Appendix A | Lighting

Appendix A | Luminaire Schedule

Type	Location	Manufacturer	Mfr/Catalog #	Description	Lamp	Ballast	Input Watts	Voltage	Notes
C1	Tiered Classroom	Elliptipar	F.105.T128.2.02.2.V00	(2) Suspended elliptipar reflectors from air-craft cable in center of room **Finish:** Style 105 fluted - bright clear anodized aluminum housing **Mounting:** Cable supports - 1/16" dia. 7x7 stranded aircraft cable, field adjustable length. Crossbar with 1/4-20 stud and canopy included. Electrical feed cable supplied with cord bushing and cord stays. Threaded rods, T-bar clips or alternative 1/4-20 hangers by others (extend 3/4" (19mm) below ceiling).	(2) F28W.T5.835.ALTO per 4' run (Philips)	EC5.T528.J.UNV.I (Lutron)	32.1	277	-
C2	Tiered Classroom	Elliptipar	F.305.T128.S.00.2.000	4' Cove Luminaire in architectural cove in front and back of roo **Finish:** Reflector - extruded high purity aluminum with clear anodized specular finish. **Mounting:** L-shaped mounting brackets can be base or wall mounted. Two brackets are supplied for each reflector. Reflectors can be mounted individually or joined together to form a continuous row. **Standard:** UL listed or CSA certified for damp locations. (Style 151 smooth painted model with gasketed lens recommended for damp location use; see Outdoor Section.)	(1) F28W.T5.835.ALTO (Philips)	EC5.T528.J.UNV.I (Lutron)	32.1	277	-
C3	Tiered Classroom	Elliptipar	F.210.T128.T.02.2.000	4' Recessed linear fluorescent in front of room under bulkhead **Finish:** Semi-gloss white exterior and trim or bright clear anodized aluminum housing with semi-gloss black end plates and tri **Electrical:** Use 90°C wire for supply connections. Splice access plate on top of back box includes two 7/8" diameter conduit entries. Integral electronic HPF thermally protected class P ballast with end-of-life protection.	(1) F28W.T5.835.ALTO (Philips)	EC5.T528.J.UNV.I (Lutron)	32.1	277	-
C4	Tiered Classroom	Lightolier	CSB132VJ2MXCCL	7" aperture downlight suspended from ceiling and between ceiling panels at varying heights (please see DWG EL-451) **Reflector:** 16 ga. Alzak® aluminum, 50° visual cutoff to lamp and lamp image, medium distribution. Comfort Clear™ low iridescence finish. **Housing:** One piece 16 ga. spun aluminum with returned bottom edge to seat reflector; no visible hardware. Matte white baked enamel finish **Ballast:** mo unted on support bracket, can be easily removed for service **Socket Bracket:** Snaps onto reflector neck to assure consistently correct optical alignment.	(1) PL.T.32W.835.4P.ALTO (Philips)	FDB-T432-277-I-S (Lutron)	36	277	-
C5	Tiered Classroom	Alkco	MWW114F.1F14T5.2'.DIM	Wall wash luminaire mounted at sides of room within pilasters. Uniform wall illumination without scallops or striations. Extruded aluminum reflector is finished with highreflectance white powder coat to match ceili appearance, not show dust or finger-prints and maintain initial performance levels over the life of the installation Shallow 3 7/8" profile. For installation in suspended grid and dry-wall ceiling. Mini-Flaire adds a unique blend of performance and practicality to the art and science of wall washing.	(1) F14WT5.835..ALTO (Philips)	EC5.T514.J.UNV.I (Lutron)	19	277	-

Type	Location	Manufacturer	Mfr/Catalog #	Description	Lamp	Ballast	Input Watts	Voltage	Notes
L1A	Library	Kurt Verson	H8602 WT	Recessed downlight with 6" x 6" square aperture. Square parabolic trim sections control brightness while spill light is redirected to the workspace. Aperture appearance from normal viewing angles appears as a soft luminous glow. Maximum ceiling thickness 11/2". Top or bottom service**Finish** Housing and structural parts are painted matte black. The aperture trim is Softglow® clear. Special finishes, textures and colors are available. S accessories. **General** Fixtures are pre-wired and thermally protected, UL and C-UL listed for eight wire 75ºC branch circuit wiring. Union made IBEW. Suitable for damp locations. Luminaire mounted between custom type luminaires.	(1) CDM70/PAR38/SP/3K/ALTO (Philips)	71A5281 For 70W M139 (ADVANCE)	95	277	Shall be recessed into gypsum wall board ceiling approx. 1-1/2" thick.Shall be installed with matte white trim flange for cohesive integration with L2A, B, and C
L1B	Library	Kurt Verson	H8602 WT	Same as L1A except for lamping	(1) CDM70/PAR38/FL/3K/ALTO (Philips)	71A5281 For 70W M139 (ADVANCE)	95	277	Shall be recessed into gypsum wall board ceiling approx. 1-1/2" thick.Shall be installed with matte white trim flange for cohesive integration with L2A, B, and C
L2A	Library	Custom Fixture using manufactured strip luminaires from Birchwood	(2) WP.T5.LP.277.DIM.128.HRW (Birchwood)	20 gauge steel construction, also available in aluminum, add "AL" in "Options" space Fixtures come standard with 9'-0" wire leads and special 3/8" flex connector fixtures are available in nominal lengths of 1, 2, 3, 4, 5 and 8 feet, see part numbers to the right for actual fixture lengths standard finish is High Reflectivity White powder coat done post production, decorative Large Pattern Galvanize and other custom colors and finishes are also available all WP System fixtures are treated with a multi-stage phosphate process which ensures proper finish bonding and inhibits rust optional standard (shown) and custom shape solid, slotted or perforated reflectors available UL and C-UL Listed for dry and damp locations**(Birchwood luminaire information, Please see detail for information on Custom Luminaire)**	(2) F28W.T5.835.ALTO (Philips)	EC5.T528.J.UNV.1 (Lutron)	32.1	277	Please see L2A, B, and C detail for more information
L2B	Library	Custom Fixture using manufactured strip luminaires from Birchwood	(2) WP.T5.LP.277.DIM.128.HRW (Birchwood)	Same as L2A and L2C except for size and radius of housing	(2) F28W.T5.835.ALTO (Philips)	(2) EC5.T528.J.UNV.1 (Lutron)	32.1	277	Please see L2A, B, and C detail for more information
L2C	Library	Custom Fixture using manufactured strip luminaires from Birchwood	(2) WP.T5.LP.277.DIM.128.HRW (Birchwood)	Same as L2A and L2B except for size and radius of housing	(2) F28W.T5.835.ALTO (Philips)	(2) EC5.T528.J.UNV.1 (Lutron)	32.1	277	Please see L2A, B, and C detail for more information
L3	Library	Elliptipar	3030.T2125.X.99.000	3032 stack light, incorporates 5% uplight component. Suspended from ceiling at 8' from finsihed floor to top of luminaire. **Finish:** Semi-gloss white or bright clear anodized aluminum housing with semi-gloss black reveal plates. White or silver decorative end plates (order separately)**Mounting:** S mount - mounting plate fastens flush to ceiling. Unit hinges on plate for hands-free access to wiring. X mount - pendant stems, cables ordered separately Pendant stem - 11/16" O.D. aluminum, internally threaded. 5" dia. aluminum canopy. Cable - 1/16" dia. 7x7 aircraft cable, field adjustable length.**Electrical:** Use 90ºC wire for supply connections and through wire. S mount - 7/8" (22mm) dia. knockouts at ends of mounting plate for conduit feed (by others). Optional integral motion sensor, consult factory**Standard:** UL listed or CSA certified.	(2) F28W.T5.835.ALTO (Philips)	(2) EC5.T528.J.UNV.1 (Lutron)	32.1	277	Luminaire shall be suspended at a height of 8' A.F.F. Luminaire shall have 94% Downlight and 6% Uplight

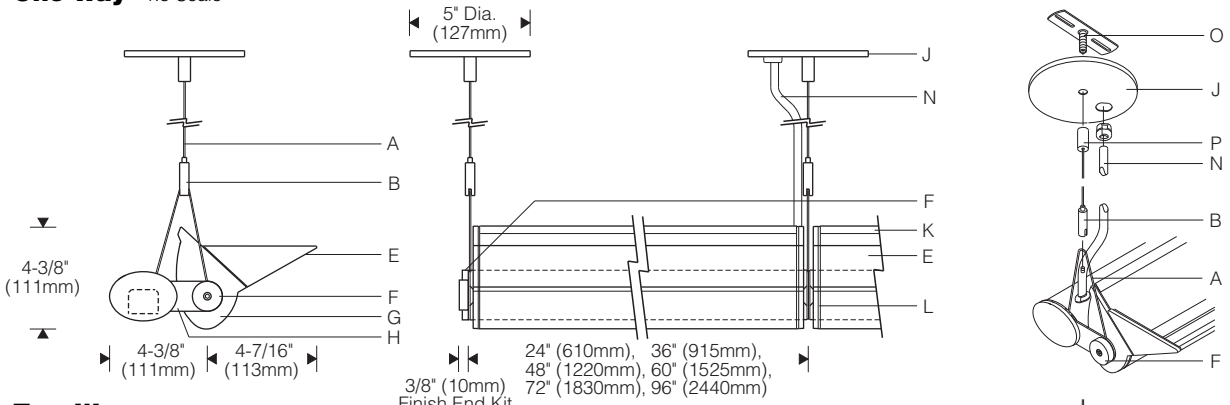
Type	Location	Manufacturer	Mfr/Catalog #	Description	Lamp	Ballast	Input Watts	Voltage	Notes
L4	Library	Lightolier	PTS5.1.S.0.2.4	4' wall slot mounted 24'6" A.F.F. **Housing:** Die-formed 20 gauge pre-painted steel. Integral heavy gauge bulkheads support housing and trim, permitting modules to be bolted together in continuous runs and facilitate suspension. **Lamping:** Cross-sectional one linear T5 fluorescent lamp. Provided by others**Reflector:** Precision parabolic roll-formed semi-specular aluminum**Louver:** Lift and shift straight blade louver constructed from die-formed aluminum and painted to match housing. Louver blades are 1" (2.54cm) high on 1-1/8" (2.86cm) centers. (Optional)	(1) F28W.T5.835.ALTO (Philips)	EC5.T528.J.UNV.1 (Lutron)	32.1	277	-
L5	Library	Elliptipar	FI15.T128.X.99.2.080	Cantelievered mounting above wood wall. Integral ballast reduces amount of electrical wirin**Finish** Bright clear anodized aluminum housing with semi-gloss black end plates or all parts semi-gloss white. Hangers (ordered separately) in choice of semi-gloss white or black. Painted surfaces - 6 stage pretreatment and electrostatically applied thermoset powder coat for stable, long lasting and corrosion resistant finish**Reflector** - extruded high purity aluminum with clear anodized specular finish. All luminaire hardware - stainless steel. All mounting hardware - zinc or cadmium plated.**Mounting:** Pendant or cantilever mounting hangers (ordered separately); specify end and intermediate hangers.	(1) F28W.T5.835.ALTO (Philips)	EC5.T528.J.UNV.1 (Lutron)	32.1	277	Luminaire shall be mounted by canteliever off the North wall (with decorative wood finish) of the Library
L6	Library	Tambient	L204	Style L204 workstation luminaires are designed for mounting above seated and below standing eye height to provide general ambient uplighting and low-glare task lighting for horizontal worksurfaces. They produce symmetrical 2-way task lighting and are particularly suited for mounting on shared worksurfaces. Bridge mount stanchions mount to horizontal worksurfaces and position the top of the luminaires at 19-1/2" above the surface. They include an integral decorative endplate and add 1-3/4" (each) to the luminaire length. Order bridge stanchions seperately. (Please see Specification sheet for more details)	(1) F28W.T5.835.ALTO (Philips)	EC5.T528.J.UNV.1 (Lutron)	32.1	277	Length: 47-1/2" (1206mm) Lamp type: F28T5 Standard output Optics: Mid-mount % Light Direct: 47% % Light Indirect: 53% Total Efficiency: 61.6% (28.9% dn, 32.6% up)
L7A	Library	Louis Poulsen	WOP.11.8.1/26W/CF GX24q-3/4.120-277V.GLASS	**Design** Vilhelm Wohlert **Concept** Wohlert Pendant provides uniform general diffuse illumination. The opening at the bottom of the glass produces direct light. The quality of the glass ensures that the visual appearance of t Wohlert Pendant has an evenly lit surface.**Finish** White opal glass. **Material** Shade: Handblown white opal glass Pendant stem: Brushed steel. **Mounting** Canopy: White. Cord type: 3 or 5-conductor, 18 AWG white PVC power cord. Cord Length 12' **Weight** Max. 8 lbs. **Label** cUL. Dry location. IBEW.	(1) PL-C 26W/835/ALTO (Philips)	FDB-T426-277-1-S (Lutron)	33.24	277	Mounting Height shall be 7'9" A.F.F. for all luminaires of this type
L7B	Library	Louis Poulsen	WOP.13.7.1/26W/CF GX24q-3/4.120-277V.GLASS	Same as L7A except for diameter dimensio	(1) PL-C 26W/835/ALTO (Philips)	FDB-T426-277-1-S (Lutron)	33.24	277	Mounting Height shall be 8' A.F.F. for all luminaires of this type
L7C	Library	Louis Poulsen	WOP.15.7.1/26W/CF GX24q-3/4.120-277V.GLASS	Same as L7A except for diameter dimensio	(1) PL-C 26W/835/ALTO (Philips)	FDB-T426-277-1-S (Lutron)	33.24	277	Mounting Height shall be 7' A.F.F. for all luminaires of this type
L8	Library	Kurt Verson	H8432	Recessed downlight with 4-1/2" x 4-1/2" square aperture. Square parabolic trim sections control brightness while spill light is redirected to the workspace. Aperture appearance from normal viewing angles appears as a soft luminous glow. Maximum ceiling thickness 11/2". Top or bottom service**Finish** Housing and structural parts are painted matte black. The aperture trim is Softglow® clear. Special finishes, textures and colors are availab See accessories. **General** Fixtures are pre-wired and thermally protected. UL and C-UL listed for eight wire 75ºC branch circuit wiring. Union made IBEW. Suitable for damp locations.	(1) PL-C 26W/835/ALTO (Philips)	FDB-T426-277-1-S (Lutron)	33.24	277	-
L9A	Library	Bruck	FLIGHT TRACK 225002mc	The Flight Track system allows you to design free flowing light displays that fit any application. The Flight Leila S fixture is compatible with the Flight Track. Sections can easily be joined together to create longer systems. Mounting options allow for semi-flush or suspended track systems. The Flight system is composed of 1/16" x 1" aluminum and may be customized for larger curves or bent with a template to achieve smaller radii. 2' min. radius; consult factory. When creating a spiral the minimum diameter is 4ft.	1.2W Festoon Lamp	(2) TQ-300/277v transformer (Bruck)	300	277	Custom dimensions are specified on drawing EL-453
L9B	Library	Bruck	FLIGHT TRACK 225002mc	Same as L9A except for dimensions	1.2W Festoon Lamp	(2) TQ-300/277v transformer (Bruck)	300	277	Custom dimensions are specified on drawing EL-453
L9C	Library	Bruck	FLIGHT TRACK 225002mc	Same as L9A except for dimensions	1.2W Festoon Lamp	(2) TQ-300/277v transformer (Bruck)	300	277	Custom dimensions are specified on drawing EL-453
L9D	Library	Bruck	FLIGHT SAMBA SPOT BI-PIN 150703mc	**Description:** The Flight Samba Spot bi-pin fixture head tilts two clamp use with Flight syste**Technical Specs:** 50W Max. Lamp not included GY6.35 socket type	(1) 35mrc16fl24 (Philips)	None	35	35mrc16fl24 (Philips)	
L9E	Library	Bruck	FLIGHT SAMBA SPOT BI-PIN	Same as L9D except for the wattage	(1) 45mrc16fl24 (Philips)	None	45		

Type	Location	Manufacturer	Mfr/Catalog #	Description	Lamp	Ballast	Input Watts	Voltage	Notes
R1	Roof Garden	Bega	2037 P	**Housing:** Constructed of die-cast and extruded aluminum with integral wiring compartment. Mounting tabs provided. **Enclosure:** All stainless steel faceplate, 3/16" thick. 1/8" thick, tempered glass; clear, etched, (behind louvers). Faceplate is secured by two (2) flat socket head, stainless steel, captive screws threaded into stainless steel inserts in the housing casting. Continuous high temperature O-ring gasket for weather tight operation. **Electrical: Lampholder:** GX23 (13 W), 2-pin, rated 75 W, 600 V. Ballast: Magnetic, available in 120 V or 277 V - specify. **Through Wiring:** Maximum of four (4) No. 12 AWG conductors (plus ground) suitable for 75 ºC. Two 7/8" knockouts provided for 1/2" conduit. Suitable for all types of construction including poured concrete. Protection class: IP 64.	PL-S 13W/835/2P/ALTO (Philips)	H-1813-TP-W (Advance)	16	277	Luminaire shall be recessed into the surrounding half wall around the Roof Garden at a height of 1' A.F.F
R2	Roof Garden	Bega	4142 P	**Post construction:** One piece extruded aluminum with die-cast top housing and base internally welded onto one assembl **Enclosure:** Hand blown, clear crystal glass. Fully gasketed for weather tight operation using a molded silicone gasket. External die-cast aluminum louver stack. Electrical: **Lampholders:** Fluorescent are type G24d-2 (18 W), rated 75 W, 250 V. Ballasts: Compact fluorescent are electronic, universal voltage (120 V through 277 V). Custom colors supplied on special order. U.L. listed, suitable for wet locations. Protection class: IP 44.	PL-T 18W/835/4P/ALTO (Philips)	FDB-T418-277-I-S (Lutron)	22	277	-
R3	Roof Garden	Winona	AB.72.277.L4.LO.CHS.FO.SH6.TT.PC.BB4PC.STD	Construction: Housing injection molded from composite material. Top machined from aluminum or brass. Lenses cut from tempered borosilicate glass for superior clarity and strength. Medium base 4 k.V. pulse rated porcelain socket rated 660W - 600V, with 18ga. 200°C leads. Finishes: Available in 12 standard TGIC polyester powdercoa nishes or 3 standard brass nishes with a polyurethane clear coat. Custom nishes available(contact factory for more info). Ingrade housing is always black. Features: Watershed™ lens included standard and is field replaceable. Double lens design as standard to reduce surface temperature of xture. Any combination of up to 3 lens accessories/color lter/ shielding can be speci ed and are held securely by a removable stainless steel clip ring between the two lenses. Concrete pour collar available. Sealed wiring compartment to prevent water intrusion into lamp compartment.	39WPAR30 (Philips)	None	45	277	-
R4	Not Used			Not Used					Not Used
R5	Roof Garden	Light Tape	LT-600	Continuous light for hundreds of feet with one connection.▪ Dimmable▪ Extremely energy efficient▪ UV and moisture resistant for indoors and outdoors▪ Available in lengths up to 300 feet (see footage guide)▪ Highly visible through smoke ▪ Thinner than a credit card▪ Generates no heat, cool to touch▪ Easy to install and maintain0.25"	-	-	176	220	1/4" Clear Barrier Encapsulation envelopes the illuminated strip on all four sides. Please see drawing EL-453.

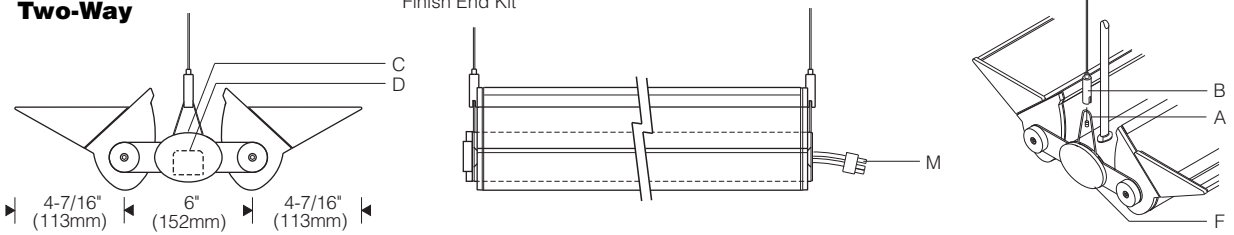
Type	Location	Manufacturer	Mfr/Catalog #	Description	Lamp	Ballast	Input Watts	Voltage	Notes
S1	Student Gathering	Elliptipar	M.412.250P.3.99.2.000	Wall wash luminaire surface mounted to sturcture above Atrium ceiling. Finish:Bright clear anodized aluminum reflector with semi-gloss black door frame, end plates, side arms and ballast housing or all parts semi-gloss white. Reflector and internal end plates - extruded high purity aluminum with clear anodized specular finish. All luminaire hardware - stainless steel. Mounting: Mounting plate covers recessed outlet box or conduit feed. Integral constant wattage autotransformer (encapsulated for 250-400W ceramic arc tube pulse start metal halide) or electronic ballast. Mogul lampholder is pulse rated for use with either horizontal or universal position reduced envelope pulse start lamps. End-of-lamp aligner ensures consistent optical performance.	MS 250W/H75/T15/PS/740	71A5742TEE For 250W M138/M153 (P.S.) (ADVANCE)	268	277	Shall be mounted such that edge of reflector is flush with geometrix ceiling.
S2	Student Gathering	Se'Lux	MIR1.IT5.SD.SH.004.WH.277.DMA	4' length recessed T5 luminaire. **I. Housing** - Continuous, 6063-T5 extruded aluminum profile up to 16 feet long. Joined with Connector Plus Joining System for ease of installation and to assure a uniform appearance. 4. Flan- 1/2" (12mm) wide flange runs ull lengths of both sides and is part of the main extruded body. Specify Continuous flange (MIR1) or flush end (MIR2).	(1) F28W.T5.835.ALTO (Philips)	EC5.T528.J.UNV.I (Lutron)	32.1	277	-
S3	Student Gathering	IO LIGHTING	O.O6.SSS.2S.PM.NR.45.3K.LENGTH.277	luxrail may be post mounted or wall mounted. Mounting hardware (post or wall) is typically required up to 5' O.C., depending on the handrail alloy. luxrail houses a low voltage LED-based light fixture that is integrated into the underside of the handrail. It comes complete with the linear light fixture installed in the handrail. 24 volt 100 w power supplies are provided as a standard. See daisy chain and remote distance requirements in chart on the lower left corner of this specification sheet. Power supply and dimming module must be specified eparately. For detailed information, see luxrail brochure or download the power supply specification sheet from www.iolighting.com.	LED LUMINAIRE BY IOLIGHTING	LEDINTA0024V41FO (ADVANCE)	117	277	-
S4	Student Gathering	Kurt Verson	S38.P5	Recessed downlight in geometrix ceiling, 5-7/8" aperture**Optics and Applications** Beam spreads range from 8º to 65º. Lamp color temperature is 3000K, CRI up to 92. Output is projected through parabolic low brightness shielding cones. Use anywhere for general, transient or task aplication**Design Features** Housing dimensions keep operating temperatures well in the safety range. The ceiling line reveal diverts heat	(1) CDM70/PAR38/SP/3K/ALTO (Philips)	71A5281 For 70W M139 (ADVANCE)	94	277	Shall be suspended on structure above: to 21"
S5	Student Gathering	Kurt Verson	S.6I.175.T.PSM	Recessed downlight in geometrix ceiling, 11-1/2" aperture**Optics and Applications** Beam spreads range from 8º to 65º. Lamp color temperature is 3000K, CRI up to 92. Output is projected through parabolic low brightness shielding cones. Use anywhere for general, transient or task applications**Design Features** Housing dimensions keep operating temperatures well in the safety range. The ceiling line reveal diverts heat flow away from the building wires into the workspace.	MPI75/BU/PS (Philips)	71A5593EE For 175W M137/M152 (P.S.) (Advance)	198	277	Shall be suspended on structure above: to 21"
S6	Student Gathering	Kurt Verson	S.62.250.T.PSM	Recessed downlight in geometrix ceiling, 11-1/2" aperture**Optics and Applications** Beam spreads range from 8º to 65º. Lamp color temperature is 3000K, CRI up to 92. Output is projected through parabolic low brightnes shielding cones. Use anywhere for general, transient or task applications**Design Features** Housing dimensions keep operating temperatures well in the safety range. The ceiling line reveal diverts heat flow away from the building wires into the workspace.	MP250/BU/PS (Philips)	71A5704 For 250W M138 (PS) (Advance)	284	277	Shall be suspended on structure above: to 21"
S7	Student Gathering	Color Kinetics	523-000030-11	Powercore used in custom luminaire mounted on opposite sides of window box. Illuminates into a spanning panel (Please see DWG EL-455) eW Graze Powercore accommodates end-to-end or incremental placement without visible light scalloping between fixtures. ▪ Supports new applications for white light—Long-life LEDs (50,000 hours at 70% lumen aintenance) significantly reduce or eliminate maintenance problems, allowing the use of white or solid color lighting in spaces where bulb maintenance may be limited or unfeasible. ▪ Universal power input range — eW Graze Powercore accepts line voltage input of 100, 120, 220 – 240, and 277 VAC.	LED by Philips	NA	14.3	277	Integral into custom luminaire types S7A-C Please details in drawing EL-454.

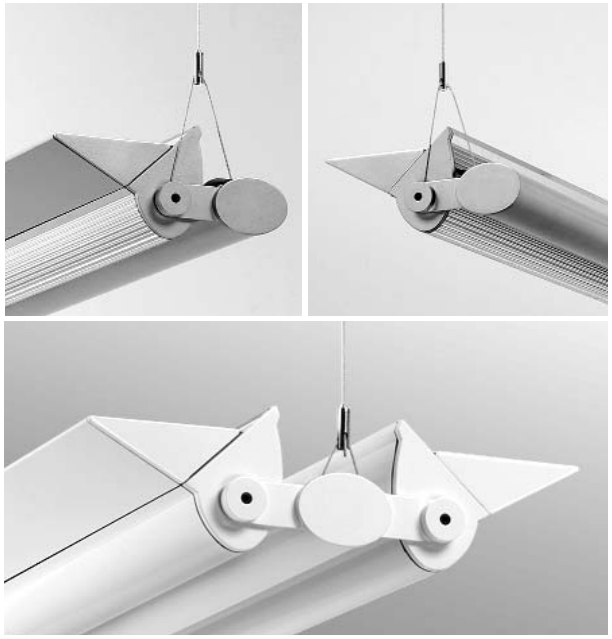
Appendix A | Luminaire Specification Sheets

One-Way 1:8 Scale



Two-Way





Specifications

- **A** 1/16" dia. 7x7 aircraft cable and sling
- **B** Adjustable Y-glider
- **C** Extruded aluminum ballast housing
- **D** Electronic ballast
- **E** Extruded aluminum visor
- **F** **AFE** finish end kit (includes aluminum end plates and knobs)
- **G** Die cast aluminum end plate
- **H** Aluminum sidearm
- **J** 1/4" aluminum canopy
- **K** Specular extruded aluminum reflector
- **L** Aluminum reveal plate (black)
- **M** Through wire with quick connectors (optional)
- **N** 18/4 cord
- **O** Crossbar, 1/4-20 stud
- **P** Threaded coupler

Finish:
Style 105 fluted - bright clear anodized aluminum housing. Painted end plates, sidearms, visor and ballast housing in choice of silver or semi-gloss black.

Style 106 smooth - semi-gloss white housing and end plates.

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

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

Mounting:
Cable supports - 1/16" dia. 7x7 stranded aircraft cable, field adjustable length. Crossbar with 1/4-20 stud and canopy included. Electrical feed cable supplied with cord bushing and cord stays. Threaded rods, T-bar clips or alternative 1/4-20 hangers by others (extend 3/4" (19mm) below ceiling).

Electrical:
Use 90°C wire for supply connections and through wire.

Cover hinges open for access to ballast and wiring. Optional prewired modular through wiring with quick connectors.

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

Optional electronic dimming ballast; compatible dimmer switch required (by others). Consult sales representative for compatibility and specifications.

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

Standard:
UL listed or CSA certified for damp locations. (Style 124 painted model with lens recommended for damp locations.)

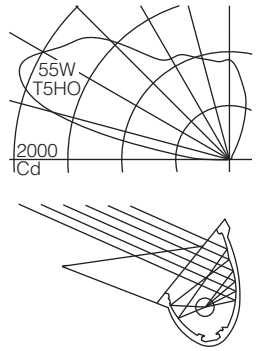
Features

- *Precise optical control of the T5 lamp projects light evenly across the ceiling - offices, conference rooms, lobbies*
- *Extruded visor, cast end plates join at articulated reveals*
- *Classic elliptical-shaped ballast housing - through wiring for rows for easy installation*
- *Optional modular wiring, dimming, emergency battery*

C 5.0

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, see www.elliptipar.com.

elliptipar

 U.S. Patent D468,473 and other U.S. and foreign patents pending

To Order

To form a Catalog Number

F	1	- T	128	- 2	- 02	- 2	- V	V	0
1	2		3	4	5	6	7		8

Project: GCC

Type: C1

1 Source

F = Linear fluorescent

2 Style

105 = Small fluted surface, **integral** ballast
106 = Small smooth surface, **integral** ballast

3 Lamp

T [ ][ ] = **T5 Fluorescent Lamp Code**
[ ] **Lamp Wattage** (see chart below)
Number of Lamps in Length, specify **1** or **2**

Example: **T255** = 8' (2.4m) housing with two 54W T5HO lamps (end-to-end)

*Length**	*T5*		*T5HO*	
	Code	*Lamp(s)*	*Code*	*Lamp(s)*
T5 Fluorescent				
24" (610mm)	**T114**	1 x F14T5	**T124**	1 x F24T5/HO
36" (915mm)	**T121**	1 x F21T5	**T139**	1 x F39T5/HO
48" (1220mm)	**T128**	1 x F28T5	**T155**	1 x F54T5/HO
60" (1525mm)	**T135**	1 x F35T5	**T180**	1 x F80T5/HO
72" (1830mm)	**T221**	2 x F21T5	**T239**	2 x F39T5/HO
96" (2440mm)	**T228**	2 x F28T5	**T255**	2 x F54T5/HO

For complete lamp and ballast information, see Accessories Section. Standard T5 lamp color is 3000K / 80+ CRI.
* Add 3/4" (19mm) to row or single unit for **AFE** Finish End Kit.

C 5.1

4 Mounting

1 = One-way cable suspended uplight
2 = Two-way cable suspended uplight
Note: Cable supports are ordered separately.

5 Finish

Style 105 Fluted
Bright clear anodized reflector with painted components in choice of:
01 = Silver
81 = Semi-gloss black

Style 106 Smooth
02 = Semi-gloss white
99 = Custom RAL or computer matched color to be specified, consult sales representative

6 Voltage/Ballast

Electronic	*Dimming* *
1 = 120V	**T** = 120V
2 = 277V	**V** = 277V

* Consult sales representative for dimming 5' lamps (lamp codes **Tx35**, **Tx80**). Availability for wattages and voltages varies with ballast manufacturer and control type - see **www.elliptipar.com** for additional dimming specifications and limitations.

Max. Row Length per Feed (4' lamps) +			
Voltage	*Lamp*	*1-way*	*2-way*
120V	*T5*	140'(42.7m)	68'(20.7m)
	T5HO	76'(23.2m)	36'(11.0m)
277V	*T5*	332'(101.2m)	164'(50.0m)
	T5HO	184'(56.1m)	92'(28.0m)

+Based on 10A capacity of 18/4 cord.

7 Option (See Accessories Section for specifications)

V0 = Cutoff visor included, no other option
VE = Integral emergency battery pack with indicator lamp and test button. Available in 4', 5', 6' and 8' units (lamp codes **T128**, **T135**, **T221**, **T228**, **T155**, **T239** and **T255**). Operates one lamp.
VK = Prewired modular through wiring with quick connectors
VC = Combination of emergency battery pack and prewired modular through wiring as described above
VX = For modification not listed, include detailed description. Consult factory prior to specification.
Note: Cutoff visor included with all options.

8 Standard

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

Example

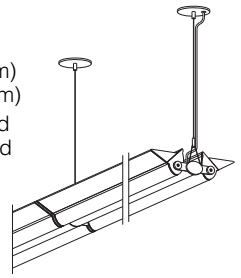
F106 - T255 - 1 - 02 - 1 - VE0

Small smooth surface model for use with two 4' F54T5HO lamps, 96" long housing (not including **AFE** finish end kit, order separately). One-way suspended uplight cable mounted. Semi-gloss white. Integral 120V electronic ballast. Cutoff visor. Emergency battery pack. UL.
Note: Cable supports are ordered separately.

Hangers

Order separately. See Accessories Section for specifications.
Singles - order one non-electrical and one electrical feed hanger for each unit.
Rows - order one non-electrical hanger for each unit plus one electrical feed for each row.
Note: For dimming (voltage/ballast code **T** or **V**), order one additional electrical feed and subtract one non-electrical cable support to accomodate control circuit.

VE [ ][ ][ ][ ] = **Ovalinear cable support**, field adjustable length
0 = UL
J = CSA
48 = up to 48" (1.2m)
96 = 48" to 96" (2.4m)
02 = white canopy and cord
08 = black canopy and cord
L = one-way, non-electrical
M = one-way, electrical feed
N = two-way, non-electrical
P = two-way, electrical feed



Accessories

Order separately. See Accessories Section for specifications.

AFE [ ]**6**[ ]**0** = **Finish end kit**, one required for each row or single unit. Adds 3/4" (17mm) to length.
02 = White
07 = Silver
08 = Black
1 = 1-way (2 knobs)
2 = 2-way (4 knobs)

AFK000X [ ] = Ballast **fuse** kit
0 = UL
J = CSA

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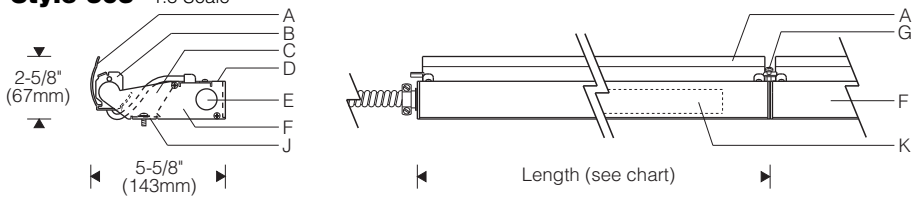
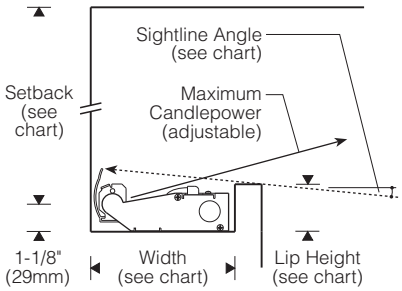
Style 305 1:8 Scale



Lamp Length	*Luminaire Length*
1 x 2'	23-1/16" (586mm)
1 x 3'	34-7/8" (886mm)
1 x 4'	46-11/16" (1186mm)
1 x 5'	58-1/2" (1486mm)
2 x 3'	69-1/2" (1765mm)
2 x 4'	93-1/8" (2365mm)
2 x 5'	116-5/8" (2963mm)

Cove



Cove Dimensions

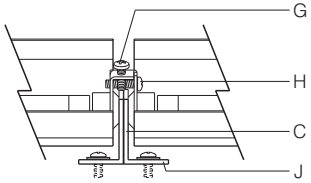
(Max. candlepower aimed 15° above horiz.)

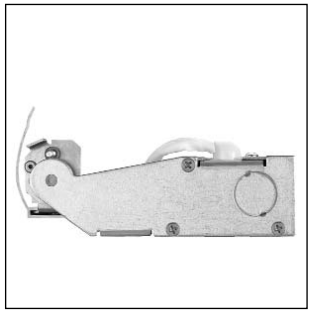
Sight-line	0°(horiz. cutoff)	5°	10°
Width (inside)	6-1/2" (165mm)	5-7/8" (150mm)	5-7/8" (150mm)
Lip (inside)	2-5/8" (67mm)	2-1/8" (54mm)	1-5/8" (41mm)
Setback (varies)	Recommended minimum: 12" T5, 18" T5HO		

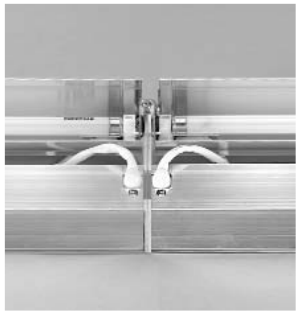
Note: Finish interior of cove matte white for best results.

Joint 1:4 Scale

(Ballast compartment not shown for clarity.)







Specifications

- **A** Specular extruded aluminum reflector
- **B** Stainless steel lamp-holder/support brackets
- **C** Aluminum sidearm with mounting tab
- **D** Extruded aluminum ballast/wireway channel cover
- **E** Conduit entry (one each end, conduit and connector by others)
- **F** Extruded aluminum ballast/wireway compartment
- **G** Rotation locking screw
- **H** Joiner/alignment screw
- **J** Mounting tab (fastener by others)
- **K** Integral electronic ballast

Finish:
Reflector - extruded high purity aluminum with clear anodized specular finish. Sidearms and ballast/wireway compartment - mill finish aluminum. All luminaire hardware - stainless steel.

Mounting:
Lay-in installation requires only one fastener per joint (by others). Sidearms with mounting tabs can be base or wall mounted. Luminaires can be mounted individually or joined together to form a continuous row.

Reflector aiming is adjustable and is fixed in position by rotation locking screws at each sidearm. When mounted in a continuous row, joiner screws lock reflectors together allowing all in the row to be aimed together.

Standard:
UL listed or CSA certified for damp locations. (Style 124 painted model with lens recommended for damp locations.)

Electrical:
Use 90°C wire for supply connections.

Integral electronic HPF thermally protected class P ballast with end-of-life protection. Ballast/wireway compartment includes one conduit entry at each end. Channel cover removes for access to ballast and wiring. Luminaires may be butted end-to-end (connectors by others) for through wiring. Optional #12 AWG prewired modular through wiring with quick connectors.

Master/satellite combination is available (Configuration **3**, see ordering information). Master supplied with 2-lamp ballast. (Wiring, conduit and connectors between master and satellite units by others.)

Optional electronic dimming ballast; compatible dimmer switch required (by others). Consult sales representative for compatibility and specifications.

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

For complete ballast specifications, see Accessories Section.

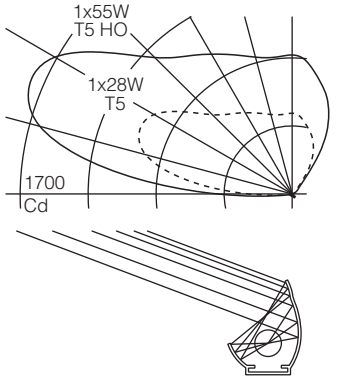
Features

- *T5 fluorescent - precise optical control for unequaled projection of light from perimeter coves*
- *Adjustable - all reflectors in a row join and aim together; rotation locking screws secure position**
- *Only 2-5/8" high - fits in low profile coves*
- *Integral electronic ballast, thru wiring for easy installation*

C 19.0

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 www.elliptipar.com

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*U.S. Patent No. 5,550,725 and foreign.

To form a Catalog Number

F	3 0 5	- T	128	- 2	- 02	- 2	-	V	0
1	2		3	4	5	6	7		8

Project: GCC

Type: C2

1 Source

F = Linear fluorescent

2 Style

305 = Xtra small concealed, **integral** ballast

3 Lamp

Note: To order by overall row length, enter **ROW CODE** in place of Lamp Code below (see Row Charts on page C-19.2). Row Code specifies a row complete with all necessary reflectors and ballasts.

T [ ][ ] = **Lamp Code** (to specify individual units)

Lamp Wattage (see chart below)

Reflector Configuration, specify **1**, **2** or **3** (see chart below)

Example: **T228** = two 28W T5 lamps in nominal 8' reflector; one 2-lamp ballast

Reflector Configuration

1	1 - Lamp Ballast 1-Lamp Reflector
2	2 - Lamp Ballast 2-Lamp Reflector
3	2 - Lamp Ballast 1-Lamp Reflector (Master) 1-Lamp Reflector (Satellite)

Lamp Wattage	*Lamp Length*	*Lamp Number*
T5 Fluorescent		
14	2'	F14T5
21	3'	F21T5
28	4'	F28T5
35	5'	F35T5
T5 HO Fluorescent *		
24	2'	F24T5/HO
39	3'	F39T5/HO
54	4'	F54T5/HO
80	5'	F80T5/HO

For complete lamp and ballast information, see Accessories Section. Standard T5 and T5HO lamp color is 3000K / 80+ CRI.

4 Mounting

S = Sidearms with mounting tabs

5 Finish

00 = Bright anodized reflector with mill finish ballast compartment

6 Voltage/Ballast

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

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

* Consult sales representative for dimming 5' lamps (lamp codes **Tx35**, **Tx80**) and for Reflector Configuration **3**. Availability for wattages and voltages varies with ballast manufacturer and control type - see **www.elliptipar.com** for additional dimming specifications and limitations.

7 Option (See Accessories Section for specifications)

00 = No options
0E = Integral emergency battery pack with indicator lamp and test button. Operates one lamp. Available in nominal 4', 6' and 8' units only (lamp codes **T128**, **T221**, **T228**, **T328**, **T155**, **T239**, **T255** and **T355**).
0K = Prewired modular #12 AWG through wiring with quick connectors
EK = Combination of emergency battery pack and prewired modular through wiring as described above
XX = For modification not listed, include detailed description. Consult factory prior to specification.

8 Standard

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

Example

F305 - T221 - S - 00 - 1 - 000

Xtra small concealed fluorescent unit consisting of one nominal 6' reflector with two 21W T5 lamps. Integral 120V electronic 2-lamp ballast. Sidearms with mounting tabs. UL.

C 19.1

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To order by Row Code - T5 lamps

When the Style 305 xtra small concealed T5 fluorescent is run continuously in **straight** coves, **elliptipar** offers the option of specifying and ordering the entire row as one catalog number. Ordering by row eliminates the need to calculate length, type and quantity of reflectors.

Steps to specify Row Code:

1. Determine clear inside length of cove.
2. Round up to nearest foot and find the nominal row length in chart.
3. Determine what lengths/wattages of lamps will be used and select the corresponding lamp combination codes.

   Example: If only 3' and 4' lamps are to be used on the project, specify row codes ending with **A**, **B** and/or **D** only.
4. If for a given nominal row length a preferred lamp combination is not listed, select the next shorter row that is available in the desired lamp combination.
5. Once the nominal row length and lamp combination has been found in the chart, note the actual overall row length (last column).
6. Consider the unlighted length at each end of the row. (Subtract the overall row length from the clear inside length, and divide the remainder by two.) It is generally recommended that the unlighted length at each end be between 6" and 12".
7. Enter the four character Row Code in place of the Lamp Code described on page C-19.1. The remainder of the catalog number is formed as shown on page C-19.1.

Features

- *Time saving - simplifies specification and ordering*
- *One catalog number - includes all necessary reflectors to install row*
- *Assured fit - all you need is the clear inside length of the cove*

3 Row Code

Note: Enter row code in place of Lamp Code described on page C-19.1.

__ __ __ __ = **Row Code**

Lamp Combination*
A = All nominal 3' lamps
B = All nominal 4' lamps
C = All nominal 5' lamps
D = Nominal 3' and 4' lamps
F = Nominal 3' and 5' lamps
G = Nominal 4' and 5' lamps

Nominal Row Length in feet, between 3' and 50' **

S = T5 fluorescent
V = T5/HO fluorescent

* Not all lamp combinations are available for each nominal row length (see chart)

** Nominal row lengths over 50' can be formed by combining shorter row lengths. (Example: a nominal 60' row can be ordered as two nominal 30' rows.)

Example

F305 - S15A - S - 00 - 2 - 000

Nominal 15' long row of Style 305 xtra small concealed T5 fluorescent using only nominal 3' (21W) lamps. Row includes two nominal 6' luminaires for use with two 3' lamps each, one nominal 3' luminaire for use with one 3' lamp and integral 277V electronic ballasts. Overall row length is 14' 5-7/8".

Nominal Row Length (feet)	*Lamp Combination*	*Nominal 3' Luminaire (1 x nominal 3' lamp)*	*Nominal 4' Luminaire (1 x nominal 4' lamp)*	*Nominal 5' Luminaire (1 x nominal 5' lamp)*	*Nominal 6' Luminaire (2 x nominal 3' lamps)*	*Nominal 8' Luminaire (2 x nominal 4' lamps)*	*Nominal 10' Luminaire (2 x nominal 5' lamps)*	*Overall Row Length*
3	**A**	1						2' 10-7/8"
4	**B**		1					3' 10-11/16"
5	**C**			1				4' 10-1/2"
6	**A**				1			5' 9-1/2"
7	**D**	1	1					6' 9-9/16"
8	**B**					1		7' 9-1/8"
8	**F**	1		1				7' 9-3/8"
9	**A**	1			1			8' 8-3/8"
9	**G**		1	1				8' 9-3/16"
10	**C**						1	9' 8-5/8"
10	**D**		1		1			9' 8-3/16"
11	**D**	1				1		10' 8"
11	**F**			1	1			10' 8"
12	**A**				2			11' 7"
12	**B**		1			1		11' 7-13/16"
13	**D**	1	1		1			12' 7-1/16"
13	**F**	1					1	12' 7-1/2"
13	**G**			1		1		12' 7-5/8"
14	**D**				1	1		13' 6-5/8"
14	**F**	1		1	1			13' 6-7/8"
14	**G**		1				1	13' 7-5/16"
15	**A**	1			2			14' 5-7/8"
15	**C**			1			1	14' 7-1/8"
15	**D**	1	1			1		14' 6-11/16"
16	**B**					2		15' 6-1/4"
16	**F**				1		1	15' 6-1/8"
17	**D**	1			1	1		16' 5-1/2"
17	**F**			1	2			16' 5-1/2"
17	**G**		1	1		1		16' 6-5/16"
18	**A**				3			17' 4-1/2"
18	**D**		1		1	1		17' 5-5/16"
18	**F**	1		1			1	17' 6"
18	**G**					1	1	17' 5-3/4"
19	**D**	1				2		18' 5-1/8"
19	**F**	1			1		1	18' 5"
19	**G**		1	1			1	18' 5-13/16"

Project: Type:

Nominal Row Length (feet)	Lamp Combination	Nominal 3' Luminaire (1 x nominal 3' lamp)	Nominal 4' Luminaire (1 x nominal 4' lamp)	Nominal 5' Luminaire (1 x nominal 5' lamp)	Nominal 6' Luminaire (2 x nominal 3' lamps)	Nominal 8' Luminaire (2 x nominal 4' lamps)	Nominal 10' Luminaire (2 x nominal 5' lamps)	Overall Row Length
20	**B**		1			2		19' 4-15/16"
20	**C**						2	19' 5-1/4"
21	**A**	1			3			20' 3-3/8"
21	**D**	1	1		1	1		20' 4-3/16"
21	**F**			1	1		1	20' 4-5/8"
21	**G**			1		2		20' 4-3/4"
22	**D**		1		3			21' 3-3/16"
22	**F**				2		1	21' 3-5/8"
22	**G**		1			1	1	21' 4-7/16"
23	**D**	1	1			2		22' 3-13/16"
23	**F**	1					2	22' 4-1/8"
23	**G**			1		1	1	22' 4-1/4"
24	**A**				4			23' 2"
24	**B**					3		23' 3-3/8"
24	**F**	1		1	1		1	23' 3-1/2"
24	**G**		1				2	23' 3-15/16"
25	**C**			1			2	24' 3-3/4"
25	**D**	1			1	2		24' 2-5/8"
26	**D**		1		1	2		25' 2-7/16"
26	**F**				1		2	25' 2-3/4"
26	**G**					2	1	25' 2-7/8"
27	**A**	1			4			26' 0-7/8"
27	**D**	1				3		26' 2-1/4"
27	**F**			1	2		1	26' 2-1/8"
27	**G**		1	1		1	1	26' 2-15/16"
28	**B**		1			3		27' 2-1/16"
28	**F**	1		1			2	27' 2-5/8"
28	**G**					1	2	27' 2-3/8"
29	**D**	1	1		1	2		28' 1-5/16"
29	**F**	1			1		2	28' 1-5/8"
29	**G**		1	1			2	28' 2-7/16"
30	**A**				5			28' 11-1/2"
30	**C**						3	29' 1-7/8"
30	**D**				1	3		29' 0-7/8"
31	**D**	1	1			3		30' 0-15/16"
31	**F**			1	1		2	30' 1-1/4"
31	**G**			1		2	1	30' 1-3/8"
32	**A**	1			5			31' 10-3/8"
32	**B**					4		31' 0-1/2"
32	**D**	1			1	3		31' 11-3/4"
32	**F**				2		2	31' 0-1/4"
32	**G**		1			1	2	31' 1-1/16"
33	**D**		1		1	3		32' 11-9/16"
33	**F**	1					3	32' 0-3/4"
33	**G**			1		1	2	32' 0-7/8"
34	**D**	1				4		33' 11-3/8"
34	**F**	1		1	1		2	33' 0-1/8"
34	**G**					3	1	33' 0"
35	**A**				6			34' 9"
35	**B**		1			4		34' 11-3/16"
35	**C**			1			3	34' 0-3/8"
36	**D**	1	1		1	3		35' 10-7/16"
36	**G**			1		4		35' 11"
37	**D**				1	4		36' 10"
37	**F**				3		2	36' 9-3/4"
37	**G**					1	3	36' 11"
38	**A**	1			6			37' 7-7/8"
38	**D**	1	1			4		37' 10-1/16"
38	**G**		1	1			3	37' 11-1/16"
39	**B**					5		38' 9-5/8"
39	**C**						4	38' 10-1/2"
40	**D**	1			1	4		39' 8-7/8"
40	**F**			1	1		3	39' 9-7/8"
40	**G**			1		2	2	39' 10"
41	**A**				7			40' 6-1/2"
41	**D**		1		1	4		40' 8-11/16"
41	**F**				2		3	40' 8-7/8"
41	**G**		1			1	3	40' 9-11/16"
42	**D**	1				5		41' 8-1/2"
42	**F**	1					4	41' 9-3/8"
42	**G**		1	1		3	1	41' 9-3/16"
43	**B**		1			5		42' 8-5/16"
43	**F**				4		2	42' 7-1/4"
43	**G**		1				4	42' 9-3/16"
44	**A**	1			7			43' 5-3/8"
44	**C**			1			4	43' 9"
44	**D**	1	1		1	4		43' 7-9/16"
45	**D**				1	5		44' 7-1/8"
45	**F**				1		4	44' 8"
45	**G**					2	3	44' 8-1/8"
46	**D**	1	1			5		45' 7-3/16"
46	**F**			1	2		3	45' 7-3/8"
46	**G**		1	1		1	3	45' 8-3/16"
47	**A**				8			46' 4"
47	**B**					6		46' 6-3/4"
47	**F**	1		1			4	46' 7-7/8"
47	**G**					1	4	46' 7-5/8"
48	**D**	1			1	5		47' 6"
48	**F**	1			1		4	47' 6-7/8"
48	**G**		1	1			4	47' 7-11/16"
49	**C**						5	48' 7-1/8"
49	**D**				3	4		48' 5"
50	**A**	1			8			49' 2-7/8"
50	**D**	1				6		49' 5-5/8"
50	**F**			1	1		4	49' 6-1/2"
50	**G**			1		2	3	49' 6-5/8"

C 19.3

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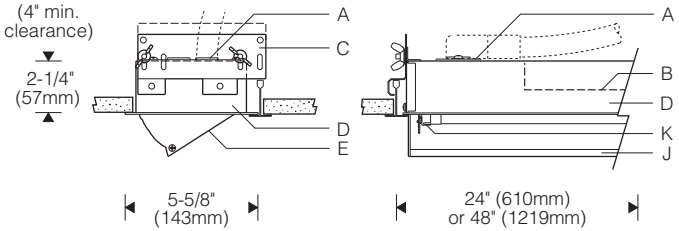
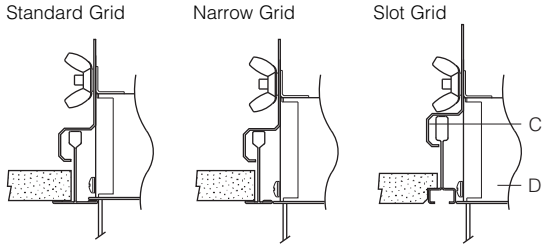
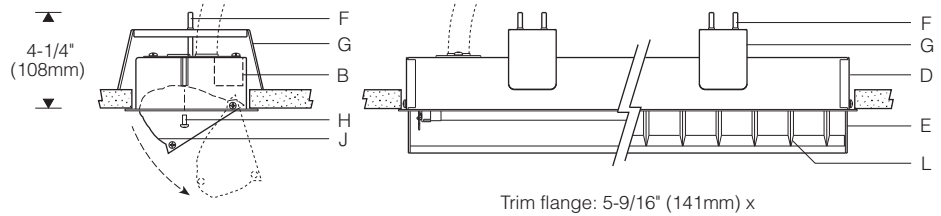
L Mount: Accessible Grid Ceiling 1:8 Scale



Ceiling Compatibility



T Mount: Non-Accessible Ceiling

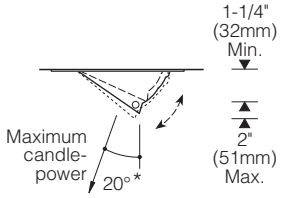


Reflector hinges down for access to back box/ballast

Trim flange: 5-9/16" (141mm) x 24-1/8" (613mm) or 48-1/8" (1222mm)
Rough opening: 4-3/4" (121mm) x 23-3/8" (594mm) or 47-3/8" (1203mm)

Adjustable Aiming

* Factory preset aiming is 20°. Field adjustable +/- 5°.



Specifications

- **A** Splice access plate with (2) KO's (connector and conduit by others)
- **B** Integral electronic ballast
- **C** Adjustable hanger clamps (grid ceiling)
- **D** Formed aluminum back box with 1/2" flange trim
- **E** Contoured aluminum end plates
- **F** Wing cinching screws
- **G** Wing mounting bracket (non-accessible ceiling)
- **H** Reflector aiming screws
- **J** Specular extruded aluminum reflector
- **K** Miniature bi-pin lampholders
- **L** Accessory snap-in specular parabolic cross baffle, 35° lengthwise shielding

Finish:
Semi-gloss white exterior and trim or bright clear anodized aluminum housing with semi-gloss black end plates and trim.

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

Reflector - extruded high purity aluminum with clear anodized specular finish. All hardware - stainless steel. Mounting brackets - cold rolled steel with corrosion resistance finish.

Electrical:
Use 90°C wire for supply connections. Splice access plate on top of back box includes two 7/8" diameter conduit entries.

Integral electronic HPF thermally protected class P ballast with end-of-life protection. Optional master/satellite. Master supplied with 2-lamp ballast. Satellite supplied with 10' (3m) leads (conduit by others).

