














Appendix A – Luminaire and Control Schedule

Luminaire Schedule										
Type		Manufacturer	Product Name	Catalog Number	Description	Lamp	Voltage	Ballast	Watts	Location
G1		Lithonia Lighting	I-Beam	IB 454L WDS MVOLT	2x4 Fluorescent high bay luminaire utilizing cool running technology. The housing is made of heavy gauge steel with high gloss baked white enamel.	FP54 841 HO ECO	277	Mark 10 Powerline	54	Auxiliary Gymnasium
L1		Gotham Lighting	8" PDPF	PDPF 32TRT 8AR LD CGL MVOLT	8" satin silver pendant supported by black cord. The housing is durable heavy gauge aluminum housing with specular reflector.	CF32DT E IN 841 ECO	277	ICF 2S26 M1 BSQS	27	Lobby
L2		Elliptipar	F114	F114- L140-F- 02-2	Wall mounted wall washer with semi white gloss finish on the outside housing made of aluminum.	FT40 DL 841 RS ECO	277	Integral Electronic Ballast	40	Lobby
L3		Philips Alkco	Sliques T2	SK213- 120- WHG	Sleek 3/4" under cabinet fluorescent luminaire with miniature integral ballast. The housing is an extruded aluminum with a specular asymmetric reflector.	FM13 T2	120	Integral Miniature Ballast	13	Lobby
S1		Elliptipar	251	M 251 70G T 07 1 00	Recessed metal halide wall wash for concrete/ outdoor applications with silicon seals and a silver corrosion resistant housing/ finish.	MC70T6 U G12 830	277	71A5237BP	85	Exterior
S2		Erco	Visor III Floor Wash Light	330304	Circular recessed floor wash light with silicon seals and corrosion resistant aluminum housing with silver finish.	MC39 T6 U G12 830	277	71A50.37BP	48	Exterior
S3		Philips Gardco	Canopy	220 P 42TRF 277 NP	Circular down light with silicon seals and die cast aluminum housing and natural aluminum finish.	F42TBX 830 A ECO	277	ICF 2S26 H1 LD@ 277	46	Exterior
S4		Erco	Beamer	34070	Hinged surface mounted direct luminaire with corrosion resistant cast aluminum and silicon seals.	MC20TC U G8.5 830	277	71A50.37BP	25	Exterior
S5		Se'lux	Saturn 2 Cutoff	SAC2 R5 1 H070T6 830 SV 277 DS	Pole mounted die cast aluminum housing with full cutoff option and weatherproof gaskets. Match existing campus pole luminaire except with full cutoff option.	MC70 T6 U G12 830	277	71A5237BP	85	Exterior

S6		Erco	Bollard	33348	Circular bollard with corrosion resistant cast aluminum and silicon seals. Reflector located at top of bollard.	MC39 T6 U G12 830	277	71A50.37BP	48	Exterior
S7		Erco	Grass hopper	34035	Square LED ground mounted focal point luminaire with die cast aluminum corrosion resistant housing and silicon seals.	LED	277	N/A	14	Exterior
W1		Gotham Lighting	AFLP	AFLP 1/32TRT 8AR LD MVOLT	8" low profile ceiling recessed down light with a galvanized steel housing and semi specular reflector.	CF32DTE IN 841 ECO	277	ICF 2S26 M1 BSQS	27	Weight
W2		Litecontrol	Acros M5	P-ID- 59M 1 4 T5 PBCWM	4' direct/indirect pendant mounted luminaire with parabolic baffle with matte white finish.	FP54 841 HO ECO	277	ICN 4S5490 C2LS @277	53	Weight
W3		Focal Point	Cove light	FCVM 24 1T5 1C 277 E	Low profile luminaire with steel gauge housing and reflector fabricated of low iridescent aluminum.	FP28 841 PM ECO	277	ICN 2S54 N	29	Weight

Control Schedule						
Type		Manufacturer	Product Name	Catalog Number	Description	Location
DC		Lutron	Automatic Day-Lighting Control	OMX-DACPI	Interface that will interpret and control photocell and dimming proportions	Gymnasium
DP		Lutron	Dimming Panel	GP8-2774T8-ML-20-CGP344	480Y/277V 3PH., 4W Dimming Panel with 8 circuits	
EM		Lutron	Emergency Lighting Interface	LUT-ELI-3PH	Relay device that will automatically switch the emergency lights on when normal power has been lost.	Gymnasium
GE		Lutron	Grafik Eye QS	QSGRJ-XP	Interface unit that will serve as the main control unit for the entire system	Gymnasium
O		Lutron	Passive Infrared Ceiling Sensor	LOS-CIR 1500-WH	Passive infrared occupancy sensor with 1500 SF coverage.	Gymnasium
PC		Lutron	Ceiling Mounted Photocell	MW-PS-WH	Ceiling mounted photocell that will measure day-light levels.	Gymnasium
RE		Lutron	Control Interface	GRX-IO	Relay device that will be used to connect to an astronomical time clock or Grafik Eye system.	
TC		Watt Stopper	Astronomical Time Clock	MSC-100	Astronomical Time Clock that will control lighting via a relay so, that lights can come on at specific time	

Appendix B – Specification Sheets

Luminaire Type G1



FEATURES & SPECIFICATIONS

INTENDED USE — The I-BEAM fluorescent high bay is an ideal one-for-one replacement of common metal halide high bay systems. The unique Cool Running Technology provides trouble-free operation in ambient spaces up to 65°C. Applications include manufacturing, warehousing, commercial facilities and retail. The fluorescent I-BEAM fixture performs at mounting heights from 15'-40'. **Certain airborne contaminants can diminish integrity of acrylic. Click here for Acrylic Environmental Compatibility table for suitable uses.**

ATTRIBUTES — I-BEAM fixtures features Cool Running Technology for ambient operation up to 65°C. Backed by a full five-year ballast warranty at 55°C, three-year ballast warranty at 65°C. Designed for optimum performance using T5HO fluorescent lamps. The I-BEAM fixture provides the best option for applications requiring a rugged fixture construction coupled with excellent fixture performance. Optical designs for your choice of narrow distribution for aisles or wide distribution for general lighting. Typical arrangement provides over 90% luminaire efficiency. Available with four- or six-lamp cross-section with your choice of full direct component or with uplight. Easy two-point mounting with convenient aircraft cable provides reliable installation, eliminates fixture sag and provides sturdy installation. Single-point mounting available. Available in MVOLT (120-277V) or HVOLT (347-480V).

CONSTRUCTION — Channel is formed of heavy-duty code-gauge steel to stand up to the most demanding elements. Lamp holder assembly protects from incidental damage to reflectors during installation. Sockets include secure positioning rotating collars with enclosed contacts. Access plate on the back of the channel housing allows quick and easy wiring.

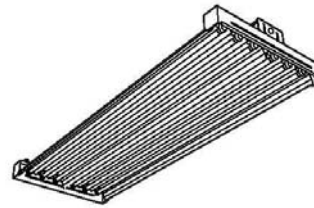
FINISH — Channel is high-gloss white baked enamel; five-stage iron phosphate pre-treatment ensures superior paint adhesion and rust resistance.

OPTICAL SYSTEM — Two optical systems are available. Narrow distribution (ND) is ideal for narrow or aisle lighting applications and features precision-formed segmented optics utilizing Alanod Miro®4 specular aluminum reflector. Provides 95% reflectivity and warranted for 25 years. Wide distribution (WD) includes high-reflectance white finish for general or open areas.

ELECTRICAL SYSTEM — Thermally protected, resetting, Class P, HPF, A+ sound-rated electronic ballast. AWM TFM or THHN wire used throughout rated for required temperatures. Ballast disconnect (BDP) is standard unless EL14 or cordset is requested.

INSTALLATION — Suitable for suspension by chain, cable, hook monopoint or pendant monopoint. Fixture should be mounted at a minimum plenum height of 18 inches.

Catalog Number	
Notes	Type



IB

**Fluorescent High Bay
4-, 6- or 8-lamp T5**



PATENT PENDING



Specifications

Length: 48 3/8 (1,227)

Width: 17 5/8 (448)

Depth: 4 3/8 (111)

Weight: 17 lbs. (7.71 kg)

All dimensions are inches (millimeters).

Specifications subject to change without notice.

LISTING — UL/C-UL listed to US and Canadian safety standards for ambient operation up to 65°C. Suitable for damp locations. NOM Certified (see Options.)

WARRANTY — Guaranteed for one year against mechanical defects in manufacturing. Ballast warranty — Five years when operated in 55°C or less ambient conditions, three years when operated in 65°C or less ambient conditions. (Four- and six-lamp fixtures only.)

ORDERING INFORMATION

For shortest lead times, configure product using **standard options (shown in bold)**.

Example: IB 454L

IB							
Series	Number of lamps/wattage	Voltage	Ballast	Lamps installed	Options		
IB I-BEAM	<u>Lamps installed¹</u> 454L 4-lamp 54W T5HO 654L 6-lamp 54W T5HO 854L 8-lamp 54W T5HO <u>Unlamped</u> 454 4-lamp 54W T5HO 654 6-lamp 54W T5HO 854 8-lamp 54W T5HO	(blank) MVOLT; 120V-277V HVOLT 347V-480V	(blank) Program start, 1.0 BF LCR90 Less Cool Running ³	(blank) F54T5HO/841 LP835 F54T5HO/835 LP830 F54T5HO/830 LP865 F54T5HO/865 <u>Amalgam lamps⁴</u> LP841A F54T5HO/841 LP835A F54T5HO/835 LP830A F54T5HO/830 LP850A F54T5HO/850	EL14 Emergency battery pack (900 lumens)⁵ MSI Motion sensor pre-wired ⁶ MSI360 360° motion sensor pre-wired ⁶ OCS RELOC® OnePass® 5' installed ⁶ FSP Integral side panels NOM NOM Certified PMP Pendant monopoint ⁷ <i>Cords: See reverse.</i>		
		Distribution	Ballast configuration				
		(blank) Narrow distribution with uplight NDS Narrow distribution, no uplight <3% WD Wide distribution with uplight WDS Wide distribution, no uplight <3%	(blank) Standard configuration² 2/3 Two, three-lamp ballasts 2/2 Two, two-lamp ballasts				
		Accessories:					
		Order as a separate catalog number.					
		IBAC120M20	Aircraft cable 10' Y hanger (one pair)				
		IBAC240M20	Aircraft cable 20' Y hanger (one pair)				
		WGI8Z	W/roguard, zinc-coated				
		HC36	Chain hanger, 36"				
		IBHMP	Hook monopoint				
		IBPMP	Pendant monopoint ⁷				

NOTES:

- Lamps installed are F54T5HO/841.
- Ballast included:
6-lamp = (1) 2-lamp ballast and (1) 4-lamp ballast
4-lamp = (1) 4-lamp ballast
- 54T5HO only ballast configuration, 1/4 1/2. Not recommended for ambient temperatures greater than 45°C. Five-year limited warranty provided by ballast manufacturer.
- Not for use with motion sensors or EL14.
- UL Listed for 55°C. Output in emergency mode varies with ambient temperature (approx. 944 lumens at 25°C and 911 lumens at 45°C). Single-lamp operation only. Not available with HVOLT. Requires some assembly in field for 6-lamp fixtures.
- Specify voltage.
- Fixture must be ordered with PMP for channel modification. Splice box ships separately. Requires two ballasts. Conduit must be minimum of 18". Not field-installable.

Fluorescent

Sheet #: IB-T5

INFL-500

I-BEAM Fluorescent High Bay, T5

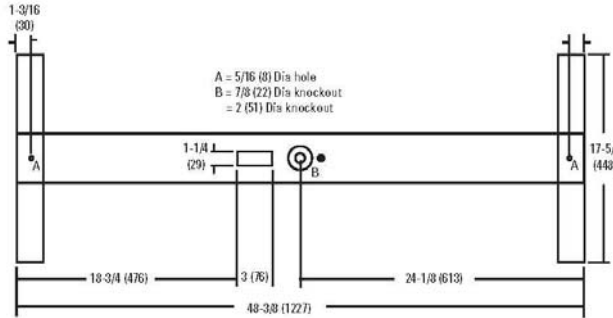
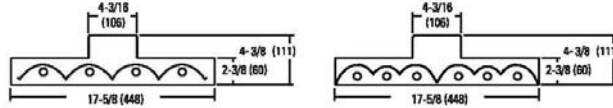
DIMENSIONS

Inches (millimeters). Subject to change without notice.

Cord Set Option:

Add suffix to end of catalog number, specify voltage. All cord sets are 6', black unless otherwise noted. Other configurations available, consult factory.

Suffix	Description
CS1	Straight plug, 120V
CS3	Twist lock, 120V
CS7	Straight plug, 277V
CS11	Twist-lock, 277V
CS25	Twist-lock, 347V
CS97	Twist-lock, 480V
CS93	600V SO white cord, no plug



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.

IB 454

Report: LTL14006
LUMENS PER LAMP#4400

IB 454 WD

Report: LTL14005
LUMENS PER LAMP#4400

IB 654

Report: LTL14055
LUMENS PER LAMP#4400

pc	Coefficients of Utilization								
	80%			20%			30%		
	70%	50%	30%	50%	30%	10%	50%	30%	10%
0	118	118	118	107	107	107	101	101	101
1	109	104	101	96	93	91	91	89	87
2	100	92	86	85	81	77	81	77	74
3	92	82	75	76	71	66	73	68	64
4	85	74	66	69	62	57	66	60	56
5	78	67	59	62	56	51	60	54	50
6	73	61	53	57	50	45	55	49	44
7	68	56	48	52	46	41	51	45	40
8	64	51	43	49	42	37	47	41	37
9	60	48	40	45	39	34	44	38	33
10	57	44	37	42	36	31	41	35	31

pc	Coefficients of Utilization								
	80%			20%			30%		
	70%	50%	30%	50%	30%	10%	50%	30%	10%
0	110	110	110	100	100	100	94	94	94
1	100	96	92	88	85	82	83	80	78
2	91	83	77	76	71	67	72	68	64
3	83	73	65	67	61	56	63	58	54
4	75	64	56	59	52	47	56	50	46
5	69	57	49	53	46	40	50	44	39
6	64	51	43	47	40	35	45	39	34
7	59	46	38	43	36	31	41	35	30
8	55	42	34	39	32	28	37	31	27
9	51	39	31	36	29	25	34	29	24
10	48	36	28	33	27	22	32	26	22

pc	Coefficients of Utilization								
	80%			20%			30%		
	70%	50%	30%	50%	30%	10%	50%	30%	10%
0	117	117	117	108	108	108	102	102	102
1	108	103	99	95	92	89	90	88	86
2	98	90	84	84	79	75	80	76	72
3	90	80	72	74	68	63	71	66	62
4	83	71	63	67	60	55	64	58	53
5	77	64	56	60	53	48	58	52	47
6	71	58	50	55	48	42	53	46	42
7	66	53	45	50	43	38	48	42	37
8	62	49	41	46	39	34	45	38	34
9	58	45	37	43	36	31	41	35	31
10	54	42	34	40	33	29	39	32	28

Zonal Lumen Summary			
Zone	Lumens	% Lamp	% Fixture
0° - 30°	6218	35.3	35.3
0° - 40°	9065	51.5	51.4
0° - 60°	13684	77.7	77.6
0° - 90°	16413	93.3	93.1
90° - 180°	1214	6.9	6.9
0° - 180°	17626	100.1	100.0

Zonal Lumen Summary			
Zone	Lumens	% Lamp	% Fixture
0° - 30°	3911	22.2	23.6
0° - 40°	6432	36.5	38.8
0° - 60°	11655	66.2	70.3
0° - 90°	15190	86.3	91.7
90° - 180°	1381	7.8	8.3
0° - 180°	16571	94.2	100.0

Zonal Lumen Summary			
Zone	Lumens	% Lamp	% Fixture
0° - 30°	8275	31.3	31.5
0° - 40°	12681	48.0	48.2
0° - 60°	20122	76.2	76.5
0° - 90°	25014	94.8	95.2
90° - 180°	1272	4.8	4.8
0° - 180°	26287	99.6	100.0



An Acuity Brands Company

Sheet #: IB-T5

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Lithonia Lighting

Industrial
One Lithonia Way, Conyers, GA 30912
Phone: 770-922-9000 Fax: 770-981-8141
www.lithonia.com

Luminaire Type L1

FEATURES

DECORATIVE HOUSING

- Durable, heavy-gauge aluminum housing. Textured polyester powder paint finish available in Matte Black or Satin Silver.
- Housing available in Short or Tall configurations to allow for a variety of ceiling height applications.

DECORATIVE ELEMENT

- Four configurations allow customization suitable in any space.
- No Ring (NR): Clean, simple form - no decorative element.
- Soft Ring (S): Subtle, formed black aluminum band.
- Stacked Rings (C): Four injection-molded black acrylic rings.
- Gear (G): Precision-formed black aluminum.

OPTICAL SYSTEM

- Self-flanged, specular or matte-diffuse reflector. Bounding Ray™ Optical Principle design (U.S. Patent No. 5,800,050) provides lamp before lamp image and smooth transition from top of the reflector to bottom. Reflector flange visually integrates with housing.

MOUNTING OPTIONS

- RC120 - 120" black cord is provided for electrical connection between luminaire and canopy. Canopy mounts directly to 4" square or octagonal junction box.
- SM - Luminaire is mounted directly to the surface-mounted canopy. Canopy mounts directly to 4" square or octagonal junction box.

ELECTRICAL SYSTEM

- Rugged aluminum lampholder housing.
- Vertically mounted, four-pin positive-latch, thermoplastic socket.
- Class P, thermally protected, high power factor electronic ballast.

LISTING

- Fixtures are UL Listed for damp locations. Listed and labeled to comply with Canadian Standards.

Type Catalog number

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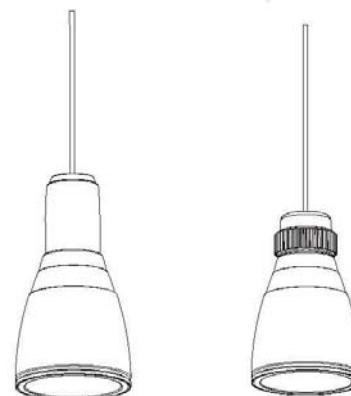
Compact Fluorescent Surface Downlights

8" PDPF

Elevations®

Performance Downlight Pendant

Vertical Triple Tube Lamp



All dimensions are inches (centimeters).

Aperture: 7-7/8 (20.1) Height: 14-7/8 (37.7) Short
 Overall Diameter: 9-3/8 (23.5) Height: 17-5/8 (44.8) Tall

ORDERING INFORMATION

Example: **PDPF 32TRT 8AR MVOLTT SNR RC120**

Choose the boldface catalog nomenclature that best suits your needs and write it on the appropriate line.

Series	Wattage/Lamp	Aperture/Trim color	Finish	Voltage	Housing	Color	Decorative Element ¹	Mounting Method ²	Options
PDPF	18TRT	8AR Clear	(blank) Semi-specular	MVOLT²	S Short	B Matte black	NR No ring	RC120 Reinforced cord mount	WLP With 3500°K lamp (shipped separately)
	26TRT	8PR Powder	LD Matte-diffuse	120	T Tall	S Satin silver	S Soft ring	SM Surface mount	GMP Single slow blow fuse
	32TRT	8WTR Wheat		277			C Stacked rings		GLF Single fast blow fuse
	42TRT	8BR Black		347			G Gear		EL Emergency battery pack. Test switch integral to ballast housing
		8WR White							GRS Recessed mounting frame
									ELF Emergency battery pack

Lens Type	Ballast
(blank) No lens	(blank)
CGL Clear glass lens	DMHL^{2,3}
T73 Tempered prismatic lens	ADEZ²

NOTES

- Multi-volt electronic ballast capable of operating on any line voltage from 120V through 277V, 50 or 60Hz.
- Available in 120V or 277V only.
- Available in 26TRT or 32TRT only.
- Refer to Page TECH-180 for decorative element and mounting method details.
- Not available with MVOLT.
- Requires use of 14" tall extended canopy. See page TECH-180.
- Available with GRS option only.



