Appendix A

***Luminaire, Ballast, LLF Schedules**

***Luminaire Cutsheets**

***Ballast Cutsheets**

***Lamp Cutsheets**

***Daylight Analysis**

- **Skycalc Inputs**
- **SPOT Inputs**

***Lighting Equipment Cutsheets**

1. ABBREVIATIONS: C=CEILING: P=PENDANT: R=RECESSED: S=SURFACE: T=TRACK: W=WALL: CB=CONCRETE BASE

LUMINAIRE SCHEDULE

Type	Manufacturer	Description	Mtg	Lamping	Volts	Watts	Ballast	Location	Notes
F1	"GREENLEE" HYPR 70CMH/T6 MT OptX BLK DT H42 PCHV	EXTRUDED ALUMINUM BOLLARD LUMINAIRE WITH TYPE V, 360 DEGREE LATERAL LIGHT DISTRIBUTION. NOMINAL 42" HIGH x 8.5" DIAMETER. FINISH IS TO MATCH SECURITY BOLLARDS.	CB	(1) CMH70TU/942/G12	277	77	B1	OUTDOOR	
F2	"LITHONIA" KSF1 150M R3 277 RP04 SF DBL LPI	ONE(1) POLE MOUNT HID SHOEBOX LUMINAIRE, NOMINAL 21.25" x 15.5" x 7.25" DEPTH, ANODIZED, SEGMENTED TYPE III OPTICS, SEAM WELDED ALUMINUM HOUSING, FINISHED DARK BRONZE, FLAT TEMPERED GLASS LENS, HORIZONTAL LAMP ORIENTATION, MOUNT UNDERSIDE OF LUMINAIRE AT 30' A.F.G.	CB	(1) MVR150/U/WM	277	173	B2	PARKING LOT	SAME AS ORIGINALLY DESIGNED
F2A	"LITHONIA" KSF1 150M R3 277 RP04 SF DBL LPI	SIMILAR TO TYPE "F2" EXCEPT MOUNT UNDERSIDE OF LUMINAIRE AT 20' A.F.G.	CB	(1) MVR150/U/WM	277	173	B2	PARKING LOT	SAME AS ORIGINALLY DESIGNED
F2B	"LITHONIA" KSF1 150M R3 277 RP04 SF DBL LPI	SIMILAR TO TYPE "F2" EXCEPT WITH TWO SHOEBOX LUMINAIRES OPPOSED 180 DEGREES FROM EACH OTHER.	CB	(1) MVR150/U/WM	277	346	B2	PARKING LOT	SAME AS ORIGINALLY DESIGNED
F3	"EXTERIEUR VERT" M2 RMA 7	RECESSED PROJECTOR, TYPE VI, FIXED REFLECTOR LUMINAIRE, NOMINAL 19" x 3.6". DRIVE OVER RATED, WATERPROOF.	R	(1) FM 11W/760 W4,3 UNV1	277	11	INTEGRAL	OUTDOOR	
F4	"ERCO" TC-TEL 18W GX24q-2	CAST ALUMINUM, SILVER POWDER-COATED TYPE V DOWNLIGHT, NOMINAL 8" DIAMETER x 9" DEPTH. CUT-OFF ANGLE 30 DEGREES. WATER-JET PROOF.	R	(1) F18TBX/SPX41/A/4	277	19.5	B3	OUTDOOR	
F5	"ERCO" HIT-CE 35W G12	CORROSION-RESISTANT CAST ALUMINUM TYPE V BEAMER II PROJECTOR, NOMINAL 12" HIGH x 6.25" DIAMETER. 130 DEGREE TILT, MOUNTING PLATE FOR METAL HALIDE LAMPS. CUT-OFF ANGLE 50 DEGREES. WATER-JET PROOF.	S	(1) CMH35/T/UVC/U/830/G12	277	35	NO	OUTDOOR	
F6	"LEDALITE" 280 8 T01 E N 04 7 2 E W	DIE-FORMED 24 GAUGE METAL PAINTED WHITE COVE LUMINAIRE. NOMINAL 6" x 48" x 1.5" DEPTH, TYPE VI ASYMMETRIC DISTRIBUTION.	S	(1) F32T8XLSPX41HLEC	277	35	B4	THEATER	
F7	"ERCO" TC-TEL 32W GX24q-3 ECG 1-10V	CAST ALUMINUM DOWNLIGHT, WHITE POWDER COATED TYPE V SYMMETRIC DISTRIBUTION. NOMINAL 8" DIAMETER x 7" DEPTH	R	(1) F32TBX/841/A/ECO	277	37.5	B5	THEATER, LOBBY	
F8	"CELESTIAL LIGHTING" LF5000 RO W 4	DELINEATED STAIRNOSE LED LUMINAIRE, LOW VOLTAGE, COMPLIES WITH NFPA'S LIFE SAFETY CODE (0.2 FC) WHEN INSTALLED AS RECOMMENDED.	S	INCLUDED IN LUMINAIRE	9.5V DC	0.2	TRANSFORMER	THEATER	
F9	"CELESTIAL LIGHTING" LF2000 S W 12	CARPET TO WALL PATH LIGHT LED LUMINAIRE, LOW VOLTAGE, COMPLIES WITH NFPA'S LIFE SAFETY CODE(0.2FC) WHEN INSTALLED AS RECOMMENDED.	S	INCLUDED IN LUMINAIRE	9.5V DC	0.2	TRANSFORMER	THEATER	
F10	"DELRAYLIGHTING" 6320.2.BLC.57	KONE PENDANT CYLINDER WITH DOWNLIGHT COMPONENT, EXTRUDED ALUMINUM CENTER TUBE IS LAMP HOLDER AND ELECTRONIC BALLAST. TYPE V SYMMETRIC DISTRIBUTION, TOP AND BOTTOM CYLINDER IS 1/4" THICK WITH ALUMINUM COVER PLATES WITH SILVER POWDER COAT FINISH.	P	(3) F32T8SP30ISWMECO (1) CMH39UPAR20FL25	277	155	B6,B7	LOBBY	

F11	"DELRAYLIGHTING" 6331.2.BLA.33	KONE PENDANT CYLINDER, EXTRUDED ALUMINUM CENTER TUBE IS LAMP HOLDER AND ELECTRONIC BALLAST. TYPE V SYMMETRIC DISTRIBUTION, TOP AND BOTTOM CYLINDER IS 1/4" THICK WITH ALUMINUM COVER PLATES WITH SILVER POWDER COAT FINISH. SPECIAL WALL MOUNT ADAPTER.	W	(3) F17T8XL/SPX41ECO	277	54	B8	LOBBY	
F12	"LITHONIA" MS5 1 21T5 GEB10PS	LINEAR DIRECT FLUORESCENT LOW-PROFILE FIXTURE. NOMINAL 2"x2"x22.5". HIGH GLOSS, BAKED WHITE ENAMEL FINISH. TYPE IV SYMMETRIC DISTRIBUTION.	S	(1) F21W/T5/841/ECO	277	26	B9	LOBBY	
F13	"FINELITE" S15-32'-1T5-SC-277-FA	INDIRECT SUSPENDED LINEAR FLUORESCENT, DOUBLE DIFFUSER OPTICAL DESIGN, 96% REFLECTIVE WHITE PAINT. NOMINAL 3.5"x12"x48". CAN BE CONNECTED IN SECTIONS. TYPE 6 SYMMETRICAL DISTRIBUTION.	P	(1) F54W/T5/841/ECO	277	62.5	B10	OFFICE	
F14	"TAMBIENT" STYLE P201	WORKSTATION LUMINAIRE FOR INSTALLATION ON OPEN OFFICE FURNITURE PANELS. DESIGNED TO PROVIDE LOW-GLARE TASK LIGHTING FOR HORIZONTAL SURFACES. NOMINAL 6"x2.5"x36". TYPE IV ASYMMETRICAL DISTRIBUTION. PLUG IN CONNECTION TO RECEPTACLE OUTLET.	S	(1) F21W/T5/841/ECO	120	27	INTEGRAL	OFFICE	
F15	"ELLIPTIPAR" F144-T121-S-22-2-000	SURFACE MOUNTED WALLWASH, ASYMMETRICAL DISTRIBUTION, TYPE IV FIXTURE. NOMINAL 5"x2.5"x36". MATTE WHITE FINISH WITH DECORATIVE ENDPLATES. CAN BE CONNECTED IN SECTIONS.	S	(1) F21W/T5/841/ECO	277	26	B9	OFFICE	
F16	"ERCO" QT12-AX 100W 12V GYG.35	LOW VOLTAGE, RECESSED DIRECTIONAL SPOTLIGHT. BLACK POWDER-COATED, 0-40 DEGREE TILT. NOMINAL 7" DIAMETER x 6" DEPTH, TYPE V SYMMETRIC DISTRIBUTION.	R	(1) Q100T3/12V/CL	12V	100	TRANSFORMER	THEATER	

BALLAST SCHEDULE							
Type	**Luminaire**	**Description**	**BF**	**Input Watt**	**PF**	**THD**	**#Lamps**
B1	F1	GE HID ULTRAMAX GEMH70-SLJ-MV	1.00	77	0.97	0.10	1
B2	F2, F2A, F2B	ADVANCE 150W M102 60HZ R-HPF	0.99	173	0.90	0.10	1
B3	F4	ADVANCE CFM18W/GX24q	1.05	39	0.99	0.10	2
B4	F6	ADVANCE MARK 7 0-10V F32T8 VZT-4S32-4	0.05/0.88	25/116	0.99	0.10	4
B5	F7	ADVANCE MARK 7 0-10V CFM32W/GX24Q	0.05/1.00	19/75	0.98	0.10	2
B6	F10	ADVANCE MARK 10 POWERLINE VEZ-3S32-SC	0.05/1.00	20/102	0.99	0.10	3
B7	F10	ADVANCE 39W M130 60HZ HX-HPF	0.99	53	0.90	0.10	1
B8	F11	ADVANCE MARK 7 0-10V F17T8 IZT-3S32-SC	0.03/1.00	16/54	0.99	0.10	3
B9	F12,F15	ADVANCE CENTIUM ICN-2S28	1.03	26	0.95	0.15	1
B10	F13	ADVANCE ROVR IDA-2S54	0.03/1.00	24/125	0.98	0.10	2

LIGHT LOSS FACTORS							
TYPE	BF	CLEANING	MAINTENANCE	LLD	LDD	RSDD	LLF
F1	1.00	12 Month	V	0.77	0.87	-	0.67
F2	0.99	12 Month	V	0.75	0.87	-	0.65
F2A	0.99	12 Month	V	0.75	0.87	-	0.65
F2B	0.99	12 Month	V	0.75	0.87	-	0.65
F3	1.00	12 Month	VI	0.92	0.85	-	0.78
F4	1.05	12 Month	V	0.85	0.87	0.97	0.75
F5	1.00	12 Month	V	0.80	0.87	-	0.70
F6	0.88	12 Month	VI	0.94	0.85	0.85	0.60
F7	1.00	12 Month	V	0.84	0.87	0.97	0.71
F8	1.00	12 Month	V	0.90	0.87	0.94	0.74
F9	1.00	12 Month	V	0.90	0.87	0.94	0.74
F10	0.99	12 Month	V	0.90	0.87	0.92	0.71
F11	1.00	12 Month	V	0.95	0.87	0.92	0.76
F12	1.03	12 Month	II	0.92	0.94	0.97	0.86
F13	1.00	12 Month	VI	0.92	0.85	0.93	0.73
F14	1.00	12 Month	III	0.92	0.90	0.97	0.80
F15	1.03	12 Month	III	0.92	0.90	0.97	0.83
F16	1.00	12 Month	V	0.85	0.87	0.97	0.72

Assuming a 12 month cleaning cycle within a clean environment.
rcr=(2.5 x cavity height x cavity perimeter)/area of cavity base

	Area of Base	Cavity Height (ft)	Cavity Perimeter (ft)	RCR
Theater	3000	11	240	2.2
Lobby	1600	35	200	10.9
Office	6000	10	465	1.9

F1 Luminaire

GREENLEE HYPERION SERIES

LAMP TYPE: Standard or Ceramic Metal Halide

HOUSING: One-piece, heavy-walled, extruded aluminum, .322" thick for vandal resistance.

CROWN ASSEMBLY: Flat or domed, heavy cast aluminum. For added security against vandals, crown attaches to lower housing with four captive, concealed 1/4" x 20 Allen-head screws.

LENS: One-piece, heavy-walled borosilicate lens is recessed .764" and protected by three cast ribs for vandal resistance. Exposed portion of the lens is only .671" tall.

OPTICS: Patented OptX™ optical assembly uses Constructive OcclusionTM technology. A precisely positioned clear lamp in a Cavity and FanTM assembly projects radiant energy into selective zones. Proprietary coating on the cavity is 96% reflective.

BALLAST: High Power Factor, multi-tap ballast designed for -20°F operation is standard. Universal electronic ballast for 120-277V, 50 or 60 HZ operation is available.

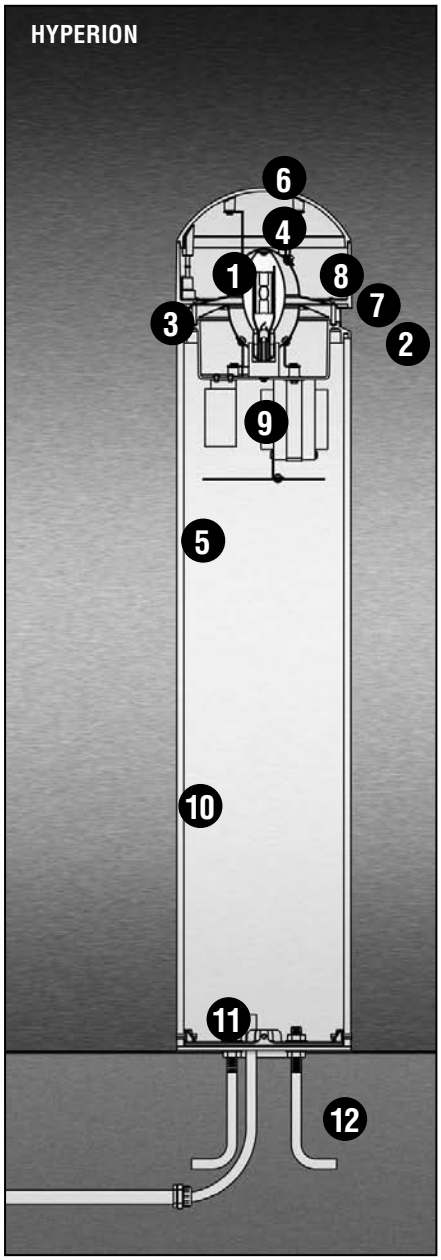
LAMPHOLDER: Matched to lamp. Glazed porcelain, medium base, 4KV pulse rated with spring center contact.

ANCHOR BOLTS: Anchor bolts are 3/8" x 10" heavy-duty galvanized steel. Four (4) are furnished.

FINISH: Available in metallic silver, satin verde green, black, bronze, white, and buff.

EXTRA VALUE FEATURES:
- Unique OptX™ optical assembly
- Tailored, uniform distribution over greater distances.
- Increased spacing between luminaires
- Vandal Resistant Aperture
- Heavy Duty Construction
- Premium Materials

Bollards are subjected to extreme environments – from severe weather to pedestrian wear-and-tear, and senseless vandalism. The Hyperion Bollard Series was designed with this harsh reality in mind, and that's why its materials are of the highest quality, ruggedly durable, and feature superior vandal resistant construction.



1. **OPTICS** – OptX optics are the heart of this luminaire. A clear lamp is precisely positioned in a highly engineered, and patented, Cavity and Fan assembly that functions like an integrating sphere. Known as Constructive Occlusion technology, this sphere uses a proprietary internal coating that realizes 96% reflectance. The lamp's radiant energy is distributed by this finely tuned, reflective surface to desired zones.
2. **VANDAL RESISTANT APERTURE** – Hyperion features the narrowest aperture of any bollard on the market, a mere 1.167" wide, which gives the luminaire a sleek and elegant appearance while minimizing the target area available to vandals.
3. **VANDAL RESISTANT LENS** – The one-piece, heavy-walled borosilicate lens is recessed a full .764" and protected by three cast ribs. The exposed portion of the lens is only .671" tall. These design features and premium materials provide superior vandal resistance.
4. **LAMPS** – Standard and Ceramic Metal Halide
5. **HEAVY-WALL HOUSING** – One-piece, heavy-wall extruded aluminum, .322" thick for vandal resistance.
6. **CROWN** – Flat or domed heavy-wall cast aluminum. One-piece castings provide for greater impact strength.
7. **CONCEALED ACCESS** – Added security against vandals, crown attaches to lower housing with four captive, concealed 1/4" x 20 Allen-head screws.
8. **SEALING AND GASKETS** – Silicone gaskets and seals ensure Hyperion is as dependable as it is rugged.
9. **BALLASTS** – Standard ballast is high power factor, designed for -20° operation. Universal electronic ballast available.
10. **FINISHES** – Metallic Silver, Satin Verde Green, Black, Bronze, White or Platinum Plus polyester powder coating.
11. **MOUNTING BASE** – Extra thick, 1/2" cast aluminum (cromate converted and powder coat finished in black standard).
12. **ANCHOR BOLTS** – 3/8" x 10" heavy-duty galvanized steel; four (4) furnished.

c UL us LISTED wet location

Greenlee Lighting™

Project Name _____ Fixture Type _____

Catalog # _____

GREENLEE HYPERION SERIES

Series	Wattage/Lamp Type	Voltage	Optics	Finish	Top	Height[3]	Options
HYPR	50, 70, 100 MH E-17 Medium Base Metal Halide Quartz Arc Tube 50, 70, 100 CMH/Med E-17 Medium Base Metal Halide Ceramic Arc Tube 39, 70 CMH/T6 T-6 Ceramic Metal Halide with G12 Bi-pin base	MT – Multi-Tap[1] 120, 208, 240, 277 TT – Tri-Tap 120, 277, 347, 480[2] UE – Universal Electronic 120-277 V 50 or 60 HZ	OptX®	MSV – Metallic Silver SVG – Satin Verde Green BUF – Buff WHT – White BLK – Black BRZ – Bronze GPT - Graphite	FT – Flat Top DT – Dome Top	H42	PC120 – 120 Volt Photocell PCHV – 208- 277V Photocell PC347 – 347V Photocell GFR – Ground-Fault Receptacle LPC - BLK Lens Protector casting painted black LL - Less Lamp LAB - Less Anchor Bolts **Accessories** HSS - House Side Shield[4]

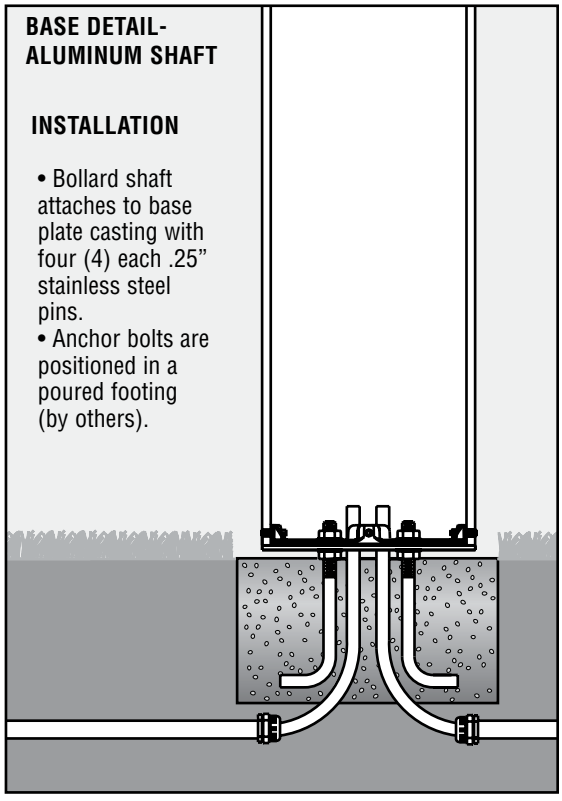
HYPR 100MH MT OptX® MSV FT H42 PC120

FOOTNOTES

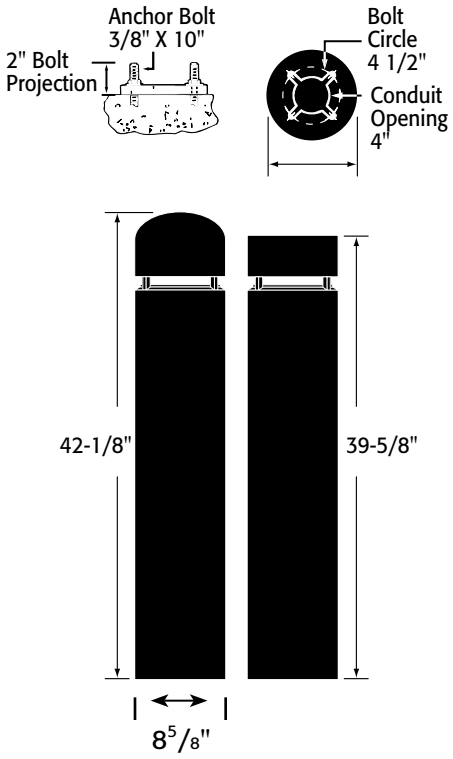
1. Multi-tap wired for highest voltage. Alternate voltages will require rewiring in the field.
2. 480 volt Magnetic Ballast is available for 70 and 100 Watt Metal Halide only.
3. Nominal standard height if 42". Non-Standard heights are available in 6" increments. Minimum height is 18"
4. House Side Shield provides 180o shielding. Maximum fixture rating with HSS is 70 watts. HSS is NOT available for 100 watt fixtures.

HYPERION BOLLARDS

All Hyperion Bollards are shipped with lamps installed and 38" leads to facilitate wiring.



DIMENSIONS



FINISHES

Each Hyperion Bollard has a tough polyester powder coat finish, which is guaranteed for two years and is available in six standard colors: metallic silver, satin verde green, black, bronze, white, graphite, and buff.

POWDER COATED TOUGH™

Greenlee Lighting™

Project Name _____ **Fixture Type** _____

Catalog # _____

Extérieur Vert

RECESSED PROJECTOR
Fixed reflector :
narrow spot, flood or asymetrical
Fluorescent lamp T2
11W / 120 /277V

M2 SERIES

F3 Luminaire

MERCURE

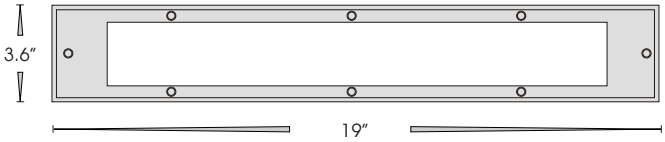
IP 67 | W 4,3 | 11W | T2

Projector body

- Drive over rated
- Waterproof IP67
- Available in anodized black cast aluminum.
- Integral electronic ballast.
- 3.5 Metric tons / 7600 Lbs.

Lamp / Optics

- Fluorescent lamp T2 11W /120/277V
- Lamp holder W4,3 .
- Choice of 3 fixed reflectors:
- Symetrical Spot reflector
- Symetrical Flood reflector
- Asymetrical reflector



Trim

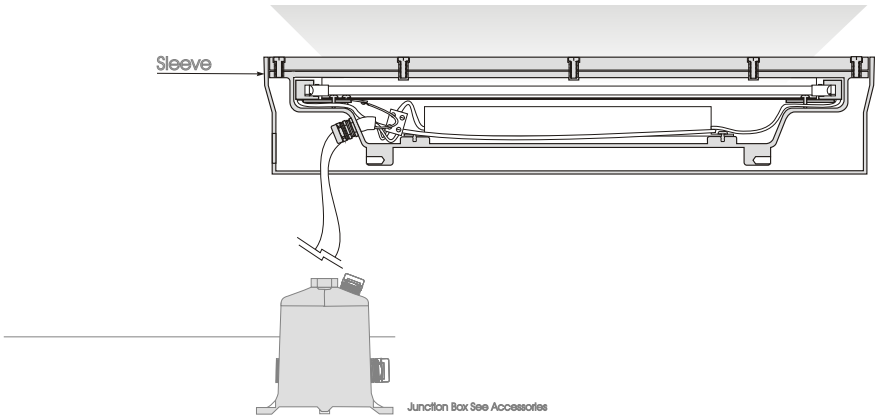
- Black anodised cast aluminium.
- Heat treated glass.
- 8 stainless steel securing screws.

Rough-In Components

- Fixture is pre-wired with 2ft of SJOOW cord.
- Sleeve is ordered separately (see accessories).

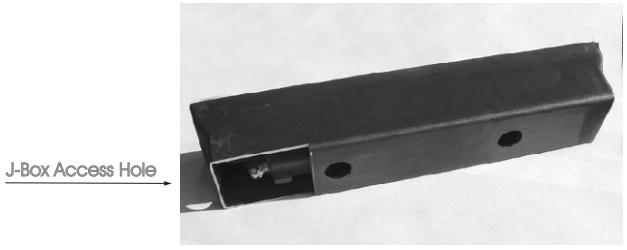
Installation Recomendations

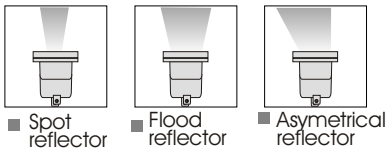
- In all potentially wet/damp locations, a waterproof junction box must be used.
- Provisions for effective drainage are necessary.



Applications

- Public spaces
- Walkways
- Commercial facilities





EXTERIEUR VERT a division of TARGETTI NORTH AMERICA
www.exterieurvert.com

1513 E. Saint Gertrude Place
Santa Ana, Ca 92705
Tel 714 957-4960
Fax 714 957-4965

Extérieur Vert

MERCURE

Part # Logic

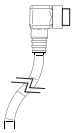
M2	RMP	1
Base Part #	Reflector	Voltage
T2 Fluoresent Projector	RMP=Symetrical Spot Reflector RMS=Symetrical Flood Reflector RMA=Asymetric Reflector	1=120V 7=277V

Select Rough In Kit

Part # Logic

ME-M2 / EV-JB1B-1/2 / QD

Sleeve (req'd) — Jbox — Quick Disconnect



Sleeve (Required)

Part #	Description
ME-M2	Aluminum

Jbox / Quick Disconnect (Optional)

Part #	Description
EV-JB1B-1/2	2x1/2" NPT holes on bottom
EV-JB1A-1/2	2x1/2" NPT holes on sides/across
EV-JB1O	Other hole configuration (specify)

Accessories

Options & Accessories

Part #	Description
QD	Quick Disconnect with Anti-Wicking Barrier 4' Cord

Filters

Color	Part #
Blue	B387
Green	G387
Red	R387
Yellow	Y387
Frosted	F387

*387mm

Louvers

Transversal

Longitudinal

Part #	Description
MER-LOL	Longitudinal Louver/Black
MER-LOT	Transversal Louver/Black
LFL0000T201102O	Lamp 3000° K
LFL0000T201104O	Lamp 4100° K

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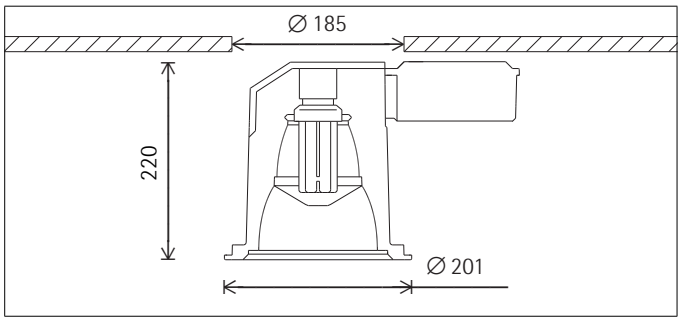
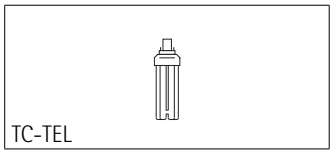
ERCO

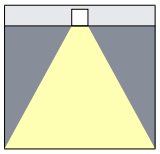
Lightcast Downlight

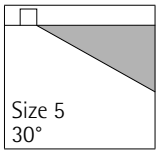
for compact fluorescent lamps

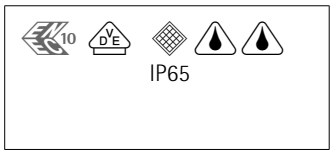
F4 Luminaire





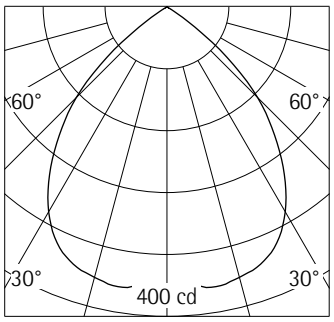






81029.000 Reflector silver
TC-TEL 18W GX24q-2 1200lm
ECG

Product description
Housing: cast aluminium, silver powder-coated. Mounting with 3-point support and screw-tightening. Side-mounted control gear: plastic, black.
Electronic control gear. 2 cable entries. Through-wiring possible. 5-pole terminal block.
Darklight reflector: aluminium, bright anodised. Cut-off angle 30°.
Diffuser as lamp cover: plastic, translucent.
Screw-fastened cover ring with safety glass: corrosion-resistant, cast aluminium, No-rinse surface treatment. Silver double powder-coated. To be removed together with Darklight reflector for lamp replacement.
Protection mode IP65: dust-proof and water-jet proof.
Weight 2.40kg



TC-TEL 18W GX24q-2 1200lm

h(m)	E(lx)	D(m) 87°
1	359	1.90
2	90	3.80
3	40	5.69
4	22	7.59
5	14	9.49

ERCO Leuchten GmbH
Postfach 2460
58505 Lüdenscheid
Germany
Tel.: +49 2351 551 0
Fax: +49 2351 551 300
info@erco.com

Technical Region: 230V/50Hz
Edition: 16.11.2006
Please download the current version from
www.erco.com/81029.000

ERCO

Lightcast Downlight

Planning data

Cleaning (a)	1				2				3			
Ambient conditions	P	C	N	D	P	C	N	D	P	C	N	D
LMF	0.98	0.94	0.90	0.86	0.95	0.91	0.86	0.81	0.94	0.90	0.84	0.79
RSMF	0.99	0.98	0.96	0.95	0.97	0.96	0.95	0.94	0.97	0.96	0.95	0.94

Hours of operation (h)	2000	6000	10000	1000	4000	8000
LLMF	0.92	0.85	0.83	0.97	0.88	0.83
LSF	1	1	1	1	1	1

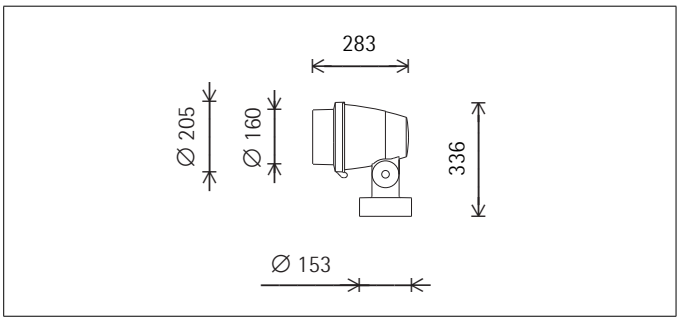
MF	LMFxRSMFxLLMFxLSF
MF	Maintainance Factor
LMF	Lumiaire Maintenance Factor
RSMF	Room Surface Maintenance Factor
LLMF	Lamp Lumens Maintenance Factor
LSF	Lamp Survival Factor
P	Room pure
C	Room clean
N	Room normal
D	Room dirty

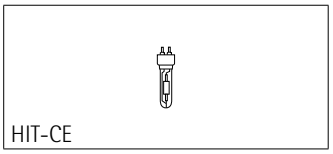
ERCO

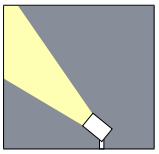
Beamer II Projector

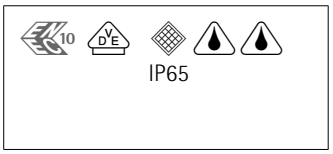
with mounting plate for metal halide lamps

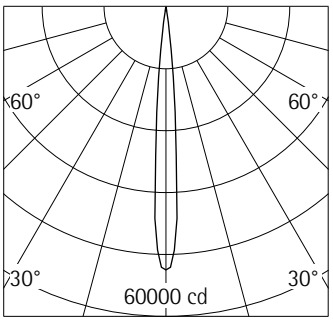
F5 Luminaire











HIT-CE 35W G12 3300lm

h(m)	E(lx)	D(m) 9°
2	12753	0.31
4	3188	0.63
6	1417	0.94
8	797	1.26
10	510	1.57

34004.000 Graphit m
HIT-CE 35W G12 3300lm

Product description
Housing, hinge and mounting plate: corrosion-resistant cast aluminium, No-Rinse surface treatment. Double powder-coated. Optimised surface for reduced accumulation of dirt. Hinge with internal wiring, 130° tilt. Graduated disc: corrosion-resistant aluminium. Mounting plate rotatable through 240°.
Control gear with temperature controller, timer-ignitor, capacitor. 2 cable entries. Through-wiring possible. 3-pole terminal block.
Spot reflector: aluminium, silver anodised, mirror-finish.
Screw-fastened snoot with safety glass: corrosion-resistant cast aluminium, double powder-coated.
Cross-baffle: metal, black lacquered. Cut-off angle 50°. Without spill light.
Protection mode IP65: dust-proof and water jet-proof.
Weight 7.00kg
Maximum wind load area 0.06m²

ERCO Leuchten GmbH
Postfach 2460
58505 Lüdenscheid
Germany
Tel.: +49 2351 551 0
Fax: +49 2351 551 300
info@erco.com

Technical Region: 230V/50Hz
Edition: 16.11.2006
Please download the current version from
www.erco.com/34004.000

Beamer II Projector

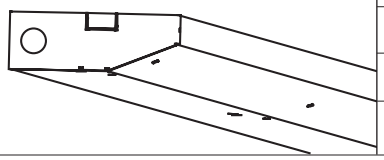
Planning data

Cleaning (a)	1				2				3			
Ambient conditions	P	C	N	D	P	C	N	D	P	C	N	D
LMF	0.98	0.94	0.90	0.86	0.95	0.91	0.86	0.81	0.94	0.90	0.84	0.79
RSMF	0.99	0.98	0.96	0.95	0.97	0.96	0.95	0.94	0.97	0.96	0.95	0.94

Hours of operation (h)	1000	2000	4000	6000	8000	10000	12000
LLMF	0.89	0.84	0.81	0.79	0.77	0.76	0.75
LSF	1	1	1	1	1	1	1

MF	LMFxRSMFxLLMFxLSF
MF	Maintainance Factor
LMF	Lumiaire Maintenance Factor
RSMF	Room Surface Maintenance Factor
LLMF	Lamp Lumens Maintenance Factor
LSF	Lamp Survival Factor
P	Room pure
C	Room clean
N	Room normal
D	Room dirty

F6 Luminaire



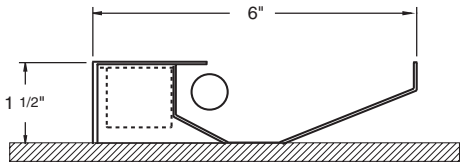
Cove mount
1 T5HO
Asymmetric
2808H01

Exceptional forward-throw distribution allows close mounting to ceiling with excellent uniformity.
Virtually eliminates the socket shadows found when using traditional strip lights.
Inter-locking modules allow for fast easy installation.
Factory pre-wired with quick-wire connectors.
Ultra slim profile for small coves.
Adjustable mounting positions allow beam pattern to be coordinated with architecture.

