



TJTUNV010AC9xxB

JA8-2016



DirectAC UNV Retrofit Kit Engines

- Integrated AC Direct Drive (No DC Driver)
- Universal Voltage (120~277) AC Engine
- Suitable for open or fully enclosed luminaires
- Suitable for luminaires with plastic and glass lenses
- All 90CRI product meets CEC Title 24 requirement
- cULus Classified 1598C
- cULus Recognized 8750
- Energy Star Luminaire 2.1 Listed (for rebate programs)^①
- Energy Star Luminaire CSD^①

General Specifications

Input Voltage / Frequency ^②	120~277VAC (+/- 10%) / 50-60Hertz		
Input Current ^②	~0.084A @120V	~0.044A @230V	~0.036A @277V
Input Power ^②	10W (+/- 1W)		
Input PF	>0.97		
THD	<20%		
Operating Frequency per Energy Star @120V/60Hz	120 Hz		
Max Lumen Output @ Full Power ^②	905 lumens @ 4000K / 90 CRI		
Dimming Type/Range @120V ONLY	Leading Edge (TRIAC) or Trailing Edge (ELV) /100% ~ 10%		
Beam Angle	120°		
CRI / CCT	90 / 2700K, 3000K, 3500K, 4000K; 5000K is made to order (MTO)		
Operating Temperature Range (ta)	-35 to 50°C / -31°F to 122°F		
Maximum Engine Case Temperature (Tc)	L70: Tc max=80°C (Ts=85°C) / L90: Tc max=80°C (Ts=85°C)		
Maximum Lens Temperature	Lens: 90°C / 194°F		
Estimated Lumen Maintenance (at Max Tc)	L70= >54,000 hours / L90= 35,000 hours		
Color Consistency	Binning per ANSI C78.377-2015 @85°C; 3 SDCM		
Overall Size	3.11" Dia. x 0.71" H (79mm Dia. x 18.03mm H)		
Wire Type/ Length	18AWG / 12" Black and White wires		
LED Quantity	40 Pcs.		
Weight	62.6g / 0.13lbs.		
Packaging: Carton / Master Carton	20pcs / 160pcs		
Maximum Screw Installation Torque	60in-lb (960in-ozf)		
Safety/Compliance	DirectAC Engines: cURus (File # E486778) TATUNV010AxxxxA DirectAC Retrofit Kits: cULus (File # E486779) TJTUNV010AxxxxB RoHS Compliant Dry and Damp Location IC Over Temperature Control Energy Star Luminaire 2.1 Listed ^① Energy Star Luminaire CSD ^① CEC JA8-2016		
RFI/EMI	FCC Part 15B Consumer, EN55015		
Input Surge Test	2.5kV Common and Differential mode (Per ES Ring Wave Test)		
Sound Rating / Noise	A / <24 dBA		
Percent Flicker / Flicker Index	<20% / <0.0416		
Protective Lens/Enclosure	High Voltage Barrier / 3mm Clear Polycarbonate 5VA Flame rated		
Lens Transmittance	>92%		
PCB Material	MCPCB		
Warranty	5 years @ 80°C / 176°F Tc from the date of manufacture		
Electrolytic Capacitor Rating	>60,000 hours		

^① See page #4 "Certification Chart" for exact models.

^② Measured electrical data per UL file



TJTUNV010AC9xxB

JA8-2016



Electrical and Optical Specifications

Color Temperature	DirectAC Engine Part Number	Input Power	Nominal Luminous Flux @ 90 CRI	Engine Efficacy @ 90 CRI
2700K	TJTUNV010AC927B	10W	831 lumens	83 lm/W
3000K	TJTUNV010AC930B	10W	863 lumens	86 lm/W
3500K	TJTUNV010AC935B	10W	873 lumens	87 lm/W
4000K	TJTUNV010AC940B	10W	905 lumens	91 lm/W
5000K	TJTUNV010AC950B	10W	927 lumens	93 lm/W

NOTES:

- 1) Nominal luminous flux includes a 7.5% loss due to lens. Use a 1.075 multiplier when lens is removed.
- 2) Electrical and optical specifications are based on Tc mod = 25°C @120V. Reference Amb. Temp. vs Rel. Lum. Flux for other temperatures.
- 3) Specifications are subject to change without notice.
- 4) Meets CEC Title 24 requirement.
- 5) ~10% lumen depreciation @277V input.