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

PDPF 8

DLCF-170

8" PDPF Elevations® Performance Downlight Pendant

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

PDPF 26TRT 8AR, (1) PL-T 26W/30K lamp, 1800 rated lumens, 1.3 s/mh, Test No. 94021601

From 0°	Ave Lumens	Zone Lumens % Lamp	Zone Lumens % Lamp	pf pc	Coefficient of utilization						Illuminance Data at 30" Above Floor for a Single Luminaire					
					80%		70%		50%		Initial fc Mount at beam height center	Beam diameter	fc at beam edge	Beam diameter	fc at beam edge	
					50%	30%	50%	30%	50%	30%						
0	830	0° - 30° 681.2 37.8	0° - 30° 681.2 37.8	1	.81	.79	.80	.78	.77	.75	8	27.4	6.9	13.7	11.7	2.7
5	870	0° - 40° 1069.0 59.4	0° - 40° 1069.0 59.4	2	.75	.72	.74	.71	.71	.69	10	14.8	9.4	7.4	16.0	1.5
15	876	0° - 60° 1335.8 74.2	0° - 60° 1335.8 74.2	3	.69	.65	.68	.64	.66	.63	12	9.2	11.9	4.6	20.3	0.9
25	762	0° - 90° 1336.1 74.2	0° - 90° 1336.1 74.2	4	.63	.59	.62	.58	.61	.57	14	6.3	14.4	3.1	24.5	0.6
35	630	90° - 180° 0.0 0.0	90° - 180° 0.0 0.0	5	.58	.53	.58	.53	.56	.52	16	4.6	16.9	2.3	28.8	0.5
45	354	0° - 180° 1336.1 *74.2	0° - 180° 1336.1 *74.2	6	.54	.49	.53	.49	.52	.48						
55	5	*Efficiency	*Efficiency	7	.50	.45	.49	.45	.48	.44						
65	0			8	.46	.41	.46	.41	.45	.41						
75	0			9	.43	.38	.43	.38	.42	.38						
85	0			10	.40	.35	.40	.35	.39	.35						
90	0															

PDPF 32TRT 8AR, (1) PL-T 32W/30K lamp, 2400 rated lumens, 1.1 s/mh, Test No. 94021402

From 0°	Ave Lumens	Zone Lumens % Lamp	Zone Lumens % Lamp	pf pc	Coefficient of utilization						Illuminance Data at 30" Above Floor for a Single Luminaire					
					80%		70%		50%		Initial fc Mount at beam height center	Beam diameter	fc at beam edge	Beam diameter	fc at beam edge	
					50%	30%	50%	30%	50%	30%						
0	1344	0° - 30° 992.2 41.3	0° - 30° 992.2 41.3	1	.76	.74	.75	.73	.72	.71	8	44.4	5.8	22.2	10.5	4.4
5	1440	0° - 40° 1446.8 60.3	0° - 40° 1446.8 60.3	2	.70	.67	.69	.67	.67	.65	10	23.9	7.9	11.9	14.4	2.4
15	1360	0° - 60° 1854.7 68.9	0° - 60° 1854.7 68.9	3	.65	.62	.64	.61	.62	.60	12	14.9	9.9	7.4	18.2	1.5
25	1036	0° - 90° 1855.2 68.0	0° - 90° 1855.2 68.0	4	.60	.56	.60	.56	.58	.55	14	10.2	12.0	5.1	22.0	1.0
35	737	90° - 180° 0.0 0.0	90° - 180° 0.0 0.0	5	.56	.52	.56	.52	.54	.51	16	7.4	14.1	3.7	25.8	0.7
45	281	0° - 180° 1855.2 *68.0	0° - 180° 1855.2 *68.0	6	.52	.48	.52	.48	.51	.47						
55	4	*Efficiency	*Efficiency	7	.49	.44	.48	.44	.47	.44						
65	1			8	.46	.41	.45	.41	.44	.41						
75	0			9	.43	.38	.42	.38	.42	.38						
85	0			10	.40	.36	.40	.36	.39	.35						
90	0															

PDPF 42TRT 8AR, (1) PL-T 42W/30/4P lamp, 3200 rated lumens, 1.0 s/mh, Test No. 95121902

From 0°	Ave Lumens	Zone Lumens % Lamp	Zone Lumens % Lamp	pf pc	Coefficient of utilization						Illuminance Data at 30" Above Floor for a Single Luminaire					
					80%		70%		50%		Initial fc Mount at beam height center	Beam diameter	fc at beam edge	Beam diameter	fc at beam edge	
					50%	30%	50%	30%	50%	30%						
0	1568	0° - 30° 1095.4 34.2	0° - 30° 1095.4 34.2	1	.83	.81	.81	.80	.79	.78	8	51.8	5.8	25.9	10.2	5.2
5	1705	0° - 40° 1801.1 50.0	0° - 40° 1801.1 50.0	2	.78	.75	.77	.75	.75	.73	10	27.9	7.6	13.9	13.9	2.8
15	1467	0° - 60° 1807.5 56.5	0° - 60° 1807.5 56.5	3	.74	.71	.73	.71	.71	.69	12	17.4	9.6	8.7	17.6	1.7
25	1145	0° - 90° 1818.6 58.8	0° - 90° 1818.6 58.8	4	.70	.67	.69	.67	.67	.65	14	11.9	11.7	5.9	21.4	1.2
35	821	90° - 180° 0.0 0.0	90° - 180° 0.0 0.0	5	.66	.63	.65	.63	.63	.61	16	8.6	13.7	4.3	25.1	0.9
45	244	0° - 180° 1818.6 *58.8	0° - 180° 1818.6 *58.8	6	.63	.59	.63	.59	.62	.59						
55	10	*Efficiency	*Efficiency	7	.60	.56	.60	.56	.59	.56						
65	4			8	.57	.53	.57	.53	.56	.53						
75	2			9	.54	.50	.54	.50	.53	.50						
85	2			10	.51	.47	.51	.47	.50	.47						
90	0															

ENERGY (Calculated in accordance with NEMA standard LE-5A)					
LER DOH	Annual* Energy Cost	Lamps	Lamp Lumens	Ballast Factor	Input Watts
51	\$ 4.69	(1) 26W TRT	1800	1.10	29
46	\$5.24	(1) 32W TRT	2400	0.98	36
37	\$6.47	(1) 42W TRT	3200	0.98	48

*Comparative yearly lighting energy cost per 1000 lumens

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

DLCF-170

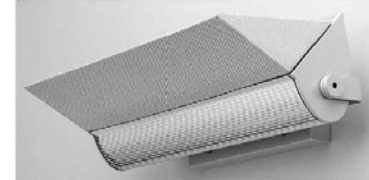
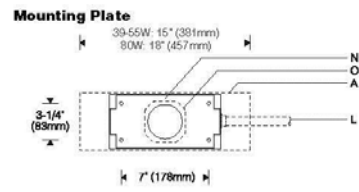
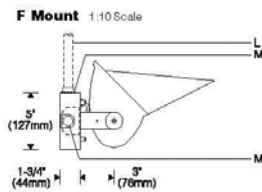
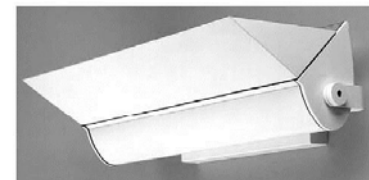
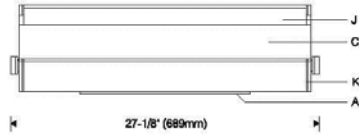
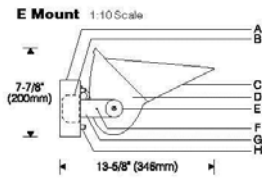
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P 800 315 4982 F 770 850 3129
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Luminaire Type L2

Lighting the Ceiling Large fluted or smooth, Integral  Long Twin Tube Fluorescent **4X® Style 113 / 114**



Specifications

- | | | | |
|---|---------------------------------------|---|--|
| A Aluminum canopy/ ballast housing | D Die-cast aluminum end plates | H Chrome cap nuts | M 7/8" dia. conduit entries, 3 total (F mount only) |
| B Integral electronic ballast (remote for X mount) | E Machined aluminum knobs | J Specular extruded aluminum reflector | N Aluminum mounting plate |
| C Perforated or solid cutoff visor (included) | F Locking set screw | K Aluminum reveal plates (black) | O Recessed outlet box (by others) |
| | G Aluminum yoke | L Conduit (by others) | |

Finish:
 Style 113 fluted – bright clear anodized aluminum housing. Painted end plates, visor, yoke and canopy in choice of silver or semi-gloss black.
 Style 114 smooth – semi-gloss white exterior.
 Visor available solid or perforated. Perforated visor supplied with diffusing translucent insert.
 Painted surfaces – 6 stage pretreatment and electrostatically applied thermoset powder coat.
 Reflector and internal end plates – extruded high purity aluminum with clear anodized specular finish. All luminaire hardware – stainless steel. All mounting hardware – zinc or cadmium plated.

Mounting:
E mount – canopy mounts over recessed outlet box.
F mount – three 7/8" dia. entries in mounting plate with clearance openings in canopy; one top center, one on each end (surface conduit, connectors by others).
 Uplight pendant (back to back) or cantilever assembly ordered separately, specify **X** mount. Supplied with remote ballast.

Electrical:
 Use 90°C wire for supply connections.
 Integral electronic HFF thermally protected class P ballast with end-of-life protection.
X mount (for use with uplight pendant or cantilever) furnished with remote electronic ballast. Aluminum ballast enclosure includes four 7/8" dia. entries and a knockout for accessory fuse. **Maximum wire length between remote electronic ballast and fixture is 10' (3m) less length of pendant stem or cantilever arm.**
 Optional electronic dimming ballast (E and F mount only); compatible dimmer switch required (by others). Consult sales representative for compatibility and specifications.
Dimming not available with X mount pendant or cantilever.
 For complete ballast specifications, see Accessories Section.

Standard:
 UL listed or CSA certified for damp locations (Style 114 hex tube model with gasketed lens recommended for damp locations).

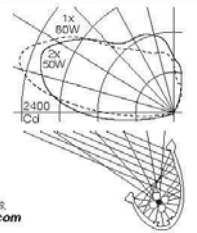
Features

- **4X** focuses the light of two 40, 50 or 55W lamps for high performance, low energy uplighting
- Long twin-tube fluorescent lamps – great color, long life
- Integral electronic ballast – dimming, emergency optional
- Die-cast end plates join at articulated black reveals; machined aluminum knobs – no exposed fasteners



Performance

Two parabolic reflector sections drive light across the ceiling from one edge. An elliptical section shields the lamp from normal viewing angles and redirects its light 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 thelightingquotient.com



9/10 **U.S. Patent RE37,310E, Canadian 2,147,106, EPO 0679835, Australia 680116, Mexico 193817, other foreign Patents Pending.**

To Order **4X® Style 113/114**

To form a Catalog Number
 F [] [] [] [] [] [] [] [] V [] []
 1 2 3 4 5 6 7 8

1 Source
 F = Long twin tube compact fluorescent

2 Style
 113 = Large fluted surface, **Integral** ballast
 114 = Large smooth surface, **Integral** ballast
 Note: Pendant or cantilever mounted units furnished with **remote** ballast.

3 Lamp
 [] [] = Long Twin Tube CF Lamp Code
 Lamp Wattage (see chart)
 Lamp Configuration
 L1 = Single-lamp cross section
 X2 = **4X®** (dual-lamp) cross section (not available for 80W)

Lamp W	Single-lamp section		4X® dual-lamp section	
	Code	Lamp	Code	Lamps
39	L139	1x FT36-39W/2G11	X239	2x FT36-39W/2G11
40	L140	1x FT40W/2G11	X240	2x FT40W/2G11
50	L150	1x FT50W/2G11	X250	2x FT50W/2G11
55	L155	1x FT55W/2G11	X255	2x FT55W/2G11
80	L180	1x FT80W/2G11		

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

4 Mounting
 E = External yoke on canopy. Mounting plate fastens over recessed outlet box (by others).
 F = External yoke on canopy. Mounting plate with (3) 7/8" dia. entries, one top center, one on each end for surface conduit (by others).
 X = External yoke for use with accessory upright pendant or cantilever mounting assembly (order separately)
 Note: furnished with **remote** ballast.

5 Finish
 Style 113 Fluted
 Bright anodized aluminum reflector with painted end plates, yoke, canopy and visor in choice of
01 = silver, solid visor
P1 = silver, perforated visor
81 = semi-gloss black, solid visor
P8 = semi-gloss black, perforated visor
 Style 114 Smooth
 Semi-gloss white reflector, end plates, yoke and canopy with choice of
02 = solid visor finished white
P2 = perforated visor finished white
99 = Custom RAL or computer matched color to be specified, consult sales representative

6 Voltage/Ballast
 Electronic *
1 = 120V
2 = 277V
3 = 347V (Canada)
 Dimming +
T = 120V
V = 277V
 * X mount furnished with **remote** electronic ballast.
 + Dimming not available for use with pendant or cantilever (X mount) - consult factory for alternatives. Availability for wattages and voltages varies with ballast manufacturer and control type - see thelightingquotient.com for dimming specifications and limitations.

7 Option (see Accessories Section for specifications)
V0 = Cutoff visor included, no other options
VE = Remote emergency battery pack (all lamps except L180), maximum distance from battery pack to fixture is 5' (1.5m). For use with non-dimming ballasts only. For emergency battery pack for L180 lamp, consult factory.
VX = For modification not listed, include detailed description. Consult factory prior to specification.
 Note: Cutoff visor included unless specified otherwise.

8 Destination Requirement
0 = UL listed or CSA certified for U.S.
J = UL listed or CSA certified for Canada

Example
F113 - X250 - E - P1 - 2 - V00
 Large fluted model for use with two 50W long twin tube compact fluorescent lamps (4X 2-lamp cross section). External yoke on canopy for mounting over recessed outlet box (by others). Bright reflector with silver end plates, yoke and canopy. Integral 277V electronic ballast. UL listed or CSA certified for U.S. Perforated cutoff visor with silver painted finish included.

Accessories
 Order separately. See Accessories Section for specifications.

VCX [] [] [] [] **Cantilever**, 36" (915mm) setback (X mount remote units only)
 0 = U.S.
 J = Canada
02 = semi-gloss white
07 = silver
08 = semi-gloss black

VDX [] [] [] [] = Upright pendant (back to back), (X mount remote units only)
 0 = U.S.
 J = Canada
 Length in inches (60" (1.5m) maximum)
02 = semi-gloss white
07 = silver
08 = semi-gloss black
 Note: For sloped ceilings, consult factory.

AFK000X [] [] = Ballast fuse kit
 0 = U.S.
 J = Canada



elliptipar from The Lighting Quotient
 114 Boston Post Road, West Haven, Connecticut 06516, USA
 Voice 203.931.4455 • Fax 203.931.4454 • thelightingquotient.com

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Luminaire Type L3

A10.0

Slique T2

3/4" Undercabinet/Display Light
T2 Fluorescent

SQ



Project	Type
Project Location	
Catalog #	

Description

Slique T2 is the sleekest fluorescent undercabinet and display luminaire available. Slique T2 utilizes a T2 fluorescent lamp and an integral miniature ballast. This allows a 3/4" x 1-3/4" luminaire cross-section and eliminates the need to remote-mount a ballast. The available plug-in modules, interconnect cords and connectors simplify the installation and support different layout configurations. Slique T2 is backed by Alkco's lifetime guarantee.

Additional features

- Specular aluminum reflector improves luminaire efficiency
- Slique T2 is available in 4 product lengths
- The acrylic lens is guaranteed not to discolor for the life of the product
- Optional glass shelf fascia extrusion simplifies mounting to glass shelves
- Slique T2 is available in three standard colors
- Backed by a Lifetime Warranty



Specifications

Construction - Extruded aluminum housing with injection molded polycarbonate endcaps and covers.

Reflector & Lens - Specular aluminum, asymmetric reflector. Extruded acrylic lens with DR additive and linear prisms.

Finish - Slique T2 is available in either a white or black polyester powder-coat paint finish. The endcaps and covers are molded to match. Slique T2 can also be specified in an acid-etched, satin aluminum finish with milled endcaps and covers to match.

Lamps - Either one or two, FM11 or FM13 T2 fluorescent lamps (with axial base) are provided with each luminaire. The supplied miniature T2 lamps have a 3000K color temperature, CRI of

80, and an average rated life of 10,000 hours. 4100K lamps can be specified as an option.

Listings - IUL and CUL Listed. The luminaire is also IBEW labeled.

Electrical - Slique T2 has a proprietary, integral electronic ballast for 120 volt applications. 277 volt, 347 volt and dimming applications are not supported.

Installation - A system consists of one Power Feed (either Direct Power Feed or Portable Power Feed) for each group of interconnected luminaires. The electrical power supply is brought to a Power Feed. The Direct Power Feed accepts a 3/8" flexible metal conduit/non-metallic sheathed wiring connector and is available in either a right- or left-end version.

The alternative is to use the Portable Power Feed in either a right- or left-end version. The Power Feeds can plug into the end of the Slique T2 housing or mounted remotely and connected with one of the interconnect cords. The In-line Connector continues power through multiple luminaires mounted end-to-end. Interconnect Cords can be used to connect luminaires spaced some distance apart and to navigate around corners or bypass obstructions. The maximum number of luminaires to be interconnected cannot exceed 6.0 amps, with a maximum distance between luminaires not exceeding 3 feet.

Warranty - All components, except lamps, are warranted to perform for the life of the original installation.

Ordering Information

Sample Catalog No: **SQ111 - 120 - AL - SQ** Each individual or string of interconnected Slique T2 luminaires require a Power Feed. Select below.

NOM. LENGTH	Model Number	120	120	Finish (standard color is WHG)	Options
18-15/16"	SQ111 (1) FM11 T2 Fluorescent	120	120	WHG White Glossy	FC ¹ In-line connector for end-to-end connections
22-15/16"	SQ113 (1) FM13 T2 Fluorescent			BLKG Black Glossy	CCW ¹ White 12-36" coiled interconnect cord
36-15/16"	SQ211 (2) FM11 T2 Fluorescent			AL Aluminum	CCB ¹ Black 12-36" coiled interconnect cord
44-15/16"	SQ213 (2) FM13 T2 Fluorescent				SCW ¹ White 6" straight interconnect cord
					SCB ¹ Black 6" straight interconnect cord
					41K 4100K lamp substituted for 3000K lamp
					SQGSF-4 4" Fascia extrusion for mounting to 3/8" or 1/2" glass shelf
					SQGSF-8 8" Fascia extrusion for mounting to 3/8" or 1/2" glass shelf

¹ Order one connector or interconnect cord for each connection point.

Sample Catalog No: **SQ-DWR - 120 - AL**

NOM. LENGTH	Power Feed Style	120	120	Finish (standard color is WHG)
4-7/8"	SQ-DWR Direct wire power feed, right end	120	120	WHG White Glossy
4-7/8"	SQ-DWL Direct wire power feed, left end			BLKG Black Glossy
3-1/2"	SQ-CSR Portable power feed, right end (with 6ft. cordset)			AL Aluminum
3-1/2"	SQ-CSL Portable power feed, left end (with 6ft. cordset)			

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 Fax: 847-451-7512 www.alkco.com 06/10
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A10.0

Slique T2

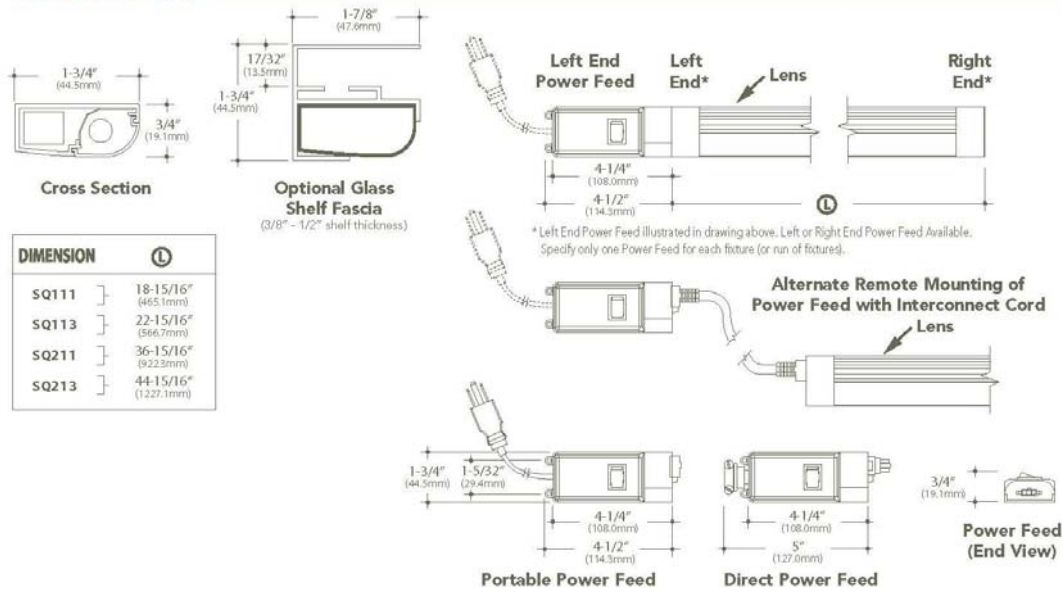
3/4" Undercabinet/Display Light
T2 Fluorescent

SQ



Project	Type
---------	------

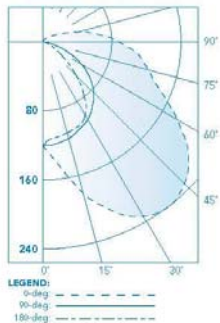
Dimensional Data



Photometric Data

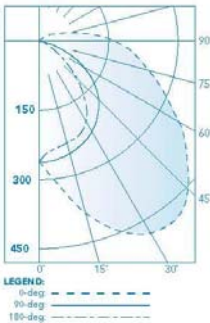
SQ113

(1) 13W T2 Fluorescent
960 lumens per lamp
Report No.: ITL51988
Efficiency: 66.9%



SQ213

(2) 13W T2 Fluorescent
960 lumens per lamp
Report No.: ITL51989
Efficiency: 68.1%



ELECTRICAL DATA

Lamp Wattage	11W	13W	(2) 11W	(2)13W
Input Watts	14	16	28	32
Max. Amps	.11	.13	.23	.27
Power Factor	>.95	>.95	>.95	>.95
THD	<15%	<15%	<15%	<15%

277V, 347V and dimming ballasts not available

(Hg) Some luminaires use fluorescent or high intensity discharge (HID) lamps that contain small amounts of mercury. Such lamps are labeled "Contains Mercury" and/or with the symbol "Hg". Lamps that contain mercury must be disposed of in accordance with local requirements. Information regarding lamp recycling and disposal can be found at www.lamprecycle.org

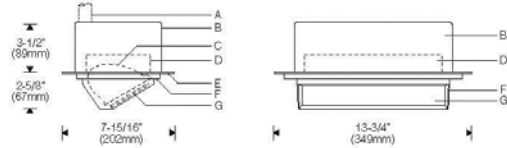
11500 Malrose Avenue Franklin Park, Illinois 60131
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Fax: 847-451-7512 www.alkco.com 06/10
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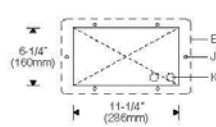
Luminaire Type S1

Lighting the Vertical Small semi-recessed outdoor **Style 251 / 253**

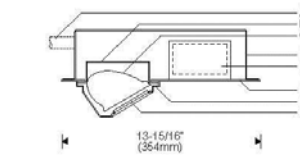
Style 251 (Halogen, metal halide remote) 1:8 Scale



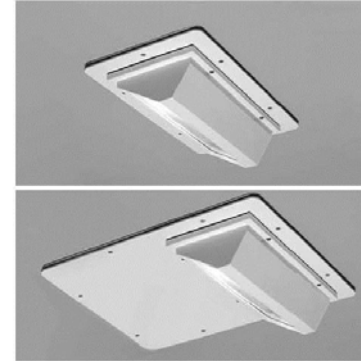
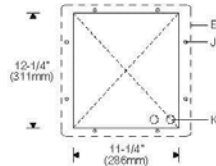
Rough Opening (Style 251)



Style 253 (Metal halide integral) 1:8 Scale



Rough Opening (Style 253)



Specifications

- | | | | |
|---|----------------------------------|--|---|
| A Conduit (by others) | D Aluminum back box | G Micro-prismatic, thermal and impact resistant tempered glass lens | J Threaded inserts for attaching recessed housing to concrete form (hardware provided) |
| B Seam welded stainless steel recessed housing | E 1/8" aluminum faceplate | H Integral ballast compartment (Style 253) | K 7/8" dia. conduit entries (2 on top, 2 on side) |
| C Specular extruded aluminum reflector | F Die-cast aluminum hood | | |

Features

- Low profile focuses attention on luminous wall, not luminaire
- Evenly lights entire wall – reflector aperture is shielded
- Shallow recessed depth – ideal for poured concrete ceilings
- Built to last – all aluminum and stainless steel components
- Durable, secure – 1/8" aluminum faceplate, die-cast hood, thermal and impact resistant lens; tamper-resistant screws



Finish:

Exterior surfaces – 6 stage pretreatment and electrostatically applied thermoset polyester powder coating for a durable abrasion, fade and corrosion resistant finish. Choice of semi-gloss colors (see ordering information).