Optional electronic dimming ballast; compatible dimmer switch required (by others). Consult sales representative for compatibility and specifications.

Optional emergency battery - unswitched supply is required.

Mounting:
L mount - compatible with most lay-in grid ceilings with T-bar supports 24" (610mm) or 48" (1219mm) on center. Finished trim on long sides supports cut ceiling tile or can rest atop or abut grid.

End hanger clamps with wing nuts for vertical adjustment. Supplemental wire or chain supports (by others) may be required by local codes (weight approx. 10 lb/4.5 kg). Units can be mounted end-to-end in adjacent tiles.

T mount - installs from below non-accessible ceiling. Bracket wings spring outward in plenum and cinch down to ceiling with screws accessible from below. Suitable for ceilings up to 1-1/2" (38mm) thick.

Standard:
UL listed or CSA certified.

REV. 7/07

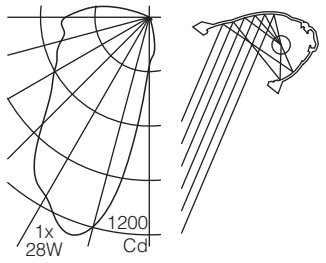
Features

- *Unequaled low energy wall lighting from 2' or 4' T5 lamp*
- *Low profile semi-recessed design - evenly lights entire wall; conceals reflector aperture from normal view*
- *Adjustable - tailor performance to wall height and setback*
- *Compact - ceiling opening less than 6" wide*
- *Available for lay-in grid or non-accessible ceilings*

W 26.0

Performance

Two parabolic reflector sections drive light to the bottom of the wall. 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, see www.elliptipar.com.

elliptipar

To form a Catalog Number

F 2 1 0 - T [ ] - [ ] - [ ] - [ ] - [ ] [ ]
1 2 3 4 5 6 7 8

1 Source

F = Linear fluorescent

2 Style

210 = Small semi-recessed, adjustable, **integral** ballast

3 Lamp

T [ ] [ ] = **Lamp Code**
- **Lamp Wattage** (see chart below)
- **Reflector Configuration**, specify **1** or **3** (see chart below)

Example: **T328** = two nominal 4' reflectors, each for use with one 28W T5 lamp; master/satellite ballast combination

Reflector Configuration

1	1 - Lamp Ballast 1-Lamp Reflector
3	2 - Lamp Ballast 1-Lamp Reflector (Master) 1-Lamp Reflector (Satellite)

Lamp Wattage	*Lamp Length*	*Lamp Number*
T5 Fluorescent		
14	2'	F14T5
28	4'	F28T5
T5 HO Fluorescent		
24	2'	F24T5/HO
55	4'	F54T5/HO

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

W 26.1

Project: **GCC**

4 Mounting

L = Lay-in grid ceiling (for T-bars 24" or 48" on center)
T = Overlapping trim for non-accessible ceilings

5 Finish

02 = Semi-gloss white
81 = Bright clear anodized reflector with semi-gloss black end plates and trim

6 Voltage/Ballast

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

* Consult factory for dimming for Reflector Configuration **3**. Dimming availability for wattages and voltages varies with ballast manufacturer and control type - see **www.elliptipar.com** for dimming specifications and limitations

7 Option (See Accessories Section for specifications)

00 = No options
0C = Modified to comply with Chicago plenum code.
0B = Snap-in parabolic cross baffle, specular finish, provides 35° lengthwise shielding
0E = Emergency battery pack with indicator lamp and test button. Integral for 48" units (lamp codes **T128**, **T328**, **T155** and **T355**). **Remote** for 24" units (lamp codes **T114**, **T314**, **T124** and **T324**). Operates one lamp only for master/satellite Configuration 3.
Note: Requires unswitched feed to battery (by others).
BE = Combination of parabolic cross baffle and emergency battery pack
0Y = Modified to comply with New York City code
XX = For modification not listed, include detailed description. Consult factory prior to specification.

8 Standard

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

Example

F210 - T128 - L - 02 - 1 - 000

Small semi-recessed model for use with 28W T5 lamp in 4' reflector. For use in lay-in grid ceilings with T-bars spaced at 48" on center. Semi-gloss white. Integral 120V electronic ballast. UL.

Type: **C3**

Accessories

Order separately. See Accessories Section for specifications.

AFK000X [ ] = Ballast **fuse** kit
- **0** = UL
- **J** = CSA

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

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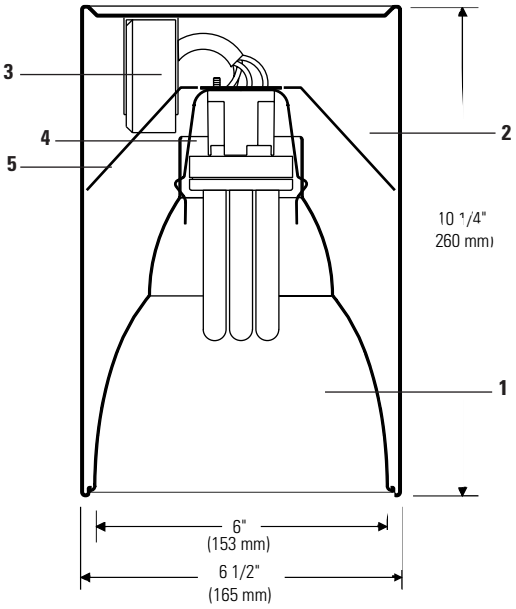
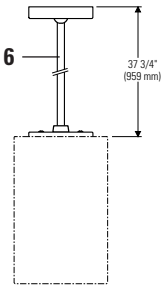
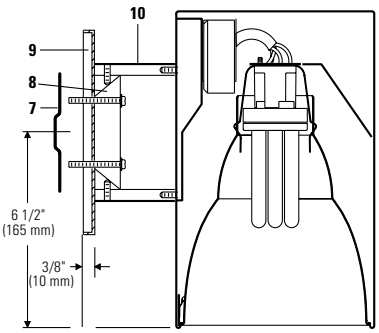
Calculite® Compact Fluorescent Surface Cylinder **CS6132**

6" Aperture Triple Tube (4-Pin) Ceiling & Wall Mount





FACSA36 (Stem Kit)



CW6132 (Wall Mount)

Complete Fixture Ceiling Mount	
CS6132VUCCL	Electronic, 120V - 277V
CS6132VJUM7CCL	Advanced Mark VII Dim., 120V - 277V
CS6132VJ1MXCCL	Advanced Mark X Dim., 120V
CS6132VJ2MXCCL	Advanced Mark X Dim., 277V

Finish
Comfort Clear™ Reflector, White Housing

Lamp
26 / 32W Triple Tube, 4 Pin

Complete Fixture Wall Mount	
CW6132VUCCL	Electronic, 120V - 277V
CW6132VJUM7CCL	Advanced Mark VII Dim., 120V - 277V
CW6132VJ1MXCCL	Advanced Mark X Dim., 120V
CW6132VJ2MXCCL	Advanced Mark X Dim., 277V

Finish
Comfort Clear™ Reflector, White Housing

Lamp
26 / 32W Triple Tube, 4 Pin

Features

1. **Reflector:** 16 ga. Alzak® aluminum, 50° visual cutoff to lamp and lamp image, medium distribution. Comfort Clear™ low iridescence finish.
2. **Housing:** One piece 16 ga. spun aluminum with returned bottom edge to seat reflector; no visible hardware. Matte white baked enamel finish.
3. **Ballast:** Mounted on support bracket, can be easily removed for service.
4. **Socket Bracket:** Snaps onto reflector neck to assure consistently correct optical alignment.
5. **Retaining Springs:** Precision-tooled steel friction springs secure reflector to housing for quick, tool-less installation.
6. **Stem Kit:** Cat. No. **FA CSA36**: Provided with 1/2" dia. stem and 5 1/2" dia. canopy. Self aligning swivel provides maximum 38° vertical adjustment. Installs over 4" octagonal outlet box. Stem can be cut to length on site. Matte white baked enamel finish.
7. **Crossbar:** Installs over 3" or 4" octagonal or rectangular outlet box.
8. **Cleat:** Cast aluminum; allows mounting to mullion or post without backplate.
9. **Backplate:** Die-cast aluminum; 6 1/4" high by 4" wide; matte white.
10. **Bracket:** Extruded aluminum; matte white finish. Secured to cleat by set screws.

Electrical

Note: For ballast electrical data and latest lamp/ballast compatibility refer to **"Ballast"** specification sheet for complete electrical data.

UL listed for 90°C supply conductors.

Options and Accessories

Other Reflector and Housing Finishes

Consult factory

Fuse (Slow Blow) Add Suffix **F** (non-dim. only, all others consult factory)

Labels

UL listed for damp locations, I.B.E.W.

Alzak® is a registered trademark of ALCOA.

US Patent Pending.

Job Information	Type: C4
Job Name:	GCC
Cat. No.:	CS6132VJ2MXCCL
Lamp(s):	2
Notes:	

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631 Airport Road, Fall River, MA 02720 • (508) 679-8131 • Fax (508) 674-4710
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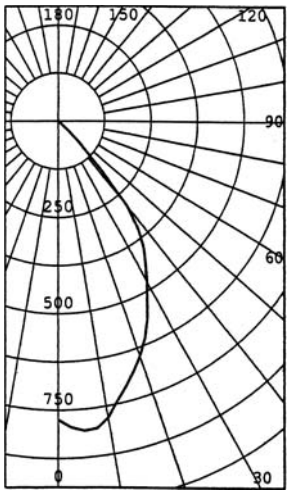
LIGHTOLIER®

26W

Spacing Ratio = 1.0

Report No: LSI 14025
Lightolier Recessed Fluorescent Luminaire, With Comfort Clear™ Reflector
One 26 Watt CPFL GE Lamp,
Cat# F26TBX/SPX35-835.
Lumen Rating = 1800 Lms.



****Efficiency=48.1%****
Date: 4-23-99
CIE Type Direct
Luminous Diameter: 6.000
This Report Based On LM-1 And
Other Pertinent IES Procedures.

ZONAL SUMMARY

ANGLE	CP	LUMENS
0	775	
5	806	77
10	780	
15	708	199
20	646	
25	566	258
30	478	
35	402	245
40	285	
45	78	81
50	13	
55	4	4
60	2	
65	1	2
70	1	
75	1	1
80	0	
85	0	0
90	0	

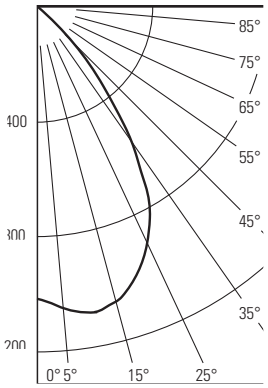
ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	%LAMP	%LUMINAIRE
0-30	533	29.66	61.66
0-40	778	43.25	89.92
0-60	863	47.98	99.75
0-90	865	48.10	100.00
40-90	87	4.85	10.08
60-90	2	.12	.25
90-180	0	.00	.00
0-180	865	48.10	100.00

32W

Spacing Ratio = 1.1

Report Prepared For: Lightolier 04-27-1999
Report No: LRL 499-9G
Lamps: 1 PLT-32 Lumens: 2400
Descrip.: 6" Dia X 10" Ht Recessed Downlight
With Comfort Clear™ Reflector. Vertical Lamp.



****Efficiency=52.7%****
Date: 4-27-99
CIE Type Direct
Luminous Diameter: 6.000
This Report Based On LM-1 And
Other Pertinent IES Procedures.

ZONAL SUMMARY

ZONE DEG.	AVG* C.P.	ZONAL LUMENS
180	0	
175	0	0
165	0	0
155	0	0
145	0	0
135	0	0
125	0	0
115	0	0
105	0	0
95	0	0
90	0	0
85	1	1
75	1	1
65	3	3
55	9	8
45	99	77
35	563	354
25	904	418
15	1063	301
5	1066	102
0	1035	

ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LAMP	%LUMINAIRE
0–30	821	34.2	64.9
0–40	1175	49.0	92.9
0–60	1260	52.5	99.6
0–90	1265	52.7	100.0
40–90	90	3.8	7.1
60–90	5	0.2	0.4
90–120	0	0.0	0.0
90–150	0	0.0	0.0
90–180	0	0.0	0.0
0–180	1265	52.7	100.0

Coefficients of Utilization

Effective Floor Cavity Reflectance = .20

Room Cavity Ratio	80			70			50			30			10			
	Wall Reflectance															
	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
1	.54	.53	.52	.53	.52	.51	.51	.50	.49	.49	.48	.48	.47	.47	.46	.46
2	.50	.49	.47	.50	.48	.47	.48	.47	.46	.47	.46	.45	.45	.45	.44	.43
3	.47	.45	.44	.47	.45	.43	.46	.44	.43	.44	.43	.42	.43	.42	.41	.41
4	.45	.42	.40	.44	.42	.40	.43	.41	.40	.42	.41	.39	.41	.40	.39	.38
5	.42	.39	.37	.42	.39	.37	.41	.39	.37	.40	.38	.37	.39	.38	.36	.36
6	.40	.37	.35	.39	.37	.35	.39	.36	.35	.38	.36	.34	.37	.36	.34	.34
7	.37	.34	.33	.37	.34	.32	.36	.34	.32	.36	.34	.32	.35	.33	.32	.31
8	.35	.32	.30	.34	.32	.30	.34	.32	.30	.34	.31	.30	.33	.31	.30	.29
9	.33	.30	.28	.32	.30	.28	.32	.30	.28	.32	.29	.28	.31	.29	.28	.27
10	.31	.28	.26	.30	.28	.26	.30	.28	.26	.30	.27	.26	.29	.27	.26	.25

Coefficients of Utilization

Effective Floor Cavity Reflectance = .20

Room Cavity Ratio	80			70			50			30			10			
	Wall Reflectance															
	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
1	.59	.58	.57	.58	.57	.56	.56	.55	.54	.54	.53	.53	.52	.52	.51	.50
2	.56	.54	.53	.55	.54	.52	.54	.52	.51	.52	.51	.50	.51	.50	.49	.48
3	.53	.51	.50	.53	.51	.49	.51	.50	.49	.50	.49	.48	.49	.48	.47	.46
4	.51	.48	.47	.50	.48	.46	.49	.47	.46	.48	.46	.45	.47	.46	.45	.44
5	.48	.46	.44	.48	.45	.44	.47	.45	.43	.46	.44	.43	.45	.44	.43	.42
6	.46	.43	.42	.46	.43	.41	.45	.43	.41	.44	.42	.41	.44	.42	.41	.40
7	.44	.41	.39	.43	.41	.39	.43	.41	.39	.42	.40	.39	.42	.40	.39	.38
8	.41	.39	.37	.41	.39	.37	.41	.38	.37	.40	.38	.37	.40	.38	.36	.36
9	.39	.36	.35	.39	.36	.35	.38	.36	.35	.38	.36	.34	.38	.36	.34	.34
10	.35	.32	.31	.35	.32	.31	.35	.32	.30	.34	.32	.30	.34	.32	.30	.30

Job Information Type:

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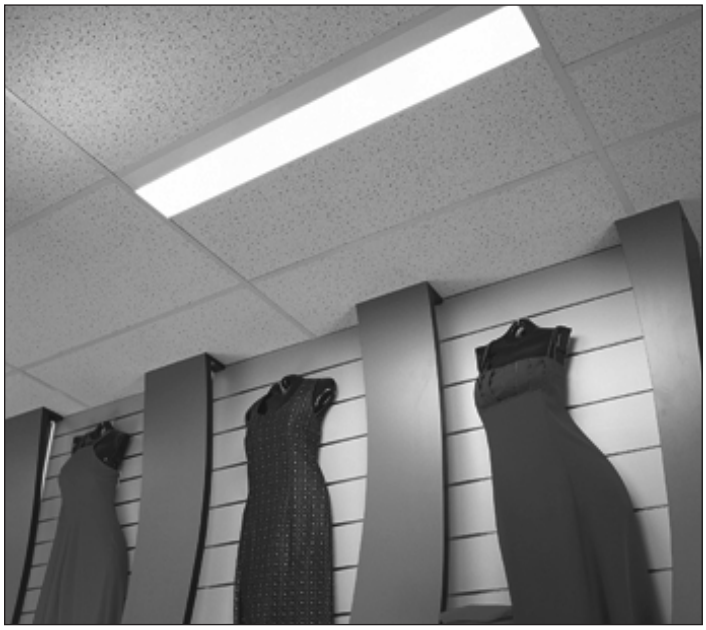
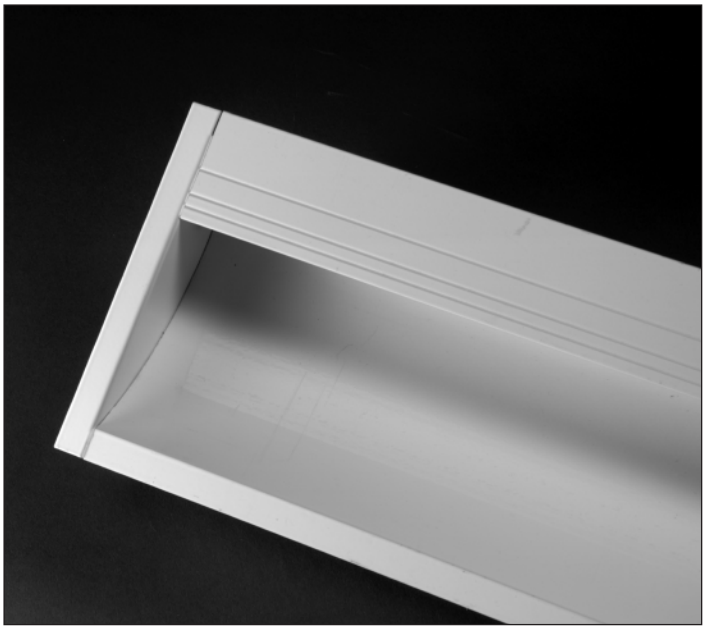
LIGHTOLIER®

Project	GCC
Fixture Type	C5
Catalog #	MWW114F.1F14T5.2'.DIM

MINI-FLAIRE
T5 FLUORESCENT WALLWASH
MWW SERIES





Uniform wall illumination without scallops or striations.

Extruded aluminum reflector is finished with high-reflectance white powder coat to match ceiling appearance, not show dust or finger-prints and maintain initial performance levels over the life of the installation

Shallow 3 7/8” profile.

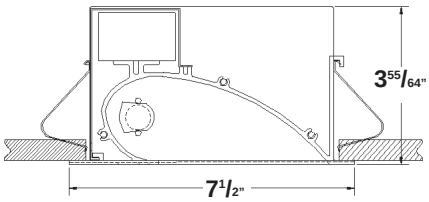
Available in 2’, 3’, 4’, and 5’ models using high efficiency T5 or high output T5 lamps.

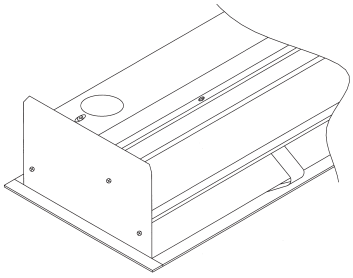
For installation in suspended grid and dry-wall ceiling.

Mini-Flaire adds a unique blend of performance and practicality to the art and science of wall washing. Provides exceptional visual uniformity, precise wall/ ceiling cut-off and balanced ceiling luminance with a cost-effective, easy to maintain luminaire.

MINI-FLAIRE
T5 FLUORESCENT WALLWASH MWW SERIES

CROSS SECTION AND MOUNTING DETAILS





Drywall Ceiling Detail

Ceiling Cut-Out	
MWW-114 or 124/F	7" x 22 11/16"
MWW-121 or 139/F	7" x 34 1/2"
MWW-128 or 154/F	7" x 46 5/16"
MWW-135/F	7" x 58 1/8"

PHOTOMETRICS (Vertical Footcandles with front edge of fixture 3' from wall)

2' Mini-Flaire, (1) F14T5 lamp

Distance from center ceiling	Single Luminaire 0'	2'	4'	6'	Multiple Luminaires 4' O.C. 0'	4'	0'
1'	5	9	4	1	6	11	9
2'	7	10	5	2	8	13	12
3'	6	8	5	3	7	11	11
4'	4	6	4	2	5	8	8
5'	3	4	3	2	4	6	6
6'	2	3	3	2	3	4	5
7'	2	2	2	2	3	3	4
8'	1	2	2	1	2	3	3

4' Mini-Flaire, (1) F28T5 lamp

Distance from center ceiling	Single Luminaire 0'	2'	4'	6'	8'	Multiple Luminaires 8' O.C. 0'	4'	0"
1'	15	18	9	3	2	16	11	16
2'	17	20	12	6	3	17	15	19
3'	13	16	11	6	3	14	14	16
4'	9	11	10	6	3	10	12	13
5'	7	8	7	5	3	8	10	10
6'	5	6	6	4	3	6	8	8
7'	4	5	4	4	3	5	6	7
8'	2	3	3	2	2	3	4	4

SPECIFICATIONS

CONSTRUCTION
.100 extruded aluminum.

FINISH
White polyester resin powder coat with minimum 87% reflectivity.

ELECTRICAL
Premium high frequency electronic high power factor universal voltage ballast.

LAMPS
(1) high efficiency T5 or (1) high output T5. 5ft H.O. T5 not available.

INSTALLATION
Suspended T-Bar ceilings. Fixture simply lays in standard grid sized openings.

DRYWALL
Housing snaps into ceiling opening with spring mounting clips. 7/8" diameter knockouts for standard trade-size electrical fittings are provided in top.

LABELS
UL, CUL, IBEW & DAMP.

ORDERING INFORMATION

Catalog# Grid	Flange	Lamps	Nominal Length
MWW-114/G	MWW-114/F	1/F14T5	2'
MWW-124/G	MWW-124F	1/F24T5HO	2'
	MWW-121/F	1/F21T5	3'
	MWW-139/F	1/F39T5HO	3'
MWW-128/G	MWW-128/F	1/F28T5	4'
MWW-154/G	MWW-154/F	1/F54T5HO	4'
	MWW-135/F	1/F35T5	5'

Note: 120V - 277V is standard

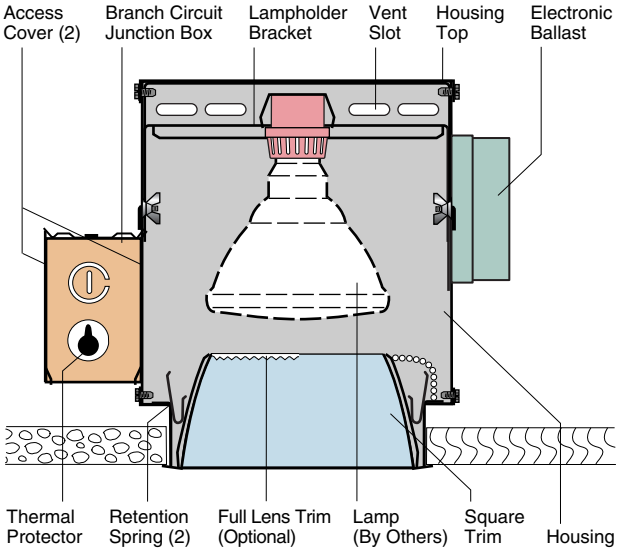
ELECTRICAL OPTIONS

/DIM	Dimming ballast for use with analog 0-10 volt fluorescent dimming control supplied by others (N/A on MWW124G, 124F or 139F)
/SLO-BLO	GMF-Slow Blow Fuse and Fuseholder

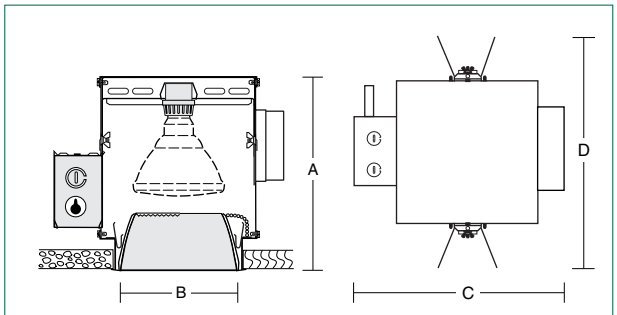
ELECTRICAL DATA

Lamp Wattage	14WT5	21WT5	28WT5	35WT5	24WT5/HO	39WT5/HO	54WT5/HO
Input Watts	19	26	34	42	27	44	64
Max. Amps	.15	.20	.27	.34	.22	.37	.53
Power Factor	.97	.97	.97	.97	.97	.97	.97
THD	<10%	<10%	<10%	<10%	<10%	<10%	<10%

TYPE L1A and L1B



Dimensions and Lamps



Number	A Depth	B Aperture	C Width	D Length	Lamps*
H8602	10" 254mm	6" sq. 153mm	12½" 318mm	14" 356mm	39W PAR-30L MH 70W PAR-38 MH
H8602-100	11" 279mm	6" sq. 153mm	16¾" 426mm	16½" 419mm	100W PAR-38 MH**

*To specify add watts and volts for proper ballast, e.g. H8602-70277.
**For 150W contact factory. Remote ballast.

Matching Square Units

Downlights	Pages H7, H8, H10, H11
Directionals	Pages H5, H6, H9
Wall washers	Pages H37, H38, H39 H40, H41, H42

H8602 H25a

Downlight
PAR-30L, PAR-38 Metal Halide Lamps
6" Square Parabolic Trim

Optics and Applications
PAR lamps offer a selection of beam spreads with controlled patterns. Vertical socket adjustment is provided for lamp depth variation. Parabolic trim contours control glare. Use anywhere for general purpose lighting.

Design Features
Square parabolic trim sections control brightness while spill light is redirected to the workspace. Aperture appearance from normal viewing angles appears as a soft luminous glow. Maximum ceiling thickness 1½". Top or bottom service.

Ballast
The electronic metal halide ballast provides more constant lumen and wattage output. Features thermal protection with auto reset, quiet operation and automatic shut-down at end of life. Draws less energy than a magnetic ballast.

Finish
Housing and structural parts are painted matte black. The aperture trim is Softglow® clear. Special finishes, textures and colors are available. See Accessories.

Trim Textures
Kurt Versen has a selection of textured square trims.
All textured surfaces are available in anodic special colors.

General
Fixtures are pre-wired and thermally protected, UL and C-UL listed for eight wire 75°C branch circuit wiring. Union made IBEW. Suitable for damp locations.

Accessories

F	Ballast fuse.	R2	26" support rails.
SB	Softglow black.	R5	52" support rails.
SG	Softglow gold.	BR	Bright trim finish.
SH	Softglow mocha.	BP	Ball Peen texture.
SP	Softglow graphite.	CG	Corrugated texture.
ST	Softglow titanium.	DS	Distressed texture.
SW	Softglow wheat.	WV	Woven texture.
SY	Softglow pewter.	WT	White trim flange.
SZ	Softglow bronze.	WHT	White complete trim.
FC	Four cell cross baffle.	HL	Hexcell louver.**
V347	347 volt ballast, contact the factory.	LL	Linear lens.**
		LP	Large prism lens.**
FR	Frosting on lens.	MP	Microprism lens.**

EC Emergency circuit with mini-can socket and leads.*
EBH5 Electronic ballast, 150W. Contact factory.
AOE1 Electronic ballast Auto-On restrike system 120V.*
AOE2 Electronic ballast Auto-On restrike system 277V.*
FLT6 Full lens trim. Specify lens type, e.g. H8602-FLT6LL.
FF30-2 Accessory holder for PAR-30. Holds two accessories.
FF38-1 Accessory holder for PAR-38. Holds one accessory.
FF38-2 Accessory holder for PAR-38. Holds two accessories.
*Use open rated 60W max. auxiliary incandescent lamp.
**Requires Accessory holder.
See Squares brochure for more accessories data.

kurt versen
Kurt Versen Company Point Source Lighting
Westwood, New Jersey 07675

TYPE L1A and L1B

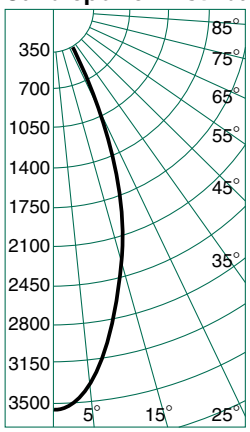
H25a H8602

Performance Datachart

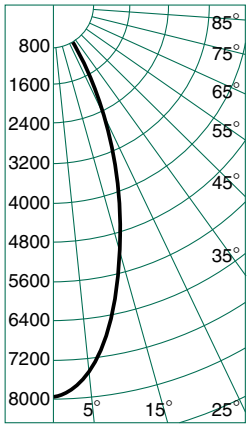
Single Unit Initial Footcandles, 30" Work Plane							Ceiling to Floor	Multiple Units Initial Footcandles, 30" Work Plane			
H8602 39W PAR-30 FL 25° MH Read Top Data H8602 70W PAR-30 FL 25° MH Read Bottom Data								Ceiling 80% Walls 50% Floor 20%			
Nadir	10°		20°		30°			Spacing is Maximum Over Work Plane			
FC	FC	Diam	FC	Diam	FC	Diam		Spacing	RCR 1	RCR 3	RCR 8
40 88	30 68	3' 3'	16 35	7' 7'	4 10	11' 11'	12'	6' 6'	57 123	51 110	40 87
27 60	21 46	4' 4'	11 24	8' 8'	3 7	13' 13'	14'	7' 7'	39 84	35 75	27 59
20 44	15 34	5' 5'	8 17	10' 10'	2 5	16' 16'	16'	8' 8'	28 61	25 54	20 43
15 33	11 25	5' 5'	6 13	11' 11'	2 4	18' 18'	18'	9' 9'	21 46	19 41	15 33
12 26	9 20	6' 6'	5 10	13' 13'	1 3	20' 20'	20'	11' 11'	17 36	15 32	12 26

Single Unit Initial Footcandles, 30" Work Plane							Ceiling to Floor	Multiple Units Initial Footcandles, 30" Work Plane			
H8602 100W PAR-38WFL 40° MH Read Top Data H8602 100W PAR-38FL 25° MH Read Bottom Data								Ceiling 80% Walls 50% Floor 20%			
Nadir	10°		20°		30°			Spacing is Maximum Over Work Plane			
FC	FC	Diam	FC	Diam	FC	Diam		Spacing	RCR 1	RCR 3	RCR 8
91 175	84 145	3' 3'	52 55	7' 7'	10 8	11' 11'	12'	7' 5'	98 218	87 197	69 162
62 119	58 99	4' 4'	35 38	8' 8'	7 5	13' 13'	14'	9' 7'	67 149	60 135	47 111
34 66	32 54	5' 5'	19 21	11' 11'	4 3	18' 18'	18'	12' 9'	37 82	33 74	26 61
27 51	25 43	6' 6'	15 16	13' 13'	3 2	20' 20'	20'	13' 10'	29 64	26 58	20 48
16 31	15 26	8' 8'	9 10	16' 16'	2 1	26' 26'	25'	17' 13'	18 39	16 35	12 29

Candlepower Distribution



H8602 39W PAR-30L 25° MH
Eff. 75% S/M .60



H8602 70W PAR-38 25° MH
Eff. 76% S/M .61

Candelas

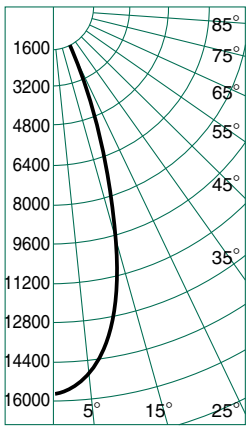
o	39W 2200*	70W 4850*
0	3591	7981
5	3368	7484
10	2877	6394
15	2275	5056
20	1715	3835
25	1098	2441
30	611	1358
35	249	554
40	97	217
45	32	72
50	11	32
55	5	17
60	0	0
65	0	0
70	0	0
75	0	0
80	0	0
85	0	0
90	0	0

o Vertical Angles
* Initial Lamp Lumens

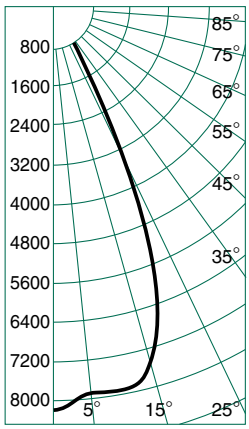
Coefficients of Utilization

Ceiling	80%				70%		50%		30%		0
Wall %	70	50	30	10	50	10	50	10	50	10	0
RCR	Zonal Cavity Method - Floor Reflectance 20%										
1	.87	.85	.84	.82	.84	.81	.81	.78	.78	.76	.73
2	.84	.80	.78	.76	.79	.75	.77	.73	.75	.72	.69
3	.80	.76	.73	.70	.75	.70	.73	.69	.71	.68	.66
4	.77	.72	.69	.66	.71	.66	.70	.65	.68	.64	.62
5	.74	.69	.65	.62	.68	.62	.67	.61	.66	.61	.59
6	.71	.65	.62	.59	.65	.59	.64	.58	.63	.58	.57
7	.68	.62	.59	.56	.62	.56	.61	.55	.60	.55	.54
8	.66	.60	.56	.53	.59	.53	.59	.53	.58	.53	.52
9	.63	.57	.53	.51	.57	.51	.56	.51	.56	.50	.49
10	.61	.55	.51	.49	.55	.49	.54	.48	.53	.48	.47

H8602 39W PAR-30L 25° MH Philips
H8602 70W PAR-38 25° MH Philips
H8602 100W PAR-38 25° MH Philips x 1.13



H8602 100W PAR-38 25° MH
Eff. 84% S/M .57



H8602 100W PAR-38 40° MH
Eff. 72% S/M .77

o	100W 6800*	100W 6500*
0	15764	8203
5	15006	7949
10	13655	7984
15	9751	7560
20	6004	5634
25	2600	3038
30	1070	1409
35	367	476
40	162	188
45	61	68
50	34	33
55	0	19
60	0	14
65	0	0
70	0	0
75	0	0
80	0	0
85	0	0
90	0	0

o Vertical Angles
* Initial Lamp Lumens

Ceiling	80%				70%		50%		30%		0
Wall %	70	50	30	10	50	10	50	10	50	10	0
RCR	Zonal Cavity Method - Floor Reflectance 20%										
1	.82	.81	.79	.78	.79	.76	.76	.74	.74	.72	.69
2	.79	.76	.74	.72	.75	.71	.73	.69	.70	.68	.65
3	.76	.72	.69	.67	.71	.66	.69	.65	.68	.64	.62
4	.73	.68	.65	.63	.68	.62	.66	.62	.65	.61	.59
5	.70	.65	.62	.59	.64	.59	.63	.58	.62	.58	.56
6	.67	.62	.59	.56	.62	.56	.61	.55	.60	.55	.54
7	.65	.59	.56	.53	.59	.53	.58	.53	.57	.53	.51
8	.62	.57	.53	.51	.56	.51	.56	.50	.55	.50	.49
9	.60	.54	.51	.48	.54	.48	.53	.48	.53	.48	.47
10	.58	.52	.49	.46	.52	.46	.51	.46	.51	.46	.45

H8602 100W PAR-38 40° MH Osram

WP SYSTEM

WP-T5-LP
WP-T5HO-LP

LOW-PROFILE

T5 or T5HO LINEAR LAMP

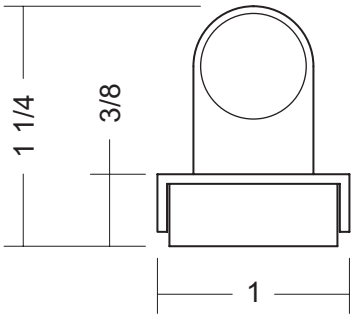
- 20 gauge steel construction, also available in aluminum, add "**AL**" in "Options" space
- uses standard or high output T5 fluorescent lamps, other lamp types available
- standard ballasts are remote electronic, see drawings for remote ballast housing options, consult the factory for available types of regular, dimming and emergency ballasts
- fixtures come standard with 9'-0" wire leads and special 3/8" flex connector
- fixtures are available in nominal lengths of 1, 2, 3, 4, 5 and 8 feet, see part numbers to the right for actual fixture lengths
- standard finish is High Reflectivity White powder coat done post production, decorative Large Pattern Galvanize and other custom colors and finishes are also available
  all WP System fixtures are treated with a multi-stage phosphate process which ensures proper finish bonding and inhibits rust
- optional standard (shown) and custom shape solid, slotted or perforated reflectors available
- UL and C-UL Listed for Dry and Damp Locations

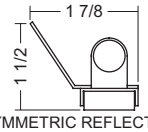
Job Information

Type
L2A L2B L2C

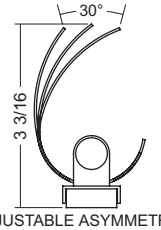
Job Name
GATEWAY CC

Location
NEW HAVEN, CT

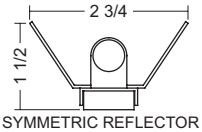




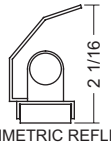
ASYMMETRIC REFLECTOR
TYPE 1
option: **AR1**



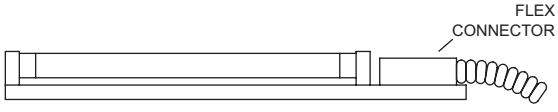
ADJUSTABLE ASYMMETRIC
REFLECTOR
option: **AAR**

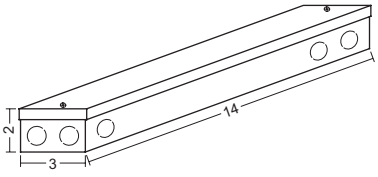


SYMMETRIC REFLECTOR
option: **SR**



ASYMMETRIC REFLECTOR
TYPE 2
option: **AR2**





"LP" fixtures come standard with **"BB14B"** remote ballast box.
Other ballast box types available, see ballast box catalog sheet.

WP — **Family**
WP

Lamp Type
T5 - Standard T5
T5HO - T5 High Output

LP — **Model**
LP - Low-Profile

Voltage
120
277
347
UNV

Ballast
STD - electronic
DIM - dimming
EM - emergency
consult factory for available **STD**, **DIM** and **EM** options

Length

T5	T5HO
108 - 14 5/8"	
114 - 24 7/8"	**124** - 24 7/8"
121 - 36 3/4"	**139** - 36 3/4"
128 - 48 1/2"	**154** - 48 1/2"
135 - 60 3/8"	**180** - 60 3/8"
228 - 941/2"*	**254** - 941/2"*

*(*4' lamps end-to-end)*

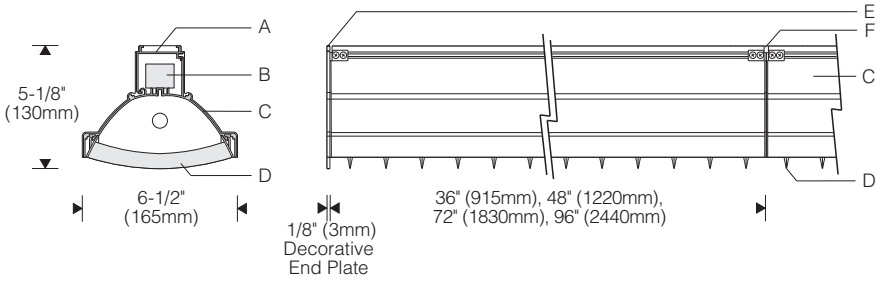
Finish
HRW - High Reflectivity White
LPG - Large Pattern Galvanize
CU - Custom (please specify)

Options

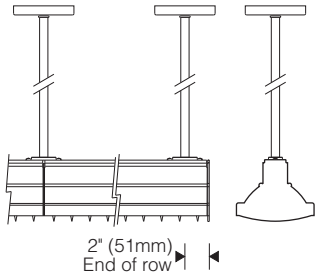
BIRCHWOOD LIGHTING
714.550.7118 • fax 714.550.7151 • www.BirchwoodLighting.com

NOTE: Specifications and dimensions are subject to change without notice.

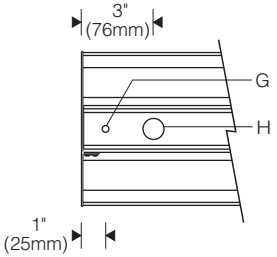
Style 3030 1:8 Scale



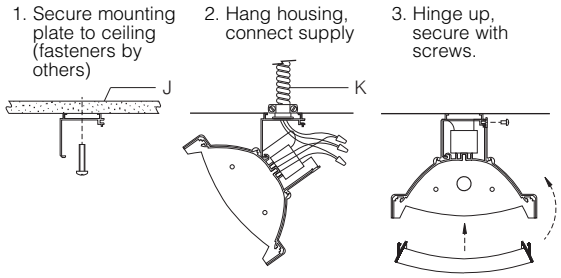
Pendant Stems (X mount)



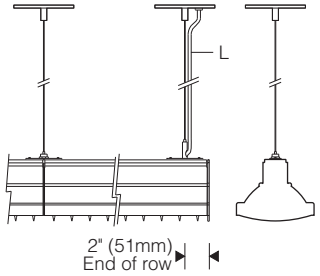
Top View (S mount)



Installation (S mount)



Cables (X mount)



Specifications

- **A** Extruded aluminum mounting plate
- **B** Electronic ballast
- **C** Specular extruded aluminum reflector housing
- **D** Snap-in semi-specular parabolic cross-baffle, blades 1-1/2" o.c., 25° shielding
- **E** Aluminum decorative end plate (3 profiles - order separately)
- **F** Aluminum joiner/ reveal plates
- **G** Mounting holes, 9/32" (7mm) dia. (**S** mount)
- **H** Knockout, (2) 7/8" (22mm) dia. (**S** mount)
- **J** Structure, fasteners (by others)
- **K** Conduit, connector (by others)
- **L** 18/4 cord with cable clips (cable mount)

Finish:
Semi-gloss white or bright clear anodized aluminum housing with semi-gloss black reveal plates. White or silver decorative end plates (order separately).

Painted surfaces - 6 stage pretreatment and electrostatically applied thermoset powdercoat for stable, long lasting finish.

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

Cross-baffle - injection molded high-impact polycarbonate with metalized semi-specular finish.

Mounting:
S mount - mounting plate fastens flush to ceiling. Unit hinges on plate for hands-free access to wiring.

X mount - pendant stems, cables **ordered separately**

Pendant stem - 11/16" O.D. aluminum, internally threaded. 5" dia. aluminum canopy.

Cable - 1/16" dia. 7x7 aircraft cable, field adjustable length. Crossbar with 1/4-20 stud and 5" dia. canopy.

For shelf supported bridge or cantilever, consult factory.

Electrical:
Use 90°C wire for supply connections and through wire.

S mount - 7/8" (22mm) dia. knockouts at ends of mounting plate for conduit feed (by others).

X mount - electrical feed hanger mounts over recessed outlet box (by others) and **must be located at end of row**.

Housing hinges down for access to ballast and wiring. Optional #12 AWG prewired modular through wiring with quick connectors.

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

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

Optional integral motion sensor, consult factory

Standard:
UL listed or CSA certified.

REV. 7/07 **Patents Pending**

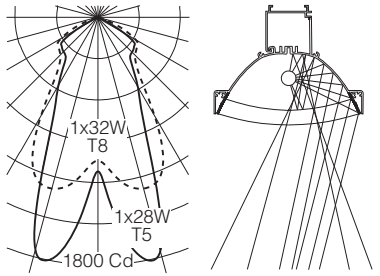
Features

- *Exceeds IESNA recommended light level - 30fc vertical at 30" AND complies with energy standards (T5)*
- *Precise extruded reflector drives light to the bottom shelf - maximizes visibility of books and shelf utilization*
- *Innovative variable width cross-baffle - redirects wasted light*
- *Optional emergency battery; motion sensor (consult factory)*

L 1.0

Performance

Multiple reflector segments drive light to the lowest shelves. Unique cross-baffle redirects a portion of the lamp energy that otherwise goes directly to the floor back into the main beam while providing lengthwise shielding. The result is high beam efficiency and superior surface uniformity in tall, narrow stacks.



For complete photometrics, see www.elliptipar.com.

elliptipar

To Order

To form a Catalog Number

3 0 3 0 - R4 - [ ] - [ ] - [ ] - [ ] - [ ]
1 2 3 4 5 6 7

Project:

Type: L3

1 Style

3030 = Stack light, integral ballast

2 Lamp

[ ][ ][ ] = **Lamp Code**

Lamp Wattage (see chart below)

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

A = T8 Fluorescent
T = T5 Fluorescent

Example: **T228** = 8' (2.4m) housing with two 28W T5 lamps (end-to-end)

*Length**	*T5*		*T8*	
	Code	*Lamp(s)*	*Code*	*Lamp(s)*
Linear Fluorescent				
36" (915mm)	**T121**	1 x F21T5	**A125**	1 x F25T8
48" (1220mm)	**T128**	1 x F28T5	**A132**	1 x F32T8
72" (1830mm)	**T221**	2 x F21T5	**A225**	2 x F25T8
96" (2440mm)	**T228**	2 x F28T5	**A232**	2 x F32T8

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

* Add 1/4" (6mm) to row or single unit for **ADE** Decorative End Plates

L 1.1

3 Mounting

S = Ceiling (surface) mount
X = For use with pendant stem or cable hangers
Note: Order hangers separately

For shelf supported bridge or cantilever mount, consult factory.

4 Finish

01 = Bright clear anodized reflector with black reveals (matching **ADE** end plates are silver - order separately)
02 = Semi-gloss white (matching **ADE** end plates are white - order separately)
99 = Custom RAL or computer matched color to be specified, consult sales representative

5 Voltage/Ballast

Electronic
1 = 120V
2 = 277V
3 = 347V (Canada)
Note: Not available for for use with cable hangers.

6 Option (See Accessories Section for specifications)

00 = No option
0E = Integral emergency battery pack with indicator lamp and test button. Operates one lamp.
0K = Prewired modular #12 AWG through wiring with quick connectors
EK = Combination emergency battery and modular thru wire
XX = For modification not listed, include detailed description. Consult factory prior to specification.

7 Standard

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

Example

3030 - T228 - S - 02 - 1 - 0E0

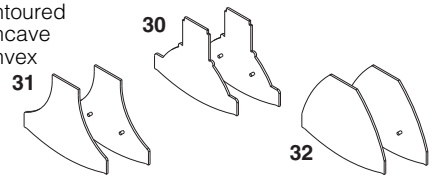
Stack light for use with two 4' F28T5 lamps. 96" long housing (not including decorative end plates). Ceiling (surface) mount. Semi-gloss white. Integral 120V electronic 2-lamp ballast. UL. Optional battery pack. Order decorative end plates separately.

Accessories

Order separately. See Accessories Section for specifications.

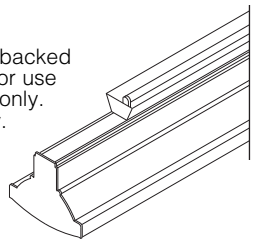
ADE[ ][ ] **0** = **Decorative end plates**, pair, silver, white, or custom color to match housing.
Note: required for each row or single unit. Adds 1/4" (6mm) to length.
4

30 = Contoured
31 = Concave
32 = Convex



AFK000X[ ] = Ballast **fuse** kit
0 = UL
J = CSA

AMU = Modular **uplight**, low-profile symmetrical reflector piggy-backed on top of mounting plate. For use with X mount stem or cable only. May be switched separately.
Note: Consult factory for complete specifications and ordering information.



Hangers

Order separately. See Accessories Section for specifications.

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

Rows - order one non-electrical hanger for each unit (**X** mount) plus one electrical feed for each row.

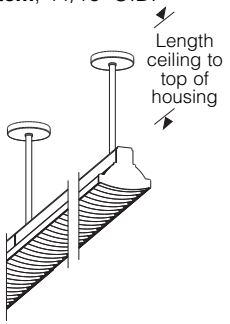
Electrical feed(s) must be located at an end of row.

VE[ ][ ][ ] **0** = **Pendant stem**, 11/16" O.D.

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

01 = Silver canopy & stem
02 = White canopy & stem
99 = Custom RAL or computer matched color to be specified

F = Non-electrical
G = Electrical feed, with (4) #14 AWG leads

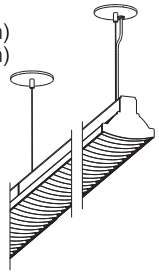


VE[ ][ ][ ] **0** = **Cable support**, field adjustable

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

01 = White canopy, black cord
02 = White canopy & cord
99 = Custom RAL or computer matched color to be specified

R = Non-electrical
S = Electrical feed, 18/4 cord



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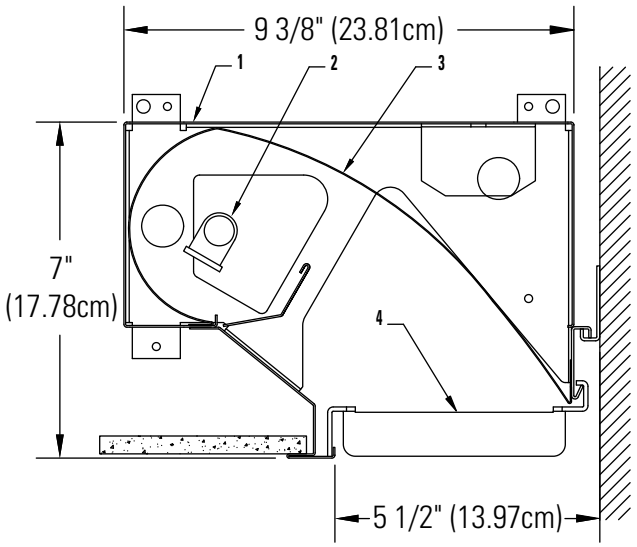

Quarter Scale

Module Ordering Information

Family	Lamps	Lamp Type	Shielding	Voltage	Length	Options
PTS5	1					
	1 = 1 Lamp	**S** = Standard **H** = HO	**O** = Open **L** = Lens **S** = Straight Blade Louver	**1** = 120V **2** = 277V **3** = 347V **D1** = 120V Dim. **D2** = 277V Dim. **E1** = 120V Emerg. **E2** = 277V Emerg.	**2** = Two-Foot **3** = Three-Foot **4** = Four-Foot **6** = Six-Foot **8** = Eight-Foot	**Blank** = No Options **A** = Adjustable* **X4** = 4 thru wires **X5** = 5 thru wires **A4** = Adjustable 4 thru wires* **A5** = Adjustable 5 thru wires*

** only available on Two-Foot, Three-Foot and Four-Foot versions. See length variations of adjustable fixtures on page 2.*

Features

1. **Housing:** Die-formed 20 gauge pre-painted steel. Integral heavy gauge bulkheads support housing and trim, permitting modules to be bolted together in continuous runs and facilitate suspension.
2. **Lamping:** Cross-sectional one linear T5 fluorescent lamp. Provided by others.
3. **Reflector:** Precision parabolic roll-formed semi-specular aluminum.
4. **Louver:** Lift and shift straight blade louver constructed from die-formed aluminum and painted to match housing. Louver blades are 1" (2.54cm) high on 1-1/8" (2.86cm) centers. (Optional)

Mounting

"J" Rail is first mounted to the wall and the modules connect to the rail for 1/4" (0.64cm) wall adjustment. Modules are hung from suspension wires attached to the fixture bulkheads and the structure above.

Electrical

Electronic Ballast: Programmed start, 3 conductor, 12 gauge wire. Color-coded quick connectors allow easy connection for modular fixutres. Factory installed ballast disconnect allows the ballast to be disconnected from and reconnected to incoming power under load without turning the entire circuit off.

Dimming: T5 lamp uses PowerSpec® HDF. Use PowerSpec® HDF compatible three-wire control (extra control lead required).

T5 HO lamp uses Advance Mark X. Use Advance compatible two-wire control (no extra control lead required).

Emergency Battery Pack: 450 Lumens @ 90 minimum.

Ordering Instructions

Individual Fixtures:

1. Order number of MODULES required.
2. Order one END SET per MODULE.

Continuous Rows:

1. Determine run length.
2. Order the appropriate number of MODULES for the complete ROW.
3. Stagger rows must be completed with an adjustable module. (2-light only)
4. Non-stagger rows must be completed with an adjustable module unless row lengths are in precise 1 foot (30.48cm) intervals.
5. Order one END SET per ROW.

Labels

UL, cUL and IBEW

Job Information **Type:** L4

Job Name: GATEWAY COMMUNITY COLLEGE

Cat. No.: SEE LUMINAIRE SCHEDULE

Lamp(s): SEE LUMINAIRE SCHEDULE

Notes:

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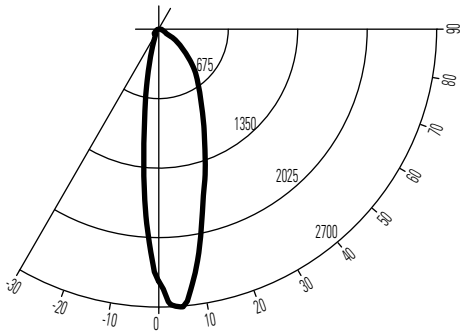
Performance & Quick Calculators



Report No: ITL53559
Cat No: PTS51HS14
Lamps: 1 F54T5
Lumens: 5000
Efficiency: 37.2%

CANDLEPOWER

ZONE	0	45	90	135	180
DEG.					
180	0	0	0	0	0
175	0	0	0	0	0
165	0	0	0	0	0
155	0	0	0	0	0
145	0	0	0	0	0
135	0	0	0	0	0
125	0	0	0	0	0
115	0	0	0	0	0
105	0	0	0	0	0
95	0	0	0	0	0
90	21	28	0	0	0
85	27	39	12	10	0
75	34	78	53	45	9
65	66	190	106	89	20
55	224	262	176	128	34
45	428	408	433	130	60
35	673	686	997	123	55
25	1036	1163	1558	203	83
15	1674	1943	2044	611	343
5	2708	2681	2376	1811	1594
0	2450	2450	2450	2450	2450

COEFFICIENTS OF UTILIZATION

% EFFECTIVE CEILING CAVITY REFLECTANCE

	80			70			50		
	% WALL REFLECTANCE								
	70	50	30	70	50	30	50	30	10
0	44	44	44	43	43	43	41	41	41
1	41	40	39	40	39	38	28	37	36
2	39	36	34	38	36	34	34	33	32
3	36	33	31	35	33	30	32	30	28
4	34	30	28	33	30	28	29	27	25
5	32	28	25	31	28	25	27	25	23
6	30	26	23	29	26	23	25	23	21
7	28	24	22	28	24	22	24	21	20
8	27	23	20	26	23	20	22	20	18
9	25	21	19	25	21	19	21	19	17
10	24	20	18	24	20	18	20	17	16

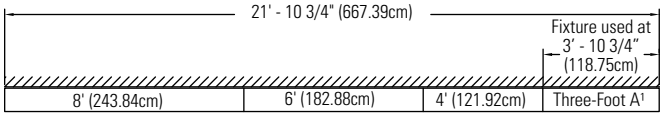
ROOM CAVITY RATIO

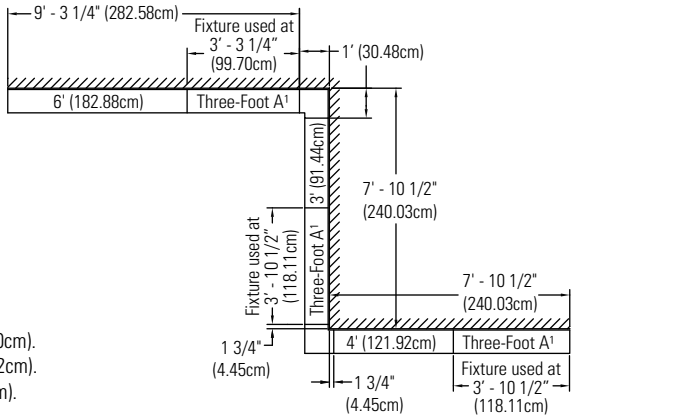
Floor cavity reflectance = 20%

ZONAL LUMEN SUMMARY

ZONE	LUMENS	% BARELAMP	% LUMINAIRE
0-90	1861	37.2	100.0
90-180	0.0	0.0	0.0
0-180	1861	37.2	100.0

Sample Run



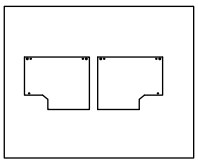


[1] *A = Adjustable Fixture or Adjustable Staggered Fixture*

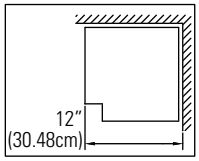
For Fixture Using non-Staggered Lamps
The Four-Foot Adjustable Fixture has a range of 48.75"(123.83cm) - 60"(152.40cm).
The Three-Foot Adjustable Fixture has a range of 36.75"(93.35cm) - 48"(121.92cm).
The Two-Foot Adjustable Fixture has a range of 24.75"(62.87cm) - 36"(91.44cm).

