



VJTUNV010AC9xxB



3" Round VividHorse 120/230/277VAC AC Engine Retrofit Kit

- 120/230/277V input AC Engine Retrofit Kit
- CRI90 standard
- Potassium Fluorosilicate (PFS) phosphor LEDs to achieve as high efficacy as today's CRI80 LEDs
- 5VA flame rated lens included
- cULus Classified Retrofit Kit per UL1598C standard
- Compatible with Fulham emergency solutions
- Suitable for closed type luminaires
- Suitable for luminaires with plastic and glass lenses

General Specifications

Input Voltage / Frequency ^①	120/230/277VAC, 50/60Hz
Input Current ^①	120VAC: ~0.096A 230VAC: ~0.041A 277VAC: ~0.042A
Input Power ^①	120VAC: 11W 230VAC: 9W 277VAC: 11W
Input PF	>0.9
THD	<45%
Max Lumen Output @ 4000K/90CRI	120VAC: 1090lm 230VAC: 910lm 277VAC: 950lm
Dimming Type/Range	Leading Edge (TRIAC) or Trailing Edge (ELV) @120VAC only / 100% ~ 10% ^②
Beam Angle	120° with lens
Color Rendering Index	CRI (Ra)>=90 / R9>=50 / TM-30 R>=85 / TM-30 R_g>=95
Storage Temperature Range	-35°C to 100°C / -31°F to 212°F
Operating Ambient Temperature Range (Ta)	-35°C to 50°C / -31°F to 122°F
Maximum Module Case Temperature	85°C(185°F)
Estimated Lumen Maintenance	L70= >72,000 hours @ Tc max 85°C / L90= 37,000 hours @ Tc max 85°C
Color Consistency (Color Center@25°C)	2700K (0.458, 0.410); 3000K (0.431, 0.397); 3500K (0.405, 0.384) 4000K (0.380, 0.372); 5000K (0.345, 0.335), Typ. 5 SDCM, Max. 6 SDCM
Flicker Percentage per CEC JA10	<30% with 200Hz cut-off
Flicker P _{st} / SVM	P _{st} : =0.678 SVM: =0.37
Start-up Time	Typ. 30ms
Overall Size with optical lens	3.11"Dia. x 0.71"H (79mm Dia. x 18mm H)
Wire Type / Length	18AWG / 12" Black & White wires
LED Quantity	18pcs
Weight	70g / 0.154lbs.
Packaging: Master Carton	160pcs
Maximum Screw Installation Torque	35in-lb (560in-ozf)
Safety	DirectAC Module (without lens): cURus File # E351548, VATUNV010AC9xxB DirectAC Retrofit Kits: cULus Classified File # E365124, VJTUNV010AC9xxB
Compliance	RoHS Compliant Dry and Damp Location
RFI/EMI	FCC Part15 Class B, EN55015
Input Surge Test	1KV / 2KV combined wave; 2.5KV ring wave
Sound Rating / Noise	A / <24 dBA
Protective Lens / Enclosure	High Voltage Barrier / 3mm clear Polycarbonate 5VA flame rated
Lens Transmittance	>92%
PCB Material	MCPCB
Warranty	5 years @ Max. Tc 85°C (185°F) from the date of manufacture

① Measured electrical data per UL file

② With some phase cut dimmers, the engine will be dimmed to off



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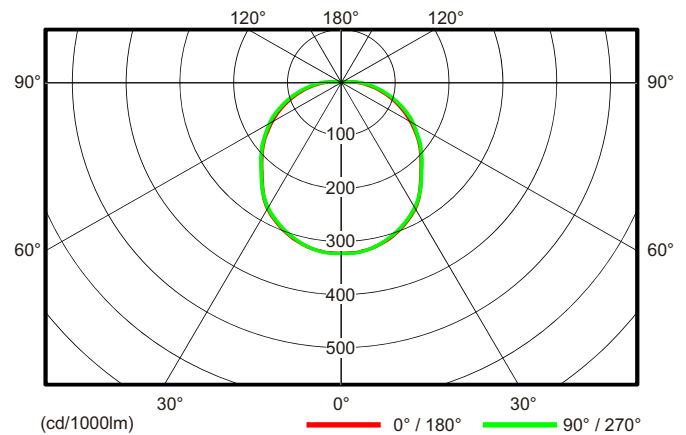


