

Appendix A: Luminaires, Lamps, and Ballasts

FINELITE

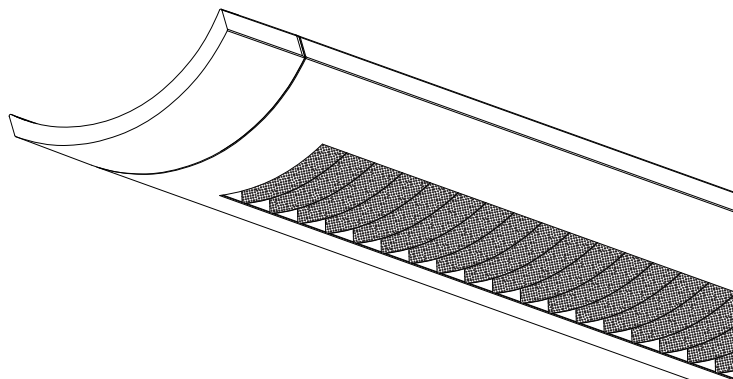
Series 12-ID Technical Sheet

Project _____

Firm Name _____

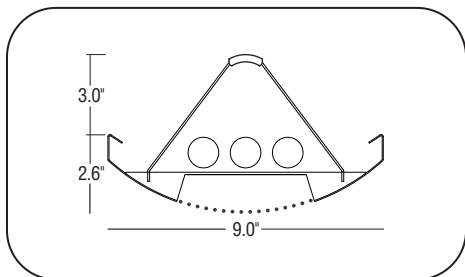
Date _____ Type _____

Series 12-ID is an indirect/direct luminaire with downlight shielding and optical choices that extends the Series 12 family to new levels of light distribution. Series 12-ID uses sophisticated designs and manufacturing techniques to produce a product that is as affordable as it is beautiful. Available in 1, 2, or 3 T8, T5 or T5HO lamps in 4' and 8' lengths. Choose from White Cross Blade perforated baffle or semi-specular Parabolic Louver, and 3 choices to control downlight distribution. Available with standard flat or optional curved die-cast endcaps. Companion wall mount also available.



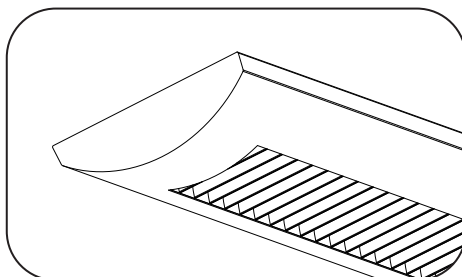
Series 12-ID with WCB white cross blade and optional die-cast curved endcap.

FEATURES



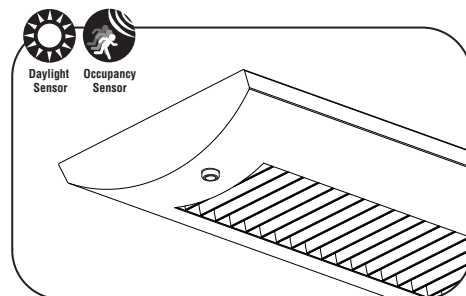
LAMPING

Available in 1, 2 or 3 T8, T5 or T5HO lamp cross sections.



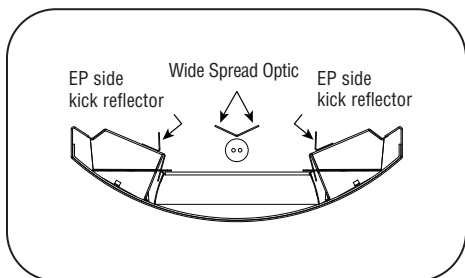
SHIELDING

Optional semi-specular Parabolic Louver PLV shielding. Shown here with the standard flat endcap.



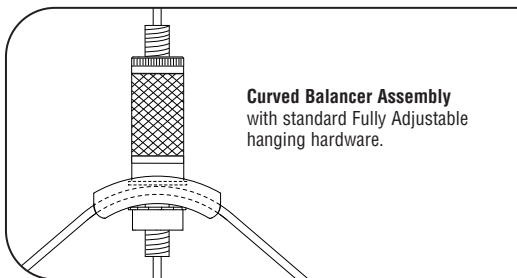
INTEGRATED SENSORS

Series 12-ID can be specified with integrated daylight or occupancy sensors.



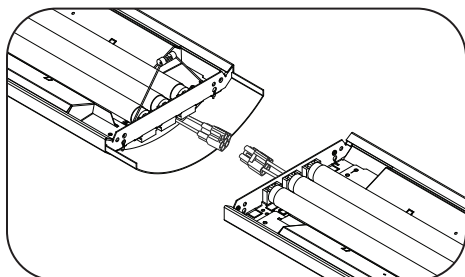
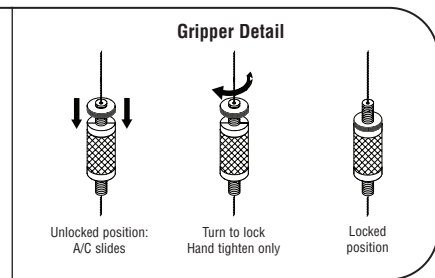
WSO-WIDE SPREAD OPTICS

Special wide spread reflector gives extended distribution and is especially effective in low ceiling areas.



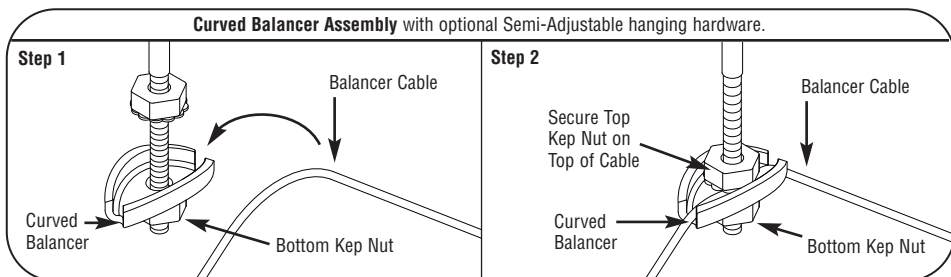
STANDARD FIXTURE SUPPORT

The Curved Balancer improves the strength of the hardware connection and improves installation. The balancer arrives attached to the fully adjustable hanging hardware. Simply adjust the bottom nut to the desired height, secure it to the balancer cable, adjust the side-to-side level, and secure the top nut. Install safety stop into fixture body.



PLUG-TOGETHER WIRING

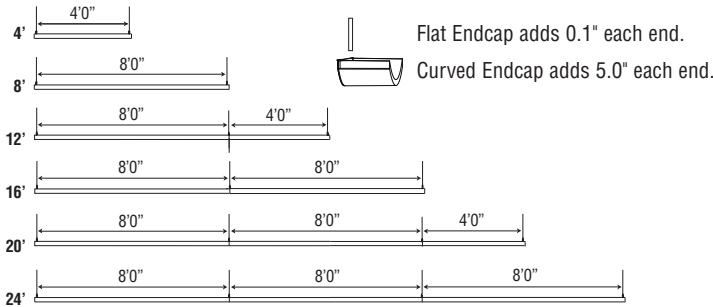
Standard plug-together wiring and die-formed aligner plate come factory installed for smooth joints with no light leaks.



OPTIONAL SEMI-ADJUSTABLE CABLE SUPPORT

Optional Semi-Adjustable aircraft cable, (AC) ± 0.5" in lengths of 12", 15", 18", 21", 24", 27", 30", 36". Aircraft cable assembly screws into the balancer. Attach Curved Balancer in the same way as Fully Adjustable assembly.

Series 12-ID is available in the lengths shown below.



Modular section lengths offer standard 4'0" and 8'0" support spacing that aligns with grid ceiling systems.

Additional 4' or 8' segments can be added to create runs as long as required.

CONTROLLED CENTER OPTICS

Controlled Center Optics (CCO) covers the center lamp—100% direct. Use dual switching for bi-directional control. Turn side lamps off for tightly controlled centered downlight, or turn side lamps on and center off for indirect/direct. Especially suitable for classrooms and energy conscious areas.

SOFT TOP OPTICS

Soft Top Optics (STO) diffuses and softens the uplight with a perforated covering above the lamps. STO is helpful in applications where less light is desired on the ceiling and more direct downlight is needed.

TOTALLY DIRECT OPTICS

With Totally Direct Optics (TDO), a covering over the lamps makes all the light reflect downward for a 100% direct fixture.

SPECIFICATIONS

CONSTRUCTION: Body is 20-gauge die-formed steel with 18-gauge die-formed internal joiner system, plug-together wiring standard. All components are hard-tooled to tolerances of 0.010".

ENDCAPS: (FE) Flat Endcap standard, 20-gauge die-formed steel, adds 0.1" at each end.

Optional: (CE) Curved Endcap, aluminum die-cast endcap with 0.100" reveal, adds 5.0" at each end.

REFLECTORS: Standard (91W) 91 White: Die-formed pre-painted aluminum, 91% reflective white. Virgin acrylic-UV-stabilized lens diffuser over perforations is standard. Optional Extended Performance (EP) reflector system for T5HO. (WSO) Wide Spread Optic system for 1 T5HO.

UPLIGHT OPTICAL OPTIONS:

- Open No optical control.
- CCO Controlled Center Optics, covers center lamp, 100% downlight (center only).
- STO Soft Top Optic, perforations cover the surface.
- TDO Totally Direct Optic, solid top above lamps.

DOWNLIGHT SHIELDING OPTIONS:

- WCB White Cross Blade baffle, white cross blades with straight edges spaced approximately 1" apart.
- PLV Parabolic Louver, semi-specular louvers with straight edges, spaced approximately 1" apart.

ACCESSORY: Optional Dust Cover, clear acrylic, T8 lamps only. NOTE: Will significantly impact light level performance. Contact Factory.

ELECTRICAL: 120 or 277V prewired. Fixture and electrical components are UL/C-UL listed and fixture will bear UL/C-UL labels. Optional Adders: Low profile 347V ballast, prewired dual circuit, emergency circuits, low profile emergency battery packs. Contact factory.

INTEGRATED SENSORS: Series 12-ID can be specified with integrated sensors from Wattstopper, Phillips, and Lutron. **Daylight Sensors:** Wattstopper sensors can be supplied with either a closed loop 0-10v dimming (handheld remote supplied) or closed loop single zone switching system. The Lutron sensor is directional and for use with Ecosystem ballasts. The Phillips sensor is a closed loop 0-10v sensor for use with Advance Mark 7 ballasts. **Occupancy Sensor:** Wattstopper occupancy sensor is a PIR sensor with additional hold-off daylight feature.

LAMPING: Available in 1, 2 or 3 T8, T5 or T5HO lamp cross sections.

BALLAST: Electronic instant-start ballast <10% THD, .88 BF standard for T8 lamps. Electronic rapid-start ballasts <10% THD, 1.0 BF standard for T5/T5HO lamps. Optional adders: rapid-start ballasts (standard for T5/T5HO), 347V, emergency battery packs, dimming ballasts (controls by others). Requires low-

profile ballasts and battery packs. Contact factory for multiple ballast factors in one luminaire.

MOUNTING OPTIONS: Standard (FA) fully adjustable aircraft cable with safety stop in lengths up to 150". Mounting connects to fixture with factory-installed Level and Lock Assembly™, which allows side-to-side fixture leveling and locks into place. NOTE: Curved balancer assembly is 3" above top of fixture. Optional (AC) semi-adjustable aircraft cable (± 0.5") in lengths of 12", 15", 18", 21", 24", 27", 30", and 36".

Optional: (AC) Semi-adjustable aircraft cable (± 0.5") in lengths of 12, 15, 18, 21, 24, 27, 30, 36.

SUPPORT CABLES: Plated steel cable and hardware.

FEED: 18 gauge straight cord. 14 gauge feed cord used when fixture current exceeds 6 amps. Optional Adders: Coil Cord Feed.

FINISHES: Finelite Signal White standard. Optional Adders: 185 colors available from Tiger Drylac's RAL color chart.

LENGTHS: 4' and 8' section lengths can be combined to make longer runs. Contact factory for additional lengths.

WEIGHT: Fixture weight = 2.6 to 3.6 lb/ft. with curved endcaps. Fixture weight 2.0 lb/ft. with flat endcaps.

WALL MOUNT: Complementary wall mount available.

ORDERING GUIDE

S12-ID - WCB - 32' - 2T8 - SC - 91W - OPEN - 277 - FA - FE - C1 - .88 - OBO

Finelite **Series 12-ID (Indirect/Direct)** _____

Shielding (WCB, PLV) _____

Run length (4', 8' multiples standard) _____

Number of lamps in cross section (1, 2, 3, T8, T5 or T5HO) _____

Circuiting (SC-single circuit, DC-dual circuit, CRD-center row dimming) _____

Reflector system (91W, EP, WSO) _____

Uplight optical options (Open, CCO, STO, TDO) _____

Voltage (120, 277, 347V) _____

Mounting (AC/FA) _____

Endcap FE (flat), CE (curved) _____

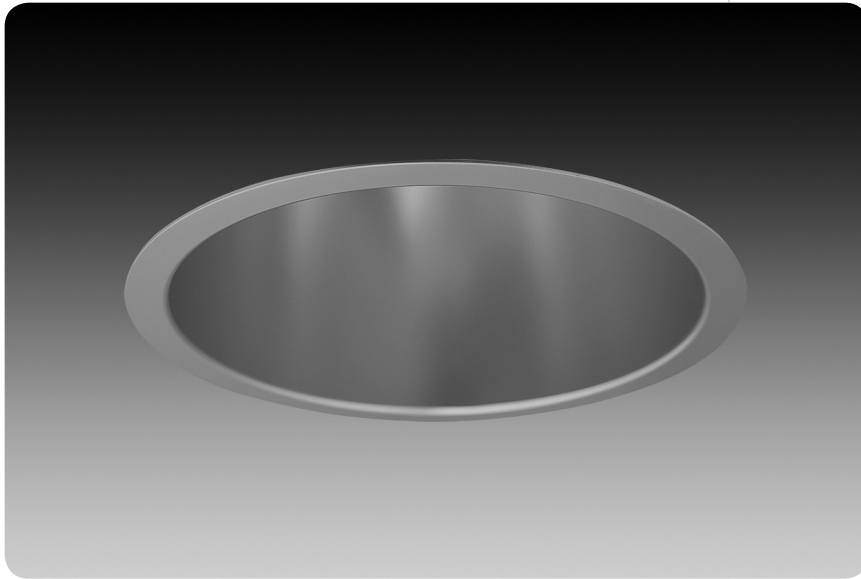
Ceiling type (C1-1" T-bar, C2-9/16" T-bar, C3-Slot Grid, C4-Hard Ceiling) _____

Ballast factor (Standard .88 for T8 lamps, 1.0 for T5 or T5HO) _____

Integrated Sensors / On-Board Controls (OBD-Daylight, OBO-Occupancy, OBB-Both) _____

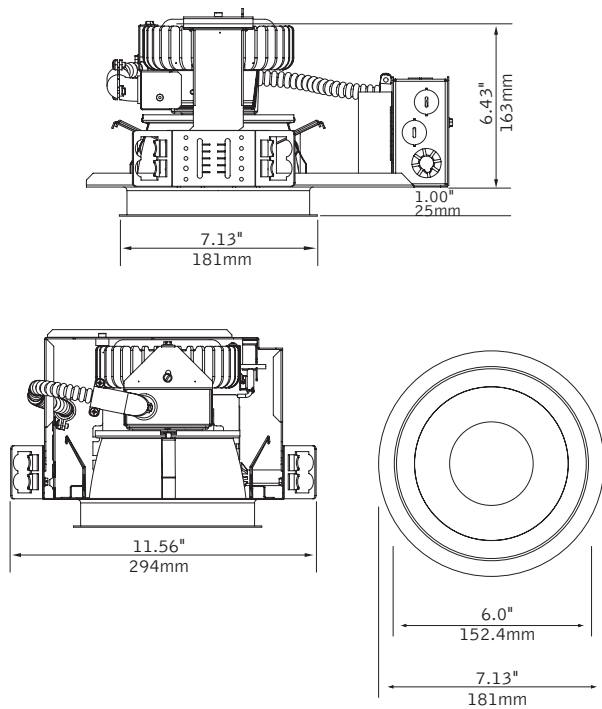
6" – led downlight

id®



Patent Pending

dimensional data



features

LED module features remote phosphor technology enabling a high system efficacy and minimum 80 CRI

Future-proof LED system design maintains form factor, lumen output, and thermal characteristics of module and driver as technology advances, allows for easy replacement and upgrades

1100, 1300 & 2000 lumen LED modules available.

Rated life is 50,000 hours at 70% lumen maintenance (L70)

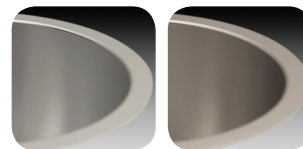
5 year limited warranty.

Constant current driver senses LED module characteristics and delivers the designed output regardless of color temperature

Flicker-free 0-10V analog dimming capability standard

Self-flanged Clear Diffuse reflector cone features superior brightness control and 50 degree cutoff to light source and its image

reflector options



clear diffuse

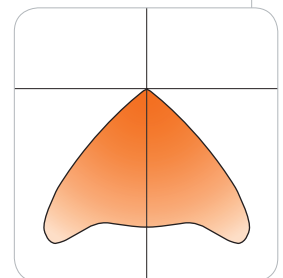
warm diffuse

performance

38W, 3000K, 2000 Lumen LED Module
 Clear Diffuse Reflector
 Total Luminaire Output: 1684lms
 Photometric performance is measured in accordance with IESNA LM-79.



Use 1300 lumen LED downlight in place of a 6" 32W compact fluorescent

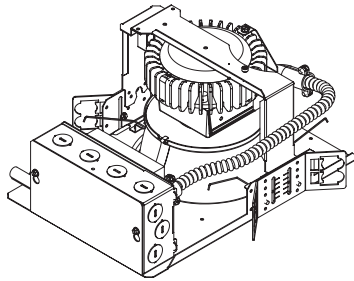


Visit focalpointlights.com for complete photometric data.

fixture:

project:

details



led system

Powered by Philips' Fortimo™ LED DLM, Advance Xitanium LED driver and communication cable. Aluminum heat sink provides appropriate thermal management. System is future-proof, allowing for easy replacement and upgrades as LED technology advances. LED system rated for 50,000 hours at 70% lumen output (L70).



led module

Philips' Fortimo™ LED DLM features patented remote phosphor technology for superior efficacy and color consistency. Module may be specified in 3000K, 3500K or 4000K, CRI>80.

construction

Thermally protected housing for new construction applications. Insulation to be kept 3" away from housing. Butterfly brackets allow mounting to 1/2 emt. Order bar hangers as an accessory. Die-cast aluminum heat sink designed for maximum thermal dissipation. Die-formed housing and integral junction box with (7) 1/2" pry outs. Accommodates ceiling thicknesses up to 1". For thicker ceiling consult factory. Fixture will not exceed 5 lb.

electrical

Advance Xitanium multi-volt 120V-277V constant current driver includes standard 0-10V analog dimming. Power factor >.9 typical, 50/60Hz., 200-700mA, input power range, 19.9-37.7w. 120-277v<15% THD @ 100% power <20% THD when dimming. "Thermal Guard" offers protection from overheating in abnormal conditions; driver will dim DLM if necessary. 2000 lumen versions integrate fanless active cooling solution designed for operation by the Fortimo LED system.

Lamp	Temp	System Watts	Module Output	Delivered Lumens	Lumens/Watt
11LED	3000K	19.9	1100	947	48
13LED	3000K	23.7	1300	1114	47
20LED	3000K	37.7	2000	1684	45

*Lumen rating based on Clear Diffuse reflector cone

*Lumen output may vary +/- 5%

*20LED system watts include active cooling.

labels

UL and cUL Listed. Lensed trims suitable for Wet Location.

trim specifications

aesthetics

Parabolic reflector cone ensures glare free optics. Reflector is .050 spun aluminum. Torsion springs pull trim tight to the ceiling with no visible fasteners within the trim.

Overlap trims are self-flanged. Non-painted trim matches reflector finish. White painted flange may also be specified.

optics

50-degree cut-off to light source and its image.

housing ordering

housing series		FL6D
ID LED Module	FL6D	
lamp		
1100 Lumen LED Module	11LED	
1300 Lumen LED Module	13LED	
2000 Lumen LED Module	20LED	
lamp temperature		
Include 3000K Module	L30	
Include 3500K Module	L35	
Include 4000K Module	L40	
voltage		
120V	120	
277V	277	

trim type		R0
Round Overlap	R0	
housing type		
Thermally Protected, Non-IC	T	

factory options		
Chicago Plenum	CP	

trim ordering

aperture		L6
6" Round Aperture	L6	

trim type		R0
Round Overlap	R0	

optic		
Downlight	DN	
Regress Frosted Lens (wet location)	RL	

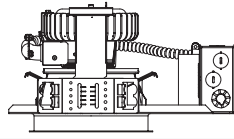
color		
Clear Diffuse	CD	
Warm Diffuse	WD	

flange finish		
Non-Painted	NP	
White Painted	WP	

a complete unit consists of two line items, housing and trim

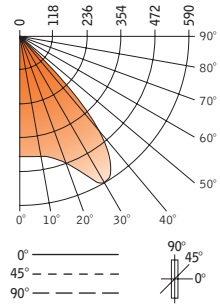
example:
FL6D-13LED-L30-120-R0-T
L6-R0-DN-CD-NP

6" – led downlight
id®



Filename: FL6DNCD11LEDL30.IES
Catalog #: FL6D-11LED-L30-R0-T, L6-R0-DN-CD
Photometric Report #: 15865

CANDLEPOWER DISTRIBUTION



Vertical Angle	0°	Zonal Lumens
0°	417	
5°	420	40
15°	436	124
25°	533	247
35°	551	346
45°	208	161
55°	24	21
65°	6	6
75°	2	2
85°	0	0
90°	0	0

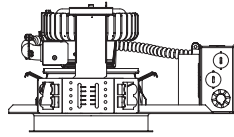
LUMEN SUMMARY

Zone	Lumens	% Fixt
0°-30°	411	43.4
0°-40°	756	79.9
0°-60°	938	99.1
0°-90°	947	100.0
Total Luminaire	0°-90° 947	100.0

Spacing Criteria:
1.6

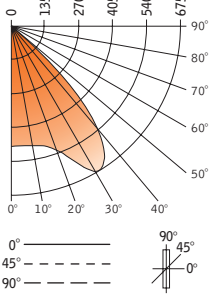
Go to www.focalpointlights.com for additional photometric data.

6" – led downlight
id®



Filename: FL6DNCD13LEDL30.IES
Catalog #: FL6D-13LED-L30-R0-T, L6-R0-DN-CD
Photometric Report #: 15866

CANDLEPOWER DISTRIBUTION



Vertical Angle	0°	Zonal Lumens
0°	483	
5°	483	46
15°	498	141
25°	599	277
35°	649	408
45°	267	206
55°	28	25
65°	8	8
75°	2	3
85°	0	0
90°	0	0

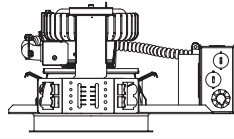
LUMEN SUMMARY

Zone	Lumens	% Fixt
0°-30°	464	41.7
0°-40°	872	78.3
0°-60°	1104	99.1
0°-90°	1114	100.0
Total Luminaire	0°-90° 1114	100.0

Spacing Criteria:
1.7

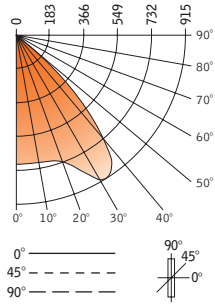
Go to www.focalpointlights.com for additional photometric data.

6" – led downlight
id®



Filename: FL6DNCD20LEDL30.IES
Catalog #: FL6D-20LED-L30-R0-T, L6-R0-DN-CD
Photometric Report #: 21561

CANDLEPOWER DISTRIBUTION



Vertical Angle	Zonal Lumens
0°	714
5°	714 68
15°	721 206
25°	820 385
35°	917 561
45°	492 371
55°	69 72
65°	17 17
75°	4 5
85°	0 0
90°	0

LUMEN SUMMARY

Zone	Lumens	% Fixt
0°-30°	686	39.1
0°-40°	1219	72.4
0°-60°	1662	98.7
0°-90°	1684	100.0
Total Luminaire	0°-90° 1684	100.0

Spacing Criteria:
1.4

WinonaLED

POPS01 Single Pendant

Type:

Qty:

POPS01 Single Pendant is a surface mounted pendant using one LED. Eight LED colors are available in both normal and high output configurations.

Construction: All aluminum construction with galvanized steel backplate and stainless steel hardware.

Acrylic Diffuser: Twenty standard diffusers, each in three sizes, can be used with this luminaire. Machined solid acrylic diffuser is naturally UV stable. Custom shapes available - consult factory.

Mounting: Luminaire is mounted to standard 4" octagon junction box (supplied by others) with hidden fasteners.

Integral Driver: Integral non-dimming drivers available for 90V-277V AC and 12V AC. Dimmable driver 12V-40V DC only.

Dimming: True 0-100% dimming is available with exclusive LightLink dimming system interface which is compatible with both 0V-10V sink and source-type dimmers.

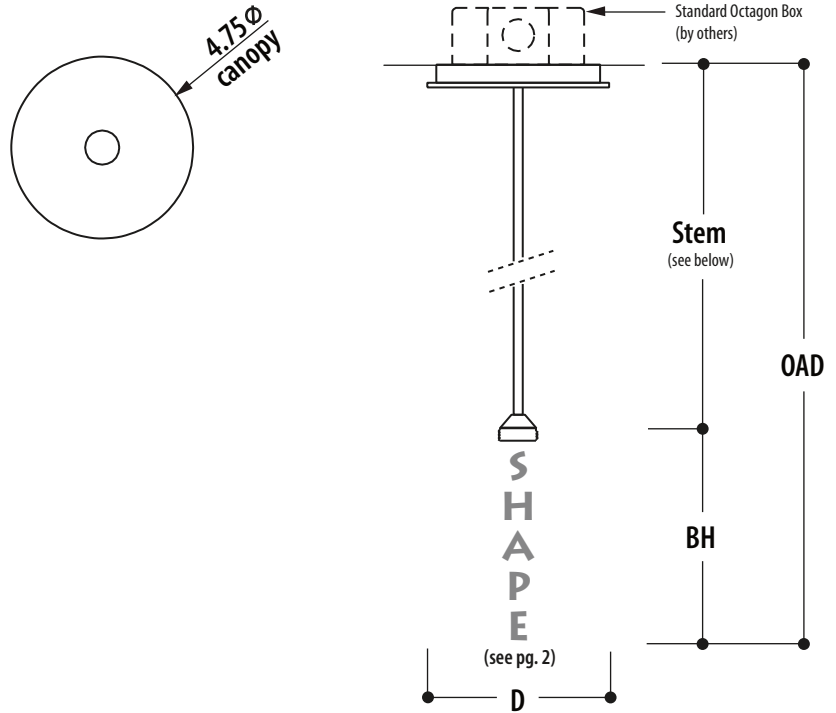
Power Consumption: Luminaire consumes maximum of 4W depending on LED color.

UL Listed: Dry Location, Wet Location optional

NOTE: Winona Lighting reserves the right to make design revisions without prior notice.

Project Name:

Ref #:



Note!

This luminaire can use any shape and any size of our standard acrylic diffusers. Refer to SHAPES page for acrylic dimensions to determine Body Height (BH), Diameter (D), and Overall Drop (OAD).

UL LISTED



LED - POPS01 -

SOURCE	MOUNT	STEM LENGTH	DIFFUSER SHAPE	DIFFUSER SIZE	LED CODE	VOLTAGE	FINISH	OPTIONS	SPECIAL																																																			
	MOUNT: POPS01 = SINGLE PENDANT	STEM LENGTH: 3 = 3 INCH 6 = 6 INCH 9 = 9 INCH	SIZE: S = SMALL M = MEDIUM L = LARGE			VOLTAGE: Non-Dimming ND120V = 90V-250VAC ND277V = 110V-277VAC ND12V = 12VAC Dimming DM24V = 12V-40VDC*		OPTIONS: X = NO OPTIONS WL = WET LOCATION	SPECIAL: STD = STANDARD MOD = MODIFIED																																																			
			<table border="1"> <thead> <tr> <th>CODE</th> <th>COLOR</th> <th>OUTPUT</th> </tr> </thead> <tbody> <tr><td>001</td><td>WARM WHITE 30K</td><td>NORMAL</td></tr> <tr><td>001/HO</td><td>WARM WHITE 30K</td><td>HIGH</td></tr> <tr><td>002</td><td>COOL WHITE 62K</td><td>NORMAL</td></tr> <tr><td>002/HO</td><td>COOL WHITE 62K</td><td>HIGH</td></tr> <tr><td>003</td><td>AMBER</td><td>NORMAL</td></tr> <tr><td>003/HO</td><td>AMBER</td><td>HIGH</td></tr> <tr><td>004</td><td>BLUE</td><td>NORMAL</td></tr> <tr><td>004/HO</td><td>BLUE</td><td>HIGH</td></tr> <tr><td>005</td><td>CYAN</td><td>NORMAL</td></tr> <tr><td>005/HO</td><td>CYAN</td><td>HIGH</td></tr> <tr><td>006</td><td>GREEN</td><td>NORMAL</td></tr> <tr><td>006/HO</td><td>GREEN</td><td>HIGH</td></tr> <tr><td>007</td><td>RED-ORANGE</td><td>NORMAL</td></tr> <tr><td>007/HO</td><td>RED-ORANGE</td><td>HIGH</td></tr> <tr><td>008</td><td>RED</td><td>NORMAL</td></tr> <tr><td>008/HO</td><td>RED</td><td>HIGH</td></tr> </tbody> </table>	CODE	COLOR	OUTPUT	001	WARM WHITE 30K	NORMAL	001/HO	WARM WHITE 30K	HIGH	002	COOL WHITE 62K	NORMAL	002/HO	COOL WHITE 62K	HIGH	003	AMBER	NORMAL	003/HO	AMBER	HIGH	004	BLUE	NORMAL	004/HO	BLUE	HIGH	005	CYAN	NORMAL	005/HO	CYAN	HIGH	006	GREEN	NORMAL	006/HO	GREEN	HIGH	007	RED-ORANGE	NORMAL	007/HO	RED-ORANGE	HIGH	008	RED	NORMAL	008/HO	RED	HIGH						
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			<table border="1"> <thead> <tr> <th>SHAPE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr><td>SPH</td><td>SPHERE</td></tr> <tr><td>CYL</td><td>CYLINDER</td></tr> <tr><td>CAT</td><td>CATTAIL</td></tr> <tr><td>WED</td><td>WEDGE</td></tr> <tr><td>TIK</td><td>TIKI</td></tr> <tr><td>CLA</td><td>CLASSICAL</td></tr> <tr><td>HOU</td><td>HOURLASS</td></tr> <tr><td>ALA</td><td>A-LAMP</td></tr> <tr><td>CHA</td><td>CHARDONNAY</td></tr> <tr><td>BEE</td><td>BEEHIVE</td></tr> <tr><td>RIB</td><td>RIBBED</td></tr> <tr><td>ARR</td><td>ARROW</td></tr> <tr><td>ARC</td><td>ARC</td></tr> <tr><td>FLU</td><td>FLUTE</td></tr> <tr><td>VAS</td><td>VASE</td></tr> <tr><td>DRO</td><td>DROP</td></tr> <tr><td>SPI</td><td>SPIKE</td></tr> <tr><td>DIS</td><td>DISCUS</td></tr> <tr><td>PUC</td><td>PUCK</td></tr> <tr><td>EDG</td><td>EDGE</td></tr> <tr><td>CUS</td><td>CUSTOM (consult factory)</td></tr> </tbody> </table>	SHAPE	DESCRIPTION	SPH	SPHERE	CYL	CYLINDER	CAT	CATTAIL	WED	WEDGE	TIK	TIKI	CLA	CLASSICAL	HOU	HOURLASS	ALA	A-LAMP	CHA	CHARDONNAY	BEE	BEEHIVE	RIB	RIBBED	ARR	ARROW	ARC	ARC	FLU	FLUTE	VAS	VASE	DRO	DROP	SPI	SPIKE	DIS	DISCUS	PUC	PUCK	EDG	EDGE	CUS	CUSTOM (consult factory)													
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WED	WEDGE																																																											
TIK	TIKI																																																											
CLA	CLASSICAL																																																											
HOU	HOURLASS																																																											
ALA	A-LAMP																																																											
CHA	CHARDONNAY																																																											
BEE	BEEHIVE																																																											
RIB	RIBBED																																																											
ARR	ARROW																																																											
ARC	ARC																																																											
FLU	FLUTE																																																											
VAS	VASE																																																											
DRO	DROP																																																											
SPI	SPIKE																																																											
DIS	DISCUS																																																											
PUC	PUCK																																																											
EDG	EDGE																																																											
CUS	CUSTOM (consult factory)																																																											
						<p>FINISH:</p> <p>BAL = BRUSHED ALUMINUM BBP = BRUSHED BRASS PAINT CPF = CUSTOM PAINTED FINISH LBPS = LIGHT BRONZE PAINT SMOOTH LSP = LIGHT SILVER PAINT PGP = PALE GOLD PAINT SGB = SEMI-GLOSS BLACK SGW = SEMI-GLOSS WHITE</p>																																																						
									<p>MODIFICATIONS:</p> <p>Please use this space to list any modifications.</p>																																																			

*LightLink dimming system interface maximum fifty luminaires per LightLink, one LightLink per dimming zone.

*IES report available for normal & high output. (See website)

Revised: 11/08/10

<p>S M L</p> <p>SPH = SPHERE</p>	<p>S M L</p> <p>CYL = CYLINDER</p>	<p>S M L</p> <p>CAT = CAT TAIL</p>	<p>S M L</p> <p>WED = WEDGE</p>
<p>S M L</p> <p>TIK = TIKI</p>	<p>S M L</p> <p>CLA = CLASSICAL</p>	<p>S M L</p> <p>HOU = HOURGLASS</p>	<p>S M L</p> <p>ALA = A-LAMP</p>
<p>S M L</p> <p>CHA = CHARDONNAY</p>	<p>S M L</p> <p>BEE = BEEHIVE</p>	<p>S M L</p> <p>RIB = RIBBED</p>	<p>S M L</p> <p>ARR = ARROW</p>
<p>S M L</p> <p>ARC = ARC</p>	<p>S M L</p> <p>FLU = FLUTE</p>	<p>S M L</p> <p>VAS = VASE</p>	<p>S M L</p> <p>DRO = DROP</p>
<p>S M L</p> <p>SPI = SPIKE</p>	<p>S M L</p> <p>DIS = DISCUS</p>	<p>S M L</p> <p>PUC = PUCK</p>	<p>S M L</p> <p>EDG = EDGE</p>

Our manufacturing process can easily accommodate custom shapes and sizes. Consult factory for design guidelines and specification details.

All POPS! models are available with Dimming and Non-Dimming internal drivers. Non-Dimming drivers accept 90V-264V AC (ND120V code) and 11-15V AC (ND12V code). All Dimming drivers require require low voltage DC power supply to operate. Size and model of the power supply will vary according to size of installation and other requirements.

Do not connect line voltage to Dimming drivers! Do not make live connections!

NON-DIMMING INSTALLATIONS

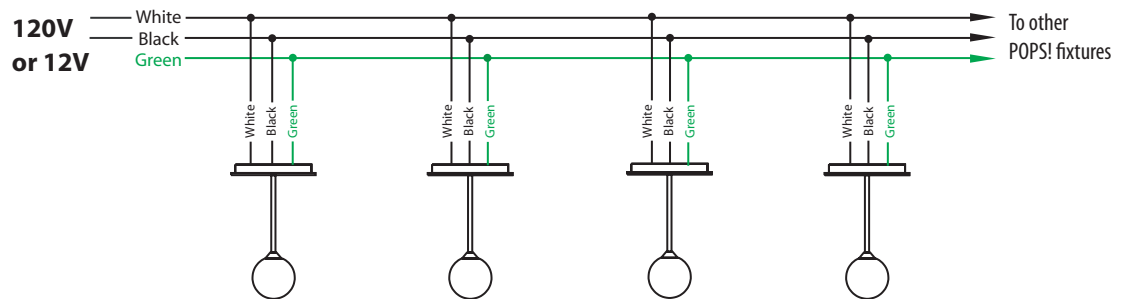
Non-dimming luminaires are supplied with an internal driver with either line voltage (90V-264V AC) or low voltage (12V AC) input. Verify you have the correct driver for your application and power supply before proceeding. Use the following diagram for either type.

Line Voltage Drivers:

1. Connect driver **WHITE & BLACK** to **120V** supply
2. Connect chassis **GREEN** wire to supply **GROUND**

Low Voltage Drivers:

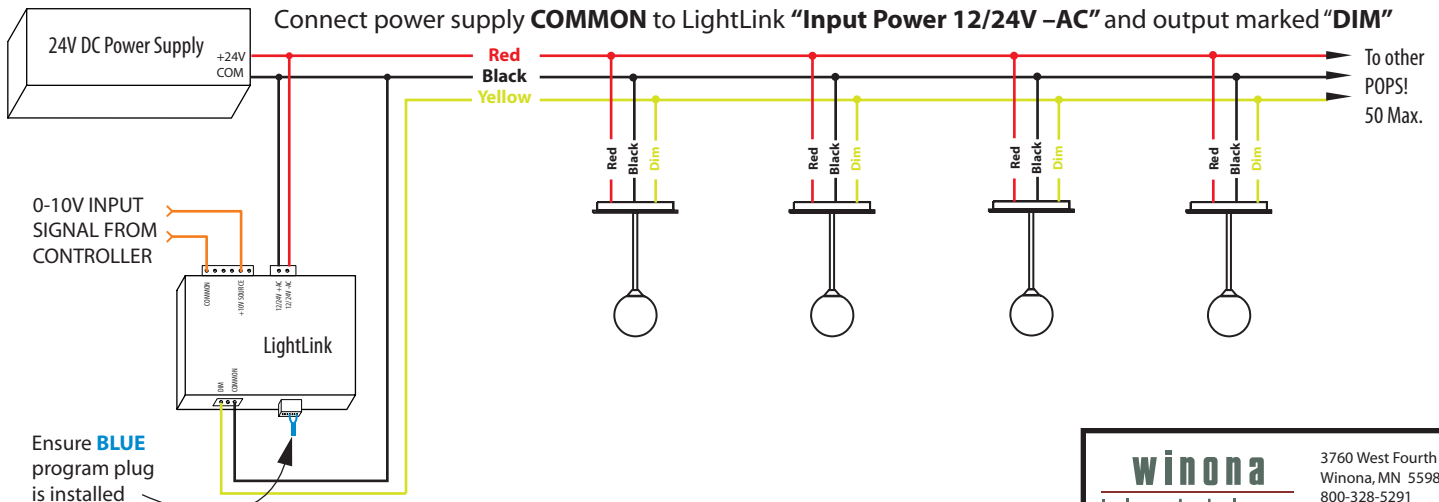
1. Connect driver **GREY** wires to **12V** supply
2. Connect chassis **GREEN** wire to electrical box



DIMMING INSTALLATIONS

All dimming installations require the use of the LightLink dimming module which is spliced inline with the control signal output from the dimming control system. The LightLink module will accept any 0-10V dimming signal input (source or sink) from any dimming control system as well as PWM input and analog input from room sensors or other devices. Refer to LightLink documentation for detailed installation and operating instructions. Mount the LightLink module close to and feed it power from the same 24V DC power supply used for the POPS! luminaires. On installations requiring more than one transformer, a LightLink module must be used for each supply. Multiple LightLink modules may be connected to the same power supply. Use minimum of 12 gauge wire for remote power supply installations. **DO NOT MAKE LIVE CONNECTIONS!**

- Connect STEP **RED** wire to power supply **+24V DC**
- Connect STEP **BLACK** wire to power supply **COMMON**
- Connect STEP **YELLOW** wire to LightLink Output marked **"DIM"**
- Connect 1 to 10V Dimmer supply Wire to LightLink Control Input marked **"+10V Source"**
- Connect 1 to 10V Dimmer common Wire to LightLink Control Input marked **"Common"**
- Connect power supply **+24V DC** to LightLink **"Input Power 12/24V +AC"**
- Connect power supply **COMMON** to LightLink **"Input Power 12/24V -AC"** and output marked **"DIM"**



FEATURES

OPTICAL SYSTEM

- Reflector - Self-flanged, semi-specular or matte-diffuse reflector. Fluted vertical upper section works in conjunction with patented Bounding Ray™ Optical Principle design (U.S. Patent No. 5,800,050) to provide lamp before lamp image and smooth transition from top of reflector to bottom. Minimum flange matches reflector finish.
- Baffle/cone - Semi-specular clear upper reflector. Microgroove baffle with white painted flange or specular black cone with flange that matches cone finish.
- Hinged lampdoor seals upper trim for optimal fixture efficiency and the reduction of stray light in the plenum.

MECHANICAL SYSTEM

- 16-gauge galvanized steel mounting/plaster frame with integral yoke to retain optical system. Maximum 1-1/2" ceiling thickness.
- 16-gauge galvanized steel mounting bars with continuous 4" vertical adjustment are shipped pre-installed. Post installation adjustment possible without the use of tools from above or below the ceiling.
- Galvanized steel junction box with hinged access covers and spring latch. 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.

ELECTRICAL SYSTEM

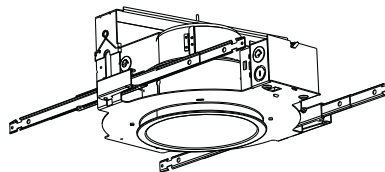
- Horizontally-mounted, positive-latch, thermoplastic socket.
- Class P, thermally protected, high power factor electronic ballast mounted to the junction box.
- Simply5™ technology available. SIMPLY5™ LIGHTING INTELLIGENCE

LISTING

- Fixtures are UL Listed for thru-branch wiring, Non-IC recessed mounting and damp locations. Listed and labeled to comply with Canadian Standards.

Type

Catalog number

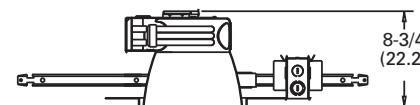


Compact Fluorescent Downlights

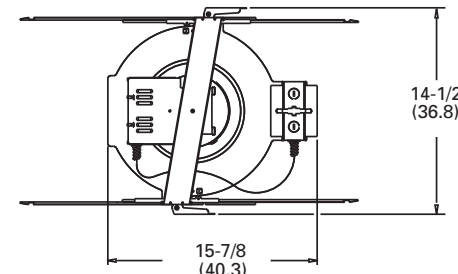
8" AF

Open Reflector

Horizontal Lamp
Triple-Tube



Aperture: 7-7/8 (20.1)
Ceiling Opening: 8-7/8 (22.5)
Overlap Trim: 9-1/4 (23.5)



All dimensions are inches (centimeters)

ORDERING INFORMATION

Example: **AF 2/32TRT 8AR MVOLT**

Choose the boldface catalog nomenclature that best suits your needs and write it on the appropriate line. Order accessories as separate catalog numbers (shipped separately).

AF							
Series	Wattage/Lamp	Aperture/Trim color		Finish	Voltage	Ballast ³	Options
AF	1/18TRT	8AR	Clear	(blank)	MVOLT²	(blank) Electronic ballast	EL⁶ Emergency battery pack with integral test switch
	1/26TRT	8PR	Pewter		120	ECOS EcoSystem electronic dimming ballast.	ELR⁶ Emergency battery pack. Remote test switch
	1/32TRT	8UBR	Umber	LD	277	Minimum dimming level 5%.	GMF Single, slow-blow fuse (not available with MVOLT)
	1/42TRT	8WTR	Wheat		347	ADEZ⁴ Advance Mark 10 [®] electronic dimming ballast.	GLR Single, fast-blow fuse (not available with MVOLT)
	1/57TRT	8WR¹	White painted			Minimum dimming level 5%	TRW White painted flange (standard on MB and WB)
	2/18TRT	8MB¹	Black baffle			S5 HW⁵ SIMPLY5™ ballast less Reloc	TRBL Black painted flange
	2/26TRT	8WB¹	White baffle				WLP With 3500°K lamp (shipped separately)
	2/32TRT	8BC¹	Black cone				LRC⁷ Provides compatibility with Lithonia Reloc System. Reloc System can be installed less this option with connectors provided by others. Access above ceiling required
	2/42TRT						CP⁸ Chicago Plenum
							CSA CSA Certified

NOTES

- 1 Not available with finishes.
- 2 Multi-volt electronic ballast capable of operating on any voltage from 120V through 277V, 50 or 60 Hz.
- 3 For additional ballast types, refer to Technical Bulletins tab.
- 4 Available in 120V or 277V only. Minimum dimming level 5%.
- 5 Simply5™ includes 9" S5 MLC Reloc wiring system (shipped separately). Available in 120V or 277V only. Not available in 18W or 57W. See simply5.net for more information.
- 6 For dimensional changes, refer to Technical Bulletins tab.
- 7 For compatible Reloc systems, refer to Technical Bulletins tab.
- 8 Not available with EL or ELR option.
- 9 Meets codes that require in-fixture disconnect.
- 10 One 5A relay with one 0-10 VDC dimming output, shipped installed. Requires additional nLight bus power supply.

Accessories

Order as separate catalog number.

SCA8 Sloped ceiling adapter. Degree of slope must be specified (10D, 15D, 20D, 25D, 30D). Ex: **SCA8 10D**

- CP⁸** Chicago Plenum
- CSA** CSA Certified
- BDP⁹** Ballast disconnect plug
- ELHL⁶** High lumen output emergency battery pack. Integral test switch provided
- ELRHL⁶** High lumen output emergency battery pack. Remote test switch provided
- NSD¹⁰** Sensor switch nLight™ dimming relay

8" AF Open Reflector

Distribution curve Distribution data Output data Coefficient of utilization Illuminance Data at 30" Above Floor for a Single Luminaire

AF 1/32TRT 8AR, (1) CF32DT/E/IN/835, 2400 lumens per lamp, 1.3 s/mh, Test no. LTL9452

Mount height	Initial fc at beam center	50% beam angle 61.0°		10% beam angle 94.7°	
		Beam diameter	fc at beam edge	Beam diameter	fc at beam edge
8'	33.2	6.5	16.6	11.9	3.3
10'	17.9	8.8	8.9	16.3	1.8
12'	11.1	11.2	5.6	20.6	1.1
14'	7.6	13.5	3.8	25.0	0.8
16'	5.5	15.9	2.8	29.3	0.6

AF 1/42TRT 8AR, (1) CF42DT/E/IN/835, 3200 lumens per lamp, 1.3 s/mh, Test no. LTL9455

Mount height	Initial fc at beam center	50% beam angle 64.5°		10% beam angle 94.8°	
		Beam diameter	fc at beam edge	Beam diameter	fc at beam edge
8'	42.8	6.9	21.4	12.0	4.3
10'	23.0	9.5	11.5	16.3	2.3
12'	14.3	12.0	7.2	20.7	1.4
14'	9.8	14.5	4.9	25.0	1.0
16'	7.1	17.0	3.6	19.3	0.7

AF 2/32TRT 8AR, (2) CF32DT/E/IN/835, 2400 lumens per lamp, 1.4 s/mh, Test no. LTL9407

Mount height	Initial fc at beam center	50% beam angle 67.9°		10% beam angle 94.3°	
		Beam diameter	fc at beam edge	Beam diameter	fc at beam edge
8'	52.4	7.4	26.2	11.9	5.2
10'	28.2	10.1	14.1	16.2	2.8
12'	17.6	12.8	8.8	20.5	1.8
14'	12.0	15.5	6.0	24.8	1.2
16'	8.7	18.2	4.3	29.1	0.9

AF 2/42TRT 8AR, (2) CF42DT/E/IN/835, 3200 lumens per lamp, 1.4 s/mh, Test no. LTL9406

Mount height	Initial fc at beam center	50% beam angle 67.6°		10% beam angle 94.1°	
		Beam diameter	fc at beam edge	Beam diameter	fc at beam edge
8'	73.1	7.4	36.5	11.8	7.3
10'	39.3	10.0	19.7	16.1	3.9
12'	24.5	12.7	12.2	20.4	2.4
14'	16.7	15.4	8.4	24.7	1.7
16'	12.1	18.1	6.1	29.0	1.2

ENERGY (Calculated in accordance with NEMA standard LE-5A)					
LER.DOL	Annual* Energy Cost	Lamps	Lamp Lumens	Ballast Factor	Input Watts
44	\$5.44	(1) 32W TRT	2400	0.98	36
47	\$5.08	(1) 42W TRT	3200	1.00	46
40	\$5.93	(2) 32W TRT	4800	0.96	69
41	\$5.92	(2) 42W TRT	6400	0.95	94

*Comparative yearly lighting energy cost per 1000 lumens

NOTES:

- For electrical characteristics, refer to Technical Bulletins tab.
- Tested to current IES and NEMA standards under stabilized laboratory conditions. Various operating factors can cause differences between laboratory data and actual field measurements. Dimensions and specifications are based on the most current available data and are subject to change without notice.
- Consult factory or IES file for microgroove baffle, black cone and other photometric reports.

DCF-180

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Rev. 02/10

gotham
An Acuity Brands Company

GOTHAM ARCHITECTURAL DOWNLIGHTING
1400 Lester Road Conyers Georgia 30012
P 800 315 4982 F 770 860 3129
www.gothamlighting.com

DESCRIPTION

Low brightness 9-1/2" aperture Surface Cylinder for use with (2)26W, 32W or 42W Triple Twin Tube 4-pin compact fluorescent lamps. Reflectors with different distributions may be used within the same housing for a variety of lighting effects. Standard features include low iridescent finish on all reflectors, electronic ballast and venting to ensure maximum lamp life and lumen output. Optics offer unparalleled performance with glare free downlighting.

Catalog #		Type	
Project			
Comments		Date	
Prepared by			

SPECIFICATION FEATURES

A ... Reflector

Available in a variety of Alzak® finishes, .050 thick aluminum, in a one piece spun parabolic contour. Positive reflector mounting, without tools, pulls trim tight to housing.

B ... Housing

Round seamless aluminum with crisply detailed edges. Choice of finish in white, matte black or bronze. Other finish options available upon request. Installs to canopy via keyhole slots for positive mounting.

C ... Mounting

Mounting canopy installs to recessed junction box (by others). All hardware and brackets are galvanized or plated.

D ... Socket

Two 4-pin Gx24q3 or Gx24q4 bases with fatigue free stainless steel lamp spring ensures positive lamp retention.

E ... Electronic Ballast

Electronic ballast provides full light output and rated lamp life. Provides flicker free and noise free operation and starting. One ballast operates all manufacturers' 26W, 32W or 42W triple tube lamps.

