- Improves Indoor Air Quality

Handi-Foam is an expanding sealant which is a moisture-cure polyurethane foam. It is used to seal, bond, retrofit, insulate and deaden sound in electrical, plumbing, air-conditioning and refrigeration applications. It expands 2 to 3 times its extruded bead, and is rated R-5 for each inch of foam. Specifically designed to be dispensed as a bead for filling cracks. Substrate must be clean, firm, free of loose particles and dust.

CAT NO	UPC	CONTENTS	STD	MSTR	WT/STD	UNIT
HF340	90980	12 oz.	12	12	12.12#	Ea

RTV Silicone Sealant
PC 6200

- UL Classified
- Clear / White
- Neutral Cure Silicone
- Non Acetic & Non Corrosive
- Low Odor
- Flexible, Non Sagging, Watertight
- Withstands Temperatures to 450° F

CAT NO	UPC	COLOR	CONTENTS	DESCRIPTION	STD	MSTR	WT/STD	UNIT
RTV3	17360	Clear	3 oz.	Tube	12	12	3.60#	Ea
RTV8	17366	Clear	8 oz.	Pressurized Can	12	12	4.53#	Ea
RTV10	17365	Clear	10.1 oz.	Cartridges	12	12	9.48#	Ea
RTV8W	10921	White	8 oz.	Pressurized Can	12	12	4.53#	Ea
RTV10W	17367	White	10.1 oz.	Cartridges	12	12	9.48#	Ea

Caulking Gun
PC 6600

- Double Friction Rod
- Long Trigger Leverage
- Thumb Pressure Release
- Standard Cartridge Size

For use with all types of caulks, sealants and adhesives.

CAT NO	UPC	DESCRIPTION	STD	MSTR	WT/STD	UNIT
CG10	40770	Caulking Gun	1	24	0.940#	Ea

Junction Boxes
Type 1 Screw Cover - Painted & Galvanized
Data and Illustration Sheet

Application
- Used as wiring boxes, junction and pull boxes
- Protects against contact with enclosed equipment

Standards
- UL 50 listed, Type 1
- CSA C22.2 No. 40 certified, Type 1
- Conforms to NEMA standard for Type 1

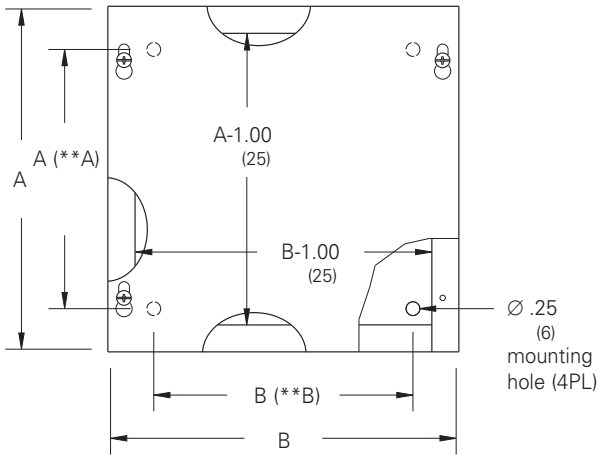
Finish
- Wash and phosphate undercoat or galvanized steel
- ANSI 61 gray acrylic electrocoat finish

Accessories
- Ground lug kit
- Touch-up paint
- See Accessories section

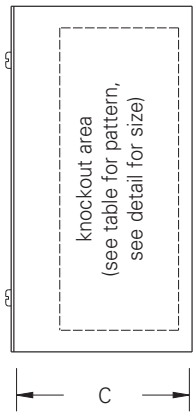
Construction
- Enclosure and cover are fabricated from code gauge steel or galvanized steel, (see table)
- Enclosure body has mounting holes on the back
- Enclosures are available with or without knockouts on the sides, top and bottom ends
- Cover is secured to the body with plated hex head combo screws
- Keyhole slots provided in the cover allow easy access to the inside without removing the screws
- Hole provision for optional ground lug kit

Discount Schedule: A2

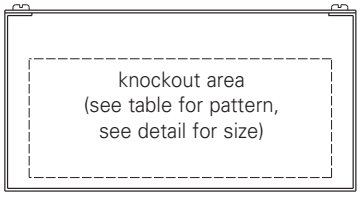
Subclass: AN0 & AX1



Front View



Side View



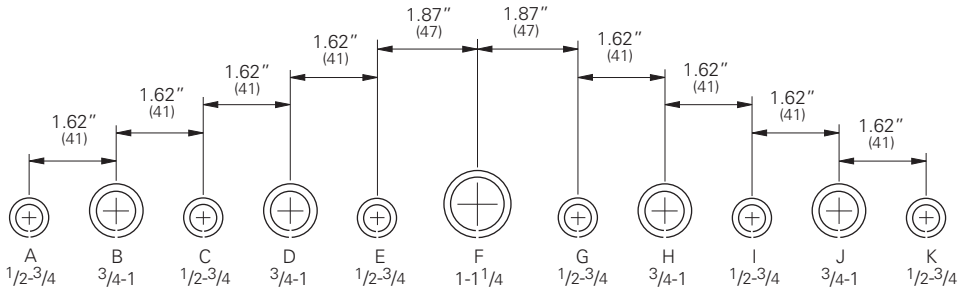
Bottom View

Dimensions:
**A = (-1.90) if 16 or 14 gauge
(-3.90) if 12 gauge
**B = (-2.00) if 16 or 14 gauge
(-4.00) if 12 gauge

Notes: We can provide special sizes, finishes and other modifications. Consult the factory for your special requirements.
Dimensions are in inches. Millimeters shown are for reference only. Data subject to change without notice.

Junction Boxes
Type 1 Screw Cover - Painted & Galvanized
Catalog Number

Enclosure Catalog Number				Enclosure Size			Knockout Pattern	Knockout Pattern
Painted		Galvanized		Height x Width x Depth A x B x C				
KO	No KO	KO	No KO	in.	mm	Gauge	Each Side	Top & Bottom
443 SC	443 SC NK	443 SCGV	443 SCGV NK	4.00 x 4.00 x 3.00	102 x 102 x 76	16	C D	C D
444 SC	444 SC NK	444 SCGV	444 SCGV NK	4.00 x 4.00 x 4.00	102 x 102 x 102	16	C D	C D
644 SC	644 SC NK	644 SCGV	644 SCGV NK	6.00 x 4.00 x 4.00	152 x 102 x 102	16	C D E	C D
663 SC	663 SC NK	663 SCGV	663 SCGV NK	6.00 x 6.00 x 3.00	152 x 152 x 76	16	C D E	C D E
664 SC	664 SC NK	664 SCGV	664 SCGV NK	6.00 x 6.00 x 4.00	152 x 152 x 102	16	C D E	C D E
863 SC	863 SC NK	863 SCGV	863 SCGV NK	8.00 x 6.00 x 4300	203 x 152 x 76	16	G H I J	C D E
864 SC	864 SC NK	864 SCGV	864 SCGV NK	8.00 x 6.00 x 4.00	203 x 152 x 102	16	G H I J	C D E
884 SC	884 SC NK	884 SCGV	884 SCGV NK	8.00 x 8.00 x 4.00	203 x 203 x 102	16	G H I J	G H I J
--	1064 SC NK	--	1064 SCGV NK	10.00 x 6.00 x 4.00	254 x 152 x 102	16	--	--
1084 SC	1084 SC NK	1084 SCGV	1084 SCGV NK	10.00 x 8.00 x 4.00	254 x 203 x 102	16	G H I J	G H I J
10104 SC	10104 SC NK	10104 SCGV	10104 SCGV NK	10.00 x 10.00 x 4.00	254 x 254 x 102	16	G H I J	G H I J
1264 SC	1264 SC NK	--	1264 SCGV NK	12.00 x 6.00 x 4.00	305 x 152 x 102	16	D E F G H	C D E
1284 SC	1284 SC NK	1284 SCGV	1284 SCGV NK	12.00 x 8.00 x 4.00	305 x 203 x 102	16	D E F G H	G H I J
12104 SC	12104 SC NK	12104 SCGV	12104 SCGV NK	12.00 x 10.00 x 4.00	305 x 254 x 102	16	D E F G H	D E F G H
12124 SC	12124 SC NK	12124 SCGV	12124 SCGV NK	12.00 x 12.00 x 4.00	305 x 305 x 102	16	D E F G H	D E F G H
--	15154 SC NK	15154 SCGV	--	15.00 x 15.00 x 4.00	381 x 381 x 102	16	C D E F G H I	C D E F G H I
16124 SC	16124 SC NK	16124 SCGV	16124 SCGV NK	16.00 x 12.00 x 4.00	406 x 305 x 102	16	C D E F G H I	D E F G H
16164 SC	16164 SC NK	16164 SCGV	--	16.00 x 16.00 x 4.00	406 x 406 x 102	16	C D E F G H I	C D E F G H I
18124 SC	18124 SC NK	18124 SCGV	18124 SCGV NK	18.00 x 12.00 x 4.00	457 x 305 x 102	16	B C D E F G H I J	D E F G H
--	18154 SC NK	18154 SCGV	--	18.00 x 15.00 x 4.00	457 x 381 x 102	16	B C D E F G H I J	C D E F G H I
18184 SC	18184 SC NK	18184 SCGV	18184 SCGV NK	18.00 x 18.00 x 4.00	457 x 457 x 102	16	B C D E F G H I J	B C D E F G H I J
24124 SC	24124 SC NK	24124 SCGV	--	24.00 x 12.00 x 4.00	610 x 305 x 102	16	B C D E F G H I J	D E F G H
--	24184 SC NK	24184 SCGV	--	24.00 x 18.00 x 4.00	610 x 457 x 102	16	B C D E F G H I J	B C D E F G H I J
24244 SC	24244 SC NK	24244 SCGV	24244 SCGV NK	24.00 x 24.00 x 4.00	610 x 610 x 102	14	B C D E F G H I J	B C D E F G H I J
--	30184 SC NK	30184 SCGV	30184 SCGV NK	30.00 x 18.00 x 4.00	762 x 457 x 102	16	B C D E F G H I J	B C D E F G H I J
30244 SC	30244 SC NK	30244 SCGV	30244 SCGV NK	30.00 x 24.00 x 4.00	762 x 610 x 102	14	B C D E F G H I J	B C D E F G H I J
-	30304 SC NK	-	30304 SCGV NK	30.00 x 30.00 x 4.00	762 x 762 x 102	12	--	--



Conduit Sizes

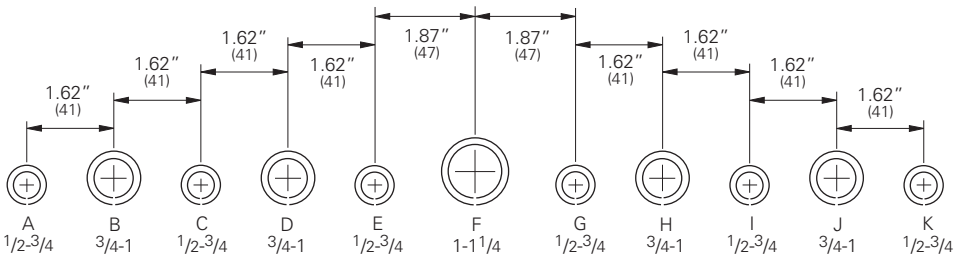
Knockout Detail

Note: See table for applicable knockout pattern.

Notes: Dimensions are in inches. Millimeters shown are for reference only. Data subject to change without notice.

Junction Boxes
Type 1 Screw Cover - Painted & Galvanized
Catalog Number

Enclosure Catalog Number Painted KO	Painted No KO	Galvanized KO	Galvanized No KO	Enclosure Size Height x Width x Depth A x B x C in.	mm	Gauge	Knockout Pattern Each Side	Knockout Pattern Top & Bottom
666 SC	666 SC NK	666 SCGV	666 SCGV NK	6.00 x 6.00 x 6.00	152 x 152 x 152	16	C D E	C D E
866 SC	866 SC NK	866 SCGV	866 SCGV NK	8.00x 6.00 x 6.00	203 x 152 x 152	16	G H I J	C D E
886 SC	886 SC NK	886 SCGV	886 SCGV NK	8.00 x 8.00 x 6.00	203 x 203 x 152	16	G H I J	G H I J
1086 SC	1086 SC NK	1086 SCGV	1086 SCGV NK	10.00 x 8.00 x 6.00	254 x 203 x 152	16	D E F G H	G H I J
10106 SC	10106 SC NK	10106 SCGV	10106 SCGV NK	10.00 x 10.00 x 6.00	254 x 254 x 152	16	D E F G H	D E F G H
--	1266 SC NK	--	--	12.00 x 6.00 x 6.00	305 x 152 x 152	16	--	--
--	1286 SC NK	--	1286 SCGV NK	12.00 x 8.00 x 6.00	305 x 203 x152	16	--	--
12106 SC	12106 SC NK	12106 SCGV	12106 SCGV NK	12.00 x 10.00 x 6.00	305 x 254 x152	16	D E F G H	D E F G H
12126 SC	12126 SC NK	12126 SCGV	12126 SCGV NK	12.00 x 12.00 x 6.00	305 x 305 x152	16	D E F G H	D E F G H
--	15156 SC NK	--	15156 SCGV NK	15.00 x 15.00 x 6.00	381 x 381 x152	16	--	--
16126 SC	16126 SC NK	16126 SCGV	16126 SCGV NK	16.00 x 12.00 x 6.00	406 x 305 x152	16	C D E F G H I	D E F G H
16166 SC	16166 SC NK	16166 SCGV	16166 SCGV NK	16.00 x 16.00 x 6.00	406 x 406x152	16	C D E F G H I	B C D E F G H I J
18126 SC	18126 SC NK	18126 SCGV	18126 SCGV NK	18.00 x 12.00 x 6.00	457 x 305x152	16	B C D E F G H I J	D E F G H
--	18156 SC NK	--	18156 SCGV NK	18.00 x 15.00 x 6.00	457 x 381x152	16	--	--
18186 SC	18186 SC NK	18186 SCGV	18186 SCGV NK	18.00 x 18.00 x 6.00	457 x 457x152	16	B C D E F G H I J	B C D E F G H I J
--	24126 SC NK	--	24126 SCGV NK	24.00 x 12.00 x 6.00	610 x 305x152	16	--	--
24186 SC	24186 SC NK	24186 SCGV	24186 SCGV NK	24.00 x 18.00 x 6.00	610 x 457x152	16	B C D E F G H I J	B C D E F G H I J
--	24206 SC NK	--	24206 SCGV NK	24.00 x 20.00 x 6.00	610 x 508x152	14	--	--
24246 SC	24246 SC NK	24246 SCGV	24246 SCGV NK	24.00 x 24.00 x 6.00	610 x 610x152	14	B C D E F G H I J	B C D E F G H I J
--	30186 SC NK	--	30186 SCGV NK	30.00 x 18.00 x 6.00	762 x 457 x 152	16	--	--
30246 SC	30246 SC NK	30246 SCGV	30246 SCGV NK	30.00 x 24.00 x 6.00	762 x 610 x 152	14	B C D E F G H I J	B C D E F G H I J
--	30306 SC NK	--	30306 SCGV NK	30.00 x 30.00 x 6.00	762 x 762 x 152	12	--	--
36246 SC	36246 SC NK	--	36246 SCGV NK	36.00 x 24.00 x 6.00	914 x 310 x 152	14	B C D E F G H I J	B C D E F G H I J
--	36306 SC NK	--	36306 SCGV NK	36.00 x 30.00 x 6.00	914 x 762 x 152	12	--	--
--	36366 SC NK	--	36366 SCGV NK	36.00 x 36.00 x 6.00	914 x 914 x 152	12	--	--
--	48366 SC NK	--	48366 SCGV NK	48.00 x 36.00 x 6.00	1219 x 914 x 152	12	--	--
--	48486 SC NK	--	48486 SCGV NK	48.00 x 48.00 x 6.00	1219 x 1219 x 152	12	--	--
888 SC	888 SC NK	888 SCGV	888 SCGV NK	8.00 x 8.00 x 8.00	203 x 203 x 203	16	G H I J	G H I J
--	10108 SC NK	--	10108 SCGV NK	10.00 x 10.00 x 8.00	254 x 254 x 203	16	--	--
12128 SC	12128 SC NK	--	12128 SCGV NK	12.00 x 12.00 x 8.00	305 x 305 x 203	16	D E F G H	D E F G H
16128 SC	16128 SC NK	--	16128 SCGV NK	16.00 x 12.00 x 8.00	406 x 305 x 203	16	C D E F G H I	D E F G H
18128 SC	18128 SC NK	--	18128 SCGV NK	18.00 x 12.00 x 8.00	457 x 305 x 203	16	B C D E F G H I J	D E F G H
18188 SC	18188 SC NK	--	18188 SCGV NK	18.00 x 18.00 x 8.00	457 x 457 x 203	16	B C D E F G H I J	B C D E F G H I J
24128 SC	24128 SC NK	--	24128 SCGV NK	24.00 x 12.00 x 8.00	610 x 305 x 203	16	B C D E F G H I J	D E F G H
24188 SC	24188 SC NK	--	24188 SCGV NK	24.00 x 18.00 x 8.00	610 x 457 x 203	16	B C D E F G H I J	B C D E F G H I J
--	24208 SC NK	--	24208 SCGV NK	24.00 x 20.00 x 8.00	610 x 508 x 203	14	--	--
24248 SC	24248 SC NK		24248 SCGV NK	24.00 x 24.00 x 8.00	610 x 610 x 203	14	B C D E F G H I J	B C D E F G H I J
30248 SC	30248 SC NK	30248 SCGV	30248 SCGV NK	30.00 x 24.00 x 8.00	762 x 610 x 203	14	B C D E F G H I J	B C D E F G H I J
--	30308 SC NK	--	30308 SCGV NK	30.00 x 30.00 x 8.00	762 x 762 x 203	12	--	--
36248 SC	36248 SC NK	--	36248 SCGV NK	36.00 x 24.00 x 8.00	914 x 610 x 203	14	B C D E F G H I J	B C D E F G H I J
--	36308 SC NK	--	36308 SCGV NK	36.00 x 30.00 x 8.00	914 x 762 x 203	14	--	--
--	36368 SC NK	--	36368 SCGV NK	36.00 x 36.00 x 8.00	914 x 914 x 203	14	--	--



Conduit Sizes Knockout Detail - Note: See table for applicable knockout pattern.

Notes: Dimensions are in inches. Millimeters shown are for reference only. Data subject to change without notice.

Junction Boxes
Type 1 Screw Cover - Painted & Galvanized
Catalog Number

Enclosure Catalog Number				Enclosure Size			Knockout Pattern	Knockout Pattern
Painted		Galvanized		Height x Width x Depth A x B x C				
KO	No KO	KO	No KO	in.	mm	Gauge	Each Side	Top & Bottom
--	121210 SC NK	--	121210 SCGV NK	12.00 x 12.00 x 10.00	305 x 305 x 254	16	--	--
181210 SC	181210 SC NK	--	181210 SCGV NK	18.00 x 12.00 x 10.00	457 x 305 x 254	16	(B)(C)(D)(E)(F)(G)(H)(I)(J)	(D)(E)(F)(G)(H)
181810 SC	181810 SC NK	--	181810 SCGV NK	18.00 x 18.00 x 10.00	457 x 457 x 254	16	(B)(C)(D)(E)(F)(G)(H)(I)(J)	(B)(C)(D)(E)(F)(G)(H)(I)(J)
--	241210 SC NK	--	241210 SCGV NK	24.00 x 12.00 x 10.00	610 x 305 x 254	16	--	--
241810 SC	241810 SC NK	--	241810 SCGV NK	24.00 x 18.00 x 10.00	610 x 457 x 254	16	(B)(C)(D)(E)(F)(G)(H)(I)(J)	(B)(C)(D)(E)(F)(G)(H)(I)(J)
242410 SC	242410 SC NK	--	242410 SCGV NK	24.00 x 24.00 x 10.00	610 x 610 x 254	14	(B)(C)(D)(E)(F)(G)(H)(I)(J)	(B)(C)(D)(E)(F)(G)(H)(I)(J)
--	302410 SC NK	--	302410 SCGV NK	30.00 x 24.00 x 10.00	762 x 610 x 254	14	--	--
--	303010 SC NK	--	303010 SCGV NK	30.00 x 30.00 x 10.00	762 x 762 x 254	12	--	--
--	362410 SC NK	--	362410 SCGV NK	36.00 x 24.00 x 10.00	914 x 610x x 254	14	--	--
--	363610 SC NK	--	363610 SCGV NK	36.00 x 36.00 x 10.00	914 x 914 x 254	14	--	--
--	121212 SC NK	--	121212 SCGV NK	12.00 x 12.00 x 12.00	305 x 305 x 305	16	--	--
181812 SC	181812 SC NK	--	181812 SCGV NK	18.00 x 18.00 x 12.00	457 x 457 x 305	16	(B)(C)(D)(E)(F)(G)(H)(I)(J)	(B)(C)(D)(E)(F)(G)(H)(I)(J)
241212 SC	241212 SC NK	--	241212 SCGV NK	24.00 x 12.00 x 12.00	610 x 305 x 305	16	(B)(C)(D)(E)(F)(G)(H)(I)(J)	(D)(E)(F)(G)(H)
241812 SC	241812 SC NK	--	241812 SCGV NK	24.00 x 18.00 x 12.00	610 x 457 x 305	16	(B)(C)(D)(E)(F)(G)(H)(I)(J)	(B)(C)(D)(E)(F)(G)(H)(I)(J)
242412 SC	242412 SC NK	--	242412 SCGV NK	24.00 x 24.00 x 12.00	610 x 610 x 305	14	(B)(C)(D)(E)(F)(G)(H)(I)(J)	(B)(C)(D)(E)(F)(G)(H)(I)(J)
302412 SC	302412 SC NK	--	302412 SCGV NK	30.00 x 24.00 x 12.00	762 x 610 x 305	14	(B)(C)(D)(E)(F)(G)(H)(I)(J)	(B)(C)(D)(E)(F)(G)(H)(I)(J)
--	303012 SC NK	--	303012 SCGV NK	30.00 x 30.00 x 12.00	762 x 762 x 305	12	--	--
362412 SC	362412 SC NK	--	362412 SCGV NK	36.00 x 24.00 x 12.00	9`14 x 610 x 305	14	(B)(C)(D)(E)(F)(G)(H)(I)(J)	(B)(C)(D)(E)(F)(G)(H)(I)(J)
--	363612 SC NK	--	363612 SCGV NK	48.00 x 48.00 x 12.00	1219 x 1219 x 305	12	--	--
--	484812 SC NK	--	484812 SCGV NK	48.00 x 48.00 x 12.00	1219 x 1219 x 305	12	--	--
--	303016 SC NK	--	--	30.00 x 30.00 x 16.00	762 x 762 x 406	12	--	--
--	363616 SC NK	--	363616 SCGV NK	48.00 x 48.00 x 16.00	1219 x 1219 x 406	12	--	--
--	484816 SC NK	--	484816 SCGV NK	48.00 x 48.00 x 16.00	1219 x 1219 x 405	12	--	--

Type 1 Flush & Surface Covers - Painted & Galvanized
Catalog Number

Discount Schedule: A2
Subclass: AN0

Optional Flush Covers		Flush Cover Size		Fits Enclosure			Replacement Surface Covers		Surface Cover Size		Fits Enclosure		
Catalog Number				A x B			Catalog Number				A x B		
Painted	Galvanized	in.	mm	in.	mm	Gauge	Painted	Galvanized	in.	mm	in.	mm	Gauge
44 SCF	--	5.50 x 5.50	140 x 140	4.00 x 4.00	102 x 102	16	--	--	--	--	--	--	--
66 SCF	--	7.50 x 7.50	191 x 191	6.00 x 6.00	152 x 152	16	66 SCS	--	6.09 x 6.09	155 x 155	6.00 x 6.00	152 x 152	16
86 SCF	--	9.50 x 7.50	241 x 191	8.00 x 6.00	203 x 152	16	--	--	--	--	--	--	--
88 SCF	--	9.50 x 9.50	241 x 241	8.00 x 8.00	203 x 203	16	88 SCS	--	8.09 x 8.09	205 x 205	8.00 x 8.00	203 x 203	16
108 SCF	--	11.50 x 9.50	292 x 241	10.00 x 8.00	254 x 203	16	--	--	--	--	--	--	--
1010 SCF	--	11.50 x 11.50	292 x 292	10.00 x 10.00	254 x 254	16	1010 SCS	--	10.09 x 10.09	256 x 256	10.00 x 10.00	254 x 254	16
128 SCF	--	13.50 x 11.50	343 x 241	12.00 x 8.00	305 x 203	16	--	--	--	--	--	--	--
1212 SCF	--	13.50 x 13.50	343 x 343	12.00 x 12.00	305 x 305	16	1212 SCS	--	12.09 x 12.09	307 x 307	12.00 x 12.00	305 x 305	16
1616 SCF	--	17.50 x 17.50	445 x 445	16.00 x 16.00	406 x 406	14	--	--	--	--	--	--	--
1812 SCF	--	19.50 x 13.50	495 x 343	18.00 x 12.00	457 x 305	14	--	--	--	--	--	--	--
1818 SCF	--	19.50 x 19.50	495 x 495	18.00 x 18.00	457 x 457	14	1818 SCS	--	18.09 x 18.09	459 x 459	18.00 x 18.00	457 x 457	16
2418 SCF	--	25.50 x 19.50	648 x 495	24.00 x 18.00	610 x 457	12	--	--	--	--	--	--	--
2424 SCF	--	25.50 x 24.50	648 x 622	24.00 x 24.00	610 x 610	12	2424 SCS	--	24.09 x 24.09	612 x 612	24.00 x 24.00	610 x610	14

Notes: Dimensions are in inches. Millimeters shown are for reference only. Data subject to change without notice.

POLYPROPYLENE - INSULATED BUSHINGS

Applications

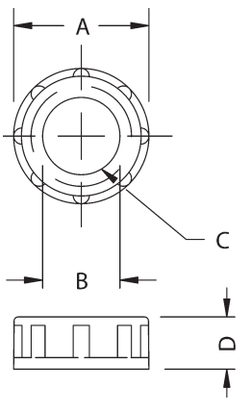
- For use on threaded Rigid/IMC conduit
- Bushings provide a smoothly rounded surface at the entrance of raceways

Product Feature

- Insulating bushings are made of high impact polypropylene that is temperature rated at 105° C

Compliances

- UL – Standard 514B
- CSA – C22.2 #18



A = O.D.
B = I.D.
C = Thread size
D = Thickness

INSULATING BUSHINGS
POLYPROPYLENE

ORDERING INFORMATION - DIMENSIONS

INSULATING BUSHINGS - POLYPROPYLENE

CATALOG NUMBER	TRADE SIZE	UNIT CTN. QTY.	SHIP CTN. QTY.	UPC BAR CODE
1402	1/2”	100	400	—
1403	3/4”	100	400	—
1404	1”	50	200	—
1405	1-1/4”	—	25	—
1406	1-1/2”	—	25	—
1408	2”	—	25	—
1410	2-1/2”	—	10	—
1412	3”	—	10	—
1414	3-1/2”	—	5	—
1416	4”	—	5	—
1420	5”	—	5	—
1424	6”	—	5	—

DIMENSIONS

CATALOG NUMBER	A	B	C THD. SPEC.	D
1402	1-1/16”	19/32”	1/2”-14 NPT	23/64”
1403	1-19/64”	25/32”	3/4”-14 NPT	13/32”
1404	1-5/8”	1”	1”-11-1/2 NPT	31/64”
1405	1-61/64”	1-9/64”	1-1/4”-11-1/2 NPT	31/64”
1406	2-3/16”	1-33/64”	1-1/2”-11-1/2 NPT	31/64”
1408	2-41/64”	1-61/64”	2”-11-1/2 NPT	35/64”
1410	3-1/4”	2-21/64”	2-1/2”- 8 NPT	5/8”
1412	3-29/32”	2-29/32”	3”- 8 NPT	11/16”
1414	4-13/32”	3-11/32”	3-1/2”- 8 NPT	11/16”
1416	4-15/16”	3-53/64”	4”- 8 NPT	11/16”
1420	5-63/64”	4-15/16”	5”- 8 NPT	49/64”
1424	7-1/16”	5-15/16”	6”- 8 NPT	49/64”

Nylon KO Bushings | PC 6100

- 105° C
- Snap In
- Reusable

Nylon KO bushings are snapped into punched holes in panels to protect wires from the rough edges.

CAT NO	UPC	SIZE	STD	MSTR	WT/STD	UNIT
1210D	12100	1/2"	100	1000	0.45#	C
1211D	12110	3/4"	100	1000	0.66#	C
1212D	12120	1"	100	1000	0.99#	C
1213D	12130	1-1/4"	50	500	0.70#	C
1214D	12140	1-1/2"	25	250	0.46#	C
1215D	12150	2"	25	250	0.93#	C
1216D	12160	2-1/2"	25	250	1.20#	C

K.O. Seals | PC 5440

- Snap In
- Steel
- Zinc Plated

Snap in K.O. seals are used to seal up holes punched in panels or knockouts from outlet boxes. They are held in place by spring tension. Available in sizes from 1/2" thru 2".

CAT NO	UPC	SIZE	STD	MSTR	WT/STD	UNIT
KO50	16000	1/2"	100	1000	1.44#	C
KO75	16010	3/4"	100	1000	1.62#	C
KO100	16020	1"	100	500	2.10#	C
KO125	16030	1-1/4"	50	100	1.45#	C
KO150	16040	1-1/2"	50	50	2.14#	C
KO200	16050	2"	25	25	1.44#	C

3 Piece K.O. Seals | PC 5450

- Assembled*
- Includes Screw and Threaded Strap
- Steel
- Zinc Plated

Three piece K.O. seals are used to seal up holes punched in panels or knockouts from outlet boxes, They are held in place by a screw inserted through the seal into a threaded strap on the opposite side of the opening. Available in sizes from 1/2" thru 6". 3 piece K.O. seals are embossed to centralize in knockout. Installs from the inside or outside of any box without disarranging wires. One screw secures unit. Size is stamped into seal.

CAT NO	UPC	SIZE	STD	MSTR	WT/STD	UNIT
D10S*	10240	1/2"	100	100	2.62#	C
D20S*	10242	3/4"	50	50	1.73#	C
D30S*	10244	1"	25	25	1.33#	C
D40S	10246	1-1/4"	25	25	1.74#	C
D50S	10248	1-1/2"	10	10	1.03#	C
D60S	10250	2"	10	10	1.46#	C
D70S	10252	2-1/2"	10	10	2.16#	C
D80S	10254	3"	10	10	3.11#	C
D90S	10256	3-1/2"	10	10	3.97#	C
D100S	10258	4"	10	10	5.81#	C
D110S	10260	4-1/2"	10	10	10.45#	C
D120S	10262	5"	10	10	13.33#	C
D130S	10264	6"	10	10	14.10#	C

RIGID LOCKNUTS

LOCKNUTS - STEEL

Locknuts (1001)

Locknuts (1002 - 1220)

APPLICATION

- For use in dry locations on threaded rigid/IMC conduit to secure conduit to a box or enclosure

PRODUCT FEATURES

- All steel construction insures mechanical protection
- Zinc electro plated for corrosion protection

COMPLIANCES (EXCLUDES NON-UL)

- UL - Standard 514B
  U L LISTED E195969
- CSA - C22.2 #18

CATALOG NUMBER	TRADE SIZE	UNIT CARTON QTY.	SHIP CARTON QTY.	UPC BAR CODE
Locknuts – *Steel*				
1001	3/8”	100	1000	—
1002	1/2”	100	1000	—
1003	3/4”	100	1000	—
1004	1”	—	100	
1005	1-1/4”	—	50	—
1006	1-1/2”	—	50	—
1008	2”	—	50	—
1010	2-1/2”	—	30	—
1012	3”	—	25	—
1014	3-1/2”	—	15	—
1016	4”	—	10	—
1020	5”	—	8	—
1024	6”	—	8	—
Non-UL Locknuts – *Steel*				
1192	1/2”	100	1000	—
1193	3/4”	100	1000	—
1194	1”	—	100	—
1195	1-1/4”	—	50	
1196	1-1/2”	—	50	—
1198	2”	—	50	—
1197	2-1/2”	—	30	—
1199	3”	—	25	—
1200	3-1/2”	—	15	—
1201	4”	—	10	—
1219	5”	—	8	—
1220	6”	—	8	—

SEE END OF SECTION (PG B102) FOR DETAILED DRAWINGS »

PORTLAND ELECTRICAL CONSTRUCTION INC.