Reflector – extruded high purity aluminum with clear anodized specular finish. All hardware and components – non-corrosive stainless steel or aluminum. Faceplate and hood secured with tamper-resistant (Torx) screws. Hood screws are captive.

Mounting:

Fixture installs into poured concrete ceiling. Recessed housing mounts to concrete form prior to pouring concrete. Full size template provided. Threaded rod and hardware included for attachment to concrete form. Recessed housing can be ordered separately for installation prior to reflector and ballast assembly, specify **OT** option code. For mounting in framed ceiling construction in damp locations, see Style 201/205 in Lighting the Wall Section.

Electrical:

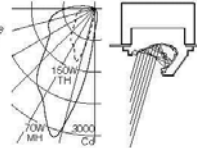
Use 90°C wire for supply connections. Recessed housing supplied with four 7/8" dia. conduit entries (two on top of housing, two on side). Tungsten halogen – DC bayonet lampholder retained with patented clamping supports for maximum heat dissipation. Metal halide – G12 lampholder for use with single ended lamp. High reactance autotransformer ballast for 35W and 70W (-20°F/-30°C starting), or electronic ballast for 35W, 70W and 150W (5°F/-15°C starting). Die-cast aluminum weatherproof ballast enclosure includes four 1/2" NPT threaded entries. Electronic ballast provides improved voltage regulation, energy savings and automatic shut-off feature to eliminate end-of-life cycling. Optional remote ballast for dry indoor location. Style 251 – remote ballast for indoor dry location. For remote wet location ballast, consult local sales representative. Style 253 – integral ballast. For complete ballast specifications, see Accessories Section.

Standard:

UL listed or CSA certified for wet locations. For installation in poured concrete only.

Performance

Two parabolic reflector sections drive light down the vertical plane from one edge. An elliptical section redirects its light to a parabola and shields the lamp. Asymmetry is maximized resulting in high beam efficiency and superior surface uniformity. The fast "runback" minimizes glare and spill light. Wide lateral distribution permits greater spacings.



For complete photometrics, visit theightingquotient.com



To Order **Style 251 / 253**

To form a Catalog Number

1 2 - 3 - T - 4 5 6 7 8

Project: _____

Type: _____

1 Source

M = Metal halide
T = Tungsten halogen

2 Style

251 = Small outdoor semi-recessed, remote ballast
Note: Available for tungsten halogen (no ballast) and metal halide. Remote ballast is suitable for dry indoor location. For wet location ballast, consult local sales representative.
253 = Small outdoor semi-recessed, integral ballast
Note: Available for metal halide only.

3 Lamp

Lamp Code	Wattage	Lamp Number	Voltages	Remote Distance
Ceramic Arc Tube Pulse Start Metal Halide (80+ CRI)*				
035G	35	CDM35/T6/830	1, 2	15' (4.5m)
			A, B	10' (3m)
070G	70	CDM70/T6/830	1, 2	15' (4.5m)
			A, B	20' (6m)
150G	150	CDM150/T6/830	1, 2	15' (1.5m)
			Tungsten Halogen	
0100	100	Q100DC	A	
0150	150	Q150DC	A	

* For complete lamp and ballast information, see Accessories Section.
* Standard lamp color is 9000K/80+ CRI.

4 Mounting

T = Recessed housing for use in poured concrete ceiling with overlapping trim/faceplate
Note: For mounting in framed ceiling construction in damp locations, see Style 201/205 in Lighting the Wall Section.

5 Finish

02 = Semi-gloss white
06 = Dark bronze
07 = Silver
08 = Semi-gloss black
12 = Green
99 = Custom RAL or computer matched color to be specified, consult sales representative.

6 Voltage/Ballast

Electronic: 1 = 120V, 2 = 277V
Magnetic*: A = 120V, B = 277V
*35W or 70W Metal Halide or Tungsten Halogen (120V)

7 Option (See Accessories Section for specifications)

00 = No options
0H = Style 251 long distance remote metal halide ballast for dry indoor location (encapsulated magnetic ballast for 35 and 70W only). 35W: 15' min. up to 50' max. (4.5m - 15m), 70W: up to 50' max. (15m)
0T = Luminaire supplied less recessed housing (includes reflector, ballast and faceplate assembly). **Note:** Requires previous installation of recessed housing kit in poured concrete (order separately, see Accessories).
XX = For modification not listed, include detailed description. Consult factory prior to specification.

8 Destination Requirement

0 = UL listed or CSA certified for U.S.
J = UL listed or CSA certified for Canada

Example

M253 - 070G - T - 07 - B - 000

Small outdoor semi-recessed with hood for use with 70W metal halide lamp. Recessed housing for use in poured concrete. Overlapping trim/faceplate. Silver powder coat finish. Integral 277V ballast. UL listed or CSA certified for U.S.

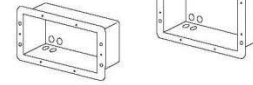
Accessories

Order separately. See Accessories Page for specifications.

AFK000X = Ballast fuse kit
0 = U.S.
J = Canada

VRH 0 = Recessed housing kit with hardware, for installation in poured concrete.
Note: Required only when installing recessed housing in advance of electrical and finish components. Order reflector, ballast and faceplate assembly separately, specify 0T option code.

T251 = tungsten halogen
M251 = metal halide remote
M253 = metal halide integral



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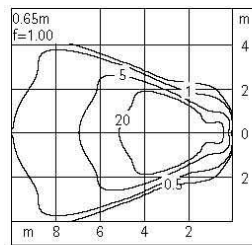
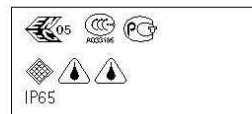
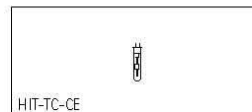
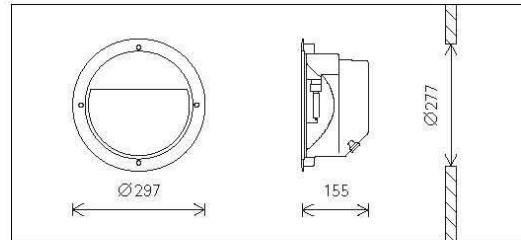
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Luminaire Type S2

ERCO

Visor III Floor washlight

for metal halide lamps



HIT-TC-CE 35W G8.5 3900lm

33304.000 Reflector silver
HIT-TC-CE 35W G8.5 3900lm
ECG

Product description

Housing for recessed mounting in brickwork and dry-wall partitions: corrosion-resistant cast aluminium, No-rinse surface treatment. Black double powder-coated.
Mounting by means of an adjustable bar. Clamp extension 1-35mm. Pre-drilled holes in the base of the housing. 2 cable entries. Through-wiring possible. 5-pole terminal block.
Electronic control gear.
Asymmetric reflector system: aluminium, silver anodised, mirror-finish.
Anti-dazzle cover: metal. No direct light emission.
Screw-fastened cover with sculpture lens as safety glass: corrosion resistant stainless steel. Optimised surface for reduced accumulation of dirt.
Protection mode IP65, dust-proof and water jet-proof.
Weight 3.70kg
Temperature on the light aperture 60°C

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Fax: +49 2351 551 300
info@erco.com

Technical Region: 230V/50Hz
We reserve the right to make technical and design changes.
Edition: 25.10.2010
Current version under
www.erco.com/33304.000

Luminaire Type S3

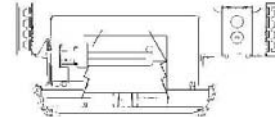
Job:
Type:
Notes:

Designer Canopy

Page 1 of 3

220 / 221 Series Recessed Luminaires Including 220EM / 221EM Series Emergency Recessed

The Philips Gardco Designer Canopy luminaire is a family of downlight and wall wash ceiling mounted luminaires utilizing high intensity discharge and compact fluorescent lamps. The contemporary form housing is available in a variety of architectural finishes assuring compatibility with the building. Downlight optical systems are offered with prismatic or fresnel lenses and the wall washer is offered with a prismatic lens. The Designer Canopy luminaire is suitable for outdoor applications and features rugged die cast construction, silicone seals and gaskets, and polyester powdercoat finishes.



PREFIX	DISTRIBUTION	WATTAGE	VOLTAGE	FINISH	OPTIONS

Enter the order code into the appropriate box above. Note: Gardco reserves the right to refuse a configuration. Not all combinations and configurations are valid. Refer to notes below for exclusions and limitations. For questions or concerns, please consult the factory.

PREFIX

- 220 Downlight
- 221 Wall Wash
- 220EM¹ Emergency Downlight
- 221EM¹ Emergency Wall Wash

1. Emergency luminaires are available in 42TRF only, 120V or 277V only.

DISTRIBUTION

- P Prismatic Lens
- F Fresnel Lens *Available with 220 units only*

WATTAGE

Pulse Start MH Magnetic Ballast	50MH ²	100MH	70MH	150MH
Ceramic Pulse Start MH Electronic Ballast	50CMHE ^{3,4}	100CMHE ^{3,4}	70CMHE ^{3,4}	150CMHE ^{3,4} ⁵
Standard MH Magnetic Ballast ⁶	175MH ⁶			
High Pressure Sodium Magnetic Ballast	50HPS	100HPS	50HPS	150HPS ³
Compact Fluorescent Electronic Ballast	26QF ³	32TRF ³	42TRF ³	
* 175MH not available for sale in the United States.				
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; margin-right: 5px; display: flex; align-items: center; justify-content: center;">E</div> Wattages marked with Circle "E" meet federal energy efficiency standards applicable to 150 watt through 500 watt metal halide luminaires only. </div>				

VOLTAGE

- UNIV 120V through 277V, 50hz to 60hz, input.
- 120
- 277
- 347 *Consult factory for 347V availability prior to ordering. Not available in Ceramic Metal Halide with Electronic Ballast (CMHE) types.*

2. ANSI S55.
3. 220 and 221 fluorescent and CMHE luminaires feature electronic ballasts that accept 120V through 277V, 50hz to 60hz, input. Specify "UNIV" voltage for 120V through 277V. Consult factory for 347V. 220EM and 221EM luminaires are available in 42TRF only, 120V or 277V only.
4. Electronic ballast brand specified by Philips Gardco only.
5. Available in 120V or 277V only.

1611 Clovis Barker Road, San Marcos, TX 78666
(800) 227-0758 (512) 753-1000 FAX: (512) 753-7855 sitelighting.com
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79115-92/1110



Designer Canopy

Page 2 of 3

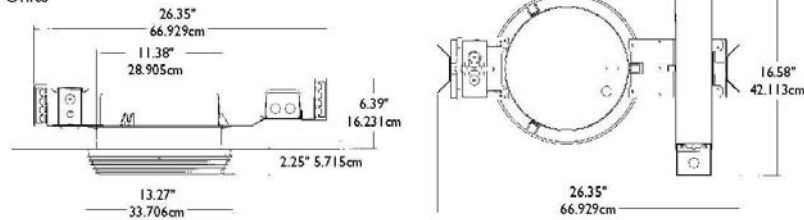
220 / 221 Series Recessed Luminaires

FINISH		OPTIONS	
BRP	Bronze Paint	F ⁵	Fusing
BLP	Black Paint	RS	Tamper Resistant Hardware
WP	White Paint	QS ⁶	Quartz Standby
NP	Natural Aluminum Paint	QST ⁶	Quartz Restrike Timed Delay
BGP	Beige Paint		
OC	Optional Color Paint Specify Optional Color or RAL ex: OC-LGP or OC-RAL7024.		
SC	Special Paint Specify. Must supply color chip.		

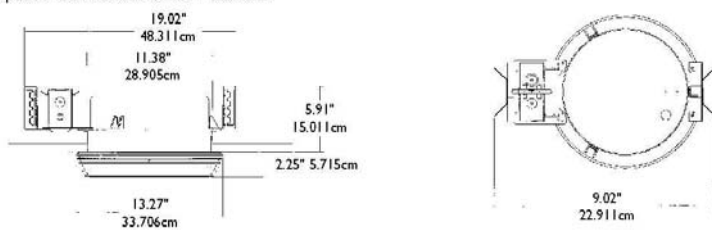
5. Not available with EM luminaires, 347V or Ceramic Metal Halide with Electronic Ballast (CMHE) types.
 6. HID luminaires only. Limited to 100W maximum quartz lamp wattage. Not available in Ceramic Metal Halide with Electronic Ballast (CMHE) types. Available with 150 watt HID and lower only.

DIMENSIONS

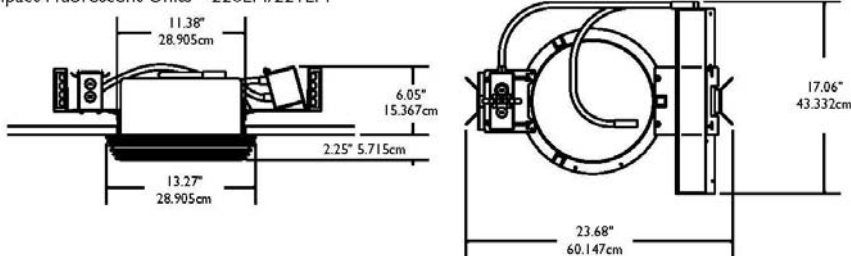
HID Units



Compact Fluorescent Units - 220/221



Compact Fluorescent Units - 220EM/221EM



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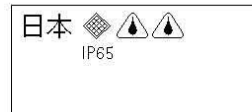
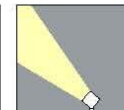
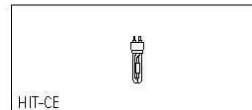
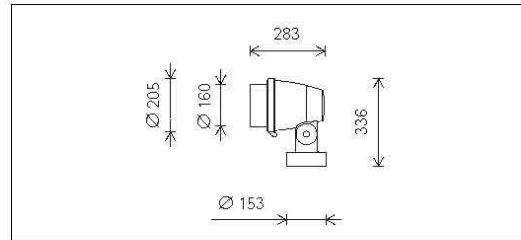


Luminaire S4

ERCO

Beamer II Projector

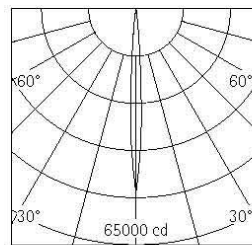
with mounting plate for metal halide lamps



34070.000 Graphit m
HIT-CE 20W G12 1800lm
ECG
Spot reflector

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°. 2 cable entries. Through-wiring possible. 3-pole terminal block. Electronic control gear. Reflector: aluminium, silver, mirror-finish anodised. 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



HIT-CE 20W G12 1800lm

h(m)	E(lx)	D(m)
		7°
1	50654	0.12
2	12663	0.24
3	5628	0.37
4	3166	0.49
5	2026	0.61

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Technical Region: 230V/50Hz
We reserve the right to make technical and design changes.
Edition: 25.10.2010
Current version under
www.erco.com/34070.000

Luminaire Type S5

Saturn 2 Cutoff



Project: _____

Type: _____ **Qty:** _____

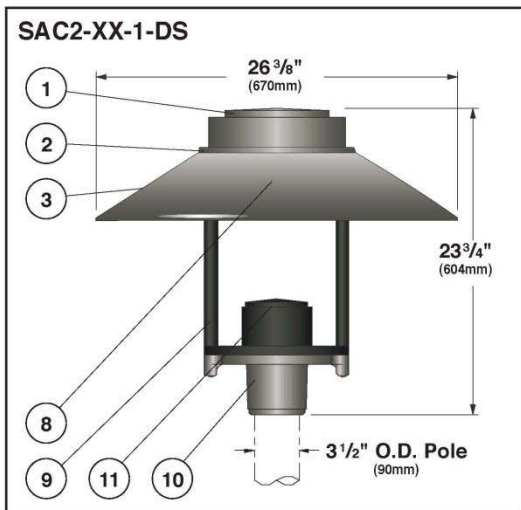
SAC2 - _____

Series	Reflector	Mounting	Lamping	Lamp Color	Finish	Voltage	Option	Option
_____	_____	_____	_____	_____	_____	_____	_____	_____

Pole Series _____ Height _____ Finish _____ Pole Options _____

Series	Reflector	Mounting	Lamping	Lamp Color	Finish	Voltage	Options
SAC2 Saturn 2 Cutoff	R2 Type II Aluminum Reflector	1 Single	<u>T6 Metal Halide</u>	830 3000° K	WH White	120	DS Full Cutoff Optics
	R5 Type V Aluminum Reflector	2 Double	H039T6 ¹ 39W T6 G12	942 4200° K	BK Black	208	HS ² House Side Shield (180°) FS ³ Single Fusing PCT Photocell Tenon
		W Wall Mount	H070T6 70W T6 G12	NOL Lamp not included	BZ Bronze	240	
			H150T6 150W T6 G12		SV Silver	277	
				SP Specify Premium Color	347		

¹Only available in 120v and 277v ²Only available with R2 reflector ³Not available with 347V



- 1. Luminaire Cover** - Die cast aluminum cover removes easily for access to field rotatable optics (rotatable 90 degrees).
- 2. Gasketing** - Continuous gasket provides weatherproofing, dust and insect control at all fixture connections.
- 3. Luminaire Hood** - Aluminum shade with white painted interior.
- 4. Reflector** - (Not shown) Precision formed, completely sealed aluminum reflector system with a Type II or Type V IDA-approved "dark sky friendly" Full-cutoff distribution.

5. Lamp - (Not shown) Choose between 39 to 150 watt T6 or T7.5 G12 base ceramic metal halide lamps. Luminaire supplied with 3000° K or 4200° K lamps, other color temperatures are available, please consult factory. Horizontal lamp for R2 and R5 reflector.

6. Socket - (Not shown) Pulse rated porcelain G12 base socket. Socket is pre-wired to ballast at factory.

7. Ballast - (Not shown) A high power factor, open core and coil ballast regulates voltage for H.I.D. lamp. Consult factory for detailed ballast information.

8. Lamp Access Door - Hinged tempered glass lens, secured to luminaire with two tool-less latches. Lens gasketed to die cast aluminum shade stabilizer.

9. Hood Supports - Two aluminum arms support shade and optic assembly and attach to the die cast aluminum pole fitter (shown painted matte black for DS option).

10. Pole Fitter - Self-leveling, die-cast aluminum, fitter base secured to pole with three stainless steel, allen head set screws. Fitter for 3 1/2" (90mm) O.D. poles.

11. Ballast cover - Die cast aluminum ballast cover removes easily for access to ballast. Ballast secured to removable tray for ease of maintenance (shown painted matte black for DS option).

Exterior Luminaire Finish - SELUX utilizes a high quality Polyester Powder Coating. All SELUX luminaires and poles are finished in our Tiger Drylac certified facility and undergo a five stage intensive pretreatment process where product is thoroughly cleaned, phosphated and sealed. SELUX powder coated products provide excellent salt and humidity resistance as well as ultra violet resistance for color retention. All products are tested in accordance with test specifications for coatings from ASTM and PCI.

Standard exterior colors are White (WH), Black (BK), Bronze (BZ), and Silver (SV). Selux premium colors (SP) are available, please specify from your SELUX color selection guide. Hot Dip Galvanized finish (GV) on all steel parts also available.

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www.selux.com/usa
SAC2-0211-01 (ss-V1.1)

NRTL Listed (i.e. UL, CSA)

Union Made Affiliated
with IBEW Local 363



Made in the USA

In a continuing effort to offer the best product possible, we reserve the right to change, without notice, specifications or materials that in our opinion will not alter the function of the product. Specification sheets found at www.selux.com/usa are the most recent versions and supersede all other printed or electronic versions.

Saturn 2 Cutoff



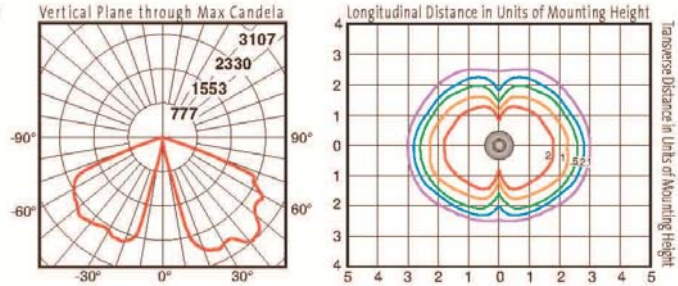
Photometry

Type II Reflector / 150w MHT6 / Full Cutoff Optics

Catalog # SAC2-R2-1-H150T6-DS
Report # LTL-16224

- Precision formed aluminum reflector with to precisely control distribution.
- Maximum candela of 3107 at 41° from vertical.
- IES classification = Type II Full Cutoff.
- IDA-Approved™ dark sky friendly.

DOWNLOAD IES FILE:
<http://www.selux.com/web/files/interior/SAC2-R2-1-H150T6-DS.zip>

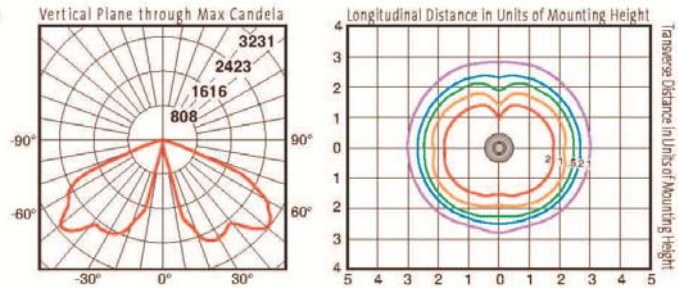


Type V Reflector / 150w MHT6 / Full Cutoff Optics

Catalog # SAC2-R5-1-H150T6-DS
Report # LTL-16225

- Ideal for applications demanding a uniform symmetric light distribution.
- Maximum candela of 3231 at 51.5° and -51.5° from vertical.
- IES classification = Type V Full Cutoff.
- IDA-Approved™ dark sky friendly.

