FULHAM DIRECTAC™

TAT120010ACxxxA
TJT120010ACxxxB
TJT120010ACxxxC / TJT120010ASxxxC

CLASSIFIED c UL us c UL us RoHS COMPLIANT

120V DirectAC Engine

- Suitable for open or fully enclosed luminaires
- Suitable for luminaires with plastic and glass lenses
- Integrated AC Direct Drive (No DC Driver)
- 120VAC dedicated Input
- <30% Flicker
- TRIAC / ELV Dimmable with Smooth Dimming
- Full CCT Option Available (Standard CCT's: 2700K,3000K,4000K)
- 80 CRI standard and 90 CRI available
- UL Classified (B/C option)
- UL Recognized (A option)
- High Voltage Barrier and 5VA rated Lens

General Specifications

Input Voltage	120VAC (108~132VAC);50/60 Hz
Input Current	~0.082A
Input Power (Nominal)	10W
Input PF	>0.98
THD	<20%
Operating Frequency	120Hz
Max Lumen Output @ Full Power	1035 lumens @ 4000K / 80 CRI*
Dimming Type/Range	Leading Edge (TRIAC) or Trailing Edge (ELV) /100% ~ 10%
Beam Angle	120°
CRI	80 (standard), 90 available
Operating Ambient Temperature Range (Ta)	-35 to 50°C / -31°F to 122ºF
Maximum Temperature	DirectAC Engine (Tc): 90°C / 194ºF Lens: 90°C / 194ºF
Estimated Lumen Maintenance (at Max Tc)	L70= >50,000 hours / L90= >18,000 hours
Color Consistency	Binning per ANSI C78.377-2011; 4 SDCM
Overall Size	3.11" diameter x 0.71" H ("B"option with lens)
Wire Type/ Length	18AWG / 12" Black and White wires
LED Quantity	24 Pcs.
Weight	A:(Engine Only) 23g / B:(Eng+Lens) 43g / C: (Kit) Rd:134g / Sq:74g
Maximum Screw Installation Torque	35 inch - ounces
Safety/Compliance	DirectAC Engines: cURus (File # E486778) TAT120010AxxxxA
	DirectAC Engine Retrofit Kits:
	cULus (File # E486779) TJT120010AxxxxB, TJT120010AxxxxC
	RoHS Compliant
	Dry and Damp Location
	IC Over Temperature Control
RFI/EMI	FCC Part 15B Consumer, EN55015
Input Surge Test	2.5kV Common and Differential mode (Per Energy Star Ring Wave Test)
Sound Rating / Noise	A / <24 dBA
Percent Flicker	<30%
Flicker Index	<0.0759
Protective Lens/Enclosure	High Voltage Barrier / 3mm Clear Polycarbonate 5VA Flame rated
Lens Transmittance	<7.5%
PCB Material	MCPCB
Warranty	5 years @ Max. Tc from the date of manufacture
Electrolytic Capacitor Rating	>60,000 hours

* At Tc Engine = 25ºC

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Part Number Matrix

T	J	T	120	010	A	C	8	40	X

Engine Type
A= DirectAC Engine (Recognized)
J**= DirectAC Engine Retrofit Kit (Classified)

Dimming
T = TRIAC/ ELV

Input Voltage
120 = 120VAC

Input Power
010 = 10W

Material
A=MCPCB+wire

Shape
C**=Circular
S= Square

CRI
8** = 80
9 = 90

Color Temperature
27** = 2700K
30** = 3000K
35 = 3500K
40** = 4000K
50 = 5000K

Option
A = DirectAC Engine
B= DirectAC Engine +Lens (Retrofit Kit)
C = DirectAC Engine +Lens +Plate (Retrofit Kit)

**Indicates standard engine options.
All other options are built to order. MOQ and lead time applies for non-standard options.