1019 7TH STREET
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PHONE: 503-655-2281 FAX: 503-655-5033
OR CCB# 51764 WA EC PORTLEC023PE

DIVISION 26 – ELECTRICAL

SPECIFICATION SECTION:

- 260923 – OCCUPANCY & VACANCY SENSORS

BEAVERTON CITY HALL

Catalog Number: | Date: | Project: NCM PDT 9 RJB

OVERVIEW

The **nCM xx RJB** family of nLight ceiling/surface mount occupancy sensors provide a range of networked sensor solutions for applications with finished ceilings (e.g. ceiling tiles, sheetrock, plaster). **nCM xx RJB** family sensors utilize 100% digital Passive Infrared (PIR) detection and are available with several lens options, providing flexibility for multiple mounting height and coverage pattern requirements. Dual technology occupancy detection can also be added as an option for applications where occupants are stationary for long periods of time. All sensors have integrated on/off photocells as a standard feature, with automatic daylight harvesting/dimming control as an available option. Additionally, **nCM xx RJB** family sensors are also available with an optional auxiliary low voltage relay for simple integration with a BMS system or other building system.

nCM xx RJB family sensors are powered via the nLight network bus and typically communicate with one or more nLight enabled luminaires (e.g. Lithonia VTLED Series) or nLight relay/dimming packs to enable control of fixtures individually or in groups. These configurations work standalone and do not require a connection to a larger nLight network.

FEATURES

- 100% digital PIR detection
- Integrated photocell standard (disabled by default) – Photocell views down through sensor lens and when enabled provides two selectable modes of operation
  - On/Off mode: Photocell has full on/off control during periods of occupancy
  - Inhibit mode: Photocell can prevent lights from turning on if adequate daylight is available, but cannot turn lights off
- Optional dimming photocell (ADCX option)
- Optional auxiliary low voltage relay (AR option) for dry contact output - relay only tracks occupancy by default, ignoring switch and photocell commands
- LED status indicator
- Adjustable settings (e.g. occupancy time delays, photocell set-points) via push-button or SensorView software application
- Broadcasts occupancy and photocell information over a local nLight channel
- Remotely upgradeable firmware

Warranty

Five-year limited warranty. Complete warranty terms located at:

www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application.

Specifications subject to change without notice.

A+ Capable

This item is an A+ capable component, which has been designed and tested to provide out-of-the-box luminaire compatibility with simple commissioning, when included as part of an A+ Certified™ Solution.

To learn more about A+, visit www.acuitybrands.com/aplus.

AcuityControls

nLight®

nCM xx RJB
nCM PDT xx RJB

nCM 9 RJB
nCM PDT 9 RJB

nCM 10 RJB
nCM PDT 10 RJB

nCM 6 RJB

A+ CAPABLE | c UL us LISTED

ORDERING INFORMATION

nCM xx RJB			Example: nCM PDT 9 ADCX RJB
Series / Detection	**Coverage Type**	**Options (See Below)**	**RJ45 Port Location**
nCM PIR Detection nCM PDT Dual Tech (PIR/ Microphonics)	9 Small Motion 360° 10 Large Motion 360 ° 6 High Mount 360° (not available with PDT version)		RJB Rear RJ45 (CAT5e patch cable & RJ45 splitter included)

nCM xx RJB Options			
Photocell	**Auxiliary Relay**	**Dual Time Delay [2]**	**Temp/ Humidity**
[blank] On/Off Photocell (disabled by default) ADCX Automatic Dimming Control (of remote dimming output)	[blank] None AR Low Voltage Aux. Relay	[blank] Single Time Delay 2P Dual Time Delay	[blank] Standard LT Low Temp / High Humidity

NOTES:
1. For information on models with side RJ45 ports, see website
2. Not available with **AR** or **ADCX** options

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SPECIFICATIONS

Size: 4.55" Dia. (11.56 cm) 1.55" Deep (3.94 cm)

Weight: 6 oz

Mounting: Ceiling Tile / Sheetrock Surface, 3.5" Octagon Box, Single Gang Handy box

Color: Matte White

Wires / Cables: (1) CAT5e patch cable, 1ft (factory installed)
(2) 20 AWG wires (**AR** option only)

nLight Bus Power Consumption: ~3mA

nLight Network Connection: 2 RJ-45 Ports (via an included RJ-45 splitter)

Relay Rating (**AR** option only): 1A @ 24 VAC/VDC (resistive only)

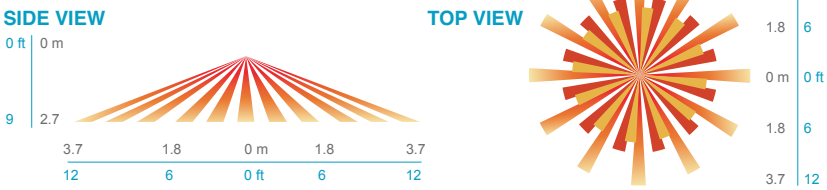
Temperature Rating: Standard: -10° C to 85° C
LT Option (PDT): -20° C to 60° C
LT Option(PIR): -20° C to 85° C
Non-LT Option (PDT): -10° C to 60° C

ROHS Compliant, Title 24 Component

COVERAGE PATTERNS

SMALL MOTION 360° (Model # nCM 9/nCM PDT 9[1])

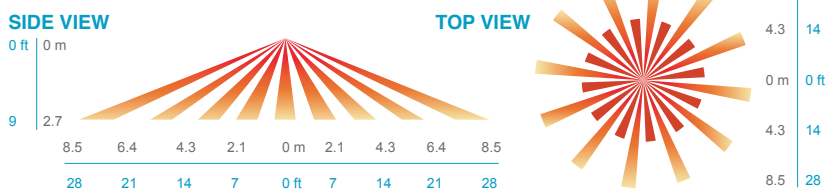
- Best choice for small motion (e.g. hand movements) detection
- 360° conical shaped pattern
- Provides 12 ft (3.66 m) radial coverage (~500 ft²) when mounted to standard 9 ft (2.74 m) ceiling
- 8 to 15 ft (2.44 to 4.57 m) mounting heights provide 10 to 20 ft (3.05 to 6.10 m) radial coverage



[1] Sensors with Microphonics™ provides overlapping detection of human activity over the complete PIR coverage area. Advanced filtering is also utilized to prevent non-occupant noises from keeping the lights on.

LARGE MOTION 360° (Model # nCM 10/nCM PDT 10[1])

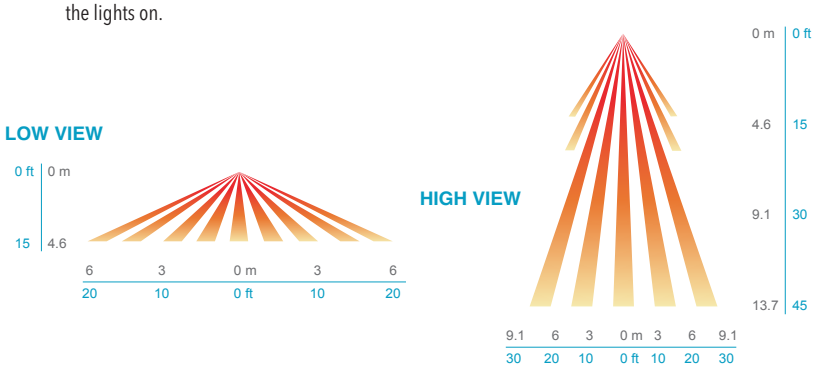
- Best choice for large motion detection (e.g. walking)
- 360° conical shaped pattern
- Provides ~24 ft (7.32 m) radial coverage (~2000 ft²) when mounted at 9 ft (2.74 m)
- 7 to 15 ft (2.13 to 4.57 m) mounting heights provide 16 to 36 ft (4.88 to 10.97 m) radial coverage
- Detection range improves when walking across beams compared to into beams



[1] Sensors with Microphonics™ provides overlapping detection of human activity over the complete PIR coverage area. Advanced filtering is also utilized to prevent non-occupant noises from keeping the lights on.

HIGH MOUNT 360° (Model # nCM 6)

- Best choice for 15 to 45 ft (4.57 to 13.72 m) mounting heights
- 15 to 20 ft (4.57 to 6.10 m) radial coverage overlaps area lit by a typical high bay fixture
- Excellent detection of large motion (e.g. walking) up to 35 ft (10.76 m)
- Excellent detection of extra large motion (e.g. forklifts) up to a 45 ft (13.72 m)



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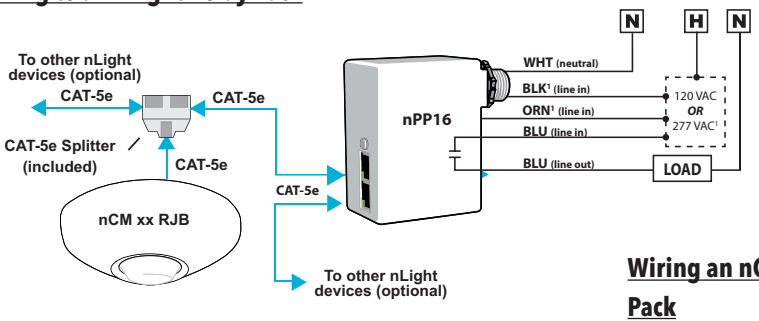
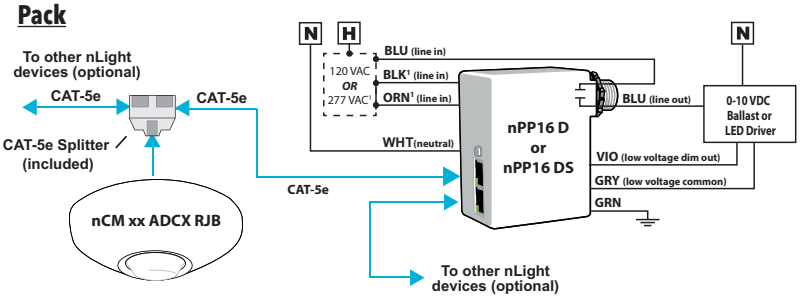
TYPICAL APPLICATIONS

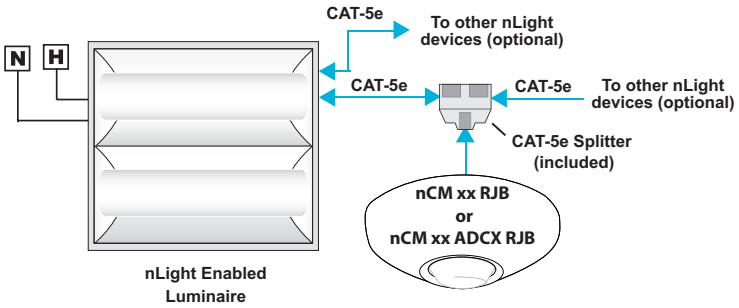
Wiring to an nLight Relay Pack



Wiring an nCM xx ADCX RJB to an nLight Dimming Pack



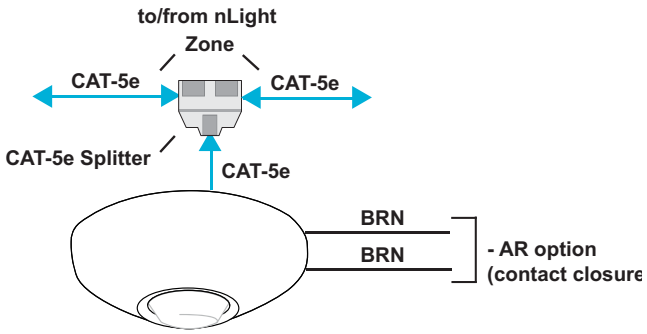
Wiring to an nLight Enabled Luminaire



TYPICAL APPLICATIONS

The following instructions are for mounting sensor directly to a ceiling tile or sheetrock surface. Sensor's mounting holes also align with standard round fixture or single gang handy box (screws not provided).

1. Using template included with unit, mark spots on ceiling tile/sheetrock for cable hole and mounting anchors/screws
2. Drill 1/2" hole through ceiling surface at location indicated on template
3. Insert provided anchors into ceiling surface at locations indicated on template
4. Remove provided RJ-45 splitter from sensor's attached CAT5e cable and then thread cable (and low voltage wires if **-AR** option included) through hole from underside
5. Mount sensor to anchors using two screws provided
6. Attach provided RJ45 splitter device (model **CAT5 Y**) above ceiling to cable from sensor (see diagram on right)
7. Interconnect CAT-5e cables to/from rest of nLight zone to RJ45 splitter
8. Once power is received via CAT-5e connection, all devices in zone will automatically begin functioning together according to each device's defaults
9. Install decorative sensor lid by rotating clockwise
10. Refer to included instruction card for default settings and directions on push-button programming.



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OVERVIEW

The **nCom Kit** is intended for programming standalone nLight zones. If your system is using nLight bridges, this device will not be able to read or write settings from one bridge port to another. The **nCom Kit** will discover all of the devices that are daisy-chained back to the bridge port if a bridge is connected. If nLight bridges are not used, the **nCom Kit** will discover all devices that are connected to the daisy-chain.

AcuityControls

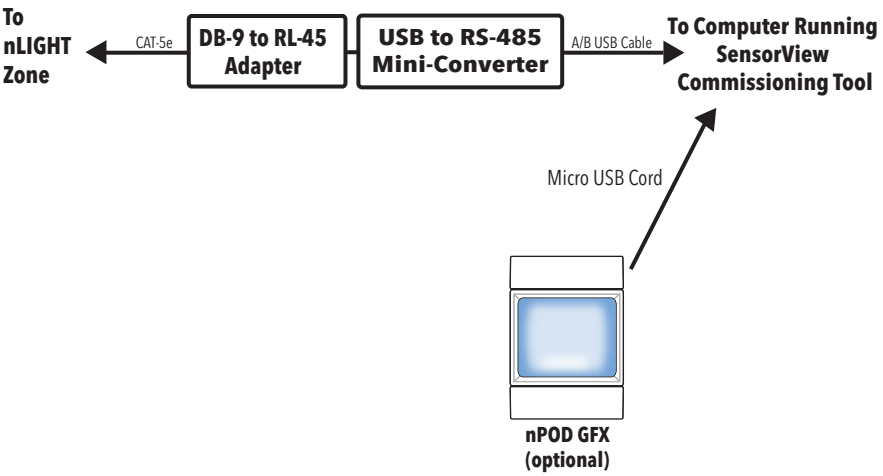
nLight®

nComKit

nLight Commissioning Kit

CONTENTS

- 10 ft. Pre-Terminated CAT-5e Cable
- Single male to dual-female CAT-5e Y-Splitter
- USB to RS-485 Mini-Converter
- A/B USB Cable
- DB-9 to RJ-45 Wiring Adapter
- 6 ft. USB to Micro USB Cable



Warranty

Five-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application.

Specifications subject to change without notice.

ORDERING INFORMATION

nComKit
Series
nComKit nLight Commissioning Kit

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BEAVERTON CITY HALL

NPODM DX WH

Catalog Number: | Date: | Project:

OVERVIEW

The nPODM Series WallPods are nLight-enabled toggle and/or raise/lower switches that provide a user with local control of a lighting zone. These single gang decorator style devices have soft-click buttons and have a green LED indicator for each button. WallPods communicate with other nLight devices via a CAT-5e cable that connects to one of its two RJ-45 connectors. A basic low voltage WallPod can work with an nLight power pack or nLight enabled fixture to provide toggle switch operation. WallPods with the DX option have the added ability to adjust the level of any nLight controlled dimmable lighting.

FEATURES

- Communicates with nLight network
- Remotely configurable/upgradeable
- Soft-click push-button control
- Custom button engraving (WH, IV, AL GY units only)
- 1, 2, or 4 channel on/off
- 1, 2, or 4 channel raise/lower
- "Dynamic" options for custom button names when pairing with Acuity Brands nTUNE fixtures

Warranty

Five-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. Specifications subject to change without notice.

A+ Capable

This item is an A+ capable component, which has been designed and tested to provide out-of-the-box luminaire compatibility with simple commissioning, when included as part of an A+ Certified™ Solution.

To learn more about A+, visit www.acuitybrands.com/aplus.

AcuityControls™

nLight®

nPODM

Wallpod: On/Off & On/Off+Raise/Lower

ORDERING INFORMATION

nPODM					Example: nPODM 2P WH
Series	**Preset Type**	**Dimming Control**	**Dynamic**	**Color**	**Temp/ Humidity**
nPODM	[blank] Single channel 2P Two channels 4P Four channels	[blank] On/off control DX On/off + raise/lower control	[blank] Standard CCT[1] Correlated color temperature GRSC[1] Grayscale COLOR[1] Color control	WH White IV Ivory GY Gray AL Almond BK Black RD Red	[blank] Normal LT Low temp

CUSTOM BUTTON ENGRAVING

- Standard button labeling is shown on back.
- Custom lettering for WH, IV, AL, and GY units can be specified and ordered at: http://www.acuitybrands.com/-/media/Files/Acuity/Products/Controls/nLight/NGRAVE%20110%20pdf.pdf?la=en
- To ensure color uniformity, ordering templates facilitate specifiying all buttons on a unit as custom lettered. Replacing single buttons not recommended.
- Buttons may ship separately and require field installation.

Notes
1. Only available on 2P DX configurations

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SPECIFICATIONS

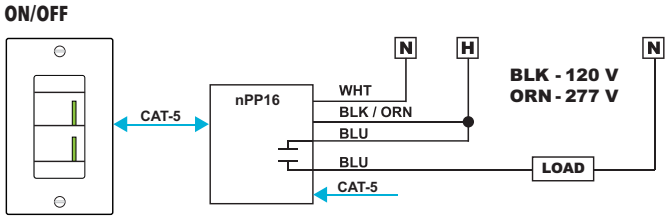
Size:	(not including ground strap) 2.74" H x 1.68" W x 1.63" D
	(6.96 cm x 4.27 cm x 4.14 cm)
Weight:	2 oz
Mounting:	Single Gang Switch Box or Low Voltage Ring
Color:	White, Ivory, Lt. Almond, Gray, Black, Red
nLight Network Ports:	2 RJ-45
Power Consumption:	< 5 mA
Wires:	None
Temperature Rating:	Standard: -10° C to 70° C
	LT Option: -40° C to 70° C

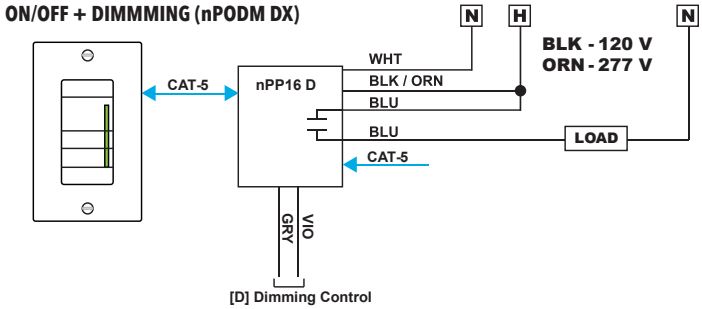
RoHS Compliant, Title 24 System Component

WIRING

TYPICAL WIRING

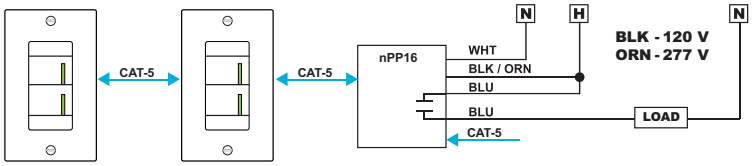
Power to WallPod device is provided via the CAT-5e connection to an nLight enabled fixture, nLight power pack (e.g. **nPP16**), power supply (**nPS80**), or Bridge (**nBRG 8**).





3-WAY CONFIGURATION WIRING

WallPods and/or nLight wall switch sensors can be configured together to create zones with multiple switching locations.



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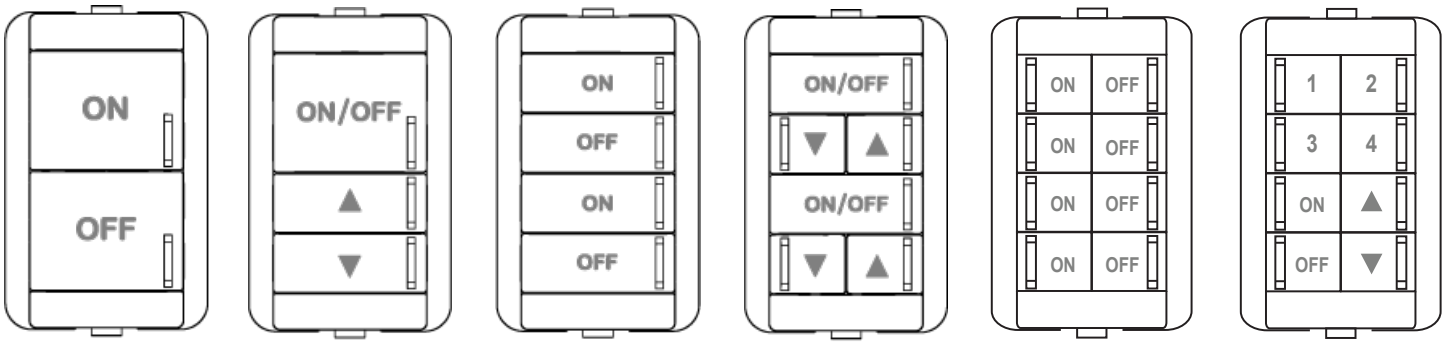
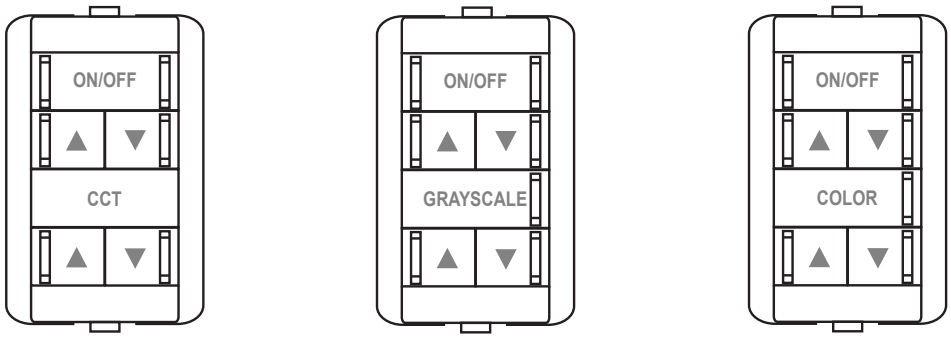
DEFAULT LABELING



nPODM | nPODM DX | nPODM 2P | nPODM 2P DX | nPODM 4P | nPODM 4P DX

Dynamic wallpod options feature custom button names when pairing with Acuity Brands nTUNE(TM) fixtures. Reference fixture cut sheets for additional details.



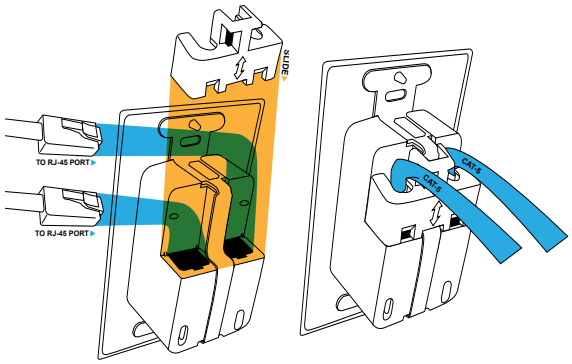
nPODM 2P DX CCT | nPODM 2P DX GRSC | nPODM 2P DX COLOR

Custom lettering for WH, IV, AL, and GY units can be specified and ordered at:
http://www.acuitybrands.com/-/media/Files/Acuity/Products/Controls/nLight/NGRAVE%20110%20pdf.pdf?la=en

INSTALLATION

- Mount WallPod using holes that align with standard single gang switch box or low voltage ring
- Access RJ-45 ports by sliding plastic guard up
- Insert CAT-5e cable(s), T568B wiring convention recommended
- Slide guard back onto metal strap
- Interconnect unit with other nLight devices in lighting zone using CAT-5e cables
- Once power is received via CAT-5e connection, all devices in zone will automatically begin functioning together according to respective device's defaults

Attention! Only use non-booted CAT5e cables.



PROGRAMMING

Refer to instruction card IN-11.3 for directions on programming the sensor via the upper-most left push-button. All buttons are factory set to the matching switch channel (button 1 - channel 1, button 2 - channel 2, etc). For nPODM 4P DX, channels to be controlled are selected first, then the control button (on/off or raise/lower).

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BEAVERTON CITY HALL

NPP16 D

Catalog Number: | Date: | Project:

OVERVIEW

The nLight nPP16 family of power packs is the workhorse of an nLight system, delivering robust system performance and design versatility for commercial and industrial lighting control applications. The nPP16 family is capable of switching loads up to 16 Amps via an internal latching relay designed with robust protection from the harsh switching requirements of T5 fluorescent and LED loads. These power packs also provide nLight system bus power - up to 40mA from each of its two RJ-45 ports - by transforming Class 1 line voltage (120/277 VAC or 347 VAC) to Class 2 low voltage (15 VDC). This power is typically utilized by other nLight devices within the power pack's local control zone; however, remaining power is also made available over the network for Bridges and devices in other zones to utilize.

FEATURES

- Communicates w/ nLight Network
- Self-Contained Relay Switches Line Voltage Load
- Supplies 40mA of Bus Power / RJ-45 port
- Optional out-of-box vacancy and partial-on modes
- Remotely Configurable/Upgradeable
- Push-Button Programmable
- Configurable Relay Logic
- Extended Chase Nipple
- Plenum rated

AcuityControls™

nLight®

nPP16 Power/Relay Pack

Model #: nPP16 (D)

SPECIFICATIONS

Size:	(not including ½" chase nipple) 3.38" H x 2.53" W x 1.83" D (8.59 cm x 6.43 cm x 4.65 cm)
Weight:	6 oz
Mounting:	1/2" Knockout
Color:	White (standard)
nLight Network Ports:	2 RJ-45
Operating Voltage:	120/240/277VAC, 347VAC (with 347 option)
Max Load:	16A @ 120VAC/277VAC, 347VAC
Motor Load:	1/2 HP
Relay type:	Latching
Frequency:	50/60Hz
Operating Temp:	14°F to 122°F (-10°C to 50°C)
Relative Humidity:	20-90% non-condensing
Bus Output Current/Voltage:	15 VDC, 40 mA / port (non-ER units only), 40 mA total at 240VAC
Max Dimming Load:	Sinks 100mA; 0-10VDC dimmable ballasts or LED drivers

*If power pack is enclosed within a junction box, max ambient temperature is 45° C
RoHS Compliant, Title 24 System Component, Class 1 Listed, Plenum Rated, cULus Listed

Warranty
Five-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application.
Specifications subject to change without notice.

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ORDERING INFORMATION

Series	Dimming	Default Mode	Voltage	Temp/humidity
nPP16 Power/Relay Pack	[blank] None	[blank] Auto On (Switch Ch. 1)	[blank] 120/277VAC	[blank] Standard
	D 0-10VDC Dimming output (via chase nipple)	SW2 Auto On (Switch Ch. 2)	347 120/347VAC	LT Low temp
	DS 0-10VDC Dimming output (via side slot)	SA Manual On (Switch Ch. 1)		
		SA2 Manual On (Switch Ch. 2)		
		PA70 Auto On to 70% (Partial On)[1]		
		PA Auto On to 50% (Partial On)[1]		

1. Requires D or DS option.

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WIRING (Do not wire hot)

T568B pin/pair assignment is recommended for all CAT-5e cables. For Supply Connections, use 14 AWG/90°C, 12 AWG/75°C or larger.

Diagram for non-dimming units

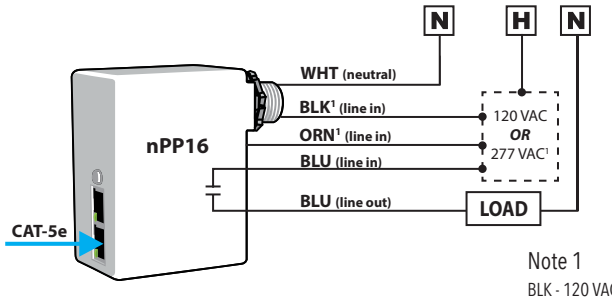
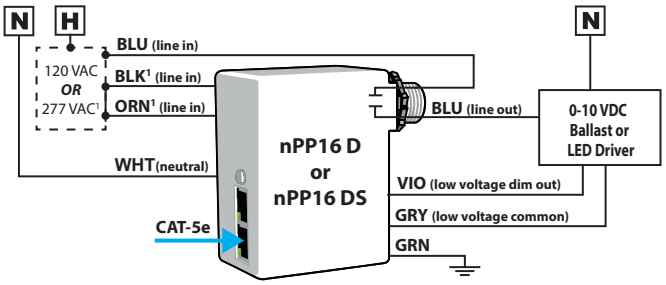


Diagram for units with a dimming option (-D or -DS suffix)



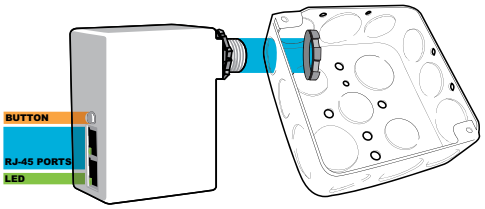
Note 1

BLK - 120 VAC

ORN - 277 VAC (or 347 VAC if unit has 347 option)

GENERAL INSTALLATION INSTRUCTIONS

- Mount through a ½" knockout in any junction box or luminaire. Secure with lock nut.
- Following above wiring diagram, connect wires to line voltage feed(s), neutral(s), and load.
- If applicable, connect low voltage violet and gray dimming wires to 0-10 VDC ballast/driver and green wire to an approved ground connection. Note: wires have 600V rated insulation.
- Interconnect unit (via RJ-45 ports) with other nLight devices in lighting zone using CAT-5e cables.



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BEAVERTON CITY HALL

WSX D WH

Catalog Number: | Date: | Project:

OVERVIEW

The WSX family of wall switch occupancy sensors provides simple and cost effective solutions for commercial and residential lighting control applications. All WSX family sensors have a stylish low profile appearance, soft-click buttons, and provide small motion detection up to 20 ft (6.10 m), making them perfect for private offices, private rest rooms, closets, copy rooms, or any other small enclosed space. Additionally, all WSX family sensors have a patent-pending wiring method that enables them to function either with or without a neutral connection. WSX units come pre-configured for wiring without a neutral, however if connection to neutral is required by code, contractors can convert the unit in seconds.

