

## SAE Systems

P-I-98PF & LS-P-I-98PF  
Pendant-Mounted Indirect

### Product Description

Graceful arcuate-shaped perforated housing for indirect lighting with a soft, glowing appearance. UL listed. Cradle to Cradle Certified.<sup>CM</sup>

### Ordering Guide

Product, lamping, & length					Options						
<b>P -</b>	<b>I -</b>	<b>98PF</b>	<b>2</b>	<b>4</b>	<b>T8 -</b>	<b>TCWM -</b>	<b>ELB10</b>	<b>TW -</b>	<b>2CWQ -</b>	<b>ECSS -</b>	<b>120</b>
Mounting	Distribution	Series	Lamp Count	Nominal Length (ft)	Lamp Type	Finish	allast	Tandem Wiring	Pre-wiring	Other Options	Volts
<b>P</b> Pendant-mounted	<b>I</b> Indirect	<b>98PF</b> perforated	2, 3, 4 → 4, 6, 8 → 6, 9, 12 →	<b>4</b> <b>8</b> <b>12</b>	<b>T8</b>	<b>TCWM</b> (textured matte white) is standard	<b>ELB10</b> is standard	-- → <b>TW</b> →	<b>1CWQ</b> <b>2CWQ</b>	<b>EF</b> <b>ECSS</b> <b>F</b> <b>HPR</b>	<b>120</b> <b>277</b>
<b>Mounting Options</b> - add to end of catalog number <b>Aircraft cables</b> <input type="checkbox"/> FAI/ACC (field adjustable) standard <b>Stems</b> <input type="checkbox"/> P6S (stem) <input type="checkbox"/> SC/P6 (sloped ceiling) <input type="checkbox"/> EQ/P6 (earthquake)					see notes		see notes		see notes		see <b>Other Options</b>
<b>notes:</b> Lamp count = the total number of lamps in fixture Tandem-wiring not available for one-lamp cross-section fixtures For ordering guide information in shaded areas, choose selection by reading ACROSS the shaded areas for correct specifications.											

**P-I-98PF24T8-TCWM-ELB10-TW-2CWQ-F-120-FAI/ACC** is a typical catalog number for a 2-lamp (2 lamps in cross-section), 4-foot long T8 fixture with perforated housing, textured matte white finish, electronic ballast, tandem-wired, pre-wired with two-circuit branch wiring and quick-connects, fuse, 120 volts, mounted with field adjustable aircraft cables.



### LiteSpeed Quick-Ship

Many configurations of this fixture are available in our Litespeed 10-day quick-ship program. The "10-day" icon in the descriptions below shows which options are available in Litespeed. Litespeed orders are shipped within 10 working days of receipt of a released, cleared order. An "LS" prefix is required in front of the ordering number to have the order handled as Litespeed. Other configurations not indicated here may be available for 10-day shipment; contact Customer Service for availability. Some restrictions may apply to large orders. All Litespeed fixtures are supplied in textured white finish (TCWM).

### Cross-section lamping



### Ballast Options

Specify in place of **ELB10**, contact factory for availability/compatibility with lamping:  
**DA/MK7** Advance Mark VII dimming ballast  
**DL/ECO** Lutron ECO-10 dimming ballast  
**DO/HEL** Osram Sylvania dimming ballast

### Other Options

- EF** Emergency Fluorescent Ballast. Battery-powered ballast from a UL Listed manufacturer will operate one T8 lamp for 1 1/2 hours.
- ECSS** End Cap Shelf-Style. Die-cast shelf-style end caps with no exposed fasteners.
- F** Fuse. Slow or fast blow, determined by Litecontrol.
- HPR** High Performance Reflector. Die-formed, specular anodized aluminum.

### To have the fixture enabled for Lutron EcoSystem compatibility:

**LPD/CS/e** EcoSystem low-profile dimming electronic ballasts installed at the factory, along with all required internal EcoSystem wiring. For other configurations of the Lutron EcoSystem components, including custom device connection feeds to enable connection to ceiling-mounted sensors and control devices, consult [litecontrol.com/](http://litecontrol.com/) or contact the factory.