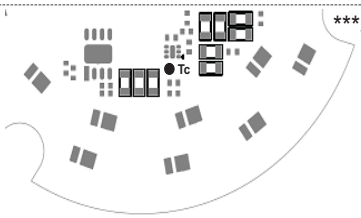
Electrical and Optical Specifications

Color Temperature	DirectAC Engine Part Number	Input Power	Nominal Luminous Flux [2,3,4] @ 90 CRI	Engine Efficacy @ 90 CRI	Nominal Luminous Flux [2,3,4] @ 80 CRI	Engine Efficacy @ 80 CRI
2700K	TJT120010ACx27B	10W	700 lumens	70 lm/W	900 lumens	90 lm/W
3000K	TJT120010ACx30B	10W	750 lumens	75 lm/W	960 lumens	96 lm/W
4000K	TJT120010ACx40B	10W	805 lumens	81 lm/W	1035 lumens	104 lm/W
5000K	TJT120010ACx50B	10W	860 lumens	86 lm/W	1105 lumens	111 lm/W

1) DirectAC Engines standard model "B" comes with engine and lens.
2) Nominal luminous flux includes a 7.5% loss due to lens. Use a 1.075 multiplier for the "A" option.
3) Electrical and optical specifications are based on Tc mod = 25ºC. Reference Thermal De-Rating chart for other temperatures.
4) Reference Energy Star website for lumen data and listing.

Thermal Specifications

	DirectAC Engine (A)	DirectAC Engine Retrofit Kit***(B)	DirectAC Engine Retrofit Kit***(C)
Storage Temperature Range	-35°C(-31°F) to 100°C(212°F)	-35°C(-31°F) to 100°C(212°F)	-35°C(-31°F) to 100°C(212°F)
Operating Ambient Temperature Range	-35°C(-31°F) to 50°C(122°F)	-35°C(-31°F) to 40°C(104°F)	-35°C(-31°F) to 45°C(113°F)
Maximum Case Temperature (Tc)	90°C (194ºF)	90°C (194ºF)	90°C (194ºF)



***Suitable for ceiling luminaire with minimum dimensions: 8.5” diameter with a height of 1.1”.

DirectAC Engine Retrofit Kit only: Hardware and Labels (B & C options)

NOTICE - THIS LUMINAIRE HAS BEEN MODIFIED AND CAN NO LONGER OPERATE THE ORIGINALLY INTENDED LAMP. (WITH RESPECT TO FIRE AND SHOCK ONLY) FOR USE ONLY WITH PRODUCTS DESCRIBED AND INSTALLED IN ACCORDANCE WITH THE INSTRUCTION PROVIDED WITH THIS RETROFIT KIT.

CAUTION: THIS LUMINAIRE HAS BEEN MODIFIED TO OPERATE LED LAMPS. DO NOT ATTEMPT TO INSTALL OR OPERATE FLUORESCENT LAMPS IN THIS LUMINAIRE.

Refer to LED Engine Retrofit Kit Installation Instructions for further detail.
This LED Engine Kit can retrofit any luminaire with a length/height greater or equal to the minimum dimensions shown on the Installation Instructions.
This LED Engine Kit can be used with luminaires similar to the one illustrated on the Installation Instructions.

Certification Chart

Model / Classification	TAT120010ACxxxA	TJT120010ACxxxB	TJT120010ACxxxC TJT120010ASxxxC
RoHS COMPLIANT	YES	YES	YES
c UL us	YES	YES	YES
CLASSIFIED c UL us	NO	YES	YES
ENERGY STAR	NO	NO	NO