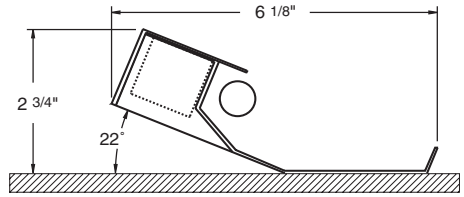
Order Number Guide

280	8	H01	E	N	___ ___	___	___	E	W
Series In-Cove LP	*Type* Wall mount Indirect	*Lamps* 1 T5HO	*Lower Optics* E - None	*Upper Optics* N - Standard	*Length* 02 - 2ft* 03 - 3ft* 04 - 4ft* 06 - 6ft* 08 - 8ft*	*Wiring Options* 1 - 1cct 3 - 1cct w/ Emergency cct 5 - 1cct w/ Battery Pack 7 - 1cct w/ Dimming* 8 - 1cct w/ Thru Wire Consult factory for complete list of standard wiring options.	*Voltage* 1 - 120V 2 - 277V 3 - 347V* X - Custom * Consult factory for availability	*Ballast* Electronic	*Finish* W - Standard White

Cross Section



Position A

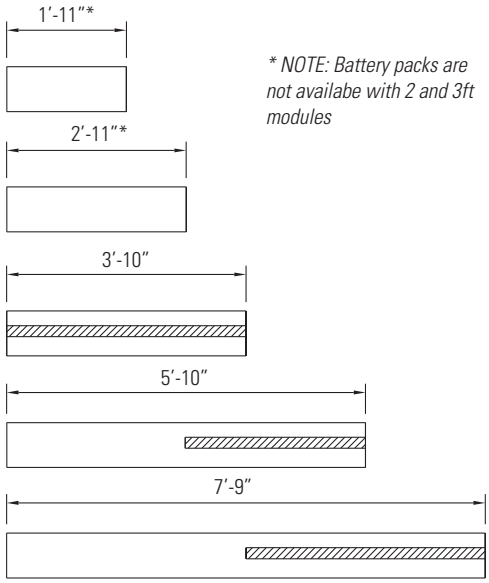


Position B

Weight 2.7 lb/ft

Modules

Linear runs are made by combining 2, 3,4,6 or 8ft modules



** NOTE: Battery packs are not availabe with 2 and 3ft modules*

Indicates location of:
- Optional emergency modules (controls all lamps) OR
- Optional battery pack (standard controls one lamp only)

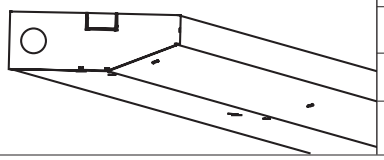
Indicates:
- Module length / Mounting distance

**Module length does not include endcaps*

L0018 Rev. 6

 Phone: 604-888-6811 **Toll Free Fax:** 1-800-665-LEDA (5332) **Fax:** 604-888-2003 **Email:** info@ledalite.com **www.**ledalite.com

In-Cove LP



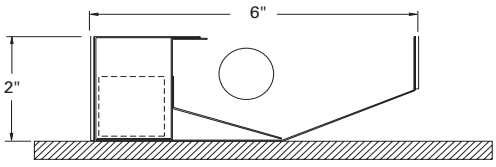
Cove mount
1 T8
Asymmetric
2808T01

Exceptional forward-throw distribution allows close mounting to ceiling with excellent uniformity.
Virtually eliminates the socket shadows found when using traditional strip lights.
Inter-locking modules allow for fast easy installation.
Factory pre-wired with quick-wire connectors.
Ultra slim profile for small coves.
Adjustable mounting positions allow beam pattern to be coordinated with architecture.

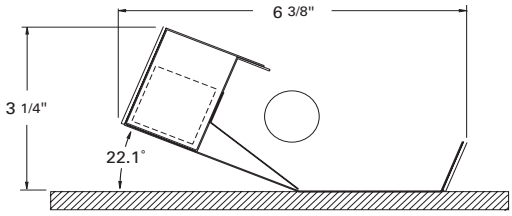
Order Number Guide

280	8	T01	E	N	___	___	___	E	W
Series In-Cove LP	*Type* Wall mount Indirect	*Lamps* 1 T8	*Lower Optics* **E** - None	*Upper Optics* **N** - Standard	*Length* **02** - 2ft **03** - 3ft **04** - 4ft **06** - 6ft **08** - 8ft	*Wiring Options* **1** - 1cct **3** - 1cct w/ Emergency cct **5** - 1cct w/ Battery Pack **7** - 1cct w/ Dimming* **8** - 1cct w/ Thru Wire Consult factory for complete list of standard wiring options	*Voltage* **1** - 120V **2** - 277V **3** - 347V* **X** - Custom * Consult factory for availability	*Ballast* Electronic	*Finish* **W** - Standard White

Cross Section



Position A

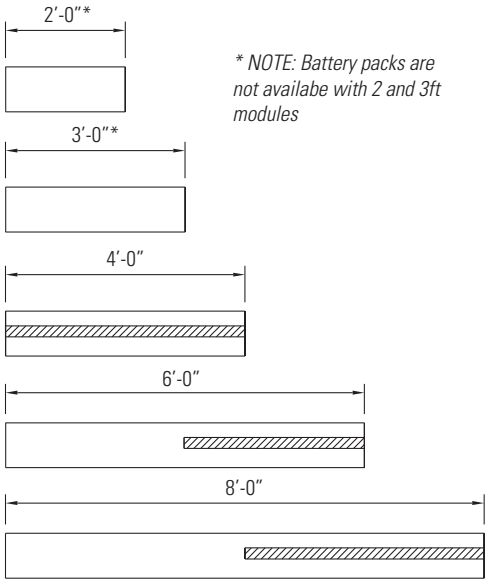


Position B

Weight 2.7 lb/ft

Modules

Linear runs are made by combining 2, 3,4,6 or 8ft modules



** NOTE: Battery packs are not availabe with 2 and 3ft modules*

Indicates location of:
- Optional emergency modules (controls all lamps) OR
- Optional battery pack (standard controls one lamp only)

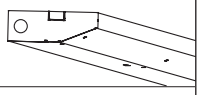
Indicates:
- Module length / Mounting distance

**Module length does not include endcaps*

L0018 Rev. 6

 Phone: 604-888-6811 **Toll Free Fax:** 1-800-665-LEDA (5332) **Fax:** 604-888-2003 **Email:** info@ledalite.com **www**.ledalite.com

Wall mount	1 T8	Asymmetric	2808T01



Specifications

Housing
Die-formed 24 gauge metal painted white.
Note: NYC version available. Please consult factory.

Optical System
Constructed of highly specular aluminum and highly reflective 24 gauge metal to produce an asymmetric distribution.

Joints
Integral with each module. Luminaire shall have an alignment tab to allow sections to be easily configured, saving installation time.

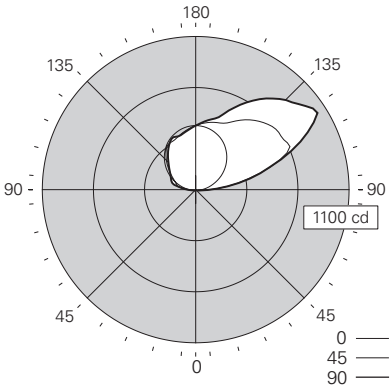
Electrical
All luminaires shall be factory pre-wired to section ends with quick-wire connectors.

Ballast
Electronic.

Approvals
Certified to UL & CSA standards.

Due to continuing product improvments, Ledalite reserves the right to change specifications without notice.

Photometry



Report#
2101275
Efficiency 74.9%
Peak Candela Value 1030 @ 122.5°
Peak: Zenith Ratio 2.2:1
RP-1 Compliant

CANDELA DISTRIBUTION

Vert. Angle	Horizontal Angle					Zonal Lumens
	0	45	90	135	180	
0	0	0	0	0	0	
5	0	0	0	0	0	0
15	0	0	0	0	0	0
25	0	0	0	0	0	0
35	0	0	0	0	0	0
45	0	0	0	0	0	0
55	0	0	0	0	0	0
65	0	0	0	0	0	0
75	0	0	0	0	0	0
85	0	0	0	0	0	0
90	24	22	2	3	1	
95	153	153	28	48	46	93
105	477	472	97	134	157	271
115	825	742	172	166	193	386
125	1021	724	247	221	222	408
135	912	685	314	292	272	362
145	796	616	371	363	341	298
155	652	532	416	388	406	217
165	532	504	446	414	409	131
175	485	479	461	447	442	46
180	463	463	463	463	463	

COEFFICIENTS OF UTILIZATION (%)

Ceiling	80				70			50			0
Wall	70	50	30	10	70	50	30	50	30	10	0
RCR											
0	71	71	71	71	61	61	61	41	41	41	0
1	65	62	59	56	55	53	50	36	35	33	0
2	59	54	49	46	50	46	42	31	29	27	0
3	53	47	42	38	45	40	36	27	25	23	0
4	49	41	36	32	41	35	31	24	21	19	0
5	44	36	31	27	38	31	27	21	19	16	0
6	41	32	27	23	35	28	23	19	16	14	0
7	37	29	24	20	32	25	20	17	14	12	0
8	34	26	21	17	29	22	18	15	12	10	0
9	32	23	18	15	27	20	16	14	11	9	0
10	30	21	16	13	25	18	14	13	10	8	0

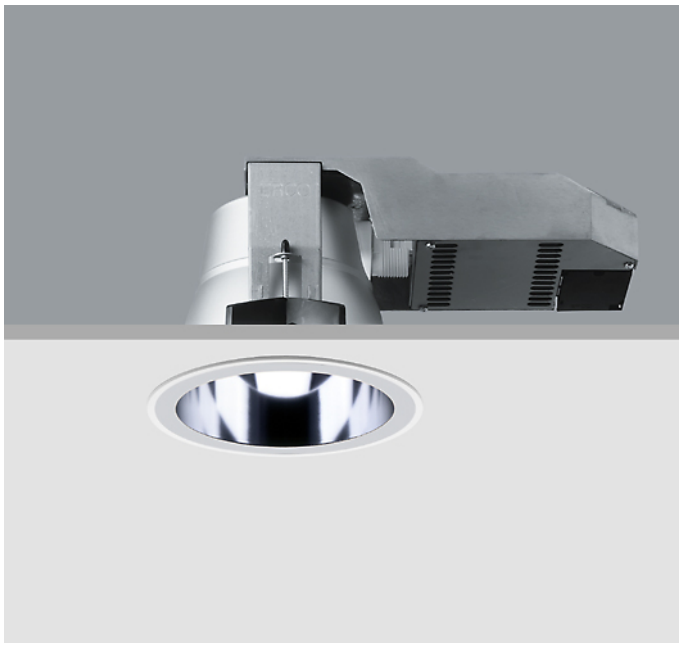
Based on a floor reflectance of 0.2

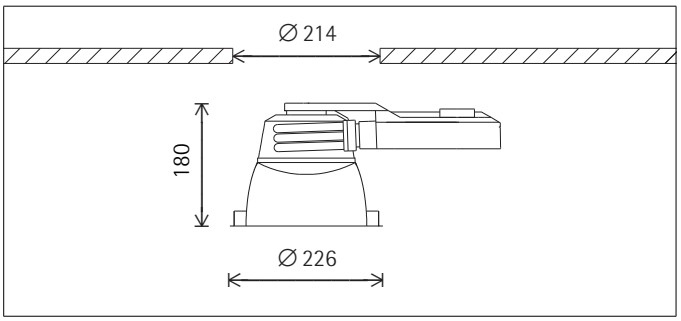
Note : IES photometric files available for download at www.ledalite.com

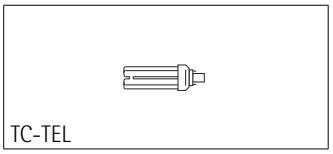
Lightcast Downlight

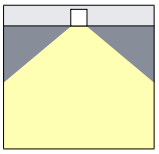
for TC-T lamps

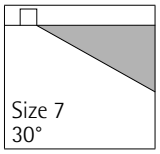
F7 Luminaire

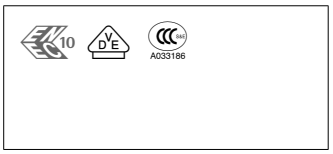


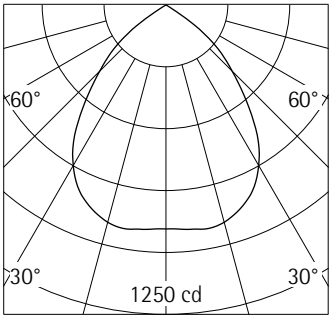












TC-TEL 32W GX24q-3 2400lm

LOR 0.64
UGR 19.5
65° < 200 cd/m²

22134.000 Reflector silver
TC-TEL 32W GX24q-3 2400lm
ECG 1-10V

Product description
Housing: cast aluminium, designed as heat sink.
Mounting ring: cast aluminium, white (RAL9002) powder-coated. Tools not required for mounting with 4-point support and screw fixing.
Junction box for through-wiring, 5-pole terminal block, integrated cable clamp. Electronic control gear.
Darklight reflector: aluminium, bright anodised. Cut-off angle 30°.
Diffuser as lamp cover: plastic, translucent, can be removed for lamp replacement without tools.
Weight 1.90kg

ERCO Leuchten GmbH
Postfach 2460
58505 Lüdenscheid
Germany
Tel.: +49 2351 551 0
Fax: +49 2351 551 300
info@erco.com

Technical Region: 230V/50Hz
Edition: 16.11.2006
Please download the current version from
www.erco.com/22134.000

ERCO

Lightcast Downlight

Planning data

22134.000	TC-TEL 32W GX24q-3 2400lm
Connected load	P: 35 W
Connected load per 100lx	P*: 2.3 W/m²
Number of luminaires per 100lx	n*: 6.4 1/100m²

22134.000	TC-TEL 32W GX24q-3 2400lm			
Number of luminaires per 100m² for	100lx	200lx	300lx	500lx
	7	13	20	33

22134.000	TC-TEL 32W GX24q-3 2400lm			
Module (m)	1.2x1.8	1.8x1.8	1.8x2.4	2.4x2.4
Illuminance E_n (lx)	719	480	360	270

Cleaning (a)	1				2				3			
Ambient conditions	P	C	N	D	P	C	N	D	P	C	N	D
LMF	0.94	0.89	0.81	0.72	0.88	0.80	0.69	0.59	0.84	0.74	0.61	0.52
RSMF	0.99	0.98	0.96	0.95	0.97	0.96	0.95	0.94	0.97	0.96	0.95	0.94

Hours of operation (h)	2000	6000	10000	1000	4000	8000
LLMF	0.92	0.85	0.83	0.97	0.88	0.83
LSF	1	1	1	1	1	1

MF	LMFxRSMFxLLMFxLSF
MF	Maintainance Factor
LMF	Lumiaire Maintenance Factor
RSMF	Room Surface Maintenance Factor
LLMF	Lamp Lumens Maintenance Factor
LSF	Lamp Survival Factor
P	Room pure
C	Room clean
N	Room normal
D	Room dirty

Correction table

Ceiling		0.70	0.70	0.70	0.50	0
Wall		0.70	0.50	0.20	0.20	0
Floor		0.50	0.20	0.20	0.10	0
k	0.6	79	60	51	51	47
k	1.0	101	78	70	68	65
k	1.5	117	91	84	81	78
k	2.5	129	100	95	90	86
k	3.0	133	103	99	93	89

SPECIFIER GUIDE

UL LISTED

PRODUCT DESCRIPTION — **DELINEATED STAIRNOSE**

PRODUCT CODE — **LITEFORM LF 5000**

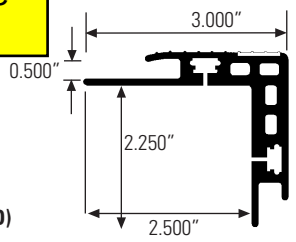
DRAWING NO. CL 904

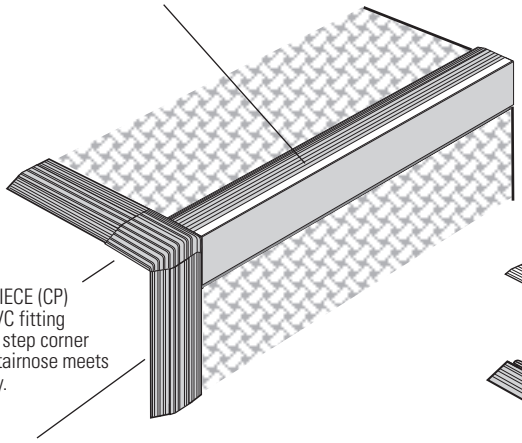
F8 Luminaire

LF 5000 DELINEATED STAIRNOSE (UNLIGHTED)
Light grey edge on black stairnose provides added step definition when using LF 4000 Wall Light to illuminate steps. (Refer to LF 4000 Specifier Guide)

Soft vinyl stairnose withstands extreme loads and heavy foot traffic. Conforms to gradual curves and irregularities in flooring. ADA compliant design (No trip hazard)

END VIEW

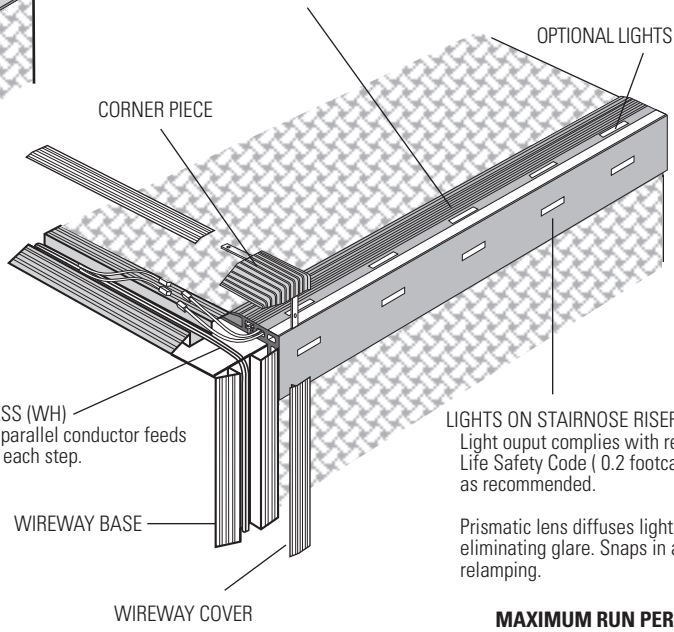




CORNER PIECE (CP)
Black PVC fitting finishes step corner where stairnose meets wireway.

WIREWAY (WW)
Black PVC fitting provides transition from carpet to floor or edge. Used as raceway for wire harness for lighted stairnose.

LF 5000 DELINEATED STAIRNOSE (LIGHTED)
For stairways without adjacent walls.



WIRE HARNESS (WH)
14 gauge parallel conductor feeds power to each step.

LIGHTS ON STAIRNOSE RISER
Light ouput complies with requirements of NFPA's Life Safety Code (0.2 footcandles) when installed as recommended.

Prismatic lens diffuses light onto step while eliminating glare. Snaps in and out for easy relamping.

CELESTIAL LEDs & LAMPS ARE:

Safe (low voltage)
Energy efficient (low wattage)
Rated for long life.
Run at optimum brightness for darkened areas.
Resistant to vibration from foot traffic.
Individually replaceable.
Dimmable from primary side of transformer.

MAXIMUM RUN PER 5 AMP CIRCUIT:
200 LEDs or 150 LF1 lamps

See maximum run chart for details.

•DRAWING NOT TO SCALE•

SPECIFICATIONS

PRODUCT CODE	STAIRNOSE LIGHT		LED / LAMP TYPE	LED / LAMP DESCRIPTION	LED / LAMP SPACING	
LF 5000	NL	NO LIGHTS				
	RO	RISER ONLY	A	DC 9.5V 0.2W HIGH OUTPUT AMBER LED (100,000 HRS. RATED LIFE)	4	4" ON CENTER
	TR	TOP & RISER	B	DC 9.5V 0.2W HIGH OUTPUT BLUE LED (25,000 HRS. RATED LIFE)	6	6" ON CENTER
			G	DC 9.5V 0.2W HIGH OUTPUT GREEN LED (25,000 HRS. RATED LIFE)		
			R	DC 9.5V 0.2W HIGH OUTPUT RED LED (100,000 HRS. RATED LIFE)		
			W	DC 9.5V 0.2W HIGH OUTPUT WHITE LED (25,000 HRS. RATED LIFE)		
			LF 1	12 V 0.34 W INCANDESCENT LAMP (80,000 HRS. RATED LIFE)		

EXAMPLE

LF 5000	- NL	-	-	

FILL OUT BELOW FOR SUBMITTAL

LF 5000	-	-	-	

PROJECT NAME	**CONTRACTOR**
FIXTURE SCHED. TYPE	**DISTRIBUTOR**
SPECIFIER	**REPRESENTATIVE**

celestial lighting

visit us at :
www. celestiallighting.com
e•mail :
info @ celestiallighting.com

14009 Dinard Ave.
Santa Fe Springs,
CA 90670

PH (562)•802•8811
(800)•233•3563
FX (562)•802•2882

SPECIFIER GUIDE

UL LISTED

PRODUCT DESCRIPTION CARPET-TO-WALL PATH LIGHT

PRODUCT CODE LITEFORM LF 2000

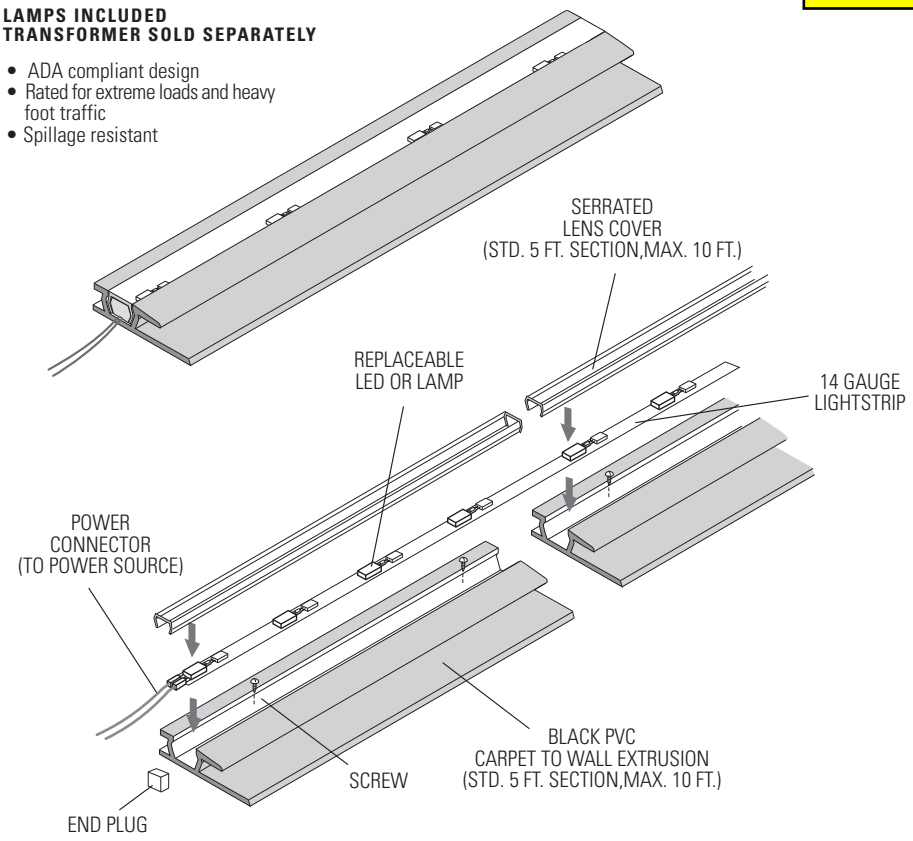
DRAWING NO. CL 1004

F9 Luminaire

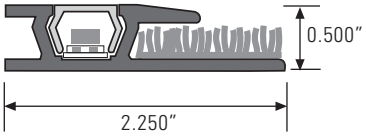
LF 2000

LAMPS INCLUDED
TRANSFORMER SOLD SEPARATELY

- ADA compliant design
- Rated for extreme loads and heavy foot traffic
- Spillage resistant



END VIEW



QUICK REFERENCE INSTALLATION INSTRUCTIONS

1. Screw mount extrusion sections.
2. Unroll lightstrip and lay into channel.
3. Strip end of lightstrip to attach power connector.
4. Insert end plugs at ends.
5. Snap in lens cover.
6. Connect to power source.

Do not exceed maximum run length per circuit. Extrusion, lens cover and lightstrip are available in pre-cut sections or can be field cut.

MAX. RUN PER CIRCUIT (5 AMPS)

LAMP TYPE	LAMP SPACING	
	6"	12"
LED	112 FT.	200 FT.
LF1	79 FT.	158 FT.

CELESTIAL LEDs & LAMPS ARE:

Safe (low voltage)
Energy efficient (low wattage)
Rated for long life.
Run at optimum brightness for darkened areas.
Resistant to vibration from foot traffic.
Individually replaceable.
Dimmable from primary side of transformer.

•DRAWING NOT TO SCALE•

SPECIFICATIONS

PRODUCT CODE
LF 2000

LENS COLOR	
C	CLEAR
A	AMBER
B	BLUE
G	GREEN
R	RED
S	SMOKE

LED / LAMP	
TYPE	DESCRIPTION
A	DC9.5V 0. 2 W AMBER LED (100,000 HRS. RATED LIFE)
B	DC9.5V 0. 2 W BLUE LED (25,000 HRS. RATED LIFE)
G	DC9.5V 0. 2 W GREEN LED (25,000 HRS. RATED LIFE)
R	DC9.5V 0. 2 W RED LED (100,000 HRS. RATED LIFE)
W	DC9.5V 0. 2 W WHITE LED (25,000 HRS. RATED LIFE)
LF1	12V 0.34W INCANDESCENT LAMP (80,000 HRS. RATED LIFE)
	USE CLEAR LENS WITH LEDS

LED / LAMP SPACING	
6	6" ON CENTER
12	12" ON CENTER
	OR SPECIFY OTHER SPACING

EXAMPLE

LF 2000	C	A	6

FILL OUT BELOW FOR SUBMITTAL

LF 2000			

PROJECT NAME	**CONTRACTOR**
FIXTURE SCHED. TYPE	**DISTRIBUTOR**
SPECIFIER	**REPRESENTATIVE**

celestial lighting

visit us at :
www. celestiallighting.com
e•mail :
info @ celestiallighting.com

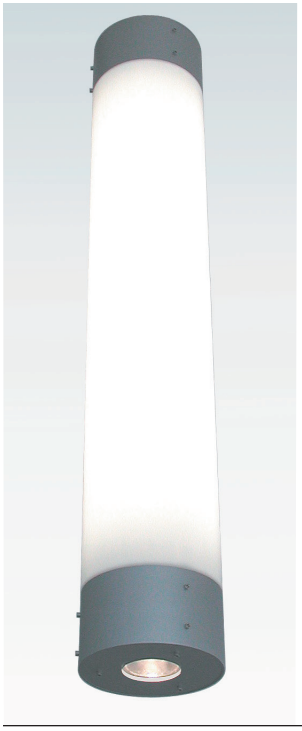
14009 Dinard Ave.
Santa Fe Springs,
CA 90670

PH (562)•802•8811
(800)•233•3563
FX (562)•802•2882

BIG LIGHT OPAL CYLINDER WITH DOWNLIGHT

DELRAY LIGHTING INCORPORATED

6300



TYPE:

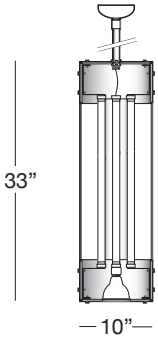
PROJECT: F10, F11 Luminaire

KONE PENDANT CYLINDER
Canopy mounts to standard J-box. Extruded aluminum center tube is a lamp holder and electronic ballast housing, ballast removes from bottom. Extruded aluminum top and bottom cylinder is 1/4" thick with aluminum cover plates and has a silver powder coat finish. Top plate will mount to rigid stem or aircraft cable. Mounting option and length of suspension must be specified, see back page for details. Fixtures use 3- T8 lamps wrapped by a seamless cylindrical Acrylic diffuser. See order info for downlight options. Separate switch leg for downlight is standard. PAR lamps are replaceable without removing cover. U.L. Listed for damp locations.