DOWNLOAD IES FILE:
<http://www.selux.com/web/files/interior/SAC2-R5-1-H150T6-DS.zip>



H.I.D. Lamp Prorate Table (Clear, G12 base)		
T6 Metal Halide		
Wattage	Factor	Initial Lumens
39	0.24	3300
70	0.47	6600
150	1.00	14000

Conversion Chart	
Values based on 12' mounting height.	
Mounting Height	Multiply
8'	1.22
10'	1.10
12'	1.00
14'	0.93
16'	0.87

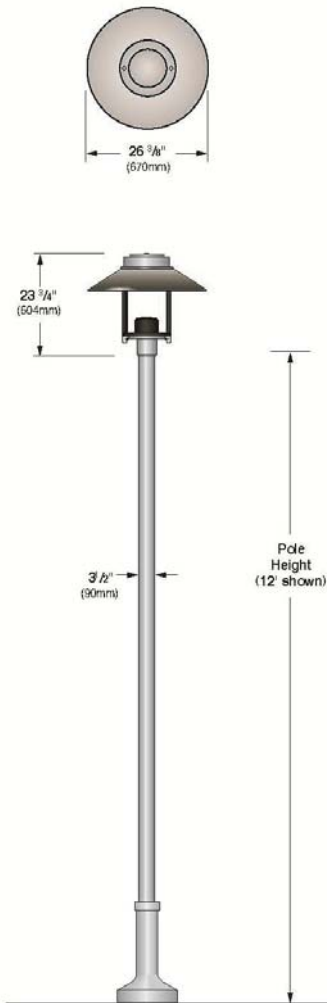
Saturn 2 Cutoff



Mounting

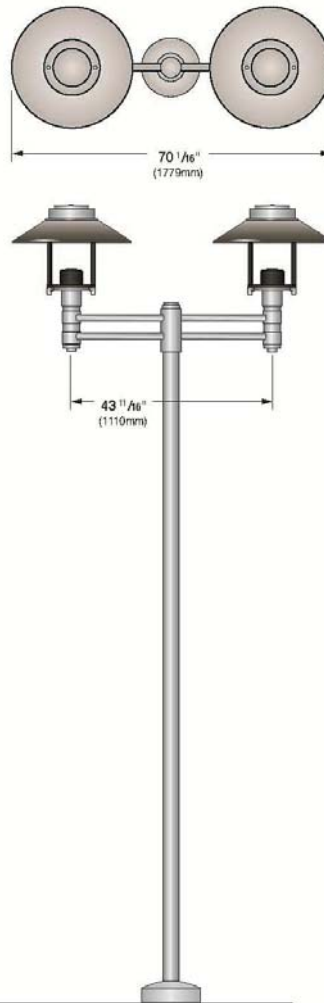
Single

Die-cast aluminum fitter base secured to pole with three stainless steel, Allen head set screws.



Double

Die-cast aluminum double luminaire mounting arm secured to pole with four stainless steel, Allen head set screws. Outer slip fitter for 3 1/2" tenon.



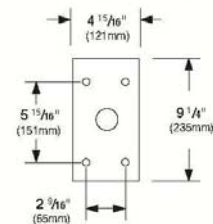
Wall

Die-cast aluminum double round wall luminaire mount arm. Secured to wall with 1/2" diameter threaded fasteners (by others).



Wall Arm Mounting Detail

(Conduit and mounting hardware by others.)



Saturn 2 Cutoff



Pole Information

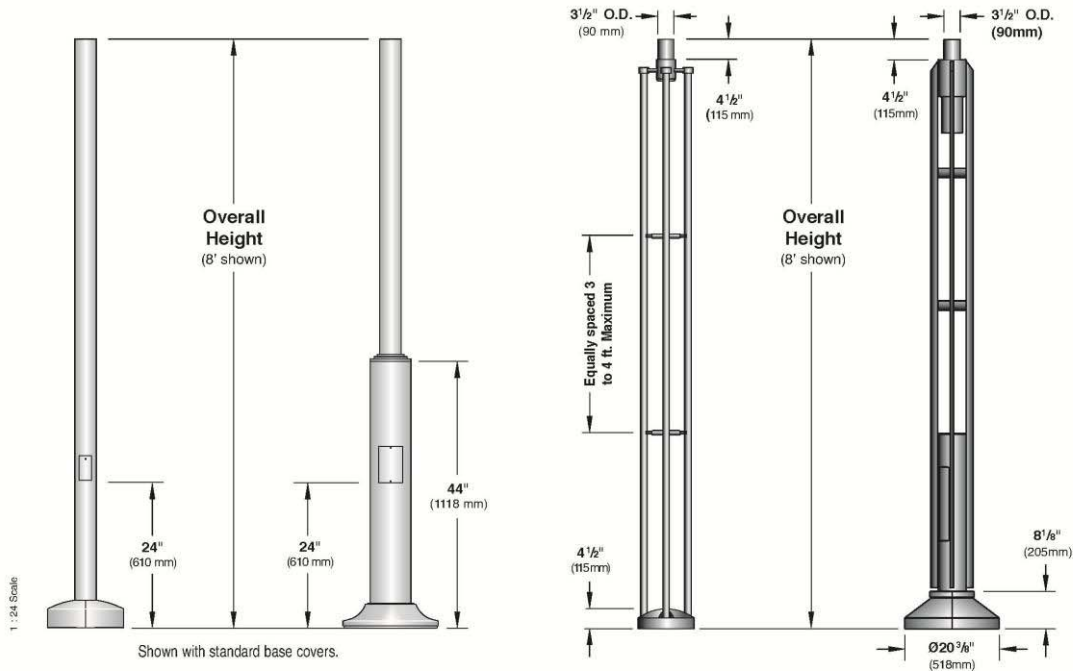
Refer to A35, A4P, S635, S4P, or S35 Pole specification sheets for construction details, anchorage information and additional options.

A35 & S35
Round Straight Aluminum
& Round Straight Steel Poles

S635
Round Stepped
Steel Pole

A4P
Quad Post
Aluminum Pole

S4P
Lattice
Steel Pole



Base Cover Information

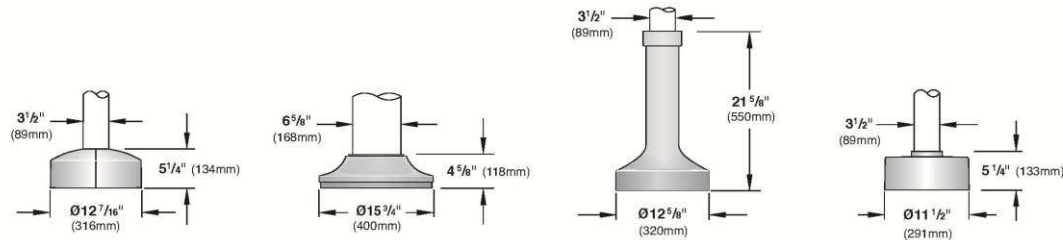
Refer to A35, A4P, S635, S4P, or S35 Pole specification sheets for construction details, anchorage information and additional options.

Straight Poles (A35 & S35)
BC5 Standard Base Cover
Two-piece cast aluminum

Stepped Steel Pole (S635)
BC6 Standard Base Cover
One-piece cast aluminum

BC1 Optional Base Cover
(A35 & S35) One-piece cast aluminum

BC4 Optional Base Cover
(A35 & S35) One-piece cast aluminum



Saturn 2 Cutoff



Pole Data Chart

Pole Series	Bolt Circle	EPA Information (ft ²)					Height	Finish	Options
		70 mph	80 mph	90 mph	100 mph	110 mph			
S635 3 1/2" Diameter Stepped Steel Pole	ø9"	57.6	44.3	34.6	27.5	22.8	8 ft.	WH White	BC1 Decorative Cast Aluminum Base Cover (for A35 & S35 poles only) BC4 One-piece Cast Aluminum Base Cover (for A35 & S35 poles only) SV Silver SP Specify Premium Color REC GFCI Receptacle with weather-proof cover ^{1,2}
A35 3 1/2" Diameter Straight Aluminum Pole	ø7 3/4"	16.1	12.2	9.4	7.3	5.9		BK Black	
A4P ² 3 1/2" Diameter Quad Post Aluminum Pole	ø9 1/4"	17.39	12.84	9.73	7.50	5.85		BZ Bronze	
S35 3 1/2" Diameter Straight Steel Pole	ø7 3/4"	14.8	11.3	8.6	6.7	5.4			
S4P 3 1/2" Diameter Lattice Steel Pole	ø13 15/16"	22.54	17.09	13.36	10.69	8.71	10 ft.		
S635 3 1/2" Diameter Stepped Steel Pole	ø9"	45.6	35.0	27.3	21.6	17.8			
A35 3 1/2" Diameter Straight Aluminum Pole	ø7 3/4"	12.4	9.3	7.1	5.4	4.3			
A4P ² 3 1/2" Diameter Quad Post Aluminum Pole	ø9 1/4"	19.87	14.63	11.03	8.46	6.56			
S35 3 1/2" Diameter Straight Steel Pole	ø7 3/4"	11.4	8.6	6.5	4.9	3.9			
S4P 3 1/2" Diameter Lattice Steel Pole	ø13 15/16"	28.87	21.87	17.06	13.63	11.08			
S635 3 1/2" Diameter Stepped Steel Pole	ø9"	37.6	28.7	22.3	17.5	14.4			
A35 3 1/2" Diameter Straight Aluminum Pole	ø7 3/4"	9.9	7.3	5.4	4.0	3.1			
A4P ² 3 1/2" Diameter Quad Post Aluminum Pole	ø9 1/4"	9.93	6.90	4.82	3.34	2.24			
S35 3 1/2" Diameter Straight Steel Pole	ø7 3/4"	9.1	6.7	4.9	3.6	2.8			
S4P 3 1/2" Diameter Lattice Steel Pole	ø13 15/16"	26.64	20.08	15.59	12.37	9.99			
S635 3 1/2" Diameter Stepped Steel Pole	ø9"	31.7	24.2	18.6	14.6	11.9		12 ft.	
A35 3 1/2" Diameter Straight Aluminum Pole	ø7 3/4"	8.0	5.8	4.2	3.0	2.2			
A4P ² 3 1/2" Diameter Quad Post Aluminum Pole	ø9 1/4"	10.99	7.59	5.26	3.60	2.37			
S35 3 1/2" Diameter Straight Steel Pole	ø7 3/4"	7.3	5.3	3.8	2.7	1.9			
S4P 3 1/2" Diameter Lattice Steel Pole	ø13 15/16"	12.71	9.35	7.04	5.39	4.17			
S635 3 1/2" Diameter Stepped Steel Pole	ø9"	21.7	15.8	12.3	9.6	7.6			
A35 3 1/2" Diameter Straight Aluminum Pole	ø7 3/4"	4.9	3.2	2.2	1.4	0.8			
A4P ² 3 1/2" Diameter Quad Post Aluminum Pole	ø9 1/4"	5.70	3.43	1.87	N/A	N/A			
S35 3 1/2" Diameter Straight Steel Pole	ø7 3/4"	4.4	2.8	1.9	1.2	0.6			
S4P 3 1/2" Diameter Lattice Steel Pole	ø13 15/16"	6.41	4.45	3.1	2.14	1.43			
S635 3 1/2" Diameter Stepped Steel Pole	ø9"	21.7	15.8	12.3	9.6	7.6	14 ft.		
A35 3 1/2" Diameter Straight Aluminum Pole	ø7 3/4"	4.9	3.2	2.2	1.4	0.8			
A4P ² 3 1/2" Diameter Quad Post Aluminum Pole	ø9 1/4"	5.70	3.43	1.87	N/A	N/A			
S35 3 1/2" Diameter Straight Steel Pole	ø7 3/4"	4.4	2.8	1.9	1.2	0.6			
S4P 3 1/2" Diameter Lattice Steel Pole	ø13 15/16"	6.41	4.45	3.1	2.14	1.43	16 ft.		
S635 3 1/2" Diameter Stepped Steel Pole	ø9"	21.7	15.8	12.3	9.6	7.6			
A35 3 1/2" Diameter Straight Aluminum Pole	ø7 3/4"	4.9	3.2	2.2	1.4	0.8			
A4P ² 3 1/2" Diameter Quad Post Aluminum Pole	ø9 1/4"	5.70	3.43	1.87	N/A	N/A			
S35 3 1/2" Diameter Straight Steel Pole	ø7 3/4"	4.4	2.8	1.9	1.2	0.6			
S4P 3 1/2" Diameter Lattice Steel Pole	ø13 15/16"	6.41	4.45	3.1	2.14	1.43			

¹Other pole configurations available, consult factory.

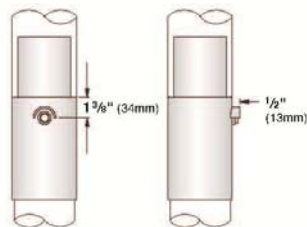
²EPA Calculations allow for 1.3 Gust Factor

Effective Projected Area of Single Luminaire = 0.8 ft² (0.24m²) / Weight of Luminaire = 36.0 lbs (16.3kg)

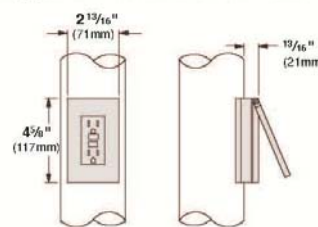
Effective Projected Area of Double Luminaire = 1.6 ft² (0.49m²) / Weight of Double Luminaire (includes arms) = 72.0 lbs (32.7kg)

Optional Accessories

Photo Cell Tenon (PCT) - Button type photocell mounted in cast aluminum pole top tenon. Tenon has integral cast visor to prevent false start/stop cycle and can be oriented for optimum performance. Refer to fixture spec sheet to determine if this option is applicable.



GFCI Receptacle (REC) - GFCI duplex receptacle with cast base bolted to pole and gasketed, provided with weather-proof, self-closing cover; located 36" (915mm) from base of pole, inline with handhole. Receptacle is intended only for portable tools or other portable equipment to be connected to outlet only when attended by operating personnel. Not available for A4P Quad Post pole..



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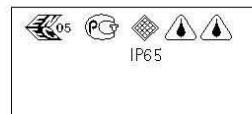
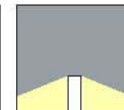
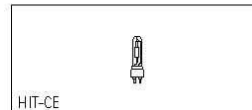
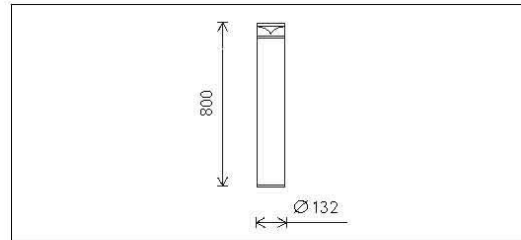
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Luminaire Type S6

ERCO

Panorama Bollard luminaire

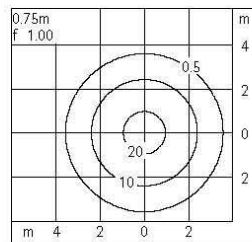
for metal halide lamps



33348.000 Graphit m
HIT-CE 35W G12 3300lm

Product description

Aluminium tube: double powder-coated.
Upper cover: corrosion-resistant cast aluminium, No-Rinse surface treatment, double powder-coated. Optimised surface for reduced accumulation of dirt.
Base plate for mounting on concrete plinth or accessories.
2 cable entries. Through-wiring possible.
5-pole terminal block.
Control gear, 230V, 50Hz, with temperature controller, timer-ignitor, capacitor.
Internal parabolic reflector: aluminium, silver, mirror-finish anodised.
Anti-dazzle screen: metal, black.
360° conical Darklight reflector: aluminium, silver, mirror-finish anodised.
Glare-free above the light aperture.
Glass cylinder as lamp cover. Luminaire housing is removed from base for lamp replacement. Tamper-proof screws.
Protection mode IP65: dust-proof and water jet-proof.
Weight 6,30kg
Housing temperature 50°C
Temperature on the light aperture 47°C
Maximum wind load area 0.11m²



HIT-CE 35W G12 3300lm

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Fax: +49 2351 551 300
info@erco.com

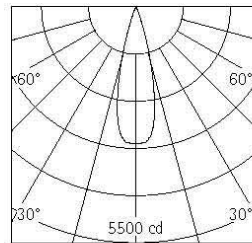
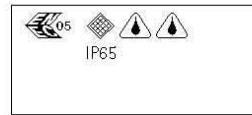
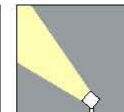
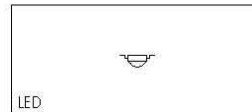
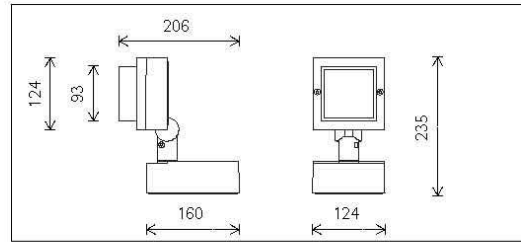
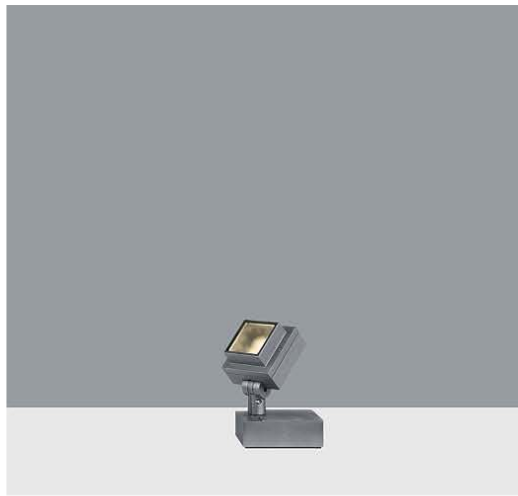
Technical Region: 230V/50Hz
We reserve the right to make technical and design changes.
Edition: 25.10.2010
Current version under
www.erco.com/33348.000

Luminaire Type S7

ERCO

Grasshopper Projector

with LED



LED 14W 870lm 3200K

h(m)	E(lx)	D(m)
		27°
1	3177	0.48
2	794	0.96
3	353	1.44
4	199	1.92
5	127	2.40

34035.000 Graphit m
LED 14W 870lm 3200K warm white
Version 3
Spherolit lens flood

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 graduations and internal wiring, 80° tilt. Mounting plate rotatable through 360°. Electronic control gear. 2 cable entries. Through-wiring possible. 3-pole terminal block.
Replaceable LED module: high-power LEDs on metal-core PCB. Collimating lens made of optical polymer.
Compact light head with non-reflecting safety glass. Corrosion-resistant cast aluminium, double powder-coated. Improved lamp screening for highest visual comfort.
Protection mode IP65: dust-proof and water jet-proof.
Weight 2.30kg

ERCO GmbH
Brockhauser Weg 80-82
58507 Lüdenscheid
Germany
Tel.: +49 2351 551 0
Fax: +49 2351 551 300
info@erco.com

Technical Region: 230V/50Hz
We reserve the right to make technical and design changes.
Edition: 25.10.2010
Current version under
www.erco.com/34035.000

Luminaire Type W1

FEATURES

OPTICAL SYSTEM

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

MECHANICAL SYSTEM

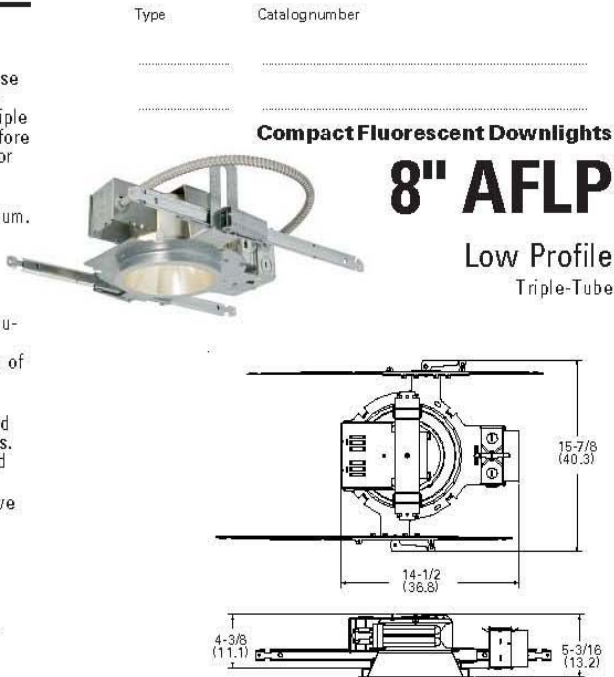
- 16-gauge galvanized steel mounting/plaster frame. Maximum 1-1/2" ceiling thickness.
- 16-gauge galvanized steel mounting bars with continuous 4" vertical adjustment are shipped pre-installed. Post installation adjustment possible without the use of tools from above or below the ceiling.
- Galvanized steel junction box with hinged access covers and spring latch. Two combination 1/2"-3/4" and three 1/2" knockouts for straight-through conduit runs. Capacity: 8 (4 in, 4 out) No. 12 AWG conductors, rated for 90°C.
- Low profile design allows for 4-3/8" fixture depth above ceiling.

ELECTRICAL SYSTEM

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

LISTING

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



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

All dimensions are inches (centimeters)

ORDERING INFORMATION

Example: **AFLP 1/26TRT 8AR MVOLT**

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

AFLP						
Series	Wattage/Lamp	Aperture/Trim color	Finish	Voltage	Ballast ²	Options
AFLP	1/18TRT	8AR Clear	(blank) Semi-specular	MVOLT ¹	(blank) Electronic ballast	ELR ⁵ Emergency battery pack, remote test switch
	1/26TRT	8PR Pewter	LD Matte-diffuse	120	ECOS ³ EcoSystem	ELRHL ⁵ High lumen output emergency battery pack, remote test switch provided
	1/32TRT	8WTR Wheat		277	H-Series architectural dimming ballast	
	1/42TRT			347	ADEZ ² Advance Mark 10 ⁹ electronic dimming ballast. Minimum dimming level 5%	GMF ⁶ Single, slow-blow fuse
	2/18TRT				ADZT ^{3,4} Advance Mark VIT™ electronic dimming ballast	GLR ⁶ Single, fast-blow fuse
	2/26TRT				S5 ⁴ SIMPLY5™ system ballast	TRW White painted flange
	2/32TRT					TREL Black painted flange
	2/42TRT					DS Dual switching
						CP ⁷ Chicago Plenum
						WLP With 3500°K lamp (shipped separately)

NOTES

- 1 Multi-volt electronic ballast capable of operating on any voltage from 120V through 277V, 50 or 60 Hz.
- 2 For additional ballast types, refer to Technical Bulletins tab.
- 3 Available in 120V or 277V only.
- 4 Simply5™ includes 9' S5 MLC Reloc wiring system (shipped separately). Available in 120V or 277V only. Not available in 18W. See simply5.net for more information.
- 5 For dimensional changes, refer to Technical Bulletins tab.
- 6 Not available with MVOLT; must specify voltage.
- 7 Not available with ELR option.