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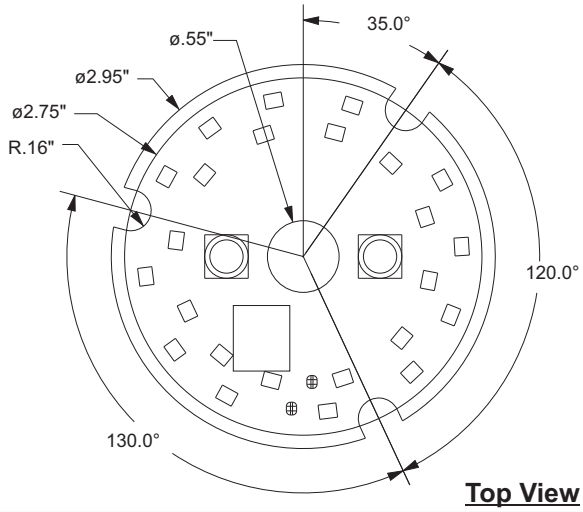
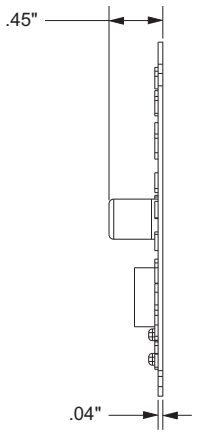
Mechanical Drawings

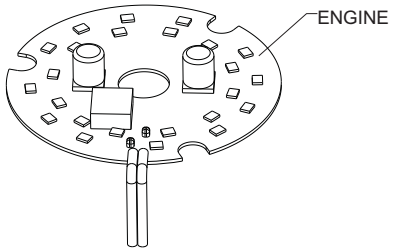
TAT120010ACxxxA
(Engine Only)



Top View

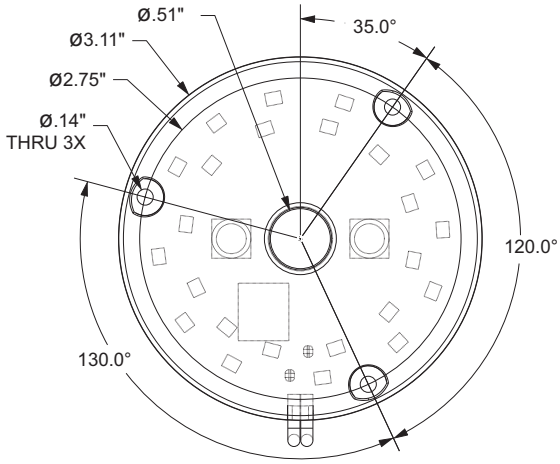


Side View

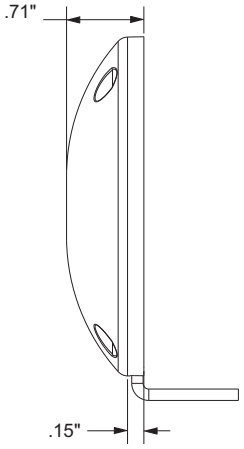


Exploded View

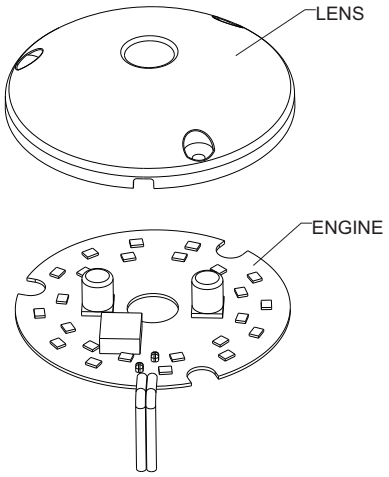
TJT120010ACxxxB
(Engine + Lens)