SPECIFICATIONS

Size:	2.74" H x 1.68" W x 1.63" D (6.96 cm x 4.27 cm x 4.14 cm) (not including ground strap)
Weight:	5 oz
Mounting:	Single Gang Switch Box
Mounting Height:	30-48 in (76.2-121.9 cm)
Maximum Load/Pole:	(Relay) 800 W @ 120VAC, 1200 W @ 277VAC, 1500 W @ 347VAC
Minimum Load:	None
Motor Load:	1/4 HP
Max Sink Current:	50 mA
0-10V Dim Min Output:	<0.3 V
Frequency:	50/60 Hz (timers are 1.2x for 50Hz)
Temperature Rating:	0°C-60°C

ROHS Compliant

AcuityControls

Sensor Switch™

WSX D

Dimming Occupancy Wall Switch

Warranty

5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application.
Specifications subject to change without notice.

c UL us LISTED

ORDERING INFORMATION

WSX D — **Example: WSX PDTD 347 WH 8H**

Series	Detection Mode	eldoLED	Dimming	Operating Mode
WSX Wall Switch Occupancy Sensor	[blank] Passive Infrared (PIR) PDT Dual Technology	[blank] None EZ[1] eldoLED Driver Compatibility	D Dimming	[blank] Automatic On SA Manual On VA Vacancy

Voltage	Color[3]		Max Dim Level[5]	Min Dim Level[5]	
[blank] 120/277 VAC 347[2] 347 VAC	WH White IV Ivory GY Gray	AL Almond BK Black RD[4] Red	[blank] 10 VDC 9H 9 VDC 8H 8 VDC 7H 7 VDC	[blank] 0 VDC 1V 1 VDC 2V 2 VDC 3V 3 VDC	4V 4 VDC 5V 5 VDC 6V 6 VDC

NOTES:
1. Max Dim Level default set to 9.1VDC. Min Dim Level default set to 1.5VDC
2. Wall plated included for white or ivory only for 347 VAC units
3. Matching wall plate provided for 120/277 VAC units
4. Special order
5. For setting other than default, minimum order quantity of 30 units

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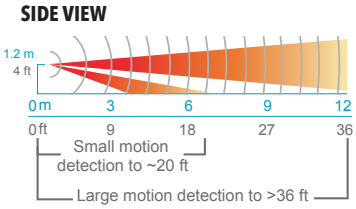
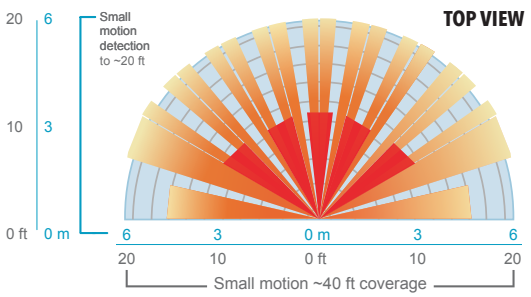
COVERAGE PATTERNS

- Small motion (e.g. hand movements) detection up to 20 ft (6.10 m), ~625 ft2
- Large motion (e.g. walking) detection greater than 36 ft (10.97 m), ~2025 ft2
- Wall-to-wall PIR coverage
- Units with -PDT (Passive Dual Technology) option (also called Microphonics) provide overlapping detection of human activity over the complete PIR coverage area. Advanced filtering is utilized to prevent non-occupant noises from keeping the lights on.
- Tested to NEMA WD 7-2011

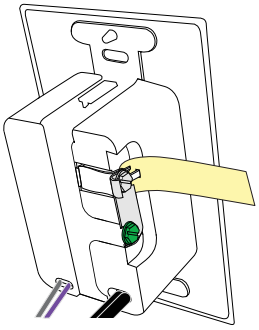




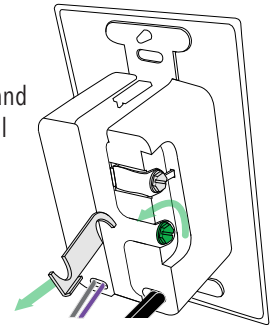
CONVERSION FROM GROUND ONLY (NO NEUTRAL) TO NEUTRAL WIRING

This product is pre-configured for wiring without a neutral; however, if connection to neutral is required by code, the unit easily converts in seconds.

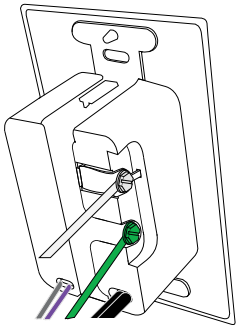
Step 1: Remove Yellow Label



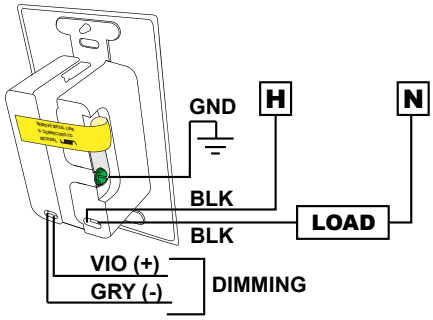
Step 2: Loosen Screws and Remove Metal Link



Step 3: Connect Neutral to Silver Screw and Ground to Green Screw



WIRING TO GROUND (NO NEUTRAL)



WIRE COLOR KEY

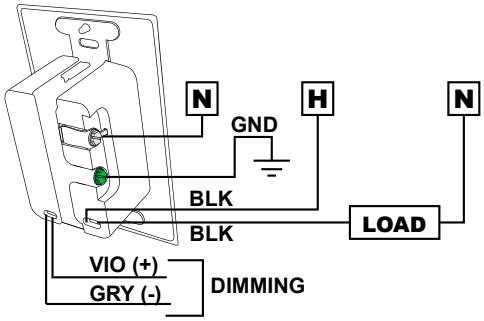
120/277 VAC WIRING

BLACK* - Line 1 Input
BLACK* - Load 1 Output
} *BLACK wires can be reversed
VIOLET - Low Voltage Dim Output (0-10 VDC)
GRAY - Low Voltage Common

347 VAC WIRING (-347 Option)

Red wires replace Black wires.

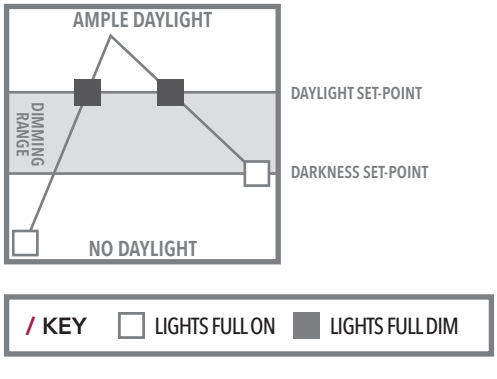
WIRING TO NEUTRAL



NOTES:
1.) Per NEC requirements, the 0-10V violet and gray wires must be installed as Class One.
2.) The 0-10V control wires must not exceed 250 ft (76 m) in length and must be sized at no less than 20AWG.

Adaptive Daylight Harvesting (ADH)

With Sensor Switch's Adaptive Daylight Harvesting (ADH), automatic dimming has never been more reliable - even in a wall switch. It works by establishing two state change set-points; daylight and darkness. The light level in the space will then be automatically maintained by ***intelligently controlling*** the dim level of the electric light source. Set-points can be established using the "Set Now" option or programmed using desired light levels as measured in foot candles (fc).



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2 = Occupancy Time Delay

The length of time an occupancy sensor will keep the lights on after it last detects occupancy.

1 - Test Mode**	5 - 7.5 min	9 - 17.5 min	13 - 27.5 min
2 - 30 sec	6 - 10.0 min*	10 - 20.0 min	14 - 30.0 min
3 - 2.5 min	7 - 12.5 min	11 - 22.5 min	
4 - 5.0 min	8 - 15.0 min	12 - 25.0 min	

**Test mode sets Occupancy Time Delay to 30 seconds, and increases photocell transition rate in addition to disabling the microphone on units with Dual Technology.

3 = On Mode

Automatic On [1]

Sensor automatically turns the lights on when it detects occupancy.

Manual On

Sensor requires pressing the button to turn the lights on.

Reduced Turn-On

Sensor is set to initially only detect large motions, effectively ignoring any reflected Passive Infrared (PIR) signals. Occupants will still be detected immediately when they enter the room as their PIR signal is large. Once lights are on, the sensor returns to maximum sensitivity.

1 - Automatic On* 3 - Reduced Turn-On

2 - Manual On

4 = Switch Modes

Switch Enable (Override Off) [1]

Button will turn lights off and keep them off until pressed again. The lights will remain off until the button is pressed again, restoring the sensor to Automatic On mode.

Switch Disable

User is prevented from turning off the lights via the push-button.

Predictive Mode

Pressing the push-button switch overrides the lights off and temporarily disables the occupancy detection. After 10 seconds, the occupancy detection reactivates and monitors for an additional 30 seconds. If no occupancy is detected during this period, the sensor will revert to Automatic On operation. If occupancy is detected, the sensor will remain in Override Off mode and requires the switch to be pressed again in order to restore the sensor to Automatic On.

Predictive Mode with Expiration

Pressing the push-button switch overrides the lights off and temporarily disables the occupancy detection. After 10 seconds, the occupancy detection reactivates and monitors for an additional 30 seconds. If no occupancy is detected during this period, the sensor will revert to Automatic On operation.

1 - Switch Enable 3 - Predictive Mode

2 - Switch Disable 4 - Predictive Mode with Expiration*

5 = Darkness Set-Point/ Inhibit Set-Point

The ambient light level at which the sensor sets the lights to the High Trim setting.

1 - Set Now**	5 - 8 fc	9 - 48 fc	13 - 128 fc
2 - 0.1 fc	6 - 16 fc	10 - 64 fc	14- 192 fc
3 - 1 fc	7 - 24 fc*	11 - 80 fc	15 - 256 fc
4 - 4 fc	8 - 32 fc	12 - 96 fc	

**Set Now will automatically select the Darkness Set-Point based on the current conditions in the room. Lights will go to full bright and sensor will rapid flash for 15 seconds allowing occupant to move out of direct view of sensor. Once the set-point selection is completed, the sensor will double-blink in confirmation.

6 = Daylight Set-Point

The ambient light level at which the sensor sets the lights to the Low Trim setting.

1 - Set Now**	5 - 8 fc	9 - 48 fc	13 - 128 fc
2 - 0.1 fc	6 - 16 fc	10 - 64 fc*	14- 192 fc
3 - 1 fc	7 - 24 fc	11 - 80 fc	15 - 256 fc
4 - 4 fc	8 - 32 fc	12 - 96 fc	

**Set Now will automatically select the Daylight Set-Point based on the current conditions in the room. Lights will go to full dim and sensor will rapid flash for 15 seconds allowing occupant to move out of direct view of sensor. Once the set-point selection is completed, the sensor will double-blink in confirmation.

7 = Photocell Mode

Inhibit Only

Prevents lights from automatically coming on when light level is above the Inhibit Set-Point.

Adaptive Daylight Harvesting

Dims lights from high trim to low trim setting according to Darkness and Daylight set-points.

1 - Disabled* 3 - Adaptive Daylight Harvesting

2 - Inhibit Only

8 = Dim to Off Occupancy Time Delay

After the Occupancy Time Delay (Function 2) has expired, this setting specifies the amount of time lights are held at Low Trim (Function 16) before turning off.

1 - 0 sec*	5 - 7.5 min	9 - 17.5 min
2 - 30 sec	6 - 10 min	10 - 20 min
3 - 2.5 min	7 - 12.5 min	11 - Stays at dim (never off)
4 - 5 min	8 - 15 min	

9 = Restore Defaults

Returns all functions to original settings.

1 - Maintain Current*

2 - Restore Defaults

10 = Minimum On Time

Required initial time for lamps to be on after each switch on, regardless of occupancy status. Once met, lights resume following occupancy time delay.

1 - 0 min (disabled)* 4 - 45 min

2 - 15 min 5 - 60 min

3 - 30 min

11 = LED Operation

Indicates behavior of device's LED.

1 - Occupancy Indication*

2 - Disabled

12 = Dual Technology (Microphonics™)

The secondary method of occupancy detection that allows the sensor to hear occupants.

1 - Normal* 4 - Low

2 - Off 5 - Phase Off (15-10-5 min)

3 - Medium

13 = Microphone Grace Period

Time period after lights are automatically turned off that they can be voice reactivated.

1 - 0 sec 5 - 40 sec

2 - 10 sec* 6 - 50 sec

3 - 20 sec 7 - 60 sec

4 - 30 sec

14 = Manual On Grace Period

Time period after lights automatically turn off that they can be reactivated by motion. Applicable only when sensor is in Manual On (Semi Auto) mode.

1 - 0 sec 3 - 15 sec*

15 = Dimming Range Max (High Trim)

The maximum output level of the sensor.

1 - 0 VDC	5 - 3 VDC	9 - 7 VDC	13 - 10 VDC*
2 - 1 VDC	6 - 4 VDC	10 - 8 VDC	
3 - 1.5 VDC	7 - 5 VDC	11 - 9 VDC	
4 - 2 VDC	8 - 6 VDC	12 - 9.1 VDC**	

**Default for EZ option

16 = Dimming Range Min (Low Trim)

The minimum output level of the sensor.

1 - 0 VDC	5 - 3 VDC	9 - 7 VDC	13 - 10 VDC
2 - 1 VDC*	6 - 4 VDC	10 - 8 VDC	
3 - 1.5 VDC**	7 - 5 VDC	11 - 9 VDC	
4 - 2 VDC	8 - 6 VDC	12 - 9.1 VDC	

**Default for EZ option

17 = Predictive Exit Time

Time period after manually switching lights off for occupant to leave the space. Applicable only when sensor is in Predictive Off mode.

1 - 5 sec	4 - 8 sec	7 - 15 sec
2 - 6 sec	5 - 9 sec	8 - 20 sec
3 - 7 sec	6 - 10 sec*	9 - 30 sec

18 = Predictive Grace Time

Time period after Predictive Exit Time that sensor rescans the room for remaining occupants. Applicable only when sensor is in Predictive Off mode.

1 - 0 sec	4 - 20 sec	7 - 50 sec
2 - 5 sec	5 - 30 sec*	8 - 60 sec
3 - 10 sec	6 - 40 sec	

19 = Fade On Rate

Time required for light to reach preset level.

1 - 0.75 sec*	3 - 5 sec
2 - 2.5 sec	4 - 15 sec

20 = Fade Off Rate

Time required for light to turn Off.

1 - 0.75 sec	3 - 5 sec
2 - 2.5 sec*	4 - 15 sec

21 = Start Level

Level of light output when occupancy is initially detected. Not applicable in Automatic Dimming Control (ADH) mode.

1 - 10%	4 - 40%	7 - 70%	10 - 100%*
2 - 20%	5 - 50%	8 - 80%	
3 - 30%	6 - 60%	9 - 90%	

*** Default Setting**

1. Not Applicable with Vacancy (VA) Option

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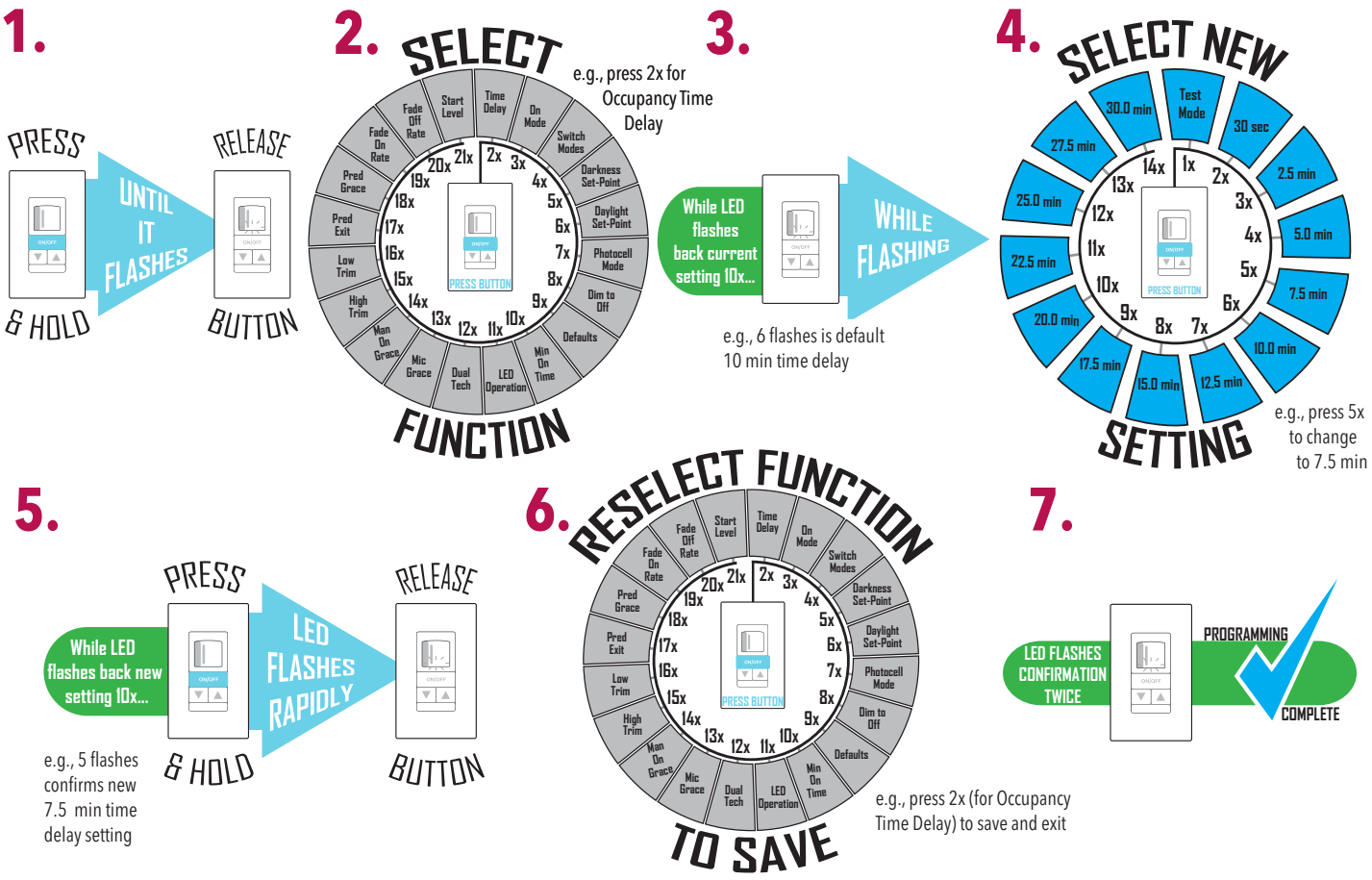
PROGRAMMING INSTRUCTIONS

Operational settings can be changed via the push-button sequence outlined below (note the example used is for changing occupancy time delay).



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BEAVERTON CITY HALL

Catalog Number: | Date: | Project: WSX PDT WH

OVERVIEW

The WSX family of wall switch occupancy sensors provides simple and cost effective solutions for commercial and residential lighting control applications. All WSX family sensors have a stylish low profile appearance, soft-click buttons, and provide small motion detection up to 20 ft (6.10 m), making them perfect for private offices, private rest rooms, closets, copy rooms, or any other small enclosed space. Additionally, all WSX family sensors have a patent-pending wiring method that enables them to function either with or without a neutral connection. WSX units come pre-configured for wiring without a neutral, however if connection to neutral is required by code, contractors can convert the unit in seconds.

SPECIFICATIONS

Size:	2.74" H x 1.68" W x 1.63" D (6.96 cm x 4.27 cm x 4.14 cm) (not including ground strap)
Weight:	5 oz
Mounting:	Single Gang Switch Box
Mounting Height:	30-48 in (76.2-121.9 cm)
Maximum Load/Pole:	(Relay) 800 W @ 120VAC, 1200 W @ 277VAC, 1500 W @ 347VAC
Minimum Load:	None
Motor Load:	1/4 HP
Max Sink Current:	50 mA
0-10V Dim Min Output:	<0.3 V
Frequency:	50/60 Hz (timers are 1.2x for 50Hz)
Temperature Rating:	0°C-60°C

ROHS Compliant

AcuityControls

Sensor Switch™

WSX D

Dimming Occupancy Wall Switch

Warranty

5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application.
Specifications subject to change without notice.

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ORDERING INFORMATION

WSX D — **Example: WSX PDTD 347 WH 8H**

Series	Detection Mode	eldoLED	Dimming	Operating Mode
WSX Wall Switch Occupancy Sensor	[blank] Passive Infrared (PIR) PDT Dual Technology	[blank] None EZ[1] eldoLED Driver Compatibility	D Dimming	[blank] Automatic On SA Manual On VA Vacancy

Voltage	Color[3]		Max Dim Level[5]	Min Dim Level[5]	
[blank] 120/277 VAC	WH White	AL Almond	[blank] 10 VDC	[blank] 0 VDC	4V 4 VDC
347[2] 347 VAC	IV Ivory	BK Black	9H 9 VDC	1V 1 VDC	5V 5 VDC
	GY Gray	RD[4] Red	8H 8 VDC	2V 2 VDC	6V 6 VDC
			7H 7 VDC	3V 3 VDC	

NOTES:
1. Max Dim Level default set to 9.1VDC. Min Dim Level default set to 1.5VDC
2. Wall plated included for white or ivory only for 347 VAC units
3. Matching wall plate provided for 120/277 VAC units
4. Special order
5. For setting other than default, minimum order quantity of 30 units

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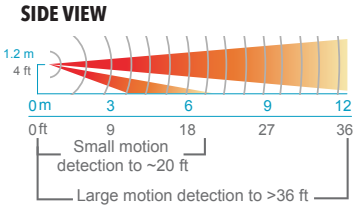
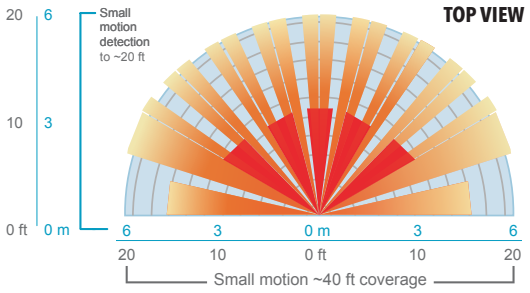
COVERAGE PATTERNS

- Small motion (e.g. hand movements) detection up to 20 ft (6.10 m), ~625 ft2
- Large motion (e.g. walking) detection greater than 36 ft (10.97 m), ~2025 ft2
- Wall-to-wall PIR coverage
- Units with -PDT (Passive Dual Technology) option (also called Microphonics) provide overlapping detection of human activity over the complete PIR coverage area. Advanced filtering is utilized to prevent non-occupant noises from keeping the lights on.
- Tested to NEMA WD 7-2011

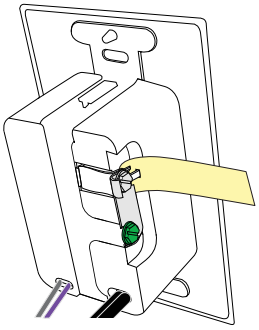




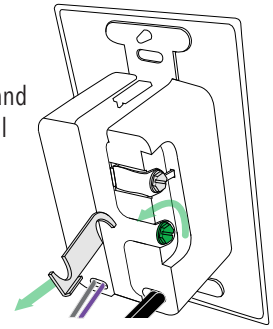
CONVERSION FROM GROUND ONLY (NO NEUTRAL) TO NEUTRAL WIRING

This product is pre-configured for wiring without a neutral; however, if connection to neutral is required by code, the unit easily converts in seconds.

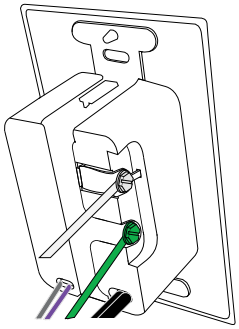
Step 1: Remove Yellow Label



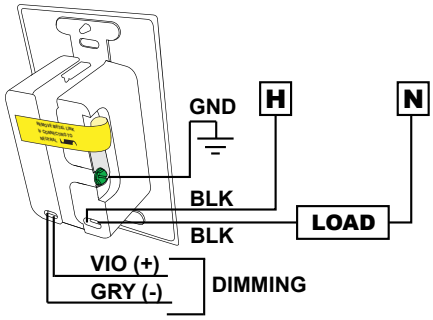
Step 2: Loosen Screws and Remove Metal Link



Step 3: Connect Neutral to Silver Screw and Ground to Green Screw



WIRING TO GROUND (NO NEUTRAL)



WIRE COLOR KEY

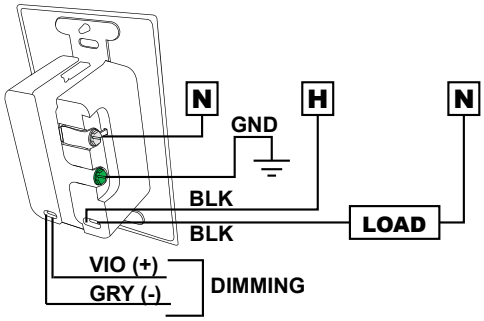
120/277 VAC WIRING

BLACK* - Line 1 Input
BLACK* - Load 1 Output
} *BLACK wires can be reversed
VIOLET - Low Voltage Dim Output (0-10 VDC)
GRAY - Low Voltage Common

347 VAC WIRING (-347 Option)

Red wires replace Black wires.

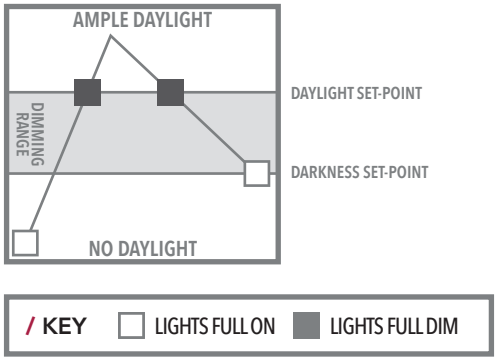
WIRING TO NEUTRAL



NOTES:
1.) Per NEC requirements, the 0-10V violet and gray wires must be installed as Class One.
2.) The 0-10V control wires must not exceed 250 ft (76 m) in length and must be sized at no less than 20AWG.

Adaptive Daylight Harvesting (ADH)

With Sensor Switch's Adaptive Daylight Harvesting (ADH), automatic dimming has never been more reliable - even in a wall switch. It works by establishing two state change set-points; daylight and darkness. The light level in the space will then be automatically maintained by ***intelligently controlling*** the dim level of the electric light source. Set-points can be established using the "Set Now" option or programmed using desired light levels as measured in foot candles (fc).



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OPERATIONAL SETTINGS

2 = Occupancy Time Delay
The length of time an occupancy sensor will keep the lights on after it last detects occupancy.

1 - Test Mode**	5 - 7.5 min	9 - 17.5 min	13 - 27.5 min
2 - 30 sec	6 - 10.0 min*	10 - 20.0 min	14 - 30.0 min
3 - 2.5 min	7 - 12.5 min	11 - 22.5 min	
4 - 5.0 min	8 - 15.0 min	12 - 25.0 min	

**Test mode sets Occupancy Time Delay to 30 seconds, and increases photocell transition rate in addition to disabling the microphone on units with Dual Technology.

3 = On Mode
Automatic On [1]
Sensor automatically turns the lights on when it detects occupancy.
Manual On
Sensor requires pressing the button to turn the lights on.
Reduced Turn-On
Sensor is set to initially only detect large motions, effectively ignoring any reflected Passive Infrared (PIR) signals. Occupants will still be detected immediately when they enter the room as their PIR signal is large. Once lights are on, the sensor returns to maximum sensitivity.

1 - Automatic On* 3 - Reduced Turn-On

2 - Manual On

4 = Switch Modes
Switch Enable (Override Off) [1]
Button will turn lights off and keep them off until pressed again. The lights will remain off until the button is pressed again, restoring the sensor to Automatic On mode.
Switch Disable
User is prevented from turning off the lights via the push-button.
Predictive Mode
Pressing the push-button switch overrides the lights off and temporarily disables the occupancy detection. After 10 seconds, the occupancy detection reactivates and monitors for an additional 30 seconds. If no occupancy is detected during this period, the sensor will revert to Automatic On operation. If occupancy is detected, the sensor will remain in Override Off mode and requires the switch to be pressed again in order to restore the sensor to Automatic On.
Predictive Mode with Expiration
Pressing the push-button switch overrides the lights off and temporarily disables the occupancy detection. After 10 seconds, the occupancy detection reactivates and monitors for an additional 30 seconds. If no occupancy is detected during this period, the sensor will revert to Automatic On operation.

1 - Switch Enable 3 - Predictive Mode

2 - Switch Disable 4 - Predictive Mode with Expiration*

5 = Darkness Set-Point/ Inhibit Set-Point
The ambient light level at which the sensor sets the lights to the High Trim setting.

1 - Set Now**	5 - 8 fc	9 - 48 fc	13 - 128 fc
2 - 0.1 fc	6 - 16 fc	10 - 64 fc	14- 192 fc
3 - 1 fc	7 - 24 fc*	11 - 80 fc	15 - 256 fc
4 - 4 fc	8 - 32 fc	12 - 96 fc	

**Set Now will automatically select the Darkness Set-Point based on the current conditions in the room. Lights will go to full bright and sensor will rapid flash for 15 seconds allowing occupant to move out of direct view of sensor. Once the set-point selection is completed, the sensor will double-blink in confirmation.

6 = Daylight Set-Point
The ambient light level at which the sensor sets the lights to the Low Trim setting.

1 - Set Now**	5 - 8 fc	9 - 48 fc	13 - 128 fc
2 - 0.1 fc	6 - 16 fc	10 - 64 fc*	14- 192 fc
3 - 1 fc	7 - 24 fc	11 - 80 fc	15 - 256 fc
4 - 4 fc	8 - 32 fc	12 - 96 fc	

**Set Now will automatically select the Daylight Set-Point based on the current conditions in the room. Lights will go to full dim and sensor will rapid flash for 15 seconds allowing occupant to move out of direct view of sensor. Once the set-point selection is completed, the sensor will double-blink in confirmation.

7 = Photocell Mode
Inhibit Only
Prevents lights from automatically coming on when light level is above the Inhibit Set-Point.

Adaptive Daylight Harvesting
Dims lights from high trim to low trim setting according to Darkness and Daylight set-points.

1 - Disabled* 3 - Adaptive Daylight Harvesting

2 - Inhibit Only

8 = Dim to Off Occupancy Time Delay
After the Occupancy Time Delay (Function 2) has expired, this setting specifies the amount of time lights are held at Low Trim (Function 16) before turning off.

1 - 0 sec*	5 - 7.5 min	9 - 17.5 min
2 - 30 sec	6 - 10 min	10 - 20 min
3 - 2.5 min	7 - 12.5 min	11 - Stays at dim (never off)
4 - 5 min	8 - 15 min	

9 = Restore Defaults
Returns all functions to original settings.

1 - Maintain Current*

2 - Restore Defaults

10 = Minimum On Time
Required initial time for lamps to be on after each switch on, regardless of occupancy status. Once met, lights resume following occupancy time delay.

1 - 0 min (disabled)* 4 - 45 min

2 - 15 min 5 - 60 min

3 - 30 min

11 = LED Operation
Indicates behavior of device's LED.

1 - Occupancy Indication*

2 - Disabled

12 = Dual Technology (Microphonics™)
The secondary method of occupancy detection that allows the sensor to hear occupants.

1 - Normal* 4 - Low

2 - Off 5 - Phase Off (15-10-5 min)

3 - Medium

13 = Microphone Grace Period
Time period after lights are automatically turned off that they can be voice reactivated.

1 - 0 sec 5 - 40 sec

2 - 10 sec* 6 - 50 sec

3 - 20 sec 7 - 60 sec

4 - 30 sec

14 = Manual On Grace Period
Time period after lights automatically turn off that they can be reactivated by motion. Applicable only when sensor is in Manual On (Semi Auto) mode.