TJTUNV010AC9xxB

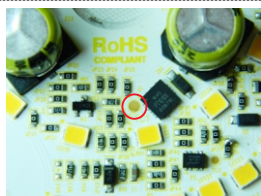
JA8-2016



Thermal Specifications

③ DirectAC Engine Retrofit Kit (B)

Storage Temperature Range	-40°C(-40°F) to 80°C(176°F)
Operating Ambient Temperature Range	-35°C(-31°F) to 50°C(122°F)
Maximum Engine Case Temperature (Tc)	L70: Tc max=80°C (Ts=85°C) / L90: Tc max=80°C (Ts=85°C)
Maximum Lens Temperature	90°C (194°F)



Tc located on module

Thermal De-Rating: Tc vs. Luminous Flux

Module Case Temperature (Tc)	Luminous Flux Multiplier
25°C	1.000
30°C	0.988
35°C	0.975
40°C	0.963
45°C	0.951
50°C	0.938
55°C	0.926
60°C	0.914
65°C	0.901
70°C	0.889
75°C	0.877
80°C	0.864
85°C	0.852
90°C	0.840
95°C	0.827
100°C	0.815

NOTES:

- 1) Refer to LED Engine Retrofit Kit Installation Instructions for further detail.
- 2) This LED Engine Kit can retrofit any luminaire with a dimension/volume greater or equal to the minimum dimensions shown below and on the Installation Instructions.
- 3) This LED Engine Kit can be used with luminaires similar to the one illustrated on the Installation Instructions.

③ Suitable for surface mounted luminaire with minimum dimensions or volume: 7.69" L x 7.69" W x 1.25" H or 73.87 cubic inches



TJTUNV010AC9xxB

JA8-2016



Certification Chart

Energy Star™ TM-21 Calculator Data

Model	TJTUNV010AC9xxB
Classification	
	YES
	YES
	YES
	YES ^①
	YES ^①

Tc Module	Reported L70	Reported L90
50°C	>54,000 Hrs	>54,000 Hrs
100°C	>54,000 Hrs	35,000 Hrs
110°C	>54,000 Hrs	30,000 Hrs

Tc Module	Calculated L70	Calculated L90
50°C	180,000 Hrs	55,000 Hrs
100°C	116,000 Hrs	35,000 Hrs
110°C	99,000 Hrs	30,000 Hrs

NOTES:

1) Energy Star CSD:
https://www.energystar.gov/products/lighting_fans/certified_lighting_subcomponent_database_csd

2) Energy Star Listed:
https://www.energystar.gov/productfinder/product/certified-light-fixtures/results?scrollTo=342&search_text=fulham&fixture_type_isopen=&markets_filter=United+States&zip_code_filter=&product_types=Select+a+Product+Category&sort_by=light_output_lumens&sort_direction=asc&page_number=0&lastpage=0

^① 10W 927 only listed for wall mount. All others are ceiling mount.



TJTUNV010AC9xxB

JA8-2016



Compatible Tested Dimmers

(Contact Fulham for other alternatives)

(TRIAC or ELV Dimmers)

Manufacture	Model	Type
Core	SI061BR-PTA	TRIAC (Leading Edge) Incandescent Analog
Legrand	RH703PTC	TRIAC (Leading Edge) Incandescent Analog
Leviton	002-6633-PLW	TRIAC (Leading Edge) Incandescent Analog
Leviton	DDE06-BLZ	ELV (Trailing Edge)
Leviton	IPL06-10Z	TRIAC (Leading Edge)
Leviton	R62-6674-P0W	CFL / LED
Leviton	R70-6631-1LW	TRIAC (Leading Edge) Incandescent Analog
Leviton	RDL06-10Z	TRIAC (Leading Edge)
Lutron	CT-600P	TRIAC (Leading Edge)
Lutron	DV-600P	TRIAC (Leading Edge)
Lutron	LG-600P	TRIAC (Leading Edge)
Lutron	NTLV-600	TRIAC (Leading Edge)
Lutron	D-600R	TRIAC (Leading Edge) Incandescent Analog
Lutron	SELV-303P	ELV (Trailing Edge)
Lutron	S-600	TRIAC (Leading Edge)
Lutron	S-603P	TRIAC (Leading Edge) Incandescent Analog



TJTUNV010AC9xxB

JA8-2016



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
TJTUNV010AC940B	10W	905 lm (4K/90CRI)	90 lm/W	Quad	13W	1	13W	775 lm	59 lm/W
				Triple	13W	1	13W	825 lm	63 lm/W

NOTES:

1) For reference only, several factors apply.