Top View

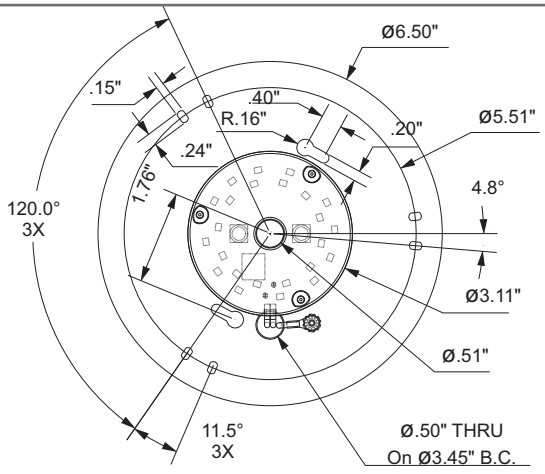


Side View

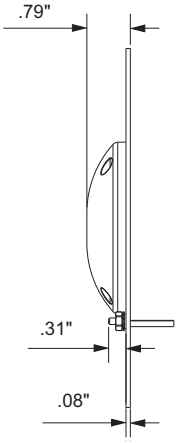


Exploded View

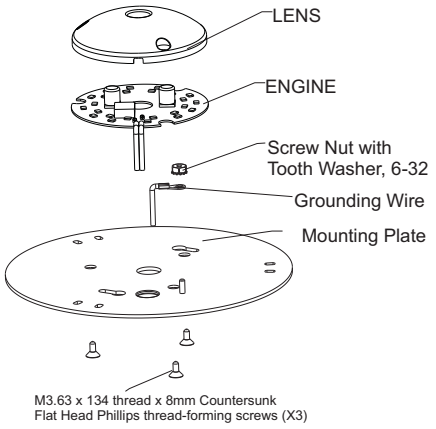
TJT120010ACxxxC
(Engine + Lens + Plate)



Top View



Side View



Exploded View

TAT120010ACxxxA
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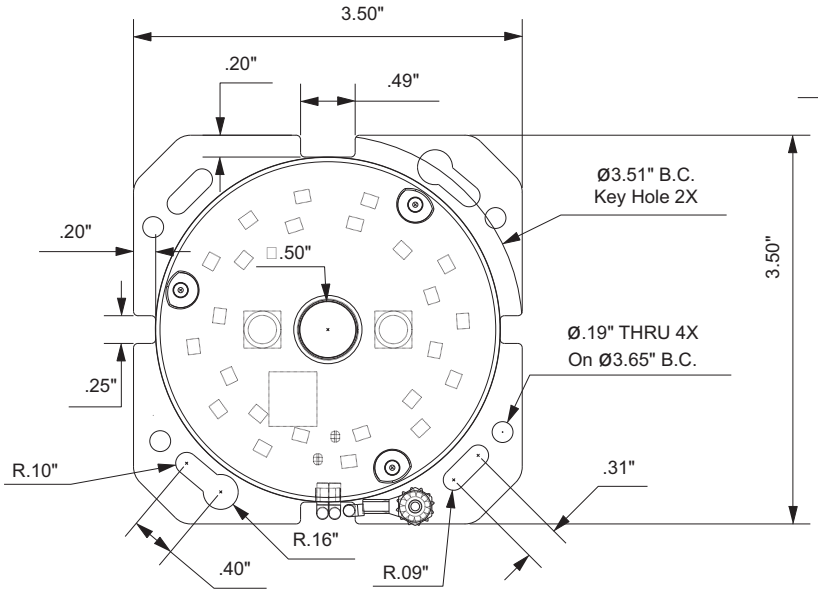
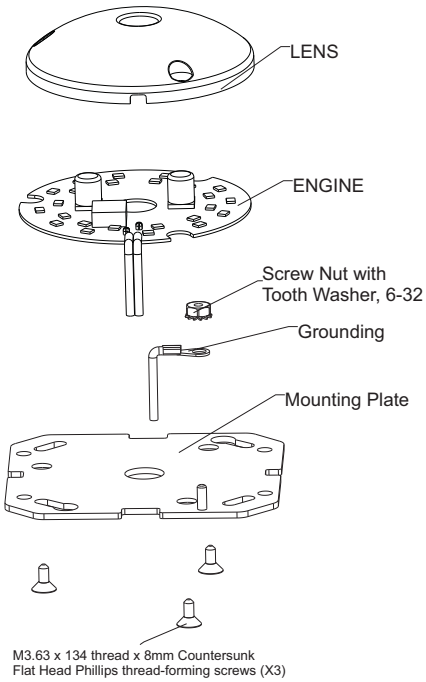
Mechanical Drawings

