

## Lighting Fixture Specifications

Thesis Final Report

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**Type:** E1  
**Location:** Exterior Entrance  
**Mfr/Catalog #:** Lightolier 8097FCCLP-S7142BU 42W  
**Description:** 7" recessed compact fluorescent downlight with 1-CFTR42W lamp. Optics: acrylic fresnel lens , painted or anodized aluminum parabolic reflector. Ballast: ADVANCE ICF2S26M1LsQs@277-CFTR42W/GX24Q. Voltage: 277V  
**Lamping:** 1 - CFTR42W lamp  
Osram Sylvania CF42DT/E/IN/830/ECO  
**Optics:** acrylic fresnel lens , painted or anodized aluminum parabolic reflector  
**Dimensions:** 15.000" length, 12.750" width, 6.500" height/depth  
**Electrical:** Integral electronic 120V/277V ballast  
Advance ICF2S26M1LsQs@277-CFTR42W/GX24Q  
**Voltage:** 277 V  
**Labels:** IBEW, UL listed Wet Location. Suitable for Wet environments.

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**Type:** E2  
**Location:** Exterior Entrance Path  
**Mfr/Catalog #:** se'lux MTRC-12-1T5-SV  
**Description:** 12' tall asymmetric fluorescent bollard with 1-28W T5 lamp. Ballast: ADVANCE ICN-2S28@ 277. Voltage:277V  
**Lamping:** 1 - F28T5 (48in) lamps  
Osram Sylvania FP28/830PM/ECO  
**Dimensions:** Diameter- 8", Height- 12'  
**Housing:** Die-cast aluminum  
**Electrical:** Advance ICN-2S28@ 277  
**Voltage:** 277 V  
**Labels:** UL listed

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**Type:** F1  
**Location:** 2nd Floor- Between Tall Stacks  
**Mfr/Catalog #:** Elliptipar 3036-T128-X-01-2-EK-0-VE-S-99-48-0  
**Description:** Suspended pendant 28W T5 linear fluorescent stack light. Cable mounted from ceiling. Optics are asymmetric with 6% uplight. Ballast:Advance ICN-2S28@ 277. Voltage: 277  
**Lamping:** 1 - F28T5 (48in) lamps  
Osram Sylvania FP28/830PM/ECO  
**Optics:** Multiple reflector segments drive light to the lowest shelves. Unique cross-baffle redirects a portion of the lamp energy  
**Dimensions:** Length-48", Width-7.25", Height-5"  
**Housing:** Anodized aluminum  
**Electrical:** Advance ICN-2S28@ 277  
Input Watts: 32.9  
**Voltage:** 277V  
**Labels:** UL listed or CSA certified  
**Notes:** Suspended 8' AFF

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**Type:** F2  
**Location:** 1st Floor- Entry Lobby, 2nd Floor-Cove Light  
**Mfr/Catalog #:** Electrix illumination EX-28-S1-2-E-46-SD  
**Description:** Low profile cove luminaire with 1-28WT5 lamp. Ballast: ADVANCE ICN-2S28@277-F28T5 Voltage: 277V  
**Lamping:** 1 - 1-28WT5  
Osram Sylvania FP28/830PM/ECO  
**Optics:** High reflectance specular aluminum reflector  
**Dimensions:** Width-4", Length-46.25", Height-1.25"  
**Housing:** Die formed 20 ga. steel  
**Electrical:** Advance ICN-2S28@277-F28T5  
Input Watts: 33  
**Voltage:** 277V  
**Labels:** UL & CUL listed locations  
**Notes:** Mount: Cove mounted in entry desk overhang. See Details.

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**Type:** F3  
**Location:** 2nd Floor- Between Tall Stacks  
**Mfr/Catalog #:** Elliptipar 3036-T128-X-01-2-EK-0-ARS30480-VE-S-99-48-0  
**Description:** Suspended pendant 28W T5 linear fluorescent stack light with roomside shield. Cable mounted from ceiling. Optics are asymmetric with 6% uplight. Ballast:Advance ICN-2S28@ 277.Voltage: 277  
**Lamping:** 1 - F28T5 (48in) lamps  
Osram Sylvania FP28/830PM/ECO  
**Optics:** Multiple reflector segments drive light to the lowest shelves. Unique cross-baffle redirects a portion of the lamp energy  
**Dimensions:** Length-48", Width-7.25", Height-5"  
**Housing:** Anodized aluminum  
**Electrical:** Advance ICN-2S28@ 277  
Input Watts: 32.9  
**Voltage:** 277V  
**Labels:** UL listed or CSA certified  
**Notes:** Suspended 8' AFF. Same as F1 with roomside shield for asymmetric illumination.

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**Type:** F4  
**Location:** 2nd Floor- Over Desks  
**Mfr/Catalog #:** Louis Poulsen X-DIR/IND-51.2-2/28W/T-5-SBL.GLASS  
**Description:** Suspended fluorescent up/downlight with 2-F28T5 (48in) lamps. Optics: glare shield , frosted glass diffuse white lens. Ballast:Lutron EC5-T528-J-UNV-2. Voltage: 277  
**Lamping:** 2 - F28T5 (48in) lamps  
Osram Sylvania FP28/830PM/ECO  
**Optics:** glare shield , frosted glass diffuse white lens  
**Dimensions:** 51.200" length, 7.900" width, 19.800" height/depth  
**Housing:** aluminum, powder coat paint  
**Electrical:** Integral electronic 120V/277V ballast  
Lutron EC5-T528-J-UNV-2  
Input Watts: 64.5  
**Voltage:** 277V  
**Labels:** CUL listed Damp Location, IBEW, UL listed Damp Location, IP20. Suitable for Dry, Damp environments.  
**Notes:** Suspended 8' AFF

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**Type:** F5  
**Location:** 2nd Floor- Small Book Shelf  
**Mfr/Catalog #:** Electrix GTP-7-28-2-E-CUSTOM MOUNT  
**Description:** 28W T5 adjustable linear fluorescent surface mount. Small profile is concealed easily within bookshelf. Reflectors lock with set screw and link to adjacent unit for symmetrical distribution. Ballast: Advance ICN-2S28@277 Voltage: 277  
**Lamping:** 1 - F28T5 (48in) lamps  
Osram Sylvania FP28/830PM/ECO  
**Optics:** Asymmetric reflector adjusts 35 degrees to control luminance. Reflectors lock with set screw and link to adjacent unit for symmetrical distribution.  
**Dimensions:** Length- 46.25", Width- 5", Depth- 3"  
**Housing:** Extruded aluminum with die cast end caps  
**Electrical:** Advance ICN-2S28@277  
Input Watts: 32.9  
**Voltage:** 277V  
**Labels:** UL & CUL listed damp locations  
**Notes:** Custom adjustable 28W T5 linear fluorescent concealed in bookshelf. Coverlight is adjusted to suit the needs of asymmetric surface mount. See Details.

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**Type:** F7  
**Location:** 1st Floor Entry Lobby  
**Mfr/Catalog #:** Louis Poulsen SAT-MAX 1/42W/CF GX24q-3/4-277V-NATPAINTALU  
**Description:** Surface-mounted compact fluorescent up/downlight with 1-CFTR42W lamp. 14% up/86% down.  
Ballast: ICF2S26M1LsQs@277-CFTR42W/GX24Q Voltage: 277  
**Lamping:** 1 - CFTR42W lamp  
Osram Sylvania CF42DT/E/IN/830/ECO  
**Optics:** 14% up/86% down  
**Dimensions:** 19.300" diameter, 13.400" height/depth  
**Electrical:** Integral electronic 120V/277V ballast  
Advance ICF2S26M1LsQs@277-CFTR42W/GX24Q  
**Voltage:** 277V  
**Labels:** CUL listed Wet Location. Suitable for Dry, Wet, Damp environments.

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**Type:** F8  
**Location:** 1st Floor Entry Lobby  
**Mfr/Catalog #:** Kurt Versen P932  
**Description:** 7" recessed compact fluorescent downlight with 1-CFTR42W lamp. Optics: anodized aluminum ellipsoidal reflector.  
Ballast: ICF2S26M1LsQs@277-CFTR42W/GX24Q Voltage: 277  
**Lamping:** 1 - CFTR42W lamp  
Osram Sylvania CF42DT/E/IN/830/ECO  
**Optics:** anodized aluminum ellipsoidal reflector  
**Dimensions:** 19.000" length, 13.500" width, 7.500" height/depth  
**Housing:** Steel housing  
**Electrical:** Integral electronic ballast  
Advance ICF2S26M1LsQs@277-CFTR42W/GX24Q  
**Voltage:** 277V  
**Labels:** CUL, IBEW, UL. Suitable for Dry environments.

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**Type:** F9  
**Location:** 1st Floor Entry Lobby  
**Mfr/Catalog #:** Linear Lighting WW4-D-1ET5-277-NS-R-EC-4'  
**Description:** 6" recessed fluorescent wallwasher with 1-F28T5 (48in) lamp (in cross-section). Optics: reflector , single. Ballast: ADVANCE ICN-2S28@277-F28T5 Voltage: 277V  
**Lamping:** 1 - F28T5 (48in) lamp (in cross-section)  
Osram Sylvania FP28/830PM/ECO  
**Optics:** reflector , single  
**Dimensions:** Length varies (see spec sheet),8.000" width, 6.000" height/depth  
**Electrical:** Integral electronic ballast  
Advance ICN-2S28@277-F28T5  
Input Watts: 33  
**Voltage:** 277V  
**Labels:** CUL, IBEW, UL. Suitable for Dry environments.

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**Type:** F10  
**Location:** 1st Floor Entry Lobby  
**Mfr/Catalog #:** Electrix illumination EX-28-S1-2-E-46-SD  
**Description:** Low profile cove luminaire with 1-28WT5 lamp. Ballast: ADVANCE ICN-2S28@277-F28T5 Voltage: 277V  
**Lamping:** 1 - 1-28WT5  
Osram Sylvania FP28/830PM/ECO  
**Optics:** High reflectance specular aluminum reflector  
**Dimensions:** Width-4", Length-46.25", Height-1.25"  
**Housing:** Die formed 20 ga. steel  
**Electrical:** Advance ICN-2S28@277-F28T5  
Input Watts: 33  
**Voltage:** 277V  
**Labels:** UL & CUL listed locations  
**Notes:** Mount: Cove mounted in entry desk overhang. See Details.

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**Type:** F11  
**Location:** Meeting Room  
**Mfr/Catalog #:** Focal Point FAVB-FLM-1T5-2C-120-D-G1-2EG-SFL-TS-5'+MR16  
**Description:** 2" recessed fluorescent downlight with 1-F28T5 (48in) lamp (in cross-section). Optics: acrylic diffuse white lens , steel die-formed reflector. Ballast: Lutron EC5-T528-J-UNV-1 Voltage:120V  
**Lamping:** 1 - F28T5 (48in) lamp (in cross-section), 20MR16/IR/WFL60/C  
Osram Sylvania FP28/830PM/ECO  
**Optics:** acrylic diffuse white lens , steel die-formed reflector  
**Dimensions:** Length varies (see spec sheet),2.880" width, 4.800" height/depth  
**Housing:** 20 ga. steel  
**Electrical:** Integral electronic ballast  
Lutron EC5-T528-J-UNV-1  
**Voltage:** 120V  
**Labels:** CUL, UL. Suitable for Dry environments.

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**Type:** F12  
**Location:** Meeting Room  
**Mfr/Catalog #:** Zumtobel 902-4-BK  
**Description:** 3" track-mounted halogen accent light with 1-PAR20 50W max lamp. Optics: glass lens. Voltage: 120V  
**Lamping:** 1 - PAR20 50W max lamp  
Osram Sylvania 50PAR20/HAL/NFL30  
**Optics:** glass lens  
**Dimensions:** 4.500" length, 4.250" width, 6.375" height/depth  
**Housing:** Aluminum  
**Electrical:** Input Watts: 50  
**Labels:** CUL, IBEW, UL. Suitable for Dry environments.  
**Notes:** Onsite aiming

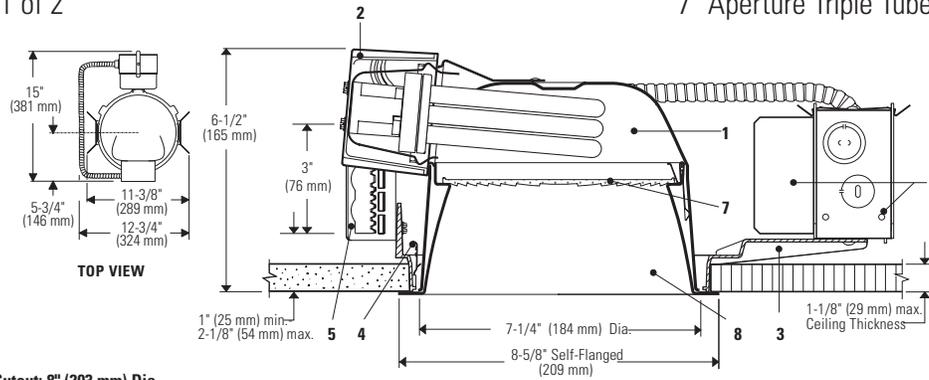
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**Type:** F13  
**Location:** Meeting Room  
**Mfr/Catalog #:** Cole Lighting LW158  
**Description:** Recessed LED step light. Optics: straight louver , frosted glass diffuser , anodized aluminum die-formed reflector.  
**Lamping:** 1 - LED  
**Optics:** straight louver , frosted glass diffuser , anodized aluminum die-formed reflector  
**Dimensions:** 8.500" length, 3.750" width, 4.000" height/depth  
**Housing:** steel, powder coat paint  
**Electrical:** transformer  
Input Watts: 2  
**Labels:** ETL. Suitable for Dry, Wet, Damp environments.  
**Notes:** Mount: 2" AFF, centered in each step. See lighting plan for details.

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**Type:** F14  
**Location:** Meeting Room  
**Mfr/Catalog #:** Elliptipar F115-T1-28-X-81-1-00-0-\*-08-\*-0-0  
**Description:** Pendant mounted linear wall washer with 1-28T5 lamp. Ballast:Lutron EC5-T528-J-UNV-1 Voltage:120V  
**Lamping:** 1 - 1-28W-T5  
Osram Sylvania FP28/830PM/ECO  
**Dimensions:** Length- 48-13/16", Width- 5", Height- 3-3/4"  
**Housing:** Anodized aluminum  
**Electrical:** Lutron EC5-T528-J-UNV-1  
Input Watts: 32.6  
**Voltage:** 120V  
**Labels:** UI listed for damp locations  
**Notes:** Housing must be matte black.  
Mount: 17'-0" A.F.F

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Ceiling Cutout: 8" (203 mm) Dia.

Reflector Trim				Frame-In Kit	
(Lens:)	Fresnel	Clear	Prismatic		
Clear Cone, White Flange	<b>8097FCLW</b>	<b>8097CCLW</b>	<b>8097PCLW</b>	<b>S7126BU</b>	7" aperture, 1 lamp 26W Triple Tube CFL (120/277V) 4-Pin (Amalgam)
Clear Cone, Polished Flange	<b>8097FCLP</b>	<b>8097CCLP</b>	<b>8097PCLP</b>	<b>S7132BU</b>	7" aperture, 1 lamp 26/32W Triple Tube CFL (120/277V) 4-Pin (Amalgam)
White Cone, White Flange	<b>8097FWHW</b>	<b>8097CWHW</b>	<b>8097PWHW</b>	<b>S7142BU</b>	7" aperture, 1 lamp 26/32/42W Triple Tube CFL (120/277V) 4-Pin (Amalgam)
	<b>Opal Diffuser</b>			<b>Dimming Options:</b>	
Clear Cone, White Flange	<b>8097DCLW</b>			<b>S7132B</b>	<input type="checkbox"/> or <b>S7142B</b> <input type="checkbox"/>
Clear Cone, Polish Flange	<b>8097DCLP</b>			<b>CU3</b>	Lightolier PowerSpec 3% Dimming (120/277V)
White Cone, White Flange	<b>8097DWHW</b>			<b>J1LD3</b>	Lutron 5% Dimming (120V)
				<b>J2LD3</b>	Lutron 5% Dimming (277V)
				<b>JUM7</b>	Mark 7 Dimming (120/277V)
				<b>J1MX</b>	Mark 10 Dimming (120V)
				<b>J2MX</b>	Mark 10 Dimming (277V)
				Other dimming product available, please consult factory	
				<b>Remodeler Frame-In Kits</b>	
				<b>7126BURM</b>	7" aperture, 1 lamp 26W Triple Tube CFL (120/277V) 4-Pin (Amalgam)
				<b>7132BURM</b>	7" aperture, 1 lamp 26/32W Triple Tube CFL (120/277V) 4-Pin (Amalgam)
				<b>7142BURM</b>	7" aperture, 1 lamp 26/32/42W Triple Tube CFL (120/277V) 4-Pin (Amalgam)

**Features**

- Reflector:** 16 ga. Die-formed aluminum, Anobrite® finish.
- Socket Cup:** Snaps onto reflector to assure consistently correct optical alignment without tools.
- Retaining Springs:** Precision-tooled steel friction springs secure reflector to mounting frame for quick, tool-less installation.
- Mounting Brackets:** 16 ga. steel. Adjust from inside of fixture. Use 3/4" or 1 1/2" lathing channel, 1/2" EMT, or optional mounting bars.
- Ballast/J-Box:** Outboard mounted to reduce heat transfer and maintain lamp efficacy and life. Service from below without tools.
- Shielding Media:** Molded acrylic. Available in fresnel lens, clear lens, or opal diffuser. Secured to aperture cone.
- Cone:** 16 ga. Alzak® aluminum. Clear Iridescence Free finish or Comfort Clear™ low iridescence finish. Retained by friction springs; no loose parts.

**Electrical**

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

UL listed for through branch circuit wiring with max of (8) No. 12 AWG, 90° C supply conductors.

**Options and Accessories**

<b>Comfort Clear™ Finishes<sup>1</sup></b>	<b>Other Finishes</b>
Clear <b>CCL</b>	White <b>WH</b>
Diffuse <b>CCD</b>	
Champagne Bronze <b>CCZ</b>	

<sup>1</sup>Specify desired flange

**W** White, **P** Polished

Emergency Add suffix **EM\***

Chicago Plenum Add suffix **LC**

**Options and Accessories (continued)**

Existing/Thk. Ceiling **FA EC7\***

Emergency Ltg. Kit **FA EM3E\***

**FA EM4E\***

Fuse (Slow Blow) Add Suffix **F**

\*See Spec. Sheets: FAEC, FAEM

Mounting Bars & Accessories; see Specification Sheet MBA.

Sloped Ceiling Adapters; see Specification Sheet SCA.

**Labels**

All units are UL listed for wet locations, Opal Diffuser is UL listed for damp locations, I.B.E.W.

Alzak® is a registered trademark of ALCOA.

**US Patent Pending.**

Job Information	Type:
<b>Job Name:</b>	
<b>Cat. No.:</b>	
<b>Lamp(s):</b>	
<b>Notes:</b>	

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We reserve the right to change details of design, materials and finish.

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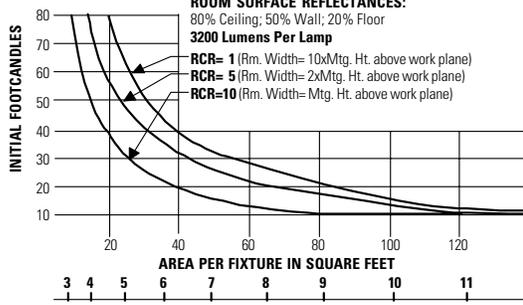
**PHILIPS**

<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b>	<b>04/07/09</b>	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b>	<b>CFTR42W lamp</b>	<b>E1</b>

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

**Clear Reflector Cone (CL)**

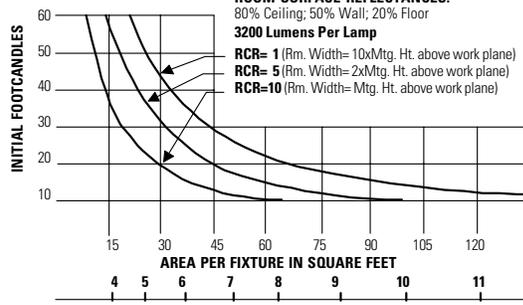
**Quick Calculator**



This quick calculator chart determines the number and spacing of 1 ft.- 42W PL-T units with Fresnel Lens and Clear Cone for any level of illumination. Conversion factors: Opal diffuser, fc x 0.8; Clear Shielding, fc x 1.0.

**White Reflector Cone (WH)**

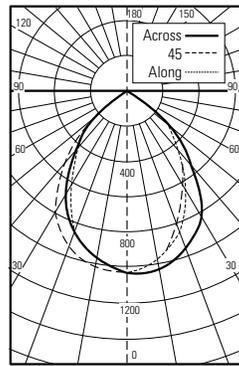
**Quick Calculator**



This quick calculator chart determines the number and spacing of 1 ft.- 42W PL-T units with Fresnel Lens and White Cone for any level of illumination. Conversion factors: Opal diffuser, fc x 0.8; Clear Shielding, fc x 1.0.

**Spacing Ratio = 1.2**

CERTIFIED TEST REPORT NO. 0066FR  
COMPUTED BY LSI PROGRAM \*\*TEST-LITE\*\*  
CALCULITE 7 3/16" DIAMETER RECESSED FLUORESCENT LENSED DOWNLIGHT  
SEMI-SPECULAR REFLECTOR WITH CLEAR CONE AND FRESNEL LENS  
LUMEN RATING = 3200 LMS. 1-42W PL-T LAMP



ANGLE	ALONG	22.5	45	67.5	ACROSS	LUMENS
0	1027	1027	1027	1027	1027	
5	1002	984	1006	1022	1037	48
10	964	942	969	1001	1034	
15	906	851	887	932	995	128
20	831	738	786	852	937	
25	736	619	692	773	880	167
30	619	519	603	698	805	
35	508	449	516	590	680	169
40	420	406	431	469	525	
45	335	349	361	381	413	144
50	267	310	307	313	322	
55	102	132	129	144	156	70
60	34	41	47	55	61	
65	4	8	9	12	14	8
70	0	0	0	0	0	
75	0	0	0	0	0	
80	0	0	0	0	0	
85	0	0	0	0	0	
90	0	0	0	0	0	

ZONAL LUMENS AND PERCENTAGES			
ZONE	LUMENS	% LAMP	% LUMINAIRE
0-30	719	22.47	47.85
0-40	1081	33.79	71.95
0-60	1490	46.58	99.19
0-90	1502	46.97	100.00
40-90	421	13.17	28.05
60-90	12	.38	.81
90-180	0	.00	.00
0-180	1502	46.97	100.00

\*\* EFFICIENCY = 47.0% \*\*

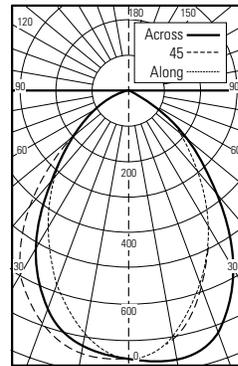
**Coefficients Of Utilization**

ROOM CAVITY RATIO	% EFFECTIVE CEILING CAVITY REFLECTANCE																							
	80				70				50				30				10				0			
	50	30	10	0	50	30	10	0	50	30	10	0	50	30	10	0	50	30	10	0	50	30	10	0
1	.52	.51	.49	.51	.50	.49	.49	.48	.47	.47	.46	.46	.46	.45	.44	.44	.44	.44	.44	.44	.44	.44	.44	
2	.48	.46	.44	.47	.45	.44	.46	.44	.43	.44	.43	.42	.43	.42	.41	.40	.40	.40	.40	.40	.40	.40	.40	
3	.44	.42	.40	.44	.42	.40	.43	.41	.39	.41	.40	.38	.40	.39	.38	.37	.37	.37	.37	.37	.37	.37	.37	
4	.41	.38	.36	.41	.38	.36	.40	.37	.36	.39	.37	.35	.38	.36	.35	.34	.34	.34	.34	.34	.34	.34	.34	
5	.38	.35	.33	.38	.35	.33	.37	.34	.33	.36	.34	.32	.35	.33	.32	.31	.31	.31	.31	.31	.31	.31	.31	
6	.35	.32	.30	.35	.32	.30	.34	.32	.30	.33	.31	.29	.33	.31	.29	.29	.29	.29	.29	.29	.29	.29	.29	
7	.32	.29	.27	.32	.29	.27	.31	.29	.27	.31	.28	.27	.30	.28	.26	.26	.26	.26	.26	.26	.26	.26	.26	
8	.30	.27	.25	.29	.27	.24	.29	.26	.24	.29	.26	.24	.28	.26	.24	.23	.23	.23	.23	.23	.23	.23	.23	
9	.28	.24	.22	.27	.24	.22	.27	.24	.22	.26	.24	.22	.26	.24	.22	.21	.21	.21	.21	.21	.21	.21	.21	
10	.25	.22	.20	.25	.22	.20	.24	.22	.20	.24	.22	.20	.24	.22	.20	.19	.19	.19	.19	.19	.19	.19	.19	

20% FLOOR CAVITY REFLECTANCE  
Conversion Factors: Opal Diffuser, cu x 0.8; Clear Shielding, cu x 1.0.

**Spacing Ratio = 1.2**

CERTIFIED TEST REPORT NO. 0071FR  
COMPUTED BY LSI PROGRAM \*\*TEST-LITE\*\*  
CALCULITE 7 3/16" DIAMETER RECESSED FLUORESCENT LENSED DOWNLIGHT  
SEMI-SPECULAR REFLECTOR WITH WHITE CONE AND FRESNEL LENS  
LUMEN RATING = 3200 LMS. 1-42W PL-T LAMP



ANGLE	ALONG	22.5	45	67.5	ACROSS	LUMENS
0	753	753	753	753	753	
5	740	727	739	753	765	35
10	700	679	712	746	774	
15	643	612	660	712	757	95
20	577	532	591	656	718	
25	514	460	517	585	660	124
30	448	394	444	506	581	
35	382	342	376	422	486	124
40	314	294	312	341	387	
45	249	243	252	269	295	101
50	188	190	197	209	223	
55	134	139	144	156	163	66
60	90	94	98	104	109	
65	59	62	64	67	68	34
70	43	47	47	48	48	
75	30	33	33	33	34	17
80	17	20	20	20	21	
85	5	7	7	7	7	5
90	0	0	0	0	0	

ZONAL LUMENS AND PERCENTAGES			
ZONE	LUMENS	% LAMP	% LUMINAIRE
0-30	531	16.60	42.26
0-40	802	25.07	63.82
0-60	1150	35.96	91.55
0-90	1256	39.23	100.00
40-90	454	14.21	36.18
60-90	106	3.32	8.45
90-180	0	.00	.00
0-180	1256	39.28	100.00

\*\* EFFICIENCY = 39.3% \*\*

**Coefficients Of Utilization**

ROOM CAVITY RATIO	% EFFECTIVE CEILING CAVITY REFLECTANCE																							
	80				70				50				30				10				0			
	50	30	10	0	50	30	10	0	50	30	10	0	50	30	10	0	50	30	10	0	50	30	10	0
1	.43	.41	.40	.42	.41	.40	.40	.39	.39	.39	.38	.37	.37	.37	.36	.36	.36	.36	.36	.36	.36	.36	.36	
2	.39	.37	.35	.38	.36	.35	.37	.35	.34	.36	.35	.33	.35	.34	.33	.33	.33	.33	.33	.33	.33	.33	.33	
3	.35	.33	.31	.35	.33	.31	.34	.32	.31	.33	.31	.30	.32	.31	.30	.29	.29	.29	.29	.29	.29	.29	.29	
4	.33	.30	.28	.32	.30	.28	.31	.29	.28	.30	.29	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	
5	.30	.27	.26	.30	.27	.25	.29	.26	.25	.28	.26	.25	.26	.26	.25	.25	.25	.25	.25	.25	.25	.25	.25	
6	.27	.25	.23	.27	.24	.23	.26	.24	.22	.26	.24	.22	.25	.23	.22	.22	.22	.22	.22	.22	.22	.22	.22	
7	.25	.22	.20	.25	.22	.20	.24	.22	.20	.24	.22	.20	.23	.21	.20	.19	.19	.19	.19	.19	.19	.19	.19	
8	.23	.20	.18	.23	.20	.18	.22	.20	.18	.22	.20	.18	.22	.20	.18	.17	.17	.17	.17	.17	.17	.17	.17	
9	.21	.19	.17	.21	.18	.17	.21	.18	.16	.21	.18	.16	.20	.18	.16	.16	.16	.16	.16	.16	.16	.16	.16	
10	.20	.17	.15	.19	.17	.15	.19	.17	.15	.19	.16	.15	.18	.16	.15	.14	.14	.14	.14	.14	.14	.14	.14	

20% FLOOR CAVITY REFLECTANCE  
Conversion Factors: Opal Diffuser, cu x 0.8; Clear Shielding, cu x 1.0.

