YOUR PARTNER FOR SUCCESS

National Electric Contact:
Paul Martinez
505-424-9144
505-660-1675
10/02/2015

Los Alamos Teen Center
Sanbros Corporation
O&M Manual

LOS ALAMOS TEEN CENTER

Operation & Maintenance Manual

General Order

SAQ0594802

Volume 1 of 1

Equipment:

Panelboards
Safety Switches

NATIONAL ELEC SUP SANTA FE NM PO# 214617

SANBROS CORPORATION

Date: 10/2/2015

Main Table of Contents

Contact Information

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For warranty support	**877-ETNCARE**
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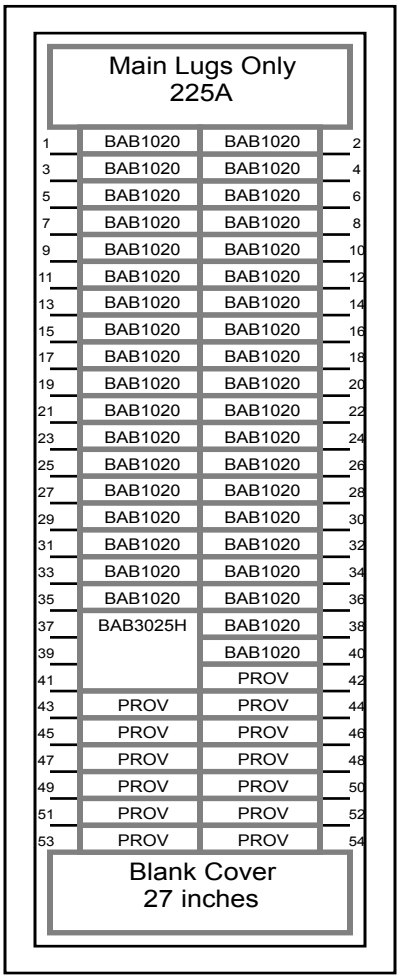
For on-site field service, commissioning & maintenance	**(800) 498-2678**

Panelboards

Drawings



General Information **(Section 1 of 1)**

Service Voltage: 208Y/120V 3Ph 4W **Enclosure:** Type 1
Bus Rating & Type: 225A Aluminum **Neutral Rating:** 225A
Ground Bar: Std. Bolted Copper, Cu cable only
S.C. Rating: 10k A.I.C. Fully Rated

Main Device Type: Main Lugs Only - Top Cable Entry
Main Terminals: Mechanical - (1) #4-500 kcmil (Cu/Al)
Neutral Terminals: Mechanical - (1) #4-500 kcmil (Cu/Al)
Box Catalog No.: No Box
Trim: EZ Trim, Door in Door, Concealed Hardware (EZT2072F)

Flush Mounted

Box Dimensions: 72.00" [1828.8mm]H x 20.00" [508.0mm]W x 5.75" [146.1mm]D
Min. Gutter Size: Top = 5.5" [139.7mm] Bottom = 5.5" [139.7mm]
Left = 6.0" [152.4mm] Right = 6.0" [152.4mm]

Panel ID Nameplate: **(1) PANEL B**
Type: Plastic, adhesive-backed **(2) 208Y/120V 3Ph 4W**
Color: White with Black Letters **(3)**

UL

Trim Lock: Standard Lock & Key (Keyed WEM2)
Circuit Directory: Plastic Sleeve with Card

Device Modifications:

Ref #	Description

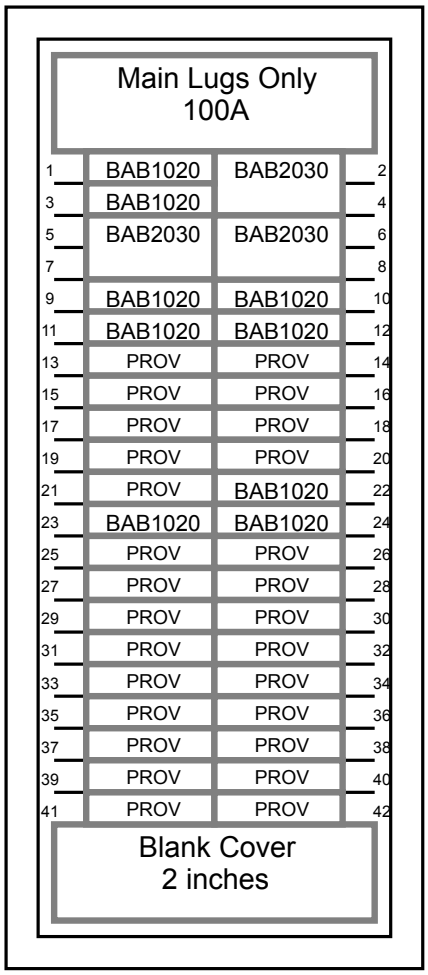
Notes:

Branch Devices

Qty	Poles	Trip	Frame	Amps	kAIC
38	1	20	BAB	100	10
1	3	25	BAB	100	10
13	1		PROV		

PREPARED BY	DATE		
PAUL MARTINEZ	10/2/2015	**Eaton**	
APPROVED BY	DATE	JOB NAME	LOS ALAMOS TEEN CENTER
		DESIGNATION	PANEL B
VERSION		TYPE	DRAWING TYPE
1.0.0.3		PRL1a	Final

NEG-ALT Number	REVISION	DWG SIZE	G.O.	ITEM	SHEET
D63N0325X5K1-0000	0	A	SAQ0594802	001I	1 of 1



General Information **(Section 1 of 1)**

Service Voltage: 208Y/120V 3Ph 4W **Enclosure:** Type 1
Bus Rating & Type: 100A Aluminum **Neutral Rating:** 100A
Ground Bar: Std. Bolted Copper, Cu cable only
S.C. Rating: 10k A.I.C. Fully Rated

Main Device Type: Main Lugs Only - Top Cable Entry
Main Terminals: Mechanical - (1) #6-300 kcmil (Cu/Al)
Neutral Terminals: Mechanical - (1) #6-300 kcmil (Cu/Al)
Box Catalog No.: No Box
Trim: EZ Trim, Door in Door, Concealed Hardware (EZT2042S)

Surface Mounted

Box Dimensions: 42.00" [1066.8mm]H x 20.00" [508.0mm]W x 5.75" [146.1mm]D
Min. Gutter Size: Top = 5.5" [139.7mm] Bottom = 5.5" [139.7mm]
Left = 6.0" [152.4mm] Right = 6.0" [152.4mm]

Panel ID Nameplate: **(1) PANEL C**
Type: Plastic, adhesive-backed **(2) 208Y/120V 3Ph 4W**
Color: White with Black Letters **(3)**

NEC Lighting & Appliance, UL CTL *****Non-Interchangeable Main Device*****

Conduit Shields: Top = Open Back - 48H
Bottom = Open Back - 33H
Trim Lock: Standard Lock & Key (Keyed WEM2)
Circuit Directory: Plastic Sleeve with Card

Device Modifications:

Ref #	Description

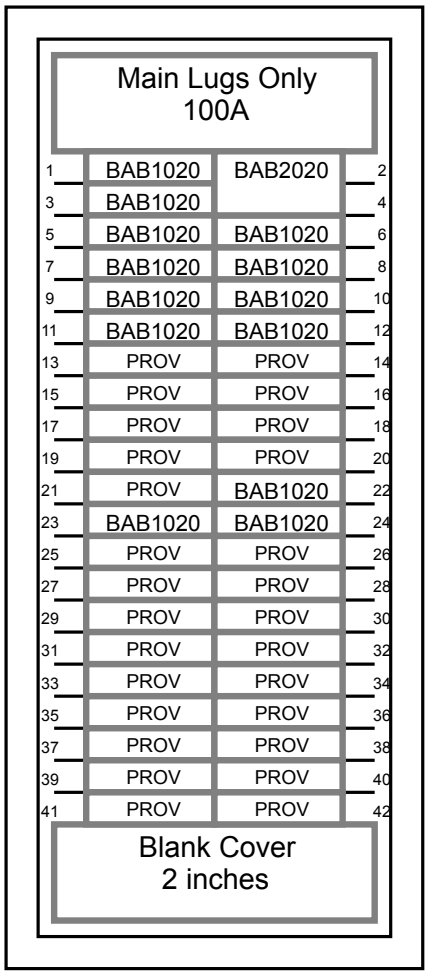
Notes:

Branch Devices

Qty	Poles	Trip	Frame	Amps	kAIC
9	1	20	BAB	100	10
3	2	30	BAB	100	10
27	1		PROV		

PREPARED BY	DATE		
PAUL MARTINEZ	10/2/2015	**Eaton**	
APPROVED BY	DATE	JOB NAME	LOS ALAMOS TEEN CENTER
		DESIGNATION	PANEL C
VERSION		TYPE	DRAWING TYPE
1.0.0.3		PRL1a	Final

NEG-ALT Number	REVISION	DWG SIZE	G.O.	ITEM	SHEET
D63N0325X5K1-0000	0	A	SAQ0594802	002I	1 of 1



General Information **(Section 1 of 1)**

Service Voltage:	208Y/120V 3Ph 4W	**Enclosure:**	Type 1
Bus Rating & Type:	100A Aluminum	**Neutral Rating:**	100A
Ground Bar:	Std. Bolted Aluminum, Al or Cu cable		
S.C. Rating:	10k A.I.C. Fully Rated		

Main Device Type: Main Lugs Only - Top Cable Entry
Main Terminals: Mechanical - (1) #6-300 kcmil (Cu/Al)
Neutral Terminals: Mechanical - (1) #6-300 kcmil (Cu/Al)
Box Catalog No.: No Box
Trim: EZ Trim, Door in Door, Concealed Hardware (EZT2042S)

Surface Mounted

Box Dimensions: 42.00" [1066.8mm]H x 20.00" [508.0mm]W x 5.75" [146.1mm]D
Min. Gutter Size: Top = 5.5" [139.7mm] Bottom = 5.5" [139.7mm]
Left = 6.0" [152.4mm] Right = 6.0" [152.4mm]

Panel ID Nameplate: **(1) PANEL D**
Type: Plastic, adhesive-backed **(2) 208Y/120V 3Ph 4W**
Color: White with Black Letters **(3)**

NEC Lighting & Appliance, UL CTL *****Non-Interchangeable Main Device*****

Conduit Shields: Top = Open Back - 48H
Bottom = Open Back - 33H
Trim Lock: Standard Lock & Key (Keyed WEM2)
Circuit Directory: Plastic Sleeve with Card

Device Modifications:

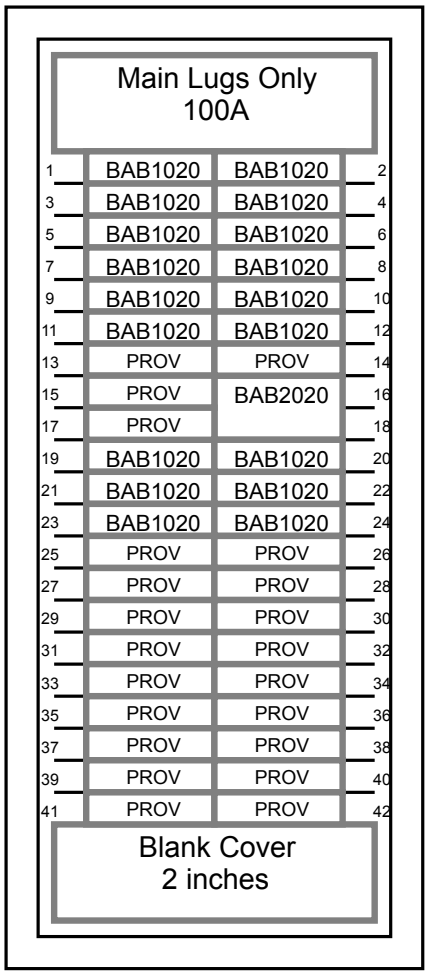
Ref #	Description

Notes:

Branch Devices

Qty	Poles	Trip	Frame	Amps	kAIC
13	1	20	BAB	100	10
1	2	20	BAB	100	10
27	1		PROV		

PREPARED BY	DATE				
PAUL MARTINEZ	10/2/2015	**Eaton**			
APPROVED BY	DATE	JOB NAME	LOS ALAMOS TEEN CENTER		
		DESIGNATION	PANEL D		
VERSION		TYPE		DRAWING TYPE	
1.0.0.3		PRL1a		Final	
NEG-ALT Number	REVISION / DWG SIZE	G.O.		ITEM	SHEET
D63N0325X5K1-0000	0 / A	SAQ0594802		003I	1 of 1



General Information **(Section 1 of 1)**

Service Voltage:	208Y/120V 3Ph 4W	**Enclosure:**	Type 1
Bus Rating & Type:	100A Aluminum	**Neutral Rating:**	100A
Ground Bar:	Std. Bolted Aluminum, Al or Cu cable		
S.C. Rating:	10k A.I.C. Fully Rated		

Main Device Type: Main Lugs Only - Top Cable Entry
Main Terminals: Mechanical - (1) #6-300 kcmil (Cu/Al)
Neutral Terminals: Mechanical - (1) #6-300 kcmil (Cu/Al)
Box Catalog No.: No Box
Trim: EZ Trim, Door in Door, Concealed Hardware (EZT2042S)

Surface Mounted

Box Dimensions: 42.00" [1066.8mm]H x 20.00" [508.0mm]W x 5.75" [146.1mm]D
Min. Gutter Size: Top = 5.5" [139.7mm] Bottom = 5.5" [139.7mm]
Left = 6.0" [152.4mm] Right = 6.0" [152.4mm]

Panel ID Nameplate:
Type: Plastic, adhesive-backed
Color: White with Black Letters

(1) PANEL F
(2) 208Y/120V 3Ph 4W
(3)

NEC Lighting & Appliance, UL CTL *****Non-Interchangeable Main Device*****

Conduit Shields: Top = Open Back - 24H
Bottom = Open Back - 33H
Trim Lock: Standard Lock & Key (Keyed WEM2)
Circuit Directory: Plastic Sleeve with Card

Device Modifications:

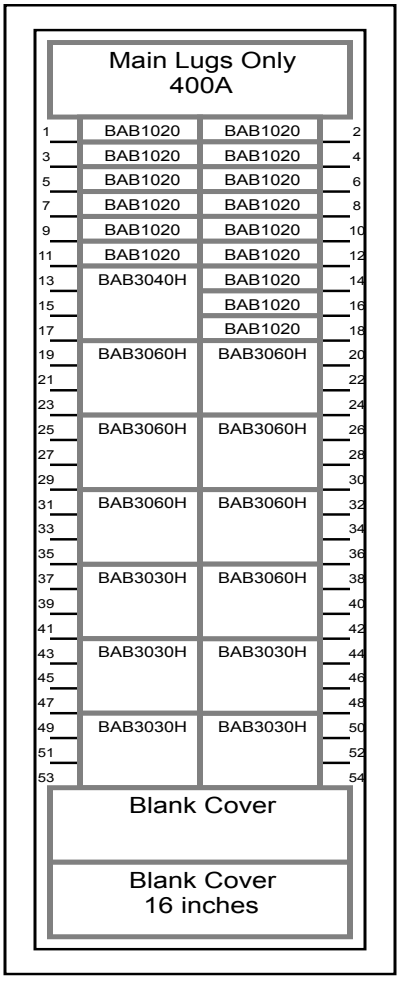
Ref #	Description

Notes:

Branch Devices

Qty	Poles	Trip	Frame	Amps	kAIC
18	1	20	BAB	100	10
1	2	20	BAB	100	10
22	1		PROV		

PREPARED BY: PAUL MARTINEZ	DATE: 10/2/2015	**Eaton**			
APPROVED BY:	DATE:	JOB NAME: LOS ALAMOS TEEN CENTER			
		DESIGNATION: PANEL F			
VERSION: 1.0.0.3		TYPE: PRL1a		DRAWING TYPE: Final	
NEG-ALT Number: D63N0325X5K1-0000	REVISION: 0	DWG SIZE: A	G.O.: SAQ0594802	ITEM: 004I	SHEET: 1 of 1



General Information **(Section 1 of 1)**

Service Voltage:	208Y/120V 3Ph 4W	**Enclosure:**	Type 1
Bus Rating & Type:	400A Aluminum	**Neutral Rating:**	400A
Ground Bar:	Std. Bolted Aluminum, Al or Cu cable		
S.C. Rating:	10k A.I.C. Fully Rated		

Main Device Type: Main Lugs Only - Top Cable Entry
Main Terminals: Mechanical - (2) 3/0-750 kcmil (Cu/Al)
Neutral Terminals: Mechanical - (2) 3/0-750 kcmil (Cu/Al)
Box Catalog No.: No Box
Trim: EZ Trim, Door in Door, Concealed Hardware (EZT2072F)

Flush Mounted

Box Dimensions: 72.00" [1828.8mm]H x 20.00" [508.0mm]W x 5.75" [146.1mm]D
Min. Gutter Size: Top = 5.5" [139.7mm] Bottom = 5.5" [139.7mm]
Left = 6.0" [152.4mm] Right = 6.0" [152.4mm]

Panel ID Nameplate:
Type: Plastic, adhesive-backed
Color: White with Black Letters

(1) PANEL DP
(2) 208Y/120V 3Ph 4W
(3)

UL *****Non-Interchangeable Main Device*****

Trim Lock: Standard Lock & Key (Keyed WEM2)
Circuit Directory: Plastic Sleeve with Card

Device Modifications:

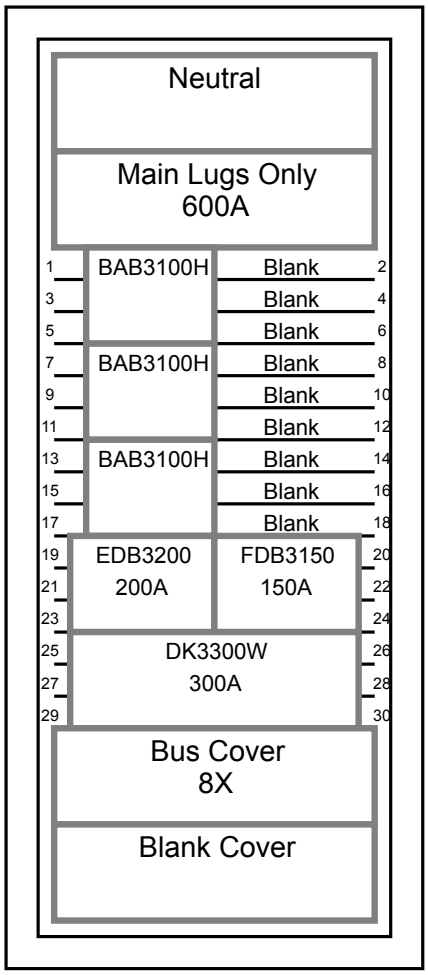
Ref #	Description

Notes:

Branch Devices

Qty	Poles	Trip	Frame	Amps	kAIC
15	1	20	BAB	100	10
1	3	40	BAB	100	10
7	3	60	BAB	100	10
5	3	30	BAB	100	10

PREPARED BY: PAUL MARTINEZ	DATE: 10/2/2015	**Eaton**			
APPROVED BY:	DATE:	JOB NAME: LOS ALAMOS TEEN CENTER			
		DESIGNATION: PANEL DP			
VERSION: 1.0.0.3		TYPE: PRL1a		DRAWING TYPE: Final	
NEG-ALT Number: D63N0325X5K1-0000	REVISION: 0	DWG SIZE: A	G.O.: SAQ0594802	ITEM: 005I	SHEET: 1 of 1



General Information **(Section 1 of 1)**

Service Voltage:	208Y/120V 3Ph 4W	**Enclosure:**	Type 3R
Bus Rating & Type:	600A Aluminum	**Neutral Rating:**	600A
Ground Bar:	Std. Bolted Aluminum, Al or Cu cable		
S.C. Rating:	10k A.I.C. Fully Rated		

Main Device Type: Main Lugs Only - Top Cable Entry
Main Terminals: Mechanical - (2) 3/0-750 kcmil (Cu/Al)
Neutral Terminals: Mechanical - (2) 3/0-750 kcmil (Cu/Al)
Box Catalog No.: RPCB3690
Trim: Complete Enclosure (Includes Trim)

Surface Mounted

Box Dimensions: 90.00" [2286.0mm]H x 36.00" [914.4mm]W x 12.85" [326.4mm]D
Min. Gutter Size: Top = 10.625" [269.9mm] Bottom = 10.625" [269.9mm]
Left = 6" [152.4mm] Right = 8" [203.2mm]

Panel ID Nameplate:
Type: Plastic, adhesive-backed
Color: White with Black Letters

(1) MDP SECTION 2
(2) 208Y/120V 3Ph 4W
(3)

UL

Trim Lock: T-Handle Lock Assembly
Circuit Directory: Plastic Sleeve with Card
Painted Box: ANSI 61

Device Modifications:

Ref #	Description

Notes:

Branch Devices

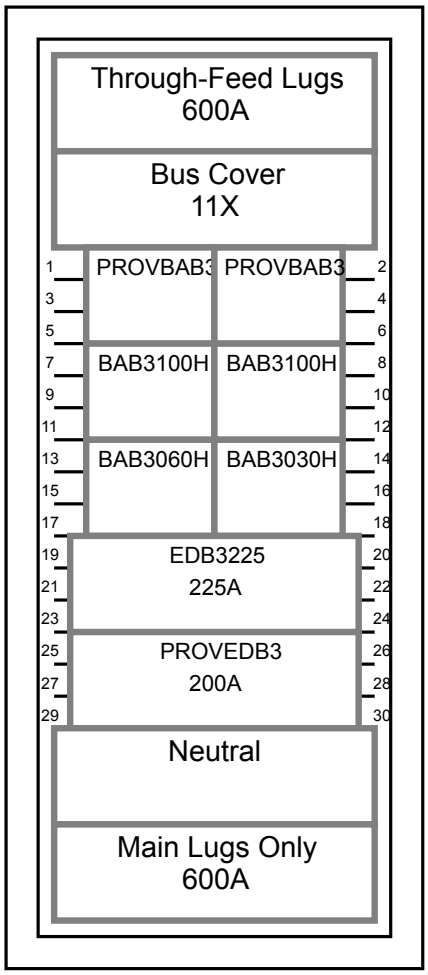
Qty	Poles	Trip	Frame	Amps	kAIC
1	3	150	FDB	150	10
1	3	300	DK	400	10
1	3	200	EDB	225	10
3	3	100	BAB	100	10

PREPARED BY: PAUL MARTINEZ	DATE: 10/2/2015	**Eaton**			
APPROVED BY:	DATE:	JOB NAME: LOS ALAMOS TEEN CENTER			
		DESIGNATION: MDP SECTION 2			
VERSION: 1.0.0.3		TYPE: PRL4		DRAWING TYPE: Final	
NEG-ALT Number: D63N0325X5K1-0000	REVISION: 0	DWG SIZE: A	G.O.: SAQ0594802	ITEM: 006I	SHEET: 1 of 2

Pow-R-Line4 Device Specifications

Ckt #s	Nameplate	Device	Trip	Terminal	Modifications
Main		600A-MLO		(2) 3/0-750 kcmil (Cu/Al)	
1,3,5		BAB3100H	100	(1) #8-1/0 (Cu/Al)	
7,9,11		BAB3100H	100	(1) #8-1/0 (Cu/Al)	
13,15,17		BAB3100H	100	(1) #8-1/0 (Cu/Al)	
19,21,23		EDB3200	200	(1) #14-4/0 (Cu/Al)	
20,22,24		FDB3150	150	(1) #4-4/0 (Cu/Al)	
25,26,27 28,29,30		DK3300W	300	(1) 250-500 kcmil (Cu/Al)	

PREPARED BY: PAUL MARTINEZ	DATE: 10/2/2015	**Eaton**			
APPROVED BY:	DATE:	JOB NAME: LOS ALAMOS TEEN CENTER			
		DESIGNATION: MDP SECTION 2			
VERSION: 1.0.0.3		TYPE: PRL4		DRAWING TYPE: Final	
NEG-ALT Number: D63N0325X5K1-0000	REVISION: 0	DWG SIZE: A	G.O.: SAQ0594802	ITEM: 006I	SHEET: 2 of 2



General Information **(Section 1 of 1)**

Service Voltage:	208Y/120V 3Ph 4W	**Enclosure:**	Type 3R
Bus Rating & Type:	600A Copper	**Neutral Rating:**	600A
Ground Bar:	Std. Bolted Aluminum, Al or Cu cable		
S.C. Rating:	10k A.I.C. Fully Rated		

Main Device Type:	Main Lugs Only - Bottom Cable Entry
Main Terminals:	Mechanical - (2) 3/0-750 kcmil (Cu/Al)
Neutral Terminals:	Mechanical - (2) 3/0-750 kcmil (Cu/Al)
Through-Feed Lugs:	Mechanical - (2) 3/0-750 kcmil (Cu/Al)
Box Catalog No.:	WPQ2890
Trim:	Complete Enclosure (Includes Trim)
	Surface Mounted
Box Dimensions:	90.00" [2286.0mm]H x 28.00" [711.2mm]W x 6.5" [165.1mm]D
Min. Gutter Size:	Top = 5.5" [139.7mm] Bottom = 5.5" [139.7mm] Left = 8" [203.2mm] Right = 8" [203.2mm]

Panel ID Nameplate: **(1) MDP SECTION 1**
Type: Plastic, adhesive-backed **(2) 208Y/120V 3Ph 4W**
Color: White with Black Letters **(3)**

UL

Trim Lock: T-Handle Lock Assembly
Circuit Directory: Plastic Sleeve with Card
Density Rated Bus
Painted Box: ANSI 61

Device Modifications:

Ref #	Description

Notes:

Branch Devices

Qty	Poles	Trip	Frame	Amps	kAIC
2	3	100	BAB	100	10
1	3		PROVEDB3		
1	3	225	EDB	225	10
1	3	60	BAB	100	10
1	3	30	BAB	100	10
2	3		PROVBAB3		

PREPARED BY	DATE	**Eaton**			
PAUL MARTINEZ	10/2/2015				
APPROVED BY	DATE	JOB NAME	LOS ALAMOS TEEN CENTER		
		DESIGNATION	MDP SECTION 1		
VERSION		TYPE		DRAWING TYPE	
1.0.0.3		PRL3a		Final	
NEG-ALT Number	REVISION / DWG SIZE	G.O.		ITEM	SHEET
D63N0325X5K1-0000	0 / A	SAQ0594802		007I	1 of 1

Instruction Data

ANSI/NEMA PB 1.1-2013

General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less

Published by

National Electrical Manufacturers Association
1300 North 17th Street, Suite 900
Rosslyn, Virginia 22209

www.nema.org

Approved: September 11, 2013

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(ANSI Accredited Standards Committee)

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Figures

Foreword

This publication is a guide of practical information containing instructions for the proper installation, operation, and maintenance of panelboards rated 600 volts or less.

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency regarding installation, operation, or maintenance.

It is recommended that work described in this set of instructions be performed only by qualified personnel familiar with the construction and operation of panelboards and that such work be performed only after reading this complete set of instructions. For specific information not covered by these instructions, you are urged to contact the manufacturer of the panelboard directly.

In the preparation of this standards publication input of users and other interested parties has been sought and evaluated. Inquiries, comments, and proposed or recommended revisions should be submitted to the concerned NEMA product section by contacting the following: These recommendations will be reviewed periodically and updated as necessary.

Senior Technical Director, Operations
National Electrical Manufacturers Association
1300 North 17th Street, Suite 900
Rosslyn, Virginia 22209

Publication PB 1.1- 2013 revises and supersedes PB 1.1-2007.

This standards publication was developed by the Panelboard and Distribution Board Product Group of the LVDE Section. Product Group approval of the standard does not necessarily imply that all Product Group members voted for its approval or participated in its development. At the time it was approved, the Product Group was composed of the following members:

Eaton Corporation.—Pittsburgh, PA
GE Industrial Solutions—Plainville, CT
Hubbell, Inc.—Orange, CT
Milbank Manufacturing Company—Kansas City, MO
Penn Panel & Box Company—Collingdale, PA
Reliance Controls Corporation—Racine, WI
Siemens Industry, Inc.—Norcross, GA
Schneider Electric —Palatine, IL

Section 1
SCOPE

This publication covers single panelboards or groups of panel units suitable for assembly in the form of single panelboards, including buses, and with or without switches or automatic overload protective devices (fuses or circuit breakers), or both. These units are used in the distribution of electricity at 600 volts and less with:

1600—ampere mains or less
1200—ampere branch circuits or less

Specifically excluded are live-front panelboards, panelboards employing cast enclosures for special service conditions, and panelboards designed primarily for residential and light commercial service equipment.

Section 2
REFERENCES

National Fire Protection Association (NFPA)
Batterymarch Park
Quincy, MA 02269

NFPA 70 *National Electrical Code®*
NFPA 70E *Standard for Electrical Safety in the Workplace*

National Electrical Manufacturers Association (NEMA)
1300 North 17th Street, Suite 900
Rosslyn, Virginia 22209

AB 4 *Guidelines for Inspection and Preventative Maintenance of Molded Case Circuit Breakers Used in Commercial and Industrial Applications*

PB 2.2 *Application Guide for Ground Fault Protective Devices for Equipment*

Guidelines for Handling Water Damaged Electrical Products

Section 3
GENERAL

WARNING—HAZARDOUS VOLTAGES IN ELECTRICAL EQUIPMENT CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. UNLESS OTHERWISE SPECIFIED, INSPECTION AND MAINTENANCE SHOULD ONLY BE PERFORMED ON PANELBOARDS AND EQUIPMENT TO WHICH POWER HAS BEEN TURNED OFF, DISCONNECTED AND ELECTRICALLY ISOLATED SO THAT NO ACCIDENTAL CONTACT CAN BE MADE WITH ENERGIZED PARTS. FOLLOW ALL MANUFACTURER'S WARNINGS AND INSTRUCTIONS.

Safety-related work practices, as described in NFPA 70E, should be followed at all times.
All requirements of the *National Electrical Code*® NFPA 70 should be followed.

CAUTION—HYDROCARBON SPRAY PROPELLANTS AND HYDROCARBON BASED SPRAYS OR COMPOUNDS WILL CAUSE DEGRADATION OF CERTAIN PLASTICS. CONTACT THE PANELBOARD MANUFACTURER BEFORE USING THESE PRODUCTS TO CLEAN, DRY, OR LUBRICATE COMPONENTS DURING INSTALLATION OR MAINTENANCE.

3.1 SUCCESSFUL OPERATION OF PANELBOARDS

The successful operation of panelboards is dependent upon proper installation, operation, and maintenance. Neglecting fundamental installation and maintenance requirements may lead to personal injury, death, or damage to electrical equipment or other property.

3.2 QUALIFIED PERSONNEL

Installation, operation, and maintenance of panelboards should be conducted only by qualified personnel.

3.3 DEFINITION OF QUALIFIED PERSONNEL

For purposes of these guidelines, a qualified person is one who is familiar with the installation, construction, and operation of the equipment and the hazards involved. In addition, the person is:

3.3.1 Requirements

Knowledgeable of the requirements of the *National Electrical Code*® and of all other applicable codes, laws, and standards.

3.3.2 Established Safety Practices

Trained and authorized to test, energize, clear, ground, tag, and lockout circuits and equipment in accordance with established safety practices.

3.3.3 Protective Equipment

Trained in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses or face shields, and flash resistant clothing in accordance with established safety practices.

3.3.4 First Aid

Trained in rendering first aid.

3.4 SUITABLE RATINGS

Verify that all equipment being installed has ratings suitable for the installation.

Section 4
INSTALLATION OF PANELBOARD CABINETS (BOXES)

4.1 INSTALLATION INSTRUCTIONS

Installation of the cabinet in a neat and workmanlike manner. Follow the manufacturer's installation instructions.

4.2 LOCATION IN BUILDING

Locate the cabinet so that it is readily accessible and not exposed to physical damage.

4.3 FLAMMABLE MATERIAL

Locate the cabinet well away from flammable material.

4.4 UNUSUAL SERVICE CONDITIONS

Do not locate the cabinet where it will be exposed to ambient temperatures above 40°C (104°F), corrosive or explosive fumes, dust, vapors, dripping or standing water, abnormal vibration, mechanical shock, high humidity, tilting, or unusual operating conditions, unless the cabinet/panelboard combination has been designed and so identified by the manufacturer for these conditions.

4.5 INDOOR DAMP LOCATIONS

Locate or shield the cabinet so as to prevent moisture and water from entering and accumulating therein. Mount the cabinet so that there is at least 1/4 inch of air space between the cabinet and the wall or other supporting surface.

4.6 WET LOCATIONS

Cabinets should be specifically approved for wet locations. Mount the cabinet so that there is at least 1/4 inch of air space between the cabinet and the wall or other supporting surface.

4.7 CLEARANCE FROM CEILING

Do not locate the cabinet against a non-fireproof ceiling; allow a space of 3 feet between the ceiling and cabinet unless an adequate fireproof shield is provided.

4.8 SPACE AROUND THE CABINET

When selecting a location, provide sufficient access and working space around the cabinet (see Section 110.26 of the *National Electrical Code*®). The width of the working space in front of the panelboard should be at least 30 inches, or the width of the cabinet, whichever is greater, and this space should not be used as storage. The working space should have adequate lighting and a minimum head room of 6 feet 6 inches.

4.9 MOUNTING OF CABINET

The cabinet should be reliably secured to the mounting surface. Do not depend on wooden plugs driven into holes in masonry, concrete, plaster, or similar materials. (See Section 110.13 of the *National Electrical Code*®.)

4.10 FLUSH MOUNTING IN WALL

In walls of concrete, tile, or other noncombustible material, install the cabinet so that its front edge will not set back more than 1/4 inch from the finished surface. In walls of wood or other combustible material, cabinets should be flush with or project beyond the finished surface. (See Section 312.3 of the *National Electrical Code*®.)

4.11 UNUSED OPENINGS IN CABINET

Effectively close unused openings in the cabinet to provide protection which is substantially equivalent to that afforded by the wall of the cabinet.

4.12 GROUNDING OF PANELBOARD CABINETS

Ground the cabinet as specified in Article 250 of the *National Electrical Code*®. When the cabinet contains service equipment, it is necessary to bond the cabinet to the grounded (neutral) service conductor.

Section 5
INSTALLATION OF CONDUIT AND CONDUCTORS

5.1 CONDUITS INSTALLATION

Conduits should be installed so as to prevent moisture or water from entering and accumulating within the enclosure. Provision should be made to protect conductors from abrasion in accordance with Article 312 of the *National Electrical Code®*.

5.2 KNOCKOUTS REMOVAL

Knockouts should be removed as follows:

IMPORTANT—Remove knockouts, ONE AT A TIME, alternating INWARD and OUTWARD.

5.2.1 First Step—Remove Center Knockout

Remove center knockout INWARD.

5.2.1.1 Screwdriver Blade

Place screwdriver blade against point farthest from tie and strike INWARD (Figure 1). Bend back and forth to break tie.

5.2.2 Next Step—Remove Rings

Remove rings ONE AT A TIME without straining remaining rings.

5.2.2.1 Pry First Ring

Pry first ring OUTWARD with screwdriver midway between ties, using pliers flat against box under screwdriver (Figure 2). Bend ring sections OUTWARD with pliers, then back and forth to break ties (Figure 5-3).

5.2.2.2 Second Ring

Remove second ring INWARD by striking screwdriver (with blade against point midway between ties) then breaking ring sections inward and back and forth to break ties.

5.3 *NATIONAL ELECTRICAL CODE®*, ARTICLE 300

Refer to the *National Electrical Code®*, Article 300 for proper wiring methods. See 6.7 for making proper connections.

5.4 CONDUCTOR LENGTH

Keep conductor length to a minimum within the wiring gutter. Excessive conductor length will result in additional heating and may result in overheating. However, conductors should be long enough to reach the terminal location in a manner that avoids strain on the terminal.

5.5 EXERCISE CARE

Exercise care to maintain the largest practical bending radius of conductors; otherwise the insulation may be damaged and terminal connections may become loosened. Deflection of conductors shall comply with *NEC®* Section 312.6.

5.6 *NATIONAL ELECTRICAL CODE®*, SECTION 725.136

Refer to the *National Electrical Code®*, Section 725.136 for the separation requirements for conductors of Class 2 and Class 3 remote-control, signaling and power-limited circuits.

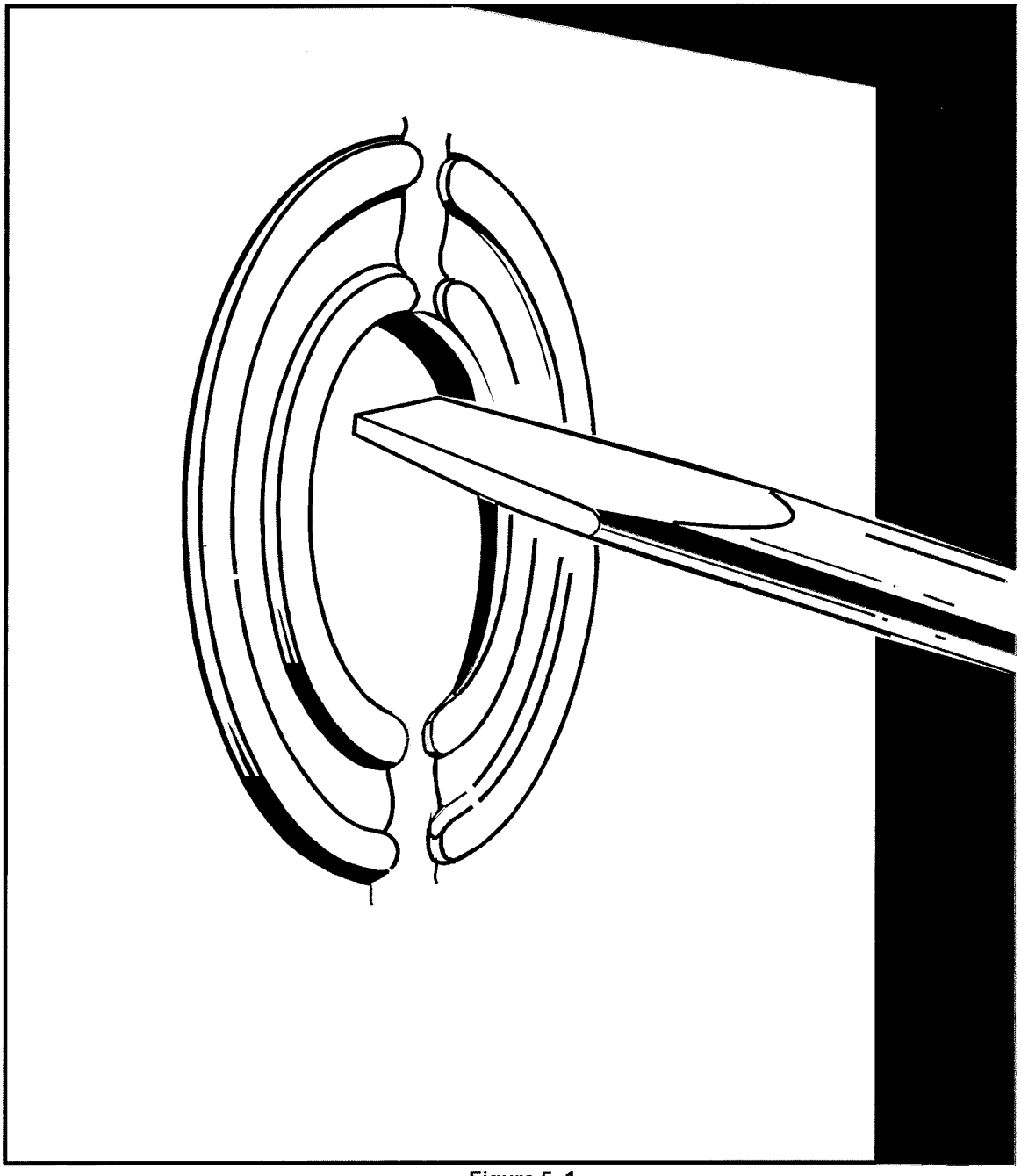

Figure 5–1
KNOCKOUT REMOVAL—STEP 1

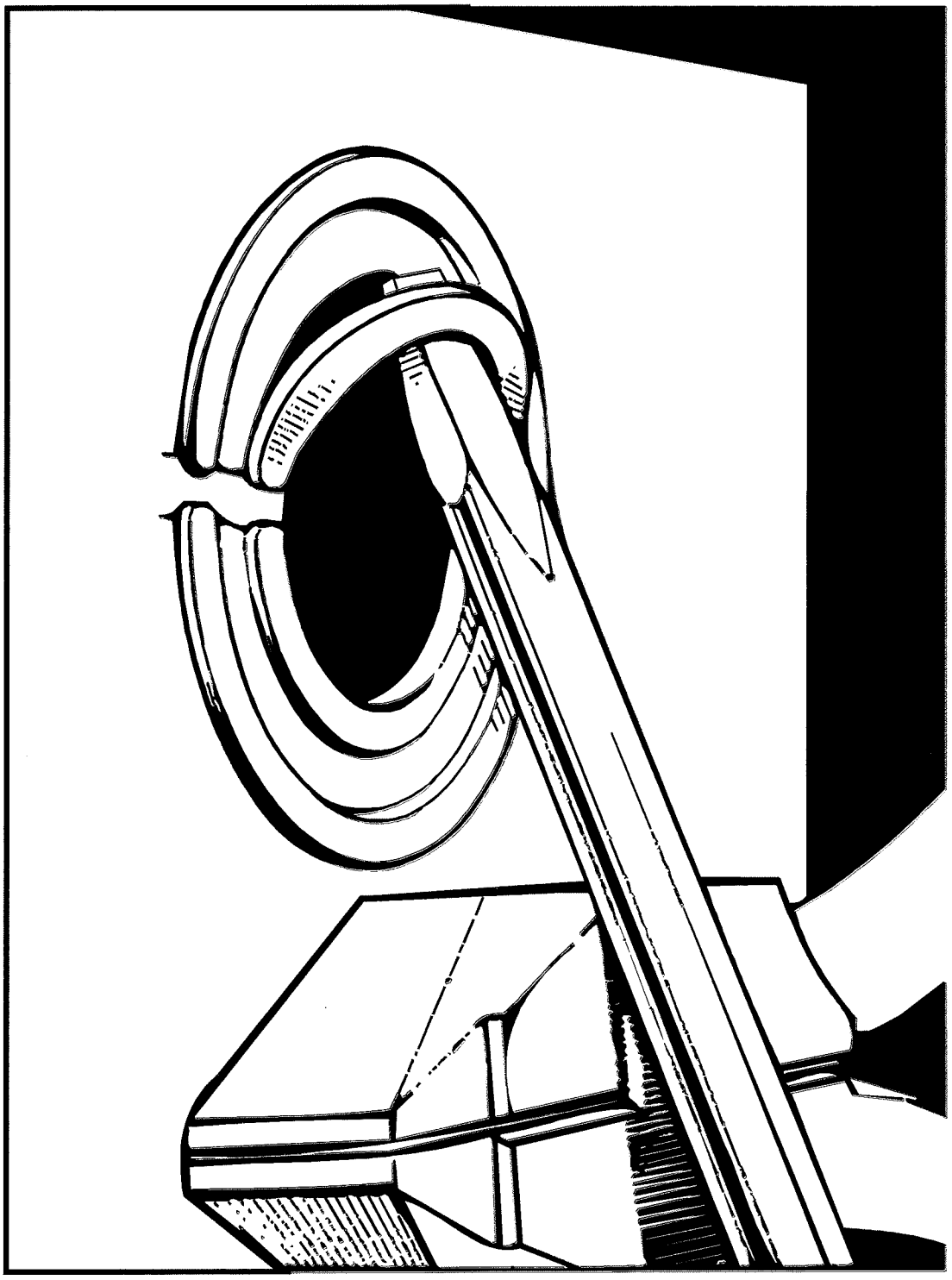

Figure 5–2
KNOCKOUT REMOVAL—STEP 2

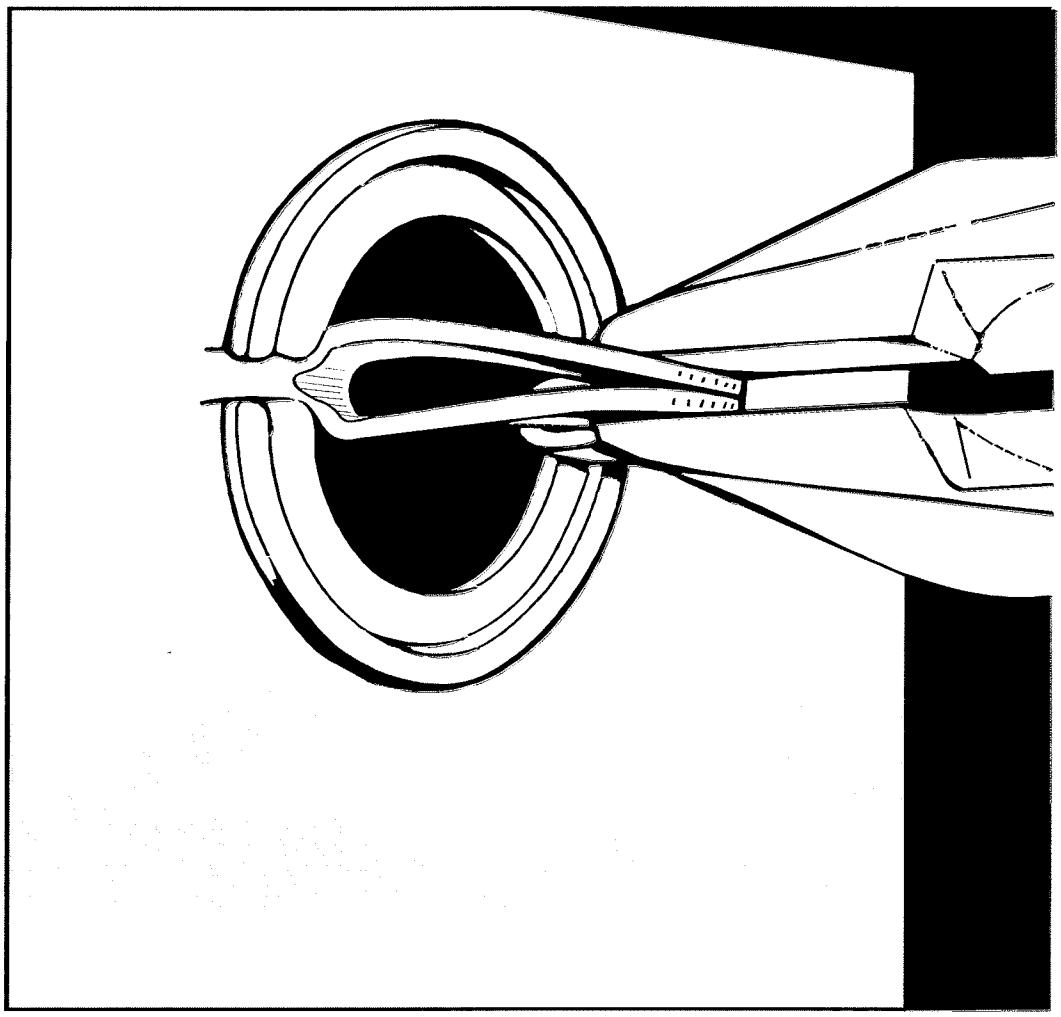

Figure 5–3
KNOCKOUT REMOVAL—STEP 3

Section 6
INSTALLATION OF PANELBOARD

6.1 PROPER STORAGE

Store the panelboard in a clean, dry place located so that mechanical damage from work personnel in the area is not likely to happen.

6.2 UNPACKING

Care should be exercised in unpacking the panelboard to prevent damage and loss of instruction materials and loose parts.

6.3 INSPECTION

Check for shipping damage and check to make sure that the panelboard is the correct one for installation in the cabinet.

6.4 CARE

Care should be taken to protect the panelboard internal parts from contamination during the installation process.

6.4.1 Cleaning

Clean the cabinet of all foreign materials. If parts at connection points are spattered with cement, plaster, paint, or other foreign material, remove the foreign materials with great care to avoid damage to the plating.

CAUTION—HYDROCARBON SPRAY PROPELLANTS AND HYDROCARBON BASED SPRAYS OR COMPOUNDS WILL CAUSE DEGRADATION OF CERTAIN PLASTICS. CONTACT THE PANELBOARD MANUFACTURER BEFORE USING THESE PRODUCTS TO CLEAN, DRY, OR LUBRICATE PANELBOARD COMPONENTS DURING INSTALLATION OR MAINTENANCE.

6.5 MANUFACTURER'S INSTRUCTIONS

Carefully follow the manufacturer's instructions and labels.

6.6 INSTALLATION

6.6.1 Alignment Devices

Adjust the alignment devices where provided.

6.6.2 Panelboard

Install the panelboard, finalize its alignment, and tighten it securely in the cabinet.

6.6.3 Flange of Deadfront Shield

Unless otherwise instructed by the manufacturer, adjust the panelboard so that the flange of the deadfront shield is no more than 3/16 inch from (1) the front of the cabinet for surface mounting or (2) the surrounding wall surfaces for flush mounting.

6.7 LINE AND BRANCH CONDUCTORS

Connect Line and Branch Conductors

6.7.1 Conductors

Use care in stripping insulation from conductors so as not to nick or ring the conductor. For aluminum, clean all oxide from the stripped portion and apply an antioxide compound.

6.7.1.1 Wiring Gutters

Distribute and arrange conductors neatly in the wiring gutters. (See Section 5.)

6.7.1.2 Types and Temperature Ratings

Care should be exercised to ensure that the types and temperature ratings of conductors being installed in the panelboard are suitable for use with the terminals, which have been provided.

6.7.1.3 Tighten All Terminals

Use the manufacturer's torque values. (See 7.1).

6.8 PANELBOARD GROUNDING AND BONDING

Ground the panelboard cabinet in accordance with 4.12. (See Section 408.40 of the *National Electrical Code*®.)

6.8.1 Equipment Grounding Conductors

Where separate equipment grounding conductors are used, prepare equipment grounding conductors in accordance with 6.7.1 and connect them to the equipment grounding terminal bar. Check to be sure that the terminal bar is securely bonded to the cabinet or panelboard frame and that it is not connected to the neutral bar except at service equipment (as permitted in Section 250.28 of the *National Electrical Code*®) or at separately derived systems (as permitted in Section 250.30 of the *National Electrical Code*®).

NOTE—An equipment grounding terminal bar is not always required. For example, when a properly installed metallic raceway is used as the equipment grounding path or when the grounded conductor terminals (neutral bar) complies with the conditions of the last sentence of Section 408.40 of the *National Electrical Code*®.

6.9 PROPER TYPE OR CLASS AND RATING

When installing circuit breakers or fuses, ensure that they are of the proper type or class and rating.

6.10 DEBRIS

Clean the cabinet of all debris, which has accumulated during the panelboard installation Ensure that all foreign materials, including cement, plaster and paint (overspray) are cleaned and removed. Remove all such materials with great care to avoid damage to conductors, plating, etc. (see 6.4.1).

6.11 STEPS IN SECTION 7

If the job is complete, perform the steps in Section 7 and then install the cabinet front (see Section 8).

Section 7
STEPS TO BE TAKEN BEFORE ENERGIZING

7.1 ACCESSIBLE ELECTRICAL CONNECTIONS

Tighten all accessible electrical connections to the manufacturer's torque specifications. If such information is not provided with the equipment, consult the manufacturer.

7.2 BLOCKS AND PACKING MATERIALS

Make certain that all blocks and packing materials used for shipment have been removed from all component devices and the panelboard.

7.3 SWITCHES, CIRCUIT BREAKERS, AND OTHER OPERATING MECHANISMS

Manually exercise all switches, circuit breakers, and other operating mechanisms to make certain they operate freely. If devices with self-test function are installed, perform test and verify proper operation per the manufacturer's instructions.

Check the integrity of all electrical and mechanical interlocks and padlocking mechanisms. For key interlocked systems, assure that only the required number of keys are accessible to the operator.

7.4 SHORT CIRCUITS AND GROUND FAULTS

To make sure that the system is free from short circuits and ground faults, conduct an insulation resistance test phase to ground and phase to phase with the switches or circuit breakers in both the open and closed positions. If the resistance reads less than 1 megohm while testing with the branch circuit devices in the open position, the system may be unsafe and should be investigated. If after investigation and possible correction, low readings are still observed, the manufacturer should be contacted. Some electronic equipment (metering, SPD, etc.) may be damaged by this testing. Refer to the manufacturers equipment markings for guidelines.

7.5 GROUND FAULT PROTECTION SYSTEM

Test the ground fault protection system (if furnished) in accordance with the manufacturer's instructions. See Section 230.95 of the *National Electrical Code®* and NEMA PB 2.2, *Application Guide for Ground Fault Protective Devices for Equipment.*

7.6 ADJUSTABLE TIME CURRENT TRIP DEVICE SETTINGS

Set any adjustable time current trip device settings to the proper values.

NOTE—Experience has indicated that damage from overcurrent can be reduced if the devices used for overload and short-circuit protection are set to operate instantaneously (that is, without intentional time delay) at 115 percent of the highest value of phase current which is likely to occur as the result of any anticipated motor starting or welding currents.

7.7 GROUNDING CONNECTIONS

Check to determine that all grounding connections are properly made. If the panelboard is used as service equipment, make certain that the neutral, if present, is properly bonded to the cabinet.

7.8 FOREIGN MATERIAL

Remove all foreign material from the panelboard and cabinet before installing the cabinet front. Make certain that all deadfront shields are properly aligned and tightened. Install the cabinet front in accordance with Section 8.

Section 8
INSTALLATION OF CABINET FRONT

8.1 CABINET FRONT OR TRIM PACKAGE

The cabinet front or trim package is designed to prevent damage to the front during shipment and handling.

8.2 UNPACKING

Care should be used when unpacking and handling the cabinet front.

8.3 COVERS AND DOORS

Install covers, close doors, and make certain that no conductors are pinched and that all enclosure parts are properly aligned and tightened. Hinged covers or doors must open a minimum of 90 degrees when installed.

8.4 TOUCH-UP

A suitable paint or other corrosion-resistant finish should be applied to those places where the finish is damaged.

8.5 FRONT ALIGNMENT

The cabinet front may be provided with an adjusting means to align it squarely with the building even though the cabinet may be slightly out of plumb with the building.

Section 9
ENERGIZING EQUIPMENT

WARNING—HAZARDOUS VOLTAGES IN ELECTRICAL EQUIPMENT CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ENERGIZING A PANELBOARD FOR THE FIRST TIME AFTER INITIAL INSTALLATION OR MAINTENANCE IS POTENTIALLY DANGEROUS.

9.1 QUALIFIED PERSONNEL

Only qualified personnel should energize equipment for the first time. If short circuit conditions caused by damage or poor installation practices have not been detected in the procedures specified in Section 7, serious personal injury and damage can occur when the power is turned on.

9.2 LOAD ON THE PANELBOARD

There should be no load on the panelboard when it is energized. Turn off all of the downstream loads.

9.3 ENERGIZED IN SEQUENCE

The equipment should be energized in sequence by starting at the source end of the system and working towards the load end. In other words, energize the main devices, then the feeder devices, and then the branch-circuit devices. Turn the devices on with a firm positive motion.

9.4 LOADS SUCH AS LIGHTING CIRCUITS, CONTACTORS, HEATERS, AND MOTORS

After all main, feeder, and branch circuit devices have been closed, loads such as lighting circuits, contactors, heaters, and motors may be turned on.

Section 10
MAINTENANCE

10.1 MAINTENANCE PROGRAM

A maintenance program for panelboards should be conducted on a regularly scheduled basis in accordance with the following:

10.2 PANELBOARD WHICH HAS BEEN CARRYING ITS REGULAR LOAD FOR AT LEAST 3 HOURS

A panelboard which has been carrying its regular load for at least 3 hours just prior to inspection should be field tested by feeling the deadfront surfaces of circuit breakers, switches, interior trims, doors, and enclosure sides with the palm of the hand. If the temperature of these surfaces does not permit you to maintain contact for at least 3 seconds, this may be an indication of trouble and investigation is necessary. Thermographic (infrared) scanning has become a useful method of investigating thermal performance.

WARNING—HAZARDOUS VOLTAGES IN ELECTRICAL EQUIPMENT CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. UNLESS OTHERWISE SPECIFIED, INSPECTION AND MAINTENANCE SHOULD ONLY BE PERFORMED ON PANELBOARDS TO WHICH POWER HAS BEEN TURNED OFF, DISCONNECTED AND ELECTRICALLY ISOLATED SO THAT NO ACCIDENTAL CONTACT CAN BE MADE WITH ENERGIZED PARTS. FOLLOW ALL MANUFACTURER'S WARNINGS AND INSTRUCTIONS.

Safety related work practices, as described in NFPA 70E, should be followed at all times.

CAUTION—HYDROCARBON SPRAY PROPELLANTS AND HYDROCARBON BASED SPRAYS OR COMPOUNDS WILL CAUSE DEGRADATION OF CERTAIN PLASTICS. CONTACT THE PANELBOARD MANUFACTURER BEFORE USING THESE PRODUCTS TO CLEAN, DRY, OR LUBRICATE PANELBOARD COMPONENTS DURING INSTALLATION OR MAINTENANCE.

10.3 INSPECT PANELBOARD ONCE EACH YEAR

Inspect the panelboard once each year or after any severe short circuit.

10.4 ACCUMULATION OF DUST AND DIRT

If there is an accumulation of dust and dirt, clean out the panelboard by using a brush, vacuum cleaner, or clean lint-free rags. Avoid blowing dust into circuit breakers or other components. Do not use a blower or compressed air.

10.4.1 Visible Electrical Joints and Terminals

Carefully inspect all visible electrical joints and terminals in the bus and wiring system.

10.4.2 Conductors and Connections

Visually check all conductors and connections to be certain that they are clean and secure. Loose and/or contaminated connections increase electrical resistance which can cause overheating. Such overheating is indicated by discoloration or flaking of insulation and/or metal parts. Pitting or melting of connecting surfaces is a sign of arcing due to a loose or otherwise poor connection. Parts which show evidence of overheating or looseness should be cleaned and re-torqued or replaced if damaged. Tighten bolts and nuts at bus joints to manufacturer's torque specifications.

CAUTION—DO NOT REMOVE PLATING FROM ALUMINUM PARTS IN JOINTS OR TERMINATIONS. DAMAGE TO PLATING CAN RESULT IN OVERHEATING. REPLACE DAMAGED ALUMINUM PARTS.

10.4.3 Fuse Clip Contact Pressure and Contact Means

Examine fuse clip contact pressure and contact means. If there is any sign of overheating or looseness, follow the manufacturer's maintenance instructions or replace the fuse clips. Loose fuse clips can result in overheating.

10.4.4 Plug Fuses

Re-tighten plug fuses.

10.4.5 Conditions Which Caused Overheating

Be sure that all conditions which caused the overheating have been corrected.

10.5 PROPER AMPERE, VOLTAGE, AND INTERRUPTING RATINGS

Check circuit breakers, switches, and fuses to ensure they have the proper ampere, voltage, and interrupting ratings. Ensure that non-current-limiting devices are not used as replacements for current-limiting devices. Never attempt to defeat rejection mechanisms which are provided to prevent the installation of the incorrect class of fuse.

10.5.1 Mechanisms Free and in Proper Working Order

Operate each switch or circuit breaker several times to ensure that all mechanisms are free and in proper working order. Replace as required. See NEMA AB-4 for maintenance of molded case circuit breakers.

10.6 OPERATION OF ALL MECHANICAL COMPONENTS

Check the operation of all mechanical components. Replace as required.

10.6.1 Switch Operating Mechanisms

Exercise switch operating mechanisms and external operators for circuit breakers to determine that they operate freely to their full on and off positions.

10.6.2 Integrity of Electrical and Mechanical Interlocks

Check the integrity of all electrical and mechanical interlocks and padlocking mechanisms. For key interlocked systems, assure that only the required number of keys are accessible to the operator.

10.6.3 Missing or Broken Parts

Whenever practical, check all devices for missing or broken parts, proper spring tension, free movement, corrosion, dirt, and excessive wear.

10.6.4 Manufacturer's Instructions

Adjust, clean, and lubricate or replace parts according to the manufacturer's instructions.

10.6.4.1 Clean Nonmetallic Light Grease or Oil

Use *clean* nonmetallic light grease or oil as instructed.

10.6.4.2 Molded Case Circuit Breakers

Do *not* oil or grease parts of molded case circuit breakers.

10.6.4.3 Clean, Light Grease

If no instructions are given on the devices, sliding copper contacts, operating mechanisms, and interlocks may be lubricated with clean, light grease.

10.6.4.4 Excess Lubrication

Wipe off excess lubrication to avoid contamination.

CAUTION—HYDROCARBON SPRAY PROPELLANTS AND HYDROCARBON BASED SPRAYS OR COMPOUNDS WILL CAUSE DEGRADATION OF CERTAIN PLASTICS. CONTACT THE PANELBOARD MANUFACTURER BEFORE USING THESE PRODUCTS TO CLEAN, DRY, OR LUBRICATE PANELBOARD COMPONENTS DURING INSTALLATION OR MAINTENANCE.

10.6.5 Accessible Copper Electrical Contacts, Blades, and Jaws

Clean and dress readily accessible copper electrical contacts, blades, and jaws according to the manufacturer's instructions when inspection indicates the need.

10.7 DAMAGED INSULATING MATERIAL AND ASSEMBLIES

Look for and replace damaged insulating material and assemblies where sealing compounds have deteriorated.

10.8 MOISTURE OR SIGNS OF PREVIOUS WETNESS OR DRIPPING

Look for any moisture or signs of previous wetness or dripping inside the cabinet.

NOTE—Condensation in conduits or dripping from outside sources is one known cause of panelboard malfunction.

10.8.1 Conduits Which Have Dripped Condensate

Seal off any conduits which have dripped condensate, and provide means for further condensate to drain away from the panelboard.

10.8.2 Cracks or Openings

Seal off any cracks or openings which have allowed moisture to enter the enclosure. Eliminate the source of any dripping on the enclosure and any other source of moisture.

10.8.3 Insulating Material Which is Damp or Wet

Replace or thoroughly dry and clean any insulating material, which is damp or wet or shows an accumulation of deposited material from previous wettings.

10.8.4 Component Devices Which Show Evidence of Moisture Damage

Inspect all component devices. Replace any component device which shows evidence of moisture damage or has been subjected to water damage or flooding. Additional information may be found in the NEMA document "Guidelines for Handling Water Damaged Electrical Products."

10.9 BEFORE CLEANUP AND CORRECTIVE ACTION IS ATTEMPTED

In the event of water damage, e.g., flooding or sprinkler discharge, the manufacturer should be consulted before clean up and corrective action is attempted.

10.10 SEVERE ELECTRICAL SHORT CIRCUIT

If a severe electrical short circuit has occurred, the excessive currents may have resulted in structural component and/or bus and conductor damage due to mechanical distortion, thermal damage, metal deposits, or smoke. Examine all devices and bus supports for cracks or breakage. The manufacturer should be consulted before cleanup and correction is attempted.

10.11 GROUND FAULT PROTECTION SYSTEM

Test the ground fault protection system (if furnished) in accordance with the manufacturer's instructions. See Section 230.95 of the *National Electrical Code®* and NEMA PB 2.2 *Application Guide for Ground Fault Protective Devices for Equipment.*

10.12 INSULATION RESISTANCE

Check insulation resistance (see 7.4) under any of the following conditions:

10.12.1 Severe Short Circuit

If a severe short circuit has occurred (see 10.10);

10.12.2 Parts Replaced

If it has been necessary to replace parts or clean insulating surfaces;

10.12.3 Panelboard Exposed to High Humidity

If the panelboard has been exposed to high humidity, condensation, or dripping moisture.

Section 11
PERMISSIBLE LOADING OF PANELBOARDS

11.1 *NATIONAL ELECTRICAL CODE®*

In compliance with the *National Electrical Code®*, the normal continuous loads (3 hours or more) of panelboard circuits should be not more than 80 percent of the rating of the overcurrent protective device, unless the marking of the device indicates that it is suitable for continuous duty at 100 percent of its rating.

11.2 HARMONICS IN ELECTRICAL SYSTEM

Some types of electrical equipment cause harmonics in the electrical system, which may result in overheating. This condition should be considered when determining panelboard loading.

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Component Data

1 **Product Selection**

QUICKLAG Type BAB Single-Pole

QUICKLAG Type: BA 10,000A Interrupting Capacity Thermal-Magnetic Breakers

Continuous Ampere Rating at 40°C	Single-Pole 120/240 Vac Catalog Number	Two-Pole 120/240 Vac Catalog Number	Two-Pole 240 Vac Catalog Number	Three-Pole 240 Vac Catalog Number
10	**BAB1010**	**BAB2010**	**BAB2010H** ③	**BAB3010H** ③
15	**BAB1015** ①②	**BAB2015**	**BAB2015H**	**BAB3015H**
20	**BAB1020** ①②	**BAB2020**	**BAB2020H**	**BAB3020H**
25	**BAB1025**	**BAB2025**	**BAB2025H**	**BAB3025H**
30	**BAB1030**	**BAB2030**	**BAB2030H**	**BAB3030H**
35	**BAB1035**	**BAB2035**	**BAB2035H**	**BAB3035H**
40	**BAB1040**	**BAB2040**	**BAB2040H**	**BAB3040H**
45	**BAB1045**	**BAB2045**	**BAB2045H**	**BAB3045H**
50	**BAB1050**	**BAB2050**	**BAB2050H**	**BAB3050H**
55	**BAB1055**	**BAB2055**	**BAB2055H**	**BAB3055H**
60	**BAB1060**	**BAB2060**	**BAB2060H**	**BAB3060H**
70	**BAB1070**	**BAB2070**	**BAB2070H**	**BAB3070H**
80	—	**BAB2080**	**BAB2080H**	**BAB3080H**
90	—	**BAB2090**	**BAB2090H**	**BAB3090H**
100	**BAB1100**	**BAB2100**	**BAB2100H**	**BAB3100H**
110	—	**BAB2110**	—	—
125	—	**BAB2125**	—	—

QUICKLAG Type: BA Non-Automatic Switches

Continuous Ampere Rating at 40°C	Single-Pole 120/240 Vac Catalog Number	Two-Pole 120/240 Vac Catalog Number	Two-Pole 240 Vac Catalog Number	Three-Pole 240 Vac Catalog Number
50	**BAB1050N**	—	**BAB2050N**	**BAB3050N**
60	**BAB1060N**	—	**BAB2060N**	**BAB3060N**
100	**BAB1100N**	—	**BAB2100N**	**BAB3100N**

QUICKLAG Type: QBHW 22,000A Interrupting Capacity Thermal-Magnetic Breakers

Continuous Ampere Rating at 40°C	Single-Pole 120/240 Vac Catalog Number	Two-Pole 120/240 Vac Catalog Number	Two-Pole 240 Vac Catalog Number	Three-Pole 240 Vac Catalog Number
15	**QBHW1015** ①	**QBHW2015**	**QBHW2015H**	**QBHW3015H**
20	**QBHW1020** ①	**QBHW2020**	**QBHW2020H**	**QBHW3020H**
25	**QBHW1025**	**QBHW2025**	**QBHW2025H**	**QBHW3025H**
30	**QBHW1030**	**QBHW2030**	**QBHW2030H**	**QBHW3030H**
35	**QBHW1035**	**QBHW2035**	**QBHW2035H**	**QBHW3035H**
40	**QBHW1040**	**QBHW2040**	**QBHW2040H**	**QBHW3040H**
45	**QBHW1045**	**QBHW2045**	**QBHW2045H**	**QBHW3045H**
50	**QBHW1050**	**QBHW2050**	**QBHW2050H**	**QBHW3050H**
55	**QBHW1055**	**QBHW2055**	**QBHW2055H**	**QBHW3055H**
60	**QBHW1060**	**QBHW2060**	**QBHW2060H**	**QBHW3060H**
70	**QBHW1070**	**QBHW2070**	**QBHW2070H**	**QBHW3070H**
80	—	**QBHW2080**	**QBHW2080H**	**QBHW3080H**
90	—	**QBHW2090**	**QBHW2090H**	**QBHW3090H**
100	—	**QBHW2100**	**QBHW2100H**	**QBHW3100H**
110	—	**QBHW2110**	—	—
125	—	**QBHW2125**	—	—

Notes

① Switching duty rated for 120 Vac fluorescent light applications.

② For special low-magnetic breaker, order **BAB1015L1** or **BAB1020L1**.

③ Not UL listed.

QUICKLAG Type: HBAX 42,000A Interrupting Capacity Thermal-Magnetic Breakers

Continuous Ampere Rating at 40°C	Single-Pole 120/240 Vac Catalog Number	Two-Pole 120/240 Vac Catalog Number	Two-Pole 240 Vac Catalog Number	Three-Pole 240 Vac Catalog Number
15	HBAX1015 ①	HBAX2015	—	HBAX3015H
20	HBAX1020 ①	HBAX2020	—	HBAX3020H
25	HBAX1025	HBAX2025	—	HBAX3025H
30	HBAX1030	HBAX2030	—	HBAX3030H
35	HBAX1035	HBAX2035	—	HBAX3035H
40	HBAX1040	HBAX2040	—	HBAX3040H
45	HBAX1045	HBAX2045	—	HBAX3045H
50	HBAX1050	HBAX2050	—	HBAX3050H
55	HBAX1055	HBAX2055	—	HBAX3055H
60	HBAX1060	HBAX2060	—	HBAX3060H
70	HBAX1070	HBAX2070	—	HBAX3070H
80	—	HBAX2080	—	HBAX3080H
80	—	HBAX2080	—	HBAX3080H
90	—	HBAX2090	—	HBAX3090H
100	—	HBAX2100	—	HBAX3100H

QUICKLAG Type: HBAW 65,000A Interrupting Capacity Thermal-Magnetic Breakers

Continuous Ampere Rating at 40°C	Single-Pole 120/240 Vac Catalog Number	Two-Pole 120/240 Vac Catalog Number	Two-Pole 240 Vac Catalog Number	Three-Pole 240 Vac Catalog Number
15	HBAW1015 ①	HBAW2015	—	HBAW3015H
20	HBAW1020 ①	HBAW2020	—	HBAW3020H
25	HBAW1025	HBAW2025	—	—
30	HBAW1030	HBAW2030	—	—

Dimensions

Approximate Dimensions in Inches (mm)

Shipping Data

Number of Poles	Carton Quantity	Approximate Weight Lbs (kg)	Dimensions
1	24	9.00 (4.1)	12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0)
2	12	9.00 (4.1)	12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0)
3	8	9.00 (4.1)	12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0)

Note

① Switching duty rated for 120 Vac fluorescent light applications.

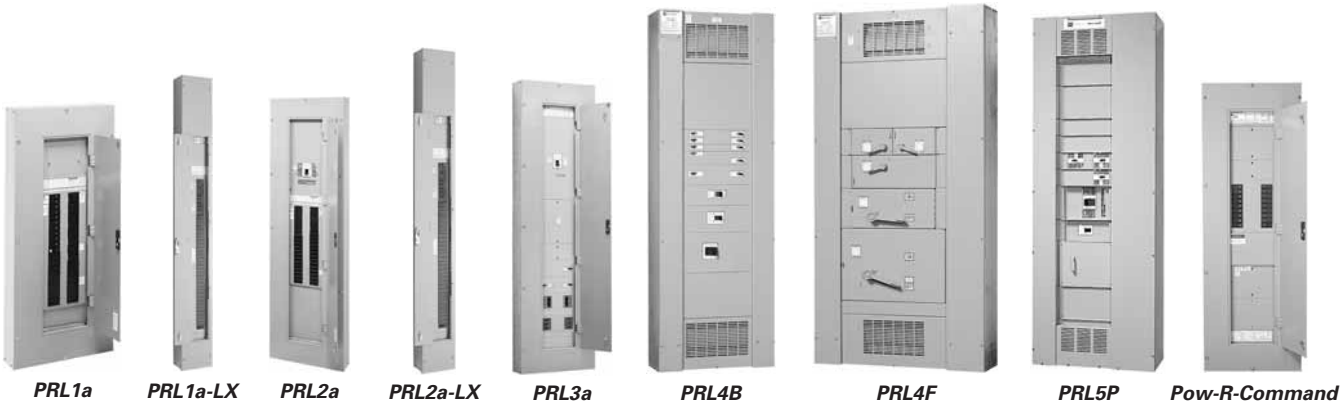
Renewal Parts

Cutler-Hammer

Current Cutler-Hammer Panelboards

Renewal Parts

Supersedes RP.38F.01.T.E
pages 1 – 48 dated February 2000



PRL1a *PRL1a-LX* *PRL2a* *PRL2a-LX* *PRL3a* *PRL4B* *PRL4F* *PRL5P* *Pow-R-Command*

Table of Contents ***Page***

Table 1. Product History Time Line

Product	1985	1990	1995	Present
Cutler-Hammer PRL1a, 2a			←	Oct. 1996 →
Cutler-Hammer PRL3a			←	Mar. 1994 →
Cutler-Hammer PRL4B/F	←			Oct. 1987 →
Cutler-Hammer PRL5P			←	Aug. 1995 →
Cutler-Hammer PRL1a, 2a-LX			←	Dec. 1997 →
Cutler-Hammer Pow-R-Command			←	Mar. 1996 →

Procedure for Identifying Panelboard Type

The current line of Pow-R-line C panelboards was introduced in 1993.

A panelboard is identified by data found on the nameplate. Pow-R-Line C panelboard nameplates are different in appearance, but all have the same critical information:

- Ampere rating of the main.
- Ampere rating of the neutral.
- Type of service (phase/wire).
- Manufacturing location.
- Type of panel.
- General order number.

In the event the nameplate is missing, it may still be possible to identify the panel type by location of the neutral bar. The illustrations to the right shows the position of the neutral in the panelboard.

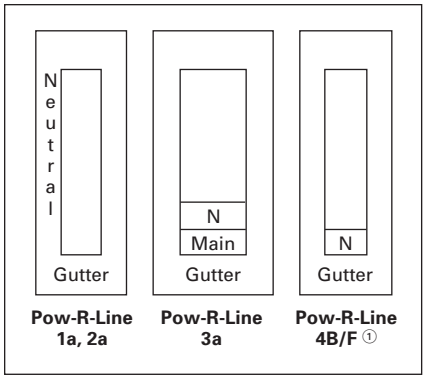


Figure 1. Position of the Neutral in the Panelboard

① PRL4F panels with vertical mounted main switch will have the neutral mounted at the opposite end the main.

Box width may also help identify the panelboard type. Standard width for PRL1a, PRL2a, and PRL3a is 20.00 inches (508.0 mm). PRL4 standard widths are 24.00, 36.00 and 44.00 inches (609.6, 914.4 and 1117.6 mm).

WARNING

HAZARDOUS VOLTAGE WILL CAUSE SEVERE INJURY OR DEATH. TURN OFF POWER SUPPLY TO EQUIPMENT BEFORE WORKING ON IT.

Procedure for Identifying Renewal Parts

1. Identify the type of panelboard, i.e. PRL1a, PRL2a, PRL3a, PRL4, PRL5P by reading the nameplate. Follow the procedure listed to the left.
2. Refer to the listing below and turn to the proper section in this brochure to identify standard parts.

3. This book identifies those replacement parts most frequently ordered and which are readily available from stock. These parts can be ordered by style or catalog number to speed up processing and delivery.

Distributor Ordering Instructions

1. Specify part by style/part number.
2. Refer to PL01400001E for pricing information. Discount Symbol CE9 applies.
3. Turn to **Page 4** to locate nearest Satellite Plant.
4. Enter the order on the satellite plant via mail, fax or phone.
5. Selling policy 25-000 applies.

Cutler-Hammer Satellite Plants

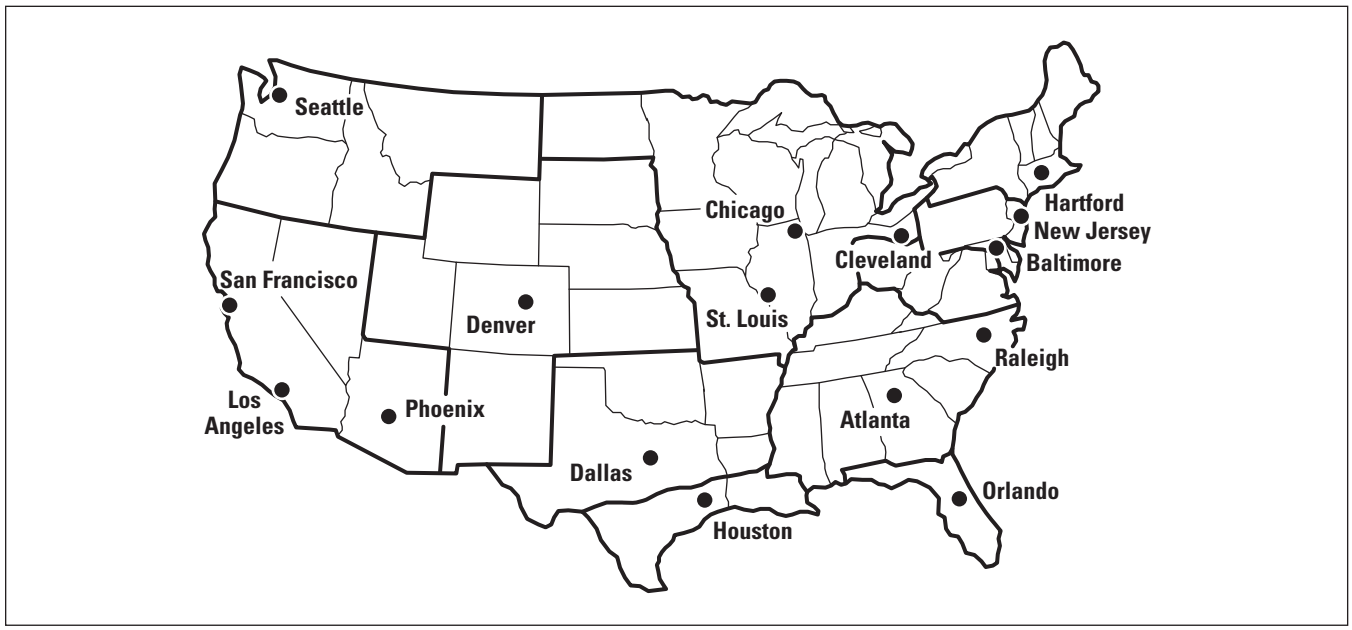


Figure 2. Satellite Plants

Atlanta
7990-A 2nd Flag Drive
Austell, GA 30001
Phone 770-944-1022
FAX 770-944-2033

Baltimore
6671 Santa Barbara Court, Suite A
Elkridge, MD 21227
Phone 410-796-7777
FAX 410-796-7755

Chicago
959 AEC Drive
Wood Dale, IL 60191
Phone 630-860-3500
FAX 630-860-3569

Cleveland
4711 Hinkley Industrial Parkway
Cleveland, OH 44109
Phone 216-485-1940
FAX 216-485-1943

Dallas
1100 Avenue T
Grand Praire, TX 75050
Phone 972-988-3339
FAX 972-641-6435

Denver
14101 East 33rd Place, Suite F
Aurora, CO 80011
Phone: 303-371-7844
FAX 303-371-4175

Hartford
625 Day Hill Road
Windsor, CT 06095
Phone 860-688-7330
FAX 860-688-4982

Houston
10810 West Little York, Suite 100
Houston, TX 77041
Phone 713-688-8430
FAX 713-688-3764

Los Angeles
2021 Locust Court
Ontario, CA 91761
Phone 909-923-2040
FAX 909-923-2344

New Jersey
96 Stemmers Lane
Westampton, NJ 08060
Phone 609-835-4230
FAX 609-835-4777

Orlando
3827 St. Valentine Way
Orlando, FL 32811
Phone 407-843-3863
FAX 407-841-9135

Phoenix
7160 South Harl Avenue
Tempe, AZ 85283
Phone 480-777-3957
FAX 480-777-3958

Raleigh
2933 S. Miami Blvd., Suite 111
Durham, NC 27703
Phone 919-544-7074
FAX 919-572-9751

San Francisco
20919 Cabot Boulevard
Hayward, CA 94545
Phone 510-784-8981
FAX 510-784-8980

Seattle
18657 72nd Avenue South
Kent, WA 98032
Phone 425-251-9081
FAX 425-251-0079

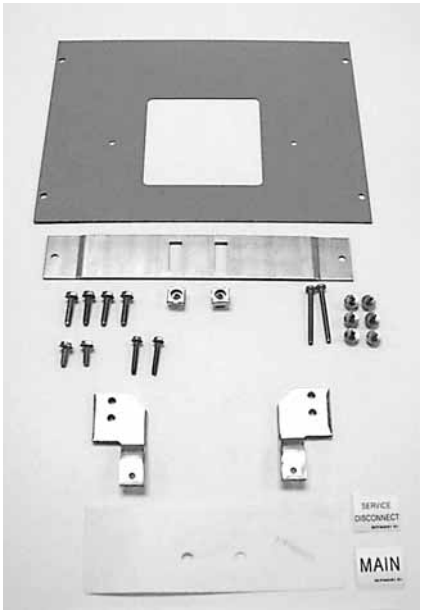
St. Louis
12947 Gravois Road
St. Louis, MO 63127
Phone: 314-842-7797
FAX 314-842-2552

PRL1a, 2a Connector Kits

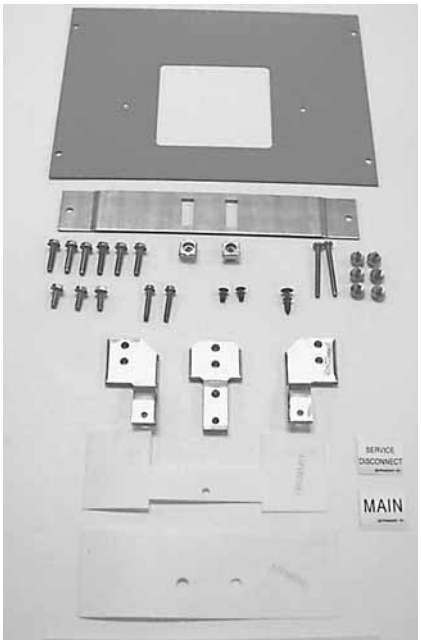
Table 2. Vertical Breaker Assemblies

Device Type ①	Device Mounting	3-Phase		1-Phase	
		Tin-Plated Aluminum Connector	Silver-Plated Copper Connector	Tin-Plated Aluminum Connector	Silver-Plated Copper Connector
		Catalog Number			
F-Frame ② (100 Ampere Maximum)	Top Fed Bottom Fed	**KB13AFT** **KB13AFB**	**KB13SFT** **KB13SFB**	**KB11AFT** **KB11AFB**	**KB11SFT** **KB11SFB**
F-Frame ③ (225 Ampere Maximum)	Top Fed Bottom Fed	**KB23AFT** **KB23AFB**	**KB23SFT** **KB23SFB**	**KB21AFT** **KB21AFB**	**KB21SFT** **KB21SFB**
J-Frame	Top Fed Bottom Fed	**KB43AJT** **KB43AJB**	**KB43SJT** **KB43SJB**	**KB41AJT** **KB41AJB**	**KB41SJT** **KB41SJB**
K-Frame	Top Fed Bottom Fed	**KB43AKT** **KB43AKB**	**KB43SKT** **KB43SKB**	**KB41AKT** **KB41AKB**	**KB41SKT** **KB41SKB**

① Order main or sub-feed breaker separately when ordering above connector kits.
② EHD, FD, HFD, FDC.
③ FD, HFD, FDC, ED, EDH, EDC.