1 - 0 sec 3 - 15 sec*

15 = Dimming Range Max (High Trim)
The maximum output level of the sensor.

1 - 0 VDC	5 - 3 VDC	9 - 7 VDC	13 - 10 VDC*
2 - 1 VDC	6 - 4 VDC	10 - 8 VDC	
3 - 1.5 VDC	7 - 5 VDC	11 - 9 VDC	
4 - 2 VDC	8 - 6 VDC	12 - 9.1 VDC**	

**Default for EZ option

16 = Dimming Range Min (Low Trim)
The minimum output level of the sensor.

1 - 0 VDC	5 - 3 VDC	9 - 7 VDC	13 - 10 VDC
2 - 1 VDC*	6 - 4 VDC	10 - 8 VDC	
3 - 1.5 VDC**	7 - 5 VDC	11 - 9 VDC	
4 - 2 VDC	8 - 6 VDC	12 - 9.1 VDC	

**Default for EZ option

17 = Predictive Exit Time
Time period after manually switching lights off for occupant to leave the space. Applicable only when sensor is in Predictive Off mode.

1 - 5 sec	4 - 8 sec	7 - 15 sec
2 - 6 sec	5 - 9 sec	8 - 20 sec
3 - 7 sec	6 - 10 sec*	9 - 30 sec

18 = Predictive Grace Time
Time period after Predictive Exit Time that sensor rescans the room for remaining occupants. Applicable only when sensor is in Predictive Off mode.

1 - 0 sec	4 - 20 sec	7 - 50 sec
2 - 5 sec	5 - 30 sec*	8 - 60 sec
3 - 10 sec	6 - 40 sec	

19 = Fade On Rate
Time required for light to reach preset level.

1 - 0.75 sec*	3 - 5 sec
2 - 2.5 sec	4 - 15 sec

20 = Fade Off Rate
Time required for light to turn Off.

1 - 0.75 sec	3 - 5 sec
2 - 2.5 sec*	4 - 15 sec

21 = Start Level
Level of light output when occupancy is initially detected. Not applicable in Automatic Dimming Control (ADH) mode.

1 - 10%	4 - 40%	7 - 70%	10 - 100%*
2 - 20%	5 - 50%	8 - 80%	
3 - 30%	6 - 60%	9 - 90%	

*** Default Setting**
1. Not Applicable with Vacancy (VA) Option

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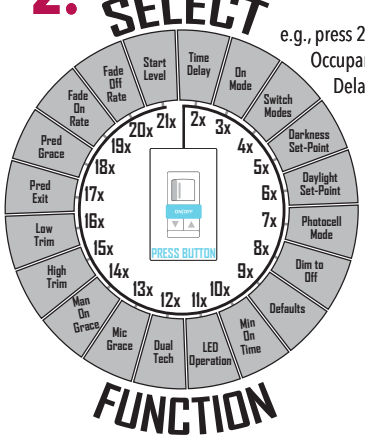
PROGRAMMING INSTRUCTIONS

Operational settings can be changed via the push-button sequence outlined below (note the example used is for changing occupancy time delay).

1. PRESS & HOLD — UNTIL IT FLASHES — RELEASE BUTTON

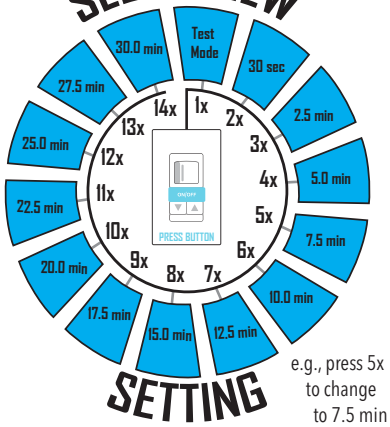
2. SELECT FUNCTION — e.g., press 2x for Occupancy Time Delay



3. While LED flashes back current setting 10x... — WHILE FLASHING

e.g., 6 flashes is default 10 min time delay

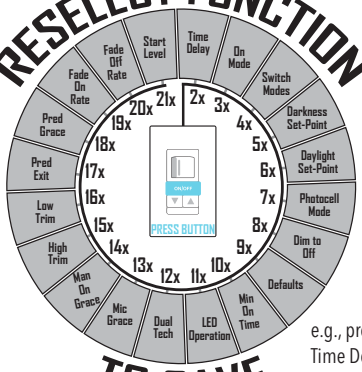
4. SELECT NEW SETTING — e.g., press 5x to change to 7.5 min



5. While LED flashes back new setting 10x... — PRESS & HOLD — LED FLASHES RAPIDLY — RELEASE BUTTON

e.g., 5 flashes confirms new 7.5 min time delay setting

6. RESELECT FUNCTION TO SAVE — e.g., press 2x (for Occupancy Time Delay) to save and exit



7. LED FLASHES CONFIRMATION TWICE — PROGRAMMING COMPLETE

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BEAVERTON CITY HALL

Catalog Number: | Date: | Project: WSX WH

OVERVIEW

The WSX family of wall switch occupancy sensors provides simple and cost effective solutions for commercial and residential lighting control applications. All WSX family sensors have a stylish low profile appearance, soft-click buttons, and provide small motion detection up to 20 ft (6.10 m), making them perfect for private offices, private rest rooms, closets, copy rooms, or any other small enclosed space. Additionally, all WSX family sensors have a patent-pending wiring method that enables them to function either with or without a neutral connection. WSX units come pre-configured for wiring without a neutral, however if connection to neutral is required by code, contractors can convert the unit in seconds.

SPECIFICATIONS

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Weight:	5 oz
Mounting:	Single Gang Switch Box
Mounting Height:	30-48 in (76.2-121.9 cm)
Maximum Load/Pole:	(Relay) 800 W @ 120VAC, 1200 W @ 277VAC, 1500 W @ 347VAC
Minimum Load:	None
Motor Load:	1/4 HP
Max Sink Current:	50 mA
0-10V Dim Min Output:	<0.3 V
Frequency:	50/60 Hz (timers are 1.2x for 50Hz)
Temperature Rating:	0°C-60°C

ROHS Compliant

AcuityControls

Sensor Switch™

WSX D

Dimming Occupancy Wall Switch

Warranty

5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application.
Specifications subject to change without notice.

c UL us LISTED

ORDERING INFORMATION

WSX D — **Example: WSX PDTD 347 WH 8H**

Series	Detection Mode	eldoLED	Dimming	Operating Mode
WSX Wall Switch Occupancy Sensor	[blank] Passive Infrared (PIR) PDT Dual Technology	[blank] None EZ[1] eldoLED Driver Compatibility	D Dimming	[blank] Automatic On SA Manual On VA Vacancy

Voltage	Color[3]		Max Dim Level[5]	Min Dim Level[5]	
[blank] 120/277 VAC 347[2] 347 VAC	WH White IV Ivory GY Gray	AL Almond BK Black RD[4] Red	[blank] 10 VDC 9H 9 VDC 8H 8 VDC 7H 7 VDC	[blank] 0 VDC 1V 1 VDC 2V 2 VDC 3V 3 VDC	4V 4 VDC 5V 5 VDC 6V 6 VDC

NOTES:
1. Max Dim Level default set to 9.1VDC. Min Dim Level default set to 1.5VDC
2. Wall plated included for white or ivory only for 347 VAC units
3. Matching wall plate provided for 120/277 VAC units
4. Special order
5. For setting other than default, minimum order quantity of 30 units

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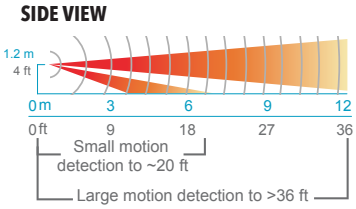
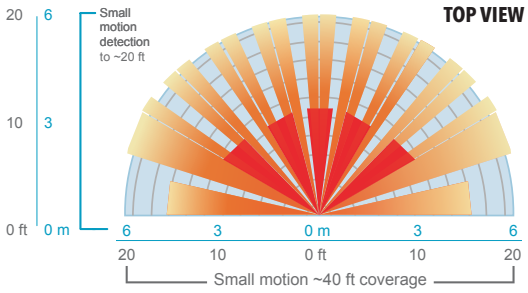
COVERAGE PATTERNS

- Small motion (e.g. hand movements) detection up to 20 ft (6.10 m), ~625 ft2
- Large motion (e.g. walking) detection greater than 36 ft (10.97 m), ~2025 ft2
- Wall-to-wall PIR coverage
- Units with -PDT (Passive Dual Technology) option (also called Microphonics) provide overlapping detection of human activity over the complete PIR coverage area. Advanced filtering is utilized to prevent non-occupant noises from keeping the lights on.
- Tested to NEMA WD 7-2011

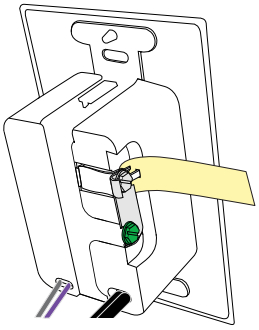




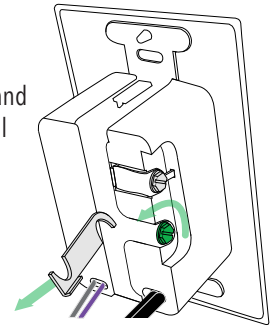
CONVERSION FROM GROUND ONLY (NO NEUTRAL) TO NEUTRAL WIRING

This product is pre-configured for wiring without a neutral; however, if connection to neutral is required by code, the unit easily converts in seconds.

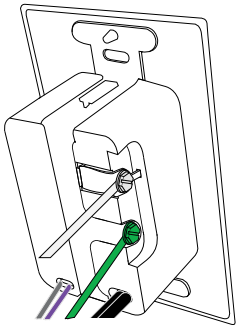
Step 1: Remove Yellow Label



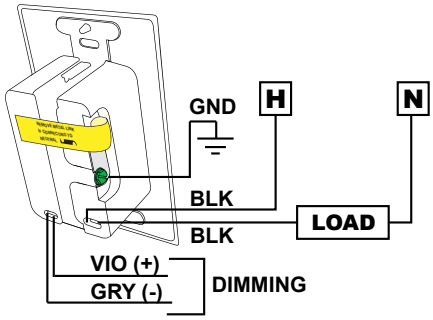
Step 2: Loosen Screws and Remove Metal Link



Step 3: Connect Neutral to Silver Screw and Ground to Green Screw



WIRING TO GROUND (NO NEUTRAL)



WIRE COLOR KEY

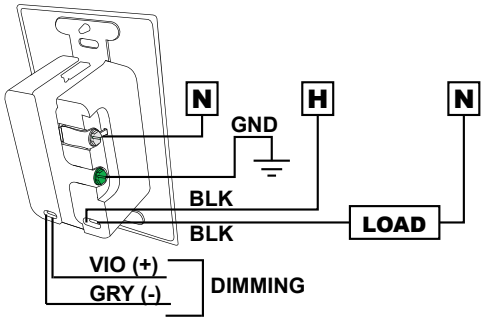
120/277 VAC WIRING

BLACK* - Line 1 Input
BLACK* - Load 1 Output
} *BLACK wires can be reversed
VIOLET - Low Voltage Dim Output (0-10 VDC)
GRAY - Low Voltage Common

347 VAC WIRING (-347 Option)

Red wires replace Black wires.

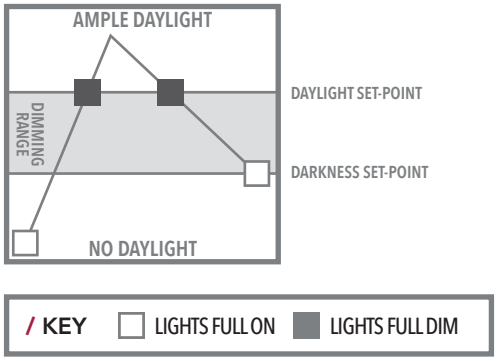
WIRING TO NEUTRAL



NOTES:
1.) Per NEC requirements, the 0-10V violet and gray wires must be installed as Class One.
2.) The 0-10V control wires must not exceed 250 ft (76 m) in length and must be sized at no less than 20AWG.

Adaptive Daylight Harvesting (ADH)

With Sensor Switch's Adaptive Daylight Harvesting (ADH), automatic dimming has never been more reliable - even in a wall switch. It works by establishing two state change set-points; daylight and darkness. The light level in the space will then be automatically maintained by ***intelligently controlling*** the dim level of the electric light source. Set-points can be established using the "Set Now" option or programmed using desired light levels as measured in foot candles (fc).



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OPERATIONAL SETTINGS

WSX WH

2 = Occupancy Time Delay
The length of time an occupancy sensor will keep the lights on after it last detects occupancy.

1 - Test Mode**	5 - 7.5 min	9 - 17.5 min	13 - 27.5 min
2 - 30 sec	6 - 10.0 min*	10 - 20.0 min	14 - 30.0 min
3 - 2.5 min	7 - 12.5 min	11 - 22.5 min	
4 - 5.0 min	8 - 15.0 min	12 - 25.0 min	

**Test mode sets Occupancy Time Delay to 30 seconds, and increases photocell transition rate in addition to disabling the microphone on units with Dual Technology.

3 = On Mode
Automatic On [1]
Sensor automatically turns the lights on when it detects occupancy.
Manual On
Sensor requires pressing the button to turn the lights on.
Reduced Turn-On
Sensor is set to initially only detect large motions, effectively ignoring any reflected Passive Infrared (PIR) signals. Occupants will still be detected immediately when they enter the room as their PIR signal is large. Once lights are on, the sensor returns to maximum sensitivity.

1 - Automatic On* 3 - Reduced Turn-On

2 - Manual On

4 = Switch Modes
Switch Enable (Override Off) [1]
Button will turn lights off and keep them off until pressed again. The lights will remain off until the button is pressed again, restoring the sensor to Automatic On mode.
Switch Disable
User is prevented from turning off the lights via the push-button.
Predictive Mode
Pressing the push-button switch overrides the lights off and temporarily disables the occupancy detection. After 10 seconds, the occupancy detection reactivates and monitors for an additional 30 seconds. If no occupancy is detected during this period, the sensor will revert to Automatic On operation. If occupancy is detected, the sensor will remain in Override Off mode and requires the switch to be pressed again in order to restore the sensor to Automatic On.
Predictive Mode with Expiration
Pressing the push-button switch overrides the lights off and temporarily disables the occupancy detection. After 10 seconds, the occupancy detection reactivates and monitors for an additional 30 seconds. If no occupancy is detected during this period, the sensor will revert to Automatic On operation.

1 - Switch Enable 3 - Predictive Mode

2 - Switch Disable 4 - Predictive Mode with Expiration*

5 = Darkness Set-Point/ Inhibit Set-Point
The ambient light level at which the sensor sets the lights to the High Trim setting.

1 - Set Now**	5 - 8 fc	9 - 48 fc	13 - 128 fc
2 - 0.1 fc	6 - 16 fc	10 - 64 fc	14- 192 fc
3 - 1 fc	7 - 24 fc*	11 - 80 fc	15 - 256 fc
4 - 4 fc	8 - 32 fc	12 - 96 fc	

**Set Now will automatically select the Darkness Set-Point based on the current conditions in the room. Lights will go to full bright and sensor will rapid flash for 15 seconds allowing occupant to move out of direct view of sensor. Once the set-point selection is completed, the sensor will double-blink in confirmation.

6 = Daylight Set-Point
The ambient light level at which the sensor sets the lights to the Low Trim setting.

1 - Set Now**	5 - 8 fc	9 - 48 fc	13 - 128 fc
2 - 0.1 fc	6 - 16 fc	10 - 64 fc*	14- 192 fc
3 - 1 fc	7 - 24 fc	11 - 80 fc	15 - 256 fc
4 - 4 fc	8 - 32 fc	12 - 96 fc	

**Set Now will automatically select the Daylight Set-Point based on the current conditions in the room. Lights will go to full dim and sensor will rapid flash for 15 seconds allowing occupant to move out of direct view of sensor. Once the set-point selection is completed, the sensor will double-blink in confirmation.

7 = Photocell Mode
Inhibit Only
Prevents lights from automatically coming on when light level is above the Inhibit Set-Point.

Adaptive Daylight Harvesting
Dims lights from high trim to low trim setting according to Darkness and Daylight set-points.

1 - Disabled* 3 - Adaptive Daylight Harvesting

2 - Inhibit Only

8 = Dim to Off Occupancy Time Delay
After the Occupancy Time Delay (Function 2) has expired, this setting specifies the amount of time lights are held at Low Trim (Function 16) before turning off.

1 - 0 sec*	5 - 7.5 min	9 - 17.5 min
2 - 30 sec	6 - 10 min	10 - 20 min
3 - 2.5 min	7 - 12.5 min	11 - Stays at dim (never off)
4 - 5 min	8 - 15 min	

9 = Restore Defaults
Returns all functions to original settings.

1 - Maintain Current*

2 - Restore Defaults

10 = Minimum On Time
Required initial time for lamps to be on after each switch on, regardless of occupancy status. Once met, lights resume following occupancy time delay.

1 - 0 min (disabled)* 4 - 45 min

2 - 15 min 5 - 60 min

3 - 30 min

11 = LED Operation
Indicates behavior of device's LED.

1 - Occupancy Indication*

2 - Disabled

12 = Dual Technology (Microphonics™)
The secondary method of occupancy detection that allows the sensor to hear occupants.

1 - Normal* 4 - Low

2 - Off 5 - Phase Off (15-10-5 min)

3 - Medium

13 = Microphone Grace Period
Time period after lights are automatically turned off that they can be voice reactivated.

1 - 0 sec 5 - 40 sec

2 - 10 sec* 6 - 50 sec

3 - 20 sec 7 - 60 sec

4 - 30 sec

14 = Manual On Grace Period
Time period after lights automatically turn off that they can be reactivated by motion. Applicable only when sensor is in Manual On (Semi Auto) mode.

1 - 0 sec 3 - 15 sec*

15 = Dimming Range Max (High Trim)
The maximum output level of the sensor.

1 - 0 VDC	5 - 3 VDC	9 - 7 VDC	13 - 10 VDC*
2 - 1 VDC	6 - 4 VDC	10 - 8 VDC	
3 - 1.5 VDC	7 - 5 VDC	11 - 9 VDC	
4 - 2 VDC	8 - 6 VDC	12 - 9.1 VDC**	

**Default for EZ option

16 = Dimming Range Min (Low Trim)
The minimum output level of the sensor.

1 - 0 VDC	5 - 3 VDC	9 - 7 VDC	13 - 10 VDC
2 - 1 VDC*	6 - 4 VDC	10 - 8 VDC	
3 - 1.5 VDC**	7 - 5 VDC	11 - 9 VDC	
4 - 2 VDC	8 - 6 VDC	12 - 9.1 VDC	

**Default for EZ option

17 = Predictive Exit Time
Time period after manually switching lights off for occupant to leave the space. Applicable only when sensor is in Predictive Off mode.

1 - 5 sec	4 - 8 sec	7 - 15 sec
2 - 6 sec	5 - 9 sec	8 - 20 sec
3 - 7 sec	6 - 10 sec*	9 - 30 sec

18 = Predictive Grace Time
Time period after Predictive Exit Time that sensor rescans the room for remaining occupants. Applicable only when sensor is in Predictive Off mode.

1 - 0 sec	4 - 20 sec	7 - 50 sec
2 - 5 sec	5 - 30 sec*	8 - 60 sec
3 - 10 sec	6 - 40 sec	

19 = Fade On Rate
Time required for light to reach preset level.

1 - 0.75 sec*	3 - 5 sec
2 - 2.5 sec	4 - 15 sec

20 = Fade Off Rate
Time required for light to turn Off.

1 - 0.75 sec	3 - 5 sec
2 - 2.5 sec*	4 - 15 sec

21 = Start Level
Level of light output when occupancy is initially detected. Not applicable in Automatic Dimming Control (ADH) mode.

1 - 10%	4 - 40%	7 - 70%	10 - 100%*
2 - 20%	5 - 50%	8 - 80%	
3 - 30%	6 - 60%	9 - 90%	

*** Default Setting**
1. Not Applicable with Vacancy (VA) Option

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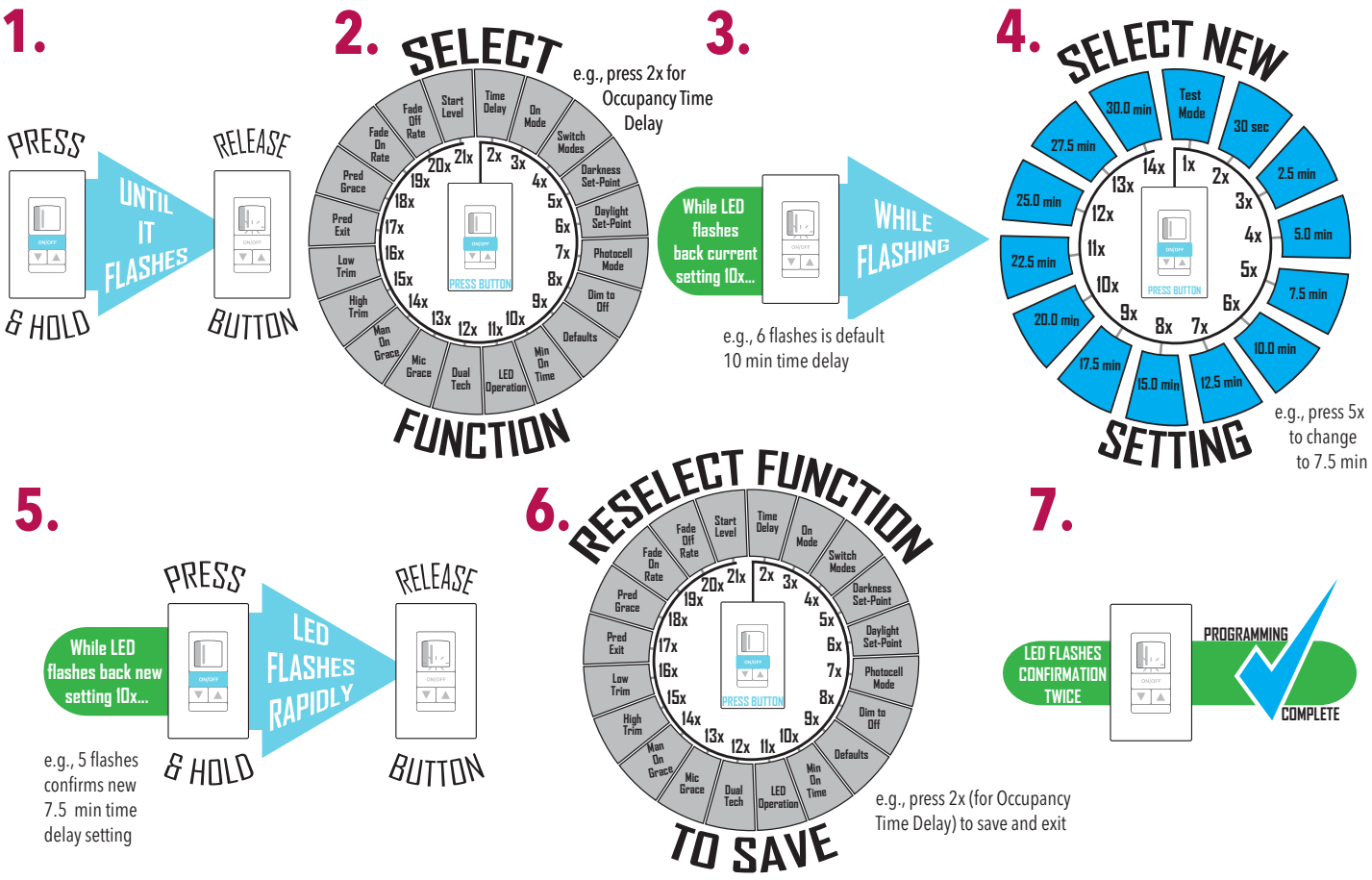
PROGRAMMING INSTRUCTIONS

Operational settings can be changed via the push-button sequence outlined below (note the example used is for changing occupancy time delay).



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DIVISION 26 – ELECTRICAL

SPECIFICATION SECTION:

- 260924 – DAYLIGHTING CONTROLS

Catalog Number: | Date: | Project:

OVERVIEW

The **nCM ADCX RJB** and **nCM PC RJB** photocell sensors are ceiling/surface mount devices that provide a range of daylight harvesting features for nLight Control System installations with finished ceilings (e.g. ceiling tiles, sheetrock, plaster). The **nCM PC RJB** version provides on/off photocell control by default, while the **nCM ADCX RJB** provides automatic dimming photocell control by default. Ideal for spaces with windows, such as vestibules, corridors, classrooms, or offices, these sensors work by first monitoring daylight conditions in a room. They then signal networked nLight control devices to adjust their dimming outputs (and/or turn lighting off) to obtain maximum energy savings while ensuring adequate lighting levels are maintained.

The **nCM ADCX RJB** sensor controls nLight enabled luminaires (e.g. **VTLED** Family from Lithonia), nLight dimming relay packs (e.g. **nPP16 D** or **nSP5 PCD**), or auxiliary dimming output devices (e.g. **nIO D**). The **nCM PC RJB** switches nLight enabled luminaires or any relay/dimming device in an nLight system (e.g. **nPP16).** Both sensors can also be used together with nLight occupancy sensors. Manual override or adjustment of the dimming level is possible via WallPod dimmers or through the SensorView software.

Both versions are powered via the nLight network bus and can communicate with one or more nLight enabled luminaires or nLight relay/dimming packs to enable control of fixtures individually or in groups. These configurations work standalone and do not require a connection to a larger nLight network.

FEATURES

- Automatic Dimming Photocell Control (**nCM ADCX RJB** model only)
- Full On/Off Photocell Switching Control (disabled by default on **nCM ADCX RJB**)
- Optional Inhibit mode: Photocell can prevent lights from turning on if adequate daylight is available, but does turn lights off (**nCM PC RJB** model only)
- LED status indicator
- Adjustable settings (e.g. set-point) via push-button or SensorView software application
- Broadcasts photocell information over a local nLight channel
- Remotely upgradeable firmware

Warranty

Five-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application.
Specifications subject to change without notice.

A+ Capable

This item is an A+ capable component, which has been designed and tested to provide out-of-the-box luminaire compatibility with simple commissioning, when included as part of an A+ Certified™ Solution.

To learn more about A+, visit www.acuitybrands.com/aplus.

AcuityControls

nLight®

nCM ADCX RJB
nCM PC RJB

Daylight Harvesting Photocell

A+ CAPABLE | c UL us LISTED

ORDERING INFORMATION

nCM			Example: nCM ADCX RJB
Series / Photocell Control Type	**Dual Zone**	**Temp / Humidity**	**RJ45 Port Location**
nCM ADCX Automatic Dimming Control Photocell	[blank] Single Zone Control	[blank] Standard	RJB Rear RJ45 (CAT5e patch cable & RJ45 splitter included)
nCM PC On/Off Control Photocell	DZ Dual Zone Control	LT Low Temp / High Humidity	

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SPECIFICATIONS

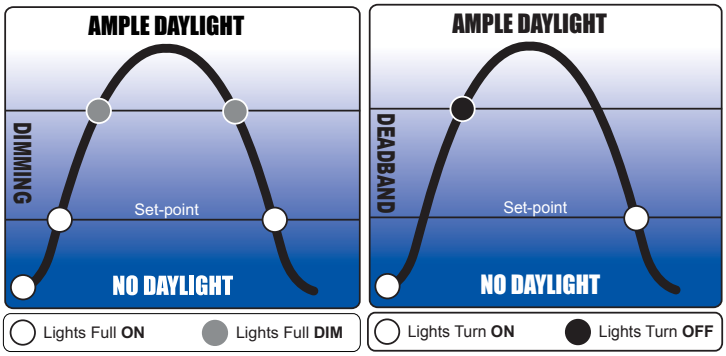
Size:	4.55" Dia. (11.56 cm) 1.55" Deep (3.94 cm)
Weight:	6 oz
Mounting:	Ceiling Tile / Sheetrock Surface
	3.5" Octagon Box
	Single Gang Handy Box
Color:	Matte White
nLight Network Ports:	2 RJ-45 (via an included RJ45 splitter)
Bus Power Consumption:	~3 mA
Wires/Cables:	(1) 1ft CAT5e patch cable (factory installed)
Temperature Rating:	Standard: -10° C to 85° C
	LT Option: -20° C to 85° C

RoHS Compliant, Title 24 System Component

PHOTOCELL OPERATION

The **nCM ADCX RJB** sensor continuously adjusts a space's lighting to achieve maximum daylight harvesting while maintaining a minimum light level, referred to as the set-point. When no daylight is available, the sensor allows the controlled dimmable lighting to operate at its full bright level. As daylight increases and begins to contribute to the overall light level of the room, the Automatic Dimming Control (ADC) feature starts dimming the room proportionally, eventually reaching the full dim level (or optionally switching off, see paragraph below). As the daylight levels fall, the ADC feature will again take control of the lights; reducing the dim level (increasing the brightness) in order to achieve the necessary total light level. At the point when all daylight contribution is gone, lighting will be back at its full bright level.

The **nCM PC RJB** sensor does not control dimming, but instead signals nLight devices located elsewhere within the sensor's zone to switch a controlled lighting load on when more light is needed. The lights are also signaled to turn off when light is above the set-point plus a 10% safety factor and deadband. The safety factor will prevent the system from cycling when the light level is very near the set-point. The deadband is the level of light contributed by the artificial lights being controlled. This level is tracked so if the lighting conditions change (for example a lamp burns out) the point at which the lights turn off is adapted accordingly. If the photocell can not view the lights being controlled (for example if it is looking up at skylights), there is no deadband and the sensor is said to be working open loop. There is also an adaptive cloud delay (optional) before the photocell turns the lights off to prevent the system from cycling on a cloudy day.



AUTOMATIC DIMMING (nCM ADCX RJB) **ON/OFF CONTROL (nCM PC RJB)**

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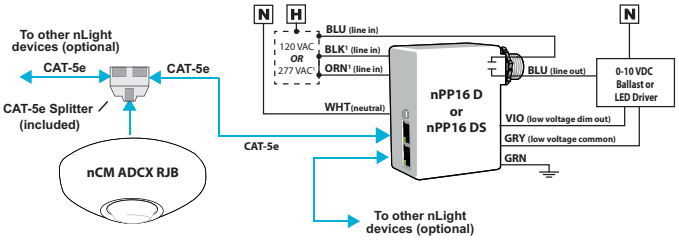
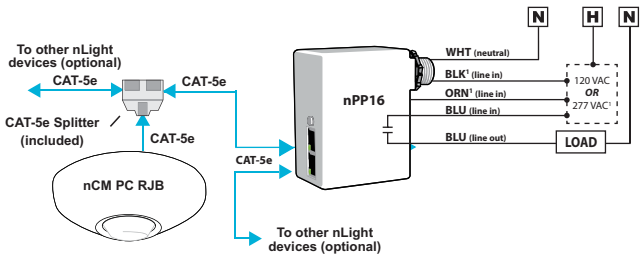
WIRING

T568B pin/pair assignment is recommended for all CAT-5e cables. Sensor power is provided via the CAT-5e connection to an nLight power pack/supply, nLight enabled digital luminaire, or nLight Bridge.