**Job Information** **Type:**

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**PHILIPS**

**Project:** Massachusetts Public Library **Date:** 04/07/09 **Type:**  
**Project #** Final Report **Lamp:** CFTR42W lamp **E1**

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

# MTR Column

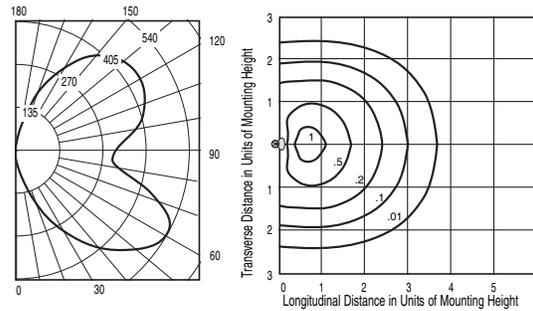


## Photometry

### MTRT with 1T8 lamp

Catalog # MTRT - 12 - 1T8  
Report # SX 17021

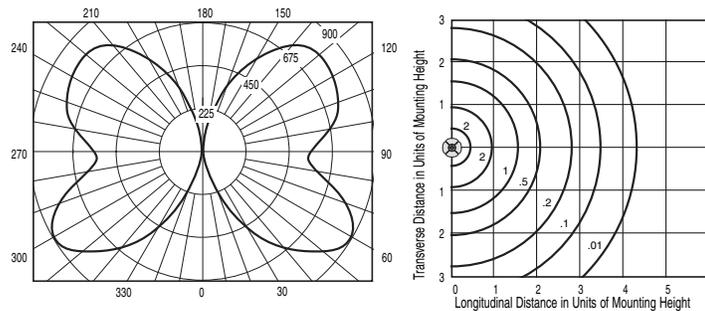
- Maximum candela of 540.2 at 60° from vertical.
- IES classification - Type IV Non-Cutoff



### MTRT with 4T8 lamps

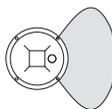
Catalog # MTRT - 12 - 4T8  
Report # SX 17020

- Maximum candela of 898.2 at 57.5° from vertical.
- IES classification - Type V Semi-Cutoff

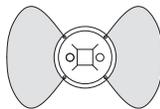


Conversion Chart	
Values based on 14' (4.3m) mounting height.	
Mounting Height	Multiply
12' (3.7m)	1.36
14' (4.3m)	1.00
16' (4.9m)	0.77

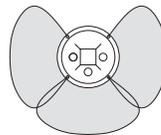
**1T8**



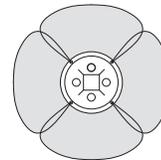
**2T8**



**3T8**



**4T8**



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MTRC-0208-02

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<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b>	<b>04/07/09</b>	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b>	<b>F28T5 (48in) lamps</b>	<b>E2</b>

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

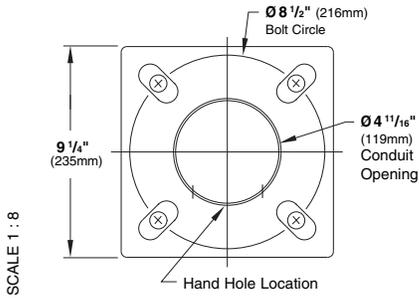


# MTR Column



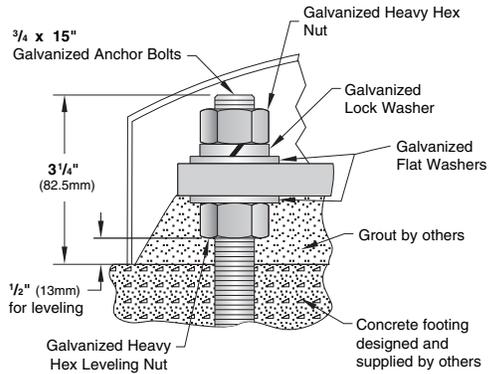
## MTRT/MTRS Bolt Circle

Use caution when setting anchor bolts. Bolts must be vertically straight and centered on dimensions shown.



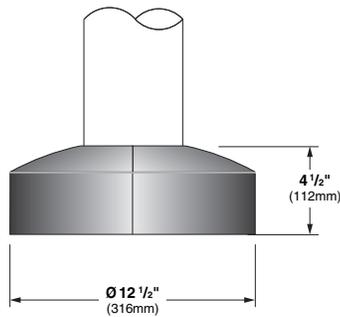
Note: Adequate drainage must be provided in concrete foundation or grout.

## MTRT/MTRS Anchor Bolt Detail

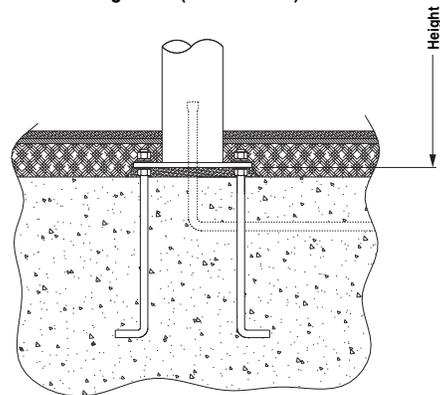


## BC3 Standard Base Cover (MTRT/MTRS)

Die-cast aluminum, two-piece field installable base cover.

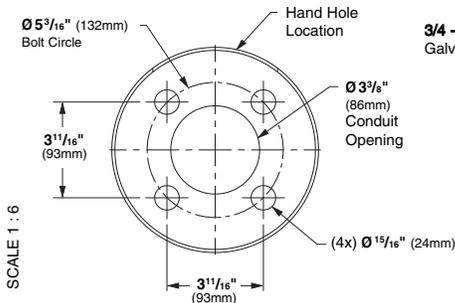


## Alternate Mounting Detail (MTRT/MTRS)



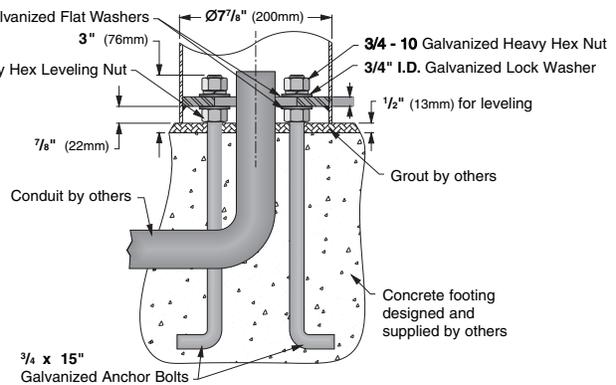
## MTRC Bolt Circle

Use caution when setting anchor bolts. Bolts must be vertically straight and centered on dimensions shown.



Note: Adequate drainage must be provided in concrete foundation or grout.

## MTRC Anchor Bolt Detail



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 MTRC-0208-04

<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b>	<b>04/07/09</b>	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b>	<b>F28T5 (48in) lamps</b>	<b>E2</b>

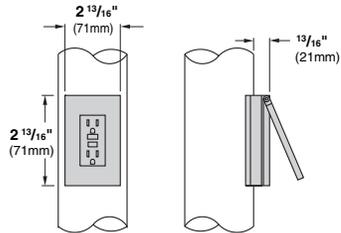
**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

# MTR Column



## Options

**GFCI Receptacle (REC)** - GFCI duplex receptacle with cast base welded to pole and gasketed, provided with weather-proof, self-closing cover; located 36" (915mm) from base of pole, inline with handhole. Receptacle is intended only for portable tools or other portable equipment to be connected to outlet only when attended by operating personnel.



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MTRC-0208-05

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<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b>	<b>04/07/09</b>	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b>	<b>F28T5 (48in) lamps</b>	<b>E2</b>

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

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# Library Lighting

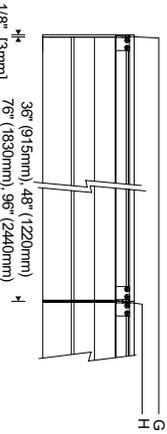
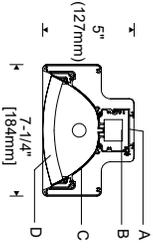
Rectangular stack light

T5 Fluorescent

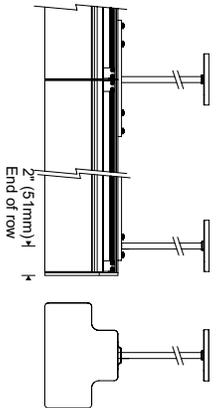
30|30 STACK LIGHT™ Style 3035/3036

## Style 3035 Scale = 1:8

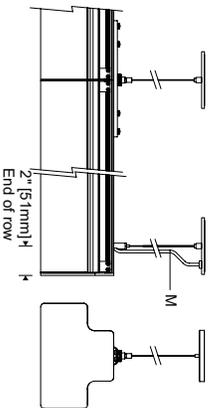
Rectangular Stack Light (no uplight)



## Pendant Stems (X mount) Scale = 1:10

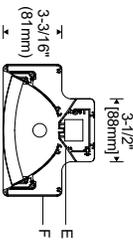


## Cables (X mount)



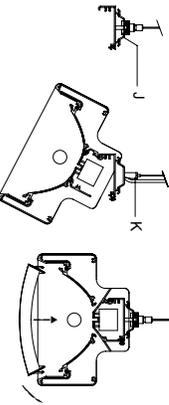
## Style 3036 Scale = 1:8

Rectangular Stack Light (6% uplight)



## Installation (X mount - cables shown)

1. Hang mounting plate on stems or cable
2. Hang housing, connect supply
3. Hinge up, secure with screws, install ballie



## Specifications

- A** Extruded aluminum mounting plate
- B** Electronic ballast
- C** Specular extruded aluminum reflector
- D** Snap-in semi-specular parabolic cross baffles, blades, 1-1/2" o.c., 25° shielding
- E** Extruded specular aluminum uplight reflector
- F** Extruded aluminum rectangular housing
- G** Aluminum decorative end plate (order separately)
- H** Aluminum joiner/reveal plates
- J** Joiner bracket
- K** Power feed
- M** 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 metallized semi-specular finish.

## Mounting:

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

Pendant stem - 1 1/16" 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. **S mount** - mounting plate fastens flush to ceiling. Unit hinges on plate for hands-free access to wiring. For shelf supported bridge or cantilever, consult factory.

## Electrical:

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

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

**S mount** - 7/8" (22mm) dia. knockouts at ends of mounting plate for conduit feed (by others). Housing hinges down for access to ballast and wiring. Optional #12 AWG prewired modular through wiring with quick connectors.

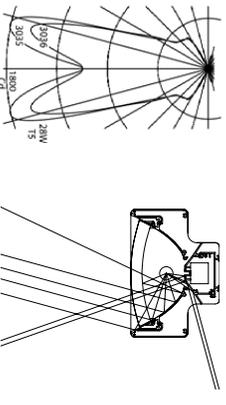
Integral electronic HPF thermally protected class P ballast with end-of-life protection. Optional integral emergency battery operates one lamp. Separate unswitched supply is required. Optional integral motion sensor, consult factory. **Standard:** UL listed or CSA certified.

## Features

- Specular uplight reflectors - creates soft glow on ceiling over adjacent aisles while maintaining 30lc on shelves
- Precise extruded reflector - drives light to the bottom shelf
- Exceeds IESNA recommended light level - 30lc vertical at 30" AND complies with energy standards with single T5
- Innovative variable width cross-baffle - redirects wasted light

## 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](http://www.elliptipar.com).

**elliptipar**



Project: Massachusetts Public Library Date: 04/07/09 Type: Final Report  
 Project # Final Report Lamp: F28T5 (48in) lamps F1

LIGHT FIXTURE CUT SHEET Note: This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

## To Order

### To form a Catalog Number

3 0 3 - T - 2 - 3 4 5 6 7

### 1 Style

3035 = Rectangular stack light, no upright, integral ballast  
 3036 = Rectangular stack light, 6% upright, integral ballast

### 2 Lamp

T = T5 Fluorescent Lamp Code

Lamp Wattage (see chart below)

Number of Lamps in Length, specify 1 or 2

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

Lamp Code	Length*	Lamps
T5 Fluorescent		
T121	36" (915mm)	1 x F21T5
T128	48" (1220mm)	1 x F28T5
T221	72" (1830mm)	2 x F21T5
T228	96" (2440mm)	2 x F28T5

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

### 3 Mounting

X = For use with pendant stem or cable hangers

Note: Order hangers separately

S = Ceiling (surface) mount

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 use with cable hangers.

Project: \_\_\_\_\_

### 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 = Rewired modular #12 AWG through wiring with quick connectors

EK = Combination emergency battery and modular thru wire For modification not listed, include detailed description. Consult factory prior to specification.

### 7 Standard

0 = UL Underwriters Laboratories

J = CSA, Canadian Standards Association

### Example

3036 - T221 - X - 02 - 1 - 0K0

Rectangular stack light with upright for use with two 3' F21T5 lamps. 72" long (not including end plates). For use with pendant or cable hangers (order separately). Semi-gloss white. Integral 120V electronic 2-lamp ballast. UL. Optional modular wiring. Order decorative end plates separately.

If cable mounted (up to 48"), order (1) VERQ2480 non-electrical plus (1) VESQ2480 electrical feed hanger. For each additional unit in a row, order (1) additional VERQ2480 non-electrical hanger. See Hangers.

### 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.

39 = Rectangular



AFK000X \_\_\_\_\_ Ballast fuse kit

0 = UL

J = CSA



## 30130 STACK LIGHT™ Style 3035/3036

Type: \_\_\_\_\_

### 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, 1 1/16" 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 with (4) #14 AWG leads

G = Electrical feed

VE \_\_\_\_\_ 0 = Cable support, field adjustable

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

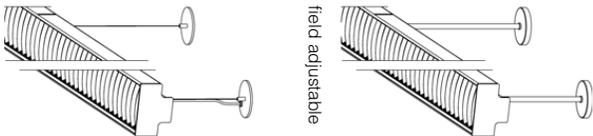
01 = White canopy, black cord

02 = White canopy & cord

99 = Custom RAL or computer matched color to be specified

R = Non-electrical

S = Electrical feed, 18/4 cord



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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Type: F1

Date: 04/07/09  
 Lamp: F28T5 (48in) lamps

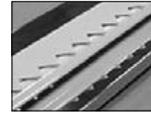
Project: Massachusetts Public Library  
 Project # Final Report

Project: \_\_\_\_\_  
 Project # \_\_\_\_\_

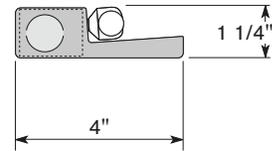
LIGHT FIXTURE CUT SHEET Note: This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

# EX T5 HO

Low Profile Linear Fluorescent



sawtooth deflector detail



ex | T5 high output performance linear cove system

- Low profile cove luminaire with only 1 1/4" height
- Designed to illuminate vertical and horizontal surfaces with restricted mounting space
- Die formed 20 gauge steel housing with powder coat enamel finish
- High reflectance specular aluminum reflector
- Optional sawtooth deflector produces a shadow-free effect
- Modules are through wired for easy installation
- Electronic Integral, High Power Factor ballasts
- UL & CUL listed locations

front view:



EX.2

**electrix**  
ILLUMINATION



<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b>	<b>04/07/09</b>	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b>	<b>1-28WT5</b>	<b>F2</b>

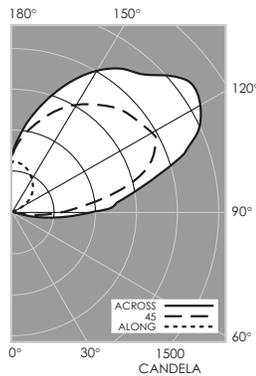
**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

how to specify: EX 54 S1 1 D1 46

PRODUCT	LAMP	LAMP CONFIG.	VOLTAGE	BALLAST	LUMINAIRE LENGTH	OPTIONS
EX - T5 High Output	54 - 54 watt T5 HO 39 - 39 watt T5 HO 24 - 24 watt T5 HO	S2 - 2 lamps (Tandem) S1 - 1 lamp	U - Universal 120 through 277v  <i>Please Specify Voltage For Dimming</i> 1 - 120V 2 - 277V	E - Electronic High Power Factor  D1 - Digital Dimming DALI compatible (54 watt only) D2 - 0 to 10 volt control system (54 watt only) D3 - Lutron Eco-10™ D4 - Lutron Hi-Lume®	92 - 54 watt / S2 / 92.5 in. 46 - 54 watt / S1 / 46.25 in. 69 - 39 watt / S2 / 69 in. 34 - 39 watt / S1 / 34.5 in. 22 - 24 watt / S1 / 22.75 in.	SD - Sawtooth Deflector  EM - Emergency Ballast <i>4' nominal lamp only</i>

photometric data | catalog no. EX 54 S1 U E 46

lighting sciences, inc. | report no. 18271



photometry taken with  
sawtooth deflector

Zone	Lumens	% Lamp	% Fixt
0-30°	0	0.00	0.00
0-60°	0	0.00	0.00
0-90°	192	4.29	6.39
90-180°	2828	62.85	93.61
<b>Total Fixture</b>			
0-180°	3021	67.14	100.00
<b>Efficiency: 67.1 %</b>			

Angle	Along	22.5°	45°	67.5°	Across	Output Lumens
0°	0	0	0	0	0	0
5°	0	0	0	0	0	0
15°	0	0	0	0	0	0
25°	0	0	0	0	0	0
35°	0	0	0	0	0	0
45°	0	0	0	0	0	0
55°	0	0	0	0	0	0
65°	0	0	0	0	0	1
75°	0	0	20	214	259	49
85°	0	75	251	451	496	142
90°	0	172	417	595	660	
95°	7	303	558	717	793	277
105°	53	588	992	1115	1200	431
115°	116	647	1201	1474	1565	512
125°	181	680	1170	1569	1668	482
135°	241	669	1101	1364	1449	387
145°	293	656	988	1250	1313	290
155°	335	608	841	1030	1063	185
165°	363	532	661	779	788	92
175°	381	439	473	519	509	24
180°	387	387	387	387	387	

EX T5 HO low profile linear fluorescent

EX.3

electrix



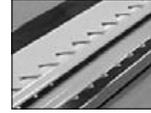
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**Project:** Massachusetts Public Library      **Date:** 04/07/09      **Type:**  
**Project #** Final Report      **Lamp:** 1-28WT5      **F2**

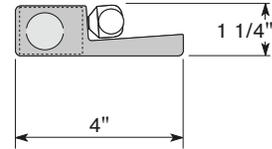
**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

# EX T5

Low Profile Linear Fluorescent



sawtooth deflector detail



ex | T5 performance linear cove system

- Low profile cove luminaire with only 1 1/4" height
- Designed to illuminate vertical and horizontal surfaces with restricted mounting space
- Die formed 20 gauge steel housing with powder coat enamel finish
- High reflectance specular aluminum reflector
- Optional sawtooth deflector produces a shadow-free effect
- Modules are through wired for easy installation
- Electronic Integral, High Power Factor ballasts
- UL & CUL listed locations

front view:



EX.4



**Project:** Massachusetts Public Library      **Date:** 04/07/09      **Type:**  
**Project #** Final Report      **Lamp:** 1-28WT5      **F2**

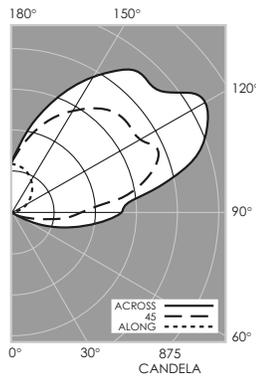
**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

how to specify: EX 28 S1 1 D1 46

PRODUCT	LAMP	LAMP CONFIG.	VOLTAGE	BALLAST	LUMINAIRE LENGTH	OPTIONS
EX - T5	28 - 28 watt T5 21 - 21 watt T5 14 - 14 watt T5	S2 - 2 lamps (Tandem) S1 - 1 lamp	U - Universal 120 through 277v  Please Specify Voltage For Dimming 1 - 120V 2 - 277V	E - Electronic High Power Factor  D1 - Digital Dimming DALI compatible  D3 - Lutron Eco-10™	92 - 28 watt / S2 / 92.5 in. 46 - 28 watt / S1 / 46.25 in. 69 - 21 watt / S2 / 69 in. 34 - 21 watt / S1 / 34.5 in. 22 - 14 watt / S1 / 22.75 in.	SD - Sawtooth Deflector  EM - Emergency Ballast  4' nominal lamp only

photometric data | catalog no. EX 28 S1 U E 46

lighting sciences, inc. | report no. 19270



photometry taken with sawtooth deflector

Zone	Lumens	% Lamp	% Fixt
0-30°	0	0.00	0.00
0-60°	0	0.00	0.00
0-90°	176	6.74	9.99
90-180°	1586	60.79	90.01
<b>Total Fixture</b>			
0-180°	1762	67.53	100.00
<b>Efficiency: 67.5%</b>			

Angle	Along	22.5°	45°	67.5°	Across	Output Lumens
0°	0	0	0	0	0	
5°	0	0	0	0	0	0
15°	0	0	0	0	0	0
25°	0	0	0	0	0	0
35°	0	0	0	0	0	0
45°	0	0	0	0	0	0
55°	0	0	0	0	0	0
65°	0	0	0	12	51	8
75°	0	0	85	197	234	52
85°	0	79	228	348	387	115
90°	0	133	301	422	462	
95°	5	244	368	452	484	183
105°	31	319	591	731	759	266
115°	64	363	659	851	897	288
125°	99	361	610	782	878	252
135°	132	363	598	753	790	209
145°	160	345	532	662	715	155
155°	183	309	435	524	558	95
165°	198	266	333	378	395	46
175°	206	218	233	241	244	12
180°	190	190	190	190	190	

EX T5 low profile linear fluorescent

EX.5

electrix



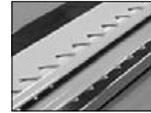
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**Project:** Massachusetts Public Library      **Date:** 04/07/09      **Type:**  
**Project #** Final Report      **Lamp:** 1-28WT5      **F2**

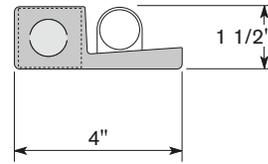
**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

# EX T8

Low Profile Linear Fluorescent



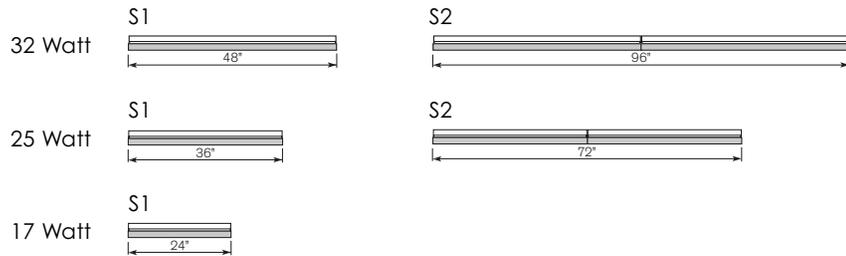
sawtooth deflector detail



ex | T8 performance linear cove system

- Low profile cove luminaire with only 1 1/2" height
- Designed to illuminate vertical and horizontal surfaces with restricted mounting space
- Die formed 20 gauge steel housing with powder coat enamel finish
- High reflectance specular aluminum reflector
- Optional sawtooth deflector produces a shadow-free effect
- Modules are through wired for easy installation
- Electronic Integral, High Power Factor ballasts
- UL & CUL listed locations

front view:



EX.6



<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b>	<b>04/07/09</b>	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b>	<b>1-28WT5</b>	<b>F2</b>

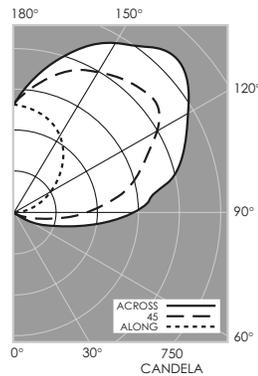
**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

how to specify: EX 32 S1 1 D1 48

PRODUCT	LAMP	LAMP CONFIG.	VOLTAGE	BALLAST	LUMINAIRE LENGTH	OPTIONS
EX - T8	32 - 32 watt T8 25 - 25 watt T8 17 - 17 watt T8	S2 - 2 lamps (Tandem) S1 - 1 lamp	U - Universal 120 through 277v  Please Specify Voltage For Dimming 1 - 120V 2 - 277V	E - Electronic High Power Factor  D1 - Digital Dimming DALI compatible  D2 - 0 to 10 volt control system	96 - 32 watt / S2 / 96 in. 48 - 32 watt / S1 / 48 in. 72 - 25 watt / S2 / 72 in. 36 - 25 watt / S1 / 36 in. 24 - 17 watt / S1 / 24 in.	SD - Sawtooth Deflector  EM - Emergency Ballast  4' nominal lamp only

photometric data | catalog no. EX 32 S1 U E 48

lighting sciences, inc. | report no. 19133



Zone	Lumens	% Lamp	% Fixt
0-30°	0	0.00	0.00
0-60°	1	0.06	0.08
0-90°	170	5.79	8.56
90-180°	1824	61.84	91.44
<b>Total Fixture</b>			
0-180°	1995	67.63	100.00

Efficiency: 67.6 %

Angle	Along	22.5°	45°	67.5°	Across	Output Lumens
0°	0	0	0	0	0	
5°	0	0	0	0	0	0
15°	0	0	0	0	0	0
25°	0	0	0	0	0	0
35°	0	0	0	0	0	0
45°	0	0	0	0	0	0
55°	0	0	0	0	6	2
65°	0	0	5	78	95	17
75°	0	0	80	176	203	49
85°	0	61	192	319	348	103
90°	0	122	267	393	426	
95°	9	186	314	436	476	163
105°	60	285	436	559	592	212
115°	121	376	528	634	664	239
125°	185	422	627	731	749	251
135°	247	446	631	763	801	228
145°	300	467	607	696	741	180
155°	345	468	573	638	673	126
165°	375	447	512	545	570	70
175°	390	413	435	438	452	21
180°	392	392	392	392	392	

photometry taken with sawtooth deflector

> additional photometry for the 25 watt T8 lamp can be downloaded at [www.electrix.com](http://www.electrix.com)

EX.7

electrix



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**Project:** Massachusetts Public Library      **Date:** 04/07/09      **Type:**  
**Project #** Final Report      **Lamp:** 1-28WT5      **F2**

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

## To Order

### To form a Catalog Number

3 0 3 0 - T - 1 - 2 - 3 - 4 - 5 - 6 - 7

### 1 Style

3030 = Stack light, integral ballast

### 2 Lamp

T = T5 Fluorescent Lamp Code

Lamp Wattage (see chart below)

Number of Lamps in Length, specify 1 or 2

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

Lamp Code	Length	Lamps
T5 Fluorescent		
T121	36" (915mm)	1 x F2-T15
T128	48" (1220mm)	1 x F28T5
T221	72" (1830mm)	2 x F2-T15
T228	96" (2440mm)	2 x F28T5

For complete lamp and ballast information, see Accessories Section. Standard 15 lamp color is 3000K / 80+ CRI.

### 3 Mounting

S = Ceiling (surface) mount

X = For use with pendant stem or cable hangers

Note: Order hangers separately.

### 4 Finish

02 = Semi-gloss white

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

### 5 Voltage/Ballast

Electronic

1 = 120V For 347V (Canada), consult factory.

2 = 277V

### 6 Option

00 = No option

0E = Integral emergency battery pack with indicator lamp and test button. Operates one lamp.

Note: For X mount, order one additional electrical feed stem or cable for unswitched feed to battery.

OK = Prewired modular #1/4 AWG thru wiring w/ connectors. For modification not listed, include detailed description. Consult factory prior to specification.

REV. 8/05

elliptipar

Project: \_\_\_\_\_

### 7 Standard

0 = UL Underwriters Laboratories

J = CSA, Canadian Standards Association

### Example

3030 - T228 - X - 02 - 1 - 0K0

Stack light for use with two 4' F28T5 lamps. 96" long housing (not including decorative end plates). For use with pendant stem or cable hangers (order separately). Semi-gloss white. Integral 120V electronic 2-lamp ballast. UL. Optional modular wiring. Order decorative end plates separately.

If cable mounted (up to 48"), order (1) VER02480 non-electrical plus (1) VES02480 electrical feed hanger. For each additional unit in a row, order (1) additional VER02480 non-electrical hanger. See Hangers.