KB11AFT



KB13AFT

PRL1a, 2a Connector Kits

Table 3. 100 Ampere Lug Assemblies

Lug Type	Panel Lug Options ①	Wire Size Range	Quantity Per Phase	3-Phase		1-Phase	
				Tin-Plated Aluminum Connector	Silver-Plated Copper Connector	Tin-Plated Aluminum Connector	Silver-Plated Copper Connector
				Catalog Number			
Aluminum/Copper Mechanical	STD SFL OVS	#14 – 1/0 #14 – 1/0 #6 – 300 kcmil	1 2 1	**KL13AMS** **KL13AMF** **KL13AMO**	**KL13SMS** **KL13SMF** **KL13SMO**	**KL11AMS** **KL11AMF** **KL11AMO**	**KL11SMS** **KL11SMF** **KL11SMO**
Crimp	STD SFL OVS	#8 – 1/0 #8 – 1/0 #4 – 300 kcmil	1 2 1	**KL13AVS** **KL13AVF** **KL13AVO**	**KL13SVS** **KL13SVF** **KL13SVO**	**KL11AVS** **KL11AVF** **KL11AVO**	**KL11SVS** **KL11SVF** **KL11SVO**
Copper Mechanical	STD SFL OVS	#14 – 1/0 #14 – 1/0 #6 – 250 kcmil	1 2 1	— — —	**KL13SCS** **KL13SCF** **KL13SCO**	— — —	**KL11SCS** **KL11SCF** **KL11SCO**

① STD = Standard lugs. Use for main or through-feed.
SFL = Sub-feed lugs.
OVS = Oversize lugs. Use for main or through-feed.

KL13AMS

KL11AVS

PRL1a, 2a Connector Kits

Table 4. 225 Ampere Lug Assemblies

Lug Type	Panel Lug Options ①	Wire Size Range	Quantity Per Phase	3-Phase		1-Phase	
				Tin-Plated Aluminum Connector	Silver-Plated Copper Connector	Tin-Plated Aluminum Connector	Silver-Plated Copper Connector
				Catalog Number			
Aluminum/Copper Mechanical	STD SFL OVS	#6 – 300 kcmil #6 – 300 kcmil 4/0 – 500 kcmil	1 2 1	**KL23AMS** **KL23AMF** **KL23AMO**	**KL23SMS** **KL23SMF** **KL23SMO**	**KL21AMS** **KL21AMF** **KL21AMO**	**KL21SMS** **KL21SMF** **KL21SMO**
Crimp	STD SFL OVS	#4 – 300 kcmil #4 – 300 kcmil 2/0 – 500 kcmil	1 2 1	**KL23AVS** **KL23AVF** **KL23AVO**	**KL23SVS** **KL23SVF** **KL23SVO**	**KL21AVS** **KL21AVF** **KL21AVO**	**KL21SVS** **KL21SVF** **KL21SVO**
Copper Mechanical	STD SFL OVS	#6 – 250 kcmil #6 – 250 kcmil 1/0 – 600 kcmil	1 2 1	— — —	**KL23SCS** **KL23SCF** **KL23SCO**	— — —	**KL21SCS** **KL21SCF** **KL21SCO**

① STD = Standard lugs. Use for main or through-feed.
SFL = Sub-feed lugs.
OVS = Oversize lugs. Use for main or through-feed.

KL23AMS

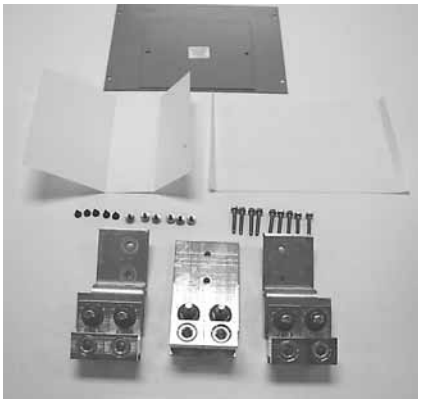
KL21AVS

PRL1a, 2a Connector Kits

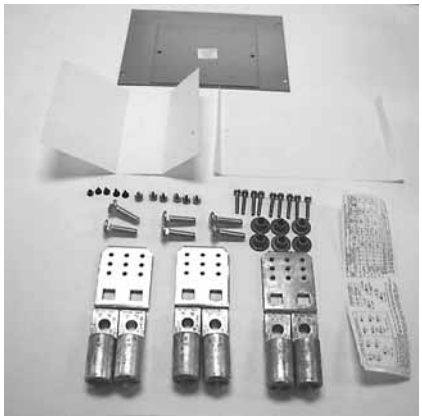
Table 5. 400 Ampere Lug Assemblies

Lug Type	Panel Lug Options ①	Wire Size Range	Quantity Per Phase	3-Phase		1-Phase	
				Tin-Plated Aluminum Connector	Silver-Plated Copper Connector	Tin-Plated Aluminum Connector	Silver-Plated Copper Connector
				Catalog Number			
Aluminum/Copper Mechanical	STD SFL OVS	4/0 – 500 kcmil N/A 3/0 – 750 kcmil	2 N/A 2	**KL43AMS** **—** **KL43AMO**	**KL43SMS** **—** **KL43SMO**	**KL41AMS** **—** **KL41AMO**	**KL41SMS** **—** **KL41SMO**
Crimp	STD SFL OVS	2/0 – 500 kcmil N/A 500 – 750 kcmil	2 N/A 2	**KL43AVS** **—** **KL43AVO**	**KL43SVS** **—** **KL43SVO**	**KL41AVS** **—** **KL41AVO**	**KL41SVS** **—** **KL41SVO**
Copper Mechanical	STD SFL OVS	1/0 – 600 kcmil N/A 1/0 – 600 kcmil	1 N/A 1	**—** **—** **—**	**—** **—** **KL43SCO**	**—** **—** **—**	**—** **—** **KL41SCO**

① STD = Standard lugs. Use for main or through-feed.
SFL = Sub-feed lugs.
OVS = Oversize lugs. Use for main or through-feed.



KL43AMS



KL43AVS

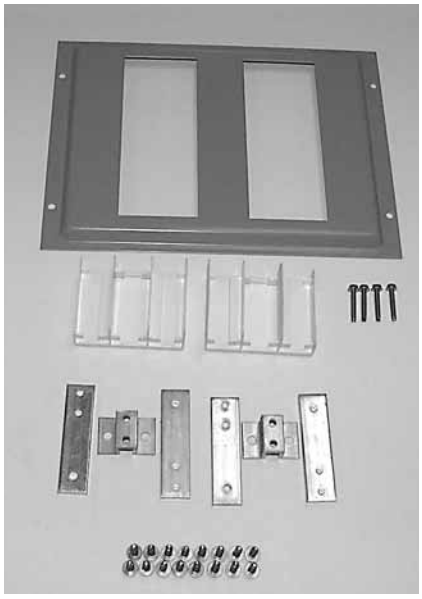
PRL1a Horizontally Mounted Connector Kit Assemblies

Table 6. Bolt-on QUICKLAG Breaker Assemblies

Breaker Frame	Drawing Number ①	Branch Circuit Quantity	3-Phase		1-Phase	
			Tin-Plated Aluminum Connector	Silver-Plated Copper Connector	Tin-Plated Aluminum Connector	Silver-Plated Copper Connector
			Item Number			
BA, BAB, QBH, QBGF, QBHGF, QBGFEP, QBHGFEP	1C96608	12 18 30	G01 G09 G17	G03 G11 G19	G05 G13 G21	G07 G15 G23
		42 48 54	G25 G33 G41	G27 G35 G43	G29 G37 G45	G31 G39 G47
		72 96	G49 G57	G51 G59	G53 G61	G55 G63

① Order the basic drawing number, along with the equivalent G–number that's needed.

Note: When determining branch circuit quantity, remember:
1. QUICKLAG breakers with shunt trips require one additional circuit.
2. UL® listed lighting and appliance (CTL) panelboards **cannot** exceed 42 electrically connected circuits in a single enclosure.
3. When bare copper is specified, use the silver-plated groups.
4. **Order breakers separately with connector kit.**



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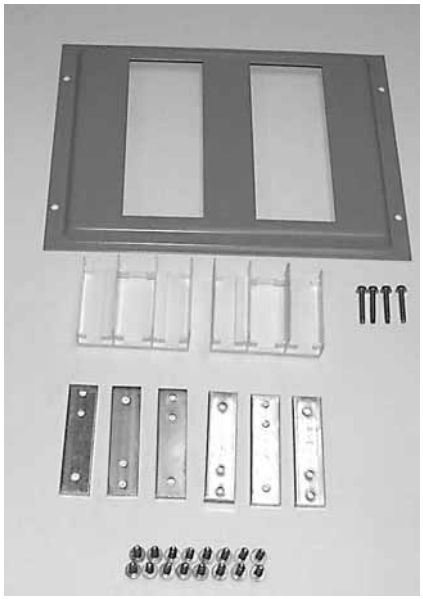


1C96608G05

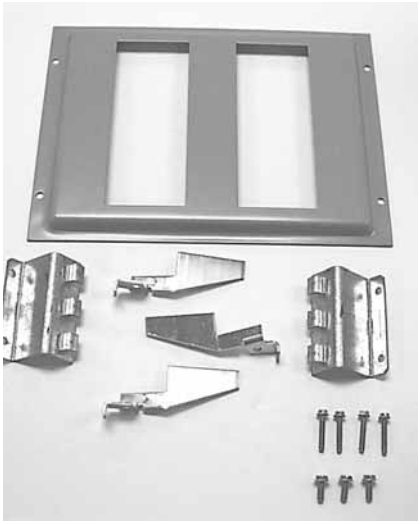
PRL1a Horizontally Mounted Connector Kit Assemblies

Table 7. Plug-in QUICKLAG Breaker Assemblies

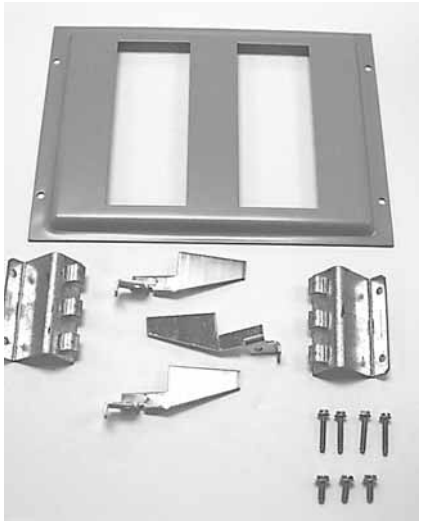
Breaker Frame	Drawing Number ①	Branch Circuit Quantity	3-Phase		1-Phase	
			Tin-Plated Aluminum Connector	Silver-Plated Copper Connector	Tin-Plated Aluminum Connector	Silver-Plated Copper Connector
			Item Number			
HQP, QPHW, QHPX, QPGF, QPHGF, QPGFEP, QPHGFEP	2C11642	12	—	G03	—	G07
		18	—	G11	—	G15
		30	—	G19	—	G23
		42	—	G27	—	G31
		48	—	G35	—	G39
		54	—	G43	—	G47
		72	—	G51	—	G55
		96	—	G59	—	G63

① Order the basic drawing number, along with the equivalent G–number that's needed.

Note: When determining branch circuit quantity, remember:
1. QUICKLAG breakers with shunt trips require one additional circuit.
2. UL listed lighting and appliance (CTL) panelboards **cannot** exceed 42 electrically connected circuits in a single enclosure.
3. When aluminum is specified, use the silver-plated groups.
4. The sum of the horizontally twin mounted breakers **shall not exceed 140 amperes**.
5. **Order breakers separately with connector kit**.



2C11642G03



2C11642G07

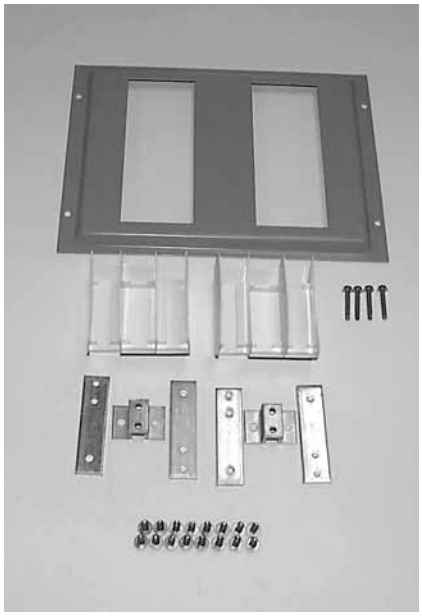
PRL2a Horizontally Mounted Connector Kit Assemblies

Table 8. GB, GHB, GHQ, GHBS Breaker Assemblies

Breaker Frame	Drawing Number ①	Branch Circuit Quantity	3-Phase		1-Phase	
			Tin-Plated Aluminum Connector	Silver-Plated Copper Connector	Tin-Plated Aluminum Connector	Silver-Plated Copper Connector
			Item Number			
GB, GHB, GHQ GHBS	1C96609	12 18 30	G01 G09 G17	G03 G11 G19	G05 G13 G21	G07 G15 G23
		42 48 54	G25 G33 G41	G27 G35 G43	G29 G37 G45	G31 G39 G47
		72 96	G49 G57	G51 G59	G53 G61	G55 G63

① Order the basic drawing number, along with the equivalent G–number that's needed.

Note: When determining branch circuit quantity, remember:
1. QUICKLAG breakers with shunt trips require one additional circuit.
2. UL listed lighting and appliance (CTL) panelboards **cannot** exceed 42 electrically connected circuits in a single enclosure.
3. When bare copper is specified, use the silver-plated groups.
4. **Order breakers separately with connector kit.**



1C96609G01

PRL1a, 2a Neutral Assemblies

Table 9. 100 Ampere Neutral Assemblies ①

Panel Main Bus Ampere Rating	Neutral Rating	Lug Type	Drawing Number ②	Panel Lug Options ③	Wire Size Range	Quantity	Tin-Plated Aluminum Connector	Silver-Plated Copper Connector
							Item Number	
100	100%	Mechanical	1C96646	STD SFL/TFL OVS	#14 – 1/0 #14 – 1/0 #6 – 300 kcmil	1 2 1	G02 G05 G09	G03 G07 G11
		Crimp	1C96647	STD SFL/TFL OVS	#8 – 1/0 #8 – 1/0 #4 – 300 kcmil	1 2 1	G01 G05 G09	G03 G07 G11
		Copper	1C96648	STD SFL/TFL OVS	#14 – 1/0 #14 – 1/0 #6 – 250 kcmil	1 2 1	— — —	G03 G07 G11
	200%	Mechanical	1C96649	STD SFL/TFL OVS	#6 – 300 kcmil #6 – 300 kcmil 4/0 – 500 kcmil	1 2 1	G02 G06 G09	G03 G07 G11
		Crimp	1C96650	STD SFL/TFL OVS	#4 – 300 kcmil #4 – 300 kcmil 2/0 – 500 kcmil	1 2 1	G01 G05 G09	G03 G07 G11
		Copper	1C96651	STD SFL/TFL OVS	#6 – 250 kcmil #6 – 250 kcmil 1/0 – 600 kcmil	1 2 1	— — —	G03 G07 G11

① The assemblies shown on this page are for panelboards that mount in 30.00 – 90.00-inch (762.0 – 2286.0 mm) high enclosures only. Reference **Page 15** for assemblies for panelboards that mount in 21.00 – 27.00-inch (533.4 – 685.8 mm) high enclosures.

② Order the basic drawing number, along with the equivalent G–number that's needed.

③ STD = Standard lugs.
SFL/TFL = Sub-feed and through-feed lugs.
OVS = Oversize lugs.

1C96646G01

PRL1a, 2a Neutral Assemblies

Table 10. 225 Ampere Neutral Assemblies ①

Panel Main Bus Ampere Rating	Neutral Rating	Lug Type	Drawing Number ②	Panel Lug Options ③	Wire Size Range	Quantity	Tin-Plated Aluminum Connector	Silver-Plated Copper Connector
							Item Number	
225	100%	Mechanical	1C96649	STD SFL/TFL OVS	#6 – 300 kcmil #6 – 300 kcmil 4/0 – 500 kcmil	1 2 1	G02 G06 G09	G03 G07 G11
		Crimp	1C96650	STD SFL/TFL OVS	#4 – 300 kcmil #4 – 300 kcmil 2/0 – 500 kcmil	1 2 1	G01 G05 G09	G03 G07 G11
		Copper	1C96651	STD SFL/TFL OVS	#6 – 250 kcmil #6 – 250 kcmil 1/0 – 600 kcmil	1 2 1	— — —	G03 G07 G11
	200%	Mechanical	1C96652	STD SFL/TFL OVS	4/0 – 500 kcmil N/A 3/0 – 750 kcmil	2 N/A 2	G01 G05 G09	G03 G07 G11
		Crimp	1C96653	STD SFL/TFL OVS	2/0 – 500 kcmil N/A 500 – 750 kcmil	2 N/A 2	G01 G05 G09	G03 G07 G11
		Copper	1C96654	STD SFL/TFL OVS	1/0 – 600 kcmil N/A 1/0 – 600 kcmil	1 N/A 1	— — —	G03 G07 G11

① The assemblies shown on this page are for panelboards that mount in 30.00 – 90.00-inch (762.0 – 2286.0 mm) high enclosures.
② Order the basic drawing number, along with the equivalent G–number that's needed.
③ STD = Standard lugs.
SFL/TFL = Sub-feed and through-feed lugs.
OVS = Oversize lugs.

1C96649G01

PRL1a, 2a Neutral Assemblies

Table 11. 400 Ampere Neutral Assemblies ①

Panel Main Bus Ampere Rating	Neutral Rating	Lug Type	Drawing Number ②	Panel Lug Options ③	Wire Size Range	Quantity	Tin-Plated Aluminum Connector	Silver-Plated Copper Connector
							Item Number	
400	100%	Mechanical	1C96652	STD SFL/TFL OVS	4/0 – 500 kcmil N/A 3/0 – 750 kcmil	2 N/A 2	G01 G05 G09	G03 G07 G11
		Crimp	1C96653	STD SFL/TFL OVS	2/0 – 500 kcmil N/A 500 – 750 kcmil	2 N/A 2	G01 G05 G09	G03 G07 G11
		Copper	1C96654	STD SFL/TFL OVS	1/0 – 600 kcmil N/A 1/0 – 600 kcmil	1 N/A 1	— — —	G03 G07 G11

① The assemblies shown on this page are for panelboards that mount in 30.00 – 90.00-inch (762.0 – 2286.0 mm) high enclosures.
② Order the basic drawing number, along with the equivalent G–number that's needed.
③ STD = Standard lugs.
SFL/TFL = Sub-feed and through-feed lugs.
OVS = Oversize lugs.

1C96652G01

PRL1a, 2a Neutral Assemblies

Table 12. 100 Ampere Neutral Assemblies for 21.00 – 27.00-Inch (533.4 – 685.8 mm) High Enclosures Only ①

Panel Main Bus Ampere Rating	Neutral Rating	Lug Type	Drawing Number ②	Panel Lug Options ③	Wire Size Range	Quantity	Tin-Plated Aluminum Connector	Silver-Plated Copper Connector
							Item Number	
100	100%	Mechanical	1C96645	STD SFL/TFL OVS	#14 – 1/0 #14 – 1/0 N/A	1 2 N/A	G01 G05 —	G03 G07 —
		Crimp	N/A	STD SFL/TFL OVS	N/A N/A N/A	N/A N/A N/A	— — —	— — —
		Copper	N/A	STD SFL/TFL OVS	N/A N/A N/A	N/A N/A N/A	— — —	— — —
	200%	Mechanical	1C97022	STD SFL/TFL OVS	#6 – 300 kcmil #6 – 300 kcmil N/A	1 2 N/A	G01 G05 —	G03 G07 —
		Crimp	N/A	STD SFL/TFL OVS	N/A N/A N/A	N/A N/A N/A	— — —	— — —
		Copper	N/A	STD SFL/TFL OVS	N/A N/A N/A	N/A N/A N/A	— — —	— — —

① The assemblies shown on this page are for panelboards that mount in 21.00 – 27.00-inch (533.4 – 685.8 mm) high enclosures only. Reference **Page 12** for assemblies for panels that mount in 36.00, 48.00, 60.00, 72.00 and 90.00-inch (914.4, 1219.2, 1524.0, 1828.8 and 2286.0 mm) high enclosures.
② Order the basic drawing number, along with the equivalent G–number that's needed.
③ STD = Standard lugs.
SFL/TFL = Sub-feed and through-feed lugs.
OVS = Oversize lugs.

1C96645G01

PRL1a, 2a Ground Assemblies

Table 13. Standard Ground

Drawing Number ①	Enclosure Height in Inches (mm)	Bar Material	Item Number
5158C05	24.00 (609.6)	Aluminum/Copper	G01
		Copper	G03
	36.00 (914.4), 48.00 (1219.2), 60.00 (1524.0), 72.00 (1828.8), 90.00 (2286.0)	Aluminum/Copper	G02
		Copper	G04

① Order the basic drawing number, along with the equivalent G–number that's needed (example 5158C05G01).

5158C05G01

5158C05G02

Table 14. Isolated Ground

Drawing Number ②	Enclosure Height in Inches (mm)	Bar Material	Item Number
2C11296	24.00 (609.6)	Aluminum/Copper	G01
		Copper	G02
	36.00 (914.4), 48.00 (1219.2), 60.00 (1524.0), 72.00 (1828.8), 90.00 (2286.0)	Aluminum/Copper	G03
		Copper	G04

② Order the basic drawing number, along with the equivalent G–number that's needed (example 5158C05G01).

PRL1a, 2a Service Entrance Kits

Table 15. PRL1a, 2a Service Entrance Kits

Drawing Number ③	Panel Ampere Rating	Tin-Plated Aluminum	Bare Copper	Silver-Plated Copper	Tin-Plated Copper
		Item Number			
Mechanical Main Lugs or Main Breakers					
4180B62	100 – 225	G01	G02	G03	G04
4180B62	400	G05	G06	G07	G08
Compression (Crimp) Main Lugs					
4180B62	100 – 225	G09	G10	G11	G12
4180B62	400	G13	G14	G15	G16
Copper Main Lugs					
4180B62	100 – 225	—	G18	G19	G20
4180B62	400	—	G22	G23	G24

③ Order the basic drawing number, along with the equivalent G–number that's needed (example 5158C05G01).

4180B62G01

PRL1a, 2a Deadfront Covers

Note: Does not apply to PRL4 sub-chassis.

1C96638G01

Table 16. Assembly

Drawing Number ①	Standard Enclosure Height in Inches (mm)						
	24.00 (609.6)	36.00 (914.4)	42.00 (1066.8)	48.00 (1219.2)	60.00 (1524.0)	72.00 (1828.8)	90.00 (2286.0)
1C96638	G01	G02	G07	G03	G04	G05	G06

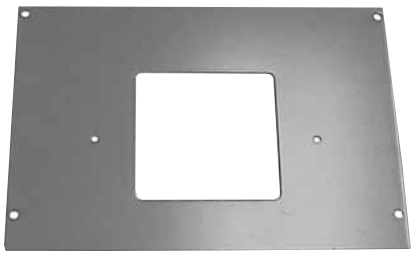
① Order the basic drawing number, along with the equivalent G–number that's needed (example 1C96638G01).

Table 17. Vertically Mounted Devices

Mounting Arrangement	Device/Frame	Drawing Number ②	Mounting Position	Item Number
Vertical	100 Ampere MLO, SFL, TFL or F-Frame (100 Ampere Maximum)	4180B03	Top Bottom	H01 H01
	225 Ampere MLO, SFL, TFL or F-Frame (225 Ampere Maximum)	4180B61	Top Bottom	H01 H01
	400 Ampere MLO, SFL, TFL or J-Frame	4180B04	Top Bottom	H01 H02
	400 Ampere MLO, TFL or K-Frame	4180B05	Top Bottom	H01 H02
Blank Covers in Inches (mm)	1.00 (25.4) 2.00 (50.8) 3.00 (76.2)	4180B08	N/A N/A N/A	H01 H02 H03
	4.00 (101.6) 5.00 (127.0) 6.00 (152.4)		N/A N/A N/A	H04 H05 H06
	7.00 (177.8) 8.00 (203.2) 9.00 (228.6)		N/A N/A N/A	H07 H08 H09
	10.00 (254.0) 11.00 (279.4) 12.00 (304.8)		N/A N/A N/A	H10 H11 H12
	13.00 (330.2) 14.00 (355.6) 15.00 (381.0) 16.00 (406.4)		N/A N/A N/A N/A	H13 H14 H15 H16

② Order the basic drawing number, along with the equivalent H–number that's needed (example 4180B03H01).

4180B08H03



4180B03H01

PRL1a, 2a Deadfront Covers

Note: Does not apply to PRL4 sub-chassis.

Table 18. Horizontally Mounted Devices

Mounting Arrangement	Device/ Frame	Drawing Number ①	Branch Circuit Quantity	Item Number	Quantity Required
Horizontal	BA, BAB, QBH, QBGF, QBHGF, QBGFEP, QBHGFEP	1C96619	12 18 30	H01 H02 H04	1 1 1
			42 48 54	H06 H03 H03 and H04	1 2 1 Each
			72 96	H05 H07	2 2
	GB, GHB, GHQ, GHBS	1C96620	12 18 30	H01 H02 H04	1 1 1
			42 48 54	H06 H03 H03 and H04	1 2 1 Each
			72 96	H05 H07	2 2

① Order the basic drawing number, along with the equivalent H–number that's needed (example 1C96619H01).

Table 19. Filler Covers

Device/Frame	Drawing Number	Item Number
F, J, K ②	4180B52	H01
QUICKLAG, GB, GHB ③	5155C62	H01

② Filler covers are required in addition to deadfront cover whenever MLO, SFL or TFL are specified.

③ Filler covers are required in addition to deadfront cover whenever a branch provision is specified.

1C96619H01

1C96620H01

5155C62H01

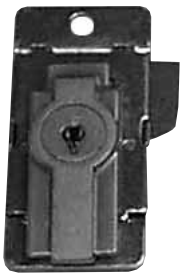
4180B52H01

Panelboard Trim Locks

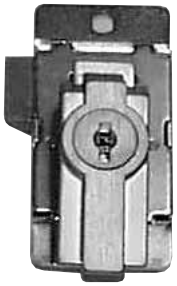
Panelboard trims use different trim locks, see pictures below for styles and part numbers. Contact your nearest Satellite for availability on the styles listed below. See **Page 4** for Satellite listings.

Table 20. Panelboard Trim Locks

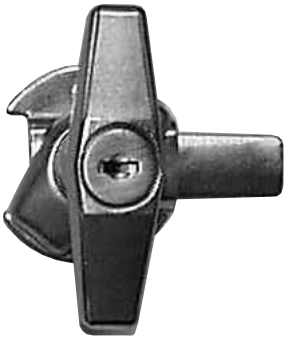
Description	Catalog Number
For use on left-handed door. (Hinged on left side.)	**K80522**
For use on right-handed door. (Hinged on right side.)	**K80133**
T–Handle lock, at one time used on all trims over 48.00 inches (1219.2 mm) in height. Also used on outdoor NEMA 12/3R trims.	**K80429**
Used on PRL4 lighting and power panels as standard.	**1A32258H03**
Used on PRL1, 2, 3 and PRL1a, 2a, 3a lighting panels as standard. WEM 2 key.	**5155C81G01**



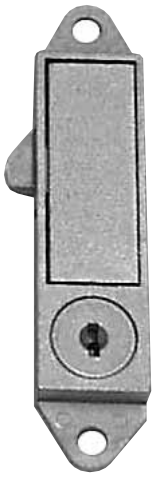
K80522



K80133



K80429



1A32258H03

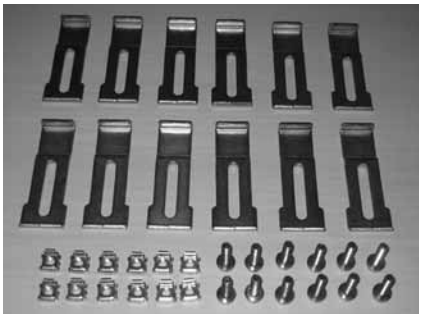
5155C81G01

Panelboard Fastrim Clamps and Screw-on Hardware Kits

For panelboard trim clamps, contact your nearest Satellite for availability on the styles listed below. See **Page 4** for Satellite listings.

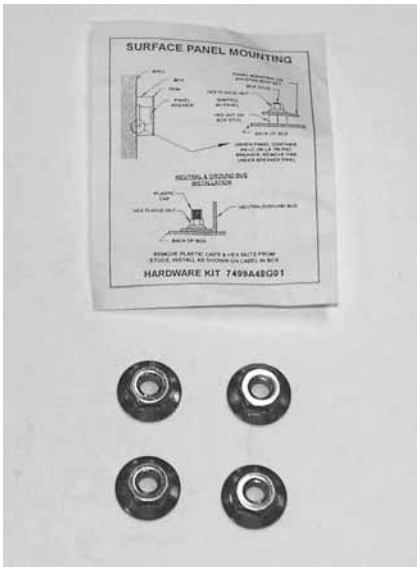
Table 21. Panelboard Fastrim Clamps and Screw-on Hardware Kits

Description	Style Number
Trim clamps — used on PRL1a, 2a, 3a fastrims. (6 per bag.)	**2C11641G02**
Trim screws — used on PRL1a, 2a, 3a, 4B standard trim. (10 per bag.)	**5157C83G06**
Chassis mounting hardware bag — PRL1a, 2a, 3a panels.	**7499A48G04**



2C11641G02

5157C83G06



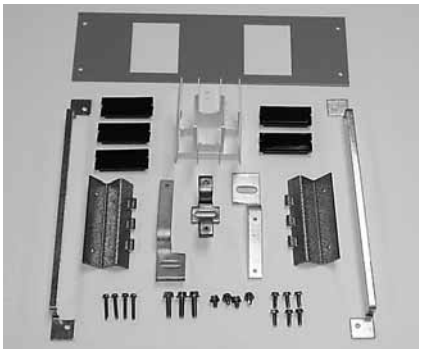
7499A48G04

PRL3a Horizontally Mounted Connector Kit Assemblies

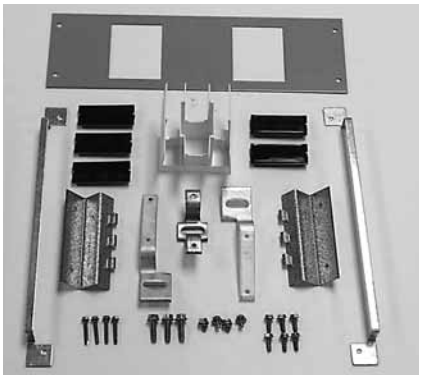
Table 22. Connector Kit Assemblies

Devices	Circuits or Pole	3-Phase		1-Phase		Notes
		Catalog Number	Phase	Catalog Number	Phase	
BA, BAB, QBGF, QBH, QBHGF, QBGFEP, QBHGFEP	6	**KPRL3ABA06**	A/B/C	**KPRL3ABA06-1**	A/C	(2) 100 Ampere Devices Maximum
	12	**KPRL3ABA12**	A/B/C	**KPRL3ABA12-1**	A/C	
	18	**KPRL3ABA18**	A/B/C	**KPRL3ABA18-1**	A/C	
	24	**KPRL3ABA24**	A/B/C	**KPRL3ABA24-1**	A/C	
GB, GHB, GHQ, GHBS	6	**KPRL3AGB06**	A/B/C	**KPRL3AGB06-1**	A/C	
	12	**KPRL3AGB12**	A/B/C	**KPRL3AGB12-1**	A/C	
	18	**KPRL3AGB18**	A/B/C	**KPRL3AGB18-1**	A/C	
	24	**KPRL3AGB24**	A/B/C	**KPRL3AGB24-1**	A/C	

Three-phase kits contain A, B and C phase connectors. Single-phase kits contain A and C phase connectors, deadfront cover, hardware and instructions to twin mount breakers across from each other. **Maximum amperes connected to any one connector cannot exceed 200 amperes.**



KPRL3ABA06



KPRL3AGB06

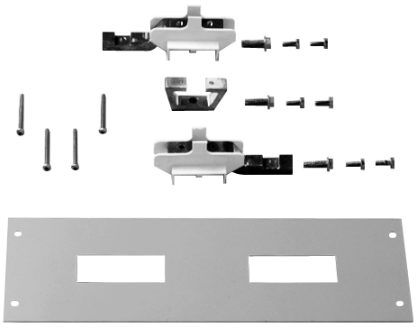
PRL3a F-Frame Horizontally Mounted Connector Kit Assemblies

Table 23. Connector Kit Assemblies

Devices	Circuits or Pole	3-Phase		1-Phase		Notes
		Catalog Number	Phase	Catalog Number	Phase	
EHD, FD, FDB, HFD, FDC (150 Ampere Maximum Twin Mount)	3-Pole Breaker 2-Pole Breaker 1-Pole Breaker	**KPRL3AFD3** **KPRL3AFD2** **KPRL3AFD1**	A/B/C A/C A/C	**—** **KPRL3AFD2** **KPRL3AFD1**	— A/C A/C	(2) 150 Ampere Devices Maximum
FD, HFD, FDC, ED, EDH, EDC (175 – 225 Ampere Single Mount) ①	3-Pole Breaker 2-Pole Breaker	**KPRL3AED3** **KPRL3AED2**	A/B/C A/C	**—** **KPRL3AED2**	— A/C	(1) 225 Ampere Maximum Single Mounted

① F-Frame devices rated above 150 amperes must be single mounted. No twin mounting acceptable.

Connector kits contain phase connectors, deadfront cover, hardware and instructions to mount breakers. Order breakers separately when ordering connector kit.



KPRL3AFD3

PRL3a Ground Assemblies

Table 24. PRL3a Ground Assemblies

Material	Standard	Isolated
	Catalog Number	
Aluminum/Copper Copper Only	**5158C05G02** **5158C05G04**	**2C11296G02** **2C11296G04**

5158C05G02

PRL3a Service Entrance Kits

Table 25. PRL3a Service Entrance Kits

Style Number ①	Panel Ampere Rating	Tin-Plated Aluminum	Bare Copper	Silver-Plated Copper	Tin-Plated Copper
		Item Number			
Mechanical Main Lugs or Main Breakers					
5078A98	100 250 – 600	G01 G13	G02 G14	G03 G15	G04 G16
Crimp Main Lugs					
5078A98	100 250 – 600	G05 G17	G06 G18	G07 G19	G08 G20
Copper Main Lugs					
5078A98	100 250 – 600	G09 G21	G10 G22	G11 G23	G12 G24

① When ordering, use complete style number (example 100 Ampere Tin-Plated Aluminum 5078A98G01).

5078A98G01

PRL3a Deadfront Covers

Table 26. Assembly ②

Style Number ③	Chassis Height/Item Number				
	14X	23X	31X	40X	53X
6559C59	G01	G02	G03	G04	G05

② Assembly groups include the frame only (two rails and two end covers). Reference **Pages 24** and **25** for specific device covers. All connector kits ship with a deadfront cover for that device.

③ When ordering, use complete style number (example 14X High Assembly 6559C59G01).

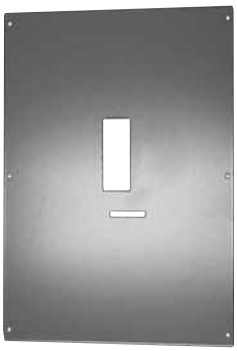
6559C59G01

PRL3a Vertical Devices Deadfront Covers

Table 27. Vertical Mounting Position

Device/Frame	Trip Unit Type	Style Number ①	"X" Space Required	Item Number	
				Without Lock-offs ①	With Lock-offs ①
EHD, FD, FDB, HFD, FDC, ED, EDH, EDC (Top) ②	N/A	**4176B68**	7X	H01	H03
EHD, FD, FDB, HFD, FDC, ED, EDH, EDC (Bottom) ②	N/A		7X	H04	H05
FD, HFD, FDC, ED, EDH (Top) ③	N/A	**4180B93**	10X	H01	H03
FD, HFD, FDC, ED, EDH (Bottom) ③				H04	H05
J-Frame (Bottom)	N/A	**4176B60**	14X	H01	H02
J-Frame (Top)			14X	H03	H04
K-Frame (Bottom)	Thermal-Mag.	**4176B61**	15X	H01	H02
K-Frame (Bottom)	Electronic		15X	H03	H04
K-Frame (Top)	Thermal-Mag.		15X	H05	H06
K-Frame (Top)	Electronic		15X	H07	H08
L-Frame (Bottom)	Thermal-Mag.	**4176B51**	17X	H01	H02
L-Frame (Bottom)	Electronic		17X	H03	H04
L-Frame (Top)	Thermal-Mag.		17X	H05	H06
L-Frame (Top)	Electronic		17X	H07	H08
FB-P (Top Only)	N/A	**4176B70**	9X	H02	H02
LA-P (Top Only)	N/A	**4176B57**	21X	H01	H01
FCL	N/A	**4176B70**	9X	H01	H01
LCL (Top)	N/A	**4176B56**	21X	H01	H02
LCL (Bottom)	N/A		21X	H03	H04
Neutral/Blank Cover	N/A	**4176B72**	1X	H01	—
			2X	H02	
			3X	H03	
			4X	H04	
			5X	H05	
			6X	H06	
			7X	H07	
			8X	H08	
			9X	H09	
			10X	H10	
			11X	H11	
			12X	H12	
J-Frame Sub-Feed Twin Bottom	N/A	**4176B79**	20X	H01	H02 (2 L/O) H03 (1 L/O RT) H04 (1 L/O LT)
J-Frame Sub-Feed Twin Top	N/A	**4176B79**	20X	H05	H05 (2 L/O) H07 (1 L/O RT) H08 (1 L/O LT)
PT363 (Top)	N/A	**4180B79**	7X	H01	—
PT363 (Bottom)	N/A		7X	H02	
PT364 (Top)	N/A		9X	H03	
PT364 (Bottom)	N/A		9X	H04	

① When ordering covers, order complete style and item numbers (example 4176B68H01).
② 4/0 Maximum acceptable terminal size.
③ 300 kcmil maximum acceptable terminal size.



J Main 4176B60H04

Neutral Blank Cover 4176B72H04

PRL3a Horizontal Devices Deadfront Covers

Table 28. Horizontal Mounting Position

Device/Frame	Device Poles	Style Number ①	Total Circuit Quantity	"X" Space Required	Item Number
EHD, FD, FDB, HFD, FDC (Twin Mounted)	1, 2 or 3	**4178B08**	6 12 18 24 30 36 42 48	3X 6X 9X 12X 15X 18X 21X 24X	H01 H02 H03 H04 H05 H06 H07 H08
EHD, FD, FDB, HFD, FDC (Twin Mounted)	1 or 2	**4179B39**	4 8 12 16 20 24 28 32	2X 4X 6X 8X 10X 12X 14X 16X	H01 H02 H03 H04 H05 H06 H07 H08
EHD, FD, FDB, HFD, FDC (Twin Mounted)	1	**4179B40**	2	1X	H01
FD, HFD, FDC, ED, EDH, EDC (Single Mounted)	3	**4179B41**	3	3X	H01
FD, HFD, FDC, ED, EDH, EDC (Single Mounted)	2	**4179B42**	2	2X	H01
CA, CAH, HCA	3	**4176B66**	3	3X	H01
CA, CAH, HCA	2	**4176B80**	2	2X	H01
BA, BAB, BABRP, BABRSP QBH, QBGF, QBGFEP, QBHGFEP	1, 2 or 3	**4176B67**	6 12 18 24	3X 5X 8X 10X	H01 H02 H03 H04
GB, GHB, GHBS, GHBGFEP, HGHB, GHQ	1, 2 or 3	**4176B69**	6 12 18 24	3X 5X 8X 10X	H01 H02 H03 H04
Pow-R-Command Controller	N/A	**4180B91**	N/A	5X	H01
Pow-R-Command Expansion	N/A	**4180B91**	N/A	7X 16X	H02 H03

① When ordering covers, order complete style and item number (example 4178B08H01).

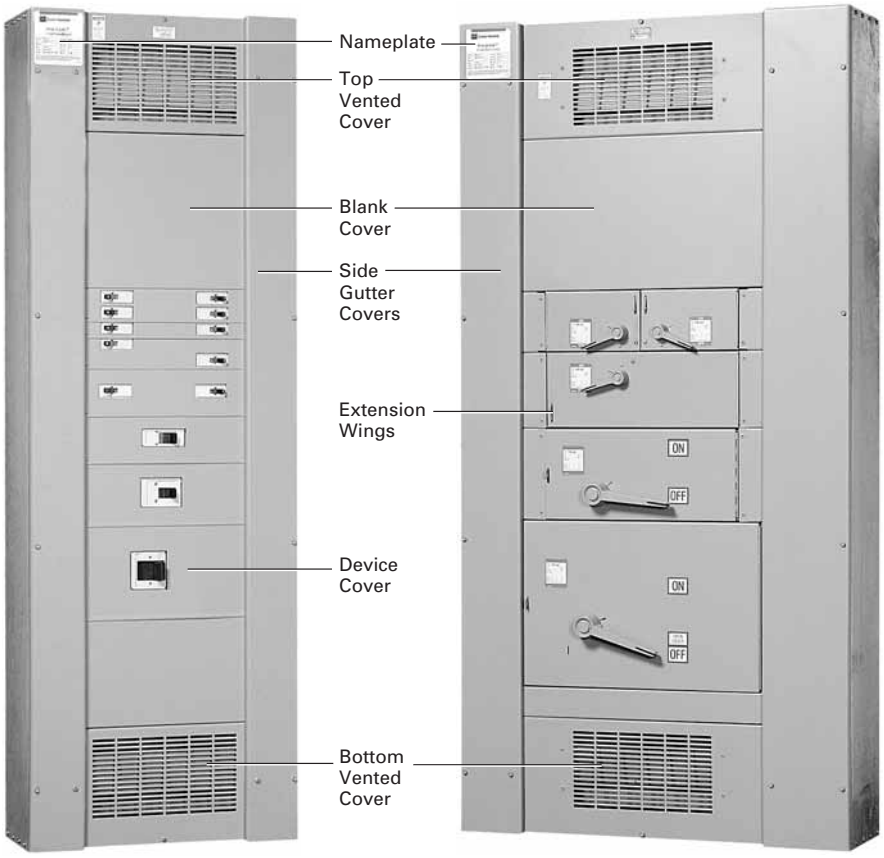
PRL3a Deadfront Cover Blank Fillers

Table 29. PRL3a Deadfront Cover Blank Fillers

Device/Frame	Poles	Style Number
F-Frame C-Frame C-Frame	1, 2 or 3 2 3	**4178B06H01** **6555C40H01** **6555C41H01**
QUICKLAG, GB, GHB, GHBS	1, 2 or 3	**5155C62H01**

BAB Cover 4176B67H01

PRL4 Vented Cover Assemblies



PRL4B ***PRL4F***

Table 30. Vented Cover Assemblies and Side Gutter Covers — Dimensions in Inches (mm)

NEMA 1 Box				Vented Cover Assembly ② Style Number	Side Gutter Covers			
Dimensions			Catalog Number		Left		Right	
Height	Width	Depth ①			Size	Style Number	Size	Style Number
57.00 (1447.8)	24.00 (609.6)	10.40 (264.2)	**BX2457**	**6574C74G02**	5.00 (127.0) x 57.00 (1447.8)	**6555C20H01**	5.00 (127.0) x 57.00 (1447.8)	**6555C20H01**
73.00 (1854.2)	24.00 (609.6)		**BX2473**	**6574C74G03**	5.00 (127.0) x 73.00 (1854.2)	**6555C21H01**	5.00 (127.0) x 73.00 (1854.2)	**6555C21H01**
90.00 (2286.0)	24.00 (609.6)		**BX2490**	**6574C74G04**	5.00 (127.0) x 90.00 (2286.0)	**6555C25H01**	5.00 (127.0) x 90.00 (2286.0)	**6555C25H01**
73.00 (1854.2)	36.00 (914.4)		**BX3673**	**6574C74G05**	6.00 (152.4) x 73.00 (1854.2)	**6555C22H01**	8.00 (203.2) x 73.00 (1854.2)	**6555C23H01**
90.00 (2286.0)	36.00 (914.4)		**BX3690**	**6574C74G06**	6.00 (152.4) x 90.00 (2286.0)	**6555C26H01**	8.00 (203.2) x 90.00 (2286.0)	**6555C27H01**
73.00 (1854.2)	44.00 (1117.6)		**BX4473**	**6574C74G05**	8.00 (203.2) x 73.00 (1854.2)	**6555C23H01**	14.00 (355.6) x 73.00 (1854.2)	**6555C24H01**
90.00 (2286.0)	44.00 (1117.6)		**BX4490**	**6574C74G06**	8.00 (203.2) x 90.00 (2286.0)	**6555C27H01**	14.00 (355.6) x 90.00 (2286.0)	**6555C28H01**

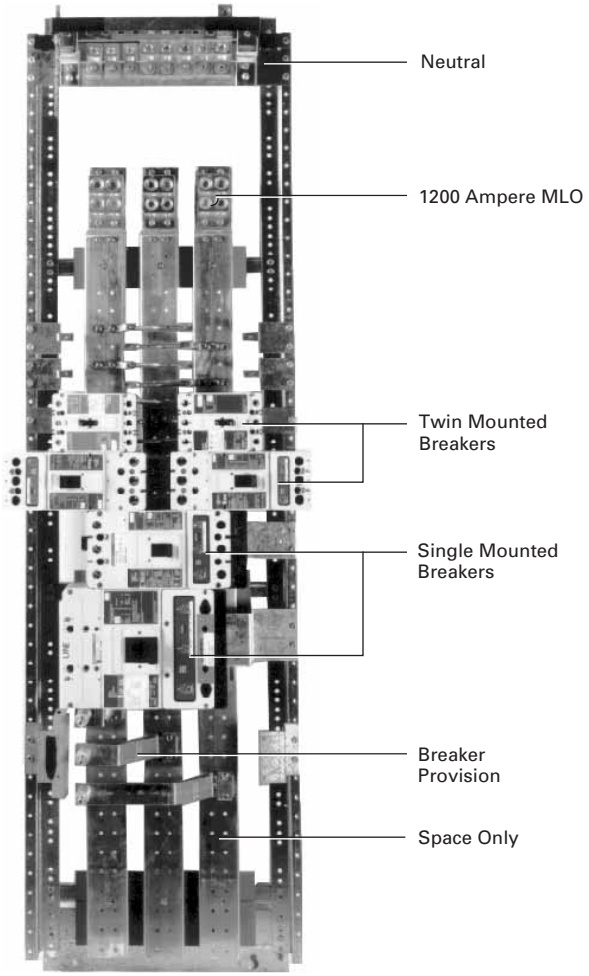
① Covers add .90 inches (22.9 mm) to box depth for overall enclosure depth of 11.30 inches (287.0 mm).
② Cover assembly consists of 2 side rails, top and bottom vented covers.
Important: Order individual device covers and blanks separately.

PRL4 Blank Covers

Used to cover blank space on chassis. All PRL4 cover heights are measured in "X" units. 1X equals 1.38 inches (35.1 mm).

Table 31. PRL4 Blank Covers

Cover Size	Style Number	
	24.00-Inch (609.6 mm) Width Box	36.00, 44.00-Inch (914.4, 1117.6 mm) Width Box
1X	6554C01H01	6554C02H01
2X	6554C01H02	6554C02H02
3X	6554C01H03	6554C02H03
4X	6554C01H13	6554C02H13
5X	6554C01H14	6554C02H14
6X	6554C01H04	6554C02H04
7X	6554C01H05	6554C02H05
9X	6554C01H06	6554C02H06
10X	6554C01H07	6554C02H07
11X	6554C01H08	6554C02H08
12X	6554C01H09	6554C02H09
13X	6554C01H10	6554C02H10
15X	6554C01H11	6554C02H11
20X	6554C01H12	6554C02H12



PRL4B Interior

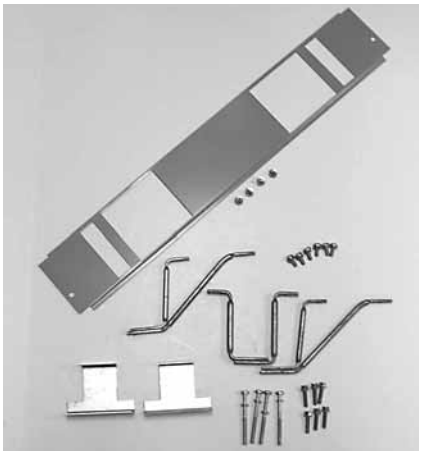
PRL4 Breaker Connector Kits

Breaker Connector Kits

Each kit includes copper connectors, mounting brackets, covers, hardware and instructions for mounting breaker(s) in a PRL4. **Breakers are not included.** Contact your local Satellite plant for availability and application information (see **Page 4**).

Connector Kit

Each kit includes copper connectors mounting brackets, cover, hardware and instructions.



Connector Kit

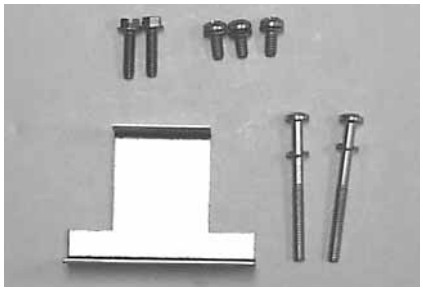
Table 32. Breaker Connector Kits

Breaker Frame	Space Required		Poles	Mounting Type	Connector Kit Catalog Number
	Inches (mm)	"X"			
EHD, FD, HFD EHD, FD, FDB, HFD, FDC ED, EDH, EDC	2.75 (69.9)	2X	1 ① 2 2	Twin Twin Twin	**KPRL4FD1** **KPRL4FD2** **KPRL4ED2**
EHD, FD, FDB, HFD, FDC FCL, FB-P, FD/LFD ED, EDH, EDC JD, JDB, HJD, JDC JD, JDB, HJD, JDC	4.13 (104.9)	3X	3 3 3 2, 3 2,3	Twin Twin Twin Single Twin	**KPRL4FD** **KPRL4FBP** **KPRL4ED** **KPRL4JDS** **KPRL4JDT** ②
DK, KD, KDB, HKD, KDC DK, KD, KDB, HKD, KDC CKD, CHKD	5.50 (139.7)	4X	2, 3 2,3 2,3	Single Twin Single	**KPRL4KDS** **KPRL4KDT** ③ **KPRL4CKD** ④
LCL LA-P LD, LDB, HLD, LDC, CLD, LC MDL, HMDL NB-P CND, CHND ND, HND	8.25 (209.5)	6X	2, 3 2, 3 2, 3 2, 3 2, 3 3 2, 3	Single Single Single Single Single Single Single	**KPRL4LCL** ② **KPRL4LAP** ② **KPRL4LD** ② **KPRL4MC** ② **KPRL4NBP** ③ **KPRL4CND** ③④ **KPRL4ND** ②

① Two sets of twin mounted 1-pole breakers.
② 36.00-inch (914.4 mm) minimum box width required.
③ 44.00-inch (1117.6 mm) box width required.
④ Requires density rated bus in existing panel chassis.

Hardware Kit

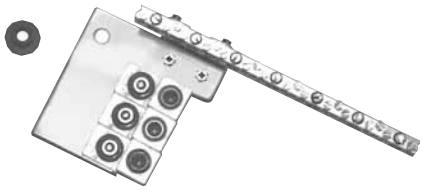
Each kit includes mounting bracket(s) and mounting hardware only. Use the appropriate Connector Kit catalog number and add an "H" to designate hardware only (example: KPRL4FD-H).



Hardware Kit

Standard Ground Bus

Copper bus with (3) 6 – 300 kcmil lugs plus a 24-circuit terminal bar with #14 – 1/0 wire range.



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PRL4 Fusible Connector Kits

Fusible Switch Connector Kits

Each kit includes copper connectors, extension wings (when required), hardware and instructions to mount a **fusible** switch. **Switches are not included.** Contact your local Satellite plant for availability and application information (see **Page 4**).

Table 33. Fusible Switch Connector Kits

Switch Height		Switch Ampere Rating	3-Pole Switch		Connector Kit
Inches (mm)	"X" Space Required		240 Volts	600 Volts	
			Catalog Number		
5.50 (139.7)	4X	30 – 30 60 – 60 100 – 100	**FDPWT3211R** **FDPWT3222R** **FDPWT3233R**	**FDPWT3611R** **FDPWT3622R** **—**	**—** **KPRL44X** ① **—**
6.88 (174.8)	5X	100 – 100	**—**	**FDPWT3633R**	**KPRL45X** ①
8.25 (209.6)	6X	200 200 – 200	**FDPBS324R** **FDPBT3244R**	**FDPBS364R** **FDPBT3644R**	**KPRL4B6XS** **KPRL4B6XT** ②
12.38 (314.5)	9X	400	**FDPW325R**	**FDPW365R**	**KPRL4W9X**
15.13 (384.3)	11X	600 800	**FDPW326R** **FDPW327**	**FDPW366R** **FDPW367**	**KPRL4W11X** **KPRL4W11X** ②
20.63 (524.0)	15X	1200	**FDPW328**	**FDPW368**	**KPRL4W15X** ②

① These connector kits will fit the FDP and FDPW switches.
② 44.00-inch (1117.6 mm) box width required for both R and J fuse applications.

PRL4 Breaker and Fusible Switch Retrofit Kits

Breaker Retrofit Kits

Each kit includes **one** breaker, copper connectors, covers, hardware and instructions to mount in a PRL4.

Table 34. Breaker Retrofit Kits

Breaker Frame	Frame Ampere Rating	Trip Range	Mounting Type
EHD	100	15 – 100	Twin
FDB		15 – 100	Twin
FD		15 – 100	Twin
HFD		15 – 100	Twin
FDC		15 – 100	Twin
FCL		15 – 100	Twin
FB-P		15 – 100	Twin
FDB	150	110 – 150	Twin
FD	225	110 – 225	Twin
HFD		110 – 225	Twin
FDC		110 – 225	Twin
ED		100 – 225	Twin
EDH		100 – 225	Twin
EDC		100 – 225	Twin
JD	250	70 – 250	Twin/Single
HJD		70 – 250	Twin/Single
JDC		70 – 250	Twin/Single
DK	400	100 – 400	Twin/Single
KD		100 – 400	Twin/Single
HKD		100 – 400	Twin/Single
KDC		100 – 400	Twin/Single
CKD		100 – 400	Single
LCL		125 – 400	Single
LA-P		70 – 400	Single
LD	600	300 – 600	Single
CLD		300 – 600	Single
HLD		300 – 600	Single
CHLD		300 – 600	Single
LDC		300 – 600	Single
CLDC		300 – 600	Single
MDL	800	300 – 800	Single
CMDL		300 – 800	Single
HMDL		300 – 800	Single
CHMDL		300 – 800	Single
ND	1200	600 – 1200	Single
CND		600 – 1200	Single
HND		600 – 1200	Single
CHND		600 – 1200	Single
NDC		600 – 1200	Single
CNDC		600 – 1200	Single

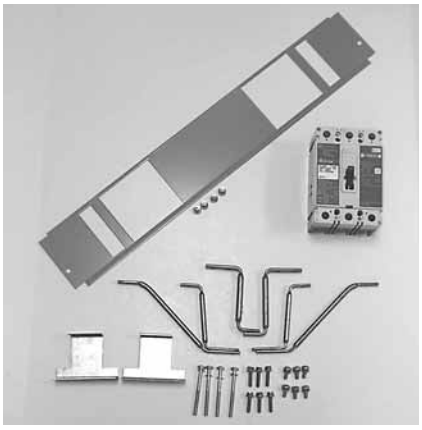
How to Order a Breaker Retrofit Kit by Catalog Number

Use "KPRL4" prefix and add catalog number of breaker as shown below. Use suffix "T" or "S" to denote twin or single mounting. Twin mounting indicates that one set of connectors is required to mount two breakers (of similar frames) opposite one another. RETROFIT KIT INCLUDES ONE BREAKER ONLY, FOR EITHER SINGLE OR TWIN MOUNTED APPLICATIONS.

Table 35. Catalog Numbering System — Breaker Retrofit Kit

KPRL4 KD 3 400 S

- **KPRL4** — Designates KPRL4 Connector Kit
- **KD** — Breaker Frame
- **3** — Number of Poles: **2** = 2-Pole, **3** = 3-Pole
- **400** — Ampere Rating
- **S** — **T** = Twin, **S** = Single



Breaker Retrofit Kit

Fusible Retrofit Kits

Each kit includes a 3-pole switch, copper connectors, extension wings (if required), hardware and instructions to horizontally mount in a PRL4.

Table 36. Fusible Retrofit Kits

Switch Ampere Rating	Switch Type	Mounting Type
30 – 30	FDPW	Twin
60 – 60	FDPW	Twin
100 – 100	FDPW	Twin
100	FDPW	Single
200	FDPB	Single
200 – 200	FDPB	Twin
400	FDPW	Single
600	FDPW	Single
800	FDPW	Single
1200	FDPW	Single

How to Order a Fusible Retrofit Kit by Catalog Number

Use "KPRL4" prefix and add catalog number of appropriate switch (refer to **Page 29** for 3-pole switch catalog number).

Example: The Retrofit Kit catalog number for a 600 volt, 100 ampere twin FDPW switch is:

Table 37. Catalog Numbering System — Fusible Retrofit Kit

KPRL4 FDPW T 3 6 33 R

- **KPRL4** — Designates PRL4 Connector
- **FDPW** — Switch Type: FDPW, FDPB
- **T** — **T** = Twin, **S** = Single
- **3** — **3** = 3-Pole
- **6** — Volts: **2** = 240, **6** = 600
- **33** — **11** = 30 – 30, **22** = 60 – 60, **33** = 100 – 100, **44** = 200 – 200, **4** = 200, **5** = 400, **6** = 600, **7** = 800, **8** = 1200
- **R** — **R** = R Fuse, **J** = J Fuse, **T** = T Fuse

PRL4 Energy Sentinel

Energy Sentinel

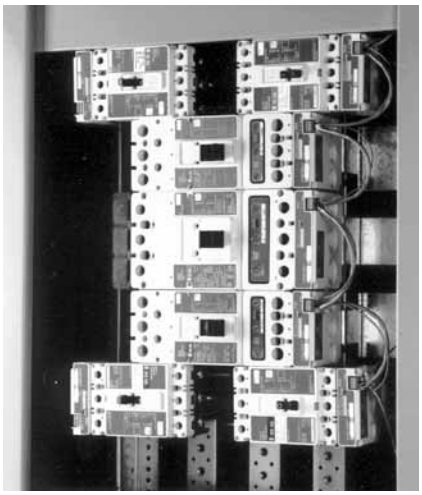
The IQ Energy Sentinel is a submetering device that mounts directly on a circuit breaker and monitors both power and energy with an overall accuracy of 99%.

This high system accuracy is achieved by use of the Cutler-Hammer SURE Plus Chip, which is a sophisticated microprocessor.

All that is necessary to complete an IQ Energy Sentinel installation is to insert it into the load side of a breaker, feed the load conductors through it, and run the shielded twisted pair wire for communications. The IQ Energy Sentinel has a nonvolatile memory, is powered by the circuit breaker, and can be applied on 3-phase, 4-wire or single-phase, 3-wire systems.

The space-saving design characteristics of the IQ Energy Sentinel mean they can be quickly and easily retrofitted onto Series C® circuit breakers in existing equipment…with no additional space required. Additionally, IQ Energy Sentinel can be installed when upgrading to Series C from older breakers that are physically interchangeable…with no additional space required.

Power and energy information from IQ Energy Sentinels can be communicated to a PC, a panel mounted Central Energy Display (CED), or even existing building management or distribution control systems.



Energy Sentinels Installed

Table 38. Energy Sentinel

Series C Breaker Frame	Voltage ac	Maximum Amperes	Catalog Number
F F	120/208, 120/240 277/480	150 150	**IQESF208** **IQESF480**
J J	120/208, 120/240 277/480	250 250	**IQESJ208** **IQESJ480**
K K	120/208, 120/240 277/480	350 350	**IQESK208** **IQESK480**

IQ Central Energy Display

IQ Central Energy Display

The IQ Central Energy Display may be panel mounted or located remotely (up to 7500 feet [2286 m] away). It displays power, peak demand, and energy readings of up to 50 IQ Energy Sentinels and eight IQ Data Plus meters.

Additional capabilities include: peak demand alarming, demand and energy totals for groups of IQ Energy Sentinels and IQ Data Plus 11 digital meters.

Refer to your local Satellite for retrofit and upgrade options available for existing equipment.

PRL1a, 2a, 3a Special Trims and Enclosures

Ventilated Trim

Required on PRL1a, 2a, 3a, 600 ampere and above panels only. Order by adding the letter "V" to the standard trim catalog number. **Add 10% to standard trim list price**.

Example: LT2072S becomes **LTV2072S**.

Ventilated Trim

Fastrim

Used when concealed trim mounting hardware is required for PRL1a, 2a and PRL3a. Trim clamps are included and shipped with the trim. Order by adding the letter "F" to the standard trim catalog number. **Add 20% to standard trim list price.**

Example: LT2072S becomes **LTF2072S**.

For trim clamps only, refer to **Page 20**.

Fastrim

Door-In-Door

Piano hinge on the right side of the trim provides access to the wiring gutters without requiring removal of the trim. Order by adding the letters "DD" to the standard trim catalog number. **Add 20% to standard trim list price.**

Example: LT2072S becomes **LTDD2072S**.

Door-in-Door

Type 12/3R Enclosures

The complete enclosure consists of a box and trim. The enclosure meets code requirements for both Type 12 (dust-tight) and Type 3R (rainproof) standards. Features include a laser cut trim with rounded corners, concealed hinges and a T-handle lock. Gasketing is provided around the trim door. The box is gasketed and made from code gauge steel with dripshield and is painted ANSI-61.

Table 39. Type 12/3R Enclosures for PRL1a, 2a, 3a

Box Dimensions in Inches (mm)			Catalog Number	
Height	**Width**	**Depth**	**Box**	**Trim**
24.00 (609.6) 36.00 (914.4) 48.00 (1219.2)	20.00 (508.0)	6.00 (152.4)	**VWPB2024** **VWPB2036** **VWPB2048**	**LWPT2024** **LWPT2036** **LWPT2048**
60.00 (1524.0) 72.00 (1828.8) 90.00 (2286.0)			**VWPB2060** **VWPB2072** **VWPB2090**	**LWPT2060** **LWPT2072** **LWPT2090**

Type 12/3R Enclosures

PRL4 Special Trims and Enclosures

Door-In-Door Trim

Door-In-Door Trim

A piano hinge on the right side of the trim provides access to the wiring gutter without requiring the removal of the trim. When used with a standard PRL4 box, a special mounting channel must be used to add extra depth to the enclosure.

An extra depth box, not requiring a mounting channel, is another available option. Contact your local Satellite for ordering information.

Table 40. Special Trims and Enclosures

Standard Box Catalog Number	Mounting Channel Style Number	Door-In-Door Trim Catalog Number	
		Surface	Flush
BX2457 BX2473 BX2490	8708C82G02 8708C82G03 8708C82G04	LDD2457STW LDD2473STW LDD2490STW	LDD2457FTW LDD2473FTW LDD2490FTW
BX3673 BX3690 BX4473 BX4490	8708C82G05 8708C82G06 8708C82G07 8708C82G08	LDD3673STW LDD3690STW LDD4473STW LDD4490STW	LDD3673FTW LDD3690FTW LDD4473FTW LDD4490FTW

Type 12/3R Enclosures

Type 12, 24.00 Inches (609.6 mm) Wide

Type 3R, 36.00 Inches (914.4 mm) Wide

PRL4 enclosures are available in both Type 12 (dust-tight) and Type 3R (rainproof) designs. The 24.00-inch (609.6 mm) wide enclosure includes a single hinged door while the 36.00-inch (914.4 mm) wide is provided with double hinged doors. The side gutter covers are an integral part of the box in all styles. Sizes and catalog numbers are shown in the table below.

Table 41. Type 12/3R Enclosures

Enclosure Dimensions in Inches (mm)			Catalog Number	
Height	Width	Depth	Type 3R	Type 12
57.00 (1447.8) 73.00 (1854.2) 90.00 (2286.0)	24.00 (609.6) 24.00 (609.6) 24.00 (609.6)	13.90 (353.1)	RPC2457 RPC2473 RPC2490	DPC2457 DPC2473 DPC2490
73.00 (1854.2) 90.00 (2286.0)	36.00 (914.4) 36.00 (914.4)		RPC3673 RPC3690	DPC3673 DPC3690

Ordering Procedure

Step 1 Select the correct part or Branch Device. When selecting, you need to know the following:

- Panelboard type.
- Amperage.
- System voltage.
- Available short circuit rating.
- Number of poles available.
- Size and number of wires per phase.
- "X" space required.

Step 2 Refer to the 5P panelboard layout on **Page 35** to verify the amount of "X" space available.

Step 3 Create a 5P breaker unit catalog number, by following the instructions on **Page 36**, or order the catalog number for parts on **Pages 38** through **40**.

Step 4 Determine if extra filler covers are required. Additional filler covers may be necessary to fill the unused space. Refer to **Page 40** for filler plate information.

PRL5P Chassis Layout

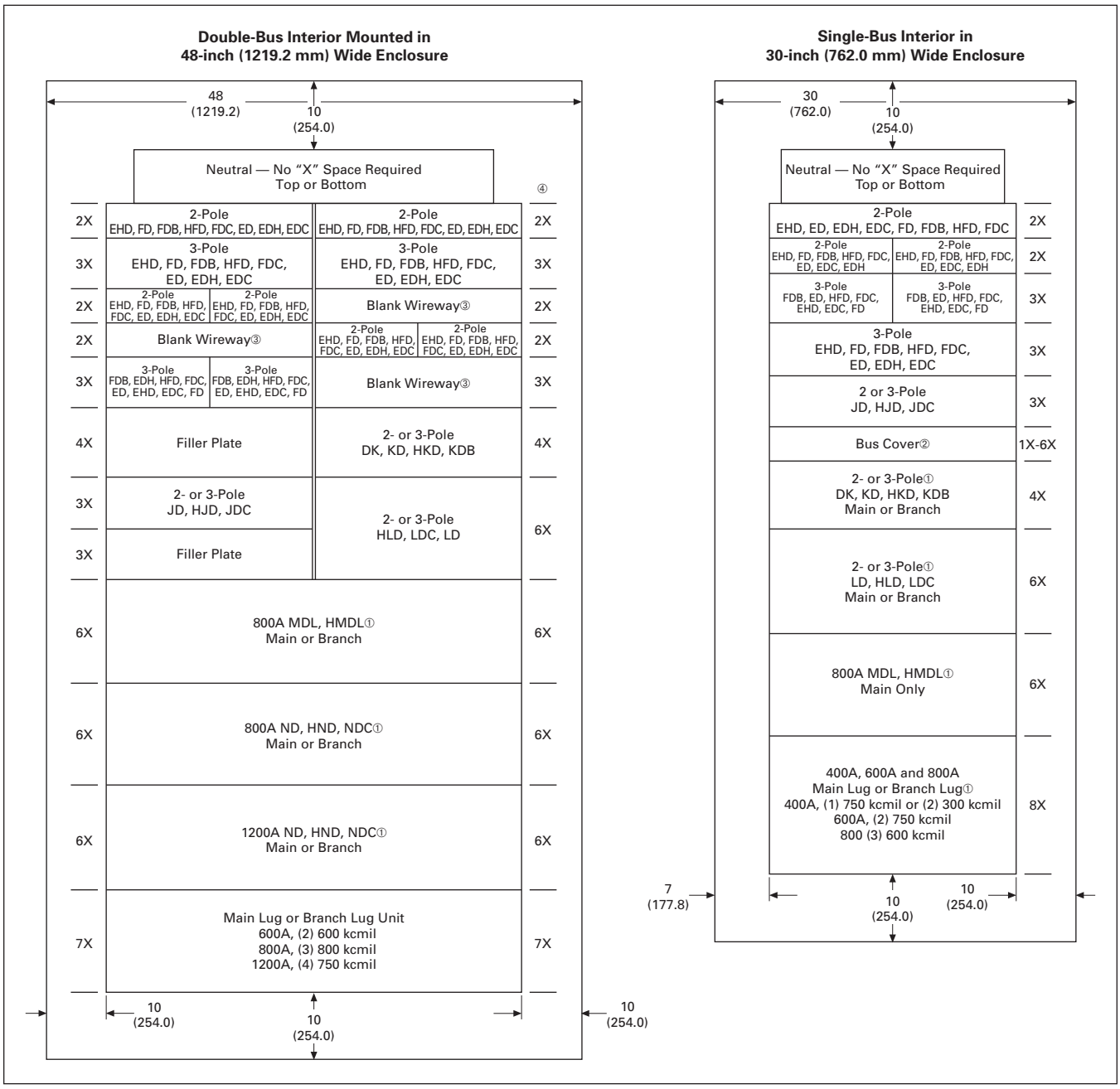
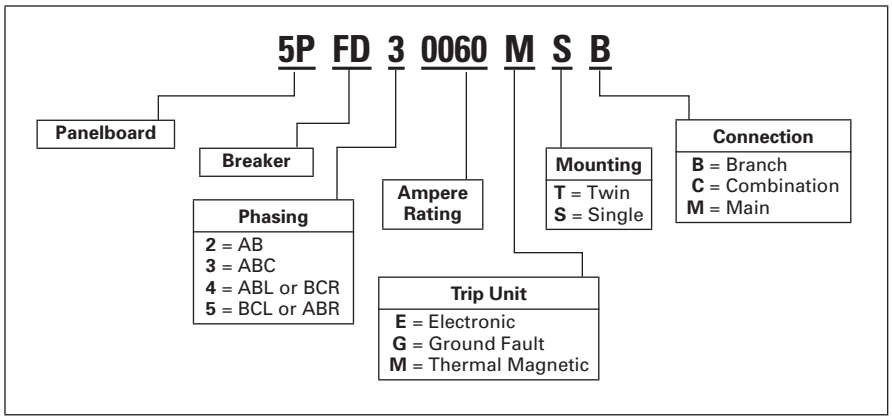


Figure 3. PRL5P Chassis Layout — Dimensions in Inches (mm)

① If used as a main device, must be mounted at the neutral end of panel.
② Fixed bus covers are required for unused spaces if NEC® six circuit disconnect rule is to be met.
③ Blank wireway fillers are required opposite any dual breaker unit.
④ One "X" = 1.38 inches (35.1 mm).

PRL5P Breaker Assemblies Catalog Numbers

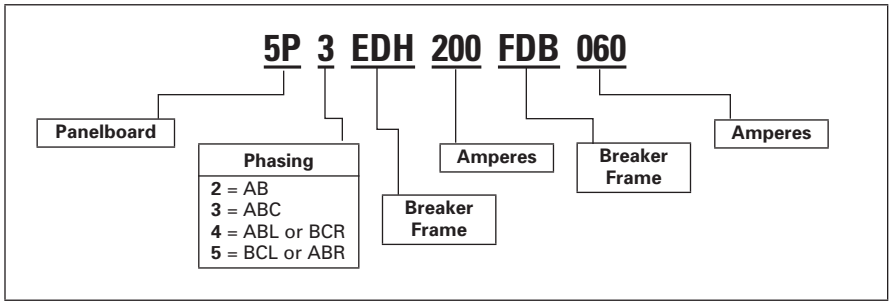
Table 42. Catalog Numbering System — 5P Single or Twin Breakers with Adapters



A plug-on unit is a complete assembly with a circuit breaker and mounting adapter to mount on a 5P panelboard.

Single indicates units that may be mounted in a single or double bus panel, and twin indicates double bus panels only. See **Tables 44** and **45** on **Page 37**.

Table 43. Catalog Numbering System — 5P Dual Breakers with Adapters



Any two F-Frame breakers listed may be mounted on the same 2X or 3X dual breaker adapter.

Dual breaker adapters may be used in single or double bus panels. Dual breaker adapters can **NOT** be mounted across from another adapter in a double bus panel. See **Table 46** on **Page 37**.

Branch Devices

Single-pole breakers in single adapter units. Include two or three single-pole 15 – 60 ampere assembled on one unit. (One X = 1.38 inches [35.1 mm])

Table 44. Single-Pole Breakers in Single Adapter Units

Breaker Type	Ampere Rating	Interrupting Rating (kA Sym.)				"X" Space Required
		120 Vac	240 Vac	277 Vac	125 Vdc	
EHD	15 – 60	—	—	14	10	2X
FD	15 – 60	—	—	25	10	2X
HFD	15 – 60	—	—	65	10	2X
EHD	15 – 60	—	—	14	10	3X
FD	15 – 60	—	—	25	10	3X
HFD	15 – 60	—	—	65	10	3X

Table 45. 2- and 3-Pole Breakers in Single Adapter Units

Breaker Type	Ampere Rating	Interrupting Rating (kA Sym.)				"X" Space Required
		240 Vac	480 Vac	600 Vac	250 Vdc	
ED	100 – 225	65	—	—	—	3X
EDH	100 – 225	100	—	—	—	3X
EDC	100 – 225	200	—	—	—	3X
EHD	15 – 60	18	14	—	10	3X
EHD	70 – 100	18	14	—	10	3X
FD	15 – 60	65	25	18	10	3X
FD	70 – 100	65	25	18	10	3X
FD	110 – 225	65	25	18	10	3X
HFD	15 – 60	100	65	25	22	3X
HFD	70 – 100	100	65	25	22	3X
HFD	110 – 225	100	65	25	22	3X
FDC	15 – 60	200	100	35	22	3X
FDC	70 – 100	200	100	35	22	3X
FDC	110 – 225	200	100	35	22	3X
JD, JDB	70 – 225	65	35	18	10	3X
JD, JDB	250	65	35	18	10	3X
HJD	70 – 225	100	65	25	22	3X
HJD	250	100	65	25	22	3X
JDC	70 – 225	200	100	35	22	3X
JDC	250	200	100	35	22	3X
DK	100 – 400	65	—	—	—	4X
KD, KDB	250 – 400	65	35	25	10	4X
HKD	250 – 400	100	65	35	22	4X
KDC	250 – 400	200	100	50	22	4X
LD, LDB	300 – 600	65	35	25	22	6X
HLD ①②	300 – 600	100	65	35	25	6X
LDC	300 – 600	200	100	50	25	6X
MDL ①②	400 – 800	65	50	25	22	6X
HMDL ①②	400 – 800	100	65	35	25	6X
ND	400 – 1200	65	50	25	—	6X
HND ①②	400 – 1200	100	65	35	—	6X
NDC	400 – 1200	200	100	50	—	6X

① For use only in double bus chassis panelboards.
② 100% rated breakers are **NOT** available in 5P panelboards.

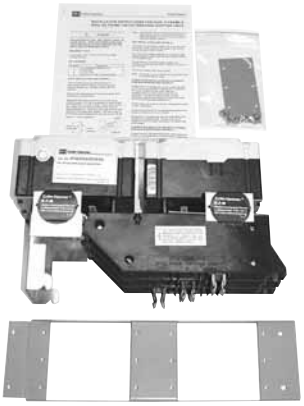
Dual breaker adapters — Any two breakers listed in **Table 46** may be mounted on the same 2X or 3X dual breaker adapter.

Dual breaker adapters may be used in single or double bus chassis. Dual breaker adapters can **NOT** be mounted across from another in a double bus chassis. (One X = 1.38 inches [35.1 mm])

Table 46. Dual Breaker Adapters

Breaker Type	Ampere Rating	Interrupting Rating (kA Sym.)				"X" Space Required
		240 Vac	480 Vac	600 Vac	250 Vdc	
ED	100 – 225	65	—	—	—	3X
EDH	100 – 225	100	—	—	—	3X
EDC	100 – 225	200	—	—	—	3X
EHD	15 – 60	18	14	—	10	3X
EHD	70 – 100	18	14	—	10	3X
FD	15 – 60	65	25	18	10	3X
FD	70 – 100	65	25	18	10	3X
FD	110 – 225	65	25	18	10	3X
HFD	15 – 60	100	65	25	22	3X
HFD	70 – 100	100	65	25	22	3X
HFD	110 – 225	100	65	25	22	3X
FDC	15 – 60	200	100	35	22	3X
FDC	70 – 100	200	100	35	22	3X
FDC	110 – 225	200	100	35	22	3X

5PFD30060MSB



5P3EDH200FDB060

PRL5P Main or Through-Feed Lugs

Table 47. PRL5P Main or Through-Feed Lugs

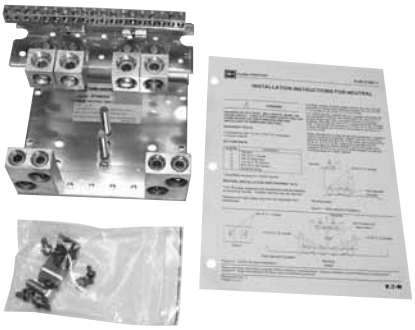
Description	Ampere Rating	Wire Size Range	"X" Space Required	Catalog Number
Single Bus Chassis Mounting				
Ampere Lug Unit	400	(1) 1/0 – 500 or (2) 1/0 – 250 kcmil	8X	**5PLUG3400SC**
Ampere Lug Unit	600	(2) 1/0 – 500 kcmil	8X	**5PLUG3600SC**
Ampere Lug Unit	800	(2) #2 – 500 or (3) #2 – 400 kcmil	8X	**5PLUG3800SC**
Double Bus Chassis Mounting				
1200 Ampere Lug Unit	600 – 1200	(4) #4 – 750 kcmil	7X	**5PLUG31200TC**

5PLUG3800SC

5PLUG31200TC

PRL5P Neutrals and Grounds

Neutral Assembly



5PN800A

Table 48. Neutral Assemblies with Lugs

Incoming Number of Cables and Wire Size	Catalog Number
(4) 250 – 500 kcmil 800 Amperes Aluminum/Copper	**5PN800A**
(4) 250 – 500 kcmil 800 Amperes Copper	**5PN800C**
(4) 250 – 500 kcmil 1200 Amperes Aluminum/Copper	**5PN1200A**
(4) 250 – 500 kcmil 1200 Amperes Copper	**5PN1200C**

Table 49. Additional Lugs for Neutral Assemblies

Description	Catalog Number
(1) 1/0 – 750 kcmil or (2) 1/0 – 300 kcmil Aluminum/Copper	**5PNL400**
(2) 250 – 500 kcmil Aluminum/Copper	**5PNL600**
(3) 3/0 – 750 kcmil Aluminum/Copper	**5PNL800**
(4) 3/0 – 750 kcmil Aluminum/Copper	**5PNL1200**
Ground Bar Type	
1200 Amperes Aluminum/Copper	**5PG1200A**
1200 Amperes Copper	**5PG1200C**

Ground Bar Assemblies

5PG1200A

Table 50. Grounded "B" Phase Adapter Kits

Ampere Rating	Main Device	Catalog Number
Single Bus Chassis		
400	Main Lugs	**5PCGBLUG400S**
600	Main Lugs	**5PCGBLUG600S**
600	LD Breaker	**5PCGBLD600S**
800	Main Lugs	**5PCGBLUG800S**
Double Bus Chassis		
800	MD Breaker	**5PCGBMD800T**
1200	Main Lugs	**5PCGBLUG1200T**
1200	ND Breaker	**5PCGBND1200T**

PRL5P Box, Trim and Deadfront Filler Plates

Table 51. PRL5P Box, Trim and Deadfront Filler Plates

Chassis "X" Factor	Catalog Number		
	Back Box	Trim	Trim Door Kit
Single Bus Chassis — 30.00-Inch (762.0 mm) Wide Box			
24X	**5PB2430G**	**5PT2430S**	**5PD24S**
32X	**5PB3230G**	**5PT3230S**	**5PD32S**
40X	**5PB4030G**	**5PT4030S**	**5PD40S**
Double Bus Chassis — 48.00-Inch (1219.2 mm) Wide Box			
24X	**5PB2448G**	**5PT2448S**	**5PD24T**
32X	**5PB3248G**	**5PT3248S**	**5PD32T**
40X	**5PB4048G**	**5PT4048S**	**5PD40T**

Table 52. Deadfront Filler Plates

Vertical "X" Increment	Catalog Number	
	Single Bus Chassis ①	Double Bus Chassis
1X	**5PFP1S**	**5PFP1T**
2X	**5PFP2S**	**5PFP2T**
3X	**5PFP3S**	**5PFP3T**
4X	**5PFP4S**	**5PFP4T**
5X	**5PFP5S**	**5PFP5T**
6X	**5PFP6S**	**5PFP6T**

① These fillers are also used across from a breaker unit in a double bus chassis.

5PT2430S

5PD24S

5PFP3S

5PFP3T

PRL1a, 2a-LX

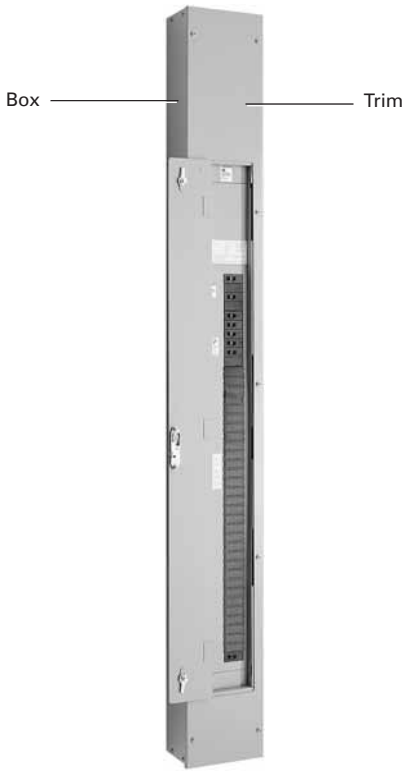


Table 53. Type 1 Box and Trims

Box Height in Inches (mm)	Catalog Number		
	Box	Surface Trim Standard	Surface Trim Door-In-Door
Incoming Location Top Fed			
69.00 (1752.6)	**YSC969**	**LTC969S**	**LTCD969S**
78.00 (1981.2)	**YSC978**	**LTC978S**	**LTCD978S**
81.00 (2057.4)	**YSC981**	**LTC981S**	**LTCD981S**
90.00 (2286.0)	**YSC990**	**LTC990S**	**LTCD990S**
Incoming Location Bottom Fed			
69.00 (1752.6)	**YSC969**	**LTC969SB**	**LTCD969SB**
78.00 (1981.2)	**YSC978**	**LTC978SB**	**LTCD978SB**
81.00 (2057.4)	**YSC981**	**LTC981SB**	**LTCD981SB**
90.00 (2286.0)	**YSC990**	**LTC990SB**	**LTCD990SB**

Pow-R-Command

For replacement parts, see PRL3a Section, **Page 21**. Parts available are the following:

- Connector kits.
- Ground assemblies.
- Service entrance kits.
- Deadfront covers.
- Trim locks.

Pow-R-Command

Additional Services

Since virtually all panelboards are supplied to meet specific customer requirements, other parts not listed in this publication might occasionally be needed. Price and availability for parts not shown here may be obtained by contacting your local Satellite plant and providing a complete description of the part along with the data on the panelboard nameplate.

Should you experience difficulty in determining what replacement parts are needed, contact your local Satellite Plant Manager who can provide help to:

- Identify and recommend replacement parts.
- Remove damaged parts and instruct you in how to install replacement parts.
- Verify the correct connector kits which should be ordered for each circuit breaker or fusible switch.
- Retrofit existing panelboard boxes with new Pow-R-Line interiors.
- Provide a recommended spare parts list.