Electrical and Optical Specifications

CRI	DirectAC Retrofit Kit Part Number	Input Voltage	Input Power	Selected CCT	Nominal Luminous Flux @ 90 CRI	Engine Efficacy @ 90 CRI
90	VJTUNV010AC9xxB	120VAC	11W	2700K	1040 lumens	102 lm/W
				3000K	1060 lumens	104 lm/W
				3500K	1070 lumens	105 lm/W
				4000K	1090 lumens	107 lm/W
				5000K	1090 lumens	107 lm/W
		230VAC	9W	2700K	870 lumens	100 lm/W
				3000K	890 lumens	102 lm/W
				3500K	890 lumens	102 lm/W
				4000K	910 lumens	105 lm/W
				5000K	910 lumens	105 lm/W
		277VAC	11W	2700K	910 lumens	92 lm/W
				3000K	930 lumens	94 lm/W
				3500K	940 lumens	95 lm/W
				4000K	950 lumens	96 lm/W
				5000K	950 lumens	96 lm/W

Light Distribution

Zone	Zone Flux%	Sum Zone Flux%
0 ~ 10	3.1%	3.1%
10 ~ 20	8.7%	11.8%
20 ~ 30	13.2%	25.0%
30 ~ 40	15.7%	40.8%
40 ~ 50	16.1%	56.8%
50 ~ 60	15.1%	72.0%
60 ~ 70	12.7%	84.6%
70 ~ 80	8.8%	93.5%
80 ~ 90	5.0%	98.4%
90 ~ 180	1.6%	100.0%



NOTES:

- 1) Nominal luminous flux includes a 8% loss due to lens. Use a 1.08 multiplier when lens is removed.
- 2) Electrical and optical specifications are based on Tc mod = 25°C. Reference Amb. Temp. vs Rel. Lum. Flux for other temperatures.
- 3) Performance for these components have been tested in accordance with UL8750
- 4) Specifications are subject to change without notice.
- 5) 70CRI & 80CRI are NOT available.



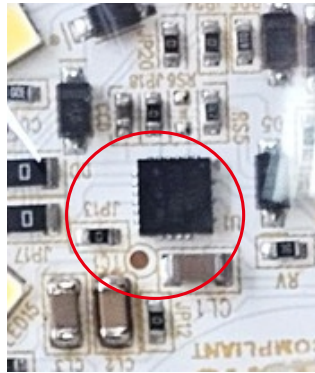
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Thermal Specifications

© DirectAC Engine Retrofit Kit

Storage Temperature Range	-35°C to 100°C / -31°F to 212°F
Operating Ambient Temperature Range	-35°C to 50°C / -31°F to 122°F
Maximum Module Case Temperature	85°C / 185°F



Tc located on module

Thermal De-Rating: Tc vs. Luminous Flux

Module Case Temperature (Tc)	Total Vf Multiplier	Luminous Flux Multiplier
25°C	1.000	1.000
30°C	0.998	0.992
35°C	0.995	0.984
40°C	0.993	0.976
45°C	0.990	0.967
50°C	0.988	0.958
55°C	0.986	0.949
60°C	0.984	0.940
65°C	0.982	0.931
70°C	0.980	0.922
75°C	0.978	0.913
80°C	0.977	0.904
85°C	0.976	0.895
90°C	0.974	0.886
95°C	0.973	0.877
100°C	0.971	0.867
105°C	0.969	0.858

NOTES:

- 1) Refer to DirectAC Engine Retrofit Kit Installation Instructions for further detail.
 - 2) This AC Engine Retrofit 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 AC Engine Retrofit Kit can be used with luminaires similar to the one illustrated on the Installation Instructions.
- © Suitable for surface mounted luminaire with minimum dimensions or volume: 7.7" x 7.7" with a height of 1.25" or 73.87 cubic inches.
 All target luminaires shall conclude a metal back plate at size 3.5"x3.5" or larger with grounding means.