### Accessories

Order separately. See Accessories Section for specifications.

### ADE

0 = Decorative end plates, pair, white, or custom color to match housing.

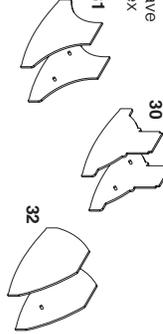
Note: 1 required for each row or single unit. Adds 1/4" (6mm) to length.

### 30

30 = Contoured

31 = Concave

32 = Convex



### ARS30

0 = Roomside shield, increases crosswise shielding from 25° to 35° (for end stack) attaches internally

alongside lamp. Consult factory for additional information.

36 = 36" (T121 lamp)  
48 = 48" (T128 lamp)  
72 = 72" (T221 lamp)  
96 = 96" (T228 lamp)



### AFK000X

0 = Ballast fuse kit

0 = UL

J = CSA



## 30|30 STACK LIGHT™

## Style 3030

Type: \_\_\_\_\_

### Hangers

Order separately. See Accessories Section for specifications. Singles - order one non-electrical and one electrical hanger for each unit (X mount).

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

Note: For each single or row with emergency battery (option code 0E), order one additional electrical feed and subtract one non-electrical hanger.

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

92 = White

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

F = Non-electrical

G = Electrical feed, with (3) #14 AWG leads

48 = up to 48" (1.2m)

96 = up to 96" (2.4m)

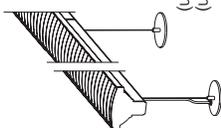
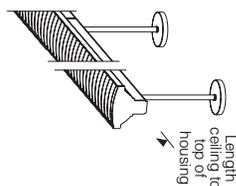
02 = White canopy, cord

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

R = Non-electrical

S = Electrical feed, 18/3 cord

0 = Cable support, field adjustable



Type: F3

Lamp: F28T5 (48in) lamps

Date: 04/07/09

Project # Final Report

Project: Massachusetts Public Library

Project #

LIGHT FIXTURE CUT SHEET Note: This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.



**Weblink**  
108



**Project page**  
334, 336

**Design**

Jorgen Klinkby

**Concept**

X-Direct/Indirect created a general, soft and diffused illumination. The shades provides an upwards and downwards distribution of light.

**Finish**

Glass, sandblasted. Anodized aluminum.

**Material**

Shades: Tempered glass. Housing: Extruded anodized aluminum.

**Mounting**

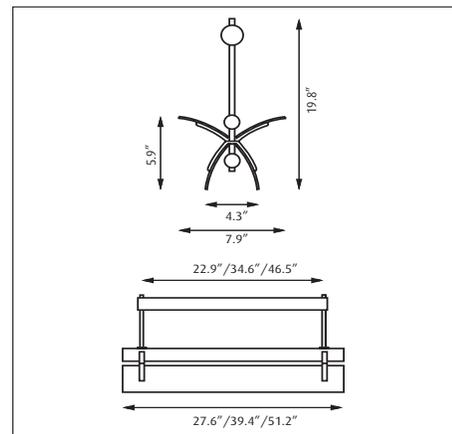
Suspension type: 2x stainless steel aircraft cables. Suspension length: 6'. Cord type: 3-conductor, 18 AWG white PVC power cord. Cord length: 6'. Canopies: White.

**Weight**

Max. 11 lbs.

**Label**

cUL, Damp location. IBEW.



Product code	Dimension	Light source	Voltage	Finish
X-DIR/IND	27.6" 39.4" 51.2"	2/24W/T-5/HO mini bipin 2/39W/T-5/HO mini bipin 2/54W/T-5/HO mini bipin	120-277V	SBL GLASS

**Specification notes:**

a. Provided with one 120-277V integral electronic ballast.

**Info notes:**

I. It is recommended that two recessed 4" octagonal junction boxes (by others) are used to suspend the luminaire.

II. Glass shade thickness is 0.16".

III. The comparable EU version has the following classification: Ingress Protection Code: IP20.



**Project:** Massachusetts Public Library  
**Project #** Final Report

**Date:** 04/07/09  
**Lamp:** F28T5 (48in) lamps  
**Type:** F4

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

Eastern Washington University  
 - School of Computing &  
 Engineering Sciences  
 Cheney, Washington, USA  
**Architect**  
 Integrus Architecture  
**Lighting Designer**  
 ESCENT Lighting Form &  
 Function  
**Electrical Engineer**  
 MW Consulting Engineers  
**Photo**  
 Kevin McGowan



<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b>	<b>04/07/09</b>	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b>	<b>F28T5 (48in) lamps</b>	<b>F4</b>

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

PROJECT NAME :

TYPE :

MODEL :

SUBMITTAL APPROVED BY :

DATE :

**PATENT PENDING**

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**PRODUCT | LL SERIES**

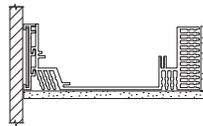
## LumiEdge® Sheet Rock Gear Tray P-7

GTP Performance Cove Luminaire / Tandem Lamp with Adjustable Asymmetric Reflector

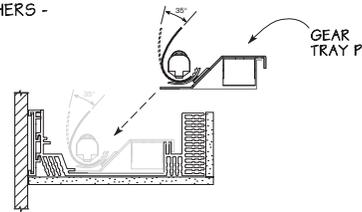
**HOW TO SPECIFY | Gear Tray**

GTP-7	LAMP	VOLTAGE	BALLAST	LUMINAIRE LENGTH	OPTIONS
<b>PRODUCT</b> Gear Tray P-7	<b>54</b> - 54 watt T5 HO <b>39</b> - 39 watt T5 HO <b>24</b> - 24 watt T5 HO <b>28</b> - 28 watt T5 <b>21</b> - 21 watt T5 <b>14</b> - 14 watt T5	<b>U</b> - Universal 120 through 277V <i>Please Specify Voltage For Dimming</i> <b>1</b> - 120V <b>2</b> - 277V	<b>E</b> - Electronic HPF  <b>D1</b> - Digital Dimming (54 watt only)  <b>D2</b> - 0 to 10 volt control system (54 watt only)  <b>D3</b> - Lutron Eco-10™ (T5 HO only)  <b>D4</b> - Lutron Hi-Lume® (T5 HO only)	<b>92</b> - 54 or 28 watt / 92.5 in. <b>69</b> - 39 or 21 watt / 69 in. <b>46</b> - 54 or 28 watt / 46.25 in. <b>34</b> - 39 or 21 watt / 34.5 in. <b>22</b> - 24 or 14 watt / 22.75 in.	<b>EM</b> - Emergency Ballast  4' nominal lamp only

**NOTE:** LL-SR7 GEAR TRAYS FIT WITHIN ELECTRIX PREFABRICATED COVE SYSTEM. COVE SYSTEM INSTALLED BY OTHERS - SEE ARCHITECTURAL DRAWINGS FOR DETAILS.



COVE SYSTEM -  
INSTALLED BY OTHERS



LL-SR7 GEAR TRAY -  
FITS WITHIN COVE SYSTEM

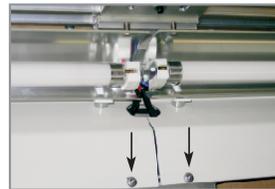
**INSTALLATION OVERVIEW**



1. insert preassembled luminaire



2. make appropriate connections



3. fasten to extrusion



4. connect link bracket for  
consistent reflector alignment



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<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b>	<b>04/07/09</b>	<b>Type:</b>	
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b>	<b>F28T5 (48in) lamps</b>	<b>F5</b>	

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

**PATENT PENDING**

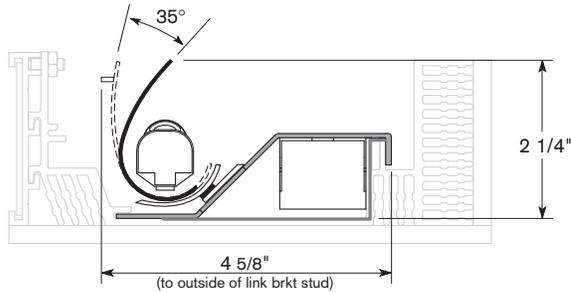
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**PRODUCT | LL SERIES**

**LumiLedge® Sheet Rock Gear Tray P-7**

GTP Performance Cove Luminaire / Tandem Lamp with Adjustable Asymmetric Reflector

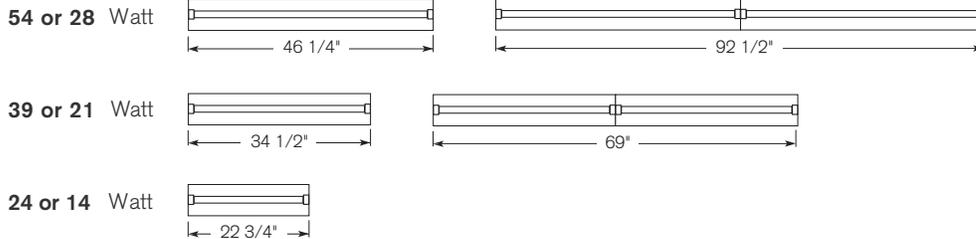
**LUMINAIRE DIMENSIONS**



**ADDITIONAL PROJECT NOTES:**

**LUMINAIRE LENGTHS**

Plan View



**PRODUCT SPECIFICATIONS**

**ELECTRICAL**

Integral electronic HPF Class P ballast; Thermally protected and has end of life protection for T5 lamps; Sound Rating - Class A

Supplied with 12 gauge through wires

Use 90°C for supply wire

Gear tray removes for easy access to ballast

Consult sales representative or factory for dimming and emergency ballast options

Compatible dimming controls provided by others

**MATERIALS & HOUSING**

Extruded aluminum asymmetric reflector with specular finish to enhance performance adjusts 35 degrees and locks into place

Die-formed 20 gauge cold rolled steel gear tray

**FINISH**

Standard finish is electrostatically applied white powder coat; Thermally cured to an enamel finish with 88%+ reflectivity

**LISTINGS**

UL & CUL listed damp locations



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<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b>	<b>04/07/09</b>	<b>Type:</b>	
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b>	<b>F28T5 (48in) lamps</b>	<b>F5</b>	

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

semi-recessed & surface



**Weblink**  
135



**Project page**  
320

## Design

Jens Møller-Jensen

## Concept

Saturn Maxi Ceiling is scaled to provide general illumination for high ceiling spaces. The design of the two reflector rings ensures the majority of the light is being directed downward. The anti-glare ring shields the lamp from view.

## Finish

White or natural painted aluminum, powder coated.

## Material

Enclosure: Injection molded clear polycarbonate, injection molded partly frosted polycarbonate or injection molded white opal polycarbonate. Saturn ring: Die cut aluminum. Anti-glare ring: Spun aluminum. Housing: Die cast aluminum.

## Mounting

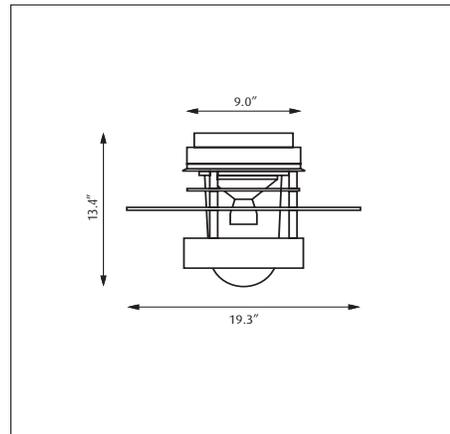
Surface: Mounted directly over a recessed 4" octagonal junction box.

## Weight

Max. 17 lbs.

## Label

CUL, Wet location. IBEW.



Product code	Light source	Voltage	Finish
SAT-MAX	1/70W/CMH/T-6 G12 1/100W/MH/ED-17 medium 1/26W/32W/42W/CF GX24q-3/4	120/208/240/277V 120-277V	NAT PAINT ALU WHT

## Specification notes:

- CMH variants provided with a partly frosted enclosure.
- CF variants provided with an opal enclosure.
- MH variants provided with a clear enclosure.
- CMH variants provided with one 120-277V integral electronic ballast.
- CF variants provided with an universal wattage socket and one 120-277V integral electronic ballast.
- MH variants provided with one 120/208/240/277V integral open core coil ballast.

## Info notes:

- All enclosures are U.V. stabilized polycarbonate.
- The comparable EU version has the following classification: Ingress Protection Code: IP44.



CMH

MH

CF



135

134

148

59

**Project:** Massachusetts Public Library  
**Project #** Final Report

**Date:** 04/07/09  
**Lamp:** CFTR42W lamp  
**Type:** F7

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

University of Colorado Health Science  
 Center - Research Complex 1  
 Aurora, Colorado, USA  
 Architect  
 Fentress Bradburn Architects  
 Lighting Designer  
 Illume  
 Engineer  
 M-E Engineers, Inc.  
 Photo  
 Image Design



<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b>	<b>04/07/09</b>	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b>	<b>CFTR42W lamp</b>	<b>F7</b>

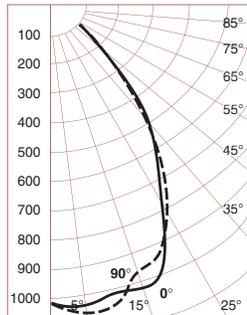
**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

# P55 P931 P932

## Performance Datachart

Single Unit Initial Footcandles, 30" Work Plane						Ceiling to Floor		Multiple Units Initial Footcandles, 30" Work Plane								
P931 One 32W Philips Triple Tube Read Top Data								Ceiling 80% Walls 50% Floor 20%								
P932 One 42W Philips Triple Tube Read Bottom Data								Spacing is Maximum Over Work Plane								
Nadir	15°		25°		35°				Spacing		RCR 1		RCR 3		RCR 8	
FC	FC	Diam	FC	Diam	FC	Diam										
34	30	3'	20	5'	9	8'	8'		6'		43		37		25	
39	35	3'	27	5'	14	8'			6'		44		38		26	
24	21	3'	14	6'	7	9'	9'		7'		31		26		18	
28	25	3'	20	6'	10	9'			8'		32		27		18	
18	16	4'	11	7'	5	11'	10'		8'		23		20		14	
21	19	4'	15	7'	7	11'			9'		24		20		14	
11	10	5'	7	9'	3	13'	12'		10'		14		12		9	
13	12	5'	9	9'	5	13'			11'		15		13		9	
8	7	6'	4	11'	2	16'	14'		12'		10		8		6	
9	8	6'	6	11'	3	16'			14'		10		8		6	

### Candlepower Distribution

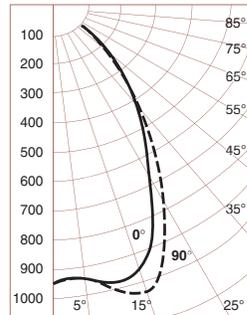


P931 One 32W Triple Tube Philips  
Eff. 52% S/M 0° 1.03 S/M 90° 1.03

### Candelas

	0°	90°
0	2400*	2400*
5	1016	1016
10	1014	1032
15	1003	1013
20	1020	987
25	975	964
30	786	829
35	643	613
40	548	457
45	380	318
50	212	193
55	97	125
60	30	60
65	6	6
70	0	0
75	0	0
80	0	0
85	0	0
90	0	0

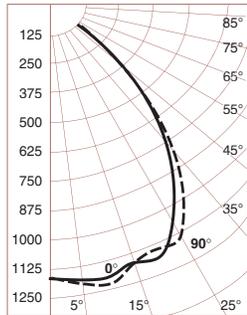
° Vertical Angles  
\* Initial Lamp Lumens



P931 One 32W Triple Tube Osram Sylvania  
Eff. 49% S/M 0° .98 S/M 90° 1.05

	0°	90°
0	2400*	2400*
5	955	955
10	939	954
15	964	998
20	960	1014
25	857	956
30	685	790
35	562	622
40	478	434
45	351	296
50	209	185
55	111	118
60	32	51
65	6	6
70	0	0
75	0	0
80	0	0
85	0	0
90	0	0

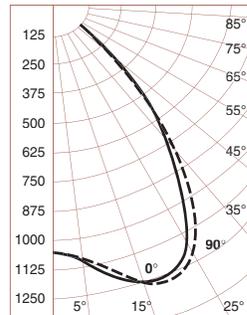
° Vertical Angles  
\* Initial Lamp Lumens



P932 One 42W Triple Tube Philips  
Eff. 54% S/M 0° 1.17 S/M 90° 1.19

	0°	90°
0	3200*	3200*
5	1177	1177
10	1190	1210
15	1184	1226
20	1159	1163
25	1215	1148
30	1092	1143
35	932	966
40	762	753
45	531	517
50	277	282
55	129	161
60	49	77
65	9	11
70	0	0
75	0	0
80	0	0
85	0	0
90	0	0

° Vertical Angles  
\* Initial Lamp Lumens



P932 One 42W Triple Tube Osram Sylvania  
Eff. 56% S/M 0° 1.24 S/M 90° 1.28

	0°	90°
0	3200*	3200*
5	1061	1061
10	1097	1092
15	1184	1184
20	1241	1246
25	1257	1262
30	1154	1231
35	942	1034
40	732	767
45	558	505
50	297	257
55	129	148
60	44	67
65	9	8
70	0	0
75	0	0
80	0	0
85	0	0
90	0	0

° Vertical Angles  
\* Initial Lamp Lumens

### Notes

- Data on all charts calculated with a clear specular cone finish.
- Specular cone multipliers: Gold x .98, Wheat x .97, Pewter x .86, Mocha x .86, Graphite x .84, Titanium x .84, Bronze x .81.
- Softglow® cone multipliers: Gold x .90, Wheat x .87, Mocha x .75, Pewter x .72, Graphite x .70, Titanium x .70, Bronze x .68.
- Single unit Datachart pattern diameters are determined by the number of degrees from each side of nadir. Therefore a 15° diameter represents a total 30° pattern width at the work plane 30" above the floor. Footcandle values are at the edge of that diameter.
- Datachart spacing is rounded off to the nearest foot.
- 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.
- Brightness data from the Average Luminance Method are inaccurate for small aperture downlights. They are theoretical calculations derived for large surfaces such as troffers. For a complete discussion refer to section Z brochure Z1.

Kurt Versen Company, Westwood, New Jersey

### Coefficients of Utilization

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

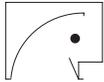
P931 One 32W Triple Tube Philips P931 One 32W Triple Tube Osram x .93  
P932 One 42W Triple Tube Philips P932 One 42W Triple Tube Osram x 1.03

**Project:** Massachusetts Public Library **Date:** 04/07/09 **Type:** Final Report  
**Project #** **Lamp:** CFTR42W lamp **F8**

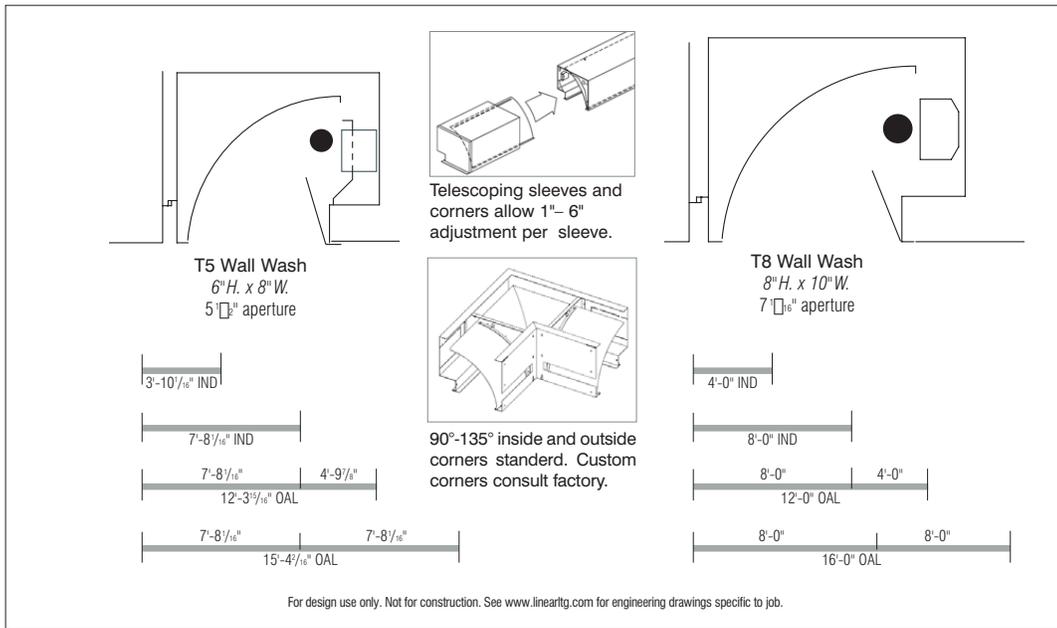
**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

# Wall Wash WW4

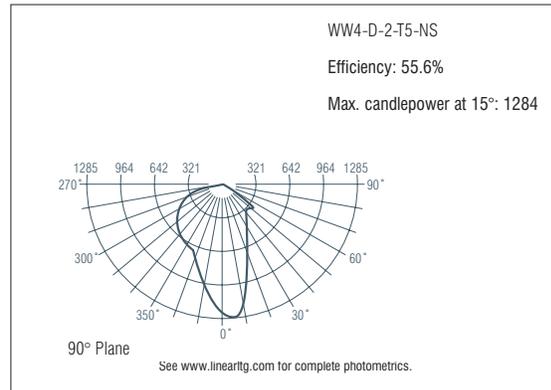
T5 options



T8 options



- Pre-painted white steel housing
- 1 or 2 T5 or T5HO lamps
- 1 or 2 T8 lamps
- Up to 8' one-piece reflector factory installed
- 90° to 135° corners
- Telescoping sleeves available for wall-to-wall installation
- Factory pre-wired
- UL/CUL labels
- Weight per foot: 7 lbs. approx.



Catalog No.	Dir.	Lamps	Ballast	Voltage	Shielding	Mounting	Color	Add'l options	Row length	
<b>WW4</b> Fixture	-	<b>D</b>	-	-	-	<b>NS</b>	<b>R</b>	<b>BW</b>	-	-
Lamps & Electrical Options				Mechanical & Aesthetic Options				Add'l	Feet	
Direction	Direct									
Lamps	1 or 2 2SG 2 lamps, staggered									
Ballast	ET5 Electronic T5 ET5HO High Output T5 ET8 Electronic T8									
Voltage	120, 277 or 347									
Shielding	NS No Shielding									
Mounting	R Recessed									
Color	BW Baked White <i>See color chart for add'l colors</i>									
Add'l options	<b>NO</b> No Option <b>AR</b> Air Return <b>FU</b> Fusing <b>EC</b> Emergency Circuits <b>NL</b> Night Light <b>ED</b> Electronic Dimming <b>EM</b> Emergency Ballast <b>RW</b> White Reflector <b>SC</b> Separate Circuits <b>ISB10</b> Instant Start Ballast <10% <sup>1</sup> <b>PSB10</b> Program Start Ballast <10% <sup>1</sup> <b>SF</b> Special Feature <b>CB</b> Checkerboard Circuit "A" or "C" <b>CBC</b> Checkerboard Circuit "C" <b>LS</b> LutronEcoSys Sensor Feed <b>PBPS</b> Prem Ballast Prog Start <b>SF</b> Special Feature									
Row length	Feet Fixture length 2, 3, 4, 5, 6, 8									

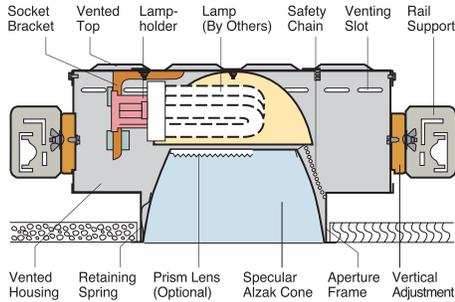
Available with 2-lamp configuration only.  
ISB10 and PSB10 available with T8 only.

Designed for acoustical ceilings.  
See [www.linearltg.com](http://www.linearltg.com) for IES files and additional information.

**Linear Lighting Corp.**  
31-30 Hunters Point Ave., Long Island City, NY 11101 ©7/08  
718-361-7552 Fax 718-937-2747 Web: [www.linearltg.com](http://www.linearltg.com)

**Project:** Massachusetts Public Library      **Date:** 04/07/09      **Type:**  
**Project #** Final Report      **Lamp:** F28T5 (48in) lamp (in cross-section)      **F9**

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.



**P931** One 26-32W Triple Tube Lamp  
**P932** One 42W Triple Tube Lamp

**P55**

Medium Wide Beam  
 7 1/4" Conoid Apertures

**Optics and Applications**

Ellipsoidal primary reflectors and parabolic shielding cones produce classic symmetrical patterns for general use in corridors, open areas and transient spaces. Recess depths are shallow for limited plenums. Use in medium ceiling heights. Spacing to mounting height ratio is 1 to 1.2.

**Design Features**

Construction allows easy access to all components. Air flow design lowers fixture temperature for optimal lamp performance. Steel housings protect the reflectors and assures their proper relationship. Maximum ceiling thickness 2". Ballast and lamp service from below.

**Finish**

Specular clear Alzak cones are standard. Optional colors and Softglow® finishes are available. Housings and structural parts are painted optical matte black to suppress stray light leaks. Steel parts are phosphate conditioned for corrosion resistance before painting.

**Ballasts**

Fully electronic, microprocessor controlled with variable starting current for inrush protection to assure rated lamp life. Input voltage ranges from 120V through 277V. Operates multiple wattage interchangeably. 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**

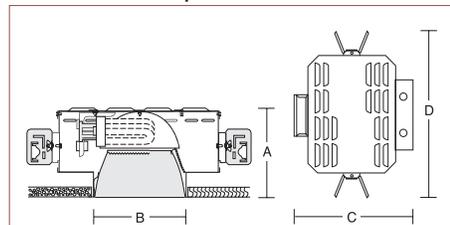
- F Fuse.
- G Gold cone.
- H Mocha cone.
- P Graphite cone.
- T Titanium cone.
- W Wheat cone.
- Y Pewter cone.
- Z Bronze cone.
- S Softglow® finishes: add S before color letters. e.g. SW for Softglow® wheat cone, SC for Softglow® clear cone.
- DM Dimming ballast. Specify watts and volts.
- EM Emergency power includes integral charger light and test switch visible through aperture. Single lamp operation for 90 minutes. Specify volts.
- WRL Wattage restriction label, specify wattage.
- R2 26" support rails.
- R5 52" support rails.
- WT White trim flange.
- WHT White complete trim.
- V347 347 volt ballast.
- LS Lamp shield, acrylic.
- LP Prism lens, acrylic.

**Matching Units**

- Medium narrow beam [Page P53](#)
- Sloped ceilings [Page P54](#)
- Surface mount [Pages P41, P42](#)
- Wall washers [Pages P64, P65, P66](#)



**Dimensions and Lamps**



Number	A Depth	B Aperture	C Width	D Length	Lamps
P931	7 1/2" 191mm	7 1/4" 184mm	13 1/2" 343mm	19" 483mm	26-32W Triple Tube
P932	7 1/2" 191mm	7 1/4" 184mm	13 1/2" 343mm	19" 483mm	42W Triple Tube

**Brightness**

Number	Lamps	Plane	85°	75°	65°	55°	45°
P931	One 32W Philips Triple Tube	0°	11	32	58	4624	16126
		90°	10	30	53	10343	14362
	One 32W Osram Sylvania Triple Tube	0°	6	18	37	2206	12342
		90°	6	17	31	7898	11916
P932	One 42W Philips Triple Tube	0°	16	47	83	4878	16845
		90°	14	36	71	13192	16845
	One 42W Osram Sylvania Triple Tube	0°	14	44	69	2615	14563
		90°	12	31	53	11119	18113

Data in footlamberts. Photometer readings, Maximum Brightness Method. See note 7 on the other side.