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

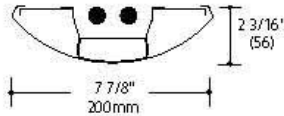
AFLP 8 TRT OPEN

DCF-183

Luminaire Type W2

LITECONTROL

Fixture Type:
Project name:



Arcos™ M5

P-ID-59M

Pendant-Mounted Indirect/Direct

Product Description

A smaller, sleeker version of the pendant-mounted Arcos indirect-direct steel fixture. This fixture is Cradle to Cradle Silver Certified™ by MBDC.

CS™ Control Solutions available

Shown with Shelf Style End Cap

Ordering Guide

Product, Lamping & Length						Options						
P -	ID -	59M	4	8	T5HO-	SGL-	TCWM-	LP/ELB-	TW-	2CWQ-	...	120
Mounting	Distribution	Series	Lamp Count	Nominal Length (ft)	Lamp Type	Baffle or Diffuser	Finish	Ballast	Tandem Wiring	Circuiting	Other Options	Volts
P Pendant-mounted	ID Indirect/Direct	59M	1, 2 2, 4 see notes	4 8 see notes	T5 T5HO	PB/CW/M PB/CW/M/O PB/SS PB/SS/O SGL VC1 see Baffle or Diffuser Options	TCWM (textured matte white) is standard see LiteColors™ in product guide for other finishes	LP/ELB is standard LPD/CS/e LPD/D10 LPD/MK7 see Ballast Options	→ 1CWQ → 2CWQ see notes	→ 1CWQ → 2CWQ	CS/dlh+ ECSS F LP/EF see Other Options	120 277
Mounting - add to end of catalog number Aircraft cables <input checked="" type="checkbox"/> FA/A CC (field adjustable) standard												

P-ID-59M48T5HO-SGL-TCWM-LP/ELB-TW-2CWQ-120-FA/A CC is a typical catalog number for a 4-lamp (2-lamps in cross-section), 8-foot long T5HO fixture with soft glow lens, textured matte white finish, low-profile electronic ballast, tandem-wired, two-circuit branch wiring with quick connects, 120 volts, mounted with field adjustable aircraft cables.

Cross-section lamping



Other Options **CS™**

- CS/dlh** Daylight harvesting solution. See next page for details.
- ECSS** End Cap Shelf-Style. Die-cast shelf-style end caps with no exposed fasteners.
- F** Fuse. Slow or fast blow, determined by Litecontrol.
- LP/EF** Low-profile Emergency Fluorescent Ballast. Battery-powered ballast from a UL Listed manufacturer will operate one lamp for 1 1/2 hours.

Baffle & Diffuser Options

- PRCWM** Radiused Parabolic Baffle finned Matte White.
- PRCWM/O** Radiused Parabolic Baffle finned Matte White with Overlay. For additional diffusing of lamp(s), Matte White acrylic overlay provided to lay over baffle blades.
- PBSS** Radiused Parabolic Semi-Specular Baffle.
- PBSS/O** Radiused Parabolic Semi-Specular Baffle with Overlay. For additional diffusing of lamp(s), Matte White acrylic overlay provided to lay over baffle blades.
- SGL** Soft Glow Lens. Extruded frosted acrylic, follows contour of fixture housing.
- VC1** VCOptic lens. Microstructure film overlay on a clear grooved lens that follows contour of fixture housing.

Ballast Options **CS™**

To have the fixture enabled for Lutron EcoSystem compatibility:
LPD/CS/e EcoSystem low-profile dimming electronic ballasts installed at the factory, along with all required internal EcoSystem wiring. For other configurations of the Lutron EcoSystem components, including custom device connection feeds to enable connection to ceiling-mounted sensors and control devices, consult litecontrol.com/cs or contact the factory.

- LPD/D10** Universal Lighting Technologies dimming ballast (T5)
- LPD/MK7** AdvanceMark VII dimming ballast (T5HO)

Tandem Wiring & Circuiting Options

1CWQ Fixture is wired with a single-circuit so that all lamps are switched together.
2CWQ Fixtures wired with two circuits. 2-lamp in cross-section fixtures, the fixture is wired such that the inline lamps are switched separately.

Questions to Ask

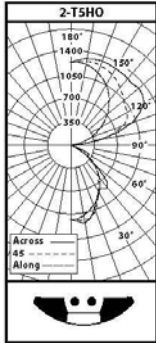
1. Row information, including desired fixture lengths?
2. Lamp type? 3. Ballast options?
4. Control solution? 5. Other options? 6. 120 or 277 volt?



revised 2/27/2009

Arcos M5 P-ID-59M

Photometric data



CANDLEPOWER SUMMARY					
ANGLE	0	22.5	45	67.5	90
180	1218	1218	1218	1218	1218
175	1227	1218	1229	1244	1250
165	1186	1209	1263	1300	1305
155	1100	1162	1236	1304	1317
145	973	1065	1173	1264	1303
135	810	931	1079	1227	1279
125	626	772	985	1215	1299
115	429	612	927	1091	1137
105	233	479	689	733	735
95	60	200	204	192	184
90	2	24	24	21	18
85	12	14	18	20	22
75	40	43	45	53	72
65	114	126	146	201	313
55	363	390	393	351	356
45	588	581	579	720	770
35	764	817	726	731	777
25	908	690	648	627	618
15	1015	1047	1119	1140	1177
5	1094	1085	1102	1120	1117
0	1095	1095	1095	1095	1095

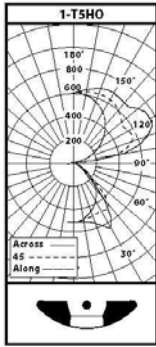
P-ID-59M24T5HO-PBSS 83.8% Efficiency Input Watts = 122W																		
RCC	80				70				50				30	10	0			
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	86	86	86	86	77	77	77	77	61	61	61	47	47	47	33	33	33	27
1	79	76	73	70	71	68	66	63	54	53	51	42	40	40	30	29	29	23
2	72	66	62	58	65	60	56	53	48	45	43	37	35	34	27	26	25	20
3	66	59	53	48	59	53	48	44	43	39	36	33	31	29	24	23	21	17
4	60	52	46	41	54	47	42	38	38	34	31	30	27	25	22	20	19	15
5	56	46	40	35	50	42	37	33	34	30	27	27	24	22	20	18	16	13
6	51	42	35	31	46	38	32	28	31	27	24	24	21	19	18	16	15	12
7	47	38	31	27	43	34	29	25	28	24	21	22	19	17	16	14	13	11
8	44	34	28	24	39	31	26	22	25	21	18	20	17	15	15	13	12	10
9	41	31	25	21	37	28	23	20	23	19	17	18	16	14	14	12	11	9
10	38	28	23	19	34	26	21	18	21	18	15	17	14	12	13	11	10	8

Floor Cavity Reflectance .20

ZONAL LUMEN SUMMARY			
ZONE	LUMENS	% LAMP	% LUMINAIRE
180-90°	5145.76	57.2	68.3
90-0°	2392.57	26.6	31.7
180-0°	7538.33	83.8	100

LUMINANCE SUMMARY (cd/m ²)			
ANGLE	0°	45°	90°
45°	12451	12261	16305
55°	9476	10259	9293
65°	4039	5173	11090
75°	2314	2603	4165
85°	2062	3092	3780

Litecontrol Test Report #68026340



CANDLEPOWER SUMMARY					
ANGLE	0	22.5	45	67.5	90
180	589	589	589	589	589
175	594	595	601	604	603
165	575	590	617	641	646
155	531	566	625	670	681
145	470	528	612	663	678
135	390	470	569	637	668
125	299	400	523	604	651
115	205	321	555	696	747
105	108	277	478	555	589
95	25	167	203	190	183
90	1	18	10	6	4
85	4	6	9	8	8
75	19	18	19	21	23
65	54	52	46	55	76
55	165	214	132	97	106
45	265	324	377	294	274
35	347	381	492	563	567
25	416	430	477	543	591
15	467	472	491	515	523
5	505	502	505	507	504
0	506	506	506	506	506

P-ID-59M14T5HO-PBSS 90.7% Efficiency Input Watts = 61W																		
RCC	80				70				50				30	10	0			
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	93	93	93	93	83	83	83	83	65	65	65	48	48	48	33	33	33	26
1	85	81	78	75	76	73	70	68	57	56	54	43	42	41	30	29	29	23
2	78	72	67	62	69	64	60	57	51	48	46	39	37	35	27	26	25	20
3	71	63	57	52	64	57	52	48	45	42	39	34	32	30	24	23	22	18
4	65	56	50	44	58	51	45	41	40	37	33	31	28	26	22	21	19	15
5	60	50	43	38	54	45	39	35	36	32	29	28	25	23	20	18	17	14
6	55	45	38	33	49	41	35	31	33	28	25	25	22	20	18	16	15	12
7	51	41	34	29	46	37	31	27	30	25	22	23	20	18	17	15	13	11
8	47	37	30	26	42	33	28	24	27	23	20	21	18	16	15	13	12	10
9	44	33	27	23	39	30	25	21	25	21	18	19	16	14	14	12	11	9
10	41	31	24	20	37	28	22	19	23	19	16	18	15	13	13	11	10	8

Floor Cavity Reflectance .20

ZONAL LUMEN SUMMARY			
ZONE	LUMENS	% LAMP	% LUMINAIRE
180-90°	2913.18	64.7	71.4
90-0°	1169.75	26	28.6
180-0°	4082.93	90.7	100

LUMINANCE SUMMARY (cd/m ²)			
ANGLE	0°	45°	90°
45°	5611	7983	5802
55°	4307	3446	2767
65°	1913	1630	2693
75°	1099	1099	1331
85°	687	1374	1374

Litecontrol Test Report #68116602

LITECONTROL

employee owned | customer driven

100 Hawks Avenue Hanson, MA 02341
781 294 0100 F: 781 293 2849 litecontrol.com



Luminaire Type W3

covelight™ 26



features

Low profile indirect luminaire designed for concealed cove applications.

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

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

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

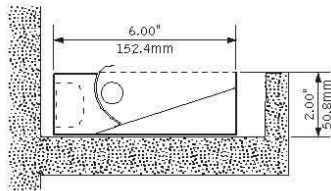
Covelight™ provides pleasing and even illumination that highlights architectural details.

details



thru-wire harness

dimensional data



lampping options



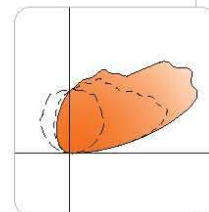
T8 LAMPS



T5/T5HO LAMPS

performance

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



Visit focalpointlights.com for complete photometric data.

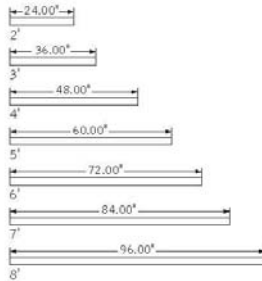
july 2008 A

fixture:
project:

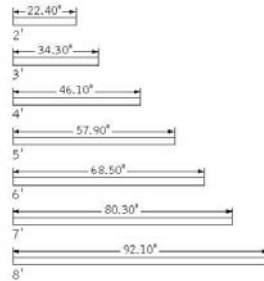
details

fixture lengths

t8



t5/t5ho



specifications

construction

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

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

optic

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

electrical

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

finish

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

ordering

luminaire series

Coveilight T5/T5HO	FCVM	_____
Coveilight T8	FCVA	_____

profile 26
2" x 6"

lamping

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

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

circuit

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

voltage

120 Volt	120	_____
277 Volt	277	_____
347 Volt	347	_____

ballast

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

mounting

Cove CV CV

factory options

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

finish

High Reflectance White HW HW

luminaire length

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

Focal Point LLC | 4441 S. Pulaski Rd, Chicago, IL 60632 | T: 773.247.4494 | F: 773.247.4484 | info@focalpointlights.com | www.focalpointlights.com
Focal Point LLC reserves the right to change specifications for product improvement without notification.

* for more information see Reference section.

perimeter

Ballast Type for G1

BALLAST SPECIFICATION

SECTION II – Controllable Light Output Electronic (Fluorescent)

Ballast Specification for Controllable Light Output Electronic Fluorescent

Mark 7® 0-10V

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 (1.18 for HL version) at maximum light output and 0.03 at minimum light output for primary lamp.
- 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, and CFL lamps.
- 2.13 Ballast shall control lamp light output from 100% - 3% relative light output for T8 and CFL lamps and 100% - 1% relative light output for T5/HO lamps.
- 2.14 Ballast shall ignite the lamps at any light output setting without first going to another output setting.
- 2.15 Ballast shall tolerate sustained open circuit and short circuit output conditions 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 _____ warranty from date of manufacture against defects in material or workmanship for operation at a maximum case temperature of _____ (Go to our web site for up-to-date warranty information: www.advancetransformer.com/warranty).
- 4.3 Manufacturer shall have a fifteen year history of producing electronic ballasts for the North American market.
- 4.4 Ballast shall be controlled by a Class 1 or Class 2 low voltage 0-10VDC controller.
- 4.5 Ballast shall be Advance part # _____ or approved equal.



Ballast Type for L1 and W1

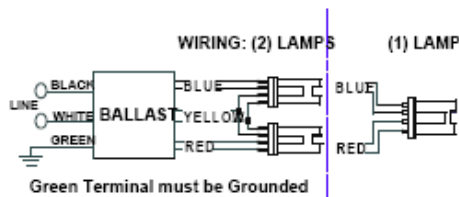


ICF2S26M1BSQS@120	
Brand Name	SMARTMATE
Ballast Type	Electronic
Starting Method	Rapid Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

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 .
CFQ26W/G24Q	1	26	0/-18	0.23	27	1.00	10	0.99	1.7	3.70
CFQ26W/G24Q	2	26	0/-18	0.43	51	1.00	10	0.99	1.7	1.96
CFTR26W/GX24Q	1	26	0/-18	0.24	29	1.10	10	0.99	1.7	3.79
CFTR26W/GX24Q	2	26	0/-18	0.45	54	1.00	10	0.99	1.7	1.85
*	1	32	0/-18	0.31	36	0.98	10	0.98	1.7	2.72
CFTR32W/GX24Q	1	42	0/-18	0.38	46	0.98	10	0.98	1.7	2.13
CFTR42W/GX24Q										

Wiring Diagram

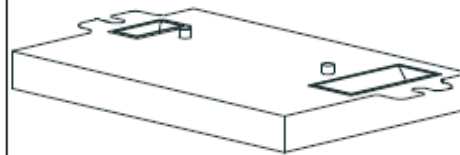


The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

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

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
4.98 "	2.40 "	0.98 "	2.00 "
12.6 cm	6.1 cm	2.5 cm	5.1 cm

Revised 03/03/2010



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

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Ballast Type for L3



RMB-1P13-S1	
Brand Name	AMBISTAR
Ballast Type	Electronic
Starting Method	Instant Start
Lamp Connection	Series
Input Voltage	120
Input Frequency	60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (*F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F.
CFQ13W/G24Q	1	13	0/-18	0.20	14	1.00	150	0.58	1.7	7.14
CFT7W/2G7	1	7	0/-18	0.13	08	1.00	150	0.51	1.7	12.50
CFT9W/2G7	1	9	0/-18	0.16	10	1.10	150	0.52	1.7	11.00
CFTR13W/GX24Q	1	13	0/-18	0.20	14	1.00	150	0.58	1.7	7.14
* F13T5	1	13	0/-18	0.21	14	1.00	150	0.58	1.7	7.14
F14T5	1	14	0/-18	0.21	14	0.95	150	0.50	1.7	8.79
F8T5	1	8	0/-18	0.16	10	1.30	150	0.52	1.7	13.00

Wiring Diagram



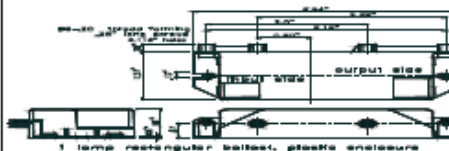
Green terminal must be grounded

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

Standard Lead Length (inches)

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

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
3.54"	1.85"	.94"	3.15"
3 27/50	1 17/20	0 47/50	3 3/20
9 cm	4.7 cm	2.4 cm	8 cm

Revised 03/02/2010


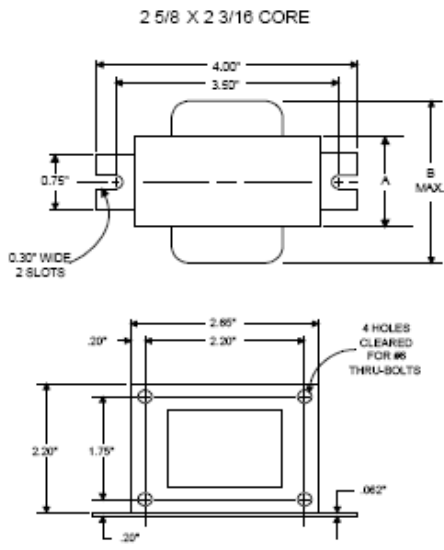

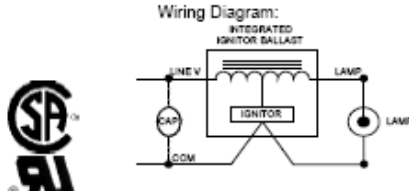


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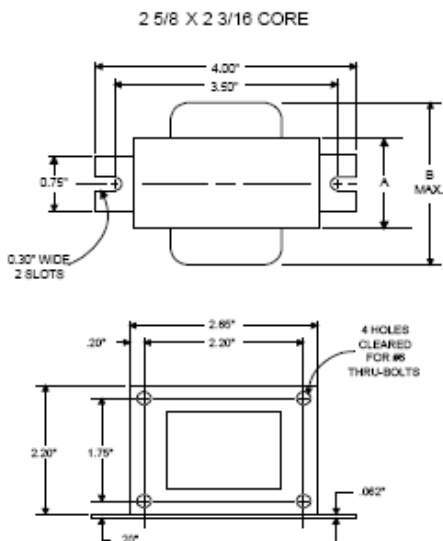

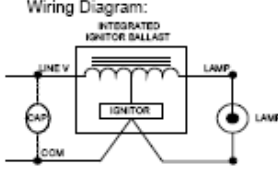
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Ballast Type for S1 and S5

	<p>Metal Halide Lamp Ballast</p>	<p>Catalog Number 71A5237BP For 70W M98/M143 60 Hz R-HPF Status: Active</p>																																																																																																																																																																																																																		
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<p>Capacitor: 7C080L30RA</p>  <p>Capacitance: 8 Dia/Oval Dim: 1.25 Height: 2.75 Temp Rating: 105°C</p>	<p style="text-align: center;">Wiring Diagram: INTEGRATED IGNITOR BALLAST</p>  <p style="text-align: center;">Fig. H</p>																																																																																																																																																																																																																			
<p>Ignitor: INTEGRAL</p> <p>An ignitor integral to the core and coil assembly is used to start the lamp.</p> <p>Ballast to Lamp Distance (BTL) = 2 feet Temp Rating: 125°C</p>	<p style="text-align: center;">Typical Ordering Information</p> <p style="text-align: center;">(please call Philips Lighting Electronics N.A. for suffix availability)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Order Suffix</th> <th style="width: 50%;">Description</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>		Order Suffix	Description																																																																																																																																																																																																																
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Ballast Type for S2

	<p>Metal Halide Lamp Ballast</p>	<p>Catalog Number 71A5037BP For 35/39W M130 60 Hz R-HPF Status: Active</p>																																																																																																																																																																																																												
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TEST Procedure for HID Ballasts - Form 127 High Potential Test (Volts)</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> 1 minute</td> <td style="text-align: right;">2000</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> 2 seconds</td> <td style="text-align: right;">2500</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Open Circuit Voltage Test (Volts)</td> <td style="text-align: right;">260-290</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Short-Circuit Current Test (Amps)</td> <td style="text-align: right;">0.50-0.80</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> Secondary Current</td> <td style="text-align: right;">0.10-</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> Input Current.....</td> <td style="text-align: right;">0.16</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		INPUT VOLTS	277					CIRCUIT TYPE	R-HPF					POWER FACTOR (min)	90%					REGULATION						Line Volts	±5%					Lamp Watts	±10%					LINE CURRENT (Amps)						Operating.....	0.19					Open Circuit.....	0.52					Starting.....	0.30					UL TEMPERATURE RATINGS						Insulation Class	H(180°C)					Coil Temperature Code	1029					MIN. 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<p>Capacitor: 7C050L30RA</p>  <p>Capacitance: 5 Dia/Oval Dim: 1.25 Height: 2.25 Temp Rating: 105°C</p>	<p style="text-align: center;">Wiring Diagram:</p>  <p style="text-align: center;">Fig. H</p>																																																																																																																																																																																																													
<p>Ignitor: INTEGRAL</p> <p>An ignitor integral to the core and coil assembly is used to start the lamp.</p> <p>Ballast to Lamp Distance (BTL) = 2 feet Temp Rating: 125°C</p>	<p style="text-align: center;">Typical Ordering Information</p> <p style="text-align: center;">(please call Philips Lighting Electronics N.A. for suffix availability)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Order Suffix</th> <th style="width: 50%;">Description</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>		Order Suffix	Description																																																																																																																																																																																																										
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Revised: 07/31/09

Ballast Type for S3

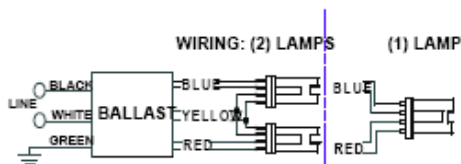


ICF-2S26-H1-LD@120	
Brand Name	SMARTMATE
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

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
CFM26W/GX24Q	1	26	0/-18	0.24	29	1.10	10	0.98	1.5	3.79
CFM26W/GX24q	2	26	0/-18	0.45	54	1.00	10	0.99	1.5	1.85
CFM32W/GX24q	1	32	0/-18	0.31	36	0.98	10	0.98	1.5	2.72
* CFM42W/GX24q	1	42	0/-18	0.38	46	0.98	10	0.98	1.5	2.13
CFQ26W/G24q	1	26	0/-18	0.23	27	1.00	10	0.98	1.5	3.70
CFQ26W/G24q	2	26	0/-18	0.43	51	1.00	10	0.99	1.5	1.96
CFS21W/GR10q	2	21	0/-18	0.42	51	1.12	10	0.99	1.5	2.20
FT24W/2G11	2	24	0/-18	0.41	48	0.93	10	0.99	1.5	1.94

Wiring Diagram

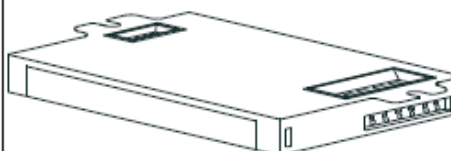


The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

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

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
4.98"	2.4"	1.0"	4.6"
12.6 cm	6.1 cm	2.5 cm	11.7 cm

Revised 09/02/2004



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Ballast Type for S4

GE Consumer & Industrial Lighting

20 Watt Mini Electronic HID Ballast



GE's line of ultra cool UltraMax® eHID electronic ballasts provide up to 70% energy savings and 2-4 times the life of standard halogen. End users get the cost savings and the advantages offered in meeting strict watts per square foot requirements with these systems. UltraMax® eHID is a high energy efficiency ballast that uses less wattage to provide full light output.