ORDER NUMBER

Model#	Voltage	Mounting	Length
	1-120	**BLA**-pipe	**Inches**
	2-277	**BLC**-cable	

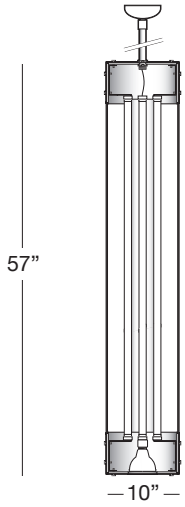
EXAMPLE:
6320.2.BLA.96



6301
3-17w T8 lamps with 1-75w PAR30S **120V only**

6321
3-17w T8 lamps with 1-39w Metal Halide PAR20

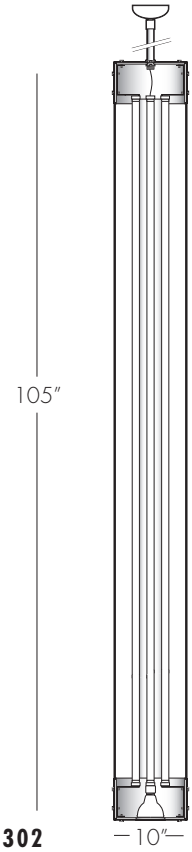
6331
3-17w T8 lamps with no downlight



6300
3-32w T8 lamps with 1-75w PAR30S **120V only**

6320
3-32w T8 lamps with 1-39w Metal Halide PAR20

6330
3-32w T8 lamps with no downlight



6302
3-59w T8 lamps with 1-75w PAR30S **120V only**

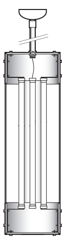
6322
3-59w T8 lamps with 1-39W Metal Halide PAR20

6332
3-59w single pin T8 lamps with no downlight

BURBANK,
CALIFORNIA,
91505
WWW.
DELRAY
LIGHTING.
COM

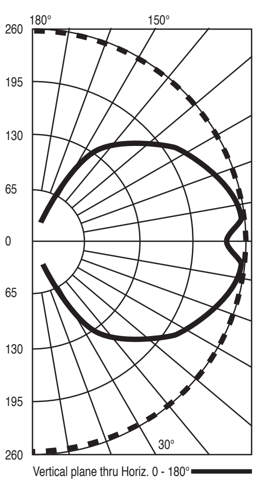
3-17 WATT

3-17W T8



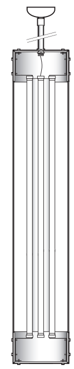
6331
3-17 watt T8
G13 Base
Total lumens-4200 mean
Total luminaire efficiency-57.3%

CP DISTRIBUTION



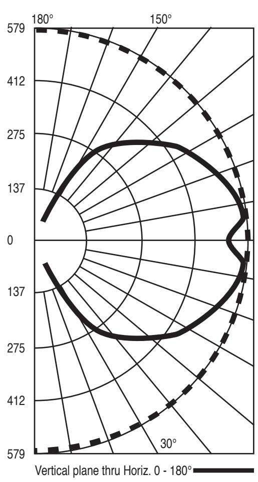
3-32 WATT

3-32W T8



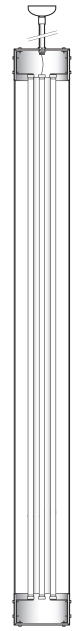
6330
3-32 watt T8
G13 Base
Total lumens-8850 mean
Total luminaire efficiency-57.4%

CP DISTRIBUTION



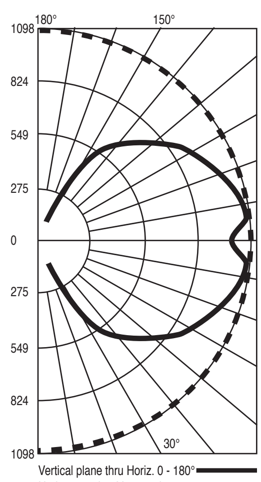
3-59 WATT

3-59W T8



6332
3-59 watt T8
Fa8 Base
Total lumens-17700 mean
Total luminaire efficiency-57.3%

CP DISTRIBUTION



MOUNTING OPTIONS

PIPE MOUNT

BLA

Order **BLA** mount for 1/2” pipe, length must be specified. Pipe comes with ball aligner canopy rated for 75 lbs. and mounts to standard J-boxes.

CABLE MOUNT

BLC

Order **BLC** mount for any length, must be specified. 3/32” stainless steel aircraft cable adjusts with push button cable grippers for easy field adjustment. Not for use in windy areas

COEFFICIENTS OF UTILIZATION

% CEILING 80	**(20% FLOOR)**		
% WALL	**70**	**50**	**30**
0	61	61	61
1	52	47	43
2	45	39	34
3	41	33	28
4	37	29	23
5	33	25	19
6	31	22	17
7	28	20	15
8	26	18	13
9	24	16	11
10	22	15	10

% CEILING 80	**(20% FLOOR)**		
% WALL	**70**	**50**	**30**
0	61	61	61
1	52	47	43
2	45	39	34
3	41	33	28
4	37	29	23
5	33	25	19
6	31	22	17
7	28	20	15
8	26	18	13
9	24	16	11
10	22	15	10

% CEILING 80	**(20% FLOOR)**		
% WALL	**70**	**50**	**30**
0	61	61	61
1	52	47	43
2	45	39	34
3	41	33	28
4	37	29	23
5	33	25	19
6	31	22	17
7	28	20	15
8	26	18	13
9	24	16	11
10	22	15	10

LITHONIA LIGHTING

Catalog Number	
Notes	Type

F12 Luminaire

Low-Profile T5 Direct Channel

MS5

2', 3', 4' or 8' Lengths
1 or 2 Lamps

T5 Technology

FEATURES & SPECIFICATIONS

INTENDED USE

T5 linear direct fluorescent intended for use in low-profile commercial, retail, manufacturing, warehouse, cove and display applications.

ATTRIBUTES

Designed exclusively for use with T5 lamps, T5 sockets and T5 electronic ballasts.

CONSTRUCTION

Housing formed from cold-rolled steel. No asbestos is used in this product. Heavy-duty 20-gauge channel.

Extended-height end caps retain and support sockets. Compact T5 socket features rotating collar and enclosed contacts.

FINISH

High-gloss, baked white enamel finish. Five-stage iron-phosphate pretreatment ensures superior paint adhesion and rust resistance.

OPTICAL SYSTEM

A variety of optical assemblies are available. See the MS5-Reflector or MS5-Louver spec sheets.

ELECTRICAL SYSTEM

Thermally protected, resetting, Class P, HPF, non-PCB, UL Listed.

Suitable for damp locations. AWM, TFN or THHN wire used throughout, rated for required temperatures.

INSTALLATION

Labor-saving coupler supplied for row mounting. Numerous knockouts for easy installation. Surface-mount or suspended.

LISTING

UL Listed and CSA Certified (see Options).

WARRANTY

Guaranteed for one year against mechanical defects in manufacture.

Specifications subject to change without notice.

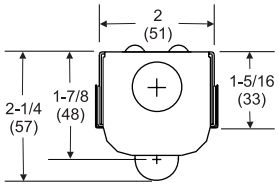
Specifications

Length: 22-7/16 (569), 34-1/4 (869), 46-1/16 (1169) or 92-1/16 (2337)

Width: 2 (51)

Depth: 2-1/4 (57)

Weight: 4.8 lbs (2.2 kg)



ORDERING INFORMATION

Example: **MS5 1 54T5HO MVOLT GEB10PS**

MS5

Series

MS5 T5 low-profile direct

For tandem double-length unit, add prefix **T.**[1] Example: **T**MS5

Number of lamps

1, 2

Not included.

Lamp type

14T5 14W T5 (22")
21T5 21W T5 (34")
24T5HO 24W T5 HO (22")
28T5 28W T5 (46")
39T5HO 39W T5 HO (34")
54T5HO 54W T5 HO (46")

Voltage

347[2], **MVOLT**[3]

Others available.

Options

GEB10PS Electronic ballast, ≤10% THD, Program Start
GLR Internal fast-blow fuse[4]
GMF Internal slow-blow fuse[4]
PLF_ Plug-in wiring, specify 1, 2 or 3 branch circuits and hot wires (**A**=black, **B**=red, **C**=blue, **AB** or **AC**)
EL55 Emergency battery pack (nominal 390-700 lumens; see Fluorescent Battery Packs tab)[1, 4]
CSA CSA Certified

Accessories

Order as separate catalog number.

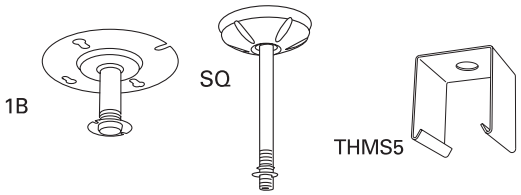
WGMS5Z Wireguard, 4', zinc
THMS5 Tong hanger
1B Ceiling spacer (adjusts from 1-1/2" to 2-1/2" from ceiling)
SQ_ Swivel stem hanger (specify length in 2" increments)

NOTES:
1 Only available with 28W and 54W.
2 Only available with 54W.
3 Available with GEB10PS only.
4 Specify voltage.

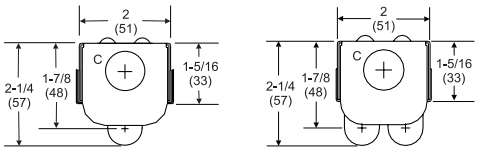
MS5 T5 Direct, Low Profile

MOUNTING DATA

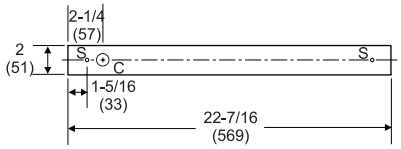
For unit or row installation, surface or stem mounting.
Unit installation — Minimum of two hangers required.
Row installation — One hanger per channel plus one per row required.
Hanging devices illustrated below.

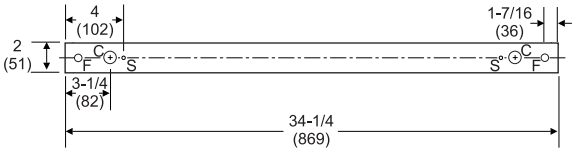


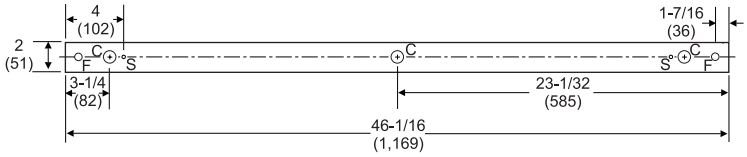
DIMENSIONS

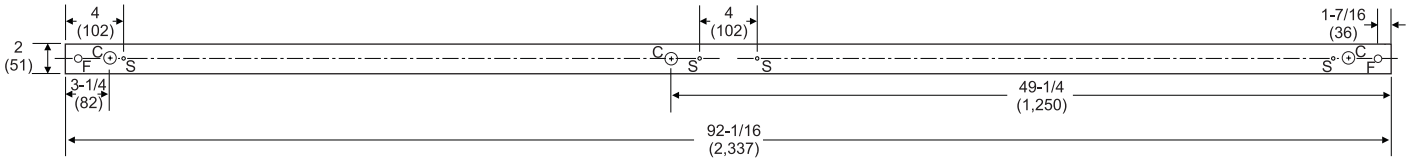


C = 7/8 (22) Dia. K.O.
F = 7/16 (11) Dia. K.O.
S = 1/4 (6) Dia. K.O.









PHOTOMETRICS

Calculated using the zonal cavity method in accordance with IESNA LM41 procedure. Floor reflectances are 20%. Lamp configurations shown are typical. All data based on 25°C. Full photometric data on these and other configurations available upon request.

MS5 1 54T5HO 120 GEB10PS
Report LTL 8568
Lumens per lamp - 4400 – Lum. eff. - 98.6%
S/MH (along) 1.2 (across) 1.6

Coefficient of Utilization

Ceiling		80%			70%			50%	
Wall	70%	50%	30%	70%	50%	30%	50%	30%	10%
0	113	113	113	109	109	109	100	100	100
1	99	93	87	95	89	84	81	77	73
2	89	79	71	84	75	68	69	63	57
3	80	68	58	76	65	56	59	52	46
4	73	59	50	69	57	48	52	44	38
5	66	52	43	63	50	41	46	38	32
6	61	47	37	58	45	36	41	34	28
7	56	42	33	53	40	32	37	30	24
8	52	38	29	50	37	28	34	27	21
9	49	35	26	46	34	26	31	24	19
10	45	32	24	43	31	23	29	22	17

Zonal Lumens Summary

Zone	Lumens	%Lamp	%Fixture
0-30	640	14.5	14.8
0-40	1089	24.7	25.1
0-60	2159	49.1	49.8
0-90	3583	81.4	82.6
90-180	755	17.2	17.4
0-180	4338	98.6	100.0

Lithonia Lighting
Fluorescent
One Lithonia Way, Conyers, GA 30012-3957
Phone: 800-858-7763 Fax: 770-929-8789
In Canada: 1100 50th Ave., Lachine, Quebec H8T 2V3
www.lithonia.com

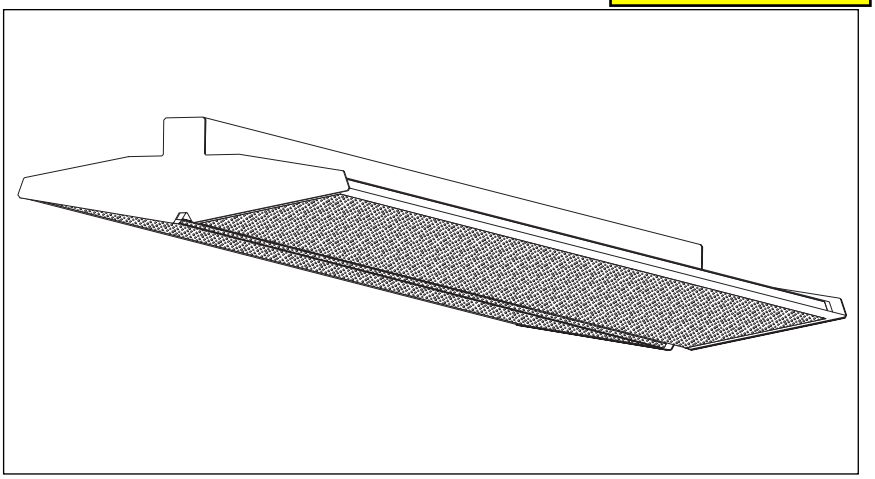
FINELITE

Series 15 - Technical Sheet

F13 Luminaire

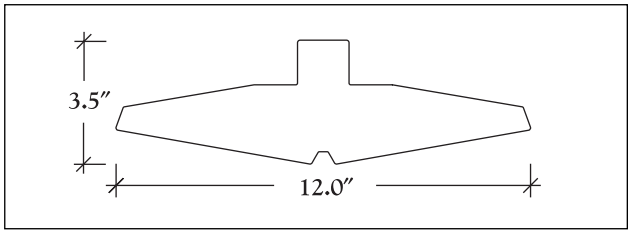
Finelite Series 15 represents an advancement in the art of indirect lighting. The slim, attractive profile delivers unsurpassed performance in low ceiling applications. Available in 1 or 2 T8, T5 or T5HO lamp cross sections, and 2′, 3′, 4′ or 8′ lengths.

Series 15 combines a unique open cavity, double diffuser optical design (Patent Pending) with 96% reflective white paint in order to maximize fixture efficiency and performance.



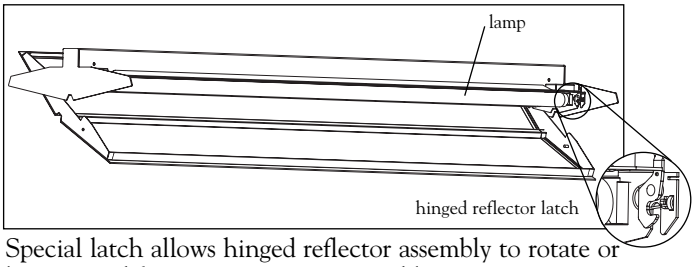
The unique optical design generates high performance in low ceiling areas.

DIMENSIONS



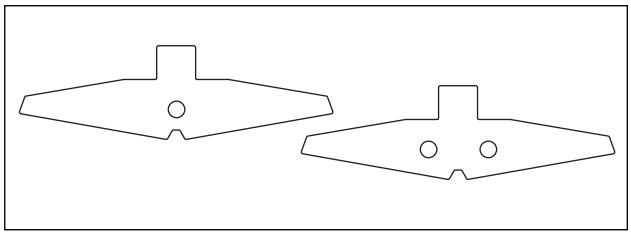
The height of the fixture body is 3.5″, width 12.0″.

REFLECTOR ASSEMBLY



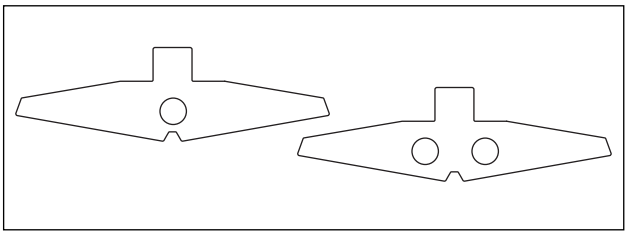
Special latch allows hinged reflector assembly to rotate or be removed for easy maintenance and lamp access.

T5 / T5HO LAMPS



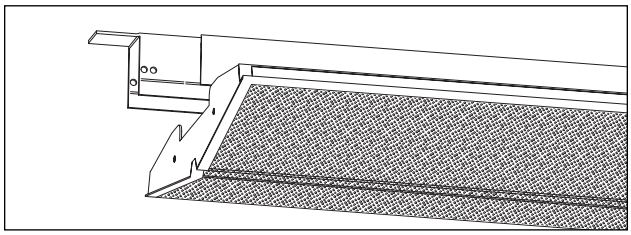
1 or 2 T5 or T5HO lamps.

T8 LAMPS



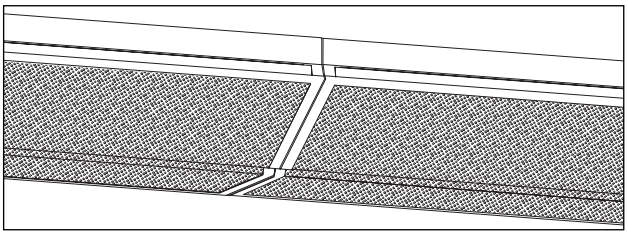
1 or 2 T8 lamps.

DIE-FORMED JOINER PLATE



Die-formed aligner plate comes factory installed for smooth joints. Plug-together wiring ensures electrical connections are right every time.

STRONG, TIGHT JOINTS

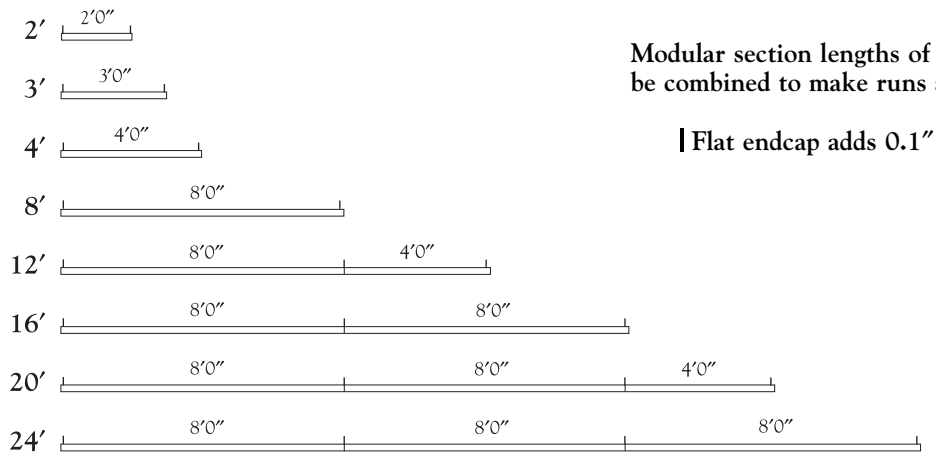


Fixtures slide together tightly and die-formed internal aligner plate ensures strong joints with no light leaks.

Finelite, Inc. · **30300 Whipple Road** · **Union City, CA 94587-1525** · **510 / 441-1100** · **FAX: 510 / 441-1510** · **www.finelite.com**

FINELITE

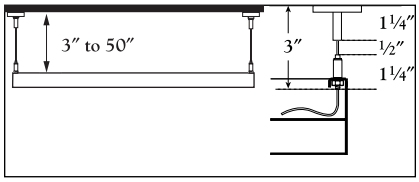
Series 15 - Technical Sheet



Modular section lengths of 4′0″ and 8′0″ can be combined to make runs as long as required.

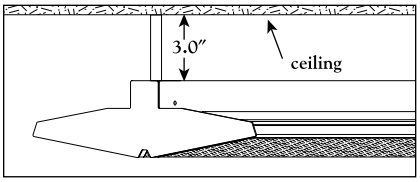
Flat endcap adds 0.1″ at each end.

STANDARD FA CABLE



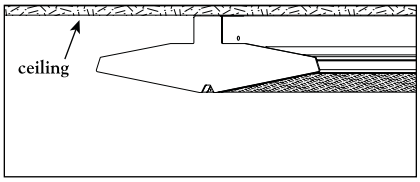
Standard fully adjustable aircraft cable (FA) allows suspension from 3.0″ to 50″. Depress the head of the fitting to allow continuous adjustment of the cable length.

OPTIONAL STEM MOUNT



Optional Stem Mount (SS) positions the top of the fixture 3″ from the ceiling. Additional stem lengths available for hard ceilings. Consult factory for additional requirements.

OPTIONAL SURFACE MOUNT



Optional Surface Mount (SM) fixture mounts directly to ceiling with no exposed hardware.

SPECIFICATIONS

CONSTRUCTION: 18 gauge die-formed steel body. All components hard tooled to tolerances of 0.005″.

Die-formed 0.062″ perforations cover the surface of the steel downlight shielding.

ENDCAPS: (FE) Flat Endcap standard, die-formed steel, painted to match fixture, adds 0.1″ at each end. No exposed fasteners, holes or knockouts.

OPTICAL SYSTEM: Finelite innovation Series 15 open cavity double diffuser optical system with 96% reflective white paint, PATENT PENDING. *This product uses patented Constructive Occlusion® technology.*

REFLECTORS: (96W) Standard—96 White painted high reflectance reflectors.

ELECTRICAL: 120 or 277 volt prewired. Fixture and electrical components UL/C-UL listed and fixture will bear UL/C-UL labels. *Optional Adders: 347 volt prewired, dual circuit, low profile emergency battery packs.*

LAMPING: 1 or 2 T8, T5 or T5HO cross sections.

BALLAST: Electronic low profile instant start ballasts <20%THD standard. *Optional Adders: Rapid Start, low profile dimming ballasts (controls by others), low profile emergency battery packs. Consult factory. 347volt ballast available for selected lamps - Consult Factory.*

MOUNTING OPTIONS: Standard pendant mounting is fully adjustable aircraft cable (FA), adjusts suspension from 3″ to 50″. *Optional Adders: Adjustable aircraft cable (AC) lengths from 51″ to 150″; Stem Mount (SS) 3″ metal stem; Surface Mount (SM) flush to ceiling. Additional stem lengths available for hard ceilings ONLY. Consult Factory.*

SUPPORT CABLES: Stainless steel with plated hardware.

FEED: Pendant: 18 gauge straight cord. 14 gauge feed cord used when fixture current exceeds 6 amps. Feed is 1.5″ from end of fixture.

FINISHES: Finelite brite white standard. (NOTE: this finish is 96% reflective.)

LENGTHS: 4′ and 8′ section lengths can be combined to make longer runs. *Consult factory for 2′and 3′ lengths.*

WEIGHT: Fixture weight = 2.0 lb/ft.

WALL MOUNT: Matching Series 15 Wall Mount available. See S15WM Technical Sheet.

ORDERING INFORMATION **(2) – S15 – 32′ – 1T5HO – SC – 277 – FA**

- Quantity
- Finelite **Series 15**
- Run length (2′, 3′, 4′, 8′ multiples standard)
- Number of lamps in cross section (1, 2 T8, T5, or T5HO)
- Circuiting (SC-single circuit, DC-dual circuit)
- Voltage (120, 277, 347 Volt)
- Mounting (FA/SS/SM)

Finelite, Inc. · **30300 Whipple Road** · **Union City, CA 94587-1525** · **510 / 441-1100** · **FAX: 510 / 441-1510** · **www.finelite.com**

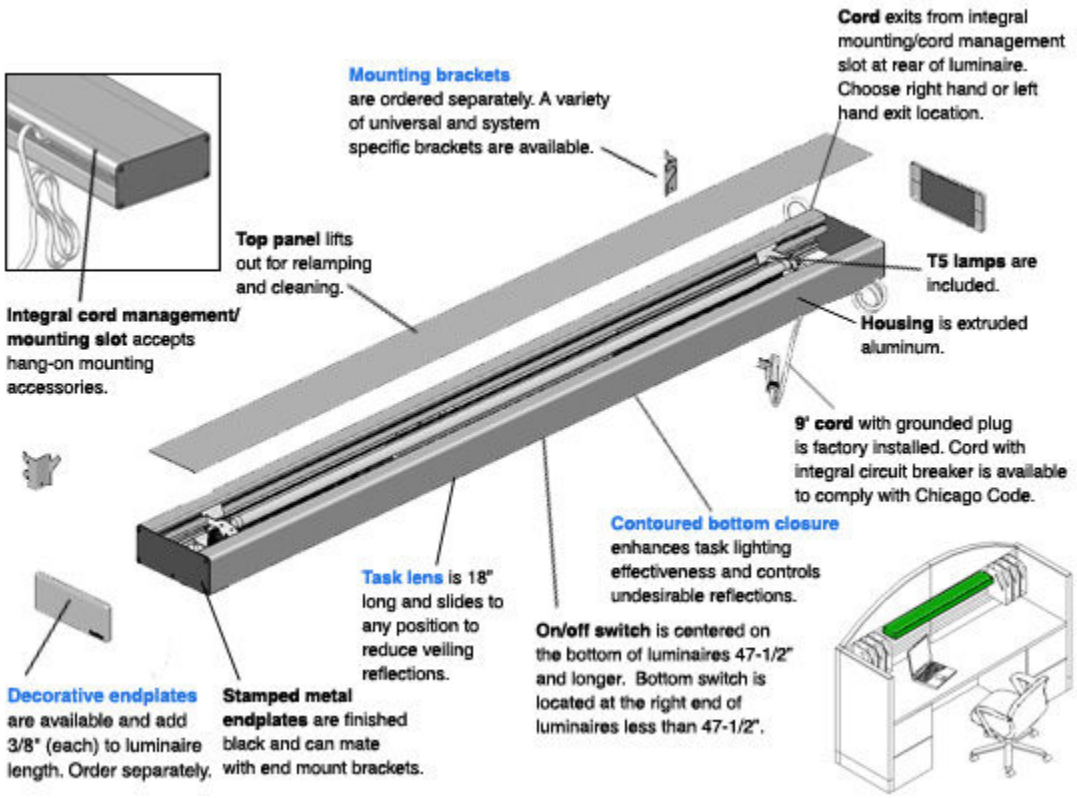
Task Lighting - Style P201

Click to print

F14 Luminaire

Style P201 workstation luminaires feature an integral hang-on mounting channel that facilitates installation on open office furniture panels. They are designed to provide low-glare task lighting for horizontal worksurfaces. Where privacy partitions occur, these luminaires also reduce workstation luminance ratios by softly lighting the panel in front of the user.

Features

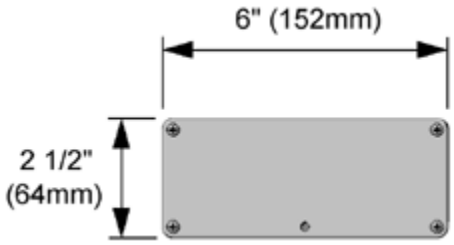


Dimensions and Lamping

Six standard lengths are offered with full length lamping. Non-standard lengths from 35-3/4" to 95-3/4" at 1" increments are available at an additional cost.

Design Tip:
Mounting methods that engage system furniture support features may dictate a non-standard luminaire length.

Each luminaire is provided with one T5 fluorescent lamp or two tandem mounted T5 lamps according to the overall luminaire length. To limit the luminance of workstation surfaces, only standard output lamps are offered. The use of high-output T5 lamps is not recommended.



Length		Lamps	Input
35 3/4 ″	(908 mm)	1xF21T5	27 watts
47 1/2 ″	(1206 mm)	1xF28T5	34 watts
59″	(1499mm)	1xF35T5	40 watts
70-3/4″	(1797mm)	2xF21T5	52 watts
82 1/2″	(2096mm)	1xF21T5 + 1xF28T5	61 watts
94 1/4″	(2394mm)	1xF28T5	66 watts

3000K lamps are included. 3500K and 4100K lamps are available upon request.

Non-standard lamp configurations are available on large quantity orders (e.g. 71" luminaire with 1xF35T5 lamp). Consult factory.

Mounting Height

Recommended mounting height is 48" to 50" A.F.F. for 24" deep worksurfaces and 48" to 52" for 30" deep worksurfaces (based on a worksurface height of 28-1/2" and a minimum seated eye height of 40-1/2"). When a standard desk clamp stanchion is used, top of the luminaire is at 48" A.F.F. (19-1/2" above the worksurface).

Tambient can provide non-standard task lighting optics for certain other workstation geometries. Contact Tambient for details.

Caution: *To avoid discomfort glare, do not install these units above 52" A.F.F. (50" for 24" deep worksurfaces).*

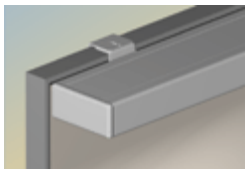
Mounting Accessories

Universal hang-on panel clamps are available for mounting workstation luminaires on partitions from 1-1/2" to 3-1/2" thick. Order panel clamps separately.

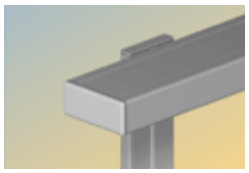
Universal desk clamp stanchions are available for mounting to worksurfaces from 1" to 2" thick. Order desk clamp stanchions separately.

Wall mount brackets are available for mounting to stud walls and rigid wall panels. Order seperately.

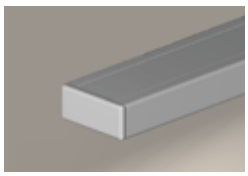
Tambient can supply mounting brackets for use with specific commercial office furniture systems and custom brackets for unique mounting conditions. Contact Tambient for details.



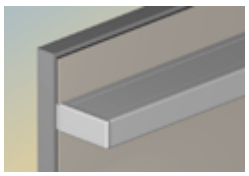
Panel Clamp



Desk Clamp Stanchion



Wall mount



Panel mount

Ballasts

Luminaires are supplied with integral 120 volt, high power factor electronic ballasts for energy efficiency.