Labels

cULus listed, C.S.A. certified, standard damp label, IBEW union made.



C19232
C19242
9250
9210

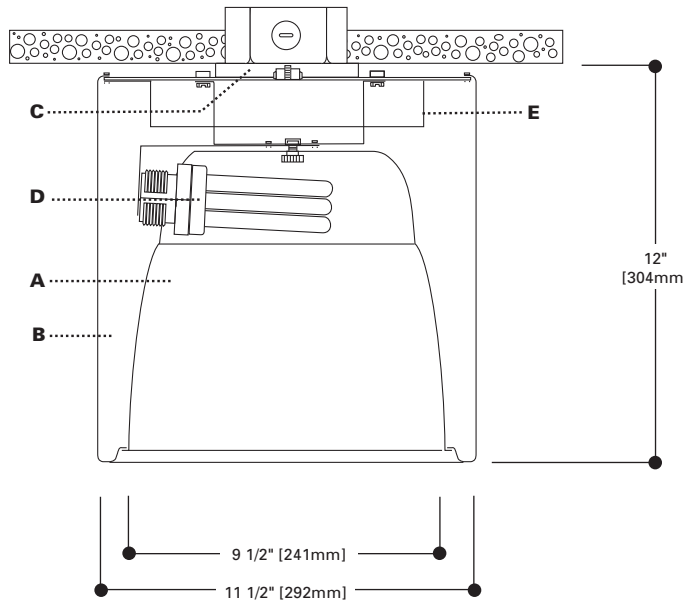
26W, 32W, 42W TTT
Compact Fluorescent
9 - 1/2" SURFACE CYLINDER

Energy Data

(2) 32W Triple 4-pin
 Ballast: Electronic
 120V Input Watts: 69
 Line Amps: 0.58
 277 Input Watts: 69
 Line Amps: 0.25
 Power Factor: >.99, THD: <10%
 Min. Starting Temp: -10°C (15°F)
 Sound Rating: A

NOTES:

Accessories should be ordered separately. For additional options, please consult your Cooper Lighting Representative. Alzak is a registered trademark of Aluminum Company of America.



ORDERING INFORMATION

Sample Number: Complete unit consists of housing, ballast and trim.

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Housing
C19: 9" Cylinder
Number of Lamps
2: 2 Lamps
Wattage
32: 26W or 32W TTT Lamp
42: 42W TTT Lamp

Ballast
E: 120/277V 50/60 Hz Electronic
3E: 347V 50/60 Hz Electronic
1D26: 26W 120V Dimming, Lutron Compact SE
2D26: 26W 277V Dimming, Lutron Compact SE
1D32: 32W 120V Dimming, Lutron Compact SE
2D32: 32W 277V Dimming, Lutron Compact SE
EDR26: DeRated Wattage Label, 26W
EDR32: DeRated Wattage Label, 32W

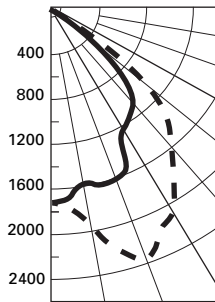
Housing Finish
P: White
BZ: Bronze
MB: Matte Black

Trims
9250: WD Beam Surface Trim
9210: Single WW Surface Trim

Finish
LI: Low Iridescent Clear
H: Haze
WMH: Warm Haze
G: Gold
WH: Wheat
W: Gloss White
GP: Graphite
GPH: Graphite Haze
K: Cognac
KH: Cognac Haze

Accessories
C836P: White Pendant Kit for CF Cylinder
C836BZ: Bronze Pendant Kit for CF Cylinder
C836MB: Black Pendant Kit for CF Cylinder

Candlepower Distribution



Test No. H40014
C19232-9250LI
Open Reflector
 Lamp=(2) 32W PLT
 Lumens=2400 each
 Spacing Criteria=
 0°=1.1, 90°=1.5
 Efficiency=81.1%

— 0°
 - - - 90°

Candlepower

Deg.	0°	90°
0	1711	1711
5	1676	1762
15	1572	2207
25	1563	2086
35	1246	1695
45	1027	1296
55	582	739
65	13	15
75	5	5
85	0	0
90	0	0

Average Luminance

Deg.	0°	90°
45	31748	40064
55	22180	28164
65	672	776
75	422	422
85	0	0

Cone of Light

Distance to Illuminated Plane	Initial Nadir Footcandles	Beam Diameter
5'6"	57	8'0"
6'6"	40	9'6"
8'0"	27	12'0"
10'0"	17	14'6"
12'0"	12	17'6"
14'0"	9	20'6"

Beam diameter is to 50% of maximum footcandles, rounded to the nearest half-foot.

Footcandle values are initial, apply appropriate light loss factors where necessary.

Reflector Multiplier

Haze=.95
 Straw=.90
 Wheat=.90

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Luminaire
0-30	1594	33.2	40.9
0-40	2528	52.7	64.9
0-60	3873	80.7	99.5
0-90	3893	81.1	100.0
90-180	0	0.0	0.0
0-180	3893	81.1	100.0

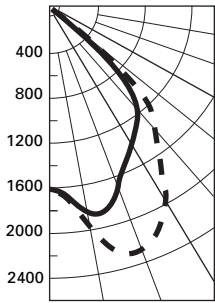
Coefficient of Utilization

rc	80%				70%				50%				30%				10%				0%			
	70	50	30	10	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10			
RCR																								
0	97	97	97	97	94	94	94	90	90	86	86	83	83	81	81	81	81	81	81	81	81	81		
1	91	89	87	85	87	85	83	84	81	91	78	78	76	74	74	74	74	74	74	74	74	74		
2	86	82	78	75	80	77	74	78	73	75	71	73	70	68	68	68	68	68	68	68	68	68		
3	81	75	71	67	74	70	66	72	65	70	64	68	63	62	62	62	62	62	62	62	62	62		
4	76	69	64	60	68	63	60	66	59	65	58	63	58	56	56	56	56	56	56	56	56	56		
5	71	63	58	54	63	57	54	61	53	60	53	58	52	51	51	51	51	51	51	51	51	51		
6	66	58	52	48	57	52	48	56	48	55	47	53	47	46	46	46	46	46	46	46	46	46		
7	61	52	47	43	52	46	42	51	42	50	42	49	42	41	41	41	41	41	41	41	41	41		
8	57	48	42	38	47	42	38	46	38	45	38	45	37	36	36	36	36	36	36	36	36	36		
9	53	43	38	34	43	37	34	42	34	41	33	41	33	32	32	32	32	32	32	32	32	32		
10	49	40	34	30	39	34	30	39	30	38	30	37	30	29	29	29	29	29	29	29	29	29		

rc=Ceiling reflectance, rw=Wall reflectance, RCR=Room cavity ratio

CU Data Based on 20% Effective Floor Cavity Reflectance.

Candlepower Distribution



Test No. H40013
C19232-9210LI
Wall Wash/ Downlight
 Lamp=(2) 32W PLT
 Lumens=2400 each
 Efficiency=82.0%

— 0°
 - - - 180°

Candlepower

Deg.	0° Wall	180° Dwnlt
0	1622	1622
5	1637	1702
15	1910	2154
25	1668	2199
35	1467	1693
45	1156	1296
55	617	748
65	359	12
75	193	4
85	48	1
90	0	0

Average Luminance CD/SQ M

Deg.	0° Wall	180° Dwnlt
45	36736	40064
55	23514	28507
65	18569	621
75	16300	338
85	12039	251

Single Fixture 2'6" From Wall

DD	Distance From Fixture Along Wall					
	1'	2'	3'	4'	5'	6'
1	38	28	13	5	2	1
2	63	46	22	9	4	2
3	56	46	28	14	6	2
4	36	33	23	14	8	4
5	23	22	18	12	8	5
6	16	15	13	10	7	5
7	11	11	10	8	6	4
8	8	8	7	6	5	3
9	6	6	5	5	4	3
10	4	4	4	4	3	2

2'6" Distance From Wall

DD	Spacing Between Fixtures					
	3'			4'		
1	48	41	48	42	26	42
2	82	71	82	71	45	71
3	86	81	86	68	59	68
4	66	69	66	53	50	53
5	50	53	50	40	41	40
6	38	39	38	30	32	30
7	29	30	29	24	25	24
8	23	23	23	19	19	19
9	17	18	17	15	15	15
10	14	14	14	12	12	12

3' Distance From Wall

DD	Spacing Between Fixtures					
	3'			4'		
1	32	31	32	26	21	26
2	56	55	56	45	38	45
3	73	71	73	57	51	57
4	65	65	65	51	48	51
5	50	54	50	41	41	41
6	40	41	40	32	34	32
7	32	32	32	26	27	26
8	25	25	25	21	21	21
9	20	20	20	17	17	17
10	16	16	15	14	14	14

4' Distance From Wall

DD	Spacing Between Fixtures					
	4'			6'		
1	14	13	14	11	7	11
2	26	25	26	20	14	20
3	34	33	34	27	19	27
4	41	40	41	30	24	30
5	38	38	38	28	35	28
6	32	34	32	23	22	23
7	27	28	27	20	20	20
8	22	23	22	16	17	16
9	19	19	19	14	15	14
10	16	16	16	12	12	12



MINI LED DOWNLIGHT

MD1L RECESSED HOUSING AND TRIM LOW VOLTAGE

Project: _____

Fixture Type: _____

Location: _____

Contact/Phone: _____

PRODUCT DESCRIPTION

The Mini LED recessed downlight is IC rated for insulated or non-insulated applications • Sleek, compact form factor provides direct accent lighting with low glare optic system that approximates the light output and distribution of 20W halogen lamps • Ideal for both residential and commercial limited space applications including niches, bookshelves, displays and cabinets • Remote mount Class 2 120V to 12V AC electronic or magnetic driver/transformer required • Designed to provide 50,000 hours of life • 5 year limited warranty on LED components.

ENVIRONMENTALLY FRIENDLY, ENERGY EFFICIENT

- No harmful ultraviolet or infrared wavelengths
- No lead or mercury
- Comparable light output to 20W MR11 halogen lamps while consuming 5W



PRODUCT SPECIFICATIONS

LED Light Engine Lumileds LUXEON® Rebel LEDs provide outstanding reliability, performance and color quality/consistency • 2700K, 3000K, 3500K or 4100K color temperatures available • 85 CRI typical.

Optical System Fixtures are offered with a choice of spot (16°), narrow flood (24°) or flood (35°) beam patterns • LED source concealed with lensed optic is deeply recessed into an internal reflector to produce a low glare system • Reflectors finished to match trim ring color for uniform appearance • Field replacement of optical lenses is NOT recommended.

LED Driver/Transformer Onboard fixture LED driver operates at less than 5 watts input at 12-volts AC • Requires remote mount Class 2, 120V to 12V AC electronic or magnetic driver/transformer for operation • Juno's TL602E electronic driver/transformer is designed specifically for use with these fixtures • Consult factory for Class 2 magnetic transformer options.

Dimming May be dimmed with dimmers tested and qualified by Juno for use with TL602E – see driver/transformer specifications for compatible dimmers • Color temperature remains constant over dimming range • Consult factory for additional information.

Life Rated for 50,000 hours at 70% lumen maintenance.

Labels UL Listed for indoor damp locations and daisy chaining • Union made AFL-CIO • UL and cUL listed • RoHS compliant.

Testing All reports are based on published industry procedures; field performance may differ from laboratory performance.

Product specifications subject to change without notice.

HOUSING FEATURES

Housing Designed for use in IC (insulated ceiling) or non-IC construction • Die cast aluminum housing.

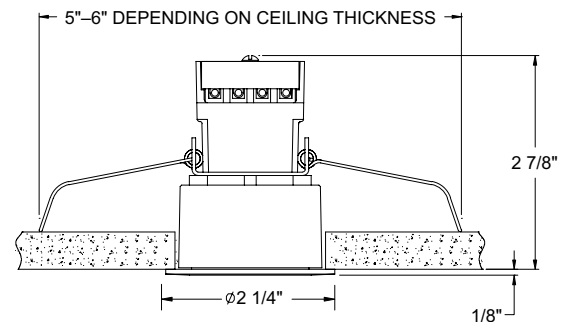
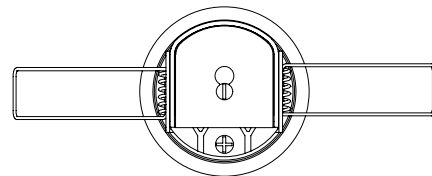
Wiring Compartment Provided with removable access plate • Four pole terminal block allows for quick, secure connection • UL/cUL listed for daisy chaining • Easy to wire with commonly available low voltage cable (Type CL2 or NEC equivalent, 18-12 AWG). Consult local codes for compliant wiring methods.

Mounting Tempered spring steel torsion clips are provided fully assembled to housing • Springs allow for fast, secure installation or removal in mounting surfaces from 1/8" to 1" thick material • 2" Cutout dimension corresponds to common hole saw size.

LUXEON is a registered trademark of the Philips Lumileds Lighting Company



DIMENSIONS



2" CUTOUT

ELECTRICAL DATA

Input Voltage	12VAC
Input Power	4.8W
Input Current - Max	0.42A
Frequency	Varies with Transformer

ORDERING INFORMATION:

Example: **MD1L41K-NFL-SN**

Fixture		Optic		Finish	
Catalog No.	Color Temp.				
MD1L	27K 2700K 3K 3000K 35K 3500K 41K 4100K	SP Spot NFL Narrow Flood FL Flood		WH White BL Black SN Satin Nickel BZ Bronze	

Electronic Transformer

Catalog Number	Finish	Description
TL602E-60-WH	White	60W 12V AC Electronic Driver/Transformer



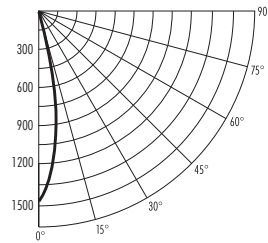
MINI LED DOWNLIGHT

MD1L RECESSED HOUSING AND TRIM

LOW VOLTAGE

PHOTOMETRIC REPORT

Test Report #: PT10102802
 Catalog No: MD1L35K-SP-WH
 Luminaire Spacing Criterion: 0.28
 Luminaire LPW: 38.6



CANDLEPOWER DISTRIBUTION (Candelas)

Degrees Vertical	0°
0	1453
5	1086
15	211
25	52
35	11
45	4
55	0
65	0
75	0
85	0
90	0

Multiplier: 27K - 0.92
 3K - 0.96
 41K - 1.06

AVERAGE INITIAL FOOTCANDLES

Multiple Units (Square Array, 60'x60' room)
 Ceiling 80% Wall 50% Floor 20%

Spacing	RCR1	RCR3	RCR5
4.0'	14	13	12
5.0'	9	8	7
6.0'	6	6	5
7.0'	5	5	4
8.0'	4	4	3
9.0'	3	3	3
10.0'	2	2	2

INITIAL FOOTCANDLES (One Unit, 5W, 15.7° Beam)

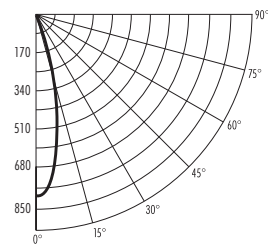
Distance to Illuminated Plane (Feet)	Footcandles Beam Center	Beam Diameter
4	90.8	1.1'
6	40.4	1.7'
8	22.7	2.2'
10	14.5	2.8'

LUMINANCE (Average cd/m²)

Degrees	Average 0° Luminance
45	6377
55	0
65	0
75	0
85	0

PHOTOMETRIC REPORT

Test Report #: LTL21544
 Catalog No: MD1L35K-NFL-WH
 Luminaire Spacing Criterion: 0.40
 Luminaire LPW: 38.2



CANDLEPOWER DISTRIBUTION (Candelas)

Degrees Vertical	0°
0	803
5	701
15	277
25	74
35	19
45	5
55	2
65	0
75	0
85	0
90	0

Multiplier: 27K - 0.92
 3K - 0.96
 41K - 1.06

AVERAGE INITIAL FOOTCANDLES

Multiple Units (Square Array, 60'x60' room)
 Ceiling 80% Wall 50% Floor 20%

Spacing	RCR1	RCR3	RCR5
4.0'	13	12	11
5.0'	9	8	7
6.0'	6	5	5
7.0'	5	4	4
8.0'	4	4	3
9.0'	3	3	2
10.0'	2	2	2

INITIAL FOOTCANDLES (One Unit, 5W, 23.6° Beam)

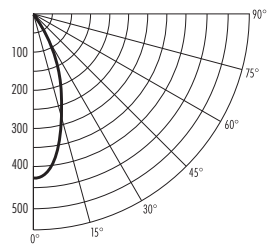
Distance to Illuminated Plane (Feet)	Footcandles Beam Center	Beam Diameter
4	50.2	1.7'
6	22.3	2.5'
8	12.5	3.3'
10	8.0	4.2'

LUMINANCE (Average cd/m²)

Degrees	Average 0° Luminance
45	6171
55	3215
65	0
75	0
85	0

PHOTOMETRIC REPORT

Test Report #: PT10102803
 Catalog No: MD1L35K-FL-WH
 Luminaire Spacing Criterion: 0.56
 Luminaire LPW: 37.2



CANDLEPOWER DISTRIBUTION (Candelas)

Degrees Vertical	0°
0	424
5	403
15	240
25	104
35	28
45	9
55	4
65	2
75	0
85	0
90	0

Multiplier: 27K - 0.92
 3K - 0.96
 41K - 1.06

AVERAGE INITIAL FOOTCANDLES

Multiple Units (Square Array, 60'x60' room)
 Ceiling 80% Wall 50% Floor 20%

Spacing	RCR1	RCR3	RCR5
4.0'	13	12	11
5.0'	8	8	7
6.0'	6	5	5
7.0'	5	4	4
8.0'	4	3	3
9.0'	3	3	2
10.0'	2	2	2

INITIAL FOOTCANDLES (One Unit, 5W, 34.9° Beam)

Distance to Illuminated Plane (Feet)	Footcandles Beam Center	Beam Diameter
4	26.5	2.5'
6	11.8	3.8'
8	6.6	5.0'
10	4.2	6.3'

LUMINANCE (Average cd/m²)

Degrees	Average 0° Luminance
45	16739
55	7738
65	7000
75	0
85	0

Fixtures tested to IES recommended standard for solid state lighting per LM-79-08. Photometric performance on a single unit at 12VAC in a 25°C ambient represents a baseline of performance for the fixture. Results may vary in the field and when multiple fixtures are used in a system.





covelight™ 26



features

Low profile indirect luminaire designed for concealed cove applications.

Luminaires are provided with quick connect thru-wire harness for easy installation in continuous runs.

Luminaire housing length designed around specified lamp length to minimize socket shadow.

Continuous run lengths may be configured with combinations of luminaire lengths up to 8'.

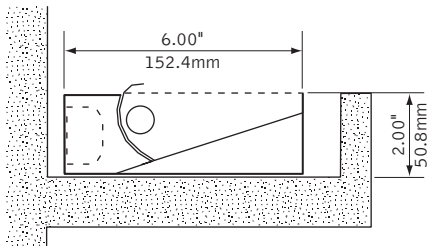
Covelight™ provides pleasing and even illumination that highlights architectural details.

details



thru-wire harness

dimensional data



lamping options



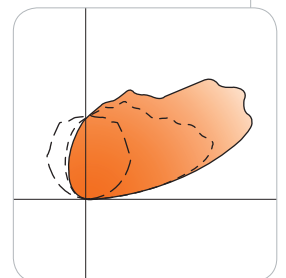
T8 LAMPS



T5/T5HO LAMPS

performance

1-Lamp T5HO
76.6% Efficiency
3843 cd @ 125°



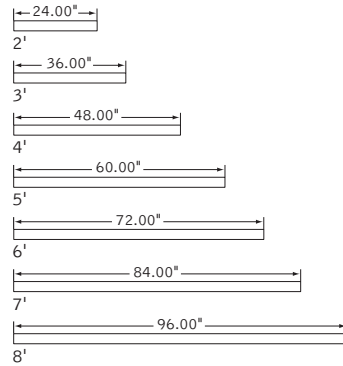
Visit focalpointlights.com for complete photometric data.

fixture:
project:

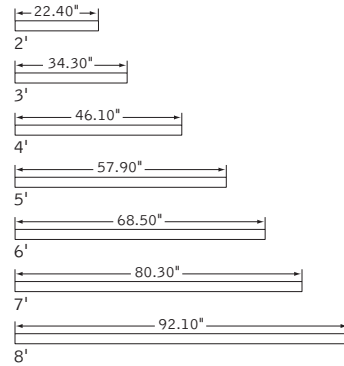
details

fixture lengths

t8



t5/t5ho



specifications

construction

One-piece 20 Ga. housing.
20 Ga. steel socket bridges and galvanized end caps.
Luminaires are available up to 8' nominal lengths.
T5 and T5HO luminaires are shorter due to lamp length.

4' unit weight: 7 lbs
8' unit weight: 14 lbs

optic

Reflector fabricated of low iridescent, semi specular premium grade aluminum.

electrical

Luminaires are pre-wired with factory installed branch circuit wiring and over-molded quick connects.
Electronic ballasts are thermally protected and have a Class "P" rating.
Consult factory for dimming specifications and availability.
UL and cUL listed.

finish

Polyester powder coat applied over a 5-stage pre-treatment.
Standard luminaire housing finished in High Reflectance White.

ordering

luminaire series	
Covelight T5/T5HO	FCVM
Covelight T8	FCVA

profile	26
2" x 6"	26

lamping

One Lamp T8 (FCVA only)	1T8
One Lamp T5	1T5
One Lamp T5HO	1T5HO
Two Lamp T5	2T5
Two Lamp T5HO	2T5HO

(T5 units supplied to match lamp length
See Luminaire Lengths chart for more information)

circuit

Single Circuit	1C
Dual Circuit (Two lamps only)	2C

voltage

120 Volt	120
277 Volt	277
347 Volt	347

ballast

Electronic Instant Start <20% THD (T8 Only)	E
Electronic Program Start <10% THD	S
Electronic Dimming Ballast*	D

mounting

Cove	CV
------	----

factory options

Emergency Circuit*	EC
Emergency Battery Pack*	EM
HLR/GLR Fuse	FU
Include 3000K Lamp	L830
Include 3500K Lamp	L835
Include 4100K Lamp	L841

finish

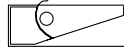
High Reflectance White	HW
------------------------	----

luminaire length

Designate length in feet (Nominal lengths: 2', 3', 4', 5', 6', 7', 8')	XX'
--	-----

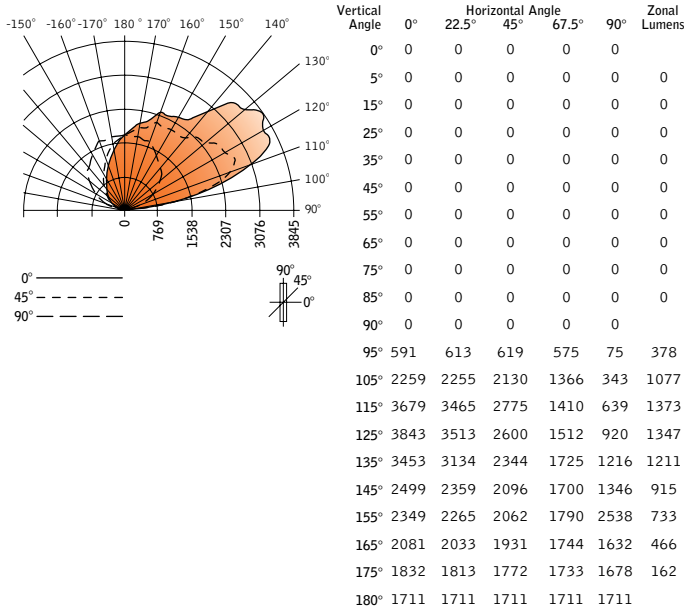
* for more information see Reference section.

covelight™ 26



Filename: FCVM261T5H.IES
 Catalog #: FCV-26-1T5H0-1C-120-E-CV-HW-4'
 Efficiency: 82.5%
 Test #: 12554.0

CANDLEPOWER DISTRIBUTION



LUMEN SUMMARY

Zone	Lumens	% Lamp	% Fixt	
90°-120°	2828	28.3	36.9	
90°-130°	4175	41.7	54.5	
90°-150°	6300	63.0	82.2	
Total	90°-180°	76.6	100.0	
Luminaire	0°-180°	7661	76.6	100.0

Go to www.focalpointlights.com for additional photometric data.

covelight standard run length

Continuous Runs consist of standard fixture lengths. Some fixtures may exceed nominal length consult individual cut sheets for details.

Example: 31' run = three 8' fixtures and one 7' fixture.

nominal run length (in feet)	standard fixture lengths required	lamp sizes	nominal run length (in feet)	standard fixture lengths required	lamp sizes
2	2	2	32	8 8 8 8	4 4 4 4 4 4 4 4
3	3	3	33	8 8 8 6 3	4 4 4 4 4 4 3 3 3
4	4	4	34	8 8 8 6 4	4 4 4 4 4 4 4 3 3
5	5	5	35	8 8 8 8 3	4 4 4 4 4 4 4 4 3
6	6	3 3	36	8 8 8 8 4	4 4 4 4 4 4 4 4 4
7	7	4 3	37	8 8 8 6 7	4 4 4 4 4 4 4 3 3 3
8	8	4 4	38	8 8 8 8 6	4 4 4 4 4 4 4 4 3 3
9	6 3	3 3 3	39	8 8 8 8 7	4 4 4 4 4 4 4 4 4 3
10	6 4	3 3 4	40	8 8 8 8 8	4 4 4 4 4 4 4 4 4 4
11	8 3	4 4 3	41	8 8 8 8 6 3	4 4 4 4 4 4 4 4 3 3 3
12	8 4	4 4 4	42	8 8 8 8 6 4	4 4 4 4 4 4 4 4 4 3 3
13	7 6	4 3 3 3	43	8 8 8 8 8 3	4 4 4 4 4 4 4 4 4 4 3
14	8 6	4 4 3 3	44	8 8 8 8 8 4	4 4 4 4 4 4 4 4 4 4 4
15	8 7	4 4 4 3	45	8 8 8 8 7 6	4 4 4 4 4 4 4 4 4 3 3 3
16	8 8	4 4 4 4	46	8 8 8 8 8 6	4 4 4 4 4 4 4 4 4 4 3 3
17	8 6 3	4 4 3 3 3	47	8 8 8 8 8 7	4 4 4 4 4 4 4 4 4 4 4 3
18	8 6 4	4 4 4 3 3	48	8 8 8 8 8 8	4 4 4 4 4 4 4 4 4 4 4 4
19	8 8 3	4 4 4 4 3	49	8 8 8 8 8 6 3	4 4 4 4 4 4 4 4 4 4 3 3 3
20	8 8 4	4 4 4 4 4	50	8 8 8 8 8 7 3	4 4 4 4 4 4 4 4 4 4 4 3 3
21	8 7 6	4 4 4 3 3 3			
22	8 8 6	4 4 4 4 3 3			
23	8 8 7	4 4 4 4 4 3			
24	8 8 8	4 4 4 4 4 4			
25	8 8 6 3	4 4 4 4 3 3 3			
26	8 8 6 4	4 4 4 4 4 3 3			
27	8 8 8 3	4 4 4 4 4 4 3			
28	8 8 8 4	4 4 4 4 4 4 4			
29	8 8 7 6	4 4 4 4 4 3 3 3			
30	8 8 8 6	4 4 4 4 4 4 3 3			
31	8 8 8 7	4 4 4 4 4 4 4 3			

6.75" x 6.75" – downlight

id®



CFL



Patent Pending

features

Overlap trim features:

- One piece die-cast construction creates seamless integration with reflector eliminating mitered corners.
- Die-cast flange maintains tight fit of reflector corners.
- **SmartLock™** clip allows for quick removal and re-assembly of trim components for field painting.

Centered optics achieved with **CenterLock™** die-cast socket cup which locates and locks 26, 32 and 42 watt lamp in center of aperture.

LampAlign™ allows installation of upper reflector in any direction regardless of housing direction. Lamps are aligned for consistent appearance and light distribution.

Reflector design eliminates tabs in corners for a seamless, no light leaks look.

1" tall housing collar rotates up to 90°.

25-degree cut-off to lamp and its image.

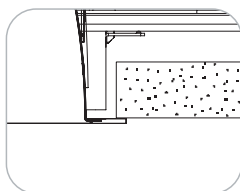
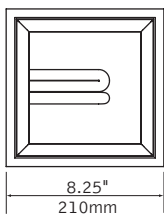
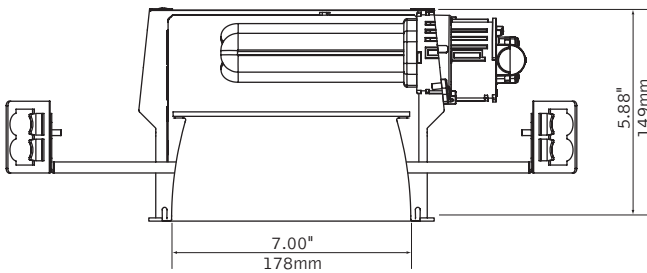
Companion 57W luminaire available.

lens option



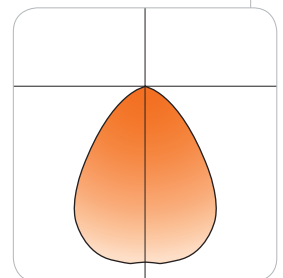
MicroGlow

dimensional data



performance

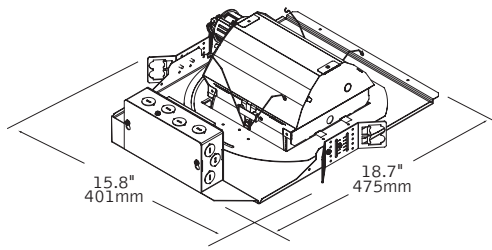
1-Lamp 32W Triple Tube
 Downlight Optic, Clear Diffuse
 56% Efficiency
 771 cd @ 5°



Visit focalpointlights.com for complete photometric data.

fixture:
project:

details



specifications

housing

Frame features up to 90-degree locking adjustment of aperture after installation for parallel alignment to walls or adjacent fixtures.

Frame may be installed into ceiling thicknesses up to 1". For thicker ceiling consult factory.

Flex conduit with screw tight fittings mechanically fasten to CenterLock™ socket cup. CenterLock™ provides proper venting for lamps.

Butterfly brackets allow mounting to ½ emt. Order bar hangers as an accessory. Galvanized steel frame includes large Junction box 7" x 3.5" with (10) ½" pry outs. UL listed for through branch wiring, four #12 90°C conductors.

upper reflector

Multi-faceted steel upper reflector mounts to steel end caps and is finished in High Reflectance White. Adjustable socket cup allows 18, 26, 32 and 42W lamps to be centered in the optic to maintain optimal performance.

trim

Lower reflector provides 25-degree cut off to lamp and lamp image.

Parabolic aluminum reflector fastens to die-cast trim flange.

Trim attaches to upper reflector via torsion springs.

Consult factory for custom reflector finishes.

Upper reflector and lower reflector ship separately from housing frame to avoid construction abuse.

Optional .125" thick MicroGlow™ micro prism lens provides lamp obscuration.

electrical

Luminaires are pre-wired for single circuit with thermally protected Class "P" program start <10% THD electronic ballast.

Consult factory for dimming specifications and availability.

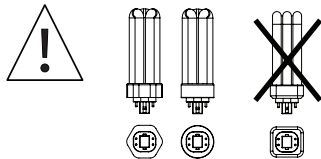
UL Listed.

Integral emergency battery test switch and indicator light in optic.

Emergency Battery not available with Chicago Plenum.

Rotary lock socket allows for easy lamp removal and reduces lamp breakage.

One lamp triple tube compact fluorescent, 4-pin, 18W-(GX24q-2), 26W/32W/42W-(GX24q-3/4).



finish

Trim flange finished in polyester powder coat over a 5-stage pre-treatment.

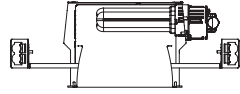
housing ordering

housing series	FC66
ID CFL Square Housing	FC66
lamp	
26W Triple Tube, GX24q-3/4 (Includes wattage restriction label)	26TT
32W Triple Tube, GX24q-3/4	32TT
42W Triple Tube, GX24q-3/4	42TT
ballast	
Electronic Program Start <10% THD	S
Electronic Dimming Ballast*	D
voltage	
120V	120
277V	277
347V	347
faceplate type	S0
Square Overlap	S0
housing type	T
Thermally Protected, Non-IC	T
factory options	
Chicago Plenum	CP
Emergency Battery Pack* (Not available with Chicago Plenum)	EM
HLR/GLR Fuse	FU
Include 3000K Lamp	L830
Include 3500K Lamp	L835
Include 4100K Lamp	L841
trim ordering	
trim aperture	D66
6.75" Square Aperture	D66
faceplate type	S0
Square Overlap	S0
optic	
Downlight	DN
Regress MicroGlow Lens	RLMG
color	
Clear Diffuse	CD
Warm Diffuse	WD
Silver Talc Diffuse	TD
flange finish	
White	WH
Black	BK
Titanium Silver	TS
Aluminum Raw	AL

a complete unit consists of two line items, housing and trim
example: FC66-32TT-S-120-S0-T
D66-S0-DN-CD-WH

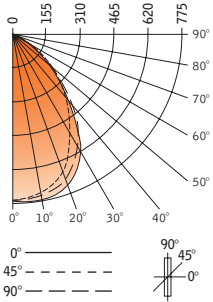
* for more information see Reference section.

6.75x6.75—downlight
id®



Filename: D66DNCD32TT.IES
Catalog #: FC66-32TT-S-120-SO-T, D66-SO-DN-CD-WH
Efficiency: 56%
Photometric Report #: 15400.0

CANDLEPOWER DISTRIBUTION



Vertical Angle	Horizontal Angle				Zonal Lumens
	0°	22.5°	45°	67.5°	
0°	763	763	763	763	763
5°	754	755	760	764	771
15°	710	717	735	750	760
25°	602	624	660	676	684
35°	434	472	514	515	500
45°	271	291	291	278	271
55°	155	147	131	145	158
65°	70	60	57	70	77
75°	30	23	21	27	31
85°	5	5	5	6	6
90°	0	0	0	0	0

Spacing Criteria
End: 1.1
Cross: 1.2

LUMEN SUMMARY

Zone	Lumens	% Lamp	% Fixt
0°-30°	582	24.2	43.5
0°-40°	891	37.1	66.6
0°-60°	1241	51.7	92.7
0°-90°	1338	55.8	100.0
Total Luminaire	1338	55.8	100.0

LUMINANCE DATA (CD/M²)

Vertical Angle	0°	45°	90°
45°	12938	14179	12938
55°	9123	7710	9299
65°	5592	4553	6151
75°	3913	2739	4043
85°	1397	1937	2324

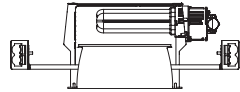
CO-EFFICIENTS OF UTILIZATION

Floor	80			70			20			50			30			10			00		
Ceiling	70	50	30	10	70	50	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10
RCR 0	66	66	66	66	65	65	65	62	62	59	59	57	57	57	57	57	57	57	57	57	57
1	62	61	59	57	61	59	56	57	55	55	53	53	51	51	50	50	50	50	50	50	50
2	58	55	52	50	57	54	49	52	48	51	47	49	46	45	45	45	45	45	45	45	45
3	55	50	47	44	53	49	44	48	43	46	42	45	42	41	41	41	41	41	41	41	41
4	51	46	42	39	50	45	39	44	38	43	38	41	37	36	36	36	36	36	36	36	36
5	47	42	38	35	46	41	34	40	34	39	34	38	33	32	32	32	32	32	32	32	32
6	44	38	34	31	43	38	31	37	31	36	30	35	30	29	29	29	29	29	29	29	29
7	41	35	31	28	40	34	28	34	28	33	27	32	27	26	26	26	26	26	26	26	26
8	38	32	28	25	37	31	25	31	25	30	24	29	24	23	23	23	23	23	23	23	23
9	35	29	25	22	35	28	22	28	22	27	22	27	22	21	21	21	21	21	21	21	21
10	33	26	22	20	32	26	20	26	20	25	19	25	19	19	19	19	19	19	19	19	19

Go to www.focalpointlights.com for additional photometric data.

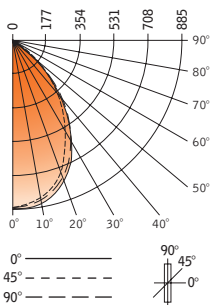
Numbers indicate percentage values of reflectivity.

6.75x6.75—downlight
id®



Filename: D66RLMGCD32TT.IES
Catalog #: FC66-32TT-S-120-SO-T, D66-SO-RLMG-CD-WH
Efficiency: 54%
Photometric Report #: 15399.0

CANDLEPOWER DISTRIBUTION



Vertical Angle	Horizontal Angle				Zonal Lumens
	0°	22.5°	45°	67.5°	
0°	882	882	882	882	882
5°	875	875	879	881	884
15°	813	816	829	834	839
25°	649	671	697	722	719
35°	459	461	495	506	486
45°	252	251	238	251	257
55°	115	106	95	102	115
65°	52	43	38	42	50
75°	21	16	12	17	20
85°	3	2	1	3	3
90°	0	0	0	0	0

Spacing Criteria
End: 1.0
Cross: 1.1

LUMEN SUMMARY

Zone	Lumens	% Lamp	% Fixt
0°-30°	639	26.7	49.5
0°-40°	943	39.3	73.0
0°-60°	1229	51.2	95.1
0°-90°	1292	53.8	100.0
Total Luminaire	1292	53.8	100.0

LUMINANCE DATA (CD/M²)

Vertical Angle	0°	45°	90°
45°	12031	11363	12270
55°	6768	5591	6768
65°	4154	3035	3994
75°	2739	1565	2609
85°	1162	387	1162

CO-EFFICIENTS OF UTILIZATION

Floor	80			70			20			50			30			10			00		
Ceiling	70	50	30	10	70	50	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10
RCR 0	64	64	64	64	63	63	63	60	60	57	57	55	55	54	54	54	54	54	54	54	54
1	61	59	57	56	59	58	55	56	53	54	52	52	50	49	49	49	49	49	49	49	49
2	57	54	51	49	56	53	49	51	48	50	47	48	46	45	45	45	45	45	45	45	45
3	54	50	46	44	52	49	44	47	43	46	42	45	42	41	41	41	41	41	41	41	41
4	50	45	42	39	49	45	39	44	39	42	38	41	38	37	37	37	37	37	37	37	37
5	47	42	38	35	46	41	35	40	35	39	34	38	34	33	33	33	33	33	33	33	33
6	44	38	35	32	43	38	32	37	32	36	31	36	31	30	30	30	30	30	30	30	30
7	41	35	32	29	40	35	29	34	29	34	29	33	28	28	28	28	28	28	28	28	28
8	38	32	29	26	38	32	26	31	26	31	26	30	26	25	25	25	25	25	25	25	25
9	36	30	26	23	35	29	23	29	23	28	23	28	23	22	22	22	22	22	22	22	22
10	33	27	24	21	33	27	21	26	21	26	21	26	21	20	20	20	20	20	20	20	20

Go to www.focalpointlights.com for additional photometric data.

Numbers indicate percentage values of reflectivity.

TEXTURES
5830-ALDRIC



Fixture Shown
5830-30-SSTM-FQ-120V-OA-LBP-STD

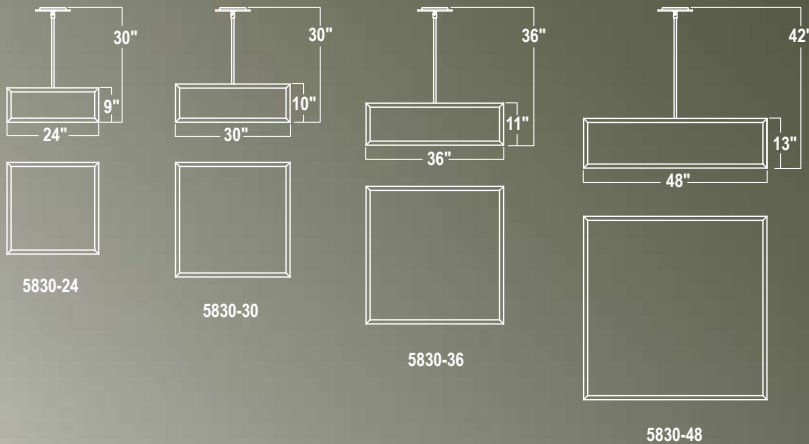


5831 • ceiling mount • page 17

5830-ALDRIC • SPECIFICATIONS

Catalog #: 5830-24 / 5830-30 / 5830-36 / 5830-48

Stem Options:	SSTM-	Single Stem
Lamping:		
5830-24	I- FQ-	(4) 60 watt A-19 Incandescent (4) CFQ26W (G24q-3) Compact Fluorescent
5830-30	I- FQ-	(4) 60 watt A-19 Incandescent (4) CFQ26W (G24q-3) Compact Fluorescent
5830-36	I- FM- FX-	(8) 60 watt A-19 Incandescent (4) CFTR42W (GX24q-4) Compact Fluorescent (8) CFTR42W (GX24q-4) Compact Fluorescent
5830-48	I- FM- FX-	(8) 60 watt A-19 Incandescent (4) CFTR42W (GX24q-4) Compact Fluorescent (8) CFTR42W (GX24q-4) Compact Fluorescent
Voltage:	120V- 277V-	120 Volt (Incandescent 120V only) 277 Volt
Lens:	OA- FAH4- FAH5- FAH6- FAH7- FAH8- FAH9- FAH10-	Opal Acrylic White Vein Faux Alabaster Antique Faux Alabaster Gray Vein Faux Alabaster Beige Vein Faux Alabaster White Faux Linen Beige Faux Linen Antique Faux Linen
Finish:	BAL- LBP-	Brushed Aluminum Light Bronze Paint with Brushed Texture
Special:	STD- MOD-	Standard Modified



Submittal Specification:

SSTM

Catalog # Stem Lamping Voltage Lens Finish Special

DESCRIPTION

7.6" recessed trim with 55° adjustable lamp holder. For use with T4 G8.5 metal halide lamp 20, 39, or 70 watts. Use with Versa housings (CDM6NCMH, CDM6RMMH).

For use in downlighting and accent applications where the need for easily adjustable light placement is required.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

A...Trim

Die cast adjustable downlighting / accent trim with integral reflector. 7.6" o.d. round trim. Lamp holder adjusts 0° to 55° vertically and can be rotated 359°. Vertical adjustment may be locked.

B...Lamp

For use with T4 G8.5 metal halide lamp in 20, 39 or 70 watts . Lamp not included. Socket is pre-wired with quick-connector for connection to Versa housing.

C...Reflector

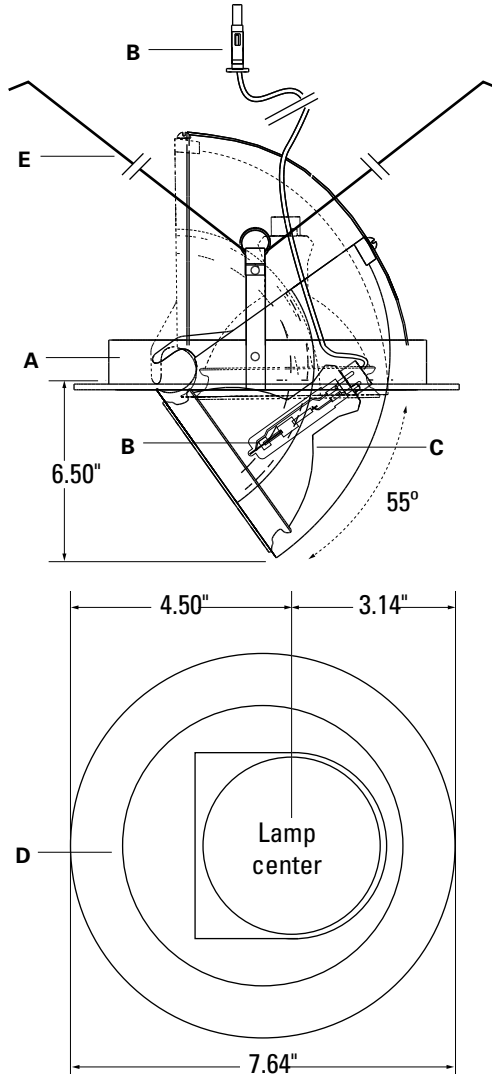
Integral aluminum reflector available in 15° narrow, 23° medium and 32° medium/wide beam spreads. Includes clear protective glass lens.

D...Finish

Trim and components are powder coated in white, black, or industrial silver. Reflector bezel is white with white trim and black in black or silver trims.

E...Installation

Trim is installed in the housing with torsion spring retainers. Retainer length allows the trim to be pulled from the ceiling for maintenance access without completely removing it from the housing.



**VERSA
ADJUSTABLE
TRIM**

**CDMA-T4
7.6" O.D.
Round Trim
55° Vertical Adjust**

For T4 G8.5 Metal Halide
20, 39, or 70 watts

Compatible Housings:

CDM6NCMH

CDM6RMMH



ORDERING INFORMATION

CDMA-T4			
Fixture CDMA-T4 = 7.6" Recessed Trim 55° Vertical Adjustment T4MH lamp	Finish WH = White BK = Black S = Industrial Silver	Reflector 15 = 15° narrow 23 = 23° medium 32 = 32° medium/wide	Lamp Wattage 20 = 20 watts 39 = 39 watts 70 = 70 watts

DESCRIPTION

New construction housing for Versa Metal Halide Adjustable and Accent trims (CDMA-T4, CDMA-P2, CDMC-C1, CDMC-P3).

For new construction applications. Insulation must be kept 3" from all sides and at least 1" above the housing.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

A...Housing

Housing and plaster frame: 18 gauge CRS. Housing is powder coated white. Housing adjusts in plasterframe to accommodate 1/2" to 1-1/4" ceiling thickness. Housing includes slots for trim torsion spring retainers.

B...System Protection:

Thermal protection provided to guard against overheating and misuse of insulation over and around fixture.

C...Electrical

Integral j-box and electronic metal halide ballast. 120V or 277V input. Junction box is U.L. listed for through branch wiring. Includes five 1/2 trade size knockouts.

D...Lamp

Quick-connect wire connector attached to ballast for connection to Versa Metal Halide trims. Trims have quick-connector wired to lamp socket. For use with Metal Halide lamps only.

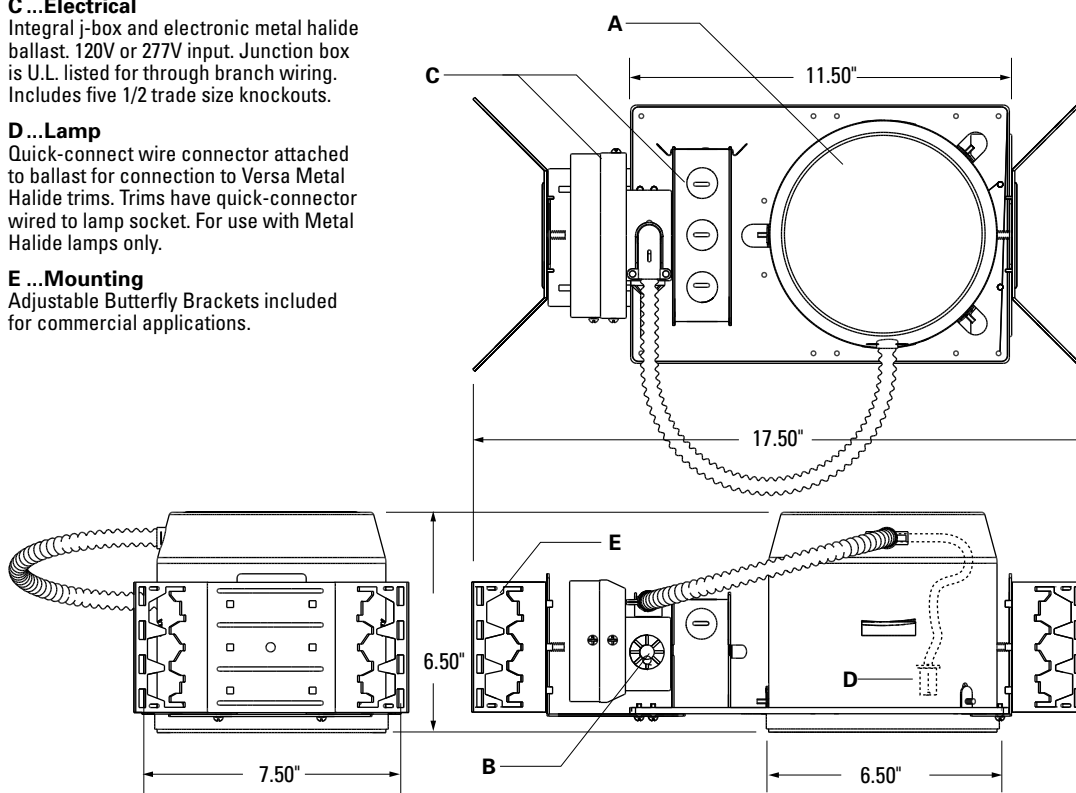
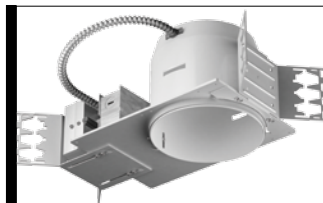
E...Mounting

Adjustable Butterfly Brackets included for commercial applications.

F...Labels

UL Listed, cUL Lited Damp Location

Ceiling Cut-Out: 6.75"



VERSA 6" RECESSED HOUSING

CDM6NCMH New Construction w/ Integral Metal Halide Ballast

For 20W, 39W or 70W
metal halide trims



ORDERING INFORMATION

CDM6NCMH		
Housing CDM6NCMH = Versa 6" New Construction Housing w/ Integral Metal Halide Ballast	Lamp Wattage 20 = 20 watt metal halide 39 = 39 watt metal halide 70 = 70 watt metal halide	Voltage 120 = 120 volts primary 277 = 277 volts primary

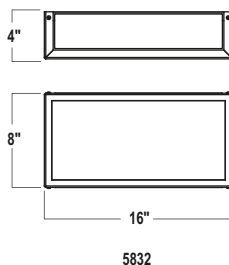
decorative textures

WALL SCONCES

5832 • EVE

SPECIFICATONS

Catalog #:	5832
Lamping: 5832	F - (2) CFQ26W (G24q-3) Compact Fluorescent
Voltage:	120V - 120 Volt 277V - 277 Volt
Lens:	OA - Opal Acrylic FAH4 - White Vein Faux Alabaster FAH5 - Antique Faux Alabaster FAH6 - Gray Vein Faux Alabaster FAH7 - Beige Vein Faux Alabaster FAH8 - White Faux Linen FAH9 - Beige Faux Linen FAH10 - Antique Faux Linen
Finish:	BAL - Brushed Aluminum LBP - Light Bronze Paint with Brushed Texture
Special:	STD - Standard MOD - Modified



Fixture Shown: 5832-F-120V-OA-LBP-STD

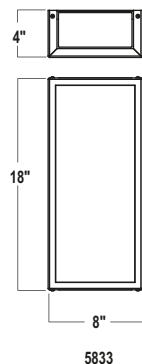
Weight: 5832 F - 7 lbs.