**Project:** Massachusetts Public Library      **Date:** 04/07/09      **Type:**  
**Project #** Final Report      **Lamp:** CFTR42W lamp      **F8**

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

# Wall Wash WW4

one or two T5 or T5HO lamps  
or one or two T8 lamps



Linear Lighting

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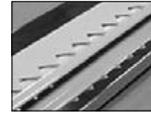
<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b> 04/07/09	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b> F28T5 (48in) lamp (in cross-section)	<b>F9</b>

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

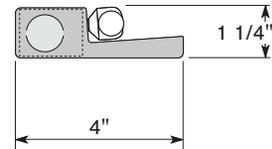
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# EX T5 HO

Low Profile Linear Fluorescent



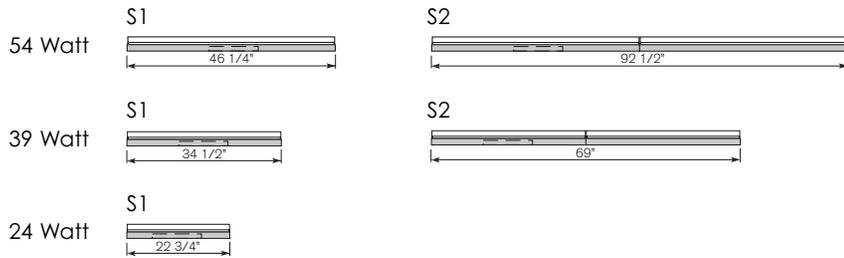
sawtooth deflector detail



ex | T5 high output performance linear cove system

- Low profile cove luminaire with only 1 1/4" height
- Designed to illuminate vertical and horizontal surfaces with restricted mounting space
- Die formed 20 gauge steel housing with powder coat enamel finish
- High reflectance specular aluminum reflector
- Optional sawtooth deflector produces a shadow-free effect
- Modules are through wired for easy installation
- Electronic Integral, High Power Factor ballasts
- UL & CUL listed locations

front view:



EX.2

**electrix**  
ILLUMINATION



<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b>	<b>04/07/09</b>	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b>	<b>1-28WT5</b>	<b>F10</b>

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

# MTR Column

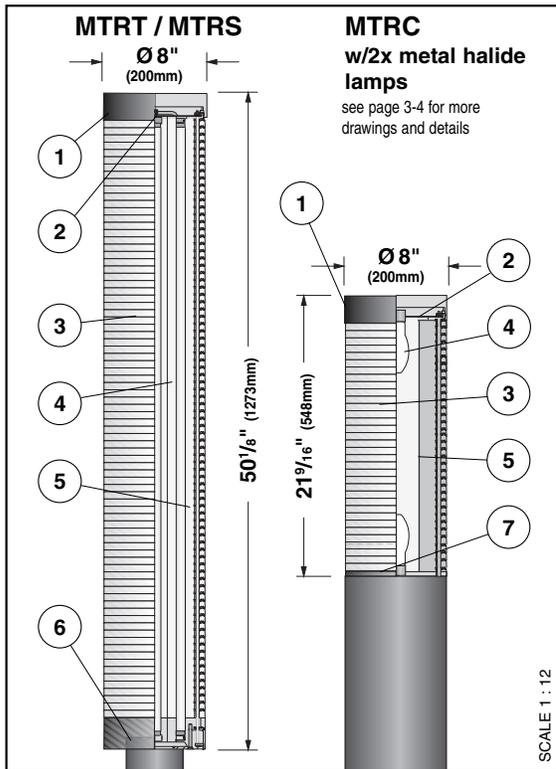


**Project:** \_\_\_\_\_  
**Type:** \_\_\_\_\_ **Qty:** \_\_\_\_\_

\_\_\_\_\_  
 Fixture Series      Height      Lamp Type / Wattage      Finish      Voltage      Options

Series	Height	Lamp Type / Wattage	Finish	Voltage	Options
MTRT MTR* Column Round Tapered Pole	12 12 ft.	<b>Metal Halide</b>	WH White BK Black BZ Bronze SV Silver SP Specify RAL#	120 277 347	REC GFCI Receptacle
	14 14 ft.	2H050** (2x)50w			
MTRS MTR* Column Round Straight Pole	16 16 ft.	2H070** (2x)70w	1T8 (1x)FO32T8	Consult factory for other heights and options	
		2H100** (2x)100w	2T8 (2x)FO32T8		
MTRC MTR* Column Round 8" Straight Pole			3T8 (3x)FO32T8		
			4T8 (4x)FO32T8		

\* US Patent No. 4,669,034      \*\*Only available with MTRC (Round 8" Straight Pole)



- 1. Fixture Cover** - Die-cast, aluminum cover, with smooth crisp form to reflect and complement the column design. Thick-walled, aluminum cover is painted white on the interior for maximum luminaire efficiency. Removes by loosening three vandal-resistant, stainless steel screws for easy access to lamp chamber.
  - 2. Gasketing** - Continuous gaskets provide weather-proofing, dust, and insect control at base of column, fixture cover, and between MTR rings.
  - 3. Shielding** - Consists of 8" (200mm) diameter injection-molded acrylic multi-prisms for total reflection (MTR). MTR rings have a wall thickness of .591" and are patterned after the light-bending characteristics of a prism (US Patent 4,669,034).
  - 4. Lamps** - One, two, three or four FO32T8 (32 watts each) fluorescent lamps on removable gear tray, mounted vertically; or two coated, medium base ED-17 metal halide up to 100w. Lamps provided by others.
  - 5. Diffusing Cylinder** - Satine acrylic cylinder between lamps and MTR rings to diffuse lamp image for maximum performance and visual comfort.
  - 6. Pole Fitter** - Self-leveling, die-cast aluminum, fitter base secured to pole with two, stainless steel, Allen head set screws. 3 1/2" (90mm) I.D. external fitter for 3 1/2" (90mm) O.D. poles.
  - 7. Column Fitter** - Die-cast aluminum fitter, with built-in gasketing ridges, for smooth transition to column.
  - 8. Ballast** (not shown)- Electronic ESB, high power factor, class P, type A sound rating. Minimum lamp starting temperature 0 F (-20 C). Consult factory for more detailed ballast information.
  - 9. Base Cover** - (not shown - MTRT/MTRS only) Standard two-piece base cover is made from die-cast 356 alloy aluminum which is heat treated to produce a T6 temper, measuring 4 1/2" (115mm) height by 12 1/2" (316mm) diameter.
- Exterior Luminaire Finish** - SELUX utilizes a high quality Polyester Powder Coating. All se lux luminaires and poles undergo a five stage intensive pretreatment process where product is thoroughly cleaned, phosphated and sealed. se lux powder coated products provide excellent salt and humidity resistance as well as ultra violet resistance for color retention. All products are tested in accordance with test specifications for coatings from ASTM and PCI.
- Standard exterior colors are White (WH), Black (BK), Bronze (BZ), and Silver (SV). RAL colors (SP) are available, please specify RAL#.

SELUX Corp. © 2007  
 TEL: (845) 691-7723  
 FAX: (845) 691-6749  
 www.selux.com/usa  
 MTRC-0208-01 (v2.3)



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.

**Project:** Massachusetts Public Library      **Date:** 04/07/09      **Type:** \_\_\_\_\_  
**Project #** Final Report      **Lamp:** F28T5 (48in) lamps      **E2**

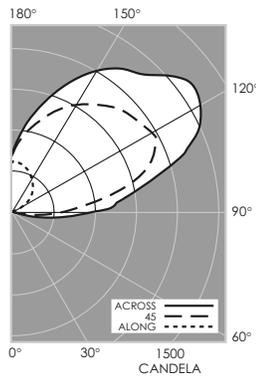
**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

how to specify: EX 54 S1 1 D1 46

PRODUCT	LAMP	LAMP CONFIG.	VOLTAGE	BALLAST	LUMINAIRE LENGTH	OPTIONS
EX - T5 High Output	54 - 54 watt T5 HO 39 - 39 watt T5 HO 24 - 24 watt T5 HO	S2 - 2 lamps (Tandem) S1 - 1 lamp	U - Universal 120 through 277v  <i>Please Specify Voltage For Dimming</i> 1 - 120V 2 - 277V	E - Electronic High Power Factor  D1 - Digital Dimming DALI compatible (54 watt only) D2 - 0 to 10 volt control system (54 watt only) D3 - Lutron Eco-10™ D4 - Lutron Hi-Lume®	92 - 54 watt / S2 / 92.5 in. 46 - 54 watt / S1 / 46.25 in. 69 - 39 watt / S2 / 69 in. 34 - 39 watt / S1 / 34.5 in. 22 - 24 watt / S1 / 22.75 in.	SD - Sawtooth Deflector  EM - Emergency Ballast <i>4' nominal lamp only</i>

photometric data | catalog no. EX 54 S1 U E 46

lighting sciences, inc. | report no. 18271



photometry taken with  
sawtooth deflector

Zone	Lumens	% Lamp	% Fixt
0-30°	0	0.00	0.00
0-60°	0	0.00	0.00
0-90°	192	4.29	6.39
90-180°	2828	62.85	93.61
<b>Total Fixture</b>			
0-180°	3021	67.14	100.00
<b>Efficiency: 67.1 %</b>			

Angle	Along	22.5°	45°	67.5°	Across	Output Lumens
0°	0	0	0	0	0	0
5°	0	0	0	0	0	0
15°	0	0	0	0	0	0
25°	0	0	0	0	0	0
35°	0	0	0	0	0	0
45°	0	0	0	0	0	0
55°	0	0	0	0	0	0
65°	0	0	0	0	0	1
75°	0	0	20	214	259	49
85°	0	75	251	451	496	142
90°	0	172	417	595	660	
95°	7	303	558	717	793	277
105°	53	588	992	1115	1200	431
115°	116	647	1201	1474	1565	512
125°	181	680	1170	1569	1668	482
135°	241	669	1101	1364	1449	387
145°	293	656	988	1250	1313	290
155°	335	608	841	1030	1063	185
165°	363	532	661	779	788	92
175°	381	439	473	519	509	24
180°	387	387	387	387	387	

EX T5 HO low profile linear fluorescent

EX.3

electrix



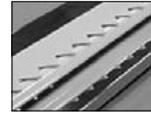
45 Spring Street • New Haven, CT 06519 • p: 203-776-5577 • f: 203-624-7545 • www.electrix.com

**Project:** Massachusetts Public Library      **Date:** 04/07/09      **Type:**  
**Project #** Final Report      **Lamp:** 1-28WT5      **F10**

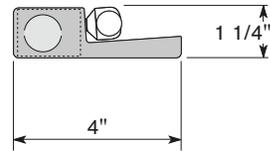
**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

# EX T5

Low Profile Linear Fluorescent



sawtooth deflector detail



ex | T5 performance linear cove system

- Low profile cove luminaire with only 1 1/4" height
- Designed to illuminate vertical and horizontal surfaces with restricted mounting space
- Die formed 20 gauge steel housing with powder coat enamel finish
- High reflectance specular aluminum reflector
- Optional sawtooth deflector produces a shadow-free effect
- Modules are through wired for easy installation
- Electronic Integral, High Power Factor ballasts
- UL & CUL listed locations

front view:



EX.4



<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b>	<b>04/07/09</b>	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b>	<b>1-28WT5</b>	<b>F10</b>

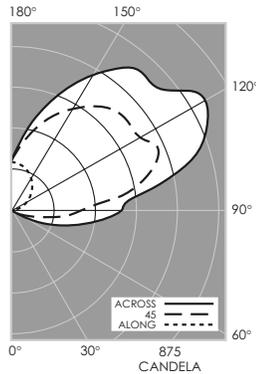
**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

how to specify: EX 28 S1 1 D1 46

PRODUCT	LAMP	LAMP CONFIG.	VOLTAGE	BALLAST	LUMINAIRE LENGTH	OPTIONS
EX - T5	28 - 28 watt T5 21 - 21 watt T5 14 - 14 watt T5	S2 - 2 lamps (Tandem) S1 - 1 lamp	U - Universal 120 through 277v  Please Specify Voltage For Dimming 1 - 120V 2 - 277V	E - Electronic High Power Factor  D1 - Digital Dimming DALI compatible  D3 - Lutron Eco-10™	92 - 28 watt / S2 / 92.5 in. 46 - 28 watt / S1 / 46.25 in. 69 - 21 watt / S2 / 69 in. 34 - 21 watt / S1 / 34.5 in. 22 - 14 watt / S1 / 22.75 in.	SD - Sawtooth Deflector  EM - Emergency Ballast  4' nominal lamp only

photometric data | catalog no. EX 28 S1 U E 46

lighting sciences, inc. | report no. 19270



photometry taken with sawtooth deflector

Angle	Along	22.5°	45°	67.5°	Across	Output Lumens
0°	0	0	0	0	0	
5°	0	0	0	0	0	0
15°	0	0	0	0	0	0
25°	0	0	0	0	0	0
35°	0	0	0	0	0	0
45°	0	0	0	0	0	0
55°	0	0	0	0	0	0
65°	0	0	0	12	51	8
75°	0	0	85	197	234	52
85°	0	79	228	348	387	115
90°	0	133	301	422	462	
95°	5	244	368	452	484	183
105°	31	319	591	731	759	266
115°	64	363	659	851	897	288
125°	99	361	610	782	878	252
135°	132	363	598	753	790	209
145°	160	345	532	662	715	155
155°	183	309	435	524	558	95
165°	198	266	333	378	395	46
175°	206	218	233	241	244	12
180°	190	190	190	190	190	

EX T5 low profile linear fluorescent

EX.5

electrix



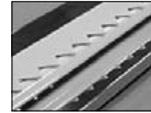
45 Spring Street • New Haven, CT 06519 • p: 203-776-5577 • f: 203-624-7545 • www.electrix.com

Project: Massachusetts Public Library Date: 04/07/09 Type: Final Report  
Project # Final Report Lamp: 1-28WT5 F10

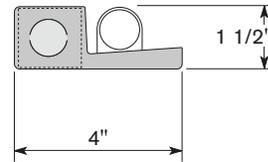
LIGHT FIXTURE CUT SHEET Note: This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

# EX T8

Low Profile Linear Fluorescent



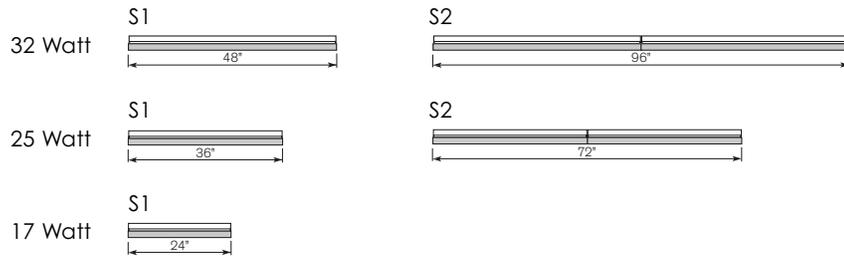
sawtooth deflector detail



### ex | T8 performance linear cove system

- Low profile cove luminaire with only 1 1/2" height
- Designed to illuminate vertical and horizontal surfaces with restricted mounting space
- Die formed 20 gauge steel housing with powder coat enamel finish
- High reflectance specular aluminum reflector
- Optional sawtooth deflector produces a shadow-free effect
- Modules are through wired for easy installation
- Electronic Integral, High Power Factor ballasts
- UL & CUL listed locations

front view:



EX.6



<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b>	<b>04/07/09</b>	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b>	<b>1-28WT5</b>	<b>F10</b>

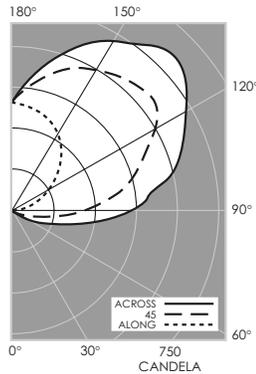
**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

how to specify: EX 32 S1 1 D1 48

PRODUCT	LAMP	LAMP CONFIG.	VOLTAGE	BALLAST	LUMINAIRE LENGTH	OPTIONS
EX - T8	32 - 32 watt T8 25 - 25 watt T8 17 - 17 watt T8	S2 - 2 lamps (Tandem) S1 - 1 lamp	U - Universal 120 through 277v  Please Specify Voltage For Dimming 1 - 120V 2 - 277V	E - Electronic High Power Factor  D1 - Digital Dimming DALI compatible  D2 - 0 to 10 volt control system	96 - 32 watt / S2 / 96 in. 48 - 32 watt / S1 / 48 in. 72 - 25 watt / S2 / 72 in. 36 - 25 watt / S1 / 36 in. 24 - 17 watt / S1 / 24 in.	SD - Sawtooth Deflector  EM - Emergency Ballast  4' nominal lamp only

photometric data | catalog no. EX 32 S1 U E 48

lighting sciences, inc. | report no. 19133



Zone	Lumens	% Lamp	% Fixt
0-30°	0	0.00	0.00
0-60°	1	0.06	0.08
0-90°	170	5.79	8.56
90-180°	1824	61.84	91.44
<b>Total Fixture</b>			
0-180°	1995	67.63	100.00

Efficiency: 67.6 %

Angle	Along	22.5°	45°	67.5°	Across	Output Lumens
0°	0	0	0	0	0	
5°	0	0	0	0	0	0
15°	0	0	0	0	0	0
25°	0	0	0	0	0	0
35°	0	0	0	0	0	0
45°	0	0	0	0	0	0
55°	0	0	0	0	6	2
65°	0	0	5	78	95	17
75°	0	0	80	176	203	49
85°	0	61	192	319	348	103
90°	0	122	267	393	426	
95°	9	186	314	436	476	163
105°	60	285	436	559	592	212
115°	121	376	528	634	664	239
125°	185	422	627	731	749	251
135°	247	446	631	763	801	228
145°	300	467	607	696	741	180
155°	345	468	573	638	673	126
165°	375	447	512	545	570	70
175°	390	413	435	438	452	21
180°	392	392	392	392	392	

photometry taken with sawtooth deflector

> additional photometry for the 25 watt T8 lamp can be downloaded at [www.electrix.com](http://www.electrix.com)

EX.7

electrix



45 Spring Street • New Haven, CT 06519 • p: 203-776-5577 • f: 203-624-7545 • [www.electrix.com](http://www.electrix.com)

**Project:** Massachusetts Public Library      **Date:** 04/07/09      **Type:**  
**Project #** Final Report      **Lamp:** 1-28WT5      **F10**

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

mr16  
avenue® b



features

Narrow 3" slot, T5/T5H0 fluorescent with 2-MR16 halogen lamps (50w max).

Shielding options include corrugated, solid regressed trim, louver as well as flush lens.

Avenue® B with MR16 is a great solution for general illumination that also requires the benefits of accent lighting in a narrow aperture.

shielding options



corrugated regress trim    solid regress trim    louver



flush lens

mr16 options



flush mount mr16 (25° adjustment)    extended yoke mr16 (90° adjustment)

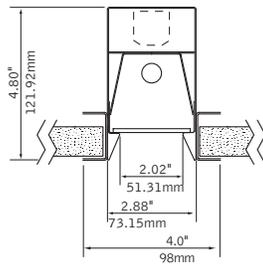


snoot    hex louver    linear    prismatic    sand blasted    soft focus

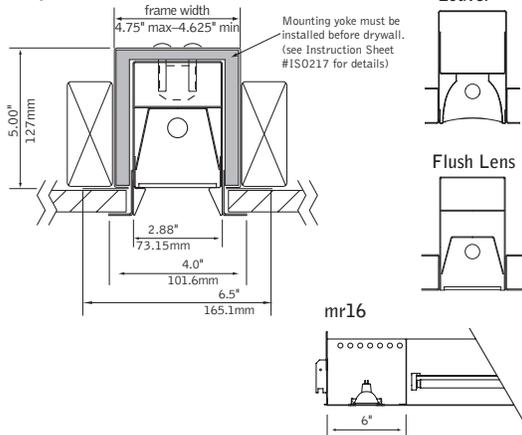
july 2008

dimensional data

Grid Mount (Regress Trim Shown)

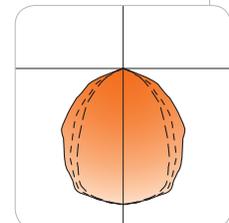


Drywall Flange (Regress Trim Shown)



performance

Regressed with lens  
1-Lamp T5  
62% Efficiency  
1466 cd @ 0°



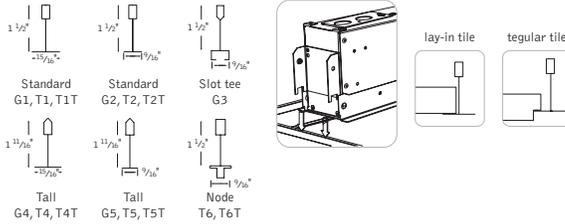
Visit focalpointlights.com for complete photometric data.

<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b> 04/07/09	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b> F28T5 (48in) lamp (in cross-section), 20MR16/IR/WFL60/C	<b>F11</b>

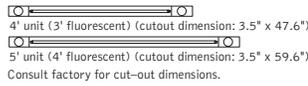
fixture:  
project:

### mounting information

#### grid



#### drywall



### specifications

#### construction

One-piece 20 Ga. steel housing.  
20 Ga., steel MR16 housing and faceplate.  
Two-piece, 20 Ga. spun steel MR16 assembly available in flush mount or with extended yoke. Extended yoke does not retract.  
Corrugated and solid regress trim constructed of 6063-T5 extruded aluminum finished in Matte Satin White.  
Grid luminaires include 20 Ga. steel, .5\"/>

4' unit weight: 7 lbs.  
5' unit weight: 10 lbs.

#### optic

22 Ga. steel reflectors finished in High Reflectance White powder coat.  
Frosted Acrylic lens diffuser .118\"/>

#### electrical

Luminaires are individually wired for specified circuits.  
Thru-wiring not available.  
Electronic ballasts are thermally protected and have a Class "P" rating.  
Electronic 12V, MR16 dimming transformer, 50w max.  
Optional dimming ballasts available.  
Consult factory for dimming specifications and availability.  
Thermal protector included.  
UL listed for non-insulated ceiling applications only.

#### finish

Polyester powder coat applied over a 5-stage pre-treatment.  
MR16 gimbal finished to match housing.

### ordering

luminaire series	FAVB
Avenue B	FAVB
<b>shielding</b>	
Corrugated Regressed Trim Frst.Lns	CR
Solid Regressed Trim Frosted Lens	SR
Concave Parabolic Louver	PL
Flush Frosted Lens	FL
Corrugated Regressed Trim with MicroGlow™ Lens	CRM
Solid Regressed Trim with MicroGlow™ Lens	SRM
Flush MicroGlow™ Lens	FLM
White Concave Parabolic Louver	PW
<b>lampping</b>	
(MR16 lamps provided by others)	
One Lamp T5	1T5
One Lamp T5HO	1T5HO
<b>circuits</b>	
Dual Circuit (floor. switched separately from incand.)	2C
<b>voltage</b>	
120 Volt	120
277 Volt	277
<b>ballast</b>	
Electronic Program Start <10% THD	S
Electronic Dimming Ballast*	D
<b>ceiling configurations*</b>	
Drywall Flange (Consult factory for custom variations)	F
Std. 15/16" Lay-in	G1
Std. 15/16" Tegular	T1
Std. 15/16" Tegular, against Tee	T1T
Std. 9/16" Lay-in	G2
Std. 9/16" Tegular	T2
Std. 9/16" Tegular, against Tee	T2T
9/16" Slot-tee Tegular	G3
Tall 15/16" Lay-in	G4
Tall 15/16" Tegular	T4
Tall 15/16" Tegular, against Tee	T4T
Tall 9/16" Lay-in	G5
Tall 9/16" Tegular	T5
Tall 9/16" Tegular, against Tee	T5T
Node 9/16" Tegular	T6
Node 9/16" Tegular, against Tee	T6T
<b>factory options</b>	
Chicago Plenum	CP
Emergency Battery Pack*	EM
Earthquake Clips	EQ
HLR/GLR Fuse	FU
Include 3000K Lamp	L830
Include 3500K Lamp	L835
Include 4100K Lamp	L841
Wattage Restriction Label (xx= wattage)	WRXX
Lutron™ Sensor Feed* (EcoSystem ballast required)	SF
<b>mr16 (50W max.) lamp qty. &amp; gimbal type (Clear lens supplied)</b>	
Flush Mount	2FM
Extended Yoke Gimbal	2EG
<b>mr16 options</b>	
Snoot	SN
Hex louver	HL
Linear Spread Lens	LSL
Prismatic Spread Lens	PSL
Sand Blasted Lens	SBL
Soft Focus Lens	SFL
<b>finish</b>	
Matte White Housing	WH
Matte Black Housing	BK
Titanium Silver	TS
<b>luminaire length</b>	
4' Nominal Housing (3' floor. lamp)	4'
5' Nominal Housing (4' floor. lamp) (For continuous row mount in drywall ceiling, specify luminaire run length, ie 24')	5'

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

\* for more information see Reference section.

recessed

<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b> 04/07/09	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b> F28T5 (48in) lamp (in cross-section), 20MR16/IR/WFL60/C	<b>F11</b>

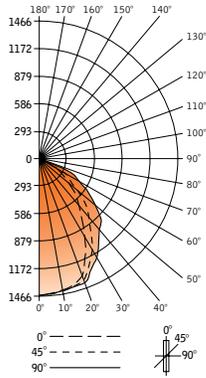
**LIGHT FIXTURE CUT SHEET Note: This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.**

regress with lens  
**avenue® b**



Filename: FAVBSR1T5H0.IES  
Catalog #: FAVB-SR-1T5H0-1C-120-S-G1-WH-4'  
Efficiency: 62%  
Test #: 12914.0

**CANDLEPOWER DISTRIBUTION**



Spacing 1.2  
Criterion: 1.1

Vertical Angle	0°	22.5°	45°	67.5°	90°	Zonal Lumens
0°	1466	1466	1466	1466	1466	
5°	1457	1457	1456	1456	1456	139
15°	1432	1428	1417	1399	1393	401
25°	1311	1299	1254	1187	1150	575
35°	1102	1073	958	837	793	599
45°	934	866	701	586	553	565
55°	649	578	426	357	335	416
65°	404	328	232	187	174	257
75°	184	133	77	60	58	103
85°	39	21	19	18	17	24
90°	0	0	0	0	0	0
95°	0	0	0	0	0	0
105°	0	0	0	0	0	0
115°	0	0	0	0	0	0
125°	0	0	0	0	0	0
135°	0	0	0	0	0	0
145°	0	0	0	0	0	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0

**LUMEN SUMMARY**

Zone	Lumens	% Lamp	% Fixt
0°-30°	1115	22.3	36.2
0°-40°	1714	34.3	55.7
0°-60°	2695	53.9	87.5
0°-90°	3078	61.6	100.0
<b>Total Luminaire</b>	<b>0°-180° 3078</b>	<b>62</b>	<b>100.0</b>

**LUMINANCE DATA (CD/M<sup>2</sup>)**

Vertical Angle	0°	45°	90°
45°	16467	12359	9750
55°	14106	9259	7281
65°	11918	6844	5133
75°	8863	3709	2794
85°	5579	2718	2432

**CO-EFFICIENTS OF UTILIZATION**

Floor	80				70				20					
Ceiling	70	50	30	10	70	50	10	00	50	10	00	00		
Wall	70	50	30	10	70	50	10	50	10	50	10	00		
RCR 0	73	73	73	73	72	72	72	68	68	65	65	63	63	62
1	68	66	64	62	67	65	61	62	59	60	57	58	56	54
2	63	59	56	53	62	58	52	56	51	54	50	52	49	48
3	59	53	49	46	57	52	45	51	45	49	44	48	43	42
4	54	48	43	40	59	47	40	46	39	45	39	43	38	37
5	50	43	38	35	49	42	34	41	34	40	34	39	33	32
6	46	39	34	31	45	39	30	37	30	36	30	36	30	29
7	43	35	31	27	42	35	27	34	27	33	27	32	26	25
8	40	32	27	24	39	32	24	31	24	30	23	29	23	22
9	37	29	24	21	36	29	21	28	21	27	21	27	20	19
10	34	26	22	19	33	26	19	25	18	25	18	24	18	17

Go to [www.focalpointlights.com](http://www.focalpointlights.com) for additional photometric data.