Programmed start ballasts are standard to maximize lamp life and minimize energy use. Manufacturer/model of furnished ballast(s) may vary. However, all ballasts furnished meet or exceed the following criteria:

- Total Harmonic Distortion (THD) < 10%
- Power Factor (PF) > 97%
- Ballast Factor* (BF) > 98%
- Current Crest Factor (CF) < 1.7
- Sound Rating A or better
- ANSI, IEEE, and FCC compliant
- UL listed (United States and Canada)

*Primary lamp application

Cords

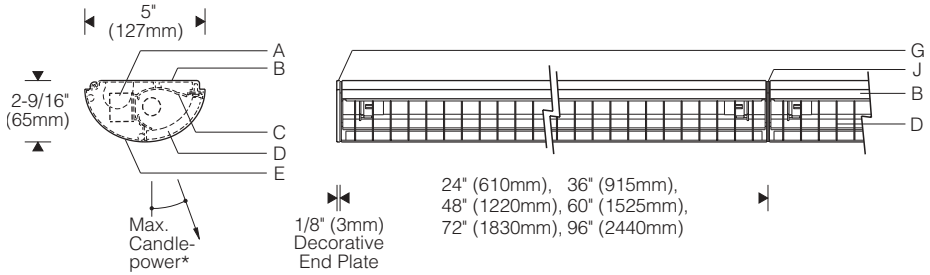
Cords are factory installed, 18 gauge, 3-conductor, Type SJT with grounded plug in accordance with UL153 (*Standard for Portable Electric Luminaires*) and the associated *Supplementary Requirements for Units for Use with Office Furnishings*.

Furnished cord length is 9 feet; the maximum length allowed by the standard. Standard cords are black. Gray and beige cords are available at an additional cost.

For installations in the City of Chicago, we offer cords with a

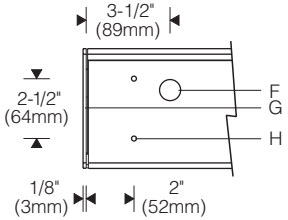
F15 Luminaire

Style 144 1:8 Scale



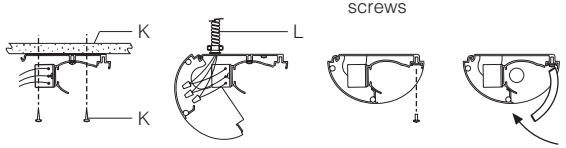
Top View 1:8 Scale

(**S** mount)



Installation (**S** mount)

1. Secure back plate to ceiling (fasteners by others)
2. Hang housing, wire ballast
3. Hinge up housing, secure with screws
4. Install lamp and baffle

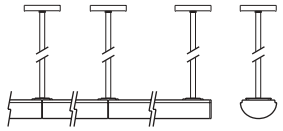


Hangers (**X** mount)

Cantilevers

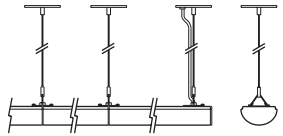
18"
(457mm)
Setback

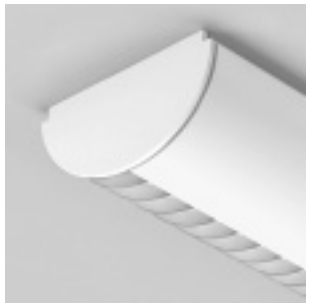
Pendant Stems



2-1/2"
(64mm)
End of row

Cables





* Aiming is field adjustable from 25° to 35° above nadir (factory setting is 25°).

Specifications

- **A** Electronic ballast
- **B** Extruded aluminum back plate
- **C** Specular extruded aluminum reflector (adjustable aiming)
- **D** High-impact poly-carbonate baffle, 25° shielding (matte gray)
- **E** Extruded aluminum housing
- **F** Conduit entry, 7/8" (22mm) dia. (**S** mount)
- **G** Aluminum decorative end plates (order separately)
- **H** Mounting holes, 9/32" (7mm) dia.
- **J** Aluminum joiner/reveal plates (matte gray)
- **K** Structure and fasteners (by others)
- **L** Conduit and connector (by others)

Finish:
Matte white housing and decorative end plates. Joiner/reveal plates and baffle finished matte gray.

Painted surfaces - 6 stage pretreatment and electrostatically applied thermoset powder coat for stable, long lasting and corrosion resistant finish.

Reflector - extruded high purity aluminum with clear anodized specular finish. All luminaire hardware - stainless steel.

Mounting:
S mount - back plate mounts flush to ceiling.

X mount - cantilevers, stems or cables **ordered separately**.

Cantilever - 1" x 2" steel arm, suitable support structure required. Adjustable interface plate (concealed under canopy) allows leveling of arms +/- 5°.

Pendant stem - 11/16" O.D. aluminum, internally threaded.

Cable - 1/16" dia. 7x7 aircraft cable, field adjustable length.

Hangers at ends of row (or single) are located 2-1/2" (64mm) from end. Intermediate hangers are centered on joint.

Electrical:
S mount - 7/8" (22mm) diameter knockouts located at each end of back plate for conduit feed (by others). Use 90°C wire for supply connections and through wire.

X mount - electrical feed hanger mounts over recessed outlet box (by others). Cantilever and stem electrical feeds supplied with #14 AWG leads (must be located at end of row). Cable feed includes 18/3 cord (can be located at end or joint).

Housing hinges down for access to ballast and wiring. Optional #14 AWG prewired modular through wiring with quick connectors.

Integral electronic HPF thermally protected class P ballast with end-of-life protection.

Optional electronic dimming ballast dims to 1% of full light output. Compatible dimming control is required (by others). Consult sales representative for specifications.

Optional integral emergency battery operates one lamp. Separate unswitched supply is required.

Standard:
UL listed or CSA certified.

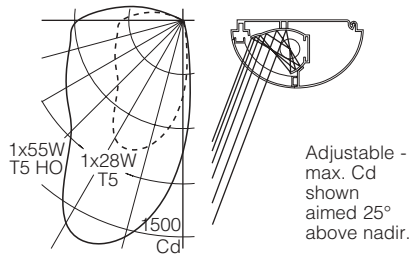
Features

- *T5/T5HO for precise optical control - adjustable aiming*
- *Matte white elliptical housing blends with ceiling - matte gray baffle nearly matches housing when lighted*
- *Designed to be inconspicuous - lights entire wall evenly without amplifying surface imperfections (unlike slots)*
- *Ideal for corridors, art walls, displays, chalkboards, signs*

W 16.2

Performance

Two parabolic reflector sections drive light to the bottom of the vertical surface. An elliptical section redirects light that is normally wasted back to a parabola. Glare is minimized and asymmetry of the beam is maximized resulting in high beam efficiency and superior surface uniformity.



For complete photometrics, visit www.elliptipar.com.

elliptipar

To form a Catalog Number

F 1 4 4 - T [3] - [4] - 2 2 - [6] - [7] [8]

1 2 3 4 5 6 7 8

1 Source

F = Linear fluorescent

2 Style

144 = Xtra small enclosed semi-elliptical, one-way, **integral** ballast

3 Lamp

Note: To order by overall row length, enter **ROW CODE** in place of Lamp Code below (see Row Charts on page 16-3a). Row Codes specifiy a row complete with all necessary luminaires and end plates. **Hangers are ordered separately.**

T [ ] [ ] = **T5 Fluorescent Lamp Code**

Lamp Wattage (see chart below)

Number of Lamps in Length, specify **1** or **2**

Example: **T155** = 4' (1.2m) housing with one 54W T5HO lamp

Length	*T5*		*T5HO*	
	Code	*Lamp(s)*	*Code*	*Lamp(s)*
T5 Fluorescent				
24" (610mm)	**T114**	1 x F14T5	**T124**	1 x F24T5/HO
36" (915mm)	**T121**	1 x F21T5	**T139**	1 x F39T5/HO
48" (1220mm)	**T128**	1 x F28T5	**T155**	1 x F55T5/HO
60" (1525mm)	**T135**	1 x F35T5	**T180**	1 x F80T5/HO
72" (1830mm)	**T221**	2 x F21T5	**T239**	2 x F39T5/HO
96" (2440mm)	**T228**	2 x F28T5	**T255**	2 x F55T5/HO

For complete lamp and ballast information, see Accessories Section. Standard T5 lamp color is 3000K / 80+ CRI.

W 16.3

4 Mounting

S = Ceiling mount
X = For use with cantilevers, pendant stems or cable hangers (**order separately**)

5 Finish

22 = Matte white
99 = Custom RAL or computer matched color to be specified, consult sales representative

Project: _____

6 Voltage/Ballast

Electronic
1 = 120V
2 = 277V
3 = 347V (Canada)

*Dimming**
T = 120V
V = 277V

* Consult sales representave for dimming 5' lamps (lamp codes **Tx35**, **Tx80**).
Note: When dimming **X** mount luminaires, order two (2) electrical feeds to accommodate the control circuit.

Max. Row Length per Feed (4' lamps)			
Voltage	*Lamp*	*Cantilever, Stem **	*Cable ***
120V	*T5*	228' (69.5m)	140' (42.7m)
	T5HO	124' (37.8m)	76' (23.2m)
277V	*T5*	532' (162.2m)	332' (101.2m)
	T5HO	296' (90.2m)	184' (56.1m)

* Based on 16A branch circuit capacity (20A max allowed for #14 AWG thru wire).
** Based on 10A capacity of 18/3 cord.

7 Option (See Accessories Section for specifications)

00 = No option
0E = Integral emergency battery pack with indicator lamp and test button. Available in 4', 5', 6' and 8' units (lamp codes **T128**, **T135**, **T221**, **T228**, **T155**, **T239** and **T255**). Operates one lamp.
Note: For **X** mount, order two (2) electrical feed cantilevers, stems or cables to accomodate unswitched feed to battery.
0K = Prewired modular #14 AWG through wiring with quick connectors.
EK = Combination of emergency battery pack and prewired modular through wiring as described above.
Note: Modular wiring does NOT accomodate unswitched supply to battery. Feed unswitched circuit directly to this unit.
XX = For modification not listed, include detailed description. Consult factory prior to specification.

8 Standard

0 = UL, Underwriters Laboratories
J = CSA, Canadian Standards Association

Example

F144 - T155 - X - 22 - T - 000

Xtra small enclosed semi-elliptical, one-way series for use with one 4' F54T5HO lamp, 48" long housing (not including decorative end plates). For use with cantilever, pendant stem or cable hangers (order separately). Matte white. Integral 120V dimming ballast. Vertical straight blade baffles finished matte gray. UL. Order decorative end plates separately.

elliptipar
114 Boston Post Road, West Haven, Connecticut 06516, USA
Voice 203.931.4455 • Fax 203.931.4464 • **www.elliptipar.com**

Type: _____

Hangers

Order separately. See Accessories Section for specifications.

Singles - order one non-electrical and one electrical feed hanger for each module (**X** mount).

Rows - order one non-electrical hanger for each module (**X** mount) plus one electrical feed for each row. See Voltage/Ballast for maximum row length per electrical feed.

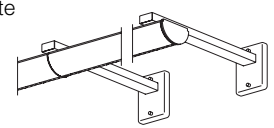
Note: For each single or row with dimming (voltage/ballast code **T** or **V**) or for each module with emergency battery (option code **0E**), order one additional electrical feed and subtract one non-electrical hanger.

Cantilever and stem electrical feeds must be located at an end of row. Cable feed can be located at ends or intermediate joints.

V4 [ ] **22 18** [ ] = **Cantilever**, 18" (460mm) setback, matte white

0 = UL
J = CSA

C = Non-electrical
D = Electrical feed with (3) #14 AWG leads

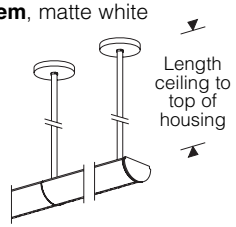


V4 [ ] **22** [ ] [ ] = **Pendant stem**, matte white

0 = UL
J = CSA

Length in inches, up to 60" (1.5m), 6" minimum

F = Non-electrical
G = Electrical feed with (3) #14 AWG leads

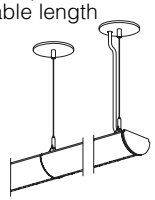


V4 [ ] **22** [ ] [ ] = **Cable support**, matte white canopy, field adjustable length

0 = UL
J = CSA

48 = up to 48" (1.2m)
96 = 48" to 96" (2.4m)

R = Non-electrical
S = Electrical feed with white 18/3 cord



Accessories

Order separately. See Accessories Section for specifications.

ADE44220 = **Decorative end plates**, pair, matte white, or custom color to match housing (see **5** Finish)
Note: adds 1/4" (6mm) to length

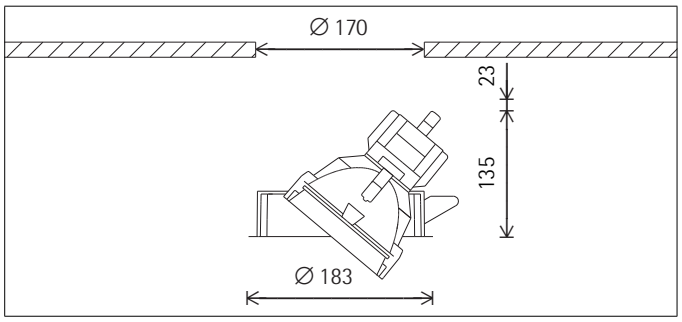
ABK = **Blank-Out Cover** for non-lighted module. Extruded cover replaces baffle, reflector and lamp(s). Painted to match housing. Consult factory for assistance.

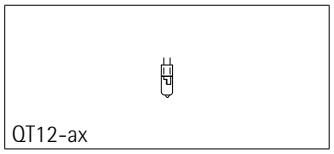
ERCO

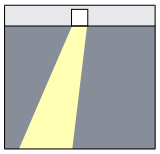
Gimbal Directional spotlight

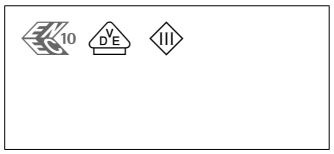
for low-voltage halogen lamps

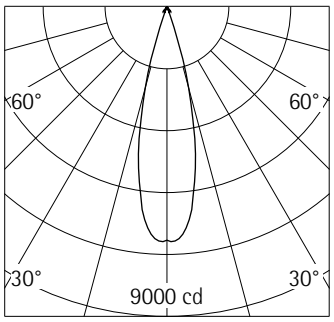
F16 Luminaire











QT12-ax 100W 12V GY6.35 2200lm

h(m)	E(lx)	D(m) 26°
1	6788	0.46
2	1697	0.92
3	754	1.39
4	424	1.85
5	272	2.31

88131.000 Reflector silver
QT12-ax 100W 12V GY6.35 2200lm

Product description
Size 5
Luminaire with heat sink: cast aluminium, black powder-coated. Mounting ring: plastic, white (RAL9002), with multigroove baffle, cast aluminium, black powder-coated. Fixing springs for ceiling thickness max. 25mm. Cardanic suspension of the luminaire in the mounting ring. 0°-40° tilt. Pivots are to be locked.
Cable, L 500mm.
Anti-dazzle ring: plastic, black.
Flood reflector: aluminium, anodised, mirror-finish. Anti-dazzle cap attached to the safety glass.
Transformer according to EN 61558 or EN 61347 to be ordered separately.
Weight 0.95kg

ERCO Leuchten GmbH
Postfach 2460
58505 Lüdenscheid
Germany
Tel.: +49 2351 551 0
Fax: +49 2351 551 300
info@erco.com

Technical Region: 230V/50Hz
Edition: 16.11.2006
Please download the current version from
www.erco.com/88131.000

ERCO

Gimbal Directional spotlight

Planning data

Cleaning (a)	1				2				3			
Ambient conditions	P	C	N	D	P	C	N	D	P	C	N	D
LMF	0.94	0.88	0.82	0.77	0.89	0.83	0.77	0.71	0.85	0.79	0.73	0.65
RSMF	0.99	0.98	0.96	0.95	0.97	0.96	0.95	0.94	0.97	0.96	0.95	0.94

Hours of operation (h)	1000	2000
LLMF	0.98	0.95
LSF	1	1

MF	LMFxRSMFxLLMFxLSF
MF	Maintainance Factor
LMF	Lumiaire Maintenance Factor
RSMF	Room Surface Maintenance Factor
LLMF	Lamp Lumens Maintenance Factor
LSF	Lamp Survival Factor
P	Room pure
C	Room clean
N	Room normal
D	Room dirty

F1 Lamp

WORLDWIDE PARTNER

GE Lighting

Commercial Products & Solutions

20023 – CMH70TU/942/G12

GE ConstantColor® PulseArc® CMH® Ceramic Metal Halide T6

PRINT

GENERAL CHARACTERISTICS

Lamp type	High Intensity Discharge - Ceramic Metal Halide
Bulb	T6
Base	Bi-Pin (G12)
Wattage	70
Rated Life	15000 hrs
Bulb Material	Quartz
Lamp Enclosure Type (LET)	Enclosed fixtures only
Additional Info	UV control

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	6000
Mean Lumens	4600
Nominal Initial Lumens per Watt	85
Color Temperature	4200 K
Color Rendering Index (CRI)	93

ELECTRICAL CHARACTERISTICS

Burn Position	Universal burning position
Warm Up Time to 90% (MAX)	2 min/3
Hot Restart Time to 90% (MIN)	10 min
Hot Restart Time to 90% (MAX)	15 min

DIMENSIONS

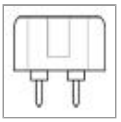
Maximum Overall Length (MOL)	3.5600 in (90.4 mm)
Light Center Length (LCL)	2.180 in (55.3 mm)

PRODUCT INFORMATION

Product Code	20023
Description	CMH70TU/942/G12
ANSI Code	M139/M85/M98
Standard Package	Case
Standard Package GTIN	10043168200230
Standard Package Quantity	12

Bulb

Base



View Larger

ADDITIONAL RESOURCES

Catalogs

Testimonials

Brochures

Product Brochures

- Ceramic Metal Halide

Application/Segment Brochures

- Contractor Lighting

MSDS (Material Safety Data Sheets)

Disposal Policies & Recycling Information

Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	12
UPC	043168200233

COMPATIBLE GE BALLASTS

Product Code	Description	# of Bulbs	Power Factor	Ballast Factor
87531	GEMH70-MSF-120	1	99.0	1.0
87546	GEMH70-SLJ-MV	1	99.0	1.0
86847	M70MLTLC3M500K	1	90.0	1.0
86576	11210277CTC000C		90.0	1.0
86578	11210506CTC000C	1	90.0	1.0
86839	M7048TLC3M500K	1	90.0	1.0

⚠ CAUTIONS & WARNINGS

R- WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured, and the arc tube continues to operate. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain types of lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. Visit the FDA website for more information: http://www.fda.gov/cdrh/radhlth/urburns.html

See list of cautions & warnings.

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Products for Your Home | Press Room | Corporate | Investor Information | Privacy Policy | Accessibility Statement | Terms of Use

Product Details **FM 11W/760 W4,3 UNV1**

F3 Lamp

Product description: FM 11W/760 W4,3 UNV1
EAN/ Product : 4050300579979
Quantity: Unpacked (UNV) contains 1 Piece (PC)

You can find this product in the eCatalog:
http://catalog.myosram.com?~language=EN&~country=&it_p=4050300579979

General Description	
Base	W4.3
Energy label	B
ILCOS	FDH-11/60/2A-L/P-W4,3
Recycling (WEEE)	yes

Technical - Electrical Data	
Luminous Efficacy in lm/W	52 lm/W
Rated wattage in Watts	11 W

Technical - Light Technical Data	
Luminous output in lumen	570 lm

Technical - Colors	
Colour appearance	LUMILUX Daylight
Colour rendering group	2A
Colour rendering index (Ra)	Min. 70 Max. 79
Colour temperature in Kelvin	6000 K

Technical - Geometries	
Length in mm	421.6 mm
Tube diameter in mm	7 mm

Technical - Life	
Average lamp life in hours	8000 h [1)]
Economic life in hours	6000 h [2)]

Packaging units

EAN	Packaging type and content	Dimensions in h x w x l	Gross weight	Volume
4050300579979	Unpacked contains 1 Piece	0,000 mm x 0,000 mm x 0,000 mm	0,000 kg (0,019 kg)	0,000 Cubic dec.
4050300579986	Shipping carton box contains 20 Piece	40,000 mm x 103,000 mm x 439,000 mm	0,456 kg (0,380 kg)	1,809 Cubic dec.

1) with preheat ECG
2) with preheat ECG

GE Consumer & Industrial Lighting

WORLDWIDE PARTNER

F4 Lamp

Commercial Products & Solutions

34385 – F18TBX/SPX41/A/4

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

PRINT

High Color Rendering
Energy Savings

GENERAL CHARACTERISTICS

Lamp type	Compact Fluorescent - Plug-In
Bulb	T4
Base	GX24q-2
Wattage	18
Voltage	120/100
Rated Life	12000 hrs
Starting Temperature (MIN)	0 °C (32 °F)
Cathode Resistance	6.050 Ohm
Additional Info	Dimmable with appropriate dimming ballast., End of Life Protection (EOL), TCLP compliant
Primary Application	Facilities; Retail Display; Hospitality; Office; Restaurant; Warehouse

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1200
Mean Lumens	1020
Nominal Initial Lumens per Watt	66
Color Temperature	4100 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

Current (max)	5.2500 A
Open Circuit Voltage (after preheating) (MAX)	250 V
Open Circuit Voltage (after preheating) Min @ Temperature	550 V @ 10 °C, 550 V @ 15 °C
Open Circuit Voltage Across Starter (MIN)	198 V
Lamp Current	0.225 A
Preheat Voltage (MIN)	4 V
Current Crest Factor (MAX)	1.7
Supply Current Frequency	60 Hz

Bulb

Base

View Larger

ADDITIONAL RESOURCES

Catalogs

Testimonials

Brochures

Product Brochures

- Ecolux
- Ecolux (Environmental)

Sell Sheets

- Fast Warming

Disposal Policies & Recycling Information

DIMENSIONS

Maximum Overall Length (MOL)	4.8000 in (121.9 mm)
Nominal Length	4.800 in (121.9 mm)
Base Face to Top of Lamp	4.250 in (107.9 mm)

PRODUCT INFORMATION

Product Code	34385
Description	F18TBX/SPX41/A/4
ANSI Code	60901-IEC-3418-1
Standard Package	Case
Standard Package GTIN	10043168343852
Standard Package Quantity	10
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	10
UPC	043168343855

COMPATIBLE GE BALLASTS

Product Code	Description	# of Bulbs	Power Factor	Ballast Factor
80675	C218UNVBEIP	1	95.0	1.05
80677	C218UNVBES-IP	1	95.0	1.05
80679	C218UNVSE-IP	1	95.0	1.05

⚠ CAUTIONS & WARNINGS

See list of cautions & warnings.

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

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GE Consumer & Industrial Lighting

WORLDWIDE PARTNER

F5 Lamp

Commercial Products & Solutions

38696 – CMH35/T/UVC/U/830/G12

GE PulseArc® Showbiz® Ceramic Metal Halide T6 - Stage & Studio

PRINT

GENERAL CHARACTERISTICS

Lamp type	High Intensity Discharge - Ceramic Metal Halide
Bulb	T6
Base	Bi-Pin (G12)
Wattage	35
Rated Life (Vert)	10000 hrs
Primary Application	Stage & Studio

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	3400
Nominal Initial Lumens per Watt	97
Color Temperature	3000 K

ELECTRICAL CHARACTERISTICS

Burn Position	Universal burning position

DIMENSIONS

Light Center Length (LCL)	2.170 in (55.1 mm)

PRODUCT INFORMATION

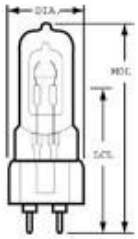
Product Code	38696
Description	CMH35/T/UVC/U/830/G12
ANSI Code	No CMH35 ANSI code
Standard Package Quantity	12
Sales Unit	Unit

⚠ CAUTIONS & WARNINGS

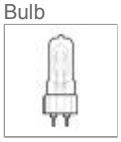
See list of cautions & warnings.

NOTES

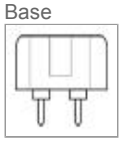
- Enclosed fixture only, per UL Standard 1572. In accordance to Federal Regulations 21 CFR 1040.30 the following notice applies: WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if the outer envelope of the lamp is broken or punctured, and the arc tube continues to operate. Do not use where people will remain more than a few minutes unless adequate shielding or other safety precautions are used. Certain types of lamp that will automatically extinguish when



Bulb



Base



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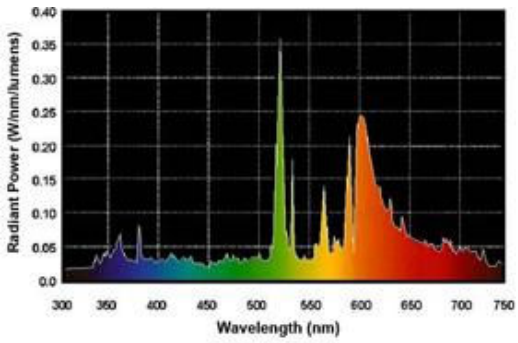
ADDITIONAL RESOURCES

Catalogs
Testimonials
MSDS (Material Safety Data Sheets)
Disposal Policies & Recycling Information

GRAPHS & CHARTS

Spectral Power Distribution



GE Lighting

WORLDWIDE PARTNER

F6 Lamp

Commercial Products & Solutions

10322 – F32T8XLSPX41HLEC

GE Ecolux® Starcoat® T8

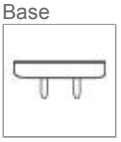
PRINT

• Passes TCLP, which can lower disposal costs.

High Color Rendering
Energy Savings

Bulb

Base



View Larger

GENERAL CHARACTERISTICS

Lamp type	Linear Fluorescent - Straight Linear
Bulb	T8
Base	Medium Bi-Pin (G13)
Wattage	32
Voltage	137
Rated Life	24000 hrs
Rated Life (instant start) @ Time	29000 h @ 12 h 24000 h @ 3 h
Rated Life (rapid start) @ Time	29000 h @ 12 h
Bulb Material	Soda lime
Starting Temperature (MIN)	10 °C (50 °F)
Additional Info	TCLP compliant

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	3100
Mean Lumens	2915
Nominal Initial Lumens per Watt	96
Color Temperature	4100 K
Color Rendering Index (CRI)	82
S/P Ratio (Scotopic/Photopic Ratio)	1.8

ELECTRICAL CHARACTERISTICS

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 (MAX)	1.7

DIMENSIONS

Maximum Overall Length (MOL)	47.7800 in (1213.6 mm)
Minimum Overall Length	47.6700 in (1210.8 mm)
Nominal Length	48.000 in (1219.2 mm)
Bulb Diameter (DIA)	1.000 in (25.4 mm)

ADDITIONAL RESOURCES

Catalogs

Testimonials

Brochures

Application/Segment Brochures
- Contractor Lighting
- Healthcare Lighting
- Office Lighting
- Retail Lighting

Product Brochures
- Ecolux
- Ecolux (Environmental)
- Industrial Lighting
- ULTRA Linear Fluorescent

Sell Sheets
- F32T8 High Lumen Linear Fluorescent System

MSDS (Material Safety Data Sheets)

Disposal Policies & Recycling Information

GRAPHS & CHARTS

Spectral Power Distribution

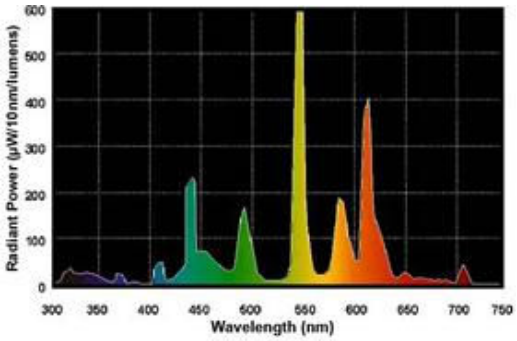
Bulb Diameter (DIA) (MIN)	0.940 in (23.8 mm)
Bulb Diameter (DIA) (MAX)	1.100 in (27.9 mm)
Max Base Face to Base Face (A)	47.220 in (1199.3 mm)
Face to End of Opposing Pin (B) (MIN)	47.400 in (1203.9 mm)
Face to End of Opposing Pin (B) (MAX)	47.500 in (1206.5 mm)
End of Base Pin to End of Opposite Pin End (C)	47.670 in (1210.8 mm)

PRODUCT INFORMATION

Product Code	10322
Description	F32T8XLSPX41HLEC
ANSI Code	1005-2
Standard Package	Case
Standard Package GTIN	10043168103227
Standard Package Quantity	36
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	36
UPC	043168103220

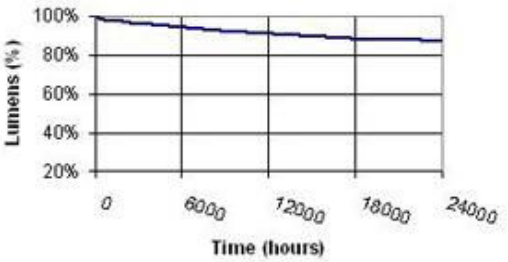
COMPATIBLE GE BALLASTS

Product Code	Description	# of Bulbs	Power Factor	Ballast Factor
49772	GE232MAX-N/ULTRA	1	99.0	0.87
80353	B132R120V5	1	90.0	0.05
49774	GE432MAX-N/ULTRA	3	99.0	0.87
49709	GE432MAX-L/ULTRA	3	99.0	0.77
49776	GE332MAX-H/ULTRA	2	99.0	1.15
97656	GE232MAX-N/CTR	1	99.0	0.87
97709	GE-232MV-N-DIY	1	99.0	1.02
80358	B332SR277V5	3	90.0	0.05
97711	GE-432MV-N-DIY	3	99.0	0.93
80356	B232SR277V5	2		0.05
30198	GE-232-MV-H	1	99.0	1.34
30192	GE-332-MV-N	2	99.0	0.96
29656	GE-332-MV-PS-H-T	2	98.0	1.28
29666	GE-332-MVPS-XL-T	2	98.0	0.64
30189	GE-132-MV-N	1	99.0	0.87
29632	GE-232-277PS-N-T	1	95.0	1.03
29672	GE-332-MVPS-XL	2	98.0	0.64
29676	GE-332-MVPS-H	2	98.0	1.28
29625	GE-432-120-PS-N	3	99.0	0.96
29623	GE-332-120-PS-N	2	99.0	1.0
49707	GE232MAX-L/ULTRA	1	99.0	0.77
24161	GE-132-120-N-	1	99.0	0.87



Lamp Mortality

Lumen Maintenance



WORLDWIDE PARTNER

GE Lighting

F7 Lamp

Commercial Products & Solutions

97632 – F32TBX/841/A/ECO

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

PRINT

High Color Rendering
Energy Savings

GENERAL CHARACTERISTICS

Lamp type	Compact Fluorescent - Plug-In
Bulb	T4
Base	GX24q-3
Wattage	32
Voltage	120/100
Rated Life	12000 hrs
Starting Temperature (MIN)	0 °C (32 °F)
Cathode Resistance	2.700 Ohm
Rated Life (rapid start) @ Time	12000 h @ 3 h 20000 h @ 12 h
Additional Info	Dimmable with appropriate dimming ballast., End of Life Protection (EOL), TCLP compliant
Primary Application	Facilities; Retail Display; Hospitality; Office; Restaurant; Warehouse

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2200
Mean Lumens	1850
Nominal Initial Lumens per Watt	68
Color Temperature	4100 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

Current (max)	5.2500 A
Open Circuit Voltage (after preheating) (MAX)	265 V
Open Circuit Voltage (MIN)	515 V
Lamp Current	0.320 A
Preheat Voltage (MIN)	4 V
Current Crest Factor (MAX)	1.7
Supply Current Frequency	20000 Hz

Bulb

Base

View Larger

ADDITIONAL RESOURCES

Catalogs

Testimonials

Brochures

Product Brochures

- Ecolux
- Ecolux (Environmental)

Sell Sheets

- Fast Warming
- Biax® T/E 32W with Amalgam

Disposal Policies & Recycling Information

DIMENSIONS

Maximum Overall Length (MOL)	5.5000 in (139.7 mm)
Nominal Length	5.500 in (139.7 mm)
Base Face to Top of Lamp	4.900 in (124.4 mm)

PRODUCT INFORMATION

Product Code	97632
Description	F32TBX/841/A/ECO
ANSI Code	60901-IEC-7432-2
Standard Package	Case
Standard Package GTIN	10043168976326
Standard Package Quantity	10
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	10
UPC	043168976329

COMPATIBLE GE BALLASTS

Product Code	Description	# of Bulbs	Power Factor	Ballast Factor
80689	C2642UNVSE-IP	1	98.0	1.0
47506	C242UNVBES-IP	2	98.0	1.0
80685	C2642UNVBE-IP	1	98.0	1.0
80687	C2642UNVBES-IP	1	98.0	1.0
47509	C242UNVSE-IP	2	98.0	1.0

⚠ CAUTIONS & WARNINGS

See list of cautions & warnings.