Submittal Specification: 5832 F

Catalog #	Lamping	Voltage	Lens	Finish	Special
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SPECIFICATONS

Catalog #:	5833
Lamping: 5833	F - (1) FT27/24W (2G11) Compact Fluorescent
Voltage:	120V - 120 Volt 277V - 277 Volt
Lens:	OA - Opal Acrylic FAH4 - White Vein Faux Alabaster FAH5 - Antique Faux Alabaster FAH6 - Gray Vein Faux Alabaster FAH7 - Beige Vein Faux Alabaster FAH8 - White Faux Linen FAH9 - Beige Faux Linen FAH10 - Antique Faux Linen
Finish:	BAL - Brushed Aluminum LBP - Light Bronze Paint with Brushed Texture
Special:	STD - Standard MOD - Modified



Fixture Shown: 5833-F-120V-OA-BAL-STD

Weight: 5833 F - 8 lbs.

Submittal Specification: 5833 F

Catalog #	Lamping	Voltage	Lens	Finish	Special
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Date: _____ Type: Fixture S1

Firm Name: _____

Project: _____

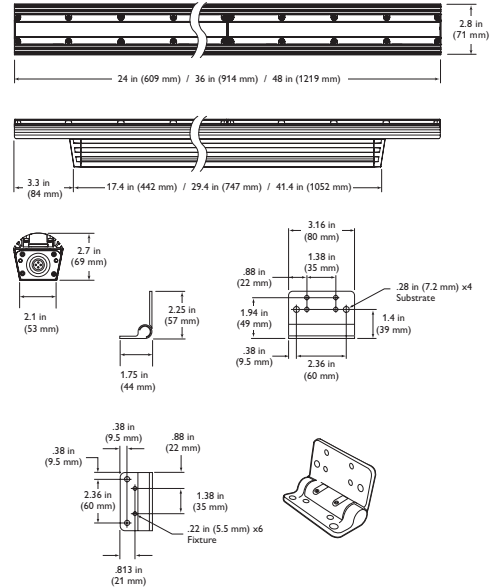
ColorGraze Powercore

10° x 60° beam angle

Linear, color-changing LED surface light for wall washing and grazing

ColorGraze™ Powercore linear LED lights are optimized for surface grazing, wall-wash lighting, and efficient signage illumination. Superior light quality offers uniform beam saturation as close as 6 in (152 mm). A compact, low-profile design combined with flexible mounting options allows for discreet placement within a wide range of architectural features. Intelligent, controllable fixtures are available in standard full-color configurations. Build-to-order configurations with additional beam angles and custom channels of white or color LEDs are also available to support special applications.

- Tailor light output to specific applications — Available in three standard lengths, with standard 10° x 60° and 30° x 60° beam angles. Individually addressable 1 ft (305 mm) segments accommodate fine control of color-changing effects and pre-programmed light shows.
- High-performance illumination and beam quality — Delivers up to 271 lumens of color-changing light per foot. Superior beam quality offers striation-free saturation as close as 6 in (152 mm) from fixture placement with no visible light scalloping between fixtures
- Integrates patented Powercore® technology — Powercore technology rapidly, efficiently, and accurately controls power output to ColorGraze Powercore fixtures directly from line voltage. The Philips Data Enabler Pro merges line voltage and control data and delivers them to the fixture over a single standard cable, dramatically simplifying installation and lowering total system cost.
- Versatile installation options — Constant torque locking hinges offer simple and consistent position control from various angles. The low-profile aluminum housing accommodates placement within most architectural niches.
- Superior color consistency and accuracy — Optibin®, an advanced binning algorithm, exceeds industry standards for chromaticity to ensure superior color consistency and uniformity of LED sources.



- Industry-leading controls — ColorGraze Powercore works seamlessly with the complete line of Philips controllers, including Light System Manager™, iPlayer® 3, and ColorDial™ Pro, as well as third-party controllers.
- Custom configurations for special applications — Standard configurations use three channels of LEDs (Red, Green, and Blue) to produce a full range of RGB colors. You can create custom configurations to support special applications by exchanging the LEDs in any channel. Available LEDs include eight color temperatures ranging from a warm 2700 K to a cool 6500 K, Royal Blue, Blue, Green, Amber, and Red. Additional beam angles (including 9° x 9°, 10° x 30°, and 90° x 60°) are also available. See the ColorGraze Powercore Ordering Information specification sheet for complete details.

For detailed product information, please refer to ColorGraze Powercore Product Guide at www.colorkinetics.com/ls/rgb/colorgraze/



Specifications

Due to continuous improvements and innovations, specifications may change without notice.

Item	Specification	2 ft (610 mm)	3 ft (914 mm)	4 ft (1219 mm)	
Output	Beam Angle	10° x 60°			
	Lumens*	543	815	1086	
	LED Channels	Red / Green / Blue			
	Mixing Distance	6 in (152 mm) to uniform beam saturation			
	Lumen Maintenance†	100,000 hours L50 @ 25° C 90,000 hours L50 @ 50° C			
Electrical	Input Voltage	100 – 240 VAC, auto-switching, 50 / 60 Hz			
	Power Consumption at full output, steady state	35 W maximum	52.5 W maximum	70 W maximum	
Control	Interface	Data Enabler Pro (DMX / Ethernet)			
	Control System	Philips full range of controllers, including Light System Manager, iPlayer 3, and ColorDial Pro, or third-party controllers			
Physical	Dimensions (Height x Width x Depth)	2.7 x 24 x 2.8 in (69 x 610 x 71 mm)	2.7 x 36 x 2.8 in (69 x 914 x 71 mm)	2.7 x 48 x 2.8 in (69 x 1219 x 71 mm)	
	Weight	4.9 lb (2.2 kg)	8.1 lb (3.6 kg)	10.8 lb (4.9 kg)	
	Housing	Extruded anodized aluminum			
	Lens	Clear polycarbonate			
	Fixture Connectors	Integral male / female waterproof connectors			
	Temperature	-40° – 122° F (-40° – 50° C) Operating -4° – 122° F (-20° – 50° C) Startup -40° – 176° F (-40° – 80° C) Storage			
	Humidity	0 – 95%, non-condensing			
	Maximum Fixture Run Lengths‡	37 @ 100 VAC 43 @ 120 VAC 56 @ 220 VAC 56 @ 240 VAC	Configuration: 2 ft (610 mm) fixtures installed end-to-end, 20 A circuit, standard 50 ft (15.2 m) Leader Cable		
	Certification and Safety	Certification	UL / cUL, FCC Class A, CE, PSE, CCC		
		Environment	Dry / Damp / Wet Location, IP66		

* Lumen measurement complies with IES LM-79-08 testing procedures.

† L50 = 50% maintenance of lumen output (when light output drops below 50% of initial output). Ambient temperatures specified. Based on measurements that comply with IES LM-80-08 testing procedures. Refer to www.colorkinetics.com/support/appnotes/lm-80-08.pdf for more information.

‡ These figures, provided as a guideline, are accurate for this configuration only. Changing the configuration can affect the fixture run lengths.



Accessories

Item	Type	Size	Item Number	Philips 12NC
Leader Cable	UL / cUL	50 ft (15.2 m)	108-000042-00	910503700322
	CE / PSE	50 ft (15.2 m)	108-000042-01	910503700323
Jumper Cable	UL / cUL	End-to-End	108-000039-00	910503700314
		1 ft (305 mm)	108-000039-01	910503700315
	CE / PSE	5 ft (1.5 m)	108-000039-02	910503700316
		End-to-End	108-000040-00	910503700317
		1 ft (305 mm)	108-000040-01	910503700318
		5 ft (1.5 m)	108-000040-02	910503700319
Glare Shield		1 ft (305 mm)	120-000081-00	910503700745
		2 ft (610 mm)	120-000081-01	910503700746
		3 ft (914 mm)	120-000081-02	910503700747
		4 ft (1.2 m)	120-000081-03	910503700748
Additional Terminators	Quantity 10	120-000074-00	910503700580	
Additional Hinge	Quantity 1	120-000098-00	910503700772	

Use Item Number when ordering in North America.

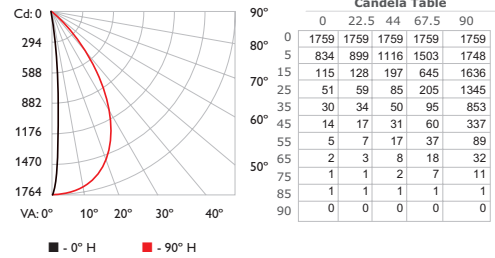


Philips Color Kinetics
3 Burlington Woods Drive
Burlington, Massachusetts 01803 USA
Tel 888.385.5742
Tel 617.423.9999
Fax 617.423.9998
www.philipscolorkinetics.com

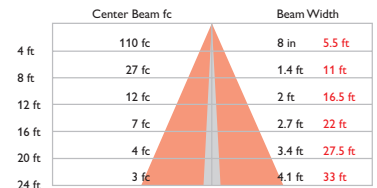
Photometrics

ColorGraze Powercore 2ft, 10° x 60° beam angle

Polar Candela Distribution



Illuminance at Distance



42 ft (12.8 m) 1 fc maximum distance
 Vert. Spread: 9.7°
 Horiz. Spread: 69.0°

LED	Lumens	Efficacy
RGB	543	15.5

For lux multiply fc by 10.7

Fixtures and Data Enabler Pro

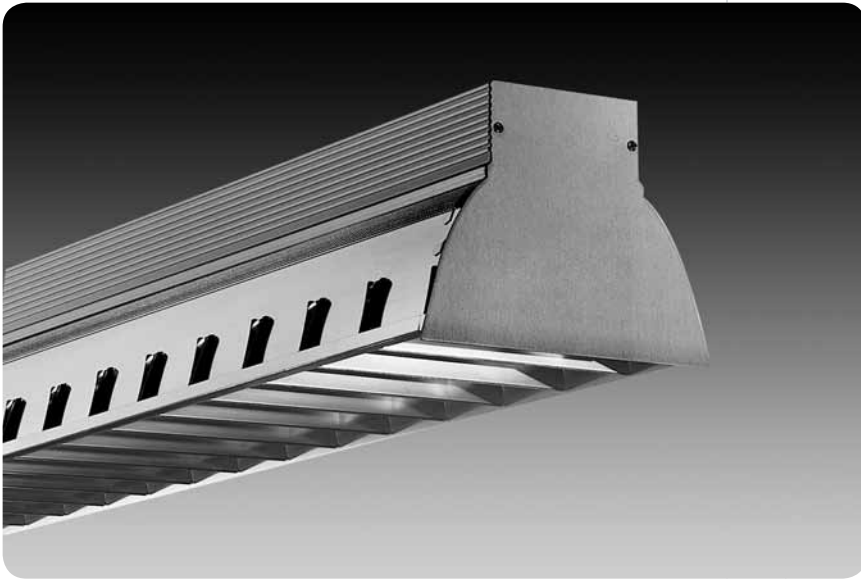
Item	Type	Size	Item Number	Philips 12NC
ColorGraze Powercore	10° x 60° beam angle	2 ft (610 mm)	123-000030-00	910503700308
		3 ft (914 mm)	123-000030-01	910503700309
		4 ft (1219 mm)	123-000030-02	910503700310
		30° x 60° beam angle	2 ft (610 mm)	123-000030-03
3 ft (914 mm)	123-000030-04		910503700312	
4 ft (1219 mm)	123-000030-05		910503700313	
Data Enabler Pro	3/4 in / 1/2 in NPT (US trade size conduit)	PG21 / PG13 (metric size conduit)	106-000004-00	910503701210
		PG21 / PG13 (metric size conduit)	106-000004-01	910503701211

Use Item Number when ordering in North America.

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louver
evolution™



features

Suspended or surface mount linear direct fluorescent with parabolic or cast acrylic louver.

Ribbed aluminum housing creates distinctive aesthetic.

Perforated sides of louver create glow for visual interest.

Visible lamps and sockets create an industrial aesthetic.

shielding options



parabolic louver



acrylic blue louver

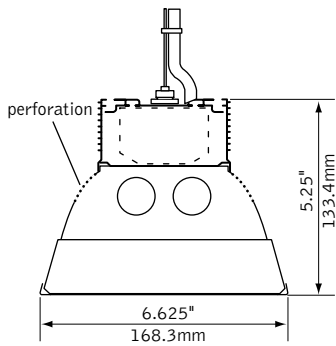


acrylic green louver



acrylic clear louver

dimensional data



lampping options



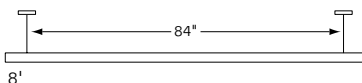
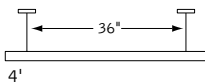
T8 LAMPS



T5/T5HO LAMPS

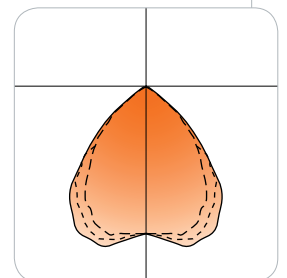


fixture information



performance

Parabolic Louver
2-Lamp T8
62% Efficiency
1865 cd @ 15°

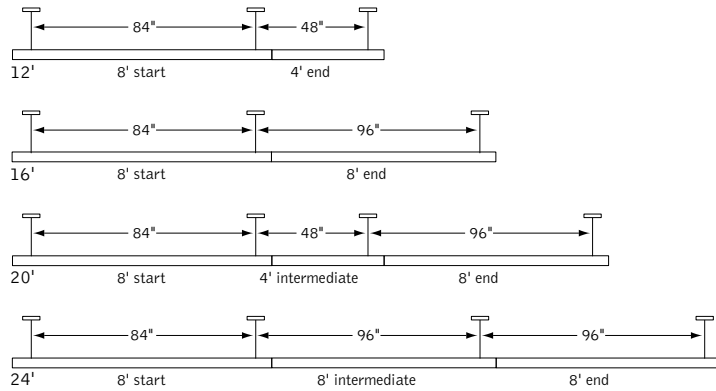


Visit focalpointlights.com for complete photometric data.

fixture:

project:

suspension information



Consult factory for additional row length information.

specifications

construction

One-piece, .090" thick channel housing of 6063-T6 extruded aluminum. 22 Ga. steel ballast cover allows for easy access to ballast. For row installation, die-formed 18 Ga. steel internal coupler mechanically fastens to adjoining luminaires, forming hairline joint. All luminaires are provided with single point aircraft cable suspension.

- 4' unit weight: 13 lbs.
- 8' unit weight: 23 lbs.

optic

Parabolic louver, 1.5"H x 2.5" frequency or acrylic louver blade 1.25"H x 2.5" frequency. Integral die-formed batwing reflector system fabricated of low iridescence, semi-specular .018" aluminum. Louver retained by concealed snap-in spring latches. Round perforation on reflector offers glow for visual interest.

electrical

Luminaires are pre-wired with factory installed branch circuit wiring with over-molded quick connects. Factory installed SJT power cord at feed location is included. Electronic ballasts are thermally protected and have a Class "P" rating. Optional dimming ballasts available. UL and cUL listed.

finish

Polyester powder coat applied over a 5-stage pretreatment. Extruded aluminum channel and steel end caps are painted with powder coat paint finish Titanium Silver. Parabolic louver material is anodized aluminum with semi-specular finish. Louver may not be painted. Canopy finished in Matte Satin White.

ordering

luminaire series Evolution FEVS

shielding
 Parabolic Louver PL
 Acrylic Blue Louver BL
 Acrylic Green Louver GL
 Acrylic Clear Louver CL

lamping
 One Lamp T8 1T8
 One Lamp T5 1T5
 One Lamp T5HO 1T5HO
 Two Lamp T8 2T8
 Two Lamp T5 2T5
 Two Lamp T5HO 2T5HO

circuits
 Single Circuit 1C
 Dual Circuit 2C
 (Multiple lamp luminaires only)

voltage
 120 Volt 120
 277 Volt 277
 347 Volt 347

ballast
 Electronic Instant Start <20% THD (T8 only) E
 Electronic Program Start <10% THD S
 Electronic Dimming Ballast* D

mounting
 24" Cable Suspension C24
 48" Cable Suspension C48
 96" Cable Suspension C96
 (Specify "J" in place of "C" for 5" dia. canopies at power feed and 2" dia canopies at non-feed locations) (Consult factory for sloped ceiling applications)
 Ceiling Surface Mount SM
 Stem Mount S__
 (specify stem length in inches Standard stem lengths 6, 12, 18, 24, 36, 48". White stems and canopies supplied standard. For non-white housings: to match stem and housing color, add M to ordering code (S12M). To match stem, canopy and housing color, add MC to ordering code (S12MC).)

factory options
 Emergency Circuit* EC
 Emergency Battery Pack* EM
 HLR/GLR Fuse FU
 Include 3000K Lamp* L830
 Include 3500K Lamp* L835
 Include 4100K Lamp* L841

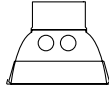
finish TS

luminaire length
 4' Nominal Housing 4'
 8' Nominal Housing 8'
 12' (8'+4') 12'
 16' (8'+8') 16'
 20' (8'+4'+8') 20'
 24' (8'+8'+8') 24'
 (Longer run lengths available; consult factory for availability.)

* for more information see Reference section.

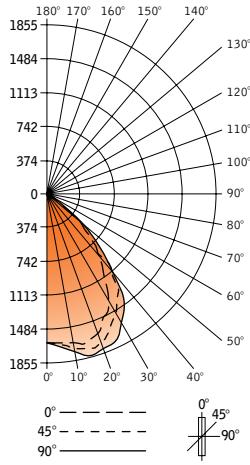
Focal Point LLC | 4141 S. Pulaski Rd, Chicago, IL 60632 | T: 773.247.9494 | F: 773.247.8484 | info@focalpointlights.com | www.focalpointlights.com. Focal Point LLC reserves the right to change specifications for product improvement without notification.

louver
evolution™



Filename: FEVSPL2T8.IES
 Catalog #: FEVS-PL-2T8-1C-120-E-C18-TS-4'
 Efficiency: 62%
 Test #: 8777.0

CANDLEPOWER DISTRIBUTION



Spacing 1.2
 Criterion: 1.4

Vertical Angle	Horizontal Angle				Zonal Lumens
	0°	22.5°	45°	67.5°	
0°	1667	1667	1667	1667	1667
5°	1660	1671	1686	1718	1723
15°	1654	1732	1796	1855	1865
25°	1464	1584	1703	1799	1821
35°	1210	1327	1456	1525	1511
45°	843	953	978	912	829
55°	193	272	357	296	243
65°	33	35	35	50	30
75°	10	10	13	18	20
85°	3	6	11	23	30
90°	0	5	13	30	37
95°	0	3	15	33	44
105°	1	6	22	42	52
115°	7	13	23	35	42
125°	12	16	23	28	33
135°	22	22	25	27	28
145°	38	28	30	30	30
155°	40	30	30	32	30
165°	42	38	34	32	30
175°	40	40	40	38	37
180°	40	40	40	40	40

LUMEN SUMMARY

Zone	Lumens	% Lamp	% Fixt
0°-30°	1446	25.4	41.0
0°-90°	3373	59.2	95.6
90°-130°	89	1.6	2.5
90°-180°	156	2.7	4.4
Total Luminaire	0°-180°		

LUMINANCE DATA (CD/M²)

Vertical Angle	0°	45°
0°	6367	7387
5°	6261	7197
15°	3324	442
25°	268	413
35°	184	674
45°	1838	1838

CO-EFFICIENTS OF UTILIZATION

Floor	80				70				20							
Ceiling	70	50	30	10	70	50	30	10	50	10	50	10	50	10	50	10
Wall	96	96	96	96	86	86	86	86	67	67	50	50	35	35	28	28
1	88	85	81	79	79	76	71	60	57	46	44	32	31	25	25	
2	81	75	70	66	73	68	60	54	49	42	38	30	28	23	23	
3	75	67	61	56	67	61	52	49	43	38	34	28	25	21	21	
4	69	60	53	48	62	54	45	44	37	34	30	25	23	19	19	
5	64	54	47	42	57	49	39	40	33	31	26	23	20	17	17	

Numbers indicate percentage values of

Go to www.focalpointlights.com for additional photometric data.

focus™ 1



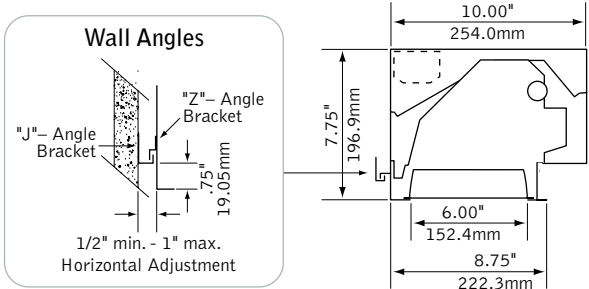
features

Economical perimeter wall washing system.

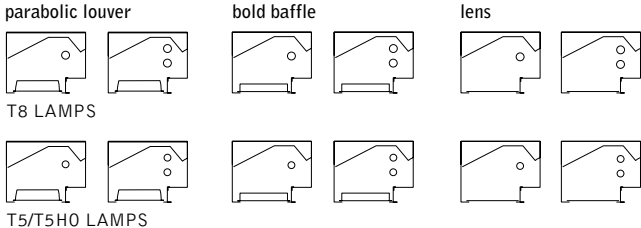
Luminaire alignment is maintained with continuous angle and splice brackets.

Focus™ 1 offers a wide selection of shielding media including parabolic louver, bold baffle, or K19 acrylic lens.

dimensional data



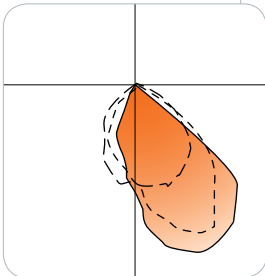
lamping options



august 2010 B

performance

1-Lamp T8
 48% Efficiency
 877cd @ 25°

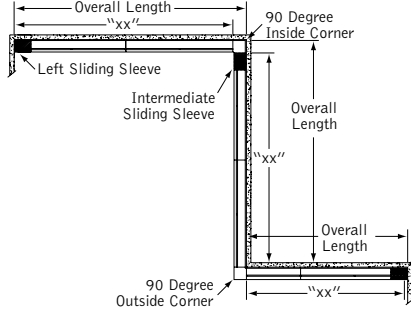


Visit focalpointlights.com for complete photometric data.

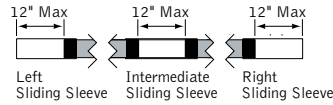
fixture:
project:

details

typical run layout



sliding sleeves



Fractional Dimensions up to 12" are taken up by the use of a sliding sleeve.

"J" and "Z" angle brackets must be cut to length in field.

Luminaires must be installed prior to ceiling.
Start run from corner with any standard luminaire.
Corner to corner runs end with an intermediate sleeve.

specifications

construction

- 20 Ga. steel housing.
- 24 Ga. steel reflector.
- 20 Ga. steel T-rail mates with ceiling.
- 18 Ga. internal bulkheads join luminaires.
- 18 Ga. galvanized steel splice brackets are provided to ensure precise luminaire alignment.
- 20 Ga. steel continuous wall angles are provided to ensure horizontal alignment at wall.
- Luminaires are available up to 8' nominal lengths.

- 4' unit weight: 30 lbs
- 8' unit weight: 50 lbs

optic

- Die-formed 24 Ga. steel reflector finished in High Reflectance White powder coat.
- Parabolic Louver: semi-specular, low iridescence .024" aluminum 1-1/2"H x 2.4" frequency.
- Bold Baffle: .040" aluminum, 1"H x 1" frequency x 3/16" thick louver finished in High Reflectance White powder coat.
- Shielding: clear virgin acrylic lens with K19 diagonal male conical prismatic pattern.
- All shielding options use positive lay-in installation.

electrical

- Electronic ballasts are thermally protected and have a Class "P" rating.
- Optional dimming ballasts available.
- Consult factory for dimming specifications and availability.
- UL and cUL listed.

finish

- Polyester powder coat applied over a 5-stage pre-treatment.
- Standard luminaire housing finished in Matte Satin White.

ordering

luminaire series

Focus 1 FW1

shielding

Parabolic Louver, Semi-Specular PL
Bold Baffle, White BB
K19 Lens K19

lamping

One Lamp T8 1T8
Two Lamp T8 2T8
One Lamp T5 1T5
Two Lamp T5 2T5
One Lamp T5H0 1T5H0
Two Lamp T5H0 2T5H0
Two Lamp Staggered T8 (adds 3" to overall run length) 2LT8

circuit

Single Circuit 1C
Dual Circuit 2C
(Two lamps only)

voltage

120 Volt 120
277 Volt 277
347 Volt 347
(Consult factory for availability)

ballast

Electronic Instant Start <20% THD E
Electronic Program Start <10% THD S
Electronic Dimming Ballast* D

mounting

Recessed RC

factory options

Air Return AR
Emergency Circuit* EC
Emergency Battery Pack* EM
Flanged End FL
(specify when run does not terminate at a wall)
HLR/GLR Fuse FU
Include 3000K Lamp* L830
Include 3500K Lamp* L835
Include 4100K Lamp* L841
Sliding Sleeve SS

finish

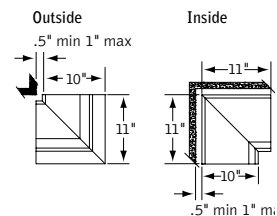
Matte Satin White WH

luminaire length

Designate length in feet XX'
(Nominal lengths: 2', 3', 4', 5', 6', 7', 8')
(All end caps are flat with no flange unless otherwise specified)

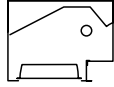
corner options

90-degree Inside Corner FW1-IC90
90-degree Outside Corner FW1-OC90



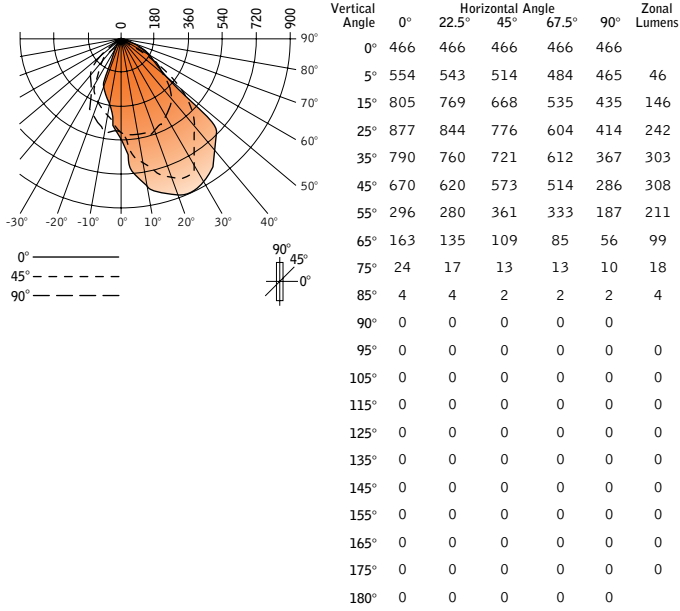
* for more information see Reference section.

focus™ 1



Filename: FW1PL1T8.IES
 Catalog #: FW1-PL-1T8-1C-120-E-RC-HW
 Efficiency: 48%
 Test #: 8759.0

CANDLEPOWER DISTRIBUTION



LUMEN SUMMARY

Zone	Lumens	% Lamp	% Fixt
0°-30°	433	15.2	31.5
0°-40°	736	25.8	53.5
0°-60°	1254	44.0	91.3
0°-90°	1374	48.2	100.0
Total Luminaire	1374	48	100.0

focus standard run length

Continuous Runs consist of standard fixture lengths. Left and Right End Trims and Sliding Sleeves are determinate, according to specific field conditions. Consult factory for details.

Example: 32' run = three 8' fixtures and one 7' fixture with a sliding sleeve expandable to 32'.

run length (in feet)	standard fixture lengths required	lamp sizes	sliding sleeve	run length (in feet)	standard fixture lengths required	lamp sizes	sliding sleeve
4-5	4	4	1	34-35	8 8 8 6 4	4 4 4 4 4 4 4 3 3	1
5-6	5	5	1	35-36	8 8 8 8 3	4 4 4 4 4 4 4 4 3	1
6-7	6	3 3	1	36-37	8 8 8 8 4	4 4 4 4 4 4 4 4 4	1
7-8	7	4 3	1	37-38	8 8 8 6 7	4 4 4 4 4 4 4 3 3 3	1
8-9	8	4 4	1	38-39	8 8 8 8 6	4 4 4 4 4 4 4 4 3 3	1
9-10	6 3	3 3 3	1	39-40	8 8 8 8 7	4 4 4 4 4 4 4 4 4 3	1
10-11	6 4	3 3 4	1	40-41	8 8 8 8 8	4 4 4 4 4 4 4 4 4 4	1
11-12	8 3	4 4 3	1	41-42	8 8 8 8 6 3	4 4 4 4 4 4 4 4 3 3 3	1
12-13	8 4	4 4 4	1	42-43	8 8 8 8 6 4	4 4 4 4 4 4 4 4 4 3 3	1
13-14	7 6	4 3 3 3	1	43-44	8 8 8 8 8 3	4 4 4 4 4 4 4 4 4 4 3	1
14-15	8 6	4 4 3 3	1	44-45	8 8 8 8 8 4	4 4 4 4 4 4 4 4 4 4 4 4	1
15-16	8 7	4 4 4 3	1	45-46	8 8 8 8 7 6	4 4 4 4 4 4 4 4 4 3 3 3	1
16-17	8 8	4 4 4 4	1	46-47	8 8 8 8 8 6	4 4 4 4 4 4 4 4 4 4 3 3	1
17-18	8 6 3	4 4 3 3 3	1	47-48	8 8 8 8 8 7	4 4 4 4 4 4 4 4 4 4 4 3	1
18-19	8 6 4	4 4 4 3 3	1	48-49	8 8 8 8 8 8	4 4 4 4 4 4 4 4 4 4 4 4 4	1
19-20	8 8 3	4 4 4 4 3	1	49-50	8 8 8 8 8 6 3	4 4 4 4 4 4 4 4 4 4 3 3 3	1
20-21	8 8 4	4 4 4 4 4	1	50-51	8 8 8 8 8 7 3	4 4 4 4 4 4 4 4 4 4 4 3 3	1
21-22	8 7 6	4 4 4 3 3 3	1	51-52	8 8 8 8 8 8 3	4 4 4 4 4 4 4 4 4 4 4 4 3	1
22-23	8 8 6	4 4 4 4 3 3	1				
23-24	8 8 7	4 4 4 4 4 3	1				
24-25	8 8 8	4 4 4 4 4 4	1				
25-26	8 8 6 3	4 4 4 4 3 3 3	1				
26-27	8 8 6 4	4 4 4 4 4 3 3	1				
27-28	8 8 8 3	4 4 4 4 4 4 3	1				
28-29	8 8 8 4	4 4 4 4 4 4 4	1				
29-30	8 8 7 6	4 4 4 4 4 3 3 3	1				
30-31	8 8 8 6	4 4 4 4 4 4 3 3	1				
31-32	8 8 8 7	4 4 4 4 4 4 4 3	1				
32-33	8 8 8 8	4 4 4 4 4 4 4 4 4	1				
33-34	8 8 8 6 3	4 4 4 4 4 4 3 3 3	1				

DESCRIPTION

Low brightness 7-3/8" aperture Surface Cylinder for use with a 26W or 32W Triple Twin Tube 4-pin compact fluorescent lamp. Adjustable and locking socket position allows reflectors with different distributions to be used within the same housing for a variety of lighting effects. Standard features include low iridescent finish on all reflectors, electronic ballast and venting to ensure maximum lamp life and lumen output. Optics offer unparalleled performance with glare free downlighting.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

A ... Reflector

Available in a variety of Alzak® finishes. .050 thick aluminum, in a one piece spun macrofocal parabolic contour. Positive reflector mounting pulls trim tight to housing.

B ... Housing

Round seamless aluminum with crisply detailed edges. Choice of finish in white, matte black or bronze. Other finish options available upon request. Installs to canopy via keyhole slots for positive mounting.

C ... Mounting

Mounting canopy installs to recessed junction box (by others). All hardware and brackets are galvanized or plated.

D ... Socket

4-pin GX24q3 base with fatigue free stainless steel lamp spring ensures positive lamp retention. Socket plate adjusts and locks into position without tools to accommodate various reflectors.

E ... Electronic Ballast

Electronic ballast provides full light output and rated lamp life. Provides flicker free and noise free operation and starting.

Labels

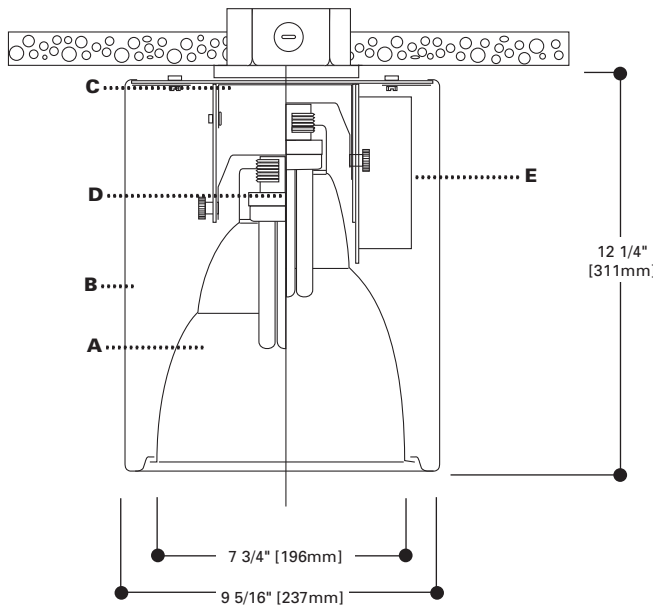
cULus listed, C.S.A. certified, standard damp label, IBEW union made.



C17032
7000/50
7010/20/30

26W, 32W TTT
Compact Fluorescent

7-3/8" SURFACE CYLINDER



Energy Data

26W Triple 4-pin
Ballast: Electronic
120V Input Watts: 29, Line Amps: 0.25
277 Input Watts: 26, Line Amps: 0.09
Power Factor: >.99, THD: <10%
Min. Starting Temp: -10°C (15°F)
Sound Rating: A

32W Triple 4-pin
Ballast: Electronic
120V Input Watts: 34.5, Line Amps: 0.30
277 Input Watts: 34.5, Line Amps: 0.13
Power Factor: >99%, THD: <.10
Min. Starting Temp: -10°C (15°F)
Sound Rating: A

NOTES:

Accessories should be ordered separately. For additional options, please consult your Cooper Lighting Representative. Alzak is a registered trademark of Aluminum Company of America.

ORDERING INFORMATION

Sample Number: Complete unit consists of housing, ballast and trim.

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Housing

C170= 7" Cylinder

Wattage

32= (1) 26W or 32W TTT Lamp

Ballast

E= 120/277V 50/60 Hz Electronic

3E= 347V 50/60 Hz Electronic

1D26= 26W 120V Dimming, Lutron Compact SE

2D26= 26W 277V Dimming, Lutron Compact SE

1D32= 32W 120V Dimming, Lutron Compact SE

2D32= 32W 277V Dimming, Lutron Compact SE

Housing Finish

p= White

BZ= Bronze

MB= Matte Black

Trims

7000= Med Beam Surface Trim

7050= WD Beam Surface Trim

7010= Single WW Surface Trim

7020= Double WW Surface Trim

7030= Corner WW Surface Trim

Finish

LJ= Low Iridescent Clear

H= Haze

WMH= Warm Haze

G= Gold

WH= Wheat

W= Gloss White

GP= Graphite

GPH= Graphite Haze

K= Cognac

KH= Cognac Haze

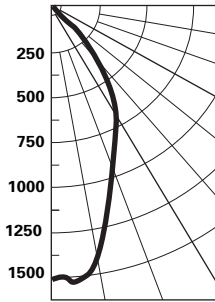
Accessories

C836P= White Pendant Kit for CF Cylinder

C836BZ= Bronze Pendant Kit for CF Cylinder

C836MB= Black Pendant Kit for CF Cylinder

Candlepower Distribution



Test No. H23177
C17032-7000LI
Medium Beam Reflector
 Lamp=32W TTT
 Lumens=2400
 Spacing
 Criterion=0.8
 Efficiency=59.8%

Candlepower

Deg.	CD
0	1511
5	1539
15	1215
25	850
35	585
45	260
55	6
65	0
75	0
85	0
90	0

Average Luminance

Deg.	CD/SQ M
45	13337
55	379
65	0
75	0
85	0

Cone of Light

Distance to Illuminated Plane	Initial Nadir Footcandles	Beam Diameter
5'6"	50	4'6"
6'6"	36	5'6"
8'0"	24	6'6"
10'0"	15	8'0"
12'0"	10	9'6"
14'0"	8	11'0"

Beam diameter is to 50% of maximum footcandles, rounded to the nearest half-foot.

Footcandle values are initial, apply appropriate light loss factors where necessary.

Reflector Multiplier

Haze=.95
 Straw=.9
 Wheat=.9

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Luminaire
0-30	875	36.4	60.9
0-40	1237	31.5	86.1
0-60	1434	59.8	99.9
0-90	1436	59.8	100.0
90-180	0	0.0	0.0
0-180	1436	59.8	100.0

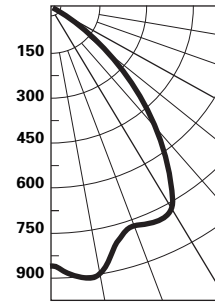
Coefficient of Utilization

rc	80%				70%			50%		30%		10%		0%	
	rw	70	50	30	10	50	30	10	50	10	50	10	50	10	0
RCR															
0		71	71	71	71	70	70	70	66	66	64	64	61	61	60
1		68	67	65	64	65	64	63	63	61	61	59	59	58	57
2		65	63	60	59	62	60	58	60	57	58	56	56	54	53
3		62	59	56	54	58	56	54	57	53	55	52	54	51	50
4		60	55	52	50	55	52	50	54	49	52	49	51	48	47
5		57	52	49	47	52	49	46	51	46	50	46	49	45	44
6		54	49	46	43	49	46	43	48	43	47	43	46	42	42
7		51	46	43	40	46	42	40	45	40	44	40	44	40	39
8		49	43	40	37	43	40	37	42	37	42	37	41	37	36
9		46	40	37	35	40	37	35	39	34	39	34	38	34	33
10		44	38	34	32	38	34	32	37	32	37	32	36	32	31

rc=Ceiling reflectance, rw=Wall reflectance, RCR=Room cavity ratio

CU Data Based on 20% Effective Floor Cavity Reflectance.

Candlepower Distribution



Test No. H23179
C17032-7050
Wide Beam Open Reflector
 Lamp=32W TTT
 Lumens=2400
 Spacing
 Criterion=1.3
 Efficiency=66.8%

Candlepower

Deg.	CD
0	867
5	884
15	821
25	786
35	707
45	457
55	149
65	5
75	0
85	0
90	0

Average Luminance

Deg.	CD/SQ M
45	23421
55	9441
65	429
75	0
85	0

Cone of Light

Distance to Illuminated Plane	Initial Nadir Footcandles	Beam Diameter
5'6"	29	7'0"
6'6"	21	8'6"
8'0"	14	10'6"
10'0"	9	13'0"
12'0"	6	15'6"
14'0"	4	18'6"

Beam diameter is to 50% of maximum footcandles, rounded to the nearest half-foot.

Footcandle values are initial, apply appropriate light loss factors where necessary.

Reflector Multiplier

Haze=.95
 Straw=.9
 Wheat=.9

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Luminaire
0-30	678	28.2	42.3
0-40	1116	46.5	69.7
0-60	1596	66.5	99.6
0-90	1603	66.8	100.0
90-180	0	0.0	0.0
0-180	1603	66.8	100.0

Coefficient of Utilization

rc	80%				70%			50%		30%		10%		0%	
	rw	70	50	30	10	50	30	10	50	10	50	10	50	10	0
RCR															
0		80	80	80	80	78	78	78	74	74	71	71	68	68	67
1		75	73	72	70	72	70	69	69	67	67	65	64	63	62
2		71	68	65	63	67	64	62	65	60	63	59	61	58	57
3		67	63	59	56	62	58	56	60	55	58	54	57	53	52
4		63	58	54	50	57	53	50	55	50	54	49	53	48	47
5		59	53	49	45	52	48	45	51	45	50	44	49	44	43
6		55	49	44	41	48	44	41	47	40	46	40	45	40	39
7		52	44	40	36	44	39	36	43	36	42	36	41	36	35
8		48	41	36	33	40	36	33	39	32	39	32	38	32	31
9		45	37	32	29	37	32	29	36	29	35	29	35	29	28
10		41	34	29	26	33	29	26	32	26	32	26	32	26	25

rc=Ceiling reflectance, rw=Wall reflectance, RCR=Room cavity ratio

CU Data Based on 20% Effective Floor Cavity Reflectance.

4.5" x 4.5" – wall wash

id®



CFL



Patent Pending

features

Overlap trim features:

- One piece die-cast construction creates seamless integration with reflector eliminating mitered corners.
- Die-cast flange maintains tight fit of reflector corners.
- **SmartLock™** clip allows for quick removal and re-assembly of trim components for field painting.

Flush trim features:

- Minimal .225" thick self flanged trim integrates seamlessly into drywall ceilings.
- Flush flange requires no field painting.

Centered optics achieved with **CenterLock™** die-cast socket cup which locates and locks 18, 26 or 32 watt lamp in center of aperture.

LampAlign™ allows installation of upper reflector in any direction regardless of housing direction. Lamps are aligned for consistent appearance and light distribution.

Reflector design eliminates tabs in corners for a seamless look with no light leaks.

1" tall housing collar rotates up to 90° for easy alignment

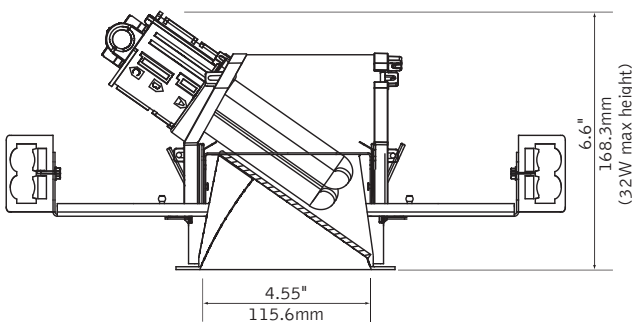
55-degree cut-off to lamp and its image.

lens detail

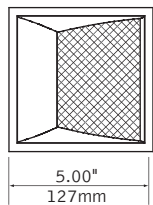


MicroGlow

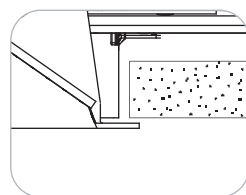
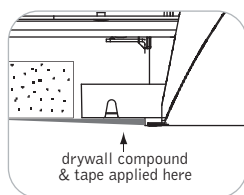
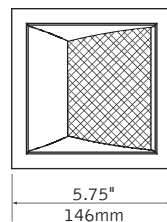
dimensional data



flush trim

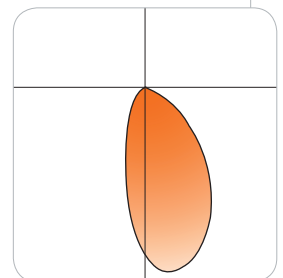


overlap trim



performance

1-Lamp 32W Triple Tube
Wall Wash Optic, Clear Specular
31% Efficiency
579 cd @ 10°



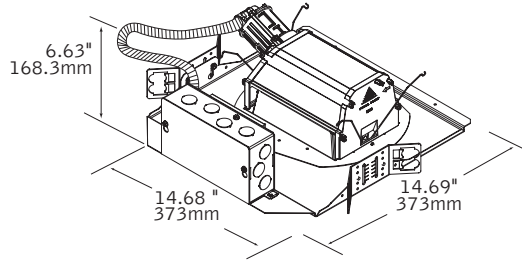
Visit focalpointlights.com for complete photometric data.

october 2010 C

fixture:
project:

details

t-rated housing non-ic



specifications

housing

Frame features up to 90-degree locking adjustment of aperture after installation for parallel alignment to walls or adjacent fixtures.

Frame may be installed into ceiling thicknesses up to 1". For thicker ceiling consult factory.

Flex conduit with screw tight fittings mechanically fasten to CenterLock™ socket cup. CenterLock™ provides proper venting for lamps.

Butterfly brackets allow mounting to ½ emt. Order bar hangers as an accessory. Galvanized steel frame includes large Junction box 7" x 3.5" with (10) ½" pry outs. UL listed for through branch wiring, four #12 90°C conductors.

upper reflector

Multi-faceted steel upper reflector mounts to die cast end caps and is finished in High Reflectance White powder coat. Adjustable socket cup allows 18, 26 and 32W lamps to be centered in the optic to maintain optimal performance.

trim

Lower reflector provides 55-degree cut off to lamp and lamp image.

.125" thick MicroGlow™ micro prism lens provides uniform distribution, lamp obscuration.

Parabolic aluminum fastens to die-cast flange on overlap trim. Flush trim option for drywall installations features a minimal reflector flange.

Trim attaches to upper reflector via torsion springs.

Consult factory for custom reflector finishes.

Upper reflector and lower reflector ship separately from housing frame to avoid construction abuse.

electrical

Luminaires are pre-wired for single circuit with thermally protected Class "P" program start <10% THD electronic ballast.

Consult factory for dimming specifications and availability.

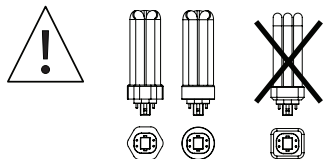
UL Listed.

Integral emergency battery test switch and indicator light in optic.

Rotary lock socket allows for easy lamp removal and reduces lamp breakage.

One lamp triple tube compact fluorescent, 32W/42W (Gx24q-3/4). OSi and GE lamps only.

finish



Trim flange, end caps and upper reflector finished in polyester powder coat over a 5-stage pre-treatment.

housing ordering

housing series	FC44
ID CFL Square Housing	FC44
lamp (OSI & GE lamps only)	
18W Triple Tube, GX24q-2	18TT
26W Triple Tube, GX24q-3 (Includes wattage restriction label)	26TT
32W Triple Tube, GX24q-3	32TT
ballast	
Electronic Program Start <10% THD	S
Electronic Dimming Ballast*	D
voltage	
120V	120
277V	277
347V	347
faceplate type	
Square Flush	SF
Square Overlap	SO
housing type	T
Thermally Protected, Non-IC	T
factory options	
Chicago Plenum	CP
Emergency Battery Pack*	EM
HLR/GLR Fuse	FU
Include 3000K Lamp	L830
Include 3500K Lamp	L835
Include 4100K Lamp	L841

trim ordering

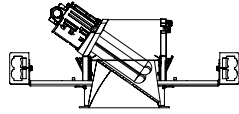
trim aperture	D44
4.5" Square Aperture	D44
faceplate type	
Square Flush	SF
Square Overlap	SO
optic	WWMG
Wall Wash MicroGlow Lens	WWMG
color	
Clear Specular	CS
Clear Diffuse	CD
Warm Diffuse	WD
Silver Talc Diffuse	TD
flange finish (for SO option only)	
White	WH
Black	BK
Titanium Silver	TS
Aluminum Raw	AL

a complete unit consists of two line items, housing and trim
example: FC44-32TT-S-120-SO-T
D44-SO-WWMG-CD-WH

* for more information see Reference section.

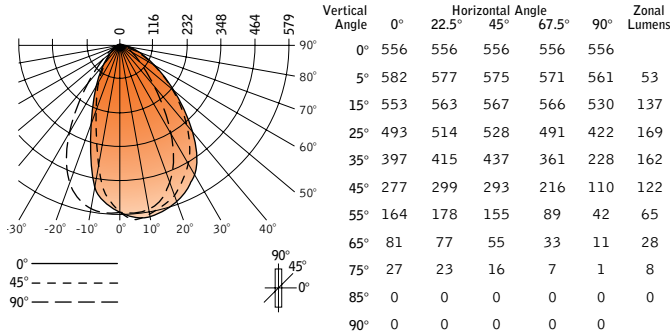
4.5"x4.5" – wall wash

id®



Filename: D44WWMGCS32TT.IES
 Catalog #: FC44-32TT-U-SO-T, D44-S0-WWMG-CS-WH
 Efficiency: 31%
 Photometric Report #: 13975.0

CANDLEPOWER DISTRIBUTION



LUMEN SUMMARY

	Zone Lumens	% Lamp	% Fixt
0°-30°	359	14.9	42.8
0°-40°	521	21.7	70
0°-60°	708	29.5	95.1
0°-90°	744	31	100
Total Luminaire	744	31	100

CO-EFFICIENTS OF UTILIZATION

	Floor				Ceiling				Wall				
	80	50	30	10	70	50	30	10	30	10	50	10	00
RCR 0	37	37	37	37	36	36	36	36	34	34	33	33	31
1	35	34	33	32	34	33	32	32	31	31	30	29	28
2	33	31	30	28	32	31	28	29	27	29	27	28	26
3	31	28	27	25	30	28	25	27	25	26	24	26	23
4	29	26	24	23	28	26	22	25	22	24	22	24	21
5	27	24	22	20	26	24	20	23	20	22	20	22	19
6	25	22	20	18	25	22	18	21	18	21	18	20	17
7	24	20	18	16	23	20	16	20	16	19	16	19	16
8	22	18	16	15	22	18	15	18	15	18	15	17	14
9	20	17	15	13	20	17	13	16	13	16	13	16	13
10	19	16	13	12	19	15	12	15	12	15	12	15	11

Numbers indicate percentage values of reflectivity.