VJTUNV010AC9xxB



Certification Chart

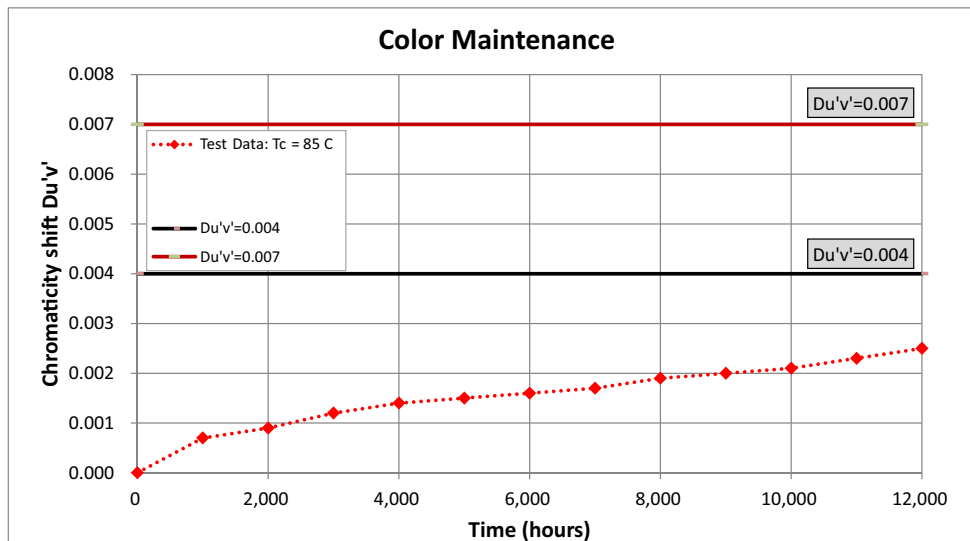
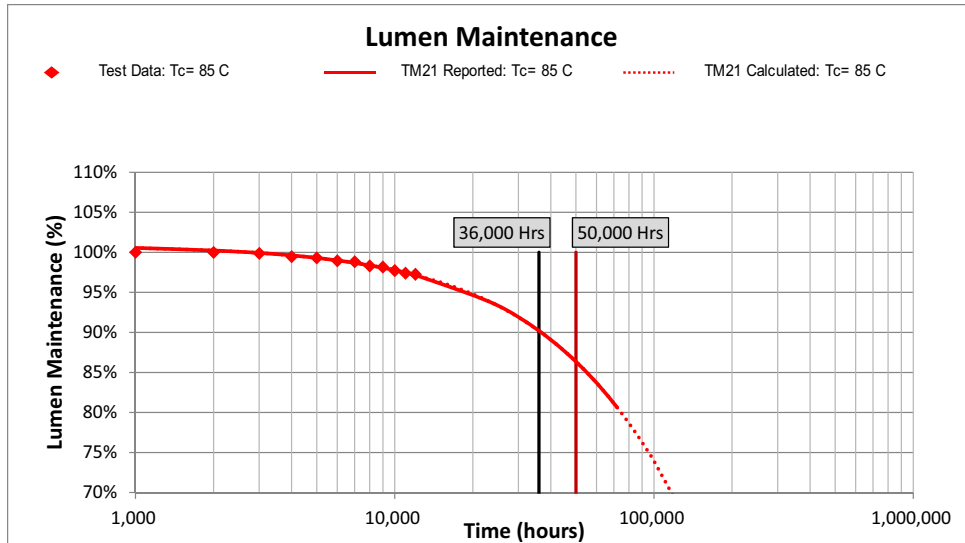
Classification	Model	VJTUNV010AC9xxB
		YES
		YES
		YES

Energy Star™ TM-21 Calculator Data

Tc Module	Reported L70	Reported L90
85°C	>72,000 Hrs	37,000 Hrs

Tc Module	Calculated L70	Calculated L90
85°C	117,000 Hrs	37,000 Hrs

LED Lumen & Color Maintenance Data per LM-80 report and TM-21 Calculator





VJTUNV010AC9xxB



Compatible Tested Dimmers (TRIAC or ELV Dimmers)

(Contact Fulham for other alternatives)

(TRIAC or ELV Dimmers)

Manufacture	Model	Type	Manufacture	Model	Type
Lutron	S-600	TRIAC (Leading Edge)	Eaton	SUT7	TRIAC (Leading Edge)
Lutron	S-603P	TRIAC (Leading Edge)			

NOTES:

- 1) The dimming compatibility is tested under 100%-10% dimming range.
- 2) Connecting multiple LED modules to a single dimmer may cause slight shimmering below the 10% dimming level due to variable input power.
- 3) A low-end trim adjustment on the dimmer is recommended to avoid flickering at low end dimming range.
- 4) Contact Fulham for other alternative dimmers.