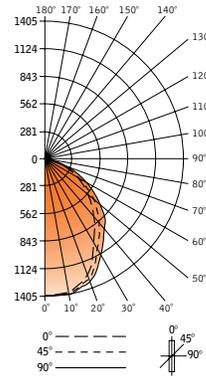
Numbers indicate percentage values of reflectivity.

flush lens  
**avenue® b**



Filename: FAVBFL1T5.IES  
Catalog #: FAVB-FL-1T5H0-1C-120-S-G1-WH-4'  
Efficiency: 65%  
Test #: 13734.0

**CANDLEPOWER DISTRIBUTION**



Spacing 1.2  
Criterion: 1.0

Vertical Angle	0°	22.5°	45°	67.5°	90°	Zonal Lumens
0°	1397	1397	1397	1397	1397	
5°	1395	1395	1394	1391	1392	133
15°	1361	1357	1342	1329	1324	381
25°	1242	1228	1192	1159	1145	552
35°	1029	1005	950	903	885	599
45°	8446	812	747	700	684	586
55°	580	550	501	471	464	458
65°	356	338	310	297	293	315
75°	165	158	150	144	142	160
85°	35	37	38	38	40	41
90°	0	0	0	0	0	0
95°	0	0	0	0	0	0
105°	0	0	0	0	0	0
115°	0	0	0	0	0	0
125°	0	0	0	0	0	0
135°	0	0	0	0	0	0
145°	0	0	0	0	0	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0

**LUMEN SUMMARY**

Zone	Lumens	% Lamp	% Fixt
0°-30°	1066	21.3	33.0
0°-40°	1665	33.3	51.6
0°-60°	2709	54.2	84.0
0°-90°	3225	64.5	100.0
<b>Total Luminaire</b>	<b>0°-180° 3225</b>	<b>64.5</b>	<b>100.0</b>

**LUMINANCE DATA (CD/M<sup>2</sup>)**

Vertical Angle	0°	45°	90°
45°	19577	17286	15828
55°	16546	14293	13237
65°	13784	12003	11344
75°	10432	9483	8977
85°	6571	7134	7510

**CO-EFFICIENTS OF UTILIZATION**

Floor	80				70				20					
Ceiling	70	50	30	10	70	50	10	00	50	10	00	00		
Wall	77	77	77	77	75	75	75	72	72	69	69	66	66	65
RCR 0	77	77	77	77	75	75	75	72	72	69	69	66	66	65
1	71	69	66	64	70	67	63	64	61	62	59	60	57	56
2	66	61	57	54	64	60	53	58	52	56	51	54	50	49
3	61	55	50	46	59	54	46	52	45	50	44	49	44	42
4	56	49	44	40	55	48	40	47	39	45	39	44	38	37
5	51	44	38	34	50	43	34	42	34	41	34	39	33	32
6	48	40	34	30	46	39	30	38	30	37	30	36	29	28
7	44	36	30	27	43	35	27	34	26	33	26	32	26	25
8	43	32	27	23	40	32	23	31	23	30	23	29	23	22
9	37	29	24	20	37	29	20	28	20	27	20	26	20	19
10	35	26	21	18	34	26	18	25	18	25	18	24	18	17

Go to [www.focalpointlights.com](http://www.focalpointlights.com) for additional photometric data.

Numbers indicate percentage values of reflectivity.

**Project:** Massachusetts Public Library **Date:** 04/07/09 **Type:**  
**Project #** Final Report **Lamp:** F28T5 (48in) lamp (in cross-section), 20MR16/IR/WFL60/C **F11**

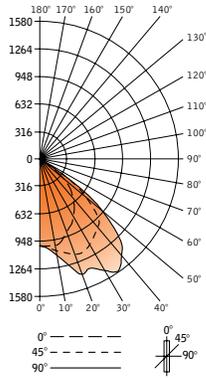
**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

louver  
avenue® b



Filename: FAVBPL1T5H.IES  
 Catalog #: FAVB-PL-1T5H0-1C-120-S-G1-WH-4'  
 Efficiency: 54%  
 Test #: 12387.0

CANDLEPOWER DISTRIBUTION



Spacing 1.1  
 Criterion: 1.9

Vertical Angle	Horizontal Angle					Zonal Lumens
	0°	22.5°	45°	67.5°	90°	
0°	1012	1012	1012	1012	1012	
5°	1017	1024	1030	1037	1041	98
15°	984	1026	1127	1235	1279	320
25°	849	940	1188	1330	1386	530
35°	681	861	1107	1404	1583	707
45°	473	646	957	1165	1326	710
55°	115	202	381	446	392	288
65°	18	24	35	55	44	36
75°	7	8	9	9	11	9
85°	1	1	1	2	2	2
90°	0	0	0	0	0	0
95°	0	0	0	0	0	0
105°	0	0	0	0	0	0
115°	0	0	0	0	0	0
125°	0	0	0	0	0	0
135°	0	0	0	0	0	0
145°	0	0	0	0	0	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0

LUMEN SUMMARY

Zone	Lumens	% Lamp	% Fixt
0°-30°	948	19.0	35.1
0°-40°	1655	33.1	61.3
0°-60°	2653	53.1	98.3
0°-90°	2700	54.0	100.0
Total Luminaire 0°-180°	2700	54.0	100.0

LUMINANCE DATA (CD/M²)

Vertical Angle	0°	45°	90°
45°	8729	17660	2447
55°	2616	8668	8918
65°	556	1081	1359
75°	353	454	555
85°	150	150	299

CO-EFFICIENTS OF UTILIZATION

	Floor				Ceiling				Wall				
	20	30	50	80	20	30	50	80	20	30	50	80	
RCR 0	64	64	64	64	63	63	63	60	60	57	57	55	55
1	61	59	57	56	59	58	55	55	53	53	52	51	50
2	57	54	51	49	56	53	48	51	47	49	46	48	45
3	53	49	46	43	52	48	43	47	42	45	41	44	41
4	49	44	41	38	48	44	38	42	37	41	37	40	36
5	46	40	36	33	45	40	33	38	33	37	32	37	32
6	42	36	32	29	41	36	29	35	29	34	29	33	29
7	39	33	29	26	38	32	26	32	25	31	25	30	25
8	36	29	25	22	35	29	22	28	22	28	22	27	22
9	33	26	22	19	32	26	19	25	19	25	19	24	19
10	30	24	20	17	30	23	17	23	17	22	17	22	17

Numbers indicate percentage values of reflectivity.

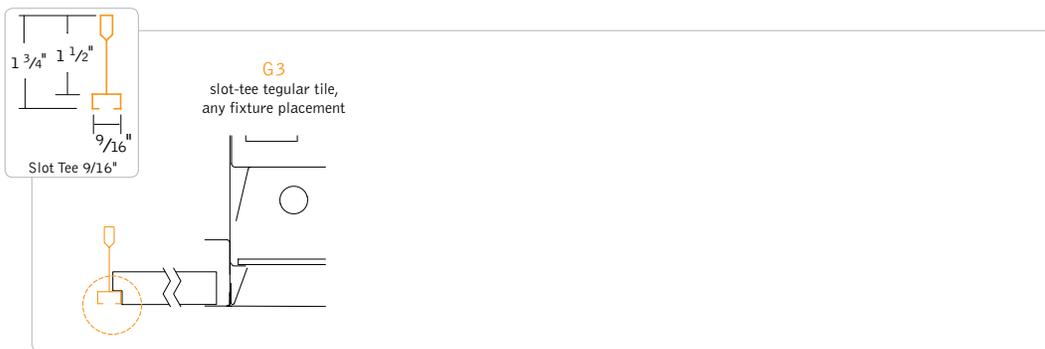
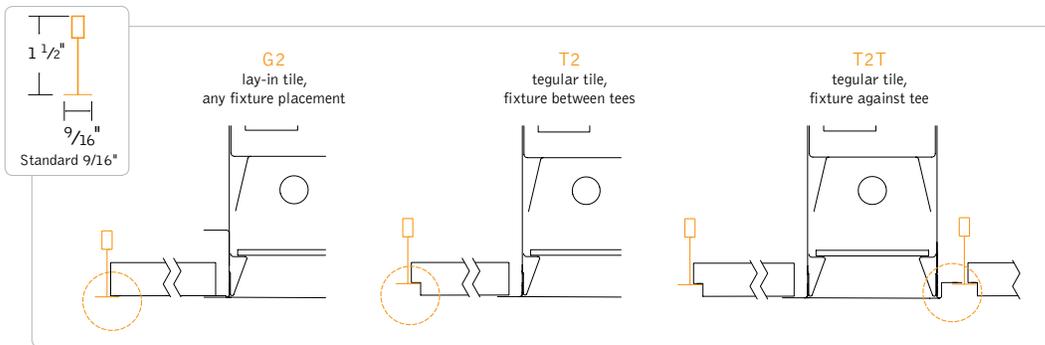
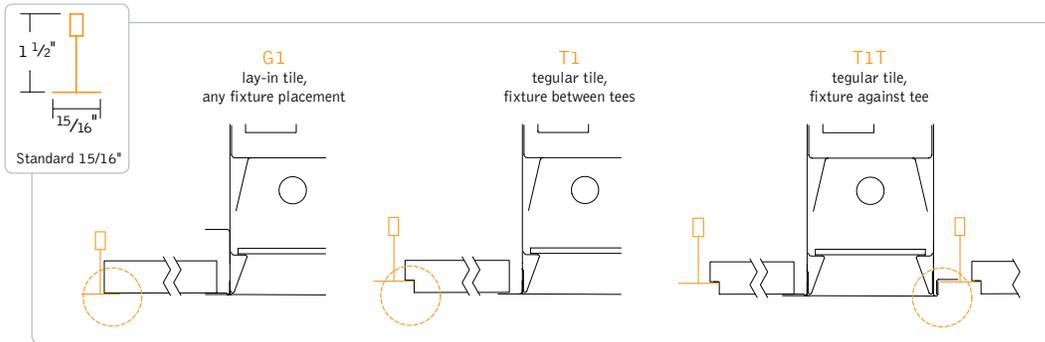
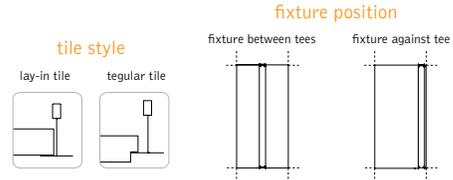
Go to [www.focalpointlights.com](http://www.focalpointlights.com) for additional photometric data.

Project:	Massachusetts Public Library	Date:	04/07/09	Type:	
Project #	Final Report	Lamp:	F28T5 (48in) lamp (in cross-section), 20MR16/IR/WFL60/C		F11

LIGHT FIXTURE CUT SHEET Note: This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

# avenue b grid ceiling configurations

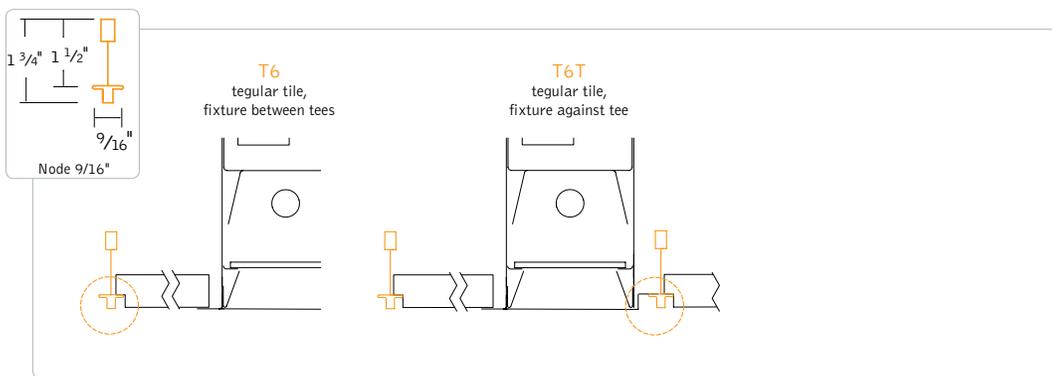
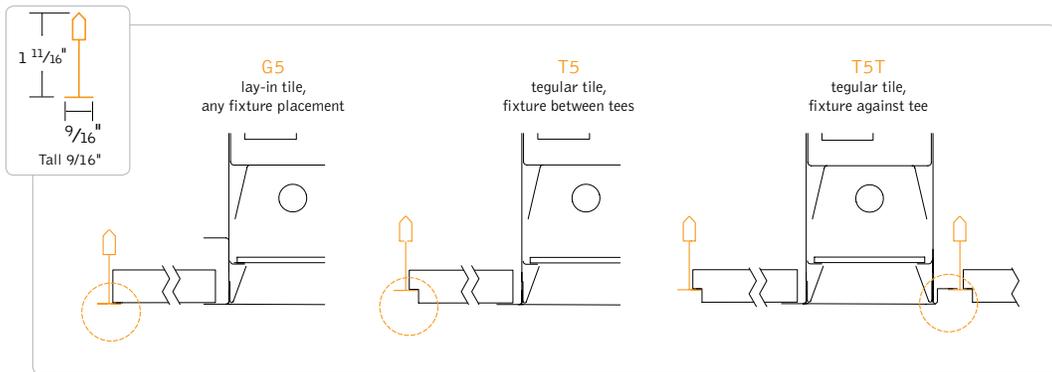
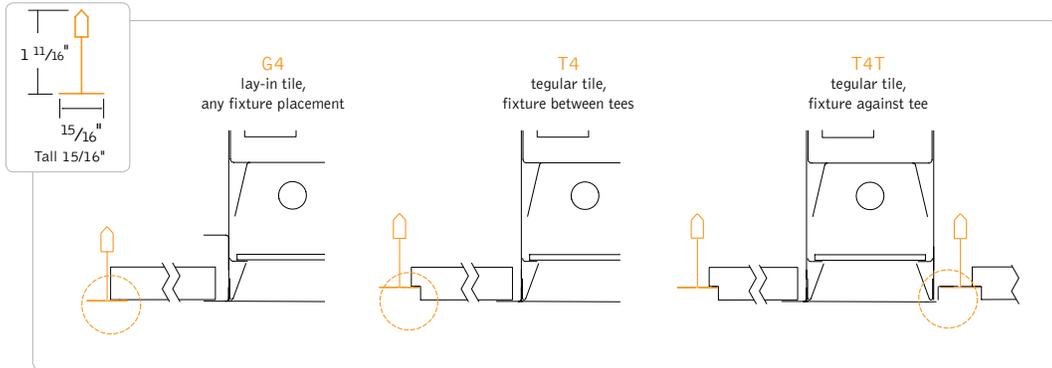
Avenue B is configured at our factory to integrate easily with your specified grid type, tile style and fixture position. Please review the below options and choose the mounting code that matches your application.



www.focalpointlights.com | 1.773.247.9494

<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b> 04/07/09	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b> F28T5 (48in) lamp (in cross-section), 20MR16/IR/WFL60/C	<b>F11</b>

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.



reference

<b>Project:</b>	<b>Massachusetts Public Library</b>	<b>Date:</b> 04/07/09	<b>Type:</b>
<b>Project #</b>	<b>Final Report</b>	<b>Lamp:</b> F28T5 (48in) lamp (in cross-section), 20MR16/IR/WFL60/C	<b>F11</b>

**LIGHT FIXTURE CUT SHEET Note:** This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

## Steplites

Series	Incan.	Fluor.	HID	LED	Exterior	Interior	Feed-Thru	Other Options
158	•	•		•	•	•	•	Cast bronze front 277V electrical Tamperproof screws

### 158 SERIES

#### Description

The 158 Series of Steplites is a low-profile, "brick size" site fixture with incandescent, fluorescent, and LED lamp options. It is appropriate in a variety of interior or exterior locations. The rugged construction, engineering excellence, and quality make these fixtures ideal for specification in most public areas.

#### Features

With the fluorescent lamp option, or thermal protection for the incandescent lamp option, this fixture may be used for combustible interior construction. Louvers in the 158 Series are more widely spaced than most fixtures of this type, allowing for significantly greater forward projected illumination. Exceptional durability is provided by the thick cast aluminum faceplate and the tempered glass diffuser. Cole Steplites feature a cast aluminum junction box which may be easily field mounted to either the back or bottom of the housing to best suit installation conditions.

#### Applications

Incandescent fixtures will work well in extremely cold climate conditions where fluorescents are not applicable. The 158 Series Steplites are suitable for concrete pour/block wall and stud wall mounting in indoor or outdoor installations. The low voltage lamp option allows safe, easy use in outdoor landscaping applications. They are ideal in low walls and step risers.

#### Custom

If your project demands a special fixture we would be pleased to discuss the production of modified standard fixtures or custom fixtures to suit your specific conditions. For more information on our custom capabilities, please contact your local Cole representative.



A 40W T10 (25W for IC application), low-voltage incandescent, 7W or 9W compact fluorescent lamp, or LED may be specified for this series.

The junction box on Cole Steplites may be field mounted to the back or bottom of the fixture.



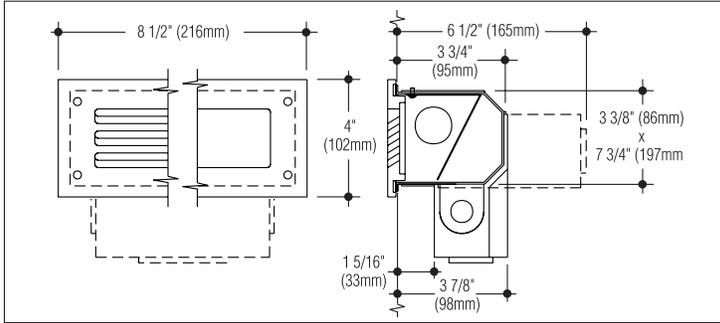
C. W. Cole & Company, Inc.  
2560 N. Rosemead Boulevard  
South El Monte, CA 91733-1593

Fax (626) 443-9253  
Tel. (626) 443-2473  
info@colelighting.com  
www.colelighting.com

Project: Massachusetts Public Library  
Project # Final Report

Date: 04/07/09 Type:  
Lamp: LED F13

LIGHT FIXTURE CUT SHEET Note: This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.



Steplites

158 SERIES

Specifications

Construction

- Fixture housing is constructed from die-formed 16 gauge steel finished with a white polyester coating
- Faceplate is cast aluminum with metallic aluminum polyester coating, gasketed and retained by stainless steel screws
- Diffuser (omitted in non-weatherproof louver faceplate models) is frosted tempered glass, set in silicone sealant in weatherproof models
- Reflector is constructed of die-formed semi-specular aluminum
- Optional junction box is cast aluminum with polyester coating
- cETLus listed
- Incandescent type IC models, furnished without glass diffuser, suitable for dry or damp locations only in any wall construction
- Non-type IC incandescent models suitable for wet locations in concrete pour/block wall construction only
- Fluorescent and LED models suitable for wet locations, any wall construction

Electrical

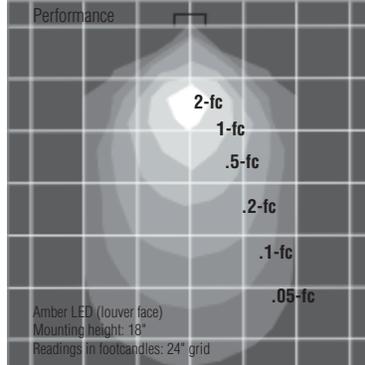
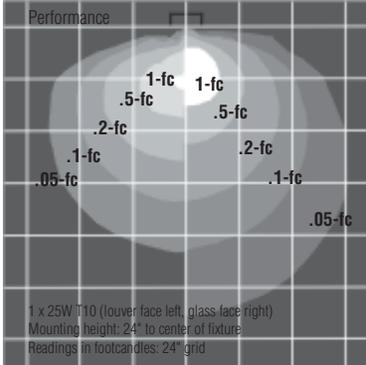
- Fixture is wired for either 40W T10 incandescent (25W for IC application), one 7W, 9W compact fluorescent lamp, or LED. Ballast is standard 120V (277V optional), low-ambient
- Pivoting fluorescent socket eases relamping
- Low-voltage model provides single contact bayonet socket for use with low voltage circuit (transformer not included)
- Optional junction box allows 8 wire thru-wiring, four in and four out. Provided with two 1/2" tapped conduit entrances in the bottom and one 1/2" conduit entrance in each side
- 39 amber or white color LEDs in three rows

Mounting

Housing has flange with holes for mounting.

How to Specify

1. Select catalog number with desired features.
2. Add suffixes for options required to meet job conditions



The isolux curves illustrated above show the footcandle distribution for a 158 Series fixture with a 25W incandescent lamp mounted at a height of 2'-0". The conversion chart provides the light output figures for various lamp types at four mounting heights. The lamp height determines the scale of the grid, i.e., for a fixture mounted at 3'-0" the grid becomes 3'-0" x 3'-0". To calculate the footcandles for each iso curve use the conversion factors shown in the chart as multipliers of the footcandles indicated for each iso curve. IES format photometric files are available.

LED Color	Voltage	Current	Wattage
White	120V	17.73mA	2.0W
9,000-11,000K	277V	20.31mA	1.9W
Amber	120V	19.47mA	1.5W
2,000-2,500K	277V	20.89mA	1.4W

Lamp Type	Lum.	Mounting Height and Grid Scale			
		1'-0"	1'-6"	2'-0"	3'-0"
25W T10 incand.	244	4.00	1.78	1.00	0.44
40W T10 incand.	415	6.80	3.03	1.70	0.75
7W compact fluor.	400	6.56	2.91	1.64	0.73
9W compact fluor.	600	9.48	4.38	2.46	1.08

Catalog Numbers	Faceplate	
Lamp	Louver	Glass
One 25W T10 medium base incandescent (type IC)	<b>T 158-IC</b>	—
One 40W T10 medium base incandescent	<b>T 158</b>	<b>T 158G</b>
One 7W or 9W (G23 base) compact fluorescent	<b>F 158</b>	<b>F 158G</b>
One low-voltage SC bayonet base incandescent LED (light emitting diode)	<b>T 158-LV</b>	<b>T 158G-LV</b>
	<b>LA 158 (Amber)</b>	
	<b>LW 158 (White)</b>	

Options

- Junction Box:** Bottom or back mounted junction box for feed-thru. Add suffix **-J**.
- Weatherproof:** For exterior applications. Not for -IC models. Add suffix **-W**.
- Plastic Microlouver:** 3M Light Control Film behind clear tempered glass. Fluorescent or LED models only. Add suffix **-PM**.
- Sharp Cutoff Louver (except L158):** Reduces illumination pattern. Add suffix **-SCL**.

- Bronze Faceplate:** Satin finished, red brass faceplate. Add suffix **-B**.
- Alternate Faceplate Color:** Black or white. To specify, add suffix **-BLK** or **-WHT**.
- Ballasts:** 277V ballast. Add suffix **-277**. Electronic ballast (fluor.). Add suffix **-EB**.
- Tamperproof Screws:** Tamperproof allen head faceplate screws. Add suffix **-TP**.



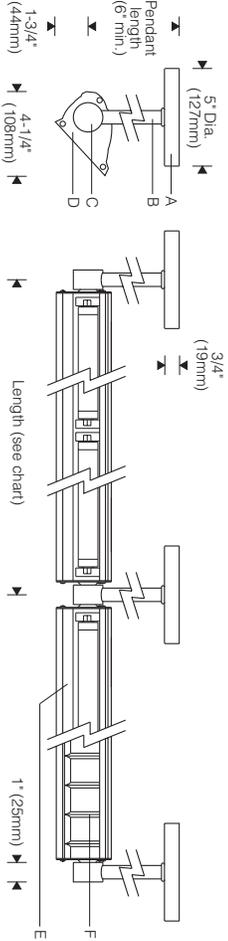
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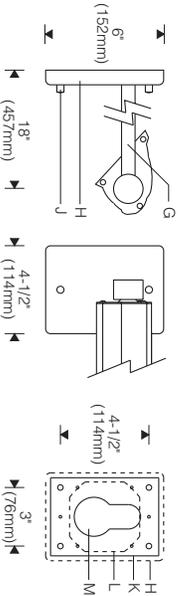
Project:	Massachusetts Public Library	Date:	04/07/09	Type:
Project #	Final Report	Lamp:	LED	F13

LIGHT FIXTURE CUT SHEET Note: This document is for information only. Refer to specifications for all catalog numbers, lamps, finishes, etc.

**Pendant Mount** 1:8 Scale



**Canilerver Mount** 1:8 scale



**Mounting Plate**

Nominal Lamp Length	Length (center to center of hangers)	
	T8	T5
1 x 2	26-7/16" (672mm)	24-7/16" (621mm)
1 x 3	38-7/16" (976mm)	36-1/4" (921mm)
1 x 4	50-7/16" (1281mm)	48" (1219mm)
1 x 5	62-5/16" (1583mm)	60" (1524mm)
2 x 3	74-15/16" (1903mm)	72" (1829mm)
2 x 4	98-15/16" (2513mm)	96" (2438mm)
2 x 5	122-15/16" (3123mm)	120" (3048mm)



**Specifications**

- A** Round aluminum canopy (pendant mount)
- B** 1 1/16" O.D. aluminum pendant stem
- C** Machined aluminum mounting hub
- D** Contoured aluminum end plates
- E** Specular extruded aluminum reflector
- F** Optional snap-in specular parabolic cross baffle

- G** 1 1/16" O.D. canilerver arm
- H** Rectangular aluminum canopy (canilerver mount)
- J** Chrome cap nuts
- K** Canilerver mounting plate
- L** Outlet box (by others)
- M** Splice access opening

**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 canilerver mounting hangers (ordered separately); specify end and intermediate hangers.

Pendant assembly furnished with canopy for mounting on recessed outlet box. Optional hang-straight allows mounting on slopes up to 45° (in the plane perpendicular to wall).

Canilerver wall plate mounts over recessed outlet box (suitable backing structure required). Adjustable interface plate (concealed under canopy) allows for leveling of arms.

REV. 7/07

**Electrical:**

Use 90°C wire for supply connections.

Remote electronic HPF thermally protected class P ballast (with end-of-life protection for T5 lamps). Aluminum ballast enclosure includes four 7/8" diameter entries and a knockout for an accessory fuse.

**Maximum wire length between electronic ballast and fixture is 7' for two-lamp reflectors and 12' for one-lamp reflectors, less length of stem or arm.**

For dimming, see Style 109 with integral dimming ballast.

For complete ballast specifications, see Accessories Section.

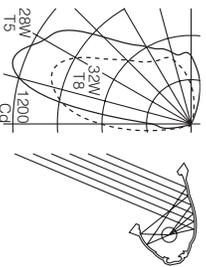
**Standard:**  
UL listed or CSA certified for damp locations. (Style 124 painted model with lens recommended for damp locations.)

**Features**

- **KO Series** - unequaled linear fluorescent wall lighting for cost and energy conscious projects
- Machined aluminum mounting hub attaches to pendant stem or canilerver arm without exposed threads
- Extruded reflector - will not deform during maintenance
- Non-corrosive construction - aluminum and stainless steel

**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](http://www.elliptipar.com).

**elliptipar**



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**Product Number:** 54237  
**Order Abbreviation:** 50MR16/IR/WFL60/C 12V  
**General Description:** Tungsten Halogen Tru-Aim MR16 IR UV-Filter Capsule Axial Filament Hard Dichroic Reflector GU5.3 Bi-Pin Base 50Watt 12Volt WFL Beam

**Product Information**

Abbrev. With Packaging Info.	50MR16IRWFL60C 12V 20/CS 1/SKU
Average Rated Life (hr)	5000
Base	GU5.3 Bipin
Beam Angle (deg)	60
Beam Type	WFL
Bulb	MR16
Centerbeam Candlepower (cp)	1430
Class	C (gas)
Color Rendering Index (CRI)	100
Color Temperature/CCT (K)	3000
Diameter (in)	2
Diameter (mm)	50.8
Ecologic	YES
Family Brand Name	TRU-AIM® IR
Filament	AXIAL
Horizontal Beam Angle (deg)	60
Lamp Finish	Covered
Maximum Overall Length - MOL (in)	1.750
Maximum Overall Length - MOL (mm)	45
Nominal Voltage (V)	12.00
Nominal Wattage (W)	50.00
Vertical Beam Angle (deg)	60

**Additional Product Information**

[Product Documents, Graphs, and Images](#)

[Packaging Information](#)



**Footnotes**

- Infrared lamp technology
- Max. seal temperature 370 C (662F)
- UV Filter capsule with axial filament in covered constant color, hard coated dichroic reflector and infrared reflective coating on the lamp capsule.
- Max pin temperature 250 C.
- Max temperature at lens reflector joint 240 C.

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# PENTRON PREMIER™ ECOLOGIC® LAMPS

## T5 Linear Fluorescent Lamps



- Improved phosphor blend yields brighter PENTRON lamps
  - 3050 lumens at 35°C for FP28/PM lamps
- QUICK 60+® system warranty when operated on OSRAM SYLVANIA QUICKTRONIC® ballasts including the .95BF, 1.15BF and QUICKSTEP® T5 ballasts
- Multiple ballast factor choices, including a stepped switching ballast provide design flexibility as well as extreme system efficiency (as high as 100 LPW)
- Passes the Federal TCLP test
- 3000K, 3500K, 4100K and 85 CRI
- 95% lumen maintenance
- 20,000 hours average rated life

SYLVANIA PENTRON PREMIER T5 ECOLOGIC

fluorescent lamps pass the Federal Toxicity

Characteristic Leaching Procedure (TCLP) criteria<sup>1</sup>

for classification as non-hazardous waste in most states<sup>2</sup>.