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Eaton Electrical
1000 Cherrington Parkway
Moon Township, PA 15108-4312
USA
tel: 1-800-525-2000
www.eatonelectrical.com

Printed in USA
Publication No. RP01400001E/Z8339
February 2009

Safety Switches

Drawings

Safety Switch General Information

Global Specifications

System Voltage	240 VAC
Switch Type	Single Throw - Heavy Duty
Poles/Blades	3-Pole
Amperage	600
Protection	Fusible with Neutral
Enclosure Type	NEMA 3R
Fuse Clips	Standard
Switch Lugs	Standard
Fungus Proof Treatment	N
Lock-On Provision	N
Fuse Pullers	N
Control Pole	N
Ground Lugs	N
316 Stainless	N
Stainless Mechanism	N
Mill Duty	N

Nameplate

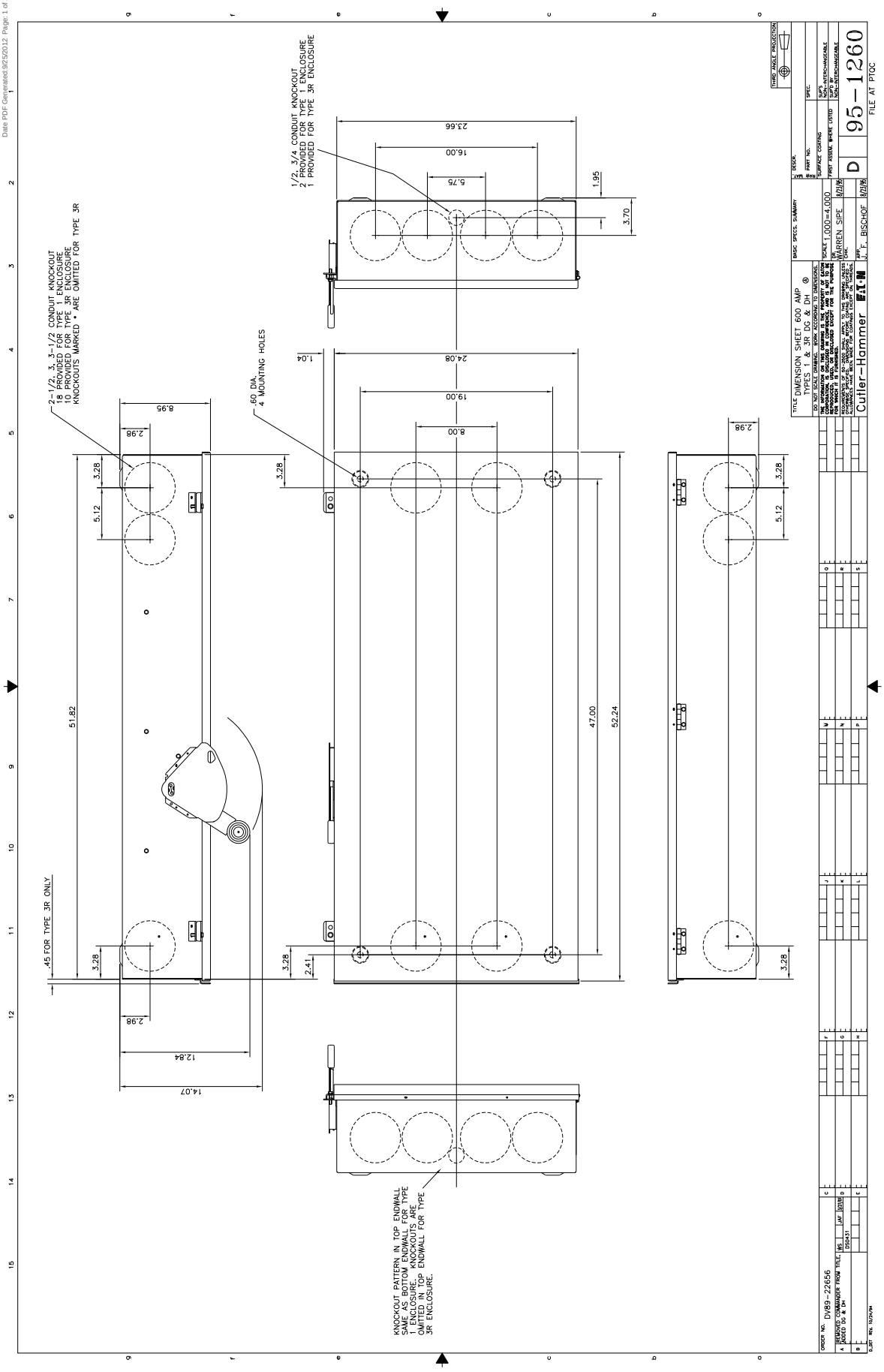
Field Installed Kits

QUANTITY	DESCRIPTION
1	Neutral / Ground Kit : DS600NK (Field Installed)
1	"R" Fuse Adapter Kit : DS66FK (Field Installed)

Safety Switch Catalog No.

DH326NRK

PREPARED BY: RON ZAITZ	DATE: 10/2/2015	**Eaton**			
APPROVED BY:	DATE:	JOB NAME: LOS ALAMOS TEEN CENTER			
		DESIGNATION: MAIN DISCONNECT			
VERSION: 1.0.0.1		TYPE: Safety Switch General Information		DRAWING TYPE: Final	
NEG-ALT Number: D63N0325X5K1-0000	REVISION: 0	DWG SIZE: A	G.O.: SAQ0594802	ITEM: 008	SHEET: 1 of 1



GO/NEG-Alt-Date:		Job Name:
SAQ0594802-0000-10/2/2015		LOS ALAMOS TEEN CENTER
Item Number:	**Catalog Number:**	**Designation:**
008	DH326NRK	MAIN DISCONNECT

Safety Switch General Information

Global Specifications

System Voltage	240 VAC
Switch Type	Single Throw - General Duty
Poles/Blades	3-Pole
Amperage	200
Protection	Non-Fusible with No Neutral
Enclosure Type	NEMA 1
Switch Lugs	Standard
Fungus Proof Treatment	N
Lock-On Provision	N
Fuse Pullers	N
Control Pole	N
Ground Lugs	N
316 Stainless	N
Stainless Mechanism	N
Mill Duty	N

Cover Controls

QUANTITY	DESCRIPTION

Nameplate

First Line: ELV. SHUNT TRIP

Safety Switch Catalog No.

DG324UGK3NP

PREPARED BY	DATE		
PAUL MARTINEZ	10/2/2015	**Eaton**	
APPROVED BY	DATE	JOB NAME	LOS ALAMOS TEEN CENTER
		DESIGNATION	ELV DISCON
VERSION		TYPE	DRAWING TYPE
1.0.0.1		Safety Switch General Information	Final

NEG-ALT Number	REVISION	DWG SIZE	G.O.	ITEM	SHEET
D63N0325X5K1-0000	0	A	SAQ0594802	011	1 of 1

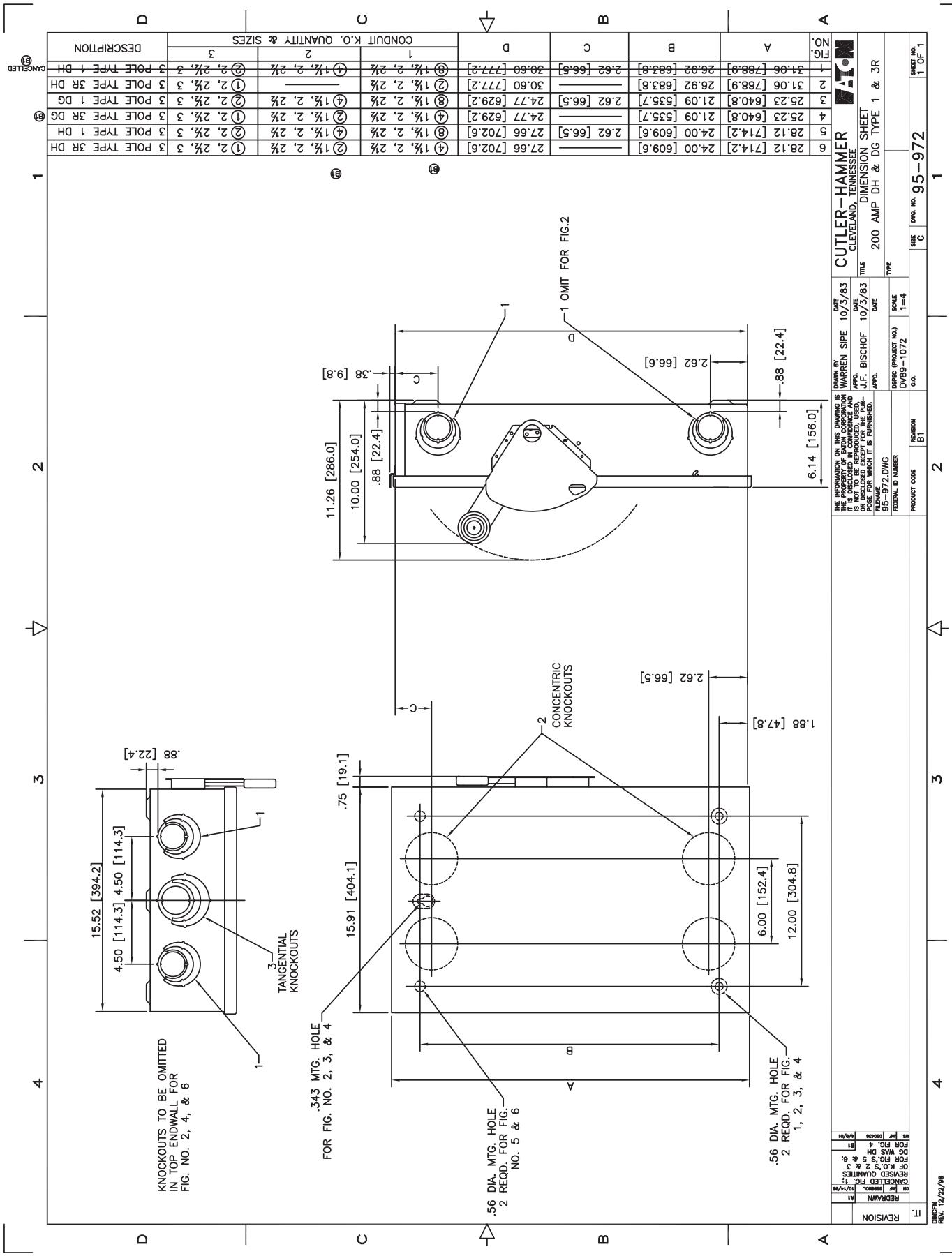


FIG. NO.	A	B	C	D	CONDUIT K.O. QUANTITY & SIZES 1	2	3	DESCRIPTION
1	31.06 [788.9]	26.92 [683.8]	2.62 [66.5]	30.60 [777.2]	⑧ 1⅛, 2, 2⅜	④ 1⅛, 2, 2⅜	② 2, 2⅜, 3	3 POLE TYPE 1 DH
2	31.06 [788.9]	26.92 [683.8]	———	30.60 [777.2]	② 1⅛, 2, 2⅜	———	① 2, 2⅜, 3	3 POLE TYPE 3R DH
3	25.23 [640.8]	21.09 [535.7]	2.62 [66.5]	24.77 [629.2]	⑧ 1⅛, 2, 2⅜	④ 1⅛, 2, 2⅜	② 2, 2⅜, 3	3 POLE TYPE 1 DG
4	25.23 [640.8]	21.09 [535.7]	———	24.77 [629.2]	④ 1⅛, 2, 2⅜	② 1⅛, 2, 2⅜	① 2, 2⅜, 3	3 POLE TYPE 3R DG
5	28.12 [714.2]	24.00 [609.6]	2.62 [66.5]	27.66 [702.6]	⑧ 1⅛, 2, 2⅜	④ 1⅛, 2, 2⅜	② 2, 2⅜, 3	3 POLE TYPE 1 DH
6	28.12 [714.2]	24.00 [609.6]	———	27.66 [702.6]	④ 1⅛, 2, 2⅜	② 1⅛, 2, 2⅜	① 2, 2⅜, 3	3 POLE TYPE 3R DH

GO/NEG-Alt-Date:	Job Name:
SAQ0594802-0000-10/2/2015	LOS ALAMOS TEEN CENTER
Item Number: 011	**Catalog Number:** DG324UGK3NP
	Designation: ELV DISCON

Instruction Data

NEMA KS 3

GUIDELINES FOR INSPECTION AND PREVENTIVE MAINTENANCE OF SWITCHES USED IN COMMERCIAL AND INDUSTRIAL APPLICATIONS

NEMA Standards Publication KS 3-2010

Guidelines for Inspection and Preventive Maintenance of Switches Used in Commercial and Industrial Applications

Published by:

National Electrical Manufacturers Association
1300 North 17th Street, Suite 1752
Rosslyn, Virginia 22209

www.nema.org

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CONTENTS

Foreword

This is the first edition of NEMA Standards Publication KS 3. To ensure that a meaningful publication was developed, draft copies were sent to a number of individuals and organizations in the public sector having an interest in or responsibility for the purchase, testing, application, use, and preventive maintenance of these products. Their resulting comments and suggestions provided a vital user and general interest input prior to final NEMA approval and resulted in a number of substantive changes to this publication. This publication will be periodically reviewed by the Switches Voting Classification of NEMA for any revisions necessary to keep it up to date with advancing technology. Proposed or recommended revisions should be submitted to:

Vice President, Technical Services
National Electrical Manufacturers Association
1300 North 17th Street
Rosslyn, Virginia 22209

This Standards Publication was developed by the Switches Voting Classification of the National Electrical Manufacturers Association. Approval of this standard does not necessarily imply that all voting classification members voted for its approval or participated in its development. At the time it was approved, the Switches Voting Classification had the following members:

ABB Control, Inc.—Wichita Falls, TX
Boltswitch, Inc.—Crystal Lake, IL
Cooper Bussmann—St. Louis, MO
Eaton Corporation—Pittsburgh, PA
GE Industrial Solutions—Plainville, CT
Hubbell Inc.—Bridgeport, CT
Mersen USA—Newburyport, MA
Siemens Industry, Inc.—Alpharetta, GA
Schneider Electric—Palatine, IL

Introduction

NEMA KS 3 deals with guidelines for inspection and preventive maintenance of switches used in commercial and industrial applications. These guidelines are to be used to identify switches requiring maintenance or replacement. Good practice includes periodic switch maintenance during plant shutdown or during a regular maintenance period as specified, for example, in NFPA 70B. When a switch operates automatically, good practice dictates that the source of the overcurrent should be located, and if it is suspected that the operation was at or near the interrupting rating, the switch condition should be checked prior to circuit re-energization.

When appropriately maintained, switches provide reliable protection for many years. The exact lifetime of the switch, however, is determined by the switch's operational duty and by its environment.

With respect to operational duty, for some circuits there will be occasional overload conditions or low-current fault conditions. Here the operating life will be tens of years. In other circuits, there may be high short-circuit-current faults but it should be noted that bolted faults at the switch interrupting rating are rarely encountered. Short circuit events can significantly reduce the operating life of the switch and may necessitate replacement of the switch. Switches in this Guideline are evaluated to three different UL Standards: UL 98 *Enclosed and Dead-Front Switches*, UL 977 *Fused Power-Circuit Devices*, and UL 1429 *Pullout Switches*. They are subjected to thousands of endurance test operations; overload test operations; and two interrupting tests at maximum short-circuit-current rating. Thus switches have an extensive but finite interrupting capability, and switches that experience multiple high short-circuit-current faults should receive a thorough inspection and be replaced if necessary.

With respect to environmental effects, switches are sometimes exposed to high ambient temperatures, high humidity, and other ambient conditions that are hostile to long term performance. For example, industries may have corrosive environments or could be associated with dusty environments that could affect operating parts.

It is not intended that switches be disassembled for inspection. Rather, NEMA KS 3 should be referenced during periodic maintenance or during specific inspection following a high short-circuit-current fault. This document is intended to ensure that switches are well maintained, and provides guidelines for switch replacement.

This document is divided into separate sections as follows:

Section 1 presents the scope and referenced standards.

Section 2 details the safety procedures to be followed.

Section 3 deals with general guidance.

Section 4 deals with inspection procedures and describes thermal checks (4.2) and visual checks (4.3) of the enclosure and switch condition. Overheating of the switch would necessitate further investigation, and cracks in the insulation systems would certainly necessitate switch replacement.

Section 5 deals with preventive maintenance and ensures that the switch's life is not compromised by external conditions. The objectives are that the switch operates in a clean environment and that the terminals are in good condition (5.2), that fuses (if required) are connected properly (5.3), and that wire connectors are in good condition and are correctly torqued (5.4).

Section 6 deals with non-destructive test procedures that can be used to verify specific operating characteristics of switches. These include the Mechanical Operation Test (6.2), the Insulation Resistance Test (6.3), and the Individual Pole Resistance Test (millivolt drop test) (6.4). Non-compliance to one or more of these tests could necessitate switch replacement.

Section 7 deals with the operation of accessory devices. Failure of an accessory would lead to replacement of that accessory, or switch replacement if accessories are not removable.

In summary, following an automatic overcurrent interruption at or near its interrupting rating, the condition of any protective device should be checked prior to circuit re-energization. Switches that have experienced multiple high short-circuit-current faults, as evidenced by conditions at the source of the faults, should receive a thorough inspection per the guidelines of NEMA KS 3. This document should also be used for recommended, periodic, preventive maintenance.

Section 1
GENERAL

1.1 Scope

NEMA Standards Publication KS 3 sets forth, for use by qualified personnel[1], a number of basic procedures that may be used for the inspection and preventive maintenance of switches used in industrial and commercial applications rated up to and including 600 V 50/60 Hz ac or ac/dc.

NOTE—Consult the manufacturer for other manufacturer-specific ratings.

The *National Electrical Code*® defines several switch types: General Use Switch, Isolating Switch, Motor-Circuit Switch, and Double-Throw Switch. In most cases, a switch is capable of interrupting/disconnecting its rated current at its rated voltage. An Isolating Switch does not have an interrupting rating and is actuated after the circuit has been opened by some other means. A Motor-Circuit Switch is rated in horsepower and is capable of interrupting the maximum overload current of a motor with the same horsepower rating.

The methods outlined may be used to verify specific characteristics of a switch that was originally built and tested in compliance with the requirements of NEMA Standards Publication KS 1. These methods are intended for field application and are, therefore, non-destructive in nature. Accordingly, these methods cannot be used to verify all performance capabilities of a switch since verification of some capabilities requires tests of a destructive nature.

Many tests, including those of a destructive nature, as defined in KS 1, are performed on representative samples of switches by the manufacturer, as part of a routine program of factory inspection.

The KS 3 Standards Publication is not intended, nor is it adequate, to verify proper electrical performance of a switch that has been disassembled, modified, rebuilt, refurbished, or handled in any manner not intended or authorized by the original manufacturer. Such switches should be removed from service.

1.2 Referenced Standards

In this publication, reference is made to the latest edition of the standards listed below. Copies are available from the indicated sources.

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169

NFPA 70 *National Electrical Code*®
NFPA 70B *Recommended Practice for Electrical Equipment Maintenance*
NFPA 70E *Standard for Electrical Safety in the Workplace*

---

[1] For purposes of these guidelines, a qualified person is one who has skills and knowledge related to the construction and operation of the electrical equipment and installation and has received training to recognize and avoid the hazards involved. In addition, the person is trained:
—and authorized to test, energize, clear, ground, tag, and lockout circuits and equipment in accordance with established safety practices.
—in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses or face shields, and flash resistant clothing, in accordance with established safety practices.
—in first aid.

National Electrical Manufacturers Association
1300 North 17th Street
Suite 1752
Rosslyn, Virginia 22209

Evaluating Water-Damaged Electrical Equipment
NEMA KS 1 *Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum)*
NEMA KS 2 *Distribution Equipment Switch Application and Maintenance Guide, A User's Reference*
NEMA 250 *Enclosures for Electrical Equipment (1000 Volts Maximum)*

Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062

UL 98 *Enclosed and Dead-Front Switches*
UL 977 *Fused Power-Circuit Devices*
UL 1429 *Pullout Switches*

Section 2
SAFETY PROCEDURES

The inspection and preventive maintenance of switches in service require the user to take all necessary precautions to avoid being injured.

2.1 Warning

2.1.1 Switch Testing

WARNING—Hazardous voltages in electrical equipment can cause death or severe personal injury. Turn off and lock out the power supplying this equipment before performing any of the following operations.

Unless otherwise specified in this publication, inspection, preventive maintenance, and testing must always be performed on equipment that is de-energized (note that certain tests require control power to conduct the test). Verify that there is no voltage present on incoming line and load terminals (and on control power terminals, if present) and between these terminals and ground to positively ascertain that the equipment is totally de-energized. The disconnecting or isolating means on the line side of the devices being checked and/or tested must be locked in the OFF position to ensure that the equipment will remain de-energized during these procedures.

Safety related work practices described in NFPA 70E must be followed at all times.

2.1.2 Test Equipment

WARNING—High voltages involved with some test equipment can cause death or serious injury. Do not touch or permit anyone else to touch the switch or the test leads when voltage is applied. Strict adherence to the safety procedures recommended by the manufacturers of the test equipment is required.

2.2 Safety Procedure

In all the following clauses, where removal of the enclosure cover is necessary, the following safety steps must be taken in the sequence shown.

2.2.1 Operate the switch to the OFF position. Turn OFF all power supplying the switch to electrically isolate it from all other circuits.

2.2.2 Open the enclosure and verify that there is no voltage on the incoming and load conductors (including control power conductors, if present) and between these conductors and ground to positively ascertain that the equipment is de-energized.

2.2.3 If disconnection of power and accessory leads, cables, or bus bars is required, be sure to properly identify all connections to ensure safe and accurate reconnection.

2.2.4 Before any functional tests are performed, be sure to connect the test switch with properly rated cable torqued to the recommended values marked on the rating label of the switch.

2.3 Reinstallation Safety Procedure

2.3.1 Do not re-energize equipment until all connections (power and control) are thoroughly checked for accuracy and tightness (torqued to value listed on the rating label), internal areas of enclosure are cleaned of any conductive loose parts or debris, all switches are turned off, and all enclosure covers are reinstalled.

2.3.2 If it is necessary to replace the switch, make sure the new switch is properly rated for the application.

Section 3
GUIDELINES

3.1 To Avoid Damaged or Otherwise Inoperable Switches Being Inadvertently Returned to Service

To avoid damaged or otherwise inoperable switches being inadvertently returned to service, it is suggested that such switches be destroyed.

3.2 Guidance Regarding Inspection and Preventive Maintenance Procedures

Industrial users have requested guidance regarding inspection and preventive maintenance procedures that could be carried out on a regularly scheduled basis. Sections 4 through 7 of this publication set forth guidelines for inspection, preventive maintenance, and testing. These clauses may be applied independently or in combination to establish such a program. For additional assistance, consult the manufacturer's published instructions or NFPA 70B.

3.3 For Information Regarding Switch Performance and Application

For information regarding switch performance and application refer to NEMA Standards Publications KS 1 and KS 2, respectively.

3.4 Water-Damaged Switches

Switches that are known to have been subjected to water damage should be replaced. For additional information, refer to the NEMA document *Evaluating Water-Damaged Electrical Equipment.*

3.5 Switch Inspection Once Each Year

It is recommended to inspect switches once each year or after any short circuit event.

Section 4
INSPECTION PROCEDURES

4.1 General

The following inspection practices are recommended.

4.2 Exposed Surfaces Temperature Check

4.2.1 Purpose

To determine if there is excessive temperature on the external cover of a switch.

CAUTION—Severe burns can result from high temperatures. Do not hold hand or fingers in contact with surfaces if excessive heat is felt.

4.2.2 Procedure

A switch that has been carrying its regular load for at least 3 hours just prior to inspection should be tested by feeling the external deadfront surfaces with the palm of the hand.

4.2.3 Results

If the temperature of these surfaces does not permit you to maintain contact for at least 3 seconds, this may be an indication of trouble and investigation is necessary. Thermographic (infrared) scanning has become a useful method of investigating thermal performance. Further investigation may be necessary. Proceed to 4.3.

4.3 Inspection of Enclosure Interior

4.3.1 Purpose

To evaluate the operating environment, the apparent condition of the switch, that proper conductors have been used, and if there is any visual indication that overheating has occurred.

4.3.2 Procedure

WARNING—Follow all safety procedures described in Section 2.

4.3.2.1 After being properly isolated, verify that the switch has been properly applied within its marked ratings. If the switch has not been applied within its ratings, it should be replaced with a switch suitable for the application.

4.3.2.2 Examine the switch surfaces for the presence of dust, dirt, soot, grease, or moisture. If such contamination is found, the surfaces should be cleaned. Refer to 5.2.2.1 for cleaning and precautionary instructions.

4.3.2.3 Examine the switch bases for cracks. The integrity of the base is important in withstanding the stresses imposed during operation. Switches should be replaced if cracks are found.

4.3.2.4 Verify that the conductors are of the correct size and type for the application. Visually check all electrical connections to the switch to be certain that such connections are clean and secure. Loose or contaminated connections increase electrical resistance, which can damage insulation and conductors and interfere with proper switch operation. Increased electrical resistance causes overheating of a connection. Such overheating is indicated by discoloration or cracks of the switch bases, discoloration or flaking of external metal parts, or melting or blistering of adjacent wire insulation. Pitting or melting of connection surfaces is a sign of arcing due to a loose or otherwise poor connection. (See Figures 1 and 2.)

a. If there is no evidence of looseness, e.g., overheating, do not disturb or tighten the connections.

b. If there is evidence of overheating (as noted in 4.2) or arcing, an investigation of the cause should be made and corrective steps taken. (See Section 5.)

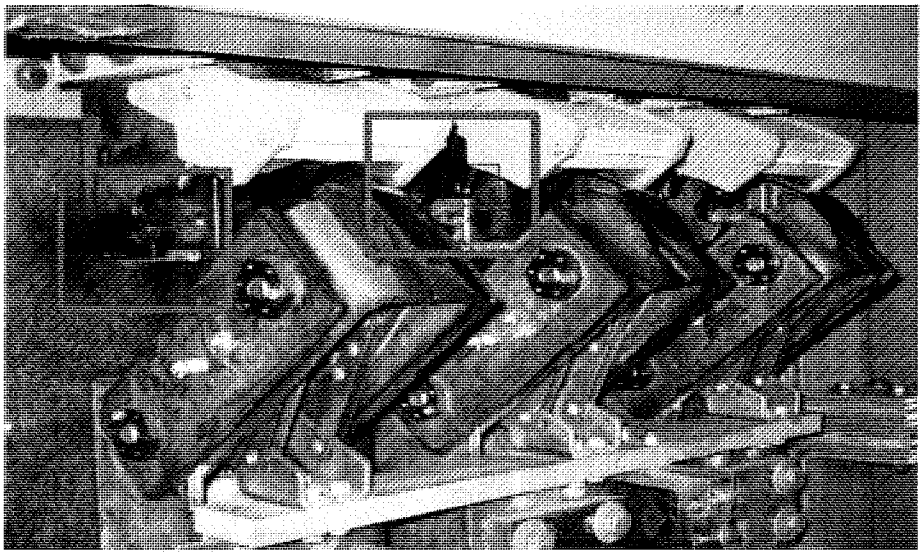

Figure 1
Pitting

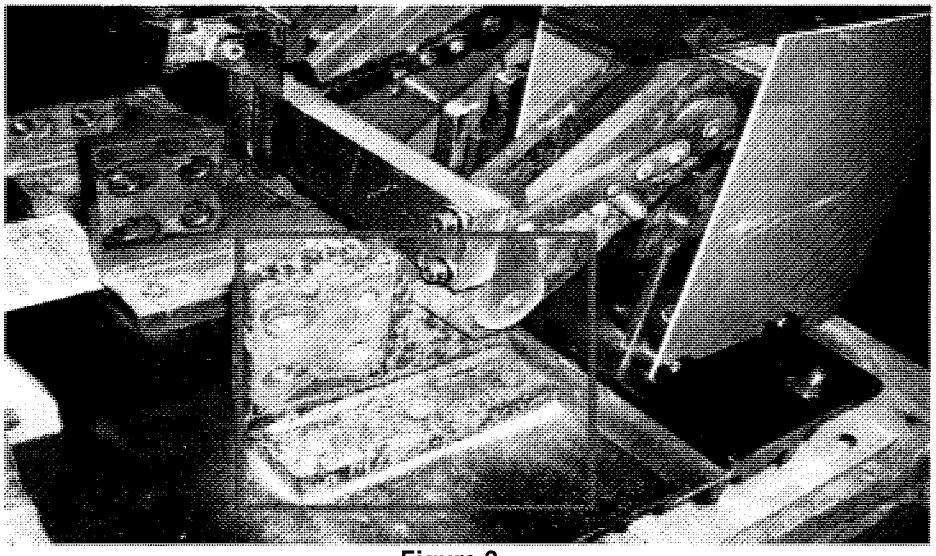

Figure 2
Heat Damage

4.3.2.5 Examine the switch for evidence of a high short circuit closing operation. Any of the following observations will warrant performing the Section 6 Test Procedures or the replacement of the switch. In some cases, switch interior renewal parts can be obtained from the manufacturer to bring the assembly back to a serviceable condition.

Evidence of excessive high current switch closing operation includes:

- Bright metal or metallic deposits on insulating surfaces or the enclosure interior
- An excessive number of small, bright metal balls resting on the enclosure bottom end wall
- Excessive black film on insulating surfaces or the enclosure interior adjacent to the contact air gap or arc chute exhaust
- Enclosure shape distortion caused by excessive internal pressure
- Contacts not fully engaging or closing
- Rough mechanism operation

4.3.2.6 Reinstallation Procedure

For reinstallation or replacement of the switch and/or accessories, follow the installation safety procedures given in 2.3 in conjunction with any installation instructions provided by the manufacturer.

Section 5
PREVENTIVE MAINTENANCE

5.1 General

Under normal conditions, properly applied switches require maintenance only for verification of environmental conditions and that the correct enclosure type for those conditions is being used. However, when inspections determine an abnormal condition and indicate the possibility of damage, it may be necessary to perform certain maintenance steps. This clause is intended to assist the user in performing these steps.

These steps cover the only maintenance that should be performed on switches unless specifically authorized by the switch manufacturer.

5.2 Environmental Evaluation

5.2.1 Purpose

To examine the operating environment and the switch's physical condition. Preventive maintenance and corrective actions are included as appropriate.

5.2.2 Procedure

WARNING—Follow all safety procedures described in Section 2.

The switch enclosure must be opened to perform the following steps and, in some cases, it will be necessary to remove the switch from the enclosure.

5.2.2.1 After being properly isolated, examine the switch surfaces for dust, dirt, soot, or moisture. If evidence of contaminates or moisture is found, or more than a thin film of dust, dirt, or soot is seen, the switch should be cleaned as suggested below.

The insulating surfaces of the switch should be cleaned using a lint free dry cloth, brush, or vacuum cleaner. Avoid blowing material into the switch or into surrounding equipment.

CAUTION—Commercial cleaners and lubricants may attack and damage the plastic insulating materials of the switch. Therefore, such cleaners should not be used. Only the methods described in 5.2.2.1 should be used. Follow manufacturer's recommendations for the use of grease.

Steps should be taken to eliminate the source of the contamination or to provide an appropriate enclosure that will protect against the future entry of contaminants. With respect to the prevention of moisture, the switch should be housed in an enclosure appropriate for the environment.

5.2.2.2 Examine the switch and terminations for signs of overheating as described in 4.3.2.4. If such evidence is found, the following maintenance steps should be performed.

5.2.2.2.1 Copper switch terminals and connecting straps (wire connectors and bus bars) can normally be cleaned. They should be carefully disassembled, cleaned, and dressed, following the manufacturer's instructions. All metal and abrasive particles should be removed before reassembling. Care should be taken to ensure that the switch terminals and connecting straps are properly torqued during re-installation.

CAUTION—When performing this procedure, extreme care should be exercised to prevent any damage to plated connections or mechanical disturbance to the switch and to prevent any particles from entering the switch mechanism, contacts, or arc suppression areas.

If the damage is extensive, or cannot be corrected by dressing the surfaces, the damaged parts should be replaced if they are intended by the manufacturer to be replaceable. If the damaged parts are not intended to be replaceable, the complete switch and/or bus connections should be replaced.

5.2.2.2.2 Aluminum wire connectors and bus bars cannot be cleaned or repaired; therefore, they must be replaced.

5.2.2.2.3 If wire conductors are damaged, the damaged lengths of the conductors should be cut off before reinstalling the conductors. (See 5.4.)

5.3 Fuse Provisions

5.3.1 If the switch has fuses and a fuse base, visually check the fuse connections to the switch for evidence of looseness, overheating, or arcing on the fuse clips or mounting arrangements for the fuse. (See 4.3.2.4.)

5.3.2 If the connecting surfaces show evidence of overheating, the switch and fuses should be replaced.

5.3.3 If there is no evidence of overheating or looseness, do not disturb or tighten the connections.

5.4 Wire Connectors

5.4.1 If conductors are removed from the wiring connectors, the following steps should be performed.

5.4.1.1 Examine wire connectors. If the wire connectors appear to be in good condition, they may be reused. If the connectors, screws, or their plating appear worn or damaged, or there is evidence of cross threading or binding, the connector assembly should be replaced.

5.4.1.2 If the wire conductors are damaged, the damaged wires should be repaired or replaced.

5.4.1.3 When required, an oxide inhibiting compound should be applied.

5.4.1.4 All wire connectors should be torqued in accordance with the nameplate marking or the switch manufacturer's instructions.

5.5 Reinstallation Procedure

If the switch needs to be reinstalled or replaced, follow the safety installation procedures given in 2.3.

Section 6
TEST PROCEDURES

6.1 General

The KS 3 Standards Publication is not intended, nor is it adequate, to verify proper electrical performance of a switch that has been disassembled, modified, rebuilt, refurbished, or handled in any manner not intended or authorized by the original switch manufacturer. The following non-destructive tests may be used to verify specific operational characteristics of switches: mechanical operation test, insulation resistance test, and individual pole resistance test (millivolt drop test).

6.2 Mechanical Operation Test

6.2.1 Purpose

To verify that the switch mechanism is operating freely.

6.2.2 Equipment

Appropriately rated continuity indicating device.

6.2.3 Procedure

WARNING—Follow all safety procedures described in Section 2.

6.2.3.1 After disconnecting and locking out all power, operate the switch ON and OFF 2 or 3 times. The switch handle should operate smoothly without binding.

6.2.3.2 Using an ohmmeter or other indicating device, verify that all switch contacts are open when the handle is in the OFF position and closed when the handle is in the ON position.

6.2.3.3 For switches that are provided with mechanical trip provisions (generally indicated by a test button), operate the tripping means according to the manufacturer's instructions. With the switch in the tripped position, verify that the contacts are open using an ohmmeter (or other indicating device). Reset the switch according to the manufacturer's instructions and operate the switch to the ON and OFF positions. Use an ohmmeter (or other indicating device) to verify that all the contacts are closing and opening respectively.

6.2.4 Results

The switch must be repaired or replaced if:

a. The contacts are not open with the switch in the OFF position

b. The contacts are not closed with the switch in the ON position

c. The switch does not reset

d. The mechanical trip provisions (if provided) do not trip the switch

6.2.5 Reinstallation Procedure

For reinstallation or replacement of the switch and/or accessories, follow the safety installation procedures given in 2.3.

6.3 Insulation Resistance Test

CAUTION—If applied incorrectly, the voltages utilized in the insulation resistance tests may damage electronic or other accessory components. Refer to the manufacturer's instructions for guidelines.

NOTE—Where the switch can be safely isolated as installed, the test may be performed with the switch in its equipment.

See Figure 3 for typical test set-up.

6.3.1 Purpose

To determine the adequacy of the insulation between line and load terminals, between poles, and between each pole and ground.

6.3.2 Equipment

Perform dielectric tests in accordance with the manufacturer's instructions.

This test requires an insulation resistance tester capable of applying a voltage of at least 500 volts. It should also be noted that more in-depth information can be obtained when 1000 volt testers are used since they are more likely to detect deteriorated insulation systems. (See Figure 3.)

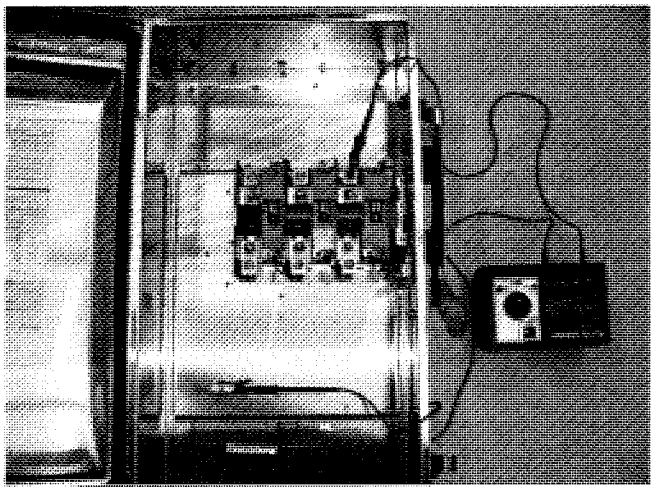

Figure 3
Typical Insulation Resistance Test Set-Up

6.3.3 Procedure

WARNING—Follow all safety procedures described in Section 2.

CAUTION—If applied incorrectly, the voltages utilized in the insulation resistance test may damage electronic or other accessory components. To avoid such damage, the following procedure should be adhered to closely. Do not apply test voltages to accessory terminals.

6.3.3.1 After disconnecting and locking out all power supplying the device to be tested, remove the switch from the electrical system. In cases where the switch can be safely isolated/disconnected from line and load connections as installed, the test may be performed with the switch in its equipment.

6.3.4 Test

6.3.4.1 All exposed metal parts except line, load, and accessory terminals should be electrically connected together.

6.3.4.2 Using an insulation resistance tester, apply a voltage of at least 500 volts to determine the resistance. Voltage is to be applied as follows.

WARNING—High Voltage—Do not touch switch or leads. See 2.1.2 for proper safety procedure.

6.3.4.2.1 Between line and load terminals of each individual pole with the switch in the OFF position and tripped position if possible.

6.3.4.2.2 Between terminals of adjacent poles with the switch in the ON position.

6.3.4.2.3 From line terminals to the metal enclosure with the switch in the ON position.

6.3.5 Results

All resistance readings should be one megohm or greater for each measurement. If any reading is less than one megohm, the switch should be replaced or the manufacturer should be consulted before restoring the switch to service. Any reading less than one megohm may indicate contaminated, unsound, or cracked insulating material.

6.3.6 Reinstall Switch

If applicable, reinstall the switch following the manufacturer's instructions. Also refer to 5.4 for information on reinstalling wire connectors and/or conductors.

6.3.7 Reinstallation Procedure

For reinstallation or replacement of the switch and/or accessories, follow the safety installation procedures given in 2.3.

6.4 Individual Pole Resistance Test (Millivolt Drop)

See Figure 4, Figure 5, and Figure 6 for typical test set up.

NOTE—The switch should be removed from the equipment for this test. In cases where the switch can be safely isolated as installed, the test may be performed with the switch in its equipment.

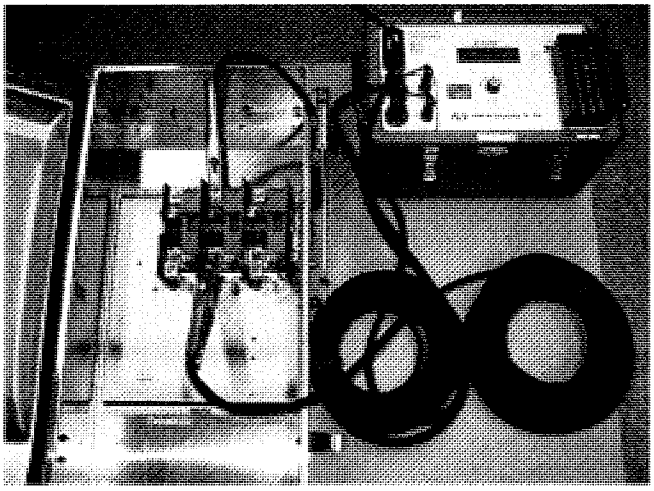

Figure 4
Individual Pole Resistance Test Set-Up

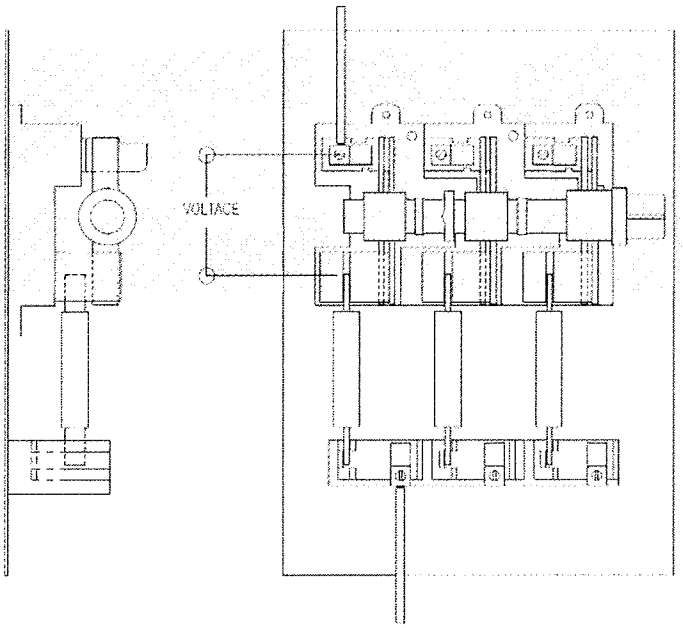

Figure 5
Fused Switch Individual Pole Resistance Test Set-Up

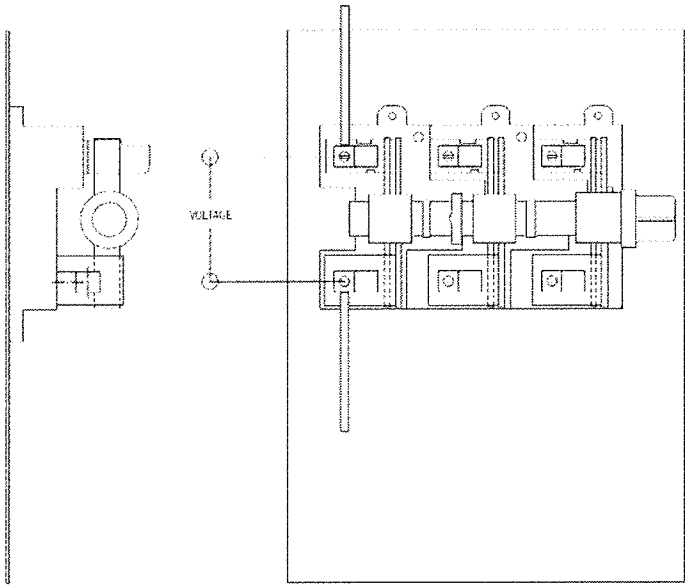

Figure 6
Non-Fused Switch Individual Pole Resistance Test Set-Up

6.4.1 Purpose

To assess the electrical integrity of internal connections and contacts in a switch. This can be done by conducting a millivolt drop test across the line and load terminals of each pole with the switch contacts closed.

The millivolt drop (resistance) of a switch pole can vary significantly because of inherent variability in the extremely low resistance of the electrical contacts and connectors. Such variations do not necessarily predict unacceptable performance and should not be used as the sole criteria for determination of acceptability.

6.4.2 Equipment

6.4.2.1 This test should be conducted using a 24 volt, or less, direct current power supply capable of supplying the rated current of the switch. For switch rated higher than 500 amperes, the power supply should be capable of delivering no less than 500 amperes.

6.4.2.2 If the above equipment is not available for field tests, a Digital Low Resistance Ohmmeter (DLRO), or 4-point tester, capable of 10 to 100 amperes (dc) may be used.

NOTE—Use of a multimeter or low current ohmmeter in place of the power supply will not provide an accurate or reliable measurement of millivolt drop and should not be used.

CAUTION—Do not exceed the current rating of the fuse where the fuse cannot be isolated from the test circuit.

6.4.3 Procedure

WARNING—Follow all safety procedures described in Section 2.

6.4.3.1 After being properly isolated, remove the switch from the enclosure. In cases where the switch can be safely isolated/disconnected as installed, the test may be performed with the switch in its equipment.

6.4.4 Test

NOTE—If the switch is equipped with an under-voltage trip release, energize the trip release to allow proper operation of the switch.

6.4.4.1 The test is performed as follows.

6.4.4.1.1 Apply test current across a pole equal to the switch rating (or 500 Amperes minimum for switch rated in excess of 500 Amperes). Record the millivolt drop and the test current. Do not maintain current for more than 1 minute. If this equipment is not available, use the following test.

6.4.4.1.2 Apply test current across a pole of 10 Amperes, or the Ampere rating of the switch, for switch rated less than 100 Amperes. For switch rated more than 100 Amperes, apply a test current across a pole of 100 Amperes. Record the millivolt drop and the test current, or resistance. Do not maintain current for more than 1 minute.

6.4.4.1.3 De-energize the test circuit. Manually operate the switch to the OFF and then ON positions.

6.4.4.1.4 Repeat steps 6.4.4.1.1 and 6.4.4.1.2 for a total of three readings on the pole being tested.

6.4.4.1.5 Repeat steps 6.4.4.1.1 through 6.4.4.1.3 for each of the remaining poles of the switch.

6.4.5 Results

Test results will vary according to the switch ampere rating and manufacturer. The manufacturer should be consulted to determine the maximum allowable voltage drop. If the average test values of any pole of the switch exceed the maximum allowable drop, the switch may have reached the end of life and additional tests may have to be conducted.

NOTE—Inconsistent readings could be the result of oxide films or foreign material on the contact surfaces, depending on the service history of the switch. If high millivolt or high resistance readings are detected, refer to the manufacturer's recommendations, and if necessary, clean and/or lubricate the contact surfaces, then repeat tests in this section. If results are still out of acceptable range, the switch should not be returned to service.

6.4.6 Reinstall Switch

If applicable, reinstall the switch following manufacturer's instructions. Also refer to 5.4 for information on reinstalling wire connectors and/or conductors.

6.4.7 Reinstallation Procedure

For reinstallation or replacement of the switch and/or accessories, follow the safety installation procedures given in 2.3.

Section 7
ACCESSORY DEVICE TEST PROCEDURES

7.1 General

If testing instructions for the specific accessory being tested are available from the manufacturer, those instructions should be followed to verify the operation of the accessory. If the manufacturer's instructions are not available, the tests described below may be used to verify the basic operation of the accessory.

7.2 Shunt Trip Release Tests

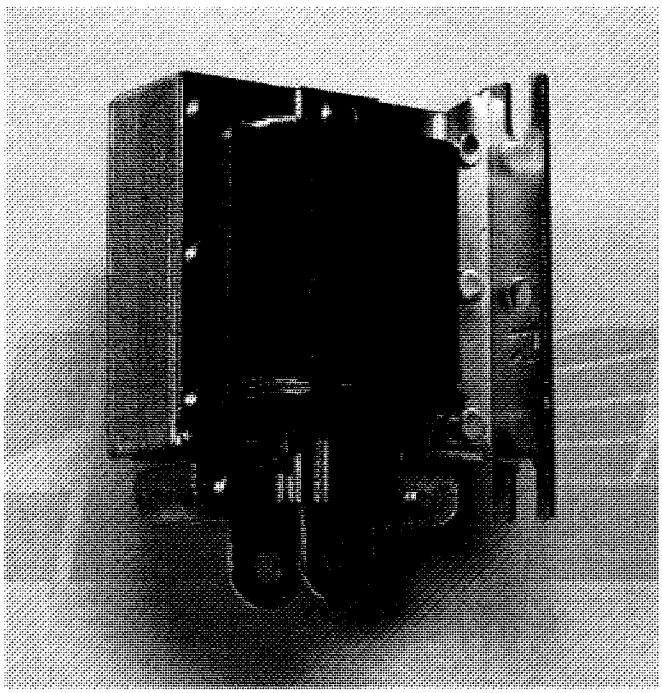

Figure 7
Sample Shunt Trip Release

7.2.1 Purpose

To verify that the shunt trip release device (Figure 7) will trip the switch when energized.

7.2.2 Equipment

This test requires a power supply capable of maintaining the rated voltage.

7.2.3 Procedure

WARNING—Follow all safety procedures described in Section 2.

CAUTION—Switches and accessory devices can be damaged if power is applied to the wrong terminals. The specific lead wires or terminals for each accessory must be properly identified before conducting any of the following tests.

7.2.3.1 After disconnecting and locking out all power, isolate the shunt trip solenoid leads from the control circuit for testing.

7.2.3.2 Connect a test power supply to the terminals (or leads) of the shunt trip release device.

WARNING—High Voltage. Do not touch switch or test leads while voltage is applied.

7.2.3.3 Operate the switch to the ON position.

7.2.3.4 Set the power supply voltage to 75% of the rated voltage of the shunt trip and energize. The switch should open. If the switch with shunt trip release is used in a ground fault relay system, use 55% of the rated voltage instead of 75% of the rated voltage.

CAUTION—If the switch does not open within 1 to 2 seconds, turn off the test power supply to prevent possible damage to the shunt trip release coil.

7.2.3.5 When the test is completed, turn off the test power supply, disconnect it from the shunt trip release device terminals (or leads), and reconnect the control circuit wires to the shunt trip release device terminals (or leads). If an under-voltage trip release device was connected during the test, turn off the test power supply, disconnect the test power supply wires, and reconnect the control circuit wires to the under-voltage release device.

7.2.4 Results

The switch should open when the power supply to the shunt trip release is turned on. If the switch does not open, check the connections and repeat the test. If the switch still does not open, replace the shunt trip release, if replaceable. If it is not possible to replace the shunt trip release, the switch should be replaced.

7.2.5 Reinstallation Procedure

If the switch needs to be reinstalled or replaced, follow the safety installation procedures given in 2.3 and the manufacturer's instructions.

7.3 Electrical Operator Tests

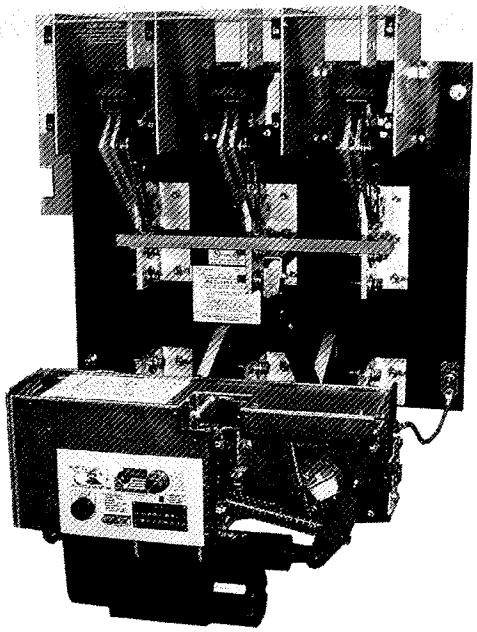

Figure 8
Sample Electrical Operator / Switch Assembly

7.3.1 Purpose

To verify that the electrical operator (Figure 8) will operate the switch to the ON and OFF positions.

7.3.2 Equipment

This test requires a power supply capable of maintaining the rated voltage.

7.3.3 Procedure

WARNING—Follow all safety procedures described in Section 2.

CAUTION—Switches and accessory devices can be damaged if power is applied to the wrong terminals. The specific lead wires or terminals for each accessory must be properly identified before conducting any of the following tests.

7.3.3.1 After disconnecting and locking out all power, remove the control circuit wires from the terminals of the electrical operator.

7.3.3.2 Set test power supply to the rated voltage of the electrical operator and connect to the terminals of the electrical operator marked "common" and "close" or "on."

7.3.3.3 With the switch in the OFF position, turn on the test power supply. The switch contacts should close.

WARNING—High Voltage. Do not touch switch or test leads while voltage is applied.

7.3.3.4 Turn the test power supply off. Disconnect its leads to the electrical operator.

7.3.3.5 Connect the test power supply leads to the terminals of the electrical operator marked "common" and "open" or "off."

7.3.3.6 With the switch in the ON position, turn on the test power supply. The switch contacts should open.

7.3.3.7 When the test is completed, turn off the test power supply, disconnect it from the electrical operator terminals, and reconnect the control circuit wires to the electrical operator terminals.

NOTE—It may also be possible to test the operation of the electrical operator by leaving the control circuit wiring in place and energized and pushing the "open" and "close" buttons on the operator. Follow step 7.3.3 to ensure that the main power to the switch is disconnected, but the power to the control circuits would be left in place.

7.3.4 Results

The switch should operate to the ON and OFF positions when the above steps are followed. If the switch does not operate properly, check the connections and ensure that there is no obvious obstruction of the operating mechanism and repeat the test. If the electrical operator still does not operate properly, it should be replaced.

7.3.5 Reinstallation Procedure

For reinstallation or replacement of the switch and/or accessories, follow the safety installation procedures given in 2.3.

7.4 Auxiliary Switch Tests

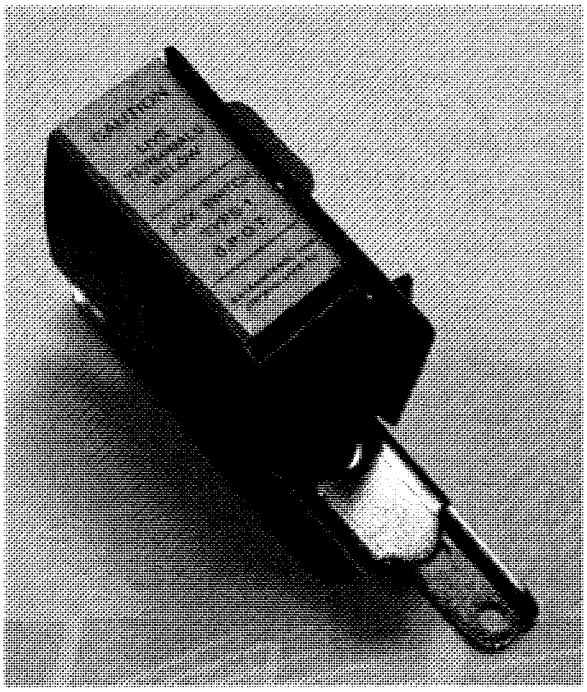

Figure 9
Sample Auxiliary Switch

7.4.1 Purpose

To verify that the contacts of the auxiliary switch(es) (see Figure 9) change status when the main switch contacts are opened and closed.

7.4.2 Equipment

This test requires an ohmmeter or low voltage continuity tester.

7.4.3 Procedure

WARNING—Follow all safety procedures described in Section 2.

7.4.3.1 Remove the control circuit wires from the terminals (or leads) of the auxiliary switch(es).

7.4.3.2 Starting with the main switch in the OFF position, use an ohmmeter or continuity tester connected to the terminals (or leads) of each auxiliary switch, to verify that its contact position (open or closed) is in agreement with the wiring diagram provided by the manufacturer.

7.4.3.3 Connect the ohmmeter or low voltage continuity tester to the terminals (or leads) of one auxiliary switch to monitor the contact.

7.4.3.4 Operate the main switch to the ON position. The auxiliary switch contact should change position.

7.4.3.5 Repeat steps 7.4.3.2 through 7.4.3.4 for each auxiliary switch.

7.4.3.6 When the test is completed, reconnect the control circuit wires to the terminals (or leads) of the auxiliary switch(es). If an under-voltage trip release device was connected, refer to 7.2.3.5 for instructions.

7.4.4 Results

Each auxiliary contact should change position (move from open to closed or vice versa) as the main switch is operated from the OFF to ON or ON to OFF positions. If the auxiliary switches do not perform correctly, check the connections and repeat the test. If performance is still incorrect, the auxiliary switches should be replaced; or if the auxiliary switch is not replaceable, replace the complete switch.

7.4.5 Reinstallation Procedure

For reinstallation or replacement of the switch and/or accessories, follow the safety installation procedures given in 2.3.

§

Renewal Parts

Cutler-Hammer

Safety Switches

Renewal Parts

New Information

Table 1. Safety Switch Renewal Parts

Catalog Number	Base or Assembly		Fuse Base and Lower Assembly		Line Shields	Operating Mechanism	Operating Handle
	Type	Part Number	Type	Part Number			
DG224NGK	Switching Base	70-7820-2	Fuse Base	70-7820-4 ①	—	70-7833-4	70-7820-6
DG224NRK	Switching Base	70-7820-2	Fuse Base	70-7820-4 ①	—	70-7833-4	70-7820-7
DG225FGK	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DG225FRK	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DG225NGK	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DG225NRK	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DG226FGK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DG226FRK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DG226NGK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DG226NRK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DG324NGK	Switching Base	70-7820	Fuse Base	70-7820-4 ②	—	70-7833-4	70-7820-6
DG324NRK	Switching Base	70-7820	Fuse Base	70-7820-4 ②	—	70-7833-4	70-7820-7
DG324UGK	Switching Base	70-7820-3	—	—	—	70-7833-4	70-7820-6
DG324URK	Switching Base	70-7820-3	—	—	—	70-7833-4	70-7820-7
DG325FGK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DG325FRK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DG325NGK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DG325NRK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DG325UGK	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-2
DG325URK	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-2
DG326FGK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DG326FGK-EXC	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DG326FRK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DG326NGK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DG326NRK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DG326UGK	Switch Interior Assembly	70-8064-2	—	—	70-8064-8	70-7833-6	70-7833-2
DG326URK	Switch Interior Assembly	70-8064-2	—	—	70-8064-8	70-7833-6	70-7833-2
DH221FDK	Switching Base	70-7758-16	Fuse Base	70-7758-29	70-7758-34	70-7813	70-7813-2
DH221FGK	Switching Base	70-7758-16	Fuse Base	70-7758-29	70-7758-34	70-7813	70-7813-2
DH221NDK	Switching Base	70-7758-16	Fuse Base	70-7758-29	70-7758-34	70-7813	70-7813-2
DH221NDK5	Switching Base	70-7758-16	Fuse Base	70-7758-29	70-7758-34	70-7813	70-7813-2
DH221NGK	Switching Base	70-7758-16	Fuse Base	70-7758-29	70-7758-34	70-7813	70-7813-2
DH221NGK5	Switching Base	70-7758-16	Fuse Base	70-7758-29	70-7758-34	70-7813	70-7813-2
DH221NRK	Switching Base	70-7758-16	Fuse Base	70-7758-29	70-7758-34	70-7813	70-7813-2
DH221NWK	Switching Base	70-7758-16	Fuse Base	70-7758-29	70-7758-34	70-7813	70-7813-3
DH221NWKX	Switching Base	70-7758-16	Fuse Base	70-7758-29	70-7758-34	70-8304	70-7813-3
DH222NDK	Switching Base	70-7758-36	Fuse Base	70-7997-4	70-7758-34	70-7813	70-7813-2
DH222NDK5	Switching Base	70-7758-36	Fuse Base	70-7997-4	70-7758-34	70-7813	70-7813-2
DH222NGK	Switching Base	70-7758-36	Fuse Base	70-7997-4	70-7758-34	70-7813	70-7813-2
DH222NGK5	Switching Base	70-7758-36	Fuse Base	70-7997-4	70-7758-34	70-7813	70-7813-2
DH222NRK	Switching Base	70-7758-36	Fuse Base	70-7997-4	70-7758-34	70-7813	70-7813-2
DH222NRK5	Switching Base	70-7758-36	Fuse Base	70-7997-4	70-7758-34	70-7813	70-7813-2
DH222NWK	Switching Base	70-7758-36	Fuse Base	70-7997-4	70-7758-34	70-7813	70-7813-3
DH222NWKX	Switching Base	70-7758-36	Fuse Base	70-7997-4	70-7758-34	70-8304	70-7813-3
DH223NDK	Switching Base	70-7758-7	Fuse Base	70-7758-23	70-7758-35	70-7813	70-7813-2
DH223NGK	Switching Base	70-7758-7	Fuse Base	70-7758-23	70-7758-35	70-7813	70-7813-2
DH223NRK	Switching Base	70-7758-7	Fuse Base	70-7758-23	70-7758-35	70-7813	70-7813-2
DH223NRK5	Switching Base	70-7758-7	Fuse Base	70-7758-23	70-7758-35	70-7813	70-7813-2
DH223NWK	Switching Base	70-7758-7	Fuse Base	70-7758-23	70-7758-35	70-7813	70-7813-3
DH223NWKX	Switching Base	70-7758-7	Fuse Base	70-7758-23	70-7758-35	70-8304	70-7813-3
DH224NDK	Switching Base	70-7759-7	Fuse Base	70-7759-4 ①	70-7759-11	70-7833-4	70-7833-2
DH224NGK	Switching Base	70-8266-3	Fuse Base	70-8266-4 ①	70-7759-11	70-7833-4	70-7833-2
DH224NRK	Switching Base	70-8266-3	Fuse Base	70-8266-4 ①	70-7759-11	70-7833-4	70-7833-2
DH224NWK	Switching Base	70-7759-7	Fuse Base	70-7759-4 ①	70-7759-11	70-7833-4	70-7833-3
DH224NWKX	Switching Base	70-7759-7	Fuse Base	70-7759-4 ①	70-7759-11	70-8305	70-7833-3
DH225FDK	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH225FGK	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH225FPK	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH225FRK	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH225NDK	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH225NGK	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH225NPK	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH225NRK	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2

① Two used.
② Three used.

Catalog Number	Base or Assembly		Fuse Base and Lower Assembly		Line Shields	Operating Mechanism	Operating Handle
	Type	Part Number	Type	Part Number			
DH225NWK	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH225NWKX	Switch Interior Assembly	70-8063-3	Fuse Base	70-8063-7	70-8063-8	70-8305-2	70-7833-2
DH226FDK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH226FGK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH226FPK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH226FRK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH226FWK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH226NDK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH226NGK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH226NPK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH226NRK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH226NWK	Switch Interior Assembly	70-8064-3	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH227FDK	Switch Interior Assembly	70-8065-3	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH227FGK	Switch Interior Assembly	70-8065-3	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH227NDK	Switch Interior Assembly	70-8065-3	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH227NGK	Switch Interior Assembly	70-8065-3	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH227NPK	Switch Interior Assembly	70-8065-3	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH227NRK	Switch Interior Assembly	70-8065-3	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH227NWK	Switch Interior Assembly	70-8065-3	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-3
DH261FDK	Switching Base	70-7758-17	Fuse Base	70-7758-30	70-7758-34	70-7813	70-7813-2
DH261FDK6	Switching Base	70-7758-17	Fuse Base	70-7758-30	70-7758-34	70-7813	70-7813-2
DH261FGK	Switching Base	70-7758-17	Fuse Base	70-7758-30	70-7758-34	70-7813	70-7813-2
DH261FGK6	Switching Base	70-7758-17	Fuse Base	70-7758-30	70-7758-34	70-7813	70-7813-2
DH261FWK	Switching Base	70-7758-17	Fuse Base	70-7758-30	70-7758-34	70-7813	70-7813-3
DH261FWKX	Switching Base	70-7758-17	Fuse Base	70-7758-30	70-7758-34	70-8304	70-7813-3
DH261UGK	Switching Base	70-7758-18	—	—	70-7758-34	70-7813	70-7813-2
DH262FDK	Switching Base	70-7997-3	Fuse Base	70-7997-6	70-7758-34	70-7813	70-7813-2
DH262FDK6	Switching Base	70-7997-3	Fuse Base	70-7997-6	70-7758-34	70-7813	70-7813-2
DH262FGK	Switching Base	70-7997-3	Fuse Base	70-7997-6	70-7758-34	70-7813	70-7813-2
DH263FDK	Switching Base	70-7758-9	Fuse Base	70-7758-25	70-7758-35	70-7813	70-7813-2
DH263FGK	Switching Base	70-7758-9	Fuse Base	70-7758-25	70-7758-35	70-7813	70-7813-2
DH263UDK	Switching Base	70-7758-11	—	—	70-7758-35	70-7813	70-7813-2
DH263UGK	Switching Base	70-7758-11	—	—	70-7758-35	70-7813	70-7813-2
DH264FDK	—	—	Fuse Base	70-7759-5 ①	70-7759-11	70-7833-4	70-7833-2
DH264FGK	—	—	Fuse Base	70-8266-4 ①	70-7759-11	70-7833-4	70-7833-2
DH264FWK	—	—	Fuse Base	70-7759-5 ①	70-7759-11	70-7833-4	70-7833-3
DH264FWKX	—	—	Fuse Base	70-7759-5 ①	70-7759-11	70-8305	70-7833-3
DH264UDK	—	—	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-7833-4	70-7833-2
DH264UDK2	—	—	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-7833-4	70-7833-2
DH265FDK	Switch Interior Assembly	70-8063-5	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH265FDK3	Switch Interior Assembly	70-8063-5	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH265FGK	Switch Interior Assembly	70-8063-5	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH265UDK	Switch Interior Assembly	70-8063	—	—	70-8063-8	70-7833-5	70-7833-2
DH265UGK	Switch Interior Assembly	70-8063	—	—	70-8063-8	70-7833-5	70-7833-2
DH266FDK	Switch Interior Assembly	70-8064-5	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH266FGK	Switch Interior Assembly	70-8064-5	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH266UDK	Switch Interior Assembly	70-8064	—	—	70-8064-8	70-7833-6	70-7833-2
DH266UGK	Switch Interior Assembly	70-8064	—	—	70-8064-8	70-7833-6	70-7833-2
DH267FDK	Switch Interior Assembly	70-8065-5	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH267FGK	Switch Interior Assembly	70-8065-5	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH267UDK	Switch Interior Assembly	70-8065	—	—	70-8064-8	70-7833-6	70-7833-2
DH267UGK	Switch Interior Assembly	70-8065	—	—	70-8064-8	70-7833-6	70-7833-2
DH321FCK	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	—	—
DH321FDK	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-2
DH321FDK2JK	Switching Base	70-7831	Fuse Base	70-7831-3	70-7758-34	70-7813	70-7813-2
DH321FDK5	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-2
DH321FGK	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-2
DH321FGK2	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-2
DH321FGK2JK	Switching Base	70-7831	Fuse Base	70-7831-3	70-7758-34	70-7813	70-7813-2
DH321FRK	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-2
DH321FRK2JK	Switching Base	70-7831	Fuse Base	70-7831-3	70-7758-34	70-7813	70-7813-2
DH321FRK5	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-2
DH321FWK	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-3
DH321FWKX	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-8304	70-7813-3
DH321FWK2JK	Switching Base	70-7831	Fuse Base	70-7831-3	70-7758-34	70-7813	70-7813-3
DH321NCK	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	—	—

① Two used.
② Three used.

Catalog Number	Base or Assembly		Fuse Base and Lower Assembly		Line Shields	Operating Mechanism	Operating Handle
	Type	Part Number	Type	Part Number			
DH321NDK	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-2
DH321NDKLW	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-2
DH321NDKW	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-2
DH321NDK3	Switching Base	70-7758-14	Fuse Base	70-7758-26	70 7758-34	70-7813	70-7813-2
DH321NGK	Switching Base	70-7758-14	Fuse Base	70-7758-26	70 7758-34	70-7813	70-7813-2
DH321NRK	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-2
DH321NWK	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-3
DH321NWKLW	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-3
DH321NWKW	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-3
DH321NWKX	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-8304	70-7813-3
DH322FCK	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	—	—
DH322FDK	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-2
DH322FGK	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-2
DH322FRK	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-2
DH322FRK5	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-2
DH322FWK	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-3
DH322FWKX	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-8304	70-7813-3
DH322NCK	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	—	—
DH322NDK	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-2
DH322NDKLW	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-2
DH322NDKW	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-2
DH322NGK	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-2
DH322NRK	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-2
DH322NRK5	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-2
DH322NWK	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-3
DH322NWKLW	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-3
DH322NWKW	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-7813	70-7813-3
DH322NWKX	Switching Base	70-7997	Fuse Base	70-7997-5	70-7758-34	70-8304	70-7813-3
DH323FCK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	—	—
DH323FDK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH323FDK-10	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH323FD3WRK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH323FGK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH323FRK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH323NCK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	—	—
DH323NDK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH323NDKLW	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH323NDKW	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH323NGK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH323NGK2	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH323NRK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH323NWK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-3
DH323NWKLW	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-3
DH323NWKW	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-3
DH323NWKX	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-8304	70-7813-3
DH324FCK	Switching Base	70-8266	Fuse Base	70-8266-4 ②	70-7759-11	—	—
DH324FDK	Switching Base	70-7759	Fuse Base	70-7759-4 ②	70-7759-11	70-7833-4	70-7833-2
DH324FGK	Switching Base	70-8266	Fuse Base	70-8266-4 ②	70-7759-11	70-7833-4	70-7833-2
DH324FRK	Switching Base	70-8266	Fuse Base	70-8266-4 ②	70-7759-11	70-7833-4	70-7833-2
DH324FRK5	Switching Base	70-8266	Fuse Base	70-8266-4 ②	70-7759-11	70-7833-4	70-7833-2
DH324FWKX	Switching Base	70-7759	Fuse Base	70-7759-4 ②	70-7759-11	70-8305	70-7833-3
DH324NCK	Switching Base	70-8266	Fuse Base	70-8266-4 ②	70-7759-11	—	—
DH324NDK	Switching Base	70-7759	Fuse Base	70-7759-4 ②	70-7759-11	70-7833-4	70-7833-2
DH324NDKLW	Switching Base	70-7759	Fuse Base	70-7759-4 ②	70-7759-11	70-7833-4	70-7833-2
DH324NDKW	Switching Base	70-7759	Fuse Base	70-7759-4 ②	70-7759-11	70-7833-4	70-7833-2
DH324NDK5	Switching Base	70-7759	Fuse Base	70-7759-4 ②	70-7759-11	70-7833-4	70-7833-2
DH324NGK	Switching Base	70-8266	Fuse Base	70-8266-4 ②	70-7759-11	70-7833-4	70-7833-2
DH324NGK2	Switching Base	70-8266	Fuse Base	70-8266-4 ②	70-7759-11	70-7833-4	70-7833-2
DH324NRK	Switching Base	70-8266	Fuse Base	70-8266-4 ②	70-7759-11	70-7833-4	70-7833-2
DH324NRK5	Switching Base	70-8266	Fuse Base	70-8266-4 ②	70-7759-11	70-7833-4	70-7833-2
DH324NWK	Switching Base	70-7759	Fuse Base	70-7759-4 ②	70-7759-11	70-7833-4	70-7833-3
DH324NWKLW	Switching Base	70-7759	Fuse Base	70-7759-4 ②	70-7759-11	70-7833-4	70-7833-3
DH324NWKX	Switching Base	70-7759	Fuse Base	70-7759-4 ②	70-7759-11	70-8305	70-7833-3
DH325FDK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH325FGK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH325FPK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2

② Three used.

Catalog Number	Base or Assembly		Fuse Base and Lower Assembly		Line Shields	Operating Mechanism	Operating Handle
	Type	Part Number	Type	Part Number			
DH325FRK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH325FWK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-3
DH325FWKX	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-8305-2	70-7833-3
DH325NDK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH325NDKLW	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH325NGK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH325NPK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH325NPKLW	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH325NRK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH325NWK	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-3
DH325NWKLW	Switch Interior Assembly	70-8063-4	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-3
DH326FDK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH326FGK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH326FPK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH326FRK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH326FWK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-3
DH326NDK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH326NDKLW	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH326NGK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH326NPK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH326NPKLW	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH326NRK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH326NWK	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH326NWKLW	Switch Interior Assembly	70-8064-4	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH327FDK	Switch Interior Assembly	70-8065-4	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH327FGK	Switch Interior Assembly	70-8065-4	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH327FPK	Switch Interior Assembly	70-8065-4	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH327FRK	Switch Interior Assembly	70-8065-4	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH327FWK	Switch Interior Assembly	70-8065-4	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-3
DH327NGK	Switch Interior Assembly	70-8065-4	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH327NRK	Switch Interior Assembly	70-8065-4	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH328FGK	Switch Interior Assembly	70-8453-2	Fuse Base	70-8453-3	70-8453-4	—	—
DH328FRK	Switch Interior Assembly	70-8453-2	Fuse Base	70-8453-3	70-8453-4	—	—
DH328NGK	Switch Interior Assembly	70-8453-2	Fuse Base	70-8453-3	70-8453-4	—	—
DH328NRK	Switch Interior Assembly	70-8453-2	Fuse Base	70-8453-3	70-8453-4	—	—
DH361FCK	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	—	—
DH361FDK	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-2
DH361FDK2	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-2
DH361FDK2WR	Switching Base	70-7758	Fuse Base	70-7758-19	70-7758-35	70-7813	70-7813-2
DH361FDK2WRK	Switching Base	70-7758	Fuse Base	70-7758-19	70-7758-35	70-7813	70-7813-2
DH361FDK2WRW	Switching Base	70-7758	Fuse Base	70-7758-19	70-7758-35	70-7813	70-7813-2
DH361FDK26	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-2
DH361FDK46	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-2
DH361FDK6	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-2
DH361FDK6JK	Switching Base	70-7831-2	Fuse Base	70-7831-3	70-7758-34	70-7813	70-7813-2
DH361FD3WRK	Switching Base	70-7758	Fuse Base	70-7758-19	70-7758-35	70-7813	70-7813-2
DH361FD4WRK	Switching Base	70-7758	Fuse Base	70-7758-19	70-7758-35	70-7813	70-7813-2
DH361FD5WRK	Switching Base	70-7758-14	Fuse Base	70-7758-26	70-7758-34	70-7813	70-7813-2
DH361FGK	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-2
DH361FGK6	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-2
DH361FGK6JK	Switching Base	70-7831-2	Fuse Base	70-7831-3	70 7758-34	70-7813	70-7813-2
DH361FG6WRK	Switching Base	70-7758-2	Fuse Base	70-7758-19	70-7758-35	70-7813	70-7813-2
DH361FRK	Switching Base	70-7758-15	Fuse Base	70-7758-28	70-7758-34	70-7813	70-7813-2
DH361FRK6	Switching Base	70-7758-15	Fuse Base	70-7758-28	70-7758-34	70-7813	70-7813-2
DH361FRK6JK	Switching Base	70-7831-2	Fuse Base	70-7831-3	70-7758-34	70-7813	70-7813-2
DH361FWK	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-3
DH361FWK-316	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-3
DH361FWKX	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-8304	70-7813-3
DH361FWK2	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-3
DH361FWK2WR	Switching Base	70-7758	Fuse Base	70-7758-19	70-7758-35	70-7813	70-7813-3
DH361FWK26	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-3
DH361FWK6	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-3
DH361FWK6JK	Switching Base	70-7831-2	Fuse Base	70-7831-3	70-7758-34	70-7813	70-7813-3
DH361NCK	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	—	—
DH361NDK	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-2
DH361NDK-10	Switching Base	70-7758-12	Fuse Base	70-7758-27	—	70-7813	70-7813-2

Catalog Number	Base or Assembly		Fuse Base and Lower Assembly		Line Shields	Operating Mechanism	Operating Handle
	Type	Part Number	Type	Part Number			
DH361NDKLW	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-2
DH361NDKW	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-2
DH361NDK6JK	Switching Base	70-7831-2	Fuse Base	70-7831-3	70-7758-34	70-7813	70-7813-2
DH361NGK	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-2
DH361NRK	Switching Base	70-7758-12	Fuse Base	70-7758-28	70 7758-34	70-7813	70-7813-2
DH361NWK	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-3
DH361NWKLW	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-3
DH361NWKW	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-3
DH361NWKW2	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-7813	70-7813-3
DH361NWKX	Switching Base	70-7758-12	Fuse Base	70-7758-27	70-7758-34	70-8304	70-7813-3
DH361UCK	Switching Base	70-7758-13	—	—	70-7758-34	—	—
DH361UDK-CPG	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH361UDK-LS	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH361UDK2-LS	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH361UD5WRK	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH361UGK	Switching Base	70-7758-13	—	—	70-7758-34	70 7813	70-7813-2
DH361UGK-CSA	Switching Base	70-7758-13	—	—	70-7758-34	70 7813	70-7813-2
DH361UGK2	Switching Base	70-7758-13	—	—	70-7758-34	70 7813	70-7813-2
DH361UGK3	Switching Base	70-7758-13	—	—	70-7758-34	70 7813	70-7813-2
DH361URK	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH361URK-CSA	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH361URK-NP-FP	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH361URK2	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH361URK3	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH361UWK	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-3
DH361UWK-CPG	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-3
DH361UWK-LS	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-3
DH361UWKW	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-3
DH361UWKW2	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-3
DH362FCK	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	—	—
DH362FDK	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362FDK2	Switching Base	70-7997-2	Fuse Base	70-7997-7	70 7758-34	70-7813	70-7813-2
DH362FDK2WR	Switching Base	70-7758-2	Fuse Base	70-7758-20	70-7758-35	70-7813	70-7813-2
DH362FDK2WR-SP	Switching Base	70-7758-2	Fuse Base	70-7758-20	70-7758-35	70-7813	70-7813-2
DH362FDK2WRW	Switching Base	70-7758-2	Fuse Base	70-7758-20	70-7758-35	70-7813	70-7813-2
DH362FDK26	Switching Base	70-7997-2	Fuse Base	70-7997-7	70 7758-34	70-7813	70-7813-2
DH362FDK3	Switching Base	70-7997-2	Fuse Base	70-7997-7	70 7758-34	70-7813	70-7813-2
DH362FDK6	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362FD3WRK	Switching Base	70-7758-2	Fuse Base	70-7758-20	70-7758-35	70-7813	70-7813-2
DH362FD4WRK	Switching Base	70-7758-2	Fuse Base	70-7758-20	70-7758-35	70-7813	70-7813-2
DH362FD5WRK	Switching Base	70-7758-2	Fuse Base	70-7758-20	70-7758-35	70-7813	70-7813-2
DH362FGK	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362FGK6	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362FGK6JK	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362FG6WRK	Switching Base	70-7758-2	Fuse Base	70-7758-20	70-7758-35	70-7813	70-7813-2
DH362FRK	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362FRK6	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362FWK	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-3
DH362FWKX	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-8304	70-7813-3
DH362FWK2WR	Switching Base	70-7758-2	Fuse Base	70-7758-20	70-7758-35	70-7813	70-7813-3
DH362FWK26	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-3
DH362FW5WRK	Switching Base	70-7758-2	Fuse Base	70-7758-20	70-7758-35	70-7813	70-7813-3
DH362NCK	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	—	—
DH362NDK	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362NDKLW	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362NDKW	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362NDK36	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362NDK6	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362NGK	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362NGK6	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362NRK	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-2
DH362NWK	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-3
DH362NWKLW	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-3
DH362NWKW	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-3
DH362NWKW2	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-7813	70-7813-3
DH362NWKX	Switching Base	70-7997-2	Fuse Base	70-7997-7	70-7758-34	70-8304	70-7813-3

Catalog Number	Base or Assembly		Fuse Base and Lower Assembly		Line Shields	Operating Mechanism	Operating Handle
	Type	Part Number	Type	Part Number			
DH362UCK	Switching Base	70-7758-13	—	—	70-7758-34	—	—
DH362UDK-CPG	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH362UDK-LS	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH362UDK2-LS	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH362UDK2WR	Switching Base	70-7758-4	—	—	70-7758-35	70-7813	70-7813-2
DH362UDK2WRCP10	Switching Base	70-7758-4	—	—	70-7758-35	70-7813	70-7813-2
DH362UD5WRK	Switching Base	70-7758-4	—	—	70-7758-35	70-7813	70-7813-2
DH362UGK	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH362UGK-CSA	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH362UGK2	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH362UGK3	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH362URK	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH362URK-CSA	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH362URK-NP-FP	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH362URK2	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH362URK3	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH362UWK	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-3
DH362UWK-CPG	Switching Base	70-7758-4	—	—	70-7758-35	70-7813	70-7813-3
DH362UWK-LS	Switching Base	70-7758-4	—	—	70-7758-35	70-7813	70-7813-3
DH362UWKW	Switching Base	70-7758-4	—	—	70-7758-35	70-7813	70-7813-3
DH362UWKW2	Switching Base	70-7758-4	—	—	70-7758-35	70-7813	70-7813-3
DH362UWK2WR	Switching Base	70-7758-4	—	—	70-7758-35	70-7813	70-7813-2
DH362UW5WRK	Switching Base	70-7758-4	—	—	70-7758-35	70-7813	70-7813-3
DH363FCK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	—	—
DH363FDK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363FDK2	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363FDK2WR	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363FDK26	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363FDK6	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363FD3WRK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363FD3WRK-EXC	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363FD4WRK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363FGK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363FGK6	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363FRK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363FRK-HRC	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363FRK6	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363FWK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-3
DH363FWKX	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-8304	70-7813-3
DH363FWK26	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-3
DH363FW5WRK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-3
DH363NCK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	—	—
DH363NDK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363NDKLW	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363NDKW	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363NDK6	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363NGK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363NGK6	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363NRK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-2
DH363NWK	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-3
DH363NWKLW	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-3
DH363NWKW	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-3
DH363NWKW2	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-7813	70-7813-3
DH363NWKX	Switching Base	70-7758-3	Fuse Base	70-7758-21	70-7758-35	70-8304	70-7813-3
DH363UCK	Switching Base	70-7758-5	—	—	70-7758-35	—	—
DH363UDK	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-2
DH363UDK-CP	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-2
DH363UDK-NP-FP	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-2
DH363UDK-10	Switching Base	70-7758-5	—	—	—	70-7813	70-7813-2
DH363UDKW	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-2
DH363UDKW2	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-2
DH363UDK2	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-2
DH363UDK3	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-2
DH363UGK	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-2
DH363UGK2	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-2

Catalog Number	Base or Assembly		Fuse Base and Lower Assembly		Line Shields	Operating Mechanism	Operating Handle
	Type	Part Number	Type	Part Number			
DH363URK	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-2
DH363URK-NP-FP	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-2
DH363URK2	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-2
DH363URK3	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-2
DH363UWK	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-3
DH363UWK-316	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-3
DH363UWKW	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-3
DH363UWKW2	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-3
DH363UWKX	Switching Base	70-7758-5	—	—	70-7758-35	70-8304	70-7813-3
DH363UWK2	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-3
DH363UWK3	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-3
DH363UWK34	Switching Base	70-7758-5	—	—	70-7758-35	70-7813	70-7813-3
DH364FCK	Switching Base	70-8266	Fuse Base	70-8266-4	70-7759-11	—	—
DH364FDK	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-7833-4	70-7833-2
DH364FDK2	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-7833-4	70-7833-2
DH364FDK26	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-7833-4	70-7833-2
DH364FDK6	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-7833-4	70-7833-2
DH364FGK	Switching Base	70-8266	Fuse Base	70-8266-4	70-7759-11	70-7833-4	70-7833-2
DH364FGK6	Switching Base	70-8266	Fuse Base	70-8266-4	70-7759-11	70-7833-4	70-7833-2
DH364FRK	Switching Base	70-8266	Fuse Base	70-8266-4	70-7759-11	70-7833-4	70-7833-2
DH364FRK6	Switching Base	70-8266	Fuse Base	70-8266-4	70-7759-11	70-7833-4	70-7833-2
DH364FWK	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-7833-4	70-7833-3
DH364FWKX	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-8305	70-7833-3
DH364FWK26	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-7833-4	70-7833-3
DH364NCK	Switching Base	70-8266	Fuse Base	70-8266-4	70-7759-11	—	—
DH364NDK	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-7833-4	70-7833-2
DH364NDKLW	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-7833-4	70-7833-2
DH364NDKW	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-7833-4	70-7833-2
DH364NGK	Switching Base	70-8266	Fuse Base	70-8266-4	70-7759-11	70-7833-4	70-7833-2
DH364NGK6	Switching Base	70-8266	Fuse Base	70-8266-4	70-7759-11	70-7833-4	70-7833-2
DH364NRK	Switching Base	70-8266	Fuse Base	70-8266-4	70-7759-11	70-7833-4	70-7833-2
DH364NWK	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-7833-4	70-7833-3
DH364NWKLW	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-7833-4	70-7833-3
DH364NWKW	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-7833-4	70-7833-3
DH364NWKX	Switching Base	70-7759	Fuse Base	70-7759-5	70-7759-11	70-8305	70-7833-3
DH364UCK	Switching Base	70-8266-2	—	—	70-7759-11	—	—
DH364UDK	Switching Base	70-7759-2	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-7833-4	70-7833-2
DH364UDK-CP	Switching Base	70-7759-2	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-7833-4	70-7833-2
DH364UDK-NP-FP	Switching Base	70-7759-2	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-7833-4	70-7833-2
DH364UDK-10	Switching Base	70-7759-2	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-7833-4	70-7833-2
DH364UDKW	Switching Base	70-7759-2	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-7833-4	70-7833-2
DH364UDK2	Switching Base	70-7759-2	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-7833-4	70-7833-2
DH364UGK	Switching Base	70-8266-2	—	—	70-7759-11	70-7833-4	70-7833-2
DH364UGK2	Switching Base	70-8266-2	—	—	70-7759-11	70-7833-4	70-7833-2
DH364UGK3	Switching Base	70-8266-2	—	—	70-7759-11	70-7833-4	70-7833-2
DH364URK	Switching Base	70-8266-2	—	—	70-7759-11	70-7833-4	70-7833-2
DH364URK-H	Switching Base	70-7759-2	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-7833-4	70-7833-2
DH364URK2	Switching Base	70-8266-2	—	—	70-7759-11	70-7833-4	70-7833-2
DH364UWK	Switching Base	70-7759-2	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-7833-4	70-7833-3
DH364UWK-316	Switching Base	70-7759-2	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-7833-4	70-7833-3
DH364UWKW	Switching Base	70-7759-2	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-7833-4	70-7833-3
DH364UWKX	Switching Base	70-7759-2	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-8305	70-7833-3
DH364UWK2	Switching Base	70-7759-2	Lower Base & Connector	70-7759-6 ②	70-7759-11	70-7833-4	70-7833-3
DH365FDK	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH365FGK	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH365FGK6	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH365FPK	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH365FRK	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH365FWK	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-3
DH365FWKX	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-8305-2	70-7833-3
DH365NDK	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH365NDKLW	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH365NDKW	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH365NGK	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH365NPK	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH365NPKLW	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2

② Three used.