Flicker Test Results per EnergyStar (NEMA77-2017 Test Methods)

Test Condition	Input Voltage(V)	Power(W)	Pst	SVM	Flicker% (200Hz cut-off)
120VAC No Dimmer	120	11	0.678	0.37	20%

Note: Flicker Percent Amplitude Modulation is no longer required by EnergyStar.
The test data per CEC JA10-2016 are from Fulham internal lab.



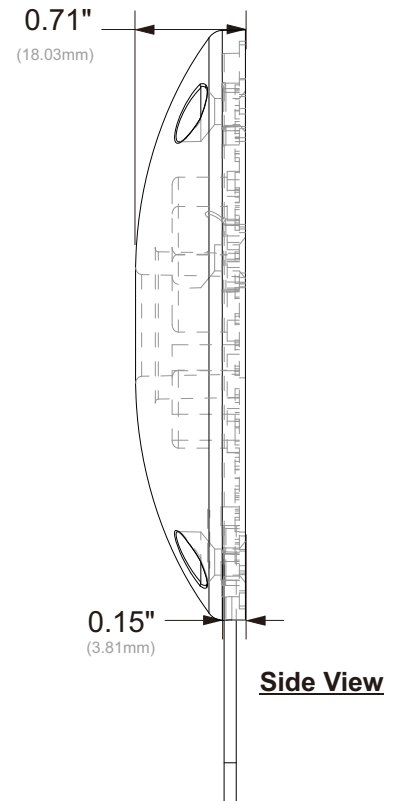
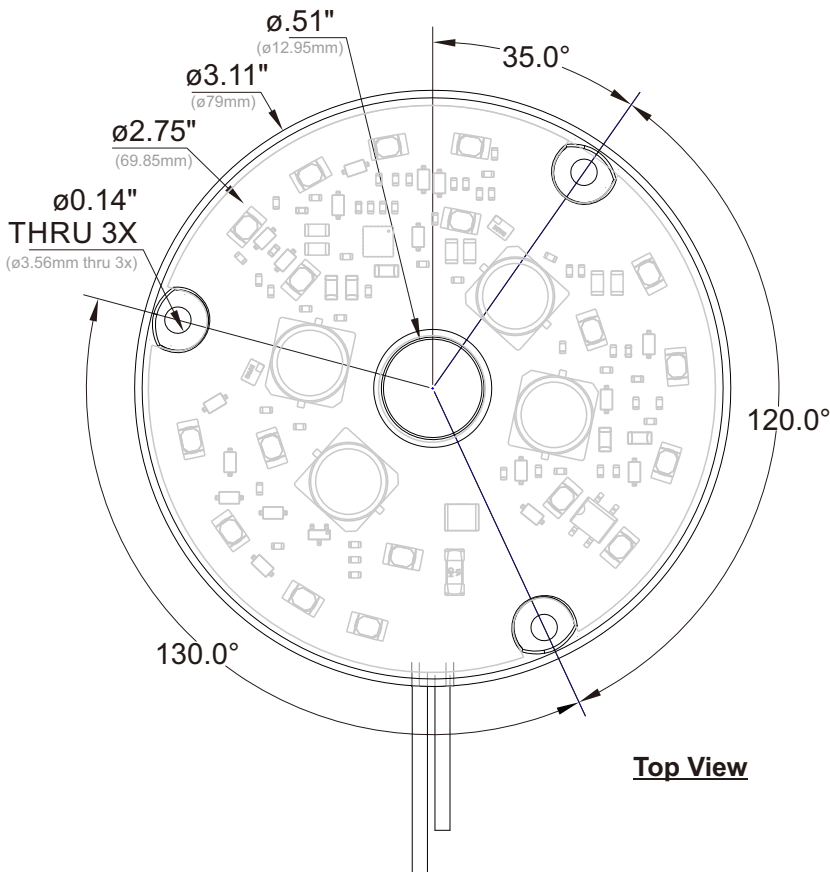
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Mechanical Drawings