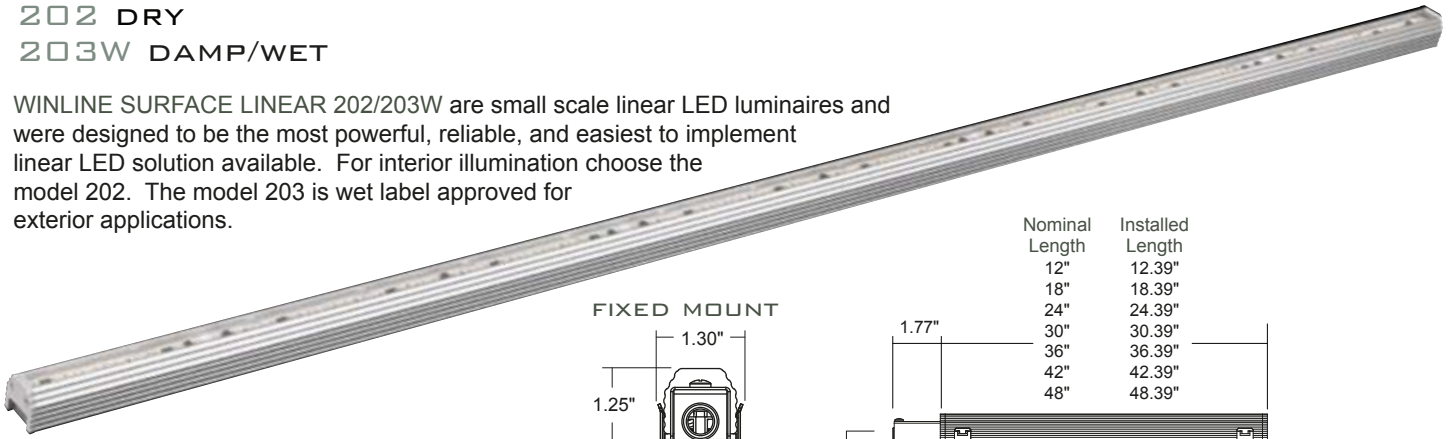
Go to www.focalpointlights.com for additional photometric data.

WINLINE SURFACE LINEAR

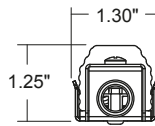
Fixture T1

202 DRY
203W DAMP/WET

WINLINE SURFACE LINEAR 202/203W are small scale linear LED luminaires and were designed to be the most powerful, reliable, and easiest to implement linear LED solution available. For interior illumination choose the model 202. The model 203 is wet label approved for exterior applications.

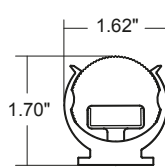


FIXED MOUNT



Nominal Length	Installed Length
12"	12.39"
18"	18.39"
24"	24.39"
30"	30.39"
36"	36.39"
42"	42.39"
48"	48.39"

ADJUSTABLE MOUNT



Nominal Length	Installed Length
12"	12.67"
18"	18.67"
24"	24.67"
30"	30.67"
36"	36.67"
42"	42.67"
48"	48.67"

surface end feed (only one required)

recessed bottom feed (RB) (only one required)

WSL	WSL - Winline Surface Linear
series	

202	- model 202 dry
203W	- model 203 damp/wet
model	

Total Run Length in Feet	202/203W offered in 6" increments starting at 12"
run length code	ex. 60FT= 60 foot run
	or
Preconfigured Run Length Code	see submittal at www.winsonalighting.com
	or
To Be Determined	TBD when run length unknown

30	- 30° tight linear flood (202 & 203W)
100	- 100° wall/ceiling wash (202 only)
110	- 110° wall/ceiling wash (203W only)
beam spread	

27K	- 2700K ANSI-binned
30K	- 3000K ANSI-binned
35K	- 3500K ANSI-binned
40K	- 4000K ANSI-binned
50K	- 5000K non-ANSI-binned
LED code	

ND24V	- non-dimming 24 volt AC
DM24V	- dimming 24 volt AC
voltage	

F	- fixed
A	- adjustable
mount	

NAA	- natural type III anodized aluminum
SGB	- semi gloss black paint
SGW	- semi gloss white paint
CPF	- custom paint finish
finish	

SE	- surface end feed
RB*	- recessed bottom feed
power feed	*available on F (fixed mount) only

X	- none
options	

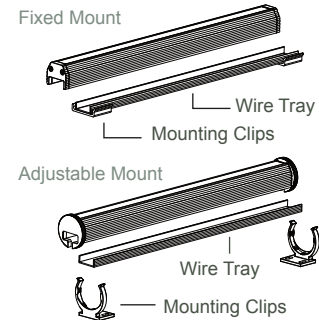
STD	- standard
MOD	- modified
special	

POWER AND DIMMING

Power consumption is 4.5W/ft. The Winline 200 series operates on 24VAC using Magnetic Transformers. A wide range of remote transformers are available in 120V and 277V primary. Used with remote mounted 24VAC magnetic transformers which can be dimmed with commonly available low voltage magnetic dimming equipment.

MOUNTING AND ADJUSTING

Both fixed and adjustable mounts combined with an integral wire tray allows the 200 Series to be used almost anywhere. The installer locates and fastens the mount clip, runs power feed lines, connects the fixture's wire leads to the feed lines and snaps the fixture in place. The low profile fixed mount is only 1/8" high and the adjustable mount allows for 300 degree rotation around the centerline of the fixture.



OPERATING TEMPERATURE -22°F to 122°F (-30C to 50°C)

COLOR AND LIGHT OUTPUT

The 200 Series utilizes Nichia 123B white LEDs in five standard colors. Models 202/203W feature (24) LEDs/ft.

202 Test Report Numbers: BALL 15384/15385/15386/15194
LM79 Data - Based on WSL102/100° Test Results

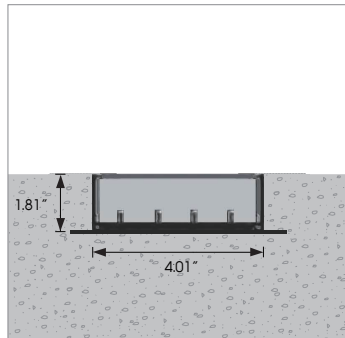
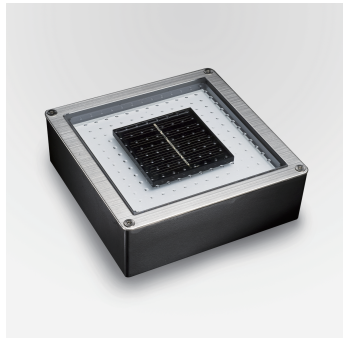
Color	Total Lumens	Lamp Watts	Lumens per Watt	CRI	Power Factor
ANSI-binned 2700K	421	15.7	26.8	84.3	.97
ANSI-binned 3000K	495	16.2	30.6	87.0	.98
ANSI-binned 3500K	515	16.3	31.6	83.0	.98
ANSI-binned 4000K	550	16.4	33.5	87.0	.98
non-ANSI-binned 5000K	699	15.8	44.2	70.3	.98

203W Test Report Number: BALL 15450
LM79 Data - Based on WSL103W/110° Test Results

Color	Total Lumens	Lamp Watts	Lumens per Watt	CRI	Power Factor
ANSI-binned 2700K	403	15.7	25.7	84.3	.97
ANSI-binned 3000K	474	15.9	29.8	87.0	.97
ANSI-binned 3500K	493	15.9	31.0	83.0	.97
ANSI-binned 4000K	526	15.9	33.1	87.0	.97
non-ANSI-binned 5000K	663	15.9	41.7	70.3	.97

Complete photometric data and submittals at www.winsonalighting.com





Type :
Project :
Quantity:
Note :

General

Size	Edge length : 6.05" Height : 2.1"
Weight	2.42 lbs
Finish	Brushed / polished stainless steel
Lens	GE super light permeable PC
Housing	SUS304 stainless steel, cast aluminum
Power Storage	Ultracapacitor
Protection Class	IP68

Operational

Switch	Lighting sensitive auto on/off
Operation Time	Minimum 12 hrs (fully charged) 4~8 hrs (overcast)
Full Charge Time	6hrs (direct sunlight)

Environmental

Compressive Strength	9902 lbs / 4456 kgs (minimum)
Operating Temperature	-4F~140F / -20C~60C
Storage Temperature	-13F~176F / -25C~80C
Moisture Protection	IP68

Color	LUX (Average)
White	35
Amber	25
Red	65
Blue	25
Green	50

Ordering Information

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Model#	LED Color	Finish	Housing
SH-170C (product)	A - Amber	B - Brushed Stainless Steel	H - Housing and Anchor Plate Included
SH-170B (battery sample)	B - Blue	P - Polished Stainless Steel	- - Without Housing and Anchor Plate
	G - Green		
	R - Red		
	W - White		

luxrail™



For Amber only.



Application

ANSI and ADA compliant, **luxrail** is an indoor/outdoor LED-based handrail that delivers functional illumination. Two intensities may be specified: standard output and high output. The standard light output version delivers illuminance levels appropriate for exterior applications (2 footcandles at grade) as well as for dark interior environments with low ambient illumination levels (e.g., themed environments, theatres and residential areas). The high output version delivers illuminance levels applicable to interior environments – providing in excess of 10 footcandles along the path of egress (ANSI required for stair treads). Independent photometric test reports and IES Format data are available at www.iolighting.com.

luxrail's standard handrail gripping surfaces are circular in cross section and meet 2004 ADAAG (Americans with Disability Act Accessibility Guidelines). Patented optical assemblies deliver 10°, 45° and 65° beam spreads. The 45° and 65° beam patterns are most suitable for illuminating pathways, while the 10° beam spread offers accent lighting for optional glass or stainless steel cable railing infills. Reference page 44 of this catalog for information regarding infill options. **io** ensures that each LED is provided thermal and electrical management properties in accordance with the LED manufacturers recommendations. Projected average rated life is 50,000 hours at 70% of lamp lumen output. Contact factory for IES LM-80 compliance. To ensure proper performance, architectural details should allow for ventilation and air flow around the fixture. Ambient temperature surrounding the fixture shall not exceed 120°F (48.9°C).

Light Output

Two luminous intensities are available for white light. All values below are initial lumens per foot. IES LM-79 format files may be obtained from the factory or downloaded from www.iolighting.com.

	Standard Output	High Output
2700K White:	48 lms/ft	180 lms/ft
3000K White:	48 lms/ft	180 lms/ft
5000K White:	63 lms/ft	240 lms/ft

Construction

luxrail may be post mounted or wall mounted. Mounting hardware (post or wall) is typically required up to 5' O.C., depending on the handrail alloy. Final post and wall bracket spacing must be determined by a licensed architect or structural engineer. **io** can provide engineering upon request. **luxrail** is available in stainless steel and aluminum. **grab bars** are available in aluminum only. The lighting fixture component of the **luxrail** is a stand alone unit and is available in incremental nominal lengths that range from 6" to 60". Vandal resistant access chamber allows units to be removed for maintenance purposes.

All handrail component parts are engineered for quick installation. Field welding or cutting is typically not required. All parts are prefabricated to field dimensions and are assembled in the field with mechanical connection or epoxy. Contact **io** Lighting for recommended handrail installers.

The light fixture's housing is made of a light weight, yet durable aluminum, providing the recommended heat sink requirements for the LEDs. Housing, patented optical assembly and stainless steel end caps are bonded to prevent water infiltration.

Electrical

luxrail houses a low voltage LED-based light fixture that is integrated into the underside of the handrail. 24 volt 96 watt power supplies are provided as a standard. For detailed information regarding daisy chain limitations, remote distance limitations, power supply options, and dimming options consult the **io** website, the **io** catalog (pages 98-100) or an **io** representative.

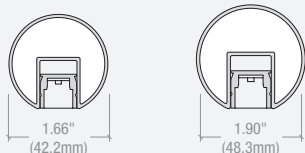
Dimming modules must be specified separately. For detailed information, see page 98 of this brochure or download the power supply specification sheet from www.iolighting.com.

Power Consumption

Standard Output: 1.44 w/ft	High Output: 7.62 w/ft
----------------------------	------------------------

Power consumption does not include power supply losses.

Dimensions



io luxrail 65°, 3KHO

lighting facts^{CM}

A Program of the U.S. DOE

Light Output (Lumens) **244**

Watts **20.9**

Lumens per Watt (Efficacy) **11**

Color Accuracy **72**

Color Rendering Index (CRI)

Light Color **3027 (Bright White)**

Correlated Color Temperature (CCT)

2700K 3000K 4500K 6500K

All results are according to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting. The U.S. Department of Energy (DOE) verifies product test data and results.

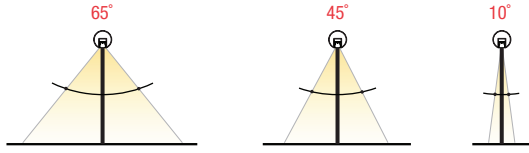
Visit www.lightingfacts.com for the Label Reference Guide.

Registration Number: 6PRA-7ZBT8B
Model Number: 0.03.13KHO.65.1.05.2
Type: Outdoor path lights

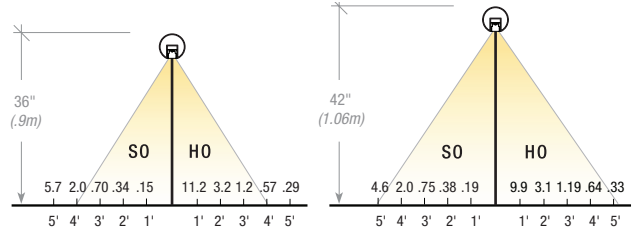
Label references 30" **luxrail** fixture with a 65° beam spread in High Output 3000K. Lighting Facts for additional beam spreads and light output levels may be obtained from **io** Lighting.



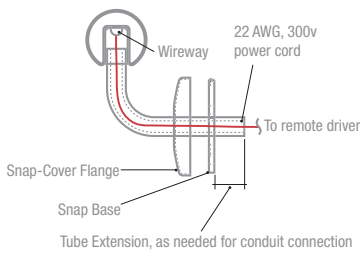
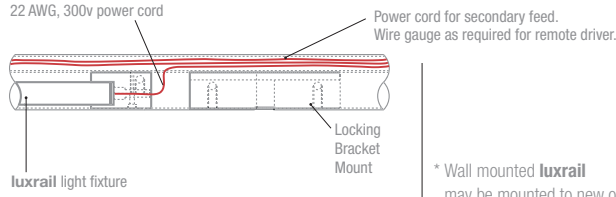
BEAM SPREAD OPTIONS



LIGHT OUTPUT - 65 DEGREE WARM WHITE

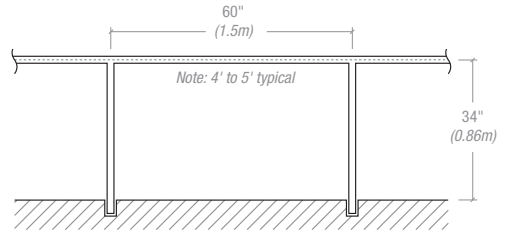


WALL MOUNT DETAILS*



* Wall mounted luxrail may be mounted to new or existing guardrail (by others). Post and wall bracket spacing must be determined by a licensed architect or structural engineer.

POST MOUNT APPLICATION



Wildlife Friendly Fixtures

IDA's Fixture Seal of Approval

Light Output / Distributions

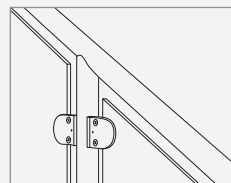
Mounting / Infill Options



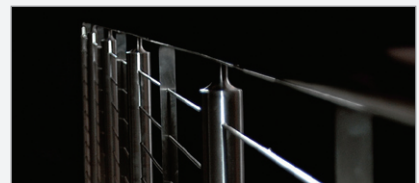
PM (post mounted)



WM (wall mount intermediate)



Glass infill
(glass provided by others)



Stainless steel cable infill
(only available on flat surfaces)

Order Code

0	06	1	2	3	4	5	6	7	8	9	10
io											

1. PRODUCT FAMILY

06 luxrail

2. ALLOY / FINISH

SSS Stainless steel satin
SSP Stainless steel polished
CAA Clear anodized aluminum⁽⁷⁾

3. SIZE

1 1.66" O.D. (1/4" pipe size)⁽⁷⁾
(available for SS & CAA)
2 1.90" O.D. (1/2" pipe size)
(available for SS & CAA)

4. MOUNTING

PM Post mounted⁽⁷⁾
WM Wall or guard rail mounted

5. INFILL

AC Stainless steel cable⁽⁵⁾
GL Glass (provided by others)
C Custom
NR Not required

6. LIGHT DISTRIBUTION

10 10 Degree
45 45 Degree
65 65 Degree
NI Handrail only (not illuminated)

7. LIGHT COLOR

27K Warm White
3K Warm White⁽³⁾
5K Cool White⁽³⁾
27KH0 Warm White
3KH0 Warm White⁽³⁾
5KH0 Cool White⁽³⁾
R Red⁽⁴⁾
G Green⁽⁴⁾
B Blue⁽⁴⁾
A Amber⁽⁴⁾

8. LENGTH

GB2 2' nominal⁽⁸⁾
GB3 3' nominal⁽⁸⁾
GB4 4' nominal⁽⁸⁾
GB5 5' nominal⁽⁸⁾
HR In Feet / Inches
(provide overall length of each handrail section)⁽²⁾⁽⁶⁾

9. VOLTAGE / DIMMING

1 120v
2 277v
3 120v w/dim
4 277v w/dim
5 Other

10. SPECIFY DRIVER / DIMMING⁽¹⁾

Note: If not specified otherwise, io will supply 96 watt drivers. Download Power Supply specification sheet from www.iolighting.com.

Footnotes

1. Power Supply Specification Sheet may be downloaded from www.iolighting.com.
2. Each handrail application will be custom to accommodate varying field conditions and design requirements. Shop drawings will be required to manage specifics of each handrail section.
3. White light variance between LEDs within a single fixture will not exceed ANSI Binning Standards.
4. Only available in 7.6 w/ft.
5. Stainless Steel cable available for flat surfaces only.
6. Detailed elevation drawings of handrail section are required for quote.
7. grab bars available in aluminum only.

SSL Chromaticity Standard: ANSI C78.337

Color	Nominal CCT	Target CCT & Tolerance (K)
White	2700K	2725 ±145
White	3000K	3045 ±175
White	5000K	5028 ±283

For Metric Conversion		
1"	1"	1'
25.4mm	2.54cm	0.3m



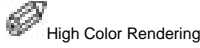


GE
Lighting

25611 - F32T8/SPX30/ECO

GE Ecolux® Starcoat® T8

- Passes TCLP, which can lower disposal costs.



GENERAL CHARACTERISTICS

Lamp Type	Linear Fluorescent - Straight Linear
Bulb	T8
Base	Medium Bi-Pin (G13)
Rated Life	30000 hrs
Rated Life (instant start) @ Time	21000 h @ 3 h
	30000 h @ 12 h
Rated Life (rapid start) @ Time	30000.0 @ 3.0/36000.0 @ 12.0 h
Bulb Material	Soda lime
Starting Temperature	10 K (50 °F)
LEED-EB MR Credit	36 picograms Hg per mean lumen hour
Additional Info	TCLP compliant

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2950
Mean Lumens	2800
Nominal Initial Lumens per Watt	92
Color Temperature	3000 K
Color Rendering Index (CRI)	86

ELECTRICAL CHARACTERISTICS

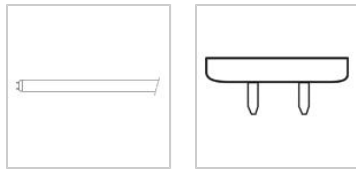
Wattage	32
Voltage	137
Open Circuit Voltage (rapid start) Min @ Temperature	315 V @ 10 °C
Cathode Resistance Ratio - Rh/Rc (MIN)	4.25
Cathode Resistance Ratio - Rh/Rc (MAX)	6.5
Current Crest Factor	1.7

DIMENSIONS

Maximum Overall Length (MOL)	47.78 cm
Minimum Overall Length	47.67 cm
Nominal Length	48.000 in(1219.2 mm)
Bulb Diameter (DIA)	1 cm
Bulb Diameter (DIA) (MIN)	0.94 cm
Bulb Diameter (DIA) (MAX)	1.1 cm
Max Base Face to Base Face (A)	47.22 cm
Face to End of Opposing Pin (B) (MIN)	47.4 cm
Face to End of Opposing Pin (B) (MAX)	47.5 cm
End of Base Pin to End of Opposite Pin End (C)	47.67 cm

PRODUCT INFORMATION

Product Code	25611
Description	F32T8/SPX30/ECO
ANSI Code	1005-2
Standard Package	Case
Standard Package GTIN	10043168256114
Standard Package Quantity	36
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	36
UPC	043168256117



CAUTIONS & WARNINGS

Caution

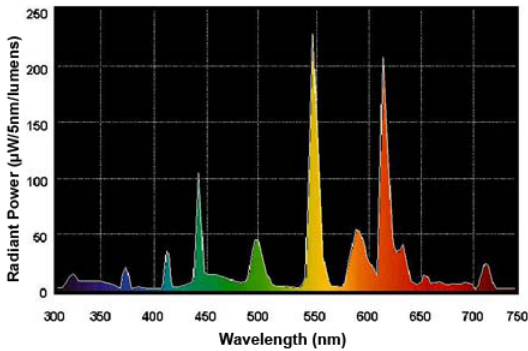
- Lamp may shatter and cause injury if broken
 - Wear safety glasses and gloves when handling lamp.
 - Do not use excessive force when installing lamp.

Warning

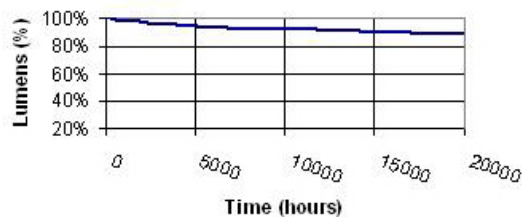
- Risk of Electric Shock
 - Turn power off before inspection, installation or removal.

GRAPHS & CHARTS

Spectral Power Distribution



Lumen Maintenance



Lamp Mortality

For additional information, visit www.gelighting.com





GE
Lighting

97631 - F32TBX/835/A/ECO

GE Ecolux® Biax® T4 - Facilities; Retail Display; Hospitality; Office; Restaurant; Warehouse

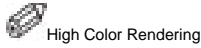
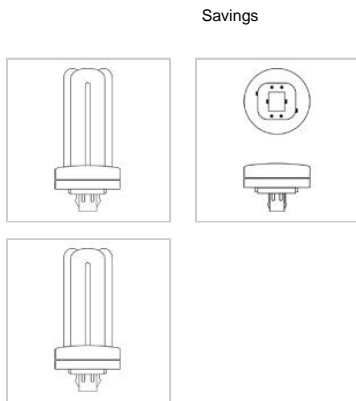


Photo
Not Available



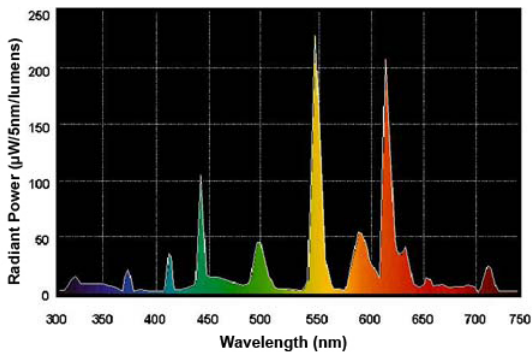
Energy

CAUTIONS & WARNINGS

Caution

GRAPHS & CHARTS

Spectral Power Distribution



NOTES

• 4-Pin lamp minimum starting temperature is a function of the ballast. Most ballasts are rated with a minimum starting temperature of 50 degrees F (10 C). Ballasts are also available that provide reliable starting to 0 degrees F (-18C) and -20 F (-29C).

• Amalgam product experience stable brightness over a wider temperature range and in various operating positions.

For additional information, visit www.gelighting.com

GENERAL CHARACTERISTICS

Lamp Type	Compact Fluorescent - Plug-In
Bulb	T4
Base	GX24q-3
Rated Life	17000 hrs
Starting Temperature	0 K (32 °F)
Cathode Resistance	2.7 Ohm
LEED-EB MR Credit	87 picograms Hg per mean lumen hour
Rated Life (rapid start) @ Time	17000.0 @ 3.0/20000.0 @ 12.0 h
Additional Info	Dimmable with appropriate dimming ballast./End of Life Protection (EOL)/TCLP compliant
Primary Application	Facilities;Retail Display;Hospitality;Office;Restaurant;W

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2400
Mean Lumens	2040
Nominal Initial Lumens per Watt	75
Color Temperature	3500 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

Wattage	32
Voltage	120
Current (max)	5.25 A
Open Circuit Voltage (after preheating)	265 V
Open Circuit Voltage	515 V
Lamp Current	0.32 A
Preheat Voltage	4.25 V
Current Crest Factor	1.7
Supply Current Frequency	20000 Hz

DIMENSIONS

Maximum Overall Length (MOL)	5.5 cm
Nominal Length	5.5 cm
Base Face to Top of Lamp	4.9 cm

PRODUCT INFORMATION

Product Code	97631
Description	F32TBX/835/A/ECO
ANSI Code	60901-IEC-7432-2
Standard Package	Case
Standard Package GTIN	10043168976319
Standard Package Quantity	10
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	10
UPC	043168976312

- Based on 60Hz reference circuit.
- Fluorescent lamp lumens decline during life



GE
Lighting

97635 - F42TBX/835/A/ECO

GE Ecolux® Biax® T4 - Facilities; Retail Display; Hospitality; Office; Restaurant; Warehouse

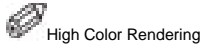
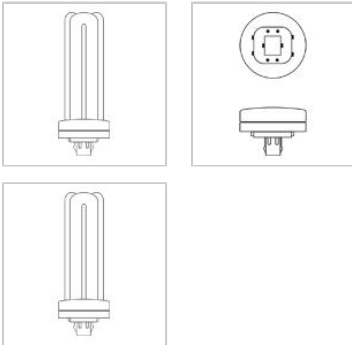


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Savings

Energy



CAUTIONS & WARNINGS

Caution

-

NOTES

- 4-Pin lamp minimum starting temperature is a function of the ballast. Most ballasts are rated with a minimum starting temperature of 50 degrees F (10 C). Ballasts are also available that provide reliable starting to 0 degrees F (-18C) and -20 F (-29C).
- Amalgam product experience stable brightness over a wider temperature range and in various operating positions.
- Based on 60Hz reference circuit.
- Fluorescent lamp lumens decline during life

GENERAL CHARACTERISTICS

Lamp Type	Compact Fluorescent - Plug-In
Bulb	T4
Base	GX24-q4
Rated Life	17000 hrs
Starting Temperature	-18 °C (-0 °F)
Cathode Resistance	2.7 Ohm
LEED-EB MR Credit	66 picograms Hg per mean lumen hour
Rated Life (rapid start) @ Time	17000.0 @ 3.0/20000.0 @ 12.0 h
Additional Info	Dimmable with appropriate dimming ballast./End of Life Protection (EOL)/TCLP compliant
Primary Application	Facilities;Retail Display;Hospitality;Office;Restaurant;W

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	3200
Mean Lumens	2690
Nominal Initial Lumens per Watt	76
Color Temperature	3500 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

Wattage	42
Voltage	135
Current (max)	5.25 A
Open Circuit Voltage (after preheating)	265 V
Open Circuit Voltage	515 V
Lamp Current	0.32 A
Preheat Voltage	4.25 V
Current Crest Factor	1.7
Supply Current Frequency	20000 Hz

DIMENSIONS

Maximum Overall Length (MOL)	6.4000 in(162.6 mm)
Nominal Length	6.400 in(162.6 mm)
Base Face to Top of Lamp	5.770 in(146.6 mm)

PRODUCT INFORMATION

Product Code	97635
Description	F42TBX/835/A/ECO
ANSI Code	60901-IEC-7442-2
Standard Package	Case
Standard Package GTIN	10043168976357
Standard Package Quantity	10
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	10
UPC	043168976350



GE
Lighting

97630 - F32TBX/830/A/ECO

GE Ecolux® Biax® T4 - Facilities; Retail Display; Hospitality; Office; Restaurant; Warehouse

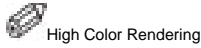
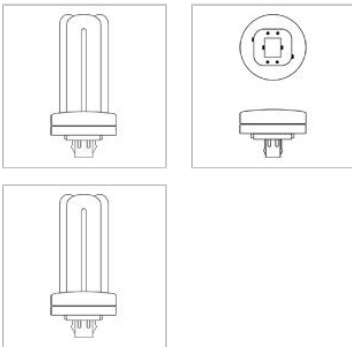


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Savings

Energy



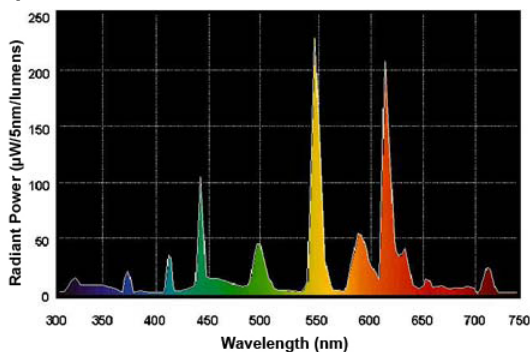
CAUTIONS & WARNINGS

Caution

- Lamp may shatter and cause injury if broken
 - Remove and install by grasping only plastic portion of the lamp.

GRAPHS & CHARTS

Spectral Power Distribution



NOTES

• 4-Pin lamp minimum starting temperature is a function of the ballast. Most ballasts are rated with a minimum starting temperature of 50 degrees F (10 C). Ballasts are also available that provide reliable starting to 0 degrees F (-18C) and -20 F (-29C).

For additional information, visit www.gelighting.com

GENERAL CHARACTERISTICS

Lamp Type	Compact Fluorescent - Plug-In
Bulb	T4
Base	GX24q-3
Rated Life	17000 hrs
Starting Temperature	0 K (32 °F)
Cathode Resistance	2.7 Ohm
LEED-EB MR Credit	87 picograms Hg per mean lumen hour
Rated Life (rapid start) @ Time	17000.0 @ 3.0/20000.0 @ 12.0 h
Additional Info	Dimmable with appropriate dimming ballast./End of Life Protection (EOL)/TCLP compliant
Primary Application	Facilities;Retail Display;Hospitality;Office;Restaurant;W

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2400
Mean Lumens	2040
Nominal Initial Lumens per Watt	75
Color Temperature	3000 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

Wattage	32
Voltage	120
Current (max)	5.25 A
Open Circuit Voltage (after preheating)	265 V
Open Circuit Voltage	515 V
Lamp Current	0.32 A
Preheat Voltage	4.25 V
Current Crest Factor	1.7
Supply Current Frequency	20000 Hz

DIMENSIONS

Maximum Overall Length (MOL)	5.5 cm
Nominal Length	5.5 cm
Base Face to Top of Lamp	4.9 cm

PRODUCT INFORMATION

Product Code	97630
Description	F32TBX/830/A/ECO
ANSI Code	60901-IEC-7432-2
Standard Package	Case
Standard Package GTIN	10043168976302
Standard Package Quantity	10
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	10
UPC	043168976305

- Amalgam product experience stable brightness over a wider temperature range and in various operating positions.
- Based on 60Hz reference circuit.
- Fluorescent lamp lumens decline during life



GE
Lighting

97611 - F26DBX/830/ECO4P

GE Ecolux® Biax® T4 - Facilities; Retail Display; Hospitality; Office; Restaurant; Warehouse

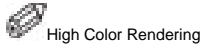
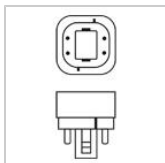
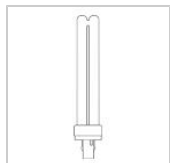


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Savings

Energy



GENERAL CHARACTERISTICS

Lamp Type	Compact Fluorescent - Plug-In
Bulb	T4
Base	G24q-3
Rated Life	17000 hrs
Starting Temperature	0 °C (32 °F)
Cathode Resistance	2.7 Ohm
LEED-EB MR Credit	115 picograms Hg per mean lumen hour
Rated Life (rapid start) @ Time Additional Info	20000.0 @ 12.0 h Dimmable with appropriate dimming ballast./End of Life Protection (EOL)/TCLP compliant
Primary Application	Facilities;Retail Display;Hospitality;Office;Restaurant;W

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1800
Mean Lumens	1530
Nominal Initial Lumens per Watt	69
Color Temperature	3000 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

Wattage	26
Voltage	120
Current (max)	5.25 A
Open Circuit Voltage (after preheating)	240 V
Open Circuit Voltage Across Starter	198 V
Lamp Current	0.325 A
Preheat Voltage	4.25 V
Current Crest Factor	1.7
Supply Current Frequency	60 Hz

DIMENSIONS

Maximum Overall Length (MOL)	6.4000 in(162.6 mm)
Nominal Length	6.400 in(162.6 mm)
Base Face to Top of Lamp	5.800 in(147.3 mm)

PRODUCT INFORMATION

Product Code	97611
Description	F26DBX/830/ECO4P
ANSI Code	60901-IEC-2562-2
Standard Package	BUNDLE
Standard Package GTIN	
Standard Package Quantity	50
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	50
UPC	043168976114



CAUTIONS & WARNINGS

Caution

- Lamp may shatter and cause injury if broken
 - Remove and install by grasping only plastic portion of the lamp.

NOTES

- 4-Pin lamp minimum starting temperature is a function of the ballast. Most ballasts are rated with a minimum starting temperature of 50 degrees F (10 C). Ballasts are also available that provide reliable starting to 0 degrees F (-18C) and -20 F (-29C).
- Based on 60Hz reference circuit.
- Fluorescent lamp lumens decline during life

MasterColor® CDM-TC T4 Elite

MasterColor CDM-TC 35W/930 CL Elite 1CT

The Elite family is at the very top of the MasterColor® CDM range, and gives a unique combination of unbeatable light quality and consistent performance over lifetime. While keeping running costs low. Philips MASTERColor CDM Elite delivers outstanding performance at reduced cost. Its extremely high efficiency means less power is required for each lumen of light produced. And the consistent lumen levels significantly cut the need for maintenance and replacement, which also translates into savings. It is a compact, energy efficient, ceramic metal halide lamp that provides crisp, sparkling light.



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Specifications

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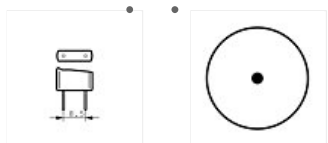
Product Data

Product number	404848
Full product name	MasterColor CDM-TC 35W/930 CL Elite 1CT

[+ More info / Hide info](#)

General Characteristics

Base	G8.5
Bulb	T4 [T 14 mm]
Bulb Material	FadeBlock Quartz
Bulb Finish	Clear
Operating Position	Universal [Any or Universal (U)]
Avg. Hrs. Life	12000 hr
Life to 5% failures EL	7000 hr
Life to 20% failures EL	10000 hr
Life to 10% failures EL	9000 hr



[+ --%> Zoom](#)

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- [Product Images](#)
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Electrical Characteristics

Watts	35 W
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GE
Lighting

16944 - F27BXSPX30RS10PK

GE Biax® T5 - Facilities; Retail Display; Hospitality; Office; Restaurant; Warehouse

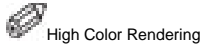
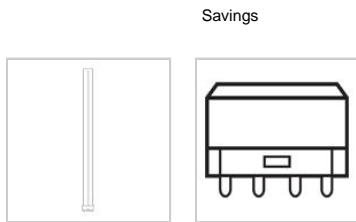


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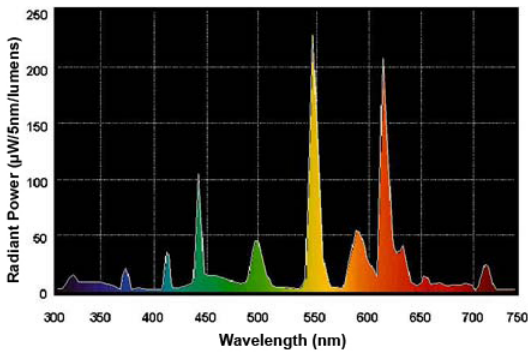
Energy

CAUTIONS & WARNINGS

Caution

GRAPHS & CHARTS

Spectral Power Distribution



NOTES

- 4-Pin lamp minimum starting temperature is a function of the ballast. Most ballasts are rated with a minimum starting temperature of 50 degrees F (10 C). Ballasts are also available that provide reliable starting to 0 degrees F (-18C) and -20 F (-29C).
- Based on 60Hz reference circuit.
- Fluorescent lamp lumens decline during life
- Life ratings for the F18BX preheat lamps are based on operating the lamp at 3 hrs per start on a preheat type circuit. Operation on rapid start and instant start ballasts is not recommended. Life ratings for all lamps are based on operating the lamp at 3 hrs per start on a rapid start type ballast. Life rating on a preheat or instant start ballast is 25% lower than other Rapid Start High Lumen Biax.

GENERAL CHARACTERISTICS

Lamp Type	Compact Fluorescent - Plug-In
Bulb	T5
Base	4-Pin (2G11)
Rated Life	12000 hrs
Starting Temperature	10 °C (50 °F)
LEED-EB MR Credit	514 picograms Hg per mean lumen hour
Primary Application	Facilities;Retail Display;Hospitality;Office;Restaurant;Warehouse

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1800
Mean Lumens	1620
Nominal Initial Lumens per Watt	66
Color Temperature	3000 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

Wattage	27
Voltage	87
Lamp Current	0.335 A

DIMENSIONS

Maximum Overall Length (MOL)	12.8000 in(325.1 mm)
Nominal Length	4.900 in(124.5 mm)
Bulb Diameter (DIA)	3.125 in(79.4 mm)
Bulb Diameter (DIA) (MAX)	

PRODUCT INFORMATION

Product Code	16944
Description	F27BXSPX30RS10PK
ANSI Code	60501-IEC-4224-1
Standard Package	Master
Standard Package GTIN	10043168169445
Standard Package Quantity	40
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	40
UPC	043168169448

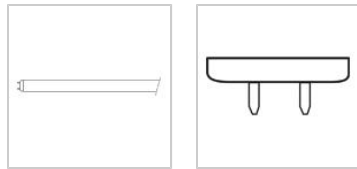
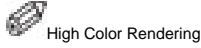


GE Lighting

25612 - F32T8/SPX35/ECO

GE Ecolux® Starcoat® T8

- Passes TCLP, which can lower disposal costs.



CAUTIONS & WARNINGS

Caution

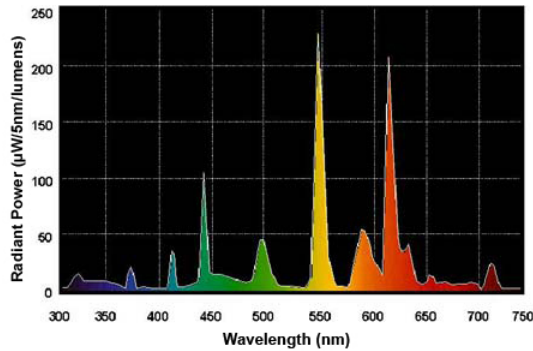
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Warning

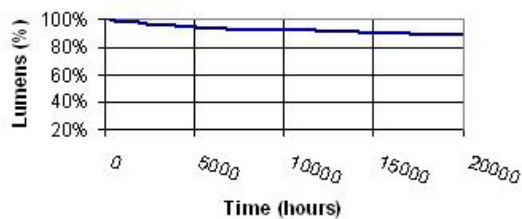
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GRAPHS & CHARTS

Spectral Power Distribution



Lumen Maintenance



Lamp Mortality

GENERAL CHARACTERISTICS

Lamp Type	Linear Fluorescent - Straight Linear
Bulb	T8
Base	Medium Bi-Pin (G13)
Rated Life	30000 hrs
Rated Life (instant start) @ Time	21000 h @ 3 h
Rated Life (rapid start) @ Time	30000.0 @ 12 h
Rated Life (rapid start) @ Time	30000.0 @ 3.0/36000.0 @ 12.0 h
Bulb Material	Soda lime
Starting Temperature	10 K (50 °F)
LEED-EB MR Credit	35 picograms Hg per mean lumen hour
Additional Info	TCLP compliant

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2950
Mean Lumens	2800
Nominal Initial Lumens per Watt	92
Color Temperature	3500 K
Color Rendering Index (CRI)	86
S/P Ratio (Scotopic/Photopic Ratio)	1.5

ELECTRICAL CHARACTERISTICS

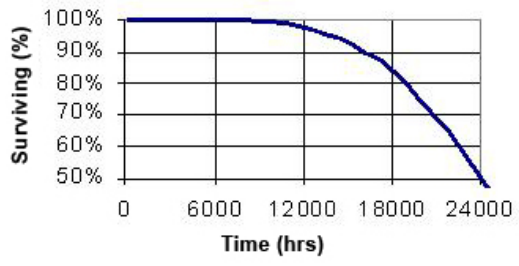
Wattage	32
Voltage	137
Open Circuit Voltage (rapid start) Min @ Temperature	315 V @ 10 °C
Cathode Resistance Ratio - Rh/Rc (MIN)	4.25
Cathode Resistance Ratio - Rh/Rc (MAX)	6.5
Current Crest Factor	1.7

DIMENSIONS

Maximum Overall Length (MOL)	47.78 cm
Minimum Overall Length	47.67 cm
Nominal Length	48 cm
Bulb Diameter (DIA)	1 cm
Bulb Diameter (DIA) (MIN)	0.94 cm
Bulb Diameter (DIA) (MAX)	1.1 cm
Max Base Face to Base Face (A)	47.22 cm
Face to End of Opposing Pin (B) (MIN)	47.4 cm
Face to End of Opposing Pin (B) (MAX)	47.5 cm
End of Base Pin to End of Opposite Pin End (C)	47.67 cm

PRODUCT INFORMATION

Product Code	25612
Description	F32T8/SPX35/ECO
ANSI Code	1005-2
Standard Package	Case
Standard Package GTIN	10043168256121
Standard Package Quantity	36
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	36
UPC	043168256124





GE
Lighting

97616 - F26TBX/835/A/ECO

GE Ecolux® Biax® T4 - Facilities; Retail Display; Hospitality; Office; Restaurant; Warehouse

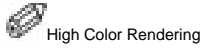


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Savings

Energy



GENERAL CHARACTERISTICS

Lamp Type	Compact Fluorescent - Plug-In
Bulb	T4
Base	GX24q-3
Rated Life	17000 hrs
Starting Temperature	0 K (32 °F)
Cathode Resistance	2.7 Ohm
LEED-EB MR Credit	115 picograms Hg per mean lumen hour
Rated Life (rapid start) @ Time	17000.0 @ 3.0/20000.0 @ 12.0 h
Additional Info	Dimmable with appropriate dimming ballast./End of Life Protection (EOL)/TCLP compliant
Primary Application	Facilities;Retail Display;Hospitality;Office;Restaurant;W

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1800
Mean Lumens	1530
Nominal Initial Lumens per Watt	69
Color Temperature	3500 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

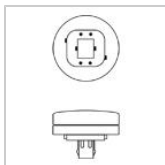
Wattage	26
Voltage	120
Current (max)	5.25 A
Open Circuit Voltage (after preheating)	265 V
Open Circuit Voltage Across Starter	198 V
Lamp Current	0.325 A
Preheat Voltage	4.25 V
Current Crest Factor	1.7
Supply Current Frequency	20000 Hz

DIMENSIONS

Maximum Overall Length (MOL)	5.2 cm
Nominal Length	5.2 cm
Base Face to Top of Lamp	4.6 cm

PRODUCT INFORMATION

Product Code	97616
Description	F26TBX/835/A/ECO
ANSI Code	60901-IEC-3426-1
Standard Package	Case
Standard Package GTIN	10043168976166
Standard Package Quantity	10
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	10
UPC	043168976169





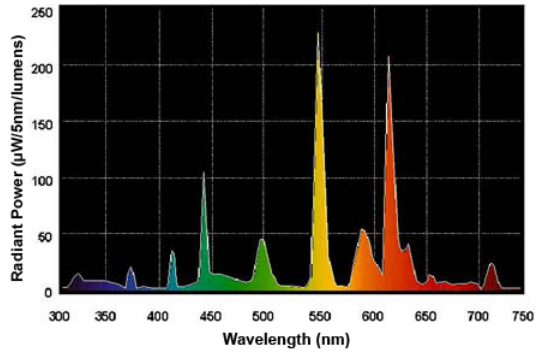
CAUTIONS & WARNINGS

Caution

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GRAPHS & CHARTS

Spectral Power Distribution



NOTES

- 4-Pin lamp minimum starting temperature is a function of the ballast. Most ballasts are rated with a minimum starting temperature of 50 degrees F (10 C). Ballasts are also available that provide reliable starting to 0 degrees F (-18C) and -20 F (-29C).
- Amalgam product experience stable brightness over a wider temperature range and in various operating positions.
- Based on 60Hz reference circuit.
- Fluorescent lamp lumens decline during life

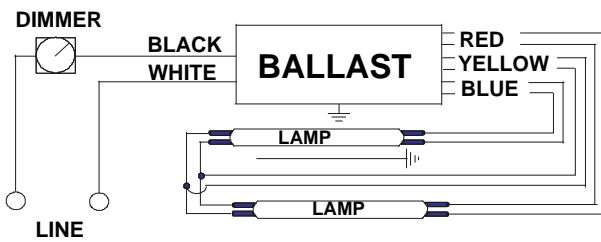


VEZ-2S32-SC	
Brand Name	MARK 10 POWERLINE
Ballast Type	Electronic Dimming
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (Watts) (min/max)	Ballast Factor (min/max)	MAX THD %	Power Factor	Lamp Current Crest Factor	B.E.F.
F17T8	2	17	50/10	0.14	13/38	0.05/1.05	10	0.99	1.6	2.76
F25T8	2	25	50/10	0.20	13/55	0.05/1.05	10	0.99	1.6	1.91
* F32T8	2	32	50/10	0.25	15/68	0.05/1.00	10	0.99	1.6	1.47

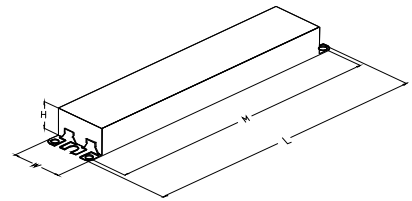
Wiring Diagram



The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
9.50 "	1.7 "	1.18 "	8.90 "
9 1/2	1 7/10	1 9/50	8 9/10
24.1 cm	4.3 cm	3 cm	22.6 cm

Revised 10/28/2005



Data is based upon tests performed by Philips Lighting Electronics N.A. in a controlled environment and is representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice. All specifications are nominal unless otherwise noted.

PHILIPS LIGHTING ELECTRONICS N.A.

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VEZ-2S32-SC	
Brand Name	MARK 10 POWERLINE
Ballast Type	Electronic Dimming
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be available in a plastic/metal can or all metal can construction to meet all plenum requirements.
- 1.3 Ballast shall be provided with poke-in wire trap connectors or integral leads color coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start.
- 2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.3 Ballast shall operate from 60 Hz input source of 120V, 277V or 347V as applicable with sustained variations of +/- 10% (voltage and frequency).
- 2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.5 Ballast shall have a Power Factor greater than 0.98 at full light output and greater than 0.90 throughout the dimming range for primary lamp.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 at maximum light output and 0.05 at minimum light output for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less.
- 2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% at maximum light output when operated at nominal line voltage with primary lamp. Total Harmonic Current (THC) at minimum light output shall not exceed THC at maximum light output.
- 2.9 Ballast shall have a Class A sound rating.
- 2.10 Ballast shall have a minimum starting temperature of 10C (50F) for primary lamp.
- 2.11 Ballast shall provide Lamp EOL Protection Circuit for all T5, T5/HO, and CFL lamps.
- 2.12 Ballast shall control lamp light output from 100% - 5% relative light output for T8 and CFL lamps and 100% - 1% relative light output for T5/HO lamps.
- 2.13 Ballast shall ignite the lamps at any light output setting without first going to another output setting.
- 2.14 Ballast shall tolerate sustained open circuit and short circuit output conditions.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.4 Ballast shall comply with ANSI C82.11 where applicable.
- 3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
- 3.6 Ballast shall comply with NEMA 410 for in-rush current limits.

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9001 Quality System Standards.
- 4.2 Ballast shall carry a ____ warranty from date of manufacture against defects in material or workmanship for operation at a maximum case temperature of ____ (Go to our web site for up to date warranty information: www.philips.com/advancewarranty).
- 4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.
- 4.4 Ballast shall be controlled by a compatible Mark 10 Powerline two-wire dimmer.
- 4.5 Ballast shall be Philips Advance part # _____ or approved equal.

Revised 10/28/2005



Data is based upon tests performed by Philips Lighting Electronics N.A. in a controlled environment and is representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice. All specifications are nominal unless otherwise noted.

PHILIPS LIGHTING ELECTRONICS N.A.