Catalog Number	Base or Assembly		Fuse Base and Lower Assembly		Line Shields	Operating Mechanism	Operating Handle
	Type	Part Number	Type	Part Number			
DH365NRK	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH365NWK	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH365NWKLW	Switch Interior Assembly	70-8063-6	Fuse Base	70-8063-7	70-8063-8	70-7833-5	70-7833-2
DH365UDK	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-2
DH365UDK-CP	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-2
DH365UDKW	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-2
DH365UDK2	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-2
DH365UGK	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-2
DH365UPK	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-2
DH365UPKW	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-2
DH365URK	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-2
DH365URK-NP-FP	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-2
DH365URK2	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-2
DH365UWK	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-3
DH365UWKW	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-7833-5	70-7833-3
DH365UWKX	Switch Interior Assembly	70-8063-2	—	—	70-8063-8	70-8305-2	70-7833-3
DH366FDK	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH366FGK	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH366FGK-EXC	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH366FPK	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH366FRK	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH366FWK	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-3
DH366NDK	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH366NDKLW	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH366NGK	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH366NPK	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH366NPKLW	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH366NRK	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH366NWK	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-3
DH366NWKLW	Switch Interior Assembly	70-8064-6	Fuse Base	70-8064-7	70-8064-8	70-7833-6	70-7833-2
DH366UDK	Switch Interior Assembly	70-8064-2	—	—	70-8064-8	70-7833-6	70-7833-2
DH366UDKW	Switch Interior Assembly	70-8064-2	—	—	70-8064-8	70-7833-6	70-7833-2
DH366UDK2	Switch Interior Assembly	70-8064-2	—	—	70-8064-8	70-7833-6	70-7833-2
DH366UGK	Switch Interior Assembly	70-8064-2	—	—	70-8064-8	70-7833-6	70-7833-2
DH366UPK	Switch Interior Assembly	70-8064-2	—	—	70-8064-8	70-7833-6	70-7833-2
DH366URK	Switch Interior Assembly	70-8064-2	—	—	70-8064-8	70-7833-6	70-7833-2
DH366UWK	Switch Interior Assembly	70-8064-2	—	—	70-8064-8	70-7833-6	70-7833-3
DH366UWKW	Switch Interior Assembly	70-8064-2	—	—	70-8064-8	70-7833-6	70-7833-3
DH367FDK	Switch Interior Assembly	70-8065-6	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH367FGK	Switch Interior Assembly	70-8065-6	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH367FPK	Switch Interior Assembly	70-8065-6	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH367FRK	Switch Interior Assembly	70-8065-6	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH367FWK	Switch Interior Assembly	70-8065-6	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-3
DH367NGK	Switch Interior Assembly	70-8065-6	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH367NGK-NKO	Switch Interior Assembly	70-8065-6	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH367NRK	Switch Interior Assembly	70-8065-6	Fuse Base	70-8065-7	70-8064-8	70-7833-6	70-7833-2
DH367UDK	Switch Interior Assembly	70-8065-2	—	—	70-8064-8	70-7833-6	70-7833-2
DH367UGK	Switch Interior Assembly	70-8065-2	—	—	70-8064-8	70-7833-6	70-7833-2
DH367UPK	Switch Interior Assembly	70-8065-2	—	—	70-8064-8	70-7833-6	70-7833-2
DH367URK	Switch Interior Assembly	70-8065-2	—	—	70-8064-8	70-7833-6	70-7833-2
DH367UWK	Switch Interior Assembly	70-8065-2	—	—	70-8064-8	70-7833-6	70-7833-3
DH368FGK	Switch Interior Assembly	70-8065-2	Fuse Base	70-8453-3	70-8453-4	—	—
DH368FRK	Switch Interior Assembly	70-8065-2	Fuse Base	70-8453-3	70-8453-4	—	—
DH368NGK	Switch Interior Assembly	70-8065-2	Fuse Base	70-8453-3	70-8453-4	—	—
DH368NRK	Switch Interior Assembly	70-8065-2	Fuse Base	70-8453-3	70-8453-4	—	—
DH368UGK	Switch Interior Assembly	70-8453	—	—	70-8453-4	—	—
DH368URK	Switch Interior Assembly	70-8453	—	—	70-8453-4	—	—
DH421FDK	Switching Base	70-7758-16	Fuse Base	70-7758-29	70-7758-34	70-7813	70-7813-2
DH421FGK	Switching Base	70-7758-16	Fuse Base	70-7758-29	70-7758-34	70-7813	70-7813-2
DH422FDK	Switching Base	70-7758-6	Fuse Base	70-7758-22	70-7758-35	70-7813	70-7813-2
DH422FGK	Switching Base	70-7758-6	Fuse Base	70-7758-22	70 7758-35	70-7813	70-7813-2
DH423FDK	Switching Base	70-7758-7	Fuse Base	70-7758-23	70-7758-35	70-7813	70-7813-2
DH423FGK	Switching Base	70-7758-7	Fuse Base	70-7758-23	70-7758-35	70-7813	70-7813-2
DH424FDK	Switching Base	70-7759-9	Fuse Base	70-7759-4 ③	70-7759-12	70-7833-4	70-7833-2
DH424FGK	Switching Base	Consult Factory	Fuse Base	Consult Factory	Consult Factory	70-7833-4	70-7833-2
DH425FGK	Switch Interior Assembly	70-8270	Fuse Base	70-8063-7	70-8270-4	70-7833-5	70-7833-2

③ Four used.

Catalog Number	Base or Assembly		Fuse Base and Lower Assembly		Line Shields	Operating Mechanism	Operating Handle
	Type	Part Number	Type	Part Number			
DH426FGK	Switch Interior Assembly	70-8271	Fuse Base	70-8064-7	70-8270-4	70-7833-6	70-7833-2
DH461FGK	Switching Base	70-7758-36	Fuse Base	70-7758-38	70-7758-34	70-7813	70-7813-2
DH461UDK	Switching Base	70-7758-40	—	—	70-7758-34	70-7813	70-7813-2
DH461UGK	Switching Base	70-7758-40	—	—	70-7758-34	70-7813	70-7813-2
DH461UWK	Switching Base	70-7758-42 ①	—	—	70-7758-35 ①	70-7813	70-7813-3
DH462FGK	Switching Base	70-7758-37	Fuse Base	70-7758-39	70 7758-35	70-7813	70-7813-2
DH462UDK	Switching Base	70-7758-13	—	—	70-7758-34	70-7813	70-7813-2
DH462UGK	Switching Base	70-7758-13	—	—	70-7758-34	70 7813	70-7813-2
DH462UWK	Switching Base	70-7758-42 ①	—	—	70-7758-35 ①	70-7813	70-7813-3
DH463FDK	Switching Base	70-7758-7	Fuse Base	70-7758-23	70-7758-35	70-7813	70-7813-2
DH463FGK	Switching Base	70-7758-7	Fuse Base	70-7758-23	70-7758-35	70-7813	70-7813-2
DH463UDK	Switching Base	70-7758-42	—	—	70-7758-35	70-7813	70-7813-2
DH463UGK	Switching Base	70-7758-42	—	—	70-7758-35	70-7813	70-7813-2
DH463UWK	Switching Base	70-7758-42	—	—	70-7758-35	70-7813	70-7813-3
DH464FDK	Switching Base	70-7759-9	Fuse Base	70-7759-5 ③	70-7759-12	70-7833-4	70-7833-2
DH464FGK	Switching Base	Consult Factory	Fuse Base	Consult Factory	Consult Factory	70-7833-4	70-7833-2
DH464UDK	Switching Base	70-7759-10	Lower Base & Connector	70-7759-6 ③	70-7759-12	70-7833-4	70-7833-2
DH464UGK	Switching Base	Consult Factory	—	—	Consult Factory	70-7833-4	70-7833-2
DH465FGK	Switch Interior Assembly	70-8270-2	Fuse Base	70-8063-7	70-8270-4	70-7833-5	70-7833-2
DH465UGK	Switch Interior Assembly	70-8270-3	—	—	70-8270-4	70-7833-5	70-7833-2
DH466FGK	Switch Interior Assembly	70-8271-2	Fuse Base	70-8064-7	70-8270-4	70-7833-6	70-7833-2
DH466UGK	Switch Interior Assembly	70-8271-3	—	—	70-8270-4	70-7833-6	70-7833-2
DH661FDK	Switching Base	70-7758-12 ①	Fuse Base	70-7758-27 ①	70-7758-34 ①	70-7813	70-7813-2
DH661UDK	Switching Base	70-7758-13 ①	—	—	70-7758-34 ①	70-7813	70-7813-2
DH661UDK2	Switching Base	70-7758-13 ①	—	—	70-7758-34 ①	70-7813	70-7813-2
DH661UDK3	Switching Base	70-7758-13 ①	—	—	70-7758-34 ①	70-7813	70-7813-2
DH661UWK	Switching Base	70-7758-5 ①	—	—	70-7758-35 ①	70-7813	70-7813-3
DH661UWK2	Switching Base	70-7758-5 ①	—	—	70-7758-35 ①	70-7813	70-7813-3
DH661UWK3	Switching Base	70-7758-5 ①	—	—	70-7758-35 ①	70-7813	70-7813-3
DH662FDK	Switching Base	70-7758-2 ①	Fuse Base	70-7758-20 ①	70-7758-35 ①	70-7813	70-7813-2
DH662UDK	Switching Base	70-7758-4 ①	—	—	70-7758-35 ①	70-7813	70-7813-2
DH662UWK	Switching Base	70-7758-5 ①	—	—	70-7758-35 ①	70-7813	70-7813-3
DH663FDK	Switching Base	70-7758-3 ①	Fuse Base	70-7758-21 ①	70-7758-35 ①	70-7813	70-7813-2
DH663UDK	Switching Base	70-7758-5 ①	—	—	70-7758-35 ①	70-7813	70-7813-2
DH663UWK	Switching Base	70-7758-5 ①	—	—	70-7758-35 ①	70-7813	70-7813-3
DH663UWK-316	Switching Base	70-7758-5 ①	—	—	70-7758-35 ①	70-7813	70-7813-3
DH664UDK	Switching Base	70-7759-13	Lower Base & Connector	70-7759-6 ④	70-7759-11 ①	70-7833-4	70-7833-2
DH664UDK3	Switching Base	70-7759-13	Lower Base & Connector	70-7759-6 ④	70-7759-11 ①	70-7833-4	70-7833-2
DH664UWK	Switching Base	70-7759-13	Lower Base & Connector	70-7759-6 ④	70-7759-11 ①	70-7833-4	70-7833-3
DP111NGB	—	—	—	—	—	—	—
DP111NRB	—	—	—	—	—	—	—
DP221NGB	—	—	—	—	—	—	—
DP221NRB	—	—	—	—	—	—	—
DT221UGK	Switching Base	70-7758-5	—	—	—	—	—
DT221URK-NPS	Switching Base	70-7758-5	—	—	—	—	—
DT221URK-NPS-BS	Switching Base	70-7758-5	—	—	—	—	—
DT221URKPS	Switching Base	70-7758-5	—	—	—	—	—
DT222UGK	Switching Base	70-7758-5	—	—	—	—	—
DT222URK-NPS	Switching Base	70-7758-5	—	—	—	—	—
DT222URK-NPS-BS	Switching Base	70-7758-5	—	—	—	—	—
DT222URKPS	Switching Base	70-7758-5	—	—	—	—	—
DT223UGK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT223URK-NPS	Switching Base	70-7758-5	—	—	—	—	—
DT223URK-NPS-BS	Switching Base	70-7758-5	—	—	—	—	—
DT223URKPS	Switching Base	70-7758-5	—	—	—	—	—
DT223URKPS-N	Switching Base	70-7758-5	—	—	—	—	—
DT224FGK	Switching Base	70-8058-2	Fuse Base	70-8060	70-7759-11	—	—
DT224FRK	Switching Base	70-8058-2	Fuse Base	70-8060	70-7759-11	—	—
DT224UGK	Switching Base	70-8059	—	—	—	—	—
DT224UGK-FB	Switching Base	70-8059	—	—	—	—	—
DT224URK	Switching Base	70-8059	—	—	—	—	—
DT224URK-EXC	Switching Base	70-8059	—	—	—	—	—
DT224URK-N	Switching Base	70-8059	—	—	—	—	—

① Two used.
③ Four used.
④ Six used.

Catalog Number	Base or Assembly		Fuse Base and Lower Assembly		Line Shields	Operating Mechanism	Operating Handle
	Type	Part Number	Type	Part Number			
DT224URK-NPS	Switching Base	70-8059	—	—	—	—	—
DT224URK-NPS-BS	Switching Base	70-8059	—	—	—	—	—
DT224URKPS	Switching Base	70-8059	—	—	—	—	—
DT225UGK	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT225URK	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT225URK-N	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT225URK-NPS	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT225URK-NPS-BS	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT225URKPS	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT226UGK	Switch Base Assembly ⑤	70-8083-5	Switch Base Assembly ⑥	70-8083-6	—	—	70-7833-7
DT261UGK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT262UGK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT263UGK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT264UGK	Switching Base	70-8059-2	—	—	—	—	—
DT264URK	Switching Base	70-8059-2	—	—	—	—	—
DT265UGK	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT265URK	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT266UGK	Switch Base Assembly ⑤	70-8083-5	Switch Base Assembly ⑥	70-8083-6	—	—	70-7833-7
DT266URK	Switch Base Assembly ⑤	70-8083-5	Switch Base Assembly ⑥	70-8083-6	—	—	70-7833-7
DT321FGK	—	—	—	—	70-7758-35 ①	—	—
DT321FRK	—	—	—	—	70-7758-35 ①	—	—
DT321UGK	Switching Base	70-7758-5	—	—	—	—	—
DT322FGK	Switching Base	70-7758	Fuse Base	70-7758-19 ①	70-7758-35 ①	—	—
DT322FRK	Switching Base	70-7758	Fuse Base	70-7758-19 ①	70-7758-35 ①	—	—
DT322NWK	Switching Base	70-7758	Fuse Base	70-7758-19 ①	70-7758-35 ①	—	—
DT322UGK	Switching Base	70-7758-5	—	—	—	—	—
DT323FGK	Switching Base	70-7758-3	Fuse Base	70-7758-21 ①	70-7758-35 ①	—	—
DT323FRK	Switching Base	70-7758-3	Fuse Base	70-7758-21 ①	70-7758-35 ①	—	—
DT323FWK	Switching Base	70-7758-3	Fuse Base	70-7758-21 ①	70-7758-35 ①	—	—
DT323NWK	Switching Base	70-7758-3	Fuse Base	70-7758-21 ①	70-7758-35 ①	—	—
DT323UGK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT323URK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT324FGK	Switching Base	70-8058	Fuse Base	70-8060	70-7759-11	—	—
DT324FRK	Switching Base	70-8058	Fuse Base	70-8060	70-7759-11	—	—
DT324FWK	Switching Base	70-8058	Fuse Base	70-8060	70-7759-11	—	—
DT324NWK	Switching Base	70-8058	Fuse Base	70-8060	70-7759-11	—	—
DT324UGK	Switching Base	70-8059-3	—	—	—	—	—
DT324URK	Switching Base	70-8059-3	—	—	—	—	—
DT325FGK	Switch Base Assembly	70-8084	Fuse Base	70-8085	70-8063-8	—	70-7833-7
DT325FRK	Switch Base Assembly	70-8084	Fuse Base	70-8085	70-8063-8	—	70-7833-7
DT325NWK	Switch Base Assembly	70-8084	Fuse Base	70-8085	70-8063-8	—	—
DT325UDK	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT325UGK	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT326FGK	Switch Base Assembly	70-8084-3	Fuse Base	70-8085-3	70-8064-8	—	70-7833-7
DT326FRK	Switch Base Assembly	70-8084-3	Fuse Base	70-8085-3	70-8064-8	—	70-7833-7
DT326UGK	Switch Base Assembly ⑤	70-8083-5	Switch Base Assembly ⑥	70-8083-6	—	—	70-7833-7
DT327UGK	Switch Base Assembly ⑤	70-8083-9	Switch Base Assembly ⑥	70-8083-10	—	—	70-7833-7
DT327UGK-N	Switch Base Assembly ⑤	70-8083-9	Switch Base Assembly ⑥	70-8083-10	—	—	70-7833-7
DT361FGK	Switching Base	70-7758	Fuse Base	70-7758-19 ①	70-7758-35 ①	—	—
DT361UDK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT361UGK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT361UGKW	Switching Base	70-7758-5 ①	—	—	—	—	—
DT361UGK22	Switching Base	70-7758-5 ①	—	—	—	—	—
DT361URK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT361UWK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT361UWK33	Switching Base	70-7758-5 ①	—	—	—	—	—
DT362FGK	Switching Base	70-7758-2	Fuse Base	70-7758-20 ①	70-7758-35 ①	—	—
DT36UDK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT362UGK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT362URK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT362UWK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT363FGK	Switching Base	70-7758-3	Fuse Base	70-7758-21 ①	70-7758-35 ①	—	—
DT363FRK	Switching Base	70-7758-3	Fuse Base	70-7758-21 ①	70-7758-35 ①	—	—
DT363FWK	Switching Base	70-7758-3	Fuse Base	70-7758-21 ①	70-7758-35 ①	—	—

① Two used.
⑤ Upper.
⑥ Lower.

Catalog Number	Base or Assembly		Fuse Base and Lower Assembly		Line Shields	Operating Mechanism	Operating Handle
	Type	Part Number	Type	Part Number			
DT363NWK	Switching Base	70-7758-3	Fuse Base	70-7758-21 ①	70-7758-35 ①	—	—
DT363UDK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT363UGK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT363URK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT363UWK	Switching Base	70-7758-5 ①	—	—	—	—	—
DT364FGK	Switching Base	70-8058	Fuse Base	70-8060	70-7759-11	—	—
DT364FRK	Switching Base	70-8058	Fuse Base	70-8060	70-7759-11	—	—
DT364FWK	Switching Base	70-8058	Fuse Base	70-8060	70-7759-11	—	—
DT364NWK	Switching Base	70-8058	Fuse Base	70-8060	70-7759-11	—	—
DT364UDK	Switching Base	70-8059-3	—	—	—	—	—
DT364UGK	Switching Base	70-8059-3	—	—	—	—	—
DT364UGK-N	Switching Base	70-8059-3	—	—	—	—	—
DT364URK	Switching Base	70-8059-3	—	—	—	—	—
DT364UWK	Switching Base	70-8059-3	—	—	—	—	—
DT365FGK	Switch Base Assembly	70-8084-2	Fuse Base	70-8085-2	70-8063-8	—	70-7833-7
DT365FRK	Switch Base Assembly	70-8084-2	Fuse Base	70-8085-2	70-8063-8	—	70-7833-7
DT365NWK	Switch Base Assembly	70-8084-2	Fuse Base	70-8085-2	70-8063-8	—	—
DT365UDK	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT365UGK	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT365UGK-N	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT365UGK33	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT365URK	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	70-7833-7
DT365UWK	Switch Base Assembly ⑤	70-8083	Switch Base Assembly ⑥	70-8083-2	—	—	—
DT366UGK	Switch Base Assembly ⑤	70-8083-5	Switch Base Assembly ⑥	70-8083-6	—	—	70-7833-7
DT366UGK-N	Switch Base Assembly ⑤	70-8083-5	Switch Base Assembly ⑥	70-8083-6	—	—	70-7833-7
DT366URK	Switch Base Assembly ⑤	70-8083-5	Switch Base Assembly ⑥	70-8083-6	—	—	70-7833-7
DT366UWK	Switch Base Assembly ⑤	70-8083-5	Switch Base Assembly ⑥	70-8083-6	—	—	70-7833-7
DT367UGK	Switch Base Assembly ⑤	70-8083-9	Switch Base Assembly ⑥	70-8083-10	—	—	70-7833-7
DT367UGK-N	Switch Base Assembly ⑤	70-8083-9	Switch Base Assembly ⑥	70-8083-10	—	—	70-7833-7
DT367URK	Switch Base Assembly ⑤	70-8083-9	Switch Base Assembly ⑥	70-8083-10	—	—	70-7833-7
DT367URK-N	Switch Base Assembly ⑤	70-8083-9	Switch Base Assembly ⑥	70-8083-10	—	—	70-7833-7
DT461URK	Switching Base	70-7758-42	—	—	—	—	—
DT461UWK	Switching Base	70-7758-42	—	—	—	—	—
DT462URK	Switching Base	70-7758-42	—	—	—	—	—
DT463URK	Switching Base	70-7758-42	—	—	—	—	—
DT463URK2	Switching Base	70-7758-42	—	—	—	—	—
DT464UGK	Switching Base	70-8059-4	—	—	—	—	—
DT464URK	Switching Base	70-8059-4	—	—	—	—	—
DT465UGK	Switch Base Assembly ⑤	70-8272	Switch Base Assembly ⑥	70-8272-2	—	—	70-7833-7
DT465URK	Switch Base Assembly ⑤	70-8272	Switch Base Assembly ⑥	70-8272-2	—	—	70-7833-7
DT466UGK	Switch Base Assembly ⑤	70-8273	Switch Base Assembly ⑥	70-8273-2	—	—	70-7833-7
DT466URK	Switch Base Assembly ⑤	70-8273	Switch Base Assembly ⑥	70-8273-2	—	—	70-7833-7
DT467UGK	Switch Base Assembly ⑤	70-8274	Switch Base Assembly ⑥	70-8274-2	—	—	70-7833-7
DT467URK	Switch Base Assembly ⑤	70-8274	Switch Base Assembly ⑥	70-8274-2	—	—	70-7833-7
DT661URK	Switching Base	70-7758-5 ③	—	—	—	—	—
DT662URK	Switching Base	70-7758-5 ③	—	—	—	—	—
DT663URK	Switching Base	70-7758-5 ③	—	—	—	—	—

① Two used.
③ Four used.
⑤ Upper.
⑥ Lower.

Eaton Corporation
Cutler-Hammer business unit
1000 Cherrington Parkway
Moon Township, PA 15108-4312
USA
tel: 1-800-525-2000
www.cutler-hammer.eaton.com

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EATON | Cutler-Hammer

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8804D WASHINGTON NE
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Contact:

Teen Center - Los Alamos

15-18720-6

10/5/2015

RKL SALES CORPORATION
MANUFACTURERS REPRESENTATIVES

Project 15-18720-6
Teen Center - Los Alamos

Submitted By
RKL SALES CORP

Type	Manufacturer	Catalog Number
C	ABL-DOWNLIGHTING	LDN6 35/20 LO6AR 120
D-INTERIOR	ABL-FLUORESCENT	WL4 40L EZ1 LP830
D-EXTERIOR	NEWSTAR	VIC4N L3 352 RC UN WH 1 @ 24 FEET & 1 @ 20 FEET
E	Con - Tech	CTL802818LM3D-B
F	ABL-DOWNLIGHTING	LDN6 35/20 LO6AR 120
H	Con - Tech	CTR4321L-CLR-B
H	Con - Tech	RA4LRM-135K12D1W
I	ABL-FLUORESCENT	ZL1N L48 5000LM L/LENS MVOLT 35K 80CRI WH
J	ABL-FLUORESCENT	TZL1N L96 10000LM L/LENS MVOLT 35K 80CRI WH
K	ABL-FLUORESCENT	2GTL 4 48L EZ1 LP830
L	ABL-FLUORESCENT	2GTL 2 40L EZ1 LP830
M	ABL-HI-TEK	OLWX1 LED 13W 40K
M1-ALT	ABL-HI-TEK	PGX LED P1 40K T5M MVOLT PM PIR360SS DWHXD
N	ABL-HI-TEK	OLVTCM
P-ALT	ABL-HI-TEK	DSXB LED 16C 700 40K SYM MVOLT DDBXD
T4	Con - Tech	LT-24-B
T4	Con - Tech	LA-209-B
T8	Con - Tech	LT-28-B
TPF	Con - Tech	LA-208-B
T8	Con - Tech	LA-209-B
TFC	Con - Tech	LA-203-B
S1	ABL-HI-TEK	DSX0 LED 40C 700 40K TFTM MVOLT RPA DDBXD
S1	ABL-HI-TEK	RSS 20 4B DM19AS DDBXD
UC	ABL-FLUORESCENT	UCLD 12 WH M4
UC	ABL-FLUORESCENT	UC ERC24 U
X	EELP	XC LED 2 R W SD
EX	EELP	XC LED 2 R W RC
EX	EELP	RH1 LED 9.6V
EM	ABL-EMERGENCY	ELM2 LED
OS	ABL-CONTROLS	WSX PDT WH
OS1	ABL-CONTROLS	WSX PDT 2P WH
OS2	ABL-CONTROLS	WVR PDT 16 WH
OS3	ABL-CONTROLS	CMR PDT 10 2P P
OS4	ABL-CONTROLS	CMR PDT 10 2P
G	EUREKA	4266-SIJ LED 13.30 120V DV AC 60 4266B BLKA CDP CDP
A	COOPER	24SR-LD1-48-C-UNV-LP835-CD1-SKYTRIM
B	COOPER	22SR-LD1-29-C-UNV-LP835-CD1-SKYTRIM

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LDN6 35/20 LO6AR 120 Notes	Type C

LITHONIA LIGHTING®

FEATURES & SPECIFICATIONS

INTENDED USE — Typical applications include corridors, lobbies, conference rooms and private offices.

CONSTRUCTION — 16-gauge galvanized steel mounting/plaster frame with trim clips to mount open conical shape reflector.

Vertically adjustable mounting brackets that use 16-gauge flat bar hangers (included), 1/2" conduit or C channel T-bar fasteners. Provides 3-3/4" total adjustment.

Post installation adjustment possible from above or below the ceiling.

Galvanized steel junction box with bottom-hinged access covers and spring latches. Two combination 1/2"-3/4" and three 1/2" knockouts for straight-through conduit runs. Capacity: 8 (4 in, 4 out) No. 12 AWG conductors, rated for 90°C.

Secondary housing adjustment system for precise, final ceiling-to-flange alignment.

Maximum 1-1/2" ceiling thickness.

OPTICS — LED light source with diffused lens, recessed in a deep reflector with a 55-degree cutoff. Aluminum full reflectors are optically designed to maximize lumen output and to provide superior glare control.

Anodized trim colors for open and wallwash reflectors are available in clear, pewter, wheat or gold. White polyester powder coat also available.

Minimum CRI of 80.

ELECTRICAL — High-efficiency, 0-10V dimming driver mounted to the junction box, dims luminaire to 10% of its light output. 1% dimming option available in 1500 and 2000 lumen packages only.

Dimming fixture requires two (2) additional low-voltage wires to be pulled.

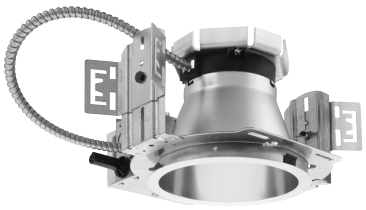
For compatible dimmers and dimming range, refer to Dimmer Compatibility Chart on page 4.

The system maintains 70% lumen output for more than 50,000 hours.

LISTINGS — CSA certified to US and Canadian safety standards. Open downlight (LO6): Wet location listed. Wallwash downlight (LW6): Rated for damp and dry locations only. ENERGY STAR® certified.

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

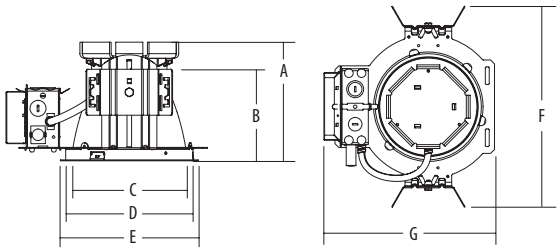
Note: Specifications subject to change without notice.



LDN6 35/15 LO6AR 120

LDN6

6" OPEN and WALLWASH LED
Non-IC
New Construction Downlight



Overall height varies by lumen package. Reference dimension chart for details.

Maximum Overall Dimensions – All dimensions are inches (centimeters) unless otherwise indicated.

Lumen package	(A) Height	(B) Frame height	(C) Aperture	(D) Ceiling opening	(E) Outside diameter	(F) Width	(G) Length
600 lm	6-7/16 (16.4)	5-3/4 (14.6)	6-15/16 (17.6)	7-1/8 (18.1)	7-1/2 (19.1)	12-15/16 (32.8)	10-15/16 (27.8)
1000 lm							
1500 lm							
2000 lm	7-13/16 (19.9)						

ORDERING INFORMATION

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

Example: LDN6 35/15 LO6AR 120

LDN6													
Series	**Color temperature**		**Lumens** [1,2]		**Reflector**		**Trim color**		**Finish**		**Voltage**	**Options**	
LDN6	27/	2700 K	06	600 lumens	LO6	Open downlight	AR	Clear	(blank)	Semi-specular	120	EL	Emergency battery pack with integral test switch [6]
	30/	3000 K	10	1000 lumens	LW6	Wallwash downlight [3]	PR	Pewter	LD	Matte-diffuse	277	ELR	Emergency battery pack with remote test switch [6]
	35/	3500 K	15	1500 lumens			WTR	Wheat	LS	Specular	347 [5]	SF	Single fuse
	40/	4000 K	20	2000 lumens			GR	Gold				TRW	White painted flange [7]
							WR	White [4]				TRBL	Black painted flange
												NEPP	Interface for Sensor Switch® nLight® network provided with integral power supply. Refer to TN-623-01. [8]
												RRL___	RELOC®-ready luminaire connectors enables a simple and consistent factory installed option across all ABL luminaire brands. Refer to RRL for complete nomenclature.
												EZ1	eldoLED dims to 1% [9]
												CP	Chicago plenum [5, 10]

Accessories: *Order as separate catalog number.*

EAC ISSM 375	Compact interruptible emergency AC power system
EAC ISSM 125	Compact interruptible emergency AC power system
NSP5 D ER KIT	Sensor Switch nLight secondary relay and dimming pack device used to switch and dim luminaires powered via an emergency circuit. Refer to NSP5 D ER KIT.
GRA68 JZ	Oversized trim ring with 8" outside diameter [11]
SCA6	Sloped ceiling adapter. Refer to TECH-SCA for more options.

Notes

1. Approximate lumen output.
2. Overall height varies by lumen package. Reference dimension chart on page 1.
3. Rated for damp and dry locations only.
4. Not available with finishes.
5. Not available with emergency options.
6. For dimensional changes, refer to chart on page 4. Not available with CP option.
7. Not available with WR (white trim color).
8. For emergency generator/inverter applications order non-nLight enabled fixture and NSP5 D ER KIT as an accessory. Refer to NSP5 D ER KIT.
9. Only available with 1500 and 2000 lumen packages.
10. 277 volt CP products require marked spacing. Install with minimal spacing between: (a) Center-to-center of adjacent luminaires: 2 ft.; (b) Top of luminaire to overhead building member: 3 in.; (c) Luminaire center to side of building member: 1 ft.
11. Refer to TECH-GOOF RINGS for more options.

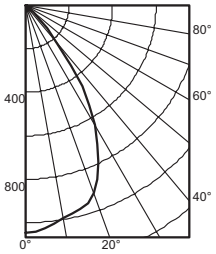
RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LDN6 35/20 LO6AR 120 Notes	Type C

LDN6

PHOTOMETRY

Distribution Curve | **Distribution Data** | **Output Data** | **Coefficient of Utilization** | **Illuminance Data at 30" Above Floor for a Single Luminaire**

LDN6 35/10 LO6AR 120, input watts: 18, delivered lumens: 1089, LM/W = 61, spacing criterion at 0 = 1.03, test no. LTL25148SL.



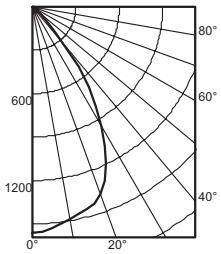
	Ave	Lumens
0	1048	
5	1028	97
15	968	272
25	797	361
35	452	273
45	87	76
55	4	6
65	2	2
75	1	0
85	0	0
90	0	

Zone	Lumens	% Lamp
0° - 30°	730.5	67.1
0° - 40°	1004.0	92.2
0° - 60°	1086.4	99.8
0° - 90°	1088.8	100.0
90° - 180°	0.0	0.0
0° - 180°	1088.8	*100.0
	*Efficiency	

pf	20%								
pc	80%			70%			50%		
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%
0	119	119	119	116	116	116	111	111	111
1	111	108	106	108	106	104	104	103	101
2	103	99	95	101	97	94	98	95	92
3	96	90	86	94	89	86	91	88	84
4	89	83	79	88	83	79	86	81	78
5	83	77	73	82	76	72	80	75	72
6	78	71	67	77	71	67	75	70	66
7	73	67	62	72	66	62	71	65	62
8	68	62	58	68	62	58	67	61	57
9	64	58	54	64	58	54	63	57	54
10	60	54	51	60	54	50	59	54	50

		50% beam - 53.7°		10% beam - 79.9°	
Mounting Height	Inital FC Center Beam	Diameter	FC	Diameter	FC
8.0	34.6	5.6	17.3	9.2	3.5
10.0	18.6	7.6	9.3	12.6	1.9
12.0	11.6	9.6	5.8	15.9	1.2
14.0	7.9	11.7	4.0	19.3	0.8
16.0	5.8	13.7	2.9	22.6	0.6

LDN6 35/15 LO6AR 120, input watts: 26, delivered lumens: 1633, LM/W = 63, spacing criterion at 0 = 1.03, test no. LTL25146.



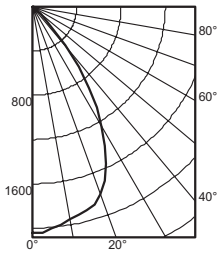
	Ave	Lumens
0	1564	
5	1539	145
15	1449	407
25	1196	542
35	678	411
45	131	115
55	7	10
65	2	2
75	2	1
85	0	0
90	0	

Zone	Lumens	% Lamp
0° - 30°	1094.3	67.0
0° - 40°	1505.0	92.1
0° - 60°	1629.6	99.8
0° - 90°	1633.3	100.0
90° - 180°	0.0	0.0
0° - 180°	1633.3	*100.0
	*Efficiency	

pf	20%								
pc	80%			70%			50%		
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%
0	119	119	119	116	116	116	111	111	111
1	111	108	106	108	106	104	104	103	101
2	103	99	95	101	97	94	98	95	92
3	95	90	86	94	89	86	91	88	84
4	89	83	79	88	83	78	86	81	78
5	83	77	73	82	76	72	80	75	72
6	78	71	67	77	71	67	75	70	66
7	73	66	62	72	66	62	71	65	62
8	68	62	58	68	62	58	66	61	57
9	64	58	54	64	58	54	63	57	54
10	60	54	50	60	54	50	59	54	50

		50% beam - 53.9°		10% beam - 79.9°	
Mounting Height	Inital FC Center Beam	Diameter	FC	Diameter	FC
8.0	51.7	5.6	25.8	9.2	5.2
10.0	27.8	7.6	13.9	12.6	2.8
12.0	17.3	9.7	8.7	15.9	1.7
14.0	11.8	11.7	5.9	19.3	1.2
16.0	8.6	13.7	4.3	22.6	0.9

LDN6 35/20 LO6AR 120, input watts: 35, delivered lumens: 2143, LM/W = 61, spacing criterion at 0 = 1.04, test no. LTL25144.



	Ave	Lumens
0	2046	
5	2014	190
15	1899	534
25	1569	711
35	892	540
45	171	150
55	9	12
65	3	3
75	2	2
85	1	1
90	0	

Zone	Lumens	% Lamp
0° - 30°	1435.1	67.0
0° - 40°	1975.3	92.2
0° - 60°	2137.5	99.8
0° - 90°	2142.7	100.0
90° - 180°	0.0	0.0
0° - 180°	2142.7	*100.0
	*Efficiency	

pf	20%								
pc	80%			70%			50%		
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%
0	119	119	119	116	116	116	111	111	111
1	111	108	106	108	106	104	104	103	101
2	103	99	95	101	97	94	98	95	92
3	95	90	86	94	89	86	91	88	84
4	89	83	79	88	83	78	86	81	78
5	83	77	73	82	76	72	80	75	72
6	78	71	67	77	71	67	75	70	66
7	73	66	62	72	66	62	71	65	62
8	68	62	58	68	62	58	66	61	57
9	64	58	54	64	58	54	63	57	54
10	60	54	50	60	54	50	59	54	50

		50% beam - 54.0°		10% beam - 80.0°	
Mounting Height	Inital FC Center Beam	Diameter	FC	Diameter	FC
8.0	67.6	5.6	33.8	9.2	6.8
10.0	36.4	7.6	18.2	12.6	3.6
12.0	22.7	9.7	11.3	15.9	2.3
14.0	15.5	11.7	7.7	19.3	1.5
16.0	11.2	13.8	5.6	22.6	1.1

Notes

- Tested in accordance with IESNA LM-79-08.
- Tested to current IES and NEMA standards under stabilized laboratory conditions.
- Actual performance may differ as a result of end-user environment and application.
- Actual wattage may differ by +/- 10% when operating between 120-277V +/- 10%.
- CRI: 80 typical.

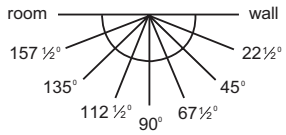
DOWNLIGHTING: One Lithonia Way Conyers, GA 30012 Phone: 800-315-4935 Fax: 770-860-3129 www.lithonia.com

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LDN6 35/20 LO6AR 120 Notes	Type C

LDN6

TECHNICAL INFORMATION

Footcandle values are initial and tables are based on minimum of six units. For fixture-to-wall distance other than those shown, use maximum of one-to-one spacing (distance between fixtures not more than distance to wall) for best results.



Candlepower Data **Footcandle values**

LDN6 35/10 LW6AR 120, input watts: 18, delivered lumens: 1090, LM/W = 61, test no. LTL25147.

	Plane angle							
Vertical Angle	Wall	22.5	45	67.5	90	112.5	135	157.5
0	888	888	888	888	888	888	888	888
5	813	811	824	854	875	902	922	926
15	652	675	728	803	862	905	930	935
25	488	524	601	678	723	748	749	741
35	319	355	387	414	409	407	409	403
45	241	229	190	139	87	76	76	74
55	181	172	114	40	9	5	7	8
65	139	117	57	11	1	2	3	4
75	74	57	19	3	2	2	3	2
85	19	13	0	0	0	0	0	0
90	5	6	0	0	0	0	0	0

	Wallwash Illuminance Study (fc) Illuminance on wall from 6 luminaires								
	Luminaire mounted 3 ft. from wall 3 ft. between luminaires			Luminaire mounted 3 ft. from wall 4 ft. between luminaires			Luminaire mounted 3 ft. from wall 5 ft. between luminaires		
ft. from ceiling	3	3.5	4	3	3.5	4	3	3.5	4
1	10	8	10	9	5	9	9	2	9
2	15	15	15	13	10	13	12	6	12
3	15	14	15	12	10	12	10	7	10
4	13	14	13	10	11	10	8	8	8
5	12	13	12	9	10	9	7	8	7
6	12	12	12	8	9	8	7	7	7
7	10	10	10	8	8	8	6	6	6
8	9	9	9	7	7	7	5	5	5
9	8	8	8	6	6	6	5	5	5
10	6	6	6	5	5	5	4	4	4

LDN6 35/15 LW6AR 120, input watts: 26, delivered lumens: 1639, LM/W = 63, test no. LTL25145.

	Plane angle							
Vertical Angle	Wall	22.5	45	67.5	90	112.5	135	157.5
0	1312	1312	1312	1312	1312	1312	1312	1312
5	1198	1187	1202	1244	1285	1326	1371	1409
15	956	976	1052	1153	1246	1333	1403	1438
25	697	720	837	953	1028	1082	1109	1126
35	442	482	548	586	583	590	612	623
45	348	336	303	222	132	105	112	115
55	283	269	196	80	19	8	10	11
65	230	191	102	22	3	2	3	6
75	121	88	30	1	1	1	1	4
85	30	18	1	1	0	0	0	0
90	5	6	0	2	1	1	1	0

	Wallwash Illuminance Study (fc) Illuminance on wall from 6 luminaires								
	Luminaire mounted 3 ft. from wall 3 ft. between luminaires			Luminaire mounted 3 ft. from wall 4 ft. between luminaires			Luminaire mounted 3 ft. from wall 5 ft. between luminaires		
ft. from ceiling	3	3.5	4	3	3.5	4	3	3.5	4
1	17	13	17	16	7	16	15	4	15
2	24	24	24	20	16	20	19	10	19
3	22	22	22	17	16	17	15	11	15
4	20	21	20	14	16	14	12	12	12
5	18	19	18	13	15	13	10	12	10
6	17	17	17	12	13	12	9	11	9
7	15	15	15	11	11	11	9	9	9
8	13	13	13	10	10	10	8	8	8
9	11	11	11	8	8	8	7	7	7
10	9	9	9	7	7	7	6	6	6

LDN6 35/20 LW6AR 120, input watts: 35, delivered lumens: 2137, LM/W = 61, test no. LTL25143.

	Plane angle							
Vertical Angle	Wall	22.5	45	67.5	90	112.5	135	157.5
0	1712	1712	1712	1712	1712	1712	1712	1712
5	1566	1544	1598	1633	1710	1739	1783	1806
15	1254	1276	1394	1533	1658	1755	1811	1834
25	913	956	1140	1307	1420	1489	1512	1521
35	592	654	766	839	851	852	855	861
45	446	425	402	325	215	170	167	167
55	335	317	248	115	32	13	12	14
65	251	213	129	35	5	4	5	5
75	121	92	39	4	1	1	1	3
85	24	14	2	0	1	0	0	0
90	1	1	1	0	1	1	1	0

	Wallwash Illuminance Study (fc) Illuminance on wall from 6 luminaires								
	Luminaire mounted 3 ft. from wall 3 ft. between luminaires			Luminaire mounted 3 ft. from wall 4 ft. between luminaires			Luminaire mounted 3 ft. from wall 5 ft. between luminaires		
ft. from ceiling	3	3.5	4	3	3.5	4	3	3.5	4
1	17	13	17	16	7	16	16	4	16
2	28	27	28	23	18	23	22	11	22
3	28	27	28	22	19	22	19	14	19
4	26	27	26	19	20	19	16	15	16
5	24	25	24	17	20	17	13	16	13
6	22	22	22	16	17	16	12	15	12
7	20	20	20	15	15	15	11	13	11
8	17	17	17	13	13	13	10	11	10
9	15	15	15	11	11	11	9	9	9
10	13	13	12	10	10	10	8	8	8

Notes

- Tested in accordance with IESNA LM-79-08.
- Tested to current IES and NEMA standards under stabilized laboratory conditions.
- Actual performance may differ as a result of end-user environment and application.
- Actual wattage may differ by +/- 10% when operating between 120-277V +/- 10%.
- CRI: 80 typical.

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LDN6 35/20 LO6AR 120 Notes	Type C

LDN6

ADDITIONAL DATA

DIMMER COMPATIBILITY CHART	
Manufacturer	**Model/Series**
600 & 1000 Lumen products	
Leviton	IllumaTech - IP710-DLX
Lutron	Nova T - NTFTV-WH *For on/off control, this switch requires a power pack. Consult Lutron for more information.*
Sensor Switch	nPODM
Synergy	ISD BC 120/277
1500 & 2000 Lumen products	
Busch-Jaeger	2112U-101
Jung	240-10
Leviton Lighting Controls	IllumaTech - IP710-DLX
Lightolier Controls	ZP600FAM120
Lutron Electronics	Nova T - NTFTV
	Diva - DVTV
	Diva - NFTV
	GraphicEye - GRX-TVI w GRX3503
	Energy Savr Node - QSN-4T16-S
	TVM2 Module
Merten	5729
Pass & Seymour	CD4FB-W
Sensor Switch	nPODM
Synergy	ISD BC 120/277
The Watt Stopper	DCLV1

EL/ELR AVAILABILITY/COMPATIBILITY - INITIAL LUMENS			
Lumen package	**Watts**	**Initial lumens EL/ELR**	**Emergency LED driver**
600	12	500	PS1030
1000	18	575	PS1030
1500	26	640	Bodine BSL17C-C2
2000	35	690	Bodine BSL17C-C2

EL/ELR DIMENSIONAL CHANGES	
Add to overall housing length for EL/ELR option	**Overall housing width with EL/ELR option**
4-1/2	16-1/2

KEY SPECIFICATION SUMMARY				
Product Description	**Watts (W)**	**Delivered lumens (lm)**	**Efficacy (lm/W)**	**Spacing criteria (s/mh)**
LDN6 35/06 LO6AR	12	670	56	1.03
LDN6 35/10 LO6AR	18	1090	61	1.03
LDN6 35/15 LO6AR	26	1640	63	1.03
LDN6 35/20 LO6AR	35	2140	61	1.04

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number WL4 40L EZ1 LP830 Notes	Type D-INTERIOR

LITHONIA LIGHTING®

FEATURES & SPECIFICATIONS

INTENDED USE — For wall or ceiling mounting, vertical or horizontal. The WL combines digital LED lighting and controls technologies with high-performance optical design to offer the most advanced wall-mount luminaire for general ambient lighting applications. High-efficacy light engine delivers long life and excellent color, ensuring a superior quality lighting installation that is highly efficient and sustainable.

CONSTRUCTION — Housing is roll formed from code-gauge steel.

Refractor is retained in die cast ends providing secure installation and easy maintenance.

Decorative die-cast end caps provide added durability.

Finish: All metal parts are post-painted in white polyester powder coat for smooth, finished edges and uniform light distribution.

OPTICS — Impact modified linear faceted refractor. Optically engineered for superior light distribution and maximum efficacy.

Crescent-shape linear faceted refractor system obscures and integrates individual LED images and uniformly washes fixture surface with light.

ELECTRICAL — Long-life LEDs, coupled with high-efficiency drivers, provide superior quantity and quality of illumination for extended service life. 90% LED lumen maintenance at 60,000 hours (L90/60,000). The LEDs have a CRI of 82.

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

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

CONTROLS — Optional nLight™ embedded controls continuously monitor system performance and allow for constant lumen management function.

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 energy waste created by the traditional practice of over-lighting.

Integral occupancy control: Integrated occupancy sensors allow luminaire to power off or dim to 10% or 50% output when space is unoccupied. Fixture designed to fail on.

The nES 7 is ideal for small rooms without obstructions or areas with primarily walking motion (e.g. corridors, stairwells). Additionally, the NES7ADCX includes an integrated photocell, which enables daylight harvesting.

For rooms like restrooms and private offices or any space with obstructions, the nES PDT 7 dual technology sensor is recommended. The nES PDT 7 utilizes both PIR (passive infrared) and Microphonics™ technologies to detect occupancy.

Wireless networking: XPoint™ Wireless technology creates a mesh network to ensure communication between fixtures, sensors and wall stations facility-wide. This option provides superior lighting management capabilities including granular control, configuration and custom grouping. This option enables sensors that detect motion to wirelessly communicate to neighboring fixtures — whether on different floors in a stairwell, to a corridor or hallway — illuminating the desired path.

LISTINGS — CSA certified to meet U.S. and Canadian standards. Suitable for damp location.

Patents pending. 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.

W SERIES

Wall bracket & Surface Mount LED

WL4

4'

LED

DLC QPL LISTED · EDISON AWARDS 2013 NOMINEE · nLIGHT ENABLED · NGL '13 Best in Class · eldoLED

ORDERING INFORMATION

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

Example: WL4 30L EZ1 LP840

WL4					
Series	**Lumens**[1]	**Voltage**	**Driver**	**Color temperature**	**Lumen management**
WL4 4' wall-mount LED	20L 2000 lumens 30L 3000 lumens 40L 4000 lumens	(blank) MVOLT (120 - 277V) 347 347V	EZ1 eldoLED dims to 1%, 0-10V EZB eldoLED dims to dark, 0-10V SLD Step-level dimming[2]	LP830 3000 K LP835 3500 K LP840 4000 K LP850 5000 K	(blank) No nLight N80 nLight with 80% lumen management N100 nLight without lumen management N80EMG nLight with 80% lumen management for use with generator supply emergency power[3] N100EMG nLight without lumen management for use with generator supply emergency power[3]

Occupancy control[4]	**Standby mode**[10]	**Options**	**Finish**[12]
NES7 Sensor Switch® nES 7 PIR integral occupancy sensor[5]	(blank) Fixture turns off when unoccupied	EL7L LED Emergency battery pack (nominal 700 lumens); see Life Safety section [11]	(blank) White
NESPDT7 Sensor Switch® nES PDT 7 dual technology integral occupancy control[5]	DIM10 Fixture dims to approximately 10% light output when unoccupied	EL14L LED Emergency battery pack (nominal 1400 lumens); see Life Safety section[11]	
NES7ADCX Sensor Switch® nES 7 ADCX PIR integral occupancy sensor with automatic dimmng control photocell[5]	DIM50 Fixture dims to approximately 50% light output when unoccupied[8]	SC Surface conduit end cap provisions	
XADS7 XPoint™ Wireless controller and micro 360° PIR occupancy and photocell sensor[6,7]			
XADNS7 XPoint™ Wireless controller and micro 360° PIR occupancy and photocell sensor (egress lighting)[6,7]			
MSD7 Sensor Switch® MSD 7 PIR integral occupancy sensor[8,9]			

Notes

1 Approximate lumen output.
2 Not available with XPoint™ Wireless or nLight options.
3 nLight EMG option requires a connection to existing nLight network. Power is provided from a separate N80 or N100 enabled fixture.
4 See integral occupancy control section in header.
5 Requires N80 or N100.
6 Select (blank) under "Lumen management" for this option.
7 Gateway not included. Requires on-site commissioning. Visit www.lightingcontrols.com/XPointWireless for more information.
8 Not available with EZB or SLD.
9 Requires DIM10 or DIM50.
10 Requires occupancy control. For XPoint™ Wireless select (blank). Standby mode is programmed at time of commissioning.
11 Not available with 347V.
12 For additional paint finishes refer to Architectural Colors.

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number WL4 40L EZ1 LP830 Notes	Type D-INTERIOR

WL4 Wall Bracket & Surface Mount LED

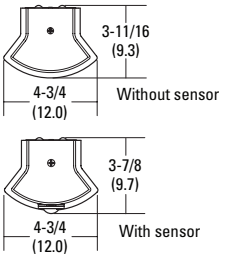
Performance Data			
Lumen package	**Input watts**	**Lumens**	**LPW**
20L LP830	18.7	2050	110
20L LP835	18.7	2152	115
20L LP840	18.7	2255	121
20L LP850	18.7	2410	129
30L LP830	28.2	2952	105
30L LP835	28.2	3095	110
30L LP840	28.2	3251	115
30L LP850	28.2	3239	115
40L LP830	39.5	3927	99
40L LP835	39.5	4124	104
40L LP840	39.5	4325	110
40L LP850	39.5	4571	116

DIMENSIONS

All dimensions are inches (centimeters) unless otherwise noted.

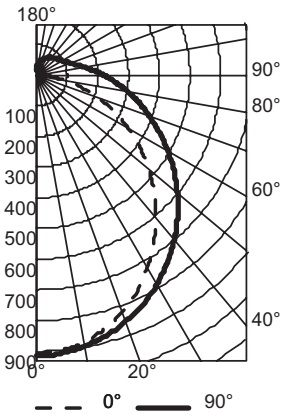
Specifications

Length: with sensor - 50-15/16 (129.40)
without sensor - 46-13/16 (118.90)
Height: with sensor - 3-11/16 (9.3)
without sensor - 3-7/8 (9.7)
Width: 4-3/4 (12.1)



PHOTOMETRICS

WL4 30L EZ1 LP840, 3250.8 delivered lumens, test no. LTL25482P5, tested in accordance to IESNA LM-79



CP Summary

	0°	90
0°	912	912
5°	901	910
15°	856	879
25°	777	823
35°	666	745
45°	542	650
55°	412	549
65°	279	444
75°	151	346
85°	44	257
90	5	219

Coefficients of Utilization

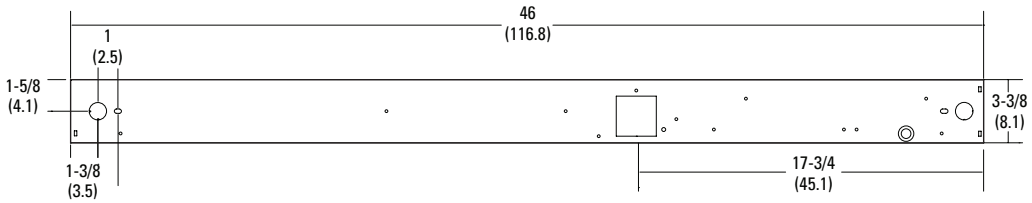
pf	20%								
pc	80%			70%			50%		
pw	70%	50%	30%	50%	30%	10%	50%	30%	10%
RCR 0	116	116	116	112	112	112	104	104	104
1	104	99	94	95	91	87	88	85	81
2	94	85	78	82	75	70	76	71	66
3	85	74	66	72	64	57	67	60	55
4	78	66	56	63	55	48	59	52	46
5	72	58	49	57	48	42	53	46	40
6	66	52	43	51	42	36	48	40	35
7	61	47	39	46	38	32	43	36	31
8	57	43	35	42	34	28	40	32	27
9	53	40	31	39	31	25	36	29	25
10	50	37	29	36	28	23	34	27	22

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Fixture
0° - 30°	701	21.6	21.6
0° - 40°	1143	35.2	35.2
0° - 60°	2032	62.5	62.5
0° - 90°	2829	87.0	87.0
90° - 120°	256	7.9	7.9
90° - 130°	310	9.5	9.5
90° - 150°	386	11.9	11.9
90° - 180°	421	13.0	13.0
0° - 180°	3251	100.0	100.0

MOUNTING DATA

For unit installation; surface ceiling or wall mounting.



RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number VIC4N L3 352 RC UN WH 1 @ 24 FEET & 1 @ 20 FEET Notes	Type D-EXTERIOR

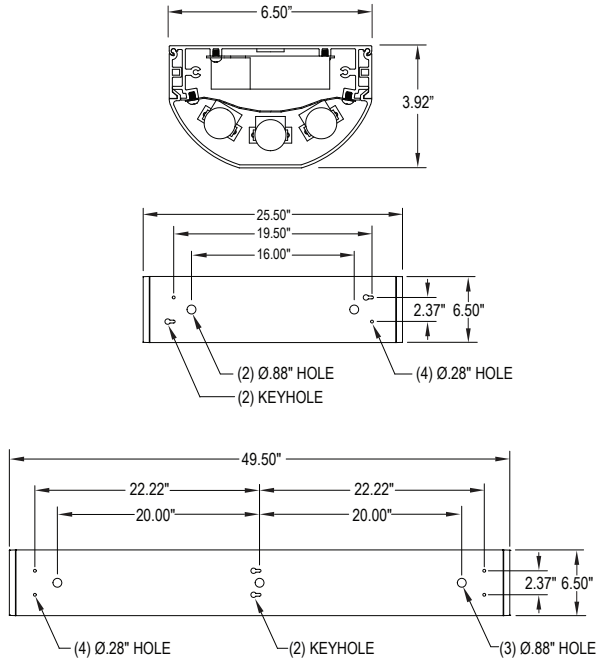
VICTORY 2-4 N

VR ARCHITECTURAL SERIES

LINEAR LUMINAIRE

FLUORESCENT/LED

DIMENSIONAL DATA



FEATURES

The " Victory " provides a real solution to the strength vs, style issue with uncompromising durability and an aesthetically pleasing streamline look.

- Architectural linear luminaire that melds aesthetics, function and vandal resistance
- Extruded aluminum narrow or wide housing with die cast end caps
- T-8/T-5/T5 HO or LED
- Many options available
- Wet location listed (for covered ceiling only)

APPLICATION

- Public Areas
- Corridors
- Walls
- Stairways
- Schools
- Underpasses
- Public Washrooms
- Dormitories
- Factories
- Warehouses

SPECIFICATION FEATURES

HOUSING:
Marine grade extruded aluminum frame with cast aluminum endcaps. Includes knockouts for surface conduit and tandem mounting.

DOOR:
Available with either a clear or white polycarbonate ribbed lens.

LENS RETENTION:
Unique swing rail design for ease of lens removal for lamp replacement and maintenance

ELECTRONICS:
Fluorescent: Electonic Ballast <10% THD standard.

LED:
Available in three standard color temperatures 3500˚K,4000˚K & 5000˚K. Other color temperatures available, consult factory.

LED NIGHT LIGHT:
Integrated switch allows light selection at 100%,70%,40% and 10% levels.

REFLECTOR:
Faceted 22 gauge specular aluminum for maximum rigidity and controlled light distribution.

GASKET:
EPDM gasketing to prevent water and dust infiltration.

FASTENERS:
Hardened Steel Tamper Proof Head screws (3) ea. side - (6) total.

FINISH:
5 stage wash and pre-treat, with a white polyester powdercoat finish.

LABEL:
Intertek WET

PATENT PENDING

ORDERING INFORMATION

Product Family	# of Lamps	Lamp Type	# Ballast/Driv.	Lens	Voltage	Finish	Options
VIC_							

VIC2N
6-1/2" x 25-1/2" x 3-15/16"
VIC4N
6-1/2" x 49-1/2" x 3-15/16"

Fluorescent:
1 = 1 Lamp
2 = 2 Lamp
3 = 3 Lamp ●
LED 2N:
L1= LED 1Row (12.5 Watts)
L2 = LED 2 Row (25 Watts)
L3 = LED 2 Row● (37.5 Watts)
LED 4N:
L1 = LED 1 Row (25 Watts)
L2 = LED 2 Row (50 Watts)
L3 = LED 3 Row● (75 Watts)

VIC2N
14 = Linear 14W T5
17 = Linear 17W T8
24 = Linear 24W T5 (H.O.)
VIC4N
28 = Linear 28W T5
32 = Linear 32W T8
54 = Linear 54W T5 (H.O.)
LED:
35 = White 3500˚ K
40 = White 4000˚ K
50 = White 5000˚ K

Other color temperatures available, please consult factory

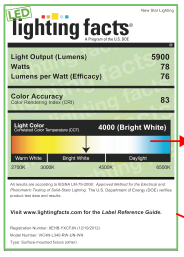
Fluorescent:
1 = Ballast
2 = Ballast
LED:
1 = Driver
2 = Driver

RW = Ribbed White Polycarbonate
RC = Ribbed Clear Polycarbonate

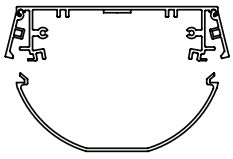
12 = 120V
27 = 277V
34 = 347V ■
N/A W/LED
UN = Universal (120V-277)

WH = White
CC = Custom Color (specify RAL number)

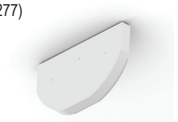
PC = Photocell (Flat end cap only)
TM = Tandem Mount Option ◘
E1 = Emergency Battery (standard) *
E2 = Emergency Battery (high) *
EML = Emergency Battery LED
DM = Dimming LED Driver (0-10V)
PR = Program Rapid Start
LN = LED Night Light. Consult factory for available color/temperatures.
FZ = Fuse Holder *
OC = Occupancy Sensor not available w/ LED L3-T5-T8 3 lamp / row
DE = Decorative End Caps ◘
TH = Torx Head Screws w/ctr. pin S.S



1 @ 24 FEET, 1 @ 20 FEET



The **VICTORY** has a unique side rail design for ease of lens removal allowing for efficient maintenance and lamp replacement.



Standard (flat) End Cap

Decorative End Cap

◘ Advise quanity for end row mtg.
* Cannot use with universal voltage option
● Occupancy sensor not available with lamping
■ Consult factory for lamp-ballast opt. (Fluorescent Lamp only)

Notes:
Specifications and Dimensions are subject to change without notice. For additional options and dimensional details please consult your New Star Lighting Representative. For specific electronic ballast, specify brand and catalog number. The New Star Promise will repair or replace any VR architectural fixture when installed according to New Star's instructions for the life of the original installation if the fixture should fail due to physical abuse.

New Star - 4000 S. Bell St. - Chicago, IL 60609 - TEL (773) 847-1400 - FAX (773) 254-6811 - V013

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number CTL802818LM3D-B Notes	Type E

CTL802818L

Optica Series

18W Dimmable LED Track Fixture

Specifications/Features

Fixture

Low wattage, eco-friendly, LED track fixture provides high lumen output.
Select from spot, medium and flood beam distributions. Dimming option allows illumination down to 10%.
Die cast aluminum housing with vertical driver.
Lockable, precision aiming adjustment. 350°+ Horizontal rotation, 180° vertical rotation.
Integral ON/OFF switch and track polarity indicator are standard.
Will accept (1) LF18 lens.

Lamp

(7) LEDs, 700mA constant current input; 18W total.
Color Temperature: 2700K (2725 ± 145)
3000K (3045 ± 175)
3500K (3465 ± 245)

Electrical

Driver: 120V primary and 700mA secondary, 60Hz.
Input current: 0.20A max

Warranty

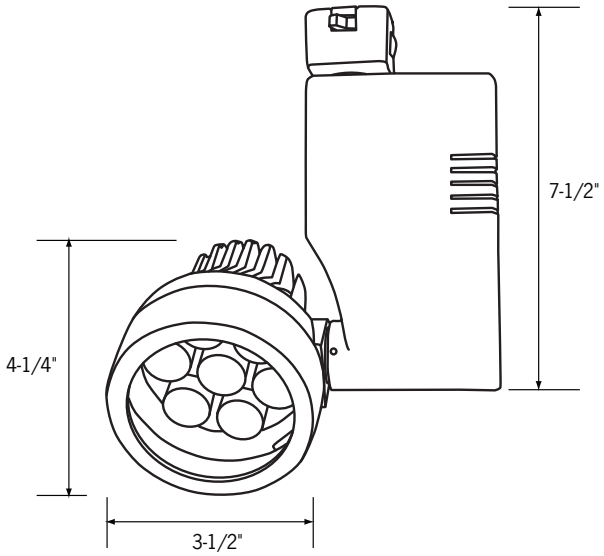
This complete fixture is covered by ConTech's full five (5) year replacement guarantee after date of purchase.

Listing

cCSAus Certified to UL standards. Suitable for dry locations.
Energy Star qualified for 3000K and 3500K color temperatures.

Fixture Compatibility

Standard ConTech track fixtures are UL Listed as-is for use with ConTech's many track systems, as well as with Juno®[1] Lighting track. By changing the prefix in the part number, ConTech can install inserts which make our fixtures compatible with other manufacturers. Replace "CTL" with "HTL" for Halo®[2] track, "LTL" for Lightolier®[3] track, and "PTL" for Capri®[4] track. For more information, please consult our factory.



Ordering Information

Example Order: CTL802818LS3D – P LF18-UV

Track System	Fixture	Beam Distribution	Color Temperature	Dimming Option		Finish	Accessories
					-		

CTL - Con-Tech
HTL - Halo
LTL - Lightolier
PTL - Capri

802818L

S - Spot
M - Medium
F - Flood

27 - 2700K
3 - 3000K
35 - 3500K

No Dimming, Leave Blank
D - Dimming

B - Black
P - White
S - Silver

LA-35- Black Honeycomb Louver
LA-44-(B,P,S) - Egg Crate Louver
LF18 - A, B, CL, G, LB, R, RO, Y, 73, LS, SL, UV
3-1/16" Dia. Tempered Glass Lenses

Color/Pattern Legend
-A (Amber), **-B** (Blue), **-CL** (Clear), **-G** (Green), **-LB** (Light Blue), **-R** (Red), **-RO** (Rose), **-Y** (Yellow), **-73** (Spread Lens), **-LS** (Linear Spread Lens), **-SL** (Soft Light), **-UV** (Optivex UV Filter)

1. Juno is a registered trademark of Juno Lighting
2. Halo is a registered trademark of Cooper Lighting
3. Lightolier is a registered trademark of Philips Lighting
4. Capri is a registered trademark of Philips Lighting

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos	Catalog Number CTL802818LM3D-B	Type
	Submitted By RKL SALES CORP	Notes	E

CTL802818L

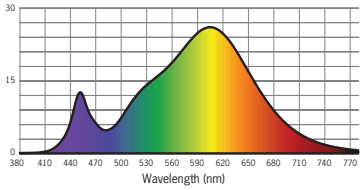
Optica Series
18W Dimmable LED Track Fixture

Photometrics

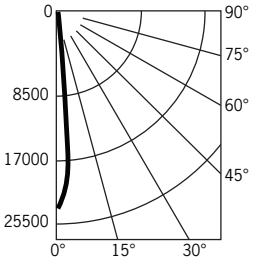
CTL802818LS3

Designed for 50,000 Hour Lamp Life; LM-63Test No. 81023*

Light Output (Fixture Lumens): 1061
Total Watts@120V: 17
Lumens Per Watt: 75
Color Rendering Index (CRI)[1]: 83
Color Temperature (CCT)[2]: 3003K Warm White
Spectral Power Distribution Chart[3]
LM-79 Test No. 81024



Candela Curve



Candlepower Summary

FROM 0	CANDELA	LUMENS
0	25413	
5	15247	979
15	695	216
25	59	31
35	25	17
45	12	10
55	6	6
65	2	2
75	1	1
85	0	0
95	0	

Intensity Distribution

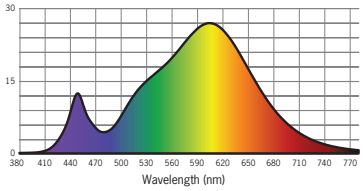
DISTANCE (FT.)	FOOTCANDLES (FC)	BEAM DIAMETER (FT.)
6'	705.9	1.2
8'	397.1	1.6
10'	254.1	2.0
12'	176.5	2.4
14'	129.7	2.8
16'	99.3	3.2

Beam Distribution: 11°
Spacing Criterion: 0.19

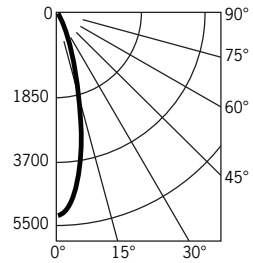
CTL802818LM3

Designed for 50,000 Hour Lamp Life; LM-63Test No. 80828*

Light Output (Fixture Lumens): 1319
Total Watts@120V: 17
Lumens Per Watt: 78
Color Rendering Index (CRI)[1]: 82
Color Temperature (CCT)[2]: 3022K Warm White
Spectral Power Distribution Chart[3]
LM-79 Test No. 80840



Candela Curve



Candlepower Summary

FROM 0	CANDELA	LUMENS
0	5452	
5	4862	420
15	2099	574
25	454	227
35	82	58
45	29	23
55	13	12
65	3	3
75	1	1
85	1	1
95	0	

Intensity Distribution

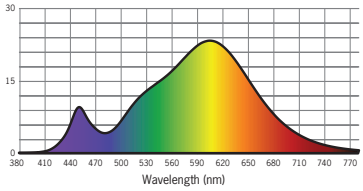
DISTANCE (FT.)	FOOTCANDLES (FC)	BEAM DIAMETER (FT.)
6'	151.4	2.5
8'	85.2	3.4
10'	54.5	4.2
12'	37.9	5.1
14'	27.8	5.9
16'	21.3	6.8

Beam Distribution: 25°
Spacing Criterion: 0.42

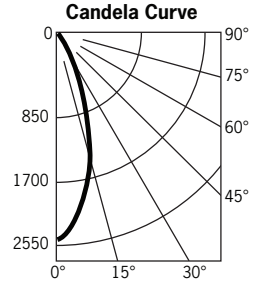
CTL802818LF3

Designed for 50,000 Hour Lamp Life; LM-63Test No. 80829*

Light Output (Fixture Lumens): 1120
Total Watts@120V: 17.5
Lumens Per Watt: 64
Color Rendering Index (CRI)[1]: 82
Color Temperature (CCT)[2]: 2997K Warm White
Spectral Power Distribution Chart[3]
LM-79 Test No. 80841



Candela Curve



Candlepower Summary

FROM 0	CANDELA	LUMENS
0	2476	
5	2328	211
15	1492	409
25	623	291
35	194	128
45	62	50
55	22	20
65	6	6
75	2	2
85	2	2
95	0	

Intensity Distribution

DISTANCE (FT.)	FOOTCANDLES (FC)	BEAM DIAMETER (FT.)
6'	68.8	3.4
8'	38.7	4.6
10'	24.8	5.7
12'	17.2	6.9
14'	12.6	8.0
16'	9.7	9.2

Beam Distribution: 35°
Spacing Criterion: 0.57

1. Accuracy of rendering colors
2. Color appearance of light source
3. Colors present within the light source

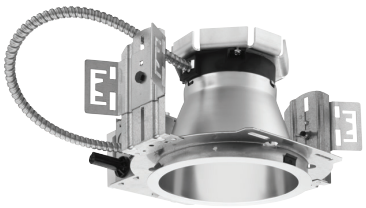
**Dependent on surrounding temperatures*

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LDN6 35/20 LO6AR 120 Notes	Type F

LITHONIA LIGHTING®

LDN6

6" OPEN and WALLWASH LED
Non-IC
New Construction Downlight



LDN6 35/15 LO6AR 120

WET LOCATION™ · DIMMABLE LED · ENERGY STAR

FEATURES & SPECIFICATIONS

INTENDED USE — Typical applications include corridors, lobbies, conference rooms and private offices.

CONSTRUCTION — 16-gauge galvanized steel mounting/plaster frame with trim clips to mount open conical shape reflector.

Vertically adjustable mounting brackets that use 16-gauge flat bar hangers (included), 1/2" conduit or C channel T-bar fasteners. Provides 3-3/4" total adjustment.

Post installation adjustment possible from above or below the ceiling.

Galvanized steel junction box with bottom-hinged access covers and spring latches. Two combination 1/2"-3/4" and three 1/2" knockouts for straight-through conduit runs. Capacity: 8 (4 in, 4 out) No. 12 AWG conductors, rated for 90°C.

Secondary housing adjustment system for precise, final ceiling-to-flange alignment.

Maximum 1-1/2" ceiling thickness.

OPTICS — LED light source with diffused lens, recessed in a deep reflector with a 55-degree cutoff. Aluminum full reflectors are optically designed to maximize lumen output and to provide superior glare control.

Anodized trim colors for open and wallwash reflectors are available in clear, pewter, wheat or gold. White polyester powder coat also available.

Minimum CRI of 80.

ELECTRICAL — High-efficiency, 0-10V dimming driver mounted to the junction box, dims luminaire to 10% of its light output. 1% dimming option available in 1500 and 2000 lumen packages only.

Dimming fixture requires two (2) additional low-voltage wires to be pulled.

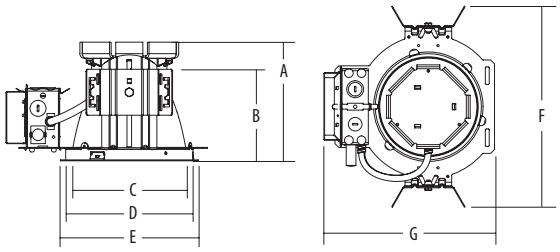
For compatible dimmers and dimming range, refer to Dimmer Compatibility Chart on page 4.

The system maintains 70% lumen output for more than 50,000 hours.

LISTINGS — CSA certified to US and Canadian safety standards. Open downlight (LO6): Wet location listed. Wallwash downlight (LW6): Rated for damp and dry locations only. ENERGY STAR® certified.

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

Note: Specifications subject to change without notice.



Overall height varies by lumen package. Reference dimension chart for details.

Maximum Overall Dimensions – All dimensions are inches (centimeters) unless otherwise indicated.

Lumen package	(A) Height	(B) Frame height	(C) Aperture	(D) Ceiling opening	(E) Outside diameter	(F) Width	(G) Length
600 lm	6-7/16 (16.4)	5-3/4 (14.6)	6-15/16 (17.6)	7-1/8 (18.1)	7-1/2 (19.1)	12-15/16 (32.8)	10-15/16 (27.8)
1000 lm							
1500 lm							
2000 lm	7-13/16 (19.9)						

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative. **Example:** LDN6 35/15 LO6AR 120

LDN6													
Series	**Color temperature**		**Lumens** [1,2]		**Reflector**		**Trim color**		**Finish**		**Voltage**	**Options**	
LDN6	27/	2700 K	06	600 lumens	LO6	Open downlight	AR	Clear	(blank)	Semi-specular	120	EL	Emergency battery pack with integral test switch [6]
	30/	3000 K	10	1000 lumens	LW6	Wallwash downlight [3]	PR	Pewter	LD	Matte-diffuse	277	ELR	Emergency battery pack with remote test switch [6]
	35/	3500 K	15	1500 lumens			WTR	Wheat	LS	Specular	347 [5]	SF	Single fuse
	40/	4000 K	20	2000 lumens			GR	Gold				TRW	White painted flange [7]
							WR	White [4]				TRBL	Black painted flange
												NEPP	Interface for Sensor Switch® nLight® network provided with integral power supply. Refer to TN-623-01. [8]
												RRL___	RELOC®-ready luminaire connectors enables a simple and consistent factory installed option across all ABL luminaire brands. Refer to RRL for complete nomenclature.
												EZ1	eldoLED dims to 1% [9]
												CP	Chicago plenum [5, 10]

Accessories: *Order as separate catalog number.*

EAC ISSM 375	Compact interruptible emergency AC power system
EAC ISSM 125	Compact interruptible emergency AC power system
NSP5 D ER KIT	Sensor Switch nLight secondary relay and dimming pack device used to switch and dim luminaires powered via an emergency circuit. Refer to NSP5 D ER KIT.
GRA68 JZ	Oversized trim ring with 8" outside diameter [11]
SCA6	Sloped ceiling adapter. Refer to TECH-SCA for more options.

Notes

1. Approximate lumen output.
2. Overall height varies by lumen package. Reference dimension chart on page 1.
3. Rated for damp and dry locations only.
4. Not available with finishes.
5. Not available with emergency options.
6. For dimensional changes, refer to chart on page 4. Not available with CP option.
7. Not available with WR (white trim color).
8. For emergency generator/inverter applications order non-nLight enabled fixture and NSP5 D ER KIT as an accessory. Refer to NSP5 D ER KIT.
9. Only available with 1500 and 2000 lumen packages.
10. 277 volt CP products require marked spacing. Install with minimal spacing between: (a) Center-to-center of adjacent luminaires: 2 ft.; (b) Top of luminaire to overhead building member: 3 in.; (c) Luminaire center to side of building member: 1 ft.
11. Refer to TECH-GOOF RINGS for more options.

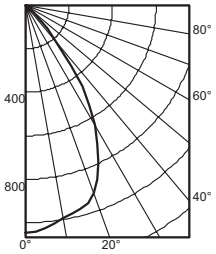
RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LDN6 35/20 LO6AR 120 Notes	Type F

LDN6

PHOTOMETRY

Distribution Curve | **Distribution Data** | **Output Data** | **Coefficient of Utilization** | **Illuminance Data at 30" Above Floor for a Single Luminaire**

LDN6 35/10 LO6AR 120, input watts: 18, delivered lumens: 1089, LM/W = 61, spacing criterion at 0 = 1.03, test no. LTL25148SL.



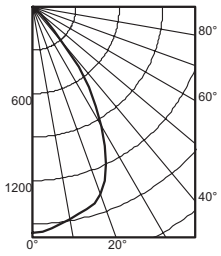
	Ave	Lumens
0	1048	
5	1028	97
15	968	272
25	797	361
35	452	273
45	87	76
55	4	6
65	2	2
75	1	0
85	0	0
90	0	

Zone	Lumens	% Lamp
0° - 30°	730.5	67.1
0° - 40°	1004.0	92.2
0° - 60°	1086.4	99.8
0° - 90°	1088.8	100.0
90° - 180°	0.0	0.0
0° - 180°	1088.8	*100.0
	*Efficiency	

pf	20%								
pc	80%			70%			50%		
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%
0	119	119	119	116	116	116	111	111	111
1	111	108	106	108	106	104	104	103	101
2	103	99	95	101	97	94	98	95	92
3	96	90	86	94	89	86	91	88	84
4	89	83	79	88	83	79	86	81	78
5	83	77	73	82	76	72	80	75	72
6	78	71	67	77	71	67	75	70	66
7	73	67	62	72	66	62	71	65	62
8	68	62	58	68	62	58	67	61	57
9	64	58	54	64	58	54	63	57	54
10	60	54	51	60	54	50	59	54	50

			50% beam - 53.7°		10% beam - 79.9°	
Mounting Height	Inital FC Center Beam	Diameter	FC	Diameter	FC
8.0	34.6	5.6	17.3	9.2	3.5
10.0	18.6	7.6	9.3	12.6	1.9
12.0	11.6	9.6	5.8	15.9	1.2
14.0	7.9	11.7	4.0	19.3	0.8
16.0	5.8	13.7	2.9	22.6	0.6

LDN6 35/15 LO6AR 120, input watts: 26, delivered lumens: 1633, LM/W = 63, spacing criterion at 0 = 1.03, test no. LTL25146.



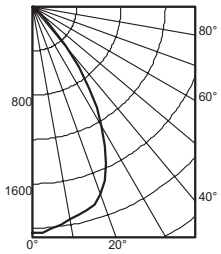
	Ave	Lumens
0	1564	
5	1539	145
15	1449	407
25	1196	542
35	678	411
45	131	115
55	7	10
65	2	2
75	2	1
85	0	0
90	0	

Zone	Lumens	% Lamp
0° - 30°	1094.3	67.0
0° - 40°	1505.0	92.1
0° - 60°	1629.6	99.8
0° - 90°	1633.3	100.0
90° - 180°	0.0	0.0
0° - 180°	1633.3	*100.0
	*Efficiency	

pf	20%								
pc	80%			70%			50%		
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%
0	119	119	119	116	116	116	111	111	111
1	111	108	106	108	106	104	104	103	101
2	103	99	95	101	97	94	98	95	92
3	95	90	86	94	89	86	91	88	84
4	89	83	79	88	83	78	86	81	78
5	83	77	73	82	76	72	80	75	72
6	78	71	67	77	71	67	75	70	66
7	73	66	62	72	66	62	71	65	62
8	68	62	58	68	62	58	66	61	57
9	64	58	54	64	58	54	63	57	54
10	60	54	50	60	54	50	59	54	50

			50% beam - 53.9°		10% beam - 79.9°	
Mounting Height	Inital FC Center Beam	Diameter	FC	Diameter	FC
8.0	51.7	5.6	25.8	9.2	5.2
10.0	27.8	7.6	13.9	12.6	2.8
12.0	17.3	9.7	8.7	15.9	1.7
14.0	11.8	11.7	5.9	19.3	1.2
16.0	8.6	13.7	4.3	22.6	0.9

LDN6 35/20 LO6AR 120, input watts: 35, delivered lumens: 2143, LM/W = 61, spacing criterion at 0 = 1.04, test no. LTL25144.



	Ave	Lumens
0	2046	
5	2014	190
15	1899	534
25	1569	711
35	892	540
45	171	150
55	9	12
65	3	3
75	2	2
85	1	1
90	0	

Zone	Lumens	% Lamp
0° - 30°	1435.1	67.0
0° - 40°	1975.3	92.2
0° - 60°	2137.5	99.8
0° - 90°	2142.7	100.0
90° - 180°	0.0	0.0
0° - 180°	2142.7	*100.0
	*Efficiency	

pf	20%								
pc	80%			70%			50%		
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%
0	119	119	119	116	116	116	111	111	111
1	111	108	106	108	106	104	104	103	101
2	103	99	95	101	97	94	98	95	92
3	95	90	86	94	89	86	91	88	84
4	89	83	79	88	83	78	86	81	78
5	83	77	73	82	76	72	80	75	72
6	78	71	67	77	71	67	75	70	66
7	73	66	62	72	66	62	71	65	62
8	68	62	58	68	62	58	66	61	57
9	64	58	54	64	58	54	63	57	54
10	60	54	50	60	54	50	59	54	50

			50% beam - 54.0°		10% beam - 80.0°	
Mounting Height	Inital FC Center Beam	Diameter	FC	Diameter	FC
8.0	67.6	5.6	33.8	9.2	6.8
10.0	36.4	7.6	18.2	12.6	3.6
12.0	22.7	9.7	11.3	15.9	2.3
14.0	15.5	11.7	7.7	19.3	1.5
16.0	11.2	13.8	5.6	22.6	1.1

Notes

- Tested in accordance with IESNA LM-79-08.
- Tested to current IES and NEMA standards under stabilized laboratory conditions.
- Actual performance may differ as a result of end-user environment and application.
- Actual wattage may differ by +/- 10% when operating between 120-277V +/- 10%.
- CRI: 80 typical.

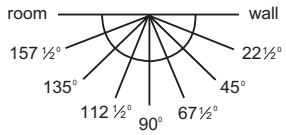
DOWNLIGHTING: One Lithonia Way Conyers, GA 30012 Phone: 800-315-4935 Fax: 770-860-3129 www.lithonia.com

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LDN6 35/20 LO6AR 120 Notes	Type F

LDN6

TECHNICAL INFORMATION

Footcandle values are initial and tables are based on minimum of six units. For fixture-to-wall distance other than those shown, use maximum of one-to-one spacing (distance between fixtures not more than distance to wall) for best results.



Candlepower Data **Footcandle values**

LDN6 35/10 LW6AR 120, input watts: 18, delivered lumens: 1090, LM/W = 61, test no. LTL25147.

	Plane angle							
Vertical Angle	Wall	22.5	45	67.5	90	112.5	135	157.5
0	888	888	888	888	888	888	888	888
5	813	811	824	854	875	902	922	926
15	652	675	728	803	862	905	930	935
25	488	524	601	678	723	748	749	741
35	319	355	387	414	409	407	409	403
45	241	229	190	139	87	76	76	74
55	181	172	114	40	9	5	7	8
65	139	117	57	11	1	2	3	4
75	74	57	19	3	2	2	3	2
85	19	13	0	0	0	0	0	0
90	5	6	0	0	0	0	0	0

Wallwash Illuminance Study (fc) Illuminance on wall from 6 luminaires	Luminaire mounted 3 ft. from wall 3 ft. between luminaires			Luminaire mounted 3 ft. from wall 4 ft. between luminaires			Luminaire mounted 3 ft. from wall 5 ft. between luminaires		
ft. from ceiling	3	3.5	4	3	3.5	4	3	3.5	4
1	10	8	10	9	5	9	9	2	9
2	15	15	15	13	10	13	12	6	12
3	15	14	15	12	10	12	10	7	10
4	13	14	13	10	11	10	8	8	8
5	12	13	12	9	10	9	7	8	7
6	12	12	12	8	9	8	7	7	7
7	10	10	10	8	8	8	6	6	6
8	9	9	9	7	7	7	5	5	5
9	8	8	8	6	6	6	5	5	5
10	6	6	6	5	5	5	4	4	4

LDN6 35/15 LW6AR 120, input watts: 26, delivered lumens: 1639, LM/W = 63, test no. LTL25145.

	Plane angle							
Vertical Angle	Wall	22.5	45	67.5	90	112.5	135	157.5
0	1312	1312	1312	1312	1312	1312	1312	1312
5	1198	1187	1202	1244	1285	1326	1371	1409
15	956	976	1052	1153	1246	1333	1403	1438
25	697	720	837	953	1028	1082	1109	1126
35	442	482	548	586	583	590	612	623
45	348	336	303	222	132	105	112	115
55	283	269	196	80	19	8	10	11
65	230	191	102	22	3	2	3	6
75	121	88	30	1	1	1	1	4
85	30	18	1	1	0	0	0	0
90	5	6	0	2	1	1	1	0

Wallwash Illuminance Study (fc) Illuminance on wall from 6 luminaires	Luminaire mounted 3 ft. from wall 3 ft. between luminaires			Luminaire mounted 3 ft. from wall 4 ft. between luminaires			Luminaire mounted 3 ft. from wall 5 ft. between luminaires		
ft. from ceiling	3	3.5	4	3	3.5	4	3	3.5	4
1	17	13	17	16	7	16	15	4	15
2	24	24	24	20	16	20	19	10	19
3	22	22	22	17	16	17	15	11	15
4	20	21	20	14	16	14	12	12	12
5	18	19	18	13	15	13	10	12	10
6	17	17	17	12	13	12	9	11	9
7	15	15	15	11	11	11	9	9	9
8	13	13	13	10	10	10	8	8	8
9	11	11	11	8	8	8	7	7	7
10	9	9	9	7	7	7	6	6	6

LDN6 35/20 LW6AR 120, input watts: 35, delivered lumens: 2137, LM/W = 61, test no. LTL25143.