### Tandem Wiring & Circuiting Options

- 1CWQ** Fixture is wired with a single-circuit so that all lamps are switched together.
- TW-2CWQ** Fixtures wired with two circuits. 2-lamp in cross section fixtures, the fixture is wired such that the inline lamps are switched separately. 3-lamp in cross section fixtures, the fixture is wired such that the inline center lamps are switched separately from the inline outer lamps.

### Questions to Ask

1. Row information, including desired fixture lengths? 2. Lamp type?
3. White, Litecolor or special color? 4. Ballast options? 5. Tandem wiring?
6. Other options? 7. 120 or 277 volt? 8. Cables or stems, what length?



## Specifications

**HOUSING.** Die-formed steel with frame-finished perforation sections of .062" diameter staggered holes .125" OC, 23% open. White acrylic diffusing panels retained behind. Perforated areas are 3 1/8" wide, and end 3" from each fixture end. At the center of eight-foot fixtures and four feet from the ends of twelve-foot fixtures, perforation is interrupted for 6", to match perforation patterns of joined four-, eight-, and twelve-foot fixtures.

**END CAPS.** End caps are 14-gauge steel with no holes or knockouts, finished to match housing. Two fasteners on each end cap allow tight attachment to ends of fixtures without removing reflector. End caps are required at each end of row and on both ends of an individual fixture.

**REFLECTOR.** Die-formed steel with high-reflectance white finish is standard. A high performance, die-formed specular aluminum reflector (**HPR**) is available as an option.

**BALLAST.** Electronic Ballast (**ELB**), high power factor, thermally protected Class P, Sound Rated A, less than 10% THD, manufactured by a UL Listed manufacturer, as available, determined by Litecontrol. Ballasts with a voltage range of 120 to 277 will be used when fixture configuration and ballast availability allow. The minimum number of ballasts will be used.

**LAMPING.** Available in two-, three-, and four-lamp T8 cross-sections. In three-lamp configuration, center lamp is diagonally positioned along length to clear suspension hardware at fixture ends, to provide symmetrical light distribution.


**TANDEM WIRING.** When selected from Ordering guide below, fixtures wired to switch in-line lamps separately, providing two (two- and four-lamp cross-section fixtures only) or three (three-lamp cross-section fixtures only) levels of light.

**PRE-WIRING.** Fixtures are supplied with #12 AWG type THHN wire for branch circuits. One end will have factory-installed push-in quick-connects. The other end will be stripped back 1/2" for quick connection in field. For fixtures to accommodate special circuits such as night light and emergency, etc., in-field wiring will be required. See Pre-wiring Information for details.

**SUSPENSION.** Aircraft cable or rigid stem pendants attach to fixture using Litecontrol's easy-hang system, with one attachment plate for use at any support point. Mounting points in rows are "on module" at 48", 96", and 144" spacings. See Planning for Installation for details.

**ROW JOINING.** Litecontrol's at-joint flat strap supporting two fixtures allows simple fixture joining and installation. Support points are centered above the midpoint of joint "on seam" for aligned, symmetrical appearance. Fixture end headers are threaded in two locations to allow easy row joining without removing reflectors. Standard suspension provided is field adjustable aircraft cable (**FAI/ACC**) with a 51" length cable. See Aircraft Cables and Stems for details.

**SYSTEM CONNECTORS.** Corners, tees, and crosses available. Die-formed 20-gauge non-perforated steel, same profile as the housing, smooth with no exposed fasteners or knockouts. Each system connector shall have a rigid cross-member with a .687" diameter stem hole at center to accept any of Litecontrol's pendant assemblies.

**CERTIFICATION.** Fixture and electrical components shall be UL and/or CUL Listed and shall bear the I.B.E.W., A.F. of L. label.  This fixture is Cradle to Cradle Certified<sup>CM</sup> Silver by MBDC.

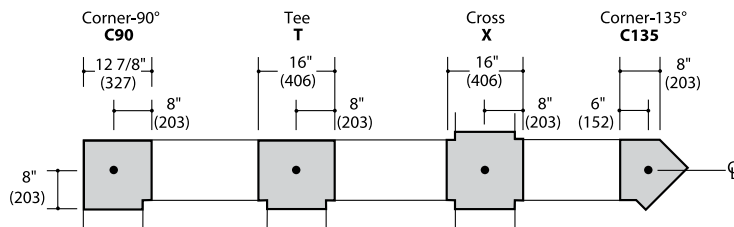
Note: Litecontrol reserves the right to change specifications without notice for product development and improvement.