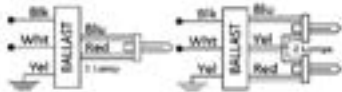
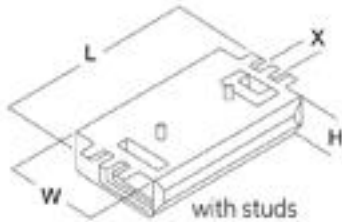
10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018
 Tel: 800-322-2086 · Fax: 888-423-1882 · www.philips.com/advance
 Customer Support/Technical Service: 800-372-3331 · OEM Support: 866-915-5886



71439 - GEC242-MVPS-BES

GE CFL Multi-Volt ProLine™ Electronic Program / Rapid Start Ballast

- Multi-Voltage technology means a single ballast handles voltage from 108V to 305V
- Programmed starting for extended lamp life
- End-of-Lamp-Life Protection
- Color Coded Poke-In Connectors simplifies wiring



GENERAL CHARACTERISTICS

Application	2- 42 / 36 / 32 / 28 / 26 / 24 watt Bottom Exit w Studs 120-277V Proline PS
Category	Compact Fluorescent
Ballast Type	Electronic - Program / Rapid Start
Starting Method	Programmed start
Lamp Wiring	Series
Line Voltage Regulation (+/-)	10 %
Case Temperature	90 °C(194 °F)
Ballast Factor	Normal
Power Factor Correction	Active
Sound Rating	A (20-24 decibels)
Enclosure Type	Metal
Additional Info	Auto-restart/Thermally protected/Universal voltage

PRODUCT INFORMATION

Product Code	71439
Description	GEC242-MVPS-BES
Standard Package	Master
Standard Package GTIN	10043168714393
Standard Package Quantity	10
Sales Unit	Individual Pack
No Of Items Per Sales Unit	1
No Of Items Per Standard	10
Package	
UPC	043168714396

DIMENSIONS

Case dimensions	
Length (L)	5.0 in(127.00 mm)
Width (W)	3.0 in(76.20 mm)
Height (H)	1.4 in(35.05 mm)
Mounting dimensions	
Mount Length (M)	4.6 in(117.60 mm)
Weight	0.57 lb
Exit Type	Poke-in
Remote Mounting Distance	12 ft
Remote Mounting Wire Gauge	18 AWG

ELECTRICAL CHARACTERISTICS

Supply Current Frequency	50 Hz/60 Hz
--------------------------	-------------

SAFETY & PERFORMANCE

- UL Class P
- UL Listed
- UL Type 1 Outdoor
- UL Type HL
- FCC Part 18 Class B at 120 volts
- Meets ANSI/IEEE C62.41 Cat. A

SPECIFICATIONS BY LAMP & WATTAGE

Lamp	# of Lamps	Line Volts	System Watts	Nom. Line Current	System Ballast Factor	Ballast Efficacy Factor	Power Factor% (>=)(<=)	Crest Factor THD% (<=)	Min. Starting Temp (°F/°C)	
FT55W/4P	1	120	43	0.36 A	0.71	1.65	99	1.7	10	-20.0 / -29
FT55W/4P	1	277	44	0.16 A	0.72	1.64	96	1.7	12	-20.0 / -29
FT40W/4P	1	120	45	0.37 A	1.00	2.22	99	1.7	10	-20.0 / -29
FT40W/4P	1	277	45	0.17 A	1.00	2.22	96	1.7	12	-20.0 / -29
FT40W/4P	2	120	82	0.69 A	0.95	1.16	99	1.7	10	-20.0 / -29
FT40W/4P	2	277	82	0.3 A	0.95	1.16	98	1.7	10	-20.0 / -29
FT39W/4P	1	120	45	0.37 A	1.00	2.22	99	1.7	10	-20.0 / -29
FT39W/4P	2	120	82	0.69 A	0.95	1.16	99	1.7	10	-20.0 / -29
FT39W/4P	1	277	45	0.17 A	1.00	2.22	96	1.7	12	-20.0 / -29
FT39W/4P	2	277	82	0.3 A	0.95	1.16	98	1.7	10	-20.0 / -29
FT36W/4P	1	120	33	0.27 A	0.80	2.42	99	1.7	10	-20.0 / -29
FT36W/4P	1	277	33	0.13 A	0.80	2.42	94	1.7	15	-20.0 / -29
FT36W/4P	2	120	63	0.52 A	0.78	1.24	99	1.7	10	-20.0 / -29
FT36W/4P	2	277	62	0.23 A	0.79	1.27	98	1.7	10	-20.0 / -29
FT24W/4P	1	120	26	0.22 A	0.92	3.54	99	1.7	10	-20.0 / -29
FT24W/4P	1	277	27	0.1 A	0.92	3.41	92	1.7	15	-20.0 / -29
FT24W/4P	2	120	54	0.45 A	1.00	1.85	99	1.7	10	-20.0 / -29
FT24W/4P	2	277	54	0.2 A	1.00	1.85	97	1.7	12	-20.0 / -29
FC9T5-22W/4P	1	120	28	0.23 A	1.10	3.93	99	1.7	10	-20.0 / -29
FC9T5-22W/4P	2	120	52	0.44 A	1.10	2.12	99	1.7	10	-20.0 / -29
FC9T5-22W/4P	1	277	28	0.11 A	1.11	3.96	93	1.7	12	-20.0 / -29

FC9T5-22W/4P	2	277	52	0.19 A	1.10	2.12	97	1.7	12	-20.0 / -29
FC9T5+FC12T5	1	120	67	0.55 A	0.90	1.34	99	1.7	10	-20.0 / -29
FC9T5+FC12T5	1	277	67	0.25 A	0.90	1.34	98	1.7	10	-20.0 / -29
FC12T5-40W/4P	1	120	37	0.31 A	0.84	2.27	99	1.7	10	-20.0 / -29
FC12T5-40W/4P	2	120	70	0.59 A	0.80	1.14	99	1.7	10	-20.0 / -29
FC12T5-40W/4P	2	277	70	0.26 A	0.81	1.16	98	1.7	10	-20.0 / -29
FC12T5-40W/4P	1	277	37	0.14 A	0.84	2.27	95	1.7	15	-20.0 / -29
CFTR70W/4P	1	120	73	0.61 A	1.00	1.37	99	1.7	10	-20.0 / -29
CFTR70W/4P	1	277	73	0.27 A	1.00	1.37	97	1.7	12	-20.0 / -29
CFTR57W/4P	1	120	58	0.49 A	1.00	1.72	99	1.7	10	-20.0 / -29
CFTR57W/4P	1	277	58	0.22 A	1.00	1.72	97	1.7	12	-20.0 / -29
CFTR42W/4P	1	120	47	0.4 A	1.00	2.13	99	1.7	10	-20.0 / -29
CFTR42W/4P	1	277	47	0.18 A	1.00	2.13	96	1.7	10	-20.0 / -29
CFTR42W/4P	2	277	93	0.38 A	1.00	1.08	98	1.7	10	-20.0 / -29
CFTR42W/4P	2	120	94	0.77 A	1.00	1.06	99	1.7	10	-20.0 / -29
CFTR32W/4P	1	120	42	0.35 A	0.96	2.29	99	1.7	10	-20.0 / -29
CFTR32W/4P	1	277	42	0.13 A	0.96	2.29	96	1.7	12	-20.0 / -29
CFTR32W/4P	2	277	63	0.23 A	0.95	1.51	98	1.7	12	-20.0 / -29
CFTR32W/4P	2	120	63	0.53 A	0.95	1.51	99	1.7	10	-20.0 / -29
CFTR26W/4P	1	120	32	0.27 A	1.00	NaN	99	1.7	10	-20.0 / -29
CFTR26W/4P	1	277	32	0.13 A	1.00	NaN	95	1.7	12	-20.0 / -29
CFTR26W/4P	2	120	54	0.45 A	0.90	1.67	99	1.7	10	-20.0 / -29
CFTR26W/4P	2	277	54	0.21 A	0.90	1.67	97	1.7	12	-20.0 / -29
CFS55W/4P	1	120	33	0.28 A	0.49	1.48	99	1.7	10	-20.0 / -29
CFS55W/4P	1	277	32	0.13 A	0.49	NaN	94	1.7	10	-20.0 / -29
CFS28W/4P	1	120	34	0.29 A	1.00	2.94	99	1.7	10	-20.0 / -29
CFS28W/4P	1	277	34	0.14 A	1.00	2.94	93	1.7	15	-20.0 / -29
CFS28W/4P	2	120	60	0.5 A	0.95	1.58	99	1.7	10	-20.0 / -29
CFS28W/4P	2	277	60	0.22 A	0.97	1.62	98	1.7	10	-20.0 / -29
CFQ26W/4P	1	120	32	0.27 A	1.00	NaN	99	1.7	10	-20.0 / -29
CFQ26W/4P	1	277	32	0.13 A	1.00	NaN	95	1.7	12	-20.0 / -29
CFQ26W/4P	2	120	54	0.45 A	0.90	1.67	99	1.7	10	-20.0 / -29
CFQ26W/4P	2	277	54	0.21 A	0.90	1.67	97	1.7	12	-20.0 / -29
CFM36W/4P	1	120	33	0.27 A	0.80	2.42	99	1.7	10	-20.0 / -29
CFM36W/4P	1	277	33	0.13 A	0.80	2.42	94	1.7	15	-20.0 / -29
CFM36W/4P	2	120	63	0.52 A	0.78	1.24	99	1.7	10	-20.0 / -29
CFM36W/4P	2	277	62	0.23 A	0.79	1.27	98	1.7	10	-20.0 / -29

WARRANTY INFORMATION

GE Lighting warrants to the purchaser that each ballast will be free from defects in material or workmanship for period as defined in the attached documents from the date of manufacture when properly installed and under normal conditions of use.



12V AC LED-COMPATIBLE CLASS 2 ELECTRONIC DRIVER/TRANSFORMER

TL602E

Project: _____

Fixture Type: _____

Location: _____

Contact/Phone: _____

PRODUCT SPECIFICATIONS

Description

12V-60VA Class 2 electronic Driver/Transformer • IC rated for recessed applications and can be buried in insulation • Rated for 0.5-60 watts total load • 120VAC input • Ideally suited for driving Juno Mini LED Downlight and Gimbal fixtures.

Construction 18 gauge die formed steel housing • Low-profile, 1" overall height • Available in standard direct-wire and optional 6' 3-wire cord & plug version • Terminal block provided for direct wire inputs accepts 18-12 AWG • All versions provided with terminal block on output side for quick and secure fixture wiring (Type CL2 or NEC equivalent 18-12 AWG) • Direct-wire versions supplied with die-cast fitting for 3/8" flexible metal conduit • White polyester powder coat paint finish.

Dimming May be dimmed using only dimmers that have been tested and qualified by Juno for use with Juno LED fixtures including: Leviton® Acenti ACE06-1L, Lutron® Diva DVELV-300P, Lutron® Nova T☆ NTELV-300, Lutron® Skylark SELV-300P, Lutron® Spacer SPSELV-600 – consult factory to confirm compatibility of other dimmers prior to installation with Juno LED fixtures.

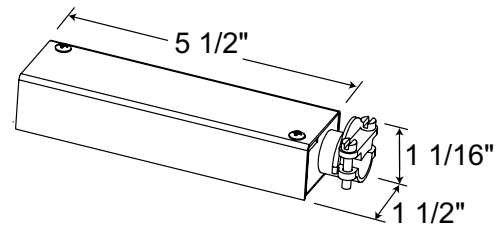
Installation Transformer should be located within 4' of first fixture in run • To avoid excessive voltage drop in light output, make sure the fixture voltage at the last fixture is at least 10 volts. Fully loaded run lengths longer than 18' with 12 AWG is not recommended due to voltage drop • Terminal block wiring connections for simpler, faster installation • Provision for ground wire attachment • Two 1/2" #6 wood screws provided for mounting to wood surfaces • IC rated for use in insulated or non-insulated applications.

Labels cULus Listed for use in the U.S. (UL 2108) and Canada (CSA C22.2 No. 250.0).

Product specifications subject to change without notice.



DIMENSIONS



Note: Fully loaded run lengths longer than 18' with 12 AWG is not recommended due to voltage drop.

PRODUCT CODES

Catalog Number	Finish	Description
TL602E-60-WH	White	60W 12V AC Electronic Driver/Transformer

OPTIONS

(Add as suffix to catalog number)

Catalog Number	Description
-CP6*	6ft. Cord & Plug, factory installed

Ordering Example: TL602E-60-WH-CP6

*Note: Not UL Listed

ENGINEERING DATA

	TL602E-60
Input Voltage	120VAC
Input Current Typ.	0.56A
Nominal Output	11.5V
Max. Load	60 Watts (VA)
Operating Frequency	>20kHz
Power Factor	>.90
T.H.D.	<30%

12V AC LED-COMPATIBLE CLASS 2 ELECTRONIC DRIVER/TRANSFORMER

TL602E

APPLICATION

Consideration	12V Electronic Driver/Transformer	12V Magnetic Transformer
• Length	• Use for short to medium fixture run lengths and low to medium wattage systems	• Use for medium to long run lengths and medium to higher wattage systems
• Dimming	• For optimal results, use dimmers specifically designed for use with electronic transformers; transformers used with Juno LED fixtures should only be operated with dimmers pre-qualified for suitability by Juno Lighting Group	• For optimal results, use dimmers specifically designed for use with magnetic transformers; transformers used with Juno LED fixtures should only be operated with dimmers pre-qualified for suitability by Juno Lighting Group
• Transformer Location	• For best performance, transformer should be located close to fixture run. • Can be surface mounted or installed in insulation. • Install where ambient temperature will not exceed 120°F (50°C); transformer must be accessible	• Install in well ventilated locations where ambient temperature will not exceed 140°F (60°C); transformer must be accessible
• Distance to First Fixture	• For best results, should be mounted within 4' to first fixture in run.	• Suitable for remote mounting at long distances

TABLE PREDICTING VOLTAGE AT FIXTURE FOR VARIOUS WIRE LENGTHS, GAUGES AND LOADS

TL602E 60W, 12V AC Electronic Transformer, 120V Input, when used with 5W fixtures

Wire Gauge	#12				#14				#18				
	Single Fixture	4	7	Max Load	Single Fixture	4	7	Max Load	Single Fixture	4	7	Max Load	
Distance from Transformer to First Fixture	1'	12.0	11.7	11.2	10.4	12.0	11.7	11.2	10.3	12.0	11.6	11.1	10.1
	2'	12.0	11.6	11.2	10.3	12.0	11.6	11.1	10.2	12.0	11.5	10.9	9.7
	4'	12.0	11.6	11.1	10.1	12.0	11.5	10.9	9.8	12.0	11.3	10.7	9.3
	6'	12.0	11.6	11.0	9.8	12.0	11.5	10.8	9.4	12.0	11.4	10.5	8.9
	8'	12.0	11.4	10.8	9.4	12.0	11.4	10.6	9.0	12.0	11.3	10.2	8.6
	10'	12.0	11.5	10.7	9.1	12.0	11.3	10.3	8.7	12.0	11.2	9.9	8.5
	12'	12.0	11.4	10.4	8.8	12.0	11.2	10.0	8.6	12.0	11.1	9.6	8.5
	14'	12.0	11.3	10.1	8.6	11.9	11.1	9.7	8.5	11.9	10.9	9.2	8.4
	16'	11.9	11.1	9.7	8.5	11.9	11.0	9.4	8.4	11.9	10.8	8.9	8.3
	18'	11.9	10.9	9.4	8.4	11.9	10.9	9.1	8.4	11.8	10.6	8.7	8.3
	20'	11.9	10.9	9.2	8.4	11.9	10.7	8.8	8.3	11.8	10.5	8.6	8.2




Notes:

1. Max 10 fixtures
2. For this analysis, 18" of wire was used between fixtures

The shaded areas represent the suggested operating range of 10.0 to 12.0 volts at the fixture using the TL602E transformer. Do not exceed 12 volts. To ensure less than a 20% drop in light output between the first and last fixture in a run, make sure the fixture voltage at the last fixture is at least 10 volts. Fully loaded, run lengths longer than 18' with 12AWG and transformer remote mounting more than 4' from the first fixture are not recommended due to voltage drop. A voltmeter with high frequency response (such as a Fluke 187 multimeter) should be used to confirm that the proper voltage is present.





EcoSystem Ballasts for linear and U bend T8 Lamps

Lamp	No. of Lamps	Model	Case Size	Input Voltage (VAC)	Input Current (A)	Input Power (W)	Ballast Factor (BF)	System Lumens (lm)	System Efficacy (lm/W)	Ballast Efficacy Factor	Relative Efficacy (RSE)
 F32T8 (48 in)	1	EC5 T832 J UNV 1	J	277	0.11	31.6	0.85	2550	81	2.69	0.86
				240	0.13	31.0	0.85	2550	82	2.74	0.87
				120	0.26	31.3	0.85	2550	81	2.72	0.87
	2	EC5 T832 G UNV 2L	G	277	0.22	59.6	0.85	5100	86	1.43	0.91
				240	0.25	57.6	0.85	5100	89	1.48	0.94
				120	0.49	58.8	0.85	5100	87	1.45	0.93
		EC5 T832 J UNV 2	J	277	0.21	57.4	0.85	5100	89	1.48	0.95
				240	0.25	59.0	0.85	5100	86	1.44	0.92
				120	0.49	59.1	0.85	5100	86	1.44	0.92
	3	EC5 T832 G UNV 3L	G	277	0.31	86.5	0.85	7650	88	0.98	0.94
				240	0.36	84.0	0.85	7650	89	1.01	0.97
				120	0.72	85.9	0.85	7650	89	0.99	0.95
EC5 T832 G UNV 317L		G	277	0.41	105.7	1.17	10,530	100	1.11	1.06	
240	0.47		106.5	1.17	10,530	99	1.10	1.05			
120	0.95	106.8	1.17	10,530	99	1.10	1.05				
 F25T8 (36 in)	1	EC5 T825 J UNV 1	J	277	0.10	27.6	0.85	1828	66	3.08	0.77
				240	0.11	27.0	0.85	1828	68	3.15	0.79
				120	0.23	26.9	0.85	1828	68	3.16	0.79
	2	EC5 T825 J UNV 2	J	277	0.18	48.9	0.85	3665	75	1.74	0.87
				240	0.20	49.0	0.85	3665	75	1.73	0.87
				120	0.41	49.0	0.85	3665	75	1.73	0.87
 F17T8 (24 in)	1	EC5 T817 J UNV 1	J	277	0.08	20.6	0.85	1190	68	4.13	0.70
				240	0.08	20.0	0.85	1190	60	4.25	0.72
				120	0.17	20.1	0.85	1190	70	4.23	0.72
	2	EC5 T817 J UNV 2	J	277	0.13	36.2	0.85	2380	66	2.35	0.80
				240	0.15	37.0	0.85	2380	64	2.30	0.78
				120	0.31	37.0	0.85	2380	64	2.30	0.78

Job Name:	Model Numbers:
Job Number:	

EcoSystem Compact Fluorescent Ballast Models

Lamp Type	Lamp Watts	No. of Lamps	Model	Case Size	Input Voltage (VAC)	Input Current (A)	Input Power (W)	Ballast Factor (BF)	System Lumens (lm)	System Efficacy (lm/W)	Ballast Efficacy Factor	Relative Efficacy (RSE)
T4 4-Pin Quad-Tube or Triple-Tube 	18 W	1	EC3DT418KU1S (Studded)	K	120	0.18	21.3	0.95	1140	53.5	4.46	0.80
				K	220	0.10	21.1	0.95	1140	54.0	4.50	0.81
			EC3DT418KU1 (Non-studded)	K	240	0.09	21.4	0.95	1140	53.3	4.44	0.80
				K	277	0.08	20.8	0.95	1140	54.8	4.57	0.82
		2	EC3DT418KU2S (Studded)	K	120	0.34	41.1	0.95	2280	55.5	2.31	0.83
				K	220	0.18	39.6	0.95	2280	57.6	2.40	0.86
			EC3DT418KU2 (Non-studded)	K	240	0.17	39.4	0.95	2280	57.9	2.41	0.87
				K	277	0.15	39.9	0.95	2280	57.1	2.38	0.86
	26 W	1	EC3DT4MWKU1S (Studded)	K	120	0.22	26.4	0.95	1710	64.8	3.60	0.94
				K	220	0.12	26.8	0.95	1710	63.9	3.55	0.92
			EC3DT4MWKU1 (Non-studded)	K	240	0.11	26.9	0.95	1710	63.7	3.54	0.92
				K	277	0.10	27.0	0.95	1710	63.4	3.52	0.92
		2	EC3DT4MWKU2S (Studded)	K	120	0.43	51.6	0.95	3420	66.3	1.84	0.96
				K	220	0.23	49.9	0.95	3420	68.5	1.90	0.99
EC3DT4MWKU2 (Non-studded)			K	240	0.21	50.6	0.95	3420	67.5	1.88	0.98	
			K	277	0.19	51.4	0.95	3420	66.6	1.85	0.96	
T4 4-Pin Triple-Tube 	32 W	1	EC3DT4MWKU1S (Studded)	K	120	0.29	34.8	0.95	2280	65.5	2.73	0.87
				K	220	0.15	33.0	0.95	2280	69.1	2.88	0.92
			EC3DT4MWKU1 (Non-studded)	K	240	0.14	33.6	0.95	2280	67.9	2.83	0.90
				K	277	0.12	33.2	0.95	2280	68.6	2.86	0.91
		2	EC3DT4MWKU2S (Studded)	K	120	0.55	66.0	0.95	4560	69.1	1.44	0.92
				K	220	0.29	64.5	0.95	4560	70.7	1.47	0.94
			EC3DT4MWKU2 (Non-studded)	K	240	0.26	63.0	0.95	4560	72.3	1.51	0.96
				K	277	0.24	65.5	0.95	4560	69.7	1.45	0.93
	42 W	1	EC3DT442KU1S (Studded)	K	120	0.36	43.2	0.95	3040	70.4	2.20	0.92
				K	220	0.20	42.9	0.95	3040	70.8	2.21	0.93
			EC3DT442KU1 (Non-studded)	K	240	0.18	42.7	0.95	3040	71.2	2.23	0.93
				K	277	0.15	42.6	0.95	3040	71.3	2.23	0.94
		2	EC3DT442KU2S (Studded)	K	120	0.73	87.6	0.95	6080	69.4	1.08	0.91
				K	220	0.39	85.9	0.95	6080	70.8	1.11	0.93
			EC3DT442KU2 (Non-studded)	K	240	0.35	85.1	0.95	6080	71.5	1.12	0.94
				K	277	0.31	85.4	0.95	6080	71.2	1.11	0.93

NOTE: The "S" at the end of the ballast model number indicates a studded option. Remove the "S" for a non-studded ballast.

Job Name:	Model Numbers:
Job Number:	



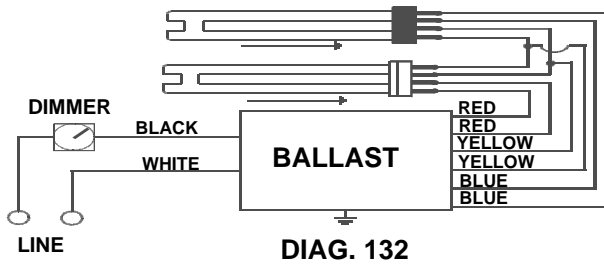
VEZ-2Q26-M2-LD

Brand Name	MARK 10 POWERLINE
Ballast Type	Electronic Dimming
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	277
Input Frequency	60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (Watts) (min/max)	Ballast Factor (min/max)	MAX THD %	Power Factor	Lamp Current Crest Factor	B.E.F.
* CFQ26W/G24Q	2	26	50/10	0.21	16/58	0.05/1.00	10	0.98	1.6	1.72
CFTR26W/GX24Q	2	26	50/10	0.21	16/58	0.05/1.00	10	0.98	1.6	1.72

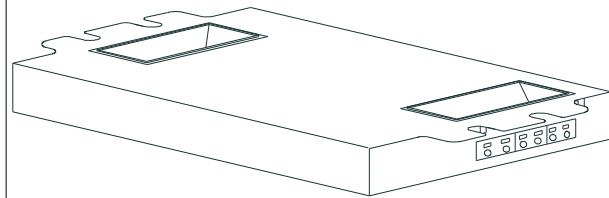
Wiring Diagram



The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
4.98 "	3.00 "	1.29 "	4.60 "
4 49/50	3	1 29/100	4 3/5
12.6 cm	7.6 cm	3.3 cm	11.7 cm

Revised 08/17/2006



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VEZ-2Q26-M2-LD	
Brand Name	MARK 10 POWERLINE
Ballast Type	Electronic Dimming
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	277
Input Frequency	60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be available in a plastic/metal can or all metal can construction to meet all plenum requirements.
- 1.3 Ballast shall be provided with poke-in wire trap connectors or integral leads color coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start.
- 2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.3 Ballast shall operate from 60 Hz input source of 120V, 277V or 347V as applicable with sustained variations of +/- 10% (voltage and frequency).
- 2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.5 Ballast shall have a Power Factor greater than 0.98 at full light output and greater than 0.90 throughout the dimming range for primary lamp.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 at maximum light output and 0.05 at minimum light output for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less.
- 2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% at maximum light output when operated at nominal line voltage with primary lamp. Total Harmonic Current (THC) at minimum light output shall not exceed THC at maximum light output.
- 2.9 Ballast shall have a Class A sound rating.
- 2.10 Ballast shall have a minimum starting temperature of 10C (50F) for primary lamp.
- 2.11 Ballast shall provide Lamp EOL Protection Circuit for all T5, T5/HO, and CFL lamps.
- 2.12 Ballast shall control lamp light output from 100% - 5% relative light output for T8 and CFL lamps and 100% - 1% relative light output for T5/HO lamps.
- 2.13 Ballast shall ignite the lamps at any light output setting without first going to another output setting.
- 2.14 Ballast shall tolerate sustained open circuit and short circuit output conditions.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.4 Ballast shall comply with ANSI C82.11 where applicable.
- 3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
- 3.6 Ballast shall comply with NEMA 410 for in-rush current limits.

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9001 Quality System Standards.
- 4.2 Ballast shall carry a ____ warranty from date of manufacture against defects in material or workmanship for operation at a maximum case temperature of ____ (Go to our web site for up to date warranty information: www.philips.com/advancewarranty).
- 4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.
- 4.4 Ballast shall be controlled by a compatible Mark 10 Powerline two-wire dimmer.
- 4.5 Ballast shall be Philips Advance part # _____ or approved equal.

Revised 08/17/2006



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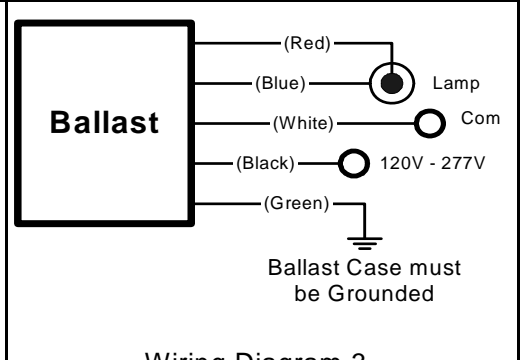
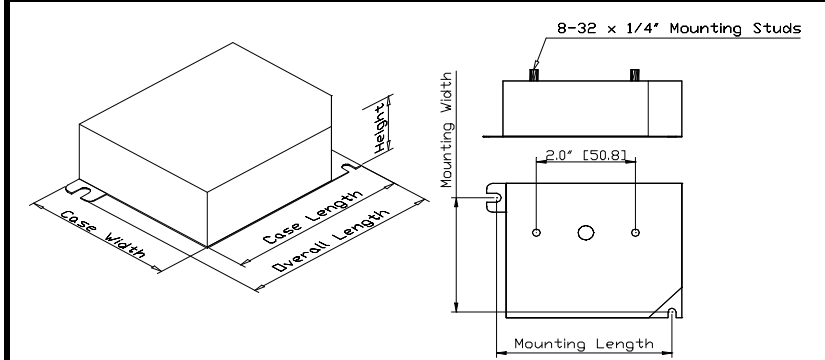
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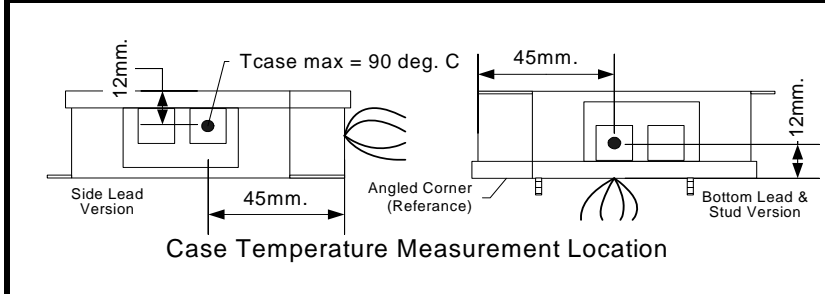
	e-Vision® Electronic Ballast for Metal Halide Lamps	Catalog Number: IMH-39-G For 39W Metal Halide Lamps ANSI M130 120-277 50/60Hz Electronic Status: RELEASED
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DIMENSIONS AND DATA

Lamp		Input Volts	Catalog Number*	Line Current (Amps)	Input Power (Watts)	Min Power Factor	Wiring Diag	Fig.	Weight (lb)	Max. Distance to Lamp (ft)
Number	Watts									
39W Watt Lamp, ANSI Code M130 Minimum Starting Temp -30°C/-20°F										
1	39	120 277	IMH-39-G-XXX	0.39 0.18	46 45	0.9	3	G	0.9	5



Case Figure	Overall Length	Case Length	Case Width	Height	Mounting Length	Mounting Width
G	97mm [3.8"]	90mm [3.5"]	77mm [3.0"]	30mm [1.2"]	87mm [3.4"]	67mm [2.6"]



- INSTALLATION & APPLICATION NOTES:**
- Maximum allowable case temperature is 90°C. See figure above for measurement location
 - Ignition pulse is 4 kV max
 - All leads are 9 inches long
 - Ballast output will shutdown after 20 minutes if lamp fails to ignite
 - Power must be cycled off – then on, after replacing lamp
 - Connect the red lead to the center terminals of the lamp when using screw base lamps

*Ordering Information	
Order Suffix	Description
-LF	Ballast with side exit leads and mounting feet
-BLS	Ballast with bottom exit leads and mounting studs

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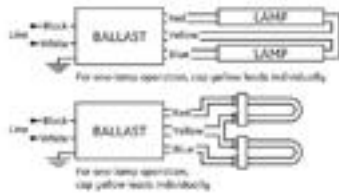


GE
Lighting

47534 - B224PUNV-COG1C

GE LFL Electronic Program / Rapid Start Ballast

- Electronic ballasts for all general fluorescent applications
- Extends lamp life in frequently switched applications
- Reduced lamp replacement cost. Ideal for use with occupancy sensors



GENERAL CHARACTERISTICS

Application	2- F24T5HO PRS UNV 50/60 Hz
Category	Linear Fluorescent
Ballast Type	Electronic - Program / Rapid Start
Starting Method	Programmed start
Lamp Wiring	Series
Line Voltage Regulation (+/-)	10 %
Ambient Temperature (MAX)	105 °F(41 °C)
Case Temperature	75 °C(167 °F)
Ballast Factor	Normal
Power Factor Correction	Active
Sound Rating	A (20-24 decibels)
Additional Info	Auto-restart/End of Life Protection (EOL)/Thermally protected/Universal voltage

PRODUCT INFORMATION

Product Code	47534
Description	B224PUNV-COG1C
Standard Package	Case
Standard Package GTIN	
Standard Package Quantity	10
Sales Unit	Standard Pack
No Of Items Per Sales Unit	1
No Of Items Per Standard	10
Package	
UPC	043168475341

DIMENSIONS

Case dimensions	
Length (L)	14.2 in(361.95 mm)
Width (W)	1.2 in(29.97 mm)
Height (H)	1.0 in(25.40 mm)
Mounting dimensions	
Mount Length (M)	13.8 in(349.25 mm)
Mount Slots (MS)	0.2 in(6.35 mm)
Weight	1 lb
Exit Type	Poke-in
Remote Mounting Distance	18 ft
Remote Mounting Wire Gauge	18 AWG

ELECTRICAL CHARACTERISTICS

Supply Current Frequency	50 Hz/60 Hz
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SAFETY & PERFORMANCE

- CSA
- FCC - CLASS A Non-Consumer
- UL Class P
- UL Listed
- UL Type 1 Outdoor
- UL Type HL

SPECIFICATIONS BY LAMP & WATTAGE

Lamp	# of Lamps	Line Volts	System Watts	Nom. Line Current	System Ballast Factor	Ballast Efficacy Factor	Power Factor% (>=)(<=)	Crest Factor	THD% (<=)	Min. Starting Temp (°F/°C)
FT36W/4P	1	120	36	0.3 A	0.90	NaN	98	1.7	10	0.0 /-18
FT36W/4P	1	277	36	0.13 A	0.90	NaN	95	1.7	10	0.0 /-18
FT36W/2G10	1	120	34	0.28 A	0.95	2.79	95	1.7	10	0.0 /-18
FT36W/2G10	1	277	34	0.12 A	0.95	2.79	95	1.7	10	0.0 /-18
FT24W/4P	1	120	27	0.23 A	1.02	3.78	98	1.7	10	0.0 /-18
FT24W/4P	1	277	27	0.1 A	1.02	3.78	95	1.7	15	0.0 /-18
FT24W/4P	2	120	52	0.43 A	1.00	1.92	98	1.7	10	0.0 /-18
FT24W/4P	2	277	51	0.18 A	1.00	1.96	98	1.7	10	0.0 /-18
FT24W/2G10	1	120	24	0.2 A	1.05	NaN	98	1.7	10	0.0 /-18
FT24W/2G10	1	277	24	0.09 A	1.05	NaN	95	1.7	15	0.0 /-18
FT24W/2G10	2	120	48	0.4 A	1.00	2.08	98	1.7	10	0.0 /-18
FT24W/2G10	2	277	47	0.17 A	1.00	2.13	98	1.7	10	0.0 /-18
F39T5/HO	1	120	41	0.34 A	0.90	2.20	98	1.7	10	0.0 /-18
F39T5/HO	1	277	40	0.15 A	0.90	NaN	98	1.7	10	0.0 /-18
F24T5/HO	1	120	28	0.23 A	1.02	3.64	98	1.7	10	0.0 /-18
F24T5/HO	1	277	28	0.1 A	1.02	3.64	95	1.7	10	0.0 /-18
F24T5/HO	2	120	53	0.45 A	1.00	1.89	98	1.7	10	0.0 /-18
F24T5/HO	2	277	52	0.19 A	1.00	1.92	98	1.7	10	0.0 /-18

CAUTIONS & WARNINGS

For additional information, visit www.gelighting.com

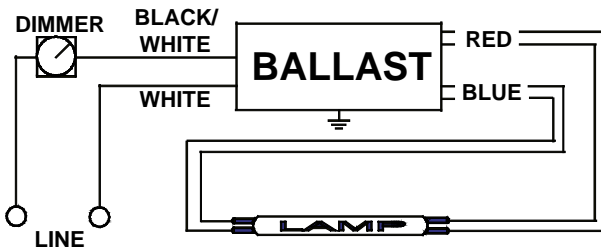
VEZ-132-SC

Brand Name	MARK 10 POWERLINE
Ballast Type	Electronic Dimming
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (Watts) (min/max)	Ballast Factor (min/max)	MAX THD %	Power Factor	Lamp Current Crest Factor	B.E.F.
F17T8	1	17	50/10	0.09	07/24	0.05/1.05	10	0.99	1.6	4.38
F25T8	1	25	50/10	0.11	07/30	0.05/1.05	10	0.99	1.6	3.50
* F32T8	1	32	50/10	0.13	09/35	0.05/1.00	10	0.99	1.6	2.86

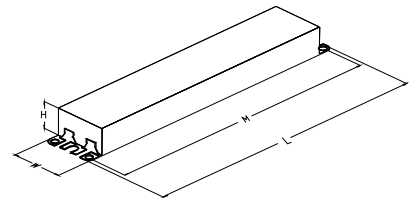
Wiring Diagram



The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
9.50 "	1.7 "	1.18 "	8.90 "
9 1/2	1 7/10	1 9/50	8 9/10
24.1 cm	4.3 cm	3 cm	22.6 cm

Revised 10/28/2005



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VEZ-132-SC	
Brand Name	MARK 10 POWERLINE
Ballast Type	Electronic Dimming
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be available in a plastic/metal can or all metal can construction to meet all plenum requirements.
- 1.3 Ballast shall be provided with poke-in wire trap connectors or integral leads color coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start.
- 2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.3 Ballast shall operate from 60 Hz input source of 120V, 277V or 347V as applicable with sustained variations of +/- 10% (voltage and frequency).
- 2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.5 Ballast shall have a Power Factor greater than 0.98 at full light output and greater than 0.90 throughout the dimming range for primary lamp.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 at maximum light output and 0.05 at minimum light output for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less.
- 2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% at maximum light output when operated at nominal line voltage with primary lamp. Total Harmonic Current (THC) at minimum light output shall not exceed THC at maximum light output.
- 2.9 Ballast shall have a Class A sound rating.
- 2.10 Ballast shall have a minimum starting temperature of 10C (50F) for primary lamp.
- 2.11 Ballast shall provide Lamp EOL Protection Circuit for all T5, T5/HO, and CFL lamps.
- 2.12 Ballast shall control lamp light output from 100% - 5% relative light output for T8 and CFL lamps and 100% - 1% relative light output for T5/HO lamps.
- 2.13 Ballast shall ignite the lamps at any light output setting without first going to another output setting.
- 2.14 Ballast shall tolerate sustained open circuit and short circuit output conditions.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.4 Ballast shall comply with ANSI C82.11 where applicable.
- 3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
- 3.6 Ballast shall comply with NEMA 410 for in-rush current limits.

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9001 Quality System Standards.
- 4.2 Ballast shall carry a ____ warranty from date of manufacture against defects in material or workmanship for operation at a maximum case temperature of ____ (Go to our web site for up to date warranty information: www.philips.com/advancewarranty).
- 4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.
- 4.4 Ballast shall be controlled by a compatible Mark 10 Powerline two-wire dimmer.
- 4.5 Ballast shall be Philips Advance part # _____ or approved equal.

Revised 10/28/2005



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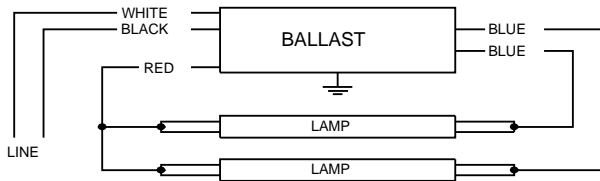


VEL-2P32-SC	
Brand Name	STANDARD ELEC
Ballast Type	Electronic
Starting Method	Instant Start
Lamp Connection	Parallel
Input Voltage	277
Input Frequency	60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F .
F17T8	2	17	0/-18	0.13	34	0.92	30	0.91	1.7	2.71
F25T8	1	25	0/-18	0.13	30	1.10	30	0.90	1.7	3.67
F25T8	2	25	0/-18	0.17	46	0.90	25	0.96	1.7	1.96
F32T8	1	32	0/-18	0.14	38	1.10	25	0.95	1.7	2.89
* F32T8	2	32	0/-18	0.21	58	0.88	20	0.98	1.7	1.52
F32T8/ES (30W)	1	30	60/16	0.13	35	1.10	25	0.93	1.7	3.14
F32T8/ES (30W)	2	30	60/16	0.20	54	0.87	20	0.98	1.7	1.61

Wiring Diagram



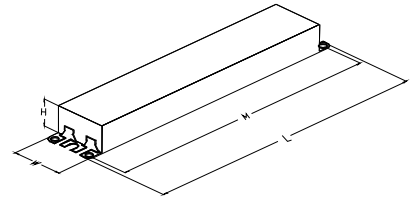
Diag. 64

The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.		in.	cm.
Black	25L	63.5	Yellow/Blue		0
White	25L	63.5	Blue/White		0
Blue	31R	78.7	Brown		0
Red	37L	94	Orange		0
Yellow		0	Orange/Black		0
Gray		0	Black/White		0
Violet		0	Red/White		0

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
9.50 "	1.7 "	1.18 "	8.90 "
9 1/2	1 7/10	1 9/50	8 9/10
24.1 cm	4.3 cm	3 cm	22.6 cm

Revised 08/21/2002



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VEL-2P32-SC	
Brand Name	STANDARD ELEC
Ballast Type	Electronic
Starting Method	Instant Start
Lamp Connection	Parallel
Input Voltage	277
Input Frequency	60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be provided with integral leads color-coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be _____ (Instant or Rapid) Start.
- 2.2 Ballast shall provide Independent Lamp Operation (ILO) for Instant Start ballasts allowing remaining lamp(s) to maintain full light output when one or more lamps fail.
- 2.3 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.4 Ballast shall operate from 60 Hz input source of 120V, 277V or 347V as applicable with sustained variations of +/- 10% (voltage and frequency).
- 2.5 Ballast shall be high frequency electronic type and operate lamps at a frequency between 20 kHz and 30 kHz or above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.6 Ballast shall have a Power Factor greater than 0.98 for primary lamp.
- 2.7 Ballast shall have a minimum ballast factor for primary lamp application as follows: 0.75 for Low Watt, 0.85 for Normal Light Output and 1.20 for High Light.
- 2.8 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less.
- 2.9 Ballast input current shall have Total Harmonic Distortion (THD) of less than 20% for Standard models and THD of less than 10% for Centium models when operated at nominal line voltage with primary lamp.
- 2.10 Ballast shall have a Class A sound rating for all 4-foot lamps and smaller.
- 2.11 Ballast shall have a minimum starting temperature of _____ [-18C (0F) for standard T8 lamps, 10C (50F) for T8/HO, standard T12, Slimline T12 and Long Twin Tube lamps, 0C (32F) for Slimline T8, -29C (-20F) for T12/HO lamps,] for primary lamp application. Ballast shall have a minimum starting temperature of 60F (16C) for energy-saving lamps.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.4 Ballast shall comply with ANSI C82.11 where applicable.
- 3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
- 3.6 Ballast shall comply with NEMA 410 for in-rush current limits.

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9001 Quality System Standards.
- 4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70C.
- 4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.

Note: Energy saving T8 lamps (25W, 28W or 30W) may experience lamp striations if operated on ballasts not rated for their use.

Revised 08/21/2002



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PHILIPS LIGHTING ELECTRONICS N.A.

10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018

Tel: 800-322-2086 · Fax: 888-423-1882 · www.philips.com/advance

Customer Support/Technical Service: 800-372-3331 · OEM Support: 866-915-5886

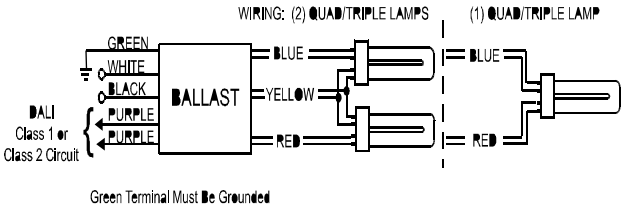


IDL-2S26-M5-BS@120	
Brand Name	ROVR
Ballast Type	Electronic Dimming
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (Watts) (min/max)	Ballast Factor (min/max)	MAX THD %	Power Factor	Lamp Current Crest Factor	B.E.F.
* CFTR32W/GX24Q	1	32	50/10	0.30	09/36	0.03/1.00	10	0.99	1.6	2.78

Wiring Diagram



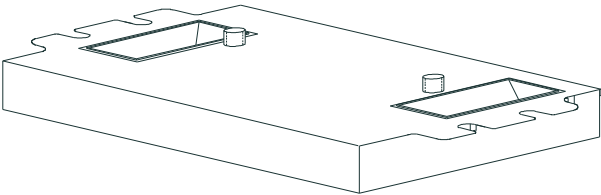
Diag. 165

The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.		in.	cm.
Black	0	0	Yellow/Blue		0
White	0	0	Blue/White		0
Blue	0	0	Brown		0
Red	0	0	Orange		0
Yellow	0	0	Orange/Black		0
Gray		0	Black/White		0
Violet		0	Red/White		0

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
4.98 "	3.00 "	1.18 "	2.00 "
4 49/50	3	1 9/50	2
12.6 cm	7.6 cm	3 cm	5.1 cm

Revised 10/23/2007



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IDL-2S26-M5-BS@120	
Brand Name	ROVR
Ballast Type	Electronic Dimming
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be available in a plastic/metal can or all metal can construction to meet all plenum requirements.
- 1.3 Ballast shall be provided with poke-in wire trap connectors or integral leads color coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start.
- 2.2 Ballast shall be provided with integral protection circuitry to withstand connection of low voltage control leads to mains power supply. In this event, ballast shall default to maximum light output.
- 2.3 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.4 Ballast shall operate from 50/60 Hz input source of 120V or 277V with sustained variations of +/- 10% (voltage and frequency). IntelliVolt models shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency).
- 2.5 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.6 Ballast shall have a Power Factor greater than 0.98 at full light output and greater than 0.90 throughout the dimming range for primary lamp.
- 2.7 Ballast shall have a minimum ballast factor of 1.00 at maximum light output and 0.03 at minimum light output for primary lamp application.
- 2.8 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less.
- 2.9 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp.
- 2.10 Ballast shall have a Class A sound rating.
- 2.11 Ballast shall have a minimum starting temperature of 10C (50F) for primary lamp.
- 2.12 Ballast shall provide Lamp EOL Protection Circuit for all T5, T5/HO and CFL lamps.
- 2.13 Ballast shall control lamp light output from 100% - 3% relative light output for T8 and CFL lamps and 100% - 1% relative light output for T5/HO lamps.
- 2.14 Ballast shall ignite the lamps at any light output setting without first going to another output setting.
- 2.15 Ballast shall tolerate sustained open circuit and short circuit output conditions.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.4 Ballast shall comply with ANSI C82.11 where applicable.
- 3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
- 3.6 Ballast shall comply with NEMA 410 for in-rush current limits.

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9001 Quality System Standards.
- 4.2 Ballast shall carry a ____ warranty from date of manufacture against defects in material or workmanship for operation at a maximum case temperature of ____ (Go to our web site for up to date warranty information: www.philips.com/advancewarranty).
- 4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.
- 4.4 Ballast shall be controlled by a compatible DALI protocol control.
- 4.5 Ballast shall be Philips Advance part # _____ or approved equal.

Revised 10/23/2007



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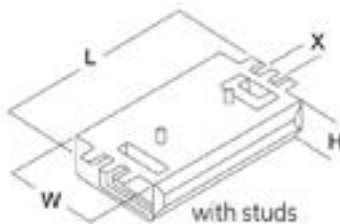


GE
Lighting

71443 - GEC226-MVPS-BES

GE CFL Multi-Volt ProLine™ Electronic Program / Rapid Start Ballast

- Multi-Voltage technology means a single ballast handles voltage from 108V to 305V
- Programmed starting for extended lamp life
- End-of-Lamp-Life Protection
- Color Coded Poke-In Connectors simplifies wiring



SPECIFICATIONS BY LAMP & WATTAGE

Lamp	# of Lamps	Line Volts	System Watts	Nom. Line Current	System Ballast Factor	Ballast Efficacy Factor	Power Factor% (>=)(<=)	Crest Factor THD% (<=)	Min. Starting Temp (°F/°C)
FT24W/2G10	2	120	48	0.41 A	0.93	NaN	99	1 1/2 10	-20.0 / -29
FT24W/2G10	2	277	48	0.18 A	0.93	NaN	99	1 1/2 10	-20.0 / -29
FC16T9/40W	1	120	43	0.16 A	1.00	2.33	97	1 1/2 10	-20.0 / -29
FC16T9/40W	1	277	43	0.16 A	1.00	2.33	97	1 1/2 10	-20.0 / -29
FC16T9	1	120	43	0.16 A	1.00	2.33	97	1 1/2 10	-20.0 / -29
FC16T9	1	277	43	0.16 A	1.00	2.33	97	1 1/2 10	-20.0 / -29
F24T5/HO	2	120	51	0.44 A	1.00	1.96	99	1 1/2 10	-20.0 / -29
F24T5/HO	2	277	51	0.19 A	1.00	1.96	98	1 1/2 10	-20.0 / -29
CFTR42W/4P	1	120	46	0.38 A	0.98	2.13	98	1 1/2 10	-20.0 / -29
CFTR42W/4P	1	277	46	0.17 A	0.98	2.13	98	1 1/2 10	-20.0 / -29
CFTR32W/4P	1	120	36	0.31 A	0.98	2.72	98	1 1/2 10	-20.0 / -29
CFTR32W/4P	1	277	36	0.13 A	0.98	2.72	98	1 1/2 10	-20.0 / -29
CFTR26W/4P	1	120	29	0.24 A	1.10	3.79	98	1 1/2 10	-20.0 / -29
CFTR26W/4P	1	277	29	0.11 A	1.10	3.79	98	1 1/2 10	-20.0 / -29
CFTR26W/4P	2	120	54	0.45 A	1.00	1.85	99	1 1/2 10	-20.0 / -29
CFTR26W/4P	2	277	54	0.2 A	1.00	1.85	99	1 1/2 10	-20.0 / -29
CFS21W/4P	2	120	51	0.42 A	1.12	2.20	99	1 1/2 10	-20.0 / -29
CFS21W/4P	2	277	51	0.18 A	1.12	2.20	99	1 1/2 10	-20.0 / -29
CFQ26W/4P	1	120	27	0.23 A	1.00	3.70	99	1 1/2 10	-20.0 / -29
CFQ26W/4P	1	277	27	0.1 A	1.00	3.70	99	1 1/2 10	-20.0 / -29

GENERAL CHARACTERISTICS

Application	2-CFQ26W, FT24 or 1-42W, CFTR32 Bottom Exit w Studs 120-277V Proline PS Compact Fluorescent
Category	Electronic - Program / Rapid Start
Ballast Type	Programmed start
Starting Method	Series
Lamp Wiring	10 %
Line Voltage Regulation (+/-)	75 °C(167 °F)
Case Temperature	Normal
Ballast Factor	Active
Power Factor Correction	A (20-24 decibels)
Sound Rating	Metal
Enclosure Type	Auto-restart/Thermally protected/Universal voltage
Additional Info	

PRODUCT INFORMATION

Product Code	71443
Description	GEC226-MVPS-BES
Standard Package	Case
Standard Package GTIN	10043168714430
Standard Package Quantity	10
Sales Unit	Individual Pack
No Of Items Per Sales Unit	1
No Of Items Per Standard	10
Package	
UPC	043168714433

DIMENSIONS

Case dimensions	
Length (L)	5.0 in(127.00 mm)
Width (W)	2.4 in(60.96 mm)
Height (H)	1.0 in(25.40 mm)
Mounting dimensions	
Mount Length (M)	4.6 in(117.60 mm)
Weight	0.57 lb
Exit Type	Poke-in
Remote Mounting Distance	12 ft
Remote Mounting Wire Gauge	18 AWG

ELECTRICAL CHARACTERISTICS

Supply Current Frequency	50 Hz/60 Hz
--------------------------	-------------

SAFETY & PERFORMANCE

- CSA
- UL Class P
- UL Listed
- UL Type 1 Outdoor
- UL Type CC
- UL Type HL
- FCC Part 18 Class B at 120 volts

CFQ26W/4P	2	120	51	0.43 A	1.00	1.96	98	1 1/2	10	-20.0 / -29
CFQ26W/4P	2	277	51	0.19 A	1.00	1.96	98	1 1/2	10	-20.0 / -29

WARRANTY INFORMATION

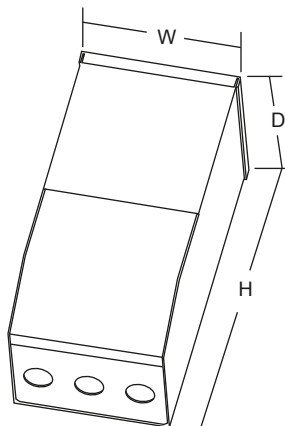
GE Lighting warrants to the purchaser that each ballast will be free from defects in material or workmanship for period as defined in the attached documents from the date of manufacture when properly installed and under normal conditions of use.

Fixture T1 TRANSFORMERS

Two styles of low voltage transformers are available. Both styles are indoor/outdoor rated and can be used interchangeably. Both will provide the 24VAC required by all Winline and Windirect SCV1/SCV2 products. Long remote distances and/or dimming installations will produce a lower voltage which will in turn produce lower light levels. Winona Lighting recommends using the TQ-style transformers for remote distances greater than 10' and whenever dimming is required.