	Plane angle							
Vertical Angle	Wall	22.5	45	67.5	90	112.5	135	157.5
0	1712	1712	1712	1712	1712	1712	1712	1712
5	1566	1544	1598	1633	1710	1739	1783	1806
15	1254	1276	1394	1533	1658	1755	1811	1834
25	913	956	1140	1307	1420	1489	1512	1521
35	592	654	766	839	851	852	855	861
45	446	425	402	325	215	170	167	167
55	335	317	248	115	32	13	12	14
65	251	213	129	35	5	4	5	5
75	121	92	39	4	1	1	1	3
85	24	14	2	0	1	0	0	0
90	1	1	1	0	1	1	1	0

Wallwash Illuminance Study (fc) Illuminance on wall from 6 luminaires	Luminaire mounted 3 ft. from wall 3 ft. between luminaires			Luminaire mounted 3 ft. from wall 4 ft. between luminaires			Luminaire mounted 3 ft. from wall 5 ft. between luminaires		
ft. from ceiling	3	3.5	4	3	3.5	4	3	3.5	4
1	17	13	17	16	7	16	16	4	16
2	28	27	28	23	18	23	22	11	22
3	28	27	28	22	19	22	19	14	19
4	26	27	26	19	20	19	16	15	16
5	24	25	24	17	20	17	13	16	13
6	22	22	22	16	17	16	12	15	12
7	20	20	20	15	15	15	11	13	11
8	17	17	17	13	13	13	10	11	10
9	15	15	15	11	11	11	9	9	9
10	13	13	12	10	10	10	8	8	8

Notes

- Tested in accordance with IESNA LM-79-08.
- Tested to current IES and NEMA standards under stabilized laboratory conditions.
- Actual performance may differ as a result of end-user environment and application.
- Actual wattage may differ by +/- 10% when operating between 120-277V +/- 10%.
- CRI: 80 typical.

RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LDN6 35/20 LO6AR 120 Notes	Type F

LDN6

ADDITIONAL DATA

DIMMER COMPATIBILITY CHART	
Manufacturer	**Model/Series**
600 & 1000 Lumen products	
Leviton	IllumaTech - IP710-DLX
Lutron	Nova T - NTFTV-WH *For on/off control, this switch requires a power pack. Consult Lutron for more information.*
Sensor Switch	nPODM
Synergy	ISD BC 120/277
1500 & 2000 Lumen products	
Busch-Jaeger	2112U-101
Jung	240-10
Leviton Lighting Controls	IllumaTech - IP710-DLX
Lightolier Controls	ZP600FAM120
Lutron Electronics	Nova T - NTFTV
	Diva - DVTV
	Diva - NFTV
	GraphicEye - GRX-TVI w GRX3503
	Energy Savr Node - QSN-4T16-S
	TVM2 Module
Merten	5729
Pass & Seymour	CD4FB-W
Sensor Switch	nPODM
Synergy	ISD BC 120/277
The Watt Stopper	DCLV1

EL/ELR AVAILABILITY/COMPATIBILITY - INITIAL LUMENS			
Lumen package	**Watts**	**Initial lumens EL/ELR**	**Emergency LED driver**
600	12	500	PS1030
1000	18	575	PS1030
1500	26	640	Bodine BSL17C-C2
2000	35	690	Bodine BSL17C-C2

EL/ELR DIMENSIONAL CHANGES	
Add to overall housing length for EL/ELR option	**Overall housing width with EL/ELR option**
4-1/2	16-1/2

KEY SPECIFICATION SUMMARY				
Product Description	**Watts (W)**	**Delivered lumens (lm)**	**Efficacy (lm/W)**	**Spacing criteria (s/mh)**
LDN6 35/06 LO6AR	12	670	56	1.03
LDN6 35/10 LO6AR	18	1090	61	1.03
LDN6 35/15 LO6AR	26	1640	63	1.03
LDN6 35/20 LO6AR	35	2140	61	1.04

LITHONIA LIGHTING®
An AcuityBrands Company

DOWNLIGHTING: One Lithonia Way Conyers, GA 30012 Phone: 800-315-4935 Fax: 770-860-3129 www.lithonia.com

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number CTR4321L-CLR-B Notes	Type H

CONTECH LIGHTING

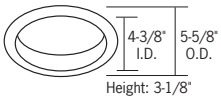
RA4L

4" LED Recessed Downlight Trims

Catalog No. _____

Type _____

Project _____

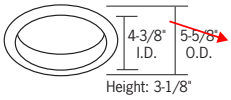


Specification Grade Specular Reflector

Specification grade specular reflector: narrow beam clear, medium beam clear, wide beam clear, platinum, or white. OD: 5-5/8"; ID: 4-3/8"

Approved for use in U.S. and Canada. Add "–C" after finish code for wet location approved trim.

CST4322LN-CLR - Narrow Beam, Clear Reflector
CST4322LM-CLR - Medium Beam, Clear Reflector
CST4322LW-CLR - Wide Beam, Clear Reflector
CST4322L-PL - Platinum Reflector
CST4322L-WHT - White Reflector

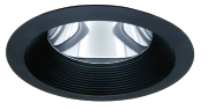


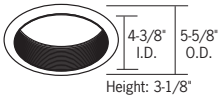
Two Piece Reflector Trim

Two piece reflector: clear or white upper reflector, clear or platinum lower cone; Includes (1) LF20-CL glass lens. OD: 5-5/8"; ID: 3-1/2"

Approved for use in U.S. and Canada when glass lens is installed (in dry or wet locations).

CTR4321L-CLR-(CLR,PL) - Clear Reflector
CTR4321L-WHT-(CLR,PL) - White Reflector



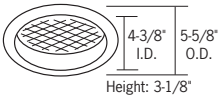


Two Piece Reflector/Baffle Trim

Two piece reflector: clear or white upper reflector, black or white lower baffle; Includes (1) LF20-CL glass lens. OD: 5-5/8"; ID: 3-1/2"

Approved for use in U.S. and Canada when glass lens is installed (in dry or wet locations).

CTR4321L-CLR-(B,P) - Clear Reflector
CTR4321L-WHT-P-(B,P) - White Reflector

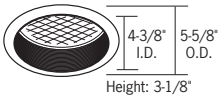


Two Piece Reflector Trim with Lens

Two piece reflector with lens: Clear or white upper reflector, clear or platinum lower cone; regressed prismatic convex lens, Wet Location Listed. OD: 5-5/8"; ID: 3-7/8"

Approved for use in U.S. and Canada.

CTR4327L-CLR-(CLR,PL) - Clear Reflector
CTR4327L-WHT-(CLR,PL) - White Reflector

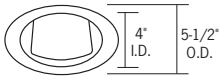


Two Piece Reflector/Baffle Trim with Lens

Two piece reflector with lens: Clear or white upper reflector, black or white lower baffle with regressed prismatic convex glass lens; 1-1/2" Regress. Wet Location Listed. OD: 5-5/8"; ID: 3-7/8"

Approved for use in U.S. and Canada.

CTR4327L-CLR-(B,P) - Clear Reflector
CTR4327L-WHT-P-(B,P) - White Reflector

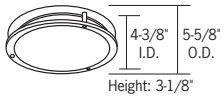


Lensed Wall Wash Trim

Lensed Wall Wash Trim; Clear, Platinum or White Reflector. OD: 5-1/2"; ID: 4"

Approved for use in U.S. and Canada.

CTR4323L-CLR - Clear Reflector
CTR4323L-PL - Platinum Reflector
CTR4323L-WHT - White Reflector

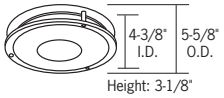


Floating Glass Trim

Floating glass disc; clear or white reflector. 1-1/4" Drop from ceiling. Glass OD: 6-1/16".

Approved for use in U.S. and Canada.

CTR4325L-(CLR,WHT)-P

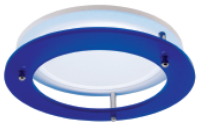


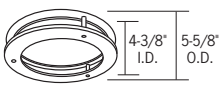
Floating Glass Ring

Floating glass ring; clear or white reflector. 1-1/4" Drop from ceiling; 3-1/2" center hole. Glass OD: 6-1/16".

Approved for use in U.S. and Canada.

CTR4326L-(CLR,WHT)-P



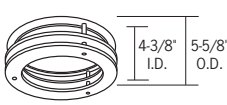


Floating Single Acrylic Ring

Single floating colored acrylic ring; clear or white reflector. 1-1/2" Drop from ceiling. Acrylic Ring OD: 6-7/8"; ID: 4-3/8".

Approved for use in U.S. and Canada.

CTR4324L-(CLR,WHT)-P
1AR4(B,F,G,R,Y)



Floating Double Acrylic Ring

Stacked floating colored acrylic rings; clear or white reflector. 2-3/4" Drop from ceiling. Acrylic Ring OD: 6-7/8"; ID: 4-3/8".

Approved for use in U.S. and Canada.

CTR4324L-(CLR,WHT)-P
2AR4(B,F,G,R,Y)

Finishes: -B (black baffle), **-CLR** (clear reflector), **-P** (white baffle), **-PL** (matte platinum), **-WHT** (white reflector)
Acrylic Ring Finishes: -B (blue), **-F** (frosted), **-G** (green), **-R** (red), **-Y** (yellow)

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number RA4LRM-135K12D1W Notes	Type H

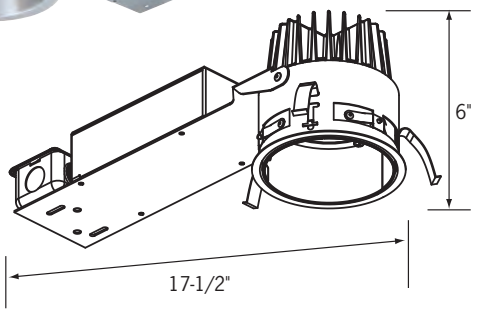
RA4LRM

4" LED Recessed Downlight: Remodel Housing

Catalog No. _____

Type _____

Project _____



Ceiling Opening: 4-7/8"
Ceiling Thickness: 1/2" – 5/8"

Specifications/Features

Housing/Mounting

Specification grade 4" remodel housing, 5-1/4" O.D. plaster ring flange.
4-7/8" Ceiling opening. Works in ceiling thicknesses from 1/2" – 2".
16 Gauge galvanized steel housing with die-cast aluminum heat sink.
Requires minimum 3" clearance around fixture from insulation material.
Thermal protection provided in case of improper insulation use.
Heavy duty steel plaster ring is secured to ceiling by three (3) spring clamps.
LED drivers are fully accessible from below the ceiling, and with the spring-latch housing attachment, can be easily removed.
Quick-connect LED light engine enables easy installation and removal.

Electrical

UL8750 and Class 2 Compliant; RoHS Compliant, US only.
Output over voltage, over-current and short circuit protection.
Approved for through-circuit wiring. Max.: (4) 12 AWG (2in/2out).
Pre-wired junction box with convenient screwdriver pry-outs. (4) 1/2" concentric knockouts.

Lamp

Light engine consists of a high output multi-chip LED array arranged into a single LED package, enabling precise optical control without requiring lensing to diffuse multiple LED sources.
Excellent fixture-to-fixture color consistency within a 3-step MacAdam Ellipse tolerance.

Dimming

All RA4LRM downlights are available for non-dimming and dimming applications.
For non-dimming applications, use driver option D2.

Trims

Specification Grade trims are available in several different styles and finishes for your space. Featuring a high quality Alzak™ finish; optically designed for reduced glare while maintaining maximum lumen output. See "4" LED Recessed Trims" spec sheet for information and details.

Warranty

This complete fixture is covered by Con-Tech's full five (5) year replacement guarantee after date of purchase.

Labels/Usage

CSAus Certified to UL Standards. Suitable for damp locations.
CSA Certified to UL Standards. Refer to trim spec sheet for Canada compliant trims.
Energy Star approved when used with CST4322L-CLR (all beam distributions) and CST4322L-PL trims. Not approved for 4000K options.
Assembled in the USA.

	1000 Series	2000 Series
Input Voltage		
Non-dimming	90-305V AC, 47-63Hz	90-305V AC, 47-63Hz
0-10V dimming	90-305V AC, 47-63Hz	90-305V AC, 47-63Hz
Triac dimming	90-135V AC, 47-63Hz	Not Available
Lutron HiLume® Dimming	120V AC, 50/60Hz	120V AC, 50/60Hz
Input Wattage	16	29
Output Current (mA)	350	700
Color Temp	2700K/3000K 3500K/4000K	2700K/3000K 3500K/4000K
CRI: Standard	83 (80min)	83 (80min)
Driver		
Power Factor	> 0.90	> 0.90
THD	< 20%	< 20%
Dimming		
0-10V	15-100%	15-100%
Triac	10-100%	Not Available
Lutron HiLume®	1-100%	1-100%
Emrgncy Batt. Backup	Not Available	Not Available

Ordering Information

Example Order: RA4LRM — 130KI2D2 CST4322LN-CLR

Housing		LED Module/Color Temp	Electrical/Dimming	Trim Type
RA4LRM	–			

RA4LRM

1000 Series
127K - 16W/2700K
130K - 16W/3000K
135K - 16W/3500K
140K - 16W/4000K
2000 Series
227K - 29W/2700K
230K - 29W/3000K
235K - 29W/3500K
240K - 29W/4000K
Consult factory for high CRI options

12D1 - 120V Triac Dimming
12D2 - 120V Non-Dimming/0-10V Dimming
12D3 - 120V Lutron HiLume® Dimming
27D2 - 277V Non-Dimming/0-10V Dimming

* - All Others *Leave Blank*
W - Wall Wash

*Trims

See "4" LED Recessed Trims" sheet for trim information and details.

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number RA4LRM-135K12D1W Notes	Type H

CONTECH LIGHTING RA4L

4" LED Recessed Downlight

Catalog No. _____

Type _____

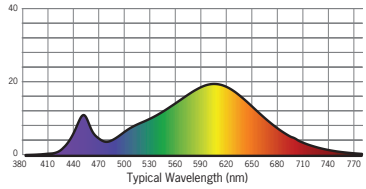
Project _____

Photometrics

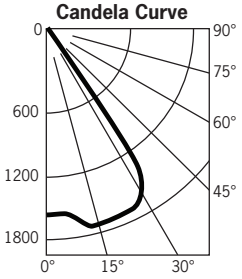
RA4LNC-230K12D2/CST4322LW-CLR

Designed for 50,000 Hour Lamp Life*; LM-79 Test No. 70358

Light Output (Fixture Delivered Lumens): 2056
Total Watts@120V: 28.6
Lumens Per Watt: 72
Color Rendering Index (CRI)[1]: 83
Color Temperature (CCT)[2]: 3079K Warm White
Spectral Power Distribution Chart[3]



Candela Curve



Candlepower Summary

FROM 0	CANDELA	LUMENS
0	1553	
5	1519	150
15	1731	489
25	1714	783
35	924	542
45	78	64
55	24	21
65	6	6
75	2	1
85	0	0
95	0	

Intensity Distribution

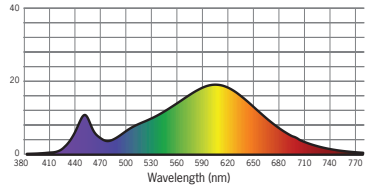
DISTANCE (FT.)	FOOTCANDLES (FC)	BEAM DIAMETER (FT.)
6'	43.1	7.7
8'	24.3	10.3
10'	15.5	12.9
12'	10.8	15.5
14'	7.9	18.0
16'	6.1	20.6

Beam Distribution: 72°
Spacing Criteria: 1.29

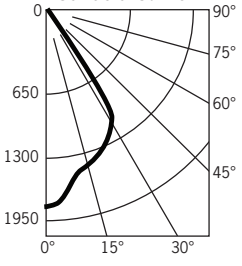
RA4LNC-230K12D2/CST4322L-PL

Designed for 50,000 Hour Lamp Life*; LM-79 Test No. 70359

Light Output (Fixture Delivered Lumens): 1806
Total Watts@120V: 29.5
Lumens Per Watt: 61
Color Rendering Index (CRI)[1]: 82
Color Temperature (CCT)[2]: 3080K Warm White
Spectral Power Distribution Chart[3]



Candela Curve



Candlepower Summary

FROM 0	CANDELA	LUMENS
0	1855	
5	1725	161
15	1502	428
25	1347	616
35	721	436
45	139	112
55	40	39
65	10	11
75	2	2
85	0	0
95	0	

Intensity Distribution

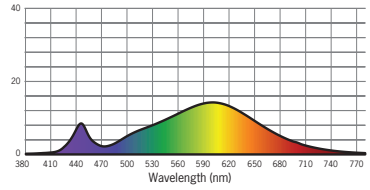
DISTANCE (FT.)	FOOTCANDLES (FC)	BEAM DIAMETER (FT.)
6'	51.5	6.0
8'	29.0	8.0
10'	18.5	10.0
12'	12.9	12.1
14'	9.5	14.1
16'	7.2	16.1

Beam Distribution: 68°
Spacing Criteria: 1.0

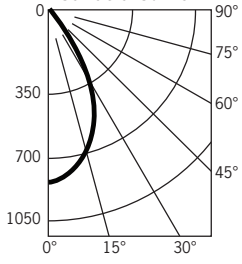
RA4LNC-230K12D2/CTR4323L-CLR

Designed for 50,000 Hour Lamp Life*; LM-79 Test No. 72139

Light Output (Fixture Delivered Lumens): 876
Total Watts@120V: 28.7
Lumens Per Watt: 31
Color Rendering Index (CRI)[1]: 81
Color Temperature (CCT)[2]: 3168K Warm White
Spectral Power Distribution Chart[3]



Candela Curve



Candlepower Summary

FROM 0	CANDELA	LUMENS
0	812	
5	907	76
15	931	196
25	778	239
35	479	180
45	236	99
55	131	52
65	61	24
75	16	8
85	3	3
95	0	

Footcandles on Wall

Single Unit, 3' From Wall

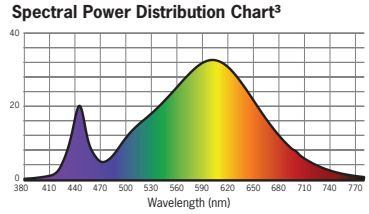
Distance from Ceiling	0'	1'	2'	3'	4'	5'
1'	3	2	1	0	0	0
2'	8	6	3	1	0	0
3'	9	8	4	2	1	0
4'	10	8	5	3	1	1
5'	9	8	5	3	1	1
6'	7	7	5	3	2	1
7'	6	5	4	3	2	1
8'	4	4	3	3	2	1
9'	3	3	3	2	2	1

beam center

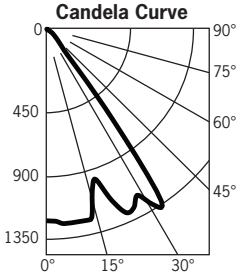
RA4LNC-230K12D2/CTR4326L-CLR-P

Designed for 50,000 Hour Lamp Life*; LM-63 Test No. 71563

Light Output (Fixture Delivered Lumens): 1730
Total Watts@120V: 29
Lumens Per Watt: 60
Color Rendering Index (CRI)[1]: 82
Color Temperature (CCT)[2]: 3138K Warm White
Spectral Power Distribution Chart[3]



Candela Curve



Candlepower Summary

FROM 0	CANDELA	LUMENS
0	1258	
5	1280	122
15	1107	326
25	1256	587
35	628	461
45	105	84
55	53	49
65	29	29
75	14	16
85	5	6
95	5	

Intensity Distribution

DISTANCE (FT.)	FOOTCANDLES (FC)	BEAM DIAMETER (FT.)
6'	34.9	8.0
8'	19.7	10.6
10'	12.6	13.3
12'	8.7	15.9
14'	6.4	18.6
16'	4.9	21.2

Beam Distribution: 70°
Spacing Criteria: 1.30

1. Accuracy of rendering colors
2. Color appearance of light source
3. Colors present within the light source

**Dependent on surrounding temperatures*

For the 1000 Series/16W data, multiply results by .50

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos	Catalog Number ZL1N L48 5000LM L/LENS MVOLT 35K 80CRI WH	Type
Manufacturers Representatives	Submitted By RKL SALES CORP	Notes	

LITHONIA LIGHTING®

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 uplight and downlight in commercial, retail, manufacturing, warehouse, cove and display applications. **Certain airborne contaminants can diminish integrity of acrylic. Click here for Acrylic Environmental Compatibility table for suitable uses.**

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

Finish: Options include high-gloss, baked white enamel (WH), galvanized (GALV), matte black (MB) and smoke gray (SKGY). 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. L/LENS option available.

ELECTRICAL — Utilizes high-output LEDs integrated on a two-layer circuit board, ensuring cool-running operation. Internal pluggable wiring harness prevents wiring errors. 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 83 CRI at 3000 K, 3500 K,4000 K or 5000 K.

Lumen output up to 2,000 lumens per foot. In 86°F (30°C) ambient environments, L70 is predicted to be 100,000+ hours, L85 at 65,000 hours. Luminaire should be installed in applications where ambient temperatures do not exceed 86°F (30°C). Ambient temperatures that exceed 86°F (30°C) will result in reduced life and will void warranty.

INSTALLATION — Tool-less channel cover for easy installation.

Fixture may be surface, pendant or stem mounted. Three-point aligner locks in place for easy continuous row mounting.

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

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

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

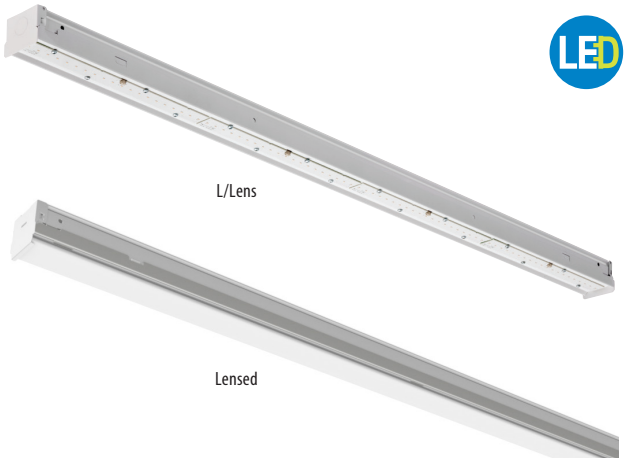
Actual wattage may differ by +/- 5% when operating between 120-277V +/- 10%.

Note: Specifications subject to change without notice.

LED Striplight

ZL1N

24", 48" and 96" Lengths



L/Lens

Lensed

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

Example: ZL1N L48 3000LM FST MVOLT 40K 80CRI WH

Series		Length		Nominal lumens[1]		Diffuser		Voltage		Color temperature		Color rendering index		Options		Finish	
ZL1N	LED striplight	L24	24"	3000LM	3,000 lumens	FST	Snap on frosted, diffuse	MVOLT	120-277V	40K	4000 K	80CRI	80 CRI	PLR	Plug-in wiring[3]	WH	White
		L46	46"	3000LM	3,000 lumens	L/LENS	No diffuser	HVOLT	347-480V[2]	30K	3000 K					GALV	Galvanized
		L48	48"	5000LM	5,000 lumens					35K	3500 K					MB	Matte black
				7000LM	7,000 lumens					50K	5000 K					SKGY	Smoke gray
TZL1N	LED striplight	L92	92"	6000LM	6,000 lumens												
		L96	96"	10000LM	10,000 lumens												
				14000LM	14,000 lumens												

Accessories: *Order as separate catalog number.*

HC36	Hanger chain, 36"	ZACF120	Aircraft cable with feed, 120"	ZSPRG	For 15/16" T-grid only
ZACVH	Aircraft cable with hook	ZAC144	Aircraft cable, 144"	WGZ24	24" wireguard, white
ZAC72	Aircraft cable, 72"	ZACF144	Aircraft cable with feed, 144"	WGZ48	48" wireguard, white[4]
ZACF72	Aircraft cable with feed, 72"	LSXR	Sensor Switch® LSXR occupancy sensor[2]		
ZAC120	Aircraft cable, 120"				

EMERGENCY OPTIONS[5]

Consider EAC ISSM 125 or EAC ISSM 375

Notes

1 See Operational Data on page 2 for actual lumens.
2 Not available with L24, 24" fixture.
3 See ordering information on page 3.
4 Order 2 for tandem double length fixtures (TZL1N).
5 See ordering information on page 4.

ZL1N LED Striplight

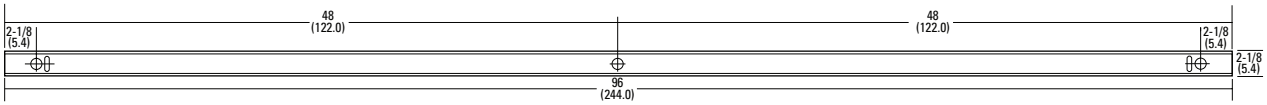
	OPERATIONAL DATA							
	Nominal lumen package	**Length (inches)**	**Delivered lumens 3000 K CCT @ 77°F (25°C) ambient temperature**	**Delivered lumens 3500 K CCT @ 77°F (25°C) ambient temperature**	**Delivered lumens 4000 K CCT @ 77°F (25°C) ambient temperature**	**Delivered lumens 5000 K CCT @ 77°F (25°C) ambient temperature**	**Wattage @ 120V/277V**	**Comparable light source**
Lensed	3,000LM	24	2,805	2,921	3,177	3,400	34W/32W	1-lamp 32W T8, 1-lamp 54W T5HO, 50W HID
	3,000LM	46 or 48	2,532	2,636	2,834	3,068	32W/31W	1-lamp 32W T8, 1-lamp 54W T5HO, 50W HID
	5,000LM	46 or 48	3,923	4,085	4,391	4,754	42W/41W	2-lamp 32W T8, 1-lamp 54W T5HO, 70W HID
	7,000LM	46 or 48	5,914	6,158	6,619	7,231	72W/70W	3-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	6,000LM	92 to 96	5,064	5,273	5,668	6,136	64W/62W	3-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	10,000LM	92 to 96	7,846	8,170	8,782	9,508	84W/82W	4-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	14,000LM	92 to 96	11,828	12,316	13,239	14,462	144W/140W	4-lamp 32W T8, 3-lamp 54W T5HO, 150W HID
Unlensed	3,000LM	24	3,165	3,295	3,582	3,835	34W/32W	1-lamp 32W T8, 1-lamp 54W T5HO, 50W HID
	3,000LM	46 or 48	2,865	2,983	3,207	3,472	32W/31W	1-lamp 32W T8, 1-lamp 54W T5HO, 50W HID
	5,000LM	46 or 48	4,439	4,622	4,968	5,379	42W/41W	2-lamp 32W T8, 1-lamp 54W T5HO, 70W HID
	7,000LM	46 or 48	6,737	7,015	7,541	8,164	72W/70W	3-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	6,000LM	92 to 96	5,730	5,966	6,413	6,944	64W/62W	3-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	10,000LM	92 to 96	8,878	9,244	9,937	10,759	84W/82W	4-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	14,000LM	92 to 96	13,474	14,031	15,082	16,329	144W/140W	4-lamp 32W T8, 3-lamp 54W T5HO, 150W HID

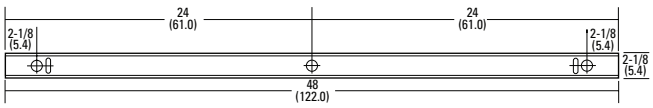
PROJECTED LUMEN MAINTENANCE								
Operating hours	0	10,000	20,000	30,000	40,000	50,000	60,000	100,000
Lumen maintenance factor	1	0.9244	0.8588	0.7979	0.7413	0.6886	0.6398	0.4766
Based on incomplete LM-80 data. Update expected Q1 2014.								

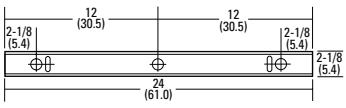
DIMENSIONS

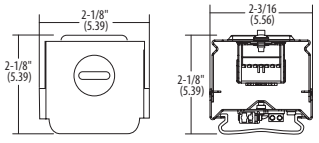
All dimensions are shown in inches (centimeters) unless otherwise noted.

Specifications subject to change without notice.









PHOTOMETRICS

Please see www.lithonia.com.

ZL1N LED Striplight

PRODUCT INFORMATION

Wiring

PLR

Advanced 3-Circuit Plug-In

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.

ORDERING INFORMATION

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

Series		Number of hot wires		Branch circuits			Ground	
PLR	(blank)	Not required for 22 or 33	Circuits to which ballast is connected		C	Blue wire[1]	(blank)	No ground in PLR
PLR22	1	Black	(blank)	Not required for 22 or 33	AB	Outboard lamps to black, inboard to red	G	Ground. Maximum 2 circuits
PLR33	2	Black and red	A	Black wire	AC	Outboard lamps to black, inboard to blue		
	3	Black, red and blue[1]	B	Red wire				

Notes

1 Ground not available.

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

Passive Infrared Indoor Occupancy Sensor

LSXR

Single Relay

sensorswitch

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.

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

ZL1N LED Striplight

FEATURES & SPECIFICATIONS

INTENDED USE — Automatic standby AC power system for LED, incandescent and fluorescent emergency lighting systems, including fixtures with line dimmable fluorescent ballast.

CONSTRUCTION — NEMA Type 1 cabinet 16-gauge steel housing.

Status indicator: Three LED indicators display utility present, charger and inverter running.

Cooling: 375W model features forced air during emergency mode.

ELECTRICAL — Dual input and output, 120V or 277V.

Units rated for 125W or 375W provide emergency lighting power for 90 minutes of operation.

Battery: 12V Valve-regulated Lead Acid (VRLA) battery.

INSTALLATION — Line voltage allows for remote mounting of up to 1000 feet.

125W: Available with surface or recess ceiling mounting.

375W: Surface mounting only.

LISTINGS — UL Listed. Meets UL924, NFPA 101 (current life safety code), NEC, OSHA.

WARRANTY — 3-year limited warranty. Complete warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Specifications subject to change without notice.

Power Systems

EAC ISSM

Compact Interruptible AC Power System

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

Example: EAC ISSM 375 120/277 SM

EAC	ISSM		120/277	
Series	**System**	**VA rating**	**Voltage**	**Mounting**
EAC Emergency AC power system	ISSM Interruptible	125 375[1]	120/277 Dual input and output 120V or 277V	SM Surface RGM Recess grid ceiling

For additional information see www.lithonia.com

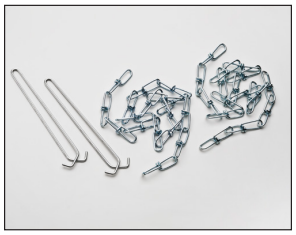
Notes

1 Available surface mount only.

ZL1N LED Striplight

OPTIONS AND ACCESSORIES

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

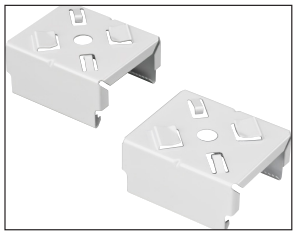


HANGER CHAIN

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

INDUSTRIAL: One Lithonia Way, Conyers, GA 30012 Phone: 800-315-4963 Fax: 770-981-8191 www.lithonia.com

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number TZL1N L96 10000LM L/LENS MVOLT 35K 80CRI WH Notes	Type J

LITHONIA LIGHTING®

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 uplight and downlight in commercial, retail, manufacturing, warehouse, cove and display applications. **Certain airborne contaminants can diminish integrity of acrylic.** **Click here for Acrylic Environmental Compatibility table for suitable uses.**

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

Finish: Paint options include high-gloss, baked white enamel (WH), galvanized (GALV), matte black (MB) and smoke gray (SKGY). 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. L/LENS option available.

ELECTRICAL — Utilizes high-output LEDs integrated on a two-layer circuit board, ensuring cool-running operation. Internal pluggable wiring harness prevents wiring errors. 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 83 CRI at 3000 K, 3500 K,4000 K or 5000 K.

Lumen output up to 2,000 lumens per foot. In 86°F (30°C) ambient environments, L70 is predicted to be 100,000+ hours, L85 at 65,000 hours. Luminaire should be installed in applications where ambient temperatures do not exceed 86°F (30°C). Ambient temperatures that exceed 86°F (30°C) will result in reduced life and will void warranty.

INSTALLATION — Tool-less channel cover for easy installation.

Fixture may be surface, pendant or stem mounted. Three-point aligner locks in place for easy continuous row mounting.

LISTINGS — UL Listed. 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 to confirm which versions are qualified.

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

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

Actual wattage may differ by +/- 5% when operating between 120-277V +/- 10%.

Note: Specifications subject to change without notice.

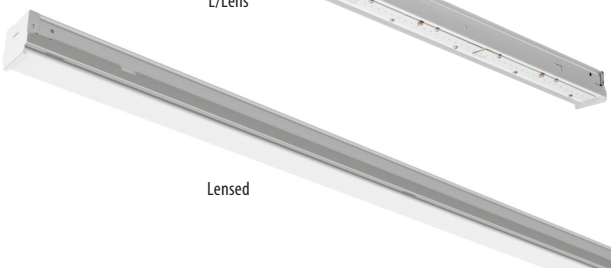
Z SERIES

LED Striplight

ZL1N

24", 48" and 96" Lengths

L/Lens



Lensed

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

Example: ZL1N L48 3000LM FST MVOLT 40K 80CRI WH

Series	Length	Nominal lumens[1]	Diffuser	Voltage	Color temperature	Color rendering index	Options	Paint finish
ZL1N LED striplight	L24 24"	3000LM 3,000 lumens	FST Snap on frosted, diffuse	MVOLT 120-277V	40K 4000 K	80CRI 80 CRI	PLR Plug-in wiring[3]	WH White
	L46 46"	3000LM 3,000 lumens	L/LENS No diffuser	HVOLT 347-480V[2]	30K 3000 K			GALV Galvanized
	L48 48"	5000LM 5,000 lumens			35K 3500 K			MB Matte black
		7000LM 7,000 lumens			50K 5000 K			SKGY Smoke gray
ZL1N LED striplight	L92 92"	6000LM 6,000 lumens						
	L96 96"	10000LM 10,000 lumens						
		14000LM 14,000 lumens						

Accessories: *Order as separate catalog number.*

HC36	Hanger chain, 36"	ZSPRG	For 15/16" T-grid only
ZACVH	Aircraft cable with hook	WGZ24	24" wireguard, white
LSXR	Sensor Switch® LSXR occupancy sensor[2]	WGZ48	48" wireguard, white[4]

EMERGENCY OPTIONS
(Order as separate catalog number.)[5]

Consider EAC ISSM 125 or EAC ISSM 375

Notes

1 See Operational Data on page 2 for actual lumens.
2 Not available with L24, 24" fixture.
3 See ordering information on page 3.
4 Order 2 for tandem double length fixtures (TZL1N).
5 See ordering information on page 4.

ZL1N LED Striplight

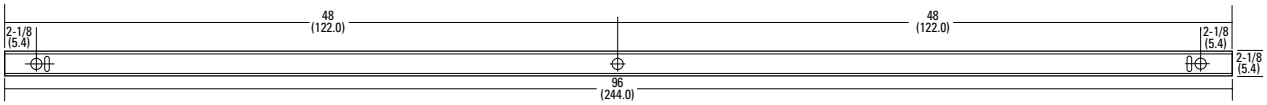
	OPERATIONAL DATA							
	Nominal lumen package	**Length (inches)**	**Delivered lumens 3000 K CCT @ 77°F (25°C) ambient temperature**	**Delivered lumens 3500 K CCT @ 77°F (25°C) ambient temperature**	**Delivered lumens 4000 K CCT @ 77°F (25°C) ambient temperature**	**Delivered lumens 5000 K CCT @ 77°F (25°C) ambient temperature**	**Wattage @ 120V/277V**	**Comparable light source**
Lensed	3,000LM	24	2,805	2,921	3,177	3,400	34W/32W	1-lamp 32W T8, 1-lamp 54W T5HO, 50W HID
	3,000LM	46 or 48	2,532	2,636	2,834	3,068	32W/31W	1-lamp 32W T8, 1-lamp 54W T5HO, 50W HID
	5,000LM	46 or 48	3,923	4,085	4,391	4,754	42W/41W	2-lamp 32W T8, 1-lamp 54W T5HO, 70W HID
	7,000LM	46 or 48	5,914	6,158	6,619	7,231	72W/70W	3-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	6,000LM	92 to 96	5,064	5,273	5,668	6,136	64W/62W	3-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	10,000LM	92 to 96	7,846	8,170	8,782	9,508	84W/82W	4-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	14,000LM	92 to 96	11,828	12,316	13,239	14,462	144W/140W	4-lamp 32W T8, 3-lamp 54W T5HO, 150W HID
Unlensed	3,000LM	24	3,165	3,295	3,582	3,835	34W/32W	1-lamp 32W T8, 1-lamp 54W T5HO, 50W HID
	3,000LM	46 or 48	2,865	2,983	3,207	3,472	32W/31W	1-lamp 32W T8, 1-lamp 54W T5HO, 50W HID
	5,000LM	46 or 48	4,439	4,622	4,968	5,379	42W/41W	2-lamp 32W T8, 1-lamp 54W T5HO, 70W HID
	7,000LM	46 or 48	6,737	7,015	7,541	8,164	72W/70W	3-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	6,000LM	92 to 96	5,730	5,966	6,413	6,944	64W/62W	3-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	10,000LM	92 to 96	8,878	9,244	9,937	10,759	84W/82W	4-lamp 32W T8, 2-lamp 54W T5HO, 100W HID
	14,000LM	92 to 96	13,474	14,031	15,082	16,329	144W/140W	4-lamp 32W T8, 3-lamp 54W T5HO, 150W HID

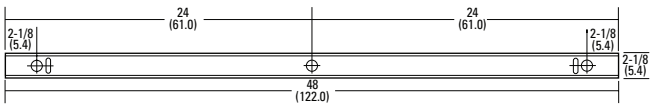
PROJECTED LUMEN MAINTENANCE								
Operating hours	0	10,000	20,000	30,000	40,000	50,000	60,000	100,000
Lumen maintenance factor	1	0.9678	0.9454	0.9235	0.9021	0.8812	0.8605	0.7839
Based on incomplete LM-80 data. Update expected Q1 2014.								

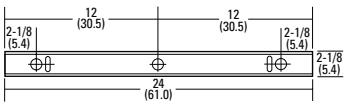
DIMENSIONS

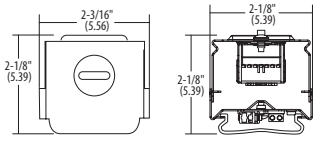
All dimensions are shown in inches (centimeters) unless otherwise noted.

Specifications subject to change without notice.









PHOTOMETRICS

Please see www.lithonia.com.

ZL1N LED Striplight

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		Ground	
PLR	(blank)	Not required for 22 or 33	Circuits to which ballast is connected		B Red wire	(blank)	No ground in PLR
PLR22	1	Black	(blank)	Not required for 22 or 33	C Blue wire	G	Ground. Maximum 2 circuits
PLR33	2	Black and red	A	Black wire			
	3	Black, red and blue					

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

sensorswitch

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

ZL1N LED Striplight

For emergency options, consider EAC ISSM 125 or EAC ISSM 375. (*Order as separate catalog number.*)

Power Systems

FEATURES & SPECIFICATIONS

INTENDED USE — Automatic standby AC power system for LED, incandescent and fluorescent emergency lighting systems, including fixtures with line dimmable fluorescent ballast.

CONSTRUCTION — NEMA Type 1 cabinet 16-gauge steel housing.

Status indicator: Three LED indicators display utility present, charger and inverter running.

Cooling: 375W model features forced air during emergency mode.

ELECTRICAL — Dual input and output, 120V or 277V.

Units rated for 125W or 375W provide emergency lighting power for 90 minutes of operation.

Battery: 12V Valve-regulated Lead Acid (VRLA) battery.

INSTALLATION — Line voltage allows for remote mounting of up to 1000 feet.

125W: Available with surface or recess ceiling mounting.

375W: Surface mounting only.

LISTINGS — UL Listed. Meets UL924, NFPA 101 (current life safety code), NEC, OSHA.

WARRANTY — 3-year limited warranty. Complete warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Specifications subject to change without notice.

EAC ISSM

Compact Interruptible AC Power System

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

Example: EAC ISSM 375 120/277 SM

EAC	ISSM		120/277	
Series	**System**	**VA rating**	**Voltage**	**Mounting**
EAC Emergency AC power system	ISSM Interruptible	125 375[1]	120/277 Dual input and output 120V or 277V	SM Surface RGM Recess grid ceiling

For additional information see www.lithonia.com

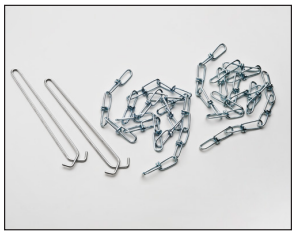
Notes

1 Available surface mount only.

ZL1N LED Striplight

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.

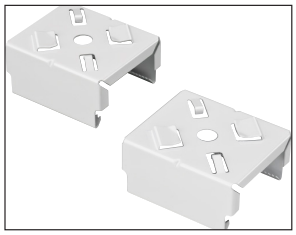


HANGER CHAIN

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

INDUSTRIAL: One Lithonia Way, Conyers, GA 30012 Phone: 800-315-4963 Fax: 770-981-8191 www.lithonia.com

RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number 2GTL 4 48L EZ1 LP830 Notes	Type K

LITHONIA LIGHTING®

FEATURES & SPECIFICATIONS

INTENDED USE — The 2GTL LED recessed troffer offers a wide range of lumen packages, color temperatures, and lens options to meet the lighting needs for a wide range of applications such as schools, offices, and hospitals. The light engine delivers long life and excellent color to ensure a sound quality, low-maintenance lighting installation. **Certain airborne contaminants can diminish integrity of acrylic. Click here for Acrylic Environmental Compatibility table for suitable uses.**

CONSTRUCTION — Housing formed from 22 gauge cold-rolled steel. Smooth hemmed sides and smooth inward formed end flanges for safe handling. Lighter-weight fixture allows for safe, easy installation.

OPTICS — Highly transmissive pattern #12 lens diffuses the light source without compromising output. Pattern # 19 and satin white lens options also available.

ELECTRICAL — Long-life LEDs, coupled with high-efficiency drivers, provide extended service life. 90% LED lumen maintenance at 60,000 hours (L90/60,000).

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 nLight® embedded 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 GTL 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.

The step-level dimming option (SLD) allows the system to be switched to 50% power for compliance with common energy codes while maintaining fixture appearance.

Ballast disconnect is provided where required to comply with U.S. and Canadian codes.

INSTALLATION — LED boards include plug-in connectors for easy of upgradeability. Suitable for direct insulation contact.

LISTINGS — CSA certified to meet U.S. and Canadian standards. IC rated. 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

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

Note: Specifications subject to change without notice.

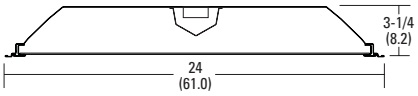
GTL Series

2GTL

2' x 4'
LED Recessed Troffer

Specifications

Length: 48 (122.0)
Width: 24 (61.0)
Depth: 3-1/4 (8.2)



All dimensions are inches (centimeters) unless otherwise indicated.

ORDERING INFORMATION

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

Example: 2GTL 4 48L EZ1 LP835

2GTL									
Series	**Length**	**Trim type**	**Lumens[1]**	**Door**	**Lens**	**Voltage**	**Driver**	**Color temperature**
2GTL 2' wide recessed LED luminaire	4 4'	(blank) Grid F Overlapping flange	30L 3000 lumens 40L 4000 lumens 48L 4800 lumens 60L 6000 lumens 72L 7200 lumens	(blank) Flush steel, white FN Flush aluminum, natural FM Flush aluminum, matte black FW Flush aluminum, white RN Regressed aluminum, natural RM Regressed aluminum, matte black RW Regressed aluminum, white	(blank) #12 pattern acrylic, 0.125" thick A19 #19 pattern acrylic SWL Satin white	(blank) MVOLT (120-277V) 120 120V 277 277V 347 347V[2]	EZ1 eldoLED dims to 1 % SLD Step-level dimming[3] EXA1 eldoLED dims to 1%, XPoint wireless enabled	LP830 3000 K LP835 3500 K LP840 4000 K LP850 5000 K

Controls[3]	
(blank)	No controls
N80	nLight with 80% (L80) lumen management
N80EMG	nLight with 80% (L80) lumen management for use with generator supply emergency power
N100	nLight without lumen management
N100EMG	nLight without lumen management for use with generator supply emergency power

Options	
EL7L	700 lumen emergency battery[3]
EL14L	1400 lumen emergency battery[3]
CP	Chicago plenum
PWS1836	6' pre-wire, 3/8" diameter, 18-gauge, 1-circuit
PWS1846	6' pre-wire, 3/8" diameter, 18-gauge, 2-circuit
ABC	Door frame gasketing[4]
GLR	Slow-blowing fuse[5]
GMF	Fast-blowing fuse[5]
LATC	Earthquake clip
NPLT	Narrow pallet
PAF	Paint after fab

Accessories: *Order as separate catalog number.*	
DGA24	Drywall grid adapter for 2x4 recessed fixture.

Notes

1 Approximate lumen output. Lumen output will vary depending upon lens option chosen.
2 Not available with EL7L, EL14L, or SLD.
3 When using pre-wire option, use PWS1846.
4 Only available with aluminum door.
5 Must specify voltage, 120 or 277.

RKL SALES CORPORATION MANUFACTURERS REPRESENTATIVES	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number 2GTL 4 48L EZ1 LP830 Notes	Type K

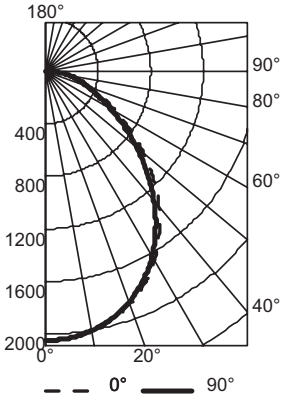
2GTL LED Troffer

Performance Data							
Lumen Package	Input Watts	Lumens	LPW	Lumen Package	Input Watts	Lumens	LPW
30L LP830	30.5	2664.7	87.37	60L LP830	54.8	5173.3	94.40
30L LP835	30.5	2798	91.74	60L LP835	54.8	5430.7	99.10
30L LP840	30.5	2931.2	96.10	60L LP840	54.8	5702.5	104.06
30L LP850	30.5	2994.4	98.18	60L LP850	54.8	5849.1	106.74
40L LP830	38.9	3910.8	100.53	72L LP830	71.0	6731.1	94.80
40L LP835	38.9	4103.7	105.49	72L LP835	71.0	7066.9	99.53
40L LP840	38.9	4290.2	110.29	72L LP840	71.0	7421.3	104.53
40L LP850	38.9	4393.3	112.94	72L LP850	71.0	7538.5	106.18
48L LP830	46.9	4583.3	97.72				
48L LP835	46.9	4815.2	102.67				
48L LP840	46.9	5036.3	107.38				
48L LP850	46.9	5164.2	110.11				

Note: Actual wattage may differ by +/- 5% when operating between 120-277V +/- 10%.
Performance based on standard #12 pattern acrylic lens.

PHOTOMETRICS

2GTL4 48L EZ1 LP835, 4815 delivered lumens, test no. LTL26406P9, tested in accordance to IESNA LM-79.



CP Summary

	0°	90
0°	2046	2046
5°	2040	2038
15°	1959	1948
25°	1782	1755
35°	1507	1460
45°	1158	1093
55°	795	726
65°	482	439
75°	257	255
85°	96	94
90	13	7

Coefficients of Utilization

RCR	pf 20% pc 80% pw 70%	50%	30%	20% pc 70% 50%	30%	10%	50% 30%	10%
0	119	119	119	116	116	116	111	111	111
1	109	105	101	103	99	96	98	95	93
2	100	92	86	90	85	80	87	82	78
3	92	82	74	80	73	67	77	71	66
4	85	73	65	72	64	58	69	63	57
5	78	66	57	65	57	51	63	56	50
6	72	60	51	59	51	45	57	50	44
7	67	54	46	54	46	40	52	45	40
8	63	50	42	49	41	36	48	41	36
9	59	46	38	45	38	32	44	37	32
10	55	42	35	42	35	30	41	34	29

Zonal Lumen Summary

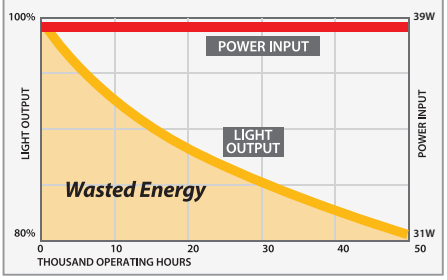
Zone	Lumens	% Lamp	% Fixture
0° - 30°	1551	32.2	32.2
0° - 40°	2471	51.3	51.3
0° - 60°	4002	83.1	83.1
0° - 90°	4813	100.0	100.0
90° - 120°	2	0.0	0.0
90° - 130°	2	0.0	0.0
90° - 150°	2	0.0	0.0
90° - 180°	2	0.0	0.0
0° - 180°	4815	100.0	100.0

Constant Lumen Management

Enabled by the embedded nLight control, the GTL actively tracks its run-time and manages its light source such that constant lumen output is maintained over the system life. Referred to as lumen management, this feature eliminates the energy waste created by the traditional practice of over-lighting.

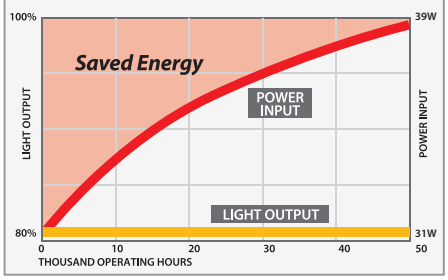
Without Lumen Management

Energy is wasted and light level is inconsistent.



With Lumen Management

Energy is saved and light level remains consistent.



LITHONIA LIGHTING®
An AcuityBrands Company

LED: One Lithonia Way Conyers, GA 30012 Phone: 800-858-7763 Fax: 770-929-8789 www.lithonia.com

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number 2GTL 2 40L EZ1 LP830 Notes	Type L

LITHONIA LIGHTING®

FEATURES & SPECIFICATIONS

INTENDED USE — The 2GTL LED recessed troffer offers a wide range of lumen packages, color temperatures, and lens options to meet the lighting needs for a wide range of applications such as schools, offices, and hospitals. The light engine delivers long life and excellent color to ensure a sound quality, low-maintenance lighting installation. **Certain airborne contaminants can diminish integrity of acrylic. Click here for Acrylic Environmental Compatibility table for suitable uses.**

CONSTRUCTION — Housing formed from 22 gauge cold-rolled steel. Smooth hemmed sides and smooth inward formed end flanges for safe handling. Lighter-weight fixture allows for safe, easy installation.

OPTICS — Highly transmissive pattern #12 lens diffuses the light source without compromising output. Pattern # 19 and satin white lens options also available.

ELECTRICAL — Long-life LEDs, coupled with high-efficiency drivers, provide extended service life. 90% LED lumen maintenance at 60,000 hours (L90/60,000).

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 nLight® embedded 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 GTL 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.

The step-level dimming option (SLD) allows the system to be switched to 50% power for compliance with common energy codes while maintaining fixture appearance.

Ballast disconnect is provided where required to comply with U.S. and Canadian codes.

INSTALLATION — LED boards include plug-in connectors for easy of upgradeability. Suitable for direct insulation contact.

LISTINGS — CSA certified to meet U.S. and Canadian standards. IC rated. 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.

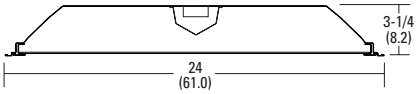
GTL Series

2GTL

2' x 2'
LED Recessed Troffer

Specifications

Length: 24 (61.0)
Width: 24 (61.0)
Depth: 3-1/4 (8.2)



All dimensions are inches (centimeters) unless otherwise indicated.

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.

ORDERING INFORMATION

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

Example: 2GTL 2 33L EZ1 LP835

2GTL									
Series	**Length**	**Trim type**	**Lumens**[1]	**Door**	**Lens**	**Voltage**	**Driver**	**Color temperature**
2GTL 2' wide recessed LED luminaire	2 2'	(blank) Grid F Overlapping flange	20L 2000 lumens 33L 3300 lumens 40L 4000 lumens	(blank) Flush steel, white FN Flush aluminum, natural FM Flush aluminum, matte black FW Flush aluminum, white RN Regressed aluminum, natural RM Regressed aluminum, matte black RW Regressed aluminum, white	(blank) #12 pattern acrylic, 0.125" thick A19 #19 pattern acrylic, 0.156" thick SWL Satin white	(blank) MVOLT (120-277V) 120 120V 277 277V 347 347V[2]	EZ1 eldoLED dims to 1 % SLD Step-level dimming[3] EXA1 eldoLED dims to 1%, XPoint wireless enabled	LP830 3000 K LP835 3500 K LP840 4000 K LP850 5000 K

Controls[4]	
(blank)	No controls
N80	nLight with 80% (L80) lumen management
N80EMG	nLight with 80% (L80) lumen management for use with generator supply emergency power
N100	nLight without lumen management
N100EMG	nLight without lumen management for use with generator supply emergency power

Options	
EL7L	700 lumen emergency battery[5]
EL14L	1400 lumen emergency battery[5]
CP	Chicago plenum
PWS1836	6' pre-wire, 3/8" diameter, 18-gauge, 1-circuit
PWS1846	6' pre-wire, 3/8" diameter, 18-gauge, 2-circuit
ABC	Door frame gasketing[6]
GLR	Slow-blowing fuse[7]
GMF	Fast-blowing fuse[7]
LATC	Earthquake clip
NPLT	Narrow pallet
PAF	Paint after fab

Accessories: *Order as separate catalog number.*	
DGA22	Drywall grid adapter for 2x2 recessed fixture.

Notes

1 Approximate lumen output. Lumen output will vary depending upon lens option chosen.
2 Not available with EL7L, EL14L, or SLD.
3 Not available with EL7L or EL14L.
4 Not available with SLD.
5 When using pre-wire option, use PWS1846.
6 Only available with aluminum door.
7 Must specify voltage, 120 or 277.

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number 2GTL 2 40L EZ1 LP830 Notes	Type L

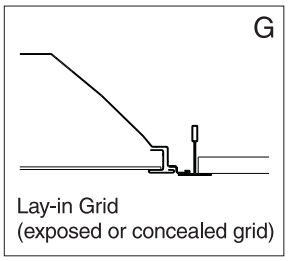
2GTL LED Troffer

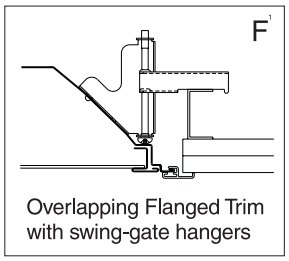
Performance Data			
Lumen Package	Input Watts	Lumens	LPW
20L LP830	19.6	1981.2	101.08
20L LP835	19.6	2080.3	106.14
20L LP840	19.6	2179.4	111.19
20L LP850	19.6	2215	113.01
33L LP830	35.4	3300.7	93.24
33L LP835	35.4	3453.3	97.55
33L LP840	35.4	3619.7	102.25
33L LP850	35.4	3645.5	102.98
40L LP830	39.6	3530.6	89.16
40L LP835	39.6	3704.9	93.56
40L LP840	39.6	3883.2	98.06
40L LP850	39.6	3994.2	100.86

Note: Performance based on standard #12 pattern acrylic lens.

MOUNTING DATA

Continuous row mounting of flanged units requires CRE and CRM trim options (see Options).



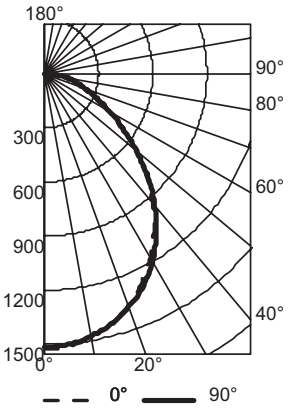


NOTE:

1 Recommended rough-in dimensions for F-trim fixtures 24"x48" (Tolerance is +1/4"-0"). Swing-gate range 1-3/16" to 3-15/16". Swing-gate span 23-3/8" to 26-11/16". Fixture swing-gate points require additional 1-1/16" over nominal fixture height.

PHOTOMETRICS

2GTL2 33L EZ1 LP835, 3453 delivered lumens, test no. LTL26153P5, tested in accordance to IESNA LM-79.



CP Summary

	0°	90
0°	1518	1518
5°	1515	1504
15°	1433	1434
25°	1274	1295
35°	1056	1081
45°	795	809
55°	540	530
65°	328	314
75°	176	180
85°	61	63
90	5	3

Coefficients of Utilization

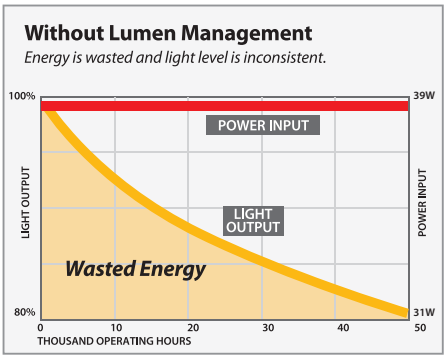
	pf	20%								
	pc	80%			70%			50%		
	pw	70%	50%	30%	50%	30%	10%	50%	30%	10%
RCR	0	119	119	119	116	116	116	111	111	111
	1	109	105	101	103	99	96	99	96	93
	2	100	93	86	91	85	80	87	82	78
	3	92	82	75	81	74	68	78	72	67
	4	85	74	65	72	64	59	70	63	58
	5	78	66	58	65	57	51	63	56	51
	6	73	60	51	59	51	45	57	50	45
	7	68	55	46	54	46	40	52	45	40
	8	63	50	42	49	42	36	48	41	36
	9	59	46	38	46	38	33	45	38	33
	10	56	43	35	42	35	30	41	35	30

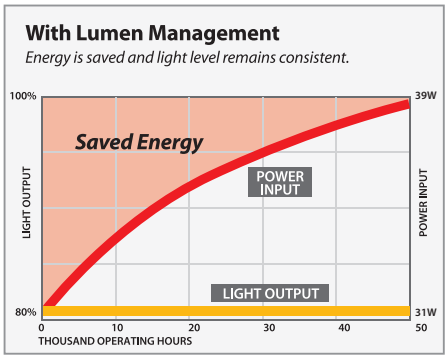
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Fixture
0° - 30°	1136	32.9	32.9
0° - 40°	1799	52.1	52.1
0° - 60°	2889	83.6	83.6
0° - 90°	3454	100.0	100.0
90° - 180°	0	0.0	0.0
0° - 180°	3454	100.0	100.0

Constant Lumen Management

Enabled by the embedded nLight control, the GTL actively tracks its run-time and manages its light source such that constant lumen output is maintained over the system life. Referred to as lumen management, this feature eliminates the energy waste created by the traditional practice of over-lighting.





LITHONIA LIGHTING®
An AcuityBrands Company

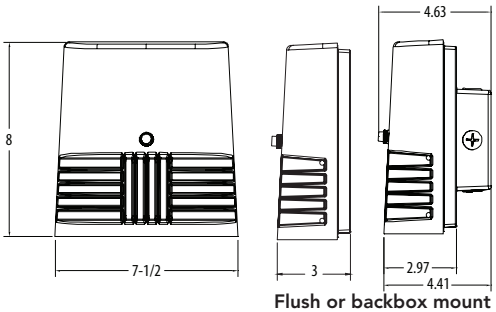
LED: One Lithonia Way Conyers, GA 30012 Phone: 800-858-7763 Fax: 770-929-8789 www.lithonia.com

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number OLWX1 LED 13W 40K Notes	Type M

OLWX1 LED
LED Wall Luminaire

Specifications

Width:	7-1/2" *(19 cm)*
Height:	8" *(20.3 cm)*
Depth:	3" *(7.62 cm)*
Weight:	5 lbs *(2.27kg)*



Flush or backbox mount

Introduction

As versatile as it is efficient, the OLWX1 is designed to replace up to 250W metal halide while saving over 87% in energy costs. It combines multiple mounting options with the latest generation of LEDs for a wall pack luminaire that converts to a whole lot more. Whether you are mounting it to a recessed junction box, conduit/through wiring, as an up light, as a down light, or as a flood light – the OLWX1 has you covered.

Ordering Information

EXAMPLE: OLWX1 LED 20W 50K

OLWX1 LED

Series	Performance Package	Color Temperature	Voltage	Controls	Finish
OLWX1 LED	13W 13 watts 20W 20 watts 40W 40 watts	40K 4000 K [1] 50K 5000 K	(blank) MVOLT [2] 120 120V [3] 347 347V	(blank) None PE 120V button photocell [1,3]	(blank) Dark bronze

Accessories

Ordered and shipped separately.

OLWX1TS	Slipfitter – size 1
OLWX1YK	Yoke – size 1
OLWX1THK	Knuckle – size 1

NOTES

1 Not available with 347V option.
2 MVOLT driver operates on any line voltage from 120-277V (50/60Hz).
3 Specify 120V when ordering with photocell (PE option).

FEATURES & SPECIFICATIONS

INTENDED USE
The versatility of the OLWX1 LED combines a sleek, low-profile wall pack design and high-output LEDs to provide an energy efficient, low maintenance LED wall pack suitable for replacing up to 250W metal halide fixtures. Available flood light mounting accessories convert the OLWX1 LED into a highly efficient flood light.

OLWX1 LED is ideal for outdoor applications such as building perimeters, loading areas, driveways and sign and building flood lighting.

CONSTRUCTION
Rugged cast-aluminum housing with textured dark bronze polyester powder paint for lasting durability. Integral heat sinks optimize thermal management through conductive and convective cooling. LEDs are protected behind a glass lens. Housing is sealed against moisture and environmental contaminants (IP65).

OPTICS
High-performance LEDs behind clear glass for maximum light output. Light engines are available in 4000K and 5000K CCTs. See Lighting Facts label and photometry reports for specific fixture performance.

ELECTRICAL
Light engine consists of 1 high-efficiency Chip On Board (COB) LED with integrated circuit board mounted directly to the housing to maximize heat dissipation and promote long life (L73/100,000 hours at 25°C). Electronic drivers have a power factor >90% and THD <20% and a minimum 2.5kV surge rating. Flood light mounting accessories include an additional 6kV surge protection device.

INSTALLATION
Easily mounts to recessed junction boxes with the included wall mount bracket, or for surface mounting and conduit entry - with the included junction box with five 1/2" threaded conduit entry hubs. Flood light mounting accessories (sold separately) include knuckle, integral slipfitter and yoke mounting options. Luminaire may be wall or ground mounted in downward or upward orientation.

LISTINGS
UL Listed to U.S. and Canadian safety standards for wet locations. Rated for -40° C minimum ambient. Tested in accordance with IESNA LM-79 and LM-80 standards. 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 to confirm which versions are qualified.

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

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

LITHONIA LIGHTING
One Lithonia Way • Conyers, Georgia 30012 • Phone: 800.279.8041 • Fax: 770.918.1209 • www.lithonia.com

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number OLWX1 LED 13W 40K Notes	Type M

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Actual performance may differ as a result of end-user environment and application. Actual wattage may differ by +/- 8% when operating between 120-347V +/- 10%.

Fixture Model Number	CCT	System Watts	Lumens	LPW	B	U	G	CRI
OLWX1 LED 13W 40K	4000 K	14 W	1,271	91	1	0	0	>70
OLWX1 LED 13W 50K	5000 K	14 W	1,289	92	1	0	0	>80
OLWX1 LED 20W 40K	4000 K	22 W	1,854	84	1	0	0	>70
OLWX1 LED 20W 50K	5000 K	22 W	1,860	84	1	0	0	>80
OLWX1 LED 40W 40K	4000 K	39 W	4,027	101	2	0	0	>70
OLWX1 LED 40W 50K	5000 K	37 W	4,079	110	2	0	0	>70

Electrical Load

Fixture Model Number	Rated Power (watts)	Input current at given input voltage (amps)				
		120V	208V	240V	277V	347V
OLWX1 LED 13W 40K	14 W	0.12	0.07	0.06	0.06	0.04
OLWX1 LED 13W 50K	14 W	0.12	0.07	0.06	0.06	0.04
OLWX1 LED 20W 40K	22 W	0.20	0.12	0.10	0.09	0.06
OLWX1 LED 20W 50K	22 W	0.20	0.12	0.10	0.09	0.06
OLWX1 LED 40W 40K	39 W	0.37	0.21	0.19	0.16	0.11
OLWX1 LED 40W 50K	37 W	0.37	0.21	0.19	0.16	0.11

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

	0°C	10°C	20°C	25°C	30°C	40°C
13W	1.06	1.03	1.01	1.00	0.99	0.96
20W	1.06	1.04	1.01	1.00	0.99	0.96
40W	1.07	1.04	1.01	1.00	0.99	0.96

Projected LED Lumen Maintenance

Data references the extrapolated performance projections in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
OLWX1 LED 13W	1.00	0.92	0.85	0.73
OLWX1 LED 20W	1.00	0.92	0.85	0.73
OLWX1 LED 40W	1.00	0.94	0.88	0.79

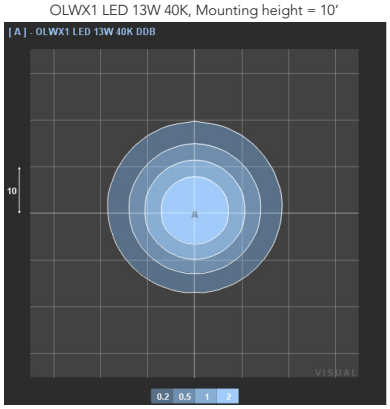
Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit the Lithonia Lighting OLWX1 LED homepage. Tested in accordance with IESNA LM-79 and LM-80 standards

LEGEND

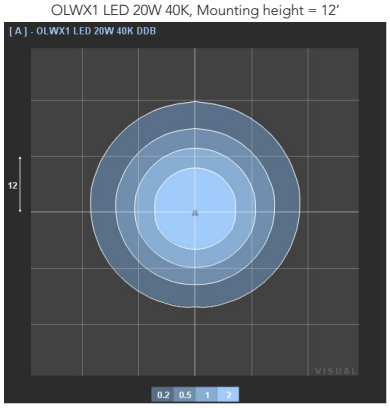
- 0.2 fc
- 0.5 fc
- 1.0 fc
- 2.0 fc

OLWX1 LED 13W 40K, Mounting height = 10'



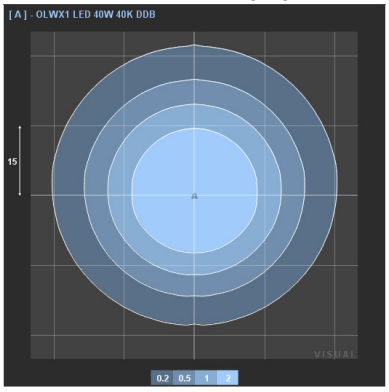
Test No. LTL22697 tested in accordance with IESNA LM-79-08.

OLWX1 LED 20W 40K, Mounting height = 12'



Test No. LTL22696 tested in accordance with IESNA LM-79-08.

OLWX1 LED 40W 40K, Mounting height = 15'



Test No. LTL22695 tested in accordance with IESNA LM-79-08.

Accessories

OLWX1TS
Slipfitter – size 1

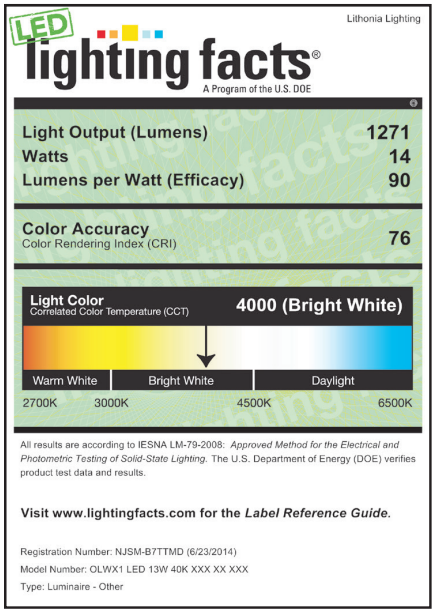
OLWX1YK
Yoke – size 1

OLWX1THK
Knuckle – size 1

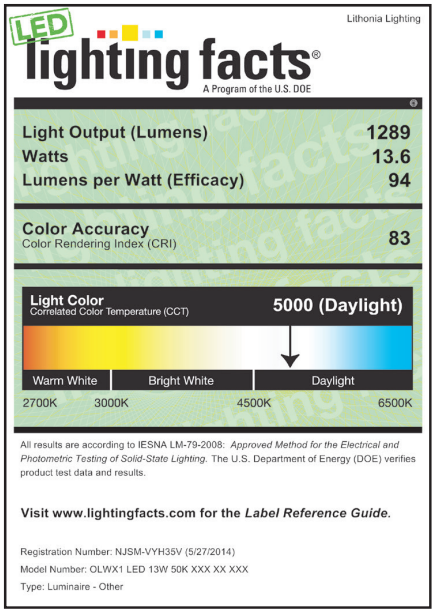
RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number OLWX1 LED 13W 40K Notes	Type M

Lighting Facts Labels

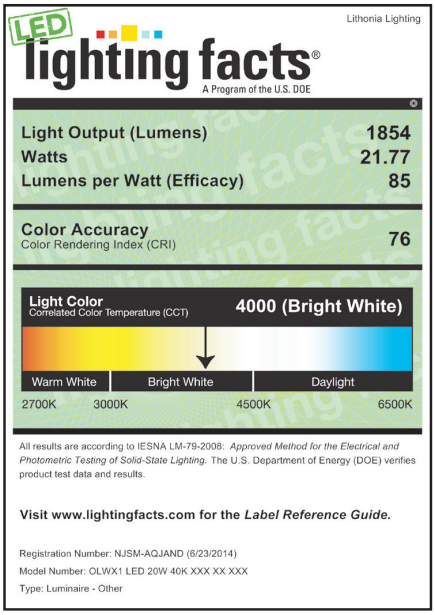
OLWX1 LED 13W 40K XXX XX XXX



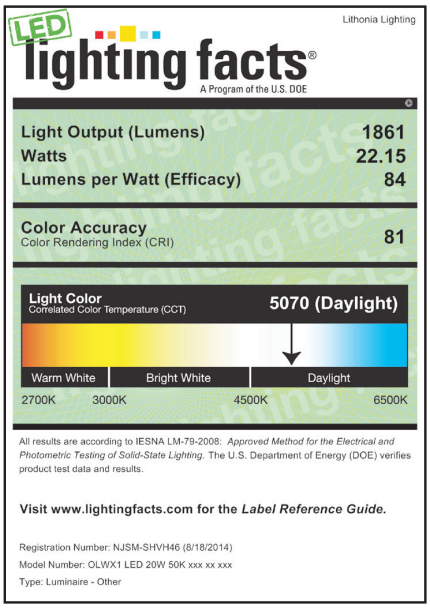
OLWX1 LED 13W 50K XXX XX XXX



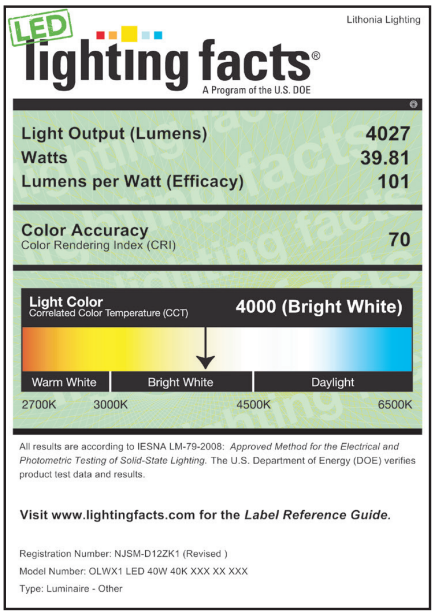
OLWX1 LED 20W 40K XXX XX XXX



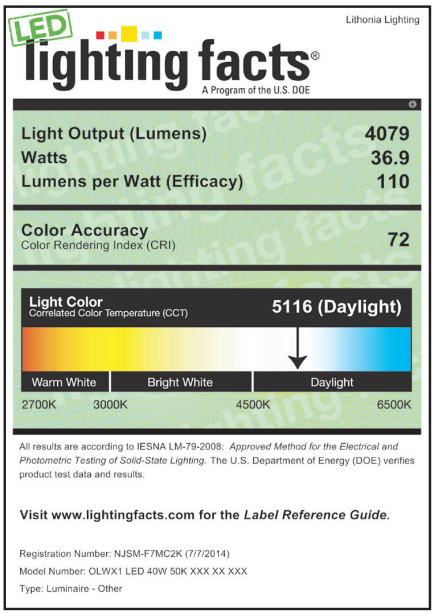
OLWX1 LED 20W 50K XXX XX XXX



OLWX1 LED 40W 40K XXX XX XXX



OLWX1 LED 40W 50K XXX XX XXX



RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number PGX LED P1 40K T5M MVOLT PM PIR360SS DWHXD Notes	Type M1-ALT

PGX LED

Parking Garage Luminaire

PENDING

Specifications

Diameter: 16″ *(40.6 cm)*

Height: 8″ *(20.3 cm)*

Weight (max): TBD lbs *(TBD kg)*

Introduction

The PGX LED luminaire is designed to provide energy savings, long life, and visual comfort. Delivering up to 80% in energy savings when replacing 175W metal halide luminaires, the PGX LED offers over a 100,000 hour life expectancy, significantly reducing maintenance costs. The PGX LED's prismatic borosilicate glass lens delivers optimal visual comfort, superior photometric control, and no discoloration over the life of the luminaire.

Ordering Information

EXAMPLE: PGX LED 1 40K T5M MVOLT PIR360SS DWHXD

Series	Package	Color temperature	Distribution	Voltage	Mounting	Control options	Other options	Finish *(required)*
PGX LED	1	40K 4000K	T5M Type V medium	MVOLT	**Shipped included**	**Shipped installed**	**Shipped installed**	DWHXD White
	2	50K 5000K		120	PM Pendant mount	PIR360SS Motion/ambient sensor, 8-15' mounting height	SF Single fuse (120, 277, 347V)	DNAXD Natural aluminum
				208	SRM Surface mount	PIRH360SS Motion/ambien sensor, 15-30' mounting height	DF Double fuse (208, 240, 480V)	DDBXD Dark bronze
				240	**Shipped separately**	XAD Wireless dimming controller (Remote sensor)	BDS Bird shroud	
				277	YK Yoke/trunnion mount	XADPIR360SS Wireless dimming controller (Integrated sensor 8-15' mounting height)		
				347		XADPIRH360SS Wireless dimming controller (Integrated sensor 15-30' mounting height)		
				480		SPD10KV Separate surge protection		

Lumen Performance

Note: Preliminary Performance

Package	System Watts	Distribution Type	40K (4000K, 70 CRI)		50K (5000K, 67 CRI)	
			Lumens	LPW	Lumens	LPW
1	43W	T5M	4000	93	4100	95
2	64W	T5M	5500	86	5700	89

NOTES

LITHONIA LIGHTING

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RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number OLVTCM Notes	Type N

LITHONIA LIGHTING®

FEATURES & SPECIFICATIONS

INTENDED USE

Provides years of maintenance-free illumination for indoor or outdoor use in residential & commercial applications.

CONSTRUCTION

Cast-aluminum housing with corrosion-resistant paint in an industrial grey finish.

Sealed gasket protects against moisture and dust.

OPTICS

4000K CCT LEDs.

Frosted glass diffuser provides even light distribution.

LUMEN MAINTENANCE

LEDs will deliver 70% of their initial lumens at 50,000 hour average LED life. See Lighting Facts label on page 2 for performance details.

ELECTRICAL

MVOLT driver operates on any line voltage from 120-277V

Operating temperature -40ºC to 40ºC.

4kV surge protection standard.

INSTALLATION

Mounts to ceiling or wall with surface mount junction box (included).

LISTINGS

UL Listed to U.S. and Canadian safety standards for wet locations.

Tested in accordance with IESNA LM-79 and LM-80 standards.

WARRANTY

Five-year limited warranty. Full warranty terms located at www.AcuityBrands.com/CustomerResources/Terms_and_Conditions.aspx

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.

Note: Specifications are subject to change without notice.

Outdoor General Purpose

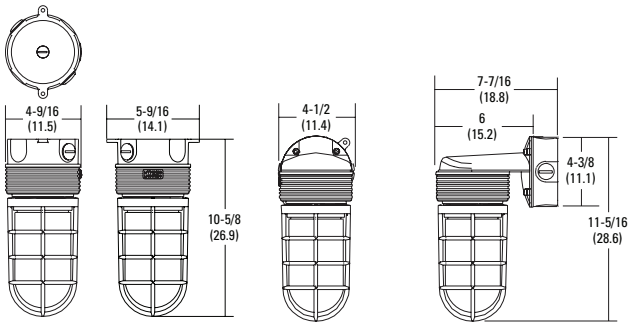
OLVTCM & OLVTWM

LED VAPORTIGHT

LED

Specifications

All dimensions are inches (centimeters)



ORDERING INFORMATION For shortest lead times, configure products using **bolded options**.

Example: OLVTCM

Series	Color temperature	Voltage	Finish
OLVTCM Ceiling MT **OLVTWM** Wall MT	**(blank)** 4000K	**(blank)** MVOLT (120V-277V)	**(blank)** Grey

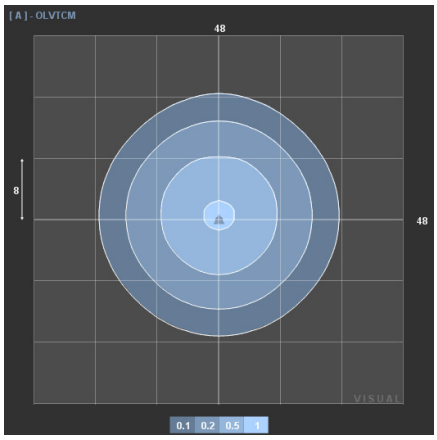
RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number OLVTCM Notes	Type N

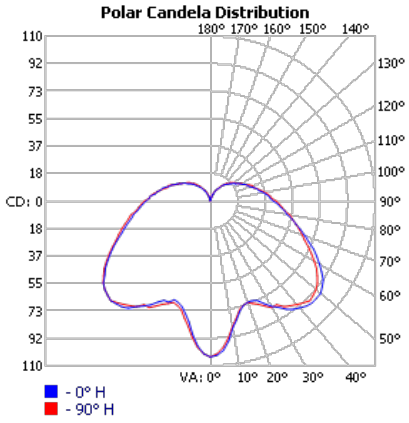
OLVTCM & OLVTWM LED Vaportight

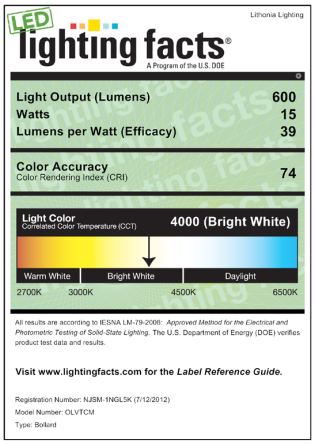
PHOTOMETRICS

To see complete photometric reports or download .ies files for this product,visit Lithonia Lighting's Outdoor LED homepage
Tested in accordance with IESNA LM-79 and LM-80 standards.

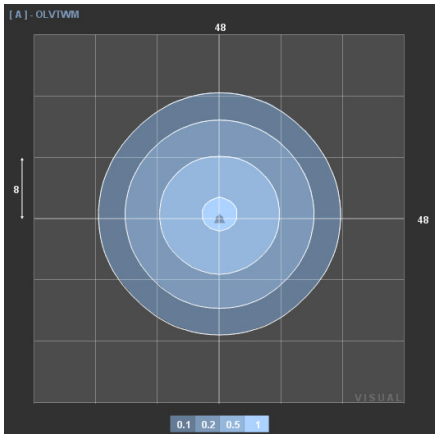
OLVTCM

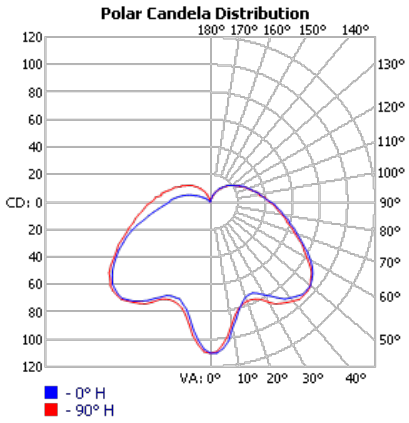


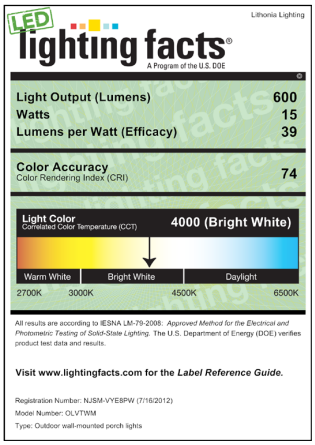




OLVTWM







RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number DSXB LED 16C 700 40K SYM MVOLT DDBXD Notes	Type P-ALT

D-Series
LED Bollard

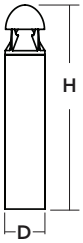
d-series

Specifications

Diameter: 8" Round *(20.3 cm)*

Height: 42" *(106.7 cm)*

Weight (max): 27 lbs *(12.25 kg)*



Introduction

The D-Series LED Bollard is a stylish, energy-saving, long-life solution designed to perform the way a bollard should—with zero uplight. An optical leap forward, this full cut-off luminaire will meet the most stringent of lighting codes. The D-Series LED Bollard's rugged construction, durable finish and long-lasting LEDs will provide years of maintenance-free service.

Ordering Information

EXAMPLE: DSXB LED 16C 700 40K SYM MVOLT DDBXD

DSXB LED								
Series	**LEDs**	**Drive current**	**Color temperature**	**Distribution**	**Voltage**	**Control options**	**Other options**	**Finish** *(required)*
DSXB LED	**Asymmetric** 12C 12 LEDs[1] **Symmetric** 16C 16 LEDs[2]	350 350 mA 450 450 mA[3,4] 530 530 mA 700 700 mA	30K 3000 K 40K 4000 K 50K 5000 K AMBPC Amber phosphor converted AMBLW Amber limited wavelength[3,4]	ASY Asymmetric[1] SYM Symmetric[2]	MVOLT[5] 120[5] 208[5] 240[5] 277[5] 347[4]	**Shipped installed** PE Photoelectric cell, button type DMG 0-10V dimming driver (no controls) ELCW Emergency battery backup[6]	**Shipped installed** SF Single fuse (120, 277, 347V)[4,7] DF Double fuse (208, 240V)[4,7] H24 24" overall height H30 30" overall height H36 36" overall height FG Ground-fault festoon outlet L/AB Without anchor bolts L/AB4 4-bolt retrofit base without anchor bolts[8]	DWHXD White DNAXD Natural aluminum DDBXD Dark bronze DBLXD Black DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white

Accessories

Ordered and shipped separately.

MRAB U Anchor bolts for DSXB[8]

NOTES

1. Only available in the 12C, ASY version.
2. Only available in the 16C, SYM version.
3. Only available with 450 AMBLW version.
4. Not available with ELCW.
5. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120, 208, 240 or 277 options only when ordering with fusing (SF, DF options), or photocontrol (PE option).
6. Not available with 347V. Not available with fusing. Not available with 450 AMBLW.
7. Single fuse (SF) requires 120, 277, or 347 voltage option. Double fuse (DF) requires 208 or 240 voltage option.
8. MRAB U not available with L/AB4 option.

LITHONIA LIGHTING
One Lithonia Way • Conyers, Georgia 30012 • Phone: 800.279.8041 • Fax: 770.918.1209 • www.lithonia.com

RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number DSXB LED 16C 700 40K SYM MVOLT DDBXD Notes	Type P-ALT

Performance Data

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Actual performance may differ as a result of end-user environment and application. Actual wattage may differ by +/- 8% when operating between 120-480V +/- 10%.