For Fixture Using Staggered Lamps
The Four-Foot Adjustable Staggered Fixture has a range of 51"(129.54cm) - 60"(152.40cm).
The Three-Foot Adjustable Staggered Fixture has a range of 39"(99.06cm) - 48"(121.92cm).
The Two-Foot Adjustable Staggered Fixture has a range of 27"(68.58cm) - 36"(91.44cm).

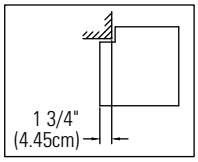
End Plate and Corner Block Accessories



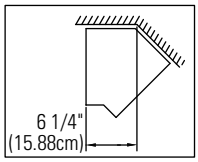
End Cap Set:
PTSEP



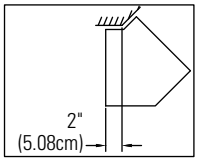
90° Inside Corner:
PTS9ØINCO - Open
PTS9ØINCL - Lens
PTS9ØINCS - Straight Blade Louver



90° Outside Corner:
PTS9ØOTCO - Open
PTS9ØOTCL - Lens
PTS9ØOTCS -Straight Blade Louver



135° Inside Corner:
PTS135INCO - Open
PTS135INCL - Lens
PTS135INCS - Straight Blade Louver



135° Outside Corner:
PTS135OTCO - Open
PTS135OTCL - Lens
PTS135OTCS - Straight Blade Louver

Job Information **Type:** L4

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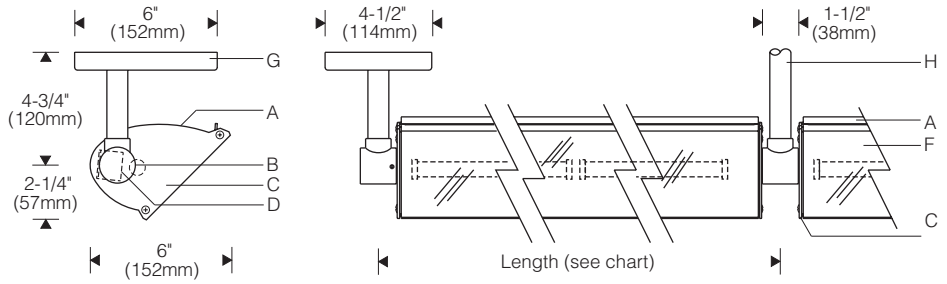
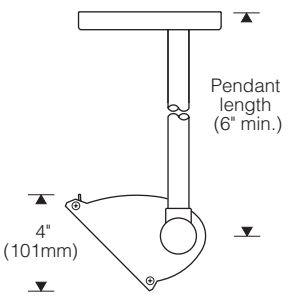
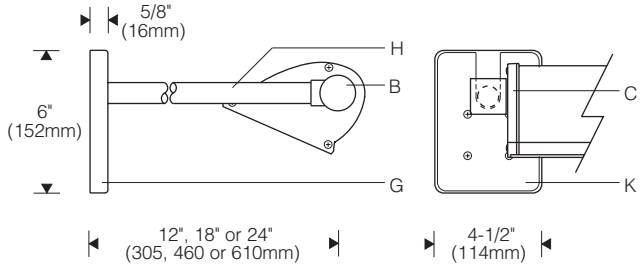
Surface Hanger 1:8 Scale



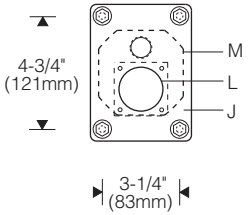
Pendant Hanger



Cantilever Hanger (Lighting upward)



Mounting Plate



Lamp Length	*Length (center to center of hubs)*
1 x 2'	25-1/4" (640mm)
1 x 3'	37" (940mm)
1 x 4'	48-3/4" (1240mm)
1 x 5'	60-5/8" (1540mm)
2 x 3'	72" (1830mm)
2 x 4'	96" (2440mm)

Specifications

- **A** Specular extruded aluminum reflector
- **B** Aluminum hub with locking set screws
- **C** Die-cast aluminum end plates
- **D** Integral electronic ballast / internal wireway
- **F** UV and impact resistant acrylic snap-on lens
- **G** Surface, cantilever, or pendant hangers (ordered separately)
- **H** Tubular steel stem or arm
- **J** Die-cast aluminum mounting plate (1/4-20 fasteners by others)
- **K** Aluminum cover plate (conceals fasteners and outlet box)
- **L** Outlet box access opening (electrical feed)
- **M** Recessed outlet box (by others)

Finish:
Semi-gloss white housing and end plates.

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

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

Snap-on lens - composite of impact resistant and UV stabilized acrylic for easy maintenance.

Mounting:
Surface, pendant or cantilever hangers **ordered separately**; specify end kit or intermediate hangers.

Hangers include aluminum mounting plate, cover plate and 1-1/2" dia. x 1-1/2" aluminum hub with 7/8" O.D. steel arm/stem. 1/4-20 mounting fasteners by others. Suitable backing structure required - allow 3 lbs/ft (21.6kg/m) (8' unit = 24 lbs).

Reflector aiming is adjustable - locks with set screws.

Electrical:
Use 90C° wire for supply connections and through wire.

Electrical feed hanger mounts over recessed outlet box (by others). Locate electrical feed at end of row. Internal wireway allows supply wiring to be fed through mounting hub to adjacent units.

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

Optional electronic dimming ballast; compatible dimmer switch required (by others). Consult sales representative for compatibility and specifications.

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

For complete ballast specifications, see Accessories Section.

Standard:
UL listed or CSA certified for damp locations.

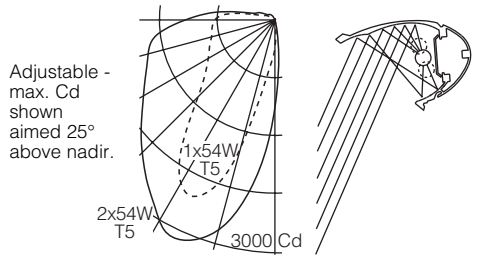
Features

- *Reflector optimized for T5 - precise optical control for wall lighting from minimal setbacks; optional dual lamp*
- *Snap-on clear acrylic lens for safety, easy maintanence - ideal for food service and healthcare settings*
- *Versatile - surface, cantilever or pendant mount*
- *Internal wireway - integral electronic ballast; through wiring*

W 15.0

Performance

Two parabolic reflector sections drive light to the bottom of the wall. 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, see www.elliptipar.com.

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U.S. Patent 7,213,949 and foreign patents pending.

To form a Catalog Number

F 1 2 4 - [3] - H - [4] - [5] - [6] - [7] [8]

1 Source

F = Linear fluorescent

2 Style

124 = Medium smooth surface, **integral** ballast

3 Lamp

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

Lamp Wattage (see chart below)

Lamp Configuration

T1 = Single-lamp cross section, 1-lamp in length
T2 = Single-lamp cross section, 2-lamp in length
D2 = Dual-lamp cross section, 1-lamp in length
D4 = Dual-lamp cross section, 2-lamp in length

Example: **T255** = Nominal 8' (2.4m) housing with (2) 54W T5HO lamps (in length)

Length (nominal)	*T5*		*T5HO*	
	Code	*Lamp(s)*	*Code*	*Lamp(s)*
T5 Fluorescent				
2' (0.6m)	**T114**	1 x F14T5	**T124**	1 x F24T5/HO
	D214	2 x F14T5	**D224**	2 x F24T5/HO
3' (0.9m)	**T121**	1 x F21T5	**T139**	1 x F39T5/HO
	D221	2 x F21T5	**D239**	2 x F39T5/HO
4' (1.2m)	**T128**	1 x F28T5	**T155**	1 x F54T5/HO
	D228	2 x F28T5	**D255**	2 x F54T5/HO
5' (1.5m)	**T135**	1 x F35T5	**T180**	1 x F80T5/HO
	D235	2 x F35T5	**D280**	2 x F80T5/HO
6' (1.8m)	**T221**	2 x F21T5	**T239**	2 x F39T5/HO
	D421	4 x F21T5	**D439**	4 x F39T5/HO
8' (2.4m)	**T228**	2 x F28T5	**T255**	2 x F54T5/HO
	D428	4 x F28T5	**D455**	4 x F54T5/HO

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

W 15.1

Project: _____

4 Mounting

H = For use with accessory surface, pendant or cantilever hub mounting hangers.

Note: Order hangers separately. Specify end kit or intermediate hanger.

5 Finish

02 = Semi-gloss 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

* Consult sales representative for availability of 347V.

+ Consult sales representative for dimming 5' lamps (lamp codes **T135**, **D235**, **T180**, **D280**). Availability for wattages and voltages varies with ballast manufacturer and control type - see **www.elliptipar.com** for additional dimming specifications and limitations.

7 Option

00 = No options
0E = Integral emergency battery pack with indicator lamp and test button. Not available in 2' and 3' units. Operates one lamp.
Note: Requires unswitched feed to battery (by others).
0P = Natatorium (pool) use
XX = For modification not listed, include detailed description. Consult factory prior to specification.

8 Standard

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

Example

F124 - T255 - H - 02 - 1 - 000

Medium smooth surface fluorescent for use with two 54W T5HO lamps in nominal 8 foot reflector. For use with accessory hub hangers. Semi-gloss white powder coat finish. Integral 2-lamp 120V electronic ballast. UL.
(Order end kit and intermediate mounting hangers separately.)

Type: _____

Hangers

Order separately. See Accessories Section for specifications. Hangers include mounting plate, cover, 7/8" (22mm) O.D. tubular stem/arm and hub. End kit includes one electrical feed end hub and one non-electrical end hub. Intermediate hanger includes single non-electrical joiner hub.

Note: Electrical feed must be located at an end of row.

For individually mounted luminaire, order one **end kit**.

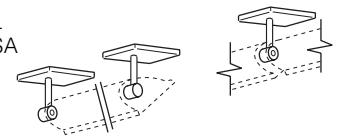
For a continuous row, order one **end kit** and one **intermediate** hanger for each additional luminaire in the row. Example: two rows of four reflectors requires 2 end kits and 6 intermediate hangers.

HC [ ] [ ] **00** [ ] = **Surface** hanger with mounting plate, nom. 4" (102mm) stem

0 = UL
J = CSA

5 Finish

A = Intermediate
B = End kit



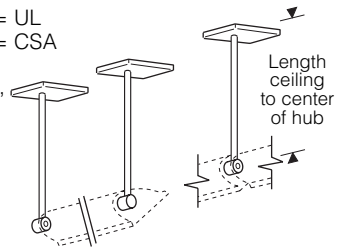
HC [ ] [ ] [ ] [ ] = **Pendant** hanger with mounting plate

0 = UL
J = CSA

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

5 Finish

F = Intermediate
G = End kit



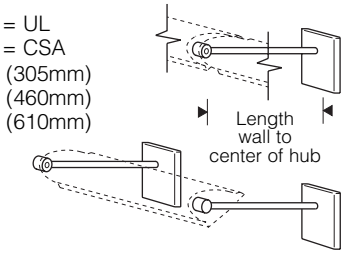
HC [ ] [ ] [ ] [ ] = **Cantilever** hanger with mounting plate

0 = UL
J = CSA

12 = 12" (305mm)
18 = 18" (460mm)
24 = 24" (610mm)

5 Finish

C = Intermediate
D = End kit



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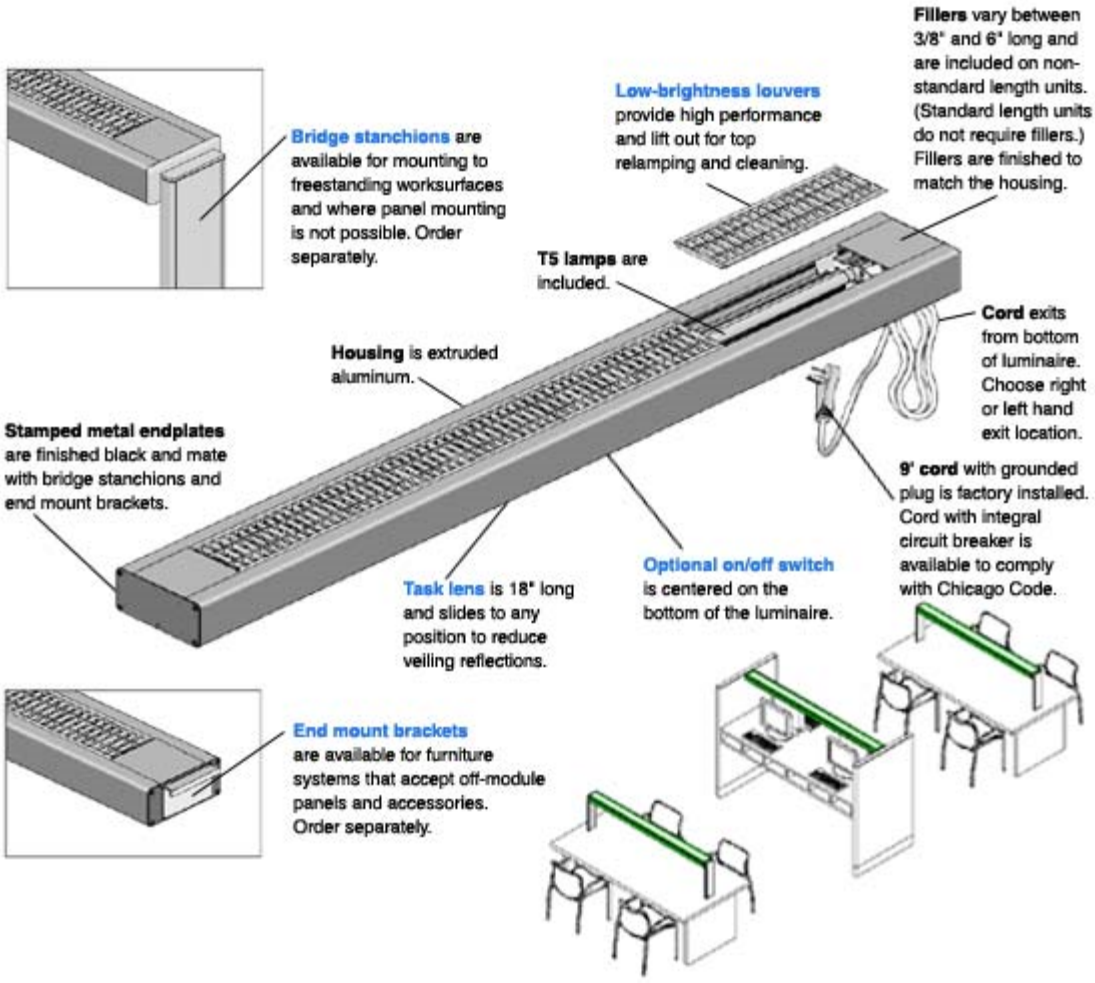
TYPE L6

Task Ambient Lighting - Style L204

Click to print

Style L204 workstation luminaires are designed for mounting above seated and below standing eye height to provide general ambient uplighting and low-glare task lighting for horizontal worksurfaces. They produce symmetrical 2-way task lighting and are particularly suited for mounting on shared worksurfaces.

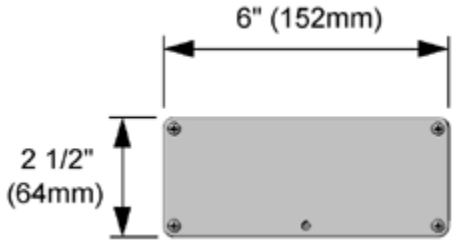
Features



Dimensions and Lamping

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

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



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

Length		Lamps	Input
47 1/2″	(1206mm)	1xF28T5	33 watts
59″	(1499mm)	1xF35T5	41 watts
70-3/4″	(1797mm)	2xF21T5	49 watts

82 1/2″	(2096mm)	1xF21T5 + 1xF28T5	60 watts
94 1/4″	(2394mm)	2xF28T5	66 watts

TYPE L6

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

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

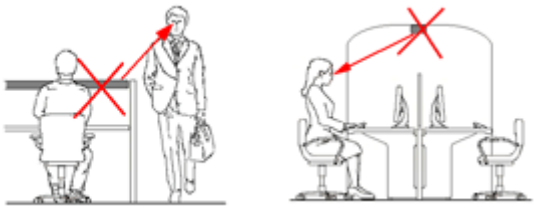
Mounting Height

The optical configuration is designated to accommodate 36” and 48” wide shared worksurfaces and mounting heights between 48” and 53”.

For mounting heights higher than shown, contact Tambient for details.

36″ Wide Worksurfaces		48″ Wide Worksurfaces	
Mounting Height	Optics	Mounting Height	Optics
≥48″ ≤50″	Low-mount	≥50″ ≤53″	Low-mount

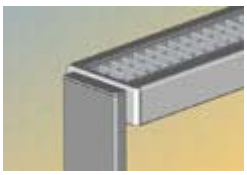
Note: These guidelines are based on a worksurface height of 28-1/2″ and a minimum seated eye height of 40-1/2″.



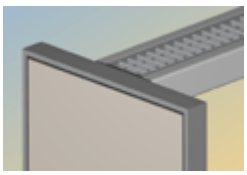
Caution: *To avoid discomfort glare, do not install these units below 48 " A.F.F. or above 53" A.F.F. (50" for 36" wide worksurfaces).*

Mounting Accessories

Bridge mount stanchions mount to horizontal worksurfaces and position the top of the luminaires at 19-1/2" above the surface. They include an integral decorative endplate and add 1-3/4" (each) to the luminaire length. Order bridge stanchions seperately.



Bridge mount



End mount

End mount brackets are available for some commercial office furniture systems and must be ordered seperately. Contact Tambient for details.

Ballasts

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

Programmed start ballasts are standard to maximize lamp life and minimize energy use.

Manufacturer/model of furnished ballast(s) may vary. However, all ballasts furnished meet or exceed the following criteria:

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

*Primary lamp application

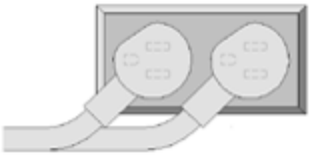
Cords

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

TYPE L6

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

A choice of straight and sw rotation plugs is offered.



The **sw rotation plug** allows two low-profile plugs to engage adjacent outlets in one duplex receptacle while managing cords close to walls and office partitions.

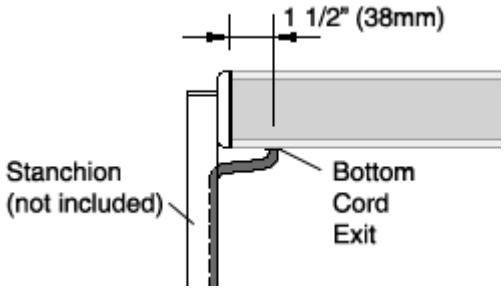
Straight plugs are often best for use with power outlets in recessed floor boxes and access flooring systems.

All cord plugs are NEMA 5-15 configuration and require a compatible grounded electrical receptacle (by others).

For installations in the City of Chicago, we offer cords with a circuit breaker in the plug to comply with the Chicago Electric Code. Chicago cords are offered in straight plug and sw rotation plug versions. However, Chicago cords are available in black only.

Cord Exit Locations

The cord exit is located on the bottom of the luminaire near one end. To maxmize the cord utilization the luminaire can be installed to acheive a right-hand or left-hand cord drop. (Rotating the luminaire end-for-end does not affect its performance and appearance.)



Finishes

6-stage pretreatment and electrostatically applied thermoset powder coat provides a stable, long-lasting and corrosion resistant finish.

Standard finishes:

Note: These photos give the viewer a general impression of the color selections available. Due to variances in computer monitors, video cards, and color printers, they should not be used for color matching in critical color situations. To order a color sample for review, please submit a sample request form.

Non-standard finishes:

RAL color finishes are available for a set up charge of $300 per run. RAL finishes are Tiger Drylac® Series 49 formulations and have a smooth glossy finish. Contact your nearest Tiger Drylac® office to obtain color samples. For non-RAL colors and other gloss factors specify a custom color finish. Preview RAL colors

Custom color finishes are available for a set up charge of $750 per run. You must submit a color sample for Tambient to consider your custom color request.

Safety Standards

Wohlert Pendant

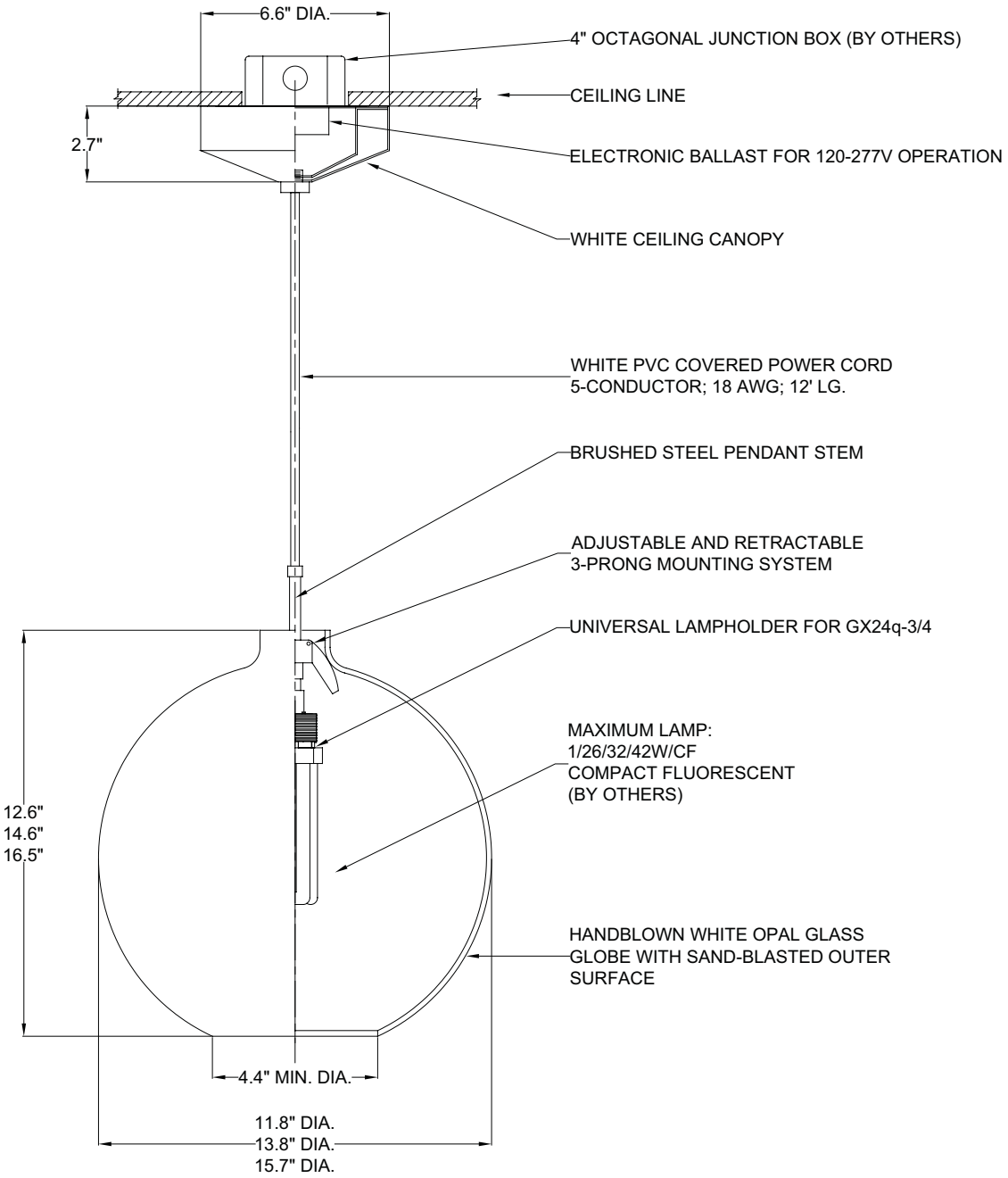
Design: Wilhelm Wohlert

compact fluorescent

Type: L7A, L7B, AND L7C

Project: GCC

Catalog Number:



louis poulsen

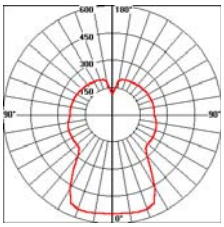
Louis Poulsen Lighting, Inc., 3260 Meridian Parkway, Fort Lauderdale, FL 33331 Telephone: (954) 349-2525 Fax: (954) 349-2550

www.louispoulsen.com

Wohlert Pendant

pendants

compact fluorescent



Photometric Report: WOP-15.7"-1-200W-A23-IF.IES
Report No.: LP1140
Poulsen Report No.: WOP-15.7"-1-200W-A23-IF.IES
Luminaire: Wohlert Pendant, Opal
Lamp: 1/200W/A23/IF, Incandescent
Efficiency: 86.4%
Description: All data shown are per 3800 lumens. This report can be used for calculation on all versions listed below. Use only actual lumen data when calculating.

Candlepower Distribution

Vertical Angle	Candela
0	546
5	546
10	551
25	540
40	295
55	255
70	253
85	238
90	231
120	224
145	211
180	112

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Fixture
0-30	451	11.9	13.7
0-40	686	18.1	20.9
0-60	1121	29.5	34.1
0-90	1898	49.9	57.8
90-120	722	19.0	22.0
90-130	921	24.2	28.0
90-150	1221	32.1	37.2
90-180	1387	36.5	42.2
0-180	3285	86.4	100.0

Coefficients of Utilization - Zonal Cavity Method
Effective Floor Cavity Reflectance 20%

Ceiling Reflectance (%)	80				70				50			30			10			0
Wall Reflectance (%)	70	50	30	10	70	50	30	10	50	30	10	30	30	10	50	30	10	0
Room Cavity Ratio																		
0	94	94	94	94	88	88	88	88	76	76	76	65	65	65	55	55	55	50
1	83	78	73	69	77	72	68	65	62	59	56	52	50	48	44	42	40	36
2	75	67	60	55	69	62	56	51	53	49	45	45	41	38	37	35	32	28
3	68	58	51	45	62	54	47	42	46	41	37	39	35	32	32	29	27	23
4	62	51	44	38	57	48	41	35	41	35	31	35	30	27	29	25	23	20
5	57	46	38	32	52	43	36	30	37	31	27	31	27	23	26	22	20	17
6	52	41	33	28	48	38	31	26	33	27	23	28	24	20	24	20	17	15
7	48	37	30	24	45	35	28	23	30	25	21	26	21	18	22	18	15	13
8	45	34	27	22	42	32	25	21	28	22	18	24	19	16	20	17	14	12
9	42	31	24	19	39	29	23	18	25	20	17	22	18	14	18	15	13	11
10	39	28	22	17	36	27	21	17	23	18	15	20	16	13	17	14	12	10

Design
Vilhelm Wohlert

Concept
Wohlert Pendant provides uniform general diffuse illumination. The opening at the bottom of the glass produces direct light. The quality of the glass ensures that the visual appearance of the Wohlert Pendant has an evenly lit surface.

Finish
White opal glass.

Material
Shade: Handblown white opal glass. Pendant stem: Brushed steel.

Mounting
Canopy: White. Cord type: 3 or 5-conductor, 18 AWG white PVC power cord. Cord length: 12'.

Weight
Max. 8 lbs.

Label
cUL, Dry location. IBEW.

Product code	Dimension	Light source	Voltage	Finish
WOP	11.8" 13.7" 15.7"	1/26W/32W/42W/CF GX24q-3/4 1/200W/A-23/IF medium	120-277V 120V	GLASS

Specification notes:
a. CF variants provided with universal wattage socket and one 120-277V electronic ballast in the canopy.
b. Incandescent variants only available in 120V.

Info notes:
I. The comparable EU version has the following classification: Ingress Protection Code: IP20.

louis poulsen

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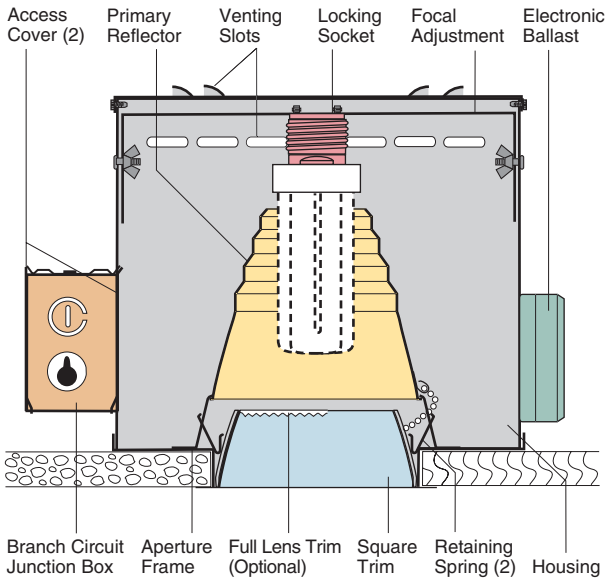
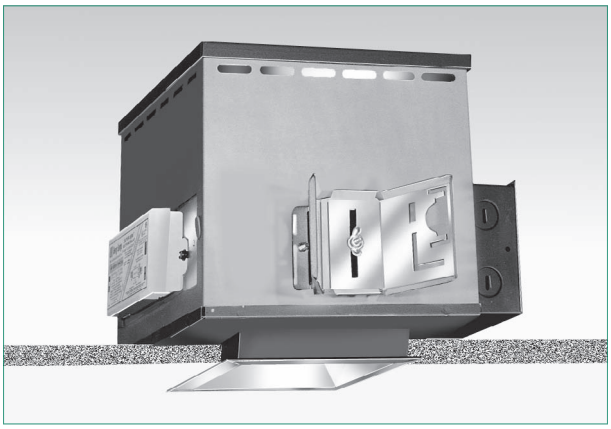




H8432 One 26-32W Triple Tube
H8442 One 42W Triple Tube

Compact Fluorescent Downlights
4½" Square Parabolic Trim

Optics and Applications
The reflector-trim combination produces uniform patterns, ideal for general lighting. For corridors, entries, over work stations or open area lighting. Suitable for damp locations.

Design Features
Sturdy steel housings protect and align reflectors and lamps. A safety locking socket prevents lamp fallout. Trims are stabilized to prevent racking and are retained by constant pressure springs. Maximum ceiling thickness 1". Top or bottom service.

Finish
Housings and structural parts are painted matte black to suppress light leaks. Trims are anodized Softglow® clear.

Trim Textures
Textured trims create a subtle new aperture appearance. Select among different embossed patterns to match the ambiance of the space being illuminated. Refer to Squares brochure for descriptive photos.

Ballasts
Fully electronic, microprocessor controlled with programmed start to assure rated lamp life. Input voltage ranges from 120V through 277V. Power factor .98, starting temperature 0°F (-18°C), THD<10%. Pre-heat start < 1.0 second. End of lamp life protection. Rated for > 50,000 starts.

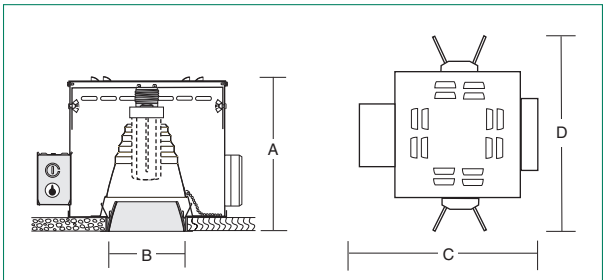
General
Fixtures are pre-wired, UL and C-UL listed for eight wire 75°C branch circuit wiring. Union made IBEW. Luminaire Efficiency Rating (LER) data is in the photometric directory located in Section Z.

Accessories

R2	26" support rails.	WT	White trim flange.
R5	52" support rails.	WHT	White complete trim.
SB	Softglow black.	BP	Ball Peen texture.*
SG	Softglow gold.	CG	Corrugated texture.
SH	Softglow mocha.	DS	Distressed texture.
SP	Softglow graphite.	WV	Woven texture.
ST	Softglow titanium.	LL	Linear spread lens.
SW	Softglow wheat.	LP	Large prism lens.
SY	Softglow pewter.	MP	Microprism lens.
SZ	Softglow bronze.	DM	Dimming ballast.
BR	Bright trim finish.	V347	347 volt ballast.
FC	Four cell cross baffle.*	FR	Frosting on lens, specify lens type.
F	Fuse.		

EM Emergency power includes integral charger light and test switch visible through aperture. Battery operation for 90 minutes.
FLT4 Full lens trim, specify lens type, e.g. H8432-FLT4LL.
WRL Wattage restriction label, specify wattage.
*Baffle FC not available with Ball Peen texture.

Dimensions and Lamps



Number	A Depth	B Aperture	C Width	D Length	Lamps
H8432	10" 254mm	4½" sq. 114mm	12" 305mm	14" 356mm	26-32W Triple Tube compact fluorescent
H8442	10" 254mm	4½" sq. 114mm	12" 305mm	14" 356mm	42W Triple Tube compact fluorescent

Brightness

Number	Lamps	85°	75°	65°	55°	45°
H8432	26W Triple Philips	27	112	241	2447	10353
	26W Triple Osram	24	91	222	2129	10091
	32W Triple Philips	42	174	357	4655	15433
	32W Triple Osram	29	112	247	4731	14821
H8442	42W Triple Philips	43	183	366	4793	15892
	42W Triple Osram	31	117	259	4967	15561

Data in footlamberts. Photometer readings, Maximum Brightness Method.

Matching Square Units **

Directional downlights	Pages H1, H2, H24
Tungsten halogen	Page H4
Metal halide	Pages H24, H25
Low voltage	Page H1
Wall washer	Page H31

** Click for link to pages in blue.

kurt versen
Kurt Versen Company
Point Source Lighting
Westwood, New Jersey 07675

H21 H8432 H8442

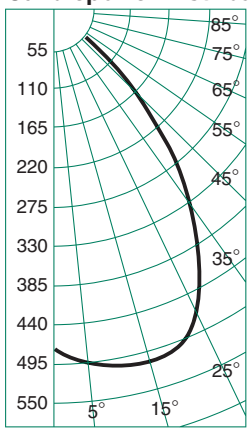
Performance Datachart

Single Unit, Initial Footcandles, 30" Work Plane							Ceiling to Floor	Multiple Units, Initial Footcandles, 30" Work Plane			
H8432 One 32W Philips Triple Tube Read Top H8432 One 32W Osram Triple Tube Read Bottom								Ceiling 80% Walls 50% Floor 20%			
Nadir	10°		20°		30°			Spacing is Maximum Over Work Plane			
FC	FC	Diam	FC	Diam	FC	Diam		Spacing	RCR 1	RCR 3	RCR 8
16 18	16 17	2' 2'	14 15	4' 4'	9 9	6' 6'	8'	7' 6'	18 22	16 14	10 12
11 13	11 12	2' 2'	10 10	5' 5'	6 6	8' 8'	9'	8' 7'	13 16	11 13	8 9
9 9	9 9	3' 3'	7 8	5' 5'	5 5	9' 9'	10'	9' 9'	10 12	8 10	6 7
7 7	7 7	3' 3'	6 6	6' 6'	4 4	10' 10'	11'	10' 10'	8 9	7 8	4 5
5 6	5 6	3' 3'	4 5	7' 7'	3 3	11' 11'	12'	12' 11'	6 7	5 6	4 4

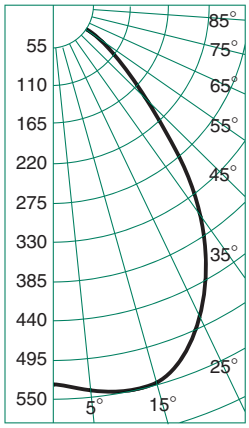
For 26 Watt x.88

Single Unit, Initial Footcandles, 30" Work Plane							Ceiling to Floor	Multiple Units, Initial Footcandles, 30" Work Plane			
H8442 One 42W Philips Triple Tube Read Top H8442 One 42W Osram Triple Tube Read Bottom								Ceiling 80% Walls 50% Floor 20%			
Nadir	10°		20°		30°			Spacing is Maximum Over Work Plane			
FC	FC	Diam	FC	Diam	FC	Diam		Spacing	RCR 1	RCR 3	RCR 8
18 21	18 21	2' 2'	15 17	4' 4'	9 10	6' 6'	8'	6' 6'	21 27	18 22	12 15
13 15	13 15	2' 2'	11 12	5' 5'	7 7	8' 8'	9'	8' 7'	15 19	13 16	9 11
10 11	10 11	3' 3'	8 9	5' 5'	5 5	9' 9'	10'	9' 8'	11 14	9 12	7 8
7 9	8 9	3' 3'	6 7	6' 6'	4 4	10' 10'	11'	10' 10'	9 11	7 9	5 6
6 7	6 7	3' 3'	5 6	7' 7'	3 3	11' 11'	12'	11' 11'	7 9	6 8	4 5

Candlepower Distribution



H8432 32W Philips
Eff 33% S/M 1.2



H8432 32W Osram
Eff. 34% S/M 1.1

Candelas

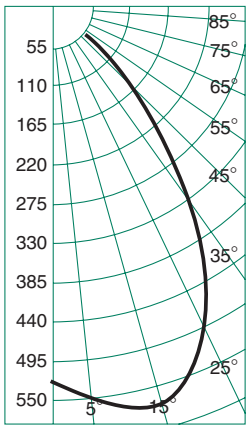
○	P 32W 2400*	O 32W 2400*
0	477	532
5	491	539
10	501	549
15	506	551
20	494	529
25	465	479
30	413	403
35	333	323
40	252	246
45	175	175
50	97	93
55	31	38
60	12	13
65	7	8
70	0	5
75	0	0
80	0	0
85	0	0
90	0	0

○ Vertical Angles
* Initial Lamp Lumens

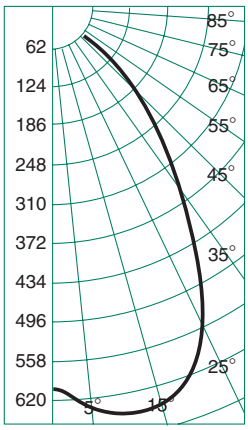
Coefficients of Utilization

Ceiling	80%				70%		50%		30%		0
Wall %	70	50	30	10	50	10	50	10	50	10	0
RCR	Zonal Cavity Method - Floor Reflectance 20%										
1	.38	.36	.36	.35	.36	.34	.34	.33	.33	.32	.30
2	.35	.33	.32	.31	.33	.30	.32	.30	.31	.29	.28
3	.33	.31	.29	.27	.30	.27	.29	.26	.28	.26	.25
4	.31	.28	.26	.24	.28	.24	.27	.24	.26	.24	.23
5	.29	.26	.24	.22	.26	.22	.25	.22	.24	.21	.21
6	.27	.24	.22	.20	.24	.20	.23	.20	.23	.19	.19
7	.26	.22	.20	.18	.22	.18	.21	.18	.21	.18	.17
8	.24	.20	.18	.17	.20	.17	.20	.16	.19	.16	.16
9	.23	.19	.17	.15	.19	.15	.18	.15	.18	.15	.14
10	.21	.18	.15	.14	.18	.14	.17	.14	.17	.14	.13

H8432 32W x 1.0 H8432 26W x 1.2 H8442 42W x .87



H8442 42W Philips
Eff 25% S/M 1.18



H8442 42W Osram
Eff. 29% S/M 1.13

○	P 42W 3200*	O 42W 3200*
0	534	620
5	549	645
10	572	652
15	577	649
20	556	620
25	505	552
30	429	458
35	344	367
40	256	283
45	173	210
50	73	125
55	21	39
60	11	13
65	3	7
70	0	0
75	0	0
80	0	0
85	0	0
90	0	0

○ Vertical
* Initial Lamp Lumens

Notes

1 For microprism spread lens multiply data x.88.

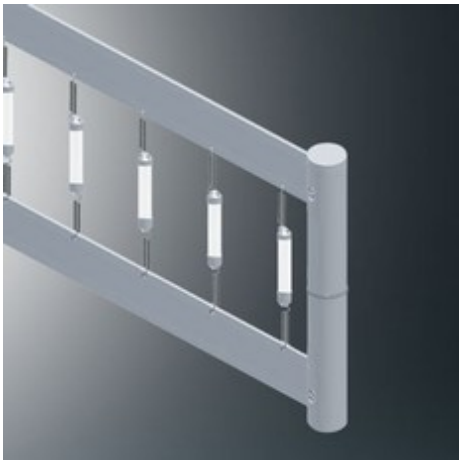
2 All data with standard trim, Softglow® clear.

3 Datachart degree headings measure one side from nadir. Diameter data includes both sides. Therefore the 20° column value describes a 40° pattern diameter at the work plane 30" above the floor. Footcandle values are at the diameter edge.

4 Datachart spacing is rounded off to the nearest foot.

5 Data by IES methods. Compact fluorescent data vary due to lamp lumen differences, power input, burning position, ambient temperature and ballast characteristics. A modification factor should be applied.

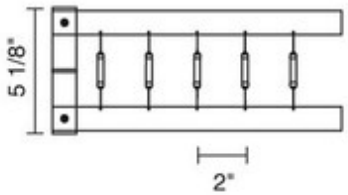
6 Colored trim multipliers: Gold x .90, Wheat x .85, Mocha x .80, Pewter x .80, Graphite x .75, Titanium x .75, Bronze x .70, Black x .70.



FLIGHT TRACK

Description:
The Flight Track system allows you to design free flowing light displays that fit any application. The Flight Leila Spot fixture is compatible with the Flight Track. Sections can easily be joined together to create longer systems. Mounting options allow for semi-flush or suspended track systems. The Flight system is composed of 1/16" x 1" aluminum and may be customized for larger curves or bent with a template to achieve smaller radii. 2' min. radius; consult factory. When creating a spiral the minimum diameter is 4ft.

Technical Specs:
End caps not included
Gold has been discontinued - availability limited to stock on hand
Lamp life: 20,000hrs



Note:
No assembly is required

Part Numbers:

225001mc	matte chrome, clear lamps
225002mc	matte chrome, frosted lamps
225003mc	matte chrome, violet lamps
225004mc	matte chrome, blue lamps
225005mc	matte chrome, green lamps
225006mc	matte chrome, yellow lamps
225007mc	matte chrome, orange lamps
225008mc	matte chrome, red lamps

Revised 2/2009

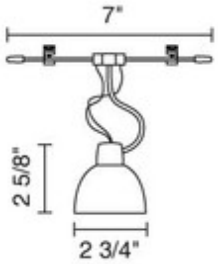
FLIGHT SAMBA SPOT BI-PIN

Description:
The Flight Samba Spot bi-pin fixture head tilts two clamp bolts connect the fixture to the track, integrated adaptor for use with Flight system.

Technical Specs:
50W Max.
Lamp not included
GY6.35 socket type

Part Numbers:

150703mc matte chrome and black, glass white



Recessed wall luminaires · shielded for walls and steps
faceplate STAINLESS STEEL

Housing: Constructed of die-cast and extruded aluminum with integral wiring compartment. Mounting tabs provided.

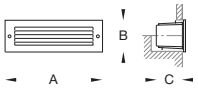
Enclosure: All stainless steel faceplate, 3⁄16" thick. 1⁄8" thick, tempered glass; clear, etched, (behind louvers). Faceplate is secured by two (2) flat socket head, stainless steel, captive screws threaded into stainless steel inserts in the housing casting. Continuous high temperature O-ring gasket for weather tight operation.

Electrical: Lampholder: GX23 (13 W), 2-pin, rated 75 W, 600 V. Ballast: Magnetic, available in 120 V or 277 V - specify. Through Wiring: Maximum of four (4) No. 12 AWG conductors (plus ground) suitable for 75 °C. Two 7⁄8" knockouts provided for 1⁄2" conduit.

Finish: #4, brushed stainless steel. Stainless steel requires regular cleaning and maintenance, much like household appliances, to maintain its luster and to prevent tarnishing or the appearance of rust like stains.

U.L. listed, suitable for wet locations and for installation within 3 feet of ground. Suitable for all types of construction including poured concrete. Protection class: IP 64. Not suitable for installation inside of a spa, sauna, or in the wall of a shower/bath stall. BEGA does not recommend luminaires with non-isolated metal parts be used in these applications.

Type: R1
BEGA Product:
Project:
Voltage: GCC
Color:
Options:
Modified:



Shielded light · **matte** safety glass

		Lamp	Lumen	A	B	C
2037 P	ADA	13 W CF twin-2p	825	12 3⁄4	3 3⁄16	4

BEGA-US 1000 BEGA Way, Carpinteria, CA 93013 (805) 684-0533 FAX (805) 566-9474 www.bega-us.com
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Pillar luminaires with shielded and directed light

Post construction: One piece extruded aluminum with die-cast top housing and base internally welded onto one assembly.

Enclosure: Hand blown, clear crystal glass. Fully gasketed for weather tight operation using a molded silicone gasket. External die-cast aluminum louver stack.

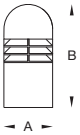
Electrical: Lampholders: Fluorescent are type G24d-2 (18 W), rated 75 W, 250 V. Ballasts: Compact fluorescent are electronic, universal voltage (120 V through 277 V).

Anchor base: Heavy die cast aluminum slotted base for precise alignment. Provided with four expansion anchor bolts for installation on existing concrete pads (895 A).

Finish: Available in five standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV); Eurocoat™ (URO). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

U.L. listed, suitable for wet locations. Protection class: IP 44.

Type: R2
BEGA Product:
Project:
Voltage: GCC
Color:
Options:
Modified:



Pillar luminaires

	Lamp	Lumen	A	B	Anchorage
4142 P	1 18 W CF quad-2p	1250	8 5/8	19 1/16	**895 A**

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PAR-20/30 metal halide
(remote ballast)

R3 abbott

Construction: Housing injection molded from composite material. Top machined from aluminum or brass. Lenses cut from tempered borosilicate glass for superior clarity and strength. Medium base 4 k.V. pulse rated porcelain socket rated 660W - 600V, with 18ga. 200˚C leads.

Finishes: Available in 12 standard TGIC polyester powdercoat finishes or 3 standard brass finishes with a polyurethane clear coat. Custom finishes available(contact factory for more info). Ingrade housing is always black.

Features: Watershed™ lens included standard and is field replaceable. Double lens design as standard to reduce surface temperature of fixture. Any combination of up to 3 lens accessories/color filter/ shielding can be specified and are held securely by a removable stainless steel clip ring between the two lenses. Concrete pour collar available. Sealed wiring compartment to prevent water intrusion into lamp compartment.


tapered top - aluminum BRS finish

abbott


flat top - brass NAT finish

abbott brass

Additional Information:

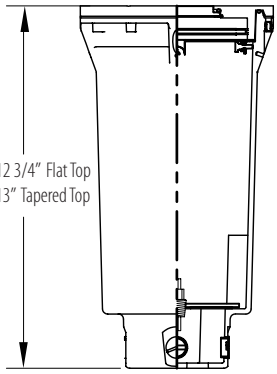
- For use with PAR -20/30 HID lamps unless otherwise noted
- Visible screws are Black Zinc plated-Color matched screws available on request
- Six 1/2" conduit entry holes on bottom and side for wiring
- Suitable for concrete pour w/pour collar option
- Suitable for drive over application up to 6 tons
- For in-ground use only • IP68 rated

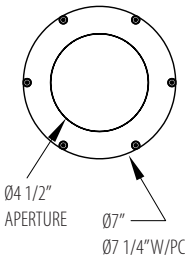
Ballast Information:

- B3 - Standard steel NEMA 3R wet location
- B4/B4PC - Cover plate made from 6061 - T6 aluminum or brass
- All hardware stainless steel
- All ballasts are electronic (included)

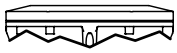
1. SERIES	**AB** = ABBOTT **ABBR**= ABBOTT BRASS	
2. LAMP	70 = 35W PAR20/MH/SP10 71 = 35W PAR20/MH/FL30 72 = 35W PAR30/MH/SP10 73 = 35W PAR30/MH/FL30	74 = 70W PAR30/MH/SP10 75 = 70W PAR30/MH/FL40 96 = NO LAMP, 35/39 WATT BALLAST 97 = NO LAMP, 70 WATT BALLAST
3. VOLTAGE	120V = 120 VOLT	277V = 277 VOLT
4. LENS OPTION	L4 = CLEAR LENS	NSL = NON SLIP LENS
5. ACCESSORY LENS	L0 = NONE L1 = PRISMATIC	L2 = LINEAR L3 = SOFTENING
6. FINISH COLOR	**ALUMINUM FINISHES (AB ONLY)** BKS = BLACK SMOOTH BKT = BLACK TEXTURED BRS = BRONZE SMOOTH BRT = BRONZE TEXTURED WHS = WHITE SMOOTH WHT = WHITE TEXTURED SIS = SILVER SMOOTH IVS = IVORY SMOOTH	CHS = CHROME SMOOTH NBS = NATURAL BRONZE VET = VERDE TEXTURED SAT = SAND TEXTURED SPF = STANDARD FINISH CPF = CUSTOM FINISH **BRASS FINISHES (ABBR ONLY)** POL = POLISHED BRASS W/GLOSS CLEAR NAT = NATURAL BRASS W/SATIN CLEAR BRZ = SATIN BRONZE W/SATIN CLEAR SPF = STANDARD FINISH CPF = CUSTOM FINISH
7. COLOR FILTER	F0 = NONE FM = MERCURY VAPOR FR = RED FRD = RED DICHROIC	FP = PINK FA = AMBER FG = GREEN FGD = GREEN DICHROIC FLB = LIGHT BLUE FMB = MED BLUE FMBD = MED BLUE DICHROIC
8. SHIELDING	SH0 = NONE	SH6 = HONEYCOMB LOUVER
9. TOP STYLE	TF = FLAT TOP	TT = TAPERED TOP
10. OPTIONS	0 = NONE PC = CONCRETE POUR COLLAR	RG = ROCK GUARD (consult factory for availability) GS = 180˚ GLARE SHIELD (consult factory for availability)
11. BALLAST HOUSING	B3 = REMOTE WALL B4 = REMOTE INGRADE	B4PC = REMOTE INGRADE W/POUR COLLAR
12. SPECIAL	STD = STANDARD	MOD = MODIFIED

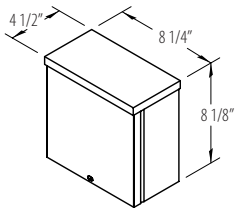
ABBOTT



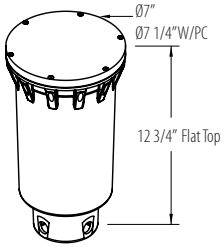



FLAT TOP (TF)


TAPERED TOP (TT)



B3 REMOTE BALLAST



B4 REMOTE INGRADE

UL Listed: Wet location, indoor/outdoor = 70W MAX
cUL Listed: indoor/outdoor = 70W MAX
IP68 rated (non-submersible)

winona lighting
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507 - 454 - 5113 • fax: 507 - 454 - 1814 • www.winonalighting.com

Bring Your Imagination To Light With Light Tape®

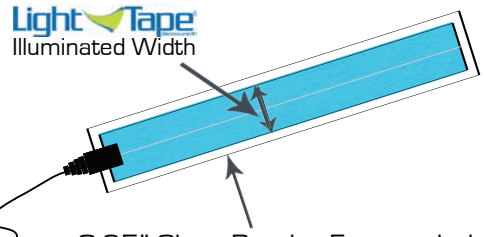
www.lighttape.com

Light Tape®

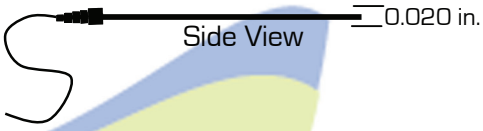
- Continuous light for hundreds of feet with one connection.
- Dimmable
- Extremely energy efficient
- UV and moisture resistant for indoors and outdoors
- Available in lengths up to 300 feet (see footage guide)
- Highly visible through smoke
- Thinner than a credit card
- Generates no heat, cool to touch
- Easy to install and maintain

Lighting Ballast

AC or DC Input



0.25" Clear Barrier Encapsulation envelopes the illuminated strip on all four sides



NOTE: Please see connector and lighting ballast information for further details on specifications

Honeywell

PHOSPHORS by SYLVANIA

Light Tape® Standard Widths (In.)			
LT-025	0.25" (0.75")	LT-200	2" (2.5")
LT-050	0.5" (1")	LT-300	3" (3.5")
LT-100	1" (1.5")	LT-400	4" (4.5")
LT-150	1.5" (2")	LT-600	6" (6.5")

*Note: Illuminated Width (Finished Width After Encapsulation)

HOW TO ORDER LIGHT TAPE®:

When ordering, please specify: Illuminated Width, Interior or Exterior, Color, Length of Segment(s)

- **Example:** 1" Indoor Orange Light Tape®20 feet long = LT100, INT, Orange, 1 in. @ 20 ft.