TJT120010ASxxxC
(Engine + Lens + Plate)



Top View **Side View**



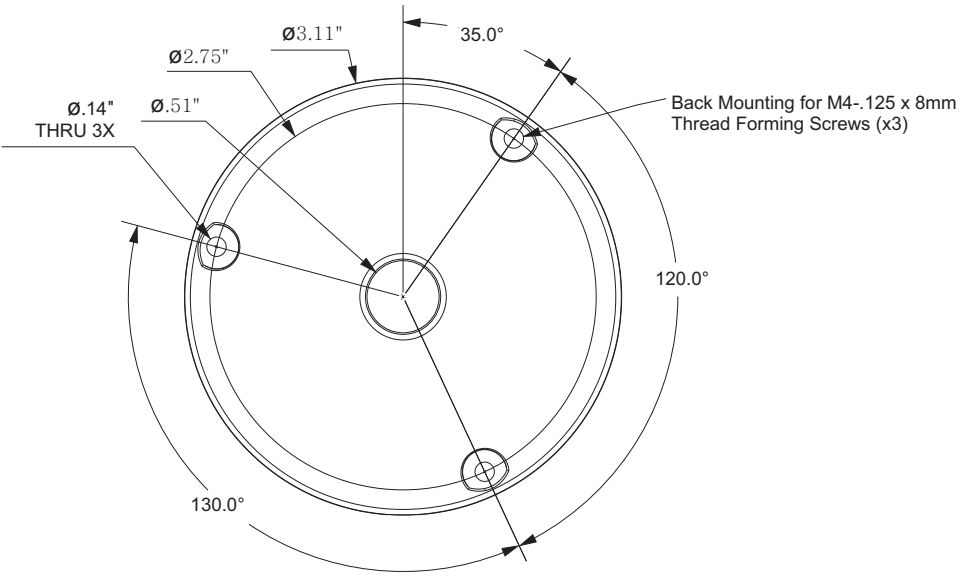
Exploded View

Accessories

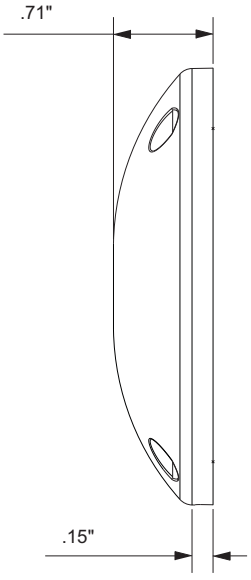
TLEOPT120-006 (Lens)

- Clear polycarbonate protective lens acts as a high voltage barrier and meets the 5VA Flame rating. It can be order separately and used with TAT120010ACxxxA option as UL Recognize component product. Hardware not included.

Lens
20g



Top View



Side View

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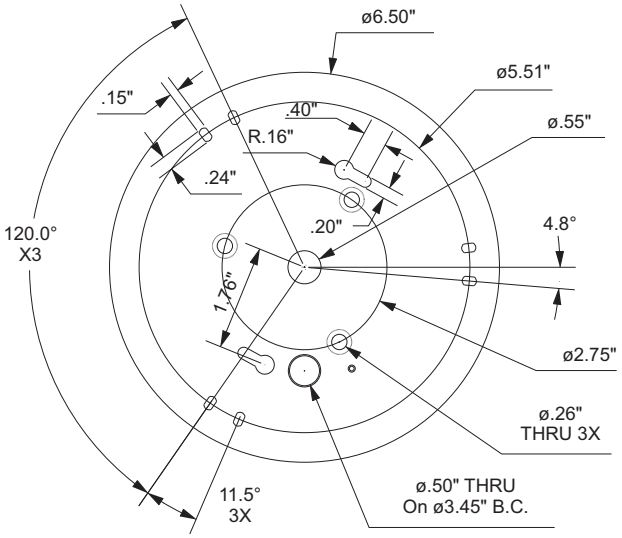
Accessories