## System connectors

### Catalog Number

Series	Connector	Finish
P-I-9800	C90	
P-I-9800	C135	
P-I-9800	T	
P-I-9800	X	

P-I-9800-C90-TCWM is a typical catalog number for a 90° corner connector finished Textured Matte White.



LITECONTROL

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# Planning for installation

## Suspension assemblies

Provided with P6S (5/8" dia., 3/8" NPT) stems, or 3/32" diameter aircraft cable assemblies. Stems with 0-45° swivel joints are available. Aircraft cable is provided at fixed lengths (with 1/4-20 stud adjustment for leveling purposes), or may be ordered with "field-adjustable" fittings that allow unlimited vertical positioning and adjustment. See Stems & Aircraft Cables sheet for further details.

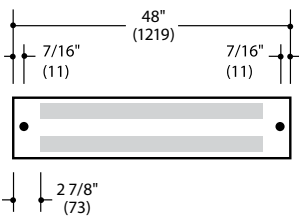
## Stem lengths

P6S stems are available in eight standard lengths from 6" to 36" (nominal). For P-I-98PF, the actual ceiling-to-top-of-fixture dimensions for each of the standard lengths are: 5", 8", 11", 14", 17", 23", 27", and 35". Refer to Standard Length Stem Assemblies sheet for dimensional information on sloped ceiling (SC/P6) and earthquake (EQ/P6) stem assemblies.

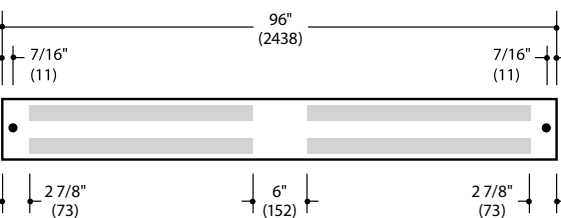
## Suspension mounting locations

Pendant locations at ends of rows or individual fixtures are 7/16" from fixture end. Pendant locations for in-row joints are at the joint. In-row mounting points are "on module" at 48", 96" and 144" spacings.

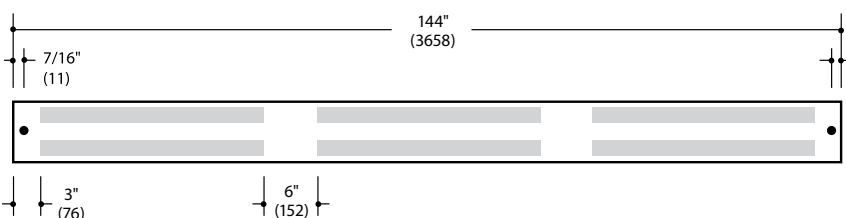
### Individual fixture (4')



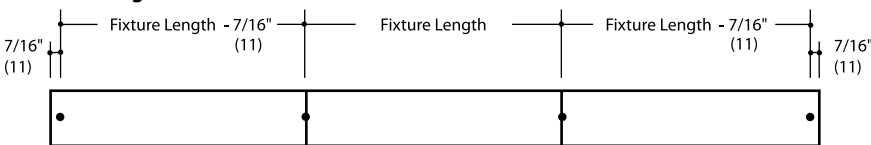
### Individual fixture (8')



### Individual fixture (12')



### Row diagram



Fixture Lengths: 4', 8', 12'  
 • Indicates pendant locations

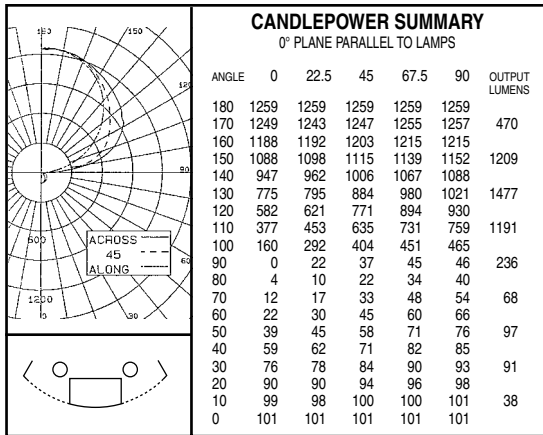
### Top view: 1-lamp and 3-lamp T8 lamp position