TJTUNV010AC9xxB

JA8-2016



Flicker Test Data Summary

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

With Dimmer at 100%

100% Light Output Percent Amplitude Modulation					
No Filter	40 Hz	90 Hz	200 Hz	400 Hz	1000 Hz
13.82%	0.32%	1.16%	12.31%	13.54%	13.39%
Measurement Period:			2.000 sec		Noise: 19.2 dBA
Recording Interval:			4.00E-05 sec		Fraction of rated light output: 100%
Flicker Index:		0.0395			

With Dimmer at 20%

20% Light Output Percent Amplitude Modulation					
No Filter	40 Hz	90 Hz	200 Hz	400 Hz	1000 Hz
19.55%	0.67%	1.84%	13.05%	16.16%	17.14%
Measurement Period:			2.000 sec	Noise:	19.2 dBA
Recording Interval:		4.00E-05 sec	Fraction of rated light output: 21%		
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
18.00%	0.48%	0.81%	9.90%	12.56%	12.88%
Measurement Period:			2.000 sec		
Noise:			19.3 dBA		
Recording Interval:		4.00E-05 sec		Fraction of rated light output:	
10%		Flicker Index:		0.0312	



TJTUNV010AC9xxB

JA8-2016



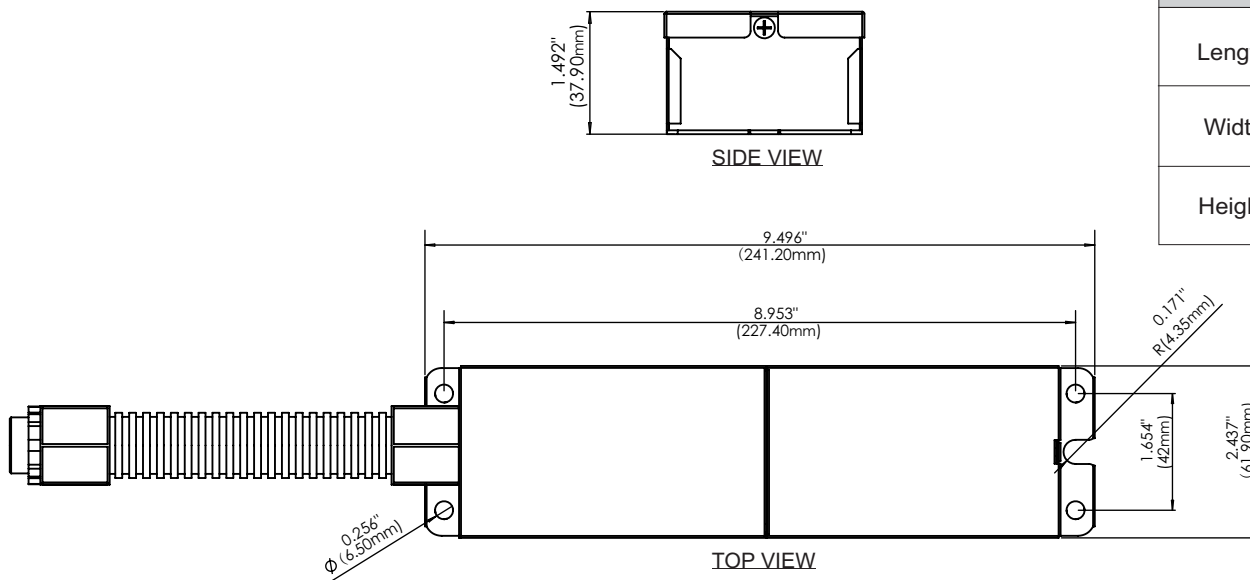
RoHS COMPLIANT

Battery Backup Option

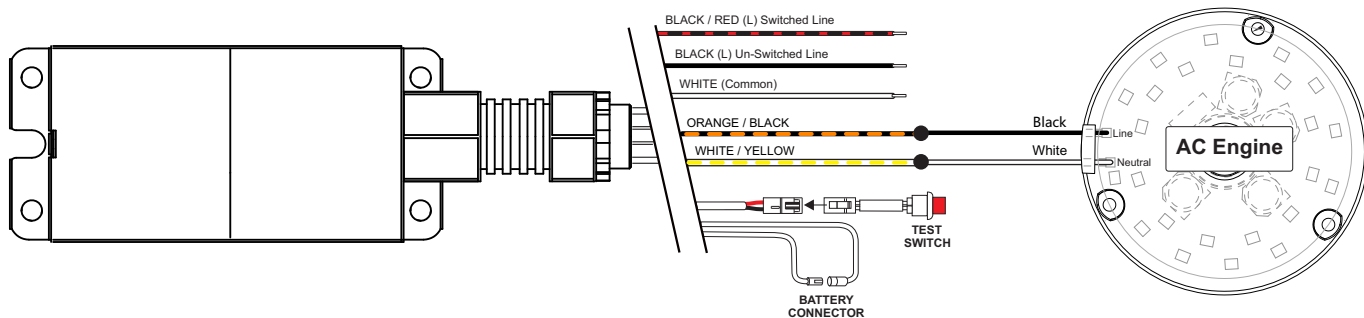
- FHSCP-UNV-6W-L-SD: Emergency LED Driver for Direct AC Engines



Mechanical Drawing



Wiring Diagram



Specification Sheet:

- <https://www.fulham.com/PDFs/SpecSheets/FHSCP-UNV-6W-L-SD-2020-857-spec.pdf>



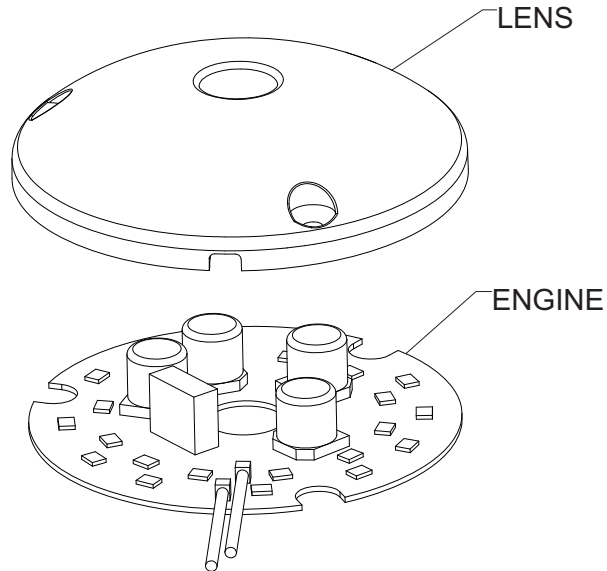
TJTUNV010AC9xxB

JA8-2016



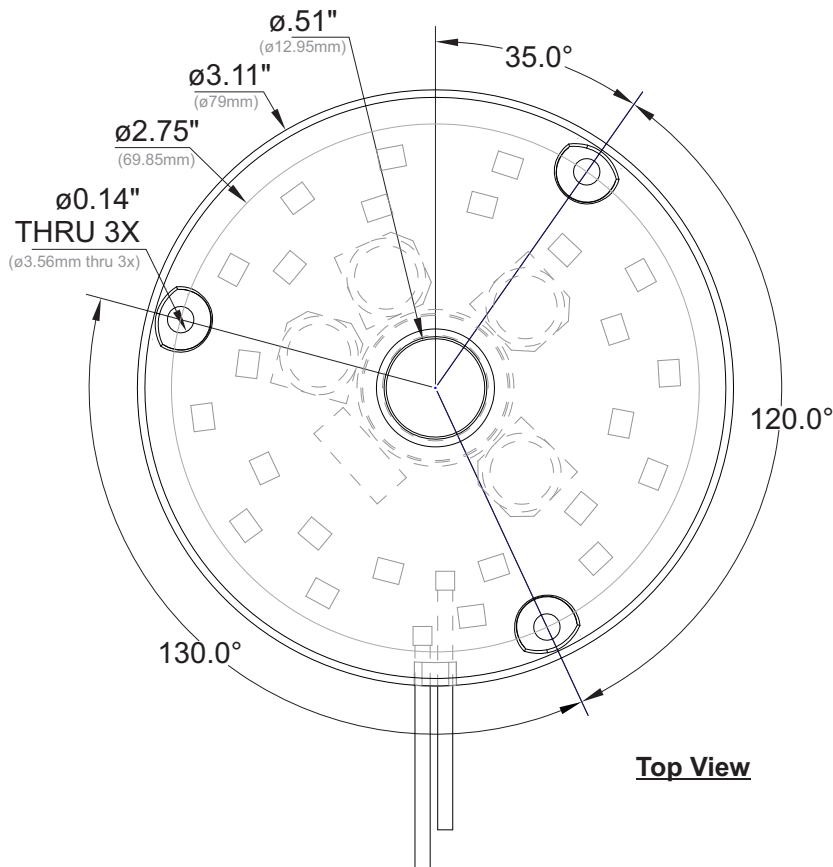
Mechanical Drawings

(Scale 1 : 1)

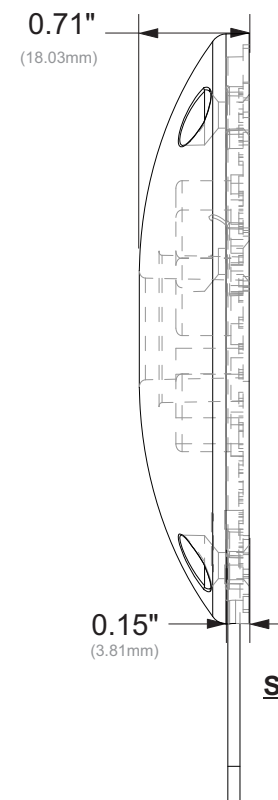


Overall Dimensions	
Diameter	3.11" [79mm]
Height	0.71" [18.03mm]
Wire Length AC Input (Black / White)	12" [304.8mm]

Exploded View



Top View



Side View