**A dramatic improvement in the developing line of slender, 5/8" diameter, T5 linear fluorescent sources, the PENTRON PREMIER™ ECO® lamps provide increased lumen output, the highest in the industry, with an astonishing 109 lamp lumens per watt**

Greater system flexibility is achieved when PENTRON PREMIER lamps are combined with the new series of OSRAM SYLVANIA QUICKTRONIC PENTRON ballasts achieving a varied lumen package depending upon the application.

PENTRON PREMIER T5 lamps also present the greatest opportunity for luminaire efficiency. The 5/8" diameter affords superior optical control achieving precision distribution in a well designed luminaire.

1. TCLP test results are based on NEMA LL Series standards and are available on request.
2. Lamp disposal regulations may vary; check your local & state regulations.

### Product Availability

NAED Code	Ordering Description
20948	FP28/830/PM/ECO
20943	FP28/835/PM/ECO
20944	FP28/841/PM/ECO

### Application Information

#### Applications

Office  
Schools  
Commercial  
Retail  
Hospitality  
Institutional  
New Construction  
Renovation

#### Application Notes

1. PENTRON PREMIER lamps are about 2" shorter than T8 and T12 bi-pin lamps.
2. Miniature bi-pin (T-5) base will not install into T8 and T12 sockets.
3. Miniature bi-pin (T-5) base requires UL listed 600 Volt rated sockets.
4. Requires high-frequency programmed rapid start electronic ballasts equipped with end-of-life sensing circuit.
5. Apply thermal factor in calculations for exterior or unheated applications.



### Sample Specification

Lamp(s) shall be PENTRON PREMIER™ ECO® T5 lamps having 2730 rated lumens at 25°C, 3050 lumens at 35°C and 95% lumen maintenance. Lamps shall have a correlated color temperature of (3000K, 3500K, 4100K) and a color rendering index of 85. Lamps shall be operated on OSRAM SYLVANIA QUICKTRONIC® ballast and a complete system warranty from a single manufacturer shall cover both lamps and ballasts.

### Lamp System Comparison

Lamp	Ballast	Input Watts	Initial System Lumens	Initial System LPW	Avg. Rated Life
F34T12	ES Magnetic	72	4660	65	20,000
F32T8/700 - 3 lamps	3 Lamp IS	88	7525	86	15,000
FP28PM/ECO	QTP2X28/UNV PS95SC	60/58*	5795	97/100*	20,000
FP28PM/ECO	QTP2X28/UNV PS115SC	73/71*	7015	96/99*	20,000

\*operated at 120V/operated at 277V

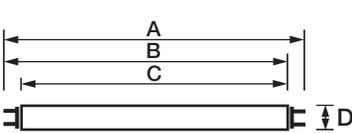
### Ordering and Specification Information

NAED Number	Ordering Abbreviation	Base	Watts	Initial Lumens @25°C	Initial Lumens @35°C	Bulb	Nominal Length (mm)	Avg. Rated Life	Color Temp	CRI
20948	FP28/830/PM/ECO	Min Bi-pin	28	2730	3050	T5	1149	20,000	3000K	85
20943	FP28/835/PM/ECO	Min Bi-pin	28	2730	3050	T5	1149	20,000	3500K	85
20944	FP28/841/PM/ECO	Min Bi-pin	28	2730	3050	T5	1149	20,000	4100K	85

### Ordering Guide

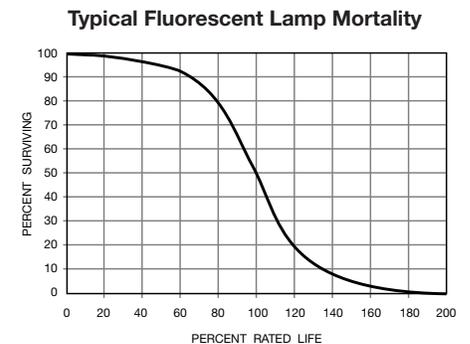
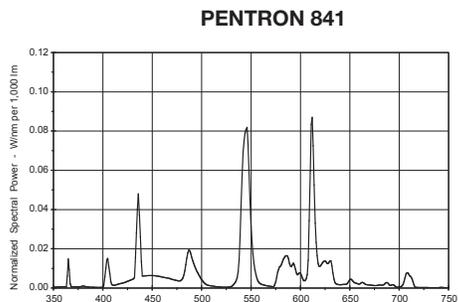
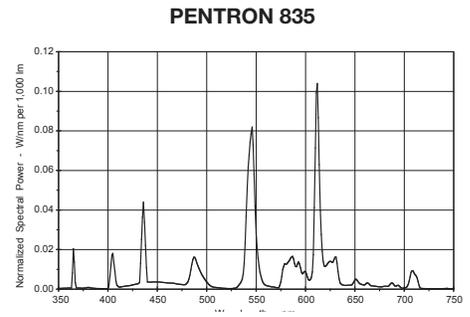
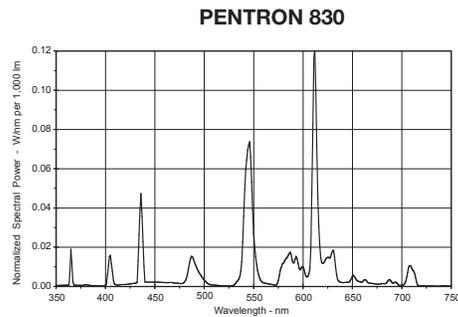
FP	28	/	8	35	/	PM	/	ECO
Fluorescent	Wattage		CRI	Color Temperature		PENTRON		ECOLOGIC®
PENTRON T5	28 watts		8 = 85	30 = 3000K 35 = 3500K 41 = 4100K		PREMIER™		

### Dimensions



Lamp	(A) Maximum Overall Length in. (mm)	(B) Max. Base Face to Opposite Pin in. (mm)	(C) Max. Base Face to Base Face in. (mm)	(D) Max. Outside Diameter in. (mm)
FP28	45.80" (1163.2)	45.52" (1156.1)	45.24" (1149.0)	0.67" (17.0)

### Technical Information



OSRAM SYLVANIA  
National Customer  
Service and Sales Center  
18725 N. Union Street  
Westfield, IN 46074  
1-800-LIGHTBULB  
(1-800-544-4828)

Visit our website: [www.sylvania.com](http://www.sylvania.com)

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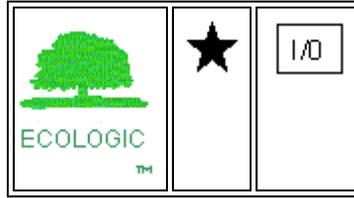


**Product Number:** 14502  
**Order Abbreviation:** 50PAR20/HAL/NFL30 120V  
**General Description:** Tungsten Halogen CAPSYLITE PAR20 Reflector Lamp Medium Base 50Watt 120Volt Narrow Flood Beam

**Product Information**

Abbrev. With Packaging Info.	50PAR20HALNFL30 120V 15/CS 1/SKU
Approx. Lumens	550
Average Rated Life (hr)	2500
Base	E26 Medium
Beam Angle (deg)	30
Beam Type	NFL
Bulb	PAR20
Centerbeam Candlepower (cp)	1200
Class	C (gas)
Color Rendering Index (CRI)	100
Color Temperature/CCT (K)	2850
Diameter (in)	2.5
Diameter (mm)	63.5
Ecologic	YES
Family Brand Name	CAPSYLITE® PAR20 SPL
Filament	CC-8
Horizontal Beam Angle (deg)	30
Lamp Finish	Reflector
Maximum Overall Length - MOL (in)	3.250
Maximum Overall Length - MOL (mm)	79.375
Nominal Voltage (V)	120.00
Nominal Wattage (W)	50.00
Vertical Beam Angle (deg)	30

**Additional Product Information**

**Product Documents, Graphs, and Images****Packaging Information****Footnotes**

- State of the Art SPL Optics
- In base up operation, heat may eventually deteriorate paper-lined or plastic sockets.

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**Product Number:** 20888

**Order Abbreviation:** CF42DT/E/IN/830/ECO

**General Description:** DULUX 42W triple compact fluorescent amalgam lamp with 4-pin base, integral EOL, 3000K color temperature, 82 CRI, for use with electronic and dimming ballasts, ECOLOGIC

#### Product Information

Abbrev. With Packaging Info.	CF42DTEIN830ECO 50/CS 1/SKU
Average Rated Life (hr)	12000
Base	GX24Q-4
Bulb	T (T4)
Color Rendering Index (CRI)	82
Color Temperature/CCT (K)	3000
Family Brand Name	Dulux® T/E
Industry Standards	IEC 60901- 7442
Mean Lumens at 25C	2670
Maximum Overall Length - MOL (in)	6.5
Maximum Overall Length - MOL (mm)	163
NEMA Generic Designation (old)	CFM42W/GX24Q/830
Nominal Wattage (W)	42.00

#### Additional Product Information

[Product Documents, Graphs, and Images](#)

[Compatible Ballast](#)

[Packaging Information](#)



#### Footnotes

- Approximate initial lumens after 100 hours operation.
- Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.
- There is a NEMA supported, industry issue where T2, T4, and T5 fluorescent and compact fluorescent lamps operated on high frequency ballasts may experience an abnormal end-of-life phenomenon. This end-of-life phenomenon can result in one or both of the

following: 1. Bulb wall cracking near the lamp base. 2. The lamp can overheat in the base area and possibly melt the base and socket. NEMA recommends that high frequency compact fluorescent ballasts have an end-of-life shutdown circuit which will safely and reliably shut down the system in the rare event of an abnormal end-of-life failure mode described above. The final requirements of this system are yet to be defined by ANSI. For additional information refer to NEMA papers on their WEBSITE at [www.NEMA.org](http://www.NEMA.org).

- SYLVANIA ECOLOGIC fluorescent lamps are designed to pass the Federal Toxic Characteristic Leaching Procedure (TCLP) criteria for classification as non-hazardous waste in most states. TCLP test results are available upon request. Lamp disposal regulations may vary, check your local & state regulations. For more information, please visit [www.lamprecycle.org](http://www.lamprecycle.org)
- This 4-pin DULUX lamp has an internal end-of-life mechanism (EOL) that shuts down the lamp preventing abnormal end-of life failure modes. This lamp was designed for use with high frequency ballasts that do not have their own end-of-life (lamp)sensing circuits, but it is also compatible with high frequency ballasts that have their own end-of-life (lamp) sensing circuits.
- The life ratings of fluorescent lamps are based on 3 hr. burning cycles under specified conditions and with ballast meeting ANSI specifications. If burning cycle is increased, there will be a corresponding increase in the average hours life.
- Lumen output and life rated on high frequency operation.
- Rule of Thumb for Compact Fluorescent Lamps: Divide wattage of incandescent lamp by 4 to determine approximate wattage of compact fluorescent lamp that will provide similar light output.
- Optimum light output for DULUX T/E IN amalgam compact fluorescent lamps occurs at approximately 35 deg. C/ 95 deg. F ambient temperature when the lamp is operated in the base up position. The lumen value listed refers to the optimum light output. Non-amalgam compact fluorescent lamps provide atleast 90% light output from 60-100 degrees F in the base up position, the temperature range is narrower for horizontal or base down position.

| Print Page |

Lutron® | EcoSystem® **universal voltage**  
multi-input digital addressable  
dimming ballasts

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model numbers:

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Lamp Watts (Length)	Lamps per Ballast	10 % Dimming EcoSystem Dimming Ballasts	Case Type <sup>1</sup>	Input Voltage (VAC)	Ballast Current (A)	Input Power (W)	Ballast Factor (BF)	System Lumens (lm) <sup>2</sup>	System Efficacy (lm/W) <sup>2</sup>	Ballast Efficacy Factor (BEF)	Relative System Efficacy (RSE)
<b>T5 Linear</b> 											
14 W (21.6 in)	1	►EC5 T514 J UNV 1	J	120	0.16	19.2	1.0	1,350	70	5.21	0.73
				240	0.08	19.2	1.0	1,350	70	5.21	0.73
				277	0.07	19.0	1.0	1,350	71	5.26	0.74
	2	►EC5 T514 J UNV 2	J	120	0.28	33.3	1.0	2,700	81	3.00	0.84
				240	0.14	33.3	1.0	2,700	81	3.00	0.84
				277	0.12	32.8	1.0	2,700	82	3.05	0.85
21 W (33.4 in)	1	►EC5 T521 J UNV 1	J	120	0.22	25.8	1.0	2,100	81	3.88	0.81
				240	0.12	25.8	1.0	2,100	81	3.88	0.81
				277	0.09	25.8	1.0	2,100	81	3.88	0.81
	2	►EC5 T521 J UNV 2	J	120	0.39	47.2	1.0	4,200	89	2.12	0.89
				240	0.20	47.2	1.0	4,200	89	2.12	0.89
				277	0.17	46.0	1.0	4,200	91	2.17	0.91
28 W (45.2 in)	1	►EC5 T528 J UNV 1	J	120	0.27	32.9	1.0	2,900	88	3.04	0.85
				240	0.14	32.9	1.0	2,900	88	3.04	0.85
				277	0.12	32.6	1.0	2,900	89	3.07	0.86
	2	►EC5 T528 J UNV 2	J	120	0.54	65.2	1.0	5,800	89	1.53	0.86
				240	0.27	65.0	1.0	5,800	89	1.54	0.86
				277	0.23	64.5	1.0	5,800	90	1.55	0.87
35 W (57.1 in)	1	►EC5 T535 J UNV 1	J	120	0.35	42.0	1.0	3,650	87	2.38	0.83
				240	0.18	42.0	1.0	3,650	87	2.38	0.83
				277	0.15	41.6	1.0	3,650	88	2.41	0.84

1 For case type information, see pages 36 and 37.

2 Actual number may vary with lamp model. Please consult the lamp manufacturer for lamp-specific data.

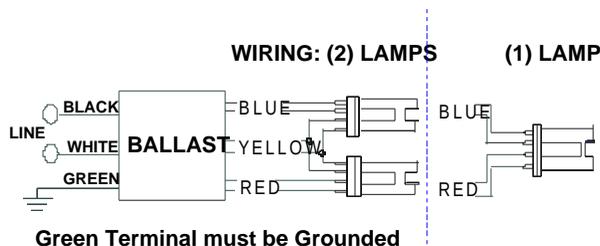
## ICF2S26M1LSQS@277

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

### Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F.
CFQ26W/G24Q	1	26	0/-18	0.10	27	1.00	10	0.99	1.7	3.70
CFQ26W/G24Q	2	26	0/-18	0.19	51	1.00	10	0.99	1.7	1.96
CFTR26W/GX24Q	1	26	0/-18	0.11	19	1.10	10	0.99	1.7	5.79
CFTR26W/GX24Q	2	26	0/-18	0.21	54	1.00	10	0.99	1.7	1.85
CFTR32W/GX24Q	1	32	0/-18	0.13	36	0.98	10	0.98	1.7	2.72
* CFTR42W/GX24Q	1	42	0/-18	0.17	46	0.98	10	0.98	1.7	2.13

### Wiring Diagram

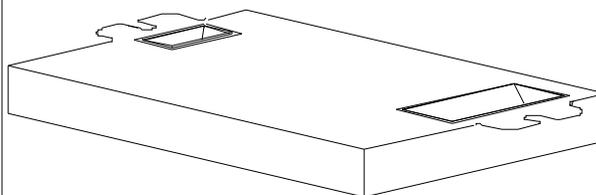


The wiring diagram that appears above is for the lamp type denoted by the asterisk (\*)

### Standard Lead Length (inches)

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

### Enclosure



### Enclosure Dimensions

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

Revised 06/24/2008



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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<b>ICF2S26M1LSQS@277</b>	
Brand Name	SMARTMATE-QS
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

**Electrical Specifications**

**Notes:**

Section I - Physical Characteristics

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

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start except for ballasts with -QS suffix, which shall be Rapid Start.
- 2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.3 Ballast shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency) with no damage to the IntelliVolt ballast. RCF models shall operate from 60 Hz input source of 120V with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.
- 2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.5 Ballast shall have a Power Factor greater than 0.98 for primary lamp.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.
- 2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp.
- 2.9 Ballast shall have a Class A sound rating.
- 2.10 Ballast shall have a minimum starting temperature of -18C (0F) for primary lamp. Ballasts for PL-H lamps shall have a minimum starting temperature of -30C (-20F) for primary lamp.
- 2.11 Ballast shall provide Lamp EOL Protection Circuit.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.

Section III - Regulatory Requirements

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

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9002 Quality System Standards.
- 4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 75C and three-years for a maximum case temperature of 85C (90C 3year warranty for ICF1H120-M4-XX, ICF2S42-90C-M2-XX and ICF2S70-M4-XX models).
- 4.3 Manufacturer shall have a fifteen-year history of producing electronic ballasts for the North American market.
- 4.4 Ballast shall at 120V meet the ballast-controlled performance requirements in the ENERGY STAR Program Requirements for Residential Lite Fixtures.

Revised 06/24/2008



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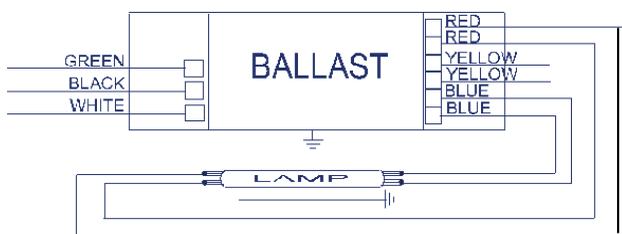
## ICN-2S28@277

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

### Electrical Specifications

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

### Wiring Diagram



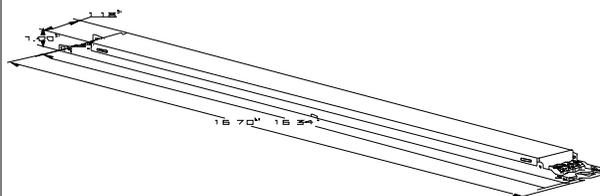
For 1 lamp operation, do not use yellow leads

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

### Standard Lead Length (inches)

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

### Enclosure



### Enclosure Dimensions

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

Revised 03/03/2009



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

## Electrical Specifications

### Notes:

#### Section I - Physical Characteristics

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

#### Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start.
- 2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.3 Ballast shall operate from 50/60 Hz input source of \_\_\_\_\_ (120V through 277V or 347V through 480V) with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.
- 2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.5 Ballast shall have a Power Factor greater than 0.98 for primary lamp.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.
- 2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 20% for Standard models and THD of less than 10% for Centium models when operated at nominal line voltage with primary lamp.
- 2.9 Ballast shall have a Class A sound rating.
- 2.10 Ballast shall have a minimum starting temperature of \_\_\_\_\_ {-18C (0F) or -29C (-20F)} for primary lamp. Consult lamp manufacturer for temperature versus light output characteristics.
- 2.11 Ballast shall provide Lamp EOL Protection Circuit.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.
- 2.13 Ballast shall have a hi-low switching option when operating (4) F54T5/HO lamps to allow switching from 4-2 lamps, 3-2 lamps or 3-1 lamp.
- 2.14 Four-lamp ballast shall have semi-independent lamp operation.

#### Section III - Regulatory Requirements

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

#### Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9002 Quality System Standards.
- 4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70C. Ballasts with a "90C" designation in their catalog number shall also carry a three-year warranty at a maximum case temperature of 90C.
- 4.3 Manufacturer shall have a fifteen-year history of producing electronic ballasts for the North American market.

Revised 03/03/2009



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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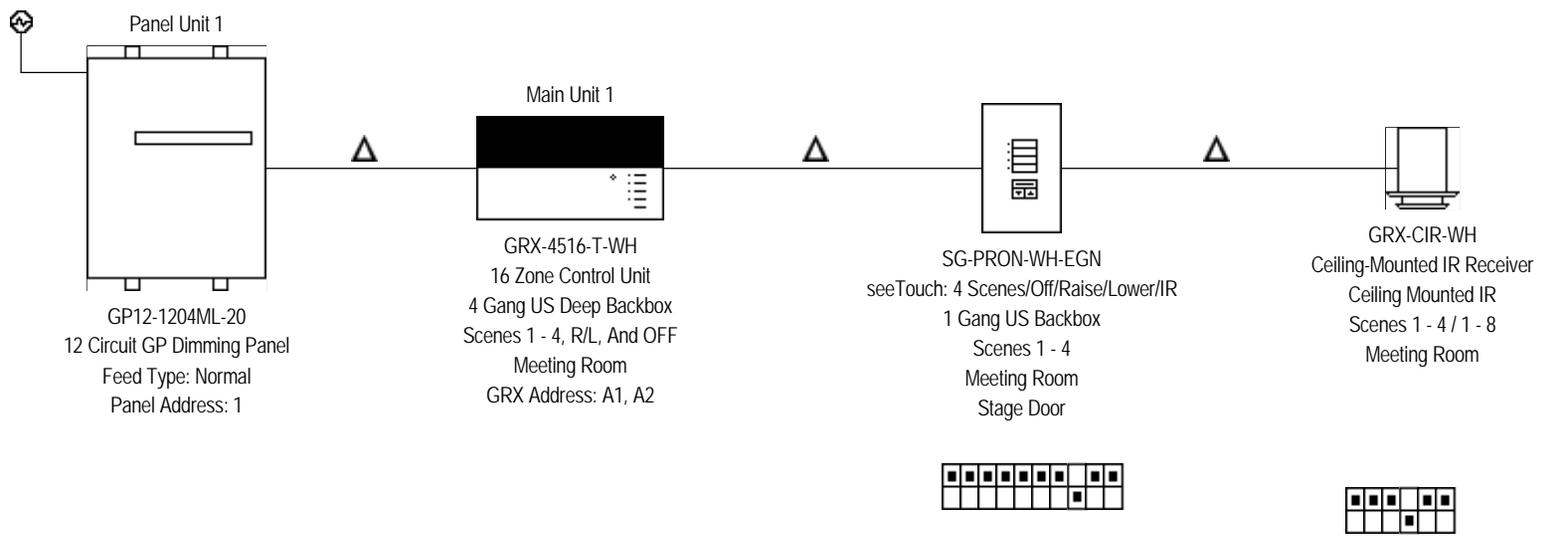
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 Lutron cable GRX-CBL-46L (Non-Plenum) or GRX-PCBL-46L (Plenum rated). Otherwise use 2 #12AWG (2.5mm<sup>2</sup>), 1 Belden #9461 (or equivalent), and between panels add 1 #18AWG (1.0mm<sup>2</sup>) for emergency sensing.


 Main Feed



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<b>Project Name:</b> Massachusetts Public Library
<b>Location:</b> Basement
<b>Project #:</b> Meeting Room
GRAFIK Eye Designer 7.1.124

<b>System:</b> Massachusetts Public Library
<b>Design By:</b> Marissa E Gesell
<b>Project Filename:</b> NEW PROJECT
<b>Date:</b> 4-Apr-2009
<b>Page:</b> 1 of 1

## GRAFIK Eye 4000 Series Control Unit

Cover (shown open)



### Description

- Provides pushbutton recall of four preset lighting scenes, plus Off.
- Allows setup of lighting scenes using buttons on the Control Unit.
- Controls virtually any light source via dimming and switching panels.
- Provides lockout options to prevent accidental changes.
- Includes built-in infrared receiver for operation with an optional remote control.

### Models available to:

- Control 2 to 24 zones of lighting.

### 4000 Series Control Units work with:

- GRAFIK Eye Wallstations
- GP and LP Dimming Panels
- XP Softswitch™ Panels

### GRX-4100 Control Units

Provide setup using buttons on the Control Unit.

### GRX-4500 Control Units

Provide optional setup using a PC, including setting lighting levels in 1% increments.

Job Name:	Model Numbers:
Job Number:	

## Specifications

### Power

- Low-voltage type Class 2 (PELV)  
Operating voltage: 24 V Direct Current.

### Lighting Sources/Load Types

Controls lighting sources with a smooth, continuous Square Law dimming curve or on a full conduction non-dim basis via GP and LP Dimming Panels and XP Softswitch™ Panels.

### Preset Control

- 4 preset lighting scenes and off are accessible from the Control Unit front panel.
- 12 additional scenes are stored in the Control Unit. These scenes are accessible via Wallstations and/or Control Interfaces.
- Light levels fade smoothly between scenes. Fade time can be set differently for each scene, between 0-59 sec. or 1-60 min. Fade time from Off is capped at 5 sec.

### Key Design Features

- Meets IEC 801-2. Tested to withstand 15kV electrostatic discharge without damage or memory loss.
- Power failure memory automatically restores lighting to the scene selected prior to power interruption.
- Faceplate snaps on with no visible means of attachment.

### System Communications and Capacities

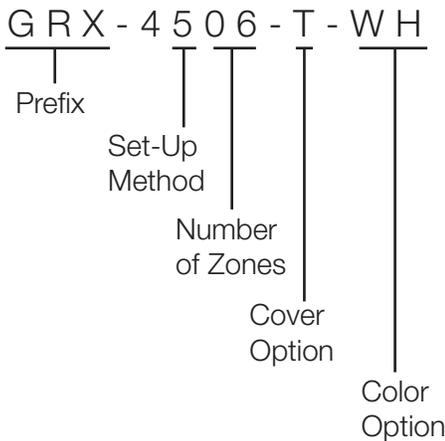
- Low-voltage type Class 2 (PELV) wiring connects Control Units, Wallstations, and Control Interfaces.
- Up to 8 Control Units may be linked to control up to 64 zones.
- Up to 16 total Wallstations and Control Interfaces may be added for a total of 24 control points.

### Environment

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

<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

## How to Build a Model Number



**Prefix:**

**GRX** for GRAFIK Eye 4000 Series Control Units

**Set-Up Method:**

- 1 for setup using front panel
- 5 for PC setup

**Number of Zones:**

2, 3, 4, 6, 8, 16, or 24

**Cover Option:**

- A for Opaque
- T for Translucent Black

**Color Option:**

See Color Options list

**Cover Options**

- Opaque                    A  
Cover and Base will match.
- Translucent Black       T  
Black Cover and choice of Base color.

Also available:  
 - Custom controls  
 - Color matching  
 - Engraving  
 These options ship in 4 to 6 weeks.