TW50-TW-600

- Stainless Steel Housing
- Enclosure Temperature does not exceed 70°C in a 40°C ambient, fully loaded.
- Transformers are encapsulated in the enclosure.
- Transformer is dimmable with all dimmers that provide symmetrical form of the current under any condition.
- Input leads are 18 AWG. Output leads are 12 AWG. Lead insulation is 105°C.
- Transformer uses a class B (130°C) insulation system.
- Transformers have manual reset thermal circuit breakers on the primary and the secondary sides.
- Wiring compartment has bottom knockouts sized for 3/4" screw cable connectors.
- Transformer is UL listed. UL file number: E194005. Models: TW150, TW300, TW500, and TW600



Catalog #	Watts	H	W	D	Primary Voltage	Secondary Voltage	Finish
TW50	50W	7 1/2"	3 7/16"	3 15/16"	120V & 277V	24V	Stainless Steel
TW75	75W	7 1/2"	3 7/16"	3 15/16"			
TW100	100W	7 1/2"	3 7/16"	3 15/16"			
TW150	150W	7 1/2"	3 7/16"	3 15/16"			
TW300	300W	8"	4 3/32"	3 3/32"			
TW500	500W	9 13/32"	4 19/32"	4 3/32"			
TW600	600W	9 13/32"	4 19/32"	4 3/32"			

TQ150-TQ600

Housing - Medium Size

18 Gauge steel with 8 knockouts. Built-in support bracket incorporated to secure housing for surface mounting.

Multi-Volt and Taps

The Qtran QO Series Luminaire Power Supply Center, utilizes two(2) primary taps, a switched or a dimed tap to compensate for losses when dimming. Four(4) secondary taps provide secondary voltages of: 22V, 24V, 26V, 28V, and 30V. Loads may be connected to one or ore of the secondary taps up to the full watt rating of the QO. The advantage is that loads at varying distances from the QO can be tapped on different taps to recover voltage drop and produce between 85% - 100% light output.

Primary Circuit Protection

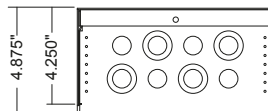
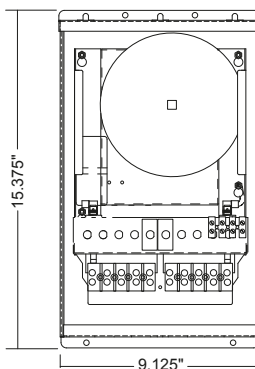
All units come standard with primary circuit protection.

Secondary Circuit Protection

QOM Single units are protected by up to five(5) magnetic circuit breakers. Breaker sized to the feed loader per N.E.C. Article 411 (not to exceed 25 amps per load). All wiring by the electrical contractor must be Class 1 compliant to N.E.C. Secondary Breaker available in 5A, 10A, 15A, 20A, and 25A.

Toroidal Choke

A Choke or "Debuzzing Coil" option reduces noise and in-rush current. A choke is especially helpful when dimming to achieve quiet operation.



Catalog #	Watts	Primary Voltage	Secondary Voltage	Finish
TQ150-120	150W	120V	24V	Black Power Coat
TQ150-277	150W	277V		
TQ300-120	300W	120V		
TQ300-277	300W	277V		
TQ500-120	500W	120V		
TQ500-277	500W	277V		
TQ600-120	600W	120V		
TQ600-277	600W	277V		

Appendix B: Electrical and Controls

GTD20A™

Relay Control Device

PHILIPS bodine

A Division Of Philips Electronics North America Corporation

Product Summary

UL LISTED

Field Installation
(Indoor and Damp)

Full Warranty

5 Years (NOT pro-rata)

Universal Input Voltage

120 Through 277 VAC, 50/60 Hz

AC Input Current

45 mA
(Sensing Circuit Only)

AC Input Power Rating

4.0 Watts
(Sensing Circuit Only)

Approved Lighting Loads

Any Type

Lighting Load Rating

20 A Maximum

Temperature Rating (Ambient)

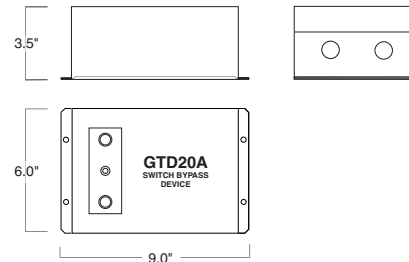
-20°C to +55°C
(-4°F to +131°F)

Dimensions

9" x 6" x 3.5"
(229 mm x 152 mm x 89 mm)
Mounting 8.5" x 2.5"
(216 mm x 63.5 mm)

Weight

5 lbs. (2.3 kg)



APPLICATION

The GTD20A works in conjunction with an auxiliary generator or central inverter system to power designated emergency lighting loads up to 20 amps regardless of local switch position. The device consists of relay switching circuitry in a single, wall-mountable enclosure (T-bar mounting kit optional). The GTD20A senses the loss of normal power and, in response, switches the lighting load to a designated alternate power source. The device can be used to: (1) transfer a lighting load from normal power to generator or central inverter system power when normal power is lost; (2) bypass a wall switch to allow generator- or central inverter system-supplied lighting loads to energize when normal power is lost; (3) bypass a dimming panel and prevent backfeed to allow lighting to energize at full brightness in an emergency situation; and (4) bypass most dimming controls using an auxiliary relay contact. The GTD20A includes three dry form C contacts, which allows the user a wide variety of wiring options. The GTD20A is not limited to emergency lighting applications. For additional applications and information, contact the factory. The GTD20A is suitable for use in indoor and damp locations.

OPERATION

The GTD20A senses the loss of normal power and switches the lighting load, connecting it to a user-designated emergency circuit. No routine maintenance is required to keep the GTD20A functional; however, like other life safety unit equipment, it should be checked periodically to ensure that it is working properly.

INSTALLATION

The GTD20A does not affect normal fixture operation and comes fully assembled for immediate installation. In addition to available wiring, the device requires a direct, unswitched connection to a normal power circuit and, depending on the application, an unswitched connection to a generator-supplied or central inverter system-supplied emergency panel. See diagram A for typical installation.

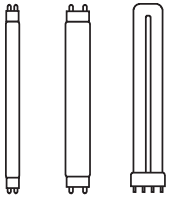
Specifiers Reference

Project _____ Type _____ Model No. _____

Comments _____

L4100020

11/02/10 © Philips Emergency Lighting
P.O. Box 460 Collierville, TN USA 38027-0460
Sales 800-223-5728 FAX 901-853-5009
Tech. Support 888-263-4638
www.philips.com/bodine



GTD20A™

Relay Control Device

UL and CODE COMPLIANCE

The GTD20A has been tested by Underwriters Laboratories in accordance with the standards set forth in UL 924 as "Emergency Lighting Equipment" and in UL 1008 as "Transfer Switch Equipment". The GTD20A has also been tested by Underwriters Laboratories in accordance with standards set C22.2 No. 178 as "Automatic Transfer Switch". The GTD20A is UL Listed for field installation.

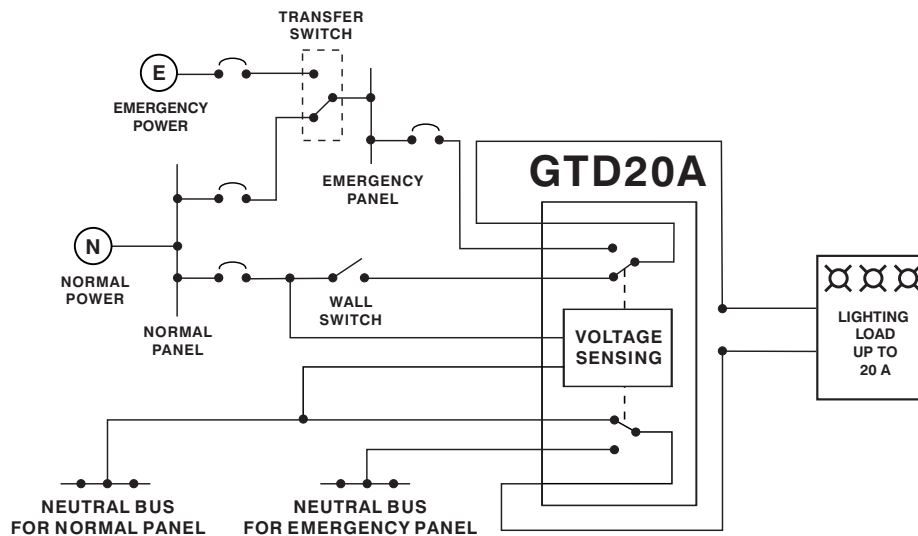
SPECIFICATION

Emergency egress lighting shall be provided by using existing lighting loads equipped with a Philips Bodine GTD20A emergency lighting relay control device. The device shall be capable of bypassing the local switching means when normal utility power has been lost. The device shall consist of relay switching circuitry, a test switch, a normal power indicator light and an alternate power indicator light contained in one 9" x 6" x 3.5" enclosure; shall sense normal power at 120 through 277 VAC, 50/60 Hz; shall be rated for 120 through 277 VAC, 50/60 Hz at up to 20 amps of lighting load; shall draw 45 mA and 4.0 Watts during normal sensing operation; and shall comply with the current NEC. The device shall be UL Listed for field installation in indoor or damp locations and shall be warranted for a full five years from date of purchase.

WARRANTY

The GTD20A is warranted for five (5) full years from date of purchase. This warranty covers only properly installed emergency lighting relay control devices used under normal conditions. For the warranty period, Philips Emergency Lighting will, at its option, repair or replace without charge a defective device, provided it is returned to the factory transportation prepaid and our inspection determines it to be defective under terms of the warranty. Repair or replacement, as stated above, shall constitute the purchaser's exclusive warranty, which does not extend to transportation, installation, labor or any other charges; nor does it apply to any equipment of another manufacturer used in conjunction with the device.

DIAGRAM A



The GTD20 can be used with a 3-wire dimming system.

L4100020

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P.O. Box 460 Collierville, TN USA 38027-0460
Sales 800-223-5728 FAX 901-853-5009
Tech. Support 888-263-4638
www.philips.com/bodine

For the most current technical information and notices, please visit TechNotes on our website.

Date: _____ Type: _____

Firm Name: _____

Project: _____



iPlayer 3

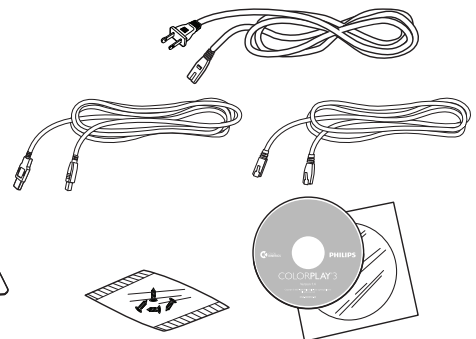
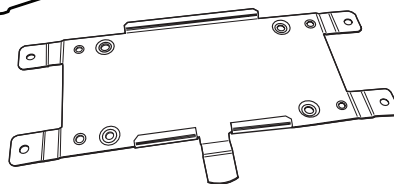
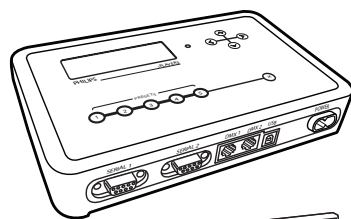
A compact DMX control solution with advanced light show authoring features

iPlayer® 3 controller is a compact yet powerful show storage and playback device capable of delivering light shows to installations with up to 340 unique light addresses. Packaged with ColorPlay® 3 light show authoring software, iPlayer 3 is designed to add new levels of sophistication and flexibility to your lighting installations while eliminating the need for expensive lighting boards and technical programming expertise.

- Easy to use — With factory preset shows, custom show-authoring capabilities, an intuitive LCD interface, removable SD card storage, and onboard light addressing features, iPlayer 3 enables you to spend more time on the creative aspects of lighting design and less time on setup.
- Packaged with ColorPlay 3 light show authoring software — ColorPlay 3 gives you the flexibility to create and manage light shows using fully customizable effects, multi-track editing, timeline layering, and transition styles.
- Designed for use with the optional Controller Keypad — Controller Keypad is a wall-mounted user interface providing instant pushbutton playback of up to eight light shows.

- Supports the optional AuxBox expansion device — AuxBox automatically triggers up to eight iPlayer 3 light shows using any remote triggering device with a dry-contact closure. Via the AuxBox, you can trigger light shows by motion sensors, 3rd party control or sensor systems, and more.
- Control two DMX universes — iPlayer 3 has two DMX output ports, each controlling a universe of 512 DMX channels.
- Automate show playback — Set alarms to automatically trigger show playback based on a specific date, day of the week, weekdays, weekends, or an astronomical event, such as sunrise or sunset.

For detailed product information, please refer to the iPlayer 3 Product Guide at www.colorkinetics.com/lis/controllers/iplayer3/

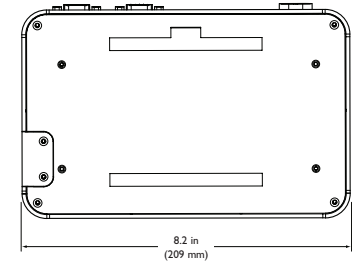
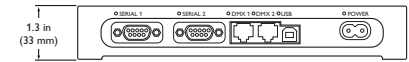
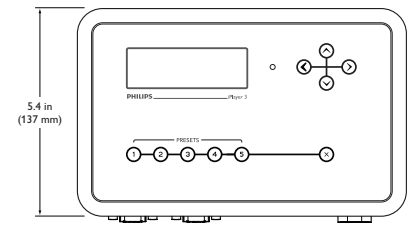


PHILIPS

Specifications

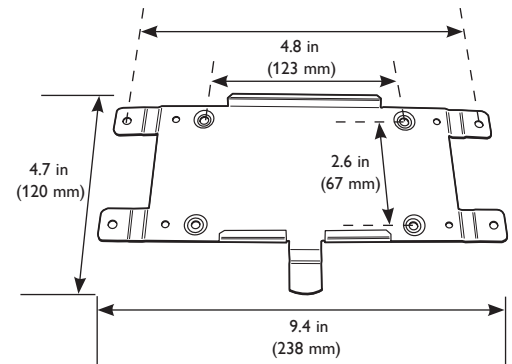
Due to continuous improvements and innovations, specifications may change without notice

Item	Specification	Details
Electrical	Input Voltage	100 – 240 VAC, 50 / 60 Hz, 5 W
Control	Computer Interface	USB 2.0
	External / Auxiliary Interface	Two DMX512 RJ45 ports Two RS-232 9-pin serial ports
	Data Storage	Removable Secure Digital Card drive (256 MB Card included.)
Physical	Dimensions (Width x Depth x Height)	8.2 x 5.4 x 1.3 in (209 x 137 x 33 mm)
	Weight	1.2 lb (0.54 kg)
	Housing	Polycarbonate
	Operating Temperature	14° – 104° F (-10° – 40° C)
	Humidity	0 – 95%, non-condensing
Certification and Safety	Certification	UL / cUL, FCC Class B, CE
	Environment	Dry Location, IP20



Software Requirements

System Requirements	Specification	PC	Mac
Software	Operating System	Windows® 2000 / XP / Vista	Mac OS 10.4 or greater
Hardware	CD Drive	CD-ROM or DVD drive	CD-ROM or DVD drive
	Memory	512 MB RAM	512 MB RAM
	Disk space	60 MB free disk space	60 MB free disk space

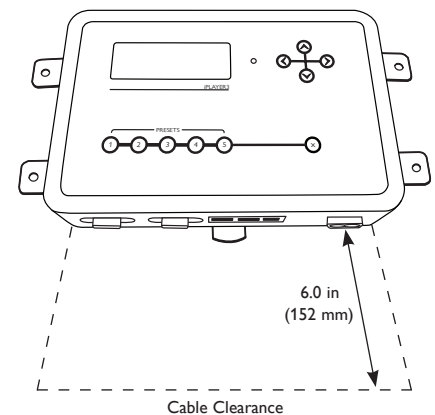


iPlayer 3 and Accessories

Item	Type	Item Number	Philips 12NC
iPlayer 3	North America Power Cord	103-000019-00	910403327101
	Europe Power Cord	103-000019-01	910503700392
	China (CCC) Power Cord	103-000019-02	910503700738
Controller Keypad	DB-9 Serial	103-000020-00	910503700223
AuxBox	DB-9 Serial	103-000021-00	910503700224

Use Item Number when ordering in North America.

For detailed product information, please refer to the iPlayer 3 Product Guide at www.colorkinetics.com/ls/controllers/iplayer3/

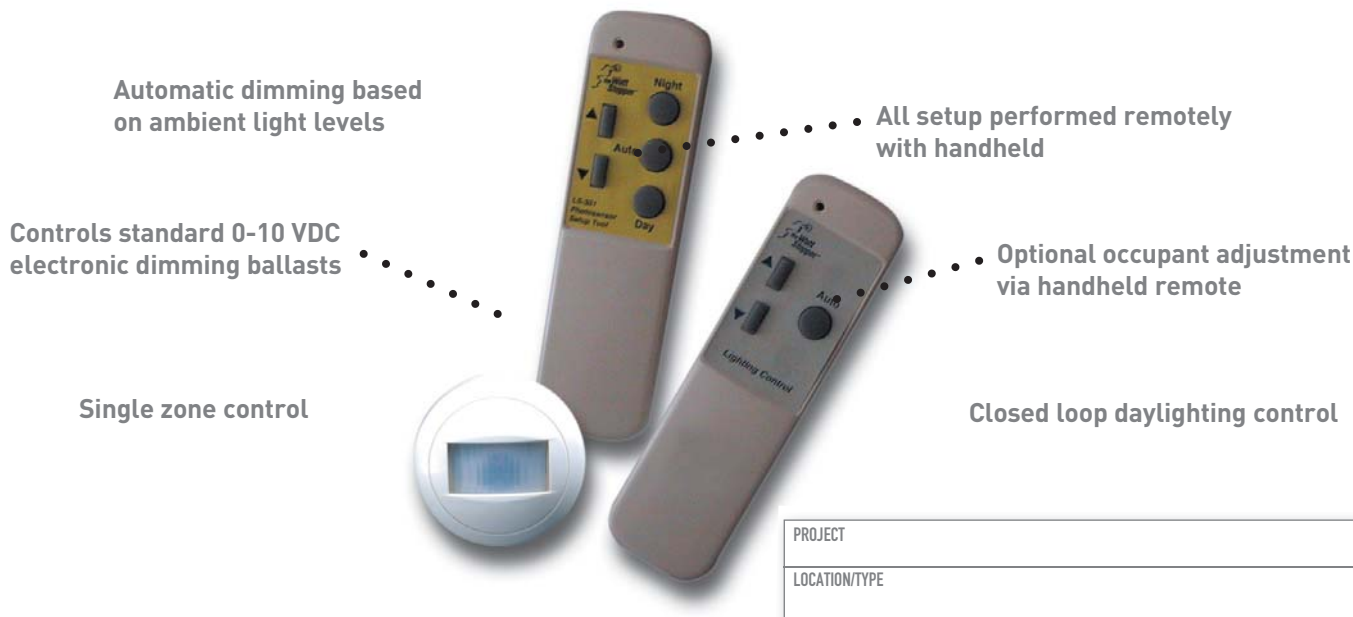


Philips Color Kinetics
3 Burlington Woods Drive
Burlington, Massachusetts 01803 USA
Tel 888.385.5742
Tel 617.423.9999
Fax 617.423.9998
www.philipscolorkinetics.com

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LightSaver® LS-301 Dimming Photosensor



Product Overview

Description

The LightSaver LS-301 is a closed loop, ceiling mount, low voltage indoor photosensor that works with standard, 0-10 VDC electronic dimming ballasts to dim lighting as daylight increases.

Operation

The LS-301 mounts on a ceiling and utilizes a spectral filtering system to measure daylight and electric light levels. A closed loop daylighting system, the LS-301 measures the total light level from daylight and electric light in the controlled area to adjust electric lighting levels. As the daylight contribution increases, the lights dim down. The photosensor utilizes sliding setpoint control, which responds to the different spatial distribution qualities of electric light and daylight. The LS-301 calculates the required light level for current daylight contribution based on two setpoints. One represents the target level when no daylight is present (night setpoint) and the other when significant daylight is present (day setpoint).

Features

- Provides precise control of lighting to maintain desired light level
- Extremely linear photocell response with greater than 1% accuracy
- Designed to measure light as the human eye perceives it, eliminating "overreporting" illumination levels provided by daylight
- California Title 24-2008 compliant
- Separate handheld remote controls for setup and occupant adjustment to prevent tampering
- Boosts energy savings by reducing maximum lamp output, often resulting in a 20% reduction or more compared with lights at full output
- Achieves lumen maintenance by holding target light level as lamp output decreases over time
- Qualifies for use on ARRA-funded public works projects

Adjustment via Handheld Remote Control

All LS-301 adjustments are made with one of two handheld remotes. The FDR-301-S provides five buttons for initial set-up, which is easily completed by first raising or lowering electric light levels to desired levels, then programming this target level into the photosensor. The LSR-301-P provides three buttons for occupants to adjust light levels. With this optional tool, users can increase target light levels by up to 25% or reduce them to the lamp/ballast minimum level. Pressing the "Auto" button returns the control to programmed levels.

Applications

The LS-301 is designed to blend into its surroundings when installed in any environment. It provides one zone of daylighting control in a private office or classroom. In these applications, the LS-301 can be combined with an occupancy sensor. Often, it is possible for the LS-301 to share a single power pack with occupancy sensor(s).

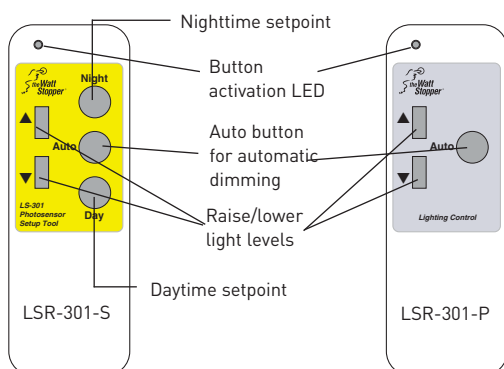


Specifications

- Full range dimming: .2 VDC (minimum) to 10 VDC (100% lighting) output voltage
- Current consumption: 30 mA @ 24 VDC
- In typical applications, setpoints are adjustable from 20-60 footcandles (210-640 lux)
- Controls up to 50 standard dimming ballasts in one zone
- Sensor leads: gray and violet to ballast, red and black to 24 VDC
- Dimensions: 2.35" diameter. x 0.875" depth (60mm x 22mm), threaded piece extends 1.25" (31.8mm) from back, fits .5" knockout
- Five year warranty

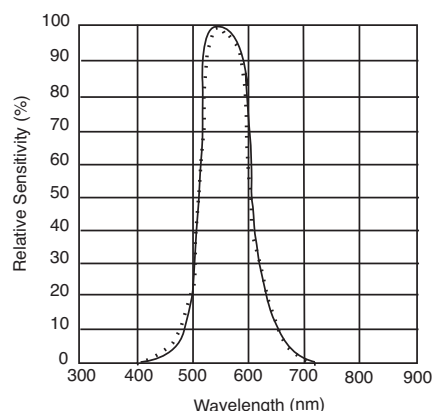
Product Controls

Remote Controls



Remote handheld (above left) enables easy set-up while optional occupant remote provides adjustability for individual lighting preferences.

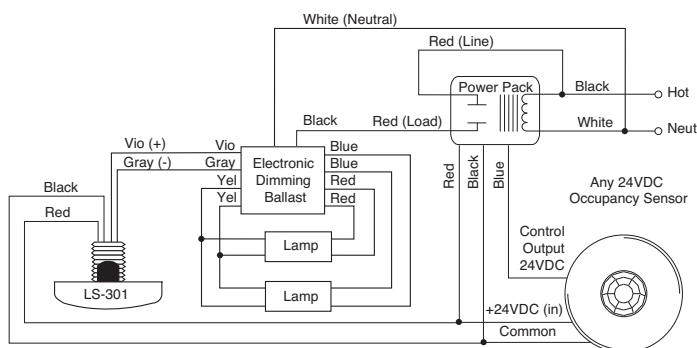
Spectral Response Curve



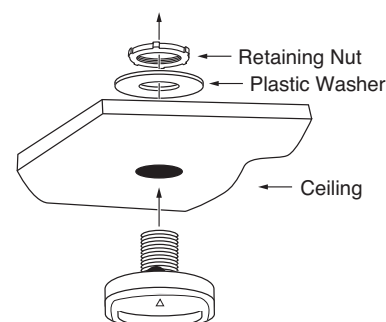
The spectral response of the LS-301 photocell closely matches the sensitivity of the human eye.

Wiring & Installation

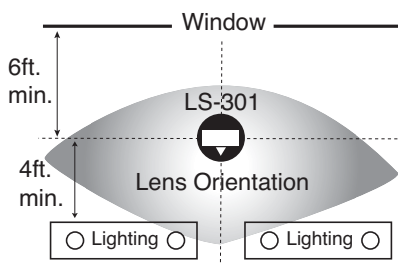
Wiring



Mounting and Installation



Coverage



Placement Guidelines

- Mount photocell between 6 and 12 feet (1.8m - 3.7m) from window.
- Do not mount directly above direct/indirect pendant fixtures. Mount at least 4 feet (1.2m) from pendant fixtures.

Ordering Information

Catalog No.	Description	Input Voltage
<input type="checkbox"/> LS-301	Dimming Photosensor	24 VDC
<input type="checkbox"/> LS-301-U	Dimming Photosensor, ARRA-compliant	24 VDC
<input type="checkbox"/> LS-301-FTA	Dimming Photosensor, ARRA-compliant (FTA exception)	24 VDC
<input type="checkbox"/> LSR-301-S	Setup Remote Control (2 AAA batteries included)	
<input type="checkbox"/> LSR-301-P	Occupant Remote Control (2 AAA batteries included)	

LS-301 works with WattStopper power packs



BZ-50 Universal Voltage Power Pack

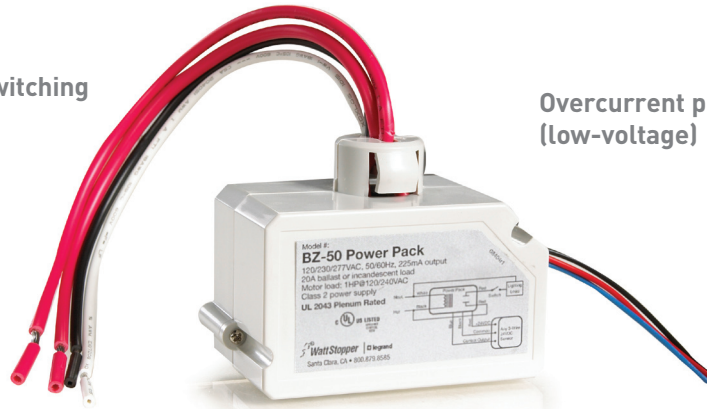
High-efficiency switching power supply

Overcurrent protection (low-voltage)

Plenum rated

120/277VAC, 50/60Hz

Zero crossing for reliability and increased product life



PROJECT
LOCATION/TYPE

Product Overview

Description

The BZ-50 Universal Voltage Power Pack provides 24 VDC operating voltage to WattStopper's low-voltage occupancy sensors. This device is constructed with environmentally friendly materials and is RoHS-compliant.

Operation

The BZ-50 consists of a high-efficiency switching power supply and a high-current relay. It has an input of 120/277 VAC, 50/60Hz, and an output of 24VDC, 225mA. It turns the connected load on and off automatically based on occupancy sensor input.

Plenum Rated

The BZ-50 Power Pack is comprised of Teflon-coated low-voltage leads and an ABS, UL 2043 and 94V-0 plastic resin enclosure that is plenum-rated. As a result, the BZ-50 does not require installation into the junction box, but can be cost-effectively installed directly into the plenum.

Applications

The BZ-50 Power Pack is designed to be flexible enough to control almost any lighting or HVAC load, such as lighting circuits, self-contained air conditioners, pumps, fans, motors, VAV systems, motorized damper controls and setback thermostats. The BZ-50 is well-suited for any application which requires high-voltage switching through low-voltage controls. By linking power packs and sensors, an almost unlimited number of configurations can be obtained.

Features

- Self-contained power supply relay system
- Efficient switching power supply providing optimized current output based on number of sensors
- LED indicates status of relay or if there is a low-voltage overcurrent
- RoHS-compliant
- Zero crossing circuitry for reliability and increased product life
- UL 2043 plenum rated for cost-effective installation
- 1/2" snap-in nipple attaches to standard electrical enclosures through 1/2" knockouts
- 14 AWG wires on the relay for 20A operation
- Qualifies for ARRA-funded public works projects

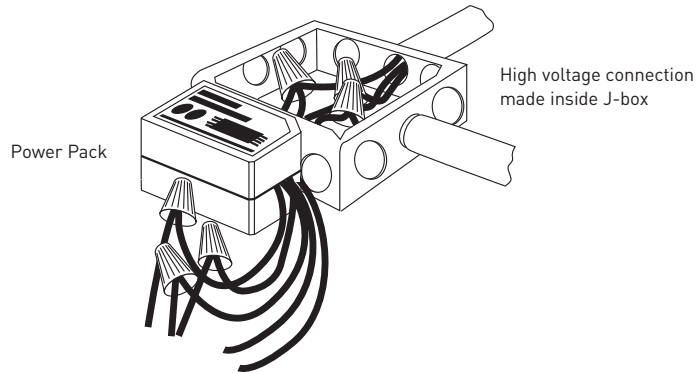


Specifications

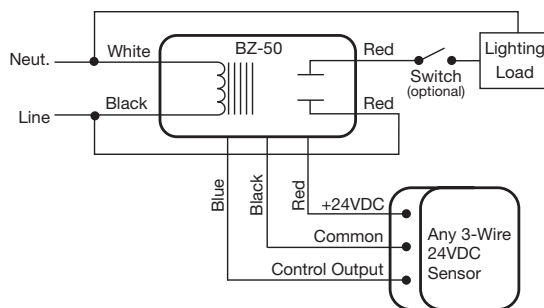
- 120/277VAC, 50/60Hz voltage input
- Secondary voltage of 24 VDC
- Secondary output of 225 mA (with relay connected)
- Low-voltage leads are rated for 300 volts
- UL-rated 94 V-0 grey plastic enclosure
- Dimensions: 1.6" x 2.75" x 1.6" (40.6mm x 69.9mm x 40.6mm) H x W x D with a 1/2" (12.7mm) snap-in nipple
- UL and cUL listed
- Five year warranty

System Layout & Wiring

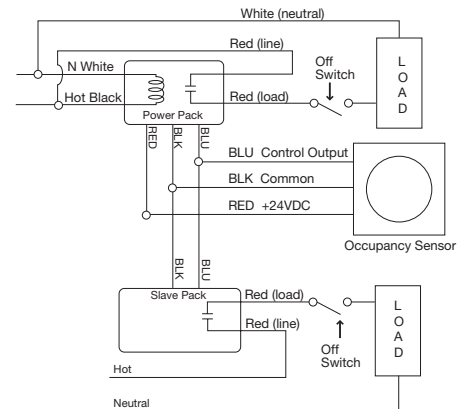
Installation Diagram



Wiring with Occupancy Sensor



Auxiliary Relay Pack with Sensor



Ordering Information

Catalog No.	Input Voltage	Load Ratings			Output
		Ballast(A)	Incan(A)	Motor(HP)	
<input type="checkbox"/> BZ-50	120/277VAC; 50/60Hz	20	20	1*	24 VDC; 225 mA**
<input type="checkbox"/> BZ-50-U					
<input type="checkbox"/> BZ-50-FTA					

*1 Hp rated at 120/250 VAC. **Output is 225 mA with relay connected.

Installation Notes

- 1) All WattStopper power packs should be installed in accordance with state, local, and national electrical codes and requirements.
- 2) Power packs are designed to attach to existing or new electrical enclosures with .5" 125.40mmJ knockout (check electrical codes in your area).
- 3) Most applications require UL-listed, 18-22 AWG, 3-conductor, Class 2 cables for low-voltage wiring. For plenum return ceilings use UL-listed plenum-approved cables.

CI-355 Passive Infrared Line Voltage Ceiling Sensor

Auto set automatically selects optimal time delay and sensitivity settings

Architecturally appealing low profile appearance

360° coverage



Terminal wiring for quick and easy installation

Operates at 120, 230, 277 or 347 VAC, 50/60 Hz

Walk-through mode increases savings potential

PROJECT

LOCATION/TYPE

Product Overview

Description

WattStopper's CI-355 passive infrared (PIR) occupancy sensor automatically turns lighting on and off based on occupancy. The sensor mounts on the ceiling with a flat, low-profile appearance and provides 360 degrees of coverage.

Operation

The CI-355 is line voltage and operates at 120, 230, 277 or 347 VAC. The sensor uses passive infrared technology (PIR) to sense occupancy and automatically turn lighting on. PIR works by sensing the difference between infrared energy from a human body in motion and the background space. When no occupancy is detected for the length of the time delay, lighting automatically turns off.

Auto Set

The CI-355 requires no adjustment at installation. Auto set continuously monitors the controlled space to identify usage patterns. Using this information, it automatically adjusts the time delay and sensitivity settings for optimal performance and energy efficiency. The sensor assigns short delays (as low as 5 minutes) for times when the space is usually vacant, and longer delays (up to 30 minutes) for busier times.

Applications

The CI-355 works well in open office spaces, computer rooms, conference rooms, classrooms, and warehouses. It is a good choice for areas with high ceilings or with two-level lighting. The convenient mounting system keeps installation costs down. It also eliminates the need for a power pack by using line voltage wiring.

Features

- Advanced control logic based on RISC micro-controller provides:
 - Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
 - Walk-through mode turns lights off 3 minutes after the area is initially occupied – ideal for brief visits such as mail delivery
 - Built-in light level sensor featuring simple, one-step set-up
- LED indicates occupancy detection
- DIP switch simplifies sensor adjustments
- Clip mounting system makes ceiling tile installation simple
- Uses existing line voltage wiring and doesn't require a power pack
- Qualifies for ARRA-funded public works projects

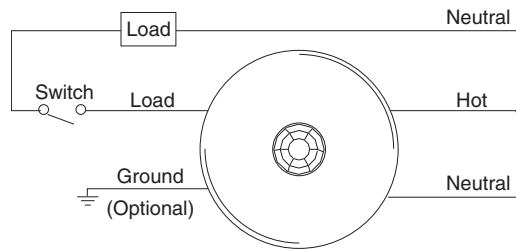


Specifications

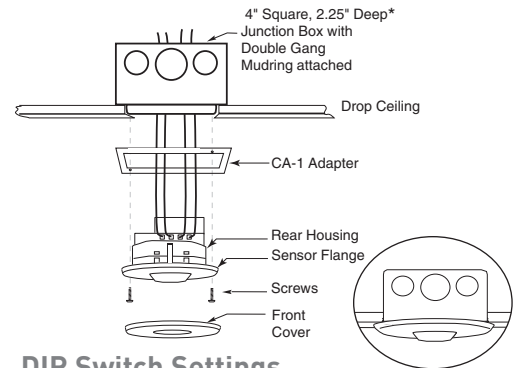
- 120/230/277/347 VAC, 50/60 Hz
- Time delays: Auto set, fixed (5, 10, 15, 20, or 30 minutes), walk-through, test-mode
- Sensitivity adjustment: Auto set or reduced sensitivity
- Multi-level, 360° Fresnel lens for superior occupancy detection
- Built-in light level sensor – works from 10 to 300 footcandles (107.6 to 3,229.2 lux)
- Mounting options: 4 square junction box with double gang mudring; 4 inch octagonal j-box
- Dimensions: 4.5" diameter x 1.45" deep (114.3mm x 25.9mm)
- UL and cUL listed
- Five year warranty

Wiring & Mounting

Wiring Diagram

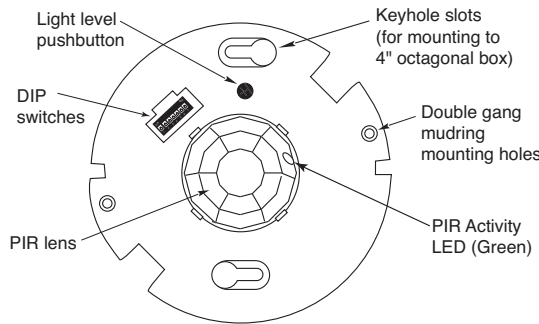


Ceiling Mounting



Controls & Settings

Product Controls



DIP Switch Settings

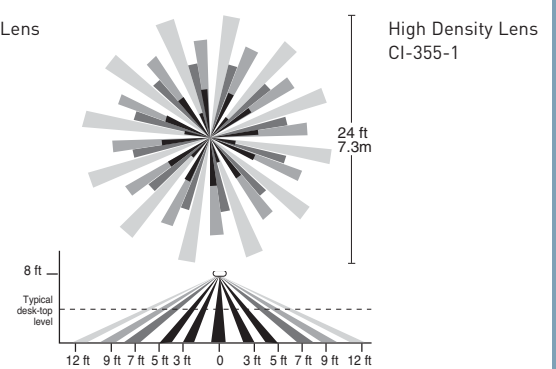
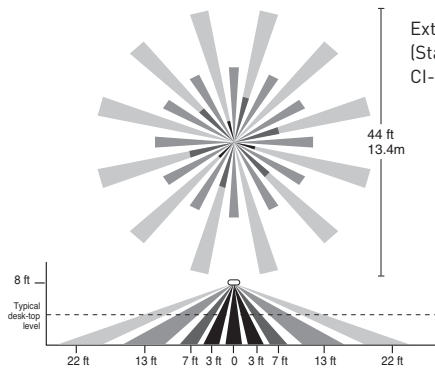
On Mode	1	LED	6
Auto On	-	Disabled	-
Manual On	•	Enabled	•
Override	2	Sensitivity	7
Normal	-	Minimum	-
Override	•	Max/Smartset	•
Time Delay	3 4 5		
5 sec/SmartSet	↑ - -		
5 minutes	- - •		
10 min.	↑ - •		
10 minutes	- - •		
15 min.	↑ - -		
15 minutes	- - •		
20 minutes	↑ - -		
30 min.	- - •		

↓ = Factory Setting
 • = ON
 - = OFF

↑ = walk-through mode

Coverage

Coverage Patterns



Ordering Information

Catalog No.	Voltage	Load Rating	Coverage
□ CI-355	120 VAC, 50/60 Hz 230/277 VAC, 50/60 Hz 347 VAC, 50/60 Hz	0-800W Ballast/Tungsten 0-1200W Ballast 0-1500W Ballast	360°; up to 1200 ft ² (111.5 m ²)
□ CI-355-1	120 VAC, 50/60 Hz 230/277 VAC, 50/60 Hz 347 VAC, 50/60 Hz	0-800W Ballast/Tungsten 0-1200W Ballast 0-1500W Ballast	360°; up to 500 ft ² (46.5 m ²)
□ CA-1	Cosmetic adapter for ceiling installations with 4" square j-box or Wiremold #V5752 box		



Two-wire Fluorescent Multi-way Architectural Dimmer (ADFM-8A, ADFM-16A, ADFM277-10A)

High-capacity spec-grade dimmers for performance and energy savings

Adjust light output to ideal levels with slider

Adjustable low-end trim



For single-pole or multi-way applications; no neutral required

On/Off/Preset control

Ideal for commercial applications; matching 120 and 277V models

PROJECT
LOCATION/TYPE

Product Overview

Description

The ADFM-8A, ADFM-16A and ADFM277-10A Two-Wire Fluorescent Architectural Dimmers provide easy on/off and preset dimming control of two-wire dimmable fluorescent lighting loads via an on/off switch and a slider. Designed to replace a standard light switch or dimmer, they allow for ideal light levels regardless of the activity taking place in a room.

Operation

With the ADFM dimmers, users can brighten and dim the connected lights by moving the slider up and down. Users reduce lighting levels by moving the slider down, or increase brightness by moving the slider up. To turn lighting on or off, users simply press the switch. Lighting will come on to the preset level, determined by the slider position.

Multi-way Operation & Low-end Trim

The ADFM dimmers can be used in both single-pole and multi-way applications. In a three-way application, a dimmer is installed in one location and a three-way switch in the other location. The user enjoys on/off and dimming control from the dimmer and on/off control from the switch. In a multi-way installation, one or more four-way switches are installed between the dimmer and three-way switch. The dimmers also allow the low-end trim to be set to accommodate different ballasts. Users simply remove the wallplate and adjust the calibration dial.

Applications

The ADFM dimmers can be used to save energy and reduce utility costs in applications where fluorescent lighting loads are common, such as private offices and conference rooms.

Features

- Replaces standard single-pole or 3-way switch
- Operates specific fluorescent loads
- Large switch turns connected load on or off
- Slider control for easy dimming or brightening
- Provides multi-way control when used with 3-way and 4-way switches
- Smooth and continuous dimming
- No current leakage to load when switch is in off position for safety
- Choice of five decorator colors (White, Ivory, Light Almond, Grey and Black)
- Includes wallplate for single or multi-gang installation

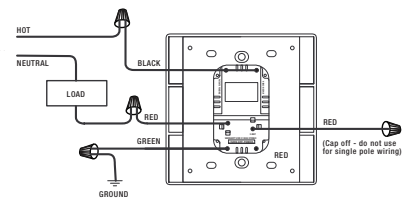


Specifications

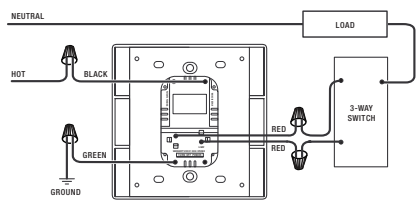
- ADFM-8A and ADFM-16A: 120 VAC; 60 Hz
- ADFM277-10A: 277 VAC; 60 Hz
- No neutral required
- Load ratings (compatible fluorescent loads only):
 - ADFM-8A: 0.3-8A, see derating chart
 - ADFM-16A: 0.3-16A
 - ADFM277-10A: 0.3-10A
- Filtered output for RFI suppression
- Includes voltage compensation circuitry for stabilized light output
- Use only one dimmer in a 3-way/multi-way circuit
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

Wiring Diagrams

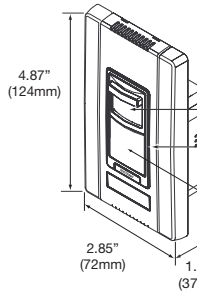


Single-pole Wiring

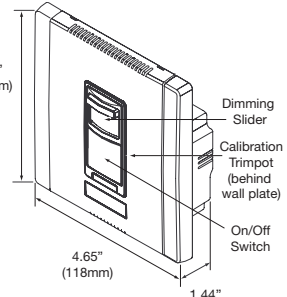


3-way/Multi-way Wiring

Product Controls



ADF-8A



ADF-16A
ADFM277-10A

Multi-gang Derating Information

Dimmer Catalog #	Maximum Load	Fins are NOT removed		Fins ARE removed	
		2-gang	3-gang	2-gang	3-gang
ADFM-8A	8A	8A	8A	7.7A	6.3A
ADFM-16A	16A	no derating required			
ADFM277-10A	10A	no derating required			

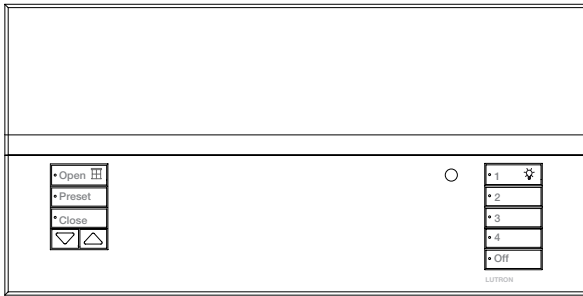
Compatible Ballasts

<p>Advance: Mark 10® and Ambistar</p> <p>ADFM-8A & ADFM-16A: REZ-132-SC, REZ-2532-SC, REZ-3532-SC, REZ-154, REZ-2554, REZ-1Q18-M2, REZ-2Q18-M2, REZ-1T42-M2, REZ-2T42-M3, REZ-1TTS40, REZ-1TTS40-SC, REZ-2TTS40, REZ-2TTS40-SC, REB-2S26-M1-LS-DIM, REB-2S26-M1-BS-DIM</p> <p>ADFM277-10A: VEZ-132-SC, VEZ-2532-SC, VEZ-3532-SC, VEZ-154, VEZ-2554, VEZ-1Q18-M2, VEZ-2Q18-M2, VEZ-1T42-M2, VEZ-2T42-M3, VEZ-1TTS40, VEZ-1TTS40-SC, VEZ-2TTS40, VEZ-2TTS40-SC</p> <p>All Models: IEZ-2S24-D</p>
<p>Lutron: Tu-Wire®</p> <p>ADFM-8A & ADFM-16A: 2W-T426-120-1-S, 2W-T426-120-2-S, 2W-T432-120-1-S, 2W-T432-120-2-S, 2W-T832-120-1-S, 2W-T832-120-2-S</p>
<p>Sylvania: Quicktronic® Powersense™</p> <p>All Models: QTP1x32T8/UNV DIM, QTP2x32T8/UNV DIM, QTP3x32T8/UNV DIM, QTP4x32T8/UNV DIM</p>

Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> ADFM-8A-W	White	Two-Wire Fluorescent 8A Multi-way Architectural Dimmer	120 VAC, 60 Hz	0.3-8A
<input type="checkbox"/> ADFM-8A-I	Ivory			
<input type="checkbox"/> ADFM-8A-LA	Lt. Almond			
<input type="checkbox"/> ADFM-8A-G	Grey			
<input type="checkbox"/> ADFM-8A-B	Black			
<input type="checkbox"/> ADFM-16A-W	White	Two-Wire Fluorescent 16A Multi-way Architectural Dimmer	120 VAC, 60 Hz	0.3-16A
<input type="checkbox"/> ADFM-16A-I	Ivory			
<input type="checkbox"/> ADFM-16A-LA	Lt. Almond			
<input type="checkbox"/> ADFM-16A-G	Grey			
<input type="checkbox"/> ADFM-16A-B	Black			
<input type="checkbox"/> ADFM277-10A-W	White	Two-Wire Fluorescent 10A Multi-way Architectural Dimmer	277 VAC, 60Hz	0.3-10A
<input type="checkbox"/> ADFM277-10A-I	Ivory			
<input type="checkbox"/> ADFM277-10A-LA	Light Almond			
<input type="checkbox"/> ADFM277-10A-G	Grey			
<input type="checkbox"/> ADFM277-10A-B	Black			

GRAFIK Eye® QS Wireless Control Unit with EcoSystem®

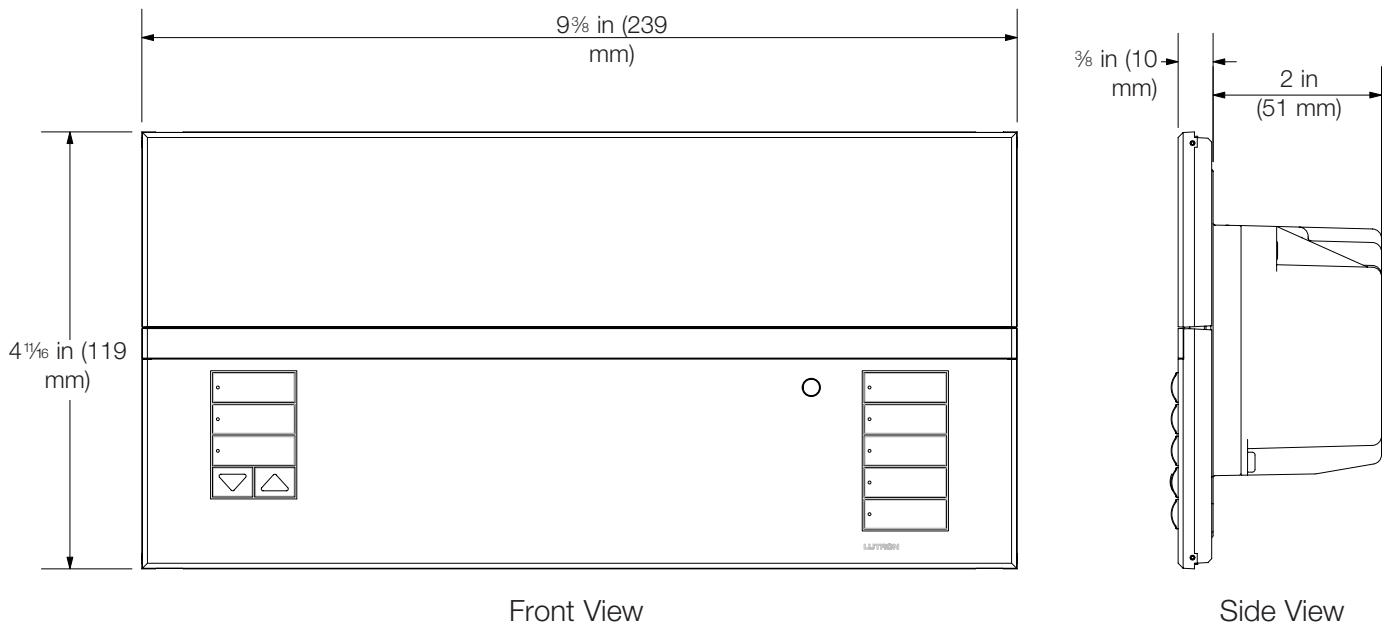


Description

GRAFIK Eye QS Wireless with EcoSystem is the premier energy-saving lighting and shade control. *GRAFIK Eye QS* features an astronomic timeclock and intuitive lighting presets, which are seamlessly integrated with *EcoSystem* fluorescent ballasts and LED drivers, and Lutron’s QS components and systems. Now with wireless technology and an integral *EcoSystem* bus supply, you can use the *GRAFIK Eye QS Wireless with EcoSystem* to control ballasts and shades without interfaces, and integrate with a variety of Lutron wireless products and systems, including Radio Powr Savr™ occupancy, vacancy, and daylight sensors, Sivoia® QS wireless shades, Pico® wireless control, and other *GRAFIK Eye QS* wireless control units. Additionally, the *GRAFIK Eye QS* wireless is compatible with all Lutron wired QS products and systems.

GRAFIK Eye QS Wireless with EcoSystem is compatible with Quantum®.