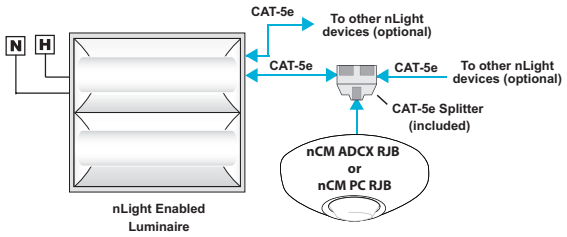
Wiring an nCM ADCX RJB to an nLight Dimming Relay Pack



Wiring an nCM PC RJB to an nLight Relay Pack



Wiring to an nLight Enabled Luminaire



Note 1
BLK - 120 VAC
ORN - 277 VAC (or 347 VAC if unit has 347 option)

DEVICE SETTINGS

Several operational settings for the **nCM ADCX RJB** and **nCM PC RJB** are available and configurable through the unit's push-button and/or SensorView software, including:

Common Settings:
- Photocell Broadcasting (Enable/Disable)
- Photocell Broadcasting Channel (1-16)
- LED Indicator (Enabled/Disable)
- Automatic Set-point Calibration Mode
- Blink-back Set-point (in footcandles)
- Set-point (0-200 fc)
- Sunlight Discount Factor (1-10)
- Photocell On/Off Transition Time (45 sec - 25 min)

nCM PC RJB Specific Settings:
- Adaptive Cloud Delay (Enable/Disable)

nCM PC DZ RJB Specific Settings:
- Photocell Pole 2 Broadcasting Channel (1-16)
- Photocell Mode:
  - ¤ Duo - Automatic step dimming
  - ¤ Duo (Never off) - Automatic step dimming with one load always left on
  - ¤ Inhibit - Loads will be held off if sufficient daylight present, but once on will not turn off from daylight
- Dual Zone Off-Point (110 to 200%)

nCM ADCX RJB Specific Settings:
- Override (Full Dim/Full Bright/Normal)
- Switch Tracking (Enable/Disable)
- Switch Tracking Channel (1-16)
- WallPod Dimming Adjustment (Temporary, Photocell Temporary Override, Permanent)
- Occupied Bright Level (1-100%)
- Unoccupied Dim Level (1-100%)
- Dimming Rate
- Photocell On/Off (Enable/Disable)

nCM ADCX DZ RJB
- Photocell Pole 2 Broadcasting Channel (1-16)
- Dual Zone Percentage Offset (-200 to 200%)
- Dual Zone Off-Point (110 to 200%)

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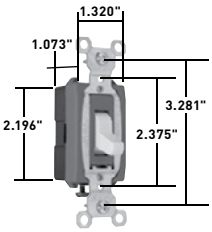
DIVISION 26 – ELECTRICAL

SPECIFICATION SECTION:

- 262726 – WIRING DEVICES

SWITCHES

Hard Use & Commercial Specification Grade Switches 15 & 20A, 120/277VAC



15 & 20 Amp

Features

- One-piece brass alloy contact arm for reliable electrical performance.
- One-piece steel strap with integral ground is plated for corrsion resistance.
- High strength thermoplastic polycarbonate toggle resists breaking and chipping under heavy abuse.
- Heavy-duty toggle bumpers for smooth and quiet operation.
- Back body made of glass-reinforced nylon.
- Locking support provides resistance to face and back body separation.
- Available with side wire or external screw-pressure-plate back and side wire models capable of accepting #14 – #10 AWG copper or copper-clad wire.
- Cam designed for fast make with positive break action to minimize arcing and prolong switch life.
- Oversized silver alloy contacts for longer dependable switch life.
- Tri-drive terminal and mounting screws.
- Auto-ground clip assures positive ground.

CATALOG NUMBER				RATING		COLOR	3rd PARTY COMPLIANCE		
SINGLE POLE	DOUBLE POLE	THREE-WAY	FOUR-WAY	A.	VAC		UL20	FSUL WS896	C22.2 111
HARD USE SPECIFICATION GRADE BACK & SIDE WIRE									
CSB15AC1I	CSB15AC2I	CSB15AC3I	CSB15AC4I	15	120/277	Ivory	•	•	•
CSB15AC1W	CSB15AC2W	CSB15AC3W	CSB15AC4W	15	120/277	White	•	•	•
CSB15AC1	CSB15AC2	CSB15AC3	CSB15AC4	15	120/277	Brown	•	•	•
CSB15AC1GRY	CSB15AC2GRY	CSB15AC3GRY	CSB15AC4GRY	15	120/277	Gray	•	•	•
CSB15AC1LA	CSB15AC2LA	CSB15AC3LA	CSB15AC4LA	15	120/277	Light Almond	•	•	•
CSB20AC1I	CSB20AC2I	CSB20AC3I	CSB20AC4I	20	120/277	Ivory	•	•	•
CSB20AC1W	CSB20AC2W	CSB20AC3W	CSB20AC4W	20	120/277	White	•	•	•
CSB20AC1	CSB20AC2	CSB20AC3	CSB20AC4	20	120/277	Brown	•	•	•
CSB20AC1BK		CSB20AC3BK		20	120/277	Black	•	•	•
CSB20AC1GRY	CSB20AC2GRY	CSB20AC3GRY	CSB20AC4GRY	20	120/277	Gray	•	•	•
CSB20AC1LA	CSB20AC2LA	CSB20AC3LA	CSB20AC4LA	20	120/277	Light Almond	•	•	•

CATALOG NUMBER		RATING		COLOR	3rd PARTY COMPLIANCE		
SINGLE POLE	THREE-WAY	A.	VAC		UL20	FSUL WS896	C22.2 111
COMMERCIAL SPECIFICATION GRADE SIDE WIRE							
CS15AC1I	CS15AC3I	15	120/277	Ivory	•	•	•
CS15AC1W	CS15AC3W	15	120/277	White	•	•	•
CS15AC1	CS15AC3	15	120/277	Brown	•	•	•
CS15AC1GRY	CS15AC3GRY	15	120/277	Gray	•	•	•
CS15AC1BK	CS15AC3BK	15	120/277	Black	•	•	•
CS15AC1LA	CS15AC3LA	15	120/277	Light Almond	•	•	•
CS20AC1I	CS20AC3I	20	120/277	Ivory	•	•	•
CS20AC1W	CS20AC3W	20	120/277	White	•	•	•
CS20AC1	CS20AC3	20	120/277	Brown	•	•	•
CS20AC1GRY	CS20AC3GRY	20	120/277	Gray	•	•	•
CS20AC1LA	CS20AC3LA	20	120/277	Light Almond	•	•	•

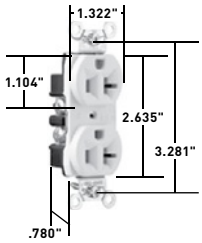
For Bulk Packaging Solutions consult factory.

PLEASE SPECIFY COLOR/FINISH

All devices listed on this page conform to NEMA WD-1 and WD-6.

STRAIGHT BLADE RECEPTACLES

Construction Specification Grade Receptacles 15 & 20A, 125V



CRB5362I

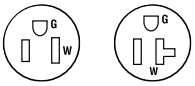
Features

- Corrosion-resistant, plated steel strap locked in to face and back body to resist pulling away from face/body assembly.
- .032 inch thick, brass, triple-wipe power contacts for lasting retention.
- Easily accessed break-off, line-contact connecting tab for fast, easy split-circuit wiring.
- Impact-resistant nylon face and thermoplastic back body.
- 8 hole internal screw-pressure-plate back wire terminals accept #10 – 14 AWG solid or stranded copper or copper-clad conductors.
- Terminal compartments isolated from each other for positive conductor containment.
- Tri-drive terminal and mounting screws.
- Auto-ground clip assures positive ground.

CATALOG NUMBER	RATING A.	RATING V.	COLOR	NEMA CONFIG. NO.	3rd PARTY COMPLIANCE UL498	FSUL WC596	C22.2 No. 42
DUPLEX RECEPTACLES BACK & SIDE WIRE							
CRB5262I	15	125	Ivory	5-15R	•	•	•
CRB5262W	15	125	White	5-15R	•	•	•
CRB5262	15	125	Brown	5-15R	•	•	•
CRB5262GRY	15	125	Gray	5-15R	•	•	•
CRB5262BK	15	125	Black	5-15R	•	•	•
CRB5262RED	15	125	Red	5-15R	•	•	•
CRB5262LA	15	125	Light Almond	5-15R	•	•	•
CRB5362I	20	125	Ivory	5-20R	•	•	•
CRB5362W	20	125	White	5-20R	•	•	•
CRB5362	20	125	Brown	5-20R	•	•	•
CRB5362GRY	20	125	Gray	5-20R	•	•	•
CRB5362BK	20	125	Black	5-20R	•	•	•
CRB5362RED	20	125	Red	5-20R	•	•	•
CRB5362LA	20	125	Light Almond	5-20R	•	•	•

PLEASE SPECIFY COLOR/FINISH

2 Pole, 3 Wire



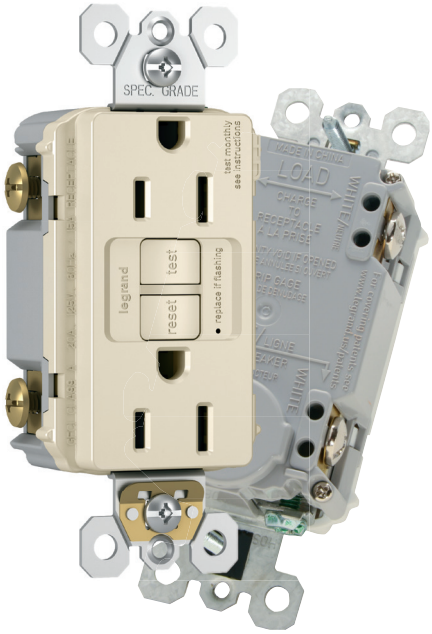
NEMA 5-15R **NEMA 5-20R**

For Bulk Packaging Solutions consult factory.

All devices listed on this page conform to NEMA WD 1 and WD-6.

PASS & SEYMOUR®
Specification Grade Self-Test GFCIs
15 & 20A, 125VAC

1597, 2097, 1597NTLTR, 2097NTLTR, 1597TR, 2097TR, 1597TRWR, 2097TRWR, 1597TRR, 2097TRR, 1597TRA, 2097TRA, 1597IGTR, 2097IGTR, 1597SWTTR, 2097NA, 1597TRNA, 2097TRNA, 1597TRWRNA, 2097TRWRNA



Reinventing Safety All Around

The new Pass & Seymour® Self-Test GFCI receptacle with SafeLock® Protection conducts an automatic test every three seconds, ensuring it's always ready to protect. If the device fails the test, the indicator light flashes to signal that the GFCI should be replaced. It also has our proven SafeLock Protection feature: if critical components are damaged and protection is lost, power to the receptacle is disconnected.

For Hospital Grade, refer to SF708R5.

FEATURES & BENEFITS

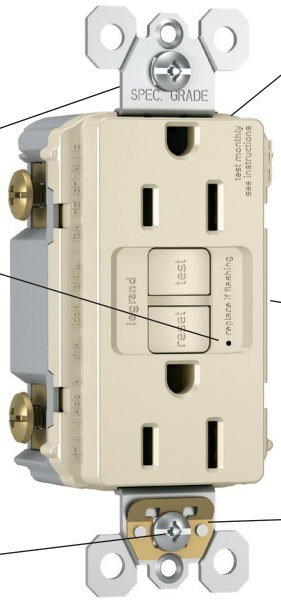
Patented SafeLock® Protection: if critical components are damaged and ground fault protection is lost, power to the receptacle is disconnected.

Tamper-resistant automatic shutter system prevents young children from inserting common household objects.

The indicator light flashes if the device fails the self-test, signalling that the GFCI should be replaced.

Side or internal screw-pressure-plate back wire termination with #14 – #10 AWG stranded or solid, copper or copper-clad conductors.

Captive screws make for easier installation.



Ground terminal clamp allows for fast installation.

Two back-wire holes per termination add wiring flexibility, eliminate pigtailing and save box space.

Prevents line-load reversal miswire: No power to the face or downstream receptacles if wired incorrectly.

High-impact-resistant, thermoplastic construction for superior strength and durability.

Thinner profile speeds installation by leaving more room for wires in the box.

Auto-ground clip assures a positive ground to metal box.

The most durable GFCI available. Exceeds UL943 voltage surge requirements.

Meets 2015 UL Requirements

2097LA

FIELD USES/VERTICAL MARKETS

- Industrial
- Retail
- Healthcare
- Office
- Education
- Hospitality/Lodging
- Institutional
- Multiple Dwelling

PASS & SEYMOUR®
Specification Grade Self-Test GFCIs
15 & 20A, 125VAC

ORDERING INFORMATION

Catalog Number	Description	Ratings	Colors	NEMA Config.
Specification Grade Self-Test GFCI Receptacles				
1597TR*	TradeMaster/Spec Grade Tamper-Resistant 15 Amp Duplex GFCI	15A 125V	I, W, –, BK, LA, NI, AB, DB	5-15R
1597*	TradeMaster/Spec Grade 15 Amp Duplex GFCI	15A 125V	I, W, –, GRY, BK, RED, LA	5-15R
1597TRA*	TradeMaster Audible Alarm Tamper-Resistant Duplex GFCI	15A 125V	I, W, –, BK LA	5-15R
1597SWTTR*CC4	Combination Tamper-Resistant Switch/GFCI (No Federal Specification)	15A 125V	I, W, BK, LA	5-15R
1597NTLTR*CC4	Combination Tamper-Resistant 15 Amp Night Light/GFCI	15A 125V	I, W, BK, LA, NI, AB, DB	5-15R
1597TRWR*	TradeMaster/Spec Grade Weather-Resistant 15 Amp Duplex GFCI	15A 125V	I, W, –, GRY, BK, LA	5-15R
1597TRR*	RoHS-Compliant TradeMaster/Spec Grade Tamper-Resistant 15 Amp Duplex GFCI	15A 125V	I, W, LA	5-15R
2097TR*	Spec Grade Tamper-Resistant 20 Amp Duplex GFCI	20A 125V	I, W, –, GRY, BK, RED, LA	5-20R
2097*	Spec Grade 20 Amp Duplex GFCI	20A 125V	I, W, –, GRY, BK, RED, LA	5-20R
1597IGTR*	Spec Grade Isolated Ground Tamper-Resistant Duplex GFCI	15A 125V	I, W, LA, O	5-15R
2097IGTR*	Spec Grade Isolated Ground Tamper-Resistant Duplex GFCI	20A 125V	I, W, GRY,	5-20R
2097NTLTR*	Combination Tamper-Resistant 20 Amp Night Light/GFCI	20A 125V	I, W, GRY, LA	5-20R
2097TRWR*	Spec Grade Weather-Resistant 20 Amp Duplex GFCI	20A 125V	I, W, –, GRY, BK, LA	5-20R
2097TRA*	Spec Grade Audible Alarm Tamper-Resistant 20 Amp Duplex GFCI	20A 125V	I, W, –, GRY, BK, RED, LA	5-20R
2097TRR*	RoHS-Compliant TradeMaster/Spec Grade Tamper-Resistant 20 Amp Duplex GFCI	20A 125V	I	5-20R
1597TRNA*	NAFTA-Compliant TradeMaster/Spec Grade Tamper-Resistant Duplex GFCI	15A 125V	I, W, –, GRY, BK, LA	5-15R
2097TRNA*	NAFTA-Compliant TradeMaster/Spec Grade Tamper-Resistant Duplex GFCI	20A 125V	I, W, GRY, LA	5-20R
2097NA*	NAFTA-Compliant TradeMaster/Spec Grade 20 Amp Duplex GFCI	20A 125V	I, W, –, GRY, LA, BL	5-20R
1597TRWRNA*	NAFTA-Compliant Tamper-Resistant Weather-Resistant Duplex GFCI	15A 125V	I, W, –, LA	5-15R
2097TRWRNA*	NAFTA-Compliant Tamper-Resistant Weather-Resistant Duplex GFCI	20A 125V	I, W, –, GRY, LA	5-20R

NEMA 5-15R

NEMA 5-20R

*Color Designation

I	Ivory	–	Brown	BK	Black	LA	Light Almond
W	White	GRY	Gray	RED	Red	NI	NIckel
AB	Antique Brass	DB	Dark Bronze	O	Orange	BL	Blue

PLEASE SPECIFY COLOR/FINISH

For more information on these and other P&S products refer to our Catalog or visit our web site.

PASS & SEYMOUR®
Specification Grade Self-Test GFCIs
15 & 20A, 125VAC

legrand®

TECHNICAL SPECIFICATIONS

3rd Party Compliance

cULus Listed File Number E42190, Standard UL498 Attachment Plugs and Receptacles, UL943 GFCIs. Federal Specification WC596, Hospital Grade. Standard CSA C22.2 No. 42 General Use Receptacles, CSA C22.2 No. 144 GFCIs. Conforms to NEMA WD-1 and WD-6.

Performance

Electrical	
Dielectric Voltage	Withstands 1500V minimum
Trip Level	4 to 6 mA
Trip Time	.025 Second Nominal
Frequency	60 Hz
Maximum Working Voltage	125VAC
Voltage Range	102-132VAC
Mechanical	
Terminal Identification	Terminals identified in accordance with UL498 (Hot, White, Green)
Terminal Accommodation	#14 AWG – #10 AWG solid or stranded copper conductor only
Product Identification	Ratings are a permanent part of device
Environmental	
Operating Temperature	-35°C to +66°C
Maximum Humidity	95%
Flammability	UL94 V2

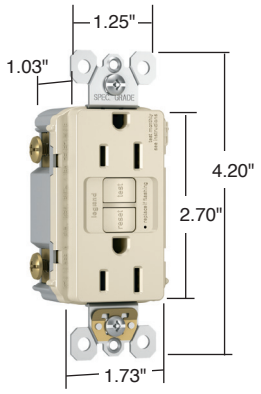
Material Specs

Face: Nylon
Body: Nylon
Contacts: .03" Brass (.8)
Mounting Straps: Galvanized Steel
Terminal Screws: Nickel-Plated Steel #8 - 32
Hex Head Grounding Screw: Steel (Green)
Flat Head Mounting Screws: Zinc-Plated Steel
Test/Reset Buttons: Nylon
Auto-Ground Clip: Brass Alloy
*Nightlight Lens: Lexan®
**Tamper-Resistant Shutter: Thermoplastic

***For 1597NTL and 2097NTL Nightlight versions only.**
****For 1597TR and 2097TR Tamper-Resistant versions only.**

Warranty

1 Year



Dimensions for 15 & 20 Amp

Audible Alarm

NIghtlight/GFCI

Weather-Resistant

Tamper-Resistant

ALSO AVAILABLE...

- USB Charging Devices
- PlugTail® Devices
- Surge Protective & Isolated Ground Devices
- Ground Continuity Monitoring (GCM)
- Straight Blade Plugs & Connectors
- Turnlok® Locking Devices
- Weatherproof Boxes & Covers
- IEC 309 Industrial Products
- Flexcor® Wire Mesh Grips
- Night Lights

Electrical Wiring Systems
P.O. Box 4822
Syracuse, NY 13221-4822
Phone: 1.800.776.4035
www.legrand.us/passandseymour

570 Applewood Crescent
Vaughan, Ontario L4K 4B4
Phone:905.738.9195
www.legrand.ca

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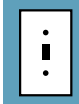
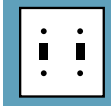
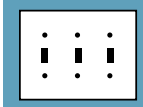
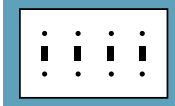
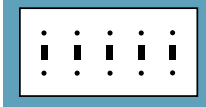
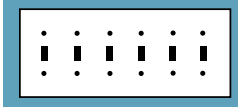
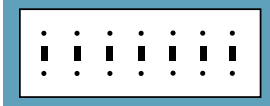
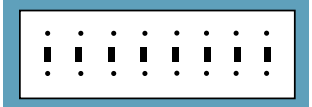
WALL PLATES

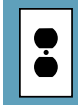
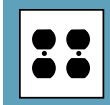
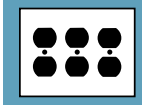
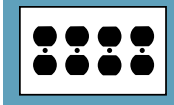
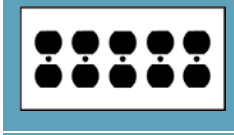
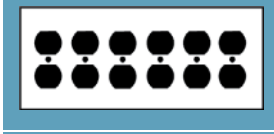
Toggle Switch Openings Standard Size Plastic & Metal

DESCRIPTION	COLOR	NYLON TRADEMASTER® PLATES	THERMOSET SMOOTH	METAL MATERIAL	METAL SMOOTH
TOGGLE SWITCH OPENINGS					
One Gang 	Ivory	TP1I	SP1I	Aluminum	SA1
	White	TP1W	SP1W	Brass	SB1
	Brown	TP1	SP1	Polished Brass	SB1PB
	Gray	TP1GRY	SP1GRY	430S/S	SL1
	Black	TP1BK		302/304 S/S	SS1
	Red	TP1RED		Brushed Bronze	SB1BZ
	Light Almond	TP1LA	SP1LA	Chrome	SB1CH
Two Gang 	Ivory	TP2I	SP2I	Aluminum	SA2
	White	TP2W	SP2W	Brass	SB2
	Brown	TP2	SP2	Polished Brass	SB2PB
	Gray	TP2GRY	SP2GRY	430S/S	SL2
	Black	TP2BK		302/304 S/S	SS2
	Red	TP2RED		Brushed Bronze	SB2BZ
	Light Almond	TP2LA	SP2LA	Chrome	SB2CH
Three Gang 	Ivory	TP3I	SP3I	Aluminum	SA3
	White	TP3W	SP3W	Brass	SB3
	Brown	TP3	SP3	Polished Brass	SB3PB
	Gray	TP3GRY	SP3GRY	430S/S	SL3
	Black	TP3BK		302/304 S/S	SS3
	Red	TP3RED		Brushed Bronze	SB3BZ
	Light Almond	TP3LA	SP3LA	Chrome	SB3CH
Four Gang 	Ivory	TP4I	SP4I	Aluminum	SA4
	White	TP4W	SP4W	Brass	SB4
	Brown	TP4	SP4	Polished Brass	SB4PB
	Gray	TP4GRY	SP4GRY	430S/S	SL4
	Black	TP4BK		302/304 S/S	SS4
	Red	TP4RED			
	Light Almond	TP4LA	SP4LA		
Five Gang 	Ivory	TP5I	SP5I		
	White	TP5W	SP5W	Brass	SB5
	Brown	TP5	SP5	Polished Brass	SB5PB
	Gray	TP5GRY	SP5GRY		
	Black	TP5BK		302/304 S/S	SS5
	Light Almond	TP5LA	SP5LA		
Six Gang 	Ivory	TP6I	SP6I		
	White	TP6W	SP6W	Polished Brass	SB6PB
	Brown	TP6			
	Gray	TP6GRY	SP6GRY	302/304 S/S	SS6
	Black	TP6BK			
	Light Almond	TP6LA	SP6LA		
Seven Gang 				302/304 S/S	SS601
				302/304 S/S Painted Ivory	SS601I
				302/304 S/S Painted White	SS601W
Eight Gang 				302/304 S/S	SS602
				302/304 S/S Painted Ivory	SS602I
				302/304 S/S Painted White	SS602W

These products listed to UL514, Cover Plates for Flush-Mounted Wiring Devices - Covers Only.

WALL PLATES

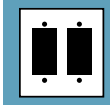
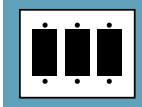
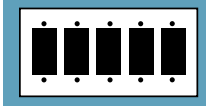
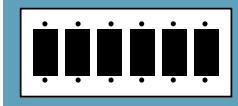
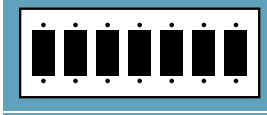
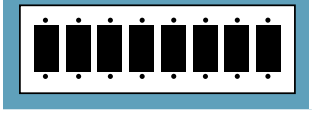
Duplex Receptacle & Decorator Openings Standard Size Plastic & Metal

DESCRIPTION	COLOR	NYLON TRADEMASTER® PLATES	THERMOSET SMOOTH	METAL MATERIAL	METAL SMOOTH
DUPLEX RECEPTACLE OPENINGS					
One Gang 	Ivory	TP8I	SP8I		
	White	TP8W	SP8W	Aluminum	SA8
	Brown	TP8	SP8	Brass	SB8
	Gray	TP8GRY	SP8GRY	Polished Brass	SB8PB
	Black	TP8BK		430S/S	SL8
	Red	TP8RED		302/304 S/S	SS8
	Light Almond	TP8LA	SP8LA	Brushed Bronze	SB8BZ
	Blue	TP8BL		Chrome	SB8CH
	Orange	TP8OR			
Two Gang 	Ivory	TP82I	SP82I		
	White	TP82W	SP82W	Aluminum	SA82
	Brown	TP82	SP82	Brass	SB82
	Gray	TP82GRY	SP82GRY	Polished Brass	SB82PB
	Black	TP82BK		430S/S	SL82
	Red	TP82RED		302/304 S/S	SS82
	Light Almond	TP82LA	SP82LA	Brushed Bronze	SB82BZ
	Orange	TP82OR		Chrome	SB82CH
Three Gang 	Ivory		SP83I		
	White		SP83W	Brass	SB83
	Brown		SP83	Polished Brass	SB83PB
	Gray		SP83GRY		
	Light Almond		SP83LA	302/304 S/S	SS83
Four Gang 	Ivory		SP84I		
	White		SP84W	Polished Brass	SB84PB
	Brown		SP84		
	Gray		SP84GRY	302/304 S/S	SS84
Five Gang 				302/304 S/S	SS85
Six Gang 				302/304 S/S	SS86
DECORATOR OPENINGS					
One Gang	Ivory	TP26I	SP26I		
	White	TP26W	SP26W	Aluminum	SA26
	Brown	TP26	SP26	Brass	SB26
	Gray	TP26GRY	SP26GRY	Polished Brass	SB26PB
	Black	TP26BK	SP26BK	430S/S	SL26
	Red	TP26RED		302/304 S/S	SS26
	Light Almond	TP26LA	SP26LA	Brushed Bronze	SB26BZ
	Blue	TP26BL		Chrome	SB26CH
	Orange	TP26OR			

These products listed to UL514, Cover Plates for Flush-Mounted Wiring Devices, CSA Certified.

WALL PLATES

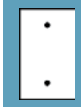
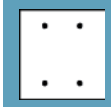
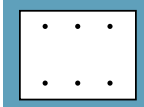
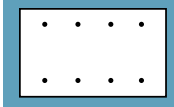
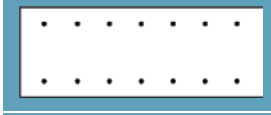
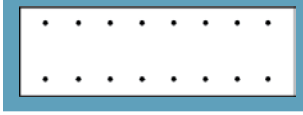
Decorator Openings Standard Size Plastic & Metal

DESCRIPTION	COLOR	NYLON TRADEMASTER® PLATES	THERMOSET SMOOTH	METAL MATERIAL	METAL SMOOTH
DECORATOR OPENINGS					
Two Gang 	Ivory	TP262I	SP262I		
	White	TP262W	SP262W	Aluminum	SA262
	Brown	TP262	SP262	Brass	SB262
	Gray	TP262GRY	SP262GRY	Polished Brass	SB262PB
	Black	TP262BK	SP262BK	430S/S	SL262
	Red	TP262RED		302/304 S/S	SS262
	Light Almond	TP262LA	SP262LA		
	Blue	TP262BL			
	Orange	TP262OR			
Three Gang 	Ivory	TP263I	SP263I		
	White	TP263W	SP263W	Brass	SB263
	Brown	TP263		Polished Brass	SB263PB
	Gray	TP263GRY	SP263GRY		
	Black	TP263BK	SP263BK	302/304 S/S	SS263
	Red	TP263RED			
	Light Almond	TP263LA	SP263LA		
Four Gang	Ivory	TP264I	SP264I		
	White	TP264W	SP264W	Brass	SB264
	Brown	TP264	SP264	Polished Brass	SB264PB
	Gray	TP264GRY	SP264GRY		
	Black	TP264BK	SP264BK	302/304 S/S	SS264
	Red	TP264RED			
	Light Almond	TP264LA	SP264LA		
Five Gang 	Ivory	TP265I	SP265I		
	White	TP265W	SP265W		
	Brown	TP265		302/304 S/S	SS265
	Gray	TP265GRY	SP265GRY		
	Black	TP265BK	SP265BK		
	Red		SP265RED		
	Light Almond	TP265LA	SP265LA		
Six Gang 	Ivory	TP266I	SP266I		
	White	TP266W	SP266W		
	Brown	TP266	SP266	302/304 S/S	SS266
	Gray	TP266GRY	SP266GRY		
	Black	TP266BK	SP266BK		
	Light Almond	TP266LA	SP266LA		
Seven Gang 				302/304 S/S	SS267
				302/304 S/S Painted Ivory	SS267I
				302/304 S/S Painted White	SS267W
Eight Gang 				302/304 S/S	SS268
				302/304 S/S Painted Ivory	SS268I
				302/304 S/S Painted White	SS268W

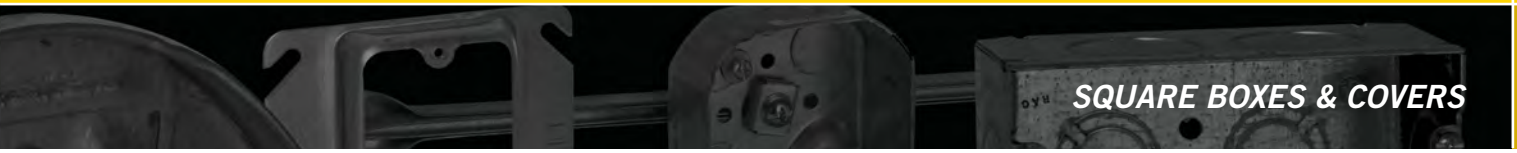
These products listed to UL514, Cover Plates for Flush-Mounted Wiring Devices - Sheet Metal.

WALL PLATES

Blank Plates – Box Mounted Standard Size Plastic & Metal

DESCRIPTION	COLOR	NYLON TRADEMASTER® PLATES	THERMOSET SMOOTH	METAL MATERIAL	METAL SMOOTH
BLANK PLATES – BOX MOUNTED					
One Gang Blank – Box Mtd. 	Ivory	TP13I	SP13I	Aluminum	SA13
	White	TP13W	SP13W	Brass	SB13
	Brown	TP13	SP13	Polished Brass	SB13PB
	Gray	TP13GRY	SP13GRY	430S/S	SL13
	Black	TP13BK		302/304 S/S	SS13
	Red	TP13RED		302/304 S/S (1/2" Screws)	SS13.5
	Light Almond	TP13LA	SP13LA	Brushed Bronze	SB13BZ
				Chrome	SB13CH
Two Gang Blank – Box Mtd. 	Ivory	TP23I	SP23I	Aluminum	SA23
	White	TP23W	SP23W	Brass	SB23
	Brown	TP23	SP23	Polished Brass	SB23PB
	Gray	TP23GRY	SP23GRY	430S/S	SL23
	Black	TP23BK		302/304 S/S	SS23
	Light Almond	TP23LA	SP23LA	302/304 S/S (1/2" Screws)	SS23.5
				Brushed Bronze	SB23BZ
				Chrome	SB23CH
Three Gang Blank – Box Mtd. 	Ivory		SP33I	Polished Brass	SB33PB
	White		SP33W		
	Brown		SP33	302/304 S/S	SS33
	Gray		SP33GRY	302/304 S/S (1/2" Screws)	SS33.5
	Light Almond		SP33LA		
Four Gang Blank – Box Mtd. 	Ivory		SP43I		
	White		SP43W		
	Brown		SP43	302/304 S/S	SS43
	Gray		SP43GRY		
Five Gang Blank – Box Mtd.				302/304 S/S	SS53
Six Gang Blank – Box Mtd.				302/304 S/S	SS63
Seven Gang Blank – Box Mtd. 				302/304 S/S	SS6013
Eight Gang Blank – Box Mtd. 				302/304 S/S	SS6023

These products listed to UL 514, Cover Plates for Flush-Mounted Wiring Devices, CSA Certified.