**Color Options**

**Architectural Matte Finishes**

- Standard – Ship in 48 hours
- Cover Option: A or T
- White                    WH
- Ivory                    IV
- Beige                    BE
- Gray                    GR
- Brown                   BR
- Black                    BL

**Designer Gloss Finishes**

- Ship in 4 to 6 weeks
- Cover Option: A only
- White                    GWH
- Ivory                    GIV
- Light Almond           GLA
- Almond                   GAL

**Satin Color Matte Finishes**

- Cover Option: A or T
- Hot                      HT
- Ochre                    OC
- Terracotta              TC
- Desert Stone            DS
- Stone                    ST
- Limestone              LS
- Blue Mist               BT
- Midnight                MN
- Taupe                    TP
- Biscuit                 BI
- Eggshell                ES
- Snow                     SW

**Architectural Metal Finishes**

- Cover Option: T only
- Bright Brass            BB
- Bright Chrome          BC
- Bright Nickel          BN
- Satin Brass             SB
- Satin Chrome           SC
- Satin Nickel            SN
- Antique Brass          QB
- Antique Bronze         QZ

**Anodized Aluminum Finishes**

- Cover Option: T only
- Clear                    CLA
- Black                    BLA
- Brass                   BRA
- Bronze                  BZA

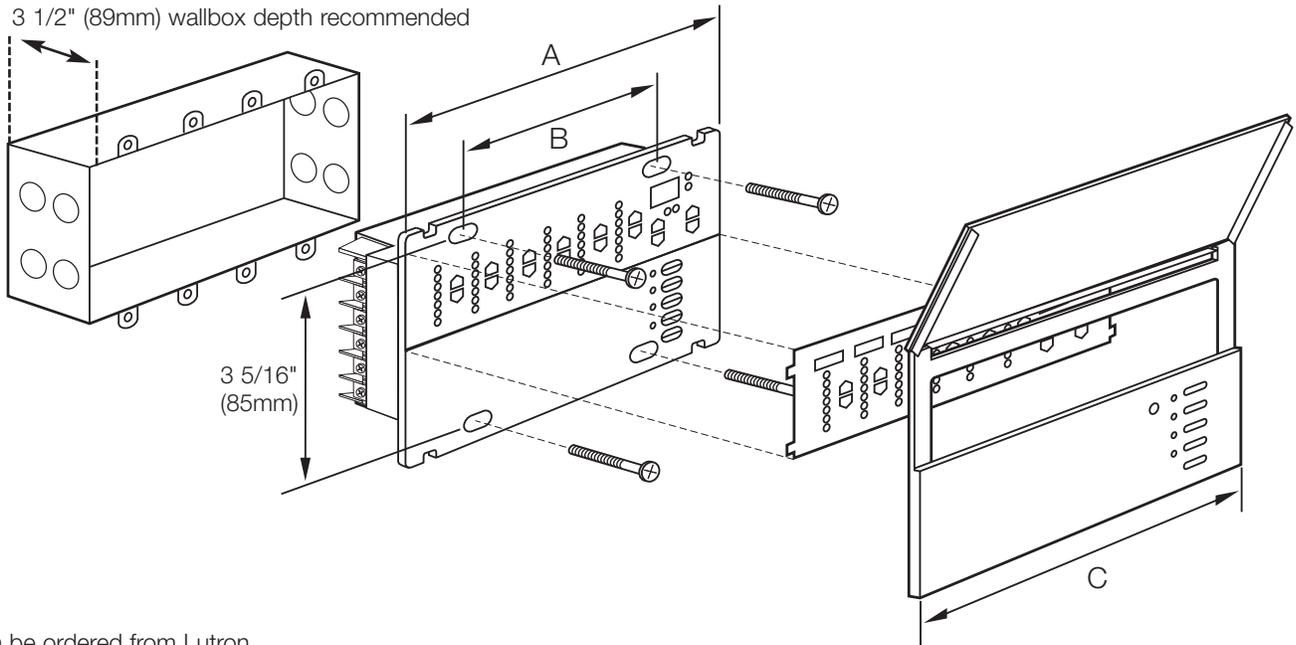
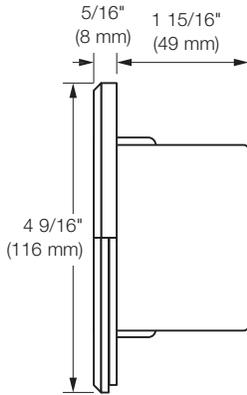
**Model Numbers**

Number of Zones	Standard Setup	PC Setup
2	GRX-4102-__	GRX-4502-__
3	GRX-4103-__	GRX-4503-__
4	GRX-4104-__	GRX-4504-__
6	GRX-4106-__	GRX-4506-__
8	GRX-4108-__	GRX-4508-__
16	GRX-4116-__	GRX-4516-__
24	GRX-4124-__	GRX-4524-__

<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

**Dimensions and Mounting**

Model	Side View	A	B	C	Wallbox <sup>1</sup> U.S. Size	Depth
2-Zone: GRX-4102 GRX-4502		4 5/16" (123mm)	1 13/16" (46mm)	5.56" (141mm)	2 Gang	3.5" (89mm)
3-Zone: GRX-4103 GRX-4503		6 11/16" (168mm)	3 5/8" (92mm)	7.25" (184mm)	3 Gang	3.5" (89mm)
4-Zone: GRX-4104 GRX-4504		8 5/16" (208mm)	5 7/16" (138mm)	8.94" (227mm)	4 Gang	3.5" (89mm)
6-Zone: GRX-4106 GRX-4506		8 5/16" (208mm)	5 7/16" (138mm)	8.94" (227mm)	4 Gang	3.5" (89mm)
8-Zone: GRX-4108 GRX-4508		8 5/16" (208mm)	5 7/16" (138mm)	8.94" (227mm)	4 Gang	3.5" (89mm)
16-Zone: GRX-4116 GRX-4516		8 5/16" (208mm)	5 7/16" (138mm)	8.94" (227mm)	4 Gang	3.5" (89mm)
24-Zone: GRX-4124 GRX-4524		8 5/16" (208mm)	5 7/16" (138mm)	8.94" (227mm)	4 Gang	3.5" (89mm)



<sup>1</sup> Can be ordered from Lutron.

<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

## Low-Voltage Class 2 (PELV) Wiring (All Models)

- System communications use low-voltage Class 2 (PELV) wiring.
- Wiring must be daisy-chained.
- Wiring must run separately from line (mains) voltage.

Class 2 (PELV) wiring link requires:

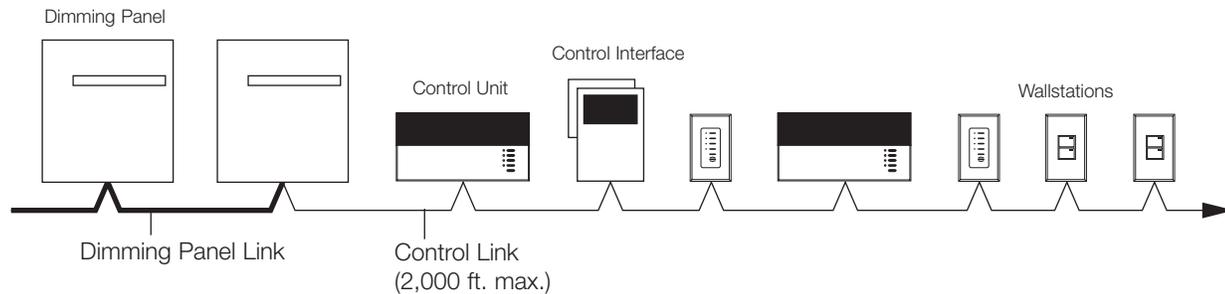
Two #12 AWG (2.5mm<sup>2</sup>) conductors for control power.

One twisted, shielded pair of #18 AWG (0.625mm<sup>2</sup>) for data link.

One #18 AWG (1.0mm<sup>2</sup>) conductor for Emergency (Essential) sense line between dimming panels.

Total length of Control Link may be up to 2,000 ft. (610m).

Approved low-voltage cable is available from Lutron<sup>1</sup>, Belden, and Liberty. These are approved with #22 AWG data link wires.

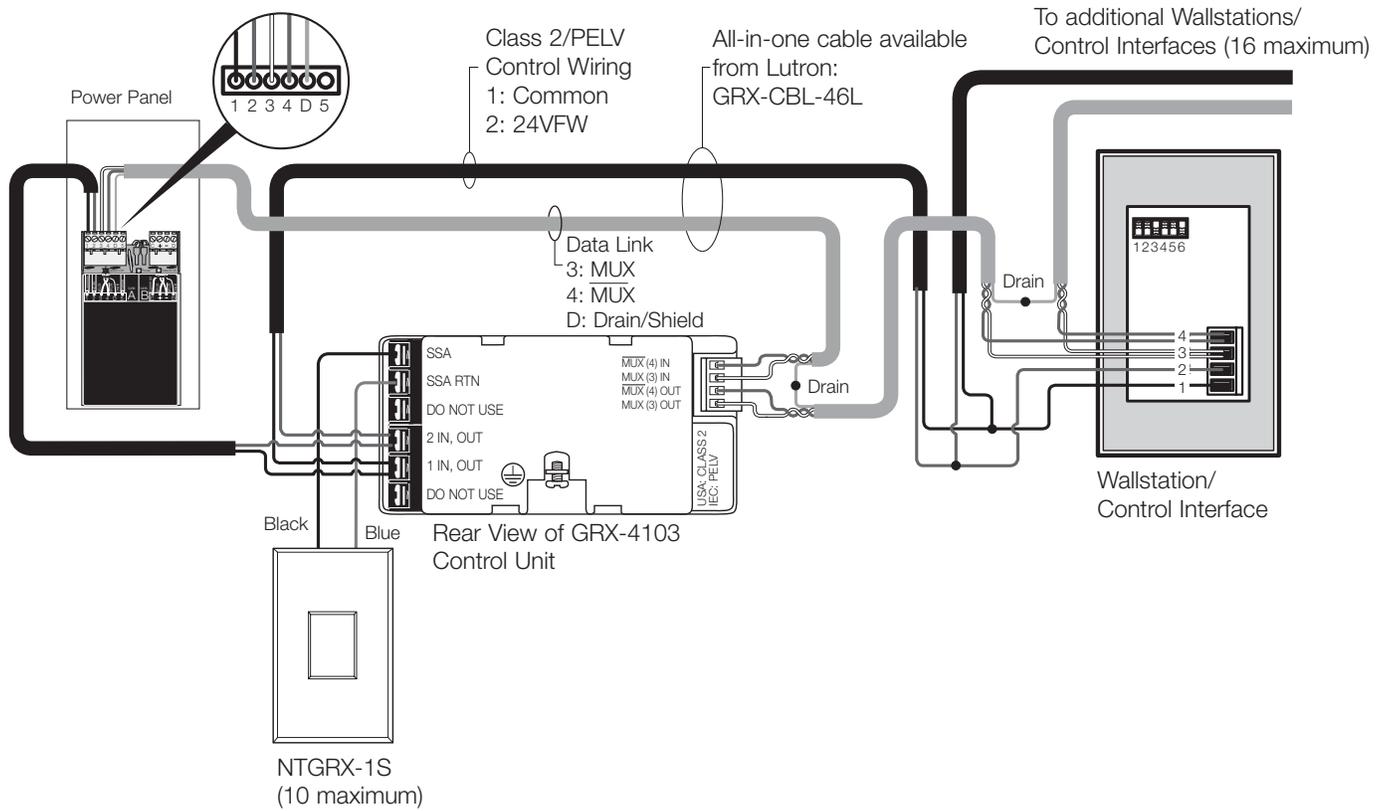


<sup>1</sup> GRX-CBL-46L Class 2 (PELV) wiring cable is available from Lutron and contains:  
 Two #12 AWG (2.5mm<sup>2</sup>) conductors for control power.  
 One twisted, shielded pair of #22 AWG (0.625mm<sup>2</sup>) for data link.  
 One #18 AWG (1.0mm<sup>2</sup>) conductor for Emergency (Essential) sense line.

<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

### Class 2 (PELV) Terminal Connections

- Connect Drain/Shield as shown. Terminate only at Power Panel if Drain Terminal is provided. Connect the bare drain wires and cut off the outside shield.
- Make all connections in the Control Unit's wallbox. Remote connections (T-taps) must be in a switch box or junction box with a maximum wire length of 8 ft. (2.5m) from the link to the connected unit.



Job Name:	Model Numbers:
Job Number:	

## Infrared Ceiling Mount Sensor



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

### Features

- Intelligent, continually adapting passive infrared (PIR) sensor
- Passive infrared sensing
- Reliable motion detection with high error immunity
- Snap-locks to ceiling-mounted cover plate
- Non-Volatile Memory: settings saved in protected memory are not lost during power outages
- 450 to 1500 sq.ft. (42 to 140 m<sup>2</sup>) coverage when mounted on an 8 - 12 ft. (2.4 - 3.7 m) ceiling
- Affords choice of turning lights off or dimming to a preset level in the unoccupied state when integrated with a Lutron system.

### Models Available

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

### Self-Adaptive Feature

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

<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

## Specifications

### Timer Adjustment

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

### LED Lamp

- Red: infrared motion detected

### Housing

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

### Power

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

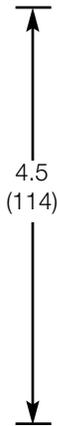
### Operating Environment

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

## Dimensions



Front View



Side View

Measurements are in inches (mm)

Job Name:

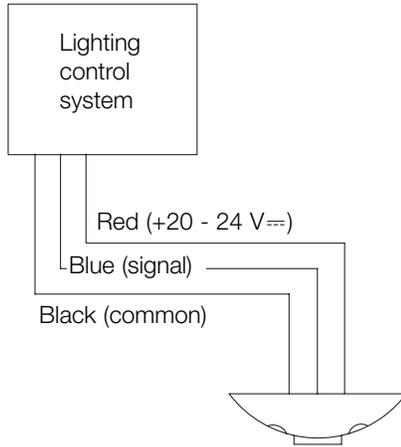
Model Numbers:

Job Number:

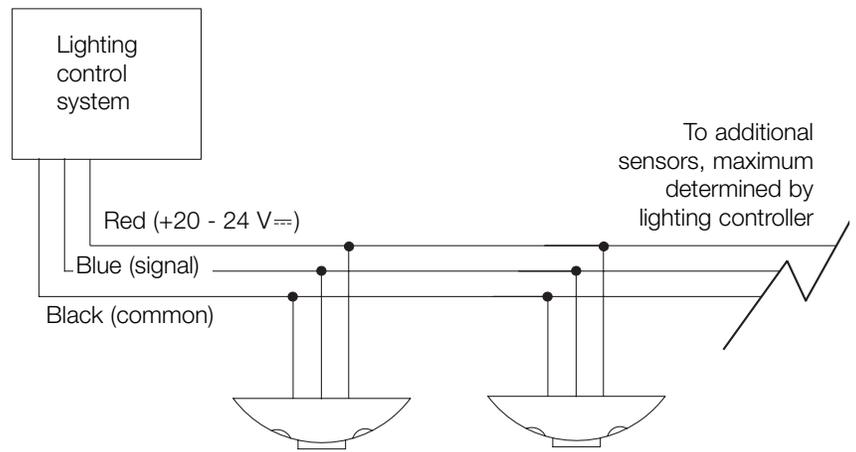
## Wiring

Note: Power pack may be required when interfaced to lighting control system; see below.

### Single Sensor to System



### 2 or More Sensors to System



### Power Supply Options

#### Lutron Lighting Control System

Digital microWATT™

EcoSystem®

GRAFIK 5000 / 6000 / 7000

GRAFIK Eye® 3000 / 4000

HomeWorks®

LCP128™

microWATT®

RadioRA®

RadioTouch®

Softswitch128®

#### Power Pack Required?

No

No

No, when used with seeTouch® wallstations with occupant sensor connections.

Yes

Yes

No, when used with seeTouch wallstations with occupant sensor connections.

No

Yes

No

No, when used with seeTouch wallstations with occupant sensor connections.

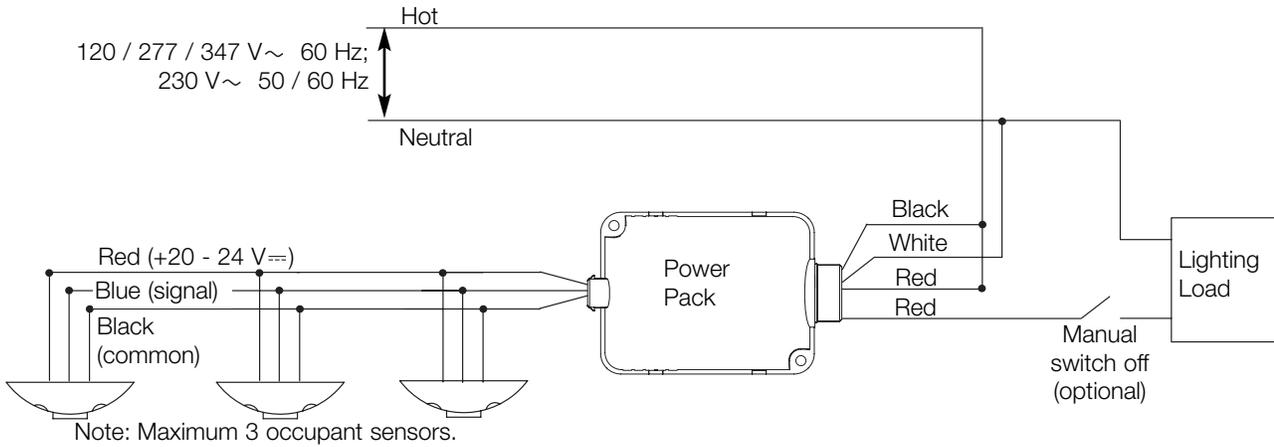
Job Name:

Model Numbers:

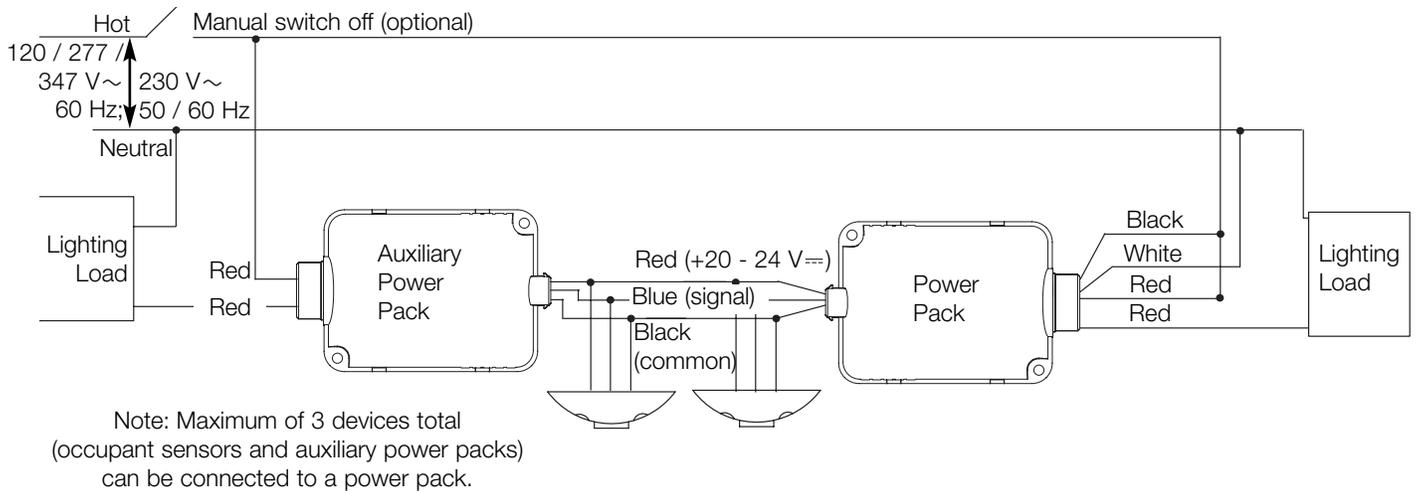
Job Number:

## Wiring: Stand-Alone Control

### 1 to 3 Sensors with Power Pack



### Switching Multiple Loads with Auxiliary Power Packs



Job Name:

Model Numbers:

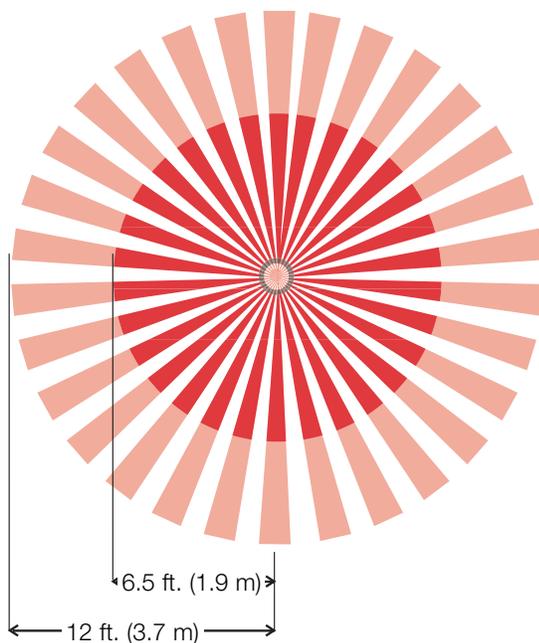
Job Number:

## Installation

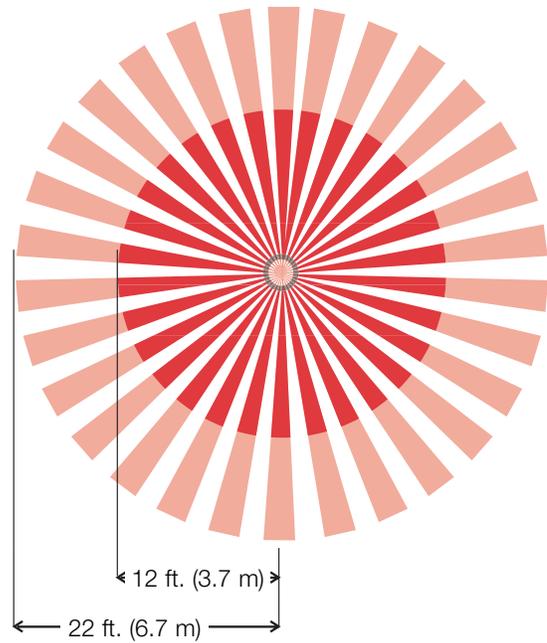
### Sensor Placement

- The occupant sensor must have an unobstructed view of the room. Do not mount behind or near tall cabinets, shelves, indirect hanging fixtures, etc.
- Keep the occupant sensor away from air flow from ventilation outlets, windows, fans, etc.
- Closely follow the diagrams shown concerning major and minor motion coverage. The sensor can detect major motion (such as a person taking a half-step) at a greater distance than it can detect minor motion (such as writing or typing at a desk).
- May not detect occupancy with no significant difference between ambient and body temperatures.

### Range Diagrams



LOS-CIR-450



LOS-CIR-1500



Major motion detection



Minor motion detection

**Job Name:**

**Model Numbers:**

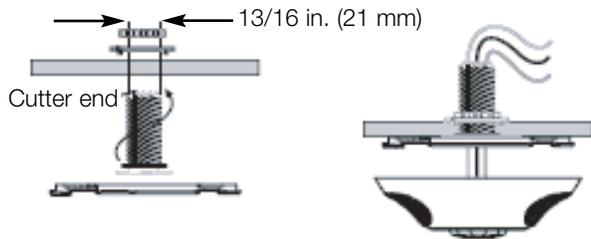
**Job Number:**

## Installation

### Mounting

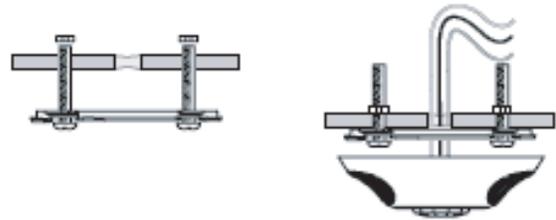
#### Normal Mounting

Twist and lock threaded mounting post onto cover plate. Drill through ceiling tile with assembly, using cutter end of the threaded mounting post. Secure with washer and nut.

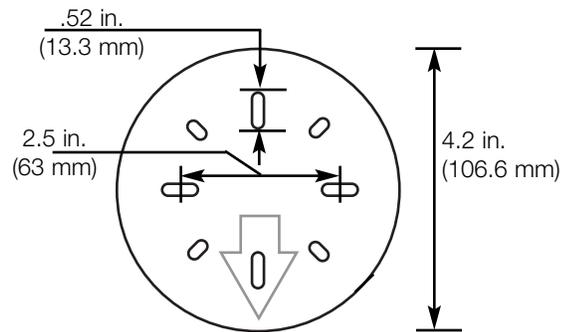


#### Mounting to Non-Standard Ceiling or Fixture

Mount twist-lock cover plate using mounting screws, nuts, and washers (included). Drill/punch wire routing hole through ceiling tile at center of cover plate.



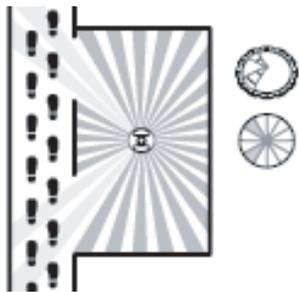
Mounting Plate Dimensions



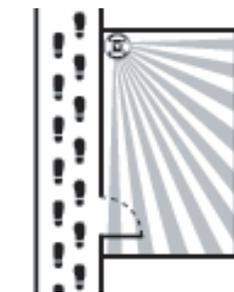
### Wire Lengths

# Sensors	1	2	3	1	2	1
# Aux. PP	0	0	0	1	1	2
22 AWG	750 ft.	375 ft.	250 ft.	375 ft.	250 ft.	250 ft.
0.5 mm <sup>2</sup>	365 m	180 m	120 m	90 m	120 m	120 m
20 AWG	1200 ft.	600 ft.	400 ft.	600 ft.	400 ft.	400 ft.
0.75 mm <sup>2</sup>	730 m	365 m	240 m	365 m	240 m	365 m
18 AWG	2400 ft.	1200 ft.	800 ft.	1200 ft.	800 ft.	800 ft.

### Using the Infrared Mask



Center Ceiling Mount  
(Mask blocks sensor seeing out doorway into hall)



Corner Ceiling Mount  
(No mask needed)

### Typical Mask Patterns



Conference Room Mask



180° Mask



Full Mask



Rectangular Areas



Over the Door



Specific Areas You Wish to Mask

Job Name:

Model Numbers:

Job Number:

## Sensor Adjustments

### Override Settings

	A	Off (Default)	On
Auto/Manual	<input type="checkbox"/>	1 Automatic (Normal)	Manual on/off (Override)
Threshold	<input type="checkbox"/>	2 Auto Threshold Adjustment	High Sensitivity (Low turn-on threshold)
LED Motion Indicator	<input type="checkbox"/>	3 Lights indicate motion	Disable LED Indicator
Reset Learned Settings	<input type="checkbox"/>	4 Retain Settings (Normal)	Erase all learned settings, Restart Learning (Toggle On)



	B	Off	On
Strong Airflow Compensation	<input type="checkbox"/>	1 Disable Compensation (Normal)	Enable Compensation
Over Doorway Installation	<input type="checkbox"/>	2 No (Normal)	Yes (Use increased turn-on threshold)
Timer Adjust	<input type="checkbox"/>	3 Adjust Timer Automatically	Use Manual Setting (No adjustment)
Auto Sensitivity	<input type="checkbox"/>	4 Adjust Sensitivity Automatically	Adjust Sensitivity Manually



### Timer Test Mode

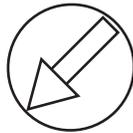
1. Remove the retainer cover.
2. Rotate the black timer adjustment knob to about midway (12 o'clock).
3. Return setting to minimum setting (full CCW).



Factory Settings



12 o'clock



Full CCW

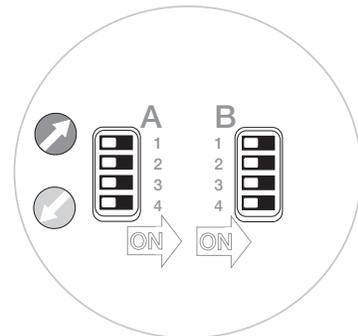
Note: The timer will remain in the 8-second test mode for 1 hour, then automatically reset to 8 minutes.

4. To manually take the timer out of the 8-second test mode, turn the timer adjustment approximately 1/16" clockwise to make the setting slightly above minimum (just above the 8-minute setting).

### Factory Settings

Red: Infrared sensitivity  
75% default

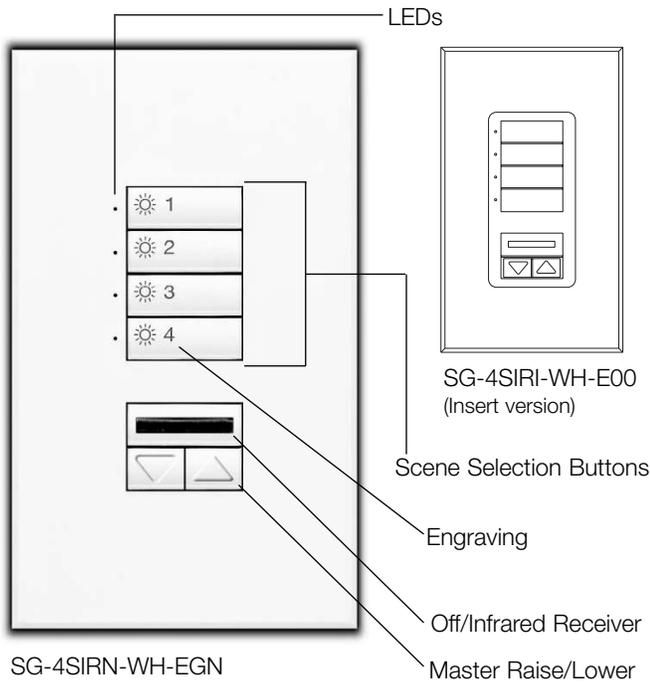
Black: Timer  
8 min.



<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

Color and Engraving Codes

**SG-4SIRN-\_\_-\_\_**  
**4-Scene with Off, Raise/Lower, and IR Receiver Wallstation**



**Description**

- Allows user to select and adjust scenes at the Wallstation or by Wireless Remote Control.
- Large, rounded buttons are easy to use.
- Backlit buttons with optional engraving make it easy to find and operate the control in low light conditions.
- Optional button engraving is angled up to the eye for easy reading.
- Scene selection functionality can be selected in the field.
- Infrared receiver allows infrared transmitters to select scenes and raise/lower all lighting zones.
- Off button turns all lights off.
- Status LEDs indicate which scene is selected.
- Master raise/lower button brightens or dims all lighting in the selected scene.
- 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.

**Finish and Engraving Options**

- Available with button engraving.
- Three engraving options are available: General Engraving, Standard Engraving, & Non-Standard Text Engraving. For more details, please refer to the seeTouch Ordering Guide (P/N 367-274) or visit the website at [www.lutron.com/seetouch](http://www.lutron.com/seetouch).