Center lamp is inserted *diagonally* on 1-lamp and 3-lamp T8 fixtures



**Photometric data**

**SAE P-I-98PF & LS-P-I-98PF**



**P-I-98PF24T8 83.9 % Efficiency**  
Litecontrol Certified Test Report # 26721000

RCC	80			70			50			30			10			0		
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0			
RCC																		
RW																		
RCR																		
0	.81	.81	.81	.81	.70	.70	.70	.70	.50	.50	.50	.31	.31	.31	.14	.14	.14	.05
1	.74	.70	.67	.65	.64	.61	.58	.55	.43	.42	.40	.27	.26	.25	.12	.11	.11	.04
2	.67	.61	.56	.52	.58	.53	.49	.46	.38	.35	.33	.23	.22	.21	.10	.10	.09	.04
3	.61	.54	.48	.44	.53	.47	.42	.38	.33	.30	.28	.21	.19	.18	.09	.08	.08	.03
4	.56	.47	.41	.37	.48	.41	.36	.32	.29	.26	.23	.18	.17	.15	.08	.07	.07	.03
5	.51	.41	.36	.31	.44	.36	.31	.27	.26	.23	.20	.16	.14	.13	.07	.06	.06	.02
6	.47	.37	.31	.27	.40	.32	.27	.23	.23	.20	.17	.15	.13	.11	.06	.06	.05	.02
7	.43	.33	.27	.23	.37	.29	.24	.20	.21	.17	.15	.13	.11	.10	.06	.05	.04	.02
8	.40	.30	.24	.20	.34	.26	.21	.17	.19	.15	.13	.12	.10	.08	.05	.04	.04	.01
9	.37	.27	.21	.17	.32	.24	.19	.15	.17	.14	.11	.11	.09	.07	.05	.04	.03	.01
10	.34	.25	.19	.15	.29	.21	.17	.13	.15	.12	.10	.10	.08	.06	.04	.03	.03	.01

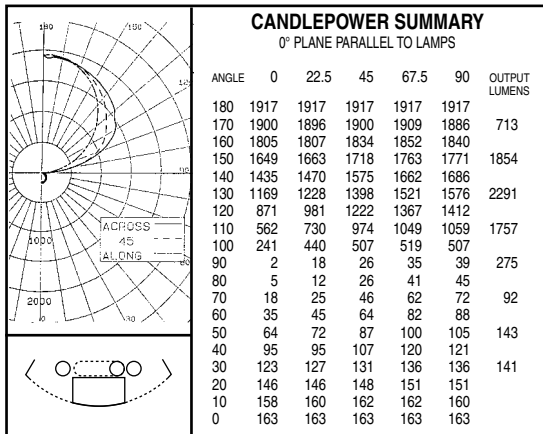
Floor Cavity Reflectance 20

**ZONAL LUMEN SUMMARY**

ZONE	LUMENS	% LAMP	% LUMINAIRE
180-90°	4554	78.52	93.54
90-0°	314	5.43	6.46
180-0°	4868	83.95	100.00

**LUMINANCE SUMMARY (fL)**

ANGLE	0°	45°	90°
45°	74	85	101
55°	54	79	101
65°	43	74	104
75°	29	73	107
85°	24	71	109



**P-I-98PF34T8 84.1 % Efficiency**  
Litecontrol Certified Test Report # 27631000

RCC	80			70			50			30			10			0		
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0			
RCC																		
RW																		
RCR																		
0	.81	.81	.81	.81	.70	.70	.70	.70	.50	.50	.50	.31	.31	.31	.13	.13	.13	.05
1	.74	.71	.67	.65	.64	.61	.59	.56	.43	.42	.40	.27	.26	.25	.12	.11	.11	.04
2	.67	.61	.57	.53	.58	.53	.49	.46	.38	.35	.33	.23	.22	.21	.10	.10	.09	.04
3	.61	.54	.48	.44	.53	.47	.42	.39	.33	.30	.28	.21	.19	.18	.09	.08	.08	.03
4	.56	.48	.41	.37	.48	.41	.36	.32	.29	.26	.24	.18	.17	.15	.08	.07	.07	.03
5	.51	.41	.36	.31	.44	.37	.31	.27	.26	.23	.20	.16	.14	.13	.07	.06	.06	.02
6	.47	.38	.31	.27	.40	.33	.27	.24	.23	.20	.17	.15	.13	.11	.07	.06	.05	.02
7	.43	.34	.27	.23	.37	.29	.24	.20	.21	.17	.15	.13	.11	.10	.06	.05	.04	.02
8	.40	.30	.24	.20	.34	.26	.21	.18	.19	.15	.13	.12	.10	.08	.05	.04	.04	.02
9	.37	.27	.21	.17	.32	.24	.19	.15	.17	.14	.11	.11	.09	.07	.05	.04	.03	.01
10	.34	.25	.19	.15	.29	.22	.17	.13	.16	.12	.10	.10	.08	.06	.04	.04	.03	.01