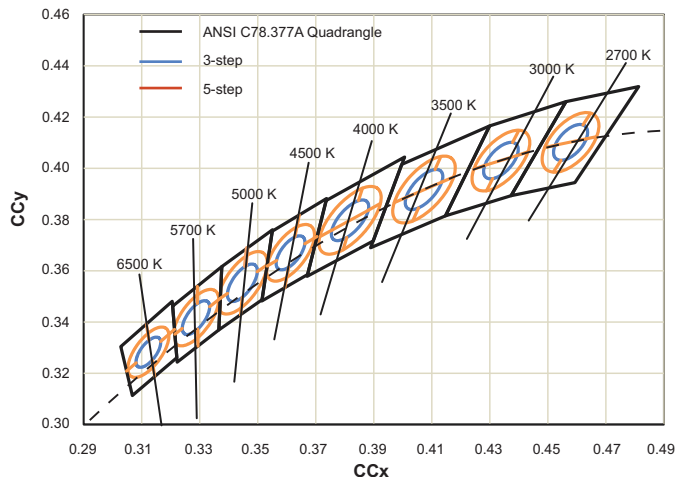
TJTUNV010AC9xxB

JA8-2016

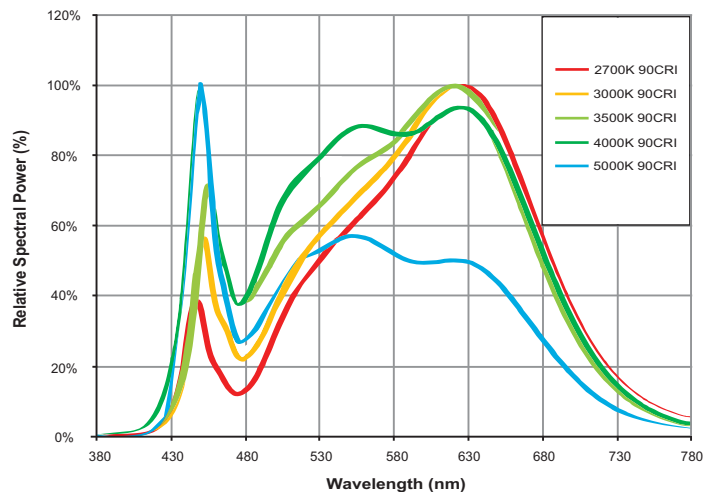


RoHS COMPLIANT

Color and Binning



Optical Spectrum



NOTES:

- 1) The Color and Binning and Optical Spectrum charts are for reference only. For more detailed info, contact factory.
- 2) Binning per ANSI C78.377-2015 @ 85°C; 3 SDCM.
- 3) The Optical Spectrum values vary depending on product type and color rank.