**Field Selected Functionality**

DIP Switch Settings	Scene selection buttons and GRX-IT 4-Scene Wireless Remote Control activate:	GRX-8IT 8-Scene Wireless Remote Control activates:
5 6		
	Scenes 1 to 4	Scenes 1 to 8
	Scenes 5 to 8	Scenes 5 to 12
	Scenes 9 to 12	Scenes 9 to 16
	Scenes 13 to 16	Scenes 13 to 16/1 to 4

DIP Switches 7-10 are set at the factory. Do not change switch 7, 8, or 9. Switch 10 controls the button backlight. Refer to product installation guide for more details.

<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

## Specifications

### Power

Low-voltage type Class 2 (PELV). Operating voltage: 12/24 V Direct Current.

### Key Design Features

- Field-changeable button and faceplate assemblies allow easy customization.
- Front accessible DIP switches allow change of function without removing the unit from the wall.
- Meets IEC 801-2. Tested to withstand 15kV electro-static discharge without damage or memory loss.
- Faceplate snaps on with no visible means of attachment.
- Available as an “insert” style control for multi-ganging.
- Can be ganged to share a common faceplate with NovaT® and Vareo® Dimmers. To order new Wallplates for multi-ganging, specify “R3” openings in a Lutron NovaT\* multi-gang FB (fins broken) Series model number.
- Use Button Replacement Kits to change color, button configuration, or engraving.
- Button Replacement Kits may also be used to convert between non-insert and insert configurations.

### System Communications and Capacity

- Low-voltage type Class 2 (PELV) wiring connects Wallstations to Control Units and other components.
- Up to 8 Control Units and 16 total Wallstations and/or Control Interfaces may be connected for a total of 24 control points.

### Terminals

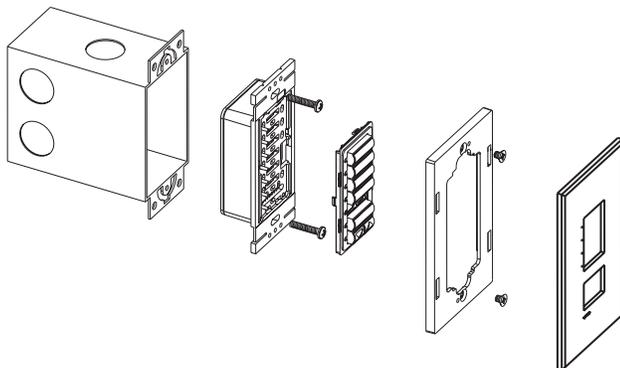
Accept up to two #18 AWG (1.0mm<sup>2</sup>) typical.

### Environment

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

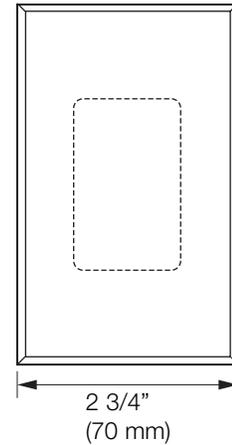
### Mounting

Typical backbox dimensions: 95mm (3.74”) high, 55mm (2.17”) wide, 70mm (2.75”) deep.

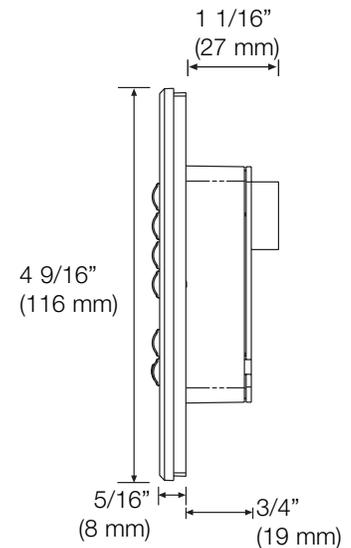


## Dimensions

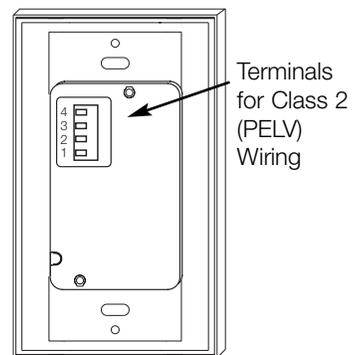
### Front View



### Side View



### Back View



<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

## Color/Finish and Customizing Information

### Color/Finish

#### Matte Finishes

White	WH
Ivory	IV*
Beige	BE
Gray	GR*
Brown	BR
Black	BL

\* GR, IV not currently backlighted

#### Metal Finishes

With Black Plastic Buttons (Standard)

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

#### Gloss Finishes

Available with Insert (I) style controls only.  
Ship with Claro® faceplates.

White	GWH
Light Almond	GLA

#### Anodized Aluminum Finishes

Clear	CLA
Black	BLA
Brass	BRA

#### Backlighting Notes:

Illuminated text (translucent text on buttons) is available for these colors: BL and BR (including all metal finishes).

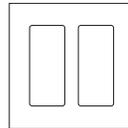
Illuminated buttons (with black text on buttons) are available for these colors: WH, BE, GR, WH\*, GLA\*.

\* Insert (I) style controls only

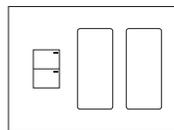
### Multi-ganging

- Order Insert (I) style controls.
- To order new Wallplates for multi-ganging, specify “R3” openings in a Lutron NovaT® multi-gang FB (fins broken) Series model number.

Examples:



Wallplate for 2 seeTouch Wallstations, Model # NT-R3-R3-FB-(color)



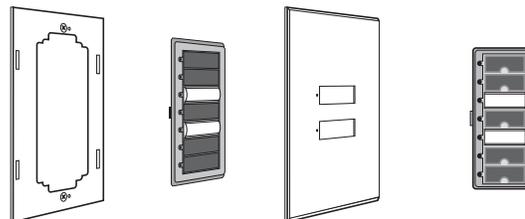
Wallplate for other Lutron controls and 2 seeTouch Wallstations, Model # NT-T8-R3-R3-FB-(color)

Note: New button inserts are not included with multi-ganging Wallplates.

### Button Replacement Kits

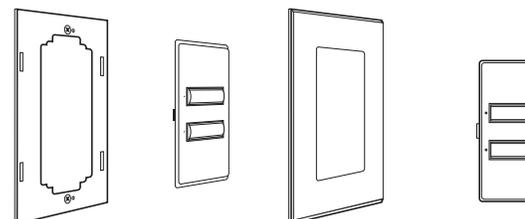
Use Button Replacement Kits to change: colors, button configuration, engraving, between insert and non-insert versions.

#### Non-Insert Kit



Each Kit includes an adapter, button assembly, and wallplate

#### Insert Kit



<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

## Wallstation Installation

### DIP Switches

- Set DIP switches 1-4 to give the Wallstation a unique system address from 1 to 16.
- Set additional DIP switches (if any) to specify a function as shown on the first page of the Wallstation's Specification Submittal.
- DIP switch 10 controls the button backlight.

Address	DIP Switch Settings			
	1	2	3	4
1	↑	↑	↑	↑
2	↑	↑	↑	↓
3	↑	↑	↓	↑
4	↑	↑	↓	↓
5	↑	↓	↑	↑
6	↑	↓	↑	↓
7	↑	↓	↓	↑
8	↑	↓	↓	↓
9	↓	↑	↑	↑
10	↓	↑	↑	↓
11	↓	↑	↓	↑
12	↓	↑	↓	↓
13	↓	↓	↑	↑
14	↓	↓	↑	↓
15	↓	↓	↓	↑
16	↓	↓	↓	↓

Reserved for GRX-PRG, if present on link.

### Low-voltage Class 2 (PELV) Wiring

- Use low-voltage Class 2 (PELV) wiring to daisy-chain Wallstations to 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 Wallstation.

### When used with GRAFIK Eye 3000 Control Units

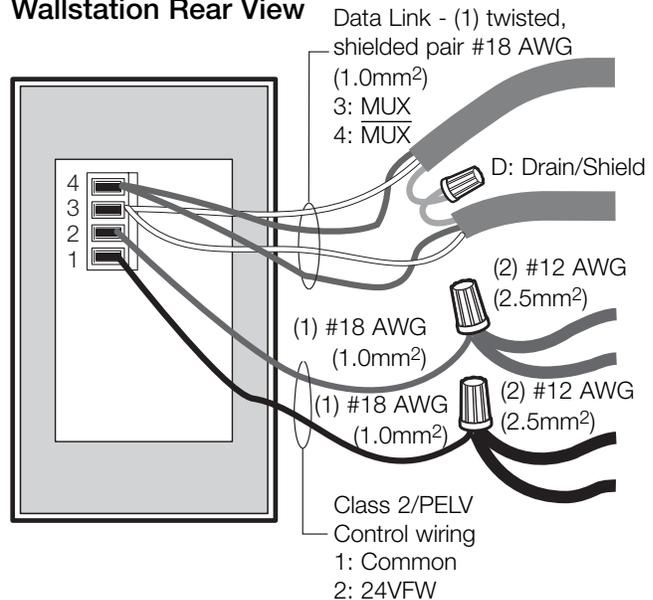
- Two #18 AWG (1.0mm<sup>2</sup>) conductors for common (terminal 1) and 12VDC (terminal 2). Ensure that the terminal 2 connection is wired correctly. Refer to GRAFIK Eye 3000 Series Specification Submittal.
- One shielded, twisted pair #18 AWG (1.0mm<sup>2</sup>) for data link (terminals 3 and 4).

### When used with GRAFIK Eye 4000 Control Units

- Two #12 AWG (2.5mm<sup>2</sup>) conductors for common (terminal 1) and 24VFW (terminal 2). These won't fit in terminals. Connect as shown.
- One shielded, twisted pair #18 AWG (1.0mm<sup>2</sup>) 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.

Note: Use appropriate wire connecting devices as specified by local codes.

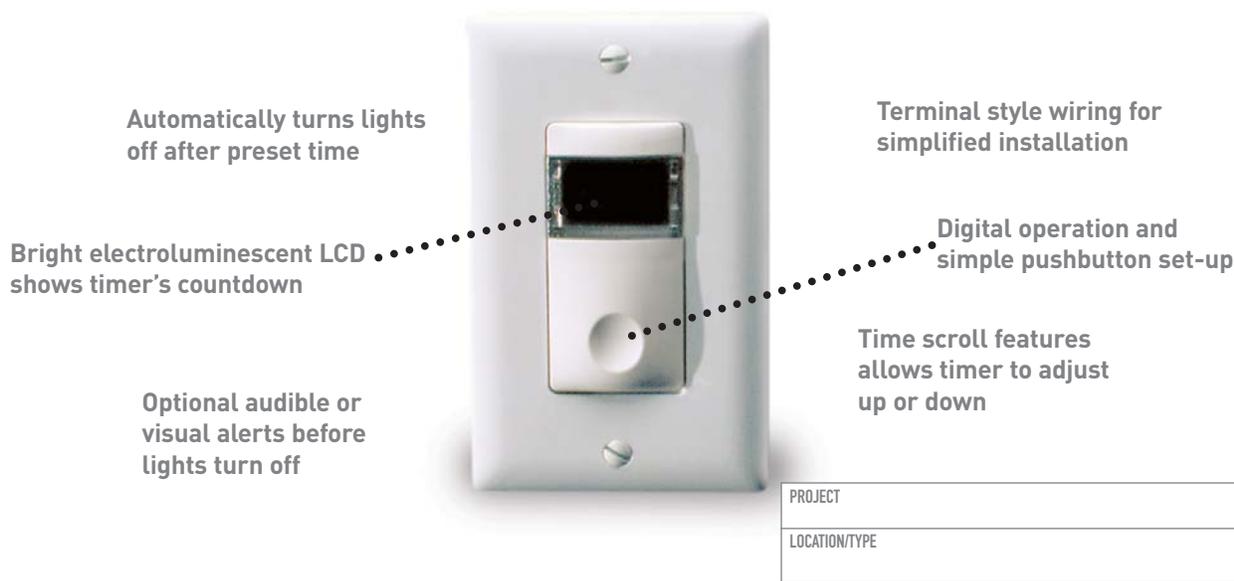
### Wallstation Rear View



<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	



# TS-400-24 Low Voltage Digital Time Switch



PROJECT

LOCATION/TYPE

## Product Overview

### Description

The IntelliSwitch TS-400 series digital time switches automatically turn lights off after a preset time. The simple pushbutton operation provides users with convenient time out lighting control without the nuisance of twist timers.

### Operation

The TS-400-24 operates at 24 VDC/ VAC. Pressing the TS's on/off button turns lights on. The lights will remain on for the duration of the time-out setting which is adjustable from 5 minutes to 12 hours. Lights can be turned off before the time-out setting expires by pressing the on/off button. Also, the unit can be reset at any time by holding down the on/off button for 2 seconds. This will bring the timer back to its original time out setting and restart the countdown.

## Features

- Time-out settings range from 5 minutes to 12 hours for flexibility in fitting many applications
- Optional flash and beep warnings allow time to reset the switch if someone is present
- Time scroll option provides temporary override of the preset time out period
- Simple reset feature for returning the switch to its original preset time-out setting
- Electroluminescent back-lit LCD shows timer countdown

## Time Scroll Overrides

The time scroll option allows users to temporarily override the time out setting without adjusting the settings. Time scroll is selected with the calibration button. With time scroll programmed to "UP", lights can be held on longer than the time out period. With time scroll programmed to down "DN", lights can be turned off sooner than the time out period. Pressing the on/off switch for more than 4 seconds causes the timer to scroll in the set direction throughout the possible time out settings.

## Applications

The TS is an ideal lighting control choice in equipment rooms, storage areas, and closets. The switch can also be used as an HVAC override or to control heat lamps in hotel guest rooms. The low voltage TS-400-24 can switch loads that exceed the ratings of standard wall switches and can be used in locations where high voltage wiring in walls is prohibited. Also, when used with a Watt Stopper power pack, the TS-400-24 can control lighting and motor loads.

- Terminal style wiring simplifies installation
- Zero crossing reduces stress on the relay and increases product longevity
- Pushbutton programming gives the TS an easy set up process
- Setting the time-out for 2 hours and time scroll to down allows Title 24 compliance for using override switches

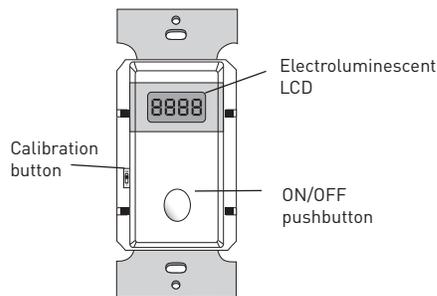


## Specifications

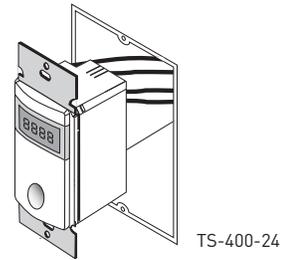
- TS-400-24: 24 VAC/VDC/VAC half-wave rectified input; current draw is 12 mA DC, 41 mA AC
- Time-out adjustments range from 5 minutes to 12 hours (5 minute increments to 1 hour, then 15 minute increments to 12 hours)
- Optional visual warning: flashes lights at 5 minutes and 1 minute prior to time-out
- Optional audible warning: beeps every 5 seconds at 1 minute prior to time-out
- TS-400-24 contains single-pole, double-throw isolated relay rated for 1A @ 30 VDC
- No minimum load requirement
- Compatible with all electronic ballasts and motor loads
- Dimensions: 2.66" x 1.79" x 1.76" (67.5mm x 45.5mm x 44.7mm)
- UL and CUL listed; Five year warranty

## Controls & Installation

### Product Controls

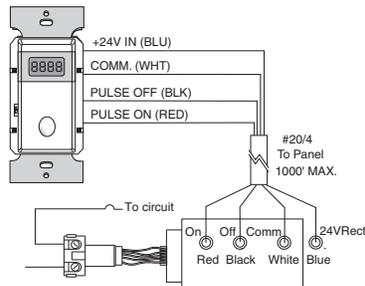


### Installation

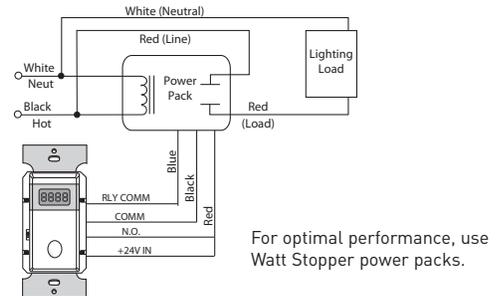


## Wiring

### TS-400-24 with Lighting Control Panel



### TS-400-24 with Power Pack



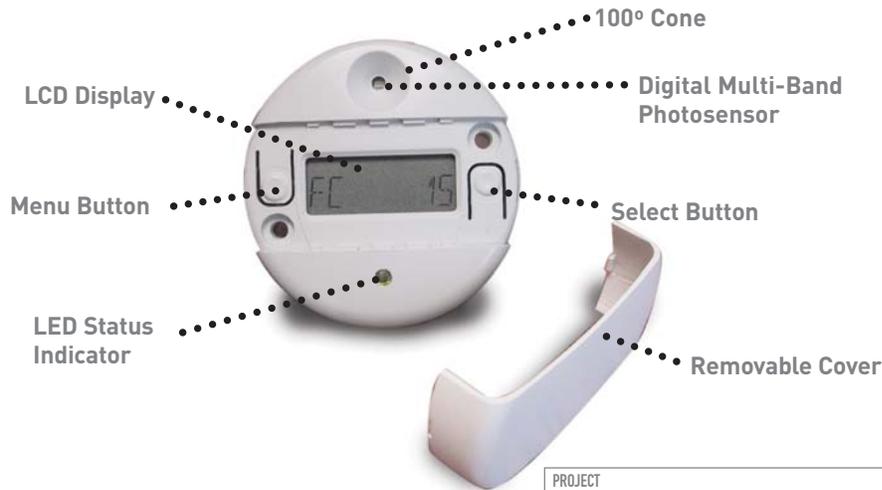
## Ordering Information

Catalog No.	Color	Voltage	Load Requirement
<input type="checkbox"/> TS-400-24-W	White	24 VAC/VDC/VAC rect.	Current: 12 mA; DC / 41 mA AC
<input type="checkbox"/> TS-400-24-I	Ivory		
<input type="checkbox"/> TS-400-24-A	Lt. Almond		
<input type="checkbox"/> TS-400-24-B	Black		
<input type="checkbox"/> TS-400-24-G	Grey		

One ASP-211 single-gang cover plate included. Order ASP-422 for blank 2-gang cover plate, ASP-432 for 2-gang cover plate with switch option (specify color). The TS-400-24 works with Watt Stopper power packs.



# LightSaver® LS-101 Daylighting Controller



PROJECT
LOCATION/TYPE

## Product Overview

### Description

The LS-101 Daylighting Controller is a single zone, ON/OFF device which can be installed in an open or closed loop application to turn lights off automatically when sufficient natural daylight is present. It consists of an advanced digital multi-band photosensor that measures light similar to the way the human eye perceives it, an on-board microcontroller, and an LCD display. This photosensor is positioned behind a 100° cone that cuts off unwanted light, preventing false triggering.

### Operation

The LS-101 is a self-contained 24 VDC device with an extended range of 1-1400 fc that only requires a low voltage power pack to operate. By adjusting the setpoints, it will turn lighting systems off when the ambient light levels exceed the OFF setpoint, and will turn lighting systems back on when natural light levels have fallen far enough to warrant it. Because of its factory presets, many set-up applications require little or no adjustment of the settings. The LS-101 is expandable with a low voltage wall switch to enable manual override or with an occupancy sensor to enable its 'Hold On While Occupied' feature.

## Features

- Easy-to-read LCD Display prompts installer through set-up and accurately reflects the current control mode and light level.
- Four user-adjustable parameters: ON Setpoint, OFF Setpoint, OFF Setpoint Time Delay, and 'Hold On While Occupied' Mode (if wired with an occupancy sensor)
- Test Mode overrides the programmed Time Delay to allow installer to check if settings are correct.
- Control load status verification allows testing and confirmation that the wiring is correct by pressing the select button
- Manual Override for one hour (if wired with a low voltage, push-button wall switch)
- Meets Section 119's requirement for daylighting in California's Title 24 Lighting Code.
- LED status indicator identifies if the LS-101 is in Override or Test Mode, or if the device has switched the lights on or off.
- Two mounting options for either top-lit or side-lit applications
- Low voltage leads are color coded to match wire colors on the power pack.
- Shape and design developed to prevent mis-alignments.
- Can be programmed in most daylight conditions

### On, Off & Deadband Settings

The LS-101 features adjustable settings for ON setpoint, OFF setpoint and time delay, should adjustment be required. Adjusting the ON setpoint will automatically calculate your OFF setpoint to a predetermined deadband setting. The deadband can be adjusted to a value of 25%, 50%, 75% or 100% above the ON setpoint. When the sensed light level drops below the ON setpoint for 20 seconds, the output signal will switch on. And when the sensed light level exceeds the OFF setpoint for the length of the time delay, the output signal will switch OFF. The time delay can be adjusted to 3, 10, 20 or 30 minutes.

### Applications

The LS-101 Daylighting Controller can be used to control any type of lighting: incandescent, fluorescent, compact fluorescent (CFL) and HID. The sensors work in peripheral offices, skylit areas, cafeterias, warehouses and any other indoor areas with natural light access.

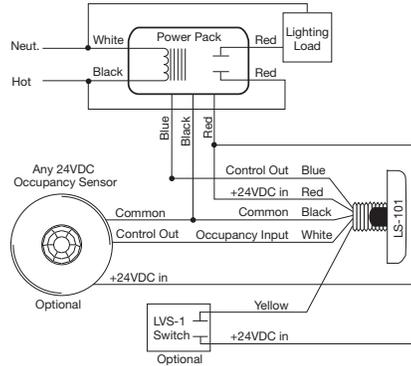


## Specifications

- Digital Multi-Band Photosensor Range: 1-1400 foot candles
- ON Setpoint Range: 1-850 foot candles
- Status Indicator: Multi-function green LED
- Power Requirements: 12/24 VDC; 7 mA typical
- Output Signal: 24VDC; maximum 120 mA
- Location: Suitable for dry interior locations
- Environment: 32 to 120°F, less than 90% rh
- Dimensions: 2.4" diameter x 0.7" deep (61mm x 17mm)
- Five-year warranty
- UL listed

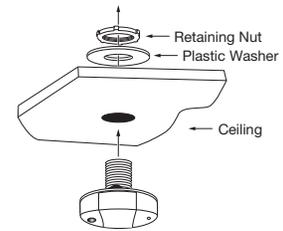
## Wiring & Installation Location

### Wiring Diagram

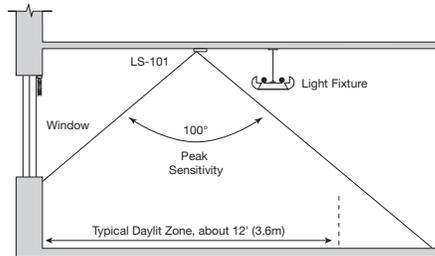


For other wiring diagrams, please visit the CAD Resource Center at [www.wattstopper.com](http://www.wattstopper.com)

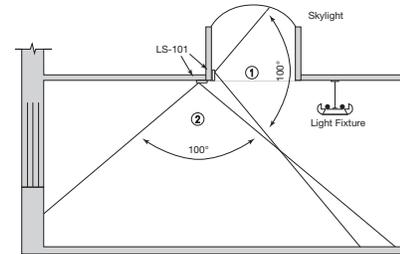
### Mounting Installation



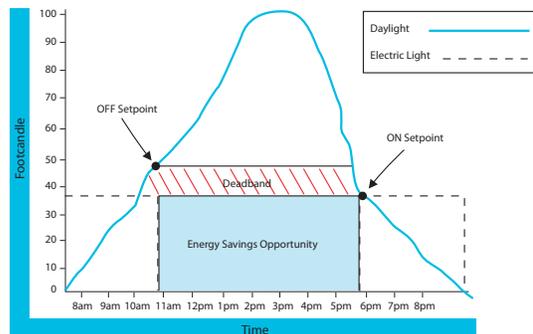
### Side Lighting Application



### Top Lighting Application



## Deadband Level Chart



If the LS-101's photosensor lighting level drops below the ON setpoint, the lights will remain on. If the sensor's lighting level rises above the OFF setpoint, the LS-101 will automatically turn the lights off. If the sensor's lighting level remains in the predetermined deadband range (25%, 50%, 75% or 100%) the lighting will be passive until the sensor's level reaches the high or low setpoints.

## Ordering Information

Catalog No.	Voltage	Current	Photosensor Range	Deadband Adjustment Range
<input type="checkbox"/> LS-101	12-24 VDC	7 mA Typical	1-1400 foot candles	25%, 50%, 75% & 100% above the ON setpoint

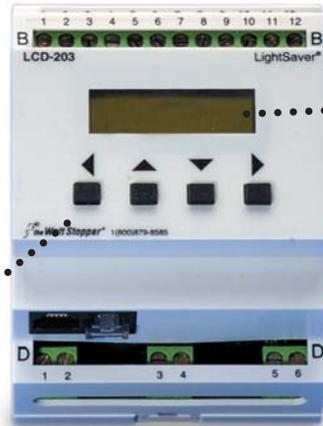


# LightSaver® LCD-203 Dimming Controller

Low voltage automatic dimming control module

Three control channels with individually programmable settings

Push-button programming and automated setup



LCD display of photosensor readings

Optional wall switch override for manual control

Open loop control

PROJECT
LOCATION/TYPE

## Product Overview

### Description

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

### Operation

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

### Multiple Channel Control

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

### Applications

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

## Features

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

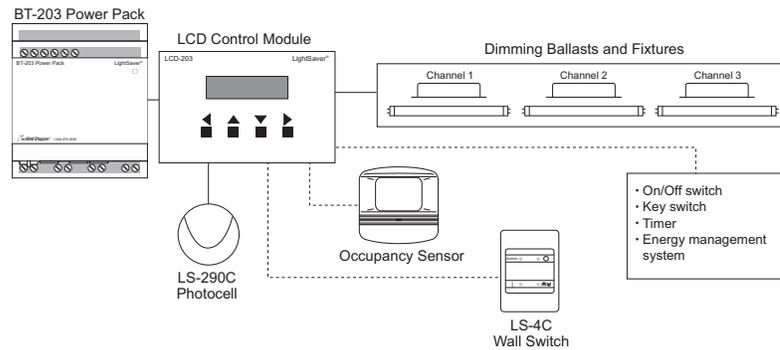


## Specifications

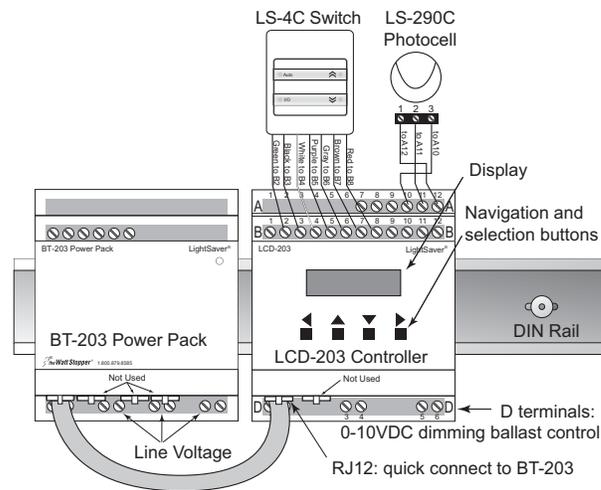
- Class 2 low voltage device
- Compatible with standard 0-10 volt dimming ballasts
- Controls up to 50 0-10 VDC ballasts per dimming channel
- Photocell range from 3 - 6,000 footcandles
- Programmable dimming and fade rates from 5-60 seconds
- Selectable cut off delay from 0-20 minutes or can be disabled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

## System Layout & Wiring

### LCD System Layout



### LCD-203 Wiring and Settings



## Ordering Information

Catalog No.	Description	Voltage	Control Channels
<input type="checkbox"/> LCD-203	Dimming control module	24 VDC	three
<input type="checkbox"/> LS-290C	Photosensor 3 - 6000 footcandle range		
<input type="checkbox"/> BT-203	Power Pack		
<b>Dimming control system options:</b>			
Product group	Catalog No.	Description	
Switch	<input type="checkbox"/> LS-4C	Wall Switch	
Enclosure	<input type="checkbox"/> LS-E8	Screw-cover enclosure 8" x 8" x 4" (203.2mm x 203.2mm x 101.6mm)	
	<input type="checkbox"/> LS-E12	Screw-cover enclosure 12" x 12" x 4" (304.8mm x 308.8mm x 101.6mm)	

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