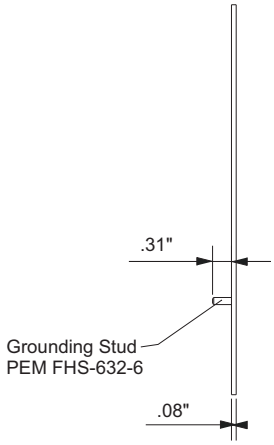
TLE-HSK-003 (Mounting Plate - Round)

- Mounting Plate, can be use for improved thermals and ease of mounting. It can be order separately and used with TAT120010ACxxxA option as a UL Recognized component product or with TJT120010ACxxxB option as a UL Classified product. Three thread forming screws (M4-.125 x 8mm) are provided in order to attach the lens and DirectAC Engine to the Mounting Plate. Ground wire pre-attached to Mounting Plate.

Mounting Plate
91g



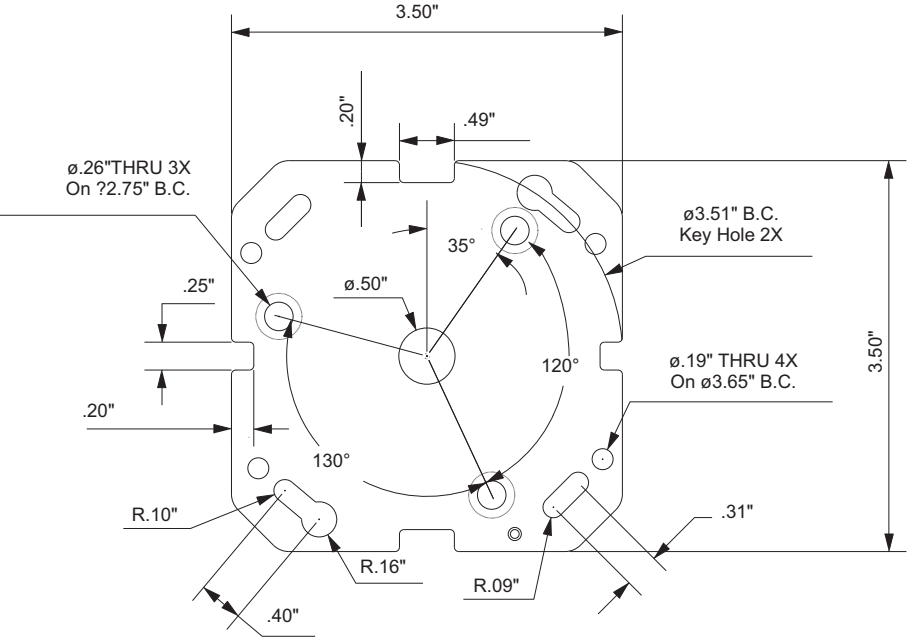
Top View



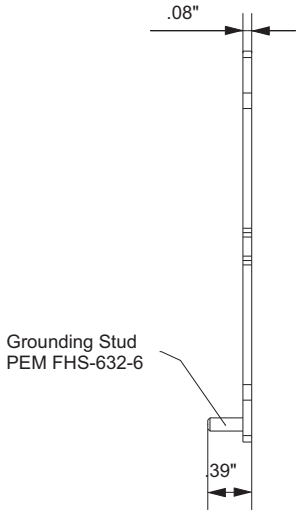
Side View

TLE-HSK-004 (Mounting Plate - Square)

Mounting Plate
30g



Top View



Side View

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Guidelines

Reduced Flicker Operation Feature

- DirectAC Engine models have added circuitry to help reduce the Flicker when operated on the 50/60Hz power lines. The Flicker percentage on these models is below 30% when operated at line voltage, per CEC requirement. Dimming by line voltage devices may increase the Flicker percentage as the power levels are reduced.