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

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WORLDWIDE PARTNER

GE Lighting

F10 Lamp

Commercial Products & Solutions

PRINT

27621 – F32T8XL/SPX41ECO

GE Ecolux® Starcoat® T8

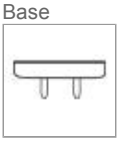
• Passes TCLP, which can lower disposal costs.

• Provides significantly longer life than standard lamp helping to reduce maintenance costs

High Color Rendering

Bulb

Base



View Larger

GENERAL CHARACTERISTICS

Lamp type	Linear Fluorescent - Straight Linear
Bulb	T8
Base	Medium Bi-Pin (G13)
Wattage	32
Voltage	137
Rated Life	24000 hrs
Rated Life (instant start) @ Time	29000 h @ 12 h 24000 h @ 3 h
Rated Life (rapid start) @ Time	29000 h @ 12 h
Bulb Material	Soda lime
Starting Temperature (MIN)	10 °C (50 °F)
Additional Info	TCLP compliant

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2950
Mean Lumens	2800
Nominal Initial Lumens per Watt	92
Color Temperature	4100 K
Color Rendering Index (CRI)	86
S/P Ratio (Scotopic/Photopic Ratio)	1.8

ELECTRICAL CHARACTERISTICS

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 (MAX)	1.7

DIMENSIONS

Maximum Overall Length (MOL)	47.7800 in (1213.6 mm)
Minimum Overall Length	47.6700 in (1210.8 mm)
Nominal Length	48.000 in (1219.2 mm)

ADDITIONAL RESOURCES

Catalogs

Testimonials

Brochures

Product Brochures

- Color
- Ecolux
- Ecolux (Environmental)
- Industrial Lighting
- Linear Fluorescent Lamps
- XL Brochure

Application/Segment Brochures

- Contractor Lighting
- Healthcare Lighting
- Office Lighting
- Retail Lighting

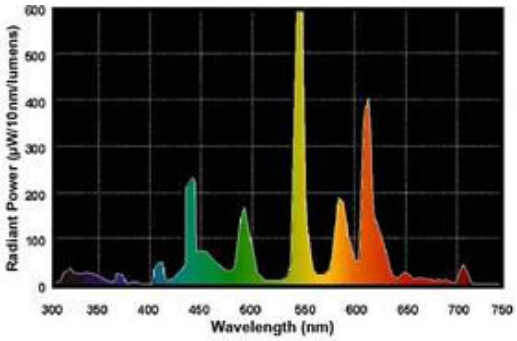
MSDS (Material Safety Data Sheets)

Disposal Policies & Recycling Information

GRAPHS & CHARTS

Spectral Power Distribution

Bulb Diameter (DIA)	1.000 in (25.4 mm)
Bulb Diameter (DIA) (MIN)	0.940 in (23.8 mm)
Bulb Diameter (DIA) (MAX)	1.100 in (27.9 mm)
Max Base Face to Base Face (A)	47.220 in (1199.3 mm)
Face to End of Opposing Pin (B) (MIN)	47.400 in (1203.9 mm)
Face to End of Opposing Pin (B) (MAX)	47.500 in (1206.5 mm)
End of Base Pin to End of Opposite Pin End (C)	47.670 in (1210.8 mm)

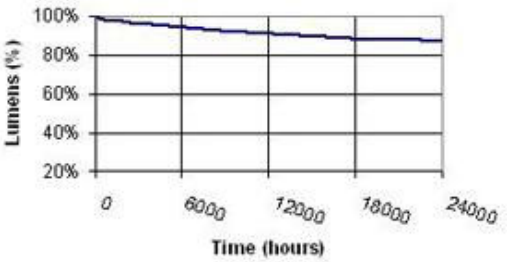


PRODUCT INFORMATION

Product Code	27621
Description	F32T8XL/SPX41ECO
ANSI Code	1005-2
Standard Package	Case
Standard Package GTIN	10043168276211
Standard Package Quantity	36
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	36
UPC	043168276214

Lamp Mortality

Lumen Maintenance



COMPATIBLE GE BALLASTS

Product Code	Description	# of Bulbs	Power Factor	Ballast Factor
49772	GE232MAX-N/ULTRA	1	99.0	0.87
80353	B132R120V5	1	90.0	0.05
49774	GE432MAX-N/ULTRA	3	99.0	0.87
49709	GE432MAX-L/ULTRA	3	99.0	0.77
49776	GE332MAX-H/ULTRA	2	99.0	1.15
97656	GE232MAX-N/CTR	1	99.0	0.87
97709	GE-232MV-N-DIY	1	99.0	1.02
80358	B332SR277V5	3	90.0	0.05
97711	GE-432MV-N-DIY	3	99.0	0.93
80356	B232SR277V5	2		0.05
30198	GE-232-MV-H	1	99.0	1.34
30192	GE-332-MV-N	2	99.0	0.96
29656	GE-332-MV-PS-H-T	2	98.0	1.28
29666	GE-332-MVPS-XL-T	2	98.0	0.64
30189	GE-132-MV-N	1	99.0	0.87
29632	GE-232-277PS-N-T	1	95.0	1.03
29672	GE-332-MVPS-XL	2	98.0	0.64
29676	GE-332-MVPS-H	2	98.0	1.28
29625	GE-432-120-PS-N	3	99.0	0.96
29623	GE-332-120-PS-N	2	99.0	1.0
49707	GE232MAX-L/ULTRA	1	99.0	0.77

WORLDWIDE PARTNER

GE Lighting

F10 Lamp

Commercial Products & Solutions

42068 – CMH39UPAR20FL25

GE ConstantColor® PulseArc® CMH® Ceramic Metal Halide PAR20

PRINT

GENERAL CHARACTERISTICS

Lamp type	High Intensity Discharge - Ceramic Metal Halide
Bulb	PAR20
Base	Medium Screw (E26)
Wattage	39
Rated Life	10000 hrs
Bulb Material	Hard glass
Lamp Enclosure Type (LET)	Open or enclosed fixtures
Additional Info	Ballast thermal protection, UV control

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2100
Nominal Initial Lumens per Watt	53
Beam Spread	25 °
Center Beam Candlepower (CBCP)	7500
Color Temperature	3000 K
Color Rendering Index (CRI)	86

ELECTRICAL CHARACTERISTICS

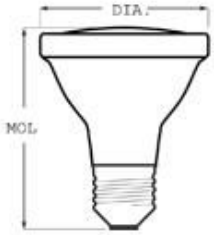
Burn Position	Universal burning position
Open Circuit Voltage (peak lead ballast) (MIN)	280 V
Open Circuit Voltage (RMS lag ballast) (MIN)	198 V
Warm Up Time to 90% (MAX)	2 min/3
Hot Restart Time to 90% (MIN)	10 min
Hot Restart Time to 90% (MAX)	15 min

DIMENSIONS

Maximum Overall Length (MOL)	3.5000 in (88.9 mm)
Nominal Length	3.500 in (88.9 mm)
Bulb Diameter (DIA)	2.500 in (63.5 mm)

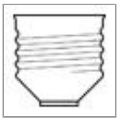
PRODUCT INFORMATION

Product Code	42068



Bulb

Base



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ADDITIONAL RESOURCES

Catalogs

Testimonials

Brochures

Product Brochures

- Ceramic Metal Halide
- Color
- HID Lamps

Application/Segment Brochures

- Contractor Lighting
- Restaurant Lighting

Sell Sheets

- GE ConstantColor® CMH® Lamps

IES/Photometric Download

MSDS (Material Safety Data Sheets)

Disposal Policies & Recycling Information

Description	CMH39UPAR20FL25
ANSI Code	M130
Standard Package	Case
Standard Package GTIN	10043168420683
Standard Package Quantity	15
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	15
UPC	043168420686

COMPATIBLE GE BALLASTS

Product Code	Description	# of Bulbs	Power Factor	Ballast Factor
87501	GEMH39-MSF-120	1	99.0	1.0

⚠ CAUTIONS & WARNINGS

R- WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured, and the arc tube continues to operate. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain types of lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. Visit the FDA website for more information: http://www.fda.gov/cdrh/radhlth/urburns.html

See list of cautions & warnings.

NOTES

- Rated life based on 11 hours per start
- Use electronic ballast, peak lead ballast, or system which can shut itself off if ballast overheating occurs

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WORLDWIDE PARTNER

GE Lighting

F11 Lamp

Commercial Products & Solutions

PRINT

15484 – F17T8XL/SPX41ECO

GE Ecolux® Starcoat® T8

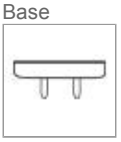
• Passes TCLP, which can lower disposal costs.

• Provides significantly longer life than standard lamp helping to reduce maintenance costs

High Color Rendering

Bulb

Base



View Larger

GENERAL CHARACTERISTICS

Lamp type	Linear Fluorescent - Straight Linear
Bulb	T8
Base	Medium Bi-Pin (G13)
Wattage	17
Voltage	70
Rated Life	24000 hrs
Rated Life (instant start) @ Time	24000 h @ 12 h 20000 h @ 3 h
Rated Life (rapid start) @ Time	29000 h @ 12 h
Bulb Material	Soda lime
Starting Temperature (MIN)	10 °C (50 °F)
Additional Info	TCLP compliant

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1350
Mean Lumens	1280
Nominal Initial Lumens per Watt	79
Color Temperature	4100 K
Color Rendering Index (CRI)	86
S/P Ratio (Scotopic/Photopic Ratio)	1.8

ELECTRICAL CHARACTERISTICS

Open Circuit Voltage (rapid start) (MAX)	285 V
Open Circuit Voltage (rapid start) Min @ Temperature	210 V @ 10 °C
Cathode Resistance Ratio - Rh/Rc (MIN)	4.25
Cathode Resistance Ratio - Rh/Rc (MAX)	6.5
Current Crest Factor (MAX)	1.7

DIMENSIONS

Maximum Overall Length (MOL)	23.7800 in (604.0 mm)

ADDITIONAL RESOURCES

Catalogs

Testimonials

Brochures

Application/Segment Brochures

- Contractor Lighting
- Healthcare Lighting
- Office Lighting
- Retail Lighting

Product Brochures

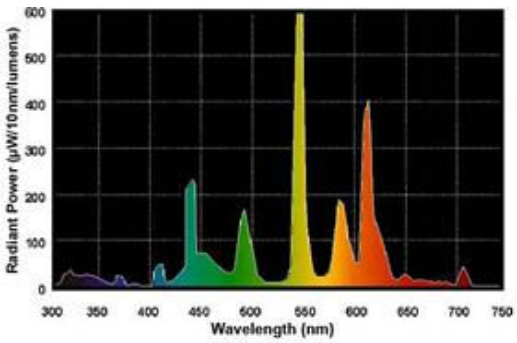
- Industrial Lighting

MSDS (Material Safety Data Sheets)

Disposal Policies & Recycling Information

GRAPHS & CHARTS

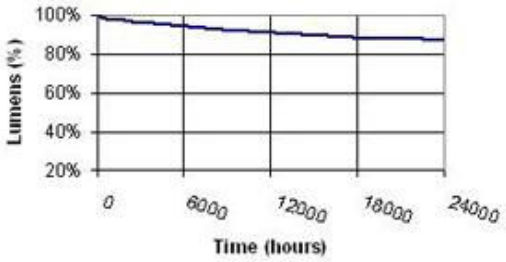
Spectral Power Distribution



Lamp Mortality

Minimum Overall Length	23.6700 in (601.2 mm)
Nominal Length	24.000 in (609.6 mm)
Bulb Diameter (DIA)	1.000 in (25.4 mm)
Bulb Diameter (DIA) (MIN)	0.940 in (23.8 mm)
Bulb Diameter (DIA) (MAX)	1.100 in (27.9 mm)
Max Base Face to Base Face (A)	23.220 in (589.7 mm)
Face to End of Opposing Pin (B) (MIN)	23.400 in (594.3 mm)
Face to End of Opposing Pin (B) (MAX)	23.500 in (596.9 mm)
End of Base Pin to End of Opposite Pin End (C)	23.670 in (601.2 mm)

Lumen Maintenance



PRODUCT INFORMATION

Product Code	15484
Description	F17T8XL/SPX41ECO
ANSI Code	1001-1
Standard Package	Case
Standard Package GTIN	10043168154847
Standard Package Quantity	24
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	24
UPC	043168154840

COMPATIBLE GE BALLASTS

Product Code	Description	# of Bulbs	Power Factor	Ballast Factor
47550	GE432MAX-H-42T	3	99.0	
49772	GE232MAX-N/ULTRA	1	99.0	
49707	GE232MAX-L/ULTRA	1	98.0	
47548	GE232MAX-H-42T	1	99.0	
49709	GE432MAX-L/ULTRA	3	99.0	
97656	GE232MAX-N/CTR	1	99.0	
97709	GE-232MV-N-DIY	1	99.0	1.0
49776	GE332MAX-H/ULTRA	2	99.0	
97711	GE-432MV-N-DIY	3	99.0	0.91
49774	GE432MAX-N/ULTRA	3	99.0	
30192	GE-332-MV-N	2	99.0	0.92
30189	GE-132-MV-N	1	99.0	0.88
29632	GE-232-277PS-N-T	1	88.0	1.02
29656	GE-332-MV-PS-H-T	2	98.0	1.25
29676	GE-332-MVPS-H	2	98.0	1.25
29625	GE-432-120-PS-N	3	99.0	0.96
29666	GE-332-MVPS-XL-T	2	98.0	0.65
29672	GE-332-MVPS-XL	2	98.0	0.65

WORLDWIDE PARTNER

GE Lighting

F12, F14, F15 Lamp

Commercial Products & Solutions

46687 – F21W/T5/841/ECO

GE Ecolux® Starcoat® T5

PRINT

• Passes TCLP, which can lower disposal costs.

High Color Rendering

GENERAL CHARACTERISTICS

Lamp type	Linear Fluorescent - Straight Linear
Bulb	T5
Base	Miniature Bi-Pin (G5)
Wattage	21
Voltage	123
Rated Life	30000 hrs
Rated Life (rapid start) @ Time	30000 h @ 3 h 36000 h @ 12 h
Bulb Material	Soda lime
Starting Temperature (MIN)	-20 °C (-4 °F)
Additional Info	TCLP compliant

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2100
Mean Lumens	1930
Nominal Initial Lumens per Watt	100
Color Temperature	4100 K
Color Rendering Index (CRI)	85
S/P Ratio (Scotopic/Photopic Ratio)	1.7

ELECTRICAL CHARACTERISTICS

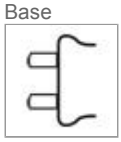
Open Circuit Voltage (rapid start) Min @ Temperature	340 V @ 10 °C
Cathode Resistance Ratio - Rh/Rc (MIN)	4.25
Cathode Resistance Ratio - Rh/Rc (MAX)	6.5
Current Crest Factor (MAX)	1.7

DIMENSIONS

Maximum Overall Length (MOL)	33.9800 in (863.0 mm)
Nominal Length	33.400 in (848.3 mm)
Bulb Diameter (DIA)	0.625 in (15.8 mm)
Bulb Diameter (DIA) (MAX)	0.670 in (17.0 mm)
Max Base Face to Base Face (A)	33.430 in (849.1 mm)
Face to End of Opposing Pin	33.610 in (853.6 mm)

Bulb

Base



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ADDITIONAL RESOURCES

Catalogs

Testimonials

Brochures

Application/Segment Brochures

- Contractor Lighting
- Healthcare Lighting

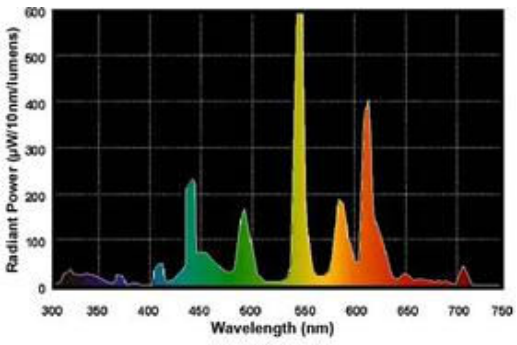
Product Brochures

- Ecolux
- Ecolux (Environmental)

Disposal Policies & Recycling Information

GRAPHS & CHARTS

Spectral Power Distribution



Lamp Mortality

(B) (MIN)	
Face to End of Opposing Pin (B) (MAX)	33.700 in (855.9 mm)

PRODUCT INFORMATION

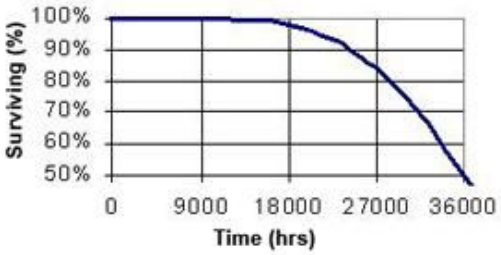
Product Code	46687
Description	F21W/T5/841/ECO
Standard Package	Case
Standard Package GTIN	10043168466872
Standard Package Quantity	40
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	40
UPC	043168466875

COMPATIBLE GE BALLASTS

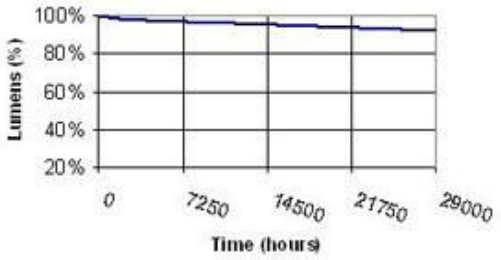
Product Code	Description	# of Bulbs	Power Factor	Ballast Factor
47536	B228PUNV-C0G1C	1		0.98

CAUTIONS & WARNINGS

See list of cautions & warnings.



Lumen Maintenance



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WORLDWIDE PARTNER

GE Lighting

F13 Lamp

Commercial Products & Solutions

PRINT

46761 – F54W/T5/841/ECO

GE Ecolux® Starcoat® T5

• Passes TCLP, which can lower disposal costs.

High Color Rendering

GENERAL CHARACTERISTICS

Lamp type	Linear Fluorescent - Straight Linear
Bulb	T5
Base	Miniature Bi-Pin (G5)
Wattage	54
Voltage	117
Rated Life	30000 hrs
Rated Life (rapid start) @ Time	30000 h @ 3 h 36000 h @ 12 h
Bulb Material	Soda lime
Starting Temperature (MIN)	-20 °C (-4 °F)
Additional Info	TCLP compliant

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	5000
Mean Lumens	4600
Nominal Initial Lumens per Watt	92
Color Temperature	4100 K
Color Rendering Index (CRI)	85
S/P Ratio (Scotopic/Photopic Ratio)	1.7

ELECTRICAL CHARACTERISTICS

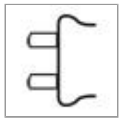
Open Circuit Voltage (rapid start) Min @ Temperature	520 V @ 10 °C
Cathode Resistance Ratio - Rh/Rc (MIN)	4.25
Cathode Resistance Ratio - Rh/Rc (MAX)	6.5
Lamp Current	460 mA
Current Crest Factor (MAX)	1.7

DIMENSIONS

Maximum Overall Length (MOL)	45.8000 in (1163.3 mm)
Nominal Length	45.200 in (1148.0 mm)
Bulb Diameter (DIA)	0.625 in (15.8 mm)
Bulb Diameter (DIA) (MAX)	0.670 in (17.0 mm)
Max Base Face to Base Face (A)	45.240 in (1149.0 mm)

Bulb

Base



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ADDITIONAL RESOURCES

Catalogs

Testimonials

Brochures

Product Brochures
- Ecolux
- Ecolux (Environmental)

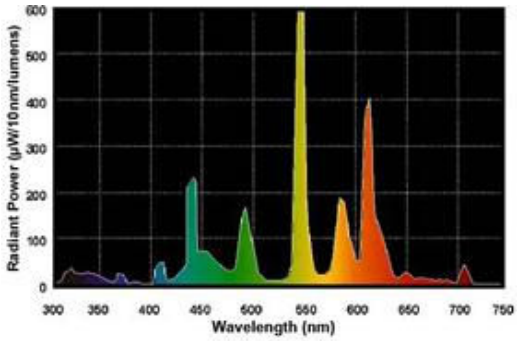
Application/Segment Brochures
- Healthcare Lighting
- Contractor Lighting

Fluorescent
- Starcoat® T5 Linear Fluorescent Lamps

Disposal Policies & Recycling Information

GRAPHS & CHARTS

Spectral Power Distribution



Lamp Mortality

Face to End of Opposing Pin (B) (MIN)	45.420 in (1153.6 mm)
Face to End of Opposing Pin (B) (MAX)	45.520 in (1156.2 mm)

PRODUCT INFORMATION

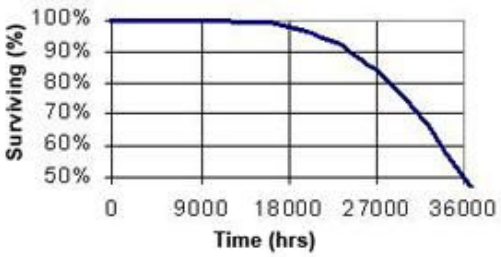
Product Code	46761
Description	F54W/T5/841/ECO
Standard Package	Case
Standard Package GTIN	10043168467619
Standard Package Quantity	40
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	40
UPC	043168467612

COMPATIBLE GE BALLASTS

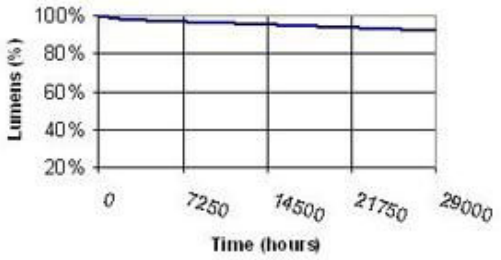
Product Code	Description	# of Bulbs	Power Factor	Ballast Factor
29717	GE454MVPSN1-B	1	99.0	1.0
87666	GE-254-MV-PS-NLB	1	99.0	1.02
47542	B254PUNV-DGE1C	1	99.0	1.02
87636	B254PUNV-DL	1	98.0	1.1
87651	GE-454-MV-PS-NLB	1	99.0	1.0
87621	GE-454-MV-PS-NL	1	99.0	1.0
29726	GE454MVPSN1	1	99.0	1.0

⚠ CAUTIONS & WARNINGS

See list of cautions & warnings.



Lumen Maintenance



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WORLDWIDE PARTNER

GE Lighting

F16 Lamp

Commercial Products & Solutions

34676 – Q100T3/12V/CL

GE T3

PRINT

GENERAL CHARACTERISTICS

Lamp type	Halogen - Single-Ended
Bulb	T3
Base	2-Pin (GY6.35)
Filament	CC-6
Wattage	100
Voltage	12
Voltage (MIN)	100
Rated Life	2000 hrs
Rated Life (Vert)	2000 hrs

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2350
Initial Lumens (Hor)	23.5
Initial Lumens (Vert)	2350
Nominal Initial Lumens per Watt	23

DIMENSIONS

Maximum Overall Length (MOL)	1.7500 in (44.4 mm)
Bulb Diameter (DIA)	0.375 in (9.5 mm)

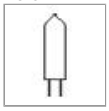
PRODUCT INFORMATION

Product Code	34676
Description	Q100T3/12V/CL
Standard Package	BUNDLE
Standard Package GTIN	30043168346765
Standard Package Quantity	100
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	100
UPC	043168346764

⚠ CAUTIONS & WARNINGS

See list of cautions & warnings.

Bulb



Filament

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ADDITIONAL RESOURCES

Catalogs
Testimonials
MSDS (Material Safety Data Sheets)
Disposal Policies & Recycling Information

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GE Lighting

WORLDWIDE PARTNER

B1 Ballast

Commercial Products & Solutions

PRINT

87546 – GEMH70-SLJ-MV

GE HID UltraMax™ Electronic Low Frequency Ballast

GENERAL CHARACTERISTICS

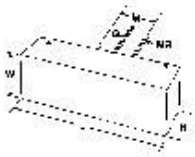
Category	High Intensity Discharge
Ballast Type	Electronic - Low Frequency
Line Voltage Regulation (+/-)	10 %
Ambient Temperature (MAX)	55 °C (131 °F)
Case Temperature (MAX)	90 °C (194 °F)
Ballast Factor	Normal
Sound Rating	A (20-24 decibels)
Enclosure Type	Metal
Distance to Lamp (MAX)	8 ft
Additional Info	End of Life Protection (EOL), Thermally protected

ELECTRICAL CHARACTERISTICS

Lamp Operating Frequency	130 Hz

PRODUCT INFORMATION

Product Code	87546
Description	GEMH70-SLJ-MV
Standard Package	Case
Standard Package GTIN	10043168875469
Standard Package Quantity	10
Sales Unit	Case
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	10
UPC	043168875462



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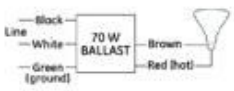
DIMENSIONS

Case dimensions			
Length (L)	7.2 in (184.91 mm)		
Width (W)	2.5 in (65.53 mm)		
Height (H)	2.2 in (55.88 mm)		
Mounting dimensions			
Mount Length (M)	0.4 in (10.92 mm)		
Weight	0.38 lbs		
Exit Type	Bottom Leads with Studs		
Remote mounting distance to lamp	8 ft		
Remote Mounting Wire Gauge	18 AWG		
Lead lengths	Qty	Exit	Length (± 1 in.)
Black	1	Left	10 in (254 mm)
Brown	1	Right	10 in (254 mm)
Red	1	Right	10 in (254 mm)
White	1	Left	10 in (254 mm)



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SPECIFICATIONS BY LAMP & LINE VOLTAGE

Lamp	# of Lamps	Specifications by Line Voltage		
M98	1		**120**	**277**
(70 W Ceramic Metal Halide) (70 W Quartz Metal Halide)		System Wattage (W)	77	77
		Nominal Current	0.66 A	0.3 A
		Ballast Factor	1	1
		Ballast Efficiency Factor	0.91	0.91
		Drop Out Voltage	96 V	96 V
		Power factor (>=) %	99	97
		Crest factor (<)	1.4	1.4
		THD % (<)	4.9	7.7
		Min. starting temperature	0 °F (-18 °C)	0 °F (-18 °C)
		Fuse rating	3	3
			System specs	System specs
M143	1		**120**	**277**
(70 W Ceramic Metal Halide)		System Wattage (W)	77	77
		Nominal Current	0.66 A	0.3 A
		Ballast Factor	1	1
		Ballast Efficiency Factor	0.91	0.91
		Drop Out Voltage	96 V	96 V
		Power factor (>=) %	99	97
		Crest factor (<)	1.4	1.4
		THD % (<)	4.9	7.7
		Min. starting temperature	0 °F (-18 °C)	0 °F (-18 °C)
		Fuse rating	3	3
			System specs	System specs
C143	1		**120**	**277**
		System Wattage (W)	77	77
		Nominal Current	0.66 A	0.3 A
		Ballast Factor	1	1
		Ballast Efficiency Factor	0.91	
		Drop Out Voltage	96 V	96 V
		Power factor (>=) %	99	97
		Crest factor (<)	1.4	1.4
		THD % (<)	4.9	7.7
		Min. starting temperature	0 °F (-18 °C)	0 °F (-18 °C)
		Fuse rating	3	3

Safety & Performance

RoHs Compliant
UL Type 1 Outdoor
ANSI - C62.41
UL 1029 Listed
FCC - CLASS A Non-Consumer
cUL Listed

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.

Download full warranty

NOTES

- 200C rated lead wires
- Do not connect brown or red wires to ground

ADDITIONAL RESOURCES

Catalogs
Testimonials
Disposal Policies & Recycling Information

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B3 Ballast

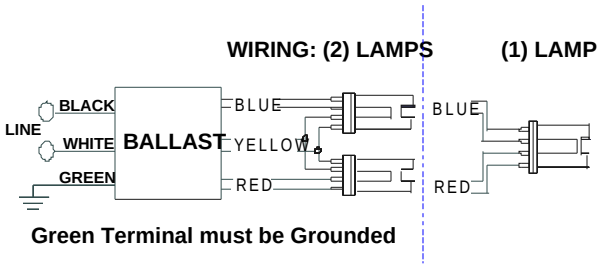
ICF-2S18-H1-LD@277

Brand Name	SMARTMATE
Ballast Type	Electronic
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 (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F.
CFM18W/GX24Q	1	18	0/-18	0.08	20	1.05	10	0.97	1.5	5.25
* CFM18W/GX24q	2	18	0/-18	0.14	39	1.05	10	0.99	1.5	2.69
CFQ18W/G24q	1	18	0/-18	0.07	19	1.00	10	0.97	1.5	5.26
CFQ18W/G24q	2	18	0/-18	0.13	35	0.95	10	0.99	1.5	2.71
CFS16W/GR10q	2	16	0/-18	0.13	37	1.00	09	0.99	1.5	2.70
CFS21W/GR10Q	1	21	0/-18	0.07	20	0.90	15	0.97	1.5	4.50
CFS21W/GR10Q	2	21	0/-18	0.14	40	0.91	10	0.99	1.5	2.28

Wiring Diagram



Green Terminal must be Grounded

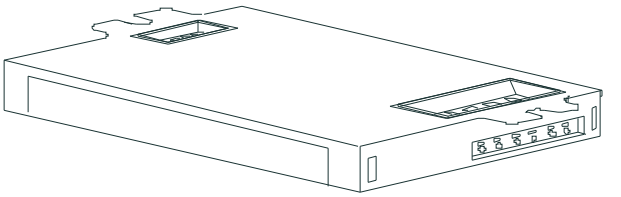
The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.
Black	0.0	
White	0.0	
Blue	0.0	
Red	0.0	
Yellow	0	
Gray		
Violet		

	in.	cm.
Yellow/Blue		
Blue/White		
Brown		
Orange		
Orange/Black		
Black/White		
Red/White		

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
4.98 "	2.4 "	1.0 "	4.6 "
4 49/50	2 2/5	1	4 3/5
12.6 cm	6.1 cm	2.5 cm	11.7 cm

Revised 08/15/2006

ADVANCE
O'HARE INTERNATIONAL CENTER · 10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018
Customer Support/Technical Service: Phone: 800-372-3331 · Fax: 630-307-3071
Corporate Offices: Phone: 800-322-2086

ICF-2S18-H1-LD@277	
Brand Name	SMARTMATE
Ballast Type	Electronic
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 color coded per ANSI C82.11.

Section II - Performance Requirements

2.1 Ballast shall be Programmed Start except for ballasts with -QS suffix, which shall be Rapid Start.

2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.

2.3 Ballast shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency) with no damage to the IntelliVolt ballast. RCF models shall operate from 60 Hz input source of 120V with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.

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 for primary lamp.

2.6 Ballast shall have a minimum ballast factor of 1.00 for primary lamp application.

2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.

2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp.

2.9 Ballast shall have a Class A sound rating.

2.10 Ballast shall have a minimum starting temperature of -18C (0F) for primary lamp. Ballasts for PL-H lamps shall have a minimum starting temperature of -30C (-20F) for primary lamp.