Light Engines	Drive Current	System Watts	3000 K					4000 K					5000 K					Limited Wavelength Amber				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
Asymmetric 3 Engines (12 LEDs)	350	16	715	45	1	0	1	889	56	1	0	1	953	60	1	0	1					
	530	22	985	45	1	0	1	1,239	56	1	0	1	1,334	61	1	0	1					
	700	31	1,263	41	1	0	1	1,588	51	1	0	1	1,712	55	1	0	1					
	Amber 450	16																348	22	1	0	1
Symmetric 4 Engines (16 LEDs)	350	20	923	46	1	0	1	1,161	58	1	0	1	1,251	63	1	0	1					
	530	28	1,274	46	1	0	1	1,603	57	1	0	1	1,726	62	1	0	1					
	700	39	1,634	42	1	0	1	2,055	53	1	0	1	2,215	57	1	0	1					
	Amber 450	20																419	21	1	0	1

Note: Available with phosphor-converted amber LED's (nomenclature AMBPC). These LED's produce light with 97+% >530 nm. Output can be calculated by applying a 0.7 factor to 4000 K lumen values and photometric files.

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	1.00	0.98	0.97	0.95

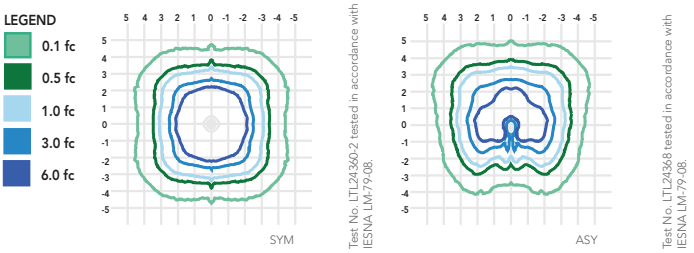
Electrical Load

Light Engines	Drive Current (mA)	System Watts	Current (A) 120	208	240	277	347
12C	350	16W	0.158	0.118	0.114	0.109	0.105
	530	22W	0.217	0.146	0.136	0.128	0.118
	700	31W	0.296	0.185	0.168	0.153	0.139
	Amber 450	16W	0.161	0.120	0.115	0.110	0.106
16C	350	20W	0.197	0.137	0.128	0.121	0.114
	530	28W	0.282	0.178	0.162	0.148	0.135
	700	39W	0.385	0.231	0.207	0.185	0.163
	Amber 450	20W	0.199	0.139	0.130	0.123	0.116

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Bollard homepage.

Isofootcandle plots for the DSXB LED 700 40K. Distances are in units of mounting height (3').



FEATURES & SPECIFICATIONS

INTENDED USE
The rugged construction and maintenance-free performance of the D-Series LED Bollard is ideal for illuminating building entryways, walking paths and pedestrian plazas, as well as any other location requiring a low-mounting-height light source.

CONSTRUCTION
One-piece 8-inch-round extruded aluminum shaft with thick side walls for extreme durability, and die-cast aluminum reflector and top cap. Die-cast aluminum mounting ring allows for easy leveling even in uneven areas and full 360-degree rotation for precise alignment during installation. Three ½" x 11" anchor bolts with double nuts and washers and 3-5/8" max. bolt circle template ensure stability. Overall height is 42" standard.

FINISH
Exterior parts are protected by a zinc-infused super durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering for maximum retention of gloss and luster. A tightly controlled multi-stage process ensures a minimum 3-mil thickness for a finish that can withstand the elements without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS
Two 0% uplight optical distributions are available: symmetrical and asymmetrical. IP66 sealed LED light engine provides smoothly graduated illumination without uplight. Light engines are available in standard 4000 K (>70 CRI) or optional 3000 K (>80 CRI) or 5000 K (67 CRI). Limited-wavelength amber LEDs are also available.

ELECTRICAL
Light engines consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (L95/100,000 hours at 700mA at 25°C). Class 2 electronic drivers are designed for an expected life of 100,000 hours with < 1% failure rate. Electrical components are mounted on a removable power tray.

LISTINGS
CSA certified to U.S. and Canadian standards. Light engines are IP66 rated. Rated for -40°C minimum ambient. Cold-weather emergency battery backup rated for -20°C minimum ambient.

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 to confirm which versions are qualified.

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

Note: Specifications subject to change without notice.

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LT-24-B Notes	Type T4

LT
Two-Circuit Line Voltage Track

Catalog No. _____

Type _____

Project _____

Specifications/Features

Track

Versitile 2-circuit, 120V rated commercial grade track sections. 40 amp capacity; 20 amps per circuit. Two (2) hot conductors and one common neutral.

Split lighting loads over one run of track for higher wattage output per running foot of track.

Change lighting effects by simply applying fixtures to desired circuits and utilize separate switching.

Track has solid copper conductors with Noryl® insulators placed in heavy 14 ga. extruded aluminum channels.

Mechanial polarity with a visual indicator simplifies installation and mounting of fixtures while assuring proper electrical connections. All ConTech track fixtures have two position contacts to access 1-circuit conductors.

Toggle bolts are supplied for simple surface installation.

Nominal length track sections can be cut in the field for exact fit.

Set of shims supplied (1 per foot of track) to lock fixture contacts into second circuit position.

Strong “H” design construction.

Track sections may be mounted within ConTech's Recessed Track Housing System to minimize appearance.

Mounting accessories available for T-Bar clips, stems, threaded rods, and aircraft cable.

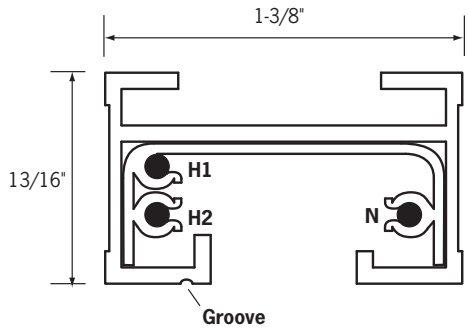
All track sections are supplied with two insulated end caps.

Warranty

This fixture is covered by ConTech’s full one (1) year replacement guarantee after date of purchase.

Listing

cULus listed. Suitable for dry locations.



Track Section End View

Ordering Information

Example Order: **LT** – 28 – B

2-Circuit Section Length | Finish

LT – [ ] – [ ]

- **22** - 2' (24") Length; 20-1/8" Actual Length
- **24** - 4' (48") Length; 44-1/8" Actual Length
- **26** - 6' (72") Length; 68-1/8" Actual Length
- **28** - 8' (96") Length; 92-1/8" Actual Length
- **212** - 12' (144") Length; 140-1/8" Actual Length

- **B** - Black
- **P** - White
- **S** - Silver*

**Not Available in 12' Sections*

LA211 end caps are supplied with all track sections and may be ordered separately as needed.
See other sheets for Recessed Track Systems and 120V Track Accessories.
2', 4', and 6' sections supplied with (2) toggle bolts, 8' and 12' sections supplied with (3) toggle bolts.

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LA-209-B Notes	Type T4

CONTECH LIGHTING Double-Circuit Track Power Feeds

Catalog No. _____

Type _____

Project _____

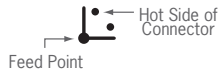
Specifications/Features

Power feeds are constructed of sturdy polycarbonate with galvanized steel back plates. Every electrical component is polarized and has a grounding capability to ensure safe usage. Visual polarity indicators simplify proper electrical installation. Twelve gauge insulated wire is used for internal connections. Solid copper track contacts provide good electrical conductivity for years of trouble free operation.

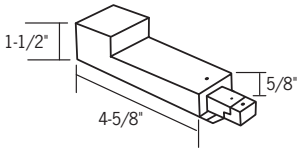
All track components are cULus listed except for LA-5 and LA-6. Installations are suitable for dry locations only. Maximum power rating is 2400 Watts: 20A at 120V, 60Hz. NEC allows 80% of full capacity or 1920 Watts.

Polarity-Configuration Legend

Forward Polarity Configuration



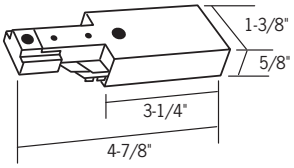
Reverse Polarity Configuration



Surface Conduit End Feed

LA-8
End Feed. (1) 1/2" top K.O. and (1) 1/2" end K.O. for surface conduit. Finish: -B, P, S

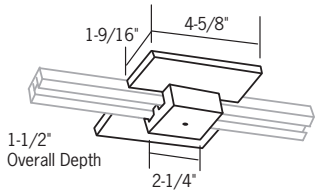
LA-8A
Reverse Polarity End Feed. (1) 1/2" top K.O. and (1) 1/2" end K.O. for surface conduit. Finish: -B, P, S



Top Access End Feed

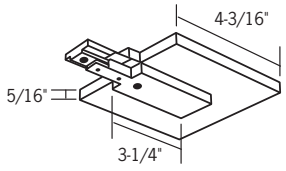
LA-10
Power Feed. (1) 1/2" top K.O. for standard electrical conduit. Finish: -B, P, S

LA-10A
Reverse Polarity Power Feed. (1) 1/2" top K.O. for standard electrical conduit. Finish: -B, P, S



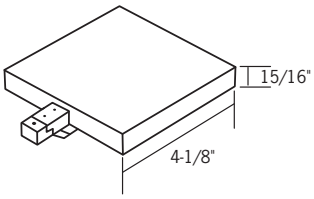
Floating Feed Point: LA-7

Can be installed anywhere along track. Kit includes square J-Box Canopy Cover, J-Box Mounting Bracket, Track Adaptor, and one LA-211 Series End Cap. Finish: -B, P, S



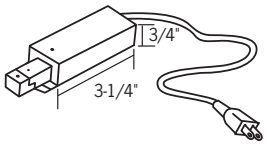
Outlet Box Feed Kit: LA- 209

Square Cover Plate With End Feed. (1) 1/2" K.O. Kit includes J-Box Mounting Bracket, Threaded Nipple And Nut. Finish: -B, P, S



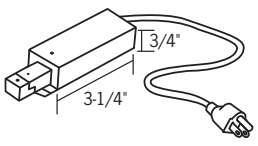
T-Bar End Feed: LA-20

Ceiling End Feed has 4 1/8" square canopy cover. (3) 1/2" top K.O.'s can be used with T-grid installations. Finish: -B, P



2-Wire Cord & Plug Feed: LA-5

18 Gauge 14' End Feed Cord, 10A Max., Optional 6A/125V switch, cut-out in cover for cord, **not UL Listed**. Finish: -B, P



3-Wire Cord & Plug Feed: LA-6

18 Gauge 14' End Feed Cord, 10 Amps Max., grounded plug and connections, cut-out in cover for cord, **not UL Listed**. Finish: -B, P

Continued on page 2

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LA-209-B Notes	Type T4

Single-Circuit Track Power Feeds

Catalog No. _____

Type _____

Project _____

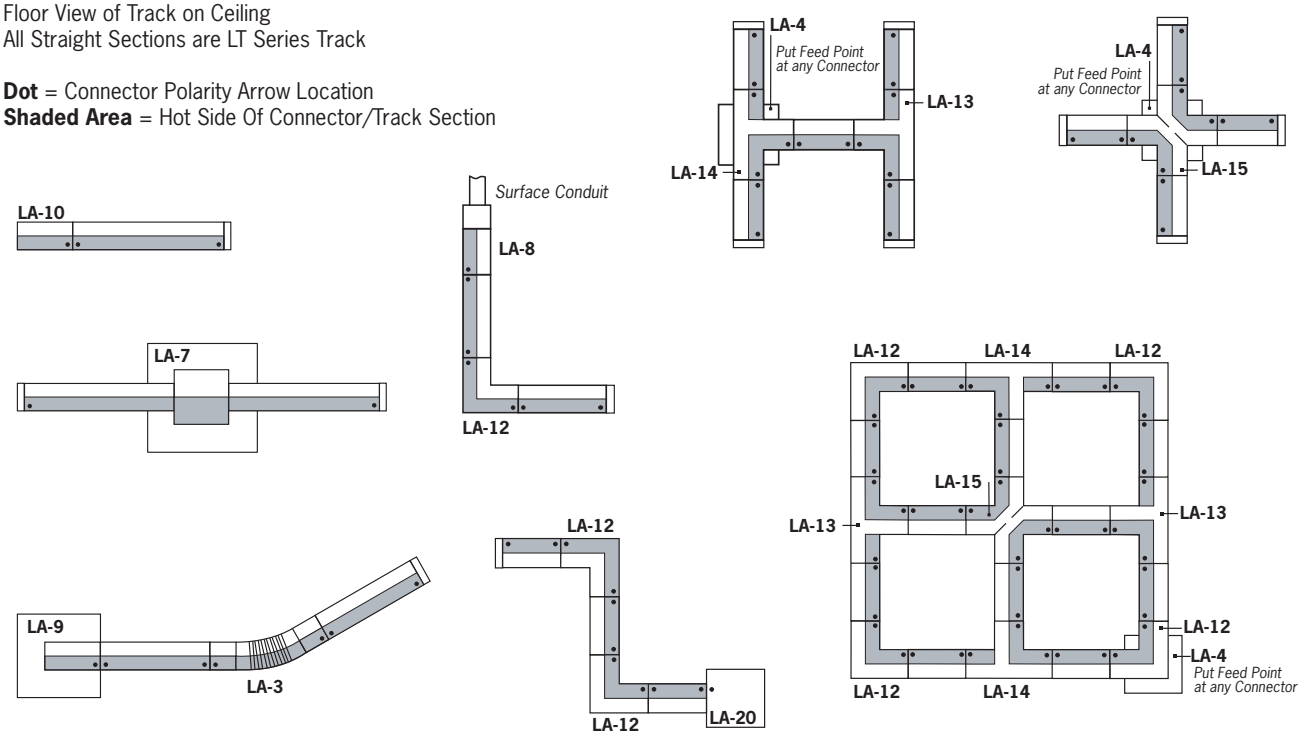
Sample System Installations

Line Up Polarity Arrows with Grooves, Insert Connectors Into Track Sections to Assemble Components

Sample Layouts with Polarity

Floor View of Track on Ceiling
All Straight Sections are LT Series Track

Dot = Connector Polarity Arrow Location
Shaded Area = Hot Side Of Connector/Track Section



Continued on page 2

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LA-208-B Notes	Type TPF

Two-Circuit Track Power Feeds

Catalog No. _____

Type _____

Project _____

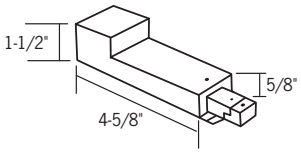
Power feeds are constructed of sturdy polycarbonate with galvanized steel back plates. Every electrical component is polarized and has a grounding capability to ensure safe usage. Visual polarity indicators simplify proper electrical installation. Twelve gauge insulated wire is used for internal connections. Solid copper track contacts provide good electrical conductivity for years of trouble free operation.

All track components are cULus listed. Installations are suitable for dry locations only. Maximum power rating is 2400 Watts per circuit (4800W total): 20A per circuit (40A total capacity) at 120V, 60Hz. NEC allows 80% of full capacity or 1920 Watts per circuit (3840W total).

Polarity-Configuration Legend

Forward Polarity Configuration

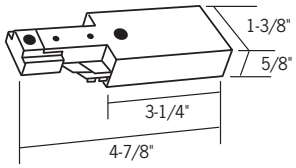
Reverse Polarity Configuration



Surface Conduit End Feed

LA-208
End Feed. (1) 1/2" top K.O. and (1) 1/2" end K.O. for surface conduit. Finish: -B, P, S

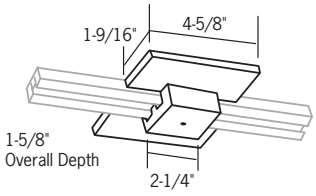
LA-208A
Reverse Polarity End Feed. (1) 1/2" top K.O. and (1) 1/2" end K.O. for surface conduit. Finish: -B, P, S



Top Access End Feed

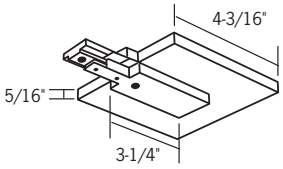
LA-210
Power Feed. (1) 1/2" top K.O. for standard electrical conduit. Finish: -B, P, S

LA-210A
Reverse Polarity Power Feed. (1) 1/2" top K.O. for standard electrical conduit. Finish: -B, P, S



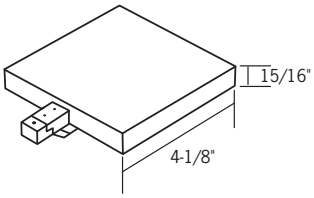
Floating Feed Point: LA-207

Can be installed anywhere along track. Kit includes square J-Box Canopy Cover, J-Box Mounting Bracket, Track Adaptor, and one LA-211 Series End Cap. Finish: -B, P, S



Outlet Box Feed Kit: LA-209

Square Cover Plate With End Feed. (1) 1/2" K.O. Kit includes J-Box Mounting Bracket, Threaded Nipple And Nut. Finish: -B, P, S



T-Bar End Feed: LA-220

Ceiling End Feed has 4 1/8" square canopy cover. (3) 1/2" top K.O.'s can be used with T-grid installations. Finish: -B, P

Continued on page 2

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LA-208-B Notes	Type TPF

Two-Circuit Track Power Feeds

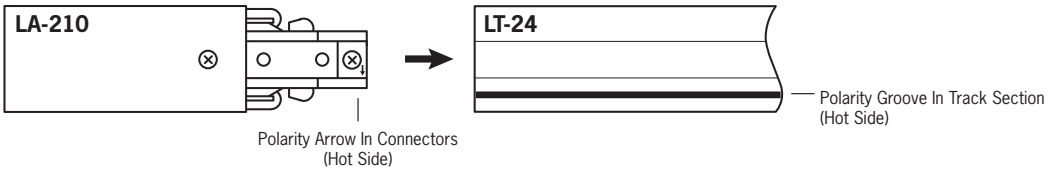
Catalog No. _____

Type _____

Project _____

Sample System Installations

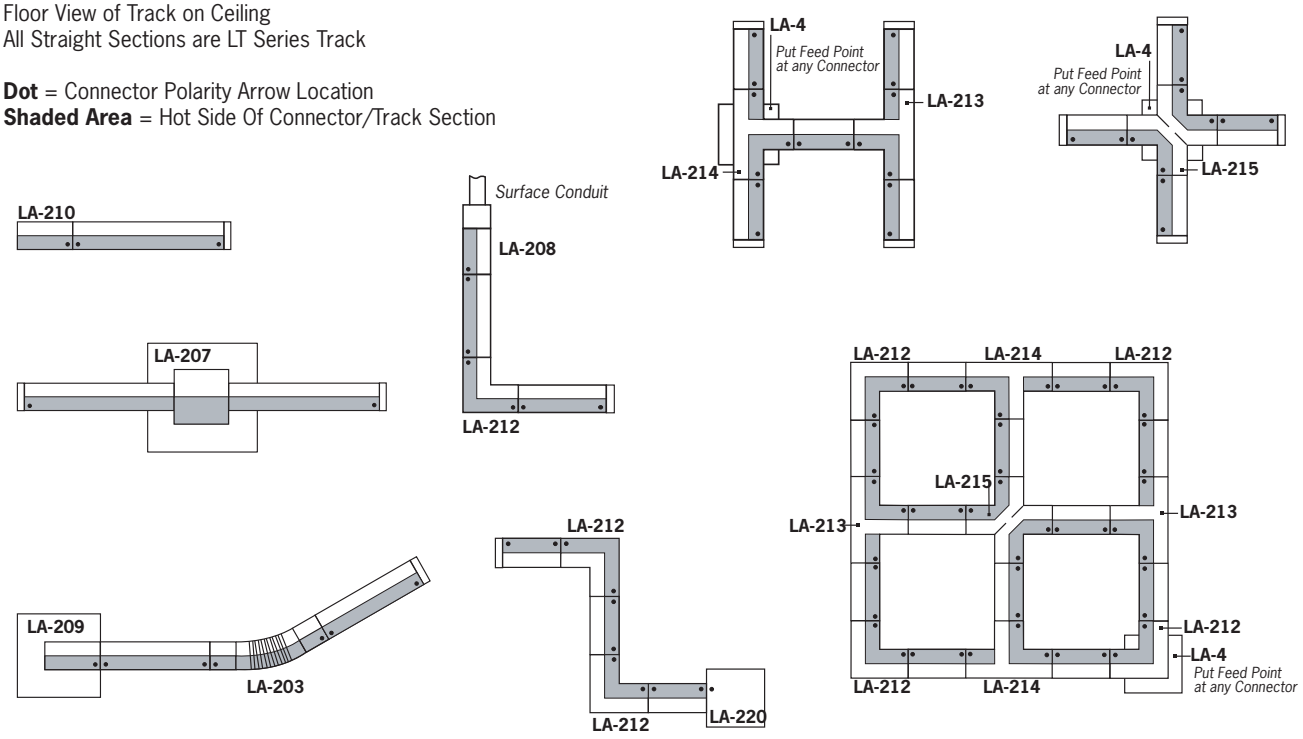
Line Up Polarity Arrows with Grooves, Insert Connectors Into Track Sections to Assemble Components



Sample Layouts with Polarity

Floor View of Track on Ceiling
All Straight Sections are LT Series Track

Dot = Connector Polarity Arrow Location
Shaded Area = Hot Side Of Connector/Track Section



RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LA-203-B Notes	Type TFC

Two-Circuit Track Connection Accessories

Catalog No. _____

Type _____

Project _____

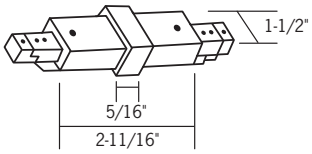
Connectors are constructed of sturdy polycarbonate with galvanized steel back plates. Every electrical component is polarized and has a grounding capability to ensure safe usage. Visual polarity indicators simplify proper electrical installation. Twelve gauge insulated wire is used for internal connections. Solid copper track contacts provide good electrical conductivity for years of trouble free operation.

All track components are cULus. Installations are suitable for dry locations only. Maximum power rating is 2400 Watts per circuit (4800W total): 20A per circuit (40A total capacity) at 120V, 60Hz. NEC allows 80% of full capacity or 1920 Watts per circuit (3840W total).

Polarity-Configuration Legend

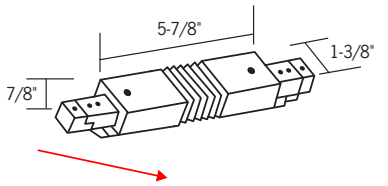
Forward Polarity Configuration

Reverse Polarity Configuration



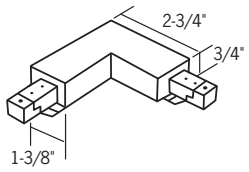
Mini-Connectors: LA-202

Conductive End To End Connector Finish: -B, P, S



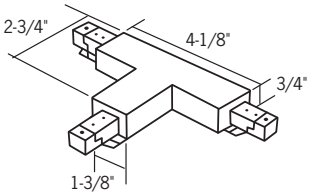
Flexible Connector: LA-203

Versatile connector allows wall to ceiling or pitched ceiling applications: ±90° horizontal range (max.); ±135° vertical range (max.). Finish: -B, P, S



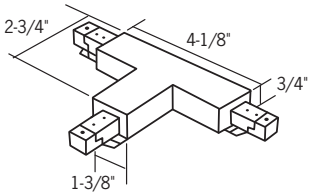
3-Way Joiner: LA-212

Use as standard "L" or reverse polarity "L". Includes optional straight cover. Connector has (1) 1/2" top K.O. that can be used as power feed. Finish: -B, P, S



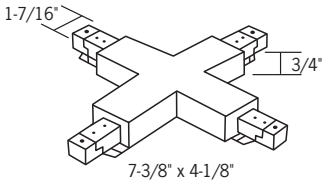
"T" Connector: LA-213

(1) 1/2" top K.O. can be used as feed point. Finish: -B, P, S



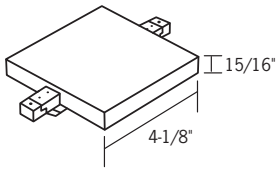
"T" Connector: LA-214

Reverse Polarity "T" Connector. (1) 1/2" top K.O. which can be used as feed point. Finish: -B, P, S



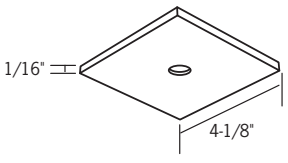
"X" Connector: LA-215

(1) 1/2" top K.O. that can be used as feed point, wired as two separate "L" sections. Finish: -B, P, S



T-Bar Connector: LA-231

Connector with square canopy cover. (3) 1/2" top K.O.'s. Can be used as straight connector feed with T-grid installations. Can be configured as a standard "L" connector, reverse polarity "L" connector or straight connector. Finish: -B, P



Outlet Box Cover Plate: LA-4

Square Cover Plate with threaded center access hole. Includes grounding washer, threaded nipple and nut. For use with LA-212, LA-213, LA-214 or LA-215. Covers 4" octagonal J-Box. Finish: -B, P, S

Continued on page 2

RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number LA-203-B Notes	Type TFC

Two-Circuit Track Connection Accessories

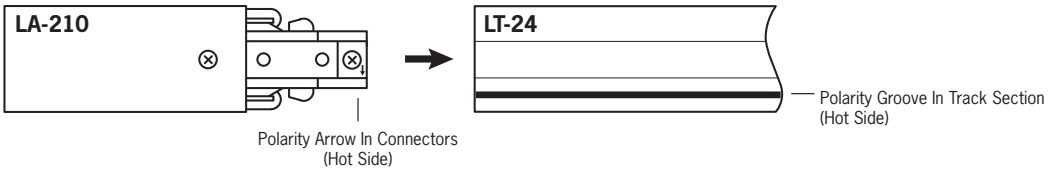
Catalog No. _____

Type _____

Project _____

Sample System Installations

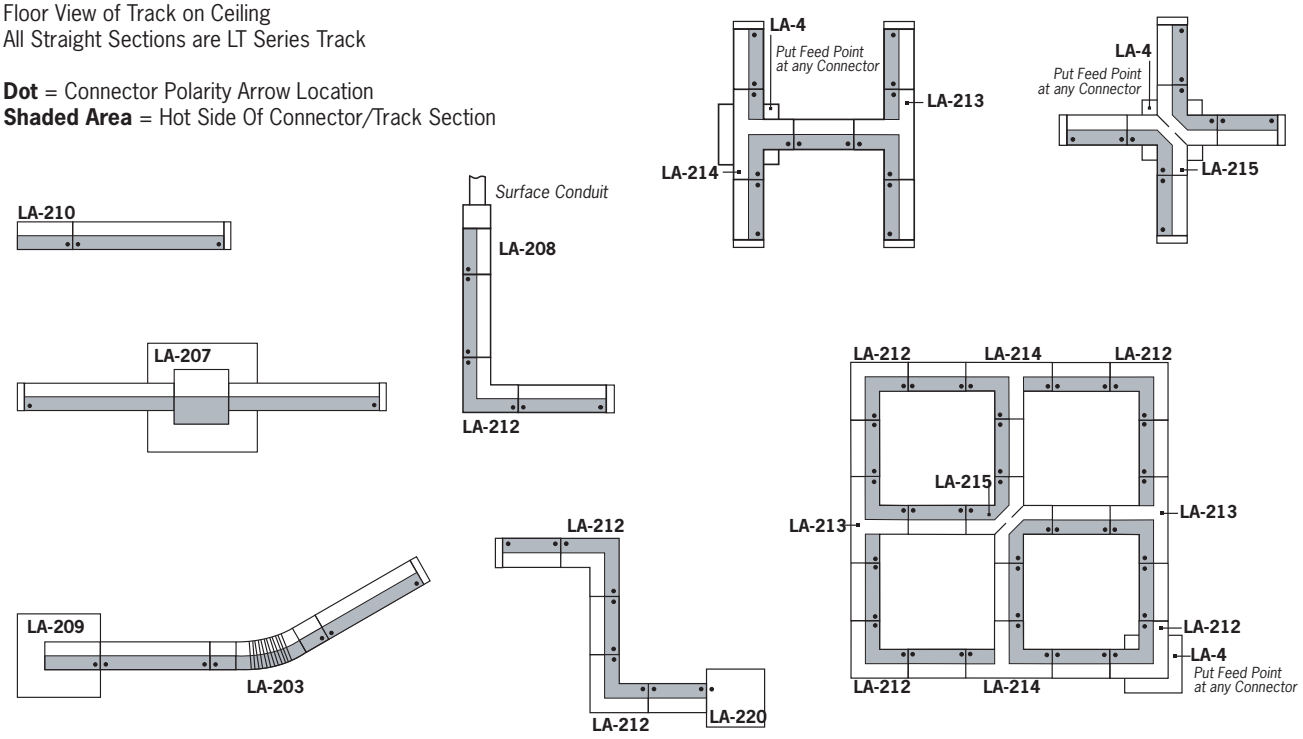
Line Up Polarity Arrows with Grooves, Insert Connectors Into Track Sections to Assemble Components



Sample Layouts with Polarity

Floor View of Track on Ceiling
All Straight Sections are LT Series Track

Dot = Connector Polarity Arrow Location
Shaded Area = Hot Side Of Connector/Track Section



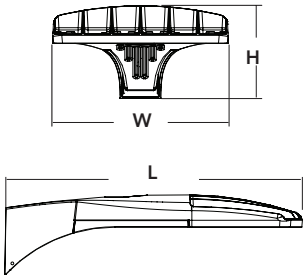
RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number DSX0 LED 40C 700 40K TFTM MVOLT RPA DDBXD Notes	Type S1

D-Series Size 0
LED Area Luminaire

d-series

Specifications

EPA:	0.8 ft² (.07 m²)
Length:	26" (66.0 cm)
Width:	13" (33.0 cm)
Height:	7" (17.8 cm)
Weight (max):	16 lbs (7.25 kg)



Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment.

The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire. The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 400W metal halide with typical energy savings of 65% and expected service life of over 100,000 hours.

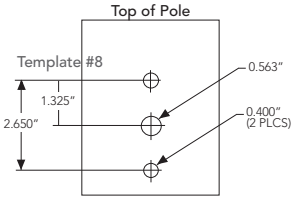
Ordering Information

EXAMPLE: DSX0 LED 40C 1000 40K T3M MVOLT SPA DDBXD

DSX0 LED

Series	LEDs	Drive current	Color temperature	Distribution	Voltage	Mounting	Control options	Other options	Finish *(required)*
DSX0 LED	**Forward optics** 20C 20 LEDs (one engine) 40C 40 LEDs (two engines) **Rotated optics**[1] 30C 30 LEDs (one engine)	530 530 mA 700 700 mA 1000 1000 mA (1 A)[2]	30K 3000 K 80 CRI min.) 40K 4000 K (70 CRI min.) 50K 5000 K (70 CRI) AMBPC Amber phosphor converted[3]	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide	MVOLT[4] 120[4] 208[4] 240[4] 277[4] 347[5] 480[5]	**Shipped included** SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor[6] RPUMBA Round pole universal mounting adaptor[6] **Shipped separately**[7] KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)	**Shipped installed** PER NEMA twist-lock receptacle only (no controls)[8] DMG 0-10V dimming driver (no controls)[9] DCR Dimmable and controllable via ROAM® (no controls)[10] PIR Motion sensor, 8-15' mounting height[11] PIRH Motion sensor, 15-30' mounting height[11] BL30 Bi-level switched dimming, 30%[12] BL50 Bi-level switched dimming, 50%[12]	**Shipped installed** HS House-side shield[13] SF Single fuse (120, 277, 347V)[14] DF Double fuse (208, 240, 480V)[14] L90 Left rotated optics[1] R90 Right rotated optics[1] DDL Diffused drop lens[13]	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white

Drilling



DSX0 shares a unique drilling pattern with the AERIS™ family. Specify this drilling pattern when specifying poles, per the table below.

DM19AS	Single unit	**DM29AS**	2 at 90° *
DM28AS	2 at 180°	**DM39AS**	3 at 90° *
DM49AS	4 at 90° *	**DM32AS**	3 at 120° **

Example: SSA 20 4C **DM19AS** DDBXD

Visit Lithonia Lighting's POLES CENTRAL to see our wide selection of poles, accessories and educational tools.

*Round pole top must be 3.25" O.D. minimum.

**For round pole mounting (RPA) only.

Accessories

Ordered and shipped separately.

DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V)[15]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V)[15]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V)[15]
SC U	Shorting cap[15]
DSX0HS 20C U	House-side shield for 20 LED unit[13]
DSX0HS 30C U	House-side shield for 30 LED unit[13]
DSX0HS 40C U	House-side shield for 40 LED unit[13]
DSX0DDL U	Diffused drop lens (polycarbonate)[13]
PUMBA DDBXD U*	Square and round pole universal mounting bracket adaptor (specify finish)
KMA8 DDBXD U	Mast arm mounting bracket adaptor (specify finish)[7]

For more control options, visit DTL and ROAM online.

Tenon Mounting Slipfitter**

Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8"	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8"	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

NOTES

1. 30 LEDs (30C option) and rotated options (L90 or R90) only available together.
2. 1000mA is not available with AMBPC.
3. AMBPC only available with 530mA or 700mA.
4. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120, 208, 240 or 277 options only when ordering with fusing (SF, DF options).
5. Not available with single-board, 530 mA product (20C 530 or 30C 530). Not available with DCR, BL30, or BL50.
6. Available as a separate combination accessory: PUMBA (finish) U.
7. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
8. Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories.
9. DMG option for 347v or 480v requires 1000mA.
10. Specifies a ROAM® enabled luminaire with 0-10V dimming capability; PER option required. Not available with 347 or 480V. Additional hardware and services required for ROAM® deployment; must be purchased separately. Call 1-800-442-6745 or email: sales@roamservices.net. N/A BL30, BL50, PIR, or PIRH.
11. PIR specifies the SensorSwitch SBGR-10-ODP control; PIRH specifies the SensorSwitch SBGR-6-ODP control; see Motion Sensor Guide for details. Dimming driver standard. Not available with DCR.
12. Requires an additional switched circuit. Dimming driver standard. MVOLT only. Not available with DCR.
13. Also available as a separate accessory; see Accessories information. HS and DDL are not available together.
14. Single fuse (SF) requires 120, 277 or 347 voltage option. Double fuse (DF) requires 208, 240 or 480 voltage option.
15. Requires luminaire to be specified with PER option. Ordered and shipped as a separate line item from Acuity Brands Controls.

LITHONIA LIGHTING
One Lithonia Way • Conyers, Georgia 30012 • Phone: 800.279.8041 • Fax: 770.918.1209 • www.lithonia.com

RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number DSX0 LED 40C 700 40K TFTM MVOLT RPA DDBXD Notes	Type S1

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Actual performance may differ as a result of end-user environment and application. Actual wattage may differ by +/- 8% when operating between 120-480V +/-10%. Contact factory for performance data on any configurations not shown here.

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 85 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
20C (20 LEDs)	530 mA	35W	T1S	2,904	1	0	1	83	3,655	1	0	1	104	3,941	1	0	1	113
			T2M	2,902	1	0	1	83	3,652	1	0	1	104	3,937	1	0	1	112
			T2S	2,959	1	0	1	85	3,723	1	0	1	106	4,014	1	0	1	115
			T3M	2,952	1	0	1	84	3,715	1	0	1	106	4,005	1	0	1	114
			T3S	2,923	1	0	1	84	3,679	1	0	1	105	3,966	1	0	1	113
			T4M	2,937	1	0	1	84	3,696	1	0	1	106	3,984	1	0	1	114
			T5M	3,037	2	0	1	87	3,823	2	0	1	109	4,121	3	0	1	118
			T5S	3,074	2	0	0	88	3,869	2	0	0	111	4,171	2	0	0	119
			T5VS	3,028	2	0	0	87	3,811	2	0	0	109	4,109	2	0	0	117
			T5W	3,044	2	0	1	87	3,831	3	0	1	109	4,130	3	0	1	118
			TFTM	2,903	1	0	1	83	3,653	1	0	1	104	3,939	1	0	2	113
	700 mA	45 W	T1S	3,599	1	0	1	80	4,524	1	0	1	101	4,902	1	0	1	109
			T2M	3,596	1	0	1	80	4,520	1	0	1	100	4,898	1	0	1	109
			T2S	3,667	1	0	1	81	4,608	1	0	1	102	4,994	1	0	1	111
			T3M	3,658	1	0	1	81	4,598	1	0	1	102	4,983	1	0	2	111
			T3S	3,623	1	0	1	81	4,554	1	0	1	101	4,935	1	0	1	110
			T4M	3,639	1	0	1	81	4,574	1	0	2	102	4,957	1	0	2	110
			T5M	3,764	2	0	1	84	4,731	3	0	1	105	5,127	3	0	1	114
			T5S	3,810	2	0	0	85	4,788	2	0	0	106	5,189	2	0	0	115
			T5VS	3,753	2	0	0	83	4,717	2	0	0	105	5,112	2	0	0	114
			T5W	3,772	3	0	1	84	4,741	3	0	1	105	5,138	3	0	1	114
			TFTM	3,598	1	0	1	80	4,522	1	0	2	100	4,900	1	0	2	109
	1000 mA	72 W	T1S	4,654	1	0	1	65	6,206	2	0	2	86	6,640	2	0	2	92
			T2M	4,650	1	0	1	65	6,200	2	0	2	86	6,634	2	0	2	92
			T2S	4,741	1	0	1	66	6,322	2	0	2	88	6,764	2	0	2	94
			T3M	4,730	1	0	2	66	6,307	2	0	2	88	6,749	2	0	2	94
			T3S	4,685	1	0	1	65	6,246	1	0	2	87	6,684	2	0	2	93
			T4M	4,706	1	0	2	65	6,275	1	0	2	87	6,714	2	0	2	93
			T5M	4,868	3	0	1	68	6,490	3	0	1	90	6,945	3	0	1	96
			T5S	4,926	2	0	0	68	6,568	2	0	0	91	7,028	2	0	0	98
			T5VS	4,853	2	0	0	67	6,471	2	0	0	90	6,924	3	0	0	96
			T5W	4,878	3	0	1	68	6,504	3	0	2	90	6,959	3	0	2	97
			TFTM	4,652	1	0	2	65	6,203	1	0	2	86	6,637	1	0	2	92
40C (40 LEDs)	530 mA	68W	T1S	5,579	1	0	1	82	7,019	2	0	2	103	7,565	2	0	2	111
			T2M	5,574	2	0	2	82	7,012	2	0	2	103	7,558	2	0	2	111
			T2S	5,683	1	0	1	84	7,150	2	0	2	105	7,706	2	0	2	113
			T3M	5,670	1	0	2	83	7,133	2	0	2	105	7,688	2	0	2	113
			T3S	5,615	1	0	2	83	7,065	2	0	2	104	7,614	2	0	2	112
			T4M	5,641	1	0	2	83	7,097	2	0	2	104	7,649	2	0	2	112
			T5M	5,835	3	0	1	86	7,340	3	0	1	108	7,912	3	0	2	116
			T5S	5,905	2	0	0	87	7,429	3	0	0	109	8,007	3	0	1	118
			T5VS	5,817	2	0	0	86	7,318	3	0	0	108	7,888	1	0	2	116
			T5W	5,847	3	0	1	86	7,355	3	0	2	108	7,928	3	0	2	117
			TFTM	5,576	1	0	2	82	7,015	1	0	2	103	7,561	2	0	2	111
	700 mA	91 W	T1S	7,074	2	0	2	78	8,930	2	0	2	98	9,619	2	0	2	106
			T2M	7,068	2	0	2	78	8,922	2	0	2	98	9,610	2	0	2	106
			T2S	7,207	2	0	2	79	9,097	2	0	2	100	9,798	2	0	2	108
			T3M	7,190	2	0	2	79	9,076	2	0	2	100	9,776	2	0	2	107
			T3S	7,121	2	0	2	78	8,988	2	0	2	99	9,682	2	0	2	106
			T4M	7,153	2	0	2	79	9,029	2	0	2	99	9,726	2	0	2	107
			T5M	7,399	3	0	2	81	9,339	3	0	2	103	10,060	3	0	2	111
			T5S	7,488	3	0	0	82	9,452	3	0	1	104	10,181	3	0	1	112
			T5VS	7,377	3	0	0	81	9,311	3	0	1	102	10,030	3	0	1	110
			T5W	7,414	3	0	2	81	9,359	4	0	2	103	10,080	4	0	2	111
			TFTM	7,071	1	0	2	78	8,926	2	0	3	98	9,614	2	0	3	106
	1000 mA	138W	T1S	9,557	2	0	2	69	12,020	2	0	2	87	12,957	3	0	3	94
			T2M	9,548	2	0	2	69	12,009	3	0	3	87	12,946	3	0	3	94
			T2S	9,735	2	0	2	71	12,245	3	0	3	89	13,199	3	0	3	96
			T3M	9,713	2	0	2	70	12,217	2	0	3	89	13,169	3	0	3	95
			T3S	9,619	2	0	2	70	12,099	2	0	2	88	13,042	2	0	2	95
			T4M	9,663	2	0	2	70	12,154	2	0	3	88	13,102	2	0	3	95
			T5M	9,995	3	0	2	72	12,571	4	0	2	91	13,552	4	0	2	98
			T5S	10,115	3	0	1	73	12,723	3	0	1	92	13,715	3	0	1	99
			T5VS	9,965	3	0	1	72	12,534	3	0	1	91	13,511	3	0	1	98
			T5W	10,015	4	0	2	73	12,597	4	0	2	91	13,579	4	0	2	98
			TFTM	9,552	2	0	3	69	12,015	2	0	3	87	12,951	1	0	2	94

Note: Available with phosphor-converted amber LED's (nomenclature AMBPC). These LED's produce light with 97+% >530 nm. Output can be calculated by applying a 0.7 factor to 4000 K lumen values and photometric files.

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number DSX0 LED 40C 700 40K TFTM MVOLT RPA DDBXD Notes	Type S1

Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	**77°F**	**1.00**
30°C	86°F	1.00
40°C	104°F	0.99

Electrical Load

Number of LEDs	Drive Current (mA)	System Watts	Current (A)					
			120	208	240	277	347	480
20C	530	35	0.34	0.22	0.21	0.20	--	--
	700	45	0.47	0.28	0.24	0.22	0.18	0.14
	1000	72	0.76	0.45	0.39	0.36	0.36	0.26
30C	530	52	0.51	0.31	0.28	0.25	--	--
	700	70	0.72	0.43	0.37	0.34	0.25	0.19
	1000	104	1.11	0.64	0.56	0.49	0.47	0.34
40C	530	68	0.71	0.41	0.36	0.33	0.25	0.19
	700	91	0.94	0.55	0.48	0.42	0.33	0.24
	1000	138	1.45	0.84	0.73	0.64	0.69	0.50

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

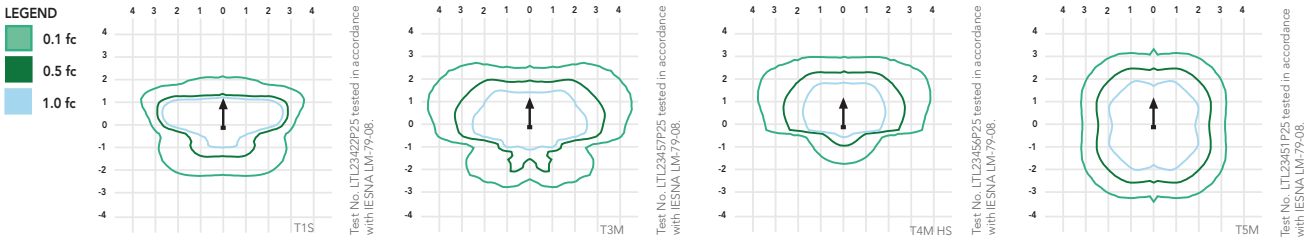
To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	DSX0 LED 20C 1000			
	1	0.97	0.94	0.90
	DSX0 LED 40C 1000			
	1	0.94	0.90	0.84
	DSX0 LED 40C 700			
	1	0.99	0.98	0.96

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area homepage.

Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').



FEATURES & SPECIFICATIONS

INTENDED USE
The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

CONSTRUCTION
Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.8 ft²) for optimized pole wind loading.

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS
Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 4000 K (70 minimum CRI) or optional 3000 K (80 minimum CRI) or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL
Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L96/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV or 6kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

INSTALLATION
Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern. Optional terminal block, tool-less entry, and NEMA photocontrol receptacle are also available.

LISTINGS
UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

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 to confirm which versions are qualified.

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

Note: Specifications subject to change without notice.

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number RSS 20 4B DM19AS DDBXD Notes	Type S1

LITHONIA LIGHTING®

FEATURES & SPECIFICATIONS

CONSTRUCTION — Weldable-grade, hot rolled, commercial-quality carbon steel tubing with a minimum yield of 42,000 psi. Uniform wall thickness of .120". Shaft is one piece with a full length, longitudinal, high-frequency electric resistance weld. Uniformly round in cross-section down length of shaft with no taper.

Anchor base is fabricated from hot rolled carbon steel plate (ASTM A-36), 3/4" thickness. Base plate and shaft are circumferentially welded at both the top and the bottom to provide maximum strength at the area of critical stress.

Reinforced handhole rim is located 18" above the base. Cover and attachment hardware provided.

Top cap provided with all drill-mount poles.

Fasteners are high-strength galvanized, zinc-plated or stainless steel.

Base cover is finished to match pole.

FINISH — Must specify finish.

GROUNDING — Provision located inside handhole rim. Grounding hardware is not included (provided by others).

ANCHOR BOLTS — Top portion of anchor bolt is galvanized per ASTM A-153. Made of steel rod having a minimum yield strength of 55,000 psi.

Anchor Base Poles

RSS

ROUND STRAIGHT STEEL

ORDERING INFORMATION

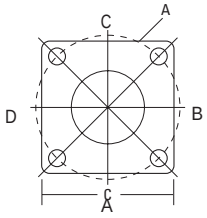
Lead times will vary depending on options selected. Consult with your sales representative.

Example: RSS 20 4-5B DM19 DDB

RSS

Series	Nominal fixture mounting height	Nominal shaft base size/wall thickness
RSS	8 – 30 feet (See back page.)	(See back page.)

HANDHOLE ORIENTATION



Handhole

Mounting[1]

Tenon mounting

PT	Open top
T20	2-3/8" O.D. (2" NPS)
T25	2-7/8" O.D. (2-1/2" NPS)
T30[2]	3-1/2" O.D. (3" NPS)
T35[2]	4" O.D. (3-1/2" NPS)

Drill mounting[3]

DM19	1 at 90°
DM28	2 at 180°
DM28PL	2 at 180° with one side plugged
DM29	2 at 90°
DM29	2 at 90°
DM32	3 at 120°
DM49	4 at 90°

AERIS™/OMERO™ Drill mounting[3]

DM19AS	1 at 90°
DM28AS	2 at 180°
DM29AS	2 at 90°
DM32AS	2 at 120°
DM39AS	3 at 90°
DM49AS	4 at 90°

AERIS™ Suspend drill mounting[3,7]

DMxxAST_

OMERO™ Suspend drill mounting[3,7]

DMxxMRT_

Options

Shipped installed

L/AB	Less anchor bolts
FBC	Full base cover
VD	Vibration damper
TP	Tamper proof
H1-18Sxx	Horizontal arm bracket (1 fixture)[4,5]
FDLxx	Festoon outlet less electrical[4]
CPL12xx	1/2" coupling[4]
CPL34xx	3/4" coupling[4]
CPL1xx	1" coupling[4]
NPL12xx	1/2" threaded nipple[4]
NPL34xx	3/4" threaded nipple[4]
NPL1xx	1" threaded nipple[4]
EHHxx	Extra handhole[4,6]

Finish[8]

Standard colors

DDB	Dark bronze
DWH	White
DBL	Black
DMB	Medium bronze
DNA	Natural aluminum
GALV	Galvanized finish

Classic colors

DSS	Sandstone
DGC	Charcoal gray
DTG	Tennis green
DBR	Bright red
DSB	Steel blue

Architectural colors (powder finish)[8]

NOTES:

1 When ordering tenon mounting and drill mounting for the same pole, follow this example: DM28/T20. The combination includes a required extra handhole.
2 T30 and T35 tenons available on 5" shafts only.
3 The drilling template to be used for a particular luminaire depends on the luminaire that is used. Refer to the Technical Data Section of the Outdoor Binder for Drilling Templates.
4 Specify location and orientation when ordering option.
For 1st "x": Specify the height in feet above base of pole. *Example: 5ft = 5 and 20ft = 20*
For 2nd "x": Specify orientation from handhole (A,B,C,D) *Refer to the Handhole Orientation diagram above.*
5 Horizontal arm is 18" x 2-3/8" O.D. tenon standard.
6 Combination of tenon-top and drill mount includes extra handhole.
7 Insert "1" or "2" to designate fixture size; e.g. DM19AST**2**.
8 Finish must be specified. Additional colors available; see www.lithonia.com/archcolors or Architectural Colors brochure (Form No. 794.3). Powder finish standard.

IMPORTANT INSTALLATION NOTES:

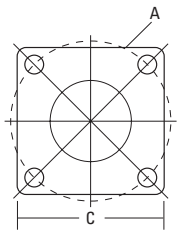
- **Do not** erect poles without having fixtures installed.
- Factory-supplied templates must be used when setting anchor bolts. Lithonia will not accept claim for incorrect anchorage placement due to failure to use factory template.
- If poles are stored outside, all protective wrapping must be removed immediately upon delivery to prevent finish damage.
- Lithonia is not responsible for the foundation design.

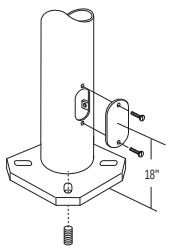
RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number RSS 20 4B DM19AS DDBXD Notes	Type S1

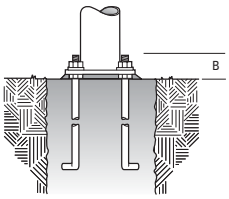
RSS Round Straight Steel Poles

TECHNICAL INFORMATION

				EPA (ft^2) with 1.3 gust								
Catalog Number	Nominal shaft length (feet)	Pole Shaft Size(in x ft)	Wall Thickness (inches)	80 mph	Max. weight	90 mph	Max. weight	100 mph	Max. weight	Bolt Circle (inches)	Bolt Size (in. x in. x in.)	Approximate ship weight (pounds)
RSS 8 4-5B	8	4.5 x 8.0	0.120	24.7	630	19.7	495	16.0	430	8	3/4 x 18 x 3	55
RSS 10 3B	10	3.0 x 10.0	0.120	10	250	7.7	190	6.0	175	8	3/4 x 18 x 3	55
RSS 10 4B	10	4.0 x 10.0	0.120	19.1	480	15.0	375	12.2	305	8	3/4 x 18 x 3	70
RSS 10 4-5B	10	4.5 x 10.0	0.120	24.5	615	19.5	490	15.8	395	8	3/4 x 18 x 3	75
RSS 12 3B	12	3.0 x 12.0	0.120	7.7	195	5.8	145	4.4	130	8	3/4 x 18 x 3	60
RSS 12 4B	12	4.0 x 12.0	0.120	15.0	390	11.8	300	9.5	240	8	3/4 x 18 x 3	80
RSS 12 4-5B	12	4.5 x 12.0	0.120	19.8	495	15.7	395	12.7	320	8	3/4 x 18 x 3	85
RSS 14 3B	14	3.0 x 14.0	0.120	6.0	175	4.4	130	3.3	90	8	3/4 x 18 x 3	70
RSS 14 4B	14	4.0 x 14.0	0.120	12.2	305	9.4	250	7.6	195	8	3/4 x 18 x 3	90
RSS 14 4-5B	14	4.5 x 14.0	0.120	16.2	405	12.8	320	10.3	260	8	3/4 x 18 x 3	95
RSS 15 4-5B	15	4.5 x 15.0	0.120	12.0	300	9.5	250	7.5	200	8	3/4 x 18 x 3	96
RSS 16 3B	16	3.0 x 16.0	0.120	4.6	125	3.2	100	2.3	60	8	3/4 x 18 x 3	80
RSS 16 4B	16	4.0 x 16.0	0.120	9.6	250	7.4	185	5.9	150	8	3/4 x 18 x 3	100
RSS 16 4-5B	16	4.5 x 16.0	0.120	13.1	330	10.2	265	8.2	205	8	3/4 x 18 x 3	105
RSS 18 3B	18	3.0 x 18.0	0.120	3.4	90	2.3	60	1.4	70	8	3/4 x 18 x 3	90
RSS 18 4B	18	4.0 x 18.0	0.120	7.6	190	5.7	180	4.5	130	8	3/4 x 18 x 3	110
RSS 18 4-5B	18	4.5 x 18.0	0.120	10.5	265	8.2	210	6.5	165	8	3/4 x 18 x 3	115
RSS 20 3B	20	3.0 x 20.0	0.120	2.4	100	1.4	75	--	--	8	3/4 x 18 x 3	100
RSS 20 4B	20	4.0 x 20.0	0.120	6.0	150	4.45	150	3.45	125	8	3/4 x 18 x 3	120
RSS 20 4-5B	20	4.5 x 20.0	0.120	8.5	215	6.6	165	5.2	130	8	3/4 x 18 x 3	130
RSS 20 5B	20	5.0 x 20.0	0.120	11.75	300	9.1	230	7.25	180	8	3/4 x 18 x 3	145
RSS 22 4-5B	22	4.5 x 22.0	0.120	6.0	150	4.5	125	3.75	100	8	3/4 x 18 x 3	134
RSS 25 4B	25	4.0 x 25.0	0.120	2.85	100	1.95	75	1.35	75	8	3/4 x 18 x 3	145
RSS 25 4-5B	25	4.5 x 25.0	0.120	4.8	130	3.6	90	2.7	90	8	3/4 x 18 x 3	145
RSS 25 5B	25	5.0 x 25.0	0.120	7.25	180	5.5	150	4.25	150	8	3/4 x 18 x 3	180
RSS 30 4-5B	30	4.5 x 30.0	0.120	2.3	80	1.5	75	1.0	60	8	3/4 x 18 x 3	185
RSS 30 5B	30	5.0 x 30.0	0.120	4.2	150	3	125	2.25	100	8	3/4 x 18 x 3	210







Pole Data

Shaft base size	Bolt circle **A**	Bolt projection **B**	Base square	Template description	Anchor bolt description
3"	8"	3.25"– 3.50"	8"	ABTEMPLATE PJ50041	AB18-0
4"	8"	3.25"– 3.50"	8"	ABTEMPLATE PJ50041	AB18-0
4.5"	8"	3.25"– 3.50"	8"	ABTEMPLATE PJ50041	AB18-0
5"	8"	3.25"– 3.50"	8"	ABTEMPLATE PJ50041	AB18-0

IMPORTANT:

• These specifications are intended for general purposes only. Lithonia reserves the right to change material or design, without prior notice, in a continuing effort to upgrade its products.

LITHONIA LIGHTING®
An AcuityBrands Company

Lithonia Lighting
Outdoor
One Lithonia Way, Conyers, GA 30012
Phone: 770-922-9000 Fax: 770-918-1209
www.lithonia.com

Sheet #: Pole-RSS

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number UCLD 12 WH M4 Notes	Type UC

LITHONIA LIGHTING®

FEATURES & SPECIFICATIONS

INTENDED USE

Provides task or accent lighting in commercial, retail, hospitality and residential applications. Ideal for use under and over cabinets, display cases, task lighting, office lighting, coves and utility/work areas.

CONSTRUCTION

Low profile design, with on/off rocker switch. Can be direct wired or powered by 5' cord-and-plug (Included). Connect multiple fixtures with 13" connector cord (Included).

Rugged low profile aluminum housing, available in either white, bronze, or brushed nickel finish. Swivel head allows light to be directed to desired area.

ELECTRICAL

LEDs have a 50,000 hour L70 rated life. Provides warm color temperature, 3000 K or 2700 K with CRI 83, and even illumination.

Standard with stepdown 120V driver (120V, 60Hz).

Can be used with standard dimmable switches.

INSTALLATION

All mounting hardware included.

LISTINGS

CUL listed to US and Canadian safety standards. ENERGY STAR® and Title 24 qualified.

WARRANTY

Five-year limited warranty. Full warranty terms located at www.AcuityBrands.com/CustomerResources/Terms_and_Conditions.aspx.

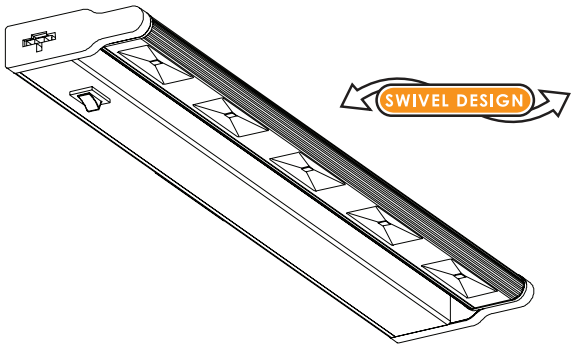
Note: Specifications are subject to change without notice.

Indoor General Purpose

LED Cabinet Light

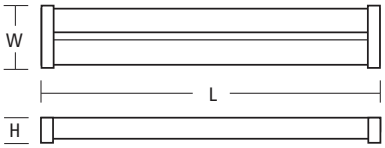
Linkable

MEETS TITLE 24 · LED lighting facts LED Product Partner · ENERGY STAR · c UL us LISTED



Specifications

Length: UCLD 12 - 12 (30.5)
UCLD 18 - 18 (45.7)
UCLD 24 - 24 (60.9)
Width: 3-5/8 (9.2)
Height: 1 (2.5)



All dimensions are inches (centimeters)

ORDERING INFORMATION For shortest lead times, configure products using **bolded options**.

Example: UCLD 12 WH

Series		Driver		Color temperature		Finish	
UCLD 12	12" long with 3 LEDs	**(blank)**	120V dimmable driver	**(blank)**	3000 K	**WH**	White
UCLD 18	18" long with 5 LEDs			2700	2700 K	BZ	Bronze
UCLD 24	24" long with 7 LEDs					BN	Brushed nickel

Accessories: *Order as separate catalog number.*

UCD JB	Splice box - allows for quick and easy direct wiring
UC ERC	1-1/8" row connector for end-to-end connections
UC ERC24	24" connector cord for longer length connections

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number UCLD 12 WH M4 Notes	Type UC

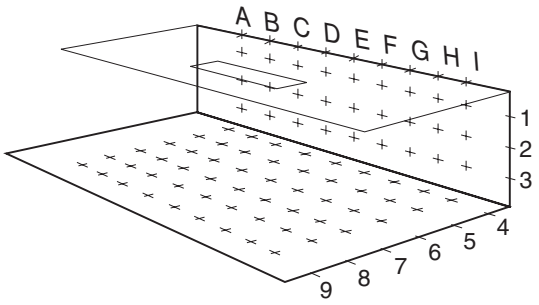
UCLD LED Cabinet Light

PHOTOMETRIC DIAGRAMS

Photometry derived in accordance with IESNA LM41 procedure. Vertical and horizontal illuminance is calculated with fixture mounted 17" from work surface.
Full photometric data report available within 2 weeks from request. Consult factory.

UCLD 12 Report LTL 21648
Initial Point Illuminance on wall and horizontal work surface. (fc)
X and Y coordinates are on 6" centers.

	X	A	B	C	D	E	F	G	H	I	
Vertical	1	1	1	2	4	6	4	2	1	1	Avg.=4 fc Max.=16 fc; Min.=1 fc Max. to min. ratio =16
	2	1	3	6	12	16	12	6	3	1	
	3	2	3	6	11	13	11	6	3	2	
Horizontal	4	3	5	9	15	18	15	9	5	3	Avg.=6 fc Max.=27 fc; Min.=1 fc Max. to min. ratio =27
	5	3	6	13	22	27	22	13	6	3	
	6	3	6	13	22	27	22	13	6	3	
	7	3	5	9	14	17	14	9	5	3	
	8	2	3	5	8	9	8	5	3	2	
	9	1	2	3	4	4	4	3	2	1	



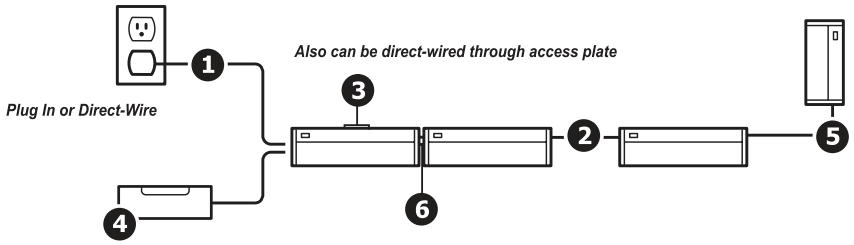
UCLD 18 Report LTL 21649
Initial Point Illuminance on wall and horizontal work surface. (fc)
X and Y coordinates are on 6" centers.

	X	A	B	C	D	E	F	G	H	I	
Vertical	1	1	2	4	7	8	7	4	2	1	Avg.=7 fc Max.=23 fc; Min.=2 fc Max. to min. ratio =11.5
	2	3	5	11	19	23	19	11	5	3	
	3	3	6	11	17	20	17	11	6	3	
Horizontal	4	5	9	16	25	28	25	16	9	5	Avg.=11 fc Max.=42 fc; Min.=1 fc Max. to min. ratio =42
	5	6	12	23	36	42	36	23	12	6	
	6	6	12	23	35	41	35	23	12	6	
	7	5	9	16	23	27	23	16	9	5	
	8	3	5	9	12	14	12	9	5	3	
	9	2	3	5	6	7	6	5	3	2	

UCLD 24 Report LTL 21650
Initial Point Illuminance on wall and horizontal work surface. (fc)
X and Y coordinates are on 6" centers.

	X	A	B	C	D	E	F	G	H	I	
Vertical	1	2	3	6	9	10	9	6	3	2	Avg.=10 fc Max.=28 fc; Min.=2 fc Max. to min. ratio =14
	2	4	8	16	25	28	25	16	8	4	
	3	5	9	16	23	25	23	16	9	5	
Horizontal	4	7	14	23	32	36	32	23	14	7	Avg.=15 fc Max.=52 fc; Min.=2 fc Max. to min. ratio =26
	5	9	18	32	46	52	46	32	18	9	
	6	9	18	32	46	52	46	32	18	9	
	7	7	13	22	30	34	30	22	13	7	
	8	5	8	12	16	18	16	12	8	5	
	9	3	5	6	8	9	8	6	5	3	

Installation



Included

Accessories

sold separately

Suggested Dimmers

This fixture is designed to operate with most standard Triac Based (Forward Phase-Control or Leading Edge) dimmer and is not compatible with 0-10v dimming systems.
Noted below is a listing of dimmers that have been tested with this fixture. This list of dimmers does not imply any guarantee or warranty of compatibility with a particular application.
Dimmers that are not listed do not imply non-compatibility.

Lutron Diva DV-600P
Lutron SkyLark S-600P (Slide & On-Off Switch)
Lutron Ariadni AY-600P
Lutron Ariadni TG-603P
Lutron Maestro MA-600 (Digital Fade Dimmer)
Leviton IllumaTech IPI06-1LX
Leviton ToggleTouch TGI06-1LW (Digital Control)
Lutron MAELV-600BL (Digital Trailing Edge)
Lutron DVELV-300P-WH (Trailing Edge)

Note: When the installation exceeds 10 fixtures on a single dimmer or distribution lengths exceed 100 feet, please confirm that the end product performs properly.
This is caused by a high degree of variability in the triac dimmers.

LITHONIA LIGHTING®
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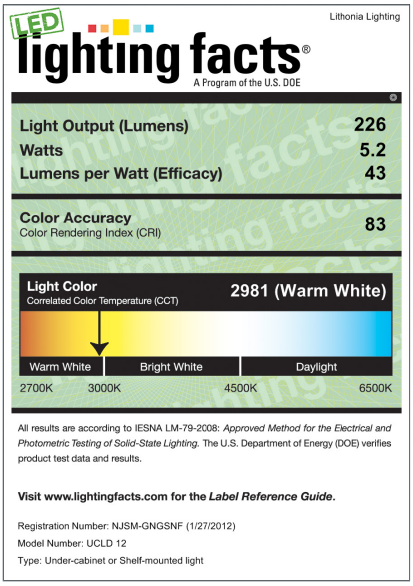
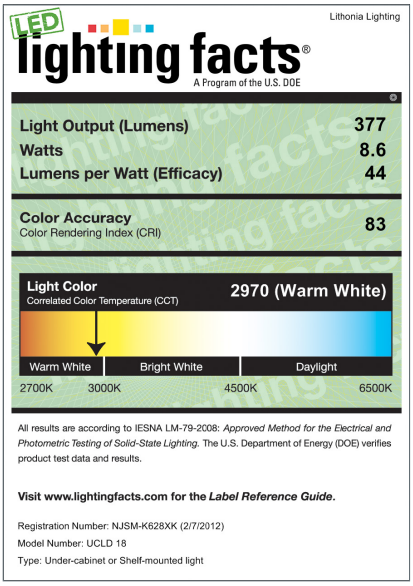
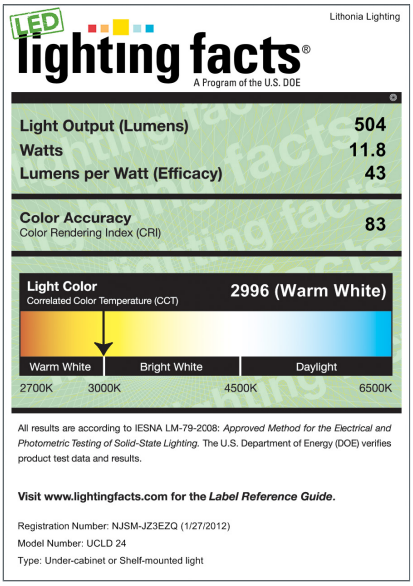
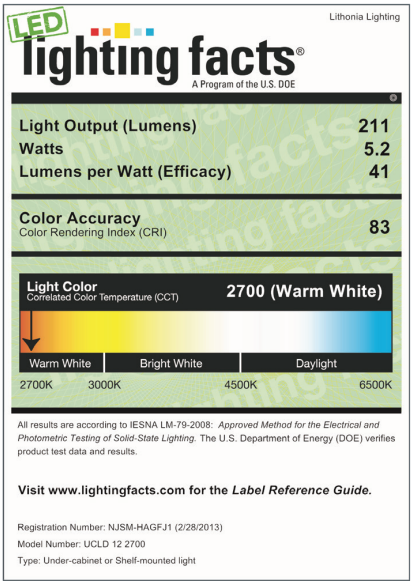
RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number UCLD 12 WH M4 Notes	Type UC

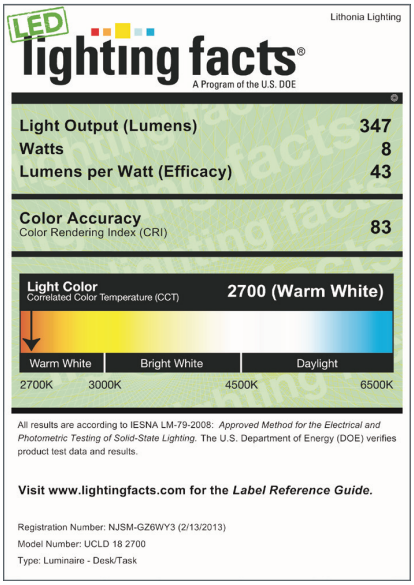
UCLD LED Cabinet Light

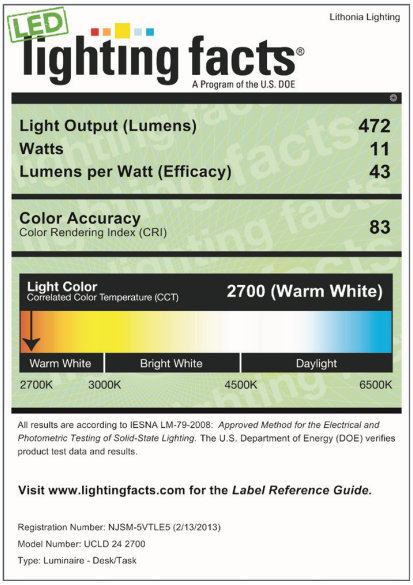












LITHONIA LIGHTING®
An AcuityBrands Company

DECORATIVE INDOOR & OUTDOOR: One Lithonia Way Conyers, GA 30012 Phone: 800-748-5070 Fax: 770-860-3903 www.lithonia.com

RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number XC LED 2 R W SD Notes	Type X

Project:	
Type:	
Catalog #:	

Model XC-LED

LED Exit/Emergency Combo

HOUSING

- Injection molded, engineering-grade, UV-stable thermoplastic
- UL94V-0 flame rating
- Impact, scratch, fade and corrosion-resistant
- Mounting canopy included for top or back mount
- Suitable for wall or ceiling mount
- White or black textured finish
- Double face comes standard with second face plate and back plate for field conversion

ELECTRICAL

- Dual voltage 120/277VAC
- Rated for use in damp locations
- Solid state charging and switching
- Brownout protection
- Battery low voltage disconnect (LVD)
- Overload and short circuit protection
- AC power indicator and test switch

LAMPS

- Long lasting red or green LED exit sign
- Supplied with 1W LED heads
- 30% brighter than standard tungsten heads (XC)
- High Output option available (HO) providing 1.5W heads

BATTERY

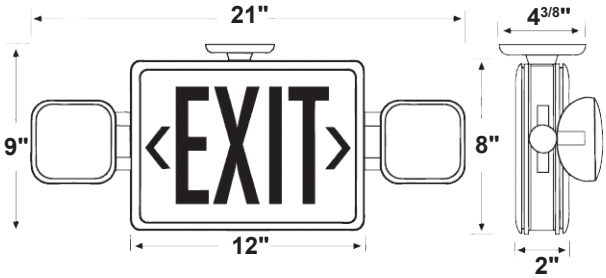
- 9.6V Maintenance-free NiCad battery standard
- Battery will operate fixture for a minimum of 90 minutes in the event of a power outage
- Recharge time is 24 hours
- RC version will operate an additional 3W for a minimum of 90 minutes
- RC unit can run LED heads only
- For remote head options, see Remote Head specsheet
- Temperature rating: 32° (0°C) - 104°F (40°C)

CODE COMPLIANCE

- UL Listed for Damp Locations
- Meets UL924
- NFPA 101 Life Safety Code compliant
- NEC and OSHA compliant

WARRANTY

- 5 year warranty



ORDERING INFORMATION

MODEL	FACE#	LETTER COLOR	FACE COLOR	OPTIONS	ACCESSORIES
XC-LED	1	R - Red	W - White	SD - Self Diagnostics	WG3 - Wireguard
	2 (universal)	G - Green	B - Black	RC - Remote Capable	BG3 - Bubble Guard
				HO - High Output	
				LH - Less Heads	

MODEL	FACE#	LETTER COLOR	FACE COLOR	OPTIONS	ACCESSORIES

_____ - _____ - _____ - _____ - _____ - _____

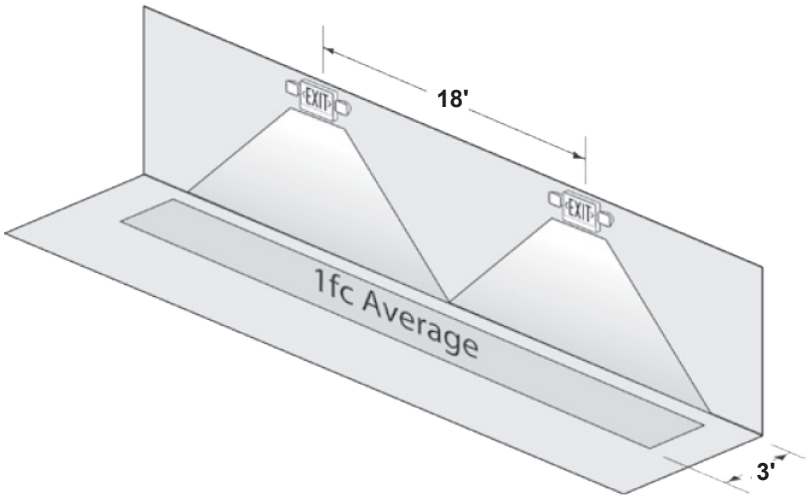
Specifications and dimensions subject to change without notice.

EELP • 2577 Neshaminy Interplex Dr. KOR A, Suite 102, Trevose, PA 19053 • Phone: 800-490-4496 • Fax: 877-634-6887 • www.eelp.net

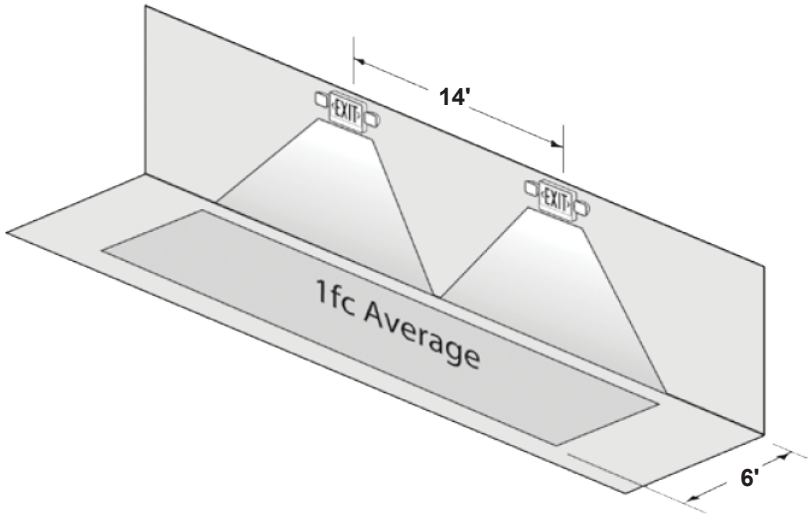
RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number XC LED 2 R W SD Notes	Type X

SPACING GUIDE

Using multiple units mounted at a typical 7.5' delivers 18' center-to-center spacing on a 3' wide egress path.



Using multiple units mounted at a typical 7.5' delivers 14' center-to-center spacing on a 6' wide egress path.



RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number XC LED 2 R W RC Notes	Type EX

Project:	
Type:	
Catalog #:	

Model XC-LED

LED Exit/Emergency Combo

HOUSING

- Injection molded, engineering-grade, UV-stable thermoplastic
- UL94V-0 flame rating
- Impact, scratch, fade and corrosion-resistant
- Mounting canopy included for top or back mount
- Suitable for wall or ceiling mount
- White or black textured finish
- Double face comes standard with second face plate and back plate for field conversion

ELECTRICAL

- Dual voltage 120/277VAC
- Rated for use in damp locations
- Solid state charging and switching
- Brownout protection
- Battery low voltage disconnect (LVD)
- Overload and short circuit protection
- AC power indicator and test switch

LAMPS

- Long lasting red or green LED exit sign
- Supplied with 1W LED heads
- 30% brighter than standard tungsten heads (XC)
- High Output option available (HO) providing 1.5W heads

BATTERY

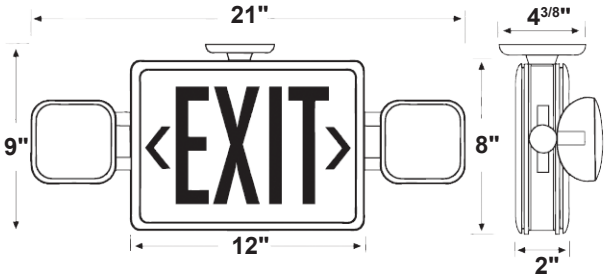
- 9.6V Maintenance-free NiCad battery standard
- Battery will operate fixture for a minimum of 90 minutes in the event of a power outage
- Recharge time is 24 hours
- RC version will operate an additional 3W for a minimum of 90 minutes
- RC unit can run LED heads only
- For remote head options, see Remote Head specsheet
- Temperature rating: 32° (0°C) - 104°F (40°C)

CODE COMPLIANCE

- UL Listed for Damp Locations
- Meets UL924
- NFPA 101 Life Safety Code compliant
- NEC and OSHA compliant

WARRANTY

- 5 year warranty



ORDERING INFORMATION

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	2 (universal)	G - Green	B - Black	RC - Remote Capable	BG3 - Bubble Guard
				HO - High Output	
				LH - Less Heads	

MODEL	FACE#	LETTER COLOR	FACE COLOR	OPTIONS	ACCESSORIES

_____ - _____ - _____ - _____ - _____ - _____

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RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number XC LED 2 R W RC Notes	Type EX

SPACING GUIDE

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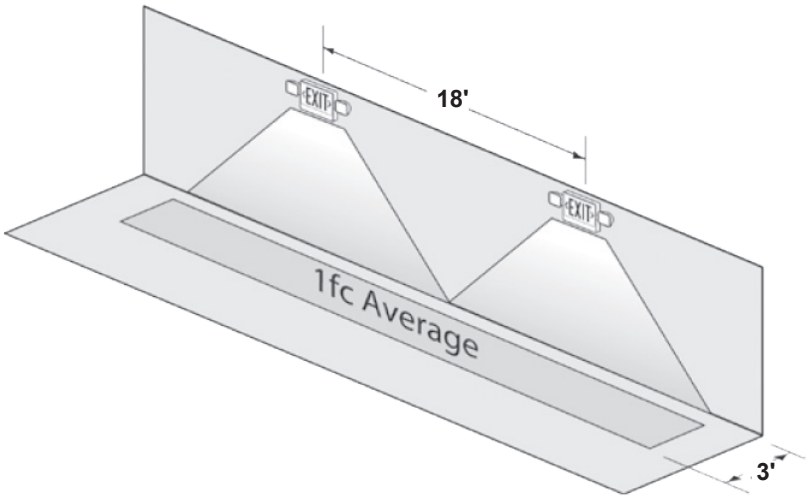

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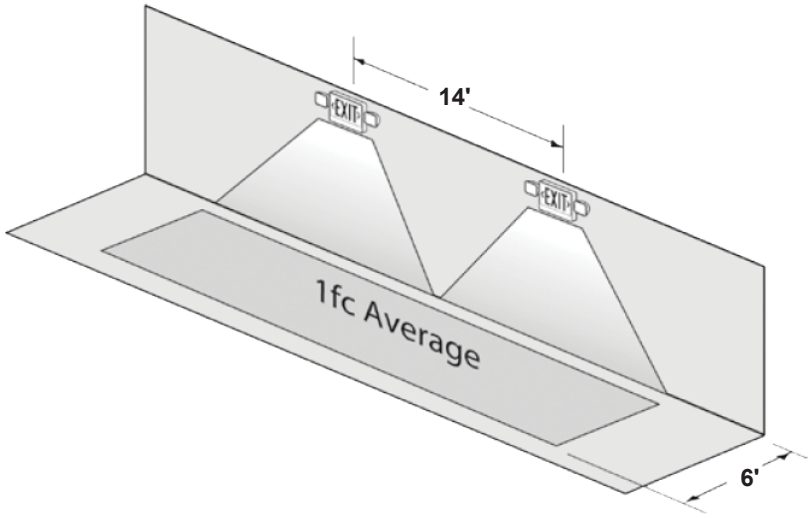


RKL Sales Corporation Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number RH1 LED 9.6V Notes	Type EX

Project:	
Type:	
Catalog #:	

Indoor LED Remote Heads

MODEL	3.6V	9.6V
XC-LED		X
XCLB		X
CAC	X	
EM1-LED-RC	X	
WLEM-LED		X

CATALOG #	HEADS	VOLTAGE	WATTAGE/LAMPS
RH1-LED-3.6V	1	3.6V	1W (8 LEDs)
RH1-LED-3.6V-HO	1	3.6V	1.5W (12 LEDs)
RH1-LED-9.6V	1	9.6V	1W (8 LEDs)
RH1-LED-9.6V-HO	1	9.6V	1.5W (12 LEDs)
RH2-LED-3.6V	2	3.6V	1W (8 LEDs)
RH2-LED-3.6V-HO	2	3.6V	1.5W (12 LEDs)
RH2-LED-9.6V	2	9.6V	1W (8 LEDs)
RH2-LED-9.6V-HO	2	9.6V	1.5W (12 LEDs)

* Specify 'B' for Black Housing
* Add 'SD' if used with units with the Self Diagnostics option

CATALOG #	HEADS	VOLTAGE	WATTAGE/LAMPS
RH16-1-LED-VV*	1	Variable (4.5 - 30V)	3.3W
RH16-2-LED-VV*	2	Variable (4.5 - 30V)	3.3W

* Specify 'B' for Black Housing

CATALOG #	HEADS	VOLTAGE	WATTAGE /LAMPS
RHBUL1-LED-6V5	1	6V	5W
RHBUL2-LED-6V5	2	6V	5W
RHBUL1-LED-12V3	1	12V	3W
RHBUL2-LED-12V3	2	12V	3W
RHBUL1-LED-12V5	1	12V	5W
RHBUL2-LED-12V5	2	12V	5W
RHBUL1-LED-12V7	1	12V	7W
RHBUL2-LED-12V7	2	12V	7W
RHBUL1-LED-24V5	1	24V	5W
RHBUL2-LED-24V5	2	24V	5W

MODEL	OPTIONS

_____ - _____ - _____

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number ELM2 LED Notes	Type EM

LITHONIA LIGHTING®

FEATURES & SPECIFICATIONS

INTENDED USE — Provides a minimum of 90 minutes of illumination for the rated wattage upon loss of AC power. Ideal for applications requiring attractive unit equipment with quick installation. **Certain airborne contaminants can diminish integrity of acrylic.** Click here for Acrylic Environmental Compatibility table, for suitable uses.

CONSTRUCTION — White, compact, low-profile contemporary design. 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.

Low-profile, integrated test switch/pilot light. Easily visible bright red status indicator.

Unique track-and-swivel arrangement permits full range of direction of lamp head adjustment. Universal J-box mounting pattern. Tool-less access for maintenance.

OPTICS — Two LED lamp heads with 12 series-parallel white LEDs each, provide redundant light sources to ensure emergency lighting performance. Typical LED lamp life is 10 years.

ELECTRICAL — Dual-voltage input capability (120/277V). Edge connector on printed circuit board ensures long-term durability.

Current-limiting charger maximizes battery life and minimizes energy consumption. Provides low operating costs.

Short-circuit protection — current-limiting charger circuitry protects printed circuit board from shorts.

Thermal compensation adjusts charger output to provide optimum charge voltage relative to ambient temperature.

Regulated charge voltage maintains constant-charge voltage over a wide range of line voltages. Prevents over/undercharging that shortens battery life and reduces capacity.

Filtered charger input minimizes charge voltage ripple and extends battery life.

AC/LVD reset allows battery connection before AC power is applied and prevents battery damage from deep discharge.

BATTERY: Sealed, maintenance-free nickel-cadmium battery delivers 90 minute capacity to emergency lamps. Two-state constant-current charge maximizes battery life and automatically recharges after battery discharge. Low-voltage disconnect prevents excessively deep discharge that can permanently damage the battery. Optional high-output battery available to power both local and optional LED remote lamp heads simultaneously.

Self -Diagnostics (SD- Option) Single multi-color LED indicator to display two-state charging, test activation and three-state diagnostic test. Test switch provides manual activation of 30-second diagnostic testing for on-demand visual inspection. Self-diagnostic testing for 30 seconds every 30 days, 30 minutes at 180-day interval, and 90 minutes annually. Diagnostic evaluation of LED light source, AC to DC transfer, charging and battery condition.

INSTALLATION — Ceiling- or wall-mount standard. Flexible conduit entry provision on top of the unit.

LISTINGS — UL damp location listed standard 50-104°F (10-40°C). Meets UL 924, NFPA 101 (current Life Safety Code), NEC and OSHA illumination standards.

QUANTUM®

Thermoplastic Emergency Light

ELM2 LED

LED Lamp Head
Ni-Cad Battery

LED

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.

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

Example: ELM2 LED

ELM2	LED				
Series	**Lamp type**		**Housing**		**Options**	
ELM2	LED	Two 1.5W/3.6V white LED	(blank)	White	HO	High-output ni-cad battery for 6W remote capacity [1]
			B	Black	SD	Self-diagnostics
					NOM	Meets Mexican standards

Accessories: *Order as separate catalog number.*

ELA Q L0304 SD	Single LED indoor remote head, white, self-diagnostics [2,3,4]	ELA Q L0304	Single LED indoor remote head, white [2,3,4]
ELA T Q L0304 SD	Twin LED indoor remote head, white, self-diagnostics [2,3,4]	ELA T Q L0304	Twin LED indoor remote head, white [2,3,4]
ELA QWP L0304 SD	Single LED weather-proof remote head, gray, self-diagnostics [2,3,4]	ELA QWP L0304	Single LED weather-proof remote head, gray [2,4]
ELA T QWP L0304 SD	Twin LED weather-proof remote head, gray, self-diagnostics	ELA T QWP L0304	Twin LED weather-proof remote head, gray [2,4]
ELA WG1	Wireguard, 15"W x 13-1/2"H x 6"D (See spec sheet ELA-WG)		

Notes

1. Not available with NOM.
2. Only available with HO option. See spec sheet ELA Q LED.
3. Also available in black. Add "B" after ELA to order black finish. Example: ELA B Q L0304 SD. See spec sheet ELA Q LED.
4. Only compatible with Quantum LED series.