4" SQUARE EXPOSED WORK COVERS

C3™ CRUSHED CORNER COVERS

800C

801C

803C

804C

805C

806C

807C

808C

809C

810C

811C

812C

813C

814C

815C

816C

817C

830C

831C

902C

906C

907C

915C

CATALOG #	DESCRIPTION	CUBIC IN. (CM3)	STD. PKG.	BARCODE
4" Square, Crushed Corner Covers – *Raised 1/2"*				
800C	1 Toggle Switch	6.5 (106.5)	10	IIIIIIII
801C	1 Receptacle 1.406" Dia.	6.5 (106.5)	10	IIIIIIII
803C	2 Toggle Switches	6.5 (106.5)	10	IIIIIIII
804C	Blank, No Holes	6.5 (106.5)	10	IIIIIIII
805C	1 Toggle Switch and 1 Receptacle 1.406" Dia.	6.5 (106.5)	10	IIIIIIII
806C	1 Duplex and 1 Receptacle 1.406" Dia.	6.5 (106.5)	10	IIIIIIII
807C	2 Receptacles 1.406" Dia.	6.5 (106.5)	10	IIIIIIII
808C	1 GFCI	6.5 (106.5)	10	IIIIIIII
809C	2 GFCI	6.5 (106.5)	10	IIIIIIII
810C	30-50A Receptacle 2.141" Dia.	6.5 (106.5)	10	IIIIIIII
811C	30A Locking 1.719" Dia.	6.5 (106.5)	10	IIIIIIII
812C	20A Receptacle 1.620" Dia.	6.5 (106.5)	10	IIIIIIII
813C	30-60A Receptacle 2.625" Dia.	6.5 (106.5)	10	IIIIIIII
814C	1 GFCI and 1 Toggle Switch	6.5 (106.5)	10	IIIIIIII
815C	1 Receptacle 2.165" Dia., Offset	6.5 (106.5)	10	IIIIIIII
816C	1 Receptacle 2.480" Dia.	6.5 (106.5)	10	IIIIIIII
817C	1 Receptacle 2.275" Dia., Offset	6.5 (106.5)	10	IIIIIIII
830C	1 Receptacle 2.255" Dia.	6.5 (106.5)	10	IIIIIIII
831C	1 Duplex, 1 20A Twist Lock® 1.620" Dia.	6.5 (106.5)	10	IIIIIIII
902C	1 Duplex Receptacle	6.5 (106.5)	10	IIIIIIII
906C	1 Duplex Receptacle and 1 Toggle Switch	6.5 (106.5)	10	IIIIIIII
907C	2 Duplex Receptacles	6.5 (106.5)	10	IIIIIIII
915C	1 GFCI and 1 Duplex Receptacle	6.5 (106.5)	10	IIIIIIII

APPLICATIONS

- RACO® surface covers are used to support switches or receptacles in areas where the box is surface mounted or positioned in exposed work applications

PRODUCT FEATURES

- RACO® exposed work covers include required hardware for mounting the receptacle(s)
- RACO® Exposed work covers meet the requirements of the 2014 NEC Article 250.146 (A). No bonding jumper is required for covers with:
  (1) Crushed corners
  (2) Two or more device attachment screws
  (3) A lockwasher or equivalent
- Hardware and cover are packed in a poly-bag with printed catalog number, compliances and installation instructions

COMPLIANCES

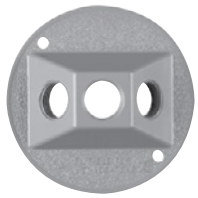
- UL File E195978

WEATHERPROOF BOXES & COVERS

Cluster & Blank Covers

WPB11

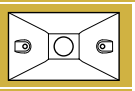
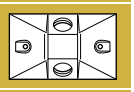
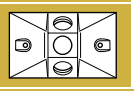
WPRB1


WPRB13

WPB1

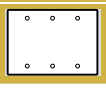
Features

- Wide range of rectangular and round covers.
- Baked-on electrostatic, polyester, powder paint for superior scratch and corrosion resistance.
- Kits available combining fixtures, lamp covers, and accessories.

CATALOG NUMBER	DESCRIPTION	COLOR	3RD PARTY COMPLIANCE	
			c UL us	SP
OUTDOOR LAMP CLUSTER COVERS FOR SINGLE GANG BOXES				
WPB11 WPB11W 	Rectangular Single Gang Cover 1 Hole 1/2"	Gray White	•	•
WPB12 WPB12W 	Rectangular Single Gang Cover 2 Hole 1/2", 1 Plug Furnished	Gray White	•	•
WPB13 WPB13W 	Rectangular Single Gang Cover 3 Hole 1/2", 2 Plugs Furnished	Gray White	•	•
4" ROUND OUTDOOR CLUSTER COVERS				
WPRB1 WPRB1W	Round Blank Cover with Gasket and Screws	Gray White	•	
WPRB11 WPRB11W	Round Cover – 1 Hole 1/2" with Gasket and Screws	Gray White	•	•
WPRB12 WPRB12W	Round Cover – 2 Hole 1/2" with Gasket and Screws 1 Plug Furnished	Gray White	•	•
WPRB13 WPRB13W	Round Cover – 3 Hole 1/2" with Gasket and Screws 2 Plugs Furnished	Gray White	•	•

Features

- Designed for both interior and exterior applications.
- Universal aluminum mounting plates.
- Gray, bronze and white models have baked-on electrostatic, polyester, powder paint for superior scratch and corrosion resistance.

CATALOG NUMBER	DESCRIPTION	COLOR	3RD PARTY COMPLIANCE	
			UL	SP
BLANK COVERS				
WPB1 WPB1G WPB1W	1 Gang Blank Aluminum Cover with Gasket and Screws	Brushed Aluminum Gray White	•	•
WPB2 WPB2G WPB2W	2 Gang Blank Aluminum Cover with Gasket and Screws	Brushed Aluminum Gray White	•	•
WPB3 	3 Gang Blank Aluminum Cover with Gasket and Screws	Brushed Aluminum	•	•

PORTLAND ELECTRICAL CONSTRUCTION INC.

1019 7TH STREET
OREGON CITY, OR 97045
PHONE: 503-655-2281 FAX: 503-655-5033
OR CCB# 51764 WA EC PORTLEC023PE

DIVISION 26 – ELECTRICAL

SPECIFICATION SECTION:

- 265100 - LIGHTING

BEAVERTON CITY HALL

LITHONIA LIGHTING®

Catalog Number	ZL1D L24 1500LM FST MVOLT 35K 80CRI WH
Notes	
Type	

FEATURES & SPECIFICATIONS

INTENDED USE — Built on the compact, low-profile Z strip channel, this LED strip offers long maintenance-free life, several color temperatures, lumen outputs and lengths. Ideal for new construction and retrofit applications in T8 lengths. Ideal for use in commercial, retail, manufacturing, warehouse, and display applications. **Certain airborne contaminants can diminish the integrity of acrylic and/or polycarbonate.** Click here for Acrylic-Polycarbonate Compatibility table for suitable uses.

CONSTRUCTION — Compact-design channel and cover are formed from code-gauge cold-rolled steel. Easy to install six-point row aligner included for continuous row mounting.

Finish: Paint options include high-gloss, baked white enamel (WH), or matte black (MB). After fabrication, five-stage iron phosphate pre-treatment ensures superior paint adhesion and rust resistance.

OPTICS — Standard diffuse snap on/snap off lens eliminates pixels, improves uniformity and minimizes glare.

ELECTRICAL — Utilizes high-output LEDs integrated on a two-layer circuit board, ensuring cool-running operation. Optional internal pluggable wiring harness for reduced labor cost in row mounting applications (see PLR_ ordering information on page 3). Electronic LED driver is rated for 75 input watts maximum (see Operational Data on page two for actual wattage consumption), **multi-volt input and 0-10V dimming standard**. This fixture is designed to withstand a maximum line surge of 1.5kV at 0.75kA combination wave for indoor locations, for applications requiring higher level of protection additional surge protection must be provided.

LEDs provide 80CRI or 90 CRI at 3000 K, 3500 K,4000 K or 5000 K.

Lumen output up to 1,500 lumens per foot. Luminaire should be installed in applications where ambient temperatures do not exceed 86 °F (30 °C).

INSTALLATION — Fixture may be surface mounted (with or without ZSPRG hanger), pendant or stem mounted with appropriate mounting options. Six-point aligner locks in place for easy continuous row mounting.

LISTINGS — CSA certified to US and Canadian safety standards. For use in damp locations between -4 °F (-20 °C) and 86 °F (30 °C).

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

WARRANTY — 5-year limited warranty. Complete warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25 °C.

Specifications subject to change without notice.

LED Striplight

ZL1D

24", 48" and 96" Lengths

A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and out-of-the-box control compatibility with simple commissioning.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is part of an A+ Certified solution for nLight® or XPoint™ Wireless control networks marked by a shaded background*

To learn more about A+, visit www.acuitybrands.com/aplus.

*See ordering tree for details

A+ Capable options indicated by this color background.

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative.

Example: ZL1D L48 3000LM FST MVOLT 40K 80CRI WH

Series	Length	Reflectors[1]	Nominal lumens[2]	Diffuser	Voltage	Color temperature
ZL1D LED striplight	L24 24"	SMR Symmetric	1500LM 1,500 lumens[3]	FST Drop lens	MVOLT 120-277V	30K 3000 K
			2500LM 2,500 lumens[3]		120 120V	35K 3500 K
			3500LM 3,500 lumens		208 208V	40K 4000 K
	L48 48"	ASR Asymmetric	3000LM 3,000 lumens		240 240V	50K 5000 K
		SMR Symmetric	5000LM 5,000 lumens		277 277V	
			7000LM 7,000 lumens		347 347V[4]	
TZL1D LED striplight	L96 96"	SMR Symmetric	6000LM 6,000 lumens		480 480V[4]	
			10000LM 10,000 lumens			
			14000LM 14,000 lumens			

Color rendering index	Options		Paint finish
80CRI 80 CRI	PLR Plug-in wiring[5,6]	Cord sets:[10]	WH White
90CRI 90 CRI	PLR1LVG Plug-in wiring-low voltage[6]	CS1W Straight plug, 120V	MB Matte black
	E7W Emergency battery pack, 7W (not available for California)[7,8]	CS3W Twist-lock, 120V	GALVB Galvanized fixture with black plastic lens endcaps
	2E7W Two Emergency battery packs, 7W[7,8,9]	CS7W Straight plug, 277V	GALVW Galvanized fixture with white plastic lens endcaps
	E10WLCP Emergency battery pack, 10W Linear Constant Power, CA Title 20 compliant[7,8]	CS11W Twist-lock, 277V	
	2E10WLCP Two Emergency battery packs, 10W Linear Constant Power, CA Title 20 Compliant[7,8,9]	CS25W Twist-lock, 347V	
	E15WLCP Emergency battery pack, 15W Linear Constant Power, CA Title 20 compliant[7,8,9]	CS97W Twist-lock, 480V	
	OUTEND Cord set to exit endplate of fixture	CS93W 600V SEOOW white cord, no plug (no voltage required)	

Accessories: *Order as separate catalog number.*

HC36	Hanger chain, 36"
ZACVH	Aircraft cable 10' (one pair)
ZLANGBKT	Luma-tilt™ angle bracket for shelf or ledge mounting only
NPP16D	nLight® switching/dimming module
LSXR	Sensor Switch® LSXR occupancy sensor[5]
ZSPRG	For 15/16" T-grid only
WGZ24	24" wireguard, white
WGZ48	48" wireguard, white[11]
ZLR L24 SYM UPL WH	24" symmetric reflector with uplight, white finish
ZLR L24 SYM WH	24" symmetric reflector, white finish
ZLR L46 SYM UPL WH	46" symmetric reflector with uplight, white finish
ZLR L46 SYM WH	46" symmetric reflector, white finish
ZLR L48 ASY WH	48" asymmetric reflector, white finish
ZLR L48 SYM UPL WH	48" symmetric reflector with uplight, white finish
ZLR L48 SYM WH	48" symmetric reflector, white finish
ZLR L92 SYM UPL WH	92" symmetric reflector with uplight, white finish
ZLR L92 SYM WH	92" symmetric reflector, white finish
ZLR L96 SYM UPL WH	96" symmetric reflector with uplight, white finish
ZLR L96 SYM WH	96" symmetric reflector, white finish

Notes

1 Optional. Reflectors ship separately.

2 See Operational Data on page 2 for actual lumens.

3 Not available with 0-10V dimming option.

4 Not available with L24, 24" fixture. 347V and 480V utilize a step-down transformer.

5 See ordering information on page 5.

6 Not available with cordsets.

7 Not available with L24, 24" fixture. See spec sheet PS1055LCP, PS1555LCP and PS750L for more information.

8 Must specify voltage. 120, 208, 240 or 277V.

9 Only available with the 8' (96") fixtures.

10 Cordsets exit back of fixture unless OUTEND option is specified. Must specify voltage (not required when ordering CS93W).

11 Order 2 for tandem double length fixtures (TZL1D).

ZL1D LED Striplight

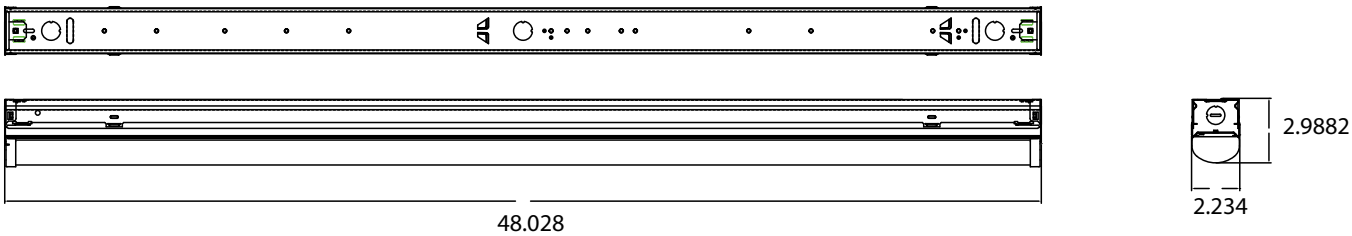
OPERATIONAL DATA												
	Nominal lumen package	Length (inches)	Delivered Lumens 3000 K CCT @ 77°F (25°C) ambient temperature		Delivered Lumens 3500 K CCT @ 77°F (25°C) ambient temperature		Delivered Lumens 4000 K CCT @ 77°F (25°C) ambient temperature		Delivered Lumens 5000 K CCT @ 77°F (25°C) ambient temperature		Wattage @ 120V/277V	Comparable Light Source
			80 CRI	90 CRI	80 CRI	90 CRI	80 CRI	90 CRI	80 CRI	90 CRI		
Lensed	1500LM	24	1985	1619	2030	1675	2061	1707	2137	1745	17	1-lamp 17W T8
	2500LM	24	2682	2187	2742	2264	2785	2307	2887	2358	22	1-lamp 17W T8
	3500LM	24	4099	3341	4190	3459	4255	3524	4412	3603	36	1-lamp 32W T8, 1-lamp 54W T5HO, 50W HID
	3000LM	48	3880	3163	3966	3274	4028	3336	4176	3410	30	1-lamp 32W T8, 1-lamp 54W T5HO, 50W HID
	5000LM	48	5337	4351	5456	4504	5541	4589	5745	4691	41	2-lamp 32W T8, 1-lamp 54W T5HO, 70W HID
	7000LM	48	7317	5965	7480	6175	7596	6291	7876	6431	59	3-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	6000LM	96	8077	6585	8257	6816	8386	6945	8694	7099	60	3-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	10000LM	96	11021	8985	11267	9301	11442	9477	11864	9687	81	4-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	14000LM	96	15397	12553	15741	12995	15986	13240	16574	13534	121	4-lamp 32W T8, 3-lamp 54W T5HO, 150W HID

DIMENSIONS

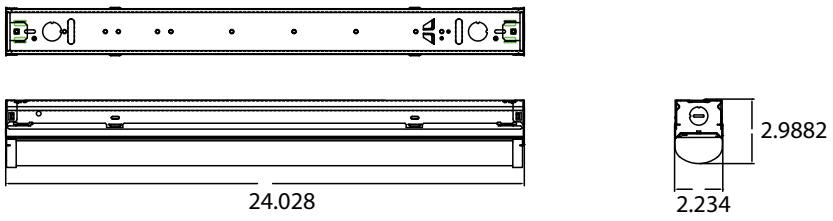
All dimensions are shown in inches (centimeters) unless otherwise noted.

Specifications subject to change without notice.

PALLET DIMENSIONS			
Length	Approximate weight	Fixtures per pallet	Approximate pallet dimensions (L x W x H)
L24	7 lbs.	176	46" X 51" X 31 5/8"
L48	13 lbs.	176	46" X 51" X 31 5/8"
L96	26 lbs.	63	46" X 98 1/2" X 31 3/8"



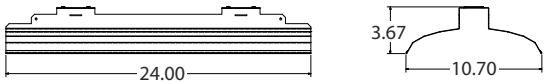
ZL1D L48



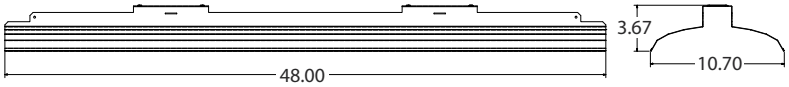
ZL1D L24

REFLECTORS (Optional)

L24 Reflector



L48 Reflector



L96 Reflector

PHOTOMETRICS

Please see www.lithonia.com

PRODUCT INFORMATION

Advanced plug-in system with three-circuit capability. Available on industrial and strip products and a variety of architectural products mounted in continuous rows. 1, 2, 3 and 4-lamp fixtures. PLR22 (2-circuit) and PLR33 (3-circuit) crossover harness switches hot circuit serving next fixture in row. Reduces fixture types on job for alternating circuit applications (see example below.)

Easy one-step installation, saves up to 35% on labor costs. Expanded switching flexibility helps save energy.

Rows can be 50% longer with two-circuit systems. Polarized, lock-together nylon connectors prevent miswiring in the field. #12 THHN conductor, rated 600V, 90°C. White neutral wire included. Grounding accomplished by fixture in-row connectors.

CSA certified systems available with up to 2 circuits. G ground required.

Note: Specifications subject to change without notice.

Wiring

PLR

Advanced 3-Circuit Plug-In

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative.

Series	Number of hot wires	Branch circuits	Dimming	Ground
PLR	(blank) Not required for 22 or 33	Circuits to which ballast is connected	LV Low-voltage dimming	(blank) No ground in PLR
PLR22	1 Black	(blank) Not required for 22 or 33		G Ground. Maximum 2 circuits
PLR33	2 Black and red	A Black wire		
	3 Black, red and blue	B Red wire		
		C Blue wire		

Typical Applications

- Multiple-circuit and single-circuit for longer continuous rows
- Multiple-circuit with alternating fixtures on separate circuits, 2-circuit (PLR 22) and 3-circuit (PLR 33)
- Multiple circuit with night-lights located along row as desired

TYPICAL APPLICATIONS										
PLR 3 C	PLR 3 C	PLR 3 C	PLR 3 C	PLR 2 B	PLR 2 B	PLR 2 B	PLR 2 B	PLR 1	PLR 1	PLR 1
(All PLR22)										
Circuit A	Circuit B	Circuit A	Circuit B	Circuit A	Circuit B	Circuit A	Circuit B	Circuit A	Circuit B	Circuit A
(All PLR33)										
Circuit A	Circuit B	Circuit C	Circuit A	Circuit B	Circuit C	Circuit A	Circuit B	Circuit C	Circuit A	Circuit B
PLR 3 A	PLR 3 A	PLR 3 A	PLR 3 C	PLR 3 B	PLR 3 B	PLR 3 B	PLR 3 C	PLR 3 A	PLR 3 A	PLR 3 A

PRODUCT INFORMATION

A standard occupancy time delay is also present to ensure lights turn off (once minimum on timer has also elapsed) if no occupancy is detected.

This timer is factory set at 10 minutes to promote energy savings, but is adjustable between 30 seconds and 30 minutes. These adjustments may be done through the unit's push-button.

FEATURES

- Four interchangeable lenses - high mount 360°, low mount 360°, high mount aisleway, and small motion 360°.
- Integrated mounting bracket drops lens down 3" from chase nipple - no bracket accessory required.
- 100% digital PIR detection - provides excellent RF immunity

Note: Specifications subject to change without notice.

Passive Infrared Indoor Occupancy Sensor

LSXR

Single Relay

AcuityControls Sensor Switch

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative.

Example: LSXR 10 ADC HVOLT 30M

LSXR

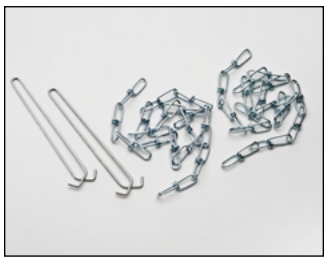
Series	Lens option	Dimming/photocell
LSXR Passive Infrared Indoor Occupancy Sensor	(blank) No lens	(blank) None
	6 High mount, 360®	HL High/low occupancy operation
	10 Low mount, 360°	P Switching photocell (on/off)
	50 High mount aisleway	ADC Dimming and switching photocell
	9 Small motion, 360°	ANL Dimming and switching photocell with high/low occupancy operation
	610 High and low mount 360°	
	650 High mount 360° and aisleway	
	3PK High and low mount 360° and aisleway	
	4PK All lenses	

Voltage	Max dim level	Min dim level	Lead length	Temp humidity	Default time delay
(blank) 120-277 VAC (MVOLT)	(blank) 10 VDC	(blank) Minimum dimming level of ballast	(blank) 14"	(blank) None	(blank) 10 minutes (with minimum 15 minutes on time)
HVOLT 347-480 VAC	9H 9 VDC	1V 1 VDC	42L 42"	LT Low temperature	5M 5 minutes (LED only)
	8H 8 VDC	2V 2 VDC			15M 15 minutes
	7H 7 VDC	3V 3 VDC			20M 20 minutes
		4V 4 VDC			30M 30 minutes
		5V 5 VDC			
		6V 6 VDC			

For additional information see www.lithonia.com

OPTIONS AND ACCESSORIE

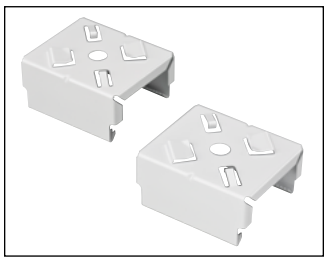
The Z Series fixture offers numerous options for almost every electrical and optical component, including a long list of field-installable accessories.



HANGER CHAIN

36" chain with Y hanger.

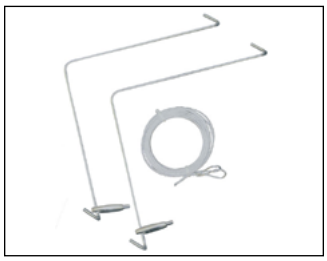
Order as:
HC36



Z SPRING HANGER

Snap 'n' lock design requires no fasteners and can be used on T-grid ceiling or universal mounting systems.

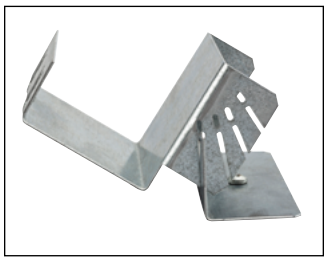
Order as:
ZSPRG



ZACVH HANGER

10' Aircraft cable with Y hanger.

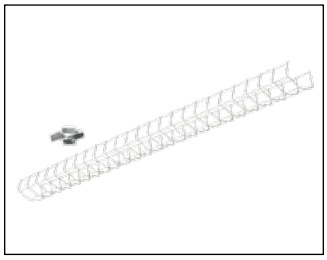
Order as:
ZACVH



ANGLE MOUNTING BRACKET

Luma-tilt™ angle bracket ships as a pair

Order as:
ZLANGBKT



WIRE GUARD

Order as:
WGZ24
WGZ48

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LITHONIA LIGHTING®

Catalog Number	ZL1D L48 3000LM FST MVOLT 35K 80CRI WH
Notes	
Type	

FEATURES & SPECIFICATIONS

INTENDED USE — Built on the compact, low-profile Z strip channel, this LED strip offers long maintenance-free life, several color temperatures, lumen outputs and lengths. Ideal for new construction and retrofit applications in T8 lengths. Ideal for use in commercial, retail, manufacturing, warehouse, and display applications. **Certain airborne contaminants can diminish the integrity of acrylic and/or polycarbonate.** Click here for Acrylic-Polycarbonate Compatibility table for suitable uses.

CONSTRUCTION — Compact-design channel and cover are formed from code-gauge cold-rolled steel. Easy to install six-point row aligner included for continuous row mounting.

Finish: Paint options include high-gloss, baked white enamel (WH), or matte black (MB). After fabrication, five-stage iron phosphate pre-treatment ensures superior paint adhesion and rust resistance.

OPTICS — Standard diffuse snap on/snap off lens eliminates pixels, improves uniformity and minimizes glare.

ELECTRICAL — Utilizes high-output LEDs integrated on a two-layer circuit board, ensuring cool-running operation. Optional internal pluggable wiring harness for reduced labor cost in row mounting applications (see PLR_ ordering information on page 3). Electronic LED driver is rated for 75 input watts maximum (see Operational Data on page two for actual wattage consumption), **multi-volt input and 0-10V dimming standard**. This fixture is designed to withstand a maximum line surge of 1.5kV at 0.75kA combination wave for indoor locations, for applications requiring higher level of protection additional surge protection must be provided.

LEDs provide 80CRI or 90 CRI at 3000 K, 3500 K,4000 K or 5000 K.

Lumen output up to 1,500 lumens per foot. Luminaire should be installed in applications where ambient temperatures do not exceed 86 °F (30 °C).

INSTALLATION — Fixture may be surface mounted (with or without ZSPRG hanger), pendant or stem mounted with appropriate mounting options. Six-point aligner locks in place for easy continuous row mounting.

LISTINGS — CSA certified to US and Canadian safety standards. For use in damp locations between -4 °F (-20 °C) and 86 °F (30 °C).

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

WARRANTY — 5-year limited warranty. Complete warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25 °C.

Specifications subject to change without notice.

LED Striplight

ZL1D

24", 48" and 96" Lengths

A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and out-of-the-box control compatibility with simple commissioning.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is part of an A+ Certified solution for nLight® or XPoint™ Wireless control networks marked by a shaded background*

To learn more about A+, visit www.acuitybrands.com/aplus.

*See ordering tree for details

ZL1D LED Striplight

A+ Capable options indicated by this color background.

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative.

Example: ZL1D L48 3000LM FST MVOLT 40K 80CRI WH

Series	Length	Reflectors[1]	Nominal lumens[2]	Diffuser	Voltage	Color temperature
ZL1D LED striplight	L24 24"	SMR Symmetric	1500LM 1,500 lumens[3]	FST Drop lens	MVOLT 120-277V	30K 3000 K
			2500LM 2,500 lumens[3]		120 120V	35K 3500 K
			3500LM 3,500 lumens		208 208V	40K 4000 K
	L48 48"	ASR Asymmetric	3000LM 3,000 lumens		240 240V	50K 5000 K
		SMR Symmetric	5000LM 5,000 lumens		277 277V	
			7000LM 7,000 lumens		347 347V[4]	
TZL1D LED striplight	L96 96"	SMR Symmetric	6000LM 6,000 lumens		480 480V[4]	
			10000LM 10,000 lumens			
			14000LM 14,000 lumens			

Color rendering index	Options		Paint finish
80CRI 80 CRI	PLR Plug-in wiring[5,6]	Cord sets:[10]	WH White
90CRI 90 CRI	PLR1LVG Plug-in wiring-low voltage[6]	CS1W Straight plug, 120V	MB Matte black
	E7W Emergency battery pack, 7W (not available for California)[7,8]	CS3W Twist-lock, 120V	GALVB Galvanized fixture with black plastic lens endcaps
	2E7W Two Emergency battery packs, 7W[7,8,9]	CS7W Straight plug, 277V	GALVW Galvanized fixture with white plastic lens endcaps
	E10WLCP Emergency battery pack, 10W Linear Constant Power, CA Title 20 compliant[7,8]	CS11W Twist-lock, 277V	
	2E10WLCP Two Emergency battery packs, 10W Linear Constant Power, CA Title 20 Compliant[7,8,9]	CS25W Twist-lock, 347V	
	E15WLCP Emergency battery pack, 15W Linear Constant Power, CA Title 20 compliant[7,8,9]	CS97W Twist-lock, 480V	
	OUTEND Cord set to exit endplate of fixture	CS93W 600V SEOOW white cord, no plug (no voltage required)	

Accessories: *Order as separate catalog number.*

HC36	Hanger chain, 36"
ZACVH	Aircraft cable 10' (one pair)
ZLANGBKT	Luma-tilt™ angle bracket for shelf or ledge mounting only
NPP16D	nLight® switching/dimming module
LSXR	Sensor Switch® LSXR occupancy sensor[5]
ZSPRG	For 15/16" T-grid only
WGZ24	24" wireguard, white
WGZ48	48" wireguard, white[11]
ZLR L24 SYM UPL WH	24" symmetric reflector with uplight, white finish
ZLR L24 SYM WH	24" symmetric reflector, white finish
ZLR L46 SYM UPL WH	46" symmetric reflector with uplight, white finish
ZLR L46 SYM WH	46" symmetric reflector, white finish
ZLR L48 ASY WH	48" asymmetric reflector, white finish
ZLR L48 SYM UPL WH	48" symmetric reflector with uplight, white finish
ZLR L48 SYM WH	48" symmetric reflector, white finish
ZLR L92 SYM UPL WH	92" symmetric reflector with uplight, white finish
ZLR L92 SYM WH	92" symmetric reflector, white finish
ZLR L96 SYM UPL WH	96" symmetric reflector with uplight, white finish
ZLR L96 SYM WH	96" symmetric reflector, white finish

Notes

1 Optional. Reflectors ship separately.

2 See Operational Data on page 2 for actual lumens.

3 Not available with 0-10V dimming option.

4 Not available with L24, 24" fixture. 347V and 480V utilize a step-down transformer.

5 See ordering information on page 5.

6 Not available with cordsets.

7 Not available with L24, 24" fixture. See spec sheet PS1055LCP, PS1555LCP and PS750L for more information.

8 Must specify voltage. 120, 208, 240 or 277V.

9 Only available with the 8' (96") fixtures.

10 Cordsets exit back of fixture unless OUTEND option is specified. Must specify voltage (not required when ordering CS93W).

11 Order 2 for tandem double length fixtures (TZL1D).

OPERATIONAL DATA												
	Nominal lumen package	Length (inches)	Delivered Lumens 3000 K CCT @ 77°F (25°C) ambient temperature		Delivered Lumens 3500 K CCT @ 77°F (25°C) ambient temperature		Delivered Lumens 4000 K CCT @ 77°F (25°C) ambient temperature		Delivered Lumens 5000 K CCT @ 77°F (25°C) ambient temperature		Wattage @ 120V/277V	Comparable Light Source
			80 CRI	90 CRI	80 CRI	90 CRI	80 CRI	90 CRI	80 CRI	90 CRI		
Lensed	1500LM	24	1985	1619	2030	1675	2061	1707	2137	1745	17	1-lamp 17W T8
	2500LM	24	2682	2187	2742	2264	2785	2307	2887	2358	22	1-lamp 17W T8
	3500LM	24	4099	3341	4190	3459	4255	3524	4412	3603	36	1-lamp 32W T8, 1-lamp 54W T5HO, 50W HID
	3000LM	48	3880	3163	3966	3274	4028	3336	4176	3410	30	1-lamp 32W T8, 1-lamp 54W T5HO, 50W HID
	5000LM	48	5337	4351	5456	4504	5541	4589	5745	4691	41	2-lamp 32W T8, 1-lamp 54W T5HO, 70W HID
	7000LM	48	7317	5965	7480	6175	7596	6291	7876	6431	59	3-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	6000LM	96	8077	6585	8257	6816	8386	6945	8694	7099	60	3-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	10000LM	96	11021	8985	11267	9301	11442	9477	11864	9687	81	4-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
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DIMENSIONS

All dimensions are shown in inches (centimeters) unless otherwise noted.