Hi-Pot Testing (Caution)

- All DirectAC Engine models are Hi-Pot tested on the Fulham production line. We advise NOT to apply AC Hi-voltage Dielectric test to LED products as this may damage the sensitive electronic components as well as the LEDs. Please inspect the connection wires for any nicks or cuts in the insulation during and after installation.

Termination Notes

- A luminaire disconnect UL listed connector is included, as part of Fulham's retrofit kit only, to meet Energy Star requirements.
- Use solid wire size 18AWG/12" per pole, rated at max 600V load and 105°C operating temperature.
- Strip wires to 11-13mm (0.47in.).
- Connector not for multiple use.
- For additional information on Wago's 873 Series Lumi-Nuts® connector, please visit: http://www.wago.com/infomaterial/wago_ebook/51261593/flipviewerxpress.html

Daisy Chain

Environmental Rating

- DirectAC Engines are rated for dry and damp locations.

IC Over Temperature Control

- DirectAC Engine models have built in Thermal management, if the unit experiences higher than normal ambient temperatures the circuit by design will reduce the drive current to the LED there by reducing the thermal impact on the LED's.

Fastening to Luminaire

- When installing by "mounting thru holes" (recommended), use any screw with diameter less than 0.13in. [3.4mm]. Mount on a flat surface and use all 3 mounting holes to ensure good contact between back side of Engine and mounting surface. Refer to max specified torque for installation. Suggested screw sizes: #5 or M3 Pan Head screw.

Electrostatic Sensitive Product (ESD)

- Fulham LED products should be handled with proper measures to protect against any potential ESD damage.
- When servicing, personnel should be ground and direct contact with LED should be avoided.

Thermal Management

- Proper thermal management should be employed to ensure life and reliability of product.

Wiring

- Intended for 120V application ONLY.
- Connect the Black wire from the DirectAC Engine to the building Line by using the proper connectors or wire nuts.
- Connect the White wire from the DirectAC Engine to the building/source Neutral by using the proper connectors or wire nuts.
- DirectAC Engine does not need grounded, but the luminaire must be grounded.

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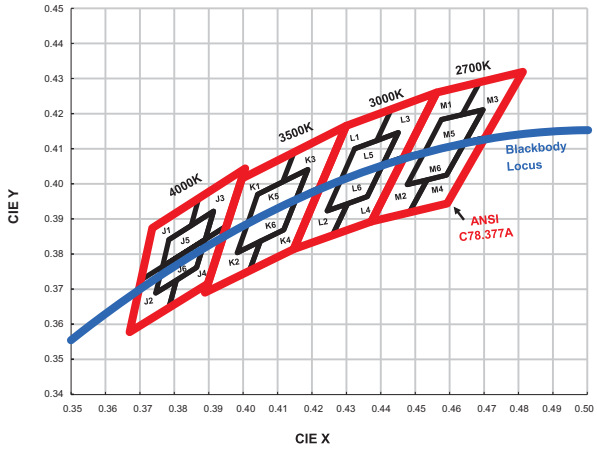
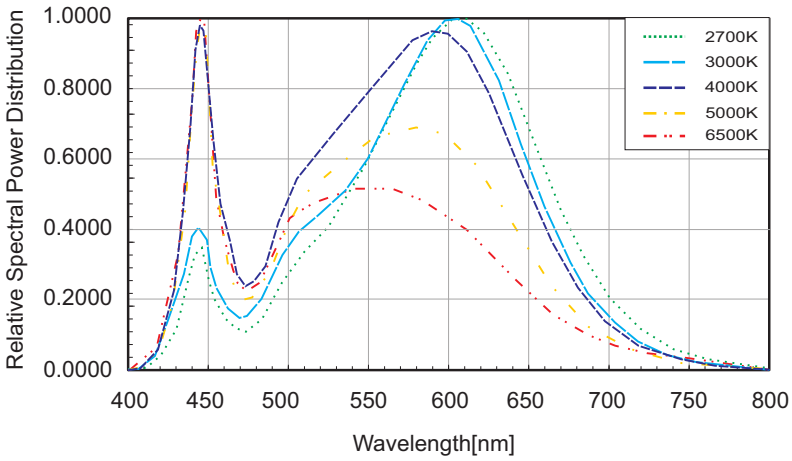
RoHS COMPLIANT