Φ3.11" [79mm]

Overall Dimensions with 5VA Lens	
Diameter	3.11" [79mm]
Height	0.71" [18mm]
Wire Length	
AC Input (Black / White)	12" [304.8mm]





VJTUNV010AC9xxB



DirectAC Engine Retrofit Kit Equivalency Chart: FLUO to LED

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
VJTUNV010AC9xxB	11W	1090 lm (4K/90CRI)	107 lm/W	Quad	13W	1	13W	775 lm	59 lm/W
				Triple	13W	1	13W	825 lm	63 lm/W

NOTES:

- 1) LED is a point source and FLUO is 360, there is more light lost with FLUO especially during the reflection. Therefore it is recommended to use a 65 percent of the original light source total lumens when converting FLUO to LED. For example original FLUO lumens of 2000 x .65% = 1300 LED lumens. This is only a recommendation, and the installer should consider other factors for the application.
- 2) For reference only, several factors apply.

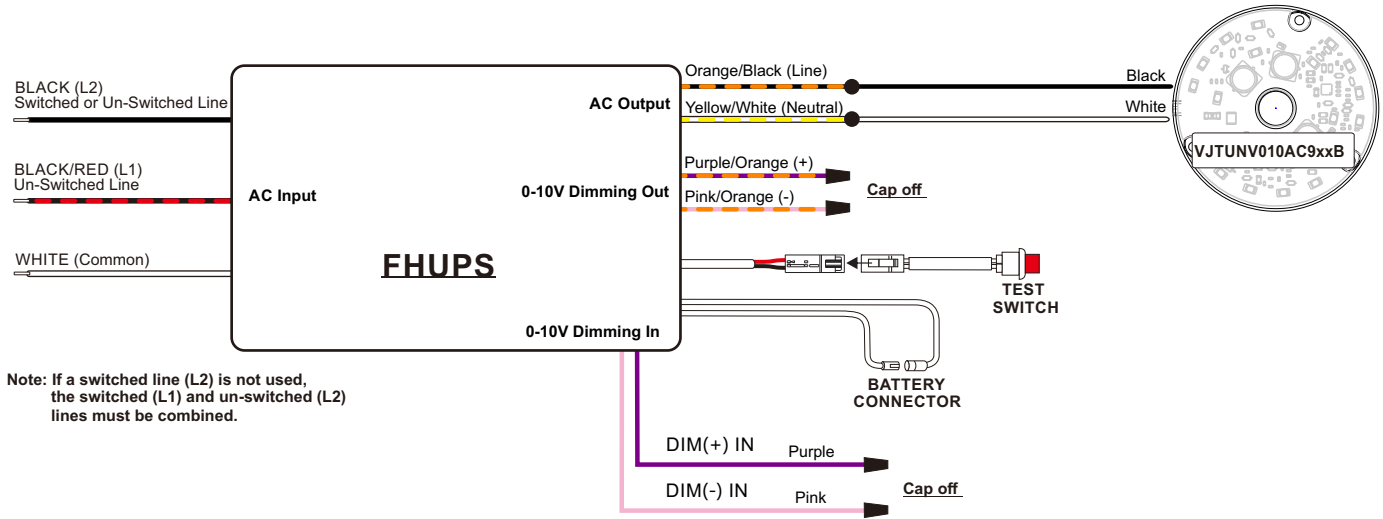


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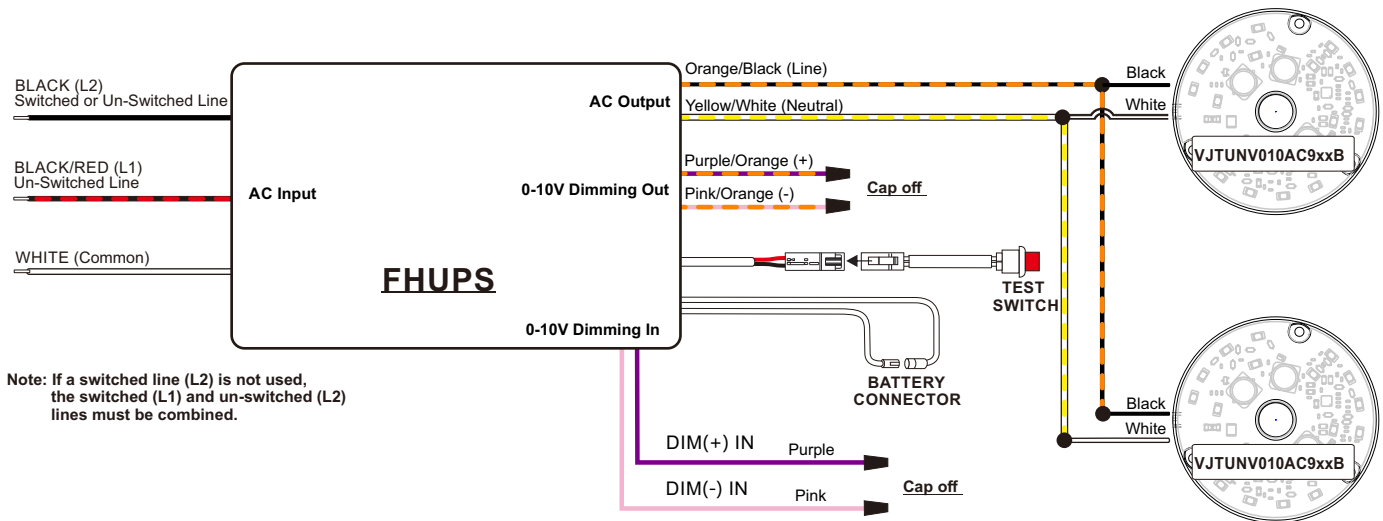


Wiring Diagram with Fulham Emergency Micro Inverter: FHUPS1-UNV-12L/25L/50L-SD

Single Luminaire



Multiple Luminaires



	Max. Qty.	VJTUNV010AC9xxB
Inverter PN#		11W
FHUPS1-UNV-12L-SD		1 pcs
FHUPS1-UNV-25L-SD		2 pcs
FHUPS1-UNV-50L-SD		5 pcs

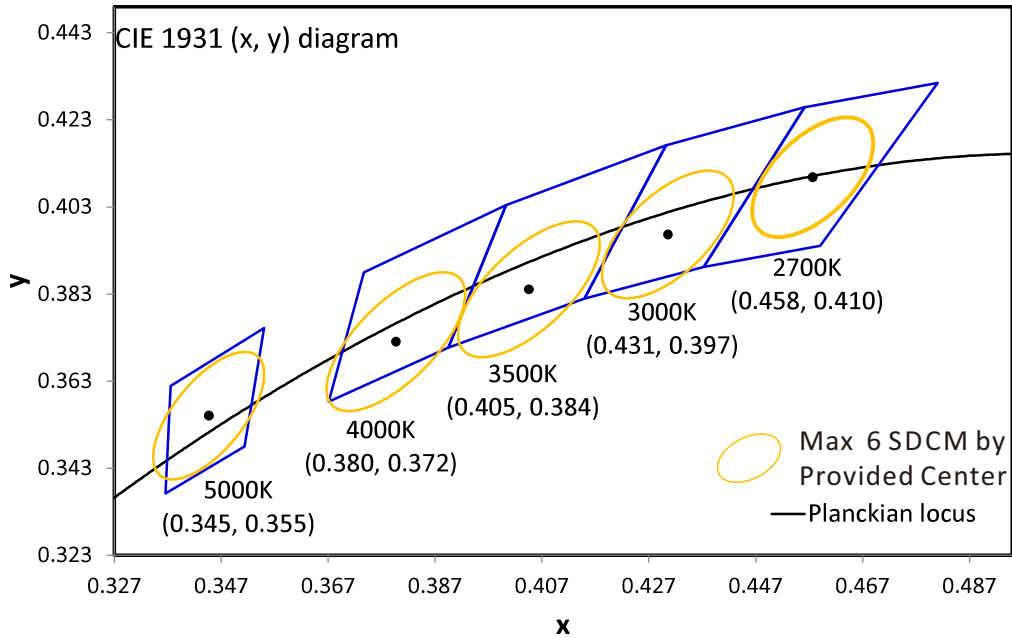
1) For reference only, several factors apply.
2) Emergency systems are not UL classified for field installation.