The UltraMax® 20W Mini is 56% smaller than the industry standard 20W housing, but does not sacrifice energy savings or heat management to ensure a full 5 year ballast warranty.

You can count on GE to answer your lamp and ballast questions at 1-888-GEBALLAST.

Performance Features

- Saves energy: 70% less power than 75W standard halogen.
- Reduce operating costs by up to \$108.00 per fixture* when replacing a 50 W Halogen HIR.
- 22.5 W system (89% efficient ballast).
- Long lamp life: 12,000 hr. design life vs. 3,000 for halogen. GE CMH® 20W lamp life extended by 3,000 hours with UltraMax eHID ballast.
- Low watts per square foot and long lamp life provide lower cost of ownership compared to halogen.
- Low frequency square wave electronic ballast maximizes ceramic metal halide performance and lamp life.
- 56% smaller than industry standard can size.
- 1" height allows ballast to run flush along standard 1.5" track.
- Normal power factor - meets IEC and ANSI power factor and THD requirements for task and recessed lighting.
- Ultra cool - 80C/5 year warranty.
- 2% output regulation over accepted ANSI lamp voltages reduces visual flicker and maintains consistent lamp color. EM lag ballasts have up to 20% change in output power over the same lamp variation range which results in an increase in power (watts) to the lamp as the voltage increases over the life of the lamp.

Applications

- Replacement of electromagnetic HID ballasts.
- Replacement of 50W HIR halogen to 70W or 90W standard halogen.
- Any track, outdoor landscape or wall pack application where watts per square foot and color quality are critical.



Benefits of Electronic Systems

System - 120V Track Lamp	Ballast	Performance					Benefits Comparison		
		Initial Lumens	CBCP	Watts	LPW	Lamp Life (hrs)	% Lumens	% Savings (W)	Lamp Life (X)
90PAR/H		1310		90	15	2500			
75PAR/H		1050		75	14	2500			
80PAR/HIR		1500		80	19	3000			
70PAR/HIR		1260		70	18	3000			
CMH20T/GU6.5	UltraMax eHID 20W	1615		22.5	72	12000	23%	-75%	4.8
Q50MR16/C/NSP15			9100	50		4000			
CMH20MR16/SPL	UltraMax eHID 20W	1000	9000	22.5	44	12000		-55%	3.0

CMH20T/GU6.5 lamps with UltraMax eHID provide 23% more light, 75% energy savings and 4.8 times the life of standard 90PAR38 halogen lamps. The CMH20MR16 spot with UltraMax eHID provides 55% energy savings with 3 times the life and nearly the same center beam candle power (CBCP).



imagination at work

* @ \$.10 kwh over life of ballast (approximately 4 lamp replacements). Ballasts and system specs listed on back.

Ballast Type for W2

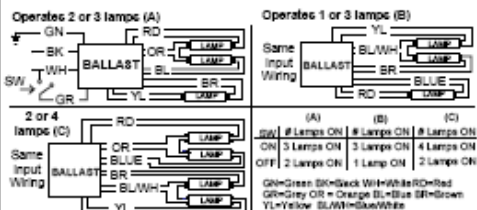


ICN4S5490C2LS@277	
Brand Name	CENTIUM T5
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series/Parallel
Input Voltage	277
Input Frequency	50/60 HZ
Status	Active

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
* F54T5/HO	1	54	-20/-29	0.24	62	0.99	30	0.90	1.7	1.60
F54T5/HO	2	54	-20/-29	0.43	117	0.99	10	0.98	1.7	0.85
F54T5/HO	3	54	-20/-29	0.66	179	1.00	10	0.98	1.7	0.56
F54T5/HO	4	54	-20/-29	0.86	234	1.00	10	0.98	1.7	0.43

Wiring Diagram



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

Standard Lead Length (inches)

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

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
24 "	1.18 "	1 "	23.64 "
24	1 9/50	1	23 16/25
61 cm	3 cm	2.5 cm	60 cm

Revised 09/10/2010



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Ballast Type for W3

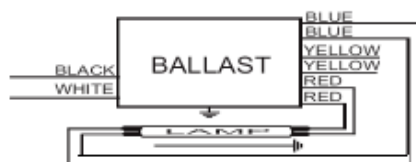


ICN-2S28-N@120	
Brand Name	CENTIUM T5
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

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 .
F14T5	1	14	0/-18	0.14	17	1.07	10	0.98	1.7	6.29
F14T5	2	14	0/-18	0.28	33	1.04	10	0.98	1.7	3.15
F21T5	1	21	0/-18	0.22	25	1.06	10	0.98	1.7	4.24
F21T5	2	21	0/-18	0.39	49	1.02	10	0.98	1.7	2.08
* F28T5	1	28	0/-18	0.29	31	1.05	10	0.98	1.7	3.39
F28T5	2	28	0/-18	0.53	62	1.00	10	0.98	1.7	1.61
F28T5/ES (25W)	1	25	32/00	0.25	30	1.00	10	0.98	1.7	3.33
F28T5/ES (25W)	2	25	32/00	0.49	58	1.00	10	0.98	1.7	1.72

Wiring Diagram

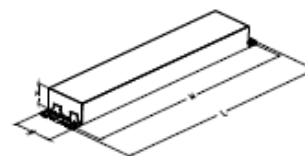


The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.		in.	cm.
Black	23	58.4	Yellow/Blue		0
White	23	58.4	Blue/White		0
Blue	27	68.6	Brown		0
Red	27	68.6	Orange		0
Yellow	42	106.7	Orange/Black		0
Gray		0	Black/White		0
Violet		0	Red/White		0

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
9.5"	1.3"	1.0"	8.9"
24.1 cm	3.3 cm	2.5 cm	22.6 cm

Revised 09/07/2010



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Control Type DC

GRAFIK Systems

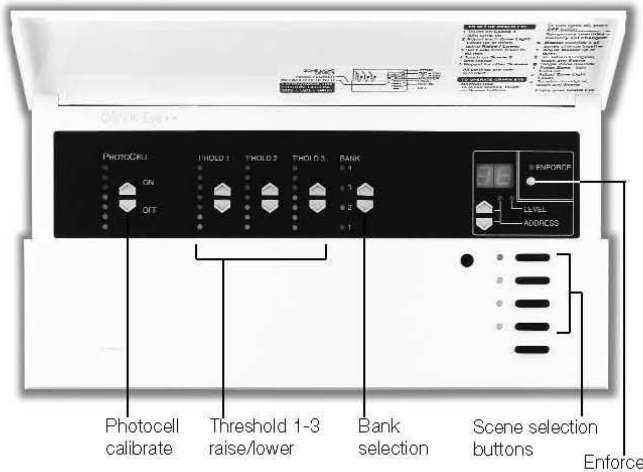
OMX-DACPI

Control Interfaces

omx-dacpi-1 05.03.04

OMX-DACPI Automatic Daylighting Control

Cover (shown open)



Description

- Saves energy in spaces with windows, skylights, or doors. Automatically dims lights when the sun is bright.
- Monitors ambient daylight via Lutron's MW-PS-WH photosensor or 0-10V photosensor by others.
- Automatically selects scenes based on the amount of daylight available.
- Helps maximize energy savings with "enforce" mode – automatic control overrides lighting set by occupants.
- Eliminates "passing cloud" effect with a two-minute "range qualification" timer.
- Works with GRAFIK 5000, 6000, and 7000 Systems.

Functionality

- In the OMX-DACPI Daylighting Control, thresholds are set to define different ranges of daylight.
- The OMX-DACPI monitors ambient light, automatically selecting scenes as daylight levels cross thresholds.
- The OMX-DACPI allows setup of four "banks" of thresholds and scenes.
- Three different thresholds can be set up for each bank.
- Use the bank select keys to select which bank the OMX-DACPI uses.
- The OMX-DACPI automatically selects scenes based on the bank selected and the amount of daylight available. This provides 12 different thresholds that call 16 different Control Unit lighting scenes. Create thresholds and scenes for different times of the day (morning vs. afternoon) or year (winter vs. spring).

- Thresholds define ranges. Ranges call scenes.
- The OMX-DACPI provides four banks.
- Enter three thresholds for each bank.
- The four scenes shown below are automatically called when thresholds are crossed.

	Range 1 0-25%	Threshold 1 = 25%	Range 2 26-50%	Threshold 2 = 50%	Range 3 51-75%	Threshold 3 = 75%	Range 4 76-100%
Bank 1	Scene 1		Scene 2		Scene 3		Scene 4
Bank 2	Scene 5		Scene 6		Scene 7		Scene 8
Bank 3	Scene 9		Scene 10		Scene 11		Scene 12
Bank 4	Scene 13		Scene 14		Scene 15		Scene 16

OLUTRON SPECIFICATION SUBMITTAL

Page 1

Job Name:	Model Numbers:	
Job Number:		

Specifications

Power

Low-voltage Class 2 (PELV)
 Operating Voltage: 32 V Direct Current.

Automatic Daylighting Control

- Automatically selects preset lighting scenes in response to ambient daylight.
- Provides four "banks". Each bank provides three thresholds (levels of ambient daylight) and four scenes.
- Allows photosensor input to override manual scene selection.
- Features a "Range Qualification" timer. When changes in daylight cause a scene change, the OMX-DACPI waits 2 minutes before another "automatic" scene change. (Scene selection buttons work immediately.)

Photosensor Input

- Accepts up to three MW-PS-WH photosensors wired in parallel or one 0-10V photosensor by others.
- Averages readings from up to three photosensors wired in parallel.
- Provides push-button photosensor calibration.

Key Design Features

- Meets IEC 801-2. Tested to withstand 15kV electrostatic discharge without damage or memory loss.
- Faceplate snaps on with no visible means of attachment.

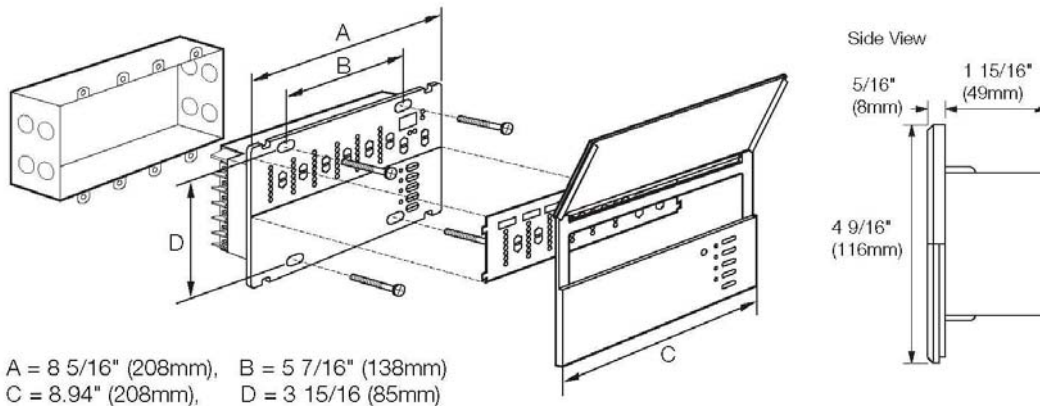
System Communications and Capacity

Low-voltage Class 2 (PELV) wiring connects the OMX-DACPI to Processor Panels.

Environment

32-104°F (0-40°C). 90% non-condensing relative humidity.

Dimensions And Mounting



Job Name:	Model Numbers:	
Job Number:		

Control Type DP

GRAFIK Systems

GP Dimming Panels

Power Equipment

GP Dimming Panels 1 11.13.08

GP Dimming Panels 120-127 / 277 Volt



GP3/4
 Mini
 Panels



GP8-24
 Standard-Size
 Panels



GP36
 Large-Size Panels



GP48-144
 Large-Size Panels

GP Dimming Panels provide power and dimming for up to 144 load circuits and control any light source, including full-conduction non-dim.

Models available with:

- 120-127 V and 277 V input power.
- 3 to 144 circuits.
- Different feed types and breakers.

GP Dimming Panels work with:

- GRAFIK Eye® 4000 Control Units.
- GRAFIK 5000™, GRAFIK 6000®, and GRAFIK 7000™ Systems.
- LP Dimming Panels.
- XP Softswitch® Panels.
- DMX512 dimming systems via the 2LINK™ option.

Job Name: <input type="text"/>	Model Numbers: <input type="text"/>	
Job Number: <input type="text"/>	<input type="text"/>	<input type="text"/>

GRAFIK Systems

GP Dimming Panels

Power Equipment

GP Dimming Panels 4 11.13.08

Specifications - 120-127 / 277 Volt

Standards

- UL Listed (Reference: UL File 42071).
- Complies with CSA or NOM (where appropriate).
- California Energy Commission Listed

Power

- Input power: 100-127 V and 277 V, 50/60 Hz, phase-to-neutral.
- Branch Circuit Capacity:
 - 120-127 V - up to 2000 W/VA
 - 277 V - 4500 W/VA
- Number of Circuits: 3-144
- Branch Circuit Breakers: UL-rated thermal magnetic. AIC ratings (other ratings available):
 - 100-127 V – 10,000 A
 - 277 V – 14,000 A
- Lightning strike protection: Meets ANSI/IEEE standard 62.41-1980. Can withstand voltage surges of up to 6000 V and current surges of up to 3000 A.
- 10-year power failure memory: Automatically restores lighting to scene selected prior to power interruption.

Sources/Load Types

Operates these sources with a smooth continuous Square Law dimming curve or on a full conduction non-dim basis:

- Incandescent (Tungsten)/Halogen
- Magnetic Low Voltage Transformer
- Electronic Low Voltage Transformer¹
- Lutron Electronic Fluorescent Dimming Ballasts

- Magnetic Fluorescent Lamp Ballasts
- Optional modules allow for control of 0-10 V, DSI, and PWM load types.
- Operates HID sources on a full conduction non-dim basis.

Wiring

- Internal: Prewired by Lutron.
- System communications: Low-voltage Class 2 (PELV) wiring connects Dimming Panels to other components.
- Line (mains) voltage: Feed, load, and control circuit wiring only. No other wiring or assembly required.

Filter Chokes

- Load current rise time is measured at a 90 degree conduction angle.
- 10-90% of load current waveform:
 - 350 µSec rise time at 50% dimmer capacity.
 - 400 µSec rise time at 100% dimmer capacity.
- 0-100% of load current waveform:
 - 525 µSec rise time at 50% dimmer capacity.
 - 600 µSec rise time at 100% dimmer capacity.
- At no point in the waveform can the rate of current change exceed 300 mA per µSec.
- Consult Lutron for higher rise time options.

Dimming Cards

- Panel current ratings are listed for continuous operation - UL-listed specifically for each light source.
- RTISS™ filter circuit technology compensates for incoming line voltage variations: No visible flicker with +/-2% change in RMS voltage/cycle and +/-2% Hz change in frequency/second.
- Arcless-relay air gap-off switches (one per load circuit) ensure open load circuits when off function selected. Eliminate arcing at mechanical contacts when loads are switched.

Physical Design

- Enclosure: NEMA-Type 1 (Type 2 available upon request), IP-20 protection; #16 U.S. Gauge Steel. Indoors only.
- Weight: 30-1300 pounds (14-590 kg).
- Mounting: Surface mount only. Allow space for ventilating.

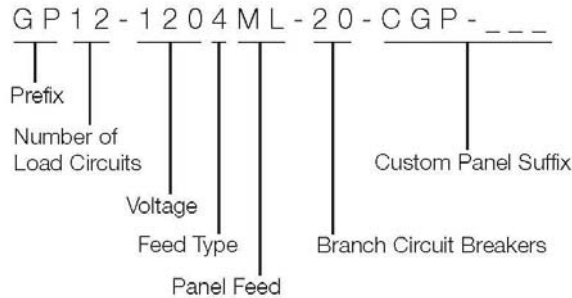
Environment/Heat Dissipation

- Patented, ribbed aluminum heat sink base cools Panel by convection. No fans.
- 32-104 °F (0-40 °C). Relative humidity less than 90% non-condensing.

¹ Reverse-phase control transformers require an ELVI Power Interface. Check phase with transformer manufacturer.

Job Name:	Model Numbers:	
<input type="text"/>	<input type="text"/>	<input type="text"/>
Job Number:	<input type="text"/>	<input type="text"/>

How to Build a GP Model Number



Prefix:

GP for GP Dimming Panel

Number of Load Circuits:

Indicates number of load circuits in the panel

Voltage:

120 for 120-127 V

277 for 277 V

Feed Type:

2 for 1 phase 2 wire

3 for 1 phase 3 wire (split phase)

4 for 3 phase 4 wire

Panel Feed:

ML for Main Lugs only

Mxx for Main Breaker with xx = breaker size in Amps

Branch Circuit Breakers:

20 for 20 A branch circuit breakers

15 for 15 A branch circuit breakers

Custom Panel Suffix:

Indicates panel with special options

Job Name: <input type="text"/>	Model Numbers: <input type="text"/>	
Job Number: <input type="text"/>	<input type="text"/>	<input type="text"/>

GRAFIK Systems

GP Dimming Panels

Power Equipment

GP Dimming Panels 11 11.13.08

GP3/4 Mini Models

Only standard panels listed. Consult Lutron for further options.

120-127 V Power

Number Of Circuits	Feed Type	Maximum Feed	Panel Branch Ratings	
			Circuit Breakers ¹	Maximum Dimmed Hot Load ²
GP3	1Ø, 2 W	40 A	15 A	1500 W/VA
		40 A	20 A	2000 W/VA
	1Ø, 3 W	30 A	15 A	1500 W/VA
		40 A	20 A	2000 W/VA
	3Ø, 4 W	15 A	15 A	1500 W/VA
		20 A	20 A	2000 W/VA
GP4	Feed	20 A	15 A ³	1500 W/VA
	Through	20 A	20 A ³	2000 W/VA

277 V Power

Number Of Circuits	Feed Type	Maximum Feed	Panel Branch Ratings	
			Circuit Breakers ¹	Maximum Dimmed Hot Load ²
GP3	1Ø, 2 W	40 A	20 A	4500 W/VA
	3Ø, 4 W	20 A	20 A	4500 W/VA
GP4	Feed Through	20 A	20 A ³	4500 W/VA

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

² Measured current will not exceed continuous load rating due to voltage drop in the dimmer.

³ Breakers located in distribution panel supplied by others.

Job Name:	Model Numbers:	
<input type="text"/>	<input type="text"/>	<input type="text"/>
Job Number:	<input type="text"/>	<input type="text"/>

Control Type EM

LUTRON®	LUT-ELI-3PH	Power Accessories
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P/N 369-299B 1 11.11.10

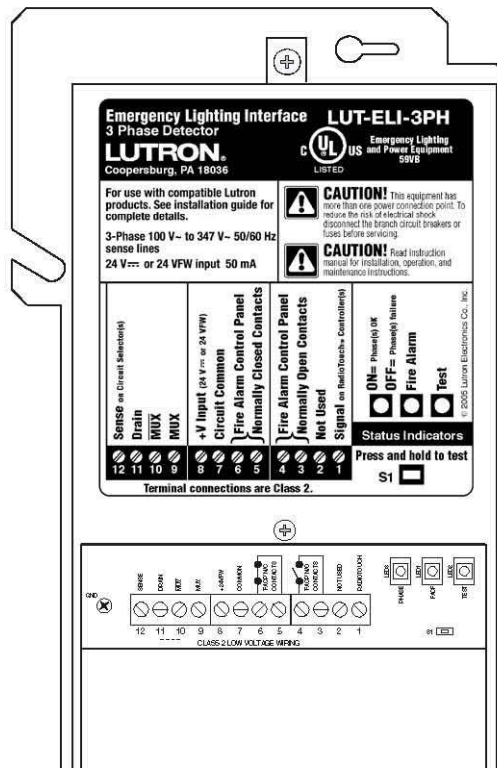
LUT-ELI-3PH Emergency Lighting Interface

Description

- The LUT-ELI-3PH unit is to be used in conjunction with *Lutron* GP, LP, LCP, XP, and XPS panels, *RadioTouch*® controllers, *EcoSystem*® bus supplies, *Energi Savr Node*™ units, *GRAFIK Eye*® QS units, and *Quantum*® lighting management hubs.
- The LUT-ELI-3PH unit is UL924 Listed as "Emergency Lighting and Power Equipment."
- The LUT-ELI-3PH senses the normal (non-essential) line voltage on all three phases of normal power. When one or more phases of power are lost, the LUT-ELI-3PH unit will send a signal to the *RadioTouch* controller, panel circuit selector/controller, *EcoSystem* bus supply, *Energi Savr Node* unit, *GRAFIK Eye* QS system or *Quantum* bus supply with emergency (essential) power, causing it to enter the emergency lighting mode. Any lights controlled by these devices will go to the emergency light level setting.
- When used with a *Energi Savr Node* unit, *EcoSystem* or *Quantum* bus supply, a separate 24 V_{DC} 50 mA power supply must be used to power the LUT-ELI-3PH unit.