2.11 Ballast shall provide Lamp EOL Protection Circuit.

2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.

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 be Underwriters Laboratories (UL) rated for use in air-handling spaces.

3.4 Ballast shall comply with ANSI C62.41 Category A for Transient protection.

3.5 Ballast shall comply with ANSI C82.11 where applicable.

3.6 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) except for RCF models which shall be Consumer (Class B).

Section IV - Other

4.1 Ballast shall be manufactured in a factory certified to ISO 9002 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 75C and three-years for a maximum case temperature of 85C (90C 3year warranty for ICF1H120-M4-XX, ICF2S42-90C-M2-XX and ICF2S70-M4-XX modesls).

4.3 Manufacturer shall have a fifteen-year history of producing electronic ballasts for the North American market.

4.4 Ballast shall be Advance part # _____ or approved equal.

Revised 08/15/2006

ADVANCE TRANSFORMER CO.
O'HARE INTERNATIONAL CENTER - 10275 WEST HIGGINS ROAD
ROSEMONT, ILLINOIS 60018
TELEPHONE: (847) 390-5000 FAX: (847) 390-5109

B4 Ballast

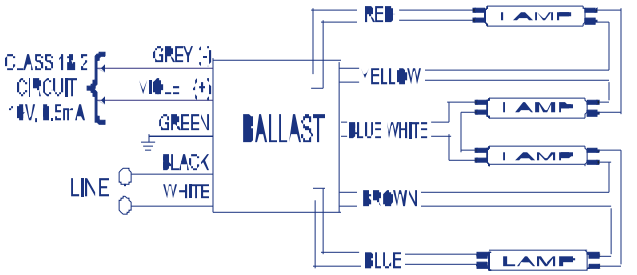
VZT-4S32-4

Brand Name	MARK 7 0-10V
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	4	17	50/10	0.25	18/69	0.05/0.88	10	0.99	1.6	1.28
F25T8	4	25	50/10	0.35	22/96	0.05/0.88	10	0.99	1.7	0.92
* F32T8	4	32	50/10	0.42	25/116	0.05/0.88	10	0.99	1.6	0.76

Wiring Diagram



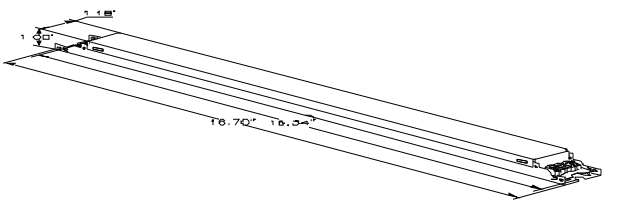
The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.
Black	0	0
White	0	0
Blue	0	0
Red	0	0
Yellow	0	0
Gray	0	0
Violet	0	0

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

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
16.70 "	1.18 "	1.00 "	16.34 "
16 7/10	1 9/50	1	16 17/50
42.4 cm	3 cm	2.5 cm	41.5 cm

Revised 06/17/2003

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Corporate Offices: Phone: 800-322-2086

B5 Ballast

IZT-2T42-M3-BS@277

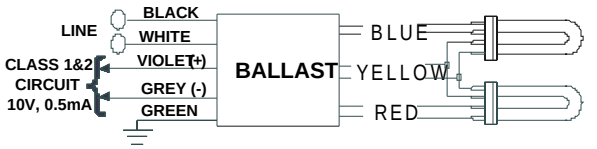
Brand Name	MARK 7 0-10V
Ballast Type	Electronic Dimming
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

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.
* CFM32W/GX24Q	2	32	50/10	0.27	19/75	0.05/1.00	10	0.98	1.4	1.33
CFM42W/GX24Q	2	42	50/10	0.35	18/96	0.05/1.00	10	0.99	1.4	1.04
CFTR57W/GX24Q	1	57	50/10	0.24	18/66	0.05/1.00	10	0.99	1.6	1.52
CFTR70W/GX24Q	1	70	50/10	0.29	18/80	0.05/1.00	10	0.99	1.6	1.25

Wiring Diagram

WIRING: (2) TRIPLE LAMPS



Green Terminal must be Grounded

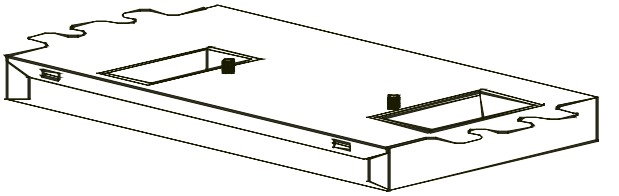
The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.
Black	0	0
White	0	0
Blue	0	0
Red	0	0
Yellow	0	0
Gray	0	0
Violet	0	0

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

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
6.28 "	3.00 "	1.29 "	2.00 "
6 7/25	3	1 29/100	2
16 cm	7.6 cm	3.3 cm	5.1 cm

Revised 08/27/2003

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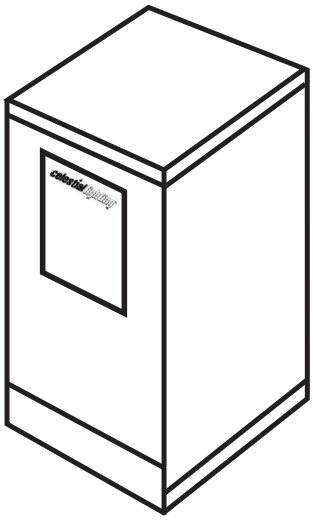
SPECIFIER GUIDE

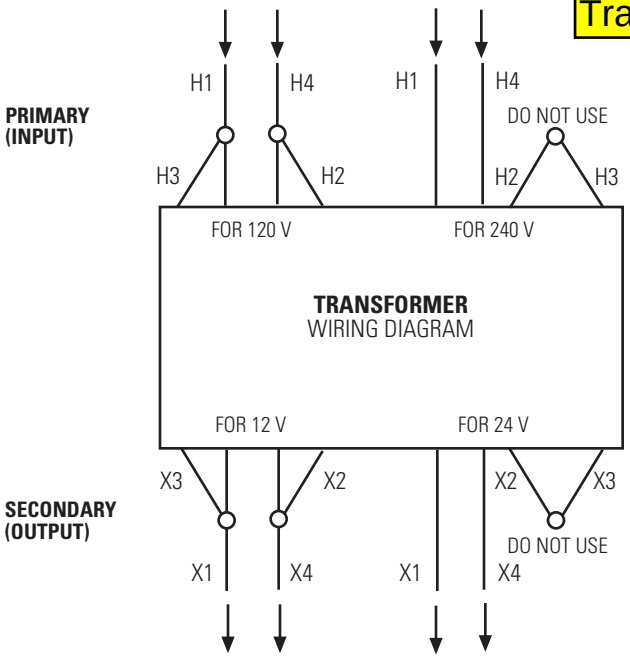
UL LISTED

PRODUCT DESCRIPTION	TRANSFORMERS
PRODUCT CODE	CLTF

DRAWING NO. CL 1601

F9, F10 Transformer





Primary Voltage 120V or 240V
Secondary Voltage 12V or 24V
NEMA Type 3 enclosure rated for outdoor use.
Minimum starting temperature - 40°C
ANSI/NEMA sound rating under 40 db
UL and CSA Listed.

•DRAWING NOT TO SCALE•

SPECIFICATIONS

PRODUCT CODE	CAPACITY (W = VA)	DIMENSIONS (H X W X D)	WEIGHT
CLTF 50	50 VA	6.4" X 3.2" X 3.1"	4 LBS.
CLTF 100	100 VA	7.2" X 3.9" X 3.7"	5 LBS.
CLTF 150	150 VA	7.2" X 3.9" X 3.7"	7 LBS.
CLTF 250	250 VA	8.7" X 4.1" X 3.9"	10 LBS.
CLTF 500	500 VA	9.1" X 4.4" X 4.2"	15 LBS.
CLTF 750	750 VA	9.7" X 4.8" X 4.6"	19 LBS.
CLTF 1000	1000 VA	10.5" X 5.5" X 5.2"	24 LBS.
CLTF 1500	1500 VA	11.7" X 5.5" X 5.2"	30 LBS.
CLTF 2000	2000 VA	13.0" X 5.5" X 5.2"	38 LBS.
CLTF 3000	3000 VA	11.5" X 10.4"X 7.2"	55 LBS.

FILL OUT QUANTITIES

CLTF50	CLTF100	CLTF150	CLTF250	CLTF500
CLTF750	CLTF1000	CLTF1500	CLTF2000	CLTF3000

PROJECT NAME	CONTRACTOR
FIXTURE SCHED. TYPE	DISTRIBUTOR
SPECIFIER	REPRESENTATIVE

celestial lighting

visit us at :
www. celestiallighting.com
e•mail :
info @ celestiallighting.com

14009 Dinard Ave.
Santa Fe Springs,
CA 90670

PH (562)•802•8811
(800)•233•3563
FX (562)•802•2882

B6 Ballast

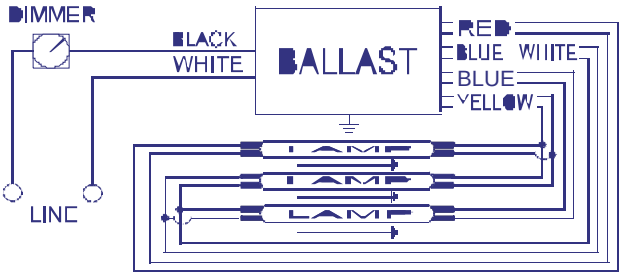
VEZ-3S32-SC

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	3	17	50/10	0.21	18/56	0.05/1.05	10	0.99	1.6	1.88
F25T8	3	25	50/10	0.29	19/79	0.05/1.05	10	0.99	1.6	1.33
* F32T8	3	32	50/10	0.37	20/102	0.05/1.00	10	0.99	1.6	0.98

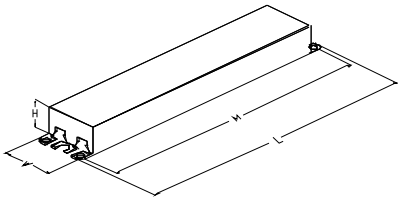
Wiring Diagram



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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ADVANCE™

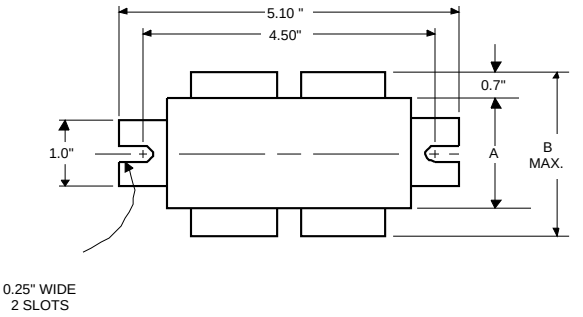
Metal Halide Lamp Ballast

Catalog Number 71A50Y1
For 39W M130
60 Hz HX-HPF
Status: Active

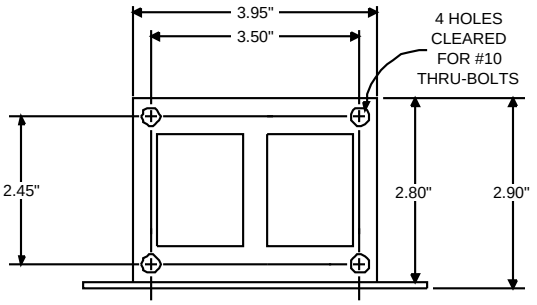
B7 Ballast

DIMENSIONS AND DATA

3 X 4 CORE - 2 COIL UNIT

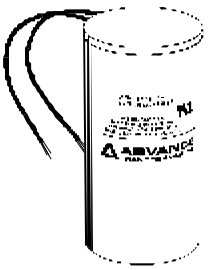


0.25" WIDE
2 SLOTS



~~INPUT VOLTS~~		100	200			
CIRCUIT TYPE	HX-HPF					
POWER FACTOR (min)	90%					
REGULATION						
Line Volts	±5%					
Lamp Watts	±10%					
LINE CURRENT (Amps)						
Operating		0.56	0.28			
Open Circuit		1.30	0.70			
Starting		0.50	0.25			
UL TEMPERATURE RATINGS						
Insulation Class	H(180°C)					
Coil Temperature Code	1029	A	A			
MIN. AMBIENT STARTING TEMP.	-30°F or -35°C					
NOM. OPEN CIRCUIT VOLTAGE	248					
INPUT VOLTAGE AT LAMP DROPOUT		70	140			
INPUT WATTS	53					
RECOMMENDED FUSE (Amps)		3	2			
CORE and COIL						
Dimension (A)	0.85					
Dimension (B)	1.95					
Weight (lbs.)	3					
Lead Lengths	12"					
CAPACITOR REQUIREMENT						
Microfarads	10.0					
Volts (min.)	280					
Fault Current Withstand (amps)						
60 Hz TEST PROCEDURES (Refer to Advance Test Procedure for HID Ballasts - Form 1270)						
High Potential Test (Volts)						
1 minute	1500					
2 seconds	2500					
Open Circuit Voltage Test (Volts)	223-273					
Short-Circuit Current Test (Amps)						
Secondary Current	0.60-0.74					
Input Current		0.38 0.58	0.19 0.29	-	-	-

Capacitor: 7C100M30-R



Capacitance: 10
Dia/Oval Dim: 1.5
Height: 2.9
Temp Rating: 105°C

Ignitor: LI533-H4

Ballast to Lamp Distance (BTL) = 5 feet
Temp Rating: 105°C

Wiring Diagram:

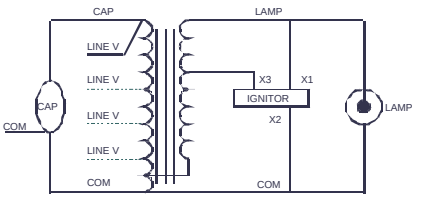


Fig. K3

Typical Ordering Information

(please call Advance for suffix availability)

Order Suffix	Description
500D.	Ballast With Ignitor and Dry Film Capacitor

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04/15/02

B8 Ballast

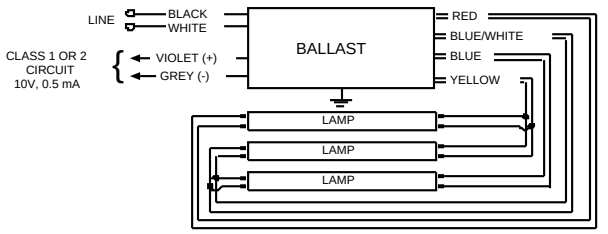
IZT-3S32-SC@277V

Brand Name	MARK 7 0-10V
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.
* F17T8	3	17	50/10	0.20	16/54	0.03/1.00	10	0.99	1.7	1.85
F25T8	3	25	50/10	0.28	16/76	0.03/1.00	10	0.99	1.7	1.32
F32T8	3	32	50/10	0.34	18/93	0.03/1.00	10	0.99	1.7	1.08

Wiring Diagram



Diag. 57A

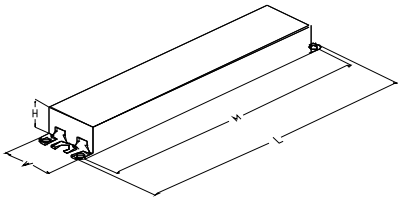
The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.
Black	22	55.9
White	22	55.9
Blue	26	66
Red	46	116.8
Yellow	26	66
Gray	36	91.4
Violet	36	91.4

	in.	cm.
Yellow/Blue		0
Blue/White	46	116.8
Brown		0
Orange		0
Orange/Black		0
Black/White		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 05/27/2004

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Corporate Offices: Phone: 800-322-2086

B9 Ballast

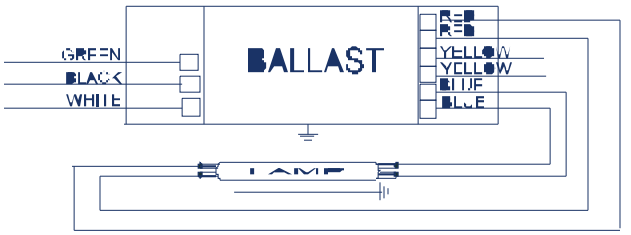
ICN-2S28@277

Brand Name	CENTIUM T5
Ballast Type	Electronic
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 (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F.
F14T5	1	14	0/-18	0.07	19	1.07	20	0.90	1.7	5.63
F14T5	2	14	0/-18	0.13	34	1.06	10	0.98	1.7	3.12
* F21T5	1	21	0/-18	0.10	26	1.03	15	0.95	1.7	3.96
F21T5	2	21	0/-18	0.17	48	1.02	10	0.98	1.7	2.13
F28T5	1	28	0/-18	0.12	33	1.04	10	0.98	1.7	3.15
F28T5	2	28	0/-18	0.23	63	1.03	10	0.99	1.7	1.63
F35T5	1	35	0/-18	0.15	41	1.01	10	0.98	1.7	2.46
F35T5	2	35	0/-18	0.28	77	1.00	10	0.99	1.7	1.30

Wiring Diagram



For 1 lamp operation, do not use yellow leads

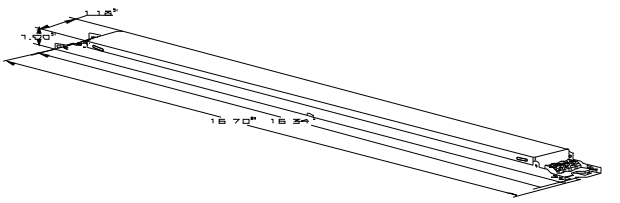
The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.
Black	0	0
White	0	0
Blue	0	0
Red	0	0
Yellow	0	0
Gray	0	0
Violet	0	0

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

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
16.70 "	1.18 "	1.00 "	16.34 "
16 7/10	1 9/50	1	16 17/50
42.4 cm	3 cm	2.5 cm	41.5 cm

Revised 09/01/2004

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ICN-2S28@277	
Brand Name	CENTIUM T5
Ballast Type	Electronic
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 provided with integral leads or poke-in wire trap connectors 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 50/60 Hz input source of _____ (120V through 277V or 347V through 480V) with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.

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 for primary lamp.

2.6 Ballast shall have a minimum ballast factor of 1.00 for primary lamp application.

2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.

2.8 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.

2.9 Ballast shall have a Class A sound rating.

2.10 Ballast shall have a minimum starting temperature of _____ {-18C (0F) or -28C (-20F)} for primary lamp. Consult lamp manufacturer for temperature versus light output characteristics.

2.11 Ballast shall provide Lamp EOL Protection Circuit.

2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.

2.13 Ballast shall have a hi-low switching option when operating (4) F54T5/HO lamps to allow switching from 4-2 lamps, 3-2 lamps or 3-1 lamp.

2.14 Four-lamp ballast shall have semi-independent lamp operation.

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 UL Type CC rating.

Section IV - Other

4.1 Ballast shall be manufactured in a factory certified to ISO 9002 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. Ballasts with a "90C" designation in their catalog number shall also carry a three-year warranty at a maximum case temperature of 90C.

4.3 Manufacturer shall have a fifteen-year history of producing electronic ballasts for the North American market.

4.4 Ballast shall be Advance part # _____ or approved equal.

Revised 09/01/2004

Data is based upon tests performed by Advance Transformer in a controlled environment and 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.

ADVANCE TRANSFORMER CO.
O'HARE INTERNATIONAL CENTER - 10275 WEST HIGGINS ROAD
ROSEMONT, ILLINOIS 60018
TELEPHONE: (847) 390-5000 FAX: (847) 390-5109

B10 Ballast

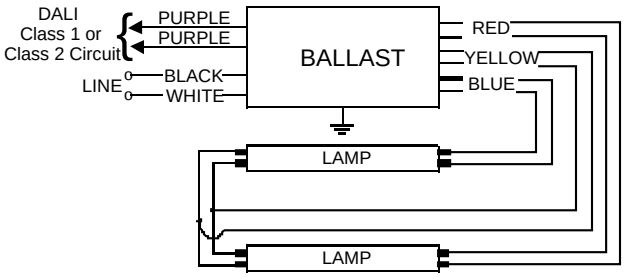
IDA-2S54@277

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.
* F54T5/HO	2	54	50/10	0.45	24/125	0.03/1.00	10	0.98	1.7	0.80
FC12T5/HO	2	55	50/10	0.42	24/114	0.03/0.90	10	0.98	1.7	0.79
FT55W/2G11	2	55	50/10	0.42	24/114	0.03/0.90	10	0.98	1.7	0.79

Wiring Diagram



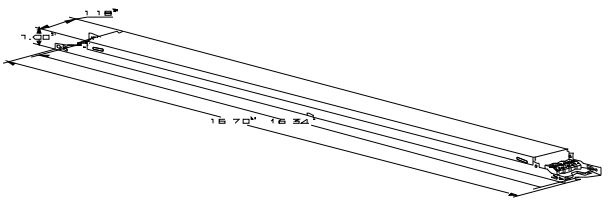
The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.
Black	0	0
White	0	0
Blue	0	0
Red	0	0
Yellow	0	0
Gray		0
Violet		0

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

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
16.70 "	1.18 "	1.00 "	16.34 "
16 7/10	1 9/50	1	16 17/50
42.4 cm	3 cm	2.5 cm	41.5 cm

Revised 01/16/2004

Data is based upon tests performed by Advance Transformer in a controlled environment and 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.

ADVANCE
O'HARE INTERNATIONAL CENTER · 10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018
Customer Support/Technical Service: Phone: 800-372-3331 · Fax: 630-307-3071
Corporate Offices: Phone: 800-322-2086

IDA-2S54@277	
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) with no damage to the ballast. IntelliVolt models shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.

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 throughout the dimming range in accordance with lamp manufacturer recommendations.

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, CFL lamps, and T8 lamps operating on 4-lamp ballast.

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 without damage.

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).

Section IV - Other

4.1 Ballast shall be manufactured in a factory certified to ISO 9002 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 fifteen-year history of producing electronic ballasts for the North American market.

SkyCalc: Skylight Design Assistant - Basic Inputs

Company Name: NNSOC

Project Description: OFFICE DESIGN

Design Skylight to Floor Ratio = 2.7%

Select Location User Generated w/ e-QUEST

Climate data loaded = Fredericksburg.wea3

Climate data needed =

Skylights:

Number of skylights	8	
Skylight width	4.5	ft
Skylight length	4.5	ft

At least 30 skylights needed for uniform daylighting

Max skylight spacing = 15 ft (1.5 x ceiling ht)

Skylight Description

Glazing type	Polycarbonate
Glazing layers	Double glazed
Glazing color	Medium White

Building

Building type	Office	
Bldg area	6,000	ft^2
Ceiling height	10	ft
Wall color	Off-white paint	

Skylight Well

Light well height	5	feet
Well color	Off-white paint	
Safety grate or screen	○ Yes, ◉ No	

Shelving/Racks or Partitions?

◉ Partitions, ○ Shelves/Racks, ○ None/Open

Partition height	4	ft
No data required	8	ft
Cubical width	8	ft
Cubical length	8	ft

Check Lighting Power Density on Optional_Input tab

Heating and Air Conditioning Systems

Air Conditioning	Mechanical A/C
Heating System	Gas/Oil Boiler

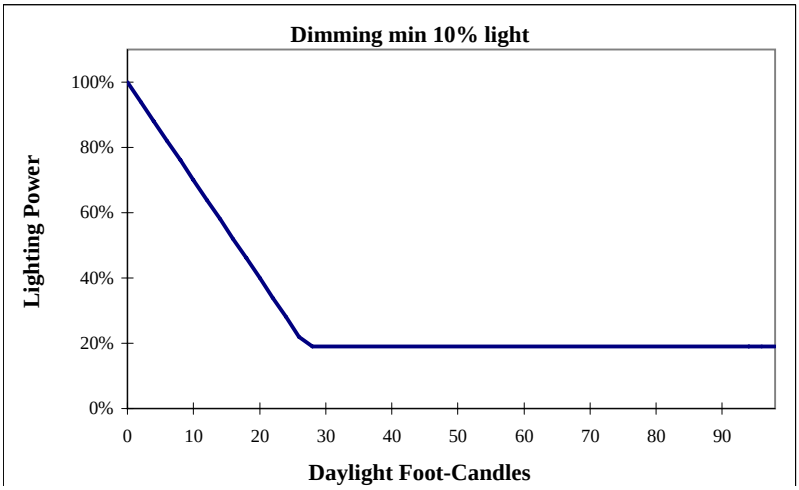
Electric Lighting

Lighting system	Direct/Indirect fluorescent	
Fixture height	8	ft
Lighting control	Dimming min 10% light	

Utilities

Average Elec Cost	$0.100	kWh
Heating Fuel Units	Therm	
Heating Fuel Cost	$0.500	/Therm

Lighting Control Graph - Lighting Setpoint = 30 fc



SkyCalc: Skylight Design Assistant - Optional Inputs

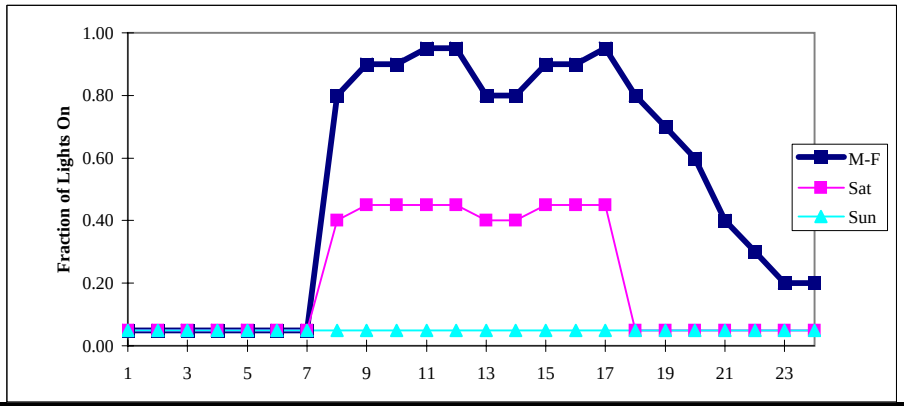
Company Name: NNSOC
Project Description: OFFICE DESIGN

Skylights	Default	User Revisions	Design Input
Skylight shape	Dome	Dome	Dome
Height of dome (Rise) (ft)	1.125		1.125
Visible transmittance	49%	72%	72%
Solar heat gain coefficient	54%	68%	68%
Curb type	Wood	Integral frame	Integral frame
Frame type	Metal w/ thermal brk	Metal w/ thermal brk	Metal w/ thermal brk
Unit U-value (Btu/h•°F•ft^2)	1.100	0.410	0.410
Dirt light loss factor	70%		70%
Screen or safety grate factor	100%		100%
Light well reflectance	70%	85%	85%
Well factor (WF)	#NAME?		#NAME?
Bottom of light well:			
Width (ft)	4.50	8.50	8.50
Length (ft)	4.50	8.50	8.50
Diffuser on bottom of well?	No	○ Yes, ◉ No	No

Building	Default	User Revisions	Design Input
Building width (ft)	55	43	43
Building length (ft)	110	Change width or area	140
Wall reflectance	70%		70%
Ceiling reflectance	70%	85%	85%
Floor reflectance	20%		20%
Shelving reflectance	40%		40%
Roof U-value (Btu/h•°F•ft^2)	0.063		0.063

Electric Lighting	Default	User Revisions	Design Input
Lighting setpoint (fc)	50	30	30
Task height (ft)	2.50		2.50
Lighting power density (W/ft^2)	#NAME?	0.81	0.81
Fraction lighting uncontrolled	10%		0.10
Lighting schedule	Office	Office	Office
Room and luminaire depreciation	80%	75%	75%

Lighting Schedule Graph

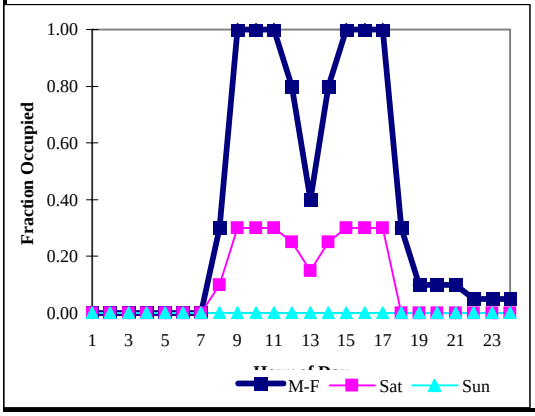


SkyCalc: Skylight Design Assistant - Optional Inputs

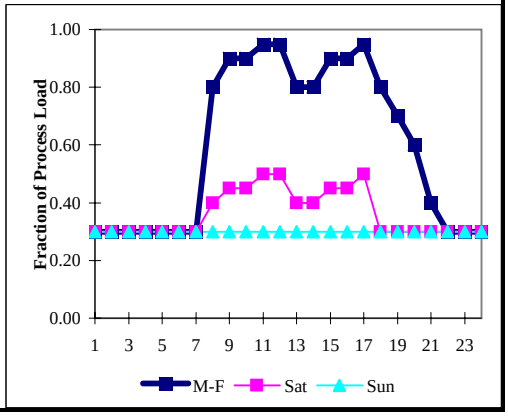
Company Name: NNSOC
Project Description: OFFICE DESIGN

Internal Loads	Default	User Revisions	Design Input
Number of people	24	42	42
Occupancy schedule	Office	Default	Office
Process (plug) loads (W/ft^2)	1.50		1.50
Process schedule	Office	Default	Office

Occupancy Schedule - Office

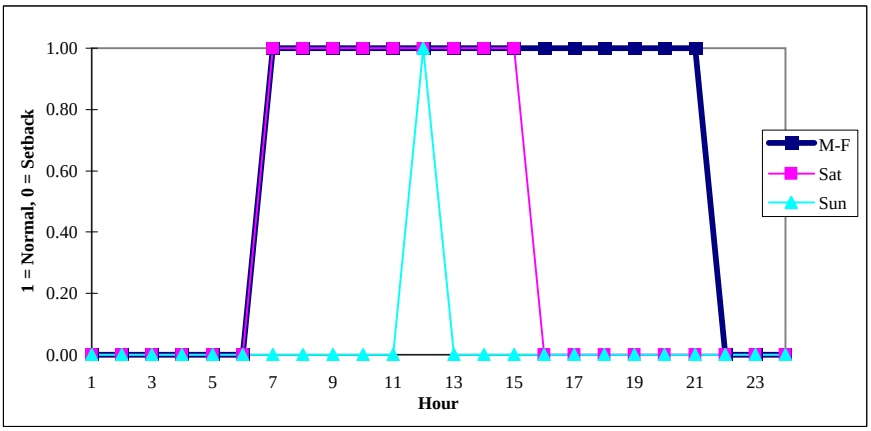


Process Schedule - Office



HVAC	Default	User Revisions	Design Input
Heating setpoint temperature (°F)	68		68
Heating setback temperature (°F)	55		55
Cooling setpoint temperature (°F)	72		72
Cooling setup temperature (°F)	88		88
Economizer (Y/N)	Y	○ Yes, ◉ No	N
Economizer setpoint (°F)	67		67
HVAC schedule	Office	Default	Office
Design outside air (cfm)	360		360

HVAC Schedule - Office



Annual Schedule	Default	User Revisions	Design Input
Starting Month	1		1

SPOT Analysis

Geometry Input

Spatial Characteristics

Dimensions

Width	48	ft
Length	43	ft
Height	10	ft
Workplane Height	2.5	ft
Wall Thickness	10	in
Skylight Depth	5	ft
Orientation	2	deg

Surface Reflectances

Floor	20%
Walls	60%
Ceiling	85%
Ground	15%
Mullions	50%
Lightshelves	80%
Overhangs	70%

Apertures and Overhangs

Architectural Element Specification

Architectural Element: Ceiling
Element Type: Skylight
Skylight Number: 1 copy...