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number ELM2 LED Notes	Type EM

ELM2 LED QUANTUM® Thermoplastic Emergency Light

SPECIFICATIONS

Electrical Primary Circuit				
Typical LED life[1]	Supply voltage	Max amps	Max watts	HO/max watts
10 years	120	.04	1.44	2.88
	277	.03	1.44	2.88

BATTERY

Ni-Cad				
Voltage	Shelf life[2]	Typical life[2]	Maintenance[3]	Optimum temperature[4]
3.6	3 years	7-9 years	none	50-104°F (10-40°C)

1 Based on continuous operation.

2 At 77°F (25°C).

3 All life safety equipment, including emergency lighting path of egress, must be maintained, serviced and tested in accordance with all National Fire Protection Association and local codes. Failure to perform the required maintenance, service or testing could jeopardize the safety of occupants and will void all warranties.

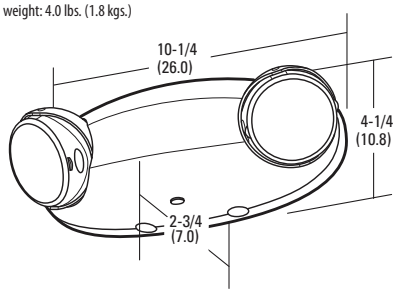
4 Optimum ambient temperature range where unit will provide capacity for 90 minutes. Higher and lower temperatures affect life and capacity. Consult factory for detailed information.

Remote Output Capacity	
Standard unit	Unit/HO battery
NA	6W

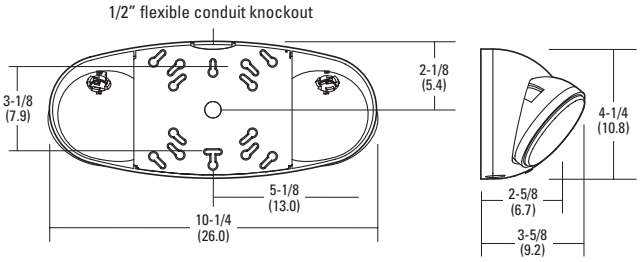
MOUNTING

All dimensions are inches (centimeters).

Shipping weight: 4.0 lbs. (1.8 kgs.)

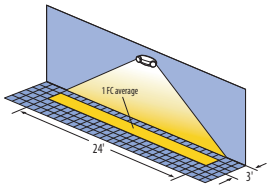


Mounting Plate

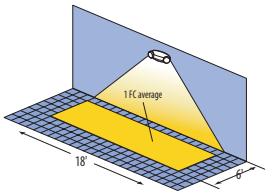


LAMP PHOTOMETRICS

QUANTUM LED SERIES – SINGLE COVERAGE
3W Total White LEDs
Using a single unit at a typical 7.5' mounting height delivers an average illuminance of 1.0 FC over a distance of 24' on a 3' path of egress and 18' on a 6' path of egress.

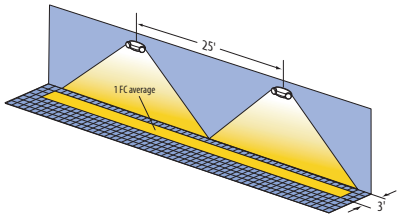


Example of single ELM2 LED unit illuminating a 3' path of egress

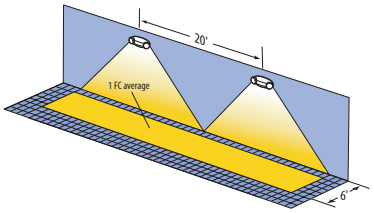


Example of single ELM2 LED unit illuminating a 6' path of egress

QUANTUM LED SERIES – MULTIPLE COVERAGE
3W Total White LEDs
Using multiple units at a typical 7.5' mounting height delivers 25' center-to-center spacing on a 3' path of egress and 20' center-to-center spacing on a 6' path of egress.



Example of multiple ELM2 LED units illuminating a 3' path of egress



Example of multiple ELM2 LED units illuminating a 6' path of egress

EXTENDED RUN-TIME FOR HIGH-OUTPUT UNITS

Product	Run time
ELM2 LED HO (no remotes)	3.9 hours

* Meets Life Safety Code standard minimum illuminance of 0.1 FC and average illuminance of 1.0 FC. Assumes open space with no obstructions, mounting height: 7.5', ceiling height: 9', and reflectances: 80/50/20. Analysis based on independently tested photometrics.

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number WSX PDT WH Notes	Type OS

sensorswitch®

PRODUCT 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 (see page 3).

All **WSX** Family sensors utilize 100% digital Passive Infrared (PIR) detection. Dual Technology (**PDT** option) versions add Microphonics detection and are recommended for offices and rooms with obstructions. Additional versions include units with dual relays - perfect for bi-level applications, and units with an integrated nightlight - perfect for restrooms and residential applications.

SENSOR OPERATION — WSX sensors detect changes in the Passive Infrared (PIR) energy given off by occupants as they move within the field-of-view. In an Auto-On sensor, once occupancy is detected, an internal relay switches on the connected lighting load. In a Vacancy (Manual On) sensor, the unit's push button must first be pressed to initiate the lights on. In a dual relay sensor, once occupancy is detected the unit will automatically close Pole 1's relay while still requiring Pole 2's push-button be pressed in order to close Pole 2's relay. All modes are user adjustable (see On Modes section).

After the lights are turned on, an internal timer keeps them on during brief periods of inactivity. Once the time delay has expired, lights are turned off automatically. The default time delay is 10 minutes - chosen in order to maximize energy savings while preventing false-offs. This timer is programmable from 30 seconds to 30 minutes, and is reset every time occupancy is re-detected. Patented LampMaximzer technology is also present in these sensors, providing an additional minimum on time (disabled by default) to be utilized if desired.

WSX sensors with Passive Dual Technology (**PDT** option) first see motion using Passive Infrared (PIR) and then engage Microphonics to listen for sounds that also indicate continued occupancy. This patented technology dynamically adapts a sensor to its environment by filtering out constant background noise and detecting only noises typical of human activity.

WSX FAMILY

WALL SWITCH SENSOR w/ CONVERTIBLE NEUTRAL / NO NEUTRAL WIRING, PASSIVE INFRARED (PIR) or DUAL TECH (PDT)

WSX
WSX PDT

WSX NL
WSX PDT NL

WSX 2P
WSX PDT 2P

KEY OPTIONS

NIGHT LIGHT (NL)
Ideal for bathrooms (hotel / hospital) or residential applications
- Ultra low power White LED night light (24/7 operation)
- Capable of powering over Ground (no Neutral required)
- Manual On / Auto Off operation of lights (default)
- Available with Single or Dual Relays

DUAL RELAY (2P)
Ideal for bi-level switched rooms or restroom with light & fan
- Includes two isolated relays, Pole 1 defaulted to Auto On, Pole 2 to Vacancy
- Enables separate time delay per pole - programmed via each pole's push-button
- UL listed to switch different loads per pole - e.g. 277 VAC lights on Pole 1 and 120 VAC fan on Pole 2

LOW TEMPERATURE / HIGH HUMIDITY (LT)
Required for cold / humid areas
- Device electronics are coated for corrosion resistance
- Operates down to -40º F/C (-4º F / 20º C for PDT)

FEATURES

- 100% digital PIR detection - excellent RF immunity
- Ruggedized assembly, vandal resistant lens standard
- Small motion detection to 20 ft
- Dual Technology (PDT) utilizes PIR / Microphonics detection (patented)
- 100% passive detection, no potential for interference with other building systems
- Self-grounding mounting strap
- White LED status indicator
- Device accommodates powering over ground or neutral connection (patent pending)
- Ultra low current leakage (<0.5 mA) when connected via ground
- Fully meets NEC 2011 Section 404.2C neutral requirements - no current leakage to ground when connected to neutral
- Line power and load wires are interchangeable - impossible to wire backwards (patented)
- Compatible w/ LEDs, Electronic & Magnetic Ballasts, CFLs, & Incandescents
- Photocell standard (disabled by default) - prevents lights from initially turning on if sufficient daylight is present, but does not turn lights off. Photocell not available in Night Light or Vacancy only versions.
- Integrated LampMaximizer minimum on time (patented) provides increased fluorescent lamp life - disabled by default
- Push-button programmable without removing cover plate - adjustable time delays & operating modes
- Non-volatile settings memory
- Includes wall plate (screwless sold separate)

sensorswitch®

WSX Family

OPERATIONAL SETTINGS

NOTE: (*) Indicates factory default (unless otherwise marked)

2 = Occupancy Time Delay

Time sensor keeps lights on after last occupancy detection.

1 30 sec **2** 2.5 min **3** 5.0 min **4** 7.5 min **5** 10.0 min* **6** 12.5 min **7** 15.0 min **8** 17.5 min **9** 20.0 min **10** 30.0 min

For additional time settings, contact technical support at 1.800.PASSIVE

3 = On Mode

Automatic On turns lights on when occupancy is detected. Manual On requires a button press to turn the lights on. Reduced Turn-On directs the sensor to only turn on when a large motion, such as a person entering a room, is detected. Weaker signals, such as reflections from glass, are ignored. Once lights are on, the sensor returns to maximum sensitivity.

1 Automatic On **2** Manual On **3** Reduced Turn-On

Settings 1 & 3 not available on -VA (Vacancy only) sensors.

Notes on Default Settings
- *WSX (PDT) Series default: Automatic On*
- *Default for units with -SA, -VA, or -NL option: Manual On*
- *WSX (PDT) 2P Series default: Pole 1 Auto On, Pole 2 Manual*
- *Default for 2P units with -2SA, -2VA, or NL options: Both poles Manual On*

4 = Switch Modes

These modes dictate switch functionality.

Pressing the button in Override Off mode (setting 1) turns off and keeps lights off until pressed again.

Disabling the Switch (setting 2) prevents the button from turning the lights on. (continued next column)

Predictive Mode (setting 3) determines if a user has left the room after the lights are switched off. It does this by monitoring the space for a period after the button is pressed (Predictive Grace Time), following a delay to allow exiting the room (Predictive Exit Time). If occupancy is detected the device will disable auto-on & hold the lights off until manually switched. If no occupancy is detected the sensor instantly reverts to auto-on mode.

If Predictive Mode with Expiration (setting 4) is enabled, once the sensor has disabled auto-on it will continue to monitor the space. When no occupancy is detected for a duration equal to the occupancy time delay, the sensor will revert to auto-on mode.

1 Override Off **
2 Switch Disable
3 Predictive Mode
4 Predictive Mode with Expiration*

* *Default for WSX (PDT) units & Pole 1 of WSX (PDT) 2P units*
** *Default for units with -SA, -VA, or -NL options, Pole 2 of WSX (PDT) 2P units, and both poles of 2P units with -2SA, -2VA, or -NL options*

5 = Photocell Set-Point

The ambient light level at which the sensor prevents the lights from initially turning on. Once on, the lights will remain on until the occupancy time delay expires and turns them off.

1 Disabled* **2** Auto Setpoint **3** 0.5 fc **4** 1 fc **5** 2 fc **6** 4 fc **7** 8 fc **8** 16 fc **9** 32 fc **10** 64 fc

Note: Sensor changes to Auto On mode if photocell is enabled. Photocell not present in -NL versions.

7 = LED Operation

Indicates behavior of device's LED.

1 Occupancy Indication* **2** Relay Indication **3** Disabled **4** Override On***

Standard Factory Default* * *Factory Default for -NL version*

9 = Restore Factory 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)* **2** 15 min **3** 30 min **4** 45 min **5** 60 min

11 = Manual On Grace Period

Time period after lights automatically turn off that they can be reactivated by motion. (Manual On (Semi-Auto) mode only)

1 0 sec **2** Unused **3** 15 sec*

12 = Dual Technology (Microphonics™)

Relative responsiveness of Microphonics detection.

1 Normal* **2** Off **3** Medium **4** Low **5** Phase Off (15-10-5 min)

13 = Microphone Grace Period

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

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

15 = Predictive Exit Time

Time period after manually switching lights off for occupant to leave the space.

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

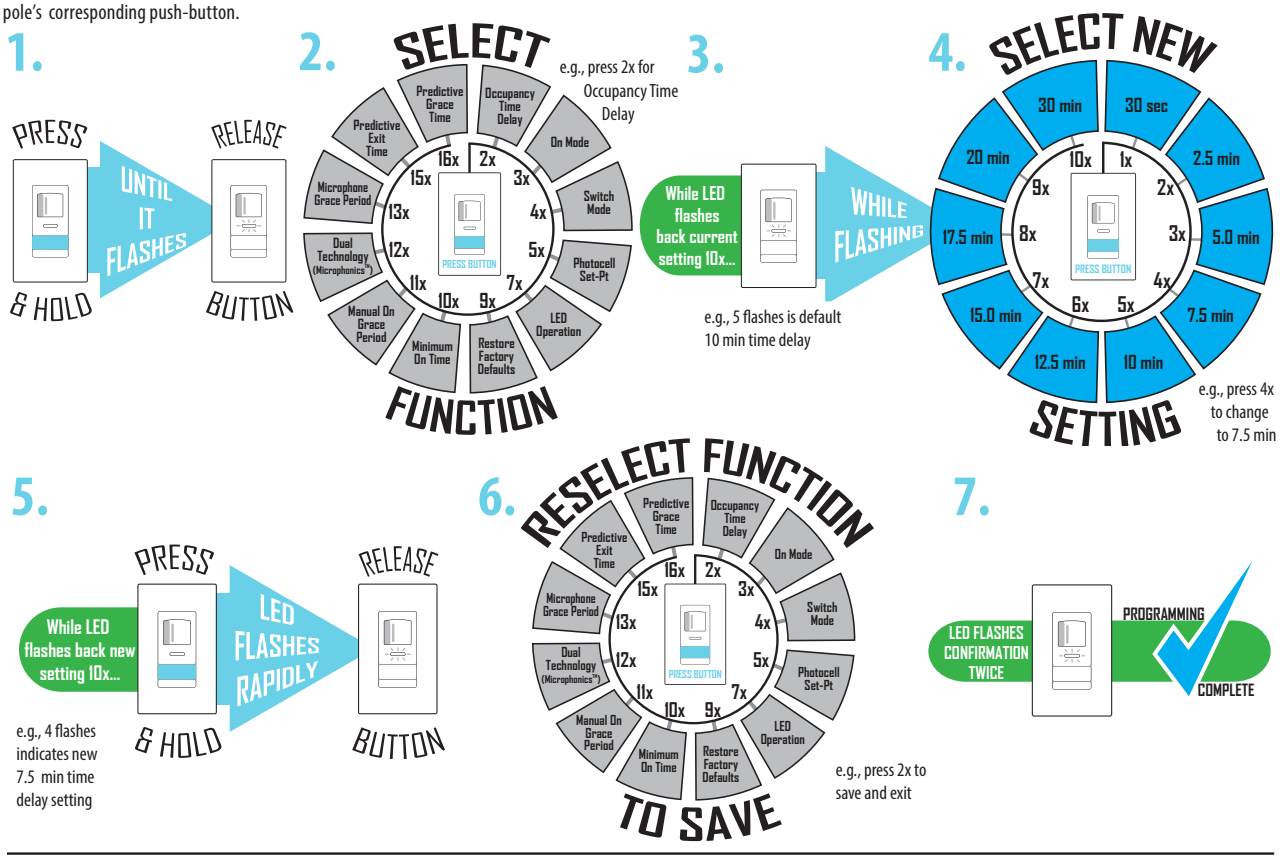
16 = Predictive Grace Time

Time period after Predictive Exit Time that sensor rescans the room for remaining occupants.

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

PROGRAMMING INSTRUCTIONS

Operational settings can be changed via the push-button sequence outlined below (note the example used is for changing occupancy time delay). Programming for 2P units done with each pole's corresponding push-button.

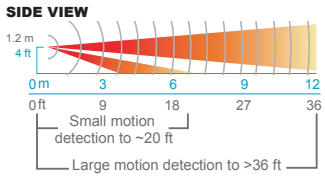


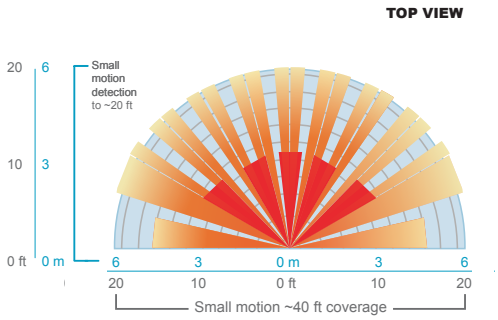
sensorswitch®

WSX Family

COVERAGE PATTERN

- 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 coverage
- Passive Dual Technology (Microphonics) provides 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.

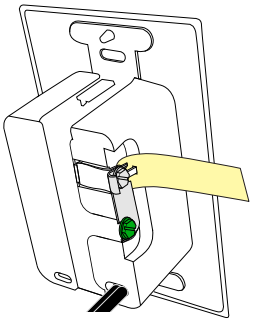




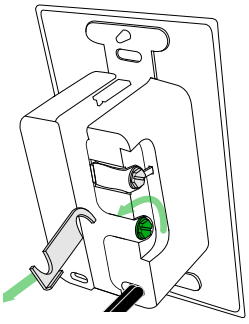
CONVERSION FROM GROUND ONLY (NO NEUTRAL) TO NEUTRAL WIRING

This product is pre-configured for wiring without a neutral, however if connection to neutral is required by code, contractors can quickly and easily convert the unit in seconds.

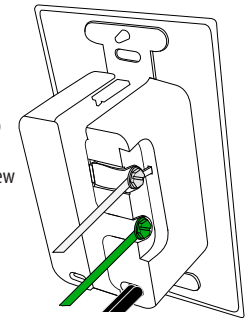
Step 1: Remove Yellow Label



Step 2: Loosen Screws and Remove Metal Link

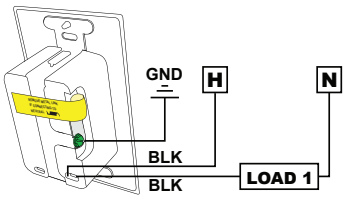


Step 3: Connect Neutral to Silver Screw and Ground to Green Screw



WIRING TO GROUND (NO NEUTRAL)

SINGLE RELAY



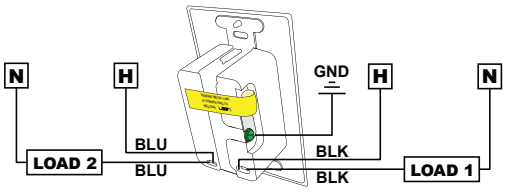
WIRE COLOR KEY

120/277 VAC WIRING

BLACK*	- Line 1 Input	*BLACK wires can be reversed
BLACK*	- Load 1 Output	
BLUE*	- Line 2 Input	*BLUE wires can be reversed
BLUE*	- Load 2 Output	

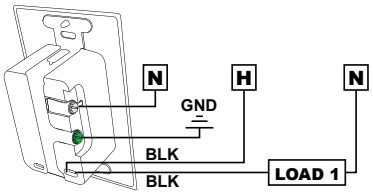
347 VAC WIRING (-347 Option)
Red wires replace Black wires.

DUAL RELAY

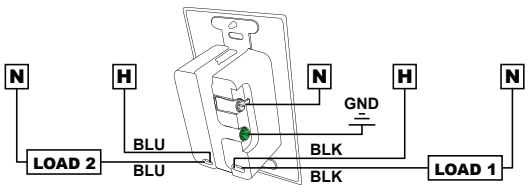


WIRING TO NEUTRAL

SINGLE RELAY



DUAL RELAY



Notes:
- Unit will draw power from either line connection.
- Both poles' line connection must be same phase.

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number WSX PDT WH Notes	Type OS

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WSX Family

SPECIFICATIONS

PHYSICAL SPECS
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)
SILICONE FREE
ROHS COMPLIANT

ELECTRICAL SPECS
MAXIMUM LOAD / POLE (RELAY)
800 W @ 120 VAC
1200 W @ 277 VAC
1500 W @ 347 VAC
MINIMUM LOAD: None
MOTOR LOAD: 1/4 HP
FREQUENCY: 50/60 Hz (timers are 1.2x for 50 Hz)

ENVIRONMENTAL SPECS
OPERATING TEMP
Standard: 14º to 122º F (-10º to 50º C)
LT Option (PIR): -40º to 122º F (-40º to 50º C)
LT Option (PDT): -4º to 122º F (-20º to 50º C)
RELATIVE HUMIDITY:
Standard: 20 to 75% non-condensing
LT Option: 20 to 90% non-condensing
(electronics coated for corrosion resistance)

ORDERING LOGIC

SINGLE RELAY

EXAMPLE: WSX PDT WH

Series	Operating Mode[1]	Voltage	Color[3]	Temp/Humidity
WSX Passive Infrared (PIR)	**Blank** Auto On (default) or Vacancy	**Blank** 120/277 VAC	**WH** White	**Blank** Standard
WSX PDT Dual Technology (PIR / Microphonics)	**SA** Vacancy (default) or Auto-On	**347**[2] 347 VAC	**IV** Ivory	**LT** Low Temp
	VA Vacancy only		**GY** Gray	
			AL Lt. Almond	
			BK Black	
			RD Red	

DUAL RELAY

EXAMPLE: WSX 2P WH LT

Series	Operating Mode[1]	Voltage	Color[3]	Temp/Humidity
WSX 2P Passive Infrared (PIR)	**Blank** Pole 1-Auto On Pole 2-Vacancy (default)	**Blank** 120/277 VAC	**WH** White	**Blank** Standard
WSX PDT 2P Dual Technology (PIR / Microphonics)	**2SA** Both Poles Vacancy (defaut)	**347**[2] 347 VAC	**IV** Ivory	**LT** Low Temp
	2VA Both Poles only Vacancy		**GY** Gray	
			AL Lt. Almond	
			BK Black	
			RD Red	

NIGHTLIGHT

EXAMPLE: WSX 2P NL WH

Series[4]	Voltage	Color[3]	Temp/Humidity
WSX NL Passive Infrared (PIR)	**Blank** 120/277 VAC	**WH** White	**Blank** Standard
WSX PDT NL Dual Technology (PIR / Microphonics)	**347**[2] 347 VAC	**IV** Ivory	**LT** Low Temp
WSX 2P NL Dual Relay, Passive Infrared (PIR)		**GY** Gray	
WSX PDT 2P NL Dual Relay, Dual Technology (PIR / Microphonics)		**AL** Lt. Almond	
		BK Black	
		RD Red	

Notes:
1 Operating Modes reprogrammable via push-button except for VA version
2 Wall plates included in white or ivory only for 347 VAC units
3 Matching wall plate provided for 120/277 VAC units
4 Units factory set to Vacancy (Manual On) Operating Mode

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c UL US LISTED

TITLE 24
ASSEMBLED in U.S.A.
5 YEAR WARRANTY

Sheet#: TS-WSX-001A

WARRANTY: Sensor Switch warrants these products to be free of defects in manufacture and workmanship for a period of 60 months. Sensor Switch, upon prompt notice of such defect, will, at its option, provide a Returned Material Authorization number and repair or replace returned product.
LIMITATIONS AND EXCLUSIONS: This Warranty is in full lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch be liable for any incidental or consequential property damages or losses.

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number WSX PDT 2P WH Notes	Type OS1

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WSX FAMILY

WALL SWITCH SENSOR w/ CONVERTIBLE NEUTRAL / NO NEUTRAL WIRING, PASSIVE INFRARED (PIR) or DUAL TECH (PDT)

WSX
WSX PDT

WSX NL
WSX PDT NL

WSX 2P
WSX PDT 2P

PRODUCT 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 (see page 3).

All **WSX** Family sensors utilize 100% digital Passive Infrared (PIR) detection. Dual Technology (**PDT** option) versions add Microphonics detection and are recommended for offices and rooms with obstructions. Additional versions include units with dual relays - perfect for bi-level applications, and units with an integrated nightlight - perfect for restrooms and residential applications.

SENSOR OPERATION — WSX sensors detect changes in the Passive Infrared (PIR) energy given off by occupants as they move within the field-of-view. In an Auto-On sensor, once occupancy is detected, an internal relay switches on the connected lighting load. In a Vacancy (Manual On) sensor, the unit's push button must first be pressed to initiate the lights on. In a dual relay sensor, once occupancy is detected the unit will automatically close Pole 1's relay while still requiring Pole 2's push-button be pressed in order to close Pole 2's relay. All modes are user adjustable (see On Modes section).

After the lights are turned on, an internal timer keeps them on during brief periods of inactivity. Once the time delay has expired, lights are turned off automatically. The default time delay is 10 minutes - chosen in order to maximize energy savings while preventing false-offs. This timer is programmable from 30 seconds to 30 minutes, and is reset every time occupancy is re-detected. Patented LampMaximzer technology is also present in these sensors, providing an additional minimum on time (disabled by default) to be utilized if desired.

WSX sensors with Passive Dual Technology (**PDT** option) first see motion using Passive Infrared (PIR) and then engage Microphonics to listen for sounds that also indicate continued occupancy. This patented technology dynamically adapts a sensor to its environment by filtering out constant background noise and detecting only noises typical of human activity.

KEY OPTIONS

NIGHT LIGHT (NL)
Ideal for bathrooms (hotel / hospital) or residential applications
- Ultra low power White LED night light (24/7 operation)
- Capable of powering over Ground (no Neutral required)
- Manual On / Auto Off operation of lights (default)
- Available with Single or Dual Relays

DUAL RELAY (2P)
Ideal for bi-level switched rooms or restroom with light & fan
- Includes two isolated relays, Pole 1 defaulted to Auto On, Pole 2 to Vacancy
- Enables separate time delay per pole - programmed via each pole's push-button
- UL listed to switch different loads per pole - e.g. 277 VAC lights on Pole 1 and 120 VAC fan on Pole 2

LOW TEMPERATURE / HIGH HUMIDITY (LT)
Required for cold / humid areas
- Device electronics are coated for corrosion resistance
- Operates down to -40º F/C (-4º F / 20º C for PDT)

FEATURES

- 100% digital PIR detection - excellent RF immunity
- Ruggedized assembly, vandal resistant lens standard
- Small motion detection to 20 ft
- Dual Technology (PDT) utilizes PIR / Microphonics detection (patented)
- 100% passive detection, no potential for interference with other building systems
- Self-grounding mounting strap
- White LED status indicator
- Device accommodates powering over ground or neutral connection (patent pending)
- Ultra low current leakage (<0.5 mA) when connected via ground
- Fully meets NEC 2011 Section 404.2C neutral requirements - no current leakage to ground when connected to neutral
- Line power and load wires are interchangeable - impossible to wire backwards (patented)
- Compatible w/ LEDs, Electronic & Magnetic Ballasts, CFLs, & Incandescents
- Photocell standard (disabled by default) - prevents lights from initially turning on if sufficient daylight is present, but does not turn lights off. Photocell not available in Night Light or Vacancy only versions.
- Integrated LampMaximizer minimum on time (patented) provides increased fluorescent lamp life - disabled by default
- Push-button programmable without removing cover plate - adjustable time delays & operating modes
- Non-volatile settings memory
- Includes wall plate (screwless sold separate)

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WSX Family

OPERATIONAL SETTINGS

NOTE: (*) Indicates factory default (unless otherwise marked)

2 = Occupancy Time Delay

Time sensor keeps lights on after last occupancy detection.

1 30 sec **2** 2.5 min **3** 5.0 min **4** 7.5 min **5** 10.0 min* **6** 12.5 min **7** 15.0 min **8** 17.5 min **9** 20.0 min **10** 30.0 min

For additional time settings, contact technical support at 1.800.PASSIVE

3 = On Mode

Automatic On turns lights on when occupancy is detected. Manual On requires a button press to turn the lights on. Reduced Turn-On directs the sensor to only turn on when a large motion, such as a person entering a room, is detected. Weaker signals, such as reflections from glass, are ignored. Once lights are on, the sensor returns to maximum sensitivity.

1 Automatic On **2** Manual On **3** Reduced Turn-On

Settings 1 & 3 not available on -VA (Vacancy only) sensors.

Notes on Default Settings
- *WSX (PDT) Series default: Automatic On*
- *Default for units with -SA, -VA, or -NL option: Manual On*
- *WSX (PDT) 2P Series default: Pole 1 Auto On, Pole 2 Manual*
- *Default for 2P units with -2SA, -2VA, or NL options: Both poles Manual On*

4 = Switch Modes

These modes dictate switch functionality.

Pressing the button in Override Off mode (setting 1) turns off and keeps lights off until pressed again.

Disabling the Switch (setting 2) prevents the button from turning the lights on. (continued next column)

Predictive Mode (setting 3) determines if a user has left the room after the lights are switched off. It does this by monitoring the space for a period after the button is pressed (Predictive Grace Time), following a delay to allow exiting the room (Predictive Exit Time). If occupancy is detected the device will disable auto-on & hold the lights off until manually switched. If no occupancy is detected the sensor instantly reverts to auto-on mode.

If Predictive Mode with Expiration (setting 4) is enabled, once the sensor has disabled auto-on it will continue to monitor the space. When no occupancy is detected for a duration equal to the occupancy time delay, the sensor will revert to auto-on mode.

1 Override Off **
2 Switch Disable
3 Predictive Mode
4 Predictive Mode with Expiration*

* *Default for WSX (PDT) units & Pole 1 of WSX (PDT) 2P units*
** *Default for units with -SA, -VA, or -NL options, Pole 2 of WSX (PDT) 2P units, and both poles of 2P units with -2SA, -2VA, or -NL options*

5 = Photocell Set-Point

The ambient light level at which the sensor prevents the lights from initially turning on. Once on, the lights will remain on until the occupancy time delay expires and turns them off.

1 Disabled* **2** Auto Setpoint **3** 0.5 fc **4** 1 fc **5** 2 fc **6** 4 fc **7** 8 fc **8** 16 fc **9** 32 fc **10** 64 fc

Note: Sensor changes to Auto On mode if photocell is enabled. Photocell not present in -NL versions.

7 = LED Operation

Indicates behavior of device's LED.

1 Occupancy Indication* **2** Relay Indication **3** Disabled **4** Override On***

*Standard Factory Default *** Factory Default for -NL version*

9 = Restore Factory 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)* **2** 15 min **3** 30 min **4** 45 min **5** 60 min

11 = Manual On Grace Period

Time period after lights automatically turn off that they can be reactivated by motion. (Manual On (Semi-Auto) mode only)

1 0 sec **2** Unused **3** 15 sec*

12 = Dual Technology (Microphonics™)

Relative responsiveness of Microphonics detection.

1 Normal* **2** Off **3** Medium **4** Low **5** Phase Off (15-10-5 min)

13 = Microphone Grace Period

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

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

15 = Predictive Exit Time

Time period after manually switching lights off for occupant to leave the space.

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

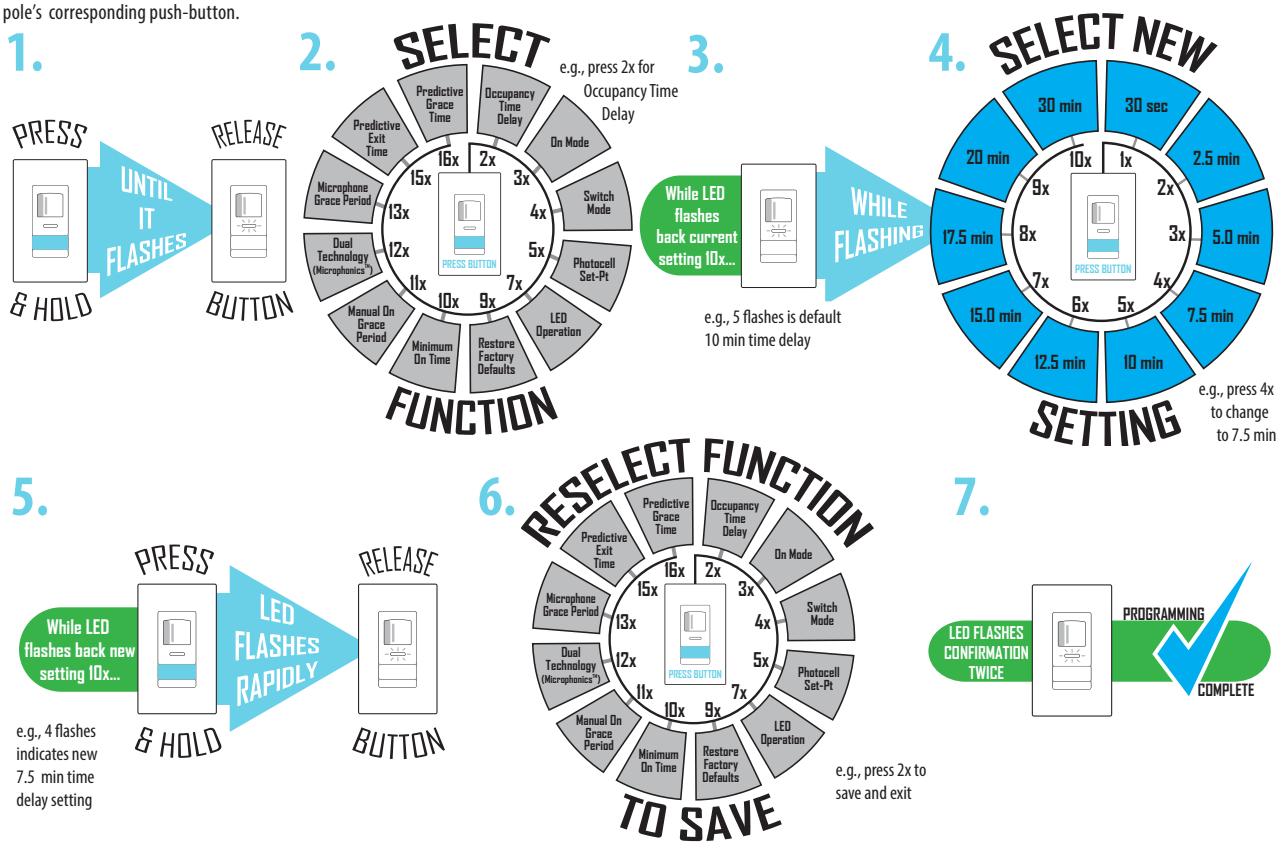
16 = Predictive Grace Time

Time period after Predictive Exit Time that sensor rescans the room for remaining occupants.

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

PROGRAMMING INSTRUCTIONS

Operational settings can be changed via the push-button sequence outlined below (note the example used is for changing occupancy time delay). Programming for 2P units done with each pole's corresponding push-button.



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WSX Family

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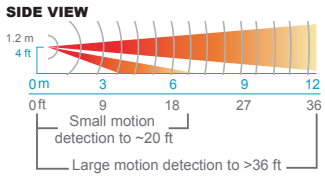

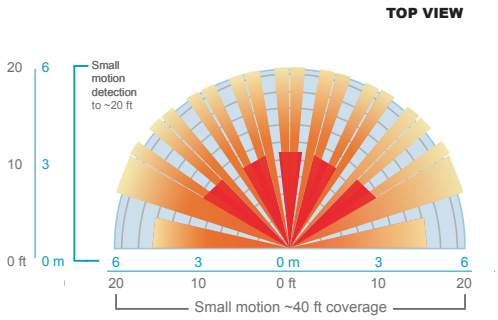

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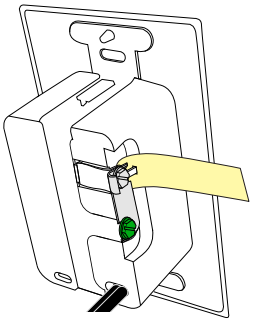

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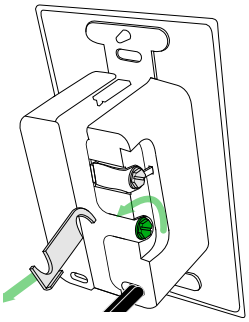

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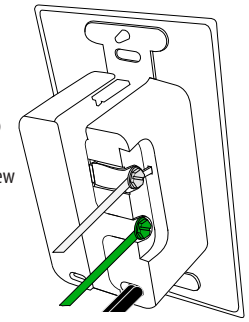
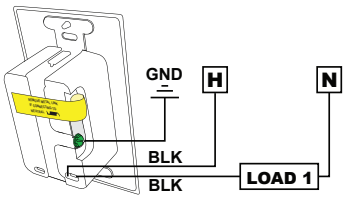


WIRING TO GROUND (NO NEUTRAL)

SINGLE RELAY



WIRE COLOR KEY

120/277 VAC WIRING

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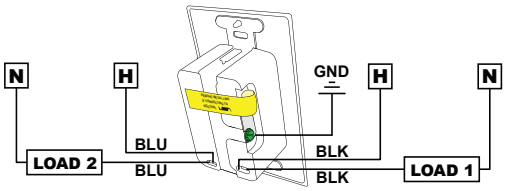
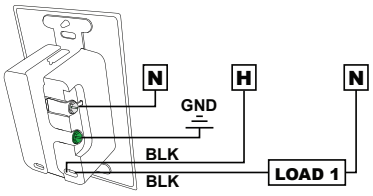
347 VAC WIRING (-347 Option)
Red wires replace Black wires.

DUAL RELAY

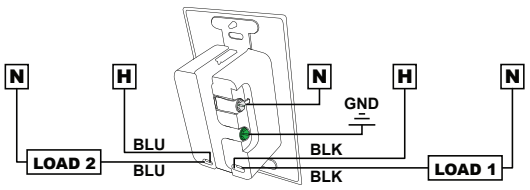


WIRING TO NEUTRAL

SINGLE RELAY



DUAL RELAY



Notes:
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WSX Family

SPECIFICATIONS

PHYSICAL SPECS
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(not including ground strap)
WEIGHT: 5 oz
MOUNTING: Single Gang Switch Box
MOUNTING HEIGHT: 30-48 in (76.2-121.9 cm)
SILICONE FREE
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ELECTRICAL SPECS
MAXIMUM LOAD / POLE (RELAY)
800 W @ 120 VAC
1200 W @ 277 VAC
1500 W @ 347 VAC
MINIMUM LOAD: None
MOTOR LOAD: 1/4 HP
FREQUENCY: 50/60 Hz (timers are 1.2x for 50 Hz)

ENVIRONMENTAL SPECS
OPERATING TEMP
Standard: 14º to 122º F (-10º to 50º C)
LT Option (PIR): -40º to 122º F (-40º to 50º C)
LT Option (PDT): -4º to 122º F (-20º to 50º C)
RELATIVE HUMIDITY:
Standard: 20 to 75% non-condensing
LT Option: 20 to 90% non-condensing
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ORDERING LOGIC

SINGLE RELAY

EXAMPLE: WSX PDT WH

Series	Operating Mode[1]	Voltage	Color[3]	Temp/Humidity
WSX Passive Infrared (PIR)	**Blank** Auto On (default) or Vacancy	**Blank** 120/277 VAC	**WH** White	**Blank** Standard
WSX PDT Dual Technology (PIR / Microphonics)	**SA** Vacancy (default) or Auto-On	**347**[2] 347 VAC	**IV** Ivory	**LT** Low Temp
	VA Vacancy only		**GY** Gray	
			AL Lt. Almond	
			BK Black	
			RD Red	

DUAL RELAY

EXAMPLE: WSX 2P WH LT

Series	Operating Mode[1]	Voltage	Color[3]	Temp/Humidity
WSX 2P Passive Infrared (PIR)	**Blank** Pole 1-Auto On Pole 2-Vacancy (default)	**Blank** 120/277 VAC	**WH** White	**Blank** Standard
WSX PDT 2P Dual Technology (PIR / Microphonics)	**2SA** Both Poles Vacancy (defaut)	**347**[2] 347 VAC	**IV** Ivory	**LT** Low Temp
	2VA Both Poles only Vacancy		**GY** Gray	
			AL Lt. Almond	
			BK Black	
			RD Red	

NIGHTLIGHT

EXAMPLE: WSX 2P NL WH

Series[4]	Voltage	Color[3]	Temp/Humidity
WSX NL Passive Infrared (PIR)	**Blank** 120/277 VAC	**WH** White	**Blank** Standard
WSX PDT NL Dual Technology (PIR / Microphonics)	**347**[2] 347 VAC	**IV** Ivory	**LT** Low Temp
WSX 2P NL Dual Relay, Passive Infrared (PIR)		**GY** Gray	
WSX PDT 2P NL Dual Relay, Dual Technology (PIR / Microphonics)		**AL** Lt. Almond	
		BK Black	
		RD Red	

Notes:
1 Operating Modes reprogrammable via push-button except for VA version
2 Wall plates included in white or ivory only for 347 VAC units
3 Matching wall plate provided for 120/277 VAC units
4 Units factory set to Vacancy (Manual On) Operating Mode

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TITLE 24
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RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number WVR PDT 16 WH Notes	Type OS2

Catalog Number: | Date: | Project:

OVERVIEW

The **WVR PDT 16** Series sensor mounts in a corner, provides line of sight PIR detection of small movements up to 40 ft away as well as Microphonics™ for detection around obstructions. These features make it ideal for retrofit applications like classrooms with inaccessible ceilings. **WVR PDT 16** sensors are powered by and directly switch line voltage, therefore no Power Packs are needed. Additionally, these sensors do not require a neutral, making wiring directly off local switches with wiremold a convenient option. Together, these features make them perfect for retrofit applications where running new wiring is difficult. A **WVR PDT 16** sensor is equipped with either one relay or an optional 2nd realy (**2P**), each with the ability to control up to 13 Amps.

FEATURES

- 100% Digital PIR Detection, Excellent RF Immunity
- 120° by 40 ft (12.19 m) Coverage for Small Motion
- Patented Dual Technology with PIR/Microphonics™ Detection
- Single and 2-Pole Versions
- Interchangeable Hot & Load Wires -Impossible to Wire Backwards
- No Neutral Required / No Minimum Load
- Compatible w/ Electronic & Magnetic Ballasts, CFLs, & Incandescents
- Adjustable Time Delay
- Push-Button Programmable
- Non-Volatile Settings Memory

SPECIFICATIONS

Size:	3.0" H x 3.6" W x 1.75" D (7.62 cm x 9.14 cm x 4.45 cm)
Weight:	7 oz
Mounting:	Single Gang Handy Box (add Wiremold Box # V5719 for Corner Mounting)
Mounting Height:	7 to 8 ft
Operating Voltage:	120/277, 347 VAC 13 Amps / Pole (347 VAC must be same phase)
Motor Load:	1/4 HP
Frequency:	50/60Hz
Max. humidity:	20 – 90% non-condensing
Ambient temperature:	14–160° F (-10–71° C)

ROHS compliant

AcuityControls

Sensor Switch™

WVR PDT 16
WVR PDT 16 2P
Wide View Sensor

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

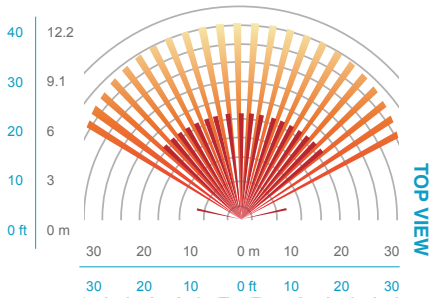
WVR PDT 16							Example: WVR PDT 16 2P WH
Series		**Poles**		**Voltage**		**Color**	
WVR PDT 16	Wide View Sensor	[blank]	1 Pole	[blank]	None	WH	White
		2P	2 Pole	347	347 VAC	IV	Ivory

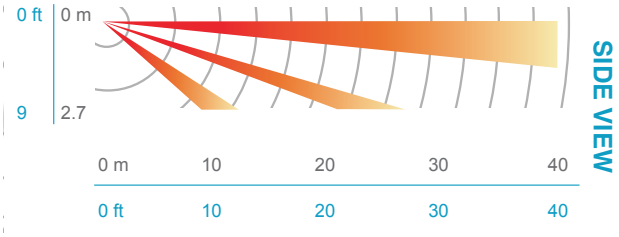
*Note: 2P units with 347 VAC option must be of the same phase

COVERAGE PATTERNS

WIDE VIEW LENS WITH MICROPHONICS™

- Small motion (e.g. hand movements) detection up to 40 ft (12.19 m).
- Large motion (e.g. walking) detection up to 70 ft (21.34 m).
- Designed for 8 to 10 ft (2.44 to 3.05 m) high mounting in room corner.
- 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.





WIRING (DO NOT WIRE HOT)

STANDARD WIRING

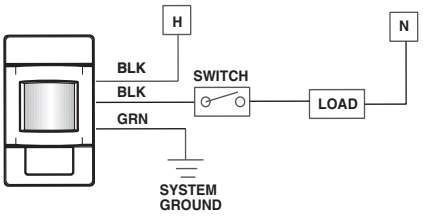
BLACK* - Line Input 1
BLACK* - Load Output 1
} *BLACK wires can be reversed

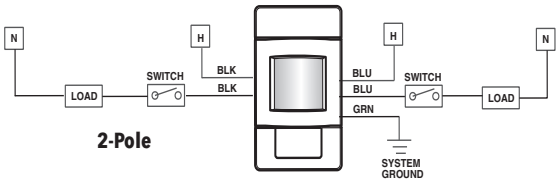
BLUE* - Line Input 2
BLUE* - Load Output 2
} *BLUE wires can be reversed

GREEN - Ground

347 VAC OPTION (347)

Black wires are replaced w/ Red wires





RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number CMR PDT 10 2P P Notes	Type OS3

sensorswitch®

CMR PDT 10 2P

EXTENDED RANGE 360° SENSOR
CEILING MOUNT • LINE VOLTAGE • DUAL TECHNOLOGY (PDT) • 2 POLE

SPECIFICATIONS

FEATURES

100% Digital PIR Detection, Excellent RF Immunity
360° Coverage Pattern
Two Self-Contained Relays, No Power Pack(s) Needed
No Minimum Load Requirements
Interchangeable Hot & Load Wires, Impossible to Wire Backwards
Push-Button Programmable Adjustable Time Delays
No Field Calibration or Sensitivity Adjustments Required
Convenient Test Mode
100 hr Lamp Burn-in Timer
Green LED Indicator

LAMPMAXIMIZER® TECHNOLOGY
- Protects Lamp Life while Maximizing Energy Savings
- Minimum On Timer (15 min default)
- Occ. Time Delay (10 min defatult)

PHYSICAL / MATERIAL SPECS

SIZE 4.55" Dia. (11.56 cm)
1.55" Deep (3.94 cm)
WEIGHT 6 oz
MOUNTING
3.5" Octagon Box
Single Gang Handy Box
COLOR White

ELECTRICAL SPECS

MAXIMUM LOAD / POLE (1 Phase Only)
800 W @ 120 VAC
1200 W @ 277 VAC
1500 W @ 347 VAC
MINIMUM LOAD None
MOTOR LOAD 1/4 HP
FREQUENCY 50/60 Hz

ENVIRONMENTAL SPECS

OPERATING TEMP
14° to 160° F (-10° to 71° C)
STORAGE TEMP
-14° to 160° F (-26° to 71° C)
RELATIVE HUMIDITY
20 to 90% non-condensing
SILICONE FREE
ROHS COMPLIANT

OVERVIEW

Classroom lighting control has never been more cost effective than with the **CMR PDT 10 2P**. This sensor provides Dual Technology detection up to a 40 ft by 40 ft (12.19 x 12.19 m) classroom, and can handle A/B (Inboard/Outboard) switching. On a typical 9 ft (2.74 m) ceiling, simply mount sensor 20 ft (6.10 m) up and in from the door. Universal mounting allows for 3.5" octagon boxes, wiremold, or standard mud rings.

SENSOR OPERATION

Sensors with Passive Dual Technology (PDT) first see motion using 100% digital Passive Infrared (PIR) detection and then engage Microphonics™ to hear sounds that indicate continued occupancy. This patented technology uses Automatic Gain Control (AGC) to dynamically self adapt a sensor to its environment by filtering out constant background noise and registering only noises typical of human activity. When occupancy is detected, two self-contained relays switch the connected lighting loads on. If needed, a 10 second grace period also allows the lights to be voice reactivated after shutting off. This sensor is line powered, switches line voltage, and requires no field calibration or sensitivity adjustments.

LAMPMAXIMIZER®

This sensor also contains patent pending LampMaximizer technology that allows users to aggressively target energy savings while still protecting lamp life. A minimum on timer, factory set at 15 minutes, helps preserve lamp life by eliminating all lamp cycles shorter than lamp warranties specify.

A standard occupancy time delay is also present that ensures lights turn off (assuming minimum on timer has 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 20 minutes. These adjustments are done manually through the unit's push-button; no tools required.

OPTIONS

INHIBIT PHOTOCELL (P)
- Photocell can prevent lights from turning on if adequate daylight is available, but cannot turn lights off
- Maintains two set-points, enabling separate control of both poles

DUAL ZONE PHOTOCELL (DZ)
- Provides more advanced control than **P** option
- DUO Operation: Determines necessary on/off combination of poles in inboard/outboard applications
- Percentage Offset Operation: Uses relative set-point for second pole in dual zone applications

347 VAC (347)
- Allows sensor to be powered from and switch 347 VAC

LOW TEMP/HIGH HUMIDITY (LT)
- Sensor is corrosion resistant to moisture
- Operates down to -4° F (-20°C)

c UL us LISTED

TITLE 24
MADE in U.S.A.
5 YEAR WARRANTY

ORDERING INFO

CMR PDT 10 2P [PHOTOCELL] [VOLTAGE] [TEMP/HUMIDITY]

PHOTOCELL *CHOOSE ONE ONLY*
- Blank = None
- P = Inhibit Photocell
- DZ = Dual Zone Photocell

VOLTAGE
- Blank = 120/277 VAC
- 347 = 347 VAC

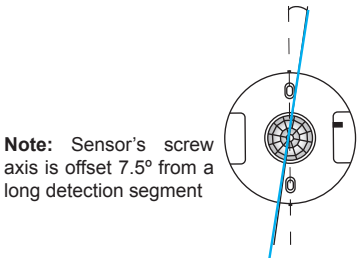
TEMP/HUMIDITY
- Blank = Standard
- LT = Low Temp

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number CMR PDT 10 2P P Notes	Type OS3

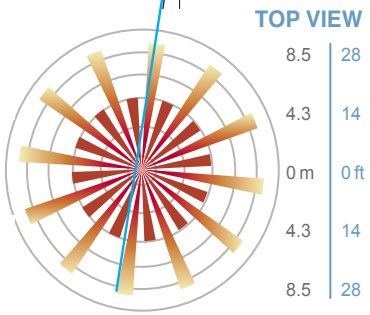
COVERAGE PATTERN

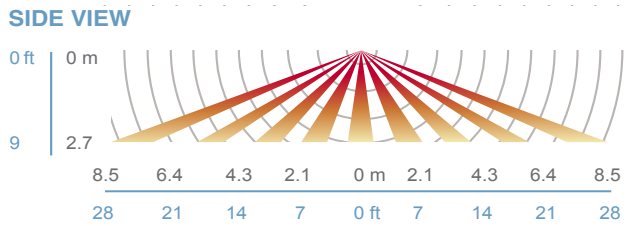
10 EXTENDED RANGE 360° LENS WITH MICROPHONICS™

- Best choice for large motion detection (e.g. walking)
- Viewing angle of 67° in a 360° conical shaped pattern
- Provides 28 ft (8.53 m) radial coverage when mounted to standard 9 ft (2.74 m) ceiling
- 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
- 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.



Note: Sensor's screw axis is offset 7.5° from a long detection segment





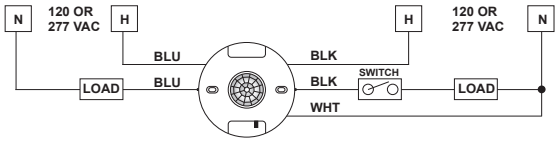
WIRING (DO NOT WIRE HOT)

STANDARD WIRING

BLACK* - Line Input 1
BLACK* - Load Output 1
*BLACK wires can be reversed

BLUE** - Line Input 2
BLUE** - Load Output 2
**BLUE wires can be reversed

WHITE - Neutral



347 VAC OPTION (347)

Black wires are replaced w/ Red wires

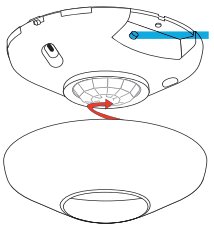
INITIAL POWER UP

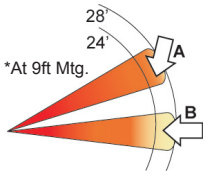
The sensor's relays are shipped in a latched closed position so the lights will come on upon initial power-up. If the lights do not immediately turn on (initial installation only) the latching relays opened during shipment and will close within 30 secs.

Note: If the sensor loses power, the internal relays will latch to on.

INSTALLATION

- Sensor's mounting holes align with 3.5" octagon or single gang handy box (screws not provided).
- For optimal detection, position sensor such that segments are crossed upon entrance and unable to view outside the space.
- Sensor will detect motions crossing segments more effectively than motions parallel to beams.
- For maximum Microphonics™ sensitivity avoid locating sensor near HVAC air diffusers.





A: When walking across beam, detection will occur at approximately 28 ft.
B: When walking into beam, detection will occur at approximately 24 ft.

PROGRAMMING

Refer to instruction card IC8.001 for default settings and directions on programming the sensor via the push-button.

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An AcuityBrands Company

900 Northrop Road, Wallingford, CT 06492 • 1.800.PASSIVE • FX 203.269.9621 • www.sensorswitch.com

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number CMR PDT 10 2P Notes	Type OS4

sensorswitch®

CMR PDT 10 2P

EXTENDED RANGE 360° SENSOR
CEILING MOUNT • LINE VOLTAGE • DUAL TECHNOLOGY (PDT) • 2 POLE

SPECIFICATIONS

FEATURES
- 100% Digital PIR Detection, Excellent RF Immunity
- 360° Coverage Pattern
- Two Self-Contained Relays, No Power Pack(s) Needed
- No Minimum Load Requirements
- Interchangeable Hot & Load Wires, Impossible to Wire Backwards
- Push-Button Programmable Adjustable Time Delays
- No Field Calibration or Sensitivity Adjustments Required
- Convenient Test Mode
- 100 hr Lamp Burn-in Timer
- Green LED Indicator

LAMPMAXIMIZER® TECHNOLOGY
- Protects Lamp Life while Maximizing Energy Savings
- Minimum On Timer (15 min default)
- Occ. Time Delay (10 min defatult)

PHYSICAL / MATERIAL SPECS

SIZE 4.55" Dia. (11.56 cm)
1.55" Deep (3.94 cm)
WEIGHT 6 oz
MOUNTING
3.5" Octagon Box
Single Gang Handy Box
COLOR White

ELECTRICAL SPECS

MAXIMUM LOAD / POLE
(1 Phase Only)
800 W @ 120 VAC
1200 W @ 277 VAC
1500 W @ 347 VAC
MINIMUM LOAD None
MOTOR LOAD 1/4 HP
FREQUENCY 50/60 Hz

ENVIRONMENTAL SPECS

OPERATING TEMP
14° to 160° F (-10° to 71° C)
STORAGE TEMP
-14° to 160° F (-26° to 71° C)
RELATIVE HUMIDITY
20 to 90% non-condensing
SILICONE FREE
ROHS COMPLIANT

OVERVIEW

Classroom lighting control has never been more cost effective than with the **CMR PDT 10 2P**. This sensor provides Dual Technology detection up to a 40 ft by 40 ft (12.19 x 12.19 m) classroom, and can handle A/B (Inboard/Outboard) switching. On a typical 9 ft (2.74 m) ceiling, simply mount sensor 20 ft (6.10 m) up and in from the door. Universal mounting allows for 3.5" octagon boxes, wiremold, or standard mud rings.

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- Provides more advanced control than **P** option
- DUO Operation: Determines necessary on/off combination of poles in inboard/outboard applications
- Percentage Offset Operation: Uses relative set-point for second pole in dual zone applications

347 VAC (347)
- Allows sensor to be powered from and switch 347 VAC

LOW TEMP/HIGH HUMIDITY (LT)
- Sensor is corrosion resistant to moisture
- Operates down to -4° F (-20°C)

c UL us LISTED

TITLE 24
MADE in U.S.A.
5 YEAR WARRANTY

ORDERING INFO → CMR PDT 10 2P [PHOTOCELL] [VOLTAGE] [TEMP/HUMIDITY]

PHOTOCELL *CHOOSE ONE ONLY*
- → **Blank = None**
- **P = Inhibit Photocell**
- **DZ = Dual Zone Photocell**

VOLTAGE
- → **Blank = 120/277 VAC**
- **347 = 347 VAC**

TEMP/HUMIDITY
- → **Blank = Standard**
- **LT = Low Temp**

RKL Sales Corporation	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number CMR PDT 10 2P Notes	Type OS4

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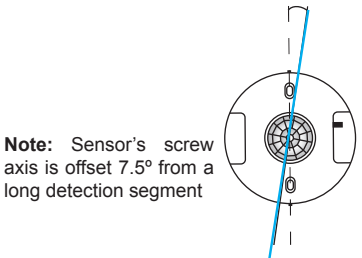

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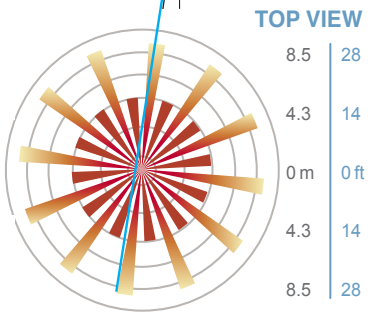

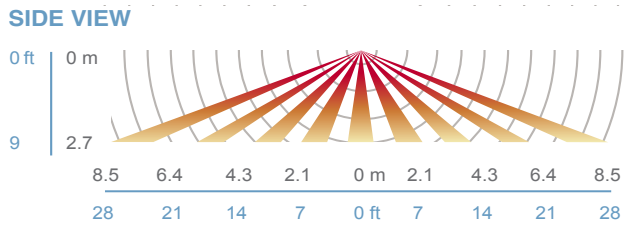

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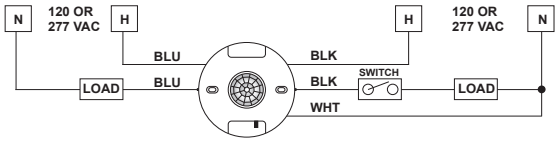

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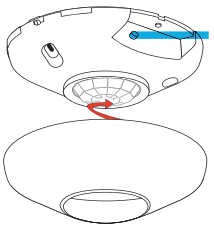

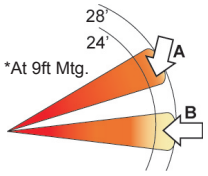

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RKL SALES CORPORATION MANUFACTURERS REPRESENTATIVES	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number NEWSTAR WARRANTY Notes	Type

NEWSTAR WARRANTY

Warranty Statement

In addition to the New Star Promise, all fluorescent fixtures manufactured by New Star are warranted to be free from defects in workmanship and material for three (3) years from the date of invoice. New Star reserves the right to issue credit, repair or replace any defective material at our discretion upon notification and verification of the defect by our local representative and/or New Star employee. New Star reserves the right to require a physical examination and verification of the defective material and to deny this warranty if the material and/or product were damaged, installed improperly, altered or used for applications for which it was not intended. There is no labor reimbursement indicated to be part of New Star's warranty. Labor back charges will not be honored without pre-approval. Pre-approved labor back charges will be accepted only with written approval at a mutually agreed upon dollar amount between New Star and the party involved. Fluorescent ballasts are covered according to our standard terms and conditions.

All LED fixtures are warranted to be free from defects in workmanship and material for five (5) years from the date of invoice. Additionally, LEDs and power regulation components will carry a warranty from New Star Lighting against defects that result in a fixture lumen depreciation of 30% or greater for a period of 5 years from invoice date*. Lumen depreciation is compared to the published lumen output of the product on the date of manufacture per IESNA LM79-8 reporting procedures. Normal accumulation of particles on the optical surfaces is not factored into the lumen depreciation.

MRI products that fail to perform to acceptable MRI room interference and susceptibility standards will be repaired or replaced for a period of 1 year from the date of invoice*.

**Fixture must be installed according to manufacturer's instructions.*

RKL SALES CORPORATION MANUFACTURERS REPRESENTATIVES	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number EELP WARRANTY Notes	Type

EELP WARRANTY

Emergency & Exit

Any component of our emergency or exit lighting products that fails due to a manufacturing defect will be replaced at no cost within 5 years of the invoice date. Replacement will be for the failed component or a new unit at EELP's discretion. All defective units are subject to manufacture testing. Should any failed units be found defective from misuse, improper installation, or faulty wiring, the customer will be charged for the replacement. ***Under no circumstances will EELP be responsible for back charges of any kind, including, without limitation, labor charges, equipment rental fees or late penalties unless prior written approval has been given.*** To activate the warranty, the product must be installed and maintained properly. The batteries must be placed in service and fully charged within 90 days of invoice date. Damaged products must be reported to EELP, in writing, within 10 days of the invoice date.

Inverters

EELP shall warranty all inverter systems against defects in materials and workmanship for 1 year. The warranty shall cover all parts for 1 year. With optional start-up provided by an EELP authorized technician, onsite warranty shall be covered for one year. Maintenance contract packages and extended warranties are also be available.

*This warranty statement supersedes all previous warranties

RKL SALES CORPORATION Manufacturers Representatives	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number ACUITY WARRANTY Notes	Type

Section 26 51 00 Paragraph 3.5/3.5.1

Acuity Brands Terms and Conditions of Sale
For Shipments Within the United States
Effective August 1, 2012

PAYMENT TERMS:
Purchaser agrees to pay the prices quoted by Acuity Brands Lighting, Inc. or Acuity Brands Technology Services, Inc. (collectively, "Acuity Brands"), and is responsible for applicable shipping and handling charges, taxes and duties as provided below. Payment terms for sales by Acuity Brands of Acuity Brands products, services and service offerings are available at http://www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx.

If purchaser does not pay any invoice, in whole or in part, when due, Acuity Brands shall assess a finance charge on any past due balance at the maximum legal rate permitted on open accounts. If any amount due Acuity Brands is collected by or through an attorney, Acuity Brands shall be entitled to recover all costs of collection, including attorney's fees equal to 15% of the total principal and interest owed.

PRICES:
All prices are those in effect at the time of quotation and are subject to change without notice. Unless prices are quoted as "firm," Acuity Brands reserves the right to invoice at the prices in effect on the date of shipment. Acuity Brands reserves the right to require minimum order amounts. Prices exclude all taxes. Prices do not include lamps unless specified.

FREIGHT ALLOWANCE:
Any orders that qualify for a freight allowance will be shipped F.O.B. Origin, freight prepaid and allowed or as otherwise agreed to in writing by Acuity Brands. Any orders that do not qualify for a freight allowance will be shipped F.O.B. Origin, freight prepaid and add. For all orders that qualify for freight allowance, Acuity Brands reserves the right to select the carrier and method of shipment and to route shipments at Acuity Brands' discretion. Acuity Brands will ship in the manner selected by purchaser provided purchaser assumes any additional transportation costs. See http://www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx for specific freight requirements.

TAXES:
Purchaser has responsibility for paying and reporting all applicable taxes levied or based on account of the purchase price or the acquisition, ownership, license or use of the products or services.

TRANSPORTATION CLAIMS:
Title and risk of loss passes to purchaser upon delivery of products by Acuity Brands to the carrier. Therefore, claims for damages or shortages in transit are the responsibility of purchaser. Bills of Lading marked with "Shippers Load and Count" do not constitute a transfer of liability for the freight or damages from purchaser to Acuity Brands.

PACKAGING:
Acuity Brands reserves the right to optimize packaging at its discretion. Some products may only be available in bulk package multiples or case quantities.

SERVICE AREA LIMITATION:
Acuity Brands reserves the right to refuse to make quotations, accept orders or make shipments to points of destination outside of the regular or assigned selling and service area of the applicable Acuity Brands distributor.

RETURN OF STOCK MERCHANDISE:
No merchandise may be returned without prior written authorization from Acuity Brands. Requests to return merchandise must be made within four (4) months from date of shipment by Acuity Brands. All returns must be shipped prepaid to the location designated on the return authorization. Credit will be issued based on the original invoice price, or price in effect at time of return, whichever is lower, less a minimum disposition charge of 35% (to defray the cost of handling). All returned product must be in salable condition in order to qualify for credit. Return authorization will not be granted when the value of all items to be returned is less than $300.

NON-RETURNABLE MERCHANDISE:
The following products are not returnable: all non-stock, special, custom made or modified products; all stock products containing time-sensitive components that have reached the end of their warranty or shelf life; outdated or phase-out stock products; and all Lithonia Lighting C&I stock and non-stock poles.

CANCELLATIONS:
Stock products may be cancelled prior to shipment without charge. Cancellation of any order for non-stock products will incur charges for work already performed and for special material purchased by Acuity Brands. Cancellation of any product order after shipment will be subject to the return provisions of these Terms and Conditions of Sale. Orders for services are non-cancellable, and except as provided in the applicable Acuity Brands services warranty, fees for services are non-refundable. If services are not provided prior to invoice, the purchaser is entitled to the performance of ordered services only within the 18-month period after the services invoice date.

LIMITED WARRANTY:
Statements of the limited warranties provided by Acuity Brands for Acuity Brands products, services and service offerings are available at http://www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx.

LIMITATION OF LIABILITY:
The total liability of Acuity Brands on any and all claims of any kind, whether in contract, warranty, tort (including negligence), strict liability or otherwise, arising out of or in connection with, or resulting from, Acuity Brands' sale, delivery, resale, repair, or replacement of any products, service offerings, or the performance of any services, shall in no event exceed the purchase price allocable to the specific product or service which gives rise to the claim, and any and all such liability shall terminate upon the expiration of the applicable warranty period.

Acuity Brands shall not be liable for damages that result from the delivery of products or the performance of services that do not occur within purchaser's specified time frame or for any delay or default in delivering products or performing services where occasioned by any cause beyond the control of Acuity Brands, including without limitation embargoes; shortages of labor, raw materials, or fuel; fires; floods; accidents; acts of war; or other similar causes.

IN NO EVENT SHALL ACUITY BRANDS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, EXEMPLARY OR PUNITIVE DAMAGES ARISING OUT OF THE SALE OR PERFORMANCE OF ANY PRODUCTS, SERVICES OR SERVICE OFFERINGS, OR ANY BREACH OF WARRANTY OR OBLIGATIONS UNDER WARRANTY, EVEN IF INFORMED OF THE POSSIBILITY OF SUCH DAMAGES, WHETHER AS THE RESULT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, OR ANY OTHER THEORY, INCLUDING WITHOUT LIMITATION LABOR OR EQUIPMENT REQUIRED TO REMOVE AND/OR REINSTALL ORIGINAL OR REPLACEMENT PARTS, LOSS OF TIME, PROFITS OR REVENUES, LACK OR LOSS OF PRODUCTIVITY, INTEREST CHARGES OR COST OF CAPITAL, COST OF SUBSTITUTE EQUIPMENT, SYSTEMS OR SERVICES, DOWNTIME COSTS, LOSS OR CORRUPTION OF DATA, LOSS OF USE OF PROPERTY OR EQUIPMENT, OR ANY INCONVENIENCE.

INTELLECTUAL PROPERTY:
Nothing herein shall be construed to grant to purchaser or any end user of an Acuity Brands product any right, title, or interest in or to any intellectual property rights (including, without limitation, any patent, trademark or copyright) embodied in or associated with the products, services, service offerings or related software that may be already installed in or included with the products, services or service offerings (the "Software"). The Software is not sold, and is protected by international intellectual property laws and treaties. Such Software may be used solely in connection with the product, service or service offering with which it is included, subject to any additional terms and conditions that may become applicable when the end user installs or accepts the Software or part of a written agreement between Acuity Brands and the end user. The products may not be loaned, rented or disclosed, nor may access be provided to the Software, for a fee or otherwise, to any third party. The Software may be permanently transferred, but only as part of a sale or transfer of the products, provided that no copies are retained, all Software is transferred, and such sale is subject to the applicable terms of these Terms and Conditions of Sale. No product or Software shall be duplicated, reverse engineered, or decompiled by anyone other than Acuity Brands except and only to the extent this restriction is prohibited by law.

CHOICE OF LAW; CONSENT TO JURISDICTION:
These Terms and Conditions of Sale shall be construed and enforced in accordance with the substantive laws of the State of Georgia, USA, without regard to such state's laws related to choice of law. Any State or Federal Court in Fulton County, Georgia shall have jurisdiction for the purpose of any suit or other proceeding arising out of the transactions under these Terms and Conditions of Sale.

GENERAL:
Unless otherwise specifically agreed in writing by an authorized representative of Acuity Brands, any different or additional terms and conditions proposed by any purchaser in a purchase order, response to a quotation or other proposal, are hereby rejected by Acuity Brands and shall not be incorporated into any order or other agreement for the sale of Acuity Brands products, services or service offerings. Purchaser's assent to these Terms and Conditions of Sale shall be conclusively presumed from purchaser's acceptance of all or part of any products, services or service offerings ordered. If an authorized representative of Acuity Brands has acknowledged purchaser's order or proposal, and such acknowledgement is found to constitute an acceptance of an offer, such acceptance is expressly made conditional on purchaser's assent solely to these Terms and Conditions of Sale which shall form part of the acknowledgement, and acceptance or authorized resale by purchaser of any products or services shall be deemed to constitute such assent. If any quotation or other document of Acuity Brands is deemed to constitute an offer to purchaser, purchaser's acceptance of such offer is limited to these Terms and Conditions of Sale. These Terms and Conditions of Sale, together with any warranty statement by Acuity Brands, constitute the entire sales agreement between Acuity Brands and purchaser, unless they are made part of a written agreement between Acuity Brands and purchaser. No custom, practice, or course of prior dealings between the parties and no usage of trade shall modify or otherwise affect these Terms and Conditions of Sale. Acuity Brands objects to and rejects any terms between purchaser and any other party, and no such terms, including but not limited to any government regulations or "flowdown" terms, shall be a part of or incorporated into any order from purchaser to Acuity Brands, unless agreed to in writing by an authorized representative of Acuity Brands. These Terms and Conditions of Sale supersede all those published or issued previously by Acuity Brands. All orders are subject to final acceptance by Acuity Brands and credit approval. Acuity Brands will not accept orders that require customer-furnished components, unless agreed to in writing by an authorized representative of Acuity Brands. Acuity Brands price sheets are not offers to sell and possession of a price sheet does not entitle one to purchase. Acuity Brands shall not be bound to sell any products or provide any services unless it shall (in its sole discretion) accept submitted purchase orders.

Acuity Brands reserves the right to change these Terms and Conditions of Sale at any time without notice.

ONE LITHONIA WAY, CONYERS, GEORGIA 30012
PHONE 770-922-9000 www.acuitybrands.com

RKL SALES CORPORATION MANUFACTURERS REPRESENTATIVES	Project 15-18720-6 Teen Center - Los Alamos Submitted By RKL SALES CORP	Catalog Number CON-TECH WARRANTY Notes	Type

Sales Terms and Conditions

January 1, 2015

Terms for Domestic Sales
1% 10 Days - Net 30 (O.E.M sales are Net 30)
1-1/2% per-month interest will be charged for accounts paid beyond 30 day terms.

Freight
All shipments F.O.B Factory Warehouses (Northbrook, IL and Sante Fe Springs, CA). Full freight allowed on orders shipped within the continental U.S. totaling $2,000.00 or more (excluding O.E.M. shipments). Full freight allowance for Hawaii and Alaska is $2,300.00. For Canada, the allowance is $2,800.00. Back ordered items qualifying for prepaid shipping charges will be shipped prepaid. Freight and shipping fees will be charged for shipments to a customer's place of business anywhere in the contiguous United States should you require a carrier of your choice. Any extra charges incurred for additional services, such as customer's carrier, lift gate or special handling by the carrier, must be paid by the consignee (including prepaid orders). Title and risk of loss pass to the customer upon tender of shipment to the carrier. Consignee must make all claims for loss or damage to carrier.

Cancellations
Any cancellation must be approved by ConTech Lighting, and may be subject to restocking and other charges.

Returns
No return will be accepted for credit without prior approval by the factory in writing and/or an accompanying RGA. All returns for credit are subject to inspection and must be in original factory fresh condition and in original packaging. All returns to be made freight prepaid to location designated on Return Goods Authorization (RGA). No refunds will be made against credits. No returns will be accepted that are Freight Collect. All returns will be subject to a 50% Restocking Charge with a $200.00 minimum. No material will be accepted for credit that was purchased over 90 days prior to request.

Minimum Charge Order
A Service Charge of $25.00 will be added to all original customer orders less than $100.00 net.

Pricing
All prices subject to change without notice.

Full Replacement Guarantee
All non-operable materials that are under warranty can be returned to our Northbrook facility for inspection. ConTech Lighting will either repair or replace material at no charge. All products must be installed and/or used in accordance with applicable National or Local Electrical Codes; and for the general use and practices as advised in our literature and instruction information.

No collect shipments will be accepted. ConTech Lighting disclaims any liability for product defect claims that are due to product misuse, improper product selection or misapplication. ConTech Lighting shall not be liable for any delay in or impairment of performance resulting in whole or in part from any circumstance or cause beyond the control of ConTech Lighting in the conduct of its business.

Warranty

ConTech Lighting guarantees our products to be free from manufacturing defects for a period of one (1) year from date of purchase.

-LED Fixtures, inlcuding Energy Star LED fixtures, carry a five (5) year complete warranty from date of purchase. This warranty covers the entire fixture, and that it will be free of defects in material and workmanship in normal use for five (5) years. This warranty also guarantees lumen depreciation of no more than 30% (L70) within the warranty period and color shift no greater than that which is specified in the Energy Star Luminaires Requirements Version 1.1. LED Tapelight carries a three (3) year limited warranty when installed without the aluminum mounting channel. Should any defects be found, ConTech Lighting may, at its option, repair or replace the defective part or else make available a replacement part that will provide equal or better performance. Usage documentation may be requested to validate hours. This warranty is conditioned upon proper installation, use, and maintenance and does not include modifications, power surges, or overheating due to external conditions. Normal wear and tear on the fixture is not covered by this warranty.

-LED Drivers, when not installed in a fixture housing, carry a one (1) year warranty by ConTech Lighting. Additional warranties may be available from the driver manufacturer. See specific manufacturer website for details.

-Energy Star CFL products are covered for three (3) years by a full replacement guarantee after date of installation.

-Electronic CFL/CMH Ballasts carry a five (5) year warranty from date of purchase.

-Electronic Transformers carry a four (4) year warranty from date of purchase except for 60W and 75W transformers, which carry a three (3) yearwarranty from date of purchase, and the LRT60 carries a one (1) year warranty from date of purchase.

-Remote Low Voltage Transformers carry a four (4) year warranty from date of purchase.

-Magnetic CFL Ballasts carry a one (1) year warranty from date of purchase.

-Magnetic Transformers carry a two (2) year warranty from date of purchase.

-Lamps (LED, CFL, CMH, Incandescent) carry a one (1) year warranty by the manufacturer. Additional warranties may be available from the lamp manufacturer. See specific manufacturer website for details.

COUPÉ 4266-SIJ

PROJECT PROJET TEEN CTR

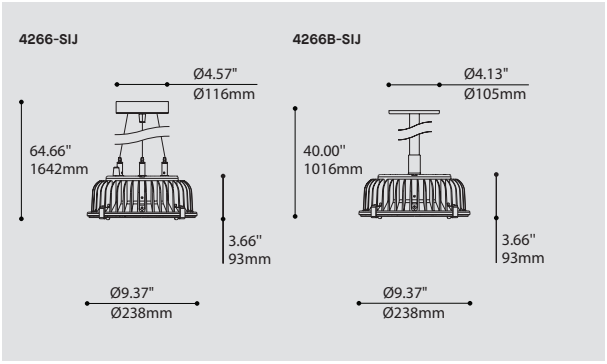
SPEC TYPE G

NOTES

4266-SIJ LED 13.30 120V DV AC 60 4266B BLKA CDP CDP

STEM OPTIONS

4266B-SIJ



FAMILY FAMILLE

4766-SIJ

4766-SIJ

4766-SCR

ORDERING SPECIFICATION SPÉCIFICATION DE COMMANDE — CODE

MODEL MODÈLE

4266-SIJ	COUPÉ (AIRCRAFT CABLE)
4266B-SIJ	COUPÉ (STEM)

LIGHT SOURCE SOURCE LUMINEUSE

(WATTAGE, LAMP TYPE, LAMP FORM, BASE TYPE, OTHER INFO)

LED.13.30	13W, LED 3000K (WARM)
LED.13.40	13W, LED 4000K (NEUTRAL)
LED.26.30	26W, LED 3000K (WARM)
LED.26.40	26W, LED 4000K (NEUTRAL)

VOLTAGE VOLTAGE

120V	120 VOLT
277V	277 VOLT

DIMMING OPTION OPTION DE GRADATION

DV	0-10V DIMMING (120-277V)
DP	PHASE DIMMING (120V ONLY)

LED DIMMING DRIVER IS STANDARD IN THESE PRODUCTS, PLEASE SPECIFY YOUR DIMMING TYPE.

STEM OR CABLE TIGE OU CABLE

AC	AIRCRAFT MOUNTING & CLEAR CABLE, FIELD ADJUSTABLE (FOR 4266 ONLY)
S7	27/32", (21MM) STEM, NOT FIELD ADJUSTABLE (FOR 4266B)

STEM OR CABLE LENGTH LONGUEUR DE TIGE OU CABLE

36	36" STEM (STD LENGHT)
60	60" AIRCRAFT CABLE (STD LENGTH)
**	CUSTOM STEM LENGTH (12", 24", 48", 60", 72", 84", 96") (PLEASE SPECIFY)
**	CUSTOM AIRCRAFT CABLE LENGTH (PLEASE SPECIFY)

FOR OVERALL LENGTH PLEASE CONTACT YOUR EUREKA REPRESENTATIVE

STRUCTURE FINISH FINI STRUCTURE

4266

CHR	CHROME

4266B

BLKE	BLACK FINE TEXTURE

HEATSINK FINISH FINI RADIATEUR — **BLKA**

BLKA	BLACK ANODISED

DIFFUSER INTERIOR FINISH FINI DIFFUSEUR INTÉRIEUR

CDP	CONICAL DEGLARING PRISM

DIFFUSER FINISH FINI DIFFUSEUR

CDP	CONICAL DEGLARING PRISM

PRODUCT CHARACTERISTICS CARACTÉRISTIQUES DU PRODUIT

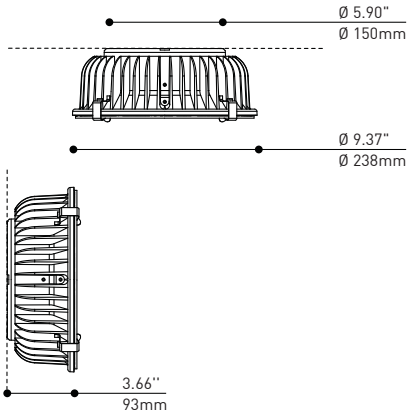
BIM DIM IES 4266 4266B LED

DESIGN:	Coupé is an industrial-looking shallow fixture that can be installed on low ceilings. Add a conical metal shade for a modern look and you have the Turbo.
LIGHT SOURCE:	13W and 26W LED Chip-on-board (COB) emitter available in 3000K and 4000K. Electronic dimming available on all models.
STRUCTURE:	Durable die cast aluminum enclosure with stainless steel spring clips. Turbo has an additional spun aluminum shade with exterior grade fine texture powder coat finish.
DIFFUSER:	Compound lens structured around layers of diffusing and conical deglaring prismatic (CDP) sheet PMMA.
CERTIFIED:	c-CSA-us Wet Location to UL standards – Suitable for interior and exterior projects (4266B only)
CONCEPTION:	Coupé est un luminaire au look industriel, assez mince pour être installé sur des plafonds bas. Ajoutez-y un abat-jour métallique conique pour obtenir un look moderne avec le Turbo.
SOURCE LUMINEUSE:	Émetteur DEL de format «Chip-on-board» (COB) de 13W et 26W, disponible en 3000K et 4000K. Gradation disponible sur tous les modèles.
STRUCTURE:	Boîtier durable en aluminium moulé avec fermoirs en acier ressort. Turbo est muni d'un abat-jour additionnel en aluminium repoussé, finition peinture en poudre à texture fine de grade extérieur.
DIFFUSEUR:	Lentille composée de couches de PMMA munis de prismes anti-éblouissement (CDP).
CERTIFIÉ:	c-CSA-us Emplacement Mouillé au standard UL – Convient aux projets intérieurs et extérieurs (4266B seulement)

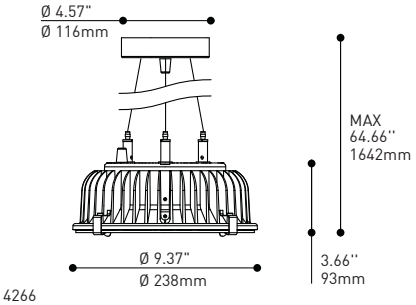
ANATOMY

ADA BIM DIM IES LED

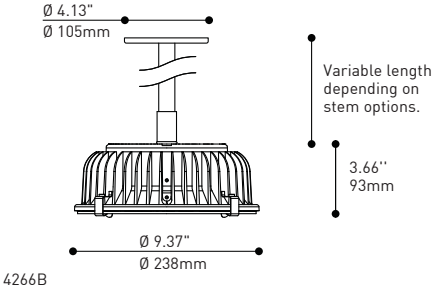
COUPÉ



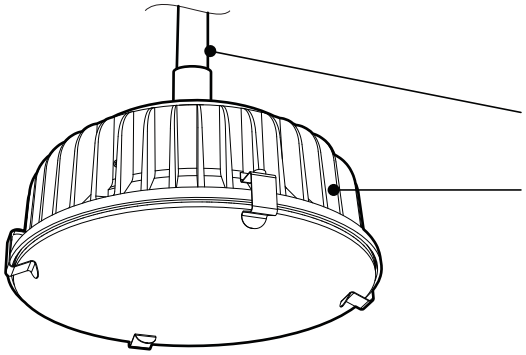
4766
SURFACE



4266
SUSPENSION CABLE



4266B
SUSPENSION STEM

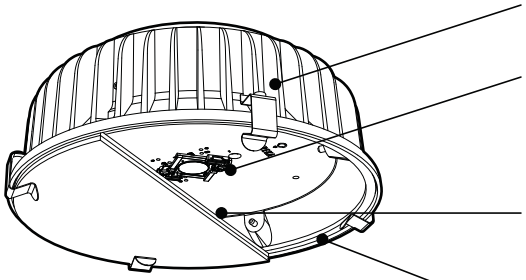


INDUSTRIAL CHIC
Works in a wide range of environments (bars, hotels, lofts, indoor, outdoor,...)

MOUNTING OPTIONS
Rigid stem / aircraft cable, or surface.

KEEPING THINGS COOL
Precisely calculated, air exposed heat sink, sturdy die cast aluminum, black anodised finish.

DESIGNED FOR DISASSEMBLY
Easy installation and maintenance
Recyclable materials
Mechanically fastened parts



STAINLESS STEEL SPRING CLIPS
Easy access inside light chamber, if need be

HIGH OUTPUT FOR GENERAL ILLUMINATION
Center mounted COB LED technology
As much as 2400 lumens for only 26 W
Color temperatures: 3000 / 4000 K

FLAT OPTICS
Compound lens structured around layers of diffusing and deglaring CDP PMMA.