Normal Brightness Settings	27 cd/m² (L), 125 cd/m² (M), 200 cd/m² (H) [candelas per meter²]
Light Tape® Current Consumption	0.30 to 0.90 milliamps per inch² depending on service hours
Light Tape® Power Consumption	0.2 to 1 watt per linear foot based on brightness setting
Power Source	E-LLC Smart Driver™ Ballasts - AC or DC Input
Lamp Lifetime	Lifetime is 10,000 to 40,000 hours. See lifetime guideline on page 31

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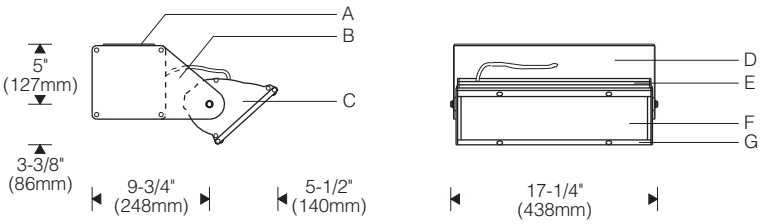
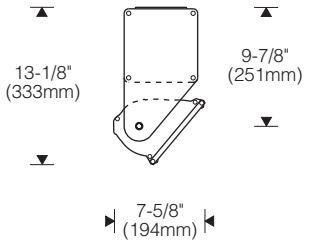
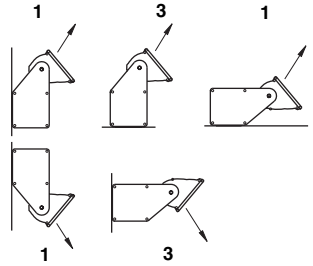
Style 412: Position 1 1:16 Scale



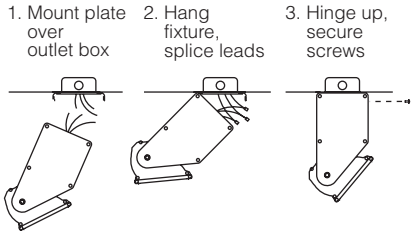
Position 2 1:16 Scale



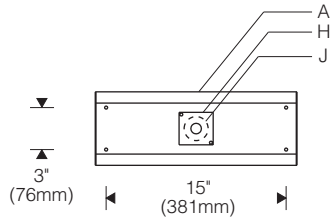
Other Orientations*



Installation



Mounting Plate



* For each orientation, order the corresponding mounting code

Specifications

- **A** Extruded aluminum mounting plate
- **B** Aluminum side arms
- **C** Contoured aluminum end plate
- **D** Extruded aluminum ballast housing
- **E** Specular extruded aluminum reflector
- **F** Micro-prismatic tempered glass lens
- **G** Overlapping aluminum door frame
- **H** Cover plate with 7/8" dia. conduit entry
- **J** 2" dia. opening to access recessed outlet box (by others)

Finish:
Bright clear anodized aluminum reflector with semi-gloss black door frame, end plates, side arms and ballast housing or all parts semi-gloss white.

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

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

Mounting:
Mounting plate covers recessed outlet box or conduit feed. Suitable backing structure required (by others). Fixture hinges on plate for hands-free access to splices.

Electrical:
Use 90°C wire for supply connections.

Mounting plate supplied with one 7/8" diameter entry for direct conduit feed and a 2" (50mm) diameter opening to access splices in recessed outlet box.

Integral constant wattage autotransformer (encapsulated for 250-400W ceramic arc tube pulse start metal halide) or electronic ballast.

Mogul lampholder is pulse rated for use with either horizontal or universal position reduced envelope pulse start lamps. End-of-lamp aligner ensures consistent optical performance.

For complete ballast specifications, see Accessories Section.

Standard:
UL listed or CSA certified for damp locations.
(Style 408 painted model with gasketed lens recommended for damp locations.) Position **1** (reflector adjacent to ceiling) suitable for mounting to non-combustible ceiling surfaces only.

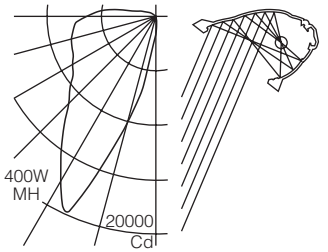
Features

- **KO Series** - *flexible high performance metal halide wall lighting for cost conscious projects*
- *Extruded aluminum reflector, ballast housing - durable and non-corrosive; will not deform during maintenance*
- *No light leaks - overlapping door; sealed end plates*

W 52.0

Performance

Two parabolic reflector sections drive light to the bottom of the wall. 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, see www.elliptipar.com.

elliptipar

To form a Catalog Number

M	4	1	2					
1	2		3	4	5	6	7	8

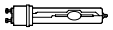
1 Source

M = Metal halide

2 Style

412 = Large **KO Series** contoured, **integral** ballast

3 Lamp

Lamp Code	*Watt-age*	*Lamp Number*	*Volt-ages*
Ceramic Arc Tube Pulse Start Metal Halide (90+ CRI) 			
210C	210	CDM210/T9/930/U/E	**U**
315C	315	CDM315/T9/930/U/E	**U**
Ceramic Arc Tube Pulse Start Metal Halide (80+ CRI)* 			
150G	150	CDM150/T6/830	**1, 2**
			T, U
250C	250	CMH250/U/830/R	**A, B**
400C	400	CMH400/U/830/R	**A, B**
Quartz Arc Tube Pulse Start Metal Halide (68 CRI)* 			
250P	250	MS 250W/H75/T15/PS/740	**A, B**
			U
320P	320	MS 320W/H75/T15/S/PS/740	**A, B**
			U
350P	350	MS 350W/H75/T15/PS/740	**A, B**
			U

For complete lamp and ballast information, see Accessories Section.

* Use only clear metal halide horizontal or universal position lamp with compact envelope. Standard lamp colors are 3000K for Ceramic Arc Tube Pulse Start lamps and 4000K for Quartz Arc Tube Pulse Metal Halide lamps.

W 52.1

Project: **C3**

4 Mounting

Mounting plate covers conduit feed or recessed outlet box (by others). Choice of three positions:

1 = Reflector positioned adjacent to ceiling (suitable for non-combustible ceiling surface only)
2 = Reflector positioned below ballast box, side arms sloping back
3 = Reflector positioned below ballast box, side arms sloping forward

5 Finish

81 = Bright aluminum reflector with semi-gloss black door frame, end plates, side arms and ballast housing
02 = Semi-gloss white
99 = Custom RAL or computer matched color to be specified, consult sales representative

6 Voltage

Electronic (Metal Halide only):
1 = 120V
2 = 277V
T = 120V dim*
U = 208-277V dim*

Magnetic and Tungsten Halogen:
A = 120V
B = 277V

*100-50% dimming, 0-10V compatible controls by others. Consult factory for dimming the 210W lamp.

7 Option (See Accessories Section for specifications)

00 = No options
0R = Halogen standby lamp with integral relay. 100W maximum (lamp included).
XX = For modification not listed, include detailed description. Consult factory prior to specification.

8 Standard

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

Example

M412 - 250C - 2 - 02 - A - 00J

Large **KO Series** for use with 250 watt ceramic arc tube pulse start metal halide lamp. Mounting plate attaches to suitable structure over conduit or recessed outlet box (by others). Reflector positioned below ballast box with side arms sloping back. Semi-gloss white. Integral 120V ballast. CSA.

Type:

Accessories

Order separately. See Accessories Section for specifications.

AFK000X ☐ = Ballast **fuse** kit
0 = UL
J = CSA

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

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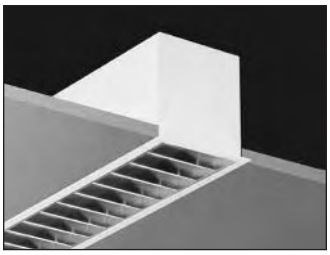
M100 Recessed Linear Fluorescent Flanged Extrusion

se'lux®



Project: _____ **Type:** _____ **Qty:** _____

Fixture Series	Lamp Type	Shielding	Mounting	Nominal Length	Finish	Voltage
_____ –	_____ –	_____ –	_____ –	_____ –	_____ –	_____ –

Options (refer to separate data sheets for ordering codes and details)

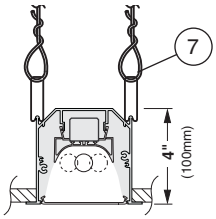
Fixture Series	Lamp Type	Shielding	Mounting	Nominal Length	Finish	Voltage	Options
M1R1 M100 Recessed Continuous Flange (Flanged Extrusion/ Flanged Endcaps) **M1R2** M100 Recessed Flush End (Flanged Extrusion/ Flangeless Endcaps)	**1T5** F28T5 **2T5** (2x)F28/T5 **1T5HO** F54T5HO **1T8** F032/T8	**SA** Specular Parabolic **MA** Matte Parabolic **MP** Silky Specular Parabolic **PL** Matte Perforated Parabolic **SD** Satine Lens **OD** Extra Diffuse Lens **X** None	**SH** Suspension Clips **TS** 1" Studs (factory installed) **RC** Rotating Crossbars **PM** Perimeter Mount	**004** 4 foot **008** 8 foot **012** 12 foot For actual lengths see following page. For other lengths, configurations indicate nominal length rounded to the next highest foot. Factory will supply layout drawings. Individual fixtures cannot be field joined.	**WH** White **BK** Black **SV** Silver **SP** Specify RAL#	**120** **277** **347**	**TB** Lengths to Fit 2' Grid T-Bar Ceiling System[1] **(qty.)EM** Stand-by Battery Pack[2] (prefix quantity, i.e. - **5EM**) **FS** Single Fusing **DM** Dimming[1] (specify system) **DMA** Digital Addressable Dimming[1] **SI** Satine Acrylic Inlay[3] **FW** Flex Whip (standard) **FW1** Flex Whip (dimming) **Track** Eutrac Standard[4] **DL** Suitable for Damp Locations **CCEA** Chicago Plenum **Downlights** (See MR16 spec sheets, pp.98-99)

[1]T5 & T5HO lamps only, consult factory for other lamps. [2]Must be low profile ballasts (1½" W x 13/16" H); consult factory for details. [3]SA, MA, MP & PL shieldings only. [4]Consult factory for details.

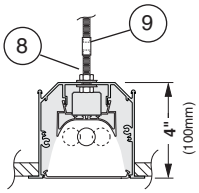
Mounting Diagrams

Scale = 1 : 8

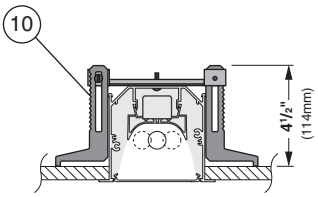
Suspension Clips (SH)



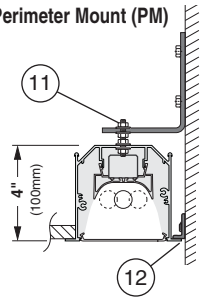
Pre-installed Rod (TS)



Rotating Crossbars (RC)

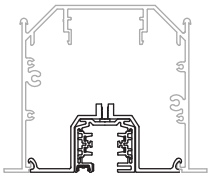


Perimeter Mount (PM)



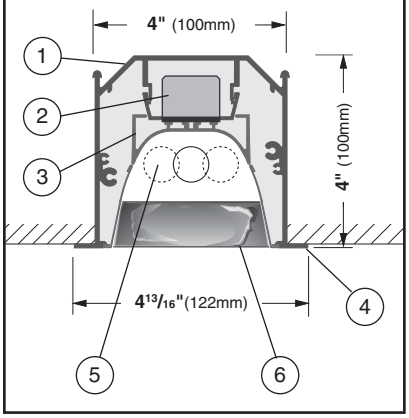
Track

Track insert including track available for all configurations, consult factory for details.



M1R1
M1R2

Scale = 1 : 4



1. Housing - Continuous, 6063-T5 extruded aluminum profile up to 16 feet long. Joined with Connector Plus Joining System for ease of installation and to assure a uniform appearance.

2. Ballast - Electronic, high power factor, class "P", type "A" sound rating. Specify 120v, 277v, or 347v. Ballast is factory pre-wired with leads to one end of fixture. Consult factory for ballast options.

3. Gear Tray - Extruded aluminum,with white painted finish. Gear tray installed as a complete electrical unit and is held in place with knurled dress nuts. It is fully accessible from below ceiling.

4. Flange - 1/2" (12mm) wide flange runs full lengths of both sides and is part of the main extruded body. Specify continuous flange (M1R1) or flush end (M1R2).

5. Lamps - As noted (by others). Other lamp lengths or wattages available, consult factory.

6. Shielding - Louvers offer excellent glare control in longitudinal, lateral, and all diagonal planes. High quality aluminum louvers and acrylic shielding allow true freedom of layout for today's modern spaces.

7. Spring Steel Suspension Clips - Supplied two places, located nominally every 4 ft. Support wires supplied and installed by others.

8. Pre-installed 1" 1/4-20 Stud - Attached to fixture every nominal 4 feet.

9. Coupling and Threaded Rod to Structure - Supplied and installed by others.

10. Rotating Crossbar - For inaccessible ceilings, adjustable for ceiling thicknesses from **1/4"** to **2".** Support required nominally every 4'.

11. Steel Wall Bracket and 1/4-20 Rod - Supplied nominally every 4 ft. Fasteners to wall and wall anchors by others.

12. Aluminum Wallbracket - Secured to wall (fasteners and wall anchors by others) and runs entire length of fixture. Also supplied for width of fixtures when supplied with continuous flange. Allows for 1/8" gap between flange and wall to create shadow line allowing for unevenness of wall.

Interior Luminaire Finish - Standard interior colors are White (WH), Black (BK) and Silver (SV). RAL colors (SP) are available, please specify RAL#.

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FAX: (845) 691-6749
www.selux.com/usa

M1R1-01 (v5.1)

c UL US LISTED

Union Made Affiliated with **IBEW** *Local 363*

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 supercede all other printed or electronic versions.

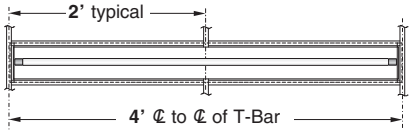
M100 Recessed Linear Fluorescent Flanged Extrusion

M1R1 and M1R2 Layout Dimensions

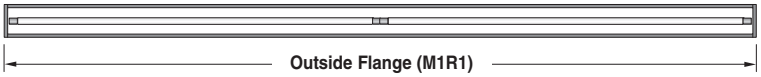
Specify T5 lamps when using in grid ceiling systems where 24" or 48" light openings are required.

M1R1 Recessed - nominal 4 foot individual

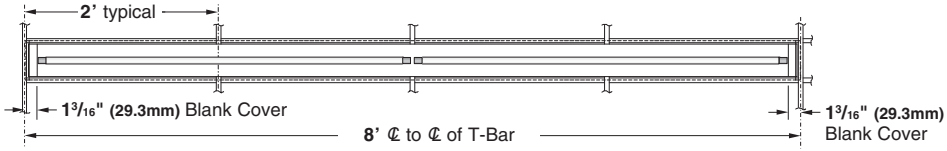
M1R1 Recessed - T-Bar Length - nominal 4 foot individual



M1R1 Recessed - nominal 8 foot individual

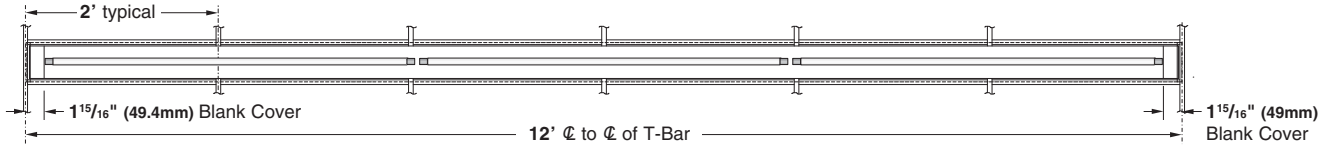


M1R1 Recessed - T-Bar Length - nominal 8 foot individual

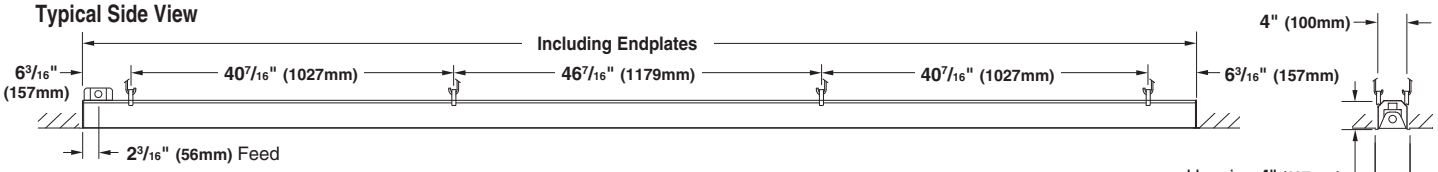


M1R1 Recessed - nominal 12 foot individual

M1R1 Recessed - T-Bar Length - nominal 12 foot individual



Typical Side View



Continuous Flange (M1R1)

Flush End (M1R2)

Suspensions supplied spaced nominally every 4 feet.

Fixture supplied with 7/8 knockout located 2 3/16" from end in top of fixture.

	T5 (1 or 2 lamp)				T8 (1 lamp)	
	M1R1/M1R2 Including Endplates	M1R1 Outside Flange	M1R1/M1R2 - TB Including Endplates	M1R1 - TB Outside Flange	M1R1/M1R2 Including Endplates	M1R1 Outside Flange
4 foot individual	46.81" (1186mm)	47.58" (1209mm)	47.03" (1195mm)	47.91" (1216mm)	48.33" (1228mm)	49.20" (1250mm)
8 foot individual	93.21" (2365mm)	94.00" (2388mm)	95.03" (2414mm)	95.91" (2436mm)	96.37" (2448mm)	97.24" (2470mm)
12 foot individual	139.65" (3544mm)	140.41" (3567mm)	143.03" (3633mm)	143.91" (3655mm)	144.41" (3668mm)	145.28" (3690mm)

For other lengths, lamping, continuous runs or configurations please specify overall length (in feet), accessories desired and sketch/drawing of configuration. SELUX will detail project drawings upon order and supply submittal drawings for approval. Individual fixtures cannot be field joined. If you have any questions please contact SELUX customer service or applications engineering for assistance (1-800-SELUX-CS).

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PO Box 1060, 5 Lumen Lane / Highland, NY 12528
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M1R1-02 (02/06)

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 supercede all other printed or electronic versions.

luxrail™

Application

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

luxrail's standard handrail gripping surfaces are circular in cross section and meet 2004 ADAAG (Americans with Disability Act Accessibility Guidelines). Patented optical assemblies deliver 10˚, 45˚ and 65˚ beam spreads. The 45˚ and 65˚ beam patterns are most suitable for illuminating pathways, while the 10˚ beam spread offers accent lighting to optional glass or stainless steel cable railing infills. Reference page 41 (**luxrail** brochure) for information regarding infill options. **io** ensures that each LED is driven with the proper current and voltage, which enables the average rated life to be 50,000 hours at 70% of lamp lumen output. Ambient temperature surrounding the fixture shall not exceed 120˚F *(48.9˚C).*

Light Output

Two luminous intensities are available for white light. IES format files may be obtained from the factory or downloaded from **www.iolighting.com**.

Standard Output:
3000K White: 34 lms/ft
5000K White: 40 lms/ft

High Output:
3000K White: 170 lms/ft
5000K White: 230 lms/ft

Construction

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

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

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

Electrical

luxrail houses a low voltage LED-based light fixture that is integrated into the underside of the handrail. It comes complete with the linear light fixture installed in the handrail. 24 volt 100 watt power supplies are provided as a standard. See daisy chain and remote distance requirements in chart on the lower left corner of this specification sheet.

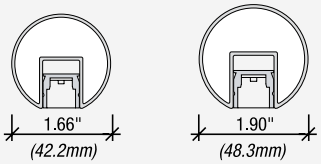
Power supply and dimming module must be specified separately. For detailed information, see **luxrail** brochure or download the power supply specification sheet from **www.iolighting.com**.

Power Consumption

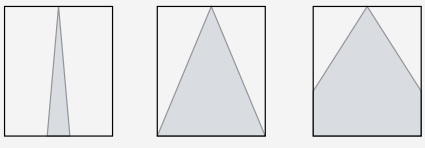
Standard Output: 2.1 w/ft **High Output: 7.6 w/ft**

Power consumption does not include power supply losses. Consult **io** driver specification sheets (at **www.iolighting.com**) for losses associated with each driver option.

Dimensions



Beam Spreads



Power Supply

Standard Output

TYPE	SUPPLIES	REMOTE DISTANCE	
24v100w	up to 35'-0"*(10.7m)*	7'-0" *(2.1m)*	w/22AWG
	(2) RUNS UP TO 49' *(14.9m)*	18'-0" *(5.5m)*	w/18AWG
	w/(1) RUN	46'-0" *(14m)*	w/14AWG
	NTE 35'-0"*(10.7m)*	71'-0" *(21.6m)*	w/12AWG

High Output

TYPE	SUPPLIES	REMOTE DISTANCE	
24v100w	up to 12'-0"*(3.6m)*	7'-0" *(2.1m)*	w/22AWG
		18'-0" *(5.5m)*	w/18AWG
		46'-0" *(14m)*	w/14AWG
		71'-0" *(21.6m)*	w/12AWG

io Lighting 370 Corporate Woods Parkway Vernon Hills, IL 60061-3107 T 847.735.7000 F 847.735.7001 E info@iolighting.com W iolighting.com

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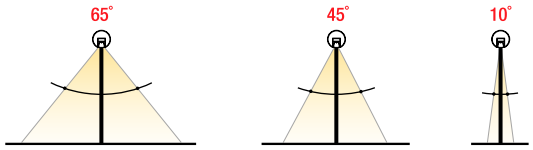
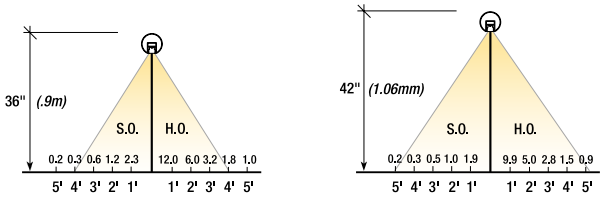
Light Output / Distributions

BEAM SPREAD OPTIONS

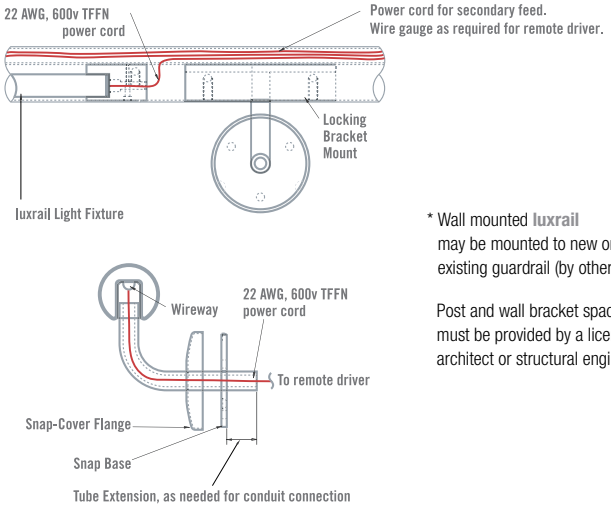


LIGHT OUTPUT - 65 DEGREE WARM WHITE



For Metric Conversion	1'	2'	3'	4'	5'
	.3m	.6m	.9m	1.2m	1.5m

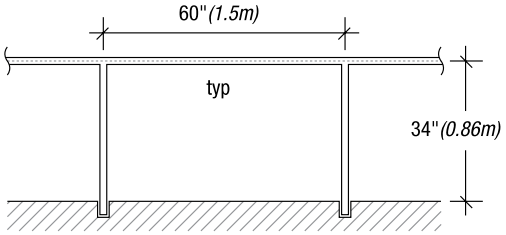
WALL MOUNT DETAILS*



* Wall mounted **luxrail** may be mounted to new or existing guardrail (by others).

Post and wall bracket spacing must be provided by a licensed architect or structural engineer.

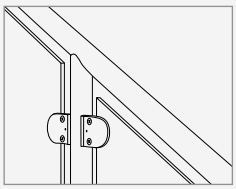
POST MOUNT APPLICATION



Mounting / Infill Options

PM (post mounted)

WM (wall mount intermediate)



Glass infill
(glass provided by others)

Stainless steel cable infill

Order Code

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

1. PRODUCT FAMILY

06	luxrail

2. ALLOY / FINISH

SSS	Stainless Steel Satin
SSP	Stainless Steel Polished
CAA	Clear Anodized Aluminum [7]

3. SIZE

1	1.66" O.D. (1¼" pipe size) [7] [available for SS & CAA]
2	1.90" O.D. (1½" pipe size) [available for SS & CAA]

4. MOUNTING

PM	Post Mounted [7]
WM	Wall or Guard Rail Mounted

5. INFILL

AC	Aircraft Cable [5]
GL	Glass (provided by others)
C	Custom
NR	Not Required

6. LIGHT DISTRIBUTION

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

7. LIGHT COLOR

3k	Warm White [3]
5k	Cool White [3]
3kHO	Warm White [3]
5kHO	Cool White [3]
R	Red [4]
G	Green [4]
B	Blue [4]

8. LENGTH

Provide overall length of each handrail section. Reference Footnote #2[6]

9. VOLTAGE / DIMMING

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

10. SPECIFY DRIVER / DIMMING[1]

Note: If left blank, **io** will supply 100 watt drivers. Download Power Supply specification sheet from **www.iolighting.com**

Footnotes

Footnotes

1. ***Power Supply Specification Sheet*** *may be downloaded from* ***www.iolighting.com****.*
2. *Each handrail application will be somewhat custom to accommodate varying field conditions and design requirements. Shop drawings will be required to manage specifics of each handrail section.*
3. *White light variance between LEDs within a single fixture will not exceed +/- 200K.*
4. *High Output only - 7.6w/ft.*
5. *Aircraft cable available for flat surfaces only.*
6. *Elevation drawings required.*
7. *1.66" OD, post mounted railings are not available in aluminum. Stainless steel only.*

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

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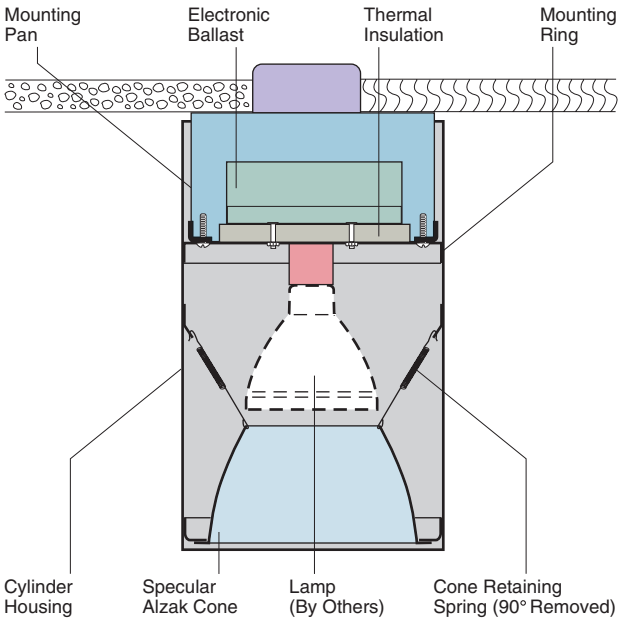
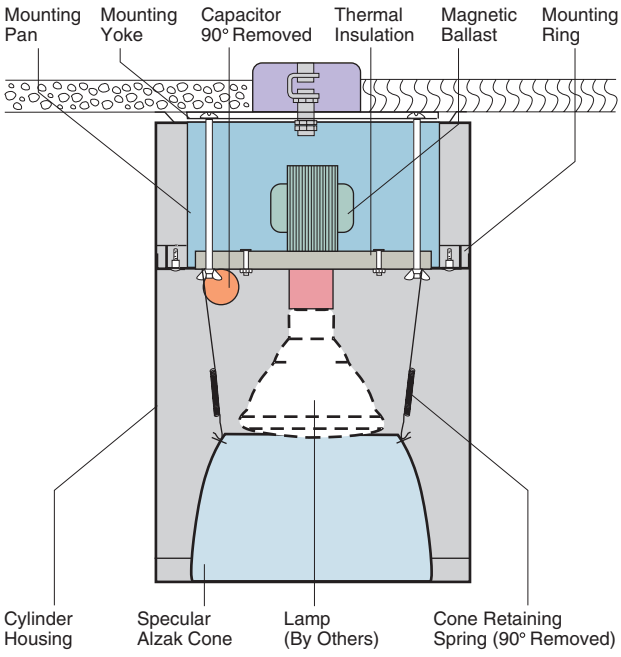
S36 39-70W PAR-30L Metal Halide
S38 70-100W PAR-38 Metal Halide

Conoid Apertures

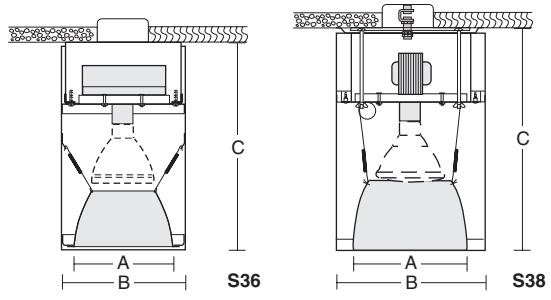


S36



S38

Dimensions and Lamps



Number*	A Aperture	B Diameter	C Depth	Lamps
S36	5⅞" 149mm	7½" 191mm	13½" 343mm	39-70W PAR-30L Metal Halide
S38	8" 203mm	10⅝" 270mm	16" 406mm	70-100W PAR-38 Metal Halide

*To specify add watts for proper ballast, eg. S36-70.

Optics and Applications
Beam spreads range from 8° to 65°. Lamp color temperature is 3000K, CRI up to 92. Output is projected through parabolic low brightness shielding cones. Use anywhere for general, transient or task applications.

Design Features
Housing dimensions keep operating temperatures well in the safety range. The ceiling line reveal diverts heat flow away from the building wires into the workspace.

Finish
Specular clear Alzak cones are standard. Optional colors and Softglow® finishes available. Cylinders are satin brushed then sprayed and baked matte white enamel. Interiors are optical matte black.

Ballasts
S36 is standard with an electronic ballast with thermal protection and auto reset. Features quiet operation, end of life shutdown and constant lumen and wattage output. S38 is standard with a core and coil magnetic ballast type HX with capacitor correction up to 95% HPF. Standard voltages 120 or 277. Inrush current is controlled, lamp wattage is regulated for line voltage variation to 10%. Replace failed lamps immediately. Ballast is dual voltage 120-277, shipped for 277V. Simple field correction to 120V. An optional electronic ballast is available for S38.

General
Fixtures are listed with UL and C-UL. Union made IBEW. Luminaire Efficiency Ratings (LER) do not apply to fixtures using reflector type lamps.

Accessories

B	Black cone.	T	Titanium cone.
G	Gold cone.	W	Wheat cone.
H	Mocha cone.	Y	Pewter cone.
P	Graphite cone.	Z	Bronze cone.
S	Softglow® finishes: add S before color letters. e.g. SW for Softglow® wheat cone, SC for Softglow® clear cone.		
U	Ballast fuse.	EX	Exterior application.
M	Wall mount.	BA	Brushed aluminum finish.
CC	Custom color.		
P5	Pendant mount, 21" length.		
ES	Extra stem length, specify length.		
YK	Yoke mounting, remote magnetic ballast.		
YKE	Yoke mounting, integral electronic ballast.		
EBH	Electronic ballast 50-70-100W for S38, specify watts.		
V347	347 volt magnetic ballast, 50-70-100W, specify watts.		
EC	Emergency circuit with mini-can socket and leads.*		
AO	Instant restrike magnetic Auto-On system. For electronic ballast AO contact factory.		

*Use open rated 60W max. auxiliary incandescent lamp.

Matching Units
Recessed directionals Pages R9, R14, R15
Recessed downlights Pages R8, R10, R11 R12, R13, R21

* Click for link to pages in blue.

Kurt Versen Company Point Source Lighting
Westwood, New Jersey 07675

S5 S36 S38

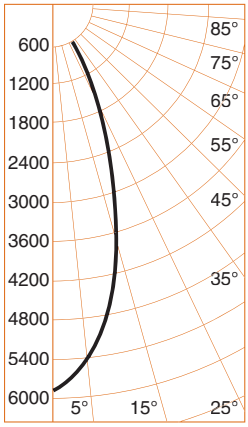
Performance Datachart

Single Unit - Initial Footcandles at Work Plane							Ceiling to Floor	Multiple Units - Initial Footcandles at Work Plane			
S36 39W PAR-30L FL MH Read Top Data S36 70W PAR-30L FL MH Read Bottom Data								Ceiling 80% Walls 50% Floor 20%			
Nadir	10°		20°		30°			Spacing is Maximum Over Work Plane			
FC	FC	Diam	FC	Diam	FC	Diam		Spacing	RCR 1	RCR 3	RCR 8
65 113	48 90	3' 3'	22 45	7' 7'	1 8	11' 11'	12'	6' 6'	74 135	67 122	55 97
44 77	33 61	4' 4'	15 31	8' 8'	1 5	13' 13'	14'	7' 7'	50 92	45 83	38 67
32 56	24 44	5' 5'	11 22	10' 10'	1 4	16' 16'	16'	8' 9'	36 67	33 60	27 48
19 33	14 26	6' 6'	6 13	13' 13'	0 2	20' 20'	20'	10' 11'	22 40	20 36	16 29
12 20	9 16	8' 8'	4 8	16' 16'	0 1	26' 26'	25'	13' 14'	13 24	12 22	10 17

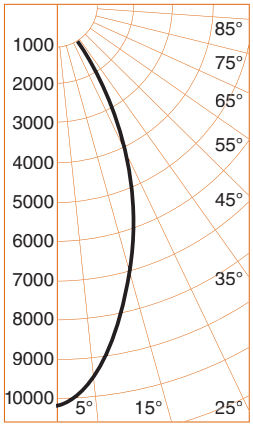
Single Unit - Initial Footcandles at Work Plane							Ceiling to Floor	Multiple Units - Initial Footcandles at Work Plane			
S38 70W PAR-38 FL MH Read Top Data S38 100W PAR-38 FL MH Read Bottom Data								Ceiling 80% Walls 50% Floor 20%			
Nadir	10°		20°		30°			Spacing is Maximum Over Work Plane			
FC	FC	Diam	FC	Diam	FC	Diam		Spacing	RCR 1	RCR 3	RCR 8
55 93	40 69	4' 4'	13 22	9' 9'	2 4	14' 14'	14'	7' 7'	68 117	61 106	51 88
36 60	26 45	5' 5'	8 14	11' 11'	1 2	18' 18'	18'	8' 8'	44 76	40 69	33 57
28 47	21 35	6' 6'	7 11	13' 13'	1 2	20' 20'	20'	9' 9'	35 60	31 54	26 45
17 29	12 21	8' 8'	4 7	16' 16'	1 1	26' 26'	25'	12' 12'	21 36	19 33	16 27
11 19	8 14	10' 10'	3 5	20' 20'	0 1	32' 32'	30'	15' 15'	14 24	13 22	10 18

See notes 3 and 4, Page S2. Colored cone multipliers: Gold x .97 Wheat x .97, Pewter x .94, Mocha x .94, Graphite x .94, Titanium x .94, Bronze x .94, Black x .89.

Candlepower Distribution



S36 39W PAR-30L FL MH
Eff. 90% S/M .59



S36 70W PAR-30L FL MH
Eff. 89% S/M .63

Candelas

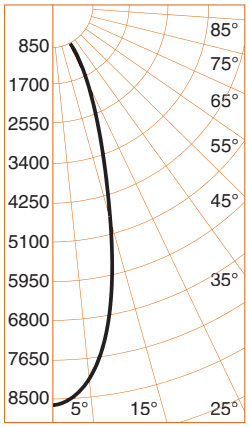
o	FL 2200*	FL 4850*
0	5848	10228
5	5338	9799
10	4552	8487
15	3733	6980
20	2349	4928
25	998	2518
30	189	1118
35	28	299
40	12	101
45	0	53
50	0	8
55	0	0
60	0	0
65	0	0
70	0	0
75	0	0
80	0	0
85	0	0
90	0	0

o Vertical Angles
* Initial Lamp Lumens

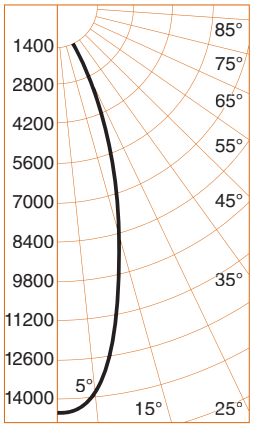
Coefficients of Utilization

Ceiling	80%				70%		50%		30%		0
Wall %	70	50	30	10	50	10	50	10	50	10	0
RCR	Zonal Cavity Method - Floor Reflectance 20%										
1	1.07	1.05	1.03	1.01	1.03	1.00	.99	.97	.96	.94	.90
2	1.03	1.00	.97	.95	.98	.93	.95	.91	.93	.90	.86
3	1.00	.95	.92	.89	.94	.88	.92	.87	.90	.86	.83
4	.97	.91	.88	.85	.90	.84	.88	.83	.87	.82	.80
5	.93	.88	.84	.81	.87	.80	.85	.80	.84	.79	.77
6	.90	.84	.80	.77	.84	.77	.83	.77	.81	.76	.75
7	.88	.81	.77	.74	.81	.74	.80	.74	.79	.74	.72
8	.85	.79	.74	.72	.78	.72	.77	.71	.76	.71	.70
9	.82	.76	.72	.69	.76	.69	.75	.69	.74	.69	.68
10	.80	.73	.70	.67	.73	.67	.72	.67	.72	.67	.65

S36 39W PAR-30L FL MH x 1.0
S36 70W PAR-30L FL MH x .94



S38 70W PAR-38 FL MH
Eff. 77% S/M .54



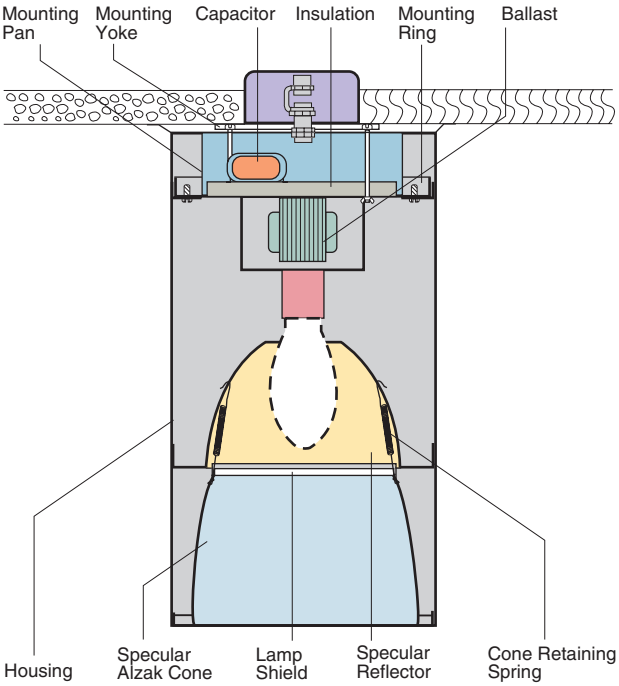
S38 100W PAR-38 FL MH
Eff.79% S/M .54

o	FL 3500*	FL 5800*
0	8548	14533
5	8149	13853
10	6617	11249
15	4760	8092
20	2454	4172
25	1138	1935
30	517	879
35	182	309
40	52	88
45	17	29
50	0	10
55	0	0
60	0	0
65	0	0
70	0	0
75	0	0
80	0	0
85	0	0
90	0	0

o Vertical Angles
* Initial Lamp Lumens

Ceiling	80%				70%		50%		30%		0
Wall %	70	50	30	10	50	10	50	10	50	10	0
RCR	Zonal Cavity Method - Floor Reflectance 20%										
1	.94	.92	.90	.89	.90	.87	.87	.85	.84	.82	.79
2	.90	.87	.85	.83	.86	.82	.84	.80	.81	.78	.76
3	.87	.83	.80	.78	.82	.77	.80	.76	.79	.75	.73
4	.85	.80	.77	.74	.79	.74	.77	.73	.76	.72	.70
5	.82	.77	.73	.71	.76	.70	.75	.70	.74	.69	.68
6	.79	.74	.70	.68	.73	.68	.72	.67	.71	.67	.65
7	.77	.71	.68	.65	.71	.65	.70	.65	.69	.64	.63
8	.74	.69	.65	.63	.68	.63	.68	.63	.67	.62	.61
9	.72	.67	.63	.61	.66	.61	.66	.60	.65	.60	.59
10	.70	.64	.61	.59	.64	.59	.64	.59	.63	.58	.58

S38 70W PAR-38 FL MH x .94
S38 100W PAR-38 FL MH x 1.0



S61
S62
S63

Narrow Distribution
175-250-400W Metal Halide
Conoid Apertures

Optics and Applications

Primary reflectors produce narrow distribution patterns with clear lamps. Coated lamps have wider distribution. Use in high ceilings as required in atriums, malls, convention centers, transportation terminals etc.

Design Features

The capacitor is protected from lamp and ballast heat. Lamp shields are standard. For directional surface cylinder model contact the factory.

Finish

Specular clear Alzak cones are standard. Optional colors and Softglow® finishes available. Cylinders are satin brushed then sprayed and baked matte white enamel. Interiors are optical matte black.

Ballasts

Magnetic core and coil with capacitor correction to 95% high power factor. HX up to 150W. CWA for 175W. Inrush current is controlled and lamp wattage regulated for line voltage variations up to 10%. Class H 180°C insulation and 90°C capacitors are standard. Replace failed lamps immediately. Ballast is dual voltage 120-277, shipped for 277V. Simple field correction to 120V.

General

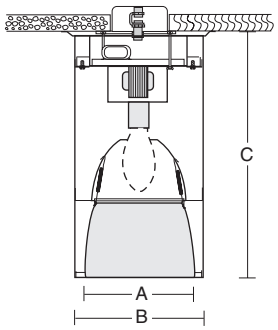
Fixtures are wired, ready for installation. Listed with UL and C-UL. Union made IBEW. Luminaire Efficiency Rating (LER) data is in the photometric directory located in Section Z.

Accessories

B	Black cone.	T	Titanium cone.
G	Gold cone.	W	Wheat cone.
H	Mocha cone.	Y	Pewter cone.
P	Graphite cone.	Z	Bronze cone.
S	Softglow® finishes: add S before color letters. e.g. SW for Softglow® wheat cone, SC for Softglow® clear cone.		
U	Ballast fuse.	EX	Exterior application.
M	Wall mount.	BA	Brushed aluminum finish.
OP	Open construction.	CC	Custom color.
V347	347 volt ballast.	HPS	High pressure sodium.

YK Yoke mounting, remote magnetic ballast.
EC Emergency circuit with mini-can socket and leads.*
PSM Pendant mount, 21" length.
ES Extra stem length, specify length.
PUL Pulse start ballast, contact the factory.
AO Instant restrike magnetic Auto-On system. S61, S62 auxiliary lamp 150W T-4. S63 auxiliary 250W T-4.
*Use open rated 60W max. auxiliary incandescent lamp.

Dimensions and Lamps



Number	A Aperture	B Diameter	C Depth	Lamps
S61-175	11½" 292 mm	13⅝" 346 mm	27¾" 705 mm	175W E-28 or BT-28 Metal Halide Clear
S62-250	11½" 292 mm	13⅝" 346 mm	27¾" 705 mm	250W E-28 or BT-28 Metal Halide Clear
S63-400	11½" 292 mm	16" 406 mm	31" 787 mm	400W E-37 or BT-37 Metal Halide Clear

Matching Units

Recessed downlights Pages R22, R23, R24
Recessed directionals Pages R25, R26
* Click for link to pages in blue.

Kurt Versen Company Point Source Lighting
Westwood, New Jersey 07675

S3 S61 S62 S63

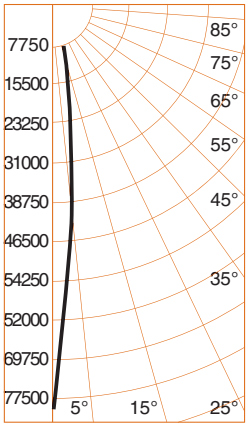
Footcandle Values at Nadir

Distance	20'					30'					40'					50'				
	Nadir	5°		10°		Nadir	5°		10°		Nadir	5°		10°		Nadir	5°		10°	
Lamps	FC	FC	Diam	FC	Diam	FC	FC	Diam	FC	Diam	FC	FC	Diam	FC	Diam	FC	FC	Diam	FC	Diam
S61 175W E-28 Clear	194	104	3	51	7	86	46	5	23	11	49	26	7	13	14	31	17	9	8	18
S62 250W E-28 Clear	253	154	3	80	7	112	69	5	36	11	63	39	7	20	14	40	25	9	13	18
Distance	40'					50'					60'					70'				
S63 400W E-37 Clear	199	70	7	22	14	127	45	9	14	18	88	31	10	10	21	65	23	12	7	25

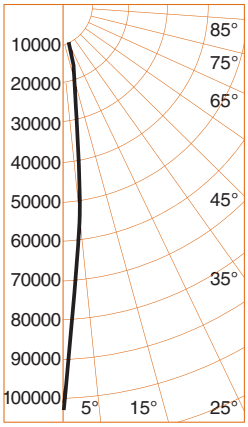
Distance	15'					20'					30'					40'				
	Nadir	10°		15°		Nadir	10°		15°		Nadir	10°		15°		Nadir	10°		15°	
Lamps	FC	FC	Diam	FC	Diam	FC	FC	Diam	FC	Diam	FC	FC	Diam	FC	Diam	FC	FC	Diam	FC	Diam
S61 175W E-28 Coated	69	46	5	35	8	39	26	7	20	11	17	12	11	9	16	10	7	14	5	21
S62 250W E-28 Coated	101	68	5	52	8	57	39	7	29	11	25	17	11	13	16	14	10	14	7	21
Distance	20'					30'					40'					50'				
S63 400W E-37 Coated	84	43	7	29	14	37	19	11	13	16	21	11	14	7	21	13	7	18	5	2

See notes 3 and 4.

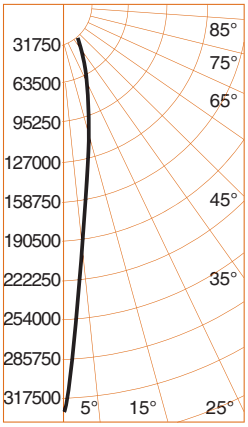
Candlepower Distribution



S61 175W E-28 Clear
Eff. 56% S/M .20



S62 250W E-28 Clear
Eff. 58% S/M .24



S63 400W E-37 Clear
Eff. 41% S/M .1

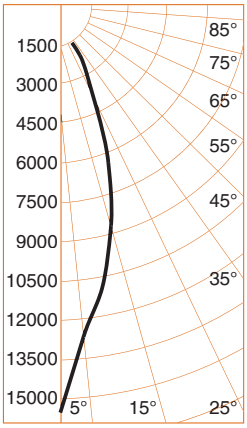
Candelas

o	175W 14000*	250W 20500*	400W 36000*
0	77788	101115	318510
5	41995	62456	113170
10	21474	33708	36710
15	9256	14645	12620
20	3814	5992	4880
25	2383	3848	1930
30	1619	2255	840
35	666	783	570
40	94	120	350
45	37	56	220
50	0	0	130
55	0	0	0
60	0	0	0
65	0	0	0
70	0	0	0
75	0	0	0
80	0	0	0
85	0	0	0
90	0	0	0

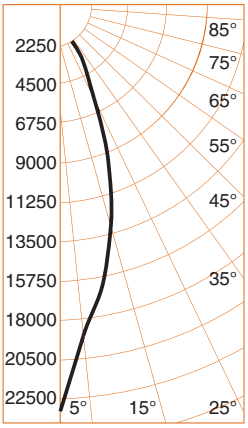
o Vertical Angles
* Initial Lamp Lumens, Clear

Notes

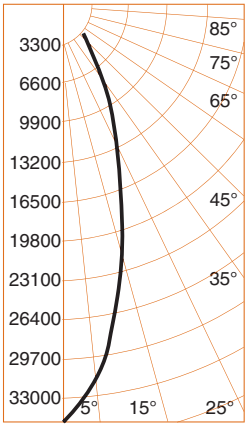
1 Data with clear specular cones.
2 Colored cone multipliers, coated lamps: Wheat x .87, Pewter x .86, Bronze x .78, Black x .68.
3 Colored cone multipliers, clear lamps: Wheat x .96, Pewter x .94, Bronze x .93, Black x .83.
4 Values are determined by the number of degrees from each side of nadir.
5 Kurt Versen believes data computed from the Average Luminance Method are inaccurate for small aperture downlights. They are theoretical calculations derived for large surfaces such as troffer lenses. We recommend the stricter standard of Maximum Brightness Method point data from direct photometer readings. They closely approximate what the human eye perceives when evaluating glare. For a complete discussion refer to section Z brochure Z1.



S61 175W E-28 Coated
Eff. 46% S/M .54



S62 250W E-28 Coated
Eff. 46% S/M .54



S63 400W E-37 Coated
Eff. 30% S/M .4

o	175W 14000*	250W 20500*	400W 36000*
0	15504	22821	33462
5	12826	18785	28497
10	10910	16135	18101
15	8812	12868	12727
20	6408	9402	9250
25	4115	6010	6408
30	2288	3370	4077
35	1143	1558	2203
40	572	728	1198
45	191	265	618
50	88	128	252
55	37	53	2
60	10	24	0
65	0	10	0
70	0	0	0
75	0	0	0
80	0	0	0
85	0	0	0
90	0	0	0

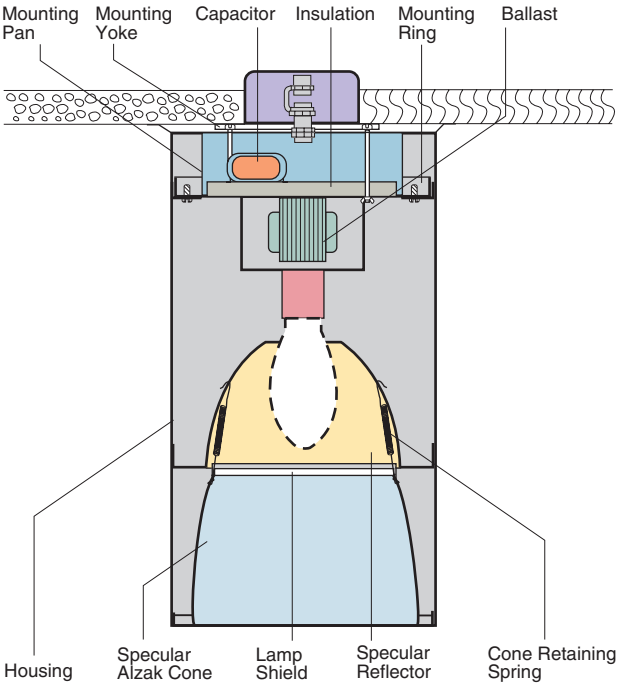
o Vertical Angles
* Initial Lamp Lumens, Coated

Brightness

Number	Lamps	85°	75°	65°	55°	45°
S61	175W E-28 Clear	55	77	139	1263	40704
S62	250W E-28 Clear	62	94	175	1830	58986
S63	400W E-37 Clear	84	129	226	3129	78977

Number	Lamps	85°	75°	65°	55°	45°
S61	175W E-28 Coated	79	126	205	1065	32971
S62	250W E-28 Coated	111	179	321	1777	53968
S63	400W E-37 Coated	144	233	409	2316	71349

Data in footlamberts. Photometer readings, Maximum Brightness Method. See note 5.



S61
S62
S63

Narrow Distribution
175-250-400W Metal Halide
Conoid Apertures

Optics and Applications

Primary reflectors produce narrow distribution patterns with clear lamps. Coated lamps have wider distribution. Use in high ceilings as required in atriums, malls, convention centers, transportation terminals etc.

Design Features

The capacitor is protected from lamp and ballast heat. Lamp shields are standard. For directional surface cylinder model contact the factory.

Finish

Specular clear Alzak cones are standard. Optional colors and Softglow® finishes available. Cylinders are satin brushed then sprayed and baked matte white enamel. Interiors are optical matte black.

Ballasts

Magnetic core and coil with capacitor correction to 95% high power factor. HX up to 150W. CWA for 175W. Inrush current is controlled and lamp wattage regulated for line voltage variations up to 10%. Class H 180°C insulation and 90°C capacitors are standard. Replace failed lamps immediately. Ballast is dual voltage 120-277, shipped for 277V. Simple field correction to 120V.

General

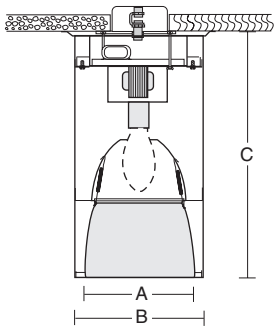
Fixtures are wired, ready for installation. Listed with UL and C-UL. Union made IBEW. Luminaire Efficiency Rating (LER) data is in the photometric directory located in Section Z.

Accessories

B	Black cone.	T	Titanium cone.
G	Gold cone.	W	Wheat cone.
H	Mocha cone.	Y	Pewter cone.
P	Graphite cone.	Z	Bronze cone.
S	Softglow® finishes: add S before color letters. e.g. SW for Softglow® wheat cone, SC for Softglow® clear cone.		
U	Ballast fuse.	EX	Exterior application.
M	Wall mount.	BA	Brushed aluminum finish.
OP	Open construction.	CC	Custom color.
V347	347 volt ballast.	HPS	High pressure sodium.

YK Yoke mounting, remote magnetic ballast.
EC Emergency circuit with mini-can socket and leads.*
PSM Pendant mount, 21" length.
ES Extra stem length, specify length.
PUL Pulse start ballast, contact the factory.
AO Instant restrike magnetic Auto-On system. S61, S62 auxiliary lamp 150W T-4. S63 auxiliary 250W T-4.
*Use open rated 60W max. auxiliary incandescent lamp.

Dimensions and Lamps



Number	A Aperture	B Diameter	C Depth	Lamps
S61-175	11½" 292 mm	13⅝" 346 mm	27¾" 705 mm	175W E-28 or BT-28 Metal Halide Clear
S62-250	11½" 292 mm	13⅝" 346 mm	27¾" 705 mm	250W E-28 or BT-28 Metal Halide Clear
S63-400	11½" 292 mm	16" 406 mm	31" 787 mm	400W E-37 or BT-37 Metal Halide Clear

Matching Units

Recessed downlights Pages R22, R23, R24
Recessed directionals Pages R25, R26
* Click for link to pages in blue.