Dist From West Wall	19.75	
Dist from South Wall	31.5	ft
Skylight Length	4.5	ft
Skylight Width	4.5	ft
Transmittance	60	%
Window Treatment	t	

Electrical Lighting

Electric Lighting Layout

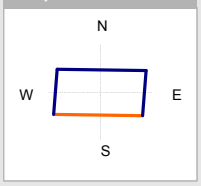
Electric Lighting Array: D copy...
finelite_S15_LSIT18033t Add
Auto-Center: Off

Zone	2	
Mounting Suspension	2	ft
Row Start	29	ft
Column Start	34	ft
Number of Rows	4	
Number of Columns	1	
Row Spacing	4	ft
Column Spacing	1	ft
Orientation	90	deg

Run Interactive View | Advanced Options | << BACK | NEXT >>

Interactive Display - Overall Space

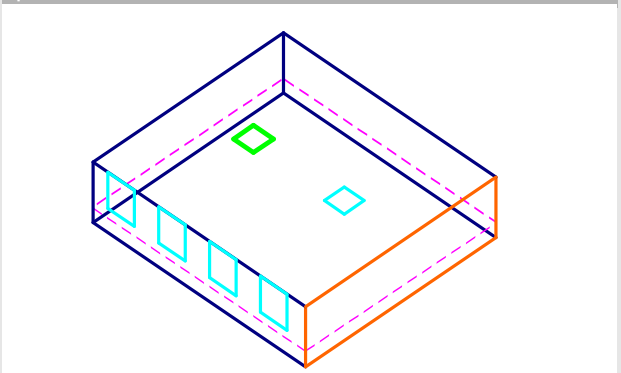
Compass



Legend

- Walls
- South Wall
- Workplane
- Window
- Active Element
- Lightshelf
- Overhang

Space Isometric



Interactive Display - Apertures and Overhangs

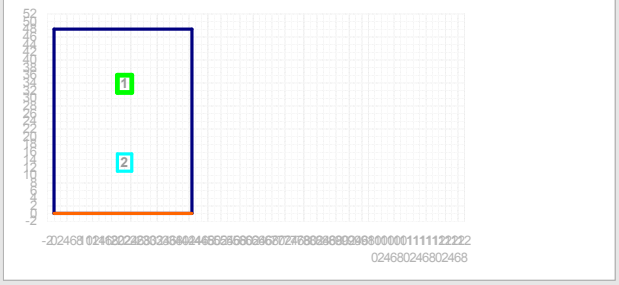
Legend

- Walls
- South Wall
- Workplane
- Window
- Active Element
- Lightshelf
- Overhang

Properties

Ceiling Area:	2064 sf
Glazing Area:	40 sf
WWR:	1.9 %

Reflected Ceiling Plan

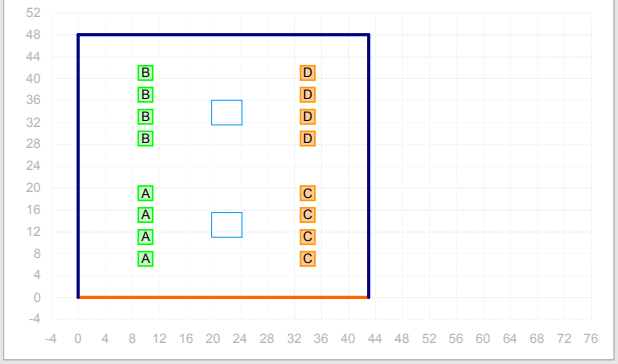


Interactive Display - Electrical Lighting

Legend

- Walls
- South Wall
- Zone 1
- Zone 2
- Zone 3
- Zone 4
- Skylight

Reflected Ceiling Plan



Site and Usage Input

Shade Control | << BACK | NEXT >>

Site Selection

SPOT Locations (USA) | State: Virginia | City: Richmond

Convert EPW File

Site Information

Latitude	37.5°
Longitude	77.3°
Prime Meridian	75
Elevation	164 ft

Legends

Weekly	
	Load < 33%
	33% < Load < 66%
	Load > 66%

Annual	
O	Occupied
U	Unoccupied
	Auto-Fill

Weekly Schedule

Hour	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
1am	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2am	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3am	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4am	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5am	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6am	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7am	0.3	0.3	0.3	0.3	0.3	0.0	0.0
8am	1.0	1.0	1.0	1.0	1.0	0.0	0.0
9am	1.0	1.0	1.0	1.0	1.0	0.3	0.0
10am	1.0	1.0	1.0	1.0	1.0	0.3	0.0
11am	1.0	1.0	1.0	1.0	1.0	0.3	0.0
12pm	0.6	0.6	0.6	0.6	0.6	0.3	0.0
1pm	1.0	1.0	1.0	1.0	1.0	0.3	0.0
2pm	1.0	1.0	1.0	1.0	1.0	0.3	0.0
3pm	1.0	1.0	1.0	1.0	1.0	0.3	0.0
4pm	1.0	1.0	1.0	1.0	1.0	0.3	0.0
5pm	0.6	0.6	0.6	0.6	0.6	0.0	0.0
6pm	0.3	0.3	0.3	0.3	0.3	0.0	0.0
7pm	0.2	0.2	0.2	0.2	0.2	0.0	0.0
8pm	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9pm	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10pm	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11pm	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12am	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Annual Schedule

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	O	O	O	O	O	O	O	O	O	O	O	O
2	O	O	O	O	O	O	O	O	O	O	O	O
3	O	O	O	O	O	O	O	O	O	O	O	O
4	O	O	O	O	O	O	O	O	O	O	O	O
5	O	O	O	O	O	O	O	O	O	O	O	O
6	O	O	O	O	O	O	O	O	O	O	O	O
7	O	O	O	O	O	O	O	O	O	O	O	O
8	O	O	O	O	O	O	O	O	O	O	O	O
9	O	O	O	O	O	O	O	O	O	O	O	O
10	O	O	O	O	O	O	O	O	O	O	O	O
11	O	O	O	O	O	O	O	O	O	O	O	O
12	O	O	O	O	O	O	O	O	O	O	O	O
13	O	O	O	O	O	O	O	O	O	O	O	O
14	O	O	O	O	O	O	O	O	O	O	O	O
15	O	O	O	O	O	O	O	O	O	O	O	O
16	O	O	O	O	O	O	O	O	O	O	O	O
17	O	O	O	O	O	O	O	O	O	O	O	O
18	O	O	O	O	O	O	O	O	O	O	O	O
19	O	O	O	O	O	O	O	O	O	O	O	O
20	O	O	O	O	O	O	O	O	O	O	O	O
21	O	O	O	O	O	O	O	O	O	O	O	O
22	O	O	O	O	O	O	O	O	O	O	O	O
23	O	O	O	O	O	O	O	O	O	O	O	O
24	O	O	O	O	O	O	O	O	O	O	O	O
25	O	O	O	O	O	O	O	O	O	O	O	O
26	O	O	O	O	O	O	O	O	O	O	O	O
27	O	O	O	O	O	O	O	O	O	O	O	O
28	O	O	O	O	O	O	O	O	O	O	O	O
29	O		O	O	O	O	O	O	O	O	O	O
30	O		O	O	O	O	O	O	O	O	O	O
31	O		O		O		O	O		O		O

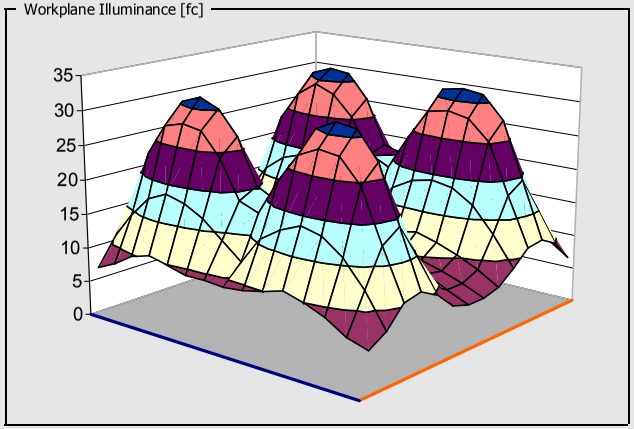
Electric Lighting Results

Interactive View | << BACK | NEXT >>

Nighttime Workplane Illuminance, [fc]

	Average	Max	Min	Max/Min	LPD
Zone 1	15.8	31.4	6.1	5.1	0.48
Zone 2	16.5	31.4	6.4	4.9	0.48
Total	**16.2**	**31.4**	**6.1**	**5.2**	**0.48**

Light Loss Factor	0.78	
Design Illuminance	30	fc



Width, [ft]	Length, [ft]													
45	7	11	15	16	13	9	7	7	8	12	16	17	13	9
42	8	14	23	25	18	11	9	9	10	16	23	25	19	11
39	10	17	27	30	21	12	10	10	11	18	28	30	22	13
36	11	19	28	31	22	13	10	10	12	19	30	31	23	13
33	10	18	28	30	22	13	10	10	12	19	28	31	22	13
30	9	16	24	27	20	12	10	10	11	18	25	28	20	12
27	9	14	19	20	17	11	10	10	11	15	20	21	17	12
24	9	12	18	19	16	11	10	10	11	13	19	20	16	11
21	9	16	23	25	19	12	10	10	11	17	24	26	19	12
18	10	18	27	30	22	13	10	10	12	19	28	31	22	13
15	11	19	28	31	23	13	10	10	12	19	29	31	23	14
12	10	18	28	31	22	13	10	10	11	19	28	31	22	13
9	9	16	25	27	19	11	9	9	10	17	25	28	20	12
6	7	12	17	19	15	9	8	8	9	13	18	20	15	9
3	6	8	10	11	10	7	6	6	7	9	11	11	10	7
	3	6	9	12	15	18	21	24	27	30	33	36	39	42

The data on this sheet represents the electric lighting (nighttime) workplane illuminance. Ideally, the nighttime workplane illuminance, scaled by an appropriate Light Loss Factor, will be a good estimate of the intended design illuminance of the space. Workplane zoning, the points on the workplane grid that are dominantly lit by a given electric lighting zone, is automatically determined from the luminaire zone layout.

Daylighting Results

Interactive View | View Report | View Climate Specific Illuminance | << BACK | NEXT >>

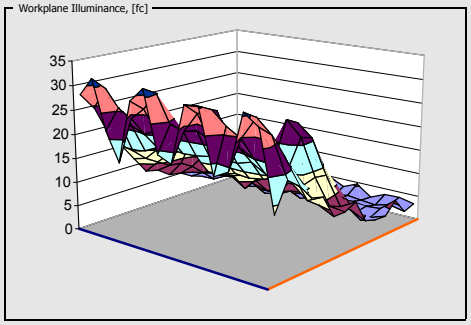
Annual Daylight Workplane Illuminance, [fc]

	Design Condition		Zone 1 Avg	Zone 1 Max	Zone 1 Min	Zone 2 Avg	Zone 2 Max	Zone 2 Min	Shades?
	Clear Sky								
◉	**Winter**	**8:00 AM**	18	32	7	6	23	2	
○		**10:00 AM**	45	130	16	25	126	5	
○		**12:00 PM**	66	178	22	33	184	6	
○		**2:00 PM**	227	1835	26	33	148	9	
○		**4:00 PM**	124	392	18	74	344	9	
○	**Equinox**	**7:00 AM**	22	37	8	8	34	3	
○		**8:00 AM**	39	116	18	22	113	5	
○		**10:00 AM**	68	241	25	43	238	8	
○		**12:00 PM**	97	287	33	54	305	8	
○		**2:00 PM**	349	3952	38	54	272	10	
○		**4:00 PM**	582	2605	50	53	211	16	
○		**6:00 PM**	38	63	16	26	64	10	
○	**Summer**	**5:00 AM**	11	20	4	4	14	2	
○		**6:00 AM**	27	56	9	12	55	3	
○		**8:00 AM**	58	202	22	37	204	7	
○		**10:00 AM**	88	303	34	56	326	9	
○		**12:00 PM**	114	376	39	65	380	10	
○		**2:00 PM**	509	4977	48	65	338	12	
○		**4:00 PM**	1015	3953	66	58	252	16	
○		**6:00 PM**	513	1235	48	129	1202	23	
○		**7:00 PM**	61	180	18	57	194	8	
	Overcast Sky								
○	**Winter**	**8:00 AM**	8	25	2	2	9	1	
○		**10:00 AM**	27	85	8	7	29	2	
○		**12:00 PM**	35	109	10	8	37	3	
○		**2:00 PM**	29	90	8	7	30	3	
○		**4:00 PM**	11	34	3	3	11	1	
○	**Equinox**	**7:00 AM**	11	34	3	3	12	1	
○		**8:00 AM**	25	77	7	6	26	2	
○		**10:00 AM**	46	145	13	11	49	4	
○		**12:00 PM**	56	174	16	14	59	5	
○		**2:00 PM**	50	158	15	12	53	4	
○		**4:00 PM**	32	99	9	8	34	3	
○		**6:00 PM**	5	15	1	1	5	0	
○	**Summer**	**5:00 AM**	2	8	1	1	3	0	
○		**6:00 AM**	15	48	5	4	16	1	
○		**8:00 AM**	41	128	12	10	43	4	
○		**10:00 AM**	60	189	18	15	64	5	
○		**12:00 PM**	68	214	20	17	72	6	
○		**2:00 PM**	63	196	18	15	66	6	
○		**4:00 PM**	45	141	13	11	48	4	
○		**6:00 PM**	20	63	6	5	21	2	
○		**7:00 PM**	7	22	2	2	7	1	
○	**Annual Average**		151			36			
○	**Annual Maximum**			4840			1376		
○	**Avg DA**		0.87	0.95	0.67	0.58	0.95	0.29	
○	**Avg MaxDA**		0.09	0.35	0.00	0.01	0.09	0.00	

Workplane Area	< 33%	33%-66%	66%-100%	> 100%
	46%	33%	18%	3%

Width, [ft]	3	6	9	12	15	18	21	24	27	30	33	36	39	42
45	28	24	19	15	12	8	7	5	5	3	3	3	3	3
42	32	29	21	15	12	11	9	9	7	5	3	3	2	5
39	22	26	21	15	15	13	17	15	10	6	4	3	3	4
36	16	24	20	17	15	17	24	21	15	6	4	4	3	5
33	29	26	21	17	16	16	23	22	15	7	3	3	4	4
30	32	30	21	17	16	16	16	16	11	6	4	3	3	4
27	19	24	23	17	13	11	10	9	7	4	5	3	4	4
24	18	24	23	17	13	12	8	9	6	4	5	3	4	5
21	30	28	22	17	14	13	11	10	6	6	3	5	2	6
18	30	29	23	17	13	15	18	18	10	6	4	4	3	4
15	18	26	22	18	14	17	24	23	15	7	5	3	4	5
12	19	25	20	16	15	16	21	21	15	6	5	4	3	3
9	31	29	20	16	14	13	14	14	9	7	3	4	3	4
6	29	27	22	17	12	10	9	8	6	3	3	4	4	5
3	13	19	17	14	13	8	8	10	5	4	4	6	3	4

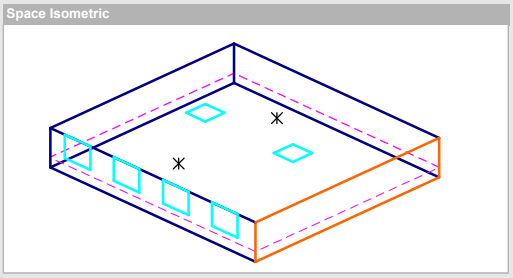
Length, [ft]



Photosensor Generator

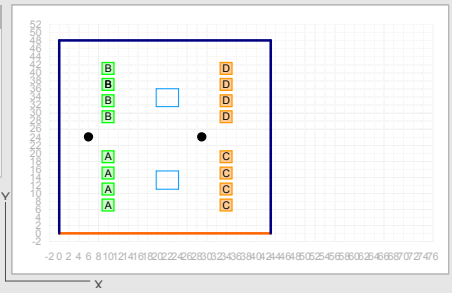
Photosensor Placement Diagrams

Space Isometric



Legend

Walls
South Wall
Zone 1
Zone 2
Zone 3
Zone 4
Skylight
Photosensor



Photosensor Placement

Revert to Generated Points

Photosensor Name	Mounting	Location			Aiming	Photosensor Type	Rotation
		X	Y	Z			
Sensor_1	C	6	24	10	D	Cosine	0
Sensor_2	C	29	24	10	D	Cosine	0

View Correlation to Zone: 1

Width, [ft]	2	5	8	11	14	17	20	23	26	29	32	35	38	41
44	33%	67%	53%	41%	54%	46%	0%	0%	0%	0%	0%	0%	0%	0%
41	32%	76%	23%	9%	37%	47%	0%	0%	0%	0%	0%	0%	0%	0%
38	73%	64%	15%	8%	31%	44%	3%	0%	0%	0%	0%	0%	0%	0%
35	78%	57%	15%	6%	28%	43%	1%	0%	0%	0%	0%	0%	0%	0%
32	51%	64%	15%	7%	28%	43%	0%	0%	0%	0%	0%	0%	0%	0%
29	38%	65%	17%	7%	34%	41%	0%	0%	0%	0%	0%	0%	0%	0%
26	76%	74%	41%	34%	46%	39%	0%	0%	0%	0%	0%	0%	0%	0%
23	68%	79%	60%	51%	52%	36%	0%	0%	0%	0%	0%	0%	0%	0%
20	33%	74%	22%	11%	37%	38%	0%	0%	0%	0%	0%	0%	0%	0%
17	38%	66%	15%	6%	30%	40%	0%	0%	0%	0%	0%	0%	0%	0%
14	75%	60%	13%	7%	27%	39%	0%	0%	0%	0%	0%	0%	0%	0%
11	69%	58%	15%	7%	28%	40%	0%	0%	0%	0%	0%	0%	0%	0%
8	35%	70%	17%	7%	29%	42%	0%	0%	0%	0%	0%	0%	0%	0%
5	37%	75%	32%	17%	44%	43%	0%	0%	0%	0%	0%	0%	0%	0%
2	79%	72%	79%	74%	61%	38%	0%	0%	0%	0%	0%	0%	0%	0%

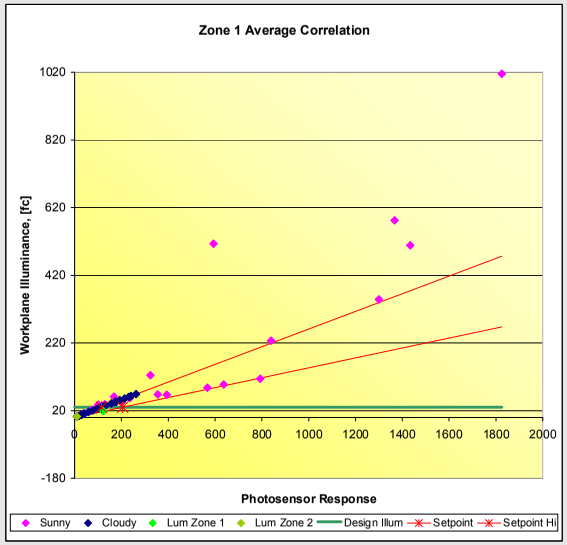
Length, [ft]

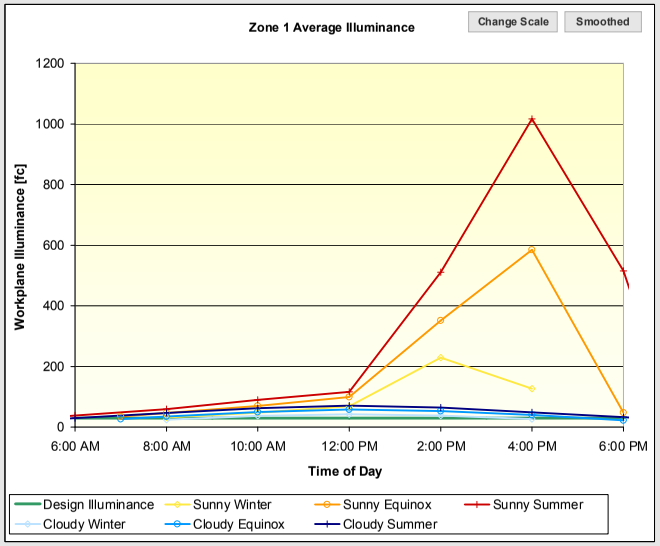
Photosensor Analyzer

Design Illuminance: 30 fc Control Type?: cont. dimming - sliding << BACK NEXT >>

Luminaire Zone	Photosensor Name	Nighttime Signal Setpoint	Actual Signal Setpoint	Signal Bandwidth	Min Light Output	Max Light Output	Average Illuminance Correlation			Performance Information			View Correlations		View Illuminance		View Light Output
							Clear Sky	Cloudy Sky	Electric	Night SetPt %	Avg. L.O.	Avg. Illum	Average	Minimum			
Zone_1	Sensor_1	134	115	90	0%	100%	49%	100%		86%	28%	117	View	View	Z1 Avg	Z1 Min	Z1 Dim
Zone_2	Sensor_2	125	ON	10	0%	100%	78%	100%		#VALUE!	100%	44	View	View	Z2 Avg	Z2 Min	Z2 Dim

Total Avg Total Min





		Zone1					Zone2					Total	
					Critical Point					Critical Point			
Clear Sky		Dimming Level	Average Illuminance	Minimum Illuminance	Length	Width	Dimming Level	Average Illuminance	Minimum Illuminance	Length	Width	Average Illuminance	Minimum Illuminance
Winter	8:00 AM	0.6	31.4	14.4	7.0	1.0	1.0	26.4	12.6	14.0	15.0	28.9	12.6
	10:00 AM	0.0	47.2	19.6	7.0	15.0	1.0	43.2	15.9	14.0	1.0	45.2	15.9
	12:00 PM	0.0	68.5	25.0	7.0	15.0	1.0	51.6	14.7	14.0	15.0	60.1	14.7
	2:00 PM	0.0	229.0	29.3	7.0	15.0	1.0	51.2	19.9	14.0	14.0	140.1	19.9
	4:00 PM	0.0	126.2	21.4	7.0	15.0	1.0	92.3	17.0	8.0	15.0	109.3	17.0
Equinox	7:00 AM	0.6	34.5	14.2	7.0	15.0	1.0	28.3	12.0	8.0	15.0	31.4	12.0
	8:00 AM	0.3	46.3	22.4	7.0	15.0	1.0	41.3	15.4	14.0	15.0	43.8	15.4
	10:00 AM	0.0	70.1	28.2	7.0	15.0	1.0	62.0	17.3	14.0	15.0	66.0	17.3
	12:00 PM	0.0	98.9	35.7	6.0	15.0	1.0	72.9	20.1	13.0	15.0	85.9	20.1
	2:00 PM	0.0	351.1	40.9	7.0	15.0	1.0	72.6	22.3	13.0	15.0	211.9	22.3
	4:00 PM	0.0	584.3	53.4	6.0	15.0	1.0	71.7	28.2	14.0	15.0	328.0	28.2
	6:00 PM	0.4	47.5	20.3	1.0	15.0	1.0	46.2	20.5	9.0	14.0	46.9	20.3
Summer	5:00 AM	0.7	26.6	10.8	7.0	15.0	1.0	24.1	10.7	8.0	15.0	25.4	10.7
	6:00 AM	0.5	37.5	15.0	7.0	1.0	1.0	31.6	15.0	9.0	15.0	34.6	15.0
	8:00 AM	0.0	59.6	24.8	7.0	15.0	1.0	55.9	16.8	14.0	15.0	57.8	16.8
	10:00 AM	0.0	90.0	36.8	7.0	15.0	1.0	74.2	18.8	14.0	1.0	82.1	18.8
	12:00 PM	0.0	115.9	41.4	6.0	15.0	1.0	83.9	19.6	14.0	15.0	99.9	19.6
	2:00 PM	0.0	510.8	50.5	6.0	15.0	1.0	83.5	21.6	14.0	15.0	297.1	21.6

	4:00 PM	0.0	1016.9	69.6	7.0	1.0	1.0	77.0	27.7	14.0	15.0	546.9	27.7
	6:00 PM	0.0	515.0	51.5	7.0	1.0	1.0	147.9	37.1	14.0	1.0	331.4	37.1
	7:00 PM	0.1	65.7	21.9	7.0	1.0	1.0	76.1	20.1	9.0	1.0	70.9	20.1
Overcast Sky													
Winter	**8:00 AM**	0.8	24.1	9.4	7.0	15.0	1.0	22.5	9.0	8.0	15.0	23.3	9.0
	10:00 AM	0.4	36.9	13.2	7.0	15.0	1.0	26.3	11.1	14.0	15.0	31.6	11.1
	12:00 PM	0.3	42.0	14.8	7.0	15.0	1.0	27.9	11.7	14.0	15.0	34.9	11.7
	2:00 PM	0.4	38.0	13.6	7.0	15.0	1.0	26.7	11.2	14.0	15.0	32.3	11.2
	4:00 PM	0.7	26.0	10.0	7.0	15.0	1.0	23.1	9.4	8.0	15.0	24.5	9.4
Equinox	**7:00 AM**	0.7	26.1	10.0	7.0	15.0	1.0	23.1	9.4	8.0	15.0	24.6	9.4
	8:00 AM	0.5	35.2	12.7	7.0	15.0	1.0	25.8	10.9	14.0	15.0	30.5	10.9
	10:00 AM	0.1	49.7	17.1	7.0	15.0	1.0	30.2	12.5	14.0	15.0	40.0	12.5
	12:00 PM	0.0	57.6	19.4	7.0	15.0	1.0	32.3	13.3	14.0	15.0	45.0	13.3
	2:00 PM	0.0	52.5	17.9	7.0	15.0	1.0	31.0	12.8	14.0	15.0	41.8	12.8
	4:00 PM	0.3	40.0	14.2	7.0	15.0	1.0	27.3	11.4	14.0	15.0	33.6	11.4
	6:00 PM	0.8	21.9	8.7	7.0	15.0	1.0	21.9	8.6	8.0	15.0	21.9	8.6
Summer	**5:00 AM**	0.9	20.4	8.3	7.0	15.0	1.0	21.4	8.3	8.0	15.0	20.9	8.3
	6:00 AM	0.6	29.1	10.9	7.0	15.0	1.0	24.0	10.1	8.0	15.0	26.6	10.1
	8:00 AM	0.2	46.3	16.0	7.0	15.0	1.0	29.1	12.1	14.0	15.0	37.7	12.1
	10:00 AM	0.0	62.4	20.8	7.0	15.0	1.0	33.5	13.7	14.0	15.0	47.9	13.7
	12:00 PM	0.0	70.3	23.1	7.0	15.0	1.0	35.4	14.5	14.0	15.0	52.8	14.5
	2:00 PM	0.0	64.7	21.5	7.0	15.0	1.0	34.0	14.0	14.0	15.0	49.4	14.0
	4:00 PM	0.1	49.0	16.9	7.0	15.0	1.0	30.0	12.4	14.0	15.0	39.5	12.4
	6:00 PM	0.6	32.2	11.8	7.0	15.0	1.0	24.9	10.6	14.0	15.0	28.6	10.6
	7:00 PM	0.8	23.4	9.2	7.0	15.0	1.0	22.3	8.9	8.0	15.0	22.9	8.9

Analysis Tool - Annual Analysis

<< BACK

Annual Results

	Zone1	Zone2	Zone3	Zone4	Total
Average Light Output	0.17	1.00			0.17
Electric Savings, [kWh/yr]	1130				1130
Heating Load, [kBtu/yr]	355				355
Cooling Load, [kWh/yr]	597				597
Average Illuminance, [fc]	145	52			99
Minimum Illuminance, [fc]	7	8			7
Maximum Illuminance, [fc]	4841	1383			4841

Building / Campus Information

Number of Similar Spaces	4	
Average Electricity Price	0.10	$/kWh
Average Heating Price	0.50	$/Therm

Building-Wide Results

	Total	Costs	
Electric Savings, [kWh/yr]	4519	$	452
Additional Heating Load, [kBtu/yr]	1420	$	7
Cooling Load Savings, [kWh/yr]	2386	$	239
	Total	$	683

Daily Results

Average Workplane Illuminance, [fc] | < 50% | 50%-100% | > 100% | Critical Day

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
January	44	45	73	79	76	84		54	44	45	74	74	64		50	54	87	71	86	92		86	43	53	85	66	134		75	54	96
February	91	93	72		61	80	48	51	85	152		87	51	109	78	95	110		66	78	57	52	92	113		47	78	107				
March	107	98	69		95	119	122	106	115	157		111	111	53	102	76	75		124	84	107	97	51	122		141	108	116	60	53	61
April		142	123	152	51	55	124		61	52	165	156	50	172		136	56	135	120	172	63		105	167	182	50	69	182		57	
May	78	55	167	196	219		195	114	57	204	141	68		64	158	169	150	74	139		144	150	166	72	55	163		72	141	107	136
June	173	94		72	95	115	49	125	175		128	77	132	186	94	81		156	153	167	192	155	199		196	203	161	143	107	68	
July		100	116	120	85	201	226		146	137	65	187	198	199		91	139	197	140	171	174		59	173	189	152	118	68		144	100
August	133	157	153	176		120	125	130	151	134	93		65	80	129	125	67	75		42	132	139	121	164	194		123	114	124	132	112
September	90		98	129	110	128	142	176		115	62	48	50	78	139		70	115	118	97	95	153		65	92	86	80	53	140		
October	92	38	81	106	51	71		37	97	107	86	96	64		95	92	92	96	99	94		91	89	95	42	47	61		86	93	71
November	68	38	69		78	39	44	35	68	108		76	81	69	40	71	119		68	64	80	39	56	101		52	47	55	62	74	
December	67		45	65	54	76	75	76		59	45	44	49	76	91		71	69	49	51	38	60		73	47	70	61	75	69		49

Hourly Results

Average Workplane Illuminance, [fc] | < 50% | 50%-100% | > 100% | Critical Hour

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
January							20	22	30	35	42	48	91	127	198	179	23	20	20					
February							20	24	34	38	47	53	105	145	227	206	44	23	20					
March							22	29	38	43	53	61	112	166	268	254	117	41	20					
April							27	35	45	50	60	66	126	185	255	258	190	85	22					
May							31	38	48	55	66	73	147	211	286	285	227	123	30					
June							33	40	50	60	68	70	144	215	273	293	284	167	40					
July							31	39	49	58	67	77	156	226	316	313	271	156	43					
August							28	35	45	53	61	71	139	200	311	285	206	95	24					
September							25	33	42	50	61	66	123	172	257	221	113	39	20					
October							21	31	40	43	53	58	109	148	231	191	47	22	20					
November							20	26	34	37	44	49	90	121	180	126	22	20	20					
December							20	23	31	36	42	46	83	116	160	136	20	20	20					

Detailed Results

Annual Average Illuminance, [fc] | < 50% | 50%-100% | > 100% | Critical Point

Width, [ft]	3	6	9	12	15	18	21	24	27	30	33	36	39	42
45	520	276	252	62	71	65	39	35	30	54	56	33	28	24
42	370	271	186	105	76	51	55	73	65	63	44	44	57	27
39	79	89	96	188	75	87	136	135	73	53	51	73	61	28
36	305	171	161	149	80	130	173	150	99	62	78	75	41	31
33	516	271	249	66	86	109	133	132	120	83	75	52	39	29
30	357	264	181	103	97	66	87	111	91	50	48	47	36	28
27	68	82	90	181	67	63	89	85	43	38	39	37	31	28
24	308	166	156	141	50	85	81	57	37	33	37	36	31	27
21	518	349	246	62	75	74	58	58	48	44	44	43	34	26
18	351	259	181	104	98	75	104	106	78	53	51	50	37	27
15	143	81	89	161	77	104	150	151	100	60	52	51	38	28
12	474	171	154	144	57	99	146	147	90	59	52	50	38	28
9	367	265	157	56	48	56	74	72	57	45	45	46	34	25
6	180	165	164	64	56	54	37	36	31	31	33	33	27	21
3	42	51	63	56	51	47	45	42	23	23	25	24	21	18

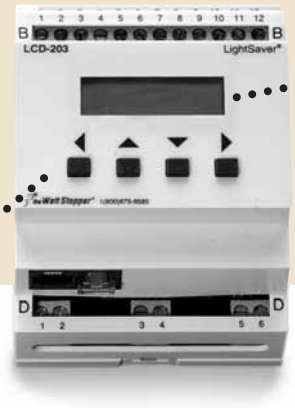
Length, [ft]

LightSaver® LCD-203 Dimming Controller

Low voltage automatic dimming control module

Three control channels with individually programmable settings

Pushbutton programming and automated setup



LCD display of photocell readings

Optional wall switch override for manual control

Open loop control

PROJECT

LOCATION/TYPE

Product Overview

Description

Watt Stopper/Legrand's LightSaver LCD-203 daylighting controller provides automatic dimming control for fluorescent and HID fixtures. It is an open loop controller providing up to three zones of control from a single photocell. It also integrates with occupancy sensors and accommodates individual occupant overrides via an optional wall switch.