Mechanical Dimensions



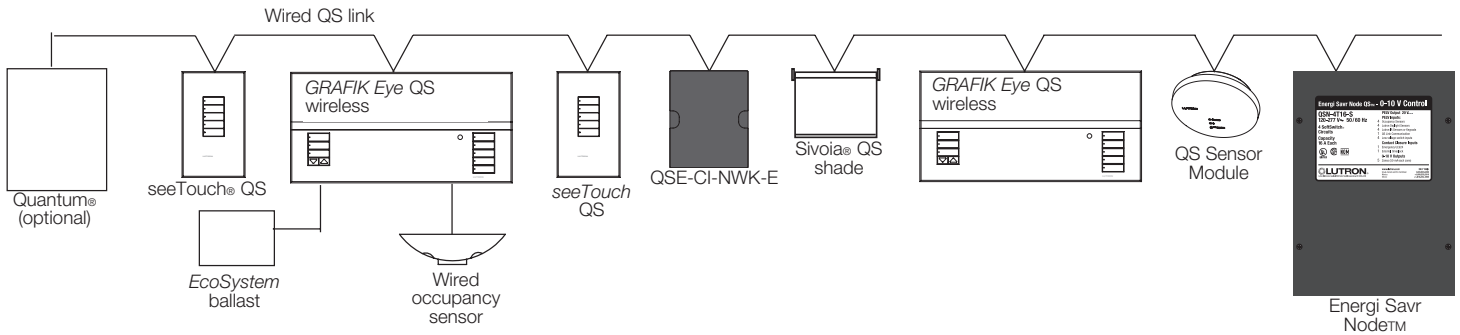
Fits into a 4-gang U.S. backbox, 3.5 in (89 mm) deep; Lutron P/N 241-400

Job Name:	Model Numbers:
Job Number:	

System Topologies

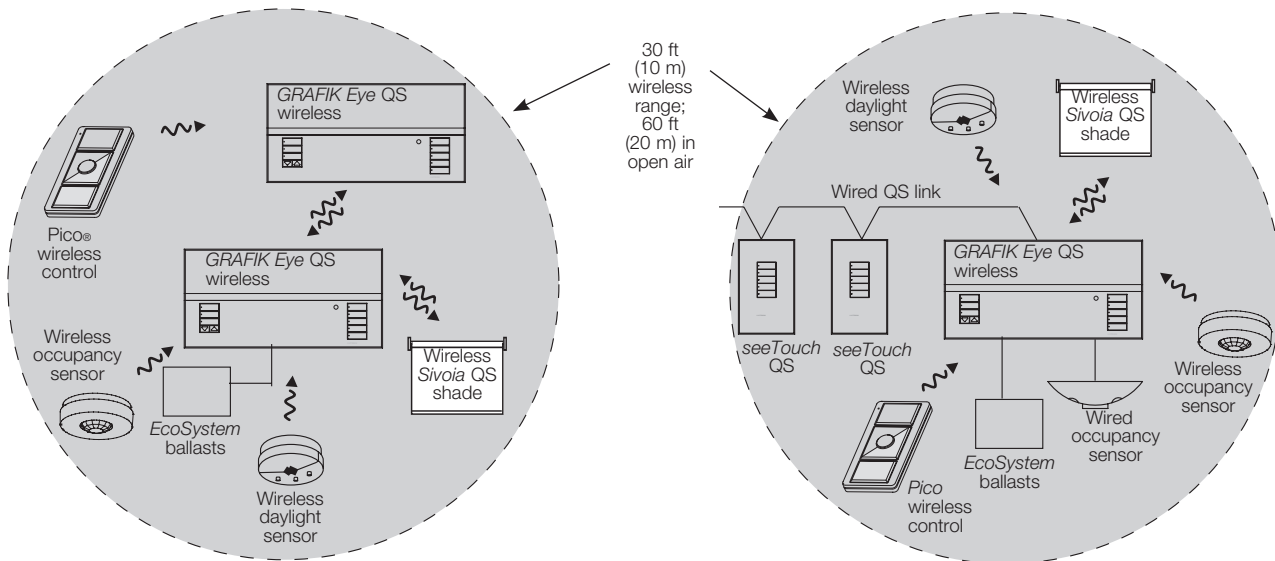
The GRAFIK Eye® QS Wireless with EcoSystem® can be specified in three different system topologies. Examples of each are shown below.

Example of Wired System



Example of GRAFIK Eye-centric Wireless System

Example of Mixed GRAFIK Eye-centric Wired/Wireless System



Job Name:	Model Numbers:
Job Number:	

Wireless Daylight Sensor

Lutron's wireless daylight sensor is a battery-powered sensor that automatically controls lights via RF communication to compatible dimming or switching devices. This sensor mounts to the ceiling and measures light in the space. The sensor then wirelessly transmits the light level to the associated dimming or switching devices that automatically control the lights to balance light level in the space. The sensor combines both convenience and exceptional energy savings along with ease of installation.



Features

- Lutron's reliable proportional daylight open loop control
- Light range (0–10,000 fc)
- Photopic response matches human eye
- Designed to give a linear response to changes in viewed light level
- Wireless daylight sensor has simple calibration
- One sensor is capable of switching, stepped dimming, and continuous dimming of multiple zones
- Intuitive test mode provides instant system verification
- 10-year battery life
- Multiple ceiling mount methods available for different ceiling materials
- Works seamlessly with Radio Powr Savr™ Occupancy and Vacancy Sensors and Pico™ wireless controls
- Front accessible test buttons make setup easy
- Each sensor can be added to up to 10 compatible RF dimming and switching devices for spaces with multiple zones of lighting
- RoHS compliant
- Capable of override for a maximum of 2 hours

Models Available:

- LRF2-DCRB-WH 434 MHz *Daylight Sensor*

Compatible RF Devices:

- For use with Lutron® products only
- Communicates to the following wireless Lutron systems:
 - Maestro Wireless®
 - GRAFIK Eye® QS Wireless

Job Name: Job Number:	Model Numbers:
--	-----------------------

Specifications

Standards

- FCC Approved. Complies with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.
- IC (RSS-210)
- SCT
- Meets CA Title 24 requirements

Power / Performance

- Operating voltage: 3 V_{DC}
- Operating current: 7 mA
- Requires one CR 2450 lithium battery
- 10-year battery life
- Non-volatile memory (settings are stored during power loss)

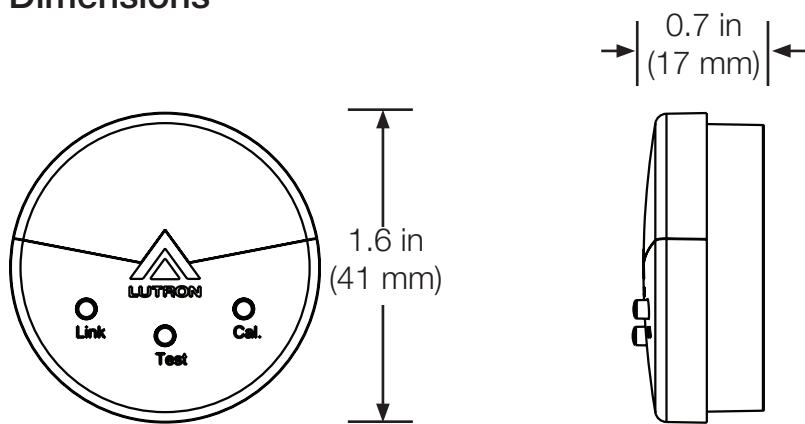
Environment

- Temperature: 32 °F to 104 °F (0 °C to 40 °C)
- 0-95% humidity, non-condensing.
- For indoor use only

Range

- Local load controls must be located within 60 ft (18 m) line of sight, or 30 ft (9 m) through walls, of a daylight sensor

Dimensions

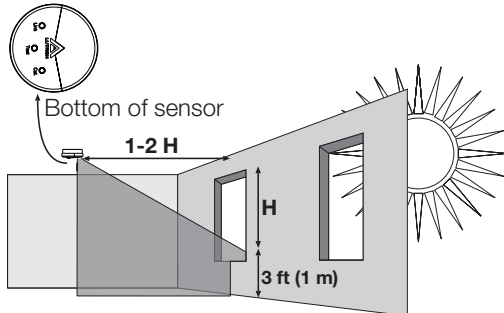


Job Name: Job Number:	Model Numbers:
------------------------------	----------------

Mounting

Location for average size areas

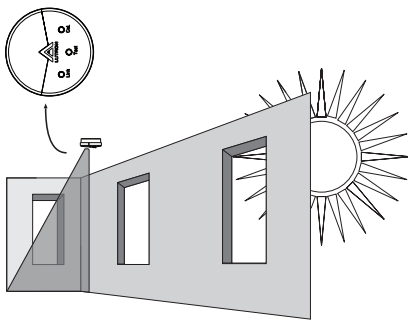
Arrow points towards the area viewed by the sensor
(towards windows)



H = Effective Window Height

Location for narrow areas (corridors, private offices)

Arrow points towards the area viewed by the sensor
(away from window)



Installation

Determine the Daylight Sensor Mounting Location using the diagrams at left:

- The arrow on the daylight sensor points toward the area viewed by the sensor.
- Place the daylight sensor so its viewing area is centered on the nearest window at a distance from the window of one to two times the effective window height (H).
- The effective window height (H) starts at the window sill or 3 ft (1 m) up from the floor, whichever is higher, and ends at the top of the window.
- Ensure that the view of the daylight sensor is not obstructed.
- Do not position the daylight sensor in the well of a skylight or above indirect lighting fixtures.
- For narrow areas where the daylight sensor cannot be placed 1-2 (H) from windows, place sensor near windows facing into the space.

Daylight Sensor Communication

- A sensor can communicate with up to 10 local load devices
- A single local load device or zone can have only one daylight sensor communicate to it

Job Name:

Model Numbers:

Job Number:

Energi Savr Node™ 0-10 V/Softswitch®

The *Energi Savr Node* family is a group of modular products for the control of lighting and other loads. This document describes the following products:

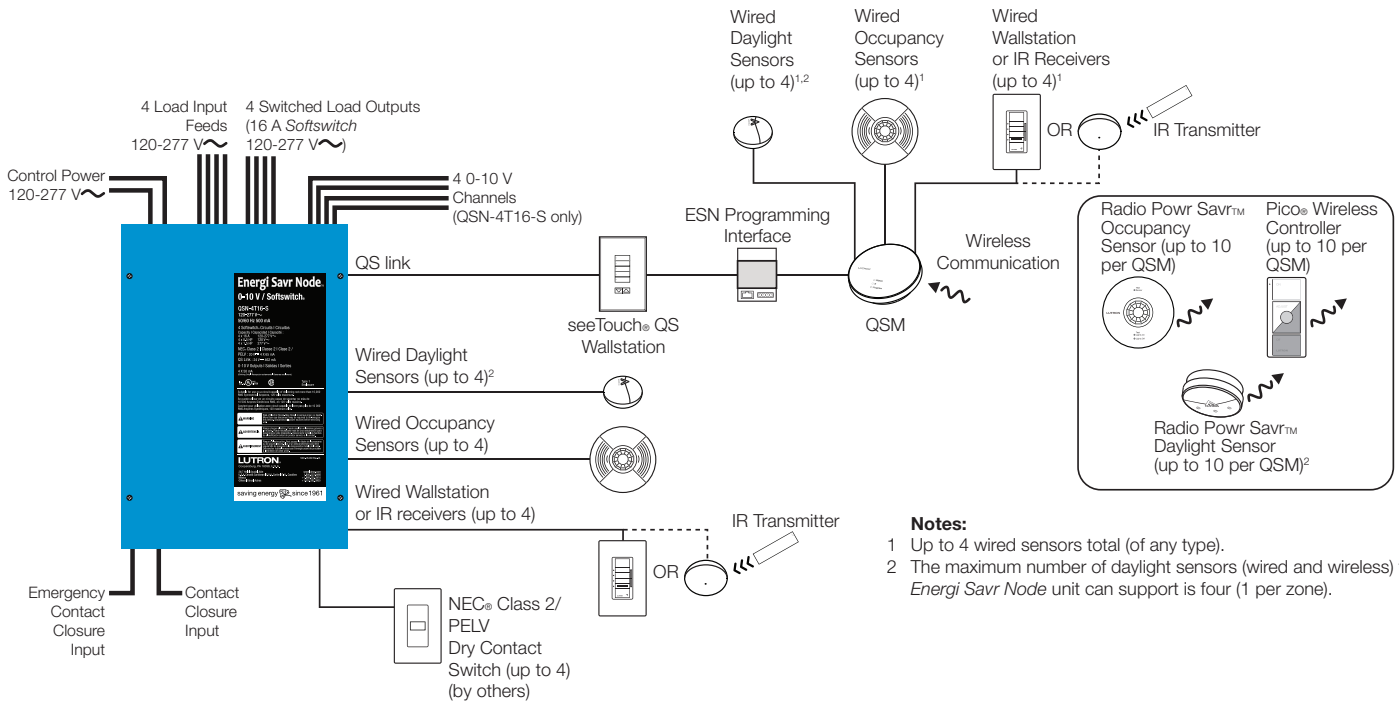
- *Energi Savr Node* unit for 0-10 V (model QSN-4T16-S — 0-10 V Control / *Softswitch*)
- *Softswitch Energi Savr Node* unit (model QSN-4S16-S — *Softswitch*)

Features

- Default configuration requires no commissioning.
- Programming using integral interface on the *Energi Savr Node* unit.
- Four occupancy sensor inputs for automated control of lights in 4 zones.
- Four daylight sensor inputs automatically adjust light levels based on the amount of natural light entering through the windows.
- Four IR receiver inputs for personal control.
- Four inputs for NEC® Class 2/PELV dry contact switches.
- Includes QS control link for seamless integration of lights, control stations, and QS sensor modules.
- *Softswitch* technology yields 1,000,000 cycle relay life-time.
- Contact Lutron for compatibility with Quantum® System.



System Example



- Notes:**
- 1 Up to 4 wired sensors total (of any type).
 - 2 The maximum number of daylight sensors (wired and wireless) that an *Energi Savr Node* unit can support is four (1 per zone).

LUTRON® SPECIFICATION SUBMITTAL		Page
Job Name:	Model Numbers:	
Job Number:		

GE Consumer & Industrial
Electrical

A-Series Lighting Control Panels

Remote Operated Circuit Breaker

Catalog/Selection Guide

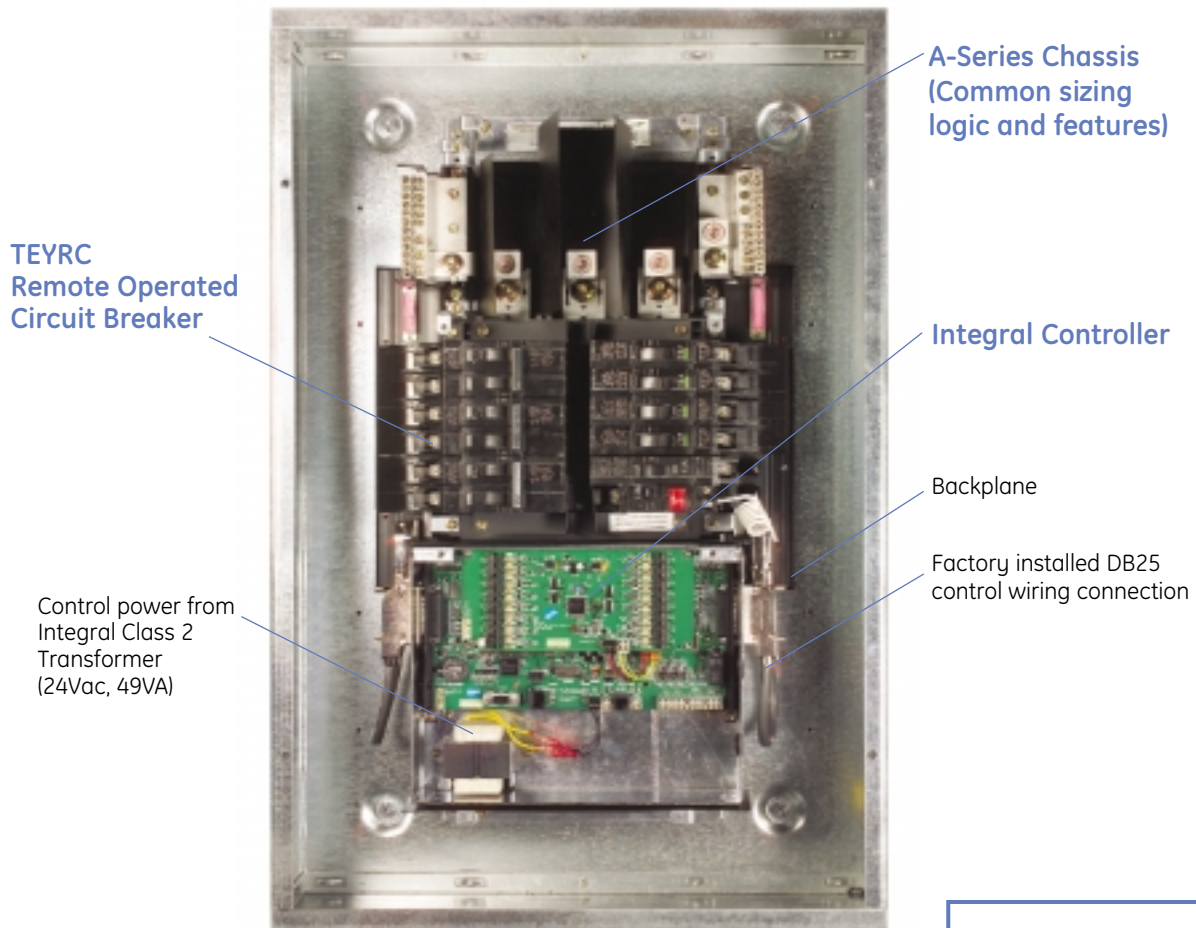


A-Series Lighting Control Panels

Remote Operated Circuit Breaker

A-Series Lighting Control Panels reduce energy costs by providing programmable control of the breaker. The integration of the controller in the panel lowers installation costs and provides valuable space savings over traditional external relay panels. The A-Series Lighting Control Panel can be stand-alone or networked into a building automation system.

Panel Interior



A-Series Lighting Control Panel

Bolt-On Factory Assembled Service Information:

3-ph, 4-w, 480Y/277Vac, 208Y/120Vac
1-ph, 3-w, 120/240Vac

Main Breaker: 100A-TEY, SE
225A-TFJ, SF
400A-TJJ, SG

Main Lugs: 125-400A

Bolt On Branch Breakers:
Type TEYRC, TEY

Standards

- UL 67 Panels
- UL 50 Enclosures
- UL 489 Molded Case Circuit Breakers
- UL 916 Energy Management Equipment

A-Series Lighting Control Panels

Remote Operated Circuit Breaker

Remote Operated Circuit Breakers

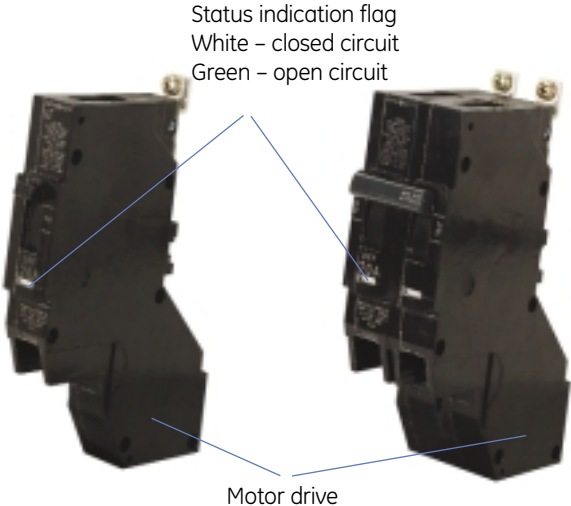
Breaker Selection

Poles	Amperage	Catalog Number
1	15A	TEYRC115
	20A	TEYRC120
	30A	TEYRC130
2	15A	TEYRC215
	20A	TEYRC220
	30A	TEYRC230

Interrupting Ratings (Amps RMS)

System Voltage	120 Vac	240 Vac	480Y/277 Vac
1-Pole	65,000	14,000	14,000
2-Pole	—	65,000	14,000

Breakers suitable for 120/240V, 120/208Y, 277/480V applications.

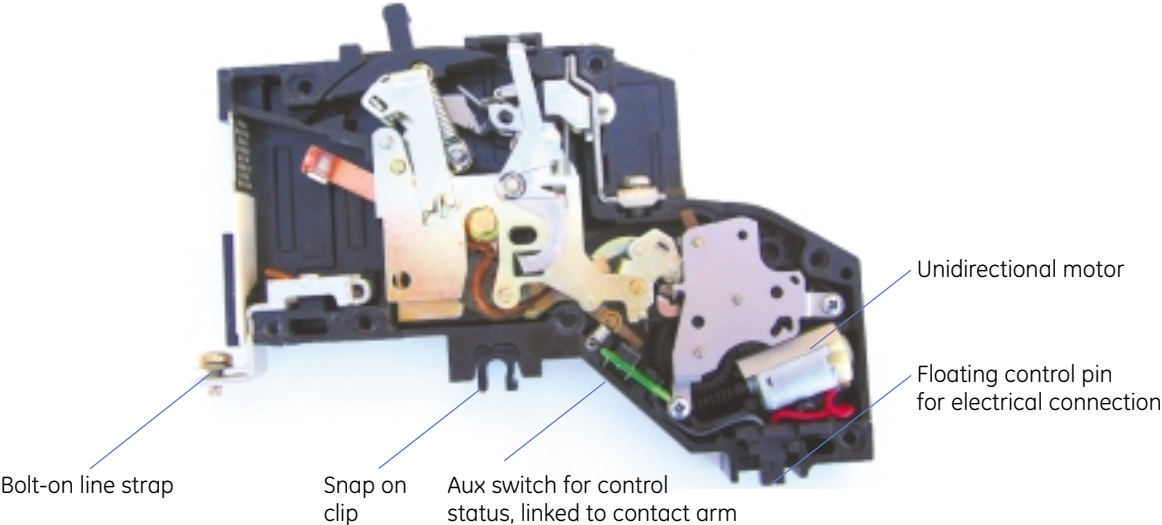


Main Breaker Series Ratings with TEYRC[®]

	125A	225A	400A
120/240 Vac	SEL – 100kA	SFL – 100kA J or T Fuse – 100kA	J or T Fuse – 100kA
240 Vac	SEL – 100kA SEP – 200kA	SFH – 65kA J or T Fuse – 100kA	J or T Fuse – 100kA
277Vac	SEH – 25kA SEL – 25kA	SFL – 65kA J or T Fuse – 100kA	J or T Fuse – 100kA
480Y/277 Vac	SEH – 25kA SEL – 25kA	SFH – 35kA SFL – 65kA J or T Fuse – 100kA	J or T Fuse – 100kA

[®] Please refer to UL Component Recognized Series Connected Ratings publication DET-008 for latest testing results.

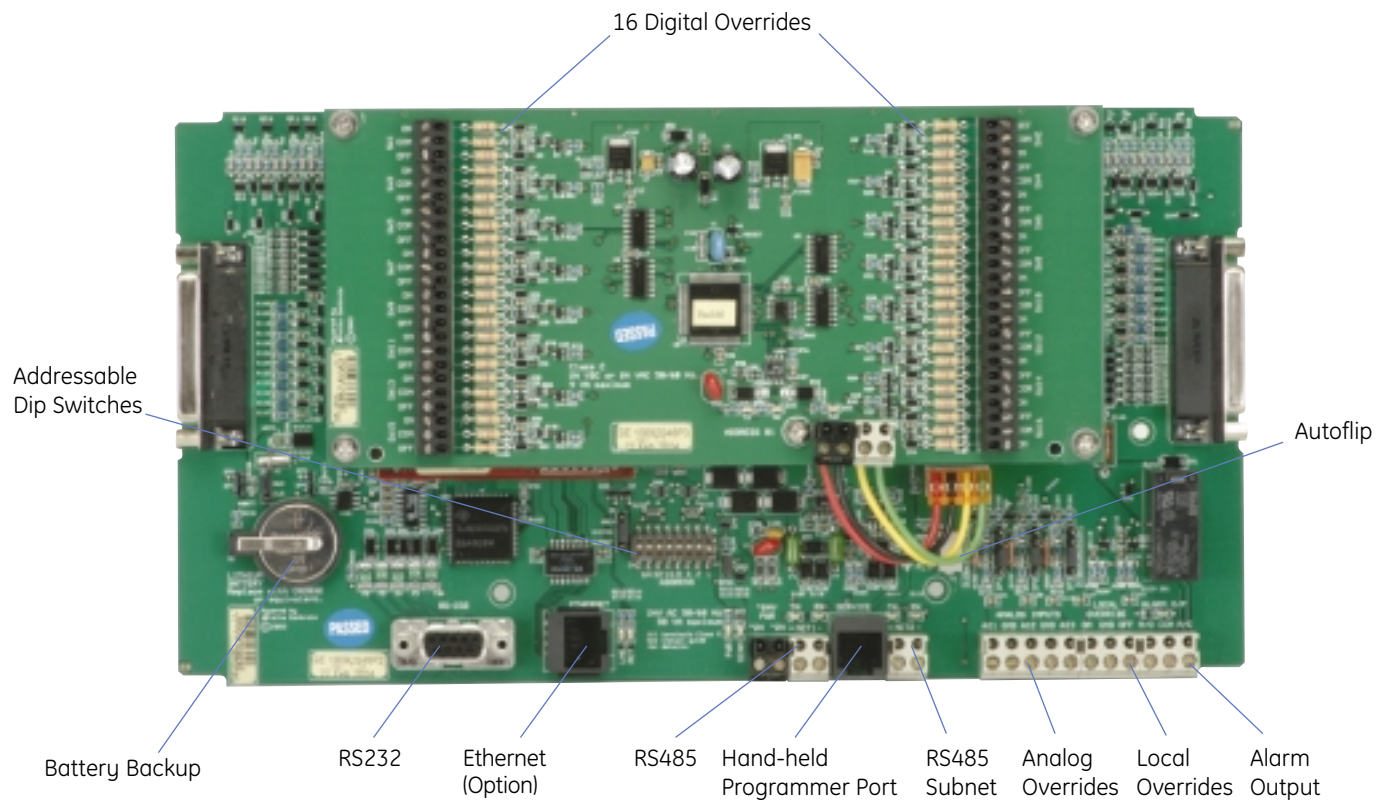
TEYRC



A-Series Lighting Control Panels

Remote Operated Circuit Breaker

Controller



Features

- Open Protocol; Native BACnet & Modbus
- 16 Lighting Groups of Control
- Real-time Clock, Astronomical Clock
- Programmable Off Warning – Flick
- Self Diagnostics
- Breaker Contact Status
- Event Alarm and Recovery

Overrides

- 16 Digital Inputs, 2- or 3-Wire, Momentary or Maintained, Dry Contact Input
- 3 Analog Inputs, 4-20mA, 10K, 5V, 10V

Scheduling

- 16 Time-of-Day On / Off Scheduling
- Day-of-Week Repeating Schedule
- Holidays Control Override
- Leap Year & Daylight Savings Time

Autoflip

- Allows user to easily rotate breaker mapping by 180° without reprogramming or rewiring

Burnhour Tracking

- Totals the run time of breaker loads

Load Priority Management

- Enables setting of load shed levels on each breaker

How To Select and Price A-Series Lighting Control Panels

1. Choose main device and number of branch circuits
2. Choose branch breakers
3. Choose controller
4. Add panel options and accessories
5. Add external accessories

1. Choose Main Device and Number of Branch Circuits

Main Lug Interiors

Panel Amps Max.	Branch Space Required	Catalog Number	List Price, GO-101	Sizing Dim. (In.)
125	0-12	AEF3121MB	\$605.00	22.5
	13-18	AEF3181MB	\$658.00	25.5
	19-24	AEF3241MB	\$750.00	28.5
	25-30	AEF3301MB	\$841.00	31.5
	31-36	AEF3361MB	\$933.00	34.5
	37-42	AEF3421MB	\$1,024.00	37.5
225	0-12	AEF3122MB	\$672.00	28.5
	13-18	AEF3182MB	\$726.00	31.5
	19-24	AEF3242MB	\$817.00	34.5
	25-30	AEF3302MB	\$908.00	37.5
	31-36	AEF3362MB	\$1,000.00	40.5
	37-42	AEF3422MB	\$1,091.00	43.5
400	0-12	AEF3124MB	\$832.00	37.5
	13-18	AEF3184MB	\$908.00	40.5
	19-24	AEF3244MB	\$992.00	43.5
	25-30	AEF3304MB	\$1,084.00	46.5
	31-36	AEF3364MB	\$1,175.00	49.5
	37-42	AEF3424MB	\$1,265.00	52.5

Main Breaker Interiors^①

Panel Amps Max.	Branch Space Required	14kA 480Y/277Vac ^③			25kA 480Y/277Vac			65kA 480Y/277 Vac 85kA 240 Vac Max.		
		Catalog Number ^②	List Price, GO-101	Sizing Dim. (In.)	Catalog Number ^②	List Price, GO-101	Sizing Dim. (In.)	Catalog Number ^②	List Price, GO-101	Sizing Dim. (In.)
100	0-12	AEF3121BB	\$990.00	22.5	AEF3121KB	\$1,285.00	25.5	AEF3121DB	\$1,606.00	25.5
	13-18	AEF3181BB	\$1,043.00	25.5	AEF3181KB	\$1,338.00	28.5	AEF3181DB	\$1,659.00	28.5
	19-24	AEF3241BB	\$1,134.00	28.5	AEF3241KB	\$1,429.00	31.5	AEF3241DB	\$1,750.00	31.5
	25-30	AEF3301BB	\$1,225.00	31.5	AEF3301KB	\$1,520.00	34.5	AEF3301DB	\$1,842.00	34.5
	31-36	AEF3361BB	\$1,317.00	34.5	AEF3361KB	\$1,612.00	37.5	AEF3361DB	\$1,933.00	37.5
	37-42	AEF3421BB	\$1,406.00	37.5	AEF3421KB	\$1,701.00	40.5	AEF3421DB	\$2,025.00	40.5
225	0-12	AEF3122BB	\$1,711.00	40.5	AEF3122KB	\$2,006.00	40.5	AEF3122DB	\$3,224.00	40.5
	13-18	AEF3182BB	\$1,764.00	43.5	AEF3182KB	\$2,059.00	43.5	AEF3182DB	\$3,276.00	43.5
	19-24	AEF3242BB	\$1,854.00	46.5	AEF3242KB	\$2,149.00	46.5	AEF3242DB	\$3,367.00	46.5
	25-30	AEF3302BB	\$1,946.00	49.5	AEF3302KB	\$2,241.00	49.5	AEF3302DB	\$3,459.00	49.5
	31-36	AEF3362BB	\$2,037.00	52.5	AEF3362KB	\$2,332.00	52.5	AEF3362DB	\$3,550.00	52.5
	37-42	AEF3422BB	\$2,128.00	55.5	AEF3422KB	\$2,423.00	55.5	AEF3422DB	\$3,642.00	55.5
400	0-12	AEF3124BB	\$2,556.00	46.5	—	—	—	—	—	—
	13-18	AEF3184BB	\$2,642.00	49.5	—	—	—	—	—	—
	19-24	AEF3244BB	\$2,731.00	52.5	—	—	—	—	—	—
	25-30	AEF3304BB	\$2,823.00	55.5	—	—	—	—	—	—
	31-36	AEF3364BB	\$2,914.00	58.5	—	—	—	—	—	—
	37-42	AEF3424BB	\$3,004.00	61.5	—	—	—	—	—	—

① Bottom feed supplied as standard - change last character in Catalog Number from B to T for top feed.

② Includes standard panelboard interior, box and front. Add price for options when required.

③ Ratings at 120/240Vac: 100A-65kA, 225A-25kA, 400A-42kA.

A-Series Lighting Control Panels

Remote Operated Circuit Breaker

2. Choose Branch Breakers

Branch Breakers, Bolt-on

Branch Breaker Mounting	Type	Bolt-on frame	Trip Range (amps)	List Price, GO-101		
				1-Pole 277Vac	2-Pole 480Y/277Vac	3-Pole 480Y/277Vac
Double Branch	TEYRC (14kAIC)	TEYRC	15-30 ^③	\$248.00	\$550.00	—
	TEY (14kAIC)	TEY	15-60 ^④	\$53.00	\$130.00	\$230.00
			70-100 ^⑤	\$116.00	\$274.00	\$326.00
	THQB (10kAIC)	THQBGF	15-30 ^⑥	\$122.00	\$203.00	—
THQBGFEP		15-30 ^⑥	\$232.00	\$533.00	—	
Subfeed Breakers ^{①②}	TED4 (14kAIC)	TED4	125-150	—	—	\$1002.00
	SEH (25kAIC)	SEH	125-150	—	—	\$1930.00
	SELL (65kAIC)	SEL	125-150	—	—	\$2280.00
	SFH (25kAIC)	SFH	125-225	—	\$1256.00	\$1571.00
	SFL (65kAIC)	SFL	125-225	—	\$2297.00	\$2761.00

① Create appropriate option product number and determine size requirements from options table in section 4 below. Specify breaker type, poles and ampacity in addition to option product number when ordering.

② Subfeed horizontally mounted. Subfeed breaker types cannot be combined in the same panel.

③ HID, HACR, & SWD rated.

④ 15 and 20 ampere breakers are SWD rated for fluorescent lighting applications.

⑤ The sum of double branch breakers mounted opposite each other cannot exceed 150 amperes.

⑥ 120/240Vac, factory installed only.

3. Choose Controller

Remote Controller, Options and Accessories

Description	Product Number Option Suffix	Panel Sizing Adder	List Price Adder, GO-101
Internal Controller	MR	9	\$4751.00
Internal Controller with Ethernet Option	MR	9	\$5418.00
External Controller	MX ^①	—	\$4751.00
External Controller with Ethernet Option	MX ^①	—	\$5418.00
External Controller Connection Cable - 5 Feet	—	—	\$139.00
External Controller Connection Cable - 10 Feet	—	—	\$209.00
External Controller Connection Cable - 15 Feet	—	—	\$290.00
External Controller Connection Cable - 20 Feet	—	—	\$342.00
External Controller Connection Cable - 25 Feet	—	—	\$402.00

① External controller requires external controller connection cable.

4. Add Panel Options

Interior Options

Option	Description	Catalog Number Option Suffix ^①	Panel Sizing Adder	List Price Adder, GO-101	Panel Sizing Adder	List Price Adder, GO-101	Panel Sizing Adder	List Price Adder, GO-101
Optional Lugs ^②	Compression Alum.	L1	N/A	\$30.00	—	\$50.00	—	\$130.00
	Pressure Copper	L2	N/A	\$49.00	—	\$49.00	—	\$92.00
	Comp. Alum. Oversize	L3	N/A	\$152.00	—	\$152.00	—	\$461.00
	Pressure Alum. Oversize	L4	N/A	\$54.00	—	\$54.00	—	\$330.00
Subfeed Breakers (Select Only One)	3 Poles TED, SE	E3	N/A	Price From Panel Section	6	Price From Panel Section	6	Price From Panel Section
	2 or 3 Poles SF	F1	N/A	Price From Panel Section	12	Price From Panel Section	18	Price From Panel Section
Feed Thru	Feed Thru Lugs ^③	T1	3	\$164.00	3	\$164.00	3	\$286.00
Busbar	600 APSI Alum	B1	—	\$595.00	—	\$595.00	—	\$759.00
	750 APSI Alum.	B2	—	\$135.00	—	\$135.00	—	Std.
	1000 APS Copper ^④	B4	—	\$210.00	—	\$210.00	—	\$323.00
200% Rated Neutrals	2 Standard Lugs	N2	—	\$60.00	—	\$100.00	—	\$140.00

① Option Catalog Number prefix is "AX."

② Oversize lugs available on single main lug panels only.

③ Feed thru lugs not available on subfeed or oversized main lug panels.

④ For silver or tin plating 1000 APSI Cu only add \$100 List, GO-101.

TVSS Transient Voltage Surge Suppression^①

Maximum Surge Current per Mode	Maximum Surge Current per Phase	Description	List Price GO-101
65kA	130kA	TVSS UL1449,UL1283	\$6350.00
80kA	160kA	TVSS UL1449,UL1283	\$7000.00
100kA	200kA	TVSS UL1449,UL1283	\$8500.00
100kA	200kA	TVSS UL1449, no counter	\$2875.00
100kA	200kA	TVSS UL1449	\$3575.00

① For factory installed transient voltage surge suppression (TVSS) units in 10" module, add T6 suffix to interior catalog number and 10" to box height.

Enclosures

Sizing Dimensions (Inches)	Box Catalog Number	Inside Box Dimensions (Inches)			Front Catalog Number
		Length	Width	Depth	
28.5-31.5	AB31	31.5	20	5.81	AF31F,S
34.5-37.5	AB37	37.5	20	5.81	AF37F,S
40.5-43.5	AB43	43.5	20	5.81	AF43F,S
46.5-49.5	AB49	49.5	20	5.81	AF49F,S
52.5-55.5	AB55	55.5	20	5.81	AF55F,S
57.5-64.5	AB64	64.5	20	5.81	AF64F,S
67.5-76.5	AB76	76.5	20	5.81	AF76F,S

Flush fronts are 1.5 inches larger than box. Surface fronts are .25 inches larger than box.

Front Options

Description	Catalog Number ^①	List Price, GO-101
Screw cover	C	\$61.00
Front hinged to box	D	\$110.00
Optional Lock: Yale 511S w/ Rosette	Y	\$300.00
Optional Lock: Corbin 15767	L	\$146.00
Door within a door ^②	P	\$238.00
Stainless steel ^③	S	\$1467.00
30" wide	W	\$82.00
Screw on nameplate	U	\$74.00
Metal directory	M	\$50.00

① Add to base box catalog number.

② Consists of two lockable doors – one over panel interior and one over box wiring gutters. Yale locks not available.

③ Flush only. Available with C and N options.

Box Options

Description	Catalog Number Suffix ^①	List Price, GO-101
Blank Endwalls	B	②
Painted Box	P	\$200.00
30" Wide ^③	W	\$250.00
NEMA 3R/12	3	\$950.00
NEMA 4X (Stainless Steel)	4S	\$4950.00
Endwall with Knockouts	K	②

① Add to base box product number.

② No charge if included on original order.

③ Includes field installable gutter barrier.

5. Add External Accessories

A-Series Lighting Control Panel Accessories

Item	Description	Catalog Number	List Price GO-134B
Handheld Programmer	Customer interface with LCD screen	ASRGLCHPK	\$1680.00
Daylight Optimization Module	Performs sunlight harvesting by measuring the amount of light and providing a control signal to a dimming mechanism to maintain a preset lighting level.	ASRGLCDOK	\$2000.00
Remote Switch Expansion Module	Provides additional 16 digital input signals to the controller for each module.	ASRGLCDSK	\$1238.00
Control Wiring Insulation Tubing	Requirement, per UL 67 and NEC 725.55, that low voltage Class 2 & 3 control wiring be separated with tubing having an insulation rating equal to branch load wiring.	ASRGLCCWT	\$25.00



Hand-Held Programmer



Daylight Optimization Module



Remote Switch Module

A-Series Lighting Control Panels

Remote Operated Circuit Breaker



It's just one part of a more productive solution – only from GE

As part of a GE integrated switchboard, the A-Series Lighting Control Panel gives you even more of what you need.

The integrated switchboard packs all your power requirements into a single integrated system that turns non-productive mechanical space into revenue-generating sales or storage areas. And it arrives fully pre-wired to your specifications. All you have to do is set it in place, run the incoming power and wire out the branches. Installation takes less than half the time.

Still, you sacrifice nothing in terms of safety, performance or flexibility. Units expand or contract to meet specific needs. They reflect GE's rigorous quality standards, and they are built and tested in accordance with NEMA PB-2, UL 891 and the NEC. All sections and devices are UL Listed and UL Labeled.

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imagination at work

Appendix C: PV Depth Resources

BALTIMORE, MD (39.2°N, 76.7°W)

Elevation: 47 m

Pressure: 1012 mb

SOLAR RADIATION FOR FLAT-PLATE COLLECTORS FACING SOUTH AT A FIXED TILT*

Tilt		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
0°	Average	2.1	2.9	3.9	4.9	5.6	6.2	6.0	5.3	4.4	3.3	2.2	1.8	4.0
	Minimum	1.7	2.4	3.4	3.9	5.0	5.5	5.3	4.7	3.7	2.9	1.8	1.5	3.8
	Maximum	2.4	3.2	4.5	5.8	6.5	6.9	6.8	5.7	5.0	3.9	2.6	2.0	4.3
Lat - 15°	Average	3.1	3.8	4.6	5.3	5.7	6.0	6.0	5.6	5.0	4.3	3.2	2.7	4.6
	Minimum	2.3	3.0	3.8	4.1	5.0	5.4	5.2	4.9	4.1	3.5	2.3	2.0	4.3
	Maximum	3.7	4.4	5.4	6.3	6.6	6.7	6.7	6.0	5.8	5.2	4.0	3.2	4.9
Lat°	Average	3.5	4.2	4.8	5.2	5.3	5.6	5.5	5.4	5.1	4.6	3.6	3.1	4.6
	Minimum	2.5	3.1	3.9	4.0	4.7	5.0	4.9	4.7	4.1	3.6	2.5	2.2	4.4
	Maximum	4.2	4.9	5.7	6.2	6.2	6.2	6.3	5.8	5.9	5.6	4.5	3.7	5.0
Lat + 15°	Average	3.7	4.3	4.7	4.8	4.7	4.8	4.9	4.9	4.8	4.6	3.7	3.3	4.4
	Minimum	2.6	3.2	3.8	3.7	4.1	4.3	4.3	4.3	3.9	3.6	2.5	2.3	4.1
	Maximum	4.6	5.1	5.6	5.8	5.5	5.3	5.5	5.3	5.7	5.7	4.8	4.0	4.8
90°	Average	3.4	3.7	3.5	3.0	2.6	2.4	2.5	2.9	3.3	3.7	3.3	3.0	3.1
	Minimum	2.3	2.7	2.8	2.4	2.3	2.2	2.3	2.6	2.7	2.8	2.2	2.0	2.9
	Maximum	4.4	4.5	4.2	3.6	2.9	2.6	2.8	3.1	3.9	4.6	4.3	3.7	3.4

SOLAR RADIATION FOR 1-AXIS TRACKING FLAT-PLATE COLLECTORS WITH A NORTH-SOUTH AXIS*

Axis Tilt		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
0°	Average	3.0	4.0	5.3	6.4	7.1	7.8	7.7	6.9	5.8	4.6	3.2	2.5	5.4
	Minimum	2.3	3.0	4.2	4.8	6.1	6.5	6.3	5.7	4.7	3.6	2.2	1.9	5.0
	Maximum	3.7	4.8	6.4	8.1	8.5	9.0	8.9	7.5	6.9	5.7	4.0	3.0	5.9
Lat - 15°	Average	3.7	4.7	5.9	6.8	7.2	7.8	7.7	7.1	6.3	5.3	3.9	3.2	5.8
	Minimum	2.7	3.4	4.6	4.9	6.1	6.5	6.3	5.9	5.1	4.2	2.6	2.3	5.4
	Maximum	4.6	5.7	7.2	8.6	8.6	9.0	9.0	7.8	7.5	6.7	5.0	3.9	6.4
Lat°	Average	4.1	5.0	6.0	6.7	7.0	7.5	7.4	7.0	6.4	5.5	4.2	3.5	5.9
	Minimum	2.9	3.6	4.7	4.9	5.9	6.2	6.1	5.8	5.1	4.3	2.8	2.4	5.4
	Maximum	5.1	6.1	7.3	8.5	8.4	8.6	8.6	7.7	7.6	7.0	5.4	4.3	6.4
Lat + 15°	Average	4.3	5.1	5.9	6.4	6.6	7.0	6.9	6.6	6.2	5.6	4.3	3.7	5.7
	Minimum	3.0	3.6	4.6	4.7	5.5	5.8	5.6	5.4	4.9	4.3	2.8	2.5	5.3
	Maximum	5.3	6.3	7.3	8.2	7.9	8.1	8.1	7.3	7.4	7.1	5.6	4.6	6.3

SOLAR RADIATION FOR 2-AXIS TRACKING FLAT-PLATE COLLECTORS*

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
2-Axis Tracking	Average	4.3	5.1	6.0	6.8	7.3	8.0	7.8	7.2	6.4	5.6	4.3	3.7	6.0
	Minimum	3.0	3.6	4.7	5.0	6.2	6.7	6.4	5.9	5.1	4.3	2.8	2.5	5.6
	Maximum	5.4	6.3	7.3	8.6	8.7	9.2	9.1	7.8	7.6	7.1	5.7	4.6	6.7

DIRECT BEAM SOLAR RADIATION FOR CONCENTRATING COLLECTORS*

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1-Axis (E-W) Tracking	Average	2.5	2.8	3.0	3.1	3.3	3.7	3.6	3.2	3.0	3.0	2.5	2.2	3.0
	Minimum	1.4	1.5	1.8	1.6	2.5	2.7	2.5	2.3	2.0	2.0	1.3	1.2	2.7
	Maximum	3.5	3.7	4.1	4.4	4.4	4.6	4.6	3.8	3.9	4.2	3.6	3.0	3.5
1-Axis (N-S) Tracking, Tilt = 0°	Average	1.9	2.5	3.4	4.0	4.3	4.8	4.7	4.2	3.6	3.0	2.0	1.5	3.3
	Minimum	1.1	1.4	2.1	2.2	3.3	3.4	3.1	2.9	2.5	1.9	1.0	0.8	2.9
	Maximum	2.5	3.4	4.7	5.8	5.8	6.1	6.0	5.0	4.7	4.2	2.9	2.1	3.9
1-Axis (N-S) Tracking, Tilt = Lat°	Average	2.8	3.4	3.9	4.2	4.2	4.5	4.5	4.2	4.1	3.8	2.8	2.4	3.7
	Minimum	1.6	1.8	2.4	2.3	3.2	3.2	3.0	3.0	2.8	2.5	1.4	1.3	3.3
	Maximum	3.8	4.5	5.4	6.1	5.6	5.7	5.7	5.0	5.2	5.3	4.1	3.2	4.4
2-Axis Tracking	Average	3.0	3.4	4.0	4.3	4.4	4.9	4.8	4.4	4.1	3.8	3.0	2.6	3.9
	Minimum	1.7	1.9	2.4	2.4	3.4	3.5	3.2	3.1	2.8	2.5	1.5	1.4	3.5
	Maximum	4.1	4.6	5.5	6.2	5.9	6.2	6.1	5.2	5.3	5.3	4.3	3.5	4.6

AVERAGE CLIMATIC CONDITIONS

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average Temperature (°C)	-0.1	1.6	6.7	11.9	17.4	22.5	25.0	24.2	20.3	13.7	8.2	2.6	12.8
Average Low (°C)	-4.8	-3.4	1.2	5.8	11.4	16.6	19.3	18.7	14.7	7.7	2.8	-2.1	7.3
Average High (°C)	4.6	6.5	12.2	17.9	23.4	28.4	30.7	29.7	25.8	19.6	13.6	7.3	18.3
Record Low (°C)	-21.7	-19.4	-14.4	-6.7	0.0	4.4	10.0	7.2	1.7	-3.9	-10.6	-17.8	-21.7
Record High (°C)	23.9	26.1	30.6	34.4	36.7	37.8	40.0	40.6	37.8	33.3	28.3	25.0	40.6
Heating Degree Days†	572	470	360	193	60	0	0	0	16	153	303	487	2615
Cooling Degree Days†	0	0	0	0	33	126	207	183	74	9	0	0	632
Relative Humidity (%)	63	61	59	59	66	68	69	71	71	69	67	66	66
Wind Speed (m/s)	4.2	4.4	4.6	4.6	3.9	3.6	3.4	3.4	3.5	3.7	4.0	4.1	3.9

* in kWh/m²/day, ±9%

† based on 18.3°C (65°F)

220W Photovoltaic module

BP 3220T

10 4085US-2 01/10



BP Solar has been manufacturing solar wafers, cells and modules for more than 35 years. This experience shows that the best way to optimize module life and electrical energy production is to attend to every detail in the design and manufacture of our products, our process controls and testing methods. BP Solar's latest generation of 60 cell, Polycrystalline T Series solar modules offers the following benefits:



Long lasting, innovative frame design

The aluminum frame has a rounded profile for better handling comfort and is optimized for use with anti-theft bolts to increase security.



Flexible mounting and reduced soiling losses

Increased distance between cells and frame, and an enhanced design to push the laminate to the front, ensures that dirt accumulation will not shadow cells, even in landscape mounting, thus maximizing energy production.



Improved reliability with effective cooling

IntegraBus™ technology ensures reliable cable management while positioning the bypass diodes and junction box away from the cells for cooler operation and greater energy production.



Environmentally responsible

Lead free soldering and interconnections, halogen free cables complete with latching MC4 connectors and minimal packaging waste.

Enhanced warranty offer

BP Solar launches an industry leading warranty offer, with lower degradation rates on our modules manufactured beginning January 1st, 2010. Our internal testing standards that go well beyond international requirements back this innovative offer.

220W Photovoltaic module

BP 3220T



Electrical characteristics

	⁽¹⁾ STC 1000W/m ²	⁽²⁾ NOCT 800W/m ²
Maximum power (P _{max})	220W	158W
Voltage at P _{max} (V _{mpp})	28.9V	25.7V
Current at P _{max} (I _{mp})	7.6A	6.08A
Short circuit current (I _{sc})	8.20A	6.64A
Open circuit voltage (V _{oc})	36.6V	33.3V
Module efficiency	13.2%	
Tolerance	-3/+5%	
Nominal voltage	20V	
Efficiency reduction at 200W/m ²	<5% reduction (efficiency 12.5%)	
Limiting reverse current	8.20A	
Temperature coefficient of I _{sc}	(0.065±0.015)%/C	
Temperature coefficient of V _{oc}	-(0.36±0.05)%/C	
Temperature coefficient of P _{max}	-(0.5±0.05)%/C	
⁽³⁾ NOCT	47±2°C	
Maximum series fuse rating	20A	
Application class (according to IEC 61730:2007)	Class A	
Maximum system voltage (U.S. NEC rating)	600V (U.S. NEC rating); 1000V (IEC 61730:2007)	

1: Values at Standard Test Conditions (STC): 1000W/m² irradiance, AM1.5 solar spectrum and 25°C module temperature
 2: Values at 800W/m² irradiance, Nominal Operation Cell Temperature (NOCT) and AM1.5 solar spectrum
 3: Nominal Operation Cell Temperature: Module operation temperature at 800W/m² irradiance, 20°C air temperature, 1m/s wind speed

All solar modules are individually tested prior to shipment; an allowance is made within our factory measurement to account for the typical power degradation (LID effect) which occurs during the first few days of deployment.

Mechanical characteristics

Solar cells	60 polycrystalline 6" silicon cells (156x156mm) in series
Front cover	High transmission 3.2mm (1/8th in) glass
Encapsulant	EVA
Back cover	White polyester
Frame	Silver anodized aluminum (Universal II)
Diodes	IntegraBus™ with 6 Schottky diodes
Junction box	Potted (IP 67); certified to meet UL 1703 flammability test
Output cables	4mm ² cable with latching MC4 connectors Asymmetrical cable lengths: (-)1250mm (49.21in) / (+)800mm (31.50in)
Dimensions	1667x1000x50mm / 65.6x39.4x2.0in
Weight	19.4kg / 42.8lbs

All dimensional tolerances within ±0.1% unless otherwise stated.