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PALLET DIMENSIONS			
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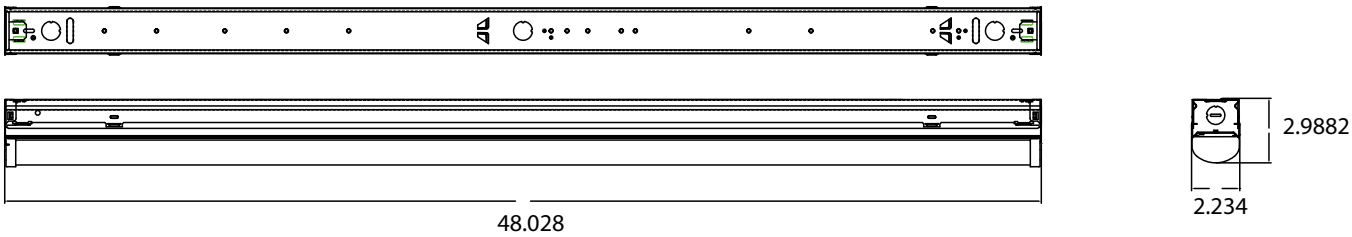
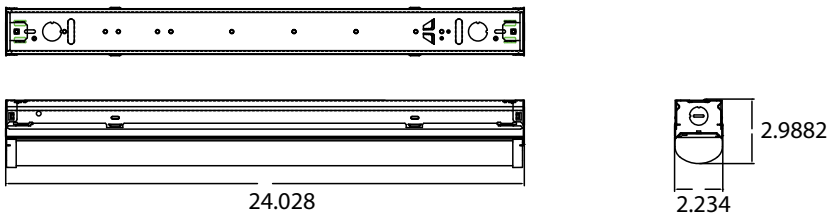


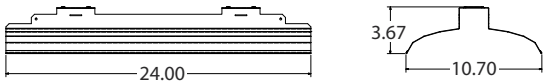
ZL1D L48



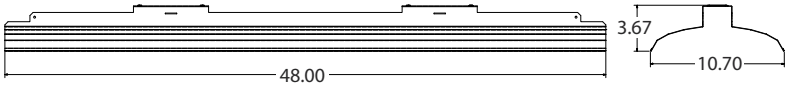
ZL1D L24

REFLECTORS (Optional)

L24 Reflector



L48 Reflector



L96 Reflector

PHOTOMETRICS

Please see www.lithonia.com

PRODUCT INFORMATION

Advanced plug-in system with three-circuit capability. Available on industrial and strip products and a variety of architectural products mounted in continuous rows. 1, 2, 3 and 4-lamp fixtures. PLR22 (2-circuit) and PLR33 (3-circuit) crossover harness switches hot circuit serving next fixture in row. Reduces fixture types on job for alternating circuit applications (see example below.)

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Rows can be 50% longer with two-circuit systems. Polarized, lock-together nylon connectors prevent miswiring in the field. #12 THHN conductor, rated 600V, 90°C. White neutral wire included. Grounding accomplished by fixture in-row connectors.

CSA certified systems available with up to 2 circuits. G ground required.

Note: Specifications subject to change without notice.

Wiring

PLR

Advanced 3-Circuit Plug-In

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative.

Series	Number of hot wires	Branch circuits	Dimming	Ground
PLR	(blank) Not required for 22 or 33	Circuits to which ballast is connected	LV Low-voltage dimming	(blank) No ground in PLR
PLR22	1 Black	(blank) Not required for 22 or 33		G Ground. Maximum 2 circuits
PLR33	2 Black and red	A Black wire		
	3 Black, red and blue	B Red wire		
		C Blue wire		

Typical Applications

- Multiple-circuit and single-circuit for longer continuous rows
- Multiple-circuit with alternating fixtures on separate circuits, 2-circuit (PLR 22) and 3-circuit (PLR 33)
- Multiple circuit with night-lights located along row as desired

TYPICAL APPLICATIONS										
PLR 3 C	PLR 3 C	PLR 3 C	PLR 3 C	PLR 2 B	PLR 2 B	PLR 2 B	PLR 2 B	PLR 1	PLR 1	PLR 1
(All PLR22)										
Circuit A	Circuit B	Circuit A	Circuit B	Circuit A	Circuit B	Circuit A	Circuit B	Circuit A	Circuit B	Circuit A
(All PLR33)										
Circuit A	Circuit B	Circuit C	Circuit A	Circuit B	Circuit C	Circuit A	Circuit B	Circuit C	Circuit A	Circuit B
PLR 3 A	PLR 3 A	PLR 3 A	PLR 3 C	PLR 3 B	PLR 3 B	PLR 3 B	PLR 3 C	PLR 3 A	PLR 3 A	PLR 3 A

PRODUCT INFORMATION

A standard occupancy time delay is also present to ensure lights turn off (once minimum on timer has also elapsed) if no occupancy is detected.

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FEATURES

- Four interchangeable lenses - high mount 360°, low mount 360°, high mount aisleway, and small motion 360°.
- Integrated mounting bracket drops lens down 3" from chase nipple - no bracket accessory required.
- 100% digital PIR detection - provides excellent RF immunity

Note: Specifications subject to change without notice.

Passive Infrared Indoor Occupancy Sensor

LSXR

Single Relay

AcuityControls Sensor Switch

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative.

Example: LSXR 10 ADC HVOLT 30M

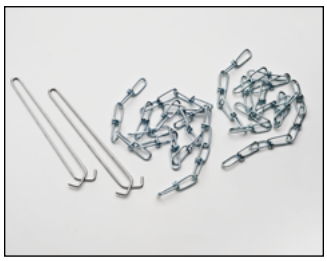
LSXR							
Series	**Lens option**				**Dimming/photocell**		
LSXR Passive Infrared Indoor Occupancy Sensor	(blank)	No lens	610	High and low mount 360°	(blank)	None	
	6	High mount, 360®	650	High mount 360° and aisleway	HL	High/low occupancy operation	
	10	Low mount, 360°	3PK	High and low mount 360° and aisleway	P	Switching photocell (on/off)	
	50	High mount aisleway	4PK	All lenses	ADC	Dimming and switching photocell	
	9	Small motion, 360°			ANL	Dimming and switching photocell with high/low occupancy operation	

Voltage		Max dim level		Min dim level		Lead length		Temp humidity		Default time delay	
(blank)	120-277 VAC (MVOLT)	(blank)	10 VDC	(blank)	Minimum dimming level of ballast	(blank)	14"	(blank)	None	(blank)	10 minutes (with minimum 15 minutes on time)
HVOLT	347-480 VAC	9H	9 VDC	1V	1 VDC	42L	42"	LT	Low temperature	5M	5 minutes (LED only)
		8H	8 VDC	2V	2 VDC					15M	15 minutes
		7H	7 VDC	3V	3 VDC					20M	20 minutes
				4V	4 VDC					30M	30 minutes
				5V	5 VDC						
				6V	6 VDC						

For additional information see www.lithonia.com

OPTIONS AND ACCESSORIE

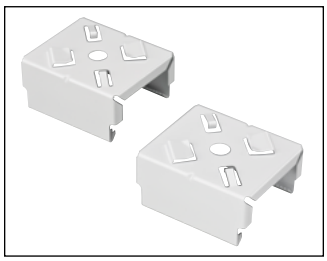
The Z Series fixture offers numerous options for almost every electrical and optical component, including a long list of field-installable accessories.



HANGER CHAIN

36" chain with Y hanger.

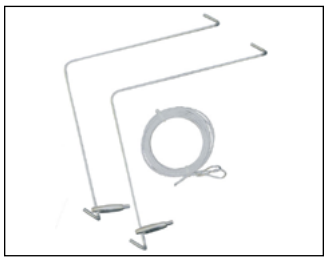
Order as:
HC36



Z SPRING HANGER

Snap 'n' lock design requires no fasteners and can be used on T-grid ceiling or universal mounting systems.

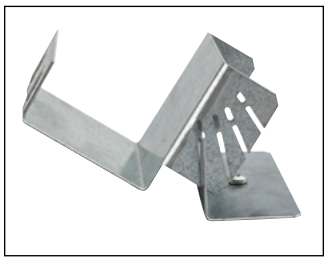
Order as:
ZSPRG



ZACVH HANGER

10' Aircraft cable with Y hanger.

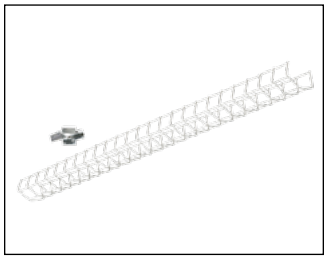
Order as:
ZACVH



ANGLE MOUNTING BRACKET

Luma-tilt™ angle bracket ships as a pair

Order as:
ZLANGBKT



WIRE GUARD

Order as:
WGZ24
WGZ48

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LITHONIA LIGHTING®

Catalog Number	2VTL4R 40L ADP EZ1 LP835
Notes	
Type	

VT SERIES RELIGHT

Volumetric Troffer

2VTL4R
2VTL4RT

2' x 4' Relight
LED

A+ CAPABLE eldoLED DLC QPL LISTED PREMIUM

Specifications

Designed to convert most existing recessed parabolic and lensed troffers.

FEATURES & SPECIFICATIONS

INTENDED USE — The 2VTL4R LED Relight assembly is the ideal solution for renovating existing fluorescent troffer and parabolic systems, delivering improved quality of light and refreshing the space. VTLR volumetric lighting eliminates the "cave effect" by delivering the ideal amount of light to walls, work surfaces, and people. The 2VTL4R Relight assembly is recommended for offices, schools, hospitals, and other general lighting applications where existing 2x4 troffer and parabolic fluorescent fixtures are currently in use.

CONSTRUCTION — Universal end brackets are constructed of 20-gauge powder-painted steel and are secured to the host fixture with provided tek screws. End brackets are painted black or white to match existing parabolic or troffer door frame reveals. The LED light engine is 20-gauge powder painted steel and is wired to the supply voltage using a driver-disconnect plug system provided as standard. A steel wiring connection cover is provided for use if required.

The door frame and reflector assembly is vaulted cold-rolled steel with embossed facets and is painted after fabrication. Impact-modified, single clear acrylic diffuser provides excellent shielding and wide distribution.

OPTICS — Volumetric illumination is delivered by creating an optimal mix of light to walls, partitions, vertical and horizontal work surfaces — rendering the interior space, objects and occupants in a more balanced, complementary luminous environment. Linear faceted reflector cavity softens and distributes light into the space while minimizing luminous contrast between the fixture and ceiling. Sloped end plates provide a smooth, luminous transition between fixture and ceiling while enhancing the perception of fixture depth.

ELECTRICAL — Long-life LEDs, coupled with high-efficiency drivers, provide superior quantity and quality of illumination for extended service life. 80% LED lumen maintenance at 60,000 hours (L80/60,000).

eldoLED driver options deliver choice of dimming range and choices for control, while assuring flicker-free, low-current inrush, 89% efficiency and low EMI.

Optional integrated nLight® controls make each luminaire addressable — allowing it to digitally communicate with other nLight-enabled controls such as dimmers, switches, occupancy sensors and photocontrols. Simply connect all the nLight-enabled control devices and the 2VTL4R luminaires using standard Cat-5 cabling. Unique plug-and-play convenience as devices and luminaires automatically discover each other and self-commission.

Lumen Management: Unique lumen management system (option N80) provides onboard intelligence that actively manages the LED light source so that constant lumen output is maintained over the system life, preventing the energy waste created by the traditional practice of over-lighting.

Step-level dimming option allows system to be switched to 50% power for compliance with common energy codes while maintaining fixture appearance.

Driver disconnect provided where required to comply with US and Canadian codes.

INSTALLATION — After existing fluorescent components are removed from housing, universal end brackets are fastened in place with tek screws. The LED light engine assembly mounts to the end brackets and hangs securely while the wiring connection is made using a driver-disconnect plug system provided as standard. The light engine then swings up into position and is secured in place with a captive screw at each end. The doorframe is then inserted via a sliding hinge into the end bracket and secured in the closed position with a rotating cam latch. Light engine may be removed from fixture during service. LED boards include plug-in connectors for easy replacement or servicing. Suitable for damp location installations.

LISTINGS — UL/cUL classified for use in recessed fluorescent light fixtures. Installation per instructions will not impact existing fixture UL listing. Tested to LM80 standards. DesignLights Consortium® (DLC) Premium qualified product. Not all versions of this product may be DLC Premium qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

Protected by one or more of US Patent Nos. 7,229,192; D541,467; D541,468; D544,633; D544,634; D544,992. D544,933 and additional patents pending.

WARRANTY — 5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and out-of-the-box control compatibility with simple commissioning.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is part of an A+ Certified solution for nLight® control networks when ordered with drivers marked by a shaded background*
- This luminaire is part of an A+ Certified solution for nLight control networks, providing advanced control functionality at the luminaire level, when selection includes driver and control options marked by a shaded background*

To learn more about A+, visit www.acuitybrands.com/aplus.

*See ordering tree for details

2VTL4R Volumetric Recessed Lighting 2'x4'

A+ Capable options indicated by this color background.

ORDERING INFORMATION

Lead times will vary depending on options selected. Consult with your sales representative.

Example: 2VTL4R 40L ADP EZ1 LP835

Series	Lumens[1]	Diffuser	Voltage	Driver	Color temperature	Controls
2VTL4R 2x4 LED relight assembly, black end brackets for use in parabolic fixture	30L 3000	ADP Acrylic linear prismatic	(blank) MVOLT (120 - 277V)	EZ1 eldoLED, dims to 1%	LP835 82 CRI, 3500 K	(blank) No controls
2VTL4RT 2x4 LED relight assembly, white end brackets for use in troffer fixture	40L 4000		347 347V[2]	EZB Dims to dark	LP840 82 CRI, 4000 K	N80 N-light with 80% lumen management [4]
2VTL4RF 2x4 LED relight assembly, flange brackets for drywall installation	48L 4800			GTH250 Bi-level (2-switch)	LP830 82 CRI, 3000 K	N100 N-light with no lumen management [4]
	60L 6000			EXA1 Dims to 1%, XPoint wireless enabled [3]	LP850 82 CRI, 5000 K	N80EMG N-light with 80% lumen management for use with generator supply EM power[4,5]
				EXAB Dims to dark, XPoint wireless enabled [3]		N100EMG N-light without lumen management for use with generator supply EM power[4,5]

Notes

1 Approximate lumen output.
2 Option ships separately as a field-installed accessory. Not available with GTH250 driver option. Verify compliance with local codes prior to ordering.
3 Gateway not included. Requires on-site commissioning. Visit www.lightingcontrols.com/XPointWireless for more information.
4 Only available with EZ1 or EZB drivers.
5 nLight EMG option requires a connection to existing nLight network Power is provided from a separate N80 or N100 enabled fixture.

Energy Comparison - 2x4 LED vs. T12 & T8				
System	Lamp type	Ballast factor	Input watts[1]	Watts saved by using LED
2VTL4R 40L	LED	1.0	38	---
4-lamp T12	F40T12	0.88	144	106
4-lamp T8	F32T8	0.88	110	72
3-lamp T12	F40T12	0.88	108	70
3-lamp T8	F32T8	0.88	90	52
2-lamp T12	F40T12	0.88	72	34
2-lamp T8	F32T8	0.88	60	22

Performance Data			
Lumen Package	Lumens	Input Watts	LPW
30L LP830	3305	26.4	125
30L LP835	3470	26.4	132
30L LP840	3836	26.4	146
30L LP850	3824	26.4	145
40L LP830	4164	33.2	126
40L LP835	4393	33.2	133
40L LP840	4501	33.2	136
40L LP850	4823	33.2	145
48L LP830	4820	39.1	123
48L LP835	5090	39.1	130
48L LP840	5209	39.1	133
48L LP850	5586	39.1	143
60L LP830	5288	44.2	120
60L LP835	5582	44.2	126
60L LP840	5738	44.2	130
60L LP850	6122	44.2	138
72L LP830	7044	58.7	120
72L LP835	7182	58.7	122
72L LP840	7714	58.7	132
72L LP850	8141	58.7	139

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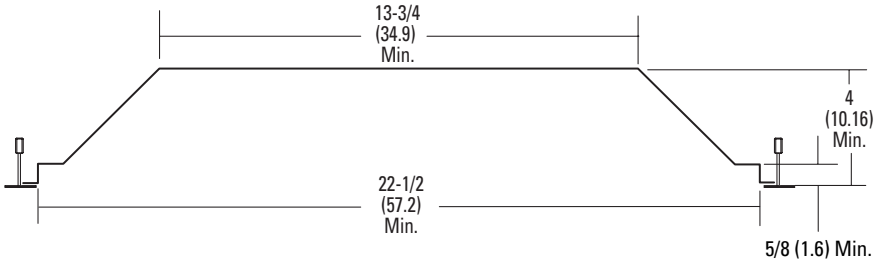
2VTL4R Volumetric Recessed Lighting 2'x4'

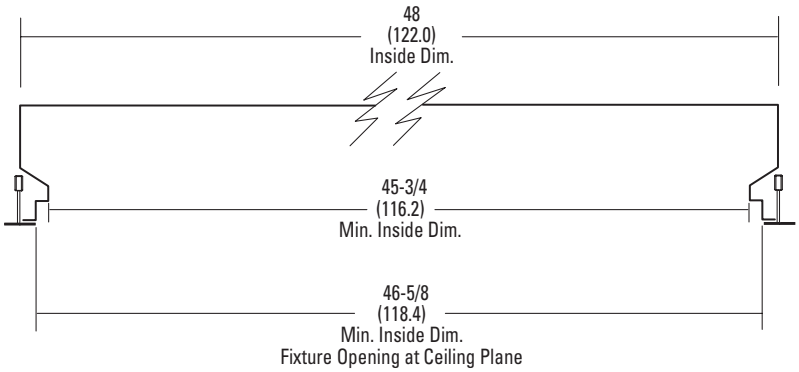
FIT COMPATIBILITY

The 2VTL4R Relight assembly was engineered to upgrade recessed 2X4 fixtures, including most parabolic and lensed troffers from all major manufacturers.

Dimensional requirements are below but Lithonia Lighting recommends a trial installation prior to purchasing project quantities.



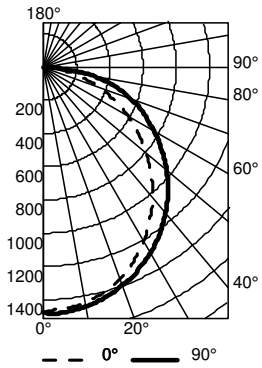
Relight assemblies are designed to fit most recessed fixtures mounted in T-grid installations. For surface mounted fixtures or for fixtures mounted in ceiling types other than T-grids, consult factory before ordering.



Dimensions are inches (centimeters) unless otherwise noted.

PHOTOMETRICS

2VTL4R 40L EZ1 LP835, 4392.9 delivered lumens, test no. LTL25401P105, tested in accordance to IESNA LM-79



CP Summary

	0°	90
0°	1479	1479
5°	1459	1481
15°	1403	1435
25°	1287	1348
35°	1119	1222
45°	918	1059
55°	700	871
65°	474	670
75°	251	445
85°	58	127
90	3	1

Coefficients of Utilization

pf	20%								
pc	80%			70%			50%		
pw	70%	50%	30%	50%	30%	10%	50%	30%	10%
RCR 0	119	119	119	116	116	116	111	111	111
1	108	103	98	101	97	93	96	93	90
2	98	89	82	87	81	75	84	78	73
3	89	78	70	76	69	62	73	67	61
4	81	69	60	68	59	53	65	58	52
5	75	62	52	60	52	45	58	51	45
6	69	55	46	54	46	39	53	45	39
7	64	50	41	49	41	35	48	40	34
8	59	46	37	45	37	31	44	36	31
9	56	42	34	41	33	28	40	33	28
10	52	39	31	38	30	25	37	30	25

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Fixture
0° - 30°	1147	26.1	26.1
0° - 40°	1877	42.7	42.7
0° - 60°	3339	76.0	76.0
0° - 90°	4392	100.0	100.0
90° - 120°	1	0.0	0.0
90° - 130°	1	0.0	0.0
90° - 150°	1	0.0	0.0
90° - 180°	1	0.0	0.0
0° - 180°	4393	100.0	100.0

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BEAVERTON CITY HALL

LED BUY AMERICAN ACT OF 2009 COMPLIANT

FINELITE

Series 17 LED ADA WM Technical Sheet

INDUSTRY BEST 10 YEAR LED WARRANTY

LED lighting facts® A Program of the U.S. DOE

Date

Project

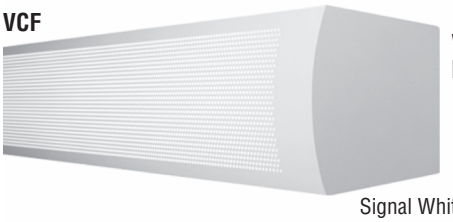
S17-LED-VCF-PF-835-3FT

Comments

ACF

Angled Curved Fascia - Solid (SF)

VCF

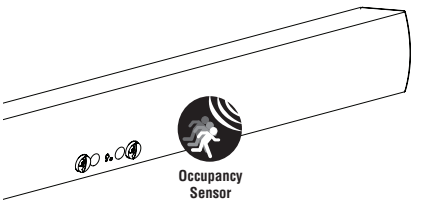


Vertical Curved Fascia - Perforated (PF)

Signal White is standard finish

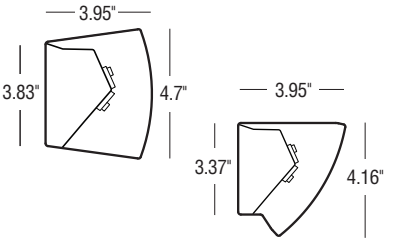
DESCRIPTION

Light up corridors, stairwells and reception areas without glare and in high style with Series 17 LED ADA Wall Mount luminaires. Choose from Angled Curved Fascia (ACF) or Vertical Curved Fascia (VCF) in solid or perforated design. Series 17 LED uses mid-powered LEDs for long life and evenly distributed illumination.



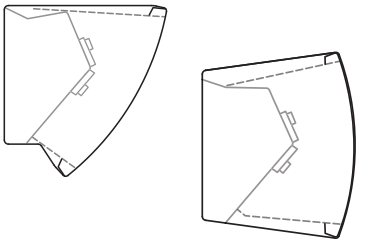
INTEGRATED SENSORS:

Each unit is available with an optional integrated ultrasonic occupancy sensor.



DIMENSIONS AND LIGHT ENGINE:

Extending less than 4" from the wall, Series 17 is ADA compliant and uses mid-powered LEDs yielding long life and even light distribution.



DIFFUSERS:

Standard with frosted acrylic diffuser on the top and bottom openings.

ORDERING GUIDE

S17-LED-VCF-PF-835-3FT

Sample Number: S17-LED - VCF - PF - 4' - S - 8 - 35 - 277 - SC - OBO

S17-LED

Finelite **Series 17-LED**

Shape (VCF - Vertical, ACF - Angled)

Fascia (PF - Perforated, SF - Solid)

Run Length (2', 3', 4', and 8' Multiples Standard)

Light Output (S - Standard Output, B - Boosted Standard Output, H - High Output, V - Very High Output)

LED CRI (8 - 80 CRI Min (standard), 9 - 90 CRI Min (optional))

LED Color Temperature (30 - 3000K, 35 - 3500K, 40 - 4000K)

Voltage (120V, 277V) ← PLEASE SPECIFY VOLTAGE

Circuiting (SC - Single Circuit)

Integrated Sensor (OBO - Occupancy Sensor)* NOT INCLUDED

* Not available on 2' luminaires.

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Due to continuing product improvements, Finelite reserves the right to change specifications without notice. Please visit www.finelite.com for the most current data.

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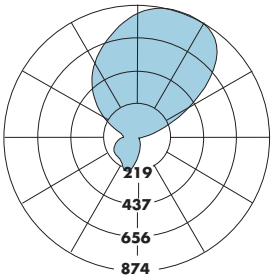
FINELITE

Series 17 LED ADA WM Technical Sheet

ACF PHOTOMETRY

S17-LED-ACF-SF - 4' Luminaire
Very High Output - 120V
Efficacy (lumens per watt): 72.0
Total luminaire output: 2673 lumens (668 lumens/foot)
37.1 watts (9.3 watts/foot)
Peak Candela Value: 874 @ 165°
CRI: 80
CCT: 3500K
ITL LM79 Report: 85160



CANDLEPOWER SUMMARY

	0	22.5	45.0	67.5	90.0	Flux
0	107	107	107	107	107	
5	79	86	107	133	144	11
15	40	53	103	184	217	33
25	16	28	94	207	228	52
35	5	12	81	193	196	61
45	1	4	64	165	185	63
55	0	0	47	146	186	64
65	0	0	30	129	180	62
75	0	0	16	109	160	54
85	0	0	4	85	133	43
90	0	0	0	69	113	
95	5	9	25	69	102	47
105	74	116	116	110	124	119
115	238	289	240	209	205	238
125	483	495	377	323	314	355
135	721	669	516	439	425	421
145	842	773	637	544	528	412
155	871	828	730	640	617	339
165	874	852	791	726	701	222
175	850	842	819	796	787	78
180	824	824	824	824	824	

ACF SF PHOTOMETRY - 4' LUMINAIRE

Total Light Output, 3500K, 80 CRI (Lumens)			
S*	**B***	**H***	**V****
1094	1376	2079	2673

Linear Light Output, 3500K, 80 CRI (Lumens Per Foot)			
S*	**B***	**H***	**V****
274	344	520	668

Power (Watts Per Foot)			
S*	**B***	**H***	**V****
3.6	4.6	7.1	9.3

Efficacy, 3500K, 80 CRI (Lumens Per Watt)			
S*	**B***	**H***	**V****
76.1	74.8	73.2	71.8

S - Standard Output, B - Boosted Standard Output, H - High Output, V - Very High Output

* Family Correlation based on 4' luminaire 3500K Very High Output (V) test - 120V.

** Correlation based on ITL report: 85160

Lumen Adjustment Factors - 80 CRI	
3000K	0.985
3500K	1.000
4000K	1.032

Lumen Adjustment Factors - 90 CRI	
3000K	0.746
3500K	0.760
4000K	0.789

Apply a lumen adjustment factor to calculate lumens for the desired CCT and CRI.

SAMPLE LUMEN ADJUSTMENT CALCULATION

High Output (H), 4000K, 90 CRI

Lumen Adjustment Factor = 0.789

Total Light Output =
2079 lm x 0.789 = 1640 lm

Total Light Output per Foot =
520 lm/ft x 0.789 = 410 lm/ft

watts/foot = 7.1 W/ft

$$Efficacy = \frac{410\ \frac{lm}{ft}}{7.1\ \frac{W}{ft}} = 57.7\ \text{lm/W}$$

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LED

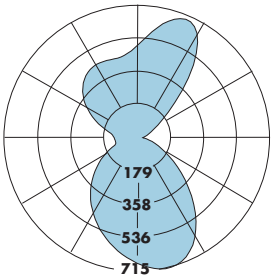
BUY AMERICAN ACT OF 2009 COMPLIANT

FINELITE

Series 17 LED ADA WM Technical Sheet

VCF PHOTOMETRY

S17-LED-VCF-SF - 4' Luminaire
Very High Output - 120V
Efficacy (lumens per watt): 87.6
Total luminaire output: 3222 lumens (806 lumens/foot)
36.8 watts (9.2 watts/foot)
Peak Candela Value: 708 @ 15°
CCT: 3500K
ITL LM79 Report: 85158



CANDLEPOWER SUMMARY

	0	22.5	45.0	67.5	90.0	Flux
0	687	687	687	687	687	
5	706	700	684	668	663	65
15	708	696	656	618	607	185
25	637	639	597	552	545	273
35	495	524	509	473	473	310
45	323	379	400	388	396	293
55	175	235	287	299	314	238
65	73	117	183	212	231	165
75	12	35	96	133	156	93
85	0	0	26	97	150	55
90	0	0	0	100	154	
95	0	0	18	110	163	59
105	0	2	79	181	227	100
115	8	36	163	264	313	159
125	55	156	258	337	392	221
135	196	361	350	391	444	274
145	478	550	425	419	466	290
155	660	631	478	432	458	241
165	660	617	510	453	450	151
175	572	556	522	495	487	50
180	524	524	524	524	524	

VCF PF PHOTOMETRY - 4' LUMINAIRE

Total Light Output, 3500K, 80 CRI (Lumens)			
S*	B*	H*	V**
1319	1658	2506	3222

Linear Light Output, 3500K, 80 CRI (Lumens Per Foot)			
S*	B*	H*	V**
330	415	627	806

Power (Watts Per Foot)			
S*	B*	H*	V**
3.6	4.6	7.0	9.2

Efficacy, 3500K, 80 CRI (Lumens Per Watt)			
S*	B*	H*	V**
91.7	90.2	89.6	87.6

S - Standard Output, B - Boosted Standard Output, H - High Output, V - Very High Output

* Family Correlation based on 4' luminaire 3500K Very High Output (V) test - 120V.

** Correlation based on ITL report: 85158

Lumen Adjustment Factors - 80 CRI	
3000K	0.985
3500K	1.000
4000K	1.032

Lumen Adjustment Factors - 90 CRI	
3000K	0.746
3500K	0.760
4000K	0.789

Apply a lumen adjustment factor to calculate lumens for the desired CCT and CRI.

SAMPLE LUMEN ADJUSTMENT CALCULATION

High Output (H), 4000K, 90 CRI

Lumen Adjustment Factor = 0.789

Total Light Output =
2506 lm x 0.789 = 1977 lm

Total Light Output per Foot =
627 lm/ft x 0.789 = 495 lm/ft

watts/foot = 7.0 W/ft

$$Efficacy = \frac{495\ \frac{lm}{ft}}{7.0\ \frac{W}{ft}} = 70.7\ \text{lm/W}$$

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FINELITE

Series 17 LED ADA WM Technical Sheet

SPECIFICATIONS

CONSTRUCTION: Fixture channel is 6063-T6 extruded aluminum. Fascia covers are die-formed 20-gauge steel. Mounting clips are constructed from 22-gauge die-formed steel. All components are hard-tooled to tolerances of +/- 0.010".

ENDCAPS: Flat endcap, 14-gauge die-formed steel, adds 0.1" to each end.

REFLECTORS: 96W standard reflector, die-formed painted steel, 96% reflectance white finish. Virgin acrylic UV stabilized lensed diffuser behind perforated fascia is standard.

DIFFUSERS: Standard with top 0.080" and bottom 0.060" frosted acrylic diffusers

LIGHT OUTPUT: Four lumen packages available, Standard Output (S), Boosted Standard Output (B), High Output (H), and Very High Output (V). A separate chart summarizes lumen distribution and wattage. Light engines are replaceable.

LUMEN MAINTENANCE: 90% of initial light output (L90) at 100,000+ hours; 70% of initial light output (L70) at 200,000+ hours.