TJTUNV010AC9xxB

JA8-2016



Guidelines

Reduced Flicker Operation Feature

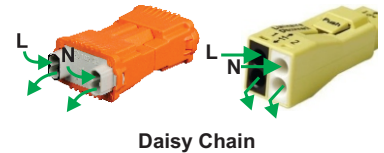
- DirectAC Engine models have added circuitry to help reduce the Flicker when operated on the 50/60Hz power lines. The Flicker percentage on these models is below 30% when operated at line voltage, per CEC requirement. Dimming by line voltage devices may increase the Flicker percentage as the power levels 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® and IDEAL's 102X connector, please visit:
http://www.wago.com/infomaterial/wago_ebook/51261593/flipviewerxpress.html
<https://idealind.com/shop/30-102x.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/Flat Head screw. Fulham provides four 6-20 X 5/8" Flat Head Self Drilling Screws, see instruction sheets for further details.

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 120~277V 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 grounding, but the luminaire must be grounded.
- Do not wire on same branch circuit as motors, inductive type loads or heavy machinery which may introduce spikes, noise and other abnormalities onto the Line. Doing so may result in damage to the unit or abnormal lighting conditions.



TJTUNV010AC9xxB

JA8-2016



Part Number Matrix

T J T UNV 010 AC 9 40 B

Engine Type	Dimming	Input Voltage	Input Power	Material & Shape	CRI	Color Temperature	Option
① J = DirectAC Engine Retrofit Kit (Classified)	T = TRIAC/ELV @120V Only	UNV = 120V~277V	010 = 10W	AC = MCPCB+wire Circular	③ 9 = 90	③ 27 = 2700K ③ 30 = 3000K ③ 35 = 3500K ③ 40 = 4000K 50 = 5000K	⑤ B = DirectAC Engine+Lens (Retrofit Kit)

NOTES:

- 1) DirectAC Engines standard model "B" comes with engine and lens.
- 2) Specifications are subject to change without notice.
- 3) All 90CRI product meets CEC Title 24 requirement.
- ⑤ Standard Product offering. (90CRI / 5000K option is made to order with MOQ and lead time.)
- ⑥ LED Engine Retrofit Kit includes mounting hardware, retrofit labels, and installation instructions.

Product Image: 10W DirectAC UNV Round Engine Kit

TJTUNV010AC9xxB



Avertissement: Risque d'incendie et d'électrocution, câblage des luminaires et pièces électriques peuvent être endommagés lors du forage pour l'installation du kit de conversion à DEL. Vérifier le câblage et les composants ci-joint.

WARNING: Risk of fire and electrical shock. Luminaire wiring and electrical parts may be damaged when drilling for installation of LED retrofit kit. Check for enclosed wiring and components.

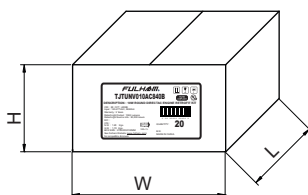
WARNING: Cancer and Reproductive Harm www.P65Warnings.ca.gov



DirectAC UNV Retrofit Kit Engines:
Hardware, Quick disconnect, Labels & Installation Instructions

Packaging

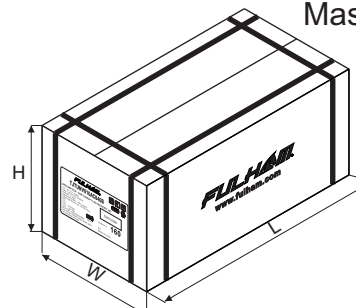
Carton



OUTER DIMENSION		
L	W	H
10.63"(270mm)	8.07"(205mm)	5.12"(130mm)
Net Weight	Gross Weight	QUANTITY
2.64 lbs. (1.20kg)	3.75 lbs. (1.70kg)	20pc.

Twenty (20) LED AC Engine retrofit kits inside each carton.

Master Carton



OUTER DIMENSION		
L	W	H
22.05"(560mm)	11.57"(435mm)	11.42"(290mm)
Net Weight	Gross Weight	QUANTITY
21.16 lbs. (9.60 kg)	32.19 lbs. (14.6 kg)	160pcs.

Eight (8) cartons inside each Master Carton.