Warranty

- Free from defects in materials and workmanship for 5 years
- 93% power output over 12 years
- 85% power output over 25 years

Certification

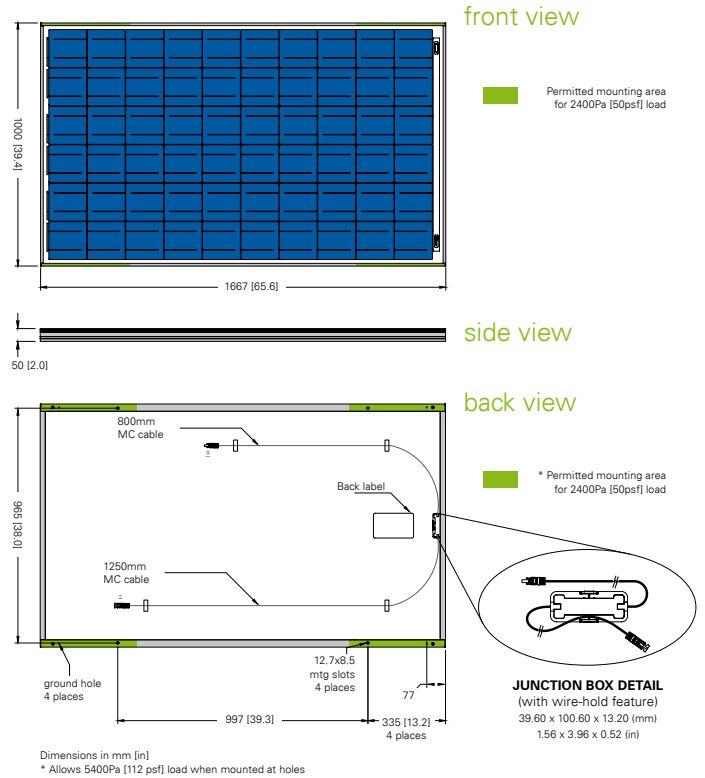
Certified according to the extended version of the IEC 61215:2005 (Crystalline silicon terrestrial photovoltaic modules - Design qualification and type approval)

Certified according to IEC 61730-1 and IEC 61730-2. (Photovoltaic module safety qualification, requirements for construction and testing)

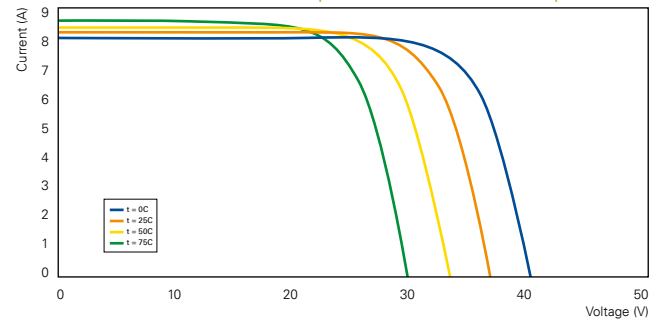
Listed to UL 1703 Standard for Safety by Intertek ETL (Class C fire rating)

Manufactured in ISO 9001 and ISO 14001 certified factories

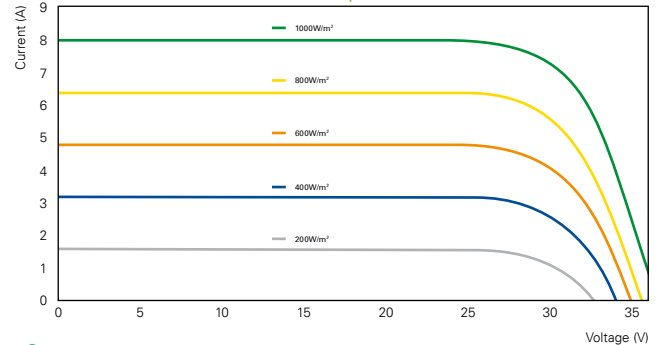
Module electrical measurements are calibrated to World radiometric reference via third party international laboratories



Dependence of the temperature



Dependence of the irradiance



Contact:

Your BP Solar partner



SUNNY BOY 3000-US / 3800-US / 4000-US

SB 3000US / SB 3800-US-10 / SB 4000US



SB 3800-US NOW AVAILABLE



UL Certified

- For countries that require UL certification (UL 1741/IEEE 1547)

Efficient

- 96.8% peak efficiency
- OptiCool™ active temperature management system

Safe

- Galvanic isolation

Simple

- Patented automatic grid voltage detection*
- Integrated DC disconnect switch

SUNNY BOY 3000-US / 3800-US / 4000-US

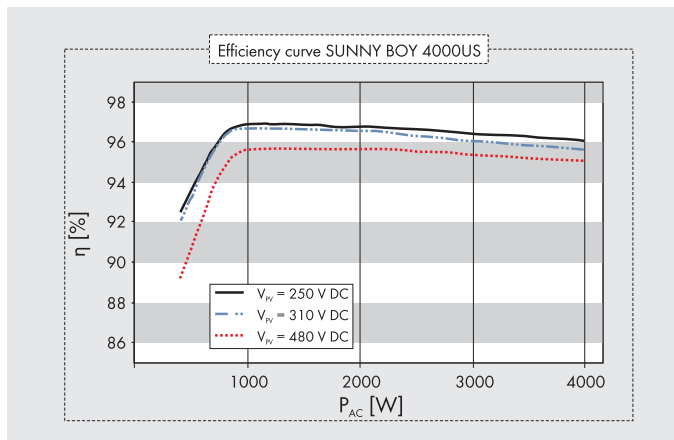
UL certified, reliable system managers

The Sunny Boy 3000-US, 3800-US and 4000-US inverters are specially designed for countries that require UL certification. Automatic grid voltage detection* and an integrated DC disconnect switch simplifies installation, ensuring safety as well as saving time. These models feature galvanic isolation and can be used with all types of modules—crystalline as well as thin-film. The die-cast aluminum enclosure, with the OptiCool active temperature management system, guarantees the highest yields possible and a long service life, even under extreme conditions. The Sunny Boy 3800-US is designed for projects with a current limit of 16A.


* US Patent US7352549B1

Technical data	Sunny Boy 3000-US		Sunny Boy 3800-US	Sunny Boy 4000-US	
	208 V AC	240 V AC	240 V AC	208 V AC	240 V AC
Input (DC)					
Max. recommended PV power (@ module STC)	3750 W		4750 W	4375 W	5000 W
Max. DC power (@ $\cos \phi = 1$)	3200 W		4200 W	4200 W	
Max. DC voltage	500 V		600 V	600 V	
DC nominal voltage	250 V		310 V	310 V	
MPP voltage range	175 – 400 V	200 – 400 V	250 – 480 V	220 – 480 V	250 – 480 V
Min. DC voltage / start voltage	175 / 228 V	200 / 228 V	250 / 285 V	220 / 285 V	250 / 285 V
Max. input current / per string (at DC disconnect)	17 A / 17 A 36 A @ combined terminal		18 A / 18 A 36 A @ combined terminal	18 A / 18 A 36 A @ combined terminal	
Number of MPP trackers / fused strings per MPP tracker	1 / 4 (DC disconnect)				
Output (AC)					
AC nominal power	3000 W		3800 W	3500 W	4000 W
Max. AC apparent power	3000 VA		3800 VA	3500 VA	4000 VA
Nominal AC voltage / adjustable	208 V / ●	240 V / ●	240 V / –	208 V / ●	240 V / ●
AC voltage range	183 – 229 V	211 – 264 V	211 – 264 V	183 – 229 V	211 – 264 V
AC grid frequency; range	60 Hz; 59.3 – 60.5 Hz		60 Hz; 59.3 – 60.5 Hz	60 Hz; 59.3 – 60.5 Hz	
Max. output current	15 A	13 A	16 A	17 A	
Power factor ($\cos \phi$)	1				
Phase conductors / connection phases	1 / 2		1 / 2	1 / 2	
Harmonics	< 4%				
Efficiency					
Max. efficiency	96.0%	96.5%	96.8%	96.5%	96.8%
CEC efficiency	95.0%	95.5%	96.0%	95.5%	96.0%
Protection devices					
DC reverse-polarity protection	●		●	●	
AC short circuit protection	●		●	●	
Galvanically isolated / all-pole sensitive monitoring unit	●/–		●/–	●/–	
Protection class / overvoltage category	I / III		I / III	I / III	
General data					
Dimensions (W / H / D) in mm (in)	450 / 350 / 235 (18 / 14 / 9)				
DC Disconnect dimensions (W / H / D) in mm (in)	187 / 297 / 190 (7 / 12 / 7.5)				
Packing dimensions (W / H / D) in mm (in)	390 / 580 / 470 (15 / 23 / 18.5)				
DC Disconnect packing dimensions (W / H / D) in mm (in)	370 / 240 / 280 (15 / 9 / 11)				
Weight / DC Disconnect weight	38 kg (84 lb) / 3.5 kg (8 lb)				
Packing weight / DC Disconnect packing weight	44 kg (97 lb) / 4 kg (9 lb)				
Operating temperature range (full power)	–25 °C ... +45 °C (–13 °F ... +113 °F)				
Noise emission (typical)	40 dB(A)	www.SMA-Solar.com		37 dB(A)	
Internal consumption at night	0.1 W		0.1 W	0.1 W	
Topology	LF transformer		LF transformer	LF transformer	
Cooling concept	OptiCool		OptiCool	OptiCool	
Electronics protection rating / connection area	NEMA 3R / NEMA 3R		NEMA 3R / NEMA 3R	NEMA 3R / NEMA 3R	
Features					
Display: text line / graphic	●/–		●/–	●/–	
Interfaces: RS485 / Bluetooth	○/○		○/○	○/○	
Warranty: 10 / 15 / 20 years	●/○/○		●/○/○	●/○/○	
Certificates and permits (more available on request)	UL1741, UL1998, IEEE 1547, FCC Part 15 (Class A & B), CSA C22.2 No. 107.1-2001				
NOTE: US inverters ship with gray lids.					
Data at nominal conditions					
● Standard features ○ Optional features – Not available					
Type designation	SB 3000US		SB 3800-US-10	SB 4000US	


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Accessories




RS485 interface
485USPB-NR



Bluetooth® Piggy Back
BTPBINV-NR



Combi-Switch
DC disconnect and PV
array combiner box
COMBO-SWITCH



Combiner Box
Simplify wiring for added
convenience and safety
SBCB-6-3R or SBCB-6-4

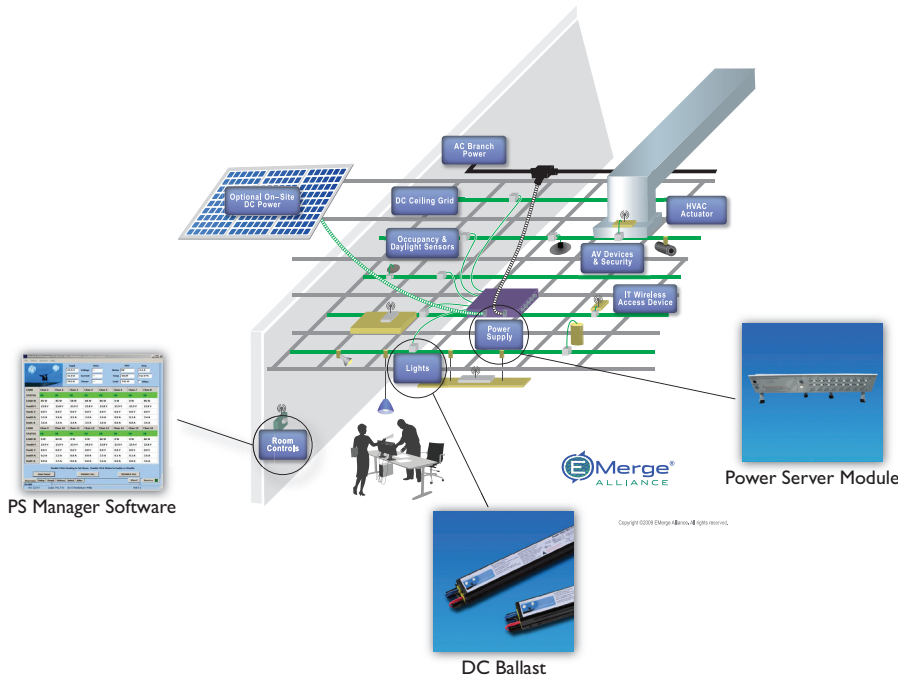
Nextek Power Systems

Nextek Power Server Module Model 1600-C2 DC Power Supply 16 Channel, Class 2, 24V DC Output



Power Server Module

- Nextek's **Power Server Module** converts 208 or 240V AC power to 24V DC through 16 individual Class 2 outputs. The Power Server Module has a wireless remote control and monitoring system.
- The **system advantage** is that the Power Server Module provides a safe, low-voltage DC distribution system that allows quick plug-and-play, energy efficient and individually controllable Direct Current (DC) lighting and other loads.
- The **patented triangular design** of the Power Server Module makes for a clean fit into a suspended ceiling grid for ease of installation and removal of ceiling tiles.



Why A Power Server Module?

Over the last 50 years, we have moved steadily from an electro-mechanical to an electronic world—a world where most of our electrical devices are driven by DC, and where most of our non-fossil fuel energy sources (such as photovoltaic cells and batteries) deliver their power as a DC supply.

The cost of Alternating Current (AC) - Despite these changes, the vast majority of today's electricity is still generated, transported and delivered as AC. Converting AC to DC and integrating alternative DC sources with the mainstream AC supply are inefficient and expensive activities that add significantly to capital costs and lock us all into archaic and uncompetitive utility pricing structures.

Take advantage of DC efficiency - Nextek's AC/DC integration technology represents a breakthrough in on-site electrical management, combining the availability of AC power with the quality and efficiency of a DC supply.

Why Class 2?

Class 2 circuits are power limited to 100 Volt-Amperes (Watts) and can be installed using more relaxed Class 2 wiring methods. A Class 2, 24 Volt DC circuit provides acceptable protection from electrical shock and fire initiation.

Clean, Efficient and Less Expensive Power

- Easy conversion of AC lighting fixtures to DC-powered systems
- Easy conversion of AC grid power into DC power for commercial building applications
- Highly efficient management of peak loads
- Complete continuity of supply through the seamless integration of available rechargeable batteries
- Complete continuity of alternative energy sources such as PV, micro turbines and fuel cells

In Addition – Unlike conventional PV installations utilizing DC to AC inverters that must be shut down in the event of a grid power failure (anti-islanding), the Nextek system can stay on and continue to support the DC loads by combining all available DC sources.

NEXTEK Power Systems

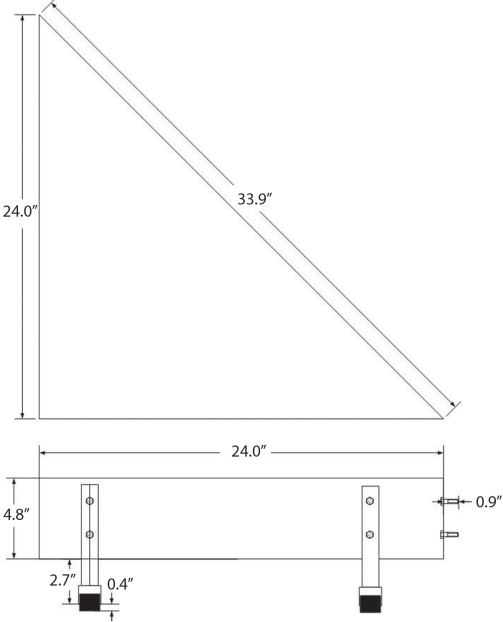


Nextek Power Systems
461 Burroughs Street
Detroit, Michigan 48202

Tel: 313-887-1321
Toll free: 1 (877) 24-VOLTS
Fax: 313-887-9433

www.nextekpower.com
info@nextekpower.com

POWER SERVER MODULE SPECIFICATIONS:

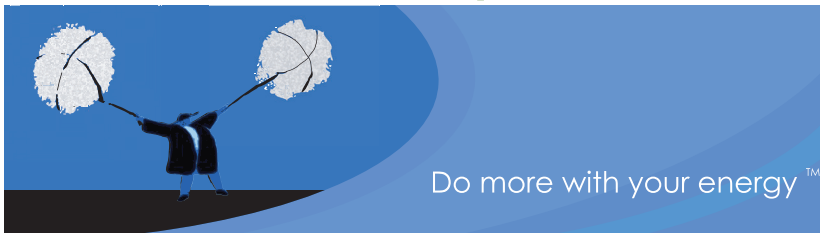
<p>STANDARDS / SPECIFICATIONS</p>	<ul style="list-style-type: none"> • UL2043 – Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces • UL1310 – Class 2 Power Units • UL1012 – Power Units Other Than Class 2 • UL2577 – Suspended Ceiling Grid Low Voltage Lighting Systems (Pending) • Emerge Alliance® Registered • ZigBee® Alliance Certification (Pending) • RoHS compliant
<p>MECHANICAL</p>	<ul style="list-style-type: none"> • Weight <ul style="list-style-type: none"> - 21.1 pounds • Mounting Orientation <ul style="list-style-type: none"> - Flat horizontal surface – using rubber feet - Ceiling grid – using plastic grid interconnects • Audible Noise <ul style="list-style-type: none"> - Less than 15 dBA • Operational Environmental Limits <ul style="list-style-type: none"> - Temperature Range 0°C – 49°C - Humidity: 90% RH non-condensing - Vibration: Low-frequency 10 – 55 Hz • Storage Environmental Limits <ul style="list-style-type: none"> - Temperature Range -40°C – 60°C - Humidity: 95% RH non-condensing (transport and storage in protective container) - Vibration: Low-frequency 10 – 55 Hz • Construction <ul style="list-style-type: none"> - Meets NEMA Type I specifications - Made of 20 gauge steel - Steel manufactured in U.S.A. • Installation <ul style="list-style-type: none"> - When installed in a suspended ceiling, installation requires a minimum of 12” from the top of the ceiling grid to the deck. 
<p>ELECTRICAL</p>	<ul style="list-style-type: none"> • Input Power <ul style="list-style-type: none"> - 208 – 240 VAC single phase, 13.5 A max., 50/60 HZ • Output Per Channel <ul style="list-style-type: none"> - 24VDC ± 5% - 95 W maximum current limited to 3.96 A continuous - Rated impulse current – 80 A for .2 mSec • Efficiency <ul style="list-style-type: none"> - Quiescent power = 7W - 90% @ 240 VAC input; 1500 W output • Wireless Communication <ul style="list-style-type: none"> - Provided through a ZigBee® module series (XBee Series2®) and a Nextek Power Systems software interface (PS Manager). See PS Manager manual for functionality and usage. • AUX Input Power <ul style="list-style-type: none"> - 24.0 – 24.5 VDC, 65 A max.
<p>STATUS INDICATORS</p>	<p>System status shall be indicated by 4 different types of LED indicators on the Power Server Module as follows:</p> <ul style="list-style-type: none"> • Power LED (bottom of Power Server Module) • System Status LED (bottom of Power Server Module) • Zigbee Association LED (bottom of Power Server Module) • Channel Status LEDs (front of Power Server Module) <p>In addition to the status indicators, control and monitoring software is available to provide additional functionality.</p>

While Nextek Power Systems has made every reasonable effort to ensure the accuracy of the information in this catalog, Nextek Power Systems does not guarantee that it is error free, nor do they make any other representation, warranty or guarantee that the information is accurate, correct, reliable or current. Nextek Power Systems, Inc. reserves the right to make any adjustments to the information contained herein at any time without notice. The specifications in this catalog are for references purposes only and are subject to change without notice. Consult Nextek Power Systems for the latest design specifications. All trademarks are either the exclusive property of Nextek Power Systems, Inc. or other companies. Copyright 2010 by Nextek Power Systems, Inc. in the United States and other countries throughout the world.



24V DC Input Electronic "Program Start"
High Efficiency Fluorescent Dimming Ballast

Nextek Power Systems



32W T8 (NB24-T832-02D)

Two lamp ballast

KEY FEATURES

- Low-voltage, 2 wire (class 2)
- 0-10V DC control technology
- Programmed rapid start design
- Ultra quiet operation
- State-of-the-art Phase Control
- 10% fluorescent dimming ballast

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Web: nextekpower.com
Email: info@nextekpower.com



FEATURES

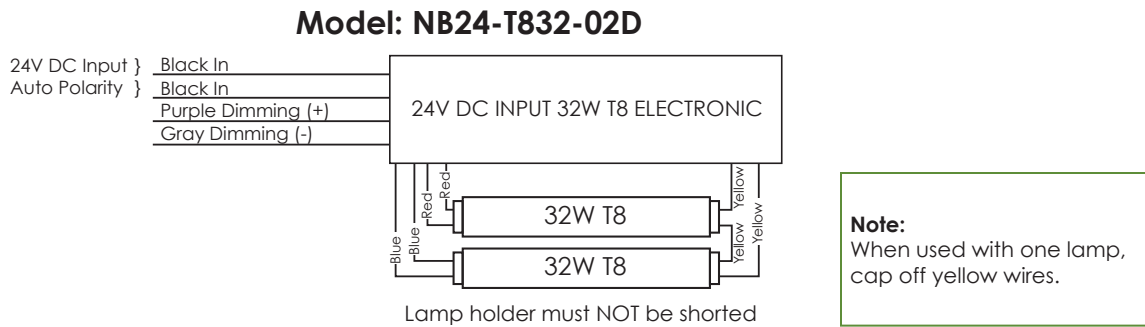
- Low-voltage, 2 wire (class 2) 0-10Vdc control technology turns lamps off (<1 Volts) at the bottom of the voltage range. Lamps can be switched back on to a previous dimming level instantly
- Programmed rapid start design: Lamps turn on to any dimmed level without flashing to full brightness
- State-of-the-art Phase Control operation resulting in continuous, flicker-free dimming from 100% to 10%.
- Inherent Thermal Protection
- Type I, Class P, Sound rated A
- UL Listed

TECHNICAL SPECIFICATIONS

Operating Voltage:	24V DC (nominal) ±10%
Operating Current:	1.99 Amp @ 24V DC
Maximum Peak Inrush Current:	37 amps, 50 μS pulse width
Minimum Starting Temperature:	0°F
Maximum Ballast Factor:	0.75
Crest Factor:	<1.55
Analog Dimming:	ILDA 0-10V
Dimensions:	1.10"W x 0.96"H x 9.57"L
Weight:	16 Oz
Construction:	Steel
Operated With:	F32T8, F32T8ES, FB032, FB32, F31T8, F25T8, F28T8

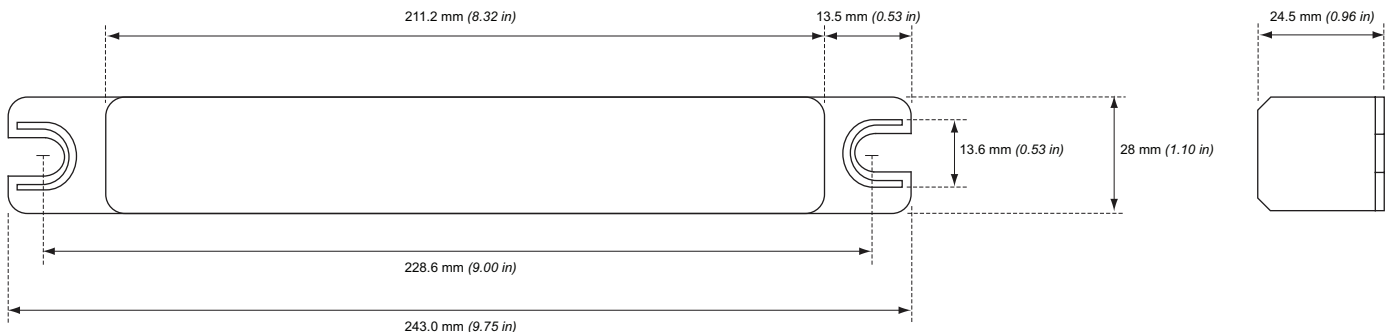
All specifications are subject to change without notice.

DC BALLAST WIRING DIAGRAM



Protected by US Patent 7,224,131; 6,933,627; 6,693,395 and other patents pending

ENCLOSURE DIAGRAM



For more information:

Nextek Power Systems
461 Burroughs Street
Detroit, Michigan 48202

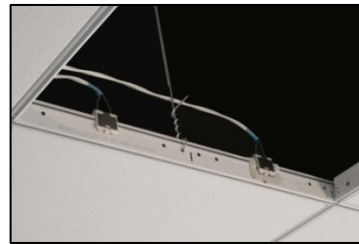
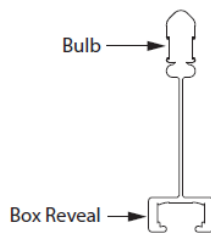
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DC FLEXZONE™ Suspension Systems

DC SILHOUETTE® ¼" Reveal

9/16" Slotted Grid System



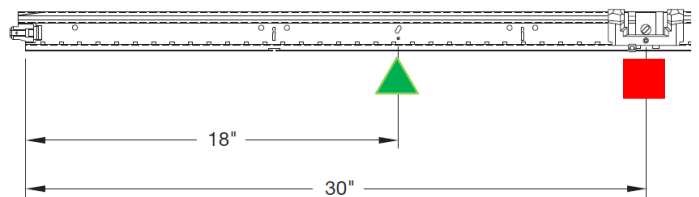
Product Description:

DC FLEXZONE SILHOUETTE ¼" Reveal mains are heavy duty main beams with integrated electrical conductors. DC SILHOUETTE mains are installed mechanically by an acoustical contractor as part of a standard suspended ceiling system with standard cross tees, molding and accessories. They are notched 12" from the end and 24" on center, with rout hole spacing 12" on center.

Qualified electricians make all electrical connections to installed DC mains. Each DC main is designed to mate with EMerge Alliance-registered power distribution cable assemblies at designated locations. DC mains are intended to deliver 24 Volt Direct Current (DC) Class 2 power from a qualified power cable to one or more device cable assemblies or electrical devices equipped with EMerge-compliant connectors. Each DC main is considered a Class 2 device when electrically connected. DC SILHOUETTE mains contain electrical conductors along the top "bulb" and the bottom "box" of the grid bus bar, providing capability for two separate Class 2 circuits (*electrically connected main shown top right*).

IMPORTANT – MECHANICAL: DC mains must not be field cut. Non-powered Border Mains should be used and field cut at perimeters. Reflected ceiling plans should indicate location & length of DC powered mains and field-cut border mains.

IMPORTANT – ELECTRICAL: 24 Volt DC Class 2 power must be connected in a pre-designated factory power key slot, located on each DC SILHOUETTE main @ 18" from each end* for power to top "bulb" (green triangle below) and 30" from each end* for power to bottom "box" (red box below). *Note: from one end only on 6' DC mains.



Item Numbers:

- DC760106* – 6' HD Silhouette DC Main Beam
- DC760108 – 8' HD Silhouette DC Main Beam
- DC760110 – 10' HD Silhouette DC Main Beam
- DC760112 – 12' HD Silhouette DC Main Beam
- 760106 – 6' HD Border Main (Non-powered)

Material/Finish:

ASTM C635 Heavy duty main beam classification, high recycled content, commercial quality hot-dipped galvanized steel with integrated plastic insulated 12AWG equivalent bus conductors (with tin finish). Note: Border Main Item No. 760106 manufactured without conductors (steel only, to be field cut as border main).

Electrical Capacity: 24 Volt DC, 4.2 Amps, 100 Watts on each Class 2 circuit (i.e., top bulb & bottom box)

Code Compliance: NEC Class 2, UL 2577 Listed, EMerge Alliance® Registered (pending)

Wiring: 12 AWG solid flat conductor, tin finish

WARNING: Not intended for use with AC line voltage

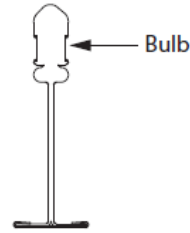
U.S. Patents Pending
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DC FLEXZONE™ Suspension Systems

DC SUPRAFINE®

9/16" Exposed Tee System



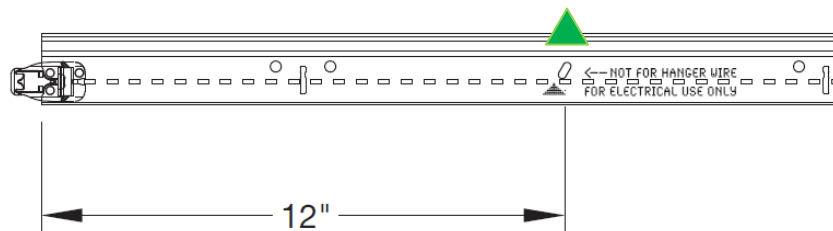
Product Description:

DC FLEXZONE SUPRAFINE mains are heavy duty main beams with integrated electrical conductors. DC SUPRAFINE mains are installed mechanically by an acoustical contractor as part of a standard suspended ceiling system with standard cross tees, molding and accessories. Note: Rout holes on DC mains are 6" from each end and 12" on center, which is different than standard (non-DC) Suprafine mains.

Qualified electricians make all electrical connections to installed DC mains. Each DC main is designed to mate with EMerge Alliance-registered power distribution cable assemblies at designated locations. DC mains are intended to deliver 24 Volt Direct Current (DC) Class 2 power from a qualified power cable to one or more power-out device cable assemblies or electrical devices equipped with EMerge-compliant connectors. Each DC main is considered a Class 2 device when electrically connected.

IMPORTANT – MECHANICAL: DC mains must not be field cut. Non-powered Border Mains should be used and field cut at perimeters. Reflected ceiling plans should indicate location & length of DC powered mains and field-cut border mains.

IMPORTANT – ELECTRICAL: 24 Volt DC Class 2 power must be connected in a pre-designated factory power key slot, located on each DC SUPRAFINE main @ 12" from each end* for power to the top "bulb" (green triangle below). *Note: power slot available on one end only on 6' DC mains.



Item Numbers:

- | | |
|---|---|
| <input type="checkbox"/> DC750106 – 6' HD Suprafine DC Main Beam | <input type="checkbox"/> DC750112 – 12' HD Suprafine DC Main Beam |
| <input type="checkbox"/> DC750108 – 8' HD Suprafine DC Main Beam | <input type="checkbox"/> 750106 – 6' HD Border Main (Non-Powered) |
| <input type="checkbox"/> DC750110 – 10' HD Suprafine DC Main Beam | |

Material/Finish:

ASTM C635 Heavy duty main beam classification, high recycled content, commercial quality hot-dipped galvanized steel with integrated plastic insulated 12AWG equivalent bus conductors (with tin finish). Note: Item 750106 manufactured without conductors.

Electrical Capacity: 24 Volt DC, 4.2 Amps, 100 Watts on each Class 2 circuit

Code Compliance: NEC Class 2, UL 2577 Listed, EMerge Alliance® Registered (pending)

Wiring: 12 AWG solid flat conductor, tin finish

WARNING: Not intended for use with AC line voltage

U.S. Patents Pending
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DC FLEXZONE™ SILHOUETTE® 1/4" Reveal NEW

9/16" Slot System



Key Selection Attributes

- Main beams only with integrated electrical conductors capable of distributing power to electrical devices such as light fixtures and sensors
- UL Listed and EMerge Alliance® Registered for use in 24VDC power distribution systems
- DC circuits available on top bulb and in slot reveal
- Integrates with standard cross tees, moldings and accessories for Silhouette 1/4" Reveal suspension systems
- Installed acoustically as part of the overall ceiling system, with electrical connections to the grid made subsequently by qualified electricians
- High recycled content, galvanized steel for durability and sustainable design
- Crisp reveal installs virtually flush with Tegular ceiling panel surface for monolithic appearance
- Seismic performance with heavy duty load rating meets the most stringent codes

Typical Applications

- Offices
- Education
- Hospitality
- Retail
- Healthcare

Color Selection

White (WH)



Visual Selection

Performance Selection

Grid Face	Item No.	Description	Dimensions	Hanger Spacing*		Seismic Category	Total Recycled Content	Total Post-consumer Content	PCS/Ctn.	LFT/Ctn.
				4 Ft.	5 Ft.					
DC Main Beams										
9/16"	DC760106	6' HD Main Beam Routs 12" OC, Notched 24" OC	72" x 9/16" x 1-3/4" x 1/4"	16.44	8.49	•	43%	37%	10	60
9/16"	DC760108	8' HD Main Beam Routs 12" OC, Notched 24" OC	96" x 9/16" x 1-3/4" x 1/4"	16.44	8.49	•	43%	37%	10	80
9/16"	DC760110	10' HD Main Beam Routs 12" OC, Notched 24" OC	120" x 9/16" x 1-3/4" x 1/4"	16.44	8.49	•	43%	37%	10	100
9/16"	DC760112	12' HD Main Beam Routs 12" OC, Notched 24" OC	144" x 9/16" x 1-3/4" x 1/4"	16.44	8.49	•	43%	37%	10	120
Non-powered Border Mains										
9/16"	760106	6' HD Border Main Beam Routs 12" OC, Notched 24" OC	72" x 9/16" x 1-3/4" x 1/4"	16.44	8.49	•	63%	53%	20	120
Accessories										
	DCINS	Insulator Cap	2"						100	N/A
	BACG90A	Brace Attachment Clip							250	N/A
	UPC	Partition Clip							200	N/A

Physical Data

Material
Double-web hot dipped galvanized steel made from USA produced recycled steel. Plastic insulated copper bus conductors. NOTE: Item 760106 Border Main steel only/no conductors.

Surface Finish
Baked polyester paint on steel. Tin finish on conductors.

Face Dimension
9/16"

Profile
Slot Reveal

Cross Tee/Main Beam Interface
Mitered

End Detail
Main Beam: Coupling
Cross Tee: Staked-on clip

Duty Classification
Heavy-duty

ASTM C635
Heavy duty main beam classification, commercial-quality galvanized steel. Steel surface chemically cleansed and prefinished in baked polyester paint.

Seismic Performance

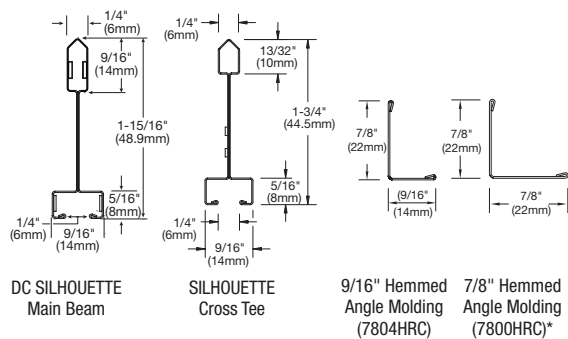
Main beams – DC7601xx – all lengths
Minimum Lbs. to pull out compression/tension – 387.6

Cross tees
Minimum Lbs. to pull out compression/tension – 299.5
See standard Silhouette XL 1/4" Reveal data page for cross tee items and further detail.

ICC Reports

For areas under ICC jurisdiction, see ICC evaluation report number 1308 for allowable values and/or conditions of use concerning the suspension system components listed on this page. The report is subject to re-examination, revisions and possible cancellation.

Details and Grid Intersection



* For seismic zones use 7800HRC

Installation Considerations:

- DC main beams shall not be field cut.
- Non-powered Border Mains (Item 760106) shall be used and field cut at perimeter.
- Four different lengths of DC main beams are available to accommodate design.
- Reflected ceiling plans should indicate orientation, location & length of DC powered mains and field-cut border mains. Installers should follow the RCP.
- Do not use pre-designated factory power key slots for hanger wire.
- Do not use metal bolts in slot reveal.
- Use Insulator Caps (Item DCINS) over any clips that touch the integrated conductors.
- Do not screw through the Bulb of a DC Main.
- Use BAC (Item BACG90A) Clips for any screw attachments for seismic applications and bracing.
- Use Partition Clips (UPC) screwed to the web of the grid for any attachments to the underside of the grid.



DC FLEXZONE™ SILHOUETTE® 1/4" Reveal NEW

9/16" Slot System

Electrical Data

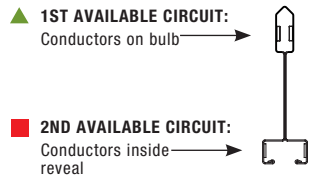
- After DC main beams have been installed as part of an acoustical ceiling suspension system, qualified electricians make all electrical connections to grid mains.
- Each DC main is designed to mate with EMerge Alliance® Registered power distribution cable assemblies at designated locations along the length of each main.
- Each DC main is considered a Class 2 circuit(s) when electrically connected.
- DC mains are intended to deliver 24 Volt Direct Current (DC) power to one or more electrical devices equipped with EMerge compliant connectors that are flexibly connected to grid.

Electrical Capacity: 24 Volt DC, 4.1 Amps, 100 Watts on each Class 2 circuit (i.e., top bulb & bottom box)

Electrical Code Compliance: NEC Class 2, UL 2577 Listed, EMerge Alliance® Registered

Wiring: 12 AWG copper solid flat conductor, tin finish

WARNING: DC MAIN BEAMS ARE *NOT* INTENDED FOR USE WITH AC LINE VOLTAGE.

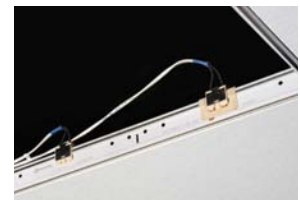
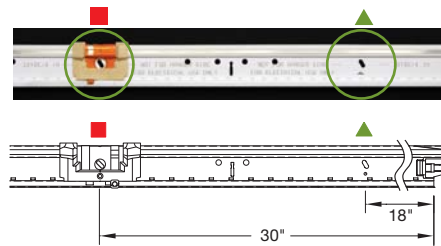


DC Silhouette Mains contain electrical conductors along the top “bulb” and within the bottom “reveal” of the grid bus bar, providing capability for two separate Class 2 circuits on each main.

Important – Electrical Connections

24 Volt DC Class 2 power shall be connected in a pre-designated factory power key slot on the DC Silhouette main beam. The two available circuits on DC Silhouette mains are located 18" from each end* for power to the top “bulb” and 30" from each end* for power to the bottom “reveal.”

*NOTE: Power slots are available on one end only on 6' DC mains.



DC FlexZone Silhouette shown with TE Connectivity Low Voltage DC Power Feed Cable Assemblies.

DC FlexZone Ceiling System Partners

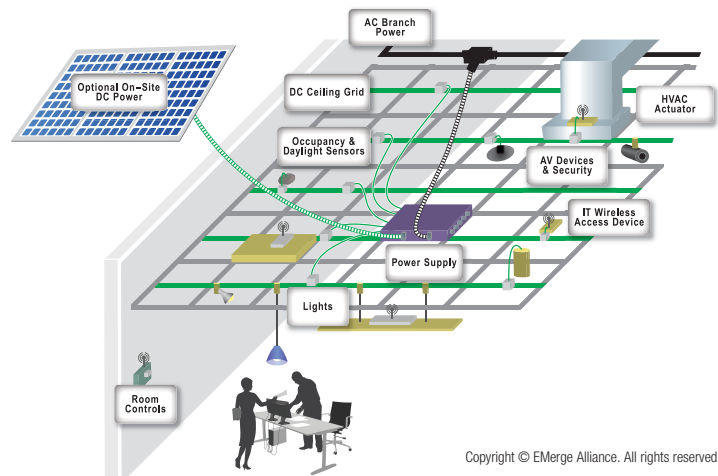
DC FlexZone Ceiling Grid Systems are designed for use with compatible power, infrastructure, lighting compatible and controls products available from DC FlexZone Compatible Partners.

These companies are also members of the EMerge Alliance and have a variety of EMerge Alliance® Registered products that can be specified as part of the power distribution, lighting, and electrical systems.

Please visit armstrong.com/dcflexzone for a list of our partners and links to their compatible products.

CAD drawings and application guides are also available online showing various configurations of typical ceiling and electrical layouts.

Please visit emergealliance.org for more information on EMerge Alliance Registered products and DC power distribution standards for buildings.



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Creating Sustainable Ceiling Systems

Maximize your sustainable ceiling system by combining DC FlexZone Silhouette with the following sustainable tegular ceiling panels:

ULTIMA® HRC	Dimensions	CIRRUS® HRC	Dimensions
1912HRC	2' x 2' x 3/4"	589HRC	2' x 2' x 3/4"
1915HRC	2' x 4' x 3/4"	539HRC	2' x 4' x 3/4"



Appendix D: Structural Breadth Resources

Versatile. Efficient. Fast.

This is the SolarDock solution.

Features:

- No roof penetrations
- Meets ASCE 7-05 wind loading criteria for 90 - 120 mph
- UL Listed
- Lightweight
- Customizable angle of inclination
- Quick and easy installation
- 25-year warranty
- Fits most commercially available solar modules
- Aesthetically pleasing
- Made in the USA
- Mill-certified aluminum construction
- Stainless steel fasteners
- Unrestricted water drainage
- Ballast and wiring hidden from view
- One inch rigid foam insulation for roof protection
- Sheds snow
- Easy access to every component
- Limits dirt and debris build-up
- Convective ventilation for improved system performance
- No moving parts



The SolarDock® mounting system revolutionizes the installation of both flat-roofed building and ground-mount photovoltaic arrays by dramatically reducing installation labor, lowering overall system costs, and improving system efficiencies.

This mounting system makes no roof penetrations and fits most commercially available photovoltaic modules. Holding modules in place at a customizable angle, the SolarDock increases annual system output by up to 15% when compared to a flat-mount system. Further, the angled design reduces the build-up of dirt and debris, sheds snow in colder climates, and reduces heat buildup through front, side, and rear ventilation.

The SolarDock, with no moving parts, is maintenance-free and one of the lightest non-penetrating solar mounting systems commercially available. And, it's quick to install. A team of 4 installers can set up the SolarDock units for a 40 kW system in one day.

Constructed from mill-certified aluminum and high quality stainless steel fasteners, this mounting system will last decades — even in harsh marine environments. Backed by a robust 25-year warranty, the SolarDock is UL certified, meets ASCE 7-05 and carries a Class C fire rating.



21MP
LISTED
PHOTOVOLTAIC POWER
SYSTEM ACCESSORIES

China
Patent
CN 0101061281 A

United States
Patent
US 6,968,654

Europe
Patent Pending
EP 01585873 A2

A standard feature of the SolarDock is one inch rigid foam insulation adhered to the bottom of the mounting structure, which provides protection to the roof and incorporates channels allowing for water flow.

Another advantage of the SolarDock mounting system is its ability to be moved easily for any routine building maintenance. No longer does a building owner need to put off purchasing a solar electric system until their roof is replaced. The SolarDock's versatile, modular design is ideal for installations ranging from a few to thousands of solar modules.

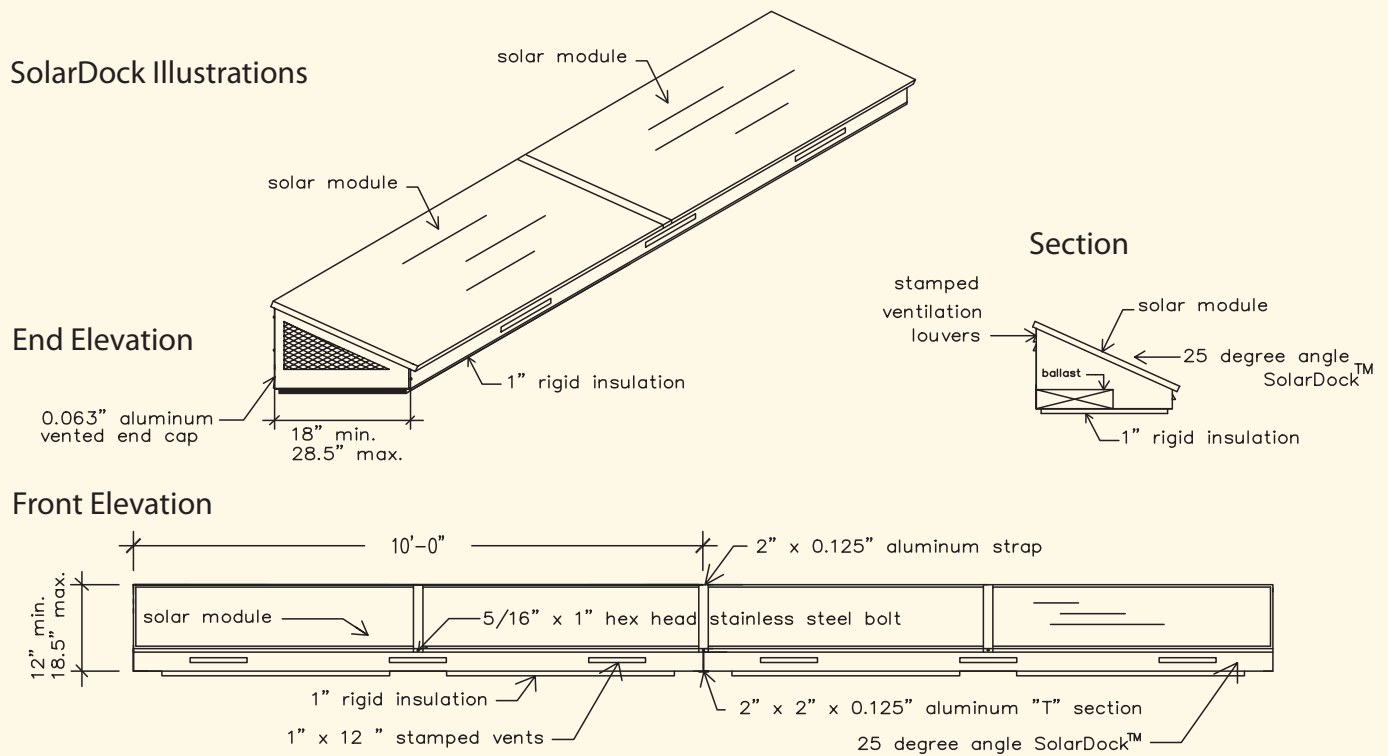


Questions about SolarDock?

Contact us for layout design tips and information on ballast requirements, roof loads, and other technical details.

(302) 504-0124

SolarDock Illustrations



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 201 W 14th Street • Suite 101 • PO Box 711 • Wilmington, DE 19899
 302-504-0124 www.solardock.com

SolarDock™
 Solar Electric Solution

STANDARD LRFD LOAD TABLE

DEEP LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a 50 ksi Maximum Yield Strength
 Adopted by the Steel Joist Institute May 1, 2000
 Revised to November 10, 2003 - Effective March 01, 2005

The black figures in the following table give the TOTAL safe factored uniformly distributed load-carrying capacities, in pounds per linear foot, of an **LRFD DLH-Series** Steel Joists. The weight of factored DEAD loads, including the joists, must in all cases be deducted to determine the factored LIVE load-carrying capacities of the joists. The approximate DEAD load of the joists may be determined from the weights per linear foot shown in the tables. All loads shown are for roof construction only.

The **RED** figures in this load table are the unfactored, nominal LIVE loads per linear foot of joist which will produce an approximate deflection of 1/360 of the span. LIVE loads which will produce a deflection of 1/240 of the span may be obtained by multiplying the **RED** figures by 1.5. In no case shall the TOTAL load capacity of the joists be exceeded.

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the carrying capacities are determined by the nominal depth of the joists at the center of the span. Standard top chord pitch is 1/8 inch per foot. If pitch exceeds this standard, the load table does not apply. Sloped parallel-chord joists shall use span as defined by the length along the slope.

All rows of bridging shall be diagonal bridging with bolted connections at the chords and intersections.

Where the joist span is in the **BLUE SHADED** area of the load table hoisting cables shall not be released until the two rows of bridging nearest the third points are completely installed.

Where the joist span is in the **GRAY SHADED** area of the load table hoisting cables shall not be released until all rows of bridging are completely installed.

The approximate moment of inertia of the joist, in inches⁴ is; $I_j = 26.767(W_{LL})(L^3)(10^{-6})$, where W_{LL} = **RED** figure in the Load Table, and L = (clear span + 0.67) in feet.

When holes are required in top or bottom chords, the carrying capacities must be reduced in proportion to the reduction of chord areas.

The top chords are considered as being stayed laterally by floor slab or roof deck.

The approximate joist weights per linear foot shown in these tables do not include accessories.

LRFD

STANDARD LOAD TABLE FOR DEEP LONGSPAN STEEL JOISTS, DLH-SERIES
 Based on a 50 ksi Maximum Yield Strength - Loads Shown in Pounds per Linear Foot (plf)

Joist Designation	Approx. Wt in Lbs. Per Linear Ft (Joists only)	Depth in inches	SAFELOAD* in Lbs. Between	CLEAR SPAN IN LINEAR FEET																
				61-88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
				66-96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
52DLH10	25	52	40050	447	436	427	418	409	400	391	384	376	369	361	354	346	340	334	327	
				171	165	159	154	150	145	140	136	132	128	124	120	116	114	110	107	
52DLH11	26	52	43950	490	480	469	459	448	439	430	421	412	405	396	388	381	373	366	360	
				187	181	174	169	164	158	153	149	144	140	135	132	128	124	120	117	
52DLH12	29	52	49050	547	535	523	513	501	490	480	471	460	451	442	433	426	417	409	402	
				204	197	191	185	179	173	168	163	158	153	149	144	140	135	132	128	
52DLH13	34	52	59550	664	649	636	621	609	595	583	571	559	549	537	526	516	507	496	487	
				247	239	231	224	216	209	203	197	191	185	180	174	170	164	159	155	
52DLH14	39	52	68100	760	745	729	714	699	685	670	657	645	631	619	607	595	585	573	562	
				276	266	258	249	242	234	227	220	213	207	201	194	189	184	178	173	
52DLH15	42	52	76500	853	835	817	799	783	766	750	735	720	705	691	676	664	651	639	627	
				311	301	291	282	272	264	256	247	240	233	226	219	213	207	201	195	
52DLH16	45	52	82500	921	901	882	862	844	826	810	792	777	760	745	730	717	702	688	676	
				346	335	324	314	304	294	285	276	267	260	252	245	237	230	224	217	
52DLH17	52	52	94950	1059	1036	1014	991	970	951	930	912	892	874	858	840	823	808	792	777	
				395	381	369	357	346	335	324	315	304	296	286	279	270	263	255	247	
			66-96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	
56DLH11	26	56	42150	432	424	415	408	400	393	385	379	372	366	358	352	346	340	334	328	
				169	163	158	153	149	145	140	136	133	129	125	122	118	115	113	110	
56DLH12	30	56	48450	496	486	477	468	459	450	442	433	426	417	409	402	394	388	381	373	
				184	178	173	168	163	158	153	150	145	141	137	133	130	126	123	119	
56DLH13	34	56	58650	601	591	579	568	558	547	537	526	516	507	496	487	478	471	462	454	
				223	216	209	204	197	191	186	181	175	171	166	161	157	152	149	145	
56DLH14	39	56	66300	679	666	652	640	628	616	604	594	582	571	562	552	541	532	523	514	
				249	242	234	228	221	214	209	202	196	190	186	181	175	171	167	162	
56DLH15	42	56	75750	777	762	747	732	717	703	690	676	664	651	639	628	616	604	594	583	
				281	272	264	256	248	242	234	228	221	215	209	204	198	192	188	182	
56DLH16	46	56	81750	838	822	805	789	774	759	744	730	717	703	690	678	666	654	642	630	
				313	304	294	285	277	269	262	254	247	240	233	227	221	214	209	204	
56DLH17	51	56	94200	964	945	927	907	891	873	856	840	823	808	793	780	765	751	738	724	
				356	345	335	325	316	306	298	289	281	273	266	258	251	245	238	231	