DRIVER: Replaceable 120V/277V Constant Current Reduction dimming driver standard. Can be wired dimming or non-dimming. 0-10V dimming controls with a range of 10%- 100%. Dimming to 1% available; consult factory. Driver is fully accessible from below the ceiling. Power Factor: ≥0.9. Total Harmonic Distortion (THD) <20%. Step-dimming driver (limited programable outputs. Contact Factory). Expected driver lifetime: 100,000 hours.

LUTRON DRIVER OPTIONS: Lut3W-3-wire, LutES-EcoSystem, Lut2W-2-wire.

ELECTRICAL: Optional emergency to generator/inverter wiring, internal generator transfer switch, nightlight wiring, backup battery. Factory-choice, low-profile, battery backup delivers 800 lumens (ACF) or 1400 (VCF). Minimum luminaire length for battery pack: 8'. The downlight alway will be illuminated in the 4' section.

Occupancy Sensor

INTEGRATED SENSORS: Available with integrated ultrasonic occupancy sensors. Not available on 2' luminaries.

MOUNTING: Standard with mounting clips to the wall and not visible from normal viewing angles once installed. One mounting clip is provided for every 16 inches of luminaire for a secure connection to the wall. Luminaire is snapped into place on the mounting clips and secured using locking screws.

FEED: Standard with one 18-gauge/5-conductor single-circuit feed. 14-gauge feed used when fixture current exceeds 5 amps. Optional 6' flex conduit whips available.

FINISHES: Finelite Signal White is standard. Optional adders: 185 finishes available from Tiger Drylac's RAL color chart.

LENGTHS: Modular section lengths of 2', 3', 4' and 8' section lengths can be combined to make longer runs. Contact factory for additional lengths.

LABELS: Fixture and electrical components are ETL-listed conforming to UL 1598 in the U.S.A. and CAN/CSA C22.2 No. 250.0 in Canada. In accordance with NEC Code 410.73 (G), this luminaire contains an internal driver disconnect. Damp Location. Finelite products use electronic components that are RoHS compliant, and the mechanical components of the luminaire have been verified to not knowingly contain any restricted substances listed per RoHS Directive 2002/95/EC.

WEIGHT: Fixture weight = 2 lb/ft.

WARRANTY: 10-year performance-based warranty on all standard components. Optional accessories such as emergency battery packs are covered by their individual manufacturer warranties.

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BEAVERTON CITY HALL

LITHONIA LIGHTING®

Catalog Number	LQM S W 3 G 120/277 EL N M6
Notes	
Type	

FEATURES & SPECIFICATIONS

INTENDED USE — Ideal for applications requiring attractive, quick-installation exit signs and low energy consumption.

CONSTRUCTION — Engineering-grade thermoplastic housing is impact-resistant, scratch-resistant, and corrosion-proof. UL94V-0 flame rating. UV-stable resin resists discoloration from natural and man-made light sources.

Rugged unibody housing snaps together with no additional mechanical fasteners. Faceplate and back cover are interchangeable on housing. Positive snap-fit tabs hold faceplate securely, yet easily removable for lamp compartment access.

Universal directional Chevron inserts are easily removed and reinserted. Uniform illumination without shadows or hot spots. Reinforced, impact-resistant color panels. Letters 6" high with 3/4" stroke, with 100 ft. viewing distance rating, based upon UL924 standards.

U.S. Patent No. 5,526,251; 5,611,163; 5,739,639; 5,954,423; 5,988,825; 6,152,581; D383,501 ; D495,751 and 6,502,044. Other patents pending.

OPTICS — LEDs mounted on printed circuit boards. Low energy consumption – less than one watt. LED lamp operates in normal (AC input) and emergency (DC input) modes.

The typical life of the exit LED lamp is 10 years.

ELECTRICAL — Dual voltage input capability (120/277V).

Low-voltage disconnect prevents excessively deep discharge that can permanently damage battery. Conveniently located test switch and LED provide visual and manual means of monitoring system.

Constant-current series charger minimizes energy consumption and provides low operating costs. Printed circuit boards are 100% quality tested during manufacturing. Current-limiting charger circuitry protects printed circuit boards from shorts.

AC/LV reset (line latch) allows battery connection before AC power is applied and aids in preventing battery damage from deep discharge.

Crystal oscillator timing system with watchdog protection for precision accuracy.

Brownout protection is automatically switched to emergency mode when supply voltage drops below 80% of nominal.

Battery: Sealed, maintenance-free nickel-cadmium battery delivers 90-minutes capacity to emergency lamps. Two-state constant-current charge maximizes battery life and automatically recharges after battery discharge.

Diagnostics: Single-point microcomputer control for all electronic features.

Single multi-chromatic LED indicator to display two-state charging, test activation and three-state diagnostic status.

Test switch provides manual activation of 30-second diagnostic testing for on-demand visual inspection. Self-diagnostic testing for five minutes every 30 days and 30 minutes every six months.

Diagnostic evaluation of LED light source, AC to DC transfer, charging and battery condition. Continuously monitors AC functionality.

INSTALLATION — Universal (top-, end-, or back-) mounting. Easily removed mounting knockouts. J-box pattern on back panel. Housing snaps to canopy with four positive-locking tabs. Cam-locking pin tightly secures housing to canopy.

Ships standard with additional face plate.

LISTINGS — UL damp location listed 50°-104°F (10°-40°C) standard. NOM Certified (see options). Meets UL924, NFPA 101 (current Life Safety Code), NEC and OSHA illumination standards. NEMA Premium certified.

Meets all applicable FCC requirements.

QUANTUM®

Thermoplastic Exits

LQM

LED LAMPS

NEMA Premium LED

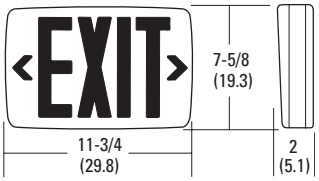
Specifications

Length: 11-3/4 (29.8)

Depth: 2 (5.1)

Height: 7-5/8 (19.3)

Weight: 2.6 lbs (1.2 kgs)



All dimensions are inches (centimeters) unless otherwise specified.

WARRANTY — 5-year limited warranty. (Battery is prorated.) Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

LQM S W 3 G 120/277 EL N M6

ORDERING INFORMATION

For shortest lead times, configure product using **bolded options.**

Example: LQM S W 3 R 120/277 EL N

LQM							
Family	**Face type**	**Housing color**	**Number of faces**	**Letter color**	**Input voltage[2]**	**Operation**	**Options**
LQM	**S** Stencil P Panel[1]	**(blank)** Black **W** White	**3** Single face with extra faceplate and color panel	**R** Red **G** Green	**120/277** Dual voltage	**(blank)** AC only **X2** Primary and secondary AC inputs provided [3] **EL N** Nickel cadmium battery	**(blank)** None NOM NOM certified for Mexico[4] SD Self-diagnostics[5] SDFIFA Self-diagnostics, fire alarm flashing interface and flashing emergency operation and intermittent audible alarm (one flash/one second)[5] M6=6 PER BOX

Accessories: Order as separate item.			
ELA WG1	Back-mount wireguard[6]	ELA WGEXE	End-mount wireguard[6]
ELA WGEXT	Top-mount wireguard[6]	ELA LQMUS12	12" stem kit[7]

Notes

1 Only available in custom signage. See spec sheet, Custom-Signage.
2 Some special voltages available. Consult factory.
3 Must specify input voltage 120 or 277. Not available with other options.
4 Available with stencil or panel faces in white housing.
5 Only available with EL N operation.
6 See spec sheet ELA-WG.
7 See spec sheet ELA-Stemkits.

SPECIFICATIONS

ELECTRICAL

Primary Circuit

Type[1]	Typical LED life[2]	Supply voltage	Input watts	Max. amps
Red LED AC Only	10 years	120	.62	.05
		277	.69	.06
Green LED AC Only	10 years	120	.62	.05
		277	.74	.06
Red LED Emergency	10 years	120	.71	.05
		277	.92	.06
Green LED Emergency	10 years	120	.66	.05
		277	.70	.06

BATTERY

Nickel Cadmium

Voltage	Shelf life[3]	Typical life[3]	Maintenance[4]	Optimum temperature[5]
1.2	3 years	7-9 years	none	50°F - 104°F (10°C - 40°C)

Notes

1 LED lamps operate in normal (AC input) and emergency (DC input) modes.

2 Based on continuous operation. The typical life of the exit LED lamp is 10 years.

3 At 77°F (25°C).

4 All life safety equipment, including emergency lighting for path of egress must be maintained, serviced and tested in accordance with all National Fire Protection Association (NFPA) and local codes. Failure to perform the required maintenance, service, or testing could jeopardize the safety of occupants and will void all warranties.

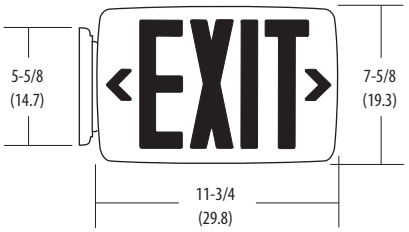
5 Optimum ambient temperature range where unit will provide capacity for 90 minutes. Higher and lower temperatures affect life and capacity.

MOUNTING

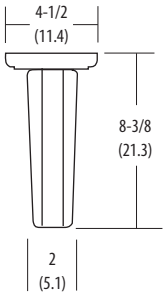
All dimensions are inches (centimeters) unless otherwise specified.

Shipping weight: 2.6 lbs. (1.2 kgs.)

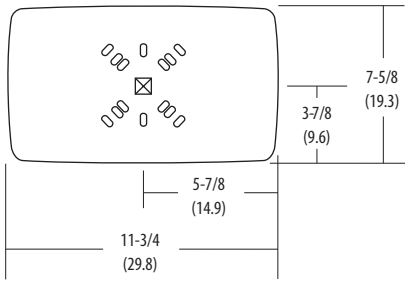
End Mounting



Top Mounting



Back Mounting



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PORTLAND ELECTRICAL CONSTRUCTION INC.

1019 7TH STREET
OREGON CITY, OR 97045
PHONE: 503-655-2281 FAX: 503-655-5033
OR CCB# 51764 WA EC PORTLEC023PE

DIVISION 28 – ELECTRICAL SAFETY & SECURITY

SPECIFICATION SECTION:

- 283100 – FIRE DETECTION & ALARM

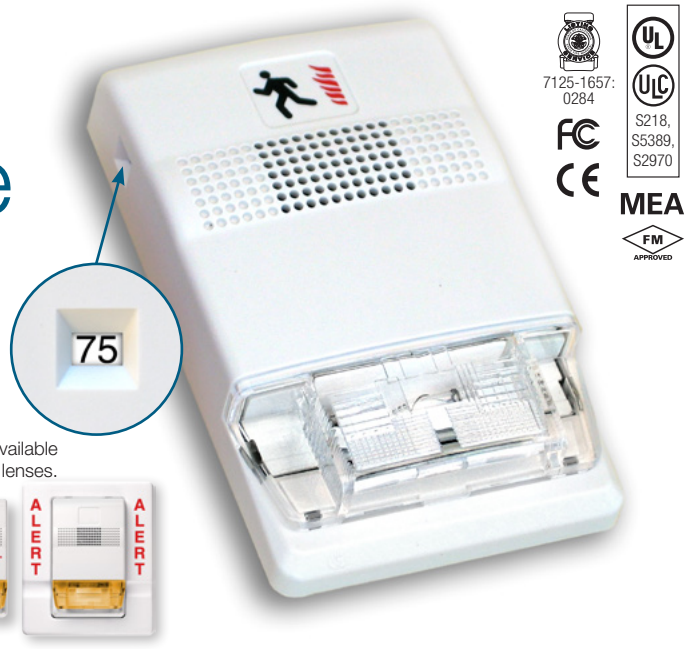
NOTE: FIRE ALARM SHOP DRAWINGS TO BE SUBMITTED AT A LATER DATE PENDING APPROVAL OF PRODUCT DATA.

EDWARDS
United Technologies

LIFE SAFETY & INCIDENT MANAGEMENT

Field Configurable Horns and Strobes

Genesis Series



7125-1657: 0284
S218, S5389, S2970
MEA
FM APPROVED

ECS/MNS appliances available with clear or amber lenses.

Overview

The Genesis line of fire alarm and mass notification/emergency communications (ECS/MNS) signals are among the smallest, most compact audible-visible life safety signaling devices in the world. About the size of a deck of playing cards, these devices are designed to blend with any decor.

Thanks to patented breakthrough technology, EDWARDS Genesis strobes do not require bulky specular reflectors and lenses. Instead, an exclusive cavity design conditions light to produce a highly controlled distribution pattern. Significant development efforts employing this new technology have given rise to a new benchmark in strobe performance – FullLight technology.

FullLight strobe technology produces a smooth light distribution pattern without the spikes and voids characteristic of specular reflectors. This ensures the entire coverage area receives consistent illumination from the strobe flash. As a result, Genesis strobes with FullLight technology go well beyond the UL-1971 and ULC-S526 light distribution requirements.

Genesis strobes and horn-strobes offer selectable candela output by means of a conveniently-located switch on the side of the device. Models are also available that offer fixed 15/75 cd output. The candela output setting remains clearly visible even after final installation, yet it stays locked in place to prevent unauthorized tampering.

Genesis ECS/MNS appliances offer emergency signaling with clear or amber lenses and with optional ALERT housing labels. They are ideal for applications that require differentiation between fire alarm and mass notification alerts.

Standard Features

- **Unique low-profile design**
  - The most compact UL-1971/ULC-S526 listed strobe available
  - Ultra-slim – protrudes less than one inch
  - Attractive appearance
  - No visible mounting screws
- **Four field-configurable options in one device**
  - Select 15, 30, 75, or 110 cd strobe output
  - Select high (default) or low dB horn output
  - Select temporal (default) or steady horn output
  - Select public mode flash rate (default) or private mode temporal flash
- **Fixed 15/75 cd model available**
- **ECS/MNS models available**
- **Easy to install**
  - Fits standard 1-gang electrical boxes – no trim plate needed
  - Optional trim plate accommodates oversized openings
  - Pre-assembled with captive hardware
  - #12 AWG terminals – ideal for long runs or existing wiring
- **Unparalleled performance**
  - Industry's most even light distribution
  - Meets tough synchronizing standards for strobes
  - Single microprocessor controls both horn and strobe
  - Independent horn control over a single pair of wires
  - Highly regulated in-rush current
  - Multiple frequency tone improves sound penetration
  - Field-programmable temporal strobe output option

Application

Genesis strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed 105 dBA (87dBA in Canada), where occupants use hearing protection, and in areas of public accommodation as defined in the *Americans with Disabilities Act (see application notes – USA)*.

Combination horn-strobe signals must be installed in accordance with guidelines established for strobe devices. Consult with your Authority Having Jurisdiction for details.

All Genesis strobes exceed UL synchronization requirements (within 10 milliseconds over a two-hour period) when used with a synchronization source. Synchronization is important in order to avoid epileptic sensitivity.

WARNING: These devices will not operate without electrical power. As fires frequently cause power interruptions, further safeguards such as backup power supplies may be required.

Horns

Genesis horn output reaches as high as 99 dB and features a unique multiple frequency tone that results in excellent sound penetration and an unmistakable warning of danger. Horns may be configured for either coded or non-coded signal circuits. They can also be set for low dB output with a jumper cut that reduces horn output by about 5 dB. Horn-only models may be ceiling-mounted or wall-mounted.

The suggested sound pressure level for each signaling zone used with alarm signals is at least 15 dB above the average ambient sound level, or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 feet (1.5 m) above the floor. The average ambient sound level is, A-weighted sound pressure measured over a 24-hour period.

Doubling the distance from the signal to the ear will theoretically result in a 6 dB reduction of the received sound pressure level. The actual effect depends on the acoustic properties of materials in the space. A 3 dBA difference represents a barely noticeable change in volume.

ECS/MNS Applications

Genesis ECS/MNS strobe appliances bring the same high-performance fire alarm features and unobtrusive design to mass notification applications. Available with amber lenses and optional ALERT housing labels, they are ideal for applications that require differentiation between fire alarm and mass notification alerts.

Installation

Genesis horns and strobes mount to any standard one-gang surface or flush electrical box. Matching optional trim plates are used to cover oversized openings and can accommodate one-gang, two-gang, four-inch square, or octagonal boxes, and European 100 mm square.

Genesis Horn/Strobe with optional trim plate

All Genesis signals come pre-assembled with captive mounting screws for easy installation. Two tabs at the top of the signal unlock the cover to reveal the mounting hardware. The shallow depth of Genesis devices leaves ample room behind the signal for extra wiring. Once installed with the cover in place, no mounting screws are visible.

Field Configuration

Temporal horn and horn-strobe models are factory set to sound in a **three-pulse temporal pattern**. Units may be configured for use with coded systems by cutting a jumper on the circuit board. This results in a **steady output** that can be turned on and off (coded) as the system applies and removes power to the signal circuit. A Genesis Signal Master is required when horn-strobe models are configured for coded systems. Non-temporal, horn-only models sound a steady tone.

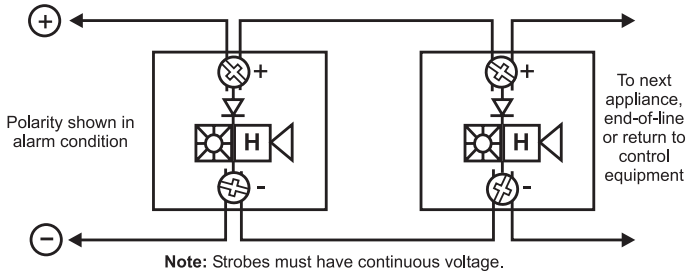
Genesis clear strobes and horn-strobes are shipped from the factory ready for use as **UL 1971 compliant** signals for public mode operation. These signals may be configured for **temporal flash** by cutting a jumper on the circuit board. This battery-saving feature is intended for private mode signaling only.

Genesis clear strobes and horn-strobes may be set for **15, 30, 75, or 110 candela output**. The output setting is changed by simply opening the device and sliding the switch to the desired setting. The device does not have to be removed to change the output setting. The setting remains visible through a small window on the side of the device after the cover is closed.

Horns and horn-strobes are factory set for **high dB output**. **Low dB output** may be selected by cutting a jumper on the circuit board. This reduces the output by about 5 dB.

Wiring

Field wiring terminals accommodate #18 to #12 AWG (0.75 mm² to 2.5 mm²) wiring. Horns, strobes, and combination horn-strobes are interconnected with a single pair of wires as shown below.



Note: Strobes must have continuous voltage.

Current Draw

Strobes, Horn-Strobes

Multi-cd Wall Strobes (G1-VM)

UL Rating	15 cd* RMS	30 cd* RMS	15/75 cd** RMS	75 cd* RMS	110 cd* RMS
16 Vdc	103	141	152	255	311
16 Vfwr	125	179	224	346	392

*G1-VM multi-cd; **G1F-V1575 fixed 15/75 cd

Typical Current	15 cd RMS	30 cd RMS	15/75 RMS	75 cd RMS	110 cd RMS
16 Vdc	85	127	150	245	285
20 Vdc	71	98	123	188	240
24 Vdc	59	82	104	152	191
33 Vdc	46	64	84	112	137
16 Vfwr	119	169	223	332	376
20 Vfwr	103	143	189	253	331
24 Vfwr	94	129	169	218	262
33 Vfwr	87	112	148	179	205

Wall Temporal Horn-strobes – High dB Setting

UL Rating	15 cd* RMS	30 cd* RMS	15/75 cd** RMS	75 cd* RMS	110 cd* RMS
16 Vdc	129	167	172	281	337
16 Vfwr	176	230	269	397	443

*G1-HDVM multi-cd
**G1F-HDV1575 fixed 15/75 cd

Typical Current	15 cd RMS	30 cd RMS	15/75 RMS	75 cd RMS	110 cd RMS
16 Vdc	102	135	160	246	309
20 Vdc	88	109	137	193	248
24 Vdc	81	94	122	161	203
33 Vdc	74	72	106	124	154
16 Vfwr	144	182	247	352	393
20 Vfwr	141	162	220	274	362
24 Vfwr	136	152	203	235	282
33 Vfwr	125	144	196	201	232

Wall Temporal Horn-strobes – Low dB Setting

UL Rating	15 cd* RMS	30 cd* RMS	15/75 cd** RMS	75 cd* RMS	110 cd* RMS
16 Vdc	122	160	146	274	330
16 Vfwr	162	216	231	383	429

*G1-HDVM multi-cd
**G1F-HDV1575 fixed 15/75 cd

Typical Current	15 cd RMS	30 cd RMS	15/75 RMS	75 cd RMS	110 cd RMS
16 Vdc	96	130	158	243	302
20 Vdc	79	104	133	189	241
24 Vdc	68	88	119	156	197
33 Vdc	56	71	100	118	146
16 Vfwr	128	180	241	344	389
20 Vfwr	118	157	213	266	343
24 Vfwr	113	144	195	230	279
33 Vfwr	112	137	182	197	226

Horns

Wall or Ceiling Mounted Temporal Horns (G1-HD)

UL Rating	High dB (RMS)	Low dB (RMS)
16 Vdc	26	19
24 Vdc	36	27
33 Vdc	41	33
16 Vfwr	51	37
24 Vfwr	69	52
33 Vfwr	76	70

Typical Current	High dB RMS	Low dB RMS
16 Vdc	22	17
20 Vdc	24	19
24 Vdc	27	22
33 Vdc	32	26
16 Vfwr	34	30
20 Vfwr	40	34
24 Vfwr	45	38
33 Vfwr	52	47

Wall or Ceiling Mounted Horns (G1-P)

UL Designation	Voltage Range	Max. Current, RMS
Regulated 24 Vdc	16 - 33 Vdc	13 mA
24 fwr	16 - 33 Vfwr	11 mA

Typical Current	RMS
24 Vdc	10
24 Vdc	11
31 Vdc	12
20 Vfwr	9
24 Vfwr	10

Current values are shown in mA.

dBA output

Temporal Horns, Horn-strobes (G1-HD, G1-HDVM series)

High dB Setting	UL464		Average	Peak
	Temporal	Steady	Temporal/ Steady	Temporal/ Steady
16 Vdc	81.4	85.5	91.4	94.2
24 Vdc	84.4	88.6	94.5	97.6
33 Vdc	86.3	90.4	96.9	99.5

Low dB Setting	UL464		Average	Peak
	Temporal	Steady	Temporal/ Steady	Temporal/ Steady
16 Vdc	76.0	80.1	86.3	89.2
24 Vdc	79.4	83.5	89.8	92.5
33 Vdc	82.1	86.5	92.5	95.3

Steady Tone Horns (G1-P series)

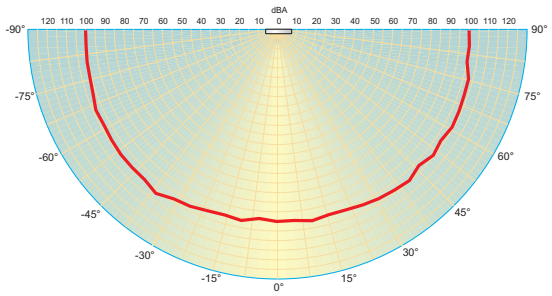
	UL464	Average	Peak
16 Vdc	77 dBA, min	85 dBA	91 dBA
16 Vfwr	77 dBA, min	85 dBA	91 dBA

Notes

1. All values shown are dBA measured at 10 feet (3.01m).
2. UL464 values measured in reverberant room.
3. Average and Peak values are measured in anechoic chamber.

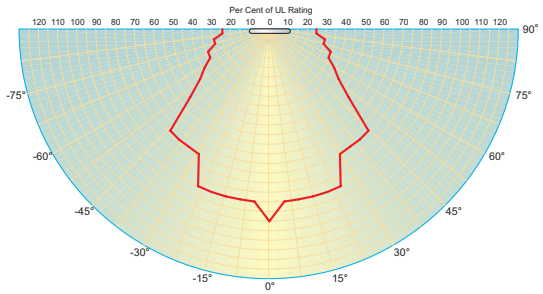
Average Sound Output (dBA)

(High dB setting, anechoic, 24V, measured at 10ft)



Light output - (effective cd)

Percent of UL rating versus angle



Specifications

Housing	Red or white textured UV stabilized, color impregnated engineered plastic. Exceeds 94V-0 UL flammability rating.
Lens	Optical grade polycarbonate (clear)
Mounting (indoor only)	Strobes and horn-strobes are for wall-mount installation only. Horn-only models may be ceiling- or wall-mounted. Flush mount: 2½ inch (64 mm) deep one-gang box Surface mount: Model 27193 surface mount box, wiremold box, or equivalent surface-mount box With optional trim plate: One-gang, two-gang, four-inch square, octagonal, or European single-gang box
Wire connections	Screw terminals: single input for both horn and strobe. #18 to #12 AWG (0.75 mm^2 to 2.5 mm^2) wire size
Operating environment	Indoor only: 32-120°F (0-49°C) ambient temperature. 93% relative humidity
Agency listings/approvals	UL 1971 (S218), UL 1638 (S218), UL 464 (S218), ULC S525, ULC S526, CSFM, CE, FCC, MEA. (All models comply with ADA Code of Federal Regulation Chapter 28 Part 36 Final Rule.)
Dimensions (HxWxD)	Signal: 4-1/2" x 2-3/4" x 13/16" (113 mm x 68 mm x 21 mm) Trimplate: 5" (127 mm); Height – 5-7/8" (149 mm); Depth – ½" (13 mm)
Operating voltage	G1-HD series temporal-tone horns: non-coded, filtered 16-33 Vdc or unfiltered 16-33 Vdc FWR (or coded when horn set to steady tone) G1-HDVM series temporal-tone horn-strobes: non-coded, filtered 16-33 Vdc or unfiltered 16-33 Vdc FWR (or coded (audible NAC only) when used with optional G1M Genesis Signal Master) G1-VM series strobes: non-coded, filtered 16 - 33 Vdc or unfiltered 16-33 Vdc FWR G1-P series steady-tone horns: coded or non-coded, filtered 20-31 Vdc or unfiltered 20-27 Vfwr
Strobe output rating	UL 1971, UL 1638, ULC S526: selectable 15 cd, 30 cd, 75 cd, or 110 cd output UL 1971: 15 cd (fixed 15/75 cd models) UL 1638, ULCS526: 75 cd (fixed 15/75 cd models)
Strobe flash rate	G1-VM strobes and G1-HDVM series temporal-tone horn-strobes: one flash per second synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds. Temporal setting (private mode only): synchronized to temporal output of horns on same circuit
Synchronization Sources	SIGA-CC1S, SIGA-MCC1S, SIGA-CC2A, SIGA-MCC2A, G1M-RM BPS6A, BPS10A, APS6A, APS10A, iO64, iO500, Fireshield Plus 3, 5 and 10 zone. Add G1M for G1-CVM &G1-HDVM devices only.
Horn pulse rate	G1-HD temporal-tone horns and G1-HDVM series temporal-tone horn-strobes: temporal rate synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds. G1-P steady-tone horns: continuous, steady tone only
Temporal audible pattern	½ sec ON, ½ sec OFF, ½ sec ON, ½ sec OFF, ½ sec ON, 1½ sec OFF, then repeat cycle

Candela Output

Lens Color	Rating	Switch Position A	Switch Position B	Switch Position C	Switch Position D
Amber	UL 1638	110 cd	75 cd	30 cd	15 cd
Amber	UL 1971*	88 cd	60 cd	24 cd	12 cd
Clear	UL 1971	110 cd	75 cd	30 cd	15 cd

** Equivalent Rating*

Fire appliances available with white or red housings.

ECS/MNS appliances available with clear or amber lenses.

Ordering Information

Model	Housing	Marking	Lens	Strobe	Horn	Ship Wt. lbs (kg)
Fire Alarm Appliances (c/w running man icon screen printed on housing)						
G1-VM	White	None	Clear	Selectable 15, 30, 75, or 110 cd	Strobe only	0.25 (0.11)
G1F-HD	White	FIRE	Clear	Horn only	Selectable high/low dB	0.25 (0.11)
G1F-HDV1575	White	FIRE	Clear	15/75 cd[1]	Temporal hi/lo dB-24V	0.25 (0.11)
G1F-HDVM	White	FIRE	Clear	Selectable 15, 30, 75, or 110 cd	Selectable high/low dB	0.25 (0.11)
G1F-P	White	FIRE	Clear	Steady Horn (not compatible with Genesis Signal Master)		0.25 (0.11)
G1F-V1575	White	FIRE	Clear	15/75 cd[1]	Strobe only	0.25 (0.11)
G1F-VM	White	FIRE	Clear	Selectable 15, 30, 75, or 110 cd	Strobe only	0.25 (0.11)
G1-HD	White	None	Clear	Horn only	Selectable high/low dB	0.25 (0.11)
G1-HDVM	White	None	Clear	Selectable 15, 30, 75, or 110 cd	Selectable high/low dB	0.25 (0.11)
G1-P	White	None	Clear	Steady Horn (not compatible with Genesis Signal Master)		0.25 (0.11)
G1RF-HD	Red	FIRE	Clear	Horn only	Selectable high/low dB	0.25 (0.11)
G1RF-HDV1575	Red	FIRE	Clear	15/75 cd[1]	Temporal hi/lo dB-24V	0.25 (0.11)
G1RF-HDVM	Red	FIRE	Clear	Selectable 15, 30, 75, or 110 cd	Selectable high/low dB	0.25 (0.11)
G1RF-P	Red	FIRE	Clear	Steady Horn (not compatible with Genesis Signal Master)		0.25 (0.11)
G1RF-V1575	Red	FIRE	Clear	15/75 cd[1]	Strobe only	0.25 (0.11)
G1RF-VM	Red	FIRE	Clear	Selectable 15, 30, 75, or 110 cd	Strobe only	0.25 (0.11)
G1R-HD	Red	None	Clear	Horn only	Selectable high/low dB	0.25 (0.11)
G1R-HDVM	Red	None	Clear	Selectable 15, 30, 75, or 110 cd	Selectable high/low dB	0.25 (0.11)
G1R-P	Red	None	Clear	Steady Horn (not compatible with Genesis Signal Master)		0.25 (0.11)
G1R-VM	Red	None	Clear	Selectable 15, 30, 75, or 110 cd	Strobe only	0.25 (0.11)
ECS/MNS Appliances (no running man icon on housing)						
G1WA-VMA	White	ALERT	Amber	Selectable A, B, C or D	Strobe only	0.25 (0.11)
G1WA-VMC	White	ALERT	Clear	Selectable 15, 30, 75, or 110 cd	Strobe only	0.25 (0.11)
G1WN-VMA	White	None	Amber	Selectable A, B, C or D	Strobe only	0.25 (0.11)
G1WN-VMC	White	None	Clear	Selectable 15, 30, 75, or 110 cd	Strobe only	0.25 (0.11)
Trim Plates						
G1T	White	None	Genesis Trim Plate (for two-gang or 4" square boxes)			0.15 (0.7)
G1RT	Red	None	Genesis Trim Plate (for two-gang or 4" square boxes)			0.15 (0.7)
G1T-FIRE	White	FIRE	Genesis Trim Plate (for two-gang or 4" square boxes)			0.15 (0.7)
G1RT-FIRE	Red	FIRE	Genesis Trim Plate (for two-gang or 4" square boxes)			0.15 (0.7)
G1WT-ALERT	White	ALERT	Genesis Trim Plate (for two-gang or 4" square boxes)			0.15 (0.7)
Surface Boxes						
27193-16	White	N/A	One-gang surface mount box			1 (0.4)
27193-11	Red	N/A	One-gang surface mount box			1 (0.4)

[1] These 15/75 cd models provide fixed output and are not multi-candela devices. The 15 cd output component complies with UL1971, while the 75 cd output component complies with UL 1638.

LIFE SAFETY & INCIDENT MANAGEMENT

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