Kurt Versen Company Point Source Lighting
Westwood, New Jersey 07675

S3 S61 S62 S63

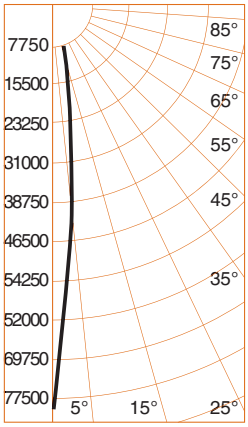
Footcandle Values at Nadir

Distance	20'					30'					40'					50'				
	Nadir	5°		10°		Nadir	5°		10°		Nadir	5°		10°		Nadir	5°		10°	
Lamps	FC	FC	Diam	FC	Diam	FC	FC	Diam	FC	Diam	FC	FC	Diam	FC	Diam	FC	FC	Diam	FC	Diam
S61 175W E-28 Clear	194	104	3	51	7	86	46	5	23	11	49	26	7	13	14	31	17	9	8	18
S62 250W E-28 Clear	253	154	3	80	7	112	69	5	36	11	63	39	7	20	14	40	25	9	13	18
Distance	40'					50'					60'					70'				
S63 400W E-37 Clear	199	70	7	22	14	127	45	9	14	18	88	31	10	10	21	65	23	12	7	25

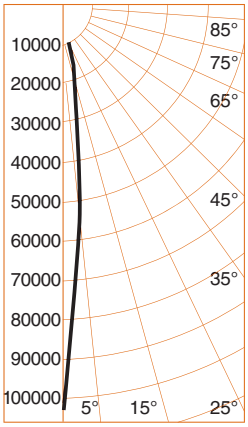
Distance	15'					20'					30'					40'				
	Nadir	10°		15°		Nadir	10°		15°		Nadir	10°		15°		Nadir	10°		15°	
Lamps	FC	FC	Diam	FC	Diam	FC	FC	Diam	FC	Diam	FC	FC	Diam	FC	Diam	FC	FC	Diam	FC	Diam
S61 175W E-28 Coated	69	46	5	35	8	39	26	7	20	11	17	12	11	9	16	10	7	14	5	21
S62 250W E-28 Coated	101	68	5	52	8	57	39	7	29	11	25	17	11	13	16	14	10	14	7	21
Distance	20'					30'					40'					50'				
S63 400W E-37 Coated	84	43	7	29	14	37	19	11	13	16	21	11	14	7	21	13	7	18	5	2

See notes 3 and 4.

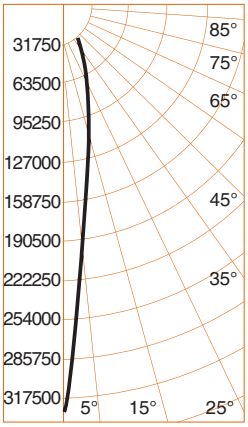
Candlepower Distribution



S61 175W E-28 Clear
Eff. 56% S/M .20



S62 250W E-28 Clear
Eff. 58% S/M .24



S63 400W E-37 Clear
Eff. 41% S/M .1

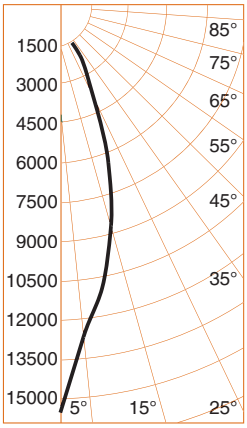
Candelas

o	175W 14000*	250W 20500*	400W 36000*
0	77788	101115	318510
5	41995	62456	113170
10	21474	33708	36710
15	9256	14645	12620
20	3814	5992	4880
25	2383	3848	1930
30	1619	2255	840
35	666	783	570
40	94	120	350
45	37	56	220
50	0	0	130
55	0	0	0
60	0	0	0
65	0	0	0
70	0	0	0
75	0	0	0
80	0	0	0
85	0	0	0
90	0	0	0

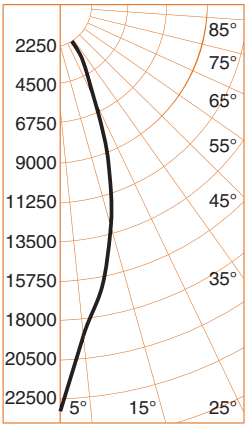
o Vertical Angles
* Initial Lamp Lumens, Clear

Notes

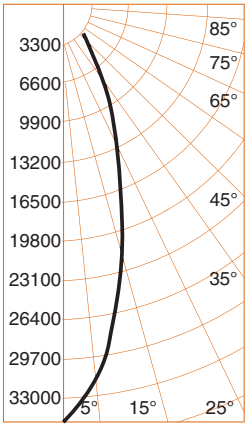
1 Data with clear specular cones.
2 Colored cone multipliers, coated lamps: Wheat x .87, Pewter x .86, Bronze x .78, Black x .68.
3 Colored cone multipliers, clear lamps: Wheat x .96, Pewter x .94, Bronze x .93, Black x .83.
4 Values are determined by the number of degrees from each side of nadir.
5 Kurt Versen believes data computed from the Average Luminance Method are inaccurate for small aperture downlights. They are theoretical calculations derived for large surfaces such as troffer lenses. We recommend the stricter standard of Maximum Brightness Method point data from direct photometer readings. They closely approximate what the human eye perceives when evaluating glare. For a complete discussion refer to section Z brochure Z1.



S61 175W E-28 Coated
Eff. 46% S/M .54



S62 250W E-28 Coated
Eff. 46% S/M .54



S63 400W E-37 Coated
Eff. 30% S/M .4

o	175W 14000*	250W 20500*	400W 36000*
0	15504	22821	33462
5	12826	18785	28497
10	10910	16135	18101
15	8812	12868	12727
20	6408	9402	9250
25	4115	6010	6408
30	2288	3370	4077
35	1143	1558	2203
40	572	728	1198
45	191	265	618
50	88	128	252
55	37	53	2
60	10	24	0
65	0	10	0
70	0	0	0
75	0	0	0
80	0	0	0
85	0	0	0
90	0	0	0

o Vertical Angles
* Initial Lamp Lumens, Coated

Brightness

Number	Lamps	85°	75°	65°	55°	45°
S61	175W E-28 Clear	55	77	139	1263	40704
S62	250W E-28 Clear	62	94	175	1830	58986
S63	400W E-37 Clear	84	129	226	3129	78977

Number	Lamps	85°	75°	65°	55°	45°
S61	175W E-28 Coated	79	126	205	1065	32971
S62	250W E-28 Coated	111	179	321	1777	53968
S63	400W E-37 Coated	144	233	409	2316	71349

Data in footlamberts. Photometer readings, Maximum Brightness Method. See note 5.

Date: _____ Type: S7

Firm Name: _____

Project: GCC

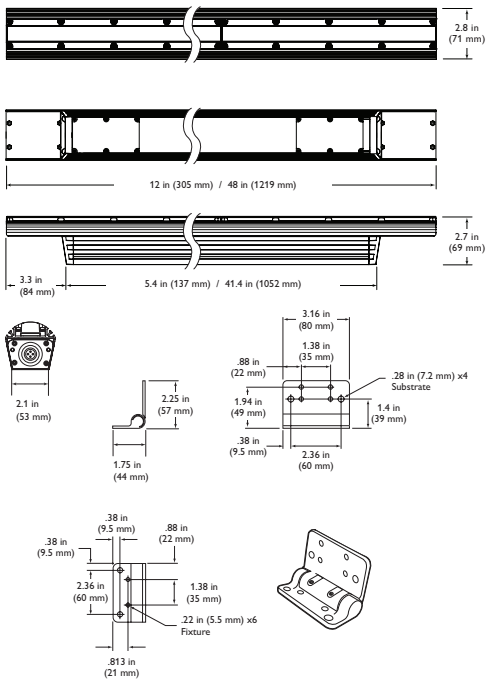
eW Graze Powercore

4000 K, 10° x 60° Lens

Linear LED surface light for wall washing and grazing

eW® Graze Powercore is a linear lighting fixture optimized for surface grazing and wall-washing applications requiring high-quality white or solid color light. Featuring Powercore® technology, eW Graze Powercore processes power directly from line voltage, eliminating the need for low-voltage, external power supplies. Fixtures are available in eight color temperatures, ranging from a warm 2700 K to a cool 6500 K, and three solid colors. eW Graze Powercore offers superior illumination quality and dramatic energy savings for new installations and retrofit upgrades. A space-efficient, low-profile aluminum housing and flexible mounting options allow discrete placement within a wide range of compact architectural details

- Tailor light output to specific applications — eW Graze Powercore is available in standard 1 ft and 4 ft exterior-rated housings, and standard 10° x 60° and 30° x 60° beam angles.
- High-performance illumination and beam quality — eW Graze Powercore offers superior beam quality for striation-free saturation as close as 6 in (152 mm) from fixture placement. eW Graze Powercore accommodates end-to-end or incremental placement without visible light scalloping between fixtures.
- Supports new applications for white light— Long-life LEDs (50,000 hours at 70% lumen maintenance) significantly reduce or eliminate maintenance problems, allowing the use of white or solid color lighting in spaces where bulb maintenance may be limited or unfeasible.
- Universal power input range — eW Graze Powercore accepts line voltage input of 100, 120, 220 – 240, and 277 VAC.
- Versatile installation options — Constant torque locking hinges offer simple position control from various angles without special tools. The low-profile extruded aluminum housing accommodates installation within architectural niches of many different shapes and sizes.



- Wide range of build-to-order configurations — Additional fixture lengths, beam angles, color temperatures up to 6500 K, and solid colors (Royal Blue, Blue, and Green) are available as build-to-order configurations. See the eW Graze Powercore Ordering Information sheet for complete details.
- "Cool lighting" functionality — eW Graze Powercore fixtures do not heat illuminated surfaces, discharge infrared radiation or emit ultraviolet light.
- Dimming capable — Patented DIMand™ technology offers smooth dimming capability with standard ELV-type dimmers.
- Trouble-free, code-compliant installation — IP66, UL wet location ratings. UL / cUL, CE, FCC, RoHS, WEEE certified.

For detailed product information, please refer to the eW Graze Powercore Product Guide at www.colorkinetics.com/ls/essentialwhite/ewgraze/

PHILIPS

Specifications

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

Item	Specification	1 ft	4 ft
Output	Beam Angle	10° x 60°	
	Color Temperature	4000 K (+400 / -500)	
	Lumens†	477	1908
	Efficacy (Lm/W)	33.4	
	Mixing Distance	6 in (152 mm) to uniform beam saturation	
	Lumen Maintenance‡	100,000+ hours L_{70} @ 25° C 50,000 hours L_{70} @ 50° C	
Electrical	Input Voltage	100 / 120 / 220 – 240 / 277 VAC	
	Power Consumption	14.3 W maximum at full output, steady state	57.20 W maximum at full output, steady state
Control		Commercially available ELV control dimmers	
Physical	Dimensions *(Height x Width x Depth)*	2.7 x 12 x 2.8 in (69 x 305 x 71 mm)	2.7 x 48 x 2.8 in (69 x 1219 x 71 mm)
	Weight	2.7 lb (1.2 kg)	10.8 lb (4.9 kg)
	Housing	Extruded anodized aluminum	
	Lens	Clear polycarbonate	
	Fixture Connectors	Integral male / female waterproof connectors	
	Mounting	Multi-positional, constant torque locking hinges	
	Temperature	-40° – 122° F (-40° – 50° C) Operating -4° – 122° F (-20° – 50° C) Startup	
	Humidity	0 – 95%, non-condensing	
	Fixture Run Lengths*	88 – 110 VAC 97 – 120 VAC 180 – 220 VAC 197 – 240 VAC	*Configuration:* *1 ft (305 mm) fixtures installed end-to-end, 20 A circuit, standard 50 ft (15.2 m) Leader Cable*
Certification and Safety	Certification	UL / cUL, FCC Class A, CE, RoHS, WEEE	
	LED Class	Class 2 LED product	
	Environment	Dry / Damp / Wet Location, IP66	

† Lumen measurement complies with IES LM-79-08.

‡ L_{70} = 70% maintenance of lumen output. (When light output drops below 70% of initial output.)

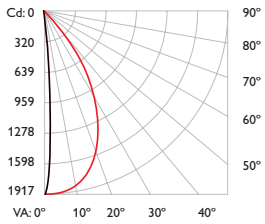
* These figures, provided as a guideline, are accurate for this configuration only. Changing the configuration can affect the fixture run lengths.

OPTIBIN® CK TECHNOLOGY | POWERCORE® CK TECHNOLOGY | DIMAND® CK TECHNOLOGY

Photometrics

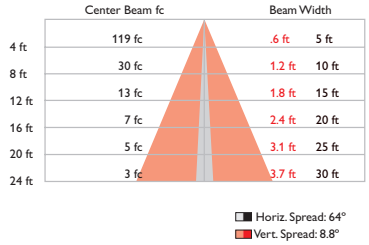
4000 K, 1 ft, 10° x 60° lens

Polar Candela Distribution



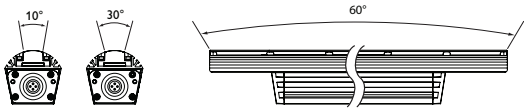
	0	22.5	44	67.5	90
0	1902	1902	1902	1902	1902
5	782	870	1135	1596	1896
15	98	107	156	570	1734
25	45	51	73	160	1356
35	25	29	42	76	774
45	12	14	25	47	261
55	4	6	13	29	66
65	1	2	6	14	26
75	0	0	1	5	10
85	0	0	0	0	1
90	0	0	0	0	0

Illuminance at Distance



For lux multiply fc by 10.7

Power Consumption	14.3 W
Lumens	477
Efficacy	33.4 Lm/W



Fixtures

Item	Beam Angle	Voltage	Size	Item Number	Philips 12NC
eW Graze Powercore, 4000 K	10° x 60°	120 VAC	1 ft	523-000030-01	910503700277
			4 ft	523-000030-03	910503700279
		277 VAC	1 ft	523-000030-09	910503700285
			4 ft	523-000030-11	910503700287
		220 – 240 VAC	1 ft	523-000030-17	910503700293
			4 ft	523-000030-19	910503700295
		100 VAC	1 ft	523-000030-25	910503700301
			4 ft	523-000030-27	910503700303

Use Item Number when ordering in North America.

Accessories

Item	Type	Size	Item Number	Philips 12NC
Leader Cable	UL / cUL	50 ft (15.2 m)	108-000041-00	910503700320
	CE		108-000041-01	910503700320
Jumper Cable	UL / cUL	End-to-End	108-000039-00	910503700314
		1 ft (305 mm)	108-000039-01	910503700315
		5 ft (1.5 m)	108-000039-02	910503700316
	CE	End-to-End	108-000040-00	910503700317
		1 ft (305 mm)	108-000040-01	910503700318
		5 ft (1.5 m)	108-000040-02	910503700319

Philips Color Kinetics
3 Burlington Woods Drive
Burlington, Massachusetts 01803 USA
Tel 888.Full.RGB
Tel 617.423.9999
Fax 617.423.9998
www.colorkinetics.com

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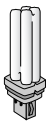
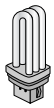
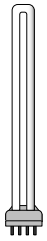
DAS-000009-02 R02 03-09

Appendix A | Ballast Specification Sheets

EcoSystem Ballasts for linear T5 Lamps

Lamp	No. of	Model	Case Size	Input Voltage (VAC)	Input Current (A)	Input Power (W)	Ballast Factor (BF)	System Lumens (lm)	System Efficacy (lm/W)	Ballast Efficacy Factor	Relative Efficacy (RSE)
F35T5 (57.1 in.) 	1	EC5 T535 J UNV 1	J	277 240 120	0.15 0.18 0.35	42.0 42.3 42.2	1.0 1.0 1.0	3650 3650 3650	87 87 87	2.38 2.38 2.38	0.83 0.83 0.83
F28T5 (45.2 in.)	2	EC5 T528 J UNV 2	J	277 240 120	0.23 0.27 0.54	64.5 65.0 65.2	1.0 1.0 1.0	5800 5800 5800	90 89 89	1.55 1.54 1.53	0.87 0.86 0.86
	1	EC5 T528 J UNV 1	J	277 240 120	0.12 0.14 0.27	32.6 32.9 32.9	1.0 1.0 1.0	2900 2900 2900	89 88 88	3.07 3.04 3.04	0.86 0.85 0.85
F21T5 (33.4 in.)	2	EC5 T521 J UNV 2	J	277 240 120	0.17 0.20 0.39	46.0 47.2 47.2	1.0 1.0 1.0	4200 4200 4200	91 89 89	2.17 2.12 2.12	0.91 0.89 0.89
	1	EC5 T521 J UNV 1	J	277 240 120	0.09 0.11 0.22	25.8 25.8 25.8	1.0 1.0 1.0	2100 2100 2100	81 81 81	3.88 3.88 3.88	0.81 0.81 0.81
F14T5 (21.6 in.)	2	EC5 T514 J UNV 2	J	277 240 120	0.12 0.14 0.28	32.8 33.3 33.3	1.0 1.0 1.0	2700 2700 2700	82 81 81	3.05 3.00 3.00	0.85 0.85 0.85
	1	EC5 T514 J UNV 1	J	277 240 120	0.07 0.08 0.16	19.0 19.2 19.2	1.0 1.0 1.0	1350 1350 1350	71 70 70	5.26 5.21 5.21	0.74 0.74 0.74

Compact SE Ballast Models

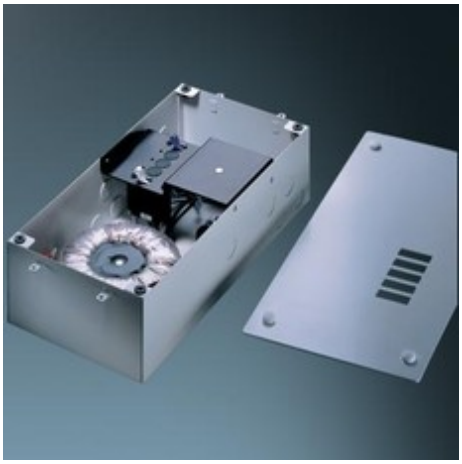
Lamp Type	Lamp Watts	Lamps per ballast	Case Type	120 VOLTS Ballast Current (amps)	120 VOLTS **Compact SE** Model Number [1]	277 VOLTS Ballast Current (amps)	277 VOLTS **Compact SE** Model Number [1]
T4 4-Pin Quad-Tube  1/2 in. diameter	18 W	1 2	A B	.20 .42	FDB-T418-120-1-S FDB-T418-120-2-S	.08 .17	FDB-T418-277-1-S FDB-T418-277-2-S
	26 W	1 2	A B	.26 .50	FDB-T426-120-1-S FDB-T426-120-2-S	.12 .21	FDB-T426-277-1-S FDB-T426-277-2-S
T4 4-Pin Triple-Tube  1/2 in. diameter	18 W	1 2	A B	.20 .42	FDB-T418-120-1-S FDB-T418-120-2-S	.08 .17	FDB-T418-277-1-S FDB-T418-277-2-S
	26 W	1 2	A B	.26 .50	FDB-T426-120-1-S FDB-T426-120-2-S	.12 .21	FDB-T426-277-1-S FDB-T426-277-2-S
	32 W	1 2	A B	.31 .59	FDB-T432-120-1-S FDB-T432-120-2-S	.13 .24	FDB-T432-277-1-S FDB-T432-277-2-S
	42 W	1 2	B B	.36 .67	FDB-T442-120-1-S FDB-T442-120-2-S	.16 .29	FDB-T442-277-1-S FDB-T442-277-2-S
T5 Twin-Tube  5/8 in. diameter	36/39 W (16 in.)	1 2 3	F F F	.33 .58 .85	FDB-1643-120-1* FDB-1643-120-2* FDB-1643-120-3*	.14 .25 .35	FDB-1643-277-1* FDB-1643-277-2* FDB-1643-277-3*
	40 W (22 in.)	1 2 3	F F F	.33 .61 .88	FDB-2227-120-1* FDB-2227-120-2* FDB-2227-120-3*	.14 .25 .38	FDB-2227-277-1* FDB-2227-277-2* FDB-2227-277-3*
	50 W (22 in.)	1 2	F F	.38 .69	FDB-2243-120-1* FDB-2243-120-2*	.17 .32	FDB-2243-277-1* FDB-2243-277-2*

[1] Mounting studs standard for T4 ballasts. Delete suffix -S in the model number if mounting studs not needed.

* UL certified only

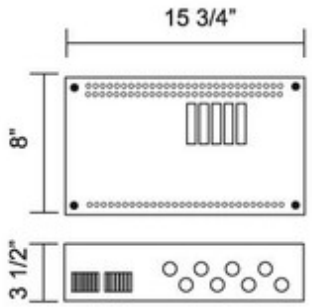
Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20

BRUCK.



TQ-300 REMOTE TRANSFORMER

Description:
The TQ-300 series magnetic remote transformer features a metal enclosure with a covered wiring compartment, which can be surface or recessed mounted in a wall. The additional tap outputs can be used to counter voltage drop do to longer power feeds. A toroidal coil is used for reliability and efficient operation. Please contact manufacturer for further details.



Technical Specs:
300VA maximum
120V AC, 60Hz input & 277V AC, 60Hz input
11/12/13/14/15V AC output

Auto thermo shutoff (resettable) and switch circuit breaker on primary
25A switch circuit breaker on secondary
25 x 1/2" electrical connect knockouts
Compatible with debuzzing choke

Part Numbers:

TQ-300/120V	white, 300VA, 120v
TQ-300/277v	white, 300VA, 277v
TCK-300	choke for TQ-300

Revised 12/2008

15774 Gateway Circle Tustin, CA 92780 ph: (714) 259-9959 fax: (714) 259-9969 www.brucklighting.com

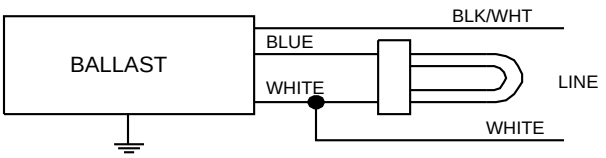
PHILIPS ADVANCE

H-1B13-TP-W	
Brand Name	COMPACT-HPF
Ballast Type	Magnetic
Starting Method	Pre-Heat
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)	Starting Current (Amps)	Open Circuit (Amps)	Input Power (Watts)	Ballast Factor	MAX THD %	Power Factor
CFQ13W/GX23	1	13	32/00	0.14	0.36	0.22	16	0.91	25	0.95
* CFT13W/GX23	1	13	32/00	0.13	0.36	0.22	16	0.89	25	1.01

Wiring Diagram



Diag. 47

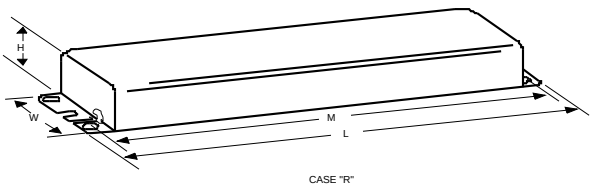
The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.
Black		
White	15	
Blue	15	
Red		
Yellow		
Gray		
Violet		

	in.	cm.
Yellow/Blue		
Blue/White		
Brown		
Orange		
Orange/Black		
Black/White	15	
Red/White		

Enclosure



Enclosure Dimensions

OverAll (L)	Width (std)/(TP)	Height (H)	Mounting (M)
4.25 "	2.00 "	1.4375 "	3.5625 "
4 1/4	2	1 7/16	3 9/16
10.8 cm	5.1 cm / 0 cm	3.7 cm	9 cm

Revised 09/21/1999

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

PHILIPS LIGHTING ELECTRONICS N.A.

10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018

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

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

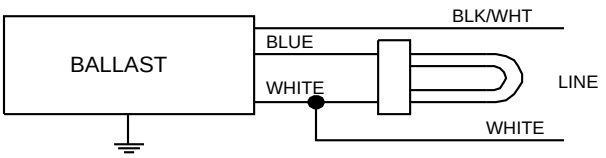
PHILIPS ADVANCE

VH-1B13-TP-BLS	
Brand Name	COMPACT-HPF
Ballast Type	Magnetic
Starting Method	Pre-Heat
Lamp Connection	Series
Input Voltage	277
Input Frequency	60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Starting Current (Amps)	Open Circuit (Amps)	Input Power (Watts)	Ballast Factor	MAX THD %	Power Factor
CFQ13W/GX23	1	13	0/-18	0.10	0.30	0.26	24	0.99	60	0.88
* CFT13W/GX23	1	13	0/-18	0.08	0.30	0.26	20	0.99	55	0.93

Wiring Diagram



Diag. 47

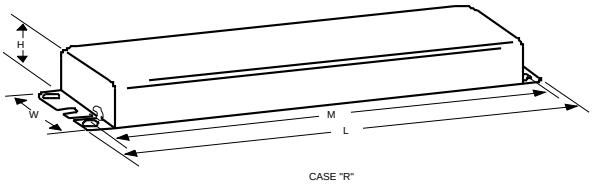
The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.
Black		0
White	7	17.8
Blue	7	17.8
Red		0
Yellow		0
Gray		0
Violet		0

	in.	cm.
Yellow/Blue		0
Blue/White		0
Brown		0
Orange		0
Orange/Black		0
Black/White	7	17.8
Red/White		0

Enclosure



Enclosure Dimensions

OverAll (L)	Width (std)/(TP)	Height (H)	Mounting (M)
4.75 "	2.21875 "/0 "	1.625 "	4.375 "
4 3/4	2 7/32 / 0	1 5/8	4 3/8
12.1 cm	5.6 cm / 0 cm	4.1 cm	11.1 cm

Revised 07/01/1999

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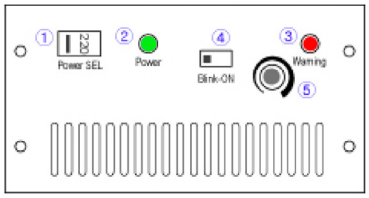
Customer Support/Technical Service: 800-372-3331 · OEM Support: 866-915-5886

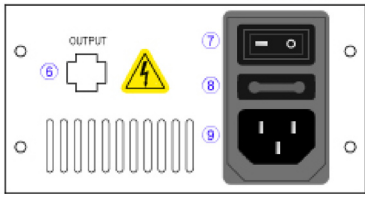
Smart Driver™

Intelligent Electroluminescent Power Source

Features

- Rated Input Voltage 110 / 220 VAC
- Protection Class 1
- IP Degree 2x
- Very low audible noise
- Worldwide voltage capacity
- Blink switch
- Visual LED system status indicator
- Stylish compact design
- Light weight
- Short circuit and overload protection
- Convection Air Cooled





1. Input Voltage Selector (110V or 220V)
2. Green LED - Normal Operating Conditions
3. Red LED - Overload Condition or Short Circuit
4. Lighting Ballast Operation Switch (Blink-On-Off)
5. Brightness Adjustment Knob
6. Output Connector
7. Power Switch (On / Off)
8. Spare Fuse
9. Power Cord Input

Input Specifications:

Input Voltage:	110/220 VAC
Input Frequency:	50/60 hertz
Earth Leakage Current:	1.5 mA

Input Fusing:

WARNING: To protect against the risk of fire, replace only with fuses of the same rating and type (spare fuse is provided). Fuses must be replaced only by qualified service personnel.

Output Specifications:

The Smart Driver™ series has a maximum output voltage of 300 VAC.. The output frequency is variable with voltage. Smart Driver™ operates at frequencies up to 15 times higher than mains. As a result, the output current is significantly lowered

Receipt and Unpacking:

On receipt, the unit should be unpacked carefully and checked for transit damage. If the unit appears to be damaged, do not apply power or install the unit. Contact your authorized outlet for instructions.

Safety:

When correctly installed in a limited access environment, the Smart Driver™ series is designed to comply with the following requirements: EN61347-1:2001, UL60950, and CSA22.2 No. 950.

For current approval status, please contact E-LLC®. Equipment manufacturers must protect service personnel against inadvertent contact with Smart Driver™ output terminals.

Environmental Parameters:

The Smart Driver™ series is designed for Rolfs compatability:

- Pollution Degree 2
- Installation Category 2
- For use as a part of another piece of equipment
- Acessible ONLY to qualified personnel
- Altitude: 0 to 2000 meters above sea level.
- Humidity: 5% to 95% Non-Condensing
- Operating Temperature: -20°C to 50°C
- De-rating: 4% per °C from 40°C to 50°C

Earth Terminal Marking IMPORTANT:

If, in the end use equipment, the incoming mains cable earth wire connects directly to the "GND" connection of the Smart Driver™ unit without being interrupted or junctioned on its way to that connection, then this connection forms the main protective earth of the system.

Warranty:

Warranty conditions are contained in our standard terms and conditions. Contact your authorized outlet for repair.

Model	Lamp Area	Rated Input Current	Dimensions	Weight
SD-400	20-400 sq. in	0.35 / 0.35 Amps	6.81" x 2.86" x 1.85"	1.4 lbs / 0.64 kg
SD-1000	400-1000 sq. in.	0.45 / 0.70 Amps	6.19" x 4.12" x 2.25"	1.95 lbs / 0.88 kg
SD-2000	1000-2000 sq. in	0.12 / 2.25 Amps	4.86" x 4.17" x 2.25"	1.85 lbs / 0.84 kg
SD-4000	2000-4000 sq. in.	0.42 / 3.30 Amps	6.94" x 4.17" x 2.25"	3 lbs / 1.36 kg
SD-8000	4000-8000 sq. in.	0.80 / 4.50 Amps	8.94" x 4.17" x 2.27"	3.5 lbs / 1.59 kg

Important Considerations:

The Smart Driver™ series should be supplied only by a power source of the type indicated on its label. A socket outlet shall be installed near the equipment and shall be easily accessible. The unit should only be used with a suitably rated mains cord and appropraite IEC320 type connector, sourced by the end user. If in doubt, contact E-LLC® for assistance. The Smart Driver™ Series of power supplies are natural convection cooled and should be mounted in the orientation shown in E-LLC®'s Design Guide. The air intake and air outlet areas should not be impeded. Provide adequate clearance space above and below the ventilation slots. A minimum of 6 inches clearance should be used. AFTER DISCONNECTING SMART DRIVER™, ALLOW 10 MINUTES BEFORE DISASSEMBLY TO ALLOW CAPACITORS WITHIN THE UNIT TO DISCHARGE.

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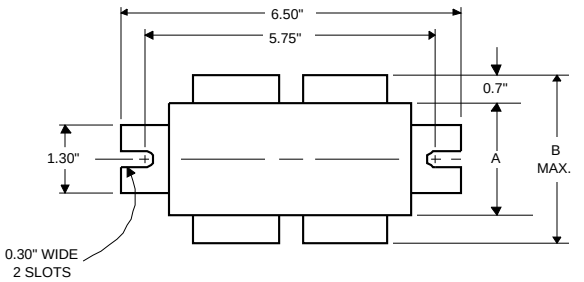
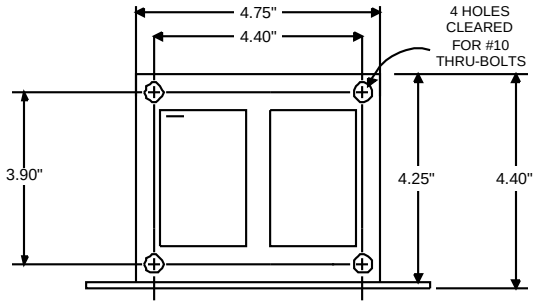
Metal Halide Lamp Ballast

Catalog Number 71A5742TEE
For 250W M138/M153 (P.S.)
60 Hz SUPER-CWA
Status: Active

DIMENSIONS AND DATA

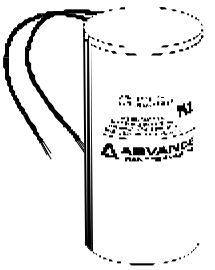
4 1/4 X 4 3/4 CORE - 2 COIL UNIT





INPUT VOLTS		480					
CIRCUIT TYPE	SUPER-CWA						
POWER FACTOR (min)	90%						
REGULATION							
Line Volts	±10%						
Lamp Watts	±10%						
LINE CURRENT (Amps)							
Operating		0.60					
Open Circuit		0.40					
Starting		0.45					
UL TEMPERATURE RATINGS							
Insulation Class	H(180°C)						
Coil Temperature Code	1029	A					
MIN. AMBIENT STARTING TEMP.	-20°F or -30°C						
NOM. OPEN CIRCUIT VOLTAGE	272						
INPUT VOLTAGE AT LAMP DROPOUT		225					
INPUT WATTS	283						
RECOMMENDED FUSE (Amps)		2					
CORE and COIL							
Dimension (A)	1.50						
Dimension (B)	3.25						
Weight (lbs.)	9.5						
Lead Lengths	12"						
CAPACITOR REQUIREMENT							
Microfarads	17.0						
Volts (min.)	400						
Fault Current Withstand (amps)							
60 Hz TEST PROCEDURES (Refer to Advance Test Procedure for HID Ballasts - Form 1270)							
High Potential Test (Volts)							
1 minute	2000						
2 seconds	2500						
Open Circuit Voltage Test (Volts)	244-298						
Short-Circuit Current Test (Amps)							
Secondary Current	2.35-2.90						
Input Current		0.33 0.52	-	-	-	-	

Capacitor: 7C170P40



Capacitance: 17
Dia/Oval Dim: 1.75
Height: 3.75
Temp Rating: 105°C

Ignitor: LI533-H4

Ballast to Lamp Distance (BTL) = 2 feet
Temp Rating: 105°C

Wiring Diagram:

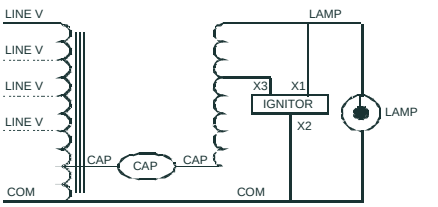


Fig. M5

U.L. RECOGNIZED

Typical Ordering Information

(please call Advance for suffix availability)

Order Suffix	Description
EE	88% EFFICIENCY-COMPLIANT

Data is based upon tests performed by Advance Transformer in a controlled environment and representitive of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice.

ADVANCE
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10/31/08

Universal Outdoor Drivers for 12V and 24V LED systems

Applications

Orientation/Step Lighting

Architectural Lighting

Channel Letters

Contour Lighting

Edge Lighting

LEDs have evolved into a practical, flexible light source for a wide variety of illumination applications. Common LED products available in the market today are configured in a series-parallel array – designed to be powered by a suitable 24vdc driver – which allows flexibility to connect variable load levels. These operating voltages have become the standard in the industry.

The Brain Behind the Bright Idea

Xitanium LED drivers from Advance are designed specifically for 24V LED systems and incorporate features that enable broad commercialization of end-use solid-state lighting products.

Features	Benefits
UL Class 2	Limited output voltage and current plus isolation for safe operation
UL Outdoor Damp location rated - IP 66	Fully potted for moisture resistance and thermal benefits
Ultra small, compact size	Facilitates new, low-profile fixture design
Extreme low temperature Performance (-40°C)	Allows use in any outdoor application
Generous high temperature capability (+60°C)	Margin flexibility to facilitate fixture design
Tightly regulated output (1% line, 5% load)	Consistent light output across line and load levels
5 year warranty	Peace of mind for your new products and for end users…from the industry's most trusted component maker
Powered by Advance	Advance is preferred by end users – Enhance the value of your product

Quick Selection Table

Catalog Number	Description	Application
LEDINTA0024V41FO	Intellivolt 100 Watt 24Vdc Outdoor	• 24Vdc LED Systems

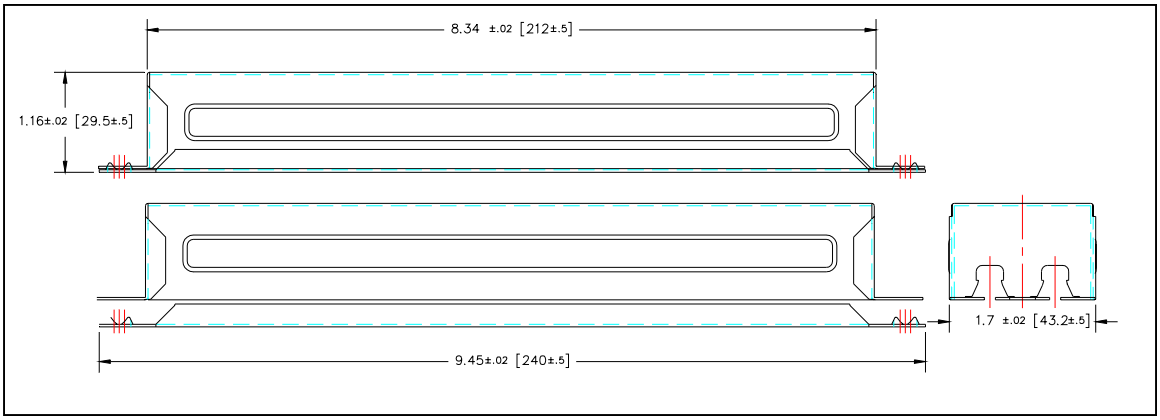
LED Driver Specifications

Description	Catalog Number	Input			Output			Case Temp Max (°C)	Figure	Weight (Grams)
		Volts (V)	Power Max (W)	Current Max (A)	Power Max (W)	Voltage Nom (V)	Current Max (A)			
100 Watt	LEDINTA0024V41FO	120	117.0	0.98	100.0	24.0	4.1	90	A	640
		230		0.51						
		277		.042						

Total Harmonic Distortion: 20% max
Power Factor: 90% min
Line Regulation: 1% output variation across input voltage range
Load Regulation: 5% output variation across input voltage range
Current Crest Factor: 1.5 max
Environmental Protection: IP66 outdoor rated
EMI: FCC47 SubPart15, CISPR15 and CISPR22 Class A
Protection: Meet UL1310 for Class 2; Inherent short-circuit protection, self-limited; overload protected; 3.2KV output insulation
AC Input and DC Output: 2 (0.78mm²) Solid Copper Wires, 15cm long

Dimensions

Fig. A



Advance, A Division of Philips Electronics North America · 10275 W Higgins Road · Rosemont, IL 60018 · USA
Tel: + 1 847 390-5205 · Fax: + 1 847 390-5264 · Revised 09/05PJJ

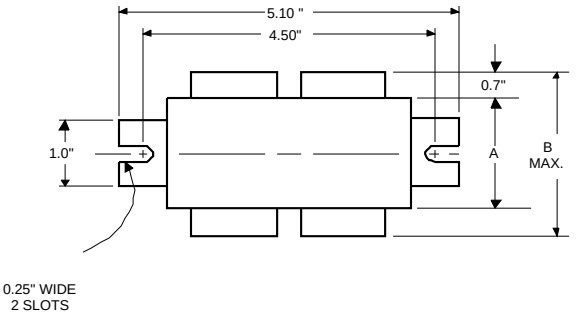
PHILIPS ADVANCE

Metal Halide Lamp Ballast

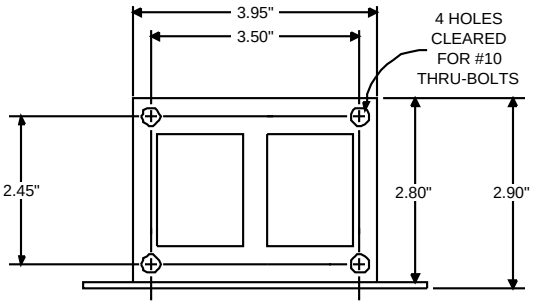
Catalog Number 71A5281
For 70W M139
60 Hz HX-HPF
Status: Active

DIMENSIONS AND DATA

3 X 4 CORE - 2 COIL UNIT

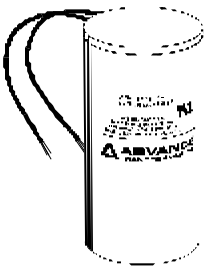


0.25" WIDE
2 SLOTS



~~INPUT VOLTS~~		~~120~~	~~277~~			
CIRCUIT TYPE	HX-HPF					
POWER FACTOR (min)	90%					
REGULATION						
Line Volts	±5%					
Lamp Watts	±7%					
LINE CURRENT (Amps)						
Operating		0.85	0.37			
Open Circuit		1.60	0.70			
Starting		0.85	0.40			
UL TEMPERATURE RATINGS	H(180°C)					
Insulation Class	1029					
Coil Temperature Code	-20°F or -30°C	A	A			
MIN. AMBIENT STARTING TEMP.	245					
NOM. OPEN CIRCUIT VOLTAGE						
INPUT VOLTAGE AT LAMP DROPOUT	94	80	190			
INPUT WATTS						
RECOMMENDED FUSE (Amps)		4	2			
CORE and COIL	1.50					
Dimension (A)	2.70					
Dimension (B)	5.5					
Weight (lbs.)	12"					
Lead Lengths						
CAPACITOR REQUIREMENT	8.0					
Microfarads	280					
Volts (min.)						
Fault Current Withstand (amps)						
60 Hz TEST PROCEDURES (Refer to Philips Lighting Electronics N.A. TEST Procedure for HID Ballasts - Form						
High Potential Test (Volts)	2000					
1 minute	2500					
2 seconds	220-270					
Open Circuit Voltage Test (Volts)						
Short-Circuit Current Test (Amps)	1.10-1.40					
Secondary Current						
Input Current		0.70 1.10	0.30 0.50	-	-	-

Capacitor: 7C080L33-R



Capacitance: 8
Dia/Oval Dim: 1.25
Height: 2.9
Temp Rating: 105°C

Ignitor: LI533-H4

Ballast to Lamp Distance
(BTL) = 10 feet
Temp Rating: 105°C

Wiring Diagram:

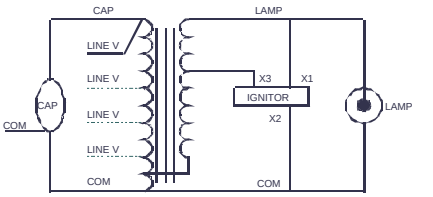


Fig. K3

U.L. RECOGNIZED

Typical Ordering Information

(please call Philips Lighting Electronics N.A. for suffix availability)

Order Suffix	Description

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

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

Revised: 05/13/99

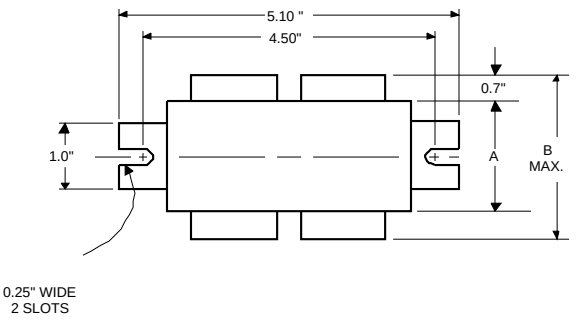
PHILIPS ADVANCE

Metal Halide Lamp Ballast

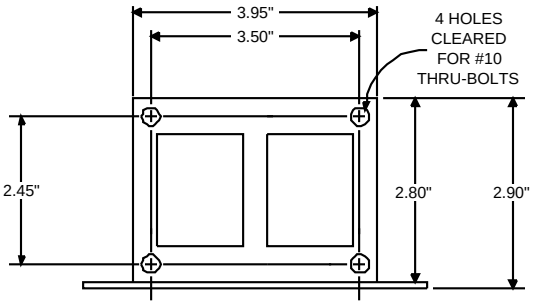
Catalog Number 71A5593EE
For 175W M137/M152 (P.S.)
60 Hz SUPER-CWA
Status: Active

DIMENSIONS AND DATA

3 X 4 CORE - 2 COIL UNIT

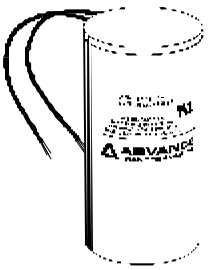


0.25" WIDE
2 SLOTS



INPUT VOLTS		120	208	240	277	
CIRCUIT TYPE	SUPER-CWA					
POWER FACTOR (min)	90%					
REGULATION						
Line Volts	±10%					
Lamp Watts	±10%					
LINE CURRENT (Amps)						
Operating		1.78	1.08	0.89	0.76	
Open Circuit		1.70	1.13	0.85	0.72	
Starting		0.70	0.39	0.35	0.29	
UL TEMPERATURE RATINGS						
Insulation Class	H(180°C)					
Coil Temperature Code	1029	A	A	A	A	
MIN. AMBIENT STARTING TEMP.	-20°F or -30°C					
NOM. OPEN CIRCUIT VOLTAGE	272					
INPUT VOLTAGE AT LAMP DROPOUT		70	111	131	155	
INPUT WATTS	198					
RECOMMENDED FUSE (Amps)		5	3	3	2	
CORE and COIL						
Dimension (A)	3.10					
Dimension (B)	4.60					
Weight (lbs.)	8					
Lead Lengths	12"					
CAPACITOR REQUIREMENT						
Microfarads	11.0					
Volts (min.)	370					
Fault Current Withstand (amps)						
60 Hz TEST PROCEDURES (Refer to Philips Lighting Electronics N.A. TEST Procedure for HID Ballasts - Form						
High Potential Test (Volts)						
1 minute	2000					
2 seconds	2500					
Open Circuit Voltage Test (Volts)	250-300					
Short-Circuit Current Test (Amps)						
Secondary Current	1.59-1.95					
Input Current		0.36	0.20	0.17	0.16	-
		0.55	0.30	0.26	0.24	

Capacitor: 7C110M40



Capacitance: 11
Dia/Oval Dim: 1.5
Height: 3.75
Temp Rating: 105°C

Ignitor: LI533-H4

Ballast to Lamp Distance (BTL) = 2 feet
Temp Rating: 105°C

Wiring Diagram:

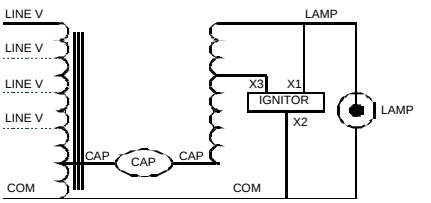


Fig. M

U.L. RECOGNIZED

Typical Ordering Information

(please call Philips Lighting Electronics N.A. for suffix availability)

Order Suffix	Description

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

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Revised: 03/31/09

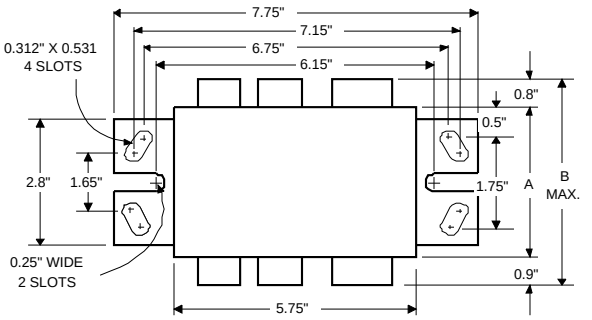
PHILIPS ADVANCE

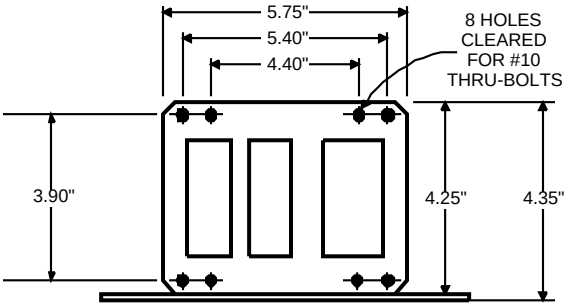
Metal Halide Lamp Ballast

Catalog Number 71A5704
For 250W M138 (Pulse Start)
60 Hz REGULATED LAG
Status: Active

DIMENSIONS AND DATA

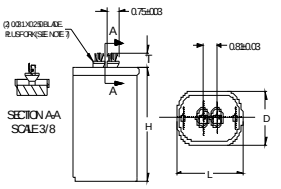
4 1/4 X 5 3/4 CORE - 3 COIL UNIT





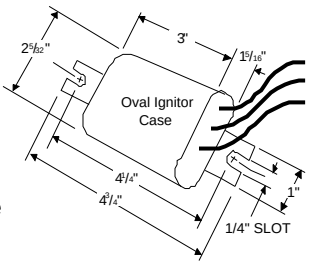
INPUT VOLTS		120				
CIRCUIT TYPE	REGULATED LAG					
POWER FACTOR (min)	90%					
REGULATION						
Line Volts	±10%					
Lamp Watts	±+5%, -7%					
LINE CURRENT (Amps)						
Operating		2.76				
Open Circuit		2.31				
Starting		1.00				
UL TEMPERATURE RATINGS						
Insulation Class	H(180°C)					
Coil Temperature Code	1029	A				
MIN. AMBIENT STARTING TEMP.	-40°F or -40°C					
NOM. OPEN CIRCUIT VOLTAGE	305					
INPUT VOLTAGE AT LAMP DROPOUT		84				
INPUT WATTS	298					
RECOMMENDED FUSE (Amps)		8				
CORE and COIL						
Dimension (A)	2.50					
Dimension (B)	4.13					
Weight (lbs.)	16					
Lead Lengths	12"					
CAPACITOR REQUIREMENT						
Microfarads	16.0					
Volts (min.)	480					
Fault Current Withstand (amps)						
60 Hz TEST PROCEDURES (Refer to Philips Lighting Electronics N.A. TEST Procedure for HID Ballasts - Form						
High Potential Test (Volts)						
1 minute	2000					
2 seconds	2500					
Open Circuit Voltage Test (Volts)	290-355					
Short-Circuit Current Test (Amps)						
Secondary Current	2.00-2.50					
Input Current		0.45 0.70	-	-	-	-

Capacitor: MD1606-000



Capacitance: 16
Dia/Oval Dim: 1.75
Height: 3.4
Temp Rating: 90°C

Ignitor: LI534-H5



Ballast to Lamp Distance (BTL) = 2 feet
Temp Rating: 105°C

Wiring Diagram:

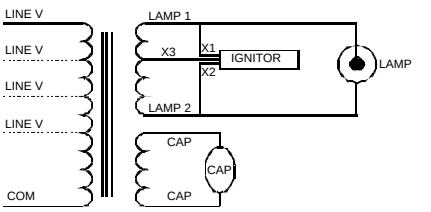


Fig. N

U.L. RECOGNIZED

Typical Ordering Information

(please call Philips Lighting Electronics N.A. for suffix availability)

Order Suffix	Description
500.	Ballast with Ignitor and Oil Filled Capacitor
510.	Ballast w/Welded Bracket, Igniter & Oil-Filled Capacitor

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

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Revised: 09/03/97

Appendix A | Lamp Specification Sheets

FLUORESCENT LAMPS

SILHOUETTE™ T5, Colored Linear Fluorescent Lamps

Watts	Product Number	Symbols, Footnotes	Ordering Code	Pkg. Qty.‡	Description	Nom. Length (In.)	Rated Average Life 3 Hr. Start (202)	Rated Average Life 12 Hr. Start (241)	Approx. Initial Lumens (203,204)	Design Lumens (208)	CRI
SILHOUETTE™ LONG LIFE T5 LAMPS—(2FT–5 FT)											
T5 Miniature Bipin; Programmed Start											
14	23077-1	$ ●	F14T5/830/ALTO	40	TL 830, 3000K	22	25,000	35,000	1350	1275	85
	23079-7	$ ●	F14T5/835/ALTO	40	TL 835, 3500K	22	25,000	35,000	1350	1275	85
	23080-5	$ ●	F14T5/841/ALTO	40	TL 841, 4100K	22	25,000	35,000	1350	1275	85
21	23081-3	$ ●	F21T5/830/ALTO	40	TL 830, 3000K	34	25,000	35,000	2100	2000	85
	23082-1	$ ●	F21T5/835/ALTO	40	TL 835, 3500K	34	25,000	35,000	2100	2000	85
	23083-9	$ ●	F21T5/841/ALTO	40	TL 841, 4100K	34	25,000	35,000	2100	2000	85
28	23084-7	$ ● ©	F28T5/830/ALTO	40	TL 830, 3000K	46	25,000	35,000	2900	2750	85
	23085-4	$ ● ©	F28T5/835/ALTO	40	TL 835, 3500K	46	25,000	35,000	2900	2750	85
	23086-2	$ ● ©	F28T5/841/ALTO	40	TL 841, 4100K	46	25,000	35,000	2900	2750	85
35	23088-8	$ ●	F35T5/830/ALTO	40	TL 830, 3000K	58	25,000	35,000	3650	3450	85
	23091-2	$ ●	F35T5/835/ALTO	40	TL 835, 3500K	58	25,000	35,000	3650	3450	85
	23095-3	$ ●	F35T5/841/ALTO	40	TL 841, 4100K	58	25,000	35,000	3650	3450	85

Watts	Product Number	Symbols, Footnotes	Ordering Code	Pkg. Qty.‡	Description	Nom. Length (In.)	Rated Avg. Life (Hrs.) (202)	Approx. Initial Lumens (203,204)	Design Lumens (208)	CRI
COLORED—LINEAR FLUORESCENT LAMPS—T5 HIGH OUTPUT										
24	14637-3	$	F24T5/RED/HO	15	TL5HO Colored Pro 24W/150 Red	22	12,000	1400	1330	N/A
	14638-1	$	F24T5/GREEN/HO	15	TL5HO Colored Pro 24W/170 Green	22	12,000	2750	2475	N/A
	14639-9	$	F24T5/BLUE/HO	15	TL5HO Colored Pro 24W/180 Blue	22	12,000	550	440	N/A
54	14640-7	$	F54T5/RED/HO	15	TL5HO Colored Pro 54W/150 Red	46	12,000	3450	3280	N/A
	14641-5	$	F54T5/GREEN/HO	15	TL5HO Colored Pro 54W/170 Green	46	12,000	6900	6210	N/A
	14642-3	$	F54T5/BLUE/HO	15	TL5HO Colored Pro 54W/180 Blue	46	12,000	1500	1200	N/A

For the most current product information, go to the e-catalog on **www.philips.com**

Fluorescent symbols and footnotes located on page 120

T5 Miniature Bipin

T5 LUMENS AT 35°C AND 25°C

Lamp Type	Approx. Initial Lumens at 35°C (203, 204)	Approx. Initial Lumens at 25°C (203, 204)
F14T5	1350	1200
F21T5	2100	1900
F28T5	2900	2600
F35T5	3650	3300
F24T5/HO	2000	1800
F39T5/HO	3500	3150
F54T5/HO	5000	4500
F80T5/HO	7000	6300