Operation

The LCD controller is part of a system that includes the LS-290C photocell and the BT-203 Power Pack. Each of the LCD controller's three channels has a 0-10 VDC output and connects to its own dedicated relay in the power pack. The photocell measures daylight and transmits the data to the controller. Each channel in the controller raises or lowers light levels, while the respective relays in the power pack switch lighting on or off. When daylight is adequate for a channel to fully dim, lights switch off after an adjustable time delay. This capability can be disabled for zones where lighting should remain on.

Multiple Channel Control

To achieve balanced dimming control, users group fixtures receiving comparable daylight levels into up to three control groups or zones. Zones closest to the daylight source are dimmed the most, while zones further away from the daylight source dim less. Unused channels may be disabled.

Applications

The LCD controller is suitable for a wide range of applications, such as open office areas, classrooms, retail stores, and any application with skylights. It is particularly suitable for applications that require independently dimming fixtures in adjoining zones. The load shedding capability can further reduce light levels during critical periods or during periods of reduced occupancy. If an occupancy sensor is used, its non-occupancy signal initiates dimming by the LCD controller prior to turning lighting off.

Features

- Simplified setup and calibration
- Optional dimming wall switch (LS-4C) provides manual dimming and ON/OFF control so users can adjust lighting as desired
- Seven individually adjustable parameters for each channel: setpoint, minimum output, maximum output, ramp rate, fade rate, cutoff time delay, load shed limit
- Menu-driven, pushbutton programming without special tools
- Automatic internal calculation for dimming requirements of individual channels for simplified setup
- DIN rail mounting
- California Title 24-2005 compliant

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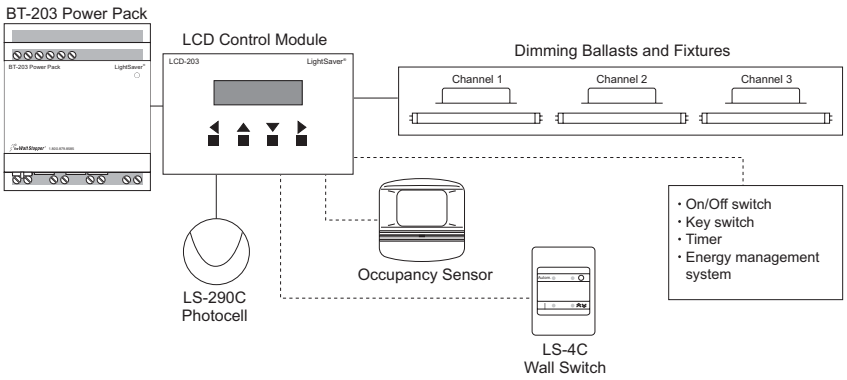
LCD Technical Information

Specifications

- Class 2 low voltage device
- Compatible with standard 0-10 volt dimming ballasts
- Controls up to 50 0-10 VDC ballasts per dimming channel
- Photocell range from 3 - 6,000 footcandles
- Programmable dimming and fade rates from 5-60 seconds
- Selectable cut off delay from 0-20 minutes or can be disabled
- Programmable minimum output from 0-4VDC
- Programmable maximum output from 6-10VDC
- Load shed output from 0-10 VDC
- Setpoint range from 5-60 fc
- 24VDC supply voltage provided by BT-203
- Control output voltage to ballasts 0-10VDC
- Dimensions: 3.5" x 2.81" x 2.5" (89mm x 71mm x 64mm) LxWxD
- UL and CUL listed; five year warranty

System Layout & Wiring

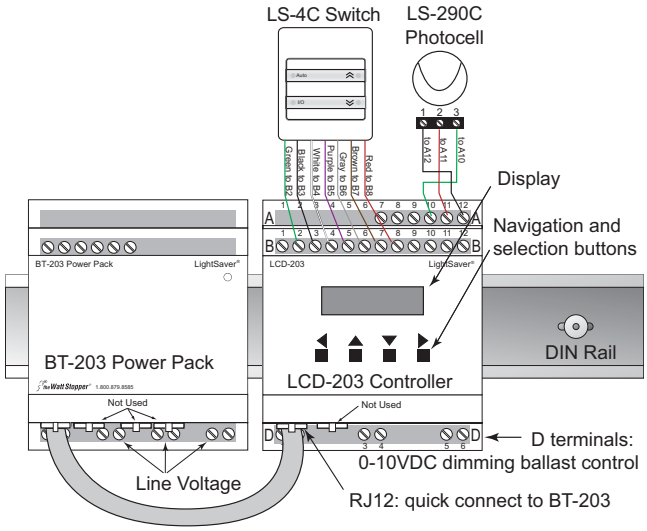
LCD System Layout



The LCD Dimming Control System consists of an LCD control module, an LS-290C photocell, and a BT-203 power pack.

Users may add options to the system to increase functionality, such as the LS-4C wall switch and occupancy sensors.

LCD-203 Wiring and Settings



Ordering Information

Catalog No.	Description	Voltage	Control Channels
☐ LCD-203	Dimming control module	24 VDC	three
☐ LS-290C	Photocell 3 - 6000 footcandle range		
☐ BT-203	Power Pack		

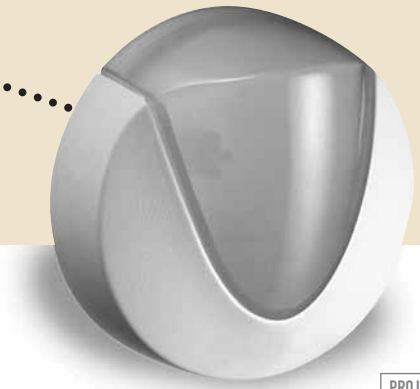
Dimming control system options:

Product group	Catalog No.	Description
Switch	☐ LS-4C	Wall Switch
Enclosure	☐ LS-E8	Screw-cover enclosure 8" x 8" x 4" (203.2mm x 203.2mm x 101.6mm)
	☐ LS-E12	Screw-cover enclosure 12" x 12" x 4" (304.8mm x 308.8mm x 101.6mm)

LightSaver® LS-290C Photocell

Photocell for LightSaver LCD-203 and LCO-203 controllers

Mounts vertically or horizontally



Footcandle range from 3 - 6000

Architecturally attractive design

PROJECT

LOCATION/TYPE

Product Overview

Description

Watt Stopper/Legrand's LightSaver LS-290C photocell provides the daylight data necessary for operation of the LCD-203 and LCO-203 daylighting control systems.

Operation

Utilizing a photodiode element, the LS-290C continuously measures ambient light levels. The sensor is positioned to "see" incoming daylight from either a window or skylight without seeing electrical light. Users select the applicable footcandle range by a jumper beneath the front cover.

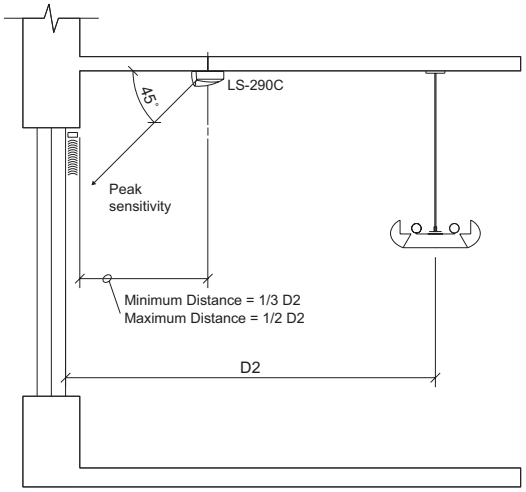
Specifications

- Three jumper-selectable footcandle ranges: 3-300 fc, 30-3000 fc, 60-6000 fc
- Low voltage, Class 2 device
- Protective hard plastic cover
- 3 conductor 22 AWG twisted cable equal to Belden 8443
- Maximum wire length is 250 feet (76.2m)
- Dimensions: 2" diameter x 1.2" deep (50.8mm diameter x 30.5mm deep)
- UL and CUL listed, five year warranty

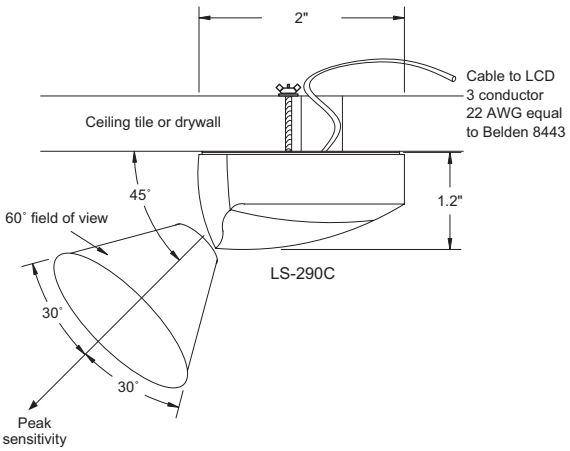
Ordering Information

Catalog No.	Description	Footcandle range
☐ LS-290C	Photocell	3 - 6000 (32 - 64,000 lux)

Photocell Placement



Installation and Wiring



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Pub. No. 9606

LightSaver® BT-203 Power Pack

Power pack for LightSaver LCO-203 and LCD-203 controllers

Three relays for switching line voltage

120/230/277 VAC transformer

Quick connect to LCD-203 and LCO-203 control modules

DIN rail mount

PROJECT

LOCATION/TYPE

Product Overview

Description

Watt Stopper/Legrand's LightSaver BT-203 Power Pack powers the LightSaver LCO-203 and LCD-203 control modules.

Specifications

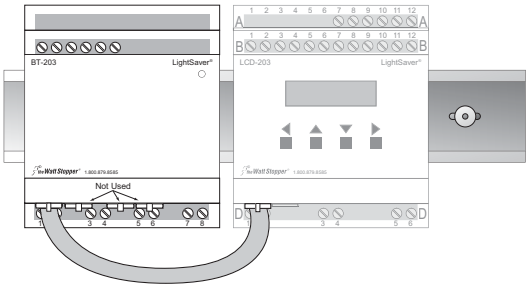
- Voltages: 120/230/277 VAC, 50/60 Hz
- Secondary power: 1000 mA @ 24 VDC (for control of larger loads, contact technical support)
- 3 normally open relays, 620 Va @ 120 or 277 VAC
- Dimensions: 2.76" x 3.57" x 2.36" (70.0mm x 90.5mm x 60.0mm) LxWxD
- UL and CUL listed, five year warranty

Operation

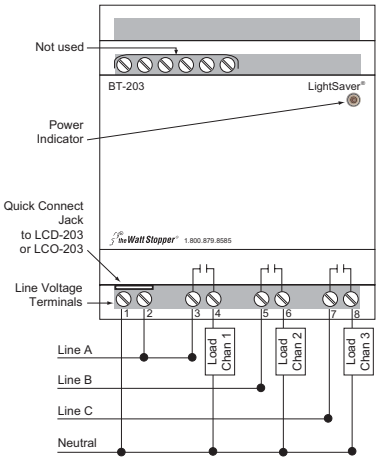
The BT-203 supplies low voltage power to LCO and LCD controllers. It connects via a quick connect cable. It has three normally open relays used to switch line voltage in response to signals from the connected controller. In addition, the power pack has an automatically resetting fuse. If the current drawn from the BT-203 exceeds the specifications, the +24VDC output will turn off and the LED will turn off. Upon removal of the fault condition and primary power, the BT-203 will restore the power.

Wiring & Mounting

Mounting



Wiring



Catalog No.	Description	Input Voltage	Output
☐ BT-203	Power Pack	120/230/277 VAC, 50/60 Hz	1000mA @ 24 VDC

Pub. No. 9805

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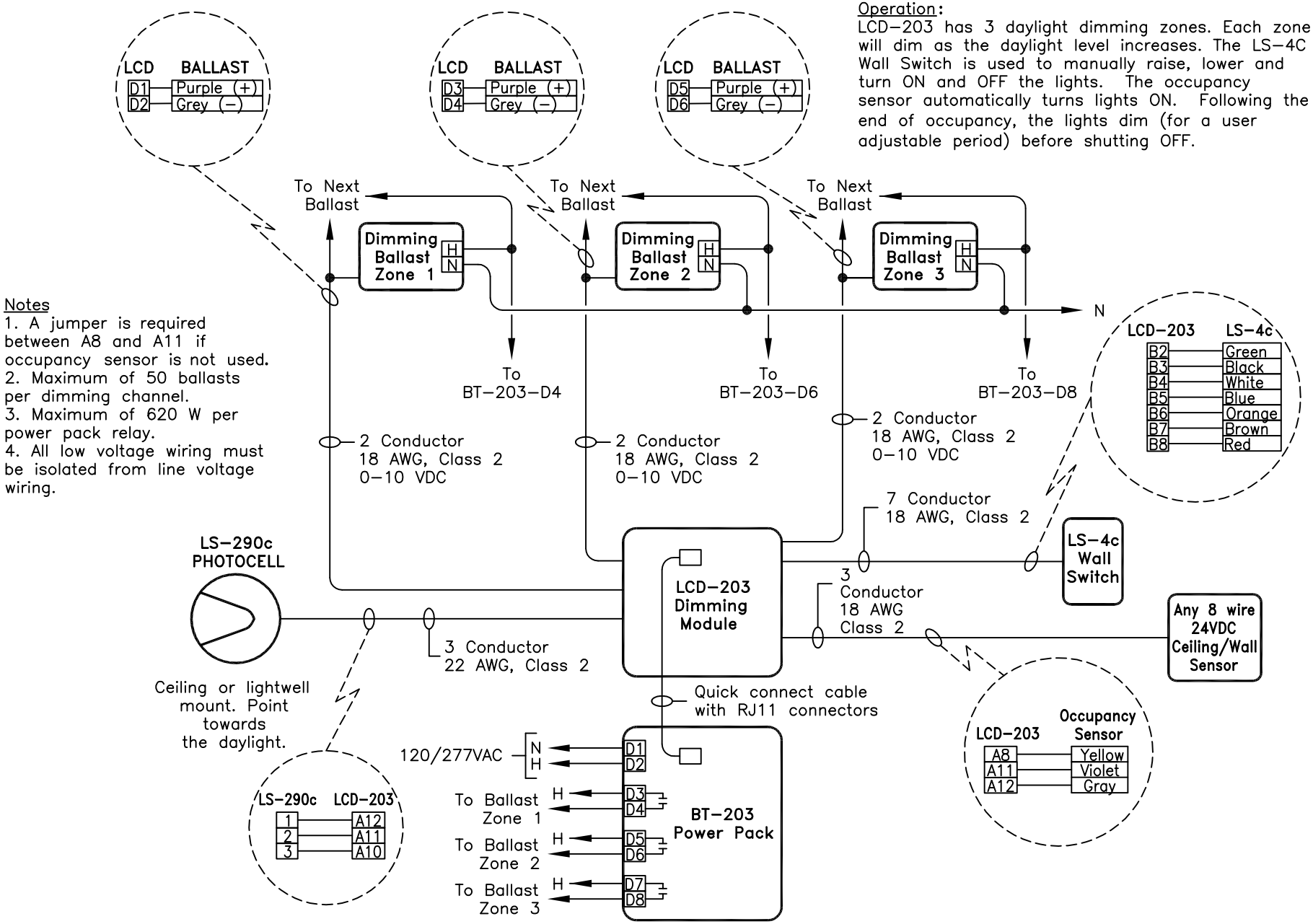
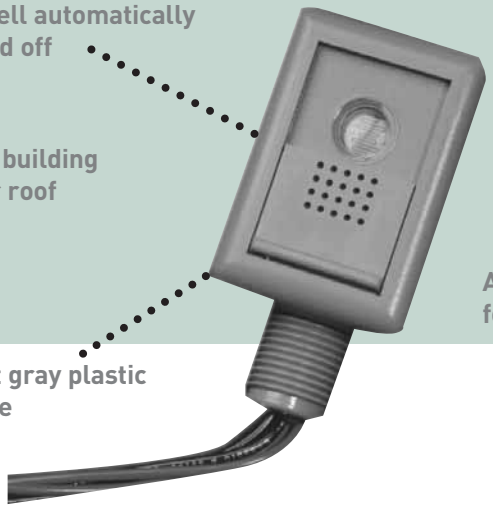


LCD–203 with LS–4C
And Occupancy Sensor

EM Photocell



PROJECT

LOCATION/TYPE

Product Overview

Description

The EM is a low voltage photocell used for controlling exterior lighting. It works with Watt Stopper power packs and lighting control panels (Lighting Integrator and LP series panels) by signalling a change in light levels to the panel.

Operation

Typically mounted so the light level window faces the northern sky, the EM photocell provides an ON signal when the ambient light level drops below a preset "dark" setpoint. It then provides a signal OFF as the ambient light level rises above the preset "light" setpoint. The setpoint can be changed for specific applications by opening and closing the photocell's aperture window. Normally, a lighting control panel or a power pack supplies power to the photocell. The photocell's relay contact red wires are connected to the panel or to a low voltage controlled load.

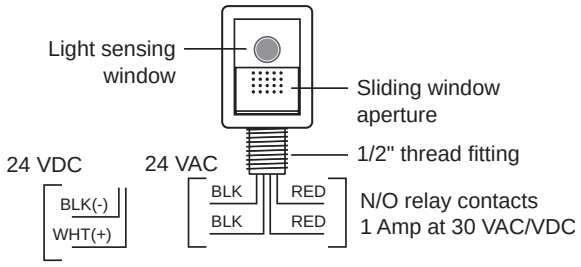
Specifications

- 1 - 15 footcandle range (10.8 - 161.5 lux)
- Isolated relay contacts 1 amp @ 30 VAC/VDC
- Power input: 24 VAC, 1 VA or 24 VDC, 1 VA
- Dimensions: 2.64"x 1.57"x 1.89" (67.1mm x 39.9mm x 48.0mm)
- One year warranty

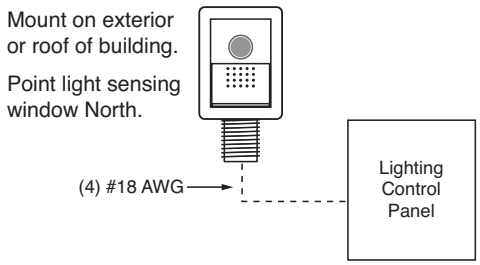
Features

- One set of normally open, isolated relay contacts; contacts are closed when sensed light level is below dark setpoint, open when light level is above light setpoint
- 8-second time delay and built-in setpoint deadband prevent cycling
- 1/2" threaded male conduit base for easy mounting on conduit fittings or junction boxes.

Accessory Enclosure Interior



Accessory Enclosure Interior



Ordering Information

Catalog No.	Description	Voltage
EM-24A2	Exterior photocell	24 VAC
EM-24D2	Exterior photocell	24 VDC

Pub. No. 8404

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GRX-4000 Control Units

DESCRIPTION

- Provide pushbutton recall of four preset lighting scenes.
- Control virtually any light source.
- Provide lockout options to prevent accidental changes.
- Include built-in infrared receiver for operation with an optional remote control.

Models available to:
- Control two to 24 zones of lighting.
- Provide easy setup of preset lighting scenes:
  GRX-4100 Control Units provide standard setup via pushbuttons on the Control Unit.
  GRX-4500 Control Units provide optional setup via a PC, including setting lighting levels in 1% increments.

GRX-4000 Control Units work with:
- GRAFIK Eye Wallstations
- GP and LP Dimming Panels
- XP Softswitch™ Panels

SPECIFICATIONS

Operating Voltage
- Low-voltage type Class 2 (PELV), 12VDC to 24VFW.
- Lightning Strike Protection: Meets ANSI/IEEE standard 62.41-1980. Can withstand voltage surges of up to 6000V and current surges up to 3000A.

Sources/Load Types
Operates sources with a smooth continuous Square Law dimming curve or on a full conduction non-dim basis via GP and LP Dimming Panels and XP Softswitch™ Panels.

Preset Controls
- 4 preset lighting scenes and off for up to 24 zones, accessible from Control Unit faceplate.
- 12 additional scenes stored in Control Unit, accessible via Wallstations and/or Control Interfaces.
- Light levels fade smoothly between scenes. Fade time: 0-59 seconds or 1-60 minutes. Can be set differently for each scene.

Key Design Features
- Meets IEC 801-2. Tested to withstand 15kV electrostatic discharge without damage or memory loss.
- Provides power failure memory: Automatically restores lighting to scene selected prior to power interruption.
- Has faceplate that snaps on with no visible means of attachment.

System Communications and Capacities
Low-voltage type Class 2 (PELV) wiring connects Control Units, Wallstations, and Control Interfaces:
- You can link up to 8 Control Units to control up to 64 zones.
- You can add up to 16 total Wallstations and Control Interfaces for a total of 24 control points.

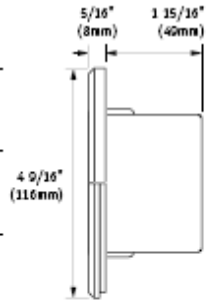
Environment
- 32-104°F (0-40°C). Relative humidity less than 90% non-condensing.

LUTRON. SPECIFICATION SUBMITTAL Page

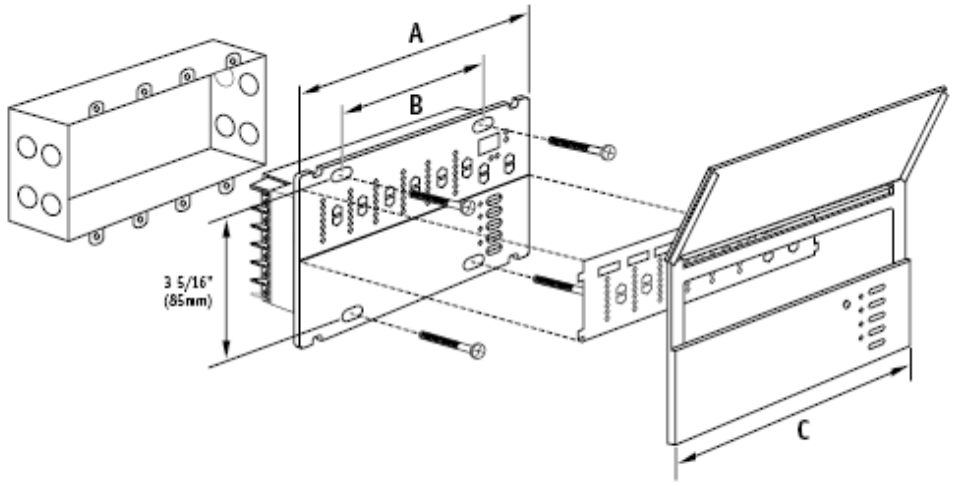
JOB NAME:	MODEL NUMBERS:		
NNSOC	GRX-4108-T-WH		
JOB NUMBER: 4-11-07			

DIMENSIONS AND MOUNTING

MODEL	SIDE VIEW	A	B	C	WALLBOX[1] U.S. SIZE	DEPTH
2-Zone: GRX-4102 GRX-4502		4 5/16" (123mm)	1 13/16" (46mm)	5.56" (141mm)	2 Gang	3.5" (89mm)
3-Zone: GRX-4103 GRX-4503		6 11/16" (168mm)	3 5/8" (92mm)	7.25" (184mm)	3 Gang	3.5" (89mm)
4-Zone: GRX-4104 GRX-4504		8 5/16" (208mm)	5 7/16" (138mm)	8.94" (227mm)	4 Gang	3.5" (89mm)
6-Zone: GRX-4106 GRX-4506		8 5/16" (208mm)	5 7/16" (138mm)	8.94" (227mm)	4 Gang	3.5" (89mm)
8-Zone: GRX-4108 GRX-4508		8 5/16" (208mm)	5 7/16" (138mm)	8.94" (227mm)	4 Gang	3.5" (89mm)
16-Zone: GRX-4116 GRX-4516		8 5/16" (208mm)	5 7/16" (138mm)	8.94" (227mm)	4 Gang	3.5" (89mm)
24-Zone: GRX-4124 GRX-4524		8 5/16" (208mm)	5 7/16" (138mm)	8.94" (227mm)	4 Gang	3.5" (89mm)



[1] Can be ordered from Lutron as Part Number 241-519 (1 Gang gangable boxes).

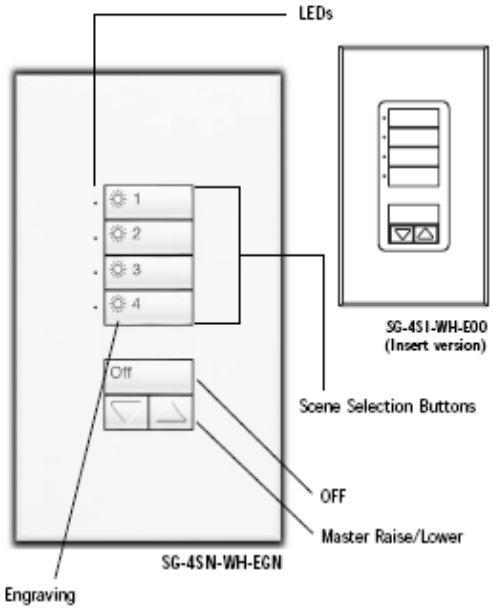


JOB NAME:	MODEL NUMBERS:	
NNSOC	GRX-4108-T-WH	
JOB NUMBER: 4-11-07		

COLOR AND FINISH CODES

SG-4SN-___-___

5-Button Wallstation with Raise/Lower



DESCRIPTION

Used to select and adjust scenes in GRAFIK Eye Control Units.

- Large, rounded buttons are easy to touch.
- Backlit buttons with optional on-button engraving make it easy to find and operate the control in low light conditions.
- Optional on-button engraving is angled up to the eye for easy reading.
- Scene selection buttons activate scenes 1 to 4, 5 to 8, 9 to 12, or 13 to 16 depending on how you set DIP switches 5 and 6.
- Status LEDs show which scene is selected.
- Off button turns all lights off.
- Master raise/lower brightens or dims all lighting in the selected scene.

Works with GRX-3000 and GRX-4000 Control Units. Can be set up to select scenes in just one Control Unit or a group of up to eight Control Units.

SPECIAL FINISH AND ENGRAVING

- On-button engraving is available for improved clarity of control functions in low light conditions.
- Three engraving options are available: General Engraving, Standard Engraving, & Non-Standard Text Engraving.For more details, please refer to the *seeTouch* Ordering Guide (P/N 367-274) or visit the website at www.lutron.com/seetouch.

FUNCTIONS

DIP SWITCH SETTINGS 5 6	Scene selection buttons activate...
	Scenes 1 to 4
	Scenes 5 to 8
	Scenes 9 to 12
	Scenes 13 to 16

Please note: DIP Switches 7-10 are set at the factory. Consult Lutron when changing 7-9(may change functionality of control). Dip switch 10 controls the button backlight.All settings are explained in the product installation guide.

LUTRON. SPECIFICATION SUBMITTAL Page

JOB NAME:	MODEL NUMBERS:	
NNSOC	SG-4SN-WH-EGN	
JOB NUMBER: 4-11-07		

GP Dimming Panels

GP3/4
Mini Panels

GP8-24
Standard-Size Panels

GP36
Large-Size Panels

GP48-144
Large-Size Panels

DESCRIPTION

- Provide power and dimming for up to 144 load circuits.
- Control any light source, including full-conduction non-dim.

Models available for:

- 100-127V, 220-240V (non CE), 230V (CE), and 277V.
- 3 to 144 circuits.
- Different feed types and breakers.

GP Dimming Panels work with:

- GRX-4000 Control Units
- GRAFIK 5000 and 6000 Systems
- LP Dimming Panels
- XP Softswitch™ Panels
- DMX512 dimming systems via the 2LINK™ option.

LUTRON. SPECIFICATION SUBMITTAL Page

JOB NAME:	MODEL NUMBERS:	
NNSOC	GP8-2774T6-ML-20-CGP-344	
JOB NUMBER: 4-11-07		

rev gp-4a 7.20.00

GP8-24 STANDARD-SIZE MODELS (100-127V AND 277V)

Only standard panels listed. Consult Lutron for options.

100-127V Power

NUMBER OF CIRCUITS	MODELS AVAILABLE FOR . . . FEED TYPE	PANEL FEED	MAXIMUM FEED	BRANCH CIRCUIT BREAKER[1]
GP 8	1Ø, 2W	Main Lugs Only	125A	15A
			175A	20A
	1Ø, 3W	Main Lugs Only	60A	15A
			80A	20A
		60A Main Breaker	60A	15A
		80A Main Breaker	80	20A
	3Ø, 4W	Main Lugs Only	50A	15A
			60A	20A
		50A Main Breaker	50A	15A
		60A Main Breaker	60A	20A
GP 12	1Ø, 3W	Main Lugs Only	100A	15A
			125A	20A
	3Ø, 4W	Main Lugs Only	60A	15A
			80A	20A
		60A Main Breaker	60A	15A
		80A Main Breaker	80A	20A
GP 16	1Ø, 3W	Main Lugs Only	125A	15A
			175A	20A
		125A Main Breaker	125A	15A
		175A Main Breaker	175A	20A
	3Ø, 4W	Main Lugs Only	100A	15A
			125A	20A
		100A Main Breaker	100A	15A
		125A Main Breaker	125A	20A
GP 20	3Ø, 4W	Main Lugs Only	110A	15A
			150A	20A
		110A Main Breaker	110A	15A
		150A Main Breaker	150A	20A
GP 24	3Ø, 4W	Main Lugs Only	125A	15A
			175A	20A
		125A Main Breaker	125A	15A
		175A Main Breaker	175A	20A

[1] 20/16A, 15/12A continuous load rating.

277V Power

NUMBER OF CIRCUITS	MODELS AVAILABLE FOR . . . FEED TYPE	PANEL FEED	MAXIMUM FEED	BRANCH CIRCUIT BREAKER[1]
GP 8	1Ø, 2W	Main Lugs Only	175A	20A
	3Ø, 4W	Main Lugs Only	60A	
		60A Main Breaker	60A	
GP 12	3Ø, 4W	Main Lugs Only	80A	
		80A Main Breaker	80A	
GP 16	3Ø, 4W	Main Lugs Only	125A	
		125A Main Breaker	125A	

WIRE SIZES

Feed Wiring

PANEL FEED	WIRE SIZES
Main Lugs Only	#14 AWG (2.0mm²) to #2/0 AWG (50mm²)
50A-100A Main Breakers	#14 AWG (2.0mm²) to #1/0 AWG (50mm²)
125A-175A Main Breakers	#4 AWG (25mm²) to 350 KCMIL(MCM)

Load Circuit Wiring

Connect to Terminal Blocks.
#14 AWG (2.0mm²) to #10 AWG (4.0mm²)

JOB NAME:	MODEL NUMBERS:		
NNSOC	GP8-2774T6-ML-20-CGP-344		
JOB NUMBER: 4-11-07			