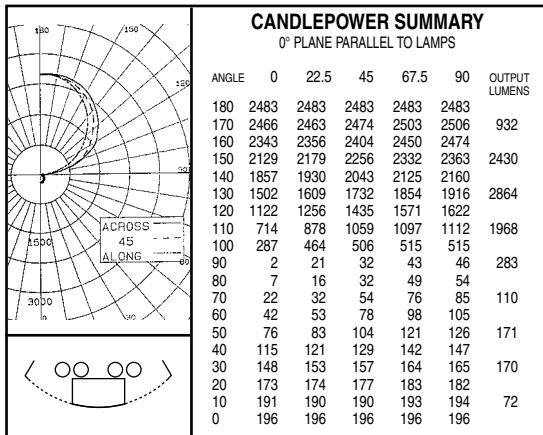
Floor Cavity Reflectance 20

**ZONAL LUMEN SUMMARY**

ZONE	LUMENS	% LAMP	% LUMINAIRE
180-90°	6860	78.86	93.77
90-0°	455	5.23	6.23
180-0°	7315	84.09	100.00

**LUMINANCE SUMMARY (fL)**

ANGLE	0°	45°	90°
45°	120	120	128
55°	86	107	117
65°	66	93	116
75°	54	77	104
85°	37	57	88



**P-I-98PF44T8 77.5 % Efficiency**  
Litecontrol Certified Test Report # 27641000

RCC	80			70			50			30			10			0		
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0			
RCC																		
RW																		
RCR																		
0	.75	.75	.75	.75	.65	.65	.65	.65	.46	.46	.46	.28	.28	.28	.12	.12	.12	.05
1	.68	.65	.62	.60	.59	.56	.54	.51	.40	.38	.37	.25	.24	.23	.11	.10	.10	.04
2	.62	.57	.52	.48	.53	.49	.45	.42	.35	.32	.30	.22	.20	.19	.09	.09	.09	.03
3	.57	.50	.45	.40	.49	.43	.39	.35	.31	.28	.26	.19	.18	.16	.08	.08	.07	.03
4	.52	.44	.38	.34	.44	.38	.33	.30	.27	.24	.22	.17	.15	.14	.07	.07	.06	.02
5	.47	.38	.33	.29	.41	.34	.29	.25	.24	.21	.18	.15	.13	.12	.07	.06	.05	.02
6	.43	.35	.29	.25	.37	.30	.25	.22	.21	.18	.16	.13	.12	.10	.06	.05	.05	.02
7	.40	.31	.25	.21	.34	.27	.22	.19	.19	.16	.14	.12	.10	.09	.05	.05	.04	.02
8	.37	.28	.22	.18	.32	.24	.19	.16	.17	.14	.12	.11	.09	.08	.05	.04	.03	.01
9	.34	.25	.20	.16	.29	.22	.17	.14	.16	.13	.10	.10	.08	.07	.04	.04	.03	.01
10	.31	.23	.18	.14	.27	.20	.15	.12	.14	.11	.09	.09	.07	.06	.04	.03	.03	.01

Floor Cavity Reflectance 20

**ZONAL LUMEN SUMMARY**

ZONE	LUMENS	% LAMP	% LUMINAIRE
180-90°	8443	72.79	93.90
90-0°	548	4.73	6.31
180-0°	8992	77.52	100.00

**LUMINANCE SUMMARY (fL)**

ANGLE	0°	45°	90°
45°	148	143	154
55°	109	123	147
65°	79	113	136
75°	58	92	125
85°	25	70	103