COMPACT FLUORESCENT LAMPS

PL-T Lamps

Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	Generic Designation	Pkg. Qty.	Desc.	MOL (In.)	Rated Avg. Life (Hrs.) (230)	Approx. Initial Lumens (231)	Design Lumens (208)	CRI
PL-T (TRIPLE) 4-PIN FLUORESCENT LAMPS—ENERGY ADVANTAGE *AVAILABLE Q3, 2008													
27	PL-T	GX24q-3	22021-0	$ ● †	PL-T 32W/830/XEW/4P/ALTO 27W	CFTR32W/GX24q/830	10	3000K	5½	16,000	1875	1725	82
			22022-8	$ ● †	PL-T 32W/835/XEW/4P/ALTO 27W	CFTR32W/GX24q/835	10	3500K	5½	16,000	1875	1725	82
			22024-4	$ ● †	PL-T 32W/841/XEW/4P/ALTO 27W	CFTR32W/GX24q/841	10	4100K	5½	16,000	1875	1725	82
33	PL-T	GX24q-4	22026-9	$ ● †	PL-T 42W/830/XEW/4P/ALTO 33W	CFTR42W/GX24q/830	10	3000K	6⅓	16,000	2615	2400	82
			22028-5	$ ● †	PL-T 42W/835/XEW/4P/ALTO 33W	CFTR42W/GX24q/835	10	3500K	6⅓	16,000	2615	2400	82
			22029-3	$ ● †	PL-T 42W/841/XEW/4P/ALTO 33W	CFTR42W/GX24q/841	10	4100K	6⅓	16,000	2615	2400	82
PL-T (TRIPLE) 4-PIN FLUORESCENT LAMPS—INSTANT ON TECHNOLOGY *AVAILABLE Q4, 2008													
13	PL-T	GX24q-1	14992-2	$ ● †	PL-T 13W/827/X/4P/ALTO	CFTR13W/GX240/827	10	2700K	4³⁄₁₆	16,000	900	825	82
			14995-4	$ ● †	PL-T 13W/841/X/4P/ALTO	CFTR13W/GX240/841	10	4100K	4³⁄₁₆	16,000	900	825	82
18	PL-T	GX24q-2	14923-7	$ ● †	PL-T 18W/827/X/4P/ALTO	CFTR18W/GX240/827	10	2700K	4⅜	16,000	1200	1020	82
			14926-0	$ ● †	PL-T 18W/841/X/4P/ALTO	CFTR18W/GX240/841	10	4100K	4⅜	16,000	1200	1020	82
26	PL-T	GX24q-3	14928-6	$ ● †	PL-T 26W/827/X/4P/ALTO	CFTR26W/GX240/827	10	2700K	5	16,000	1800	1530	82
			14931-0	$ ● †	PL-T 26W/841/X/4P/ALTO	CFTR26W/GX240/841	10	4100K	5	16,000	1800	1530	82
PL-T (TRIPLE) 4-PIN FLUORESCENT LAMPS													
18	PL-T	GX24q-2	38437-0	X $ ●	PL-T 18W/827/4P/ALTO	CFTR18W/GX24q/827	12	2700K	4⅜	16,000	1200	1020	82
			26802-9	$ ●	PL-T 18W/830/4P/ALTO	CFTR18W/GX24q/830	12	3000K	4⅜	16,000	1200	1020	82
			26820-1	$ ●	PL-T 18W/835/4P/ALTO	CFTR18W/GX24q/835	12	3500K	4⅜	16,000	1200	1020	82
			26822-7	$ ●	PL-T 18W/841/4P/ALTO	CFTR18W/GX24q/841	12	4100K	4⅜	16,000	1200	1020	82
26	PL-T	GX24q-3	38440-4	$ ●	PL-T 26W/827/4P/ALTO	CFTR26W/GX24q/827	12	2700K	5	16,000	1800	1530	82
			26823-5	$ ●	PL-T 26W/830/4P/ALTO	CFTR26W/GX24q/830	12	3000K	5	16,000	1800	1530	82
			26824-3	$ ●	PL-T 26W/835/4P/ALTO	CFTR26W/GX24q/835	12	3500K	5	16,000	1800	1530	82
			26825-0	$ ●	PL-T 26W/841/4P/ALTO	CFTR26W/GX24q/841	12	4100K	5	16,000	1800	1530	82
32	PL-T	GX24q-3	38443-8	$ ●	PL-T 32W/827/4P/ALTO	CFTR32W/GX24q/827	12	2700K	5⅝	16,000	2400	2040	82
			26832-6	$ ●	PL-T 32W/830/4P/ALTO	CFTR32W/GX24q/830	12	3000K	5⅝	16,000	2400	2040	82
			26833-4	$ ●	PL-T 32W/835/4P/ALTO	CFTR32W/GX24q/835	12	3500K	5⅝	16,000	2400	2040	82
			26872-2	$ ●	PL-T 32W/841/4P/ALTO	CFTR32W/GX24q/841	12	4100K	5⅝	16,000	2400	2040	82
42	PL-T	GX24q-4	38450-3	$ ●	PL-T 42W/827/4P/ALTO	CFTR42W/GX24q/827	12	2700K	6⅜	16,000	3200	2720	82
			26873-0	$ ●	PL-T 42W/830/4P/ALTO	CFTR42W/GX24q/830	12	3000K	6⅜	16,000	3200	2720	82
			26875-5	$ ●	PL-T 42W/835/4P/ALTO	CFTR42W/GX24q/835	12	3500K	6⅜	16,000	3200	2720	82
			26876-3	$ ●	PL-T 42W/841/4P/ALTO	CFTR42W/GX24q/841	12	4100K	6⅜	16,000	3200	2720	82
			13488-2	X $ ● (242)	PL-T 42W/835/4P/HTA ALTO	CFTR42W/GX24q/835	12	3500K	6⅜	16,000	3200	2720	82
			13659-8	X $ ● (242)	PL-T 42W/841/4P/HTA ALTO	CFTR42W/GX24q/841	12	4100K	6⅜	16,000	3200	2720	82
57	PL-T	GX24q-5	14631-6	$	PL-T 57W/830/4P/A	CFTR57W/GX24q/830	10	3000K	7¹³⁄₁₆	16,000	4300	3741	82
			14632-4	$	PL-T 57W/835/4P/A	CFTR57W/GX24q/835	10	3500K	7¹³⁄₁₆	16,000	4300	3741	82
			14633-2	$	PL-T 57W/841/4P/A	CFTR57W/GX24q/841	10	4100K	7¹³⁄₁₆	16,000	4300	3741	82

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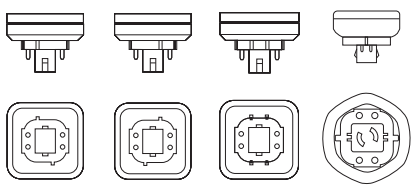

HIGH INTENSITY DISCHARGE LAMPS

MasterColor® Ceramic Metal Halide Lamps

Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code Ballast Ref. or MBCP♦	Pkg. Qty.‡	Description (401, 407)	LCL (In.)	MOL (In.)	Rated Avg. Life (Hrs.)(351)	Approx. Initial Lumens(352)	Approx. Mean Lumens(353)	CRI	CCT (K)
PROTECTED MASTERCOLOR CERAMIC METAL HALIDE PAR LAMPS (391, 392, 396)															
Open or enclosed luminaires; lifetime color stability within ±200K															
22	PAR20	Med.	21151-6	★ ● †	CDM20/PAR20/M/SP/3K/ALTO	C156/C175/O MBCP=11,000	12	G, PAR WISO Spot 10° (397)	—	3¾	9000	940	600	81	3000
			21152-4	★ ● †	CDM20/PAR20/M/FL/3K/ALTO	C156/C175/O MBCP=2800	12	G, PAR WISO Flood 30° (397)	—	3¾	9000	980	615	81	3000
	PAR30L	Med.	21149-0	★ ● †	CDM20/PAR30L/M/SP/3K/ALTO	C156/C175/O MBCP=20,000	6	G, PAR WISO Spot 10° (397)	—	4¾	9000	1200	750	81	3000
			21140-9	★ ● †	CDM20/PAR30L/M/FL/3K/ALTO	C156/C175/O MBCP=3300	6	G, PAR WISO Flood 30° (397)	—	4¾	9000	1200	750	81	3000
39	PAR20	Med.	23365-0	★ ●	CDM35/PAR20/M/SP/3K/ALTO	M130/O MBCP=23,000	12	G, PAR WISO Spot 10° (397)	—	3¾	9000	2000	1300	81	3000
			23364-3	★ ●	CDM35/PAR20/M/FL/3K/ALTO	M130/O MBCP=5000	12	G, PAR WISO Flood 30° (397)	—	3¾	9000	2000	1300	81	3000
			15140-7	★	CDM35/PAR20/M/SP/4K	M130/O MBCP=21,500	12	G, PAR WISO Spot 10° (397)	—	3¾	6000	1950	1650	92	4000
			15141-5	★	CDM35/PAR20/M/FL/4K	M130/O MBCP=5000	12	G, PAR WISO Flood 30° (397)	—	3¾	6000	1950	1650	92	4000
	PAR30L	Med.	22329-7	★ ●	CDM35/PAR30L/M/SP/3K/ALTO	M130/O MBCP=44,000	6	G, PAR WISO Spot 10° (397)	—	4¾	9000	2200	1430	81	3000
			22330-5	★ ●	CDM35/PAR30L/M/FL/3K/ALTO	M130/O MBCP=7400	6	G, PAR WISO Flood 30° (397)	—	4¾	9000	2200	1430	81	3000
			23224-9	★ ●	CDM70/PAR30L/M/SP/3K/ALTO	M143/M98/O MBCP=68,000	6	G, PAR WISO Spot 10°	—	4¾	11,000	5000	3050	83	3000
			23221-5	★ ●	CDM70/PAR30L/M/FL/3K/ALTO	M143/M98/O MBCP=10,000	6	G, PAR WISO Flood 40°	—	4¾	11,000	5000	3050	83	3000
			15142-3	★ ●	CDM70/PAR30L/M/SP/4K/ALTO	M139/O MBCP=63,000	6	G, PAR WISO Spot 10°	—	4¾	9000	4300	3010	94	4000
			15143-1	★ ●	CDM70/PAR30L/M/FL/4K/ALTO	M139/O MBCP=9000	6	G, PAR WISO Flood 40°	—	4¾	9000	4300	3010	94	4000
70	PAR38	Med.	22250-5	★ ●	CDM70/PAR38/SP/3K/ALTO	M143/M98/O MBCP=42,000	12	G, PAR WISO Spot 15° (399)	—	5⅞	12,500	4100	2870	85	3000
			22249-7	★ ●	CDM70/PAR38/FL/3K/ALTO	M143/M98/O MBCP=18,000	12	G, PAR WISO Flood 25° (399)	—	5⅞	12,500	4100	2870	85	3000
			28872-0	▢ ★ ●	CDM70/PAR38/SP/4K/ALTO	M143/M98/O MBCP=40,000	12	G, PAR WISO Spot 15° (399)	—	5⅞	12,500	3700	2590	92	4000
			28873-8	▢ ★ ●	CDM70/PAR38/FL/4K/ALTO	M143/M98/O MBCP=15,000	12	G, PAR WISO Flood 25° (399)	—	5⅞	12,500	3700	2590	92	4000
100	PAR38	Med.	24477-2	★ ●	CDM100/PAR38/SP/3K/ALTO	M140/M90/O MBCP=65,000	12	G, PAR WISO Spot 15° (399)	—	5⅞	12,500	6200	4340	85	3000
			24476-4	★ ●	CDM100/PAR38/FL/3K/ALTO	M140/M90/O MBCP=24,000	12	G, PAR WISO Flood 25° (399)	—	5⅞	12,500	6200	4340	85	3000
			28876-1	▢ ★ ●	CDM100/PAR38/SP/4K/ALTO	M140/M90/O MBCP=52,000	12	G, PAR WISO Spot 15°(399)	—	5⅞	12,500	5700	3990	92	4000
			28878-7	▢ ★ ●	CDM100/PAR38/FL/4K/ALTO	M140/M90/O MBCP=19,000	12	G, PAR WISO Flood 25° (399)	—	5⅞	12,500	5700	3990	92	4000

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HID symbols and footnotes located on page 139


PAR20 Med.


PAR30L Med.


PAR38 Med.

HALOGEN LAMPS

MRC16, ALR, ALUline Pro 111, Twistline GU10 Lamps

Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	Volts	Pkg. Qty.‡	Description	Class, Filament	MOL (In.)	Rated Avg. Life (Hrs.)(93)	Approx. MBCP♦	Lumens
HALOGEN MR ENERGY ADVANTAGE IR (FORMERLY MASTERLINE® ES IRC) (92)													
20	MRC16	GU5.3	20258-0	$	20MRC16/IRC/ALU/SP8	12	20	Spot 8°	C, C-8	1⅞	5000	6000	320
			20259-8	$	20MRC16/IRC/ALU/FL36	12	20	Flood 36°	C, C-8	1⅞	5000	925	325
30	MRC16	GU5.3	20260-6	$	30MRC16/IRC/ALU/SP8	12	20	Spot 8°	C, C-8	1⅞	5000	10,000	560
			20261-4	$	30MRC16/IRC/ALU/NFL24	12	20	Narrow Flood 24°	C, C-8	1⅞	5000	3000	570
			20262-2	$	30MRC16/IRC/ALU/FL36	12	20	Flood 36°	C, C-8	1⅞	5000	1500	580
35	MRC16	GU5.3	21031-0	$	35MRC16/IRC/SP8	12	20	Spot 8°	C, C-8	1⅞	5000	13,500	770
			20263-0	$	35MRC16/IRC/ALU/SP8	12	20	Spot 8°	C, C-8	1⅞	5000	12,500	720
			21030-2	$	35MRC16/IRC/NFL24	12	20	Narrow Flood 24°	C, C-8	1⅞	5000	4400	780
			20267-1	$	35MRC16/IRC/ALU/NFL24	12	20	Narrow Flood 24°	C, C-8	1⅞	5000	4000	730
			20268-9	$	35MRC16/IRC/ALU/FL36	12	20	Flood 36°	C, C-8	1⅞	5000	2000	740
			20269-7	$	35MRC16/IRC/ALU/WFL60	12	20	Wide Flood 60°	C, C-8	1⅞	5000	975	750
45	MRC16	GU5.3	20271-3	$	45MRC16/IRC/SP8	12	20	Spot 8°	C, C-8	1⅞	5000	14,000	1030
			20272-1	$	45MRC16/IRC/NFL24	12	20	Narrow Flood 24°	C, C-8	1⅞	5000	5400	1040
			20273-9	$	45MRC16/IRC/FL36	12	20	Flood 36°	C, C-8	1⅞	5000	2600	1050
			20274-7	$	45MRC16/IRC/WFL60	12	20	Wide Flood 60°	C, C-8	1⅞	5000	1250	1180
HALOGEN MR ALUMINUM (FORMERLY CONTINUUM PRO) (92)													
50	MRC16	GU5.3	13981-6		50 MRC16/NFL24/A	12	50	Narrow Flood 24°	C, C-8	1⅞	5000	3300	940
			13982-4		50 MRC16/FL36/A	12	50	Flood 36°	C, C-8	1⅞	5000	2100	950
CLOSED ALUMINUM REFLECTOR (ALR) LAMPS ALUMINUM REFLECTOR WITH LENS (92)													
20	37mm	BA15d	32840-1		20ALR12/NSP6 GBD Clear	12	50	Clear, Narrow Spot 6°	C, C-8	1½	2000	7000	250
			34002-6		20ALR12/SP18 GBE Frost	12	50	Frost, Spot 18°	C, C-8	1½	2000	1500	250
			34003-4		20ALR12/FL32 GBF Frost	12	50	Frost, Flood 32°	C, C-8	1½	2000	750	250
50	56mm	B15d	32826-0		50ALR18/SP10 GBJ Clear	12	50	Clear, Spot 10°	C, C-8	2¼	2000	13,000	820
			34091-9		50ALR18/NFL25 GBK Frost	12	50	Frost, Narrow Flood 25°	C, C-8	2¼	2000	2500	820
ALULINE PRO 111													
50	ALU Pro 111	G53	13396-6		ALU111MM 50W G53 12V 8D	12	6	Spot 8°	C, C-8	2 3/64	3000	23,000	950
			13397-4		ALU111MM 50W G53 12V 24D	12	6	Flood 24°	C, C-8	2 3/64	3000	4000	950
75	ALU Pro 111	G53	13398-2		ALU111MM 75W G53 12V 8D	12	6	Spot 8°	C, C-8	2 3/64	3000	30,000	1575
HALOGEN MRC16 GU7 BASE (92)													
35	MRC16	GU7	14851-0		35MRC16/SP10/GU7	12	20	Spot 10°	C, C-8	2	4000	8000	500
TWISTLINE GU10 BLISTER-CARDED (98)													
25	Twistline	GU10	21129-2		BC25TWISTLINE GU10/FL25	120	6	Blister Card, Flood 25°	C, C-6	2	2000	345	160
35	Twistline	GU10	20335-6		BC35TWISTLINE GU10/FL25	120	6	Blister Card, Flood 25°	C, C-6	2	2000	480	265
50	Twistline	GU10	14112-7		BC50GU10/HAL/TL	120	6	Blister Card, Flood 25°	C, C-6	2	2000	700	430
			20331-5		BC50TWISTLINE GU10/FL25	120	6	Blister Card, Flood 25°	C, C-6	2	2000	700	430
			20576-5		BC50TWISTLINE GU10/NTL/FL	120	6	Blister Card, Flood 25°	C, C-6	2	2000	1200	—

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Halogen symbols and footnotes located on page 70


MRC16 GU5.3


37mm ALR BA15d


56mm ALR B15d


ALU Pro 111 G5.3


Twistline GU10


MRC16 GU7

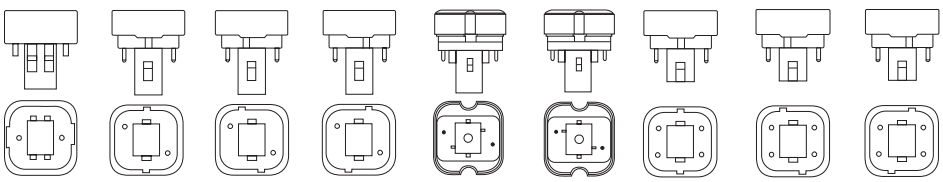
COMPACT FLUORESCENT LAMPS

PL-C Lamps

Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	Generic Designation	Pkg. Qty.	Desc.	MOL (In.)	Rated Avg. Life (Hrs.) (230)	Approx. Initial Lumens (231)	Design Lumens (208)	CRI
PL-C (CLUSTER) 2-PIN FLUORESCENT LAMPS													
13	PL-C	GX23-2	38310-9	$ ●	PL-C 13W/827/USA/ALTO	CFQ13W/GX23/827	10	2700K	4⅝	10,000	860	735	82
			38311-7	$ ●	PL-C 13W/830/USA/ALTO	CFQ13W/GX23/830	10	3000K	4⅝	10,000	860	735	82
			38312-5	$ ●	PL-C 13W/835/USA/ALTO	CFQ13W/GX23/835	10	3500K	4⅝	10,000	860	735	82
			38313-3	$ ●	PL-C 13W/841/USA/ALTO	CFQ13W/GX23/841	10	4100K	4⅝	10,000	860	735	82
	PL-C	G24d-1	38314-1	$ ●	PL-C 13W/827/ALTO	CFQ13W/G24d/827	10	2700K	5½	10,000	900	770	82
			38315-8	$ ●	PL-C 13W/830/ALTO	CFQ13W/G24d/830	10	3000K	5½	10,000	900	770	82
18	PL-C	G24d-2	38316-6	$ ●	PL-C 18W/827/ALTO	CFQ18W/G24d/827	10	2700K	6	10,000	1250	1070	82
			38317-4	$ ●	PL-C 18W/830/ALTO	CFQ18W/G24d/830	10	3000K	6	10,000	1250	1070	82
			38318-2	$ ●	PL-C 18W/835/ALTO	CFQ18W/G24d/835	10	3500K	6	10,000	1250	1070	82
			38319-0	$ ●	PL-C 18W/841/ALTO	CFQ18W/G24d/841	10	4100K	6	10,000	1250	1070	82
26	PL-C	G24d-3	38321-6	$ ●	PL-C 26W/827/ALTO	CFQ26W/G24d/827	10	2700K	6⅜	10,000	1800	1545	82
			38322-4	$ ●	PL-C 26W/830/ALTO	CFQ26W/G24d/830	10	3000K	6⅜	10,000	1800	1545	82
			38323-2	$ ●	PL-C 26W/835/ALTO	CFQ26W/G24d/835	10	3500K	6⅜	10,000	1800	1545	82
			38324-0	$ ●	PL-C 26W/841/ALTO	CFQ26W/G24d/841	10	4100K	6⅜	10,000	1800	1545	82
PL-C (CLUSTER) 2-PIN FLUORESCENT LAMPS, 15MM TUBE DIAMETER (222)													
20	PL-C	GX32d-2	20478-4	$	PL-C 15mm/22W/827	CFQ20W/GX32d/827	40	2700K	6	10,000	1200	995	82
27	PL-C	GX32d-3	20479-2	$	PL-C 15mm/28W/827	CFQ27W/GX32d/827	40	2700K	6⅜	10,000	1600	1325	82
PL-C (CLUSTER) 4-PIN FLUORESCENT LAMPS, ELECTRONIC OPERATION—ENERGY ADVANTAGE *AVAILABLE Q3, 2008													
14	PL-C	G24q-2	22034-3	$ ● †	PL-C 18W/827/XEW/4P/ALTO 14W	CFQ18W/G24q/827	10	2700K	5¹⁄₁₆	12,000	1100	1010	82
			22040-0	$ ● †	PL-C 18W/835/XEW/4P/ALTO 14W	CFQ18W/G24q/835	10	3500K	5¹⁄₁₆	12,000	1100	1010	82
			22041-8	$ ● †	PL-C 18W/841/XEW/4P/ALTO 14W	CFQ18W/G24q/841	10	4100K	5¹⁄₁₆	12,000	1100	1010	82
21	PL-C	G24q-3	22042-6	$ ● †	PL-C 26W/827/XEW/4P/ALTO 21W	CFQ26W/G24q/827	10	2700K	6½	12,000	1525	1400	82
			22047-5	$ ● †	PL-C 26W/835/XEW/4P/ALTO 21W	CFQ26W/G24q/835	10	3500K	6½	12,000	1525	1400	82
			22048-3	$ ● †	PL-C 26W/841/XEW/4P/ALTO 21W	CFQ26W/G24q/841	10	4100K	6½	12,000	1525	1400	82
PL-C (CLUSTER) 4-PIN FLUORESCENT LAMPS, ELECTRONIC OPERATION													
13	PL-C	G24q-1	38325-7	$ ●	PL-C 13W/827/4P/ALTO	CFQ13W/G24q/827	10	2700K	5⅜	12,000	900	775	82
			38326-5	$ ●	PL-C 13W/830/4P/ALTO	CFQ13W/G24q/830	10	3000K	5⅜	12,000	900	775	82
			38327-3	$ ●	PL-C 13W/835/4P/ALTO	CFQ13W/G24q/835	10	3500K	5⅜	12,000	900	775	82
			38328-1	$ ●	PL-C 13W/841/4P/ALTO	CFQ13W/G24q/841	10	4100K	5⅜	12,000	900	775	82
18	PL-C	G24q-2	38329-9	$ ●	PL-C 18W/827/4P/ALTO	CFQ18W/G24q/827	10	2700K	5¹⁄₁₆	12,000	1250	1075	82
			38330-7	$ ●	PL-C 18W/830/4P/ALTO	CFQ18W/G24q/830	10	3000K	5¹⁄₁₆	12,000	1250	1075	82
			38332-3	$ ●	PL-C 18W/835/4P/ALTO	CFQ18W/G24q/835	10	3500K	5¹⁄₁₆	12,000	1250	1075	82
			38333-1	$ ●	PL-C 18W/841/4P/ALTO	CFQ18W/G24q/841	10	4100K	5¹⁄₁₆	12,000	1250	1075	82
26	PL-C	G24q-3	38334-9	$ ●	PL-C 26W/827/4P/ALTO	CFQ26W/G24q/827	10	2700K	6½	12,000	1800	1550	82
			38335-6	$ ●	PL-C 26W/830/4P/ALTO	CFQ26W/G24q/830	10	3000K	6½	12,000	1800	1550	82
			38336-4	$ ●	PL-C 26W/835/4P/ALTO	CFQ26W/G24q/835	10	3500K	6½	12,000	1800	1550	82
			38337-2	$ ●	PL-C 26W/841/4P/ALTO	CFQ26W/G24q/841	10	4100K	6½	12,000	1800	1550	82

For the most current product information, go to the e-catalog on **www.philips.com**

Compact fluorescent symbols and footnotes located on page 86



COMPACT FLUORESCENT LAMPS

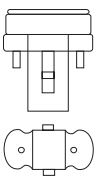
PL-S Lamps

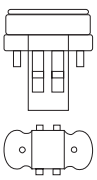
Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	Generic Designation	Pkg. Qty.	Desc.	MOL (In.)	Rated Avg. Life (Hrs.) (230)	Approx. Initial Lumens (231)	Design Lumens (208)	CRI
PL-S (SHORT) FLUORESCENT LAMPS													
5	PL-S	G23	14671-2	$ ●	PL-S 5W/827/2P/ALTO	CFT5W/G23/827	10	2700K	4 9/32	10,000	250	210	82
			14868-4	$ ●	PL-S 5W/841/2P/ALTO	CFT5W/G23/841	10	4100K	4 9/32	10,000	250	210	82
7	PL-S	G23	14871-8	$ ●	PL-S 7W/827/2P/ALTO	CFT7W/G23/827	10	2700K	5 1/32	10,000	400	360	82
			14872-6	$ ●	PL-S 7W/835/2P/ALTO	CFT7W/G23/835	10	3500K	5 1/32	10,000	400	360	82
			14873-4	$ ●	PL-S 7W/841/2P/ALTO	CFT7W/G23/841	10	4100K	5 1/32	10,000	400	360	82
			14874-2	$ ● X	PL-S 7W/850/2P/ALTO	CFT7W/G23/850	10	5000K	5 1/32	10,000	380	340	82
9	PL-S	G23	14867-6	$ ●	PL-S 9W/827/2P/ALTO	CFT9W/G23/827	10	2700K	6 13/32	10,000	600	540	82
			14869-2	$ ●	PL-S 9W/835/2P/ALTO	CFT9W/G23/835	10	3500K	6 13/32	10,000	600	540	82
			14870-0	$ ●	PL-S 9W/841/2P/ALTO	CFT9W/G23/841	10	4100K	6 13/32	10,000	600	540	82
			14680-3	$ ● X	PL-S 9W/850/2P/ALTO	CFT9W/G23/850	10	5000K	6 13/32	10,000	570	510	82
13	PL-S	GX23	14681-1	$ ●	PL-S 13W/827/2P/ALTO	CFT13W/GX23/827	10	2700K	7 1/64	10,000	825	740	82
			14682-9	$ ●	PL-S 13W/827/2P/ALTO/BULK	CFT13W/GX23/827	50	2700K	7 1/64	10,000	825	740	82
			14683-7	$ ●	PL-S 13W/830/2P/ALTO	CFT13W/GX23/830	10	3000K	7 1/64	10,000	825	740	82
			14684-5	$ ●	PL-S 13W/835/2P/ALTO	CFT13W/GX23/835	10	3500K	7 1/64	10,000	825	740	82
			14685-2	$ ●	PL-S 13W/841/2P/ALTO	CFT13W/GX23/841	10	4100K	7 1/64	10,000	825	740	82
			14686-0	$ ●	PL-S 13W/841/2P/ALTO/BULK	CFT13W/GX23/841	50	4100K	7 1/64	10,000	825	740	82
			14687-8	$ ●	PL-S 13W/850/2P/ALTO	CFT13W/GX23/850	10	5000K	7 1/64	10,000	800	720	82
			14688-6	$ ●	PL-S 13W/850/2P/ALTO/BULK	CFT13W/GX23/850	50	5000K	7 1/64	10,000	800	720	82

For the most current product information, go to the e-catalog on **www.philips.com**
Compact fluorescent symbols and footnotes located on page 86


PL-S G23


PL-S GX23


PL-S G23 Base


PL-S GX23 Base

HIGH INTENSITY DISCHARGE LAMPS

MasterColor Ceramic Metal Halide Lamps

Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code Ballast Ref.	Pkg. Qty.‡	Description (401, 407)	LCL (In.)	MOL (In.)	Rated Avg. Life (Hrs.)(351)	Approx. Initial Lumens(352)	Approx. Mean Lumens(353)	CRI	CCT (K)
MASTERCOLOR CERAMIC METAL HALIDE HPS-RETRO WHITE™ (374, 399, 403, 404)															
Satisfies the 2005 NEC for use in open luminaries.◊															
ED18, open or enclosed luminaires; lifetime color stability within ±200K HPS-Retro White™ Lamps Rated for Vertical Operation Only (V = Vertical Operation ± 15°)															
250	ED18	Mog.	13093-0	★ ●	CDM250S50/V/O/4K/ALTO	M168/O/S50	12	G, Clear, Vertical ± 15°	5¾	9¾	20,000	20,500	16,400	85	4000
400	ED18	Mog.	13094-8	★ ●	CDM400S51/V/O/4K/ALTO	M169/O/S51	12	G, Clear, Vertical ± 15°	5¾	9¾	20,000	34,800	27,840	85	4000
HPS-Retro White™ Lamps Rated for Horizontal Operation Only (HOR = Horizontal Operation ± 15°)															
250	ED18	Mog.	14649-8	★ ●	CDM250S50/HOR/4K/ALTO	M168/O/S50	12	G, Clear, Horizontal ± 15°	5¾	9¾	20,000	20,500	16,400	85	4000
400	ED18	Mog.	14650-6	★ ●	CDM400S51/HOR/4K/ALTO	M169/O/S51	12	G, Clear, Horizontal± 15° (403)	5¾	9¾	15,000	34,800	29,600	85	4000
COSMOWHITE (391, 392, 396, 397)															
Enclosed luminaires only; lifetime color stability within ±200K (HOR = Horizontal Operation ± 15°)															
60	T6	PGZ12	15731-3	▢ ★ †	CPO-T WHITE 60W/728	—	12	G, Clear, FadeBlock™, Horiz. ±15°	2½	5½	20,000	6900	6200	70	2800
140	T6	PGZ12	15732-1	▢ ★ †	CPO-T WHITE 140W/728	—	12	G, Clear, FadeBlock™, Horiz. ±15°	2½	5½	20,000	16,500	15,840	70	2800
PROTECTED PULSE START METAL HALIDE "O" RATED LAMPS (372, 374, 391)															
Satisfies the 2005 NEC for use in open luminaries.◊															
Open or enclosed luminaires; pulse start metal halide is designed for operation on only specified ANSI compatible ballasts with metal halide pulse ignitors, offering															
175	ED28	EX39 Excl. Mog.	20755-5	■ ★ †	MP175/BU/PS	M152/M137/O	12	G, Clear, Base Up ± 15° Pulse Start	5	8⅜	14,000	16,000	11,200	62	3500
250	ED28	EX39 Excl. Mog.	20756-3	■ ★ †	MP250/BU/PS	M153/M138/O	12	G, Clear, Base Up ± 15° Pulse Start	5	8⅜	14,000	23,000	16,100	62	3800
320	ED37	EX39 Excl. Mog.	13039-3	■ ★	MP320/BU/PS	M154/M132/O	6	G, Clear, Base Up ± 15° Pulse Start	7	11½	20,000	29,500	20,650	65	3800
			13040-1	■ ★	MP320/C/BU/PS	M154/M132/O	6	G, Coated, Base Up ± 15° Pulse Start	—	11½	20,000	27,200	19,040	65	3700
350	ED37	EX39 Excl. Mog.	39101-1	■ ★	MP350/BU/PS	M131/O	6	G, Clear, Base Up ± 15° Pulse Start	7	11½	20,000	34,000	23,800	64	4000
			39102-9	■ ★	MP350/C/BU/PS	M131/O	6	G, Coated, Base Up ± 15° Pulse Start	—	11½	20,000	31,000	21,700	67	3700
400	ED37	EX39 Excl. Mog.	13334-8	■ ★	MP400/BU/PS	M155/M128/M135/O	6	G, Clear, Base Up ± 15° Pulse Start	7	11½	20,000	40,000	28,000	65	3800
			13335-5	■ ★	MP400/C/BU/PS	M155/M128/M135/O	6	G, Coated, Base Up ± 15° Pulse Start	—	11½	20,000	36,000	23,400	68	3600
750	BT37	EX39 Excl. Mog.	20757-1	■ ★ †	MP750/BU/PS	M149/O	6	G, Clear, Base Up ± 15° Pulse Start	—	11½	12,000	70,000	49,000	70	3800

◊ The 2005 NEC states that luminaires that use a metal halide lamp shall be provided with either a containment barrier that encloses the lamp (historically referred to as an enclosed luminaire) or shall be provided with a means, typically a special lampholder, that will only accept ANSI Type-O metal halide lamp. (Exception—this requirement will not apply to open luminaires with thick-glass parabolic reflector PAR lamps.) For more information regarding use of Type-O, S, and E metal halide systems, please refer to the NEMA white paper on this subject that is freely available at www.nema.org

For the most current product information, go to the e-catalog on **www.philips.com**

HID symbols and footnotes located on page 139

ED18
Mog.

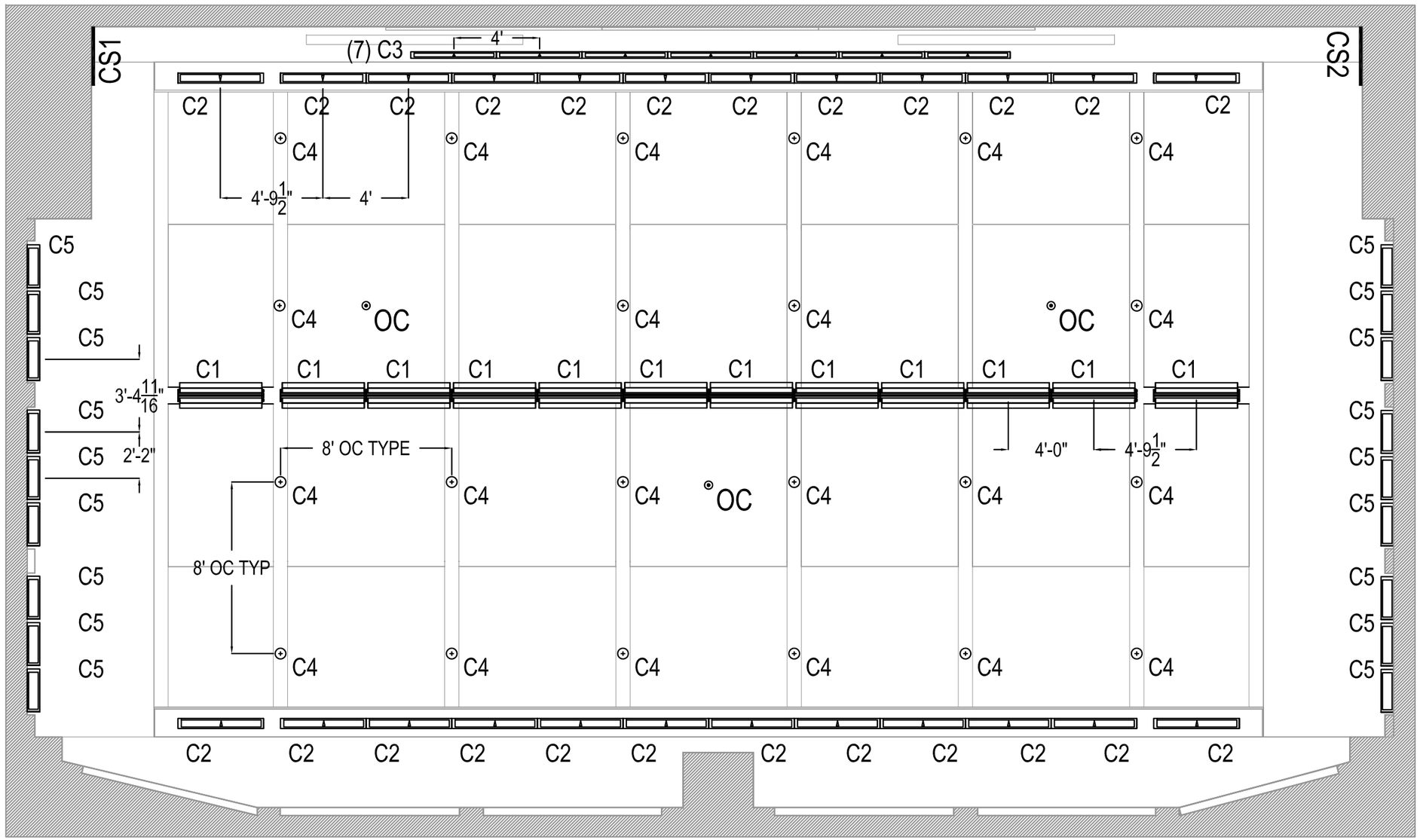
CosmoWhite T6
PGZ12

ED28
EX-39

ED37
EX-39

BT37
EX-39

Appendix A | Lighting Drawings and Details



Tiered Classroom Circuiting Diagram

Scale: 3/16" = 1'

DRAWING BY: BS

SUBMITTED FOR:
PROF. HOUSER/ DANNERTH
AE 482
4/7/2009

GATEWAY COMMUNITY COLLEGE

FRONTAGE RD.
AND CHURCH ST.
NEW HAVEN, CT.

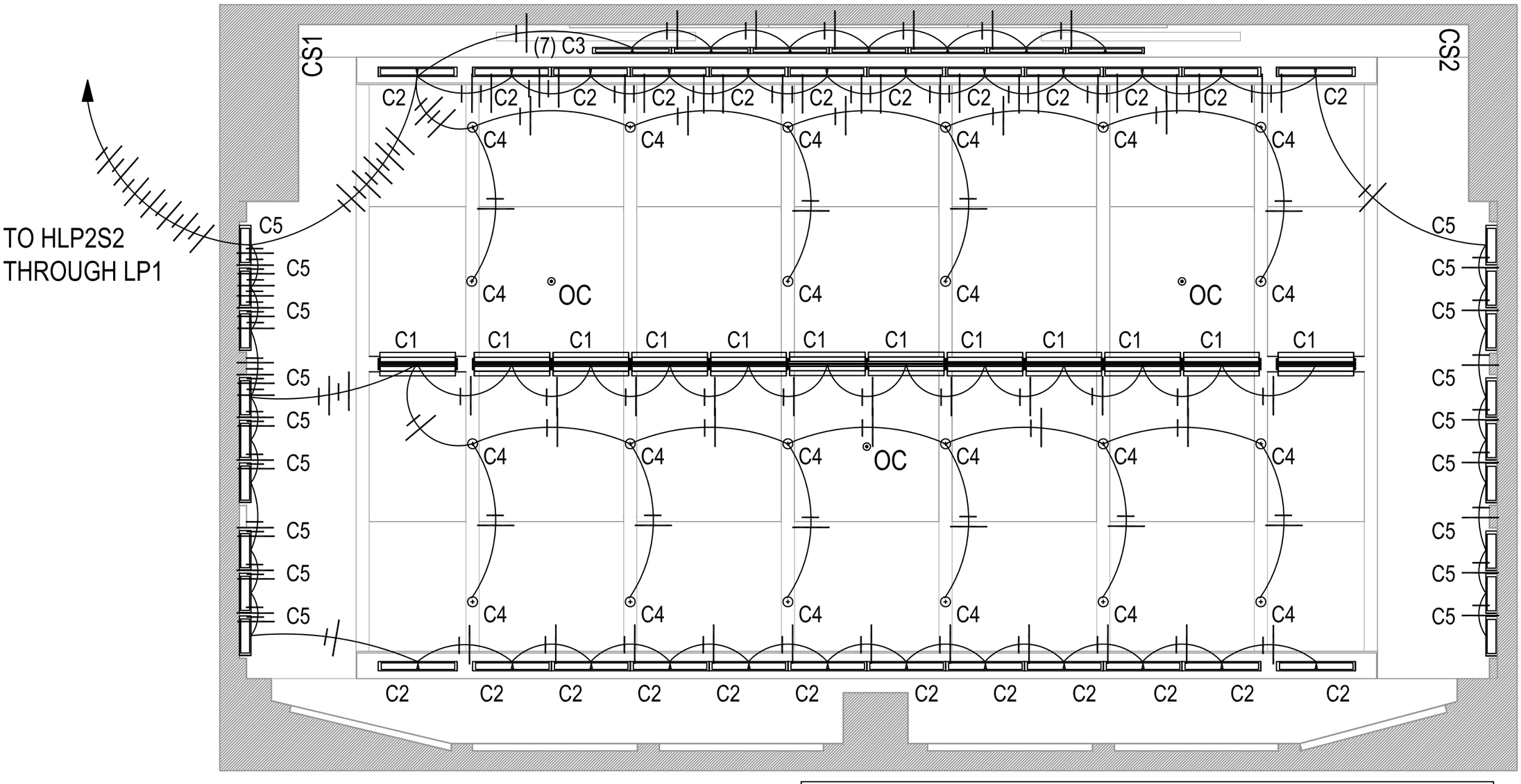
TIERED CLASSROOM CIRCUITING PLAN

EL-2.1

LUTRON DIMMING PANEL
TYPE:
CGP8-277-4T6-ML20-CGP344
8CCT GP DIMMING PANEL

3 PHASE 4W 60A

HLP2S2



Tiered Classroom Circuiting Diagram

Scale: 1/8" = 1'

Notes:
Power is supplied to all luminaires through a HOT wire. Switching is done through a DALI system and therefore is not shown on this diagram. Please see Control Diagram for control station specification, and other equipment specification.

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SUBMITTED FOR:
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AE 482
4/7/2009

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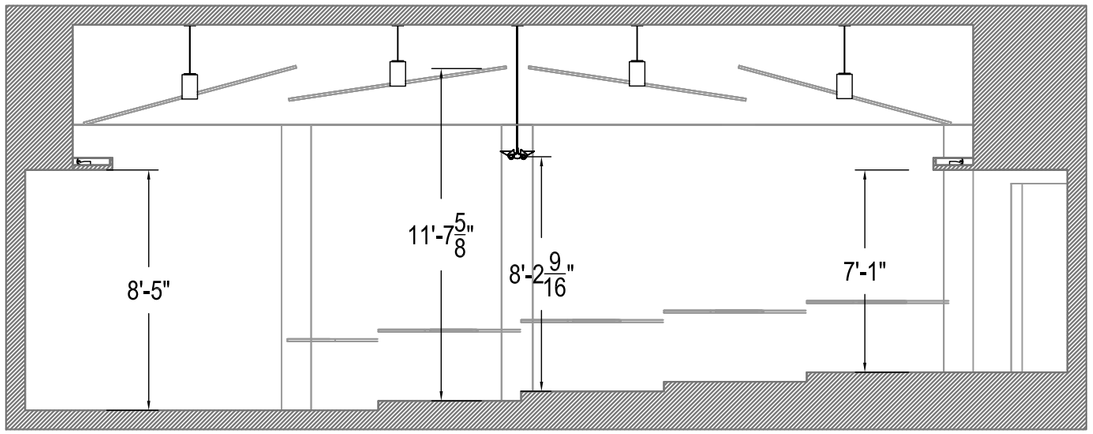
AND CHURCH ST.
NEW HAVEN, CT.

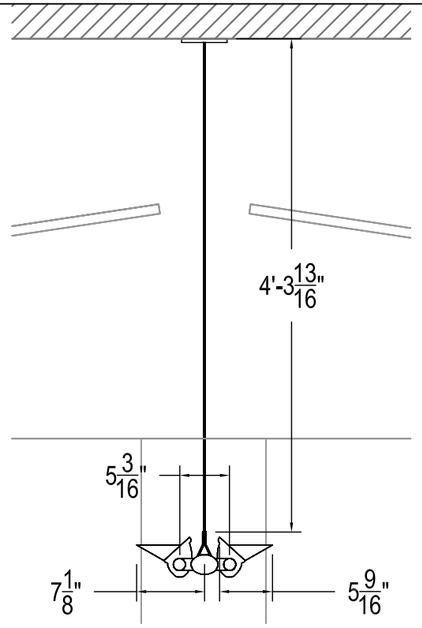
TIERED CLASSROOM CIRCUITING PLAN

EP-2.2



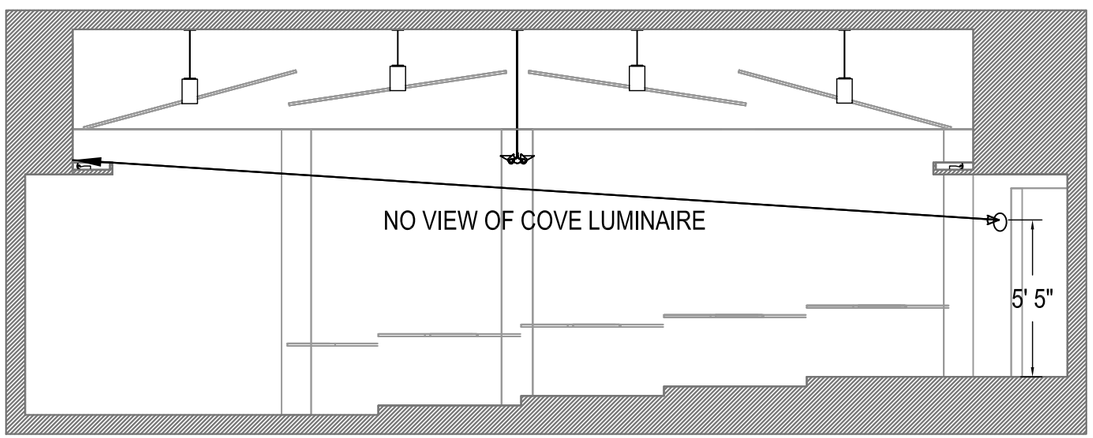
Tiered Classroom North Section

Scale: 1/4" = 1'



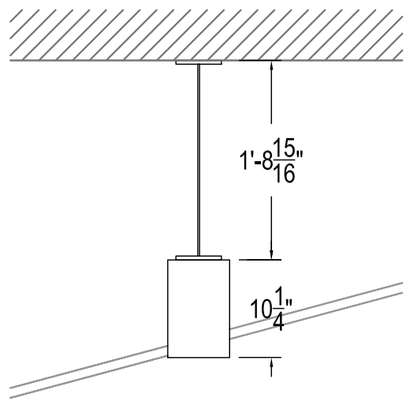
C1 Detail

Scale: 1/4" = 1'



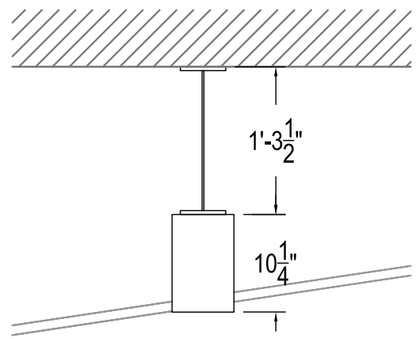
Cove Glare Study

Scale: 1/4" = 1'



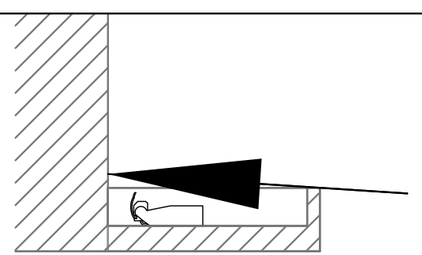
C4 Detail 1

Scale: 1/4" = 1'



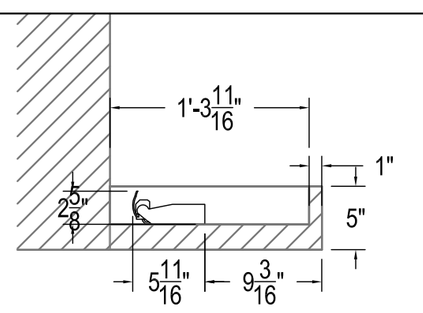
C4 Detail 2

Scale: 1" = 1'



Cove Glare Study

Scale: 1" = 1'



C2 Detail

Scale: 1" = 1'

DRAWING BY: **BS**

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3/20/2009

GATEWAY COMMUNITY COLLEGE

FRONTAGE RD.

AND CHURCH ST.

NEW HAVEN, CT.

TIERED CLASSROOM LUMINAIRE DETAILS

EL-451

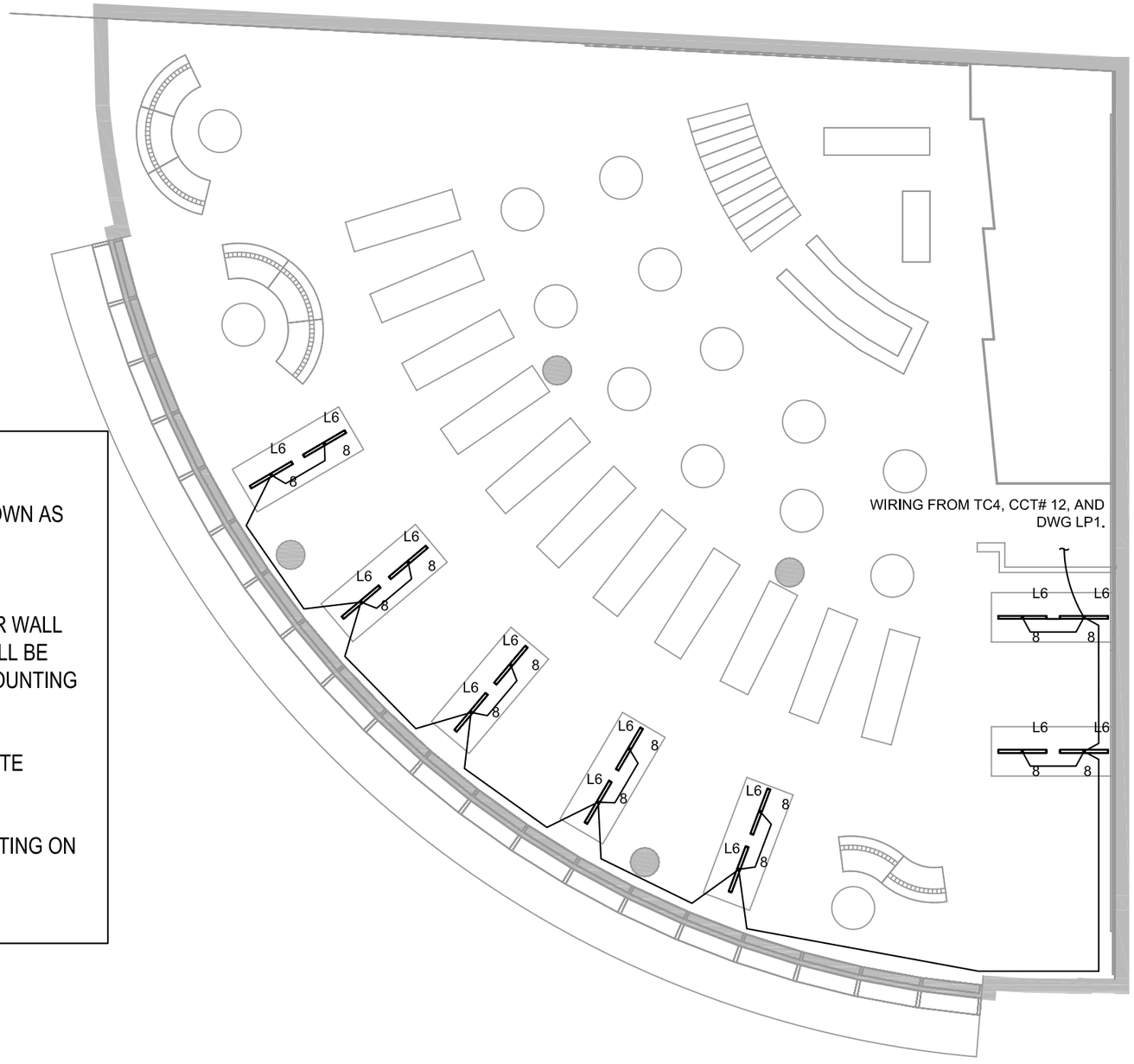
NOTES:

ALL WIRING FOR LUMINAIRE TYPE L6 IS SHOWN AS SURFACE MOUNTED.

WIRING SHALL BE CONCEALED WITHIN ARCHITECTURAL LEDGE AROUND EXTERIOR WALL SIMILAR TO RECEPTACLE WIRING, AND SHALL BE SURFACE MOUNTED TO THE FLOOR AND MOUNTING HARDWARE ON TABLES WHEN NEEDED.

ELECTRICAL CONTRACTOR WILL COORDINATE WIRING AROUND OPENINGS.

CCT #S SHOWN CORRESPOND WITH CIRCUITING ON DIMMING PANEL AND NOT PANELBOARD



Library First Floor Power Plan

Scale: 3/32" = 1'

DRAWING BY: **BS**

SUBMITTED FOR:
PROF. HOUSER/ DANNERTH
AE 482
3/20/2009

GATEWAY COMMUNITY COLLEGE

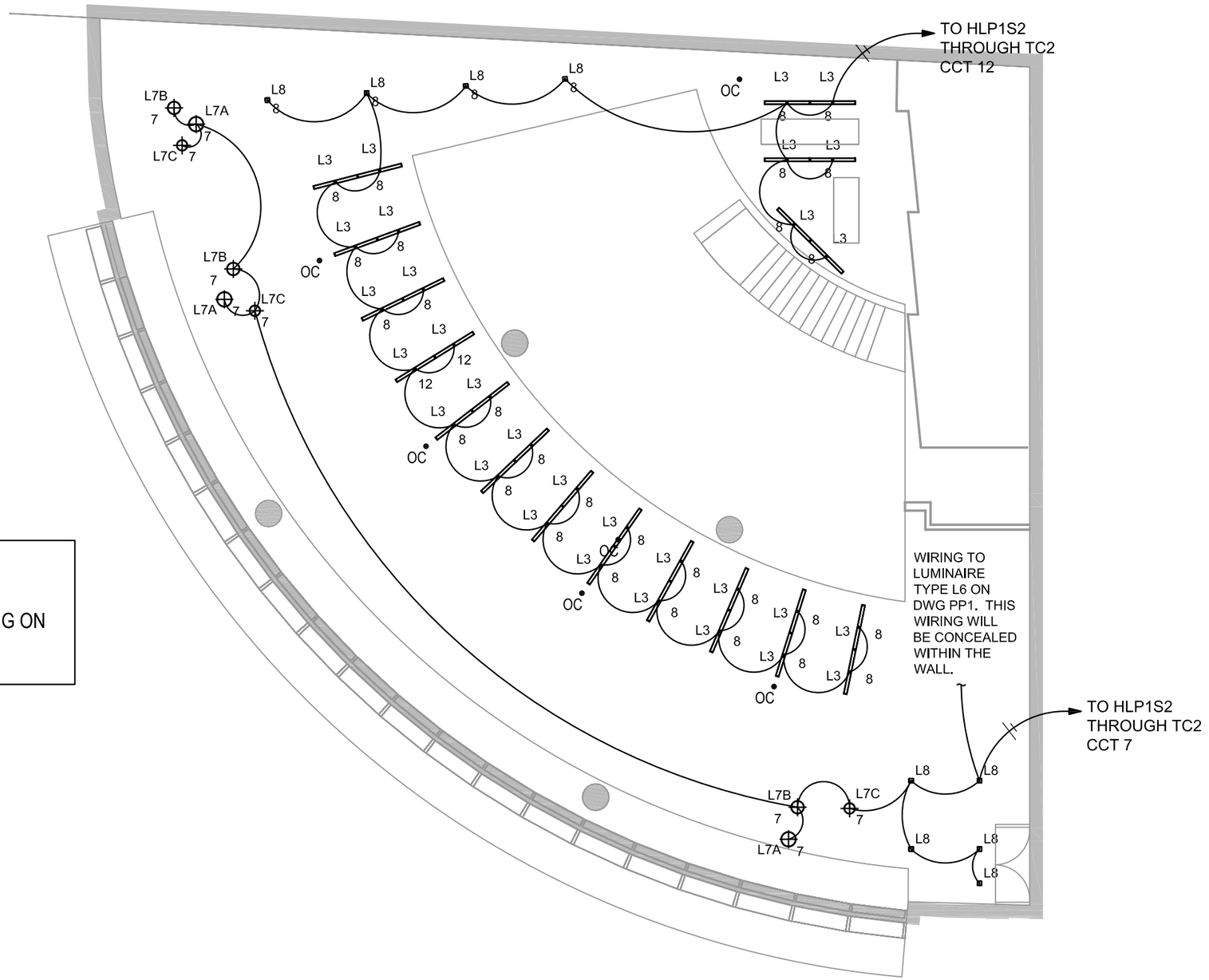
FRONTAGE RD.