Features

- Can be added to an existing system.
- Status indicator, indicates the phase status. Indicator ON is normal mode, OFF is emergency mode.
- A test button is provided to perform a functional test of the system by simulating an emergency situation.
- The interface has inputs for a Fire Alarm Control Panel (FACP). A maintained dry contact closure received between the FACP inputs will actuate the emergency mode.



Job Name: <input type="text"/>	Model Numbers: <input type="text"/>
Job Number: <input type="text"/>	<input type="text"/>

LUTRON®

LUT-ELI-3PH

Power Accessories

P/N 369-299B 2 11.11.10

Specifications

Power

- Sense voltage input to the LUT-ELI-3PH unit must be from the Normal (Non-Essential) power source.
- Sense voltage range: 100-347 V \sim 50/60 Hz 30 mA, 1 Phase or 3 Phase.
- Proper short-circuit and over-current protection must be provided at the distribution panel. A 20 A maximum circuit breaker may be used for the installation.

Standards

- UL 924 Listed.
- Lutron Quality Systems registered to ISO 9001.2000.

Environment

- Ambient Temperature Operating Range: 32-104 °F (0-40 °C).
- Relative humidity: less than 90% non-condensing.
- For indoor use only.

Inputs

- 2 inputs for a Fire Alarm Control Panel (FACP). A normally open or normally closed dry contact input on the FACP inputs will activate the emergency mode.

Status Light

- Status light indicates the phase status. Status light "ON" is normal mode, "OFF" is emergency mode.

Test Button

- A test button is provided to perform a functional test of the system by simulating an emergency situation.

System Communications and Capacity

- May be added to an existing Lutron system.
- One LUT-ELI-3PH unit may be used with up to 32 circuit selectors or controllers, 100 RadioTouch® controllers, or 32 EcoSystem® bus supplies, 32 Energi Savr Node™ units, 32 GRAFIK Eye® QS units or 32 Quantum® bus supplies.
- There are 4 Quantum bus supplies in a Quantum hub. Only 1 Quantum bus supply per hub needs to be connected per LUT-ELI-3PH unit. There can be up to 8 Quantum hubs connected to one LUT-ELI-3PH unit.

Mounting

- The interface mounts to a standard 4 x 4 in (102 x 102 mm) junction box.

LUTRON SPECIFICATION SUBMITTAL

Page 2

Job Name: <input type="text"/>	Model Numbers: <input type="text"/>	<input type="text"/>
Job Number: <input type="text"/>	<input type="text"/>	<input type="text"/>

Control Type GE



GRAFIK Eye QS Wireless Control Unit

Preset Dimming Controls

qsgr1-1 10.07.10

GRAFIK Eye QS Wireless Control Unit

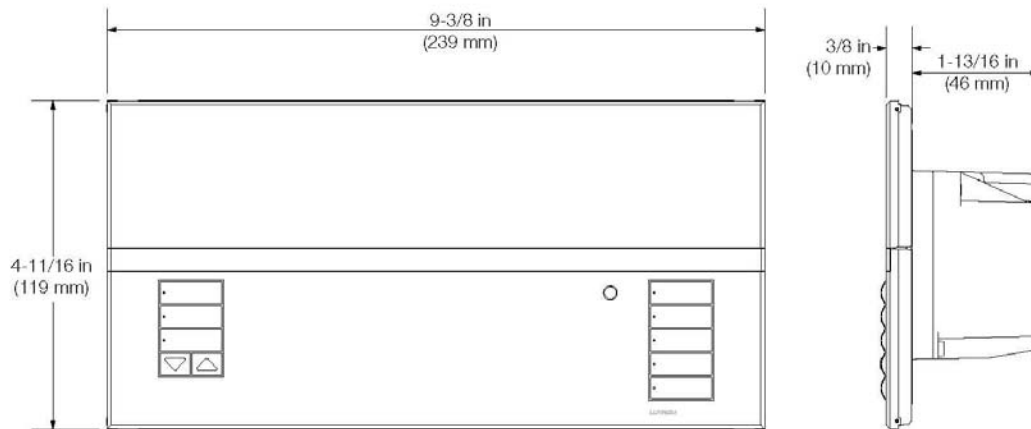


Description

GRAFIK Eye QS Wireless is the premier energy-saving light and shade control. GRAFIK Eye QS includes an astronomic timeclock, intuitive lighting presets, and direct shade control. Now with wireless technology, you can use the GRAFIK Eye QS Wireless to seamlessly integrate with a variety of Lutron wireless products and systems, including RadioRA 2, Radio Powr Savr™ occupancy, vacancy, and daylight sensors, Sivoia QS Wireless shades, Pico wireless control, and other GRAFIK Eye QS Wireless control units. Additionally, the GRAFIK Eye QS Wireless is compatible with all Lutron wired QS products and systems.

GRAFIK Eye QS Wireless is compatible with Quantum.

Mechanical Dimensions



Front View

Side View

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

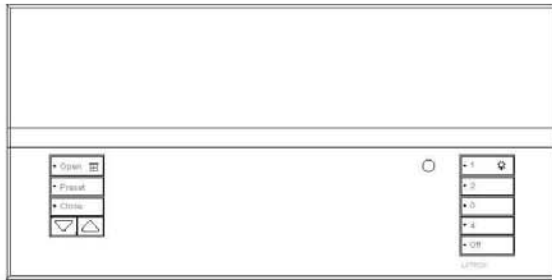
Job Name: _____	Model Numbers: _____
Job Number: _____	_____



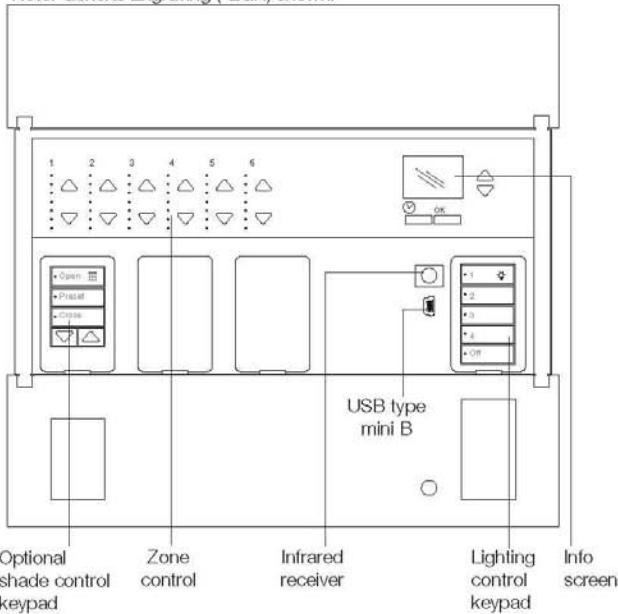
GRAFIK Eye.QS Wireless Control Unit

Preset Dimming Controls

qsgrj-3 10.07.10



Note: General Engraving (-EGN) shown.



Features

- Lutron's proprietary Clear Connect™ RF technology. Operates in the 434 MHz band.
- Pushbutton recall of four preset lighting scenes, plus Off.
- Twelve (12) additional scenes accessible through other QS devices, such as seeTouch® QS wallstations.
- Optional integrated shade control buttons, which can also be added to the unit after installation.
- Master override buttons to raise and lower all lights.
- Allows setup of lighting scenes and shade presets using buttons on the control unit.
- Built-in infrared (IR) receiver.
- External IR connection.
- Built-in astronomic timeclock.
- Info screen shows zone light level percentage, energy savings, zone labeling, and programming.
- Lockout option prevents accidental changes.
- One occupancy sensor input and 24 V_{AC} power for occupancy sensor.
- QS communication link for seamless integration of lights, motorized window treatments, occupancy sensors, wallstations, and integration interfaces.
- Compatible with all Lutron QS system components.
- Wireless communication for seamless integration with a variety of Lutron wireless products and systems, including Radio RA® 2, Radio Powr Savr™ occupancy, vacancy, and daylight sensors, Sivoia® QS wireless shades, Pico® wireless control, and other GRAFIK Eye QS wireless control units.
- Backlit buttons with engraving make unit easy to locate and operate.
- Available in a variety of colors and finishes.

Job Name: _____	Model Numbers: _____
Job Number: _____	_____

Control Type O

Sensors

LOS-CIR Series

Occupant Sensors

LOS-CIR: 1 09.04.08

Infrared Ceiling Mount Sensor



The LOS-CIR Series ceiling-mount passive infrared sensors can integrate into Lutron systems or function as stand-alone controls using a Lutron power pack. The sensor uses a small semiconductor heat detector that resides behind a multi-zone optical lens. The sensor's detector is sensitive to the heat emitted by the human body. In order to trigger the sensor, the source of heat must move from one range of detection to another. Non-moving hot objects will not cause the lights to turn on.

Features

- Intelligent, continually adapting passive infrared (PIR) sensor
- Passive infrared sensing
- Reliable motion detection with high error immunity
- Snap-locks to ceiling-mounted cover plate
- Non-Volatile Memory: settings saved in protected memory are not lost during power outages
- 450 to 1500 sq.ft. (42 to 140 m²) coverage when mounted on an 8 - 12 ft. (2.4 - 3.7 m) ceiling
- Affords choice of turning lights off or dimming to a preset level in the unoccupied state when integrated with a Lutron system.

Models Available

Cat. No.	Color	Coverage	Field of View
LOS-CIR-450-WH	White	450 sq.ft. (42 m ²)	360°
LOS-CIR-1500-WH	White	1500 sq. ft. (140 m ²)	360°

Self-Adaptive Feature

The LOS-CIR Series ceiling-mount occupant sensors provides reliable detection with high error immunity. The internal microprocessor analyzes the information from the PIR technology and determines the optimum setting to use in order to properly cover the space.

OLUTRON SPECIFICATION SUBMITTAL

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Job Number: <input type="text"/>	<input type="text"/>	<input type="text"/>

Sensors	LOS-CIR Series	Occupant Sensors
---------	----------------	------------------

LOS-CIR 2 09.04.08

Specifications

Timer Adjustment

- Automatic mode: Continually adapting sensor automatically adjusts settings to the space
- Manual mode: 8 to 30 minutes
- Test mode: 8 seconds

LED Lamp

- Red: infrared motion detected

Housing

- Rugged, high-impact, injection-molded plastic
- Color-coded leads 6 in. (15 cm)

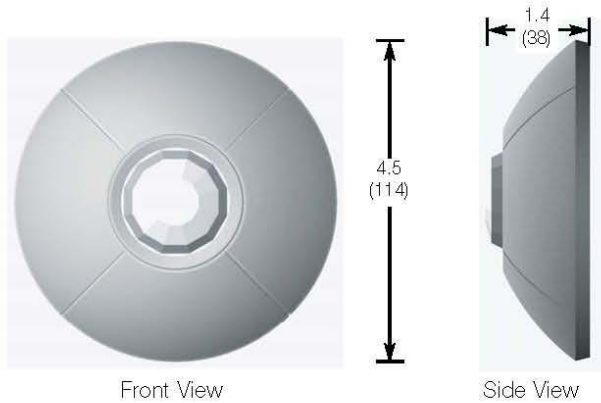
Power

- Operating voltage: 20 - 24 V_{DC}, PELV (Class 2: USA) low-voltage
- Operating current: 33 mA nominal
- Control output: 20 - 24 V_{DC} active high logic control signal with short-circuit protection, open collector when unoccupied
- UL and CUL listed

Operating Environment

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



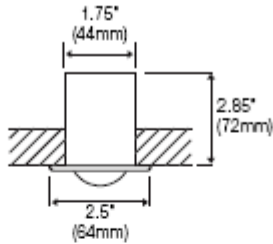
Dimensions



Measurements are in inches (mm)

Job Name:	Model Numbers:	
Job Number:		

Control Type PC

	MW-PS-WH	Daylight Sensor
microPS™ Daylight Sensor		<small>mhw-ps-1 04.01.04</small> Type PS
	<p>Description</p> <ul style="list-style-type: none"> • Provides daylight harvesting capability. • May be used with the Digital microWATT® Lighting Zone Controller, GRX/OMX-DACPI, or RadioTouch Controller. • Allows controllers to automatically dim lights when available daylight is high and brighten lights when daylight is low in order to maintain a specific light level in the space. • May be calibrated for daylight sensitivity. • Mounts easily on any ceiling tile with one 2" diameter hole. 	
<p>Specifications</p> <p>Power Low-voltage Class 2 Operating Voltage: 24 V Direct Current.</p> <p>Key Design Features Meets IEC 801-2. Tested to withstand 15kV electrostatic discharge without damage or memory loss.</p> <p>Environment</p> <ul style="list-style-type: none"> • Temperature: 32-104°F (0-40°C). • Relative humidity: less than 90% non-condensing. <p>Delivery Ships in 3-4 weeks.</p>		
	<p>2" (50mm) diameter hole required for installation</p>	
LUTRON. SPECIFICATION SUBMITTAL		Page
Job Name:	Model Numbers:	
Job Number:		

Control Type RE

GRAFIK Eye 

GRX-IO

Control Interfaces

grx-io-1 06.16.07

GRX-IO Control Interface



Description

- Integrates a *GRAFIK Eye* lighting control system with equipment that has contact-closure I/O, including:
 - Motion and occupant sensors.
 - Timeclocks and push buttons.
 - Motorized projection screens, skylights, window shades, and movable walls.
 - AV equipment.
 - Security systems.
- May be programmed to control any combination of one to eight *GRAFIK Eye* 3000 or 4000 Series control units.

Inputs/Outputs

- Provides five inputs and five outputs.
- Provides both normally open (NO) and normally closed (NC) contacts.
- Using the inputs, contact closures in other equipment can operate control units to:
 - Select scenes.
 - Adjust scenes to reflect status of movable walls.
 - Turn lights on or off based on room occupancy.
- Using the outputs, scene changes in control units can:
 - Trigger outputs to control other equipment.
 - Provide status feedback to other equipment.

LUTRON SPECIFICATION SUBMITTAL

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Job Name: <input style="width: 90%;" type="text"/>	Model Numbers: <input style="width: 95%;" type="text"/>	
Job Number: <input style="width: 80%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>

Specifications

Power

- Low-voltage PELV (Class 2: USA), Operating voltage: 12-24 V_{DC}.
- Provides 2-way interface between preset lighting controls and dry contact closure devices.
- Provides 5 inputs and 5 outputs. Outputs can control other manufacturers' equipment.

Operating Modes


- Scene selection
- Special functions
- Partitioning
- Occupant sensor

Five Input Terminals

- Accept maintained inputs and momentary inputs with 40 msec minimum pulse times.
- Off-state leakage current must be less than 100 μ A.
- Open circuit voltage: 24 V_{DC} maximum.
- Inputs must be dry contact closure, solid state, open collector, or active-low (NPN)/active high (PNP) output.
 - Open collector NPN or active-low on-state voltage must be less than 2 V_{DC} and sink 3.0 mA.
 - Open collector PNP or active-high on-state voltage must be greater than 12 V_{DC} and source 3.0 mA.

Five Output Terminals

- Provide maintained or momentary (1-second) outputs.
- The GRX-IO is not rated to control unclamped, inductive loads. Inductive loads include, but are not limited to, relays, solenoids, and motors. To control these types of equipment, a flyback diode must be used (DC voltages only). See diagram at right.

Supply Voltage	Resistive Load 
0-24 V _{DC}	1.0 A
0-24 V _{AC}	0.5 A

Status LEDs

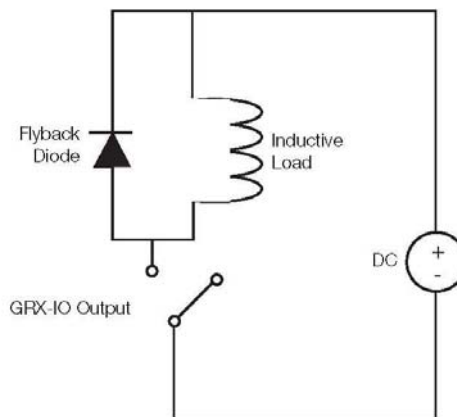
Five Status LEDs light when associated output is active (on).

System Communications and Capacity

Low-voltage type PELV (Class 2: USA) wiring connects GRX-IO Interface to control units and other components. Counts toward system maximum of 16 wallstations/control interfaces (3 powered from one *GRAFIK Eye* control unit without external 12 V_{DC} power supply; GRX-IO counts as two devices toward the maximum of three connected to one *GRAFIK Eye* 3000 control unit).

Environment

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



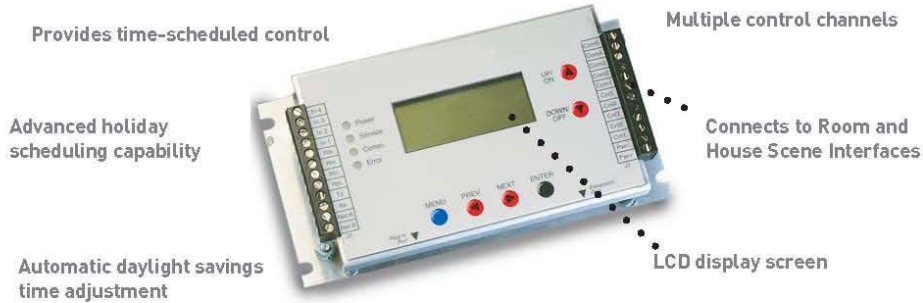
Job Name: <input type="text"/>	Model Numbers: <input type="text"/>
Job Number: <input type="text"/>	<input type="text"/>

Control Type TC



WIRELESS LIGHTING CONTROLS

MSC-100 Astronomic Time Clock



PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's MSC-100 Astronomic Time Clock is a five-channel clock used for fully automating a Wireless Miro lighting control system. It offers simple programming, yet advanced control features. The Time Clock is used with at least one Wireless Miro Scene Interfaces.

Operation

The MSC-100 provides ON/OFF control signals based on time of day, day of week, holiday, and calculated sunrise/sunset (astronomic) time. Control signals are transmitted via hardwire connection to relay channels, giving the clock the ability to work in a range of applications from simple to complex. Clock schedules are programmed events that command channels on or off. Each schedule is assigned a number, type, time of day, channel, day, and may include other information for specific clock event operation. Schedules can be assigned to operate any combination of days or holiday types.

Features

- Single date, perpetual date, perpetual day of week and perpetual Easter holidays
- 32 holidays, each up to 120 days with three holiday schedule types
- Temporary schedules that execute once then self-delete
- Repeating schedule 5 minutes to 10 hours
- 120 schedules assignable to one or more weekday or holiday

Programming

Programming the MSC-100 is easy. Users simply complete fill-in-the-blank prompts on the device keypad and can follow along on the LCD screen. Each clock channel can be programmed independently. All programming is securely stored in non-volatile memory.

Applications

When used in conjunction with Wireless Miro lighting controls, one MSC-100 will support connection to up to two Scene Interfaces, depending on the number of scenes required. Unused channels can be used to control third-party devices such as fountains or sprinklers.

- Duration time scheduling from 1 second to 18 hours
- Continually self-adjusting astronomic control based on sunrise and sunset times
- Astronomic offset +/- 120 minutes
- Manual ON/OFF override from keypad
- Selectable 12- or 24-hour format
- Adjustable channel stagger from 1-60 seconds

WattStopper
 www.wattstopper.com
 800.879.8585



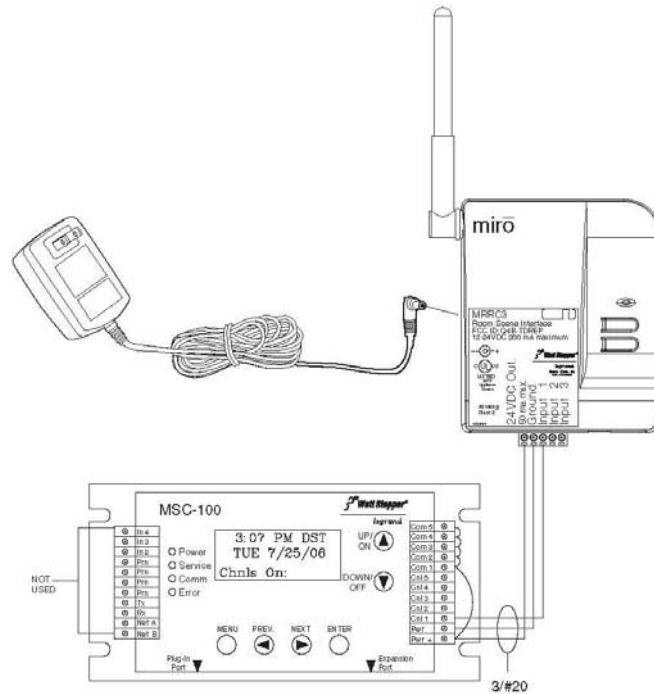
WIRELESS LIGHTING CONTROLS

Specifications

- Input voltage: 24 VAC or 24 VDC
- Five normally open isolated relays rated 1 amp 24 VAC/VDC, assigned to channels 1-5
- Battery backed clock operation for up to 8 years
- Non-volatile program memory storage
- Power-up sequence, executes missed schedules following power outage
- Dimensions: 3.6" x 6.7" x 1.3" (91.4mm x 177.8mm x 33mm) L x W x D
- FCC compliant; CE certified
- One year warranty

System Layout & Wiring

MSC-100 Controls & Wiring



The MSC-100 Time Clock interfaces to the Wireless Miro RF network through a Miro Room or House Scene Interface. The Scene Interface supplies 24 VDC to power the Time Clock. Wiring shown is typical for one channel.