Color and Binning



Ref. Bridgelux Chromaticity Diagram for ANSI bins.
Binning per ANSI C78.377-2011; 4SDCM
For reference only. For more detailed info, contact factory.

Optical Spectrum****



**** Value varies depending on product type and color rank
Ref. Bridgelux
For reference only. For more detailed info, contact factory.

Thermal De-Rating

Ambient Temperature (Ta)	Thermal De-rating Multiplier
25ºC	1
30ºC	0.991
35ºC	0.989
40ºC	0.980
45ºC	0.975
50ºC	0.970
55ºC	0.960
60ºC	0.950

Ref. Bridgelux
For reference only. For more detailed info, contact factory.

Compatible Tested Dimmers

(Contact Fulham for other alternatives)

Manufacture	Model	Type
Leviton	ILLUMATECH IPL06	Leading Edge
Lutron	NOVA T NTLV-600	Leading Edge
Lutron	SLYLARK S-600	Leading Edge
Leviton	IG40O5 6631	Leading Edge
Lutron	LUMEA LG-600P	Leading Edge
Leviton	VPE06	Trailing Edge
Lutron	SELV-303P	Trailing Edge

DirectAC Engine Equivalency Chart

DirectAC Engine/Kit (10W)				CFL					
Engine/Kit Part Number	System Wattage	Lumen Output	Efficacy	CFL Style	Lamp Wattage	# of Lamps	Total Wattage	Lumen Output	Efficacy
TJT120010AC8xxB	10W	1035 lm (4K/80CRI)	103 lm/W	Quad	13W	1	13W	775 lm	59 lm/W
TJT120010Ax8xxC TJT120010Ax8xxC				Triple	13W	1	13W	825 lm	63 lm/W

For reference only, several factors apply.

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Flicker Test Data Summary

(Test performed by third party lab using, Lutron Skylark S-600-WH dimmer)

With Dimmer at 100%

100% Light Output Percent Amplitude Modulation					
No Filter	40 Hz	90 Hz	200 Hz	400 Hz	1000 Hz
26.82%	0.69%	1.99%	24.41%	25.38%	25.94%
Measurement Period: 1,000 sec			Noise: 23.6 dBA		
Recording Interval: 4.00E-05 sec			Fraction of rated light output: 100%		
Flicker Index:	0.0759				

With Dimmer at 20%

20% Light Output Percent Amplitude Modulation					
No Filter	40 Hz	90 Hz	200 Hz	400 Hz	1000 Hz
17.73%	1.17%	4.22%	16.03%	16.99%	17.51%
Measurement Period: 1,000 sec			Noise: 21.3 dBA		
Recording Interval: 4.00E-05 sec			Fraction of rated light output: 20%		
Flicker Index:	0.0416				

With Dimmer at Minimum Light Output

Minimum Light Output Percent Amplitude Modulation					
No Filter	40 Hz	90 Hz	200 Hz	400 Hz	1000 Hz
12.67%	0.75%	2.38%	10.84%	11.71%	11.81%
Measurement Period: 1,000 sec			Noise: 22.6 dBA		
Recording Interval: 4.00E-05 sec			Fraction of rated light output: 10%		
Flicker Index:	0.0292				

No Dimmer

Light Output Percent Amplitude Modulation					
No Filter	40 Hz	90 Hz	200 Hz	400 Hz	1000 Hz
24.09%	0.45%	1.45%	22.74%	22.89%	23.04%
Measurement Period: 1,000 sec					