AND CHURCH ST.

NEW HAVEN, CT.

LIBRARY FIRST FLOOR POWER PLAN

EP-1



NOTES:

CCT #S SHOWN CORRESPOND WITH CIRCUITING ON DIMMING PANEL AND NOT PANELBOARD

Library First Floor Lighting Plan

Scale: 3/32" = 1'

DRAWING BY: **BS**

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3/20/2009

GATEWAY COMMUNITY COLLEGE

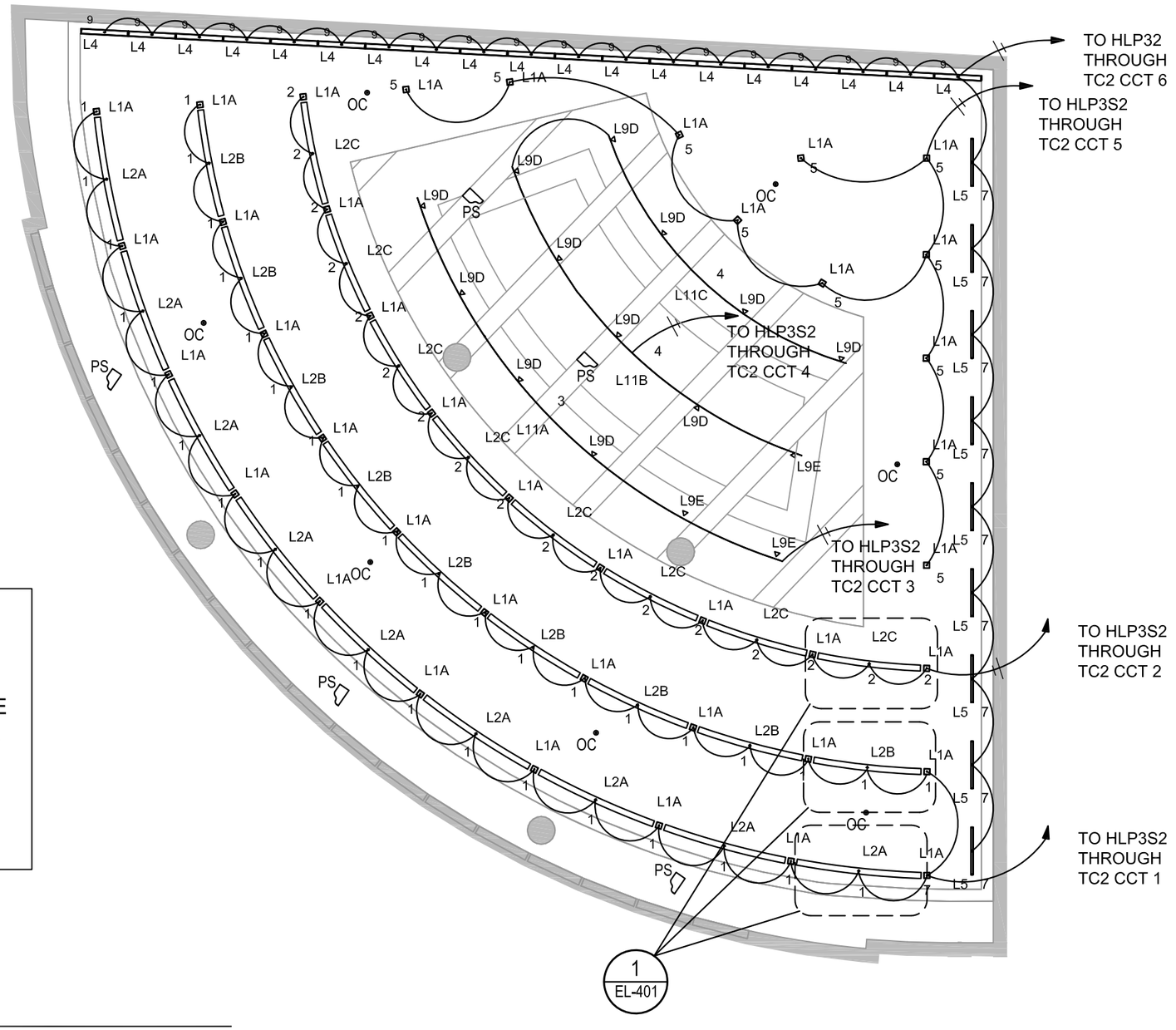
FRONTAGE RD.

AND CHURCH ST.

NEW HAVEN, CT.

LIBRARY FIRST FLOOR LIGHTING PLAN

EL-1.1



NOTES:

L11 TYPE LUMINAIRE WILL INCORPORATE REMOTE TRANSFORMERS ABOVE THE CEILING TO CONVERT THE 277 V SUPPLY TO 120V. (2) 300W TRANSFORMERS WILL BE USED FOR EACH L11A, B, AND C RUN.

CCT #S SHOWN CORRESPOND WITH CIRCUITING ON DIMMING PANEL AND NOT PANELBOARD

Library Third Floor Lighting Plan

Scale: 3/32 " = 1'

DRAWING BY:
BS

SUBMITTED FOR:
PROF. HOUSER/ DANNERTH
AE 482
3/20/2009

GATEWAY COMMUNITY COLLEGE

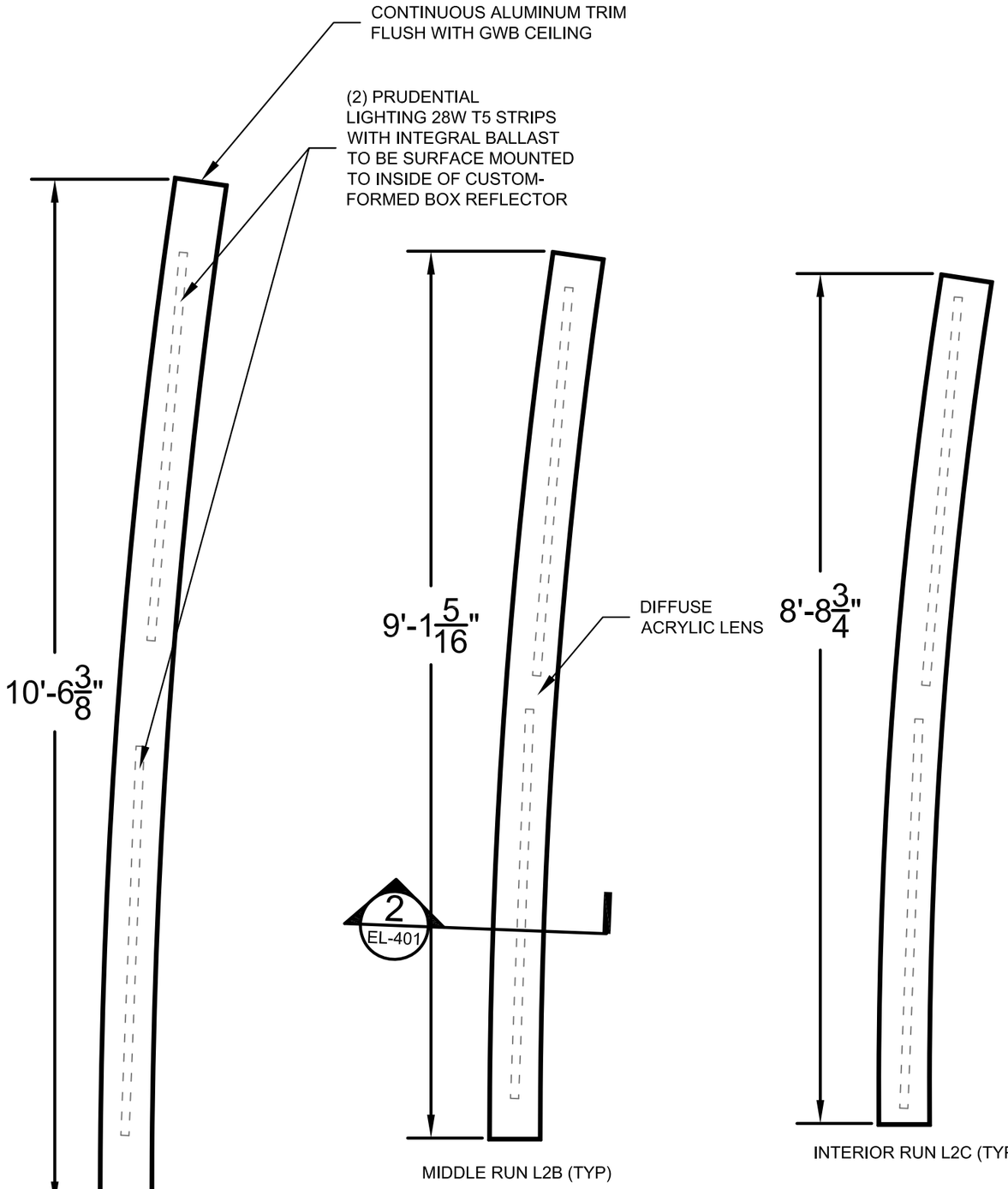
FRONTAGE RD.

AND CHURCH ST.

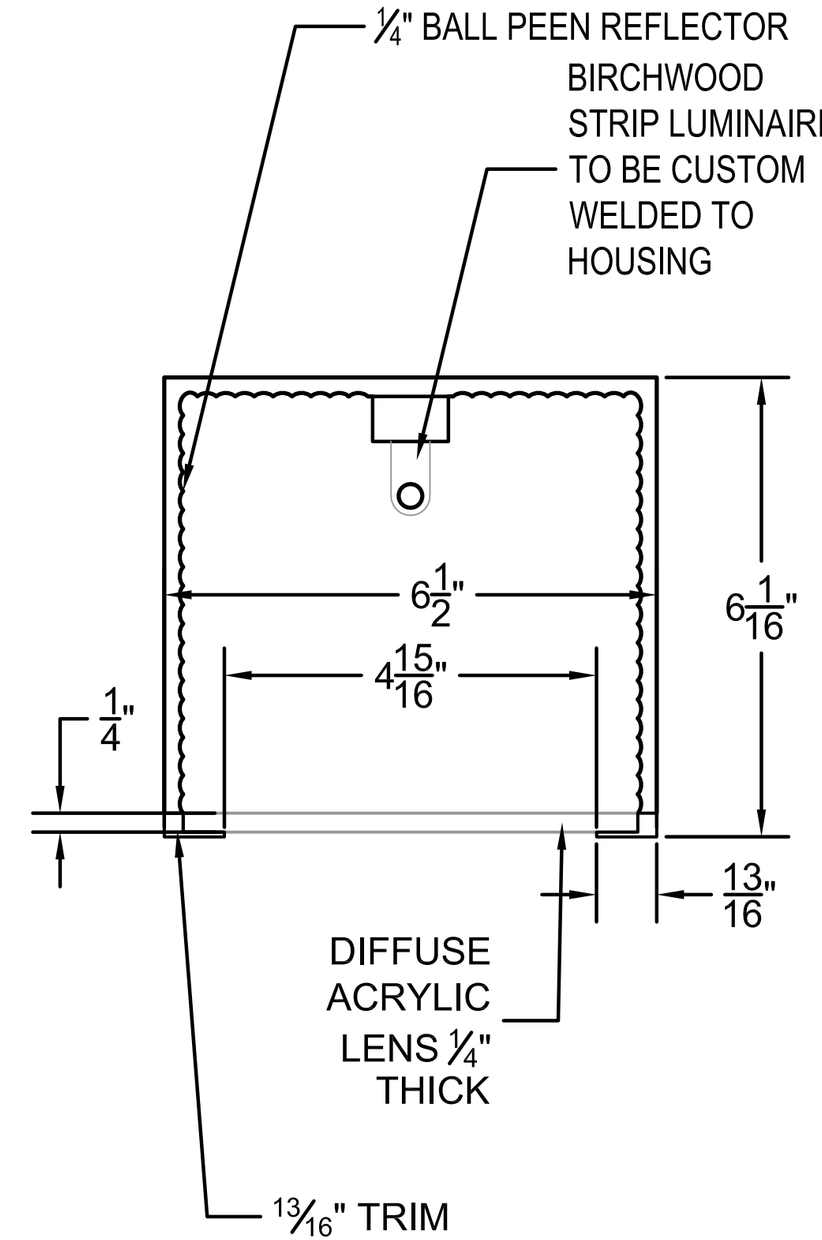
NEW HAVEN, CT.

LIBRARY THIRD FLOOR LIGHTING PLAN

EL-3.1



① Type L2 Luminaires
Scale: 3/4" = 1'



② Typical Section Cut Type L2
Scale: 3/4" = 1'

DRAWING BY: BS

SUBMITTED FOR:
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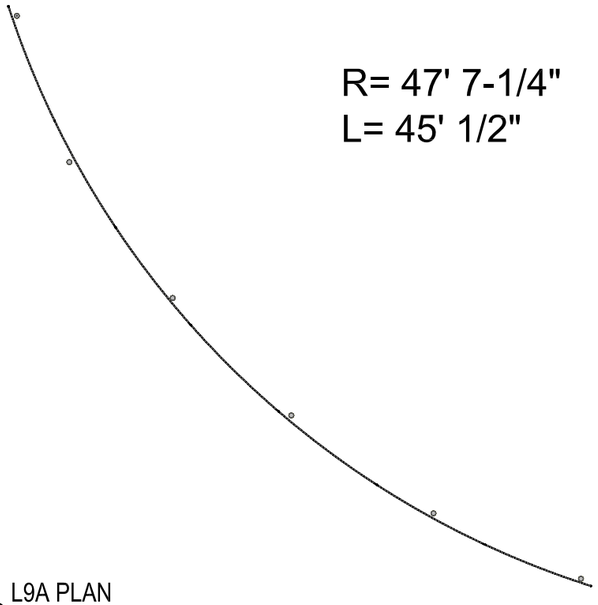
AE 482
3/20/2009

GATEWAY COMMUNITY COLLEGE

FRONTAGE RD.
AND CHURCH ST.
NEW HAVEN, CT.

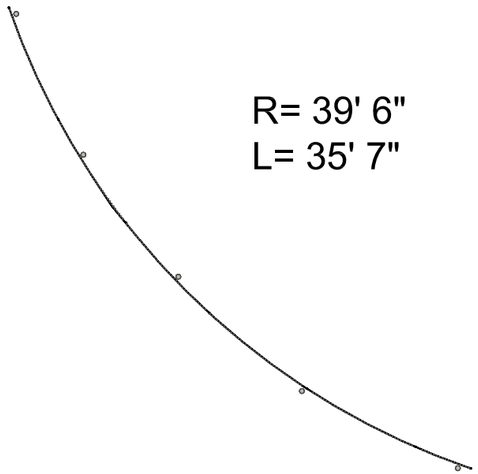
LIBRARY CURVED LUMINAIRE DETAILS

EL-452



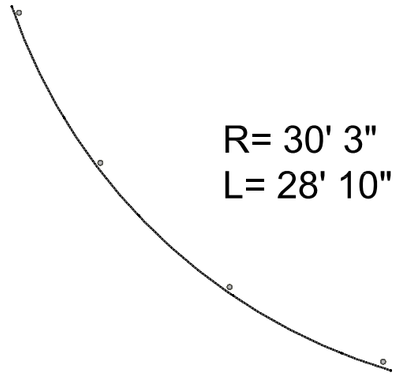
R= 47' 7-1/4"
L= 45' 1/2"

L9A PLAN
Scale: 1/8" = 1'



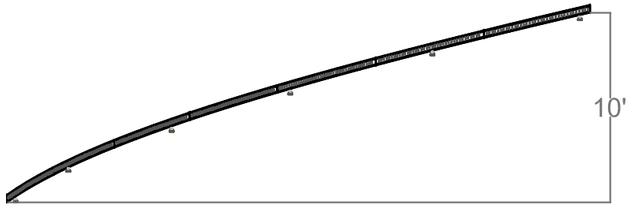
R= 39' 6"
L= 35' 7"

L9B PLAN
Scale: 1/8" = 1'

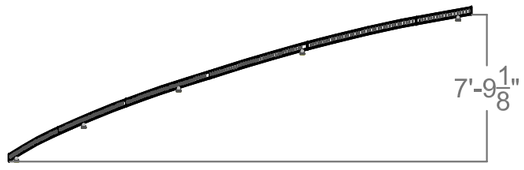


R= 30' 3"
L= 28' 10"

L9C PLAN
Scale: 1/8" = 1'

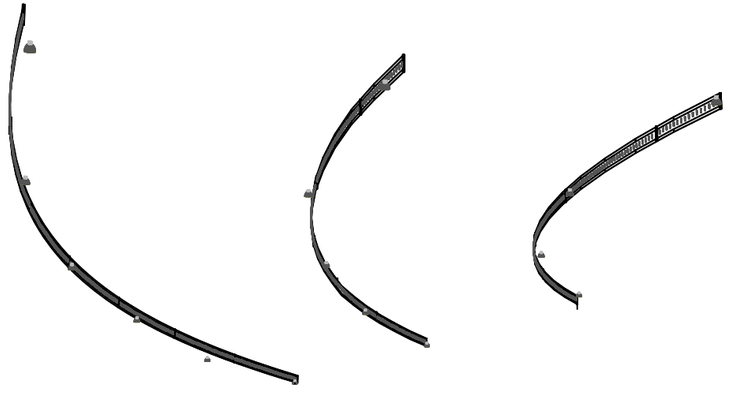


L9A ELEVATION
Scale: 1/8" = 1'

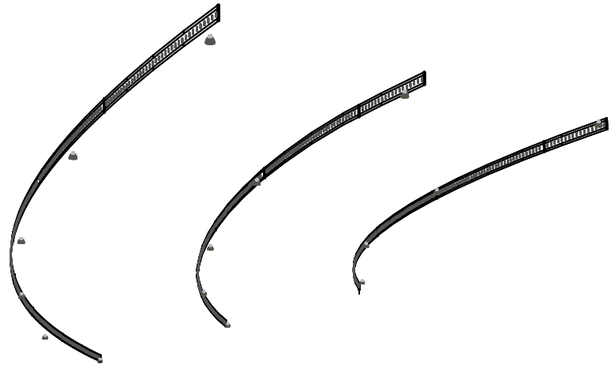


L9B ELEVATION
Scale: 1/8" = 1'

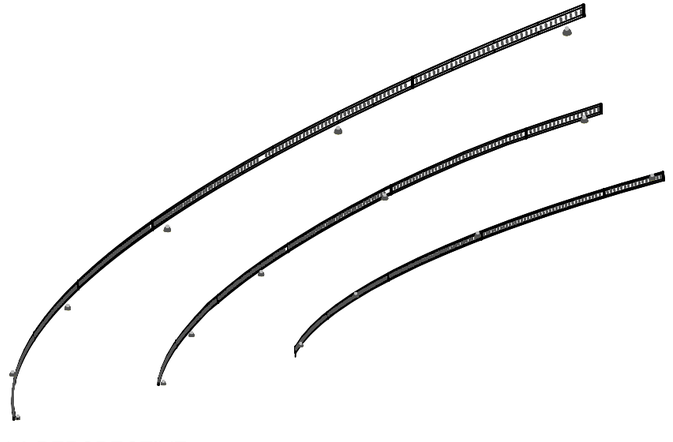
L9C ELEVATION
Scale: 1/8" = 1'



L9 PERSPECTIVE
Scale: 1/8" = 1'



L9 PERSPECTIVE
Scale: 1/8" = 1'



L9 PERSPECTIVE
Scale: 1/8" = 1'

DRAWING BY:
BS

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AE 482
3/20/2009

GATEWAY COMMUNITY COLLEGE

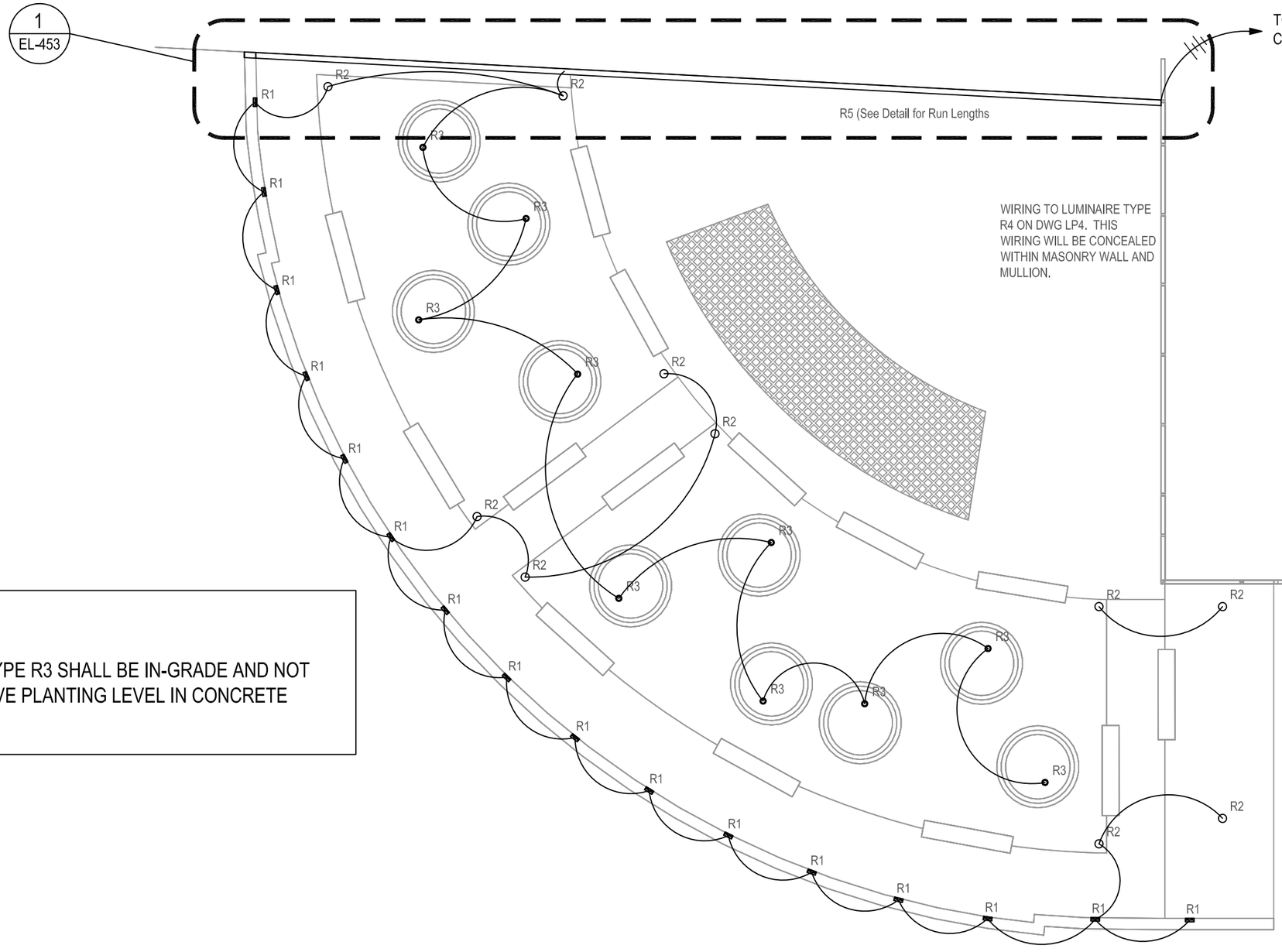
FRONTAGE RD.

AND CHURCH ST.

NEW HAVEN, CT.

LIBRARY CUSTOM TRACK
L9A, L9B, AND L9C

EL-453



NOTES:

LUMINAIRE TYPE R3 SHALL BE IN-GRADE AND NOT EXTEND ABOVE PLANTING LEVEL IN CONCRETE PLANTERS.

Roof Garden Power Plan

Scale: 3/32" = 1'

DRAWING BY: BS

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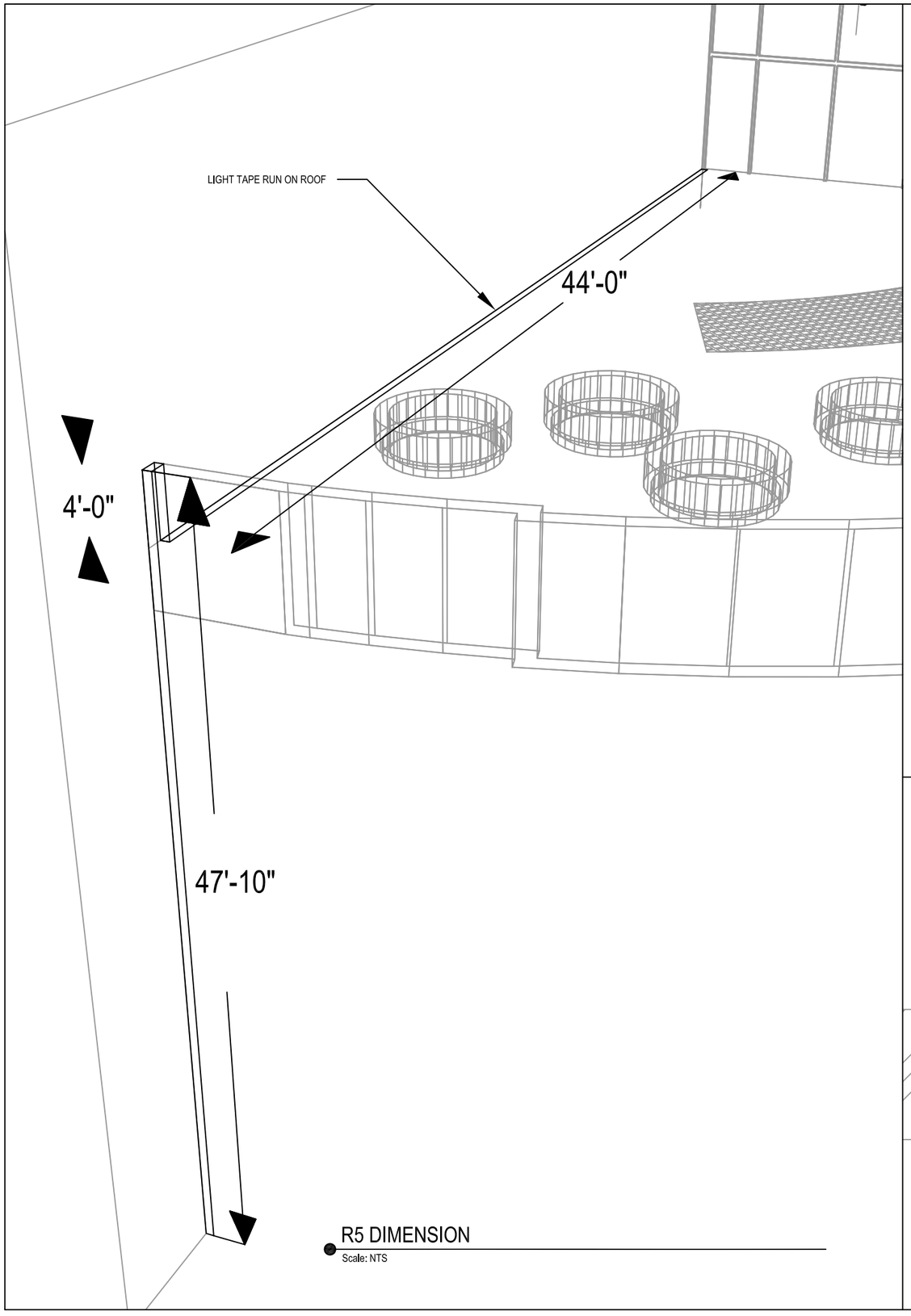
3/5/2009

GATEWAY COMMUNITY COLLEGE

FRONTAGE RD.
AND CHURCH ST.
NEW HAVEN, CT.

ROOF GARDEN POWER PLAN

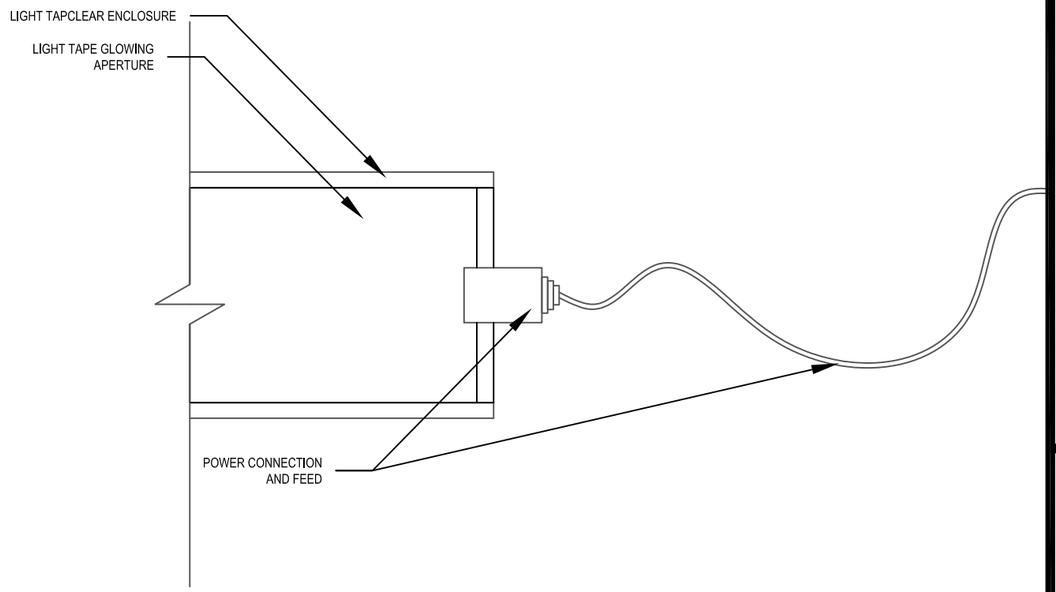
EP-4.1



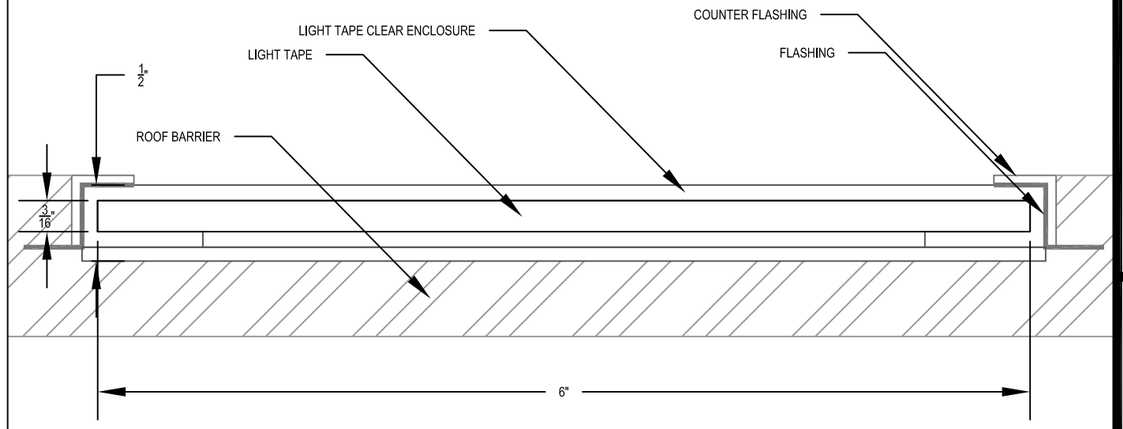
R5 DIMENSION
Scale: NTS

NOTES:

LUMINAIRE TYPE R3 SHALL BE IN-GRADE AND NOT EXTEND ABOVE PLANTING LEVEL IN CONCRETE PLANTERS.



R5 DETAIL PLAN
Scale: 3" = 1'



R5 DETAIL CROSS SECTION
Scale: 1" = 1'

DRAWING BY: BS

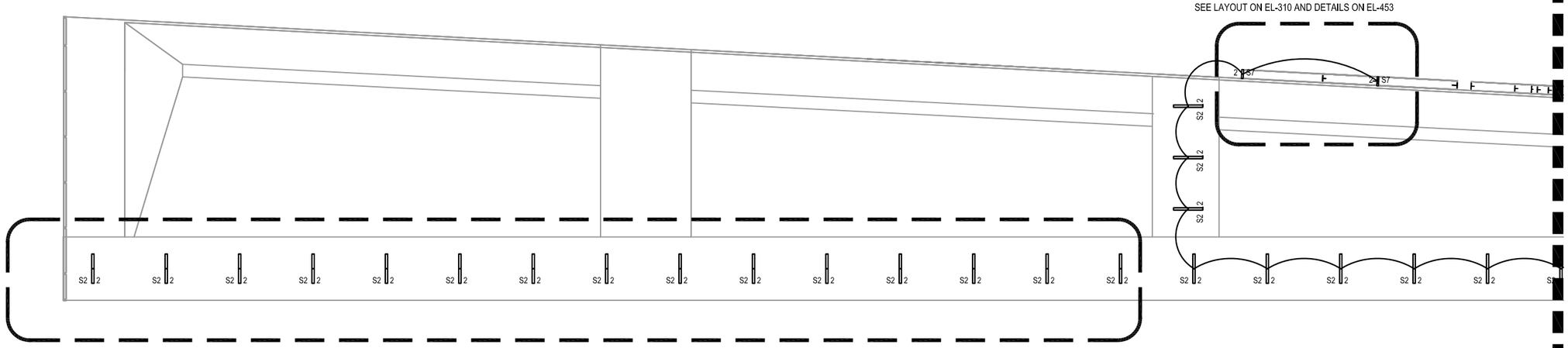
SUBMITTED FOR: PROF. HOUSER
AE 482
3/5/2009

GATEWAY COMMUNITY COLLEGE

FRONTAGE RD.
AND CHURCH ST.
NEW HAVEN, CT.

LIGHT TAPE DTEAIL

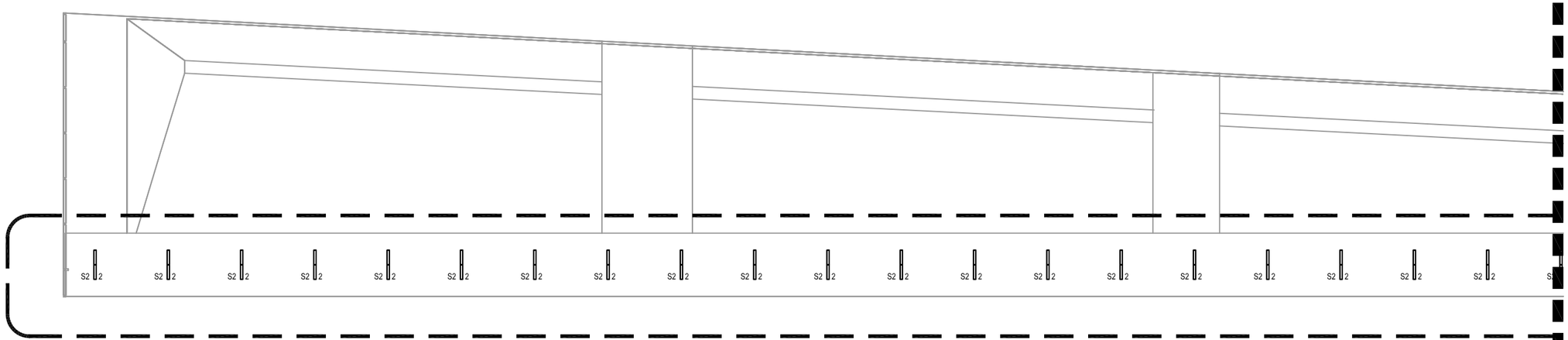
EL-454



LUMINAIRES NOT INCLUDED IN SCOPE

Student Gathering Second Floor Lighting Plan

Scale: 1/16" = 1'



LUMINAIRES NOT INCLUDED IN SCOPE

Student Gathering First Floor Lighting Plan

Scale: 1/16" = 1'

DRAWING BY: **BS**

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GATEWAY COMMUNITY COLLEGE

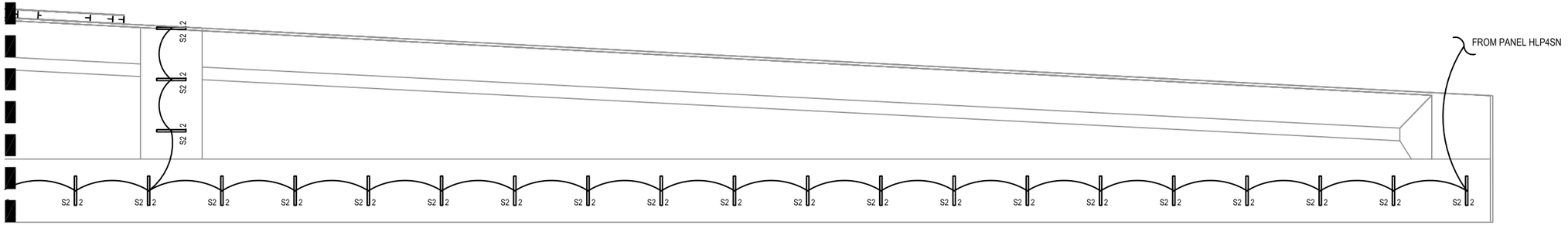
FRONTAGE RD.

AND CHURCH ST.

NEW HAVEN, CT.

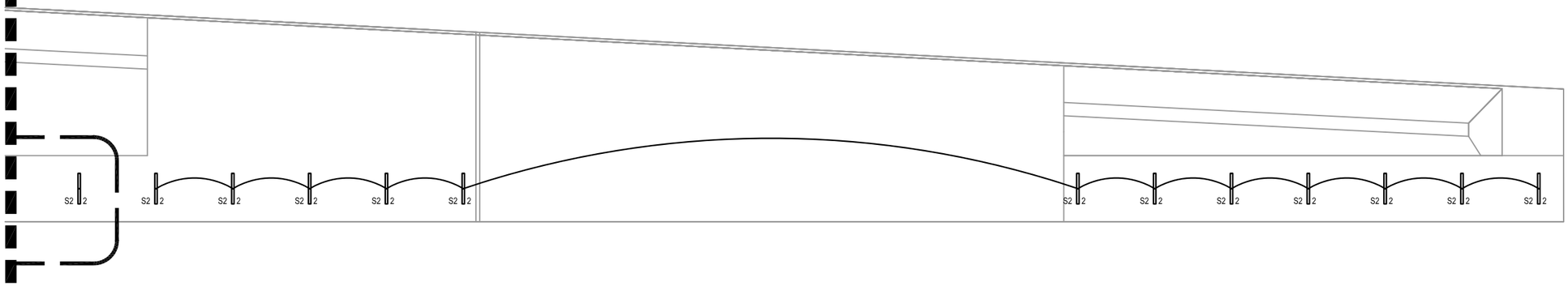
STUDENT GATHERING
FIRST AND SECOND FLOOR
LIGHTING PLANS

EL-1.2A



Student Gathering First Floor Lighting Plan

Scale: 1/16" = 1'



LUMINAIRES NOT INCLUDED IN SCOPE

Student Gathering Second Floor Lighting Plan

Scale: 1/16" = 1'

DRAWING BY:
BS

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3/20/2009

GATEWAY COMMUNITY COLLEGE

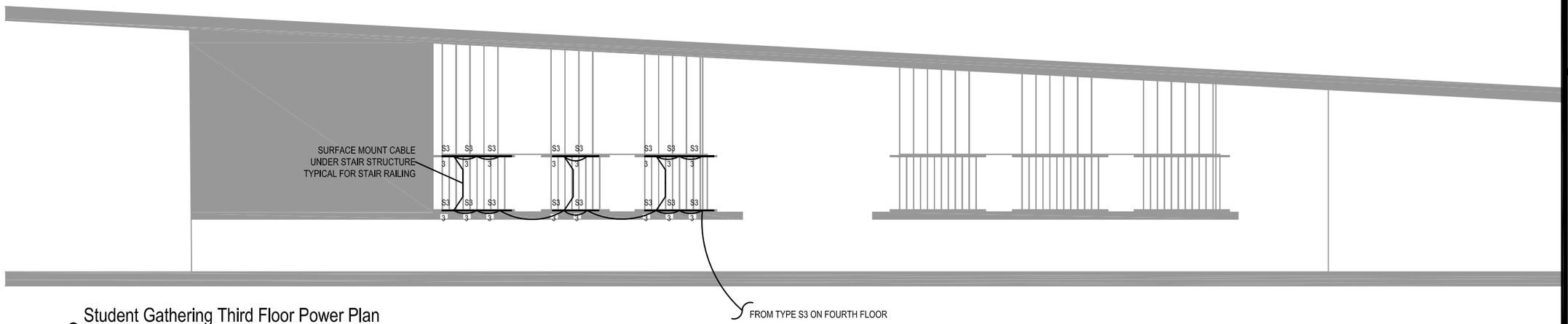
FRONTAGE RD.

AND CHURCH ST.

NEW HAVEN, CT.

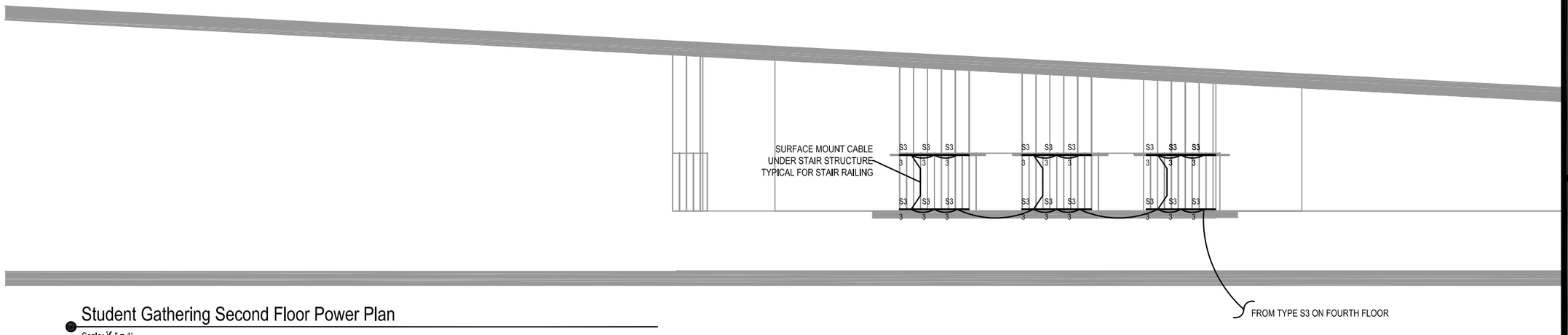
STUDENT GATHERING
FIRST AND SECOND FLOOR
LIGHTING PLANS

EL-1.2B



Student Gathering Third Floor Power Plan

Scale: 1/16" = 1'



Student Gathering Second Floor Power Plan

Scale: 1/16" = 1'

DRAWING BY:

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GATEWAY COMMUNITY COLLEGE

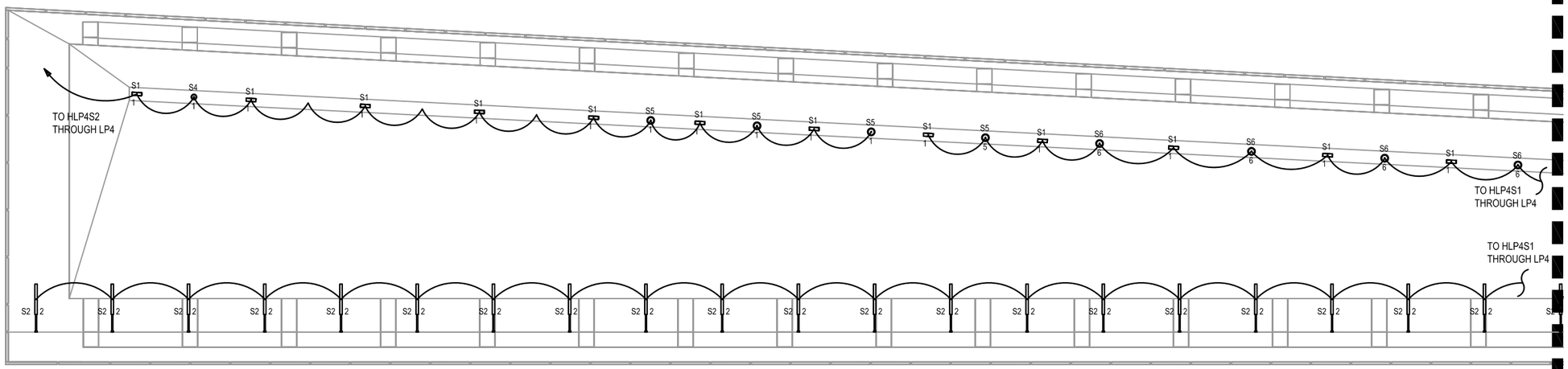
FRONTAGE RD.

AND CHURCH ST.

NEW HAVEN, CT.

STUDENT GATHERING
SECOND AND THIRD
FLOOR POWER PLANS

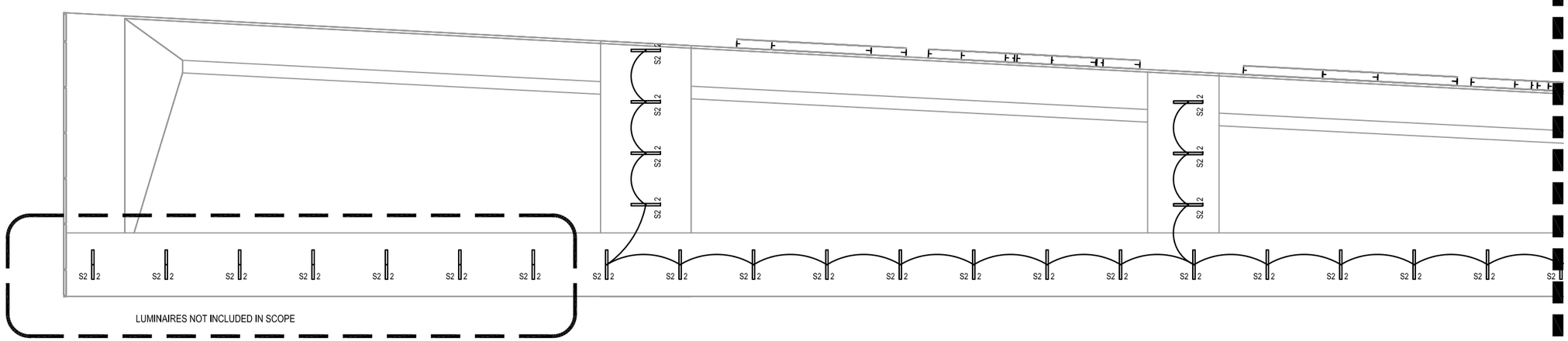
EP-2.3



Student Gathering Fourth Floor Lighting Plan

Scale: 1/16" = 1'

CUT LINE



Student Gathering Third Floor Lighting Plan

Scale: 1/16" = 1'

DRAWING BY:
BS

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3/20/2009

GATEWAY COMMUNITY COLLEGE

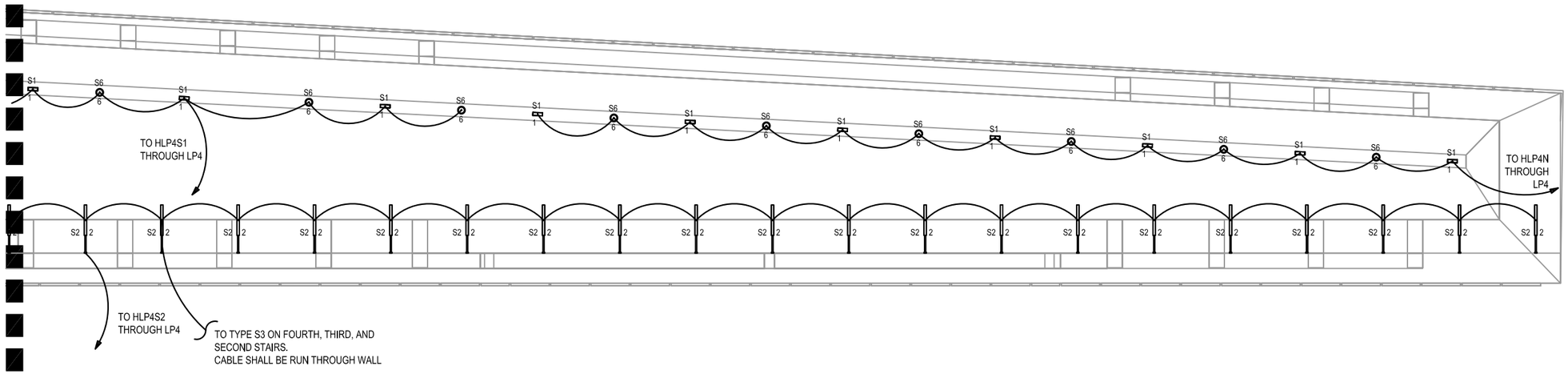
FRONTAGE RD.

AND CHURCH ST.

NEW HAVEN, CT.

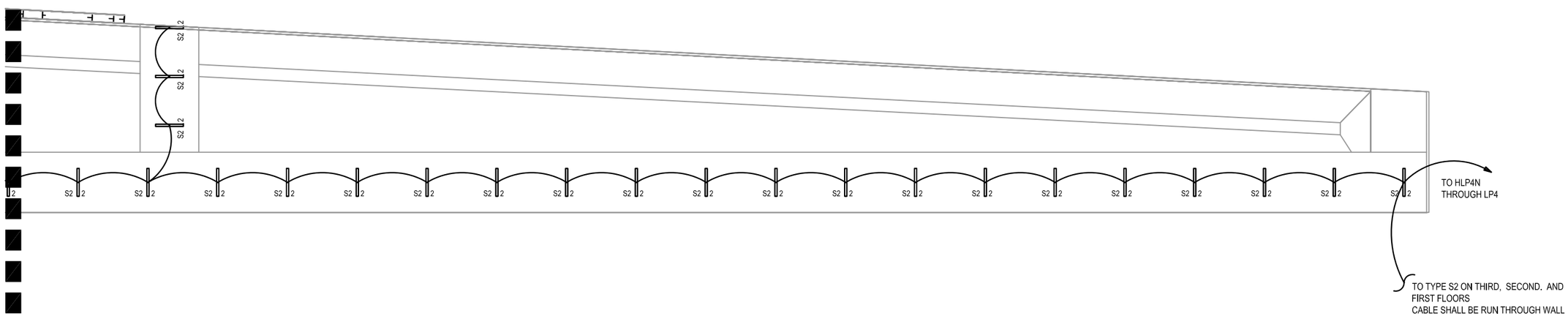
STUDENT GATHERING
THIRD AND FOURTH FLOOR
LIGHTING PLANS

EL-3.4A



Student Gathering Fourth Floor Lighting Plan

Scale: 1/16" = 1'



Student Gathering Third Floor Lighting Plan

Scale: 1/16" = 1'

DRAWING BY:

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GATEWAY COMMUNITY COLLEGE

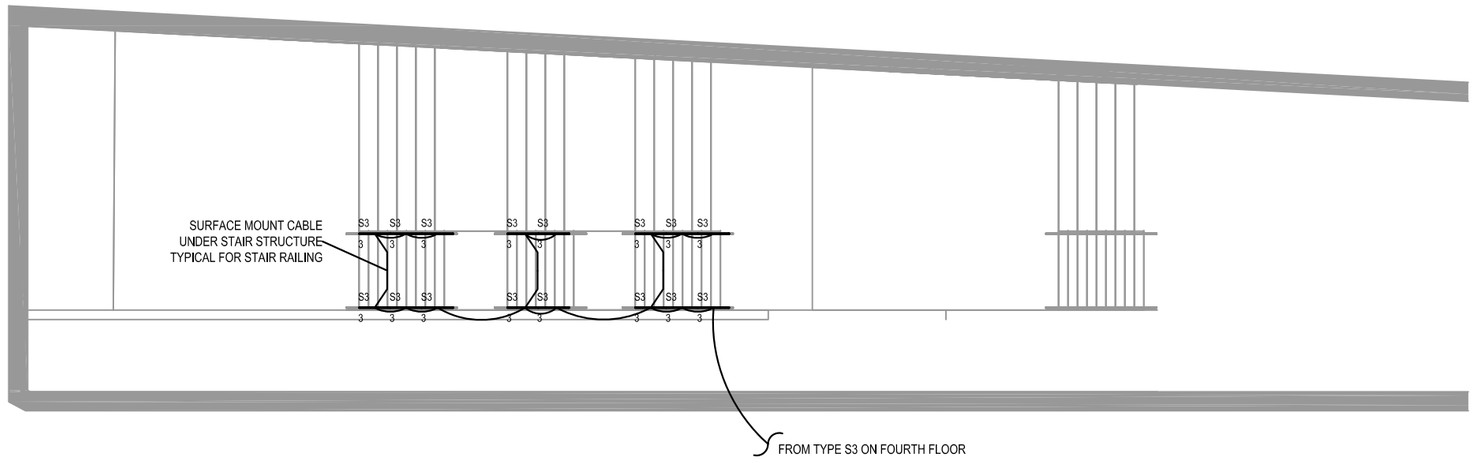
FRONTAGE RD.

AND CHURCH ST.

NEW HAVEN, CT.