Ordering Information

Catalog No.	Product Description
<input type="checkbox"/> MSC-100	5-channel astronomical time clock
Works in conjunction with:	
Catalog No.	Description
<input type="checkbox"/> MRHC3	House Scene Interface
<input type="checkbox"/> MRRC3	Room Scene Interface

Motor Control Center

**30.1-12 Motor Control Centers — Low Voltage
Freedom & Advantage**

EAT•N | Cutler-Hammer

June 2006
Sheet 1236

TOC Index
Master TOC

General Description

2100 Series Motor Control Center



30
*Freedom and Advantage
Motor Control Center*

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For more information visit: www.EatonElectrical.com CA08104001E

MCC Freedom FVR Table

NEMA Size		Maximum Horsepower					HMCP Frame ①	MCCB Frame ②	Freedom		Advantage	
		208 V	240 V	380 V	480 V	600 V			Unit Size	X Space	Unit Size	X Space
30.1-14 Motor Control Centers — Low Voltage Freedom & Advantage												
Technical Data												
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="display: flex; align-items: center;"> </div> <div style="text-align: right;"> <div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; padding: 2px 5px;">TOC</div> <div style="border: 1px solid black; padding: 2px 5px;">Index</div> </div> <div style="border: 1px solid black; padding: 2px 5px; margin-top: 2px;">Master TOC</div> </div> </div> <div style="text-align: right; margin-top: 5px;"> June 2006 Sheet 1238 </div>												
Table 30.1-2. Combination Starters with Series C Motor Circuit Protectors or Molded Case Circuit Breakers (Continued)												
Two-Speed One Winding, Constant/Variable Torque												
Type F946												
Type W946												
1	7.5	7.5	10	10	10	150	HFD/FDC	24 (609.6) ③	4X	24 (609.6) ③	4X	
2	10	15	25	25	25	150	HFD/FDC	24 (609.6) ③	4X	24 (609.6) ③	4X	
3	25	30	50	50	50	150	HJD/JDC	36 (914.4) ③④	6X	36 (914.4) ③④	6X	
4	40	50	75	100	100	150	HJD/JDC	36 (914.4) ③④	6X	36 (914.4) ③④	6X	
5	50	60	100	125	150	250	HJD/JDC	72 (1828.8) ③	12X	72 (1828.8) ③	12X	
	75	100	150	200	200	400	HKD/KDC					
Two-Speed Two Winding, Constant/Variable Torque												
Type F956												
Type W956												
1	7.5	7.5	10	10	10	150	HFD/FDC	24 (609.6)	4X	24 (609.6) ③	4X	
2	10	15	25	25	25	150	HFD/FDC	24 (609.6)	4X	24 (609.6) ③	4X	
3	25	30	50	50	50	150	HFD/FDC	30 (762.0)	5X	30 (762.0) ③	5X	
4	30	40	60	75	100	150	HFD/FDC	30 (762.0)	5X	30 (762.0) ③	5X	
	40	50	75	100	—	250	HJD/JDC	30 (762.0) ③	5X	30 (762.0) ③	5X	
5	50	60	100	125	150	250	HJD/JDC	72 (1828.8) ③	12X	72 (1828.8) ③	12X	
	75	100	150	200	200	400	HKD/KDC					
Reduced Voltage Autotransformer												
Type F606												
Type W606												
2	10	15	25	25	25	150	HFD/FDC	36 (914.4)	6X	36 (914.4)	6X	
3	25	30	50	50	50	150	HFD/FDC	48 (1219.2)	8X	54 (1371.6)	9X	
4	30	50	75	100	100	150	HJD/JDC	54 (1371.6)	9X	54 (1371.6)	9X	
5	50	60	100	125	150	250	HJD/JDC	72 (1828.8)	12X	72 (1828.8)	12X	
	75	100	150	200	200	400	HKD/KDC					
6	150	200	300	400	400	600	HLD/LDC	72 (1828.8) ③	12X	72 (1828.8) ③	12X	
7	—	300	—	600	600	1200	HND	72 (1828.8) ③	12X	72 (1828.8) ③	12X	
Reduced Voltage Part Winding												
Type F706												
Type W706												
1PW	10	10	15	15	15	150	HFD/FDC	24 (609.6)	4X	24 (609.6) ③	4X	
2PW	20	25	40	40	40	150	HFD/FDC	24 (609.6)	4X	24 (609.6) ③	4X	
3PW	40	50	75	75	75	150	HFD/FDC	30 (762.0)	5X	30 (762.0) ③	5X	
4PW	—	—	—	100	125	150	HFD/FDC	36 (914.4) ③	6X	36 (914.4) ③	6X	
	60	60	125	150	150	250	HJD/JDC					
	75	75	150	—	—	400	HKD/KDC					
5PW	100	125	—	250	300	400	HKD/KDC	72 (1828.8) ③	12X	72 (1828.8) ③	12X	
	150	150	250	350	350	600	HLD/LDC					
Reduced Voltage Wye Delta Open Transition												
Type F806												
Type W806												
2YD	20	25	40	40	40	150	HFD/FDC	30 (762.0)	5X	30 (762.0)	5X	
3YD	30	40	75	75	5	150	HFD/FDC	42 (1066.8)	7X	42 (1066.8)	7X	
	40	50	—	—	—	250	HJD/JDC					
4YD	60	75	125	150	150	250	HJD/JDC	48 (1219.2)	8X	42 (1066.8)	7X	
	—	—	150	—	—	400	HKD/KDC					
5YD	100	125	200	250	300	400	HKD/KDC	72 (1828.8) ③	12X	72 (1828.8) ③	12X	
	150	150	250	300	—	600	HLD/LDC					
Reduced Voltage Wye Delta Closed Transition												
Type F806												
Type W806												
2YD	20	25	40	40	40	150	HFD/FDC	42 (1066.8)	7X	42 (1066.8)	7X	
3YD	40	50	—	—	—	250	HFD/FDC	54 (1371.6)	9X	54 (1371.6)	9X	
4YD	60	75	125	150	150	250	HJD/JDC	60 (1524.0)	10X	60 (1524.0)	10X	
	—	—	150	—	—	400	HKD/KDC					
5YD	100	125	200	250	300	400	HKD/KDC	72 (1828.8) ③	12X	72 (1828.8) ③	12X	
	150	150	250	300	—	600	HLD/LDC					

① Standard Combination Starter Units with HMCP Magnetic Only disconnect have short circuit ratings of 65,000 amperes at 480 volts. Optional HMCP combination starter units are available with 100,000 amperes at 480 volts.

② Optional Combination Starter Units with Thermal-Magnetic breaker disconnects are available with either 65,000 amperes or 100,000 amperes at 480 volts.

③ Add 6-inch (152.4 mm) space for low speed disconnect.

④ 42-inch (1066.8 mm) space needed with Thermal-Magnetic Circuit Breaker. 48-inch (1219.2 mm) space needed with Thermal-Magnetic Circuit Breaker.

⑤ Requires 29-inch (711.2 mm) wide structure.

⑥ 36-inch (914.4 mm) space needed for Thermal-Magnetic Circuit Breaker.

⑦ Requires 21-inch (533.4 mm) deep, 29-inch (711.2 mm) wide structure.

⑧ For starting speed disconnect, add 6-inch (152.4 mm) space.


Note: For HMCP motor circuit protectors continuous ampere ratings by motor hp, see Table 30.1-88 on Page 30.1-39.

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MCC Freedom AFD Table



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SVX9000 1 – 30 hp at 480 V Plug-in Adjustable Frequency Drive Units

All Eaton's Cutler-Hammer standard units include a disconnect, an ac choke, output reactor and a door-mounted keypad. All plug-in units have a built-in Dynamic Braking Circuit, M3 frame. Standard unit drives do not include a CPT.

Note: Output reactor not included on 240 V units. Standard on 380 – 500 V drives up to 125 hp (ICT rating).

CT: Constant Torque drives are capable of producing 200% starting torque for 10 seconds and are rated 150% overload for one minute.

VT: Variable Torque drives are capable of producing 200% starting torque for 10 seconds and are rated 110% overload for one minute.

Table 30.1-27. SVX9000 Adjustable Frequency Drives — Dimensions in Inches (mm)

CT/VT Amperes	Nominal hp CT/VT or kW	CB Type ①		Standard Unit Space		Typical Options Unit Space		Max. Option Unit Space	
		HMCP	MCCB	Dim.	(X)	Dim. ②	(X)	Dim.	(X)
200 – 240 Volts									
3.6	.75	7	15	18 (457.2)	3X	30 (762.0)	5X	36 (914.4)	6X
4.7	1	15	15	18 (457.2)	3X	30 (762.0)	5X	36 (914.4)	6X
5.6	1.5	15	15	18 (457.2)	3X	30 (762.0)	5X	36 (914.4)	6X
7	2	15	15	18 (457.2)	3X	30 (762.0)	5X	36 (914.4)	6X
10	3	15	25	24 (609.6)	4X	36 (914.4)	6X	42 (1066.8)	7X
16	5	30	40	24 (609.6)	4X	36 (914.4)	6X	42 (1066.8)	7X
22	7.5	50	50	24 (609.6)	4X	36 (914.4)	6X	42 (1066.8)	7X
30	10	50	70	36 (914.4)	7X	48 (1219.2)	8X	54 (1371.6)	9X
43	15	100	100	36 (914.4)	7X	48 (1219.2)	8X	54 (1371.6)	9X
57	20	100	125	36 (914.4)	7X	48 (1219.2)	8X	54 (1371.6)	9X
380 – 500 Volts									
2.5	1	7	15	18 (457.2)	3X	30 (762.0)	5X	36 (914.4)	6X
3	1.5	7	15	18 (457.2)	3X	30 (762.0)	5X	36 (914.4)	6X
3.5	2	7	15	18 (457.2)	3X	30 (762.0)	5X	36 (914.4)	6X
5	3	15	15	18 (457.2)	3X	30 (762.0)	5X	36 (914.4)	6X
8	5	15	15	24 (609.6)	4X	36 (914.4)	6X	42 (1066.8)	7X
11	7.5	30	25	24 (609.6)	4X	36 (914.4)	6X	42 (1066.8)	7X
15	10	30	35	24 (609.6)	4X	36 (914.4)	6X	42 (1066.8)	7X
21	15	30	50	24 (609.6)	4X	36 (914.4)	6X	42 (1066.8)	7X
27	20	50	60	36 (914.4)	6X	48 (1219.2)	8X	54 (1371.6)	9X
34	25	50	80	36 (914.4)	6X	48 (1219.2)	8X	54 (1371.6)	9X
40	30	100	100	36 (914.4)	6X	48 (1219.2)	8X	54 (1371.6)	9X

① For fusible disconnect use typical option unit.
Note: Drive units fit into a standard 20-inch (508.0 mm) wide MCC structure.

Table 30.1-28. Plug-in Options

Plug-in Options	
Option Boards ①	
IO Expander	②
Encoder Expander	②
Interbus S Communications	②
Modbus Communications	②
PROFIBUS® DP Communications	②
LonWorks Communications	②
Can Open (Slave) Communications	②
DeviceNet Communications	②
Johnson Controls® N2 Communications	②
PROFIBUS DP (D9 Connector)	②
Modbus (D9 Connector)	②
Plug-In Control Relays	
1 Relay	②
2 Relays	②
3 Relays	②
Other Options	
Automatic Bypass Circuit	②
Bypass Drive Test Switch	②
7 Relay 120 V Control with CPT	②
Isolated Signal Processor	②
3-15 PSIG Interface	②
Dynamic Braking Resistors	②
Graphics Keypad	②
Line Fuses	③④
RFI Filter	②
Deduct to Remove Output Filter	②
KLC 2000 ft. (610 m) DV/DT Filter	②
Output Contactor	②
Dual Overloads	③④
3 Contactor Bypass	③④
RWT Filter	②
NEMA 1	②
NEMA 4X and Class 1, Division 2	②

① Up to 5 Option Boards may be selected. Please see Section 32 for detailed information.
 ② All options will fit in typical and maximum option unit.
 ③ This option will fit in all units.
 ④ One of these options will fit in 5 – 30 hp CT at 480 V frame standard units, 1 – 30 hp CT at 480 V typical and maximum option units.
 ⑤ All options will fit in maximum option unit.
 ⑥ Use with bypass option.
 ⑦ DB resistors are to be mounted by the customer external to the MCC.
 ⑧ Not available for 240 V units.
 ⑨ RWT is mounted at the motor. See Section 35 for Reflected Wave Trap (RWT).
Note: Output reactor or DV/DT filter not required for motor lead lengths shorter than 100 feet (30.4 m) — 30 feet (9.1 m) for 2 hp and below, or when a RWT filter is used at the motor.
Note: Maximum motor lead length is 160 feet (48.8 m) for 1.5 hp and below, 330 feet (100.6 m) for 2 hp and 400 feet (121.9 m) for 3 hp and larger when using a standard output reactor.
Note: Motor lead lengths up to 2000 feet (609.6 m) can be achieved by using the KLC DV/DT filter.

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MCC Freedom Main Sizing Table

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Table 30.1-60. Main Incoming Line and Feeder Circuit Breakers — Molded Case Circuit Breakers — Dimensions in Inches (mm)
Frames reflect standard circuit breakers. Unit spacings shown include sufficient space to terminate cables on any standard breaker lug. If cable sizes exceed those listed, add 12-inch (304.8 mm) space for lug adapters.

Frame Size (Amperes)	Circuit Breaker Frame ①	Interrupting Capacity (kAIC)			Main Unit Size		Feeder Unit Size		Maximum Cable Size See circuit breaker terminal data for variations.
		240 V	480 V	575 V	Inches (mm) ②	X Space	Inches (mm)	X Space	
150	HFD	100	65	25	18 (457.2) T, B	3X	12 (304.8)	2X	4/0 (1 per Phase)
	FDC	100	100	35					
225	HFD	100	65	35	18 (457.2) T, B	3X	18 (457.2)	3X	4/0 (1 per Phase)
	FDC	100	100	35					
250	HJD	100	65	35	30 (762.0) T, B	5X	18 (457.2)	3X	350 kcmil (1 per Phase)
	JDC	100	100	35					
400	HKD	100	65	25	30 (762.0) T, B	5X	18 (457.2)	4X	250 kcmil (2 per Phase) or 500 kcmil (1 per Phase)
	KDC	100	100	50					
	CHKD ③	100	65	25	30 (762.0) T, B	5X	30 (762.0)	5X	250 kcmil (2 per Phase) or 500 kcmil (1 per Phase)
	CKDC ③	100	100	50					
600	HLD	100	65	35	24 (609.6) B ④	4X	30 (762.0) ⑤	5X	500 kcmil (2 per Phase)
	LDC	100	100	50	30 (762.0) T	5X			
	CHLD ⑥	100	65	35	24 (609.6) B ④	4X	24 (609.6) ⑤	4X	500 kcmil (2 per Phase)
	CLDC ⑥	100	100	50	30 (762.0) T	5X			
800	HMDL	100	65	35	30 (762.0) T, B ⑦	5X	30 (762.0) ⑧	5X	750 kcmil (3 per Phase)
	CHMDL ⑨	100	65	35	48 (1219.2) T, B ⑧	8X	48 (1219.2) ⑧	8X	750 kcmil (3 per Phase)
	NDC	100	100	50	42 (1066.8) T, B ⑧	7X	42 (1066.8) ⑧	7X	750 kcmil (3 per Phase)
	CHND ⑩	100	65	35	72 (1828.8) T, B	12X	72 (1828.8)	12X	750 kcmil (3 per Phase)
1200	CNDC ⑩	100	100	50					
	HND ⑪	100	65	35	42 (1066.8) T, B ⑧	7X	42 (1066.8) ⑧	7X	750 kcmil (3 per Phase)
2000	NDC	100	100	50	72 (1828.8) T, B	12X	72 (1828.8)	12X	750 kcmil (3 per Phase)
	CHND ⑫	100	65	35	72 (1828.8) T, B	12X	72 (1828.8)	12X	750 kcmil (3 per Phase)
	CNDC ⑫	100	100	50					
	RD ⑬	100	65	50	72 (1828.8) ⑭	12X	72 (1828.8)	12X	750 kcmil (6 per Phase)
2500	RDC ⑬	100	100	65					
	CRD ⑮	100	65	50					
	CRDC ⑮	100	100	65					
	RD ⑬	100	65	50	72 (1828.8) ⑭	12X	72 (1828.8)	12X	750 kcmil (6 per Phase)

① For 100% rated application, please refer to Page 21.4-61 Application Information — 100% Rated Circuit Breakers.

② T = top, B = bottom.

③ 100% Rated when 90° cable is applied at 75°C ampacity for 100% rating. RMS 310 LS is required and included in the price.

④ Add 6-inch (152.4 mm) for top entry of incoming cables.

⑤ Install at top or cable top entry or at bottom for bottom cable entry.

⑥ NEMA 1 gasketed only.

⑦ Digitrip RMS 310 LS is standard and included in the pricing.

⑧ The main breaker requires the complete vertical section. The rear is unusable.

⑨ 24-inch (609.6 mm) wide.

⑩ Install at top of vertical section for top entry cable and at bottom for bottom entry.

Table 30.1-61. Dual Feeder Units — Molded Case Circuit Breakers — Dimensions in Inches (mm)

Maximum Amperes	Circuit Breaker Frame	Interrupting Ratings (kAIC)			Enclosure Width Inches (mm)	Main Unit Size		Feeder Unit Size		Maximum Cable Size		
		240 V	480 V	600 V		Inches (mm)	X Space	Inches (mm)	X Space			
50/50	HFD	100	65	25	Standard 20 (508.0)	N/A	12 (304.8)	2X	See above breaker frame information			
	FDC	200	100	35								
50/100	HFD	100	65	25						12 (304.8)	2X	
	FDC	200	100	35								
100/100	HFD	100	65	25						12 (304.8)	2X	
	FDC	200	100	35								
100/100	HFD	100	65	25						12 (304.8)	2X	
	FDC	200	100	35								
150/150	HFD	100	65	25						12 (304.8)	2X	
	FDC	200	100	35								

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MCC Freedom Motor Circuit Protection Table

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Motor Protection

In line with 2005 NEC 430.6(A) circuit breaker, HMCP and fuse rating selections are based on full load currents for induction motors running at speeds normal for belted motors and motors with normal torque characteristics using data taken from NEC Table 130.250 (3-phase). Actual motor nameplate ratings shall be used for selecting motor running overload protection. Motors built special for low speeds, high torque characteristics, special starting conditions and applications will require other considerations as defined in the application section of the NEC.

These additional considerations may require the use of a higher rated HMCP, or at least one with higher magnetic pickup settings.

Circuit breaker, HMCP and fuse ampere rating selections are in line with maximum rules given in NEC 430.52 and Table 430.250. Based on known characteristics of Eaton's Cutler-Hammer type breakers, specific units are recommended. The current ratings are no more than the maximum limits set by the NEC rules for motors with code letters F to V or without code letters. Motors with lower code letters will require further considerations.

In general, these selections were based on:

1. Ambient — Outside enclosure not more than 40°C (104°F).
2. Motor starting — Infrequent starting, stopping or reversing.
3. Motor accelerating time — 10 seconds or less.
4. Locked rotor — Maximum 6 times motor FLA.

Type HMCP motor circuit protector may not set at more than 1300% of the motor full-load current to comply with NEC 430.52. (Except for NEMA Design B energy high-efficiency motors which can be set up to 1700%.)

Circuit breaker selections are based on types with standard interrupting ratings. Higher interrupting rating types may be required to satisfy specific system application requirements.

For motor full load currents of 208 and 200 volts, increase the corresponding 230-volt motor values by 10 and 15% respectively.

Table 30.1-88. Motor Circuit Protector (MCP), Circuit Breaker and Fusible Switch Selection Guide

Horsepower	Full Load Amperes (NEC) FLA	Fuse Size NEC 430.52 Maximum Amperes		Recommended Cutler-Hammer			
		Time Delay	Non-Time Delay	Circuit Breaker		Motor Circuit Protector Type HMCP	
				Amperes	Type	Amperes	Adj. Range
230 Volts, 3-Phase							
1	3.6	10	15	15	HFD	7	21 - 70
1-1/2	5.2	10	20	15	HFD	15	45 - 150
2	6.8	15	25	15	HFD	15	45 - 150
3	9.6	20	30	20	HFD	30	90 - 300
5	15.2	30	50	30	HFD	30	90 - 300
7-1/2	22	40	70	50	HFD	50	150 - 500
10	28	50	90	60	HFD	50	150 - 500
15	42	80	150	90	HFD	100	300 - 1000
20	54	100	175	100	HFD	100	300 - 1000
25	68	125	225	125	HFD	150	450 - 1500
30	80	150	250	150	HFD	150	450 - 1500
40	104	200	350	150	HFD	150	750 - 2500
50	130	250	400	200	HFD	150	750 - 2500
60	154	300	500	225	HFD	250	1250 - 2500
75	192	350	600	300	HKD	400	2000 - 4000
100	248	450	800	400	HKD	400	2000 - 4000
125	312	600	1000	500	HLD	600	1800 - 6000
150	360	700	1200	600	HLD	600	1800 - 6000
200	480	1000	1600	700	HLD	600	1800 - 6000
460 Volts, 3-Phase							
1	1.8	6	6	15	HFD	7	21 - 70
1-1/2	2.6	6	10	15	HFD	7	21 - 70
2	3.4	6	15	15	HFD	7	21 - 70
3	4.8	10	15	15	HFD	15	45 - 150
5	7.6	15	25	15	HFD	15	45 - 150
7-1/2	11	20	35	25	HFD	30	90 - 300
10	14	25	45	35	HFD	30	90 - 300
15	21	40	70	45	HFD	50	150 - 500
20	27	50	90	50	HFD	50	150 - 500
25	34	60	110	70	HFD	70	210 - 700
30	40	70	125	70	HFD	100	300 - 1000
40	52	100	175	100	HFD	100	300 - 1000
50	65	125	200	110	HFD	150	450 - 1500
60	77	150	150	125	HFD	150	750 - 2500
75	96	175	300	150	HJD	150	750 - 2500
100	124	225	400	175	HJD	150	750 - 2500
125	156	300	500	225	HKD	400	2000 - 4000
150	180	350	600	250	HJD	400	2000 - 4000
200	240	450	800	350	L600	600	1800 - 6000
575 Volts, 3-Phase							
1	1.4	3	6	15	HFD	3	9 - 30
1-1/2	2.1	6	10	15	HFD	7	21 - 70
2	2.7	6	10	15	HFD	7	21 - 70
3	3.9	10	15	15	HFD	7	21 - 70
5	6.1	15	20	15	HFD	15	45 - 150
7-1/2	9	20	30	20	HFD	30	90 - 300
10	11	20	35	25	HFD	30	90 - 300
15	17	30	60	40	HFD	30	90 - 300
20	22	40	70	50	HFD	50	150 - 500
25	27	50	90	60	HFD	50	150 - 500
30	32	60	100	60	HFD	70	210 - 500
40	41	80	125	80	HFD	100	300 - 1000
50	52	100	175	100	HFD	100	300 - 1000
60	62	110	200	125	HFD	150	750 - 2500
75	77	150	250	150	HFD	150	750 - 2500
100	99	175	300	175	HJD	150	750 - 2500
125	125	225	400	200	HJD	250	1250 - 2500
150	144	300	450	225	HJD	250	1250 - 2500
200	192	350	600	300	HKD	400	2000 - 4000

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