WEATHERPROOF
Self-adhesive gaskets
Die-cut silicone sponge
Mechanically compressed
Fully sealed
Wet location rated (CSA to UL standards)

CHARACTERISTICS 4766 / 4266 / 4266b

LIGHT SOURCE	1 x Cree CXA2520 COB - total ±26 w	1 x Cree CXA2520 COB - total ±13 w
MODULE	UL Recognized	
DELIVERED LUMENS	2250 lm (3000K) - 2400 lm (4000K)	1170 lm (3000K) - 1250 lm (4000K)
CRI	80 CRI (3000K) - 80 CRI (4000K)	
ROHS	Yes	
HOUSING	Die-cast aluminum, black anodised (2,5mm thickness)	
HEAT SINK	Die-cast aluminum, black anodised (variable thickness)	
LIGHT DISTRIBUTION	Direct	
OPTICS	Diffusing flat PMMA lens, Deglaring CDP PMMA lens (minimum 3 mm thickness for each layer)	
GASKETS	Die-cut self-adhesive silicone gasket (minimum 3,2mm thickness)	
VOLTAGE	120V or 277V	
DRIVER (DIMMING)	Lightech 700 mA ("Reverse Phase Dimming")	Lightech 350 mA ("Reverse Phase Dimming")
LM-79	Available	In process
WARRANTY	5 years	

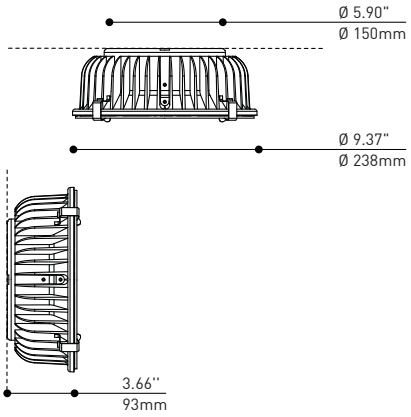
EUREKA

4766-SIJ
4266-SIJ / 4266B-SIJ

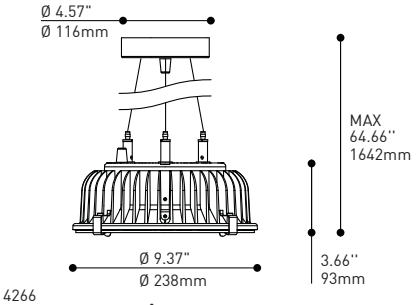
ANATOMIE

ADA BIM DIM IES LED

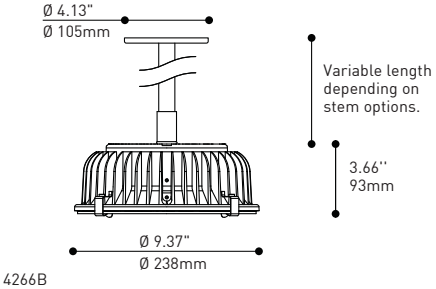
COUPÉ



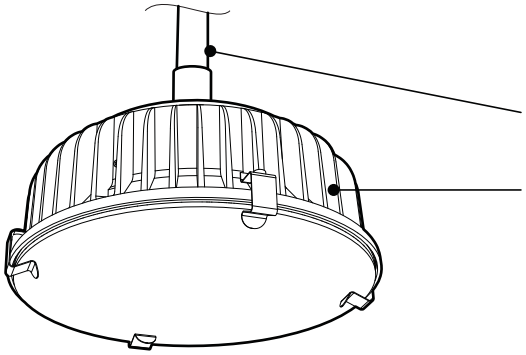
4766
PLAFONNIER



4266
SUSPENSION SUR CÂBLES



4266B
SUSPENSION SUR TIGE

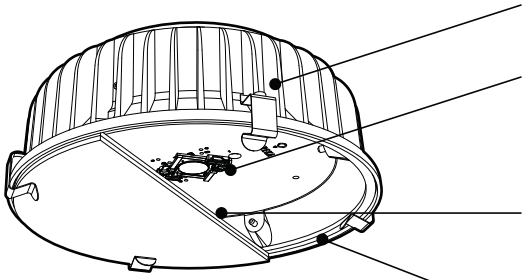


CHIC INDUSTRIEL
Compatible dans un éventail de décors (plafond bas, escalier, garage, extérieur,...)

OPTIONS DE MONTAGE
Câble d'acier, tige fixe, ou en surface.

GARDER LA TÊTE FROIDE
Aluminium moulé sous pression
Anodisé noir pour une gestion thermique améliorée

CONÇU POUR LE DÉSASSEMBLAGE
Installation et entretien facile
Matériaux recyclables
Pièces jointes mécaniquement



FERMOIRS EN ACIER RESSORT
Accès facile à la source lumineuse, au besoin

INTENSITÉ POUR ÉCLAIRAGE GÉNÉRAL
Densité de sources ("Chip-on-Board" COB)
Jusqu'à 2400 lm pour aussi peu que 26 W
Températures couleur: 3000 / 4000 K

LENTILLE COMPOSÉE
Superposition de couches de PMMA qui diffusent et réduisent l'éblouissement (CDP).

RÉSISTE AUX INTEMPÉRIES
Joints d'étanchéité autocollants
Silicone éponge découpé à l'emporte-pièce
Compression mécanique
Scellage complet
Convient aux endroits mouillés
(CSA aux standards UL)

CARACTÉRISTIQUES 4766 / 4266 / 4266b

SOURCE LUMINEUSE	1 x Cree CXA2520 COB - total ±26 w	1 x Cree CXA2520 COB - total ±13 w
MODULE	Reconnu par UL	
LUMENS RÉELS	2250 lm (3000K) - 2400 lm (4000K)	1170 lm (3000K) - 1250 lm (4000K)
IRC	80 IRC (3000K) - 80 IRC (4000K)	
ROHS	Conforme	
BOÎTIER	Aluminium moulé sous pression, anodisé noir (épaisseur 2,5mm)	
RADIATEUR	Aluminium moulé sous pression, anodisé noir (épaisseurs variables)	
DISTRIBUTION LUMINEUSE	Direct	
OPTIQUES	Lentille composée de couches de PMMA qui diffusent et réduisent l'éblouissement. (CDP, épaisseur minimum 3 mm)	
JOINTS D'ÉTANCHÉITÉ	Silicone éponge autocollant, découpé à l'emporte-pièce (épaisseur minimum 3,2mm)	
VOLTAGE	120V ou 277V	
PILOTES (AVEC GRADATION)	Lightech 700 m ("Reverse phase dimming")	Lightech 350 mA ("Reverse phase dimming")
LM-79	Disponible	En cours d'obtention
GARANTIE	5 ans	

EUREKA

4766-SIJ
4266-SIJ / 4266B-SIJ

EUREKA

TERMS AND CONDITIONS OF SALES

1. Orders Acceptance

An order is accepted by **Eureka** only when submitted in writing and when the following conditions are met: (1) Purchaser's credit is approved; (2) We have received complete job information including correct pricing and shipping information;(3) Color samples of non-standard **Eureka** offerings have been approved by purchaser;(4) Approved shop drawings for modified or special designs have been received;(5) deposits have been received if required (See "**Deposits**"). All price changes must be submitted in writing. Unless we have made an error, all fees charged to **Eureka** by transport companies for incorrect shipping addresses or re-deliveries will be charged back to the Purchaser.

2. Pricing

All prices are in US dollars. All previous prices are hereby superseded. All prices are FOB our warehouse. Purchase orders that have been accepted allowing for shipment sixty (60) days will carry a firm price. Written quotations are valid for a period of ninety (90) days. If a written quotation is given, our quotation number must be included with the purchase order. For pricing on a modified and/or custom product, please contact your **Eureka** Sales Representative. Prices are subject to change without notice.

3. Minimum order charge

A minimum order charge of thirty (30) $ dollars will be invoiced on all orders of less than five hundred (**500**) **$ net**, before freight and other fees.

4. Taxes

Taxes are not included in our prices. Taxes will be invoiced as per governmental regulation. All merchandise delivered from our warehouse to any location within the province of Quebec will be subject to 6% GST and 7.5% PST. All merchandise delivered from our warehouse to the following provinces will be subject to 15% PST: New Brunswick, Nova Scotia, Newfoundland. All merchandise delivered elsewhere in Canada will be subject to 6% GST. No taxes will be collected for merchandise delivered outside of Canada, which includes the United States.

5. Deposits

Eureka reserves to right to ask for a deposit up to fifty (50) % on custom, modified standard or large orders. When the order is ready for shipment, the unpaid balance of the order will be invoiced at standard payments terms.

6. Credit

Credit may be established at our sole discretion. **Eureka** reserves the right to cancel or change credit terms at its discretion and may request advance payment at any time.

7. Terms of payment

All invoices are payable in full within thirty (30) days. All first orders (new Purchaser) are on a CIA (cash in advance) basis until payment terms can be set up by **Eureka**. **Eureka** reserves the right to refuse to set up an account for a Purchaser for any reason. We also reserve the right to modify the terms of payment on a Purchaser's account for any reason. Invoices are payable in accordance to the terms of payment given to the customer by **Eureka**. The price of the product shall be the price set out in the invoice. Past due accounts shall bear interest from the due date until paid at the lesser of an annual rate of eighteen (18) %, calculated daily, or the highest rate permitted by applicable law. The Products delivered shall remain **Eureka**'s property until **Eureka** has received payment in full.

8. Catalog

Every effort is made to ensure accuracy; however, specifications, dimensions, and information contained in our catalog (print and electronic) are subject to change without notice. Catalog sheets are not to be used for installation information. Installation instructions are provided with the product and can be furnished in advance if requested with our customer service department.

9. Territory

Unless otherwise agreed in writing by **Eureka**, the Purchaser shall refrain from, directly or indirectly, installing or using the products outside the State or Province in which the Purchaser is located ("Territory"), or selling, commercializing, distributing or transferring in any manner the products to any person whom the Purchaser should reasonably expect to install or use the products outside the Territory.

10. Regular Delivery

Unless otherwise specified by the Purchaser, **Eureka** will ship merchandise via the method it deems satisfactory, collect or prepaid and charge on the invoice, based upon convenience, experience and cost. All orders will be shipped complete F.O.B factory. The delivery date shall be determined by **Eureka** in accordance with the readiness of the products and factory loading. Any and all dates given are approximate only and do not constitute any guarantee of shipment or delivery on or by any particular date. We are not responsible for any damages, penalties or labor charge-backs resulting from delayed shipments or from our inability to ship by the acknowledged shipping date. If **Eureka**'s ability to manufacture and deliver the products shall be curtailed or limited, directly or indirectly, by acts of God, fires, sabotages, wars, riots,

typhoons, explosions or other catastrophes, epidemics or quarantine restrictions, embargoes, acts of governmental bodies or agencies foreign or domestic, act of public enemy, strikes, lockouts or labor difficulties or any other occurrences whatsoever beyond Eureka's reasonable control, in whole or in part, the occurrences shall constitute valid grounds for the suspension of delivery to the Purchaser upon notification and without penalty to Eureka. In such a case, the date of delivery shall be extended for a period equal to the delay. Eureka shall notify the Purchaser promptly of any of those events and specify the revised date of delivery as soon as practical. At the Purchaser's request, Eureka may, for a period of time not exceeding forty-five (45) days and at no additional cost to the Purchaser, store products ordered by the Purchaser if the Purchaser is not ready to receive such merchandise. All products ready for shipment for more than forty-five (45) days shall be invoiced to the Purchaser and a set fee of five (5) $ per day shall be charged to the Purchaser until the products are finally released for shipment by the Purchaser. All storage fees shall be invoiced on the last day of every month and are payable in accordance with the terms of payment given to the Purchaser by Eureka on the day the invoice is made. Within twenty (20) days of the delivery of the products, the Purchaser shall inform Eureka of any nonconformity of the products (insofar this default is not due or caused by transport) so as to allow Eureka, after a proper control as may be requested by us, to replace the nonconforming products or to credit the corresponding value of the nonconforming products to the Purchaser. In case of failure to invoke and to indicate the nature of such nonconformity within the above-mentioned period of time, the Purchaser shall lose the right to rely on the nonconformity of the products. Purchaser should carefully inspect all items at time of delivery and note any damage on the delivery receipt. Obvious or subsequently discovered concealed damage must be reported, promptly and in writing, to the carrier.

11. Quick Delivery

Quick Delivery orders will ship within three working days of receipt of orders. The maximum quantity of fixtures allowed per type under the Quick Delivery program is 10 pieces. Quantities above maximum quick delivery quantities are contingent upon stock availability.

12. Returns

All return requests must be made in writing within ninety (90) days of receipt of merchandise for merchandise no longer required by the Purchaser. No merchandise may be returned without a return merchandise authorization (RMA). Should merchandise be deemed defective, Eureka will only pay transport fees for said merchandise from the original point of delivery. All RMA requests must include original invoice, packing slip or purchase order number as well as the reason for the return. Returned merchandise must be in original packaging. All returns are subject to a re-stocking fee. An additional ten (10)% re- stocking fee may apply to merchandise not returned in their original cartons, any such fee shall be included on the return authorization sent to the Purchaser. Eureka will not accept responsibility for unauthorized returns. All returns must have a RMA number clearly marked on the box (es) as well as on the waybill and commercial invoice. Merchandise sent to Eureka without an RMA number will be returned to the Purchaser at his or her expense. Credits for returns that are unsealed, or not in their original cartons, will be issued only after inspection and acceptance by Eureka. No credit will be issued for damaged material. Eureka reserves the right to refuse any damaged or out of warranty merchandise. Any such merchandise will be returned at the Purchaser's expense. All modified, specially discounted, custom items (including mock- up samples) are **not returnable.**

13. Cancellations

The Purchaser may, at no charge, cancel an order in writing provided the order was sent to Eureka twenty-four (24) hours or less prior to cancellation. After that time frame, the Purchaser may in writing cancel or modify the order at any time provided that the Purchaser shall assume any and all costs related to the cancellation or modification. All modified, specially discounted, custom items **cannot be cancelled.**

14. Design Changes

Eureka reserves the right to make changes in design or construction of products, which in Eureka's judgment constitutes an improvement, without notice or obligation to the Purchaser. With the exception of parts covered by an extended warranty, Eureka cannot guarantee that replacement parts will be available after three (3) years of delivery of a product. This does not apply to products that were being liquidated (LIQ) at the time of delivery, as such parts would not be available for the aforementioned items.

15. Warranty and Disclaimers

Eureka warrants to the Purchaser that the products sold by Eureka will be free from defects in material and workmanship for twelve (12) months from the date of delivery of the products. Should at any time defect or deficiency appear due to faulty workmanship and/or material on products still under warranty, Eureka may, at its choosing, decide to repair, at its manufacturing facility or on site, or replace said goods. Any goods still under warranty that are to be returned to Eureka will be sent via the transport company of Eureka's choice.

No labor charge-backs in connection with such defects will be reimbursed without prior written approval from Eureka. Purchaser's invoice for labor charge-backs agreed to by Eureka must be submitted in writing within thirty (30) days of authorization. No returned merchandise will be accepted without a written authorization from

Eureka. Repaired or replacement fixtures will be sent via ground. All air shipments will ship at the client's expense. All defective merchandise still under warranty will be repaired or replaced. In no event shall Eureka be liable for loss of profit, loss of use, economic loss, damage to other equipment, or any indirect, consequential, incidental, special, punitive or treble damages whatsoever arising out of or relating to any breach to this warranty. The total liability, contractual or in torts, of Eureka relating to any claims arising out of, or in connection with the products, their sale, delivery, replacement, use or performance of the products shall in no case exceed the price allocable to the products. We reserve the right to determine the best method for correcting such defects.

Ballasts, Transformers/Converters supplied by Eureka in its products are warranted to be free from manufacture and material defects from the date of purchase of said products. This warranty covers only replacements or repairs at Eureka's factory to the original purchaser, exclusive of labor costs, transport costs, or any personal or financial losses incurred by the original purchaser. If Eureka furnishes you with advice or other assistance concerning the products manufactured, the furnishing of such advice will not subject the company to any liability.

Ballasts, Transformers/Converters Warranty Period by Eureka:

- Integral Magnetic Low Voltage Transformer: (5) years
- Electronic Low Voltage Converter: (3) years
- Fluorescent and Compact Fluorescent: (1) year
- HID: (1) year

All ballasts, transformers/converters might be warranted by the ballasts, transformers/converters manufacturers for an extended period exceeding the Eureka warranty. For warranty requests exceeding Eureka's warranty period, ballasts, transformers/converters manufacturers should be contacted directly. Eureka Customer Service can also be called for more details and assistance.

Note: We recommend that each fixture be checked at the job site by the contractor prior to actual installation. (Some field assembly may be required.)

16. Exceptions to warranty

The warranty described above shall not apply in the following circumstances:

- Damages resulting from normal wear and tear, negligence, accident, or misuse after shipment from the factory, as well as improper selection or installation of lighting products, lack of proper maintenance, abuse, casualty, alteration or damage due to electrical fluctuations as the result of extreme conditions, fire and flooding or any acts of God.
- Failure of products which have been modified or integrated with other manufacturers products;
- Failure of color stability in non-standard paint colors;

Note: This warranty does not apply to lamps, and any accessories which are not manufactured by Eureka, and may be supplied by Eureka for convenience only.

17. Intellectual property

The purchaser acknowledges the validity and the ownership of Eureka's Intellectual Property and that such Intellectual Property is and shall remain its property. The Purchaser shall not (i) in any way do anything to infringe upon, harm or contest the validity of the Intellectual Property or (ii) register or use for any reason whatsoever the Intellectual Property within the Territory and elsewhere. This obligation shall survive and continue to bind the parties after the termination of this Agreement. The Purchaser agrees not to remove or alter Eureka's trademarks, which are affixed to the Products, nor affix any additional trademarks or trade designations to any of the Products that bear Eureka's trademarks without the prior written consent of Eureka.

18. Litigation and Governing Law

All disputes arising out of this Agreement shall be subject to the exclusive jurisdiction of the competent courts of the district of Montreal, Quebec. This Agreement shall be governed by the laws of the Province of Quebec, Canada.

19. Miscellaneous

Offers and acceptance made by facsimile are legally binding as though executed originally. If any provision of this Agreement is found to be null or unenforceable, the remainder shall continue to be in full force and effect. This Agreement constitutes the entire Agreement between Eureka and the Purchaser with regard to the purchase and sale of the Products and shall supersede all prior Agreements, undertaking and communications between the Purchaser and Eureka with regard to such purchase and sale.

COOPER LIGHTING - METALUX®

DESCRIPTION

The SkyRidge™ transforms ambient lighting by perfectly blending a refined modern styling with our breakthrough WaveStream™ LED technology to deliver exceptional performance and superior energy savings. SkyRidge's advanced engineered LED system with superior optical design delivers an unparalleled combination of optimal light uniformity and exceptional efficiency for greater energy savings.

SkyRidge is compatible with all of today's popular ceiling systems and available in a variety of configurations for application versatility. Its perfect balance of form and function make it an ideal choice for commercial office spaces, schools, hospitals, retail and other indoor ambient applications.

Catalog #	24SR-LD1-48-C-UNV-LP835-CD1-SKYTRIM	**Type**	A
Project	LOS ALAMOS TEEN CENTER		
Comments		**Date**	
Prepared by			

SPECIFICATION FEATURES

Construction
Shallow 4.75" deep housing is extruded aluminum frame and injected molded composite end plates. End plates are securely attached with screws for strength and rigidity and the elimination of gaps. End plates have accessory grid-lock feature for safety and convenience. Four auxiliary fixture end suspension points are provided. Large access plate for supply connection.

Controls
The SkyRidge LED is Powered by Fifth Light, with a standard 0-10V continuous dimming driver that works with any 0-10V control/ dimmer. Combine with energy saving products like occupancy sensors, daylighting controls and lighting relay panels from Cooper Controls (www.coopercontrol.com) to maximize energy savings. In addition, the SkyRidge can include a factory-installed integrated sensor system for occupancy and daylight dimming control and manual control from an optional handheld remote. Or, specify the Digital Addressable Lighting Interface (DALI) drivers, dimmable down to 1% with the HD option, for use with Fifth Light controls. See ordering information for details on all three options.

Electrical
Long-life LED system coupled with electrical driver to deliver optimal performance. LED's available in 3000K, 3500K, 4000K or 5000K with a typical CRI ≥ 85. Projected life is 60,000 hours at 84% lumen output. Electronic drivers are available for 120-277V applications.

Driver Access
Drivers can be accessed via plenum.

Finish
Durable frame has high reflectance baked matte white enamel finish for luminous uniformity.

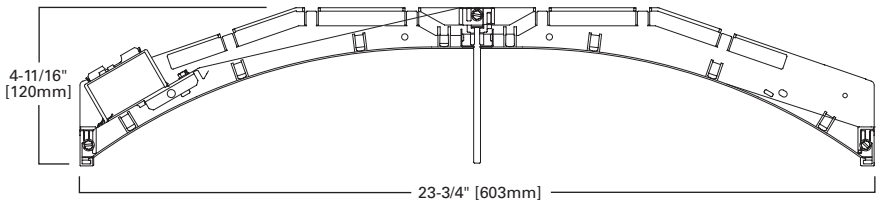
Optics
Precision formed optical assembly with positively retained high optical grade acrylic lens provides a directed optical distribution using WaveStream LED technology.

SkyTrim Accessory
Designed for an array of interior applications, SkyTrim is a luminous decorative accent that can be mounted directly on the light guide of a SkyRidge fixture either at the factory or in the field. It is ideal for spaces where color is necessary to provide visual cues, emphasize brand identity, directional awareness or simply as an artistic expression.

Compliance
Components are UL recognized. Indoor luminaires are cULus listed for 25° C ambient environments, RoHS compliant, and comply with IESNA LM-79. LEDs comply with LM-80 standards. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.

Warranty
Five year warranty.

CURVED



24SR
LED

2' X 4' TROFFER LED MODULE

Specification Grade Troffer

powered by fifthlight technology

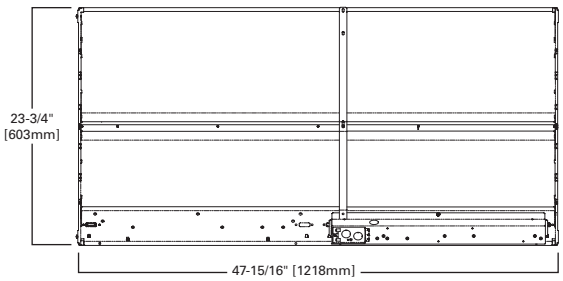
CERTIFICATION DATA

cULus - 1598 and 2043**
Damp Location Listed
IC Rated
LM79/LM80 Compliant
ROHS Compliant
DesignLights Consortium® Qualified
NOM Compliant

*See Drywall Frame Kit Accessory in Ordering Information section.
**Fixture construction is suitable for use in Air-handling and plenum rated spaces in accordance with Section 300.22 (C) of the National Electrical Code, Section 4.3.11.2.6.5 of NFPA 90A and Section 602.2.1.4 of ICC.

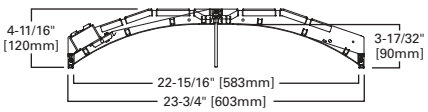
LINEAR DISCONNECT
Safe and convenient means of disconnecting power

MOUNTING DATA

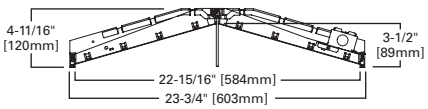


LAMP CONFIGURATIONS

CURVED

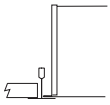


STRAIGHT



CEILING COMPATIBILITY

G
Grid/Lay-in
Standard



F
Drywall Frame
Kit

Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G or T
Slot Grid	G or T
Flange	*

Cooper Lighting by EATON

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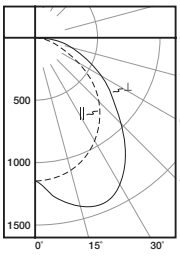
PHOTOMETRICS



24SR-LD1-39-C-UNV-L835-CD1-U
Dimming Driver
Linear LED 3500K
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.6 x mounting height
Lumens: 3940
Input Watts: 38.8W
Efficacy: 102 LPW
Test Report: 22SR-LD1-39-C-UNV-L835-CD1-U.IES

Candlepower

Angle	Along II	45°	Across ⊥
0	1140	1140	1140
5	1140	1203	1251
10	1123	1270	1338
15	1097	1301	1400
20	1060	1311	1435
25	1012	1291	1421
30	951	1244	1355
35	883	1162	1247
40	804	1062	1111
45	717	954	970
50	621	840	834
55	513	724	702
60	402	609	592
65	299	502	486
70	213	408	393
75	143	321	303
80	91	238	205
85	47	134	111
90	0	0	0

Coefficients of Utilization

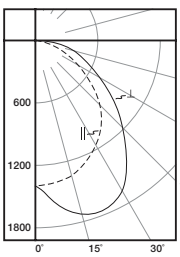
	Effective floor cavity reflectance				20%															
rc	80%				70%				50%			30%			10%			0%		
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																				
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100		
1	108	103	99	95	105	101	97	93	97	93	90	93	90	87	89	87	85	83		
2	98	90	83	77	96	88	81	76	84	79	74	81	76	72	78	74	71	69		
3	90	79	70	64	87	77	69	63	74	68	62	71	66	61	69	64	60	58		
4	82	70	61	54	80	68	60	54	66	59	53	64	57	52	61	56	51	49		
5	75	62	53	46	73	61	53	46	59	51	46	57	50	45	55	49	45	43		
6	70	56	47	41	68	55	47	40	53	46	40	52	45	40	50	44	39	37		
7	64	51	42	36	63	50	42	36	48	41	35	47	40	35	46	39	35	33		
8	60	46	38	32	58	46	37	32	44	37	32	43	36	31	42	36	31	29		
9	56	43	34	29	55	42	34	29	41	33	28	40	33	28	39	33	28	26		
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	25	24		

Zonal Lumen Summary

Zone	Lumens	%Fixture
0-30	1063	27.0
0-40	1763	44.7
0-60	3060	77.7
0-90	3940	100.0
0-180	3940	100.0

Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	1453	1934	1966
55	1282	1809	1754
65	1014	1703	1648
75	792	1778	1678
85	773	2204	1825



24SR-LD1-48-C-UNV-L835-CD1-U
Dimming Driver
Linear LED 3500K
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.6 x mounting height
Lumens: 4810
Input Watts: 49.1W
Efficacy: 98 LPW
Test Report: 22SR-LD1-48-C-UNV-L835-CD1-U.IES

Candlepower

Angle	Along II	45°	Across ⊥
0	1388	1388	1388
5	1389	1461	1524
10	1371	1547	1639
15	1338	1591	1718
20	1291	1605	1759
25	1230	1584	1741
30	1159	1520	1661
35	1071	1422	1523
40	976	1302	1354
45	867	1167	1180
50	746	1026	1015
55	616	881	854
60	481	742	722
65	359	614	596
70	251	497	483
75	170	396	376
80	107	293	256
85	57	167	133
90	0	0	0

Coefficients of Utilization

	Effective floor cavity reflectance				20%															
rc	80%				70%				50%			30%			10%			0%		
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																				
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100		
1	108	103	99	95	105	101	97	93	97	93	90	93	90	87	89	87	85	83		
2	98	90	83	77	96	88	81	76	84	79	74	81	76	72	78	74	71	69		
3	90	79	70	64	87	77	69	63	74	67	62	71	66	61	69	64	60	58		
4	82	70	61	54	80	68	60	54	66	59	53	64	57	52	61	56	51	49		
5	75	62	53	46	73	61	53	46	59	51	46	57	50	45	55	49	45	43		
6	70	56	47	41	68	55	47	40	53	46	40	52	45	40	50	44	39	37		
7	64	51	42	36	63	50	42	36	48	41	35	47	40	35	46	40	35	33		
8	60	46	38	32	58	46	37	32	44	37	32	43	36	31	42	36	31	29		
9	56	43	34	29	55	42	34	29	41	33	28	40	33	28	39	33	28	26		
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	25	24		

Zonal Lumen Summary

Zone	Lumens	%Fixture
0-30	1298	27.0
0-40	2154	44.8
0-60	3734	77.6
0-90	4810	100.0
0-180	4810	100.0

Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	1649	2220	2240
55	1444	2066	2003
65	1143	1954	1897
75	883	2058	1954
85	880	2577	2052

ENERGY AND PERFORMANCE DATA BY CATALOG NUMBER

Stock or MTO*	Catalog Logic (Curved)	Delivered Lumens	Watts	Efficacy (LPW)
MTO	24SR-LD1-29-C-UNV-L830-CD1-U	2867	28.2	102
MTO	24SR-LD1-29-C-UNV-L835-CD1-U	2998	28.2	106
MTO	24SR-LD1-29-C-UNV-L840-CD1-U	3034	28.2	108
MTO	24SR-LD1-29-C-UNV-L850-CD1-U	3209	28.1	114
MTO	24SR-LD1-34-C-UNV-L830-CD1-U	3302	33.1	100
MTO	24SR-LD1-34-C-UNV-L835-CD1-U	3451	33.0	104
MTO	24SR-LD1-34-C-UNV-L840-CD1-U	3503	33.0	106
MTO	24SR-LD1-34-C-UNV-L850-CD1-U	3705	33.1	112
MTO	24SR-LD1-39-C-UNV-L830-CD1-U	3713	39.1	95
Stock	24SR-LD1-39-C-UNV-L835-CD1-U	3940	38.8	102
Stock	24SR-LD1-39-C-UNV-L840-CD1-U	4019	39.2	102
MTO	24SR-LD1-39-C-UNV-L850-CD1-U	4251	39.2	108
MTO	24SR-LD1-45-C-UNV-L830-CD1-U	4288	46.7	92
MTO	24SR-LD1-45-C-UNV-L835-CD1-U	4538	46.2	98
MTO	24SR-LD1-45-C-UNV-L840-CD1-U	4656	46.3	101
MTO	24SR-LD1-45-C-UNV-L850-CD1-U	4925	46.8	105
MTO	24SR-LD1-48-C-UNV-L830-CD1-U	4512	49.0	92
Stock	24SR-LD1-48-C-UNV-L835-CD1-U	4810	49.1	98
Stock	24SR-LD1-48-C-UNV-L840-CD1-U	4944	49.0	101
MTO	24SR-LD1-48-C-UNV-L850-CD1-U	5230	49.0	107
MTO	24SR-LD1-53-C-UNV-L830-CD1-U	5053	56.6	89
MTO	24SR-LD1-53-C-UNV-L835-CD1-U	5396	56.6	95
MTO	24SR-LD1-53-C-UNV-L840-CD1-U	5567	56.6	98
MTO	24SR-LD1-53-C-UNV-L850-CD1-U	5888	56.6	104
MTO	24SR-LD1-59-C-UNV-L830-CD1-U	5530	63.4	87
MTO	24SR-LD1-59-C-UNV-L835-CD1-U	5909	63.6	93
MTO	24SR-LD1-59-C-UNV-L840-CD1-U	6111	63.4	96
MTO	24SR-LD1-59-C-UNV-L850-CD1-U	6464	63.5	102
MTO	24SR-LD1-64-C-UNV-L830-CD1-U	6007	70.9	85
MTO	24SR-LD1-64-C-UNV-L835-CD1-U	6420	71.0	90
MTO	24SR-LD1-64-C-UNV-L840-CD1-U	6656	70.8	94
MTO	24SR-LD1-64-C-UNV-L850-CD1-U	7041	71.1	99

*Made to order (MTO) requires a typical four week lead time.

ENERGY AND PERFORMANCE DATA BY CATALOG NUMBER

Stock or MTO*	Catalog Logic (Straight)	Delivered Lumens	Watts	Efficacy (LPW)
MTO	24SR-LD1-29-S-UNV-L830-CD1-U	2886	28.1	103
MTO	24SR-LD1-29-S-UNV-L835-CD1-U	2959	28.1	105
MTO	24SR-LD1-29-S-UNV-L840-CD1-U	3048	28.1	108
MTO	24SR-LD1-29-S-UNV-L850-CD1-U	3224	28.1	115
MTO	24SR-LD1-34-S-UNV-L830-CD1-U	3325	32.9	101
MTO	24SR-LD1-34-S-UNV-L835-CD1-U	3409	32.9	104
MTO	24SR-LD1-34-S-UNV-L840-CD1-U	3512	32.9	107
MTO	24SR-LD1-34-S-UNV-L850-CD1-U	3715	32.9	113
MTO	24SR-LD1-39-S-UNV-L830-CD1-U	3789	39.1	97
MTO	24SR-LD1-39-S-UNV-L835-CD1-U	3884	39.1	99
MTO	24SR-LD1-39-S-UNV-L840-CD1-U	4002	39.1	102
MTO	24SR-LD1-39-S-UNV-L850-CD1-U	4233	39.1	108
MTO	24SR-LD1-45-S-UNV-L830-CD1-U	4384	46.7	94
MTO	24SR-LD1-45-S-UNV-L835-CD1-U	4494	46.7	96
MTO	24SR-LD1-45-S-UNV-L840-CD1-U	4630	46.7	99
MTO	24SR-LD1-45-S-UNV-L850-CD1-U	4898	46.7	105
MTO	24SR-LD1-48-S-UNV-L830-CD1-U	4659	49.0	95
MTO	24SR-LD1-48-S-UNV-L835-CD1-U	4776	49.0	97
MTO	24SR-LD1-48-S-UNV-L840-CD1-U	4921	49.0	100
MTO	24SR-LD1-48-S-UNV-L850-CD1-U	5205	49.0	106
MTO	24SR-LD1-53-S-UNV-L830-CD1-U	5057	56.7	89
MTO	24SR-LD1-53-S-UNV-L835-CD1-U	5401	56.7	95
MTO	24SR-LD1-53-S-UNV-L840-CD1-U	5572	56.7	98
MTO	24SR-LD1-53-S-UNV-L850-CD1-U	5894	56.7	104
MTO	24SR-LD1-59-S-UNV-L830-CD1-U	5520	63.5	87
MTO	24SR-LD1-59-S-UNV-L835-CD1-U	5898	63.5	93
MTO	24SR-LD1-59-S-UNV-L840-CD1-U	6100	63.5	96
MTO	24SR-LD1-59-S-UNV-L850-CD1-U	6452	63.5	102
MTO	24SR-LD1-64-S-UNV-L830-CD1-U	5990	71.0	84
MTO	24SR-LD1-64-S-UNV-L835-CD1-U	6402	71.0	90
MTO	24SR-LD1-64-S-UNV-L840-CD1-U	6637	71.0	93
MTO	24SR-LD1-64-S-UNV-L850-CD1-U	7020	71.0	99

*Made to order (MTO) requires a typical four week lead time.

LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance (60,000 hours)	Theoretical L70 (Hours)
25°C	> 85%	> 154,000

SKYTRIM FIELD INSTALLATION KITS

Color Choice	Kit Catalog Number	Kit Quantity
Tahitian Blue	STK-4-TB-10PK	10
Primary Green	STK-4-PG-10PK	10
Storaro Orange	STK-4-SO-10PK	10
Belladonna Rose	STK-4-BR-10PK	10
Medium Red	STK-4-MR-10PK	10
Pearl	STK-4-PL-10PK	10
Straw	STK-4-ST-10PK	10
Custom Color	STK-4-CC-*-10PK	10

Please select color

*Custom color requires Roscolux numeric specification color code, consult factory for more information.

Note: Chosen color will be matched on acrylic but will appear lighter once applied to lit light guide.

ORDERING INFORMATION

SAMPLE NUMBER: 24SR-LD1-48-C-UNV-L835-CD1-SVDP1-U

Rating
Blank=Standard
ATW-SW4= Chicago Rated [7]

Series [9]
24SR=2' x 4' SkyRidge Series

Air
[Blank]=Standard
A=Air (Vented) [8]

Lamp Type
LD1=LED 1.0

Stock Lumen Outputs
39=3900 Lumens
48=4800 Lumens [15]

MTO Lumen Outputs [5]
29=2900 Lumens [6], [14]
34=3400 Lumens [14]
45=4500 Lumens
53=5300 Lumens [15]
59=5900 Lumens [15]
64=6400 Lumens [15]

Reflector
C=Curved (Standard)
S=Straight

Optics
Blank=Standard

Voltage [1]
347V=347 Volt
UNV=Universal Voltage 120-277

Options
Emergency
EL=Emergency Installed, 700 Lumens [4]
EL14=Emergency Installed, 1400 Lumens [2], [4]
EL10W=Emergency Installed, 10 Watts [10]

CCT
L830=3000K
L835=3500K
L840=4000K
L850=5000K

Flex [17]
Multiple Configurations Available

Driver Type
CD=0-10V Dimming Driver (Standard)
SD=Step-Dim Driver [13]
5LTD=Fifth Light DALI Driver [3] (10%- 100% Dimming)
5LTHD=Fifth Light DALI Driver [3] (1%- 100% Dimming)

Number of Drivers
1=1 Driver

Product Family
S=Integrated Sensor

Control Type
B=Sensor Mounting, No Sensor
V=Analog (0-10V) Output for Local Control [16]

Occupancy Technology
P=Passive Infrared

Sensing Technology
D=Dimming Daylight Harvesting (Closed Loop)

Coverage Pattern
1= ~144 Square Feet

SkyTrim [11]
TB=Tahitian Blue
PG=Primary Green
SO=Storaro Orange
PL=Pearl
BR=Belladonna Rose
MR=Medium Red
ST=Straw
CC=Custom [12]

Packaging
U=Unit Pack
PALC=Job Pack, in carton

ACCESSORIES

T3A END E.Q. BRACKET PARTS BAG (Standard with fixture)
DF-24-W=2' x 4' Drywall Frame Kit
DF10P-C__=Devine Decorator Dimmer, 0-10V
SF10P-__=Skye Decorator Slide Dimmer, 0-10V
HHPRG-MS=Programming Remote for Integrated Sensor

NOTES: [1] Products also available in non-US voltages and frequencies for international markets. [2] Must specify voltage (120V or 277V) when selecting EL option. [3] Must be used in conjunction with a DALI control system. For complete DALI soluitions by Fifth Light, visit www.coopercontrol.com. [4] EL test switch and light must be remote mounted. [5] Made-to-order (MTO) requites four week lead time. [6] 2900 lumen option is not available with Step-Dim. [7] Chicago rated version does not allow for row mounting. [8] Air version is vented but does not meet air handling requirements. Air version is non-IC. Air version is not available with integrated sensor. [9] DesignLights Consortium® Qualified (all lumen packages). Refer to www.designlights.org Qualified Products List under Family Models for details. [10] For delivered lumens, take lumens per watt of desired fixture and multiply by 10 watts (100 lp/W x 10 = 1000 lumens delivered). [11] Fixtures using factory installed SkyTrim option are not DLC qualified. [12] Custom color must list Roscolux numeric color specification code. [13] 3400, 5900 and 6400 lumen packages are not available with Step-Dim driver. [14] 5LTD option is not available in 2900 and 3400 lumen packages. [15] 5LTHD not available in 4800, 5300, 5900 and 6400 lumen packages. [16] Integral sensor works only with "CD" driver and is factory prewired to the driver for stand-alone control. [17] Flex does not include dimming leads. Control leads provided by othyers.

Specifications & dimensions subject to change without notice. Consult your Cooper Lighting Representative for availability and ordering information.

SHIPPING DATA

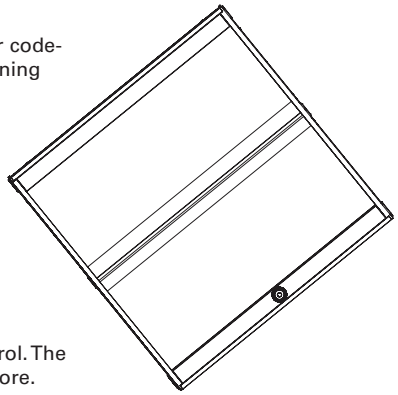
Catalog No.	Wt.
24SR-LD1-39	24 lbs.
24SR-LD1-48	24 lbs.

Cooper Lighting by EATON

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Cooper Lighting Business
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

INTEGRATED SENSOR



Description
This innovative luminaire-integrated sensor control system is built on Greengate technology and optimized for code-compliant occupancy detection and daylight harvesting – all from within the foot print of Metalux's award-winning recessed ambient luminaires.

No New Wires
An in-place fixture retrofit is all that's needed to meet most energy codes in commercial spaces. The sensor system is factory wired to the luminaire, switching on or off based on occupancy, and dimming the light when enough daylight is available.

Sophisticated lighting control without commissioning
The luminaire-integrated sensor system offers out-of-the-box operation using thoughtful default settings.

Flexibility and Individual Control
When the application demands more, the sensor system has the option to make changes using a remote control. The remote allows changes from the default settings for occupancy, target light level, preset lighting levels, and more.

Cost-effective, Stand-alone Operation
With a single product to mount and a single electrical connection to make, the SkyRidge with an integrated sensor system saves money on the total installed cost when occupancy or daylight harvesting controls are needed. The integrated sensor system works stand-alone, without the need for additional switches and dimmers. When manual-on, manual dimming or other code-required control schemes are needed, please see the comprehensive offering of Greengate and Fifth Light solutions from Cooper Controls at www.coopercontrol.com.

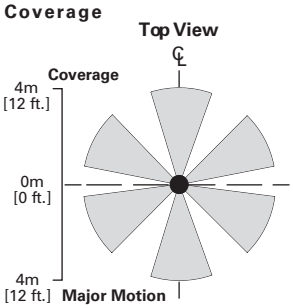
Metalux Integrated Sensor Sequence of Operation
The occupancy sensing portion of the sensor uses Passive Infrared (PIR) technology with Auto-on/Auto-off operation. The small lens in the center of the sensor directs the view of a passive infrared occupancy detector to sense occupants moving through the room. To trigger the light on, an occupant must cross at least two passive infrared beams. When motion in the coverage area ceases, the sensor logic concludes the room is unoccupied, and begins a count-down timer. By default, the timer is factory-set to 30 minutes, and can be adjusted to 5, 10, 15 and 30 minutes using the optional remote control, model number HHPRG-MS. Any motion detected during the count-down timer will cause the light to remain on and resets the timer. When motion is detected, a red LED will blink. In addition to the default on/off functionality, the sensor has an Energy Saver feature, where the light can be set to dim to a preset level after the sensor detects no occupancy for half of the count-down timer, when the timer is complete the lighting will change to the unoccupied setting. The Energy Saver feature works when the count-down timer is set to at least 15 minutes, and the preset level and feature are configured using the optional remote control. See the Sensor Programming Guide that comes with the HHPRG-MS remote for details on this feature. The sensitivity of the occupancy detection can be adjusted, using the HHPRG-MS remote. By default, the sensor operates at the full detection range shown on the coverage pattern diagram. Using the "LO" button on the HHPRG-MS remote, reduces the sensor detection range by 50%. Full coverage can be restored at any time by pressing the "HI" button on the remote. The red LED indicator will blink repeatedly to confirm any programming change.

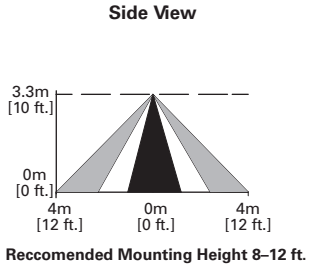
The dimming daylight harvesting portion of the sensor uses a small photo sensor located next to the occupancy sensing lens. The sensor continuously measures the available light in the room, even when the fixture is turned off. This allows sensor to operate in one of three daylighting modes, where the artificial light from the paired Metalux luminaire can adjust the light based on the amount of ambient light from surrounding natural and artificial light sources. Since the sensor measures light from its luminaire along with other light sources, this sensor follows a closed-loop dimming daylight harvesting style. The first mode, Daytime, is active when the sensor detects light of at least 100 lux in the room. In Daytime mode, when the light is turned on after detecting occupancy, the sensor will begin balancing the luminaire light level relative to the total available light it measures. The default light balancing target in daytime mode is 500 lux. This level can be adjusted higher or lower using the optional HHPRG-MS remote, and pressing "SET" and then the "DO" (Daytime Occupied) button to store the new light level. Similarly, the Daytime Unoccupied, "DU" has a default of level of 0 lux, or off, but can be adjusted higher to prevent the lights from turning off completely when unoccupied. More details on this function are found in the Sensor Programming Guide for the HHPRG-MS remote.

The next two modes, Twilight and Nighttime, function in a similar way, allowing the artificial light to adjust to different levels based on the surroundings. While primarily for use in outdoor luminaires, these modes are available for use in areas with a wide range of natural light, including atriums, day lit stairwells, and rooms with large or continuous windows. The Twilight mode is active when the sensor detects 50-100 lux in the off position, and has a 300 lux default light balancing target. The Nighttime mode is active when the sensor detects less than 50 lux, and has a 250 lux default light balancing target. Like the Daytime mode, there are separate settings for Twilight Occupied ("TO"), Twilight Unoccupied ("TU"), Nighttime Occupied ("NO") and Nighttime Unoccupied ("NU") which can be adjusted and set using the optional HHPRG-MS remote.

In addition to programming the sensor, the optional HHPRG-MS remote can be used for personal control to adjust the lighting temporarily override the functions of the sensor temporarily. The remote has raise/lower buttons to adjust the light level for special tasks, as well as a power button to turn the lights on or off. Unless the SET button and another function is selected, any changes made using these buttons will revert to the programmed settings after the sensor has detected no occupancy for its programmed time out, and turned off the lighting. The next time the sensor detects occupancy, it will revert to its programmed settings for count-down timer and light balancing.

Coverage





Reccomended Mounting Height 8–12 ft.

Optional Remote Control

HHPRG-MS Remote

Cooper Lighting by EATON

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Cooper Lighting Business
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

COOPER LIGHTING - METALUX®

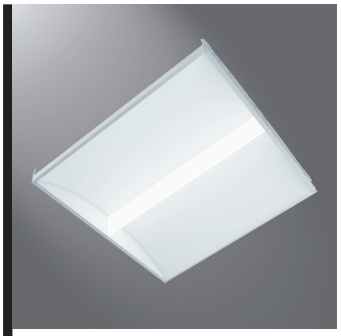
energy solutions

DESCRIPTION

The SkyRidge™ transforms ambient lighting by perfectly blending a refined modern styling with our breakthrough WaveStream™ LED technology to deliver exceptional performance and superior energy savings. SkyRidge's advanced engineered LED system with superior optical design delivers an unparalleled combination of optimal light uniformity and exceptional efficiency for greater energy savings.

SkyRidge is compatible with all of today's popular ceiling systems and available in a variety of configurations for application versatility. Its perfect balance of form and function make it an ideal choice for commercial office spaces, schools, hospitals, retail and other indoor ambient applications.

Catalog #	22SR-LD1-29-C-UNV-LP835 -CD1-SKYTRIM	**Type**
Project		B
Comments		**Date**
Prepared by		



22SR
LED

2' X 2' TROFFER LED MODULE

Specification Grade Troffer

SPECIFICATION FEATURES

Construction
Shallow 4.75" deep housing is extruded aluminum frame and injected molded composite end plates. End plates are securely attached with screws for strength and rigidity and the elimination of gaps. End plates have accessory grid-lock feature for safety and convenience. Four auxiliary fixture end suspension points are provided. Large access plate for supply connection.

Controls
The SkyRidge LED is Powered by Fifth Light, with a standard 0-10V continuous dimming driver that works with any 0-10V control/ dimmer. Combine with energy saving products like occupancy sensors, daylighting controls and lighting relay panels from Cooper Controls (www.coopercontrol.com) to maximize energy savings. In addition, the SkyRidge can include a factory-installed integrated sensor system for occupancy and daylight dimming control and manual control from an optional handheld remote. Or, specify the Digital Addressable Lighting Interface (DALI) drivers, dimmable down to 1% with the HD option, for use with Fifth Light controls. See ordering information for details on all three options.

Electrical
Long-life LED system coupled with electrical driver to deliver optimal performance. LED's available in 3000K, 3500K, 4000K or 5000K with a typical CRI ≥ 85. Projected life is 60,000 hours at 84% lumen output. Electronic drivers are available for 120-277V applications.

Driver Access
Drivers can be accessed via plenum.

Finish
Durable frame has high reflectance baked matte white enamel finish for luminous uniformity.

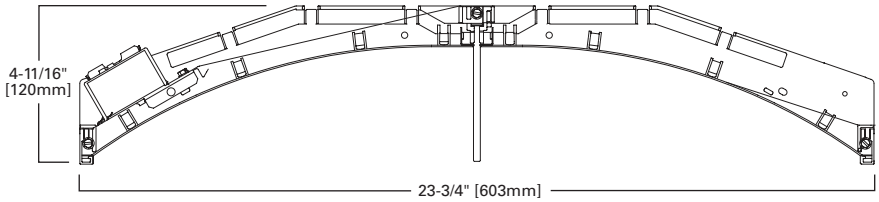
Optics
Precision formed optical assembly with positively retained high optical grade acrylic lens provides a directed optical distribution using WaveStream LED technology.

SkyTrim Accessory
Designed for an array of interior applications, SkyTrim is a luminous decorative accent that can be mounted directly on the light guide of a SkyRidge fixture either at the factory or in the field. It is ideal for spaces where color is necessary to provide visual cues, emphasize brand identity, directional awareness or simply as an artistic expression.

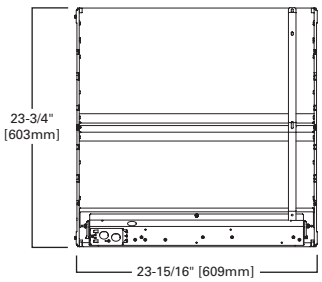
Compliance
Components are UL recognized. Indoor luminaires are cULus listed for 25° C ambient environments, RoHS compliant, and comply with IESNA LM-79. LEDs comply with LM-80 standards. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.

Warranty
Five year warranty.

CURVED

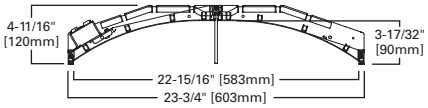


MOUNTING DATA

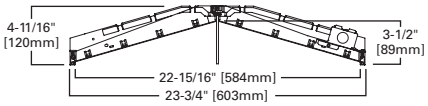


LAMP CONFIGURATIONS

CURVED



STRAIGHT



CEILING COMPATIBILITY

G
Grid/Lay-in
Standard

F
Drywall Frame
Kit

Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G or T
Slot Grid	G or T
Flange	*

CERTIFICATION DATA

cULus - 1598 and 2043**
Damp Location Listed
IC Rated
LM79/LM80 Compliant
ROHS Compliant
DesignLights Consortium® Qualified
NOM Compliant

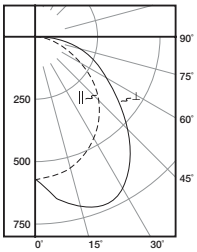
*See Drywall Frame Kit Accessory in Ordering Information section.
**Fixture construction is suitable for use in Air-handling and plenum rated spaces in accordance with Section 300.22 (C) of the National Electrical Code, Section 4.3.11.2.6.5 of NFPA 90A and Section 602.2.1.4 of ICC.

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

ADF130559
2014-12-29 15:52:44

Cooper Lighting
by EATON

PHOTOMETRICS



22SR-LD1-20-C-UNV-L835-CD1-U
Dimming Driver
Linear LED 3500K
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.6 x mounting height
Lumens: 2046
Input Watts: 19.9W
Efficacy: 103 LPW
Test Report: 22SR-LD1-20-C-UNV-L835-CD1-U.IES

Candlepower

Angle	Along II	45°	Across ⊥
0	572	572	572
5	567	611	634
10	559	644	678
15	543	658	709
20	524	659	728
25	499	647	727
30	469	623	700
35	435	584	650
40	396	536	585
45	353	484	515
50	306	431	446
55	257	378	383
60	207	327	327
65	160	278	277
70	119	231	230
75	86	187	182
80	57	138	124
85	30	75	63
90	0	0	0

Coefficients of Utilization

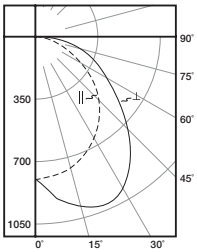
	Effective floor cavity reflectance																	
rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	108	103	98	94	105	100	96	92	96	93	90	92	89	87	89	86	84	82
2	98	89	82	76	95	87	81	75	84	78	73	80	76	71	77	73	70	68
3	89	78	69	63	86	76	68	62	73	67	61	71	65	60	68	63	59	57
4	81	69	60	53	79	68	59	53	65	58	52	63	56	51	60	55	50	48
5	75	62	52	45	73	60	52	45	58	51	45	56	49	44	54	48	44	41
6	69	55	46	40	67	54	46	39	53	45	39	51	44	39	49	43	38	36
7	64	50	41	35	62	49	41	35	48	40	34	46	39	34	45	39	34	32
8	59	46	37	31	58	45	37	31	44	36	31	42	36	31	41	35	30	28
9	56	42	34	28	54	41	33	28	40	33	28	39	32	27	38	32	27	25
10	52	39	31	25	51	38	30	25	37	30	25	36	30	25	35	29	25	23

Zonal Lumen Summary

Zone	Lumens	%Fixture
0-30	533	26.1
0-40	886	43.3
0-60	1556	76.0
0-90	2046	100.0
0-180	2046	100.0

Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	1343	1841	1959
55	1205	1773	1796
65	1018	1769	1763
75	894	1944	1892
85	926	2315	1944



22SR-LD1-29-C-UNV-L835-CD1-U
Dimming Driver
Linear LED 3500K
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.6 x mounting height
Lumens: 2935
Input Watts: 30.0W
Efficacy: 98 LPW
Test Report: 22SR-LD1-29-C-UNV-L835-CD1-U.IES

Candlepower

Angle	Along II	45°	Across ⊥
0	818	818	818
5	811	869	904
10	799	918	965
15	778	938	1011
20	749	940	1039
25	715	924	1039
30	672	890	1001
35	624	836	933
40	568	768	840
45	507	693	738
50	438	617	641
55	369	542	549
60	299	469	470
65	231	398	397
70	174	333	332
75	124	268	265
80	83	200	180
85	45	113	94
90	0	0	0

Coefficients of Utilization

	Effective floor cavity reflectance																	
rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	108	103	98	94	105	100	96	92	96	93	89	92	89	87	89	86	84	82
2	98	89	82	76	95	87	80	75	83	78	73	80	75	71	77	73	70	68
3	89	78	69	63	86	76	68	62	73	66	61	70	65	60	68	63	59	57
4	81	69	60	53	79	68	59	52	65	58	52	63	56	51	60	55	50	48
5	75	61	52	45	73	60	52	45	58	50	45	56	49	44	54	48	44	41
6	69	55	46	39	67	54	46	39	52	45	39	51	44	39	49	43	38	36
7	64	50	41	35	62	49	41	35	48	40	34	46	39	34	45	39	34	32
8	59	46	37	31	58	45	37	31	44	36	31	42	35	30	41	35	30	28
9	55	42	33	28	54	41	33	28	40	33	28	39	32	27	38	32	27	25
10	52	39	30	25	51	38	30	25	37	30	25	36	29	25	35	29	25	23

Zonal Lumen Summary

Zone	Lumens	%Fixture
0-30	762	26.0
0-40	1267	43.2
0-60	2227	75.9
0-90	2935	100.0
0-180	2935	100.0

Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	1929	2636	2808
55	1731	2542	2575
65	1470	2533	2527
75	1289	2785	2754
85	1389	3488	2901

LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance (60,000 hours)	Theoretical L70 (Hours)
25°C	> 84%	> 144,000

CHOOSE COLOR

SKYTRIM FIELD INSTALLATION KITS

Color Choice	Kit Catalog Number	Kit Quantity
Tahitian Blue	STK-2-TB-10PK	10
Primary Green	STK-2-PG-10PK	10
Storaro Orange	STK-2-SO-10PK	10
Belladonna Rose	STK-2-BR-10PK	10
Medium Red	STK-2-MR-10PK	10
Pearl	STK-2-PL-10PK	10
Straw	STK-2-ST-10PK	10
Custom Color	STK-2-CC-*-10PK	10

*Custom color requires Roscolux numeric specification color code, consult factory for more information.

Note: Chosen color will be matched on acrylic but will appear lighter once applied to lit light guide.

ENERGY AND PERFORMANCE DATA BY CATALOG NUMBER

Stock or MTO*	Catalog Logic (Curved)	Delivered Lumens	Watts	Efficacy (LPW)
MTO	22SR-LD1-20-C-UNV-L830-CD1-U	1981	19.9	99
Stock	22SR-LD1-20-C-UNV-L835-CD1-U	2046	19.9	103
Stock	22SR-LD1-20-C-UNV-L840-CD1-U	2095	19.9	105
MTO	22SR-LD1-20-C-UNV-L850-CD1-U	2216	19.9	111
MTO	22SR-LD1-25-C-UNV-L830-CD1-U	2464	25.4	97
MTO	22SR-LD1-25-C-UNV-L835-CD1-U	2550	25.5	100
MTO	22SR-LD1-25-C-UNV-L840-CD1-U	2617	25.5	103
MTO	22SR-LD1-25-C-UNV-L850-CD1-U	2768	25.5	109
MTO	22SR-LD1-29-C-UNV-L830-CD1-U	2820	29.9	94
Stock	22SR-LD1-29-C-UNV-L835-CD1-U	2935	30.0	98
Stock	22SR-LD1-29-C-UNV-L840-CD1-U	3003	30.0	100
MTO	22SR-LD1-29-C-UNV-L850-CD1-U	3177	30.0	106

Stock or MTO*	Catalog Logic (Straight)	Delivered Lumens	Watts	Efficacy (LPW)
MTO	22SR-LD1-20-S-UNV-L830-CD1-U	1977	19.7	101
MTO	22SR-LD1-20-S-UNV-L835-CD1-U	2083	19.7	106
MTO	22SR-LD1-20-S-UNV-L840-CD1-U	2140	19.7	109
MTO	22SR-LD1-20-S-UNV-L850-CD1-U	2140	19.6	109
MTO	22SR-LD1-25-S-UNV-L830-CD1-U	2467	25.1	98
MTO	22SR-LD1-25-S-UNV-L835-CD1-U	2597	25.1	103
MTO	22SR-LD1-25-S-UNV-L840-CD1-U	2672	25.1	106
MTO	22SR-LD1-25-S-UNV-L850-CD1-U	2826	25.1	113
MTO	22SR-LD1-29-S-UNV-L830-CD1-U	2824	29.6	95
MTO	22SR-LD1-29-S-UNV-L835-CD1-U	2984	29.7	101
MTO	22SR-LD1-29-S-UNV-L840-CD1-U	3075	29.7	104
MTO	22SR-LD1-29-S-UNV-L850-CD1-U	3253	29.7	110

*Made to order (MTO) requires a typical four week lead time.

SHIPPING DATA

Catalog No.	Wt.
22SR-LD1-20	12 lbs.
22SR-LD1-29	12 lbs.

Cooper Lighting by EATON

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Cooper Lighting Business
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

ORDERING INFORMATION

SAMPLE NUMBER: 22SR-LD1-29-C-UNV-L835-CD1-SVPD1-U

Rating
Blank=Standard
ATW-SW4= Chicago Rated [6]

Series [8]
22SR=2' x 2' SkyRidge Series

Air
[Blank]=Standard
A=Air (Vented) [7]

Lamp Type
LD1=LED 1.0

Stock Lumen Outputs
20=2000 Lumens
29=2900 Lumens

MTO Lumen Outputs [5]
25=2500 Lumens

Reflector
C=Curved (Standard)
S=Straight

Optics
Blank=Standard

Voltage [1]
347V=347 Volt
UNV=Universal Voltage 120-277

Options
Emergency
EL=Emergency Installed, 700 Lumens [3]
EL14=Emergency Installed, 1400 Lumens [2], [3]
EL10W=Emergency Installed, 10 Watts [9]

CCT
L830=3000K
L835=3500K
L840=4000K
L850=5000K

Flex [14]
Multiple Configurations Available

Driver Type [4]
CD=0-10V Dimming Driver (Standard)
5LTHD=Fifth Light DALI Driver (1% - 100% Dimming) [12]

Number of Drivers
1=1 Driver

Product Family
S=Integrated Sensor

Control Type
B=Sensor Mounting, No Sensor
V=Analog (0-10V) Output for Local Control [13]

Occupancy Technology
P=Passive Infrared

Sensing Technology
D=Dimming Daylight Harvesting (Closed Loop)

Coverage Pattern
1= ~144 Square Feet

SkyTrim [11]
TB=Tahitian Blue
PG=Primary Green
SO=Storaro Orange
PL=Pearl
BR=Belladonna Rose
MR=Medium Red
ST=Straw
CC=Custom [11]

Packaging
U=Unit Pack
PALC=Job Pack, in carton

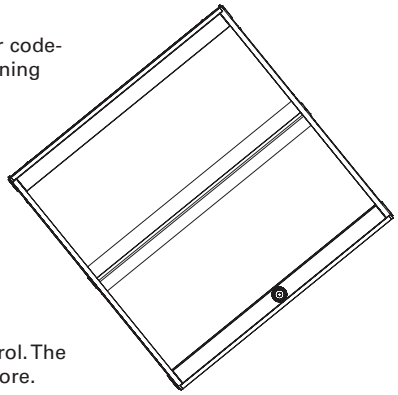
ACCESSORIES

T3A END E.Q. BRACKET PARTS BAG (Standard with fixture)
DF-22-W=2' x 2' Drywall Frame Kit
DF10P-C_=Devine Decorator Dimmer, 0-10V
SF10P-__=Skye Decorator Slide Dimmer, 0-10V
HHPRG-MS=Programming Remote for Integrated Sensor

NOTES: [1] Products also available in non-US voltages and frequencies for international markets. [2] Must specify voltage (120V or 277V) when selecting EL option. [3] EL test switch and light must be remote mounted. [4] Call factory for step-dimming options. [5] Made-to-order (MTO) requites four week lead time. [6] Chicago rated version does not allow for row mounting. [7] Air version is vented but does not meet air handling requirements. Air version is non-IC. Air version is not available with integrated sensor. [8] DesignLights Consortium® Qualified (all lumen packages). Refer to www.designlights.org Qualified Products List under Family Models for details. [9] For delivered lumens, take lumens per watt of desired fixture and multiply by 10 watts (100 lp/W x 10 = 1000 lumens delivered). [10] Fixtures using factory installed SkyTrim option are not DLC qualified. [11] Custom color must list Roscolux numeric color specification code. [12] Must be used in conjunction with a DALI control system. For complete DALI soluitions by Fifth Light, visit www.coopercontrol.com [13] Integral sensor works only with "CD" driver and is factory prewired to the driver for stand-alone control. [14] Flex does not include dimming leads. Control leads provided by others.

Specifications & dimensions subject to change without notice. Consult your Cooper Lighting Representative for availability and ordering information.

INTEGRATED SENSOR



Description
This innovative luminaire-integrated sensor control system is built on Greengate technology and optimized for code-compliant occupancy detection and daylight harvesting – all from within the foot print of Metalux's award-winning recessed ambient luminaires.

No New Wires
An in-place fixture retrofit is all that's needed to meet most energy codes in commercial spaces. The sensor system is factory wired to the luminaire, switching on or off based on occupancy, and dimming the light when enough daylight is available.

Sophisticated lighting control without commissioning
The luminaire-integrated sensor system offers out-of-the-box operation using thoughtful default settings.

Flexibility and Individual Control
When the application demands more, the sensor system has the option to make changes using a remote control. The remote allows changes from the default settings for occupancy, target light level, preset lighting levels, and more.

Cost-effective, Stand-alone Operation
With a single product to mount and a single electrical connection to make, the SkyRidge with an integrated sensor system saves money on the total installed cost when occupancy or daylight harvesting controls are needed. The integrated sensor system works stand-alone, without the need for additional switches and dimmers. When manual-on, manual dimming or other code-required control schemes are needed, please see the comprehensive offering of Greengate and Fifth Light solutions from Cooper Controls at www.coopercontrol.com.

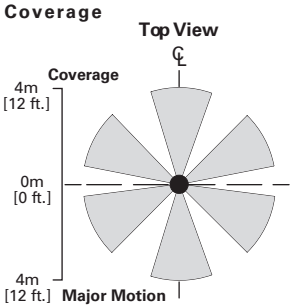
Metalux Integrated Sensor Sequence of Operation
The occupancy sensing portion of the sensor uses Passive Infrared (PIR) technology with Auto-on/Auto-off operation. The small lens in the center of the sensor directs the view of a passive infrared occupancy detector to sense occupants moving through the room. To trigger the light on, an occupant must cross at least two passive infrared beams. When motion in the coverage area ceases, the sensor logic concludes the room is unoccupied, and begins a count-down timer. By default, the timer is factory-set to 30 minutes, and can be adjusted to 5, 10, 15 and 30 minutes using the optional remote control, model number HHPRG-MS. Any motion detected during the count-down timer will cause the light to remain on and resets the timer. When motion is detected, a red LED will blink. In addition to the default on/off functionality, the sensor has an Energy Saver feature, where the light can be set to dim to a preset level after the sensor detects no occupancy for half of the count-down timer, when the timer is complete the lighting will change to the unoccupied setting. The Energy Saver feature works when the count-down timer is set to at least 15 minutes, and the preset level and feature are configured using the optional remote control. See the Sensor Programming Guide that comes with the HHPRG-MS remote for details on this feature. The sensitivity of the occupancy detection can be adjusted, using the HHPRG-MS remote. By default, the sensor operates at the full detection range shown on the coverage pattern diagram. Using the "LO" button on the HHPRG-MS remote, reduces the sensor detection range by 50%. Full coverage can be restored at any time by pressing the "HI" button on the remote. The red LED indicator will blink repeatedly to confirm any programming change.

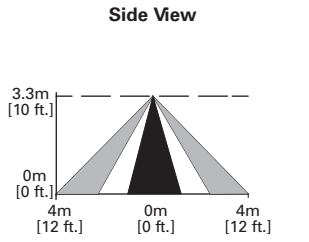
The dimming daylight harvesting portion of the sensor uses a small photo sensor located next to the occupancy sensing lens. The sensor continuously measures the available light in the room, even when the fixture is turned off. This allows sensor to operate in one of three daylighting modes, where the artificial light from the paired Metalux luminaire can adjust the light based on the amount of ambient light from surrounding natural and artificial light sources. Since the sensor measures light from its luminaire along with other light sources, this sensor follows a closed-loop dimming daylight harvesting style. The first mode, Daytime, is active when the sensor detects light of at least 100 lux in the room. In Daytime mode, when the light is turned on after detecting occupancy, the sensor will begin balancing the luminaire light level relative to the total available light it measures. The default light balancing target in daytime mode is 500 lux. This level can be adjusted higher or lower using the optional HHPRG-MS remote, and pressing "SET" and then the "DO" (Daytime Occupied) button to store the new light level. Similarly, the Daytime Unoccupied, "DU" has a default of level of 0 lux, or off, but can be adjusted higher to prevent the lights from turning off completely when unoccupied. More details on this function are found in the Sensor Programming Guide for the HHPRG-MS remote.

The next two modes, Twilight and Nighttime, function in a similar way, allowing the artificial light to adjust to different levels based on the surroundings. While primarily for use in outdoor luminaires, these modes are available for use in areas with a wide range of natural light, including atriums, day lit stairwells, and rooms with large or continuous windows. The Twilight mode is active when the sensor detects 50-100 lux in the off position, and has a 300 lux default light balancing target. The Nighttime mode is active when the sensor detects less than 50 lux, and has a 250 lux default light balancing target. Like the Daytime mode, there are separate settings for Twilight Occupied ("TO"), Twilight Unoccupied ("TU"), Nighttime Occupied ("NO") and Nighttime Unoccupied ("NU") which can be adjusted and set using the optional HHPRG-MS remote.

In addition to programming the sensor, the optional HHPRG-MS remote can be used for personal control to adjust the lighting temporarily override the functions of the sensor temporarily. The remote has raise/lower buttons to adjust the light level for special tasks, as well as a power button to turn the lights on or off. Unless the SET button and another function is selected, any changes made using these buttons will revert to the programmed settings after the sensor has detected no occupancy for its programmed time out, and turned off the lighting. The next time the sensor detects occupancy, it will revert to its programmed settings for count-down timer and light balancing.

Coverage





Reccomended Mounting Height 8–12 ft.

Optional Remote Control

HHPRG-MS Remote

Cooper Lighting by EATON

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Cooper Lighting Business
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

Cooper Lighting, LLC

Terms and Conditions

1. Applicable Terms and Conditions

(a) These terms and conditions of sale establish the rights, obligations, and remedies of Buyer and Seller that apply to any order issued by Buyer for the purchase of Seller's products and/or services ("Products"). No additional or different terms or conditions, whether contained in Buyer's purchase order form or in any other document or communication pertaining to Buyer's order, will be binding on Seller unless accepted in writing by an authorized representative of Seller. Seller expressly objects to and rejects any additional or different terms and conditions, which shall be ineffective.

(b) If Seller's order acknowledgement, invoice, other document, or electronic transmittal including or attaching these terms and conditions is found to be an acceptance of an offer, acceptance is expressly made conditional upon Buyer's assent solely to these terms and conditions, and acceptance of any part of Products delivered by Seller shall be deemed to constitute such assent by Buyer. If the order acknowledgement, invoice, other document, or electronic transmittal including or attaching these terms and conditions constitutes an offer, Buyer's acceptance of the offer is hereby limited to the terms of the offer.

2. Price, Payment Terms, and Title

(a) All prices represent those in effect at the time of quotation and are subject to change without notice. Unless prices are bid or quoted as "firm," Seller reserves the right to invoice at prices in effect at the date of shipment, regardless of any prior bid and whether notice was received by Buyer. Prices are stated in United States dollars unless otherwise indicated, are exclusive of shipping, handling, shipping insurance, duties, and sales, use, excise or similar taxes. Export packaging or any other special handling requested by Buyer will be at Buyer's expense. A service charge of $25 will be assessed for any order less than $100.

(b) Buyer acknowledges that the pricing of the Products has been set based on the agreed allocation of risks contained in these terms and conditions. If, notwithstanding the provisions of these terms and conditions, a court of competent jurisdiction determines that Buyer's terms and conditions apply to an order, then Seller shall have the right to either (i) modify the prices (including retroactively) according to the additional level of risk and responsibility that Buyer's terms and conditions require Seller to undertake; or (ii) cancel the order any time after such a determination without liability for the termination other than for the Products already delivered on these terms and conditions.

(c) Unless different credit terms have been extended to Buyer in writing by Seller, payment terms are net 30 days after delivery or date of invoice, whichever first occurs, in the currency invoiced. Seller reserves the right to modify or withdraw credit terms at any time without notice. If Buyer fails to fulfill the terms of payment, Seller may defer further shipments to Buyer or, at its option, cancel the unshipped portions of Buyer's orders. Buyer agrees to pay interest on all past due invoices at the lesser of 18% per annum, compounded monthly, or the highest contractual rate allowable under the law.

(d) Until full payment of all obligations of the Buyer for an order, Seller reserves the title (but not the risk of loss) to all Products furnished under that order. If the Buyer defaults in payment or performance or becomes subject to insolvency, receivership or bankruptcy proceedings or makes an assignment for the benefit of creditors, or without the consent of Seller voluntarily or involuntarily sells, transfers, leases or permits any lien or attachment on the Products, Seller may treat all amounts then or thereafter owing by Buyer to be immediately due and payable and Seller at its election may repossess Products for which Buyer has not paid in full. In the event of repossession of Products under this section, Buyer agrees that Seller may enter the premises where the Products may be located and remove them without notice and without being liable to Buyer for such repossession. Buyer will not set off invoiced amounts or any portion thereof against sums that are due or may become due from Seller, its parents, affiliates, or subsidiaries. Buyer grants Seller a security interest in all Products for which title has passed (including all after-acquired Products) that Seller sells Buyer and all proceeds of Products (including but not limited to all products in which Products are incorporated and any funds and products that Buyer receives in exchange for Products). Buyer consents to Seller's execution of any documents to evidence and perfect this security interest, and agrees to execute the same if requested by Seller.

3. Delivery and Risk of Loss

(a) Unless otherwise agreed in writing, all deliveries of Products will be EXW (Incoterms 2000) Seller's facility. Products will be packed in Seller's standard commercial shipping packages. Charges for shipping may not reflect net transportation costs paid by Seller. Buyer shall reimburse Seller for all costs of storage and handling incurred by Seller after the date that Seller is prepared to make shipment.

(b) Delivery and shipping dates are approximate and represent Seller's best estimate of the time required to make delivery or shipment. Time is not of the essence with respect to the transactions covered by these terms and conditions, except with respect to Buyer's obligation to make all related payments. Seller's obligations under these terms and conditions will be dependent upon Seller's ability to obtain necessary raw materials and components. Seller shall have the right to make partial deliveries and to ship up to forty (40) days in advance of shipping date.

4. Acceptance

Acceptance shall occur, if not before, when Buyer fails to reject within ten (10) days after delivery of the Products. Buyer may rightfully reject only when a reasonable inspection shows that the Products fail to conform substantially to the specifications for the Products. Buyer waives any right to revoke acceptance. Buyer's remedies for any nonconformity detected after acceptance are limited to those expressly provided in these terms and conditions for breach of warranty.

5. Limited Warranty

(a) Seller warrants to each original Buyer of Products that Products are, at the time of delivery to the Buyer, in good working order and conform to Seller's official published specifications, provided that no warranty is made with respect to any Products, ballasts, lamps, component parts, or accessories manufactured by others but supplied by Seller.

(b) Seller's obligation under this warranty for any Product proved not to be as warranted within the applicable warranty period is limited to, at its option, replacing the Product, refunding the purchase price of the Product, or using reasonable efforts to repair the Product during normal business hours at any authorized service facility of Seller. All costs of transportation of any Product claimed not to be as warranted and of any repaired or replacement Product to or from such service facility shall be borne by Buyer.

(c) Seller may require the return of any Product claimed not to be as warranted to one of its facilities as designated by Seller, transportation prepaid by Buyer, to establish a claim under this warranty. The cost of labor for removing a Product and for installing a repaired or replacement Product shall be borne by Buyer. Replacement parts provided under the terms of this warranty are warranted for the remainder of the warranty period of the Products in which they are installed to the same extent as if such parts were original components. Warranty services provided under these terms and conditions do not assure uninterrupted operations of Products; Seller shall not be liable for damages caused by any delays involving warranty service.

(d) The warranty period for Products is twelve (12) months from the date of shipment unless otherwise agreed by Seller in writing.

(e) **EXCEPT FOR THE EXPRESS WARRANTY SET FORTH ABOVE, SELLER PROVIDES PRODUCTS AS-IS AND MAKES NO OTHER REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, REGARDING THE PRODUCTS, THEIR FITNESS FOR ANY PARTICULAR PURPOSE, THEIR MERCHANTIBILITY, THEIR QUALITY, THEIR NONINFRINGEMENT, OR OTHERWISE. IN NO EVENT SHALL SELLER BE LIABLE FOR THE COST OF PROCUREMENT OR INSTALLATION OF SUBSTITUTE GOODS. THIS WARRANTY SPECIFICALLY EXCLUDES POLE FAILURE RESULTING FROM A THIRD-PARTY ACT OR OMISSION, MISUSE, UNANTICIPATED USE, FATIGUE, FAILURE, OR SIMILAR PHENOMENA RESULTING FROM INDUCED VIBRATION, HARMONIC OSCILLATION, OR RESONANCE FROM AIR CURRENT MOVEMENT AROUND THE PRODUCT. THIS WARRANTY SPECIFICALLY EXCLUDES POLES INSTALLED WITHOUT THE LUMINAIRES OR WITH UNAPPROVED DEVICES SUCH AS BANNERS, PENNANTS, CAMERAS, OR SIGNS, FOR WHICH THE POLE WAS NOT DESIGNED. USE OF SUCH ACCESSORIES MAY RESULT IN INJURY, DEATH OR PROPERTY DAMAGE. THIS WARRANTY SPECIFICALLY EXCLUDES POLES USING PRE-EXISTING ANCHORAGES, ANCHOR BOLTS, OR BOLT ADAPTERS NOT SUPPLIED BY COOPER LIGHTING. IT ALSO EXCLUDES ISSUES RELATED TO FOUNDATION OR SOIL CONDITIONS AT THE INSTALLATION SITE.**

6. LIMITATION OF LIABILITY

IN NO EVENT WILL SELLER BE LIABLE FOR ANY SPECIAL DAMAGES, CONSEQUENTIAL DAMAGES, INDIRECT DAMAGES, INCIDENTAL DAMAGES, STATUTORY DAMAGES, EXEMPLARY OR PUNITIVE DAMAGES, LOSS OF PROFITS, LOSS OF REVENUE, LIQUIDATED DAMAGES, OR LOSS OF USE, EVEN IF INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. SELLER'S LIABILITY FOR DAMAGES ARISING OUT OF OR RELATED TO A PRODUCT SHALL IN NO CASE EXCEED THE PURCHASE PRICE OF THE PRODUCT FROM WHICH THE CLAIM ARISES. TO THE EXTENT PERMITTED BY APPLICABLE LAW, THESE LIMITATIONS AND EXCLUSIONS WILL APPLY WHETHER SELLER'S LIABILITY ARISES OR RESULTS FROM BREACH OF CONTRACT, BREACH OF WARRANTY, TORT (INCLUDING BUT NOT LIMITED TO NEGLIGENCE, GROSS NEGLIGENCE, MALICE, OR INTENTIONAL CONDUCT), STRICT LIABILITY, BY OPERATION OF LAW, OR OTHERWISE.

7. Cancellation and Return of Products

Orders shall not be subject to cancellation or modification either in whole or in part without Seller's written consent and then only with terms that will reimburse Seller for all applicable costs incurred by virtue of the sale, including costs of purchased materials, engineering costs and a reasonable allowance for profit. Seller's written consent must be given in advance of Buyer's return of Products for credit. Seller reserves the right to cancel any sale of Products without liability to Buyer (except for refund of monies already paid), if the manufacture or sale of the goods is or becomes technically or economically impractical.

8. Force Majeure

Seller shall not be liable for any failure to perform or delay in performing its obligations resulting directly or indirectly from or contributed to by any acts of God, acts of Buyer or those under Buyer's control, acts of government or other civil or military authorities, priorities, strikes, or other labor disputes, fires, accidents, floods, epidemics, war, riot, embargoes, delays in transportation, lack of or inability to obtain raw materials, components, labor, fuel or supplies, or other circumstances beyond Seller's reasonable control ("Force Majeure Event"). If Seller elects, the time for performance shall be extended by a period of time equal to the time lost because of any delays caused by reasons of a Force Majeure Event. Should Seller be prevented from completing Buyer's order or any part thereof because of any Force Majeure Event, then Buyer agrees promptly upon request and upon receipt of invoice therefor, to pay Seller for any Product or Products then completed.

9. Work Product

"Work Product" shall include, without limitation, all designs, discoveries, creations, works, devices, masks, models, work in progress, service deliverables, inventions, products, special tooling, computer programs, procedures, improvements, developments, drawings, notes, documents, business processes, information and materials made, conceived or developed by Seller alone or with others that result from or relate to the Products. All Work Product shall at all times be and remain the sole and exclusive property of Seller. Buyer hereby agrees to irrevocably assign and transfer to Seller and does hereby assign and transfer to Seller all of its worldwide right, title and interest in and to the Work Product including all associated intellectual property rights. Buyer hereby waives any and all moral and other rights in any Work Product or any other intellectual property created, developed or acquired in respect of the Products. Seller will have the sole right to determine the treatment of any Work Product, including the right to keep it as trade secret, execute and file patent applications on it, to use and disclose it without prior patent application, to file registrations for copyright or trademark in its own name or to follow any other procedure that Seller deems appropriate. All tools and equipment supplied by Buyer to Seller shall remain the sole property of Seller.

10. Confidentiality

(a) Buyer may acquire knowledge of Seller Confidential Information (as defined below) in connection with Products and/or its performance hereunder and agrees to keep Seller Confidential Information in confidence during and following termination or expiration of this Agreement. "Seller Confidential Information" includes but is not limited to all information, whether written or oral, in any form, including, without limitation, information relating to the research, development, products, methods of manufacture, trade secrets, business plans, customers, vendors, finances, personnel data, Work Product, and other material or information considered proprietary by Seller relating to the current or anticipated business or affairs of Seller that is disclosed directly or indirectly to Buyer. In addition, Seller Confidential Information means any third party's proprietary or confidential information disclosed to Buyer in the course of providing Products to Buyer.

(b) Buyer agrees not to copy, alter or directly or indirectly disclose any Seller Confidential Information. Additionally, Buyer agrees to limit its internal distribution of Seller Confidential Information to Buyer's employees who have a need to know, and to take steps to ensure that the dissemination is so limited. In no event will Buyer use less than the degree of care and means that it uses to protect its own information of like kind, but in any event not less than reasonable care to prevent the unauthorized use of Seller Confidential Information. Buyer may disclose Seller Confidential Information that is required to be disclosed pursuant to a requirement of a government agency or law but only after Buyer provides prompt notice to Seller of such requirement and gives Seller the opportunity to challenge or limit the scope of the disclosure.

(c) Buyer further agrees not to use Seller Confidential Information except in the course of performing hereunder and will not use such Seller Confidential Information for its own benefit or for the benefit of any third party. All Seller Confidential Information is and shall remain the property of Seller. Upon Seller's written request, Buyer shall return, transfer or assign to Seller all Seller Confidential Information, including all Work Product, and all copies containing Seller Confidential Information.

11. Patent Indemnity

In the event any Product is made in accordance with drawings, samples or manufacturing specifications designated by Buyer, Buyer agrees to indemnify, defend and hold Seller harmless from any and all damages, costs and expenses (including attorney's fees) relating to any claim arising from or relating to the design, distribution, manufacture, marketing, sale, or use of the Product or arising from or relating to a claim that such Product furnished to Buyer by Seller, or the use thereof, infringes any claim of any patent, foreign or domestic, and Buyer agrees at its own expense to undertake the defense of any suit against Seller brought upon such claim or claims.

12. Changes in Product Design or Manufacture

Seller shall have the right to change, discontinue or modify the design and construction of any of its products and to substitute material equal to or superior to that originally specified.

13. Software License

Software, if included with a Product, is hereby licensed and not sold. The license is nonexclusive, and is limited to use with the Product with which it is included. No other use is permitted and Seller retains for itself (or, if applicable, its suppliers) all title and ownership to any software delivered hereunder, all of which contains confidential and proprietary information and which ownership includes without limitation all rights in patents, copyrights, trademarks and trade secrets. Buyer shall not attempt any sale, transfer, sublicense, reverse compilation or disassembly (save to the extent expressly permitted by law) or redistribution of the software. Buyer shall not copy, disclose or display any such software, or otherwise make it available to others.

14. Compliance with Laws

Buyer shall comply with all laws and regulations applicable to Products, including but not limited to all applicable import and export laws and regulations. Buyer and Buyer's Agent shall provide all information requested by Seller relating to Seller's voluntary or mandatory compliance with any law or regulation, and Buyer shall indemnify Seller for any losses incurred by Seller arising from Buyer's or Buyer's Agent's failure to provide the information requested by Seller.

15. Waiver

No waiver of any provision of these terms and conditions (or any right or default hereunder) shall be effective unless in writing and signed by an authorized representative Seller. Any such waiver shall be effective only for the instance given, and shall not operate as a waiver with respect to any other rights or obligations under these terms and conditions or applicable law in connection with any other instances or circumstances.

16. Language

The parties have expressly required that these terms and conditions be prepared in the English language. Les parties aux présentes ont expressément exigé que les présents termes et les bons de commandes émis aux termes des présentes soient rédigés en langue Anglaise.

17. Choice of Law and Dispute Resolution

Except as set forth below, these terms and conditions shall be governed by and construed in accordance with the laws of the State of Texas, without reference to its choice of law rules. If both Seller and Buyer are incorporated under the laws of Canada or a province of Canada, these terms and conditions shall be governed by and construed in accordance with the laws of the Province of Ontario and the federal laws of Canada. If Buyer is incorporated in the United States, any claim or litigation arising out of or relating to Products shall be brought exclusively in a court of competent jurisdiction in Harris County, Texas. If Buyer is incorporated outside of the United States, any dispute will be resolved by arbitration in Houston, Texas, by three arbitrators and under the International Chamber of Commerce Rules of Arbitration. The language of the arbitration will be English. In all cases, Buyer and Seller expressly exclude from application the United Nations Convention on Contracts for the International Sale of Goods.

18. Assignment

Buyer may not assign, transfer or subcontract the performance of its services, or any of its rights and/or obligations hereunder, without Seller's prior written consent.

19. Severability

If any provision of these terms and conditions is determined to be illegal, invalid, or unenforceable, the validity and enforceability of the remaining provisions of these terms and conditions will not be affected and, in lieu of such illegal, invalid, or unenforceable provision, there will be added, as part of these terms and conditions, one or more provisions as similar in terms as may be legal, valid and enforceable under applicable law. CL 022311