STUDENT GATHERING
THIRD AND FOURTH FLOOR
LIGHTING PLANS

EL-3.4B



Student Gathering Fourth Floor Power Plan

Scale: 1/16" = 1'

DRAWING BY:
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SUBMITTED FOR:
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3/20/2009

GATEWAY COMMUNITY COLLEGE

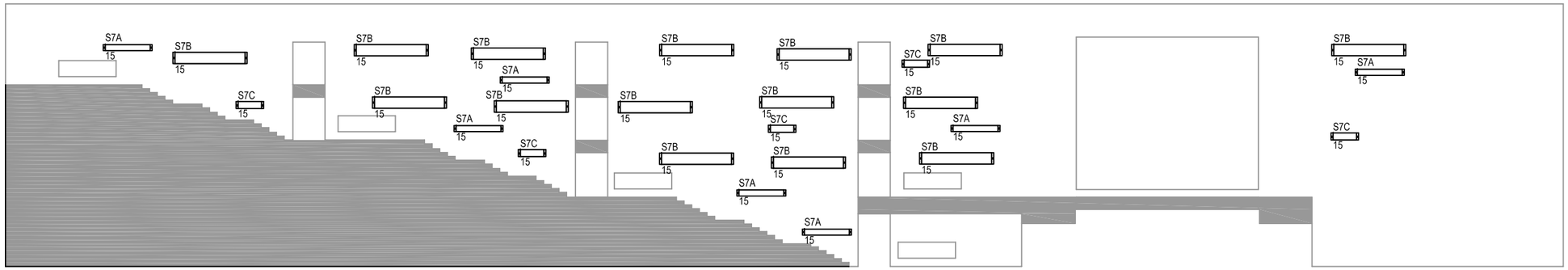
FRONTAGE RD.

AND CHURCH ST.

NEW HAVEN, CT.

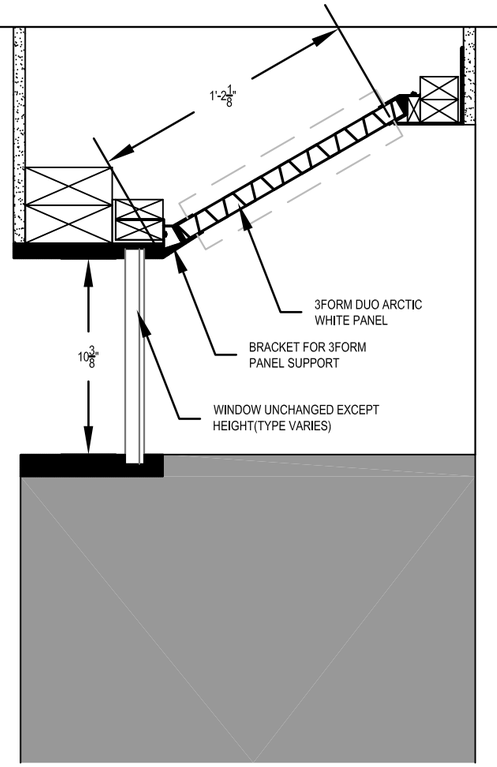
STUDENT GATHERING
FOURTH FLOOR POWER
PLAN

EP-4.2



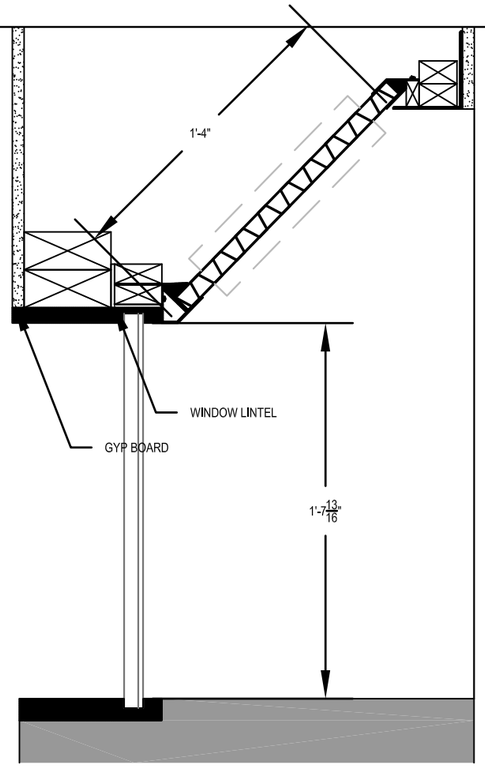
Student Gathering West Section Lighting Plan

Scale: 1/16" = 1'



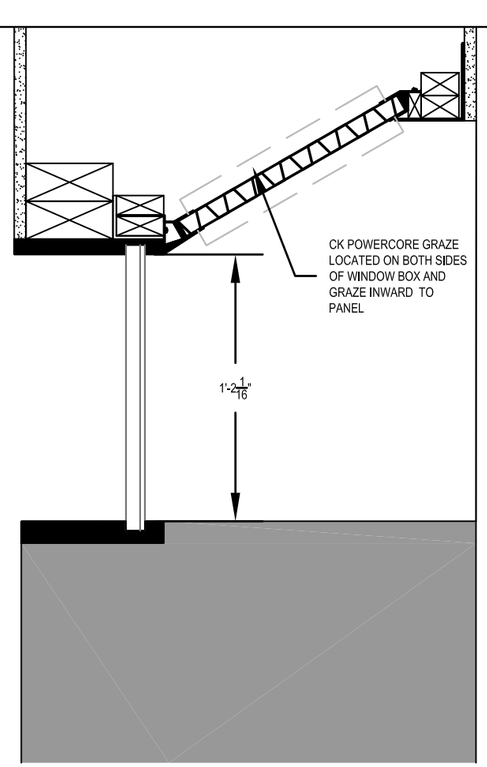
Type S7A Detail

Scale: 1-1/2" = 1'



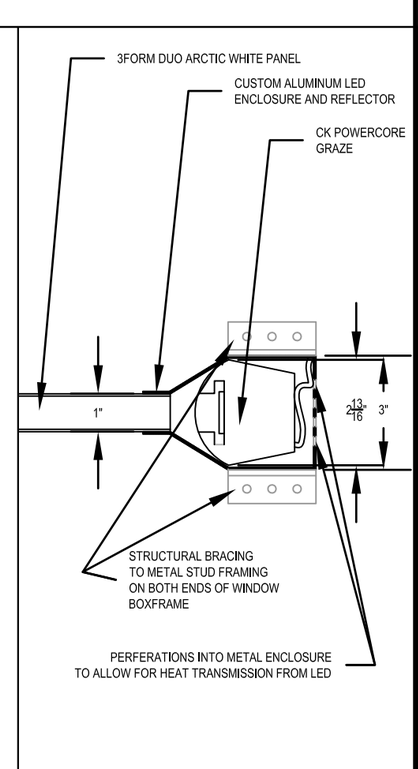
Type S7B Detail

Scale: 1-1/2" = 1'



Type S7C Detail

Scale: 1-1/2" = 1'



Typical End LED Enclosure Detail

Scale: 3" = 1'

DRAWING BY: **BS**

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3/20/2009

GATEWAY COMMUNITY COLLEGE

FRONTAGE RD.

AND CHURCH ST.

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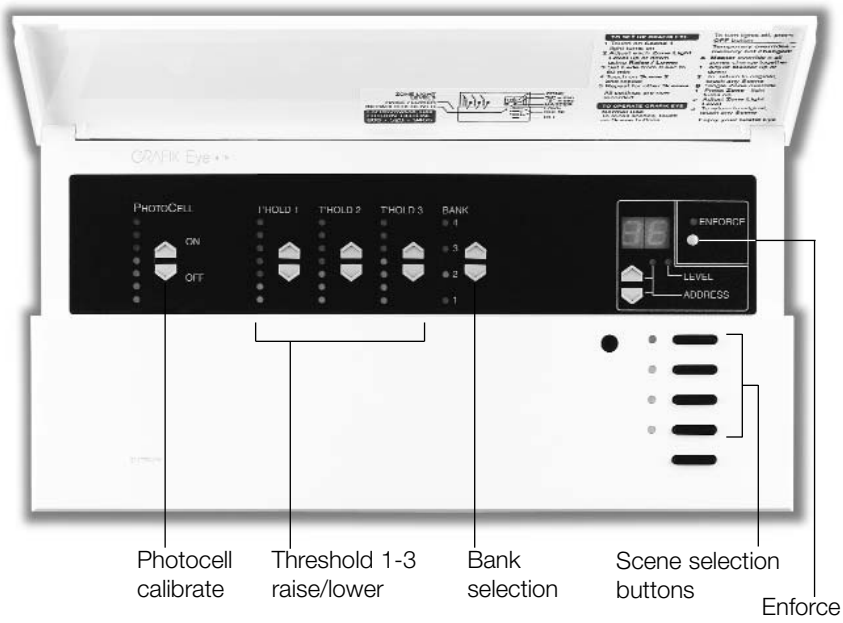
STUDENT GATHERING FOURTH FLOOR POWER PLAN

EL-455

Appendix A | Control Equipment

GRX-DACPI Automatic Daylighting Control

Cover (shown open)



- Thresholds define ranges. Ranges call scenes.
- The GRX-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

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 in GRAFIK Eye Control Units 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 Eye 3000 and 4000 Series Control Units. Selects scenes in just one Control Unit or a group of up to eight Control Units.

Functionality

- In the GRX-DACPI Daylighting Control, thresholds are set to define different ranges of daylight.
- In the Control Unit(s), scenes are set up to complement these levels.
- The GRX-DACPI monitors ambient light, automatically selecting scenes as daylight levels cross thresholds.
- The GRX-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 GRX-DACPI uses.
- The GRX-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).

Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20

Specifications

Power

Low-voltage Class 2 (PELV)
Operating Voltage: 12/24 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 GRX-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.

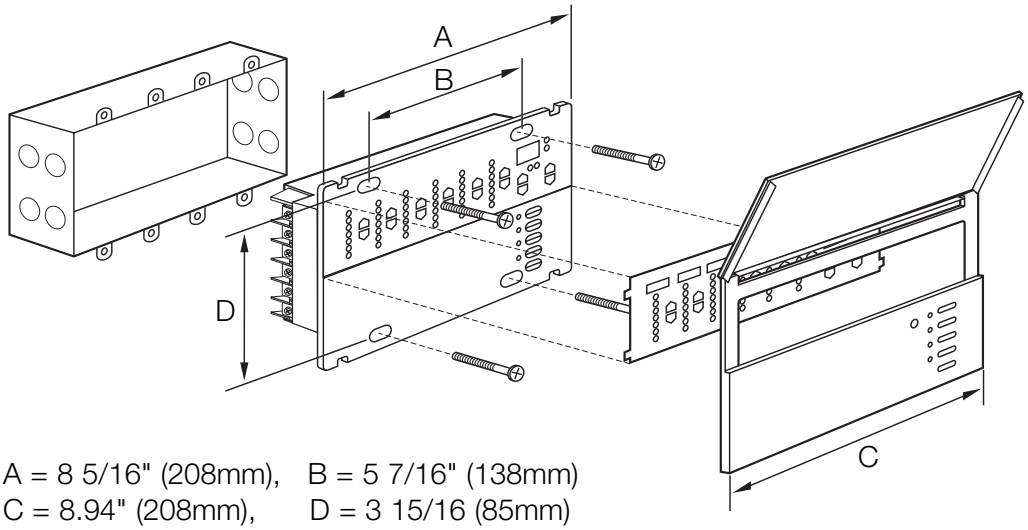
System Communications and Capacity

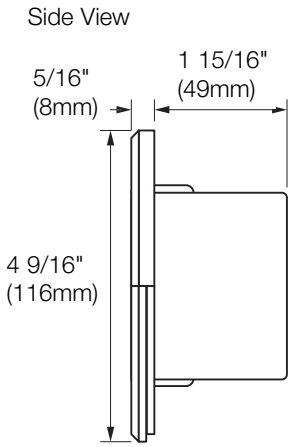
Low-voltage Class 2 (PELV) wiring connects the GRX-DACPI to GRAFIK Eye Control Units and other components.

Environment

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

Dimensions And Mounting





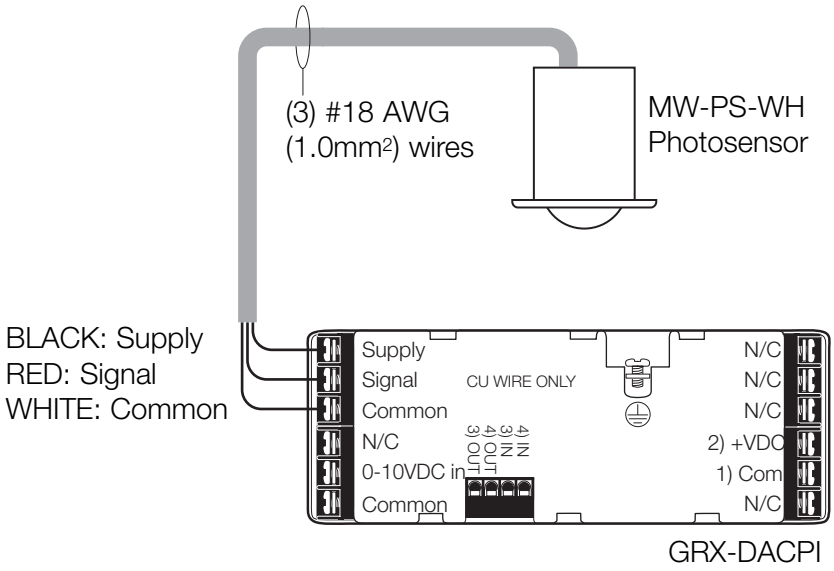
A = 8 5/16" (208mm), B = 5 7/16" (138mm)
C = 8.94" (208mm), D = 3 15/16 (85mm)

Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20

Functions

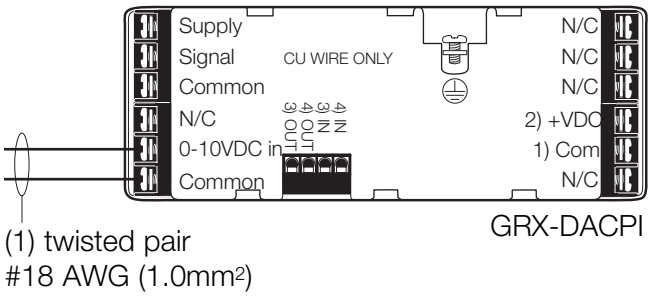
Buttons and Settings	Function
Scene selection buttons	Select scenes: • 1 to 4 with bank 1 • 5 to 8 with bank 2 • 9 to 12 with bank 3 • 13 to 16 with bank 4
Bank selection	• Select which bank the GRX-DACPI uses. • LED 1 lights for bank 1, LED 2 for bank 2, etc.
Threshold raise/lower	Used to setup 3 thresholds for each bank. Each threshold must be equal to or lower than the next threshold. Example: Threshold — Can be set as a value between: 1 — 0-25% 2 — 25-50% 3 — 50-75%
Photocell calibrate button	Calibrates the photocell connected to the GRX-DACPI.
Enforce toggle button and LED	Forces the GRX-DACPI to re-select the appropriate scene every 5 minutes, even if daylight levels stay the same. LED lights when enforce mode is on.

Wiring for Lutron MW-PS-WH Photocell



0–10VDC Input Wiring

0-10VDC input from photo measurement equipment by other manufacturers.



Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20

Low-Voltage Class 2 (PELV) Wiring

- Use low-voltage Class 2 (PELV) wiring to daisy-chain the GRX-DACPI to GRAFIK Eye Control Units and other components.
- Make connections inside the wallbox or in a switch/junction box with a maximum wire length of 8 feet (2.5m) from the link to the GRX-DACPI.

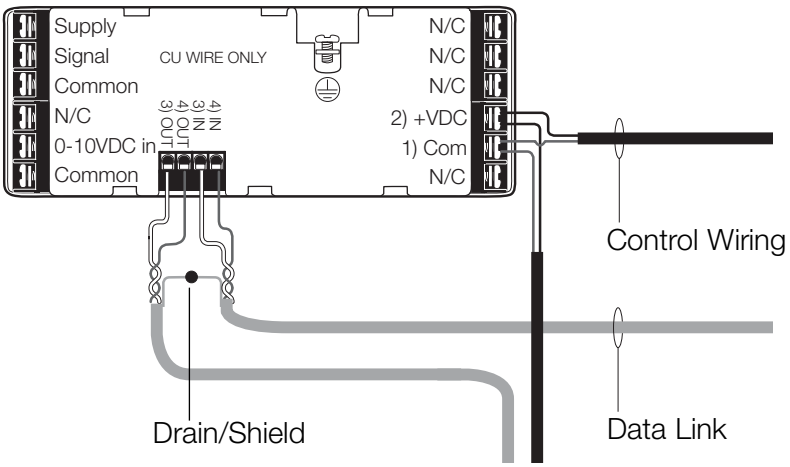
When used with GRAFIK Eye 3000 Control Units:

- Two #18 AWG (1.0mm²) conductors for common (terminal 1) and 12 V Direct Current (terminal 2) control wiring.
- One shielded, twisted pair #18 AWG (1.0mm²) for data link (terminals 3 and 4).

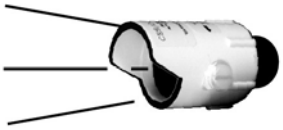
When used with GRAFIK Eye 4000 Control Units:

- Two #12 AWG (2.5mm²) conductors for common (terminal 1) and 24 V Direct Current (terminal 2) control wiring.
- One shielded, twisted pair #18 AWG (1.0mm²) for data link (terminals 3 and 4).
- Connect Drain/Shield as shown. Do not connect to Ground (Earth) or Wallstation. Connect the bare drain wires and cut off the outside shield.

GRX-DACPI



Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20



SENSOR

CELESTIAL CES

Light Sensors for Energy Management Systems

DESCRIPTION

The **CES** belongs to a family of sensors that monitor either task or ambient light levels precisely. The light level measured is converted to an analog signal that is sent to the controller of the Energy Management System (EMS).

The **CES** allows the Heating Ventilation Air Conditioning Energy Management System (HVAC/EMS) to control area lighting by switching banks of lights on and off, or provide continuous signals to electronic dimming ballasts for fluorescent fixtures.

ADJUSTABILITY

The sensor sensitivity is adjustable. The maximum output voltage can be matched to the maximum light level, in order to provide the highest resolution signal to the EMS. Model measurement ranges include 0 to 20, 2,500,or 7,500 FC. The **CES** sensor is available in several input voltages (5,10,12,& 24VDC). The voltage output is available in either 5 or 10VDC, and can be ordered with a zero or one volt minimum. (See selector table).

CONSTRUCTION

To achieve the highest degree of performance and reliability, all components are of computer grade quality and are assembled on a fiberglass epoxy circuit board. The electronic circuit of all exterior sensor models is encased in a clear, glass-like epoxy and sealed with an electronic grade, non-corrosive urethane resin. Skylight and outdoor models are housed in Cycolac T (TM) for UV stabilization.

SENSORS FOR ALL APPLICATIONS

All indoor sensors have a flat Fresnel lens that looks downward in a 60 degree cone of reference to measure actual light on the work surface. The Fresnel lens is used to reduce the influence of stray light striking the sensor from nearby windows or incidental side lighting.

The Outdoor sensor is enclosed in a weatherproof housing with a visor for shading and lens protection.

The Atrium and Skylight sensors both use diffusing dome lenses to provide a 180 degree angle of photodiode response.

FEATURES

- Adjustable maximum output voltage for high resolution in 20-7,500 FC range.
- Output minimum voltage selection of zero or offset.
- Indoor sensor with 60 degree clear Fresnel Lens, Adhesive mounting to ceiling, facing down. Sensor range 0-750 FC. Low range indoor 0-20 FC.
- Outdoor sensor with flat clear lens. Sensor range: 0/5-75FC. 1/2" IPT connection for horizontal mounting. Weather proof housing.
- Atrium sensor with opaque dome lens filters 33% of light level in upper atrium. Sensor range 2/200-2,500 FC. 1/2" IPT connection for horizontal mounting.
- Skylight sensor with dark dome lens filters 90% of light level in skylight. Sensor range: 10/1,000-7,500 FC in skylight. 1/2" IPT connection to for upward vertical mounting.
- Interfaces with any EMS equipment.
- Sensor matched to human eye response range.
- Fully patented technology.
- 2 year warranty.

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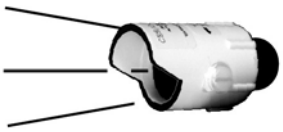
3101-111th St. SW #F Everett, WA 98204 • Toll Free 866-998-5483 • PH:425-353-7552
FAX: 425-353-3353 • Web: www.plcmultipoint.com

Rev.2006-09-05



CES TECHNICAL DATA

Accuracy:	+/-1% at 70 F (21 C) Derated to +/-5% at 120 F or at 0 F (-18 C to 49 C)
Operating Temp:	13 F to +140 F. (-11 C to 60 C)
Sensor Type:	Blue-enhanced Photo Diode

Sensor Ranges:	Minimum	Adjustable Max
CES/I	0 Fc	50 - 750 Fc
CES/O	0 Fc	50 - 750 Fc
CES/A	2 Fc	200 - 2,500 Fc
CES/S	10Fc	1,000 - 7,500 Fc
CES/IL	0 Fc	20/30 Fc

Input Voltage:	5,10, 12, 24VDC. (See ordering example)
Output Voltage:	5 VDC or 10 VDC full output
Output Offset:	0 VDC or 1 VDC at total Darkness
Wiring:	(3) Conductor 18 ga. stranded cable
Red:	Pos. DC input
Black:	DC common
Yellow:	Output to EMS

CES SENSOR SELECTOR

SENSOR	LENS	FILTER	MOUNTING	ORIENT	Height	Dia.
CES/I	Fresnel	Clear	Ceiling	Down	2.00”	1.23”
CES/O	Flat	Clear	1/2” IPT	Horiz.	1.85”	1.28”
CES/A	Dome	Opaque	1/2” IPT	Horiz	2.25”	1.28”
CES/S	Dome	Dark	1/2” IPT	Up	2.25”	1.28”
CES/IL	Fresnel	Clear	Ceiling	Down	2.00”	1.23”

ORDERING EXAMPLE

CES	/A	-12	-1	-5

	Housing	Input	Min Output	Max Output
Indoor=	I	5V	0	5
Outdoor=	O	10V	1	10
Atrium=	A	12V		
Skylight=	S	24V		
Indoor Low=	IL	5V		

*N.I.S.T. Calibration upon request $150.00 fee applies. All documentation included.

SPECIFICATION

PHOTODIODE SENSOR
The photoelectric device shall be a Class 2, low voltage, ambient light sensor designed to interface directly with the analog input of the Energy Management System. The sensor shall supply an analog signal to the EMS system proportional to the light measured. The sensor output shall provide for zero or offset based signal. The sensor shall be capable of a fully adjustable response in the range between 0 and 10,000 footcandles with a +/-1% accuracy at 70 degrees F (21 deg.C).

The sensitivity adjustment shall be at the sensor body, and outside of the sensor’s viewing angle. The sensor housing shall be constructed from GE Cycolac (R) ABS, shall be flame retardant and meet UL 94 HB standards.

INDOOR
Indoor sensors shall have a Fresnel lens, with a 60 degree cone of response. Indoor sensors shall only require a penetration hole in the ceiling of 3/8" dia., and the sensor shall mount to the ceiling using adhesive tape. The indoor sensor range shall be between 0 and 750 FC. The indoor sensor shall be **PLC-MULTIPOINT CES/I**.

Low Range sensor selectable 20 or 30 FC range. Sensor shall be **PLC-MULTIPOINT CES/IL**.

OUTDOOR
Outdoor models shall have a hood over the aperture to shield the sensor from direct sunlight. The outdoor sensor circuitry shall be completely encased in an optically clear epoxy resin. Outdoor sensors shall mount to a standard threaded 1/2" conduit or fit a 1/2" knockout. The Outdoor sensor range shall be between 0 and 750 FC. The outdoor sensor shall be **PLC-MULTIPOINT CES/O.**

ATRIUM or SKYLIGHT
The Atrium or Skylight sensors shall have a translucent dome with a 180 degree field of view. Atrium or Skylight sensors shall mount to standard threaded 1/2" conduit or fit a 1/2" knockout. Atrium sensor range shall be from 2 to 2,500 FC. Skylight sensor range shall be between 10 and 7,500 FC. The Atrium or Skylight sensors shall be **PLC-MULTIPOINT CES/A or CES/S**.

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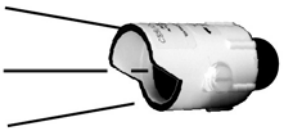


CES/O APPLICATION NOTE

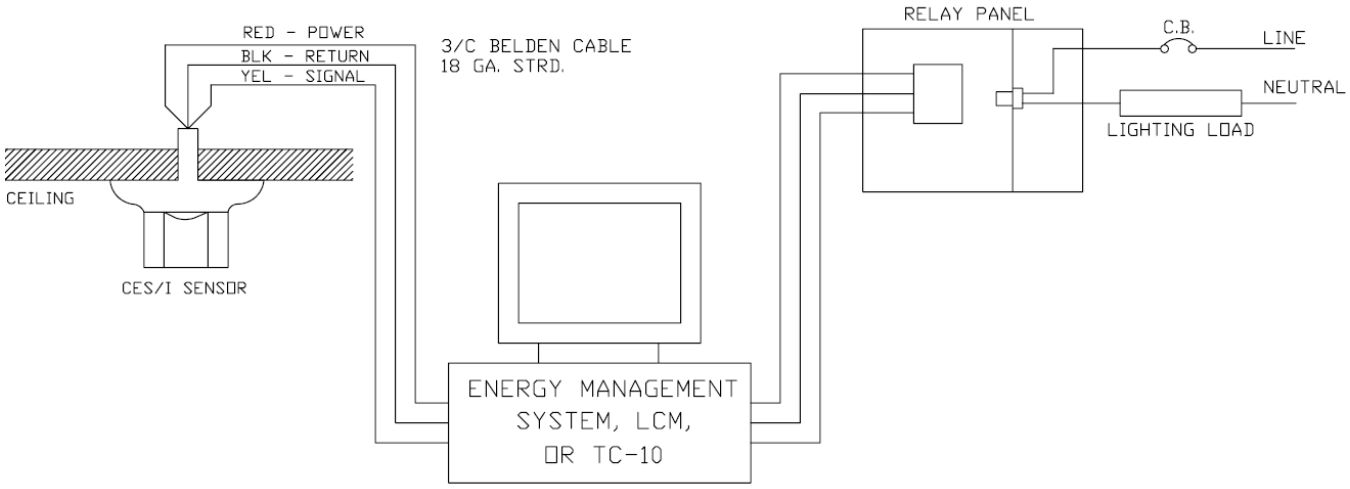
ENERGY MANAGEMENT SYSTEM

A building energy management system needed to control outdoor security and safety lighting. The lighting systems were required to turn on and off at different light levels using the building energy management system.

Photocells and mechanical timers were considered, but didn't provide the precise switching level controls required. The mechanical timers didn't allow for easy changes in schedules and daylight/standard time changes.

The **PLC-MULTIPOINT CES/O SENSOR** provided the energy management system with the lighting level signal required to control the outdoor safety and security lighting. The sensor was powered by the energy management system's 12VDC power supply source. The sensor signal provided a linear light level input into the energy management system. The **CES/O SENSOR'S** input range was set at 750 FC and the output was 0 to 10VDC providing a resolution of 13.3mv/FC or (75 FC/V) which was sufficient for the energy management system to control the lighting levels.

The ON and OFF switching setpoints were entered into the energy management system via the operator terminal. The minimum Hold-On-Time, transient filtering and output control was all handled through the energy management system. All of the above were displayed on the operator terminal, including the current light level from the **CES/O SENSOR**.



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Rev.2006-09-05

PP Series Power Packs

PP-120H
PP-230H
PP-277H
PP-347H

PP-SH

Power switch packs provide both the 24 V⎓ power supply to operate Lutron sensors as well as the 20 A line voltage relay to control the load in one compact housing. The unit can be placed outside or inside the junction box with a simple twist-on nut. The auxiliary relay model can be used with line voltage power packs to switch additional loads.

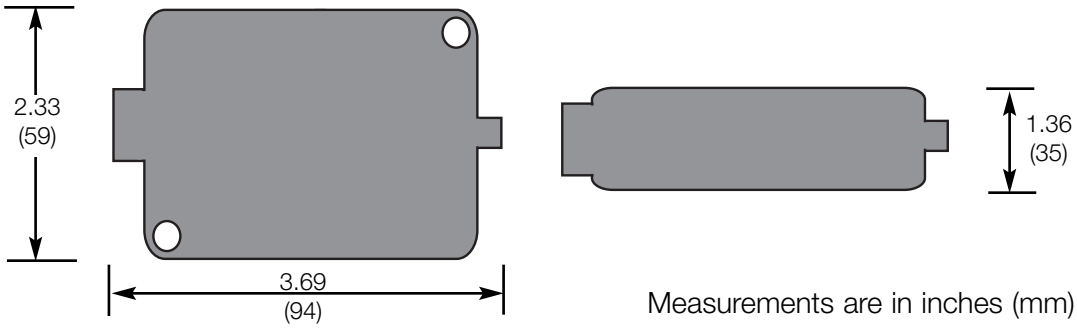
Features

- High-impact UL94 5 VA flammability-rated plastic case construction.
- Relay: Class B (130°C) insulating material; silver alloy contacts.
- 120 V, 277 V, or 347 V∿ transformer: 60 Hz;
  230 V transformer: 50 Hz.
- 24 V⎓ nominal output; 100 mA nominal, full wave rectified and filtered.
- 7” wire leads, 18 AWG input; 7” leads, 16 AWG contacts.
- Relay contact rating:
  --20 A: 120/230/277 V ballast
  --15 A: 347 V ballast
  --15 A: 120 V incandescent
- Complies with requirements for use in a compartment handling conditioned air (plenum).
- Supports up to 3 devices, including occupant sensors and PP-SH units.
- Operating environment: 32°F to 104°F (0°C to 40°C);
  less than 90% relative humidity, non-condensing.
- For indoor use only.

Model Numbers

Catalog Number	Power Input	Control Input	Power Output
PP-120H	120 V∿, 60 Hz	24 V⎓, 5 mA	24 V⎓, 100 mA
PP-230H	230 V∿, 50 & 60 Hz	24 V⎓, 5 mA	24 V⎓, 100 mA
PP-277H	277 V∿, 60 Hz	24 V⎓, 5 mA	24 V⎓, 100 mA
PP-347H	347 V∿, 60 Hz	24 V⎓, 5 mA	24 V⎓, 100 mA
PP-SH	N/A	24 V⎓, 5 mA	N/A

Dimensions

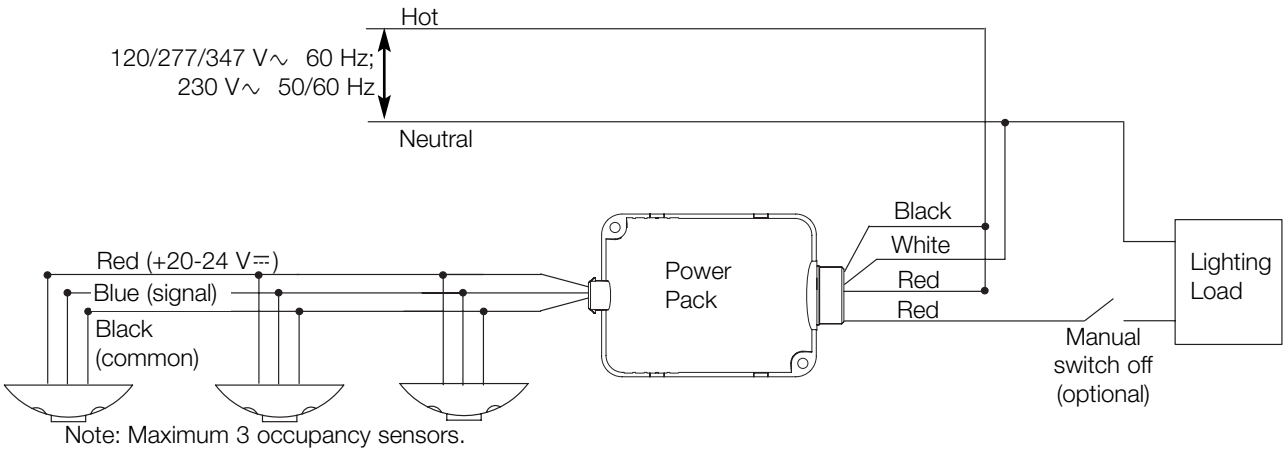


Measurements are in inches (mm)

Job Name:		Model Numbers:	
			FDB-T432-277-1-S
Job Number:			XPS-24-277-4ML-20

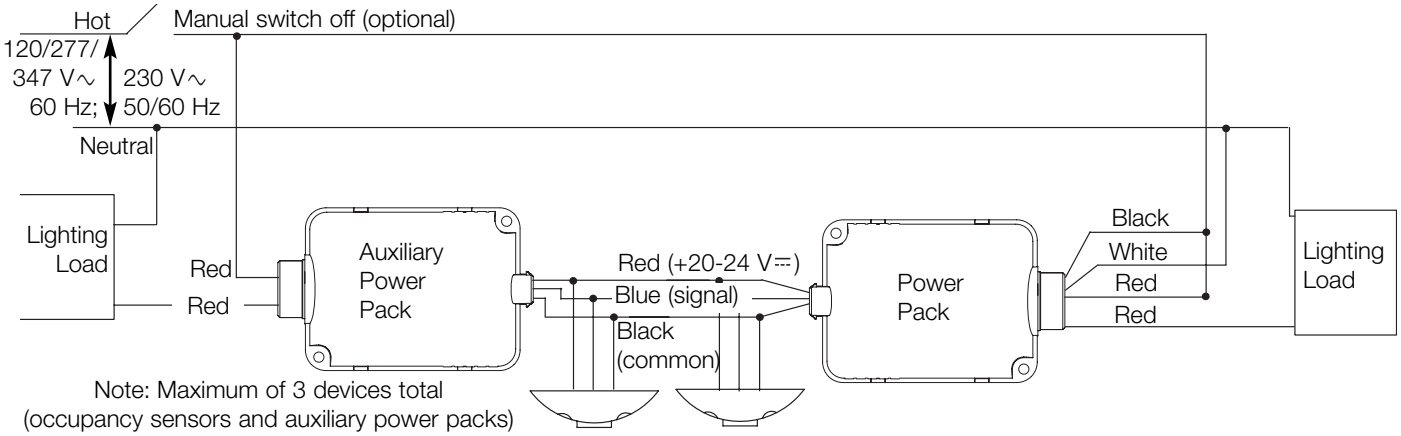
Wiring

1 to 3 Sensors with Power Pack



Note: Maximum 3 occupancy sensors.

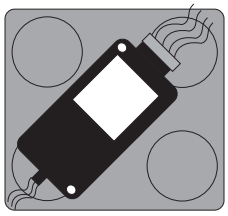
Switching Multiple Loads with Auxiliary Power Packs

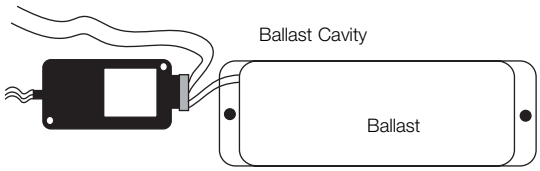


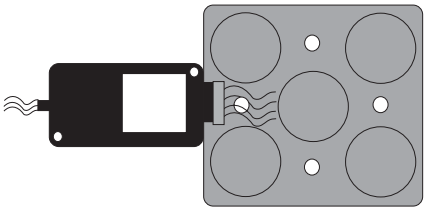
Note: Maximum of 3 devices total (occupancy sensors and auxiliary power packs) can be connected to a power pack.

Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20

Mounting







Fits inside junction box or standard fluorescent fixture ballast cavity

Mount with 6/32 x 1.25” pan head screws

Mounts to standard 4” x 4” junction box through knockout with 1/2” EMT threaded nipple.

Note: Always turn power off and lock out during unit installation.
Always install unit in accordance with applicable national and local electrical codes.

Installation

- Wire according to appropriate Wiring Diagram.
- Warning: Risk of electrical shock from energized equipment.
  Always turn power OFF and lock out during unit installation.
  Always install units in accordance with applicable national and local electrical codes.

Softswitch128 Switching System

Softswitch128 Panel

System Overview

Softswitch128 is a switching system that is ideal for small to medium sized switching projects. A system consists of panels, control stations, occupancy sensors, and photocells. Softswitch128 panels contain Lutron's one million cycle Softswitch™ relay and the Softswitch128 Controller.
Softswitch128 is easy to install and simple to program. Softswitch128 also includes a CEC/Title24 approved astronomical time clock for system automation.

System Features

- Digital control for up to 512 circuits.
- Add up to 32 digital control stations (wallstations and interfaces) for multiple points of control.
- Up to sixteen (16) Softswitch128 panels may be used.
- Add the Softswitch128 Expansion Module (XPS-E-120/277-FT) to the system for increased control station capacity. Three links of up to 32 control stations each (96 control stations total) may be added with the Expansion Module present.
- Integrated CEC Title 24 listed astronomical time clock.
- Lutron Softswitch technology for every switched output (resistive, inductive and capacitve) to full 16A.
- Softswitch relays are rated for all light sources as well as motors.
- RS232 interface available (OMX-RS232).
- Contact closure input and output devices available (OMX-AV and OMX-CCO-8).
- Keyswitch wallstations available (NTOMX-KS).
- Normal or emergency panel capability.
- Softswitch128 panel is prewired and pre-tested.
- Panels for 120 V/277 V, 347 V, and 480 V applications. Contact a Lutron representative for details on 347 V and 480 V switching.
- 208 V loads are wired phase-to-phase in 120 V panels. See Lutron Application Note #102 for details.
- Feed through, branch circuit breaker, and rough-in type panels are available.

Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20

Softswitch128 Controller

Softswitch128 Controller

Overview

The Softswitch128 Controller is used to configure the entire Softswitch128 system. The controller features an LCD user interface to facilitate programming all switching system and astronomical time clock (ATC) parameters.

Features

- Program wallstations to recall light patterns, to toggle any switch leg(s), to activate delay-to-off and to activate contact closures on a button by button basis.
- Integrated astronomical time clock (ATC) automates switching and contact closure outputs with up to 500 user-defined events within 7 daily schedules and 40 holiday schedules. Each day may have 25 events.
- ATC events automatically select patterns, start afterhours mode, or end afterhours mode.
- Events may be copied and pasted for fast programming.
- ATC events may be triggered by time of day or by an offset from sunrise or sunset.
- System location is programmable by internal city database or by specifying latitude and longitude.
- ATC automatically adjusts for leap year and daylight savings time (where applicable).
- Programmable afterhours mode with user-selectable “blink warn” and user programmable refresh time.
- Two integrated user-configurable contact closure inputs.
- Override capability is available at the panel for controls, timeclock, and switch legs.
- Controller is located in the Softswitch128 panel for easy access.

Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20

Specifications

Standards

- UL Listed
- CSA
- NOM

Power

- Input power: 120 V/277 V, 347 V[1] and 480 V[1]. All voltages 50/60 Hz, phase-to-neutral.
- Branch Circuit Breakers: UL-rated thermal magnetic. AIC ratings:
  120 V – 10,000 A
  277 V – 18,000 A
  347 V – 14,000 A
- Lightning strike protection: Meets ANSI/IEEE standard 62.41-1980. Can withstand voltage surges up to 6000 V and current surges up to 3000 A.
- 10-year power failure memory: restores lighting to levels prior to power interruption.

Load Types

- Incandescent (Tungsten) and Halogen
- Magnetic Low Voltage Transformer
- Electronic Low Voltage Transformer
- Neon or Cold Cathode
- Magnetic and Electronic Fluorescent Lamp Ballasts
- HID

Motor Loads

- 1/3 HP at 120 V
- 1/2 HP at 277 V and 347 V

Switching Modules (120V, 277V, 347V)

- Softswitch relay is rated for 16 A continuous use, which is the maximum continuous load for a 20 A Overcurrent Protection Device (Branch Breaker).
- Patented Softswitch™ circuit eliminates arcing at mechanical contacts when loads are switched. Extends relay life to an average of 1,000,000 cycles (on/off) for resistive, capacitive or inductive sources.
- Relay is mechanically held.

Wiring

- Internal: Wired and tested by Lutron.
- System communications: low voltage Class 2/PELV wiring connects Softswitch128 panels to control stations.
- Line (mains) voltage: feed and load wiring only (feed-through Softswitch128 panels also require a feed for the Softswitch128 controller).

Physical Design

- Enclosure: NEMA-Type 1, IP-20 protection; #16 U.S. Gauge Steel. Indoors only.
- Weight:
  27 lbs (13 kg) for Mini panels
  80 lbs (37 kg) for Standard panels
  135 lbs (61 kg) for Large panels
  150 lbs (69 kg) for Extra Large panels

Mounting

- Mini and Standard size panels: surface mount or recess mount between 16 in. (40 cm) studs.
- Large or Extra Large panels: surface mount only.

Environment

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

Short Circuit Current Ratings (other ratings available)

Panel Type	Voltage	Std. SCCR Rating
XPS Feed Through (all sizes)	120/277	25,000 A
XPS Main Lug Panels (all sizes)	120/277	25,000 A

[1]Consult your Lutron representative for details on 347 V and 480 V switching.

Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20

Specifications (continued)

Softswitch128 Controller

- Configures entire Softswitch128 system.
- Two low voltage (15-24 VDC) contact closure inputs, momentary or maintained, pull up or pull down.
- Emergency Sensing.
- Astronomical Time Clock.
- Digital Control Link.
- Mounted in Softswitch128 panel.

Astronomical Time Clock

- Capable of up to 500 events.
- 7 daily schedules and 40 holiday schedules are available.
- 25 events per day.
- Holiday events are programmable one year in advance.
- Holiday schedules are programmable to run for up to 90 days.
- ATC location programmable by built-in city database or by entering latitude and longitude, plus a sunrise or sunset offset to adjust for local geography.
- CEC Title 24 listed.

OMX-RS232

- Interfaces the Softswitch128 system to a PC, touchscreen, or building management system (BMS).
- Use RS232 strings to set light levels and enable/disable time clock events.

OMX-AV

- 5 low voltage contact closure inputs and 5 outputs.
- Inputs may select patterns, toggle lights, or activate delay-to-off.
- Interfaces with occupancy sensors or photosensors (with relay) to activate patterns or turn off lights in an unoccupied space.
- Contact closure outputs are activated by button presses, contact closure inputs, time clock events, or emergency status.
- See OMX-AV specification for mounting, wiring, contact closure output ratings, and voltage limits. Note: only the above features are supported by Softswitch128.

OMX-CCO-8

- Integrates third party motorized window treatments or A/V equipment.
- Outputs are activated by button presses, contact closure inputs, time clock events or emergency status.
- See OMX-CCO-8 product specification for mounting, wiring and voltage limits.

Contact Closure Inputs

- Two closure inputs are available at the Softswitch128 controller.
- May be configured as pull up to 15 or 24 VDC (externally supplied) or pulled down to common.
- Programmable as maintained or momentary.
- Functions are programmable on contact close, contact open or both.

Wall Stations

- One to seven button seeTouch™ and single button FOMX controls are available.
- Buttons are programmable to select patterns, toggle circuits or activate delay-to-off.
- Buttons are programmed at the Softswitch128 controller.
- Wall controls are powered by and communicate via the Softswitch128 low-voltage communication link.
- See specification submittals for seeTouch and FOMX wallstations for wiring and mounting details.
- Keyswitch control is also available.

Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20

Specifications

Standards

- UL Listed
- CSA
- NOM

Power

- Input power: 120 V/277 V, 347 V[1] and 480 V[1]. All voltages 50/60 Hz, phase-to-neutral.
- Branch Circuit Breakers: UL-rated thermal magnetic. AIC ratings:
  120 V – 10,000 A
  277 V – 18,000 A
  347 V – 14,000 A
- Lightning strike protection: Meets ANSI/IEEE standard 62.41-1980. Can withstand voltage surges up to 6000 V and current surges up to 3000 A.
- 10-year power failure memory: restores lighting to levels prior to power interruption.

Load Types

- Incandescent (Tungsten) and Halogen
- Magnetic Low Voltage Transformer
- Electronic Low Voltage Transformer
- Neon or Cold Cathode
- Magnetic and Electronic Fluorescent Lamp Ballasts
- HID

Motor Loads

- 1/3 HP at 120 V
- 1/2 HP at 277 V and 347 V

Switching Modules (120V, 277V, 347V)

- Softswitch relay is rated for 16 A continuous use, which is the maximum continuous load for a 20 A Overcurrent Protection Device (Branch Breaker).
- Patented Softswitch™ circuit eliminates arcing at mechanical contacts when loads are switched. Extends relay life to an average of 1,000,000 cycles (on/off) for resistive, capacitive or inductive sources.
- Relay is mechanically held.

Wiring

- Internal: Wired and tested by Lutron.
- System communications: low voltage Class 2/PELV wiring connects Softswitch128 panels to control stations.
- Line (mains) voltage: feed and load wiring only (feed-through Softswitch128 panels also require a feed for the Softswitch128 controller).

Physical Design

- Enclosure: NEMA-Type 1, IP-20 protection; #16 U.S. Gauge Steel. Indoors only.
- Weight:
  27 lbs (13 kg) for Mini panels
  80 lbs (37 kg) for Standard panels
  135 lbs (61 kg) for Large panels
  150 lbs (69 kg) for Extra Large panels

Mounting

- Mini and Standard size panels: surface mount or recess mount between 16 in. (40 cm) studs.
- Large or Extra Large panels: surface mount only.

Environment

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

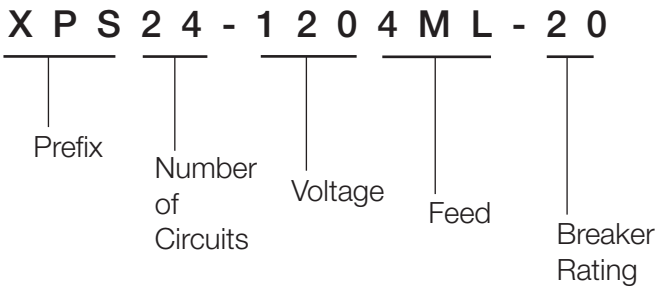
Short Circuit Current Ratings (other ratings available)

Panel Type	Voltage	Std. SCCR Rating
XPS Feed Through (all sizes)	120/277	25,000 A
XPS Main Lug Panels (all sizes)	120/277	25,000 A

[1]Consult your Lutron representative for details on 347 V and 480 V switching.

Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20

How to Build a Model Number



Prefix

XPS for Softswitch128 panels.

Number of Circuits

Total number of circuits (switch legs) in the panel.

Voltage

Omit for feed through panels.
120 for 100 - 127 V or 208 V
277 for 277 V
347[1] for 347 V

Feed

FT for feed through panels.
4ML for 3 phase 4 wire feed.
3ML for 1 phase 3 wire feed.

Breaker Rating

Omit for feed through panels.
20 for 20 A branch circuit breakers; 20 A branch circuit breakers have a 16 A continuous load rating.

Example Model Numbers

Example 1

Model number for 120 V Softswitch128 panel with 28 circuits and Lutron installed 20A branch circuit breakers:
XPS28-1204ML-20

Example 2

Model number for 120/277 V Softswitch128 panel with 12 circuits without circuit breakers:
XPS12-FT

Sample 3

Model number for a 120 V Softswitch128 panel with 12 circuits and 20 A branch circuit breakers and a split-phase feeder:
XPS12-1203ML-20

Sample 4

Model number for a 347 V Softswitch128 panel with 24 circuits with Lutron installed 20 A branch circuit breakers:
Contact your Lutron Representative

[1] Custom panel construction required, contact Lutron for model number and lead time.

Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20

Feed-Through Softswitch128 Panel Models

(without branch circuit breakers)

Mini Softswitch128 Dual-Voltage Feed Through Models for 120 V or 277 V, or 347 V[1]

Panel Model	Switch Legs	Feed Type	Maximum Feed
XPS8-FT	8	Feed Through	20 A
XPS12-FT	12		
XPS16-FT	16		

Standard Softswitch128 Dual-Voltage Feed Through Models for 120 V or 277 V, or 347 V[1]

Panel Model	Switch Legs	Feed Type	Maximum Feed
XPS20-FT	20	Feed Through	20 A
XPS24-FT	24		
XPS28-FT	28		
XPS32-FT	32		
XPS36-FT	36		
XPS40-FT	40		
XPS44-FT	44		
XPS48-FT	48		

Wire Sizes

- #14 AWG (2.0 mm^2) to #10 AWG (4.0 mm^2) for Feed Wiring and Switch Legs (to loads).
- Power (Hot/Live) and Switched Hot/Live connect directly to Terminal Block for Switch Legs.

[1] Custom panel construction required, contact Lutron for model number and lead time.

Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20

Softswitch128 Panels with Branch Circuit Breakers

Standard Softswitch128 Panels with Circuit Breakers for 120 V (max. feed is 200 A)

Model Prefix	Switch Legs	Feed Type	Branch Breaker[1]
XPS8 XPS12 XPS16 XPS20 XPS24 XPS28	8 12 16 20 24 28	3Ø 4W or 1Ø 3W Main Lug Accepts #4 AWG (25 mm²) to 250 KCMIL (MCM) (120 mm²)	20 A

Large Softswitch128 Panels with Circuit Breakers for 277 V / 347 V[2] (max feed is 250 A)

Model Prefix	Switch Legs	Feed Type	Branch Breaker[1]
XPS8 XPS12 XPS16 XPS20 XPS24 XPS28	8 12 16 20 24 28	3Ø 4W Main Lug Accepts #4 AWG (25 mm²) to 350 KCMIL (MCM) (185 mm²)	20 A

Large Softswitch128 Panels with Circuit Breakers for 120 V (max. feed is 225 A)

Model Prefix	Switch Legs	Feed Type	Branch Breaker[1]
XPS32 XPS36 XPS40 XPS42	32 36 40 42	3Ø 4W or 1Ø 3W Main Lug Accepts #4 AWG (25 mm²) to 250 KCMIL (MCM) (120 mm²)	20A

Extra Large Softswitch128 Panels with Circuit Breakers for 277 V / 347 V[2] (max. feed is 300 A)

Model Prefix	Switch Legs	Feed Type	Branch Breaker[1]
XPS32 XPS36 XPS40 XPS42	32 36 40 42	3Ø 4W Main Lug Accepts #4 AWG (25 mm²) to 350 KCMIL (MCM) (185 mm²)	20 A

Wire Sizes for Switch Legs

- #14 AWG (2.0 mm²) to #10 AWG (4.0 mm²)

1 20 A breaker, 16 A continuous load rating.

2 Custom panel construction required, contact Lutron for model number and lead time.

Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20

Feed-Through Softswitch128 Wiring Overview

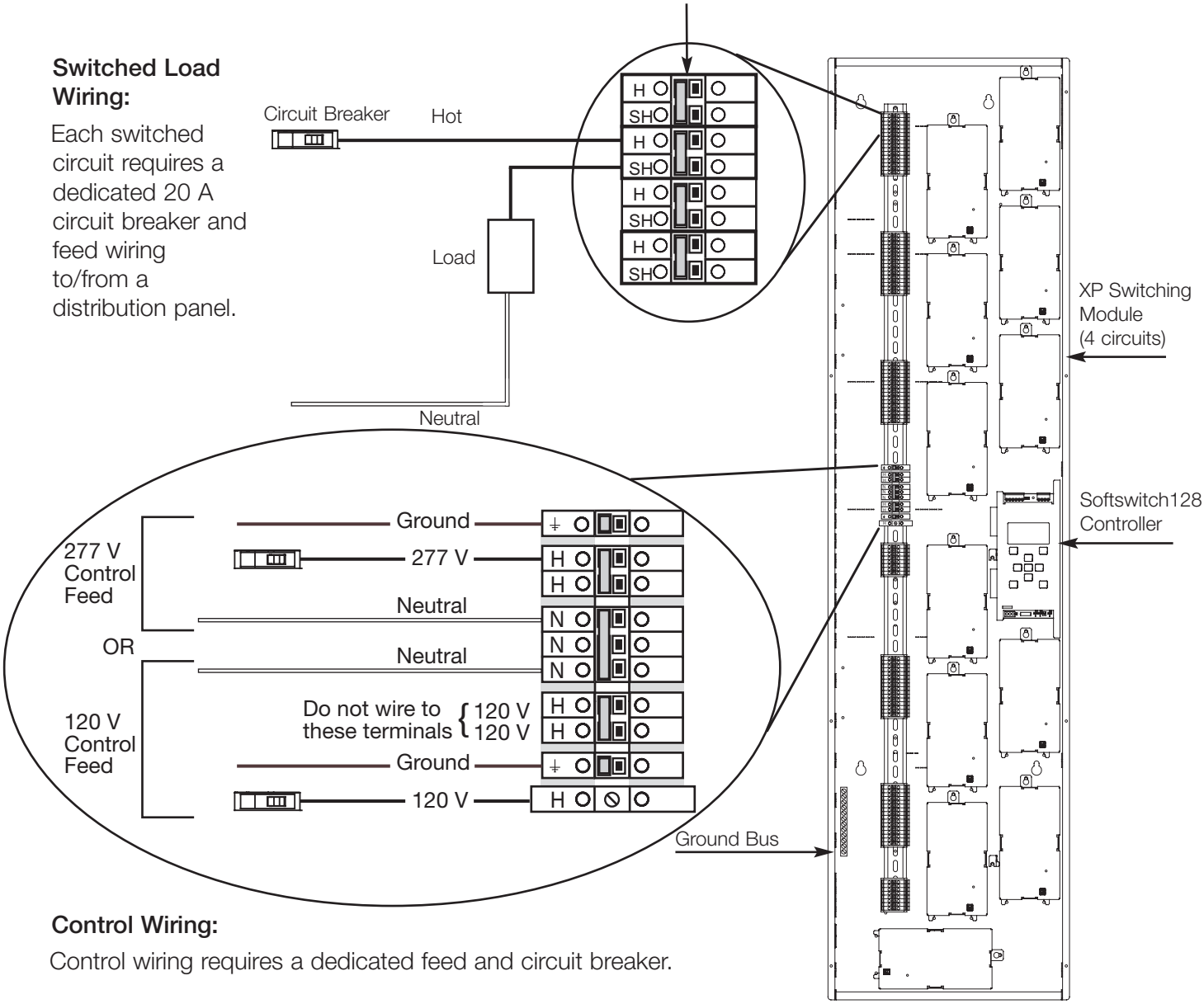
Wire the Softswitch128 panel as shown. Use a trough when the Softswitch128 Panel is not adjacent to a distribution panel. Splice Neutrals in trough.

Do not remove bypass jumpers until load wiring is verified.

Leaving bypass jumpers installed allows Softswitch128 panels to be used to provide temporary lighting, until load wiring is verified.

Switched Load Wiring:

Each switched circuit requires a dedicated 20 A circuit breaker and feed wiring to/from a distribution panel.



Control Wiring:

Control wiring requires a dedicated feed and circuit breaker.

Wire Sizes

- #14 AWG (2.0 mm²) to #10 AWG (4.0 mm²) for Feed Wiring and Switched Load Wiring.
- Power (Hot/Live) and Switched Hot/Live connect directly to Terminal Block for Switch Legs.

Job Name:	Model Numbers:	
		FDB-T432-277-1-S
Job Number:		XPS-24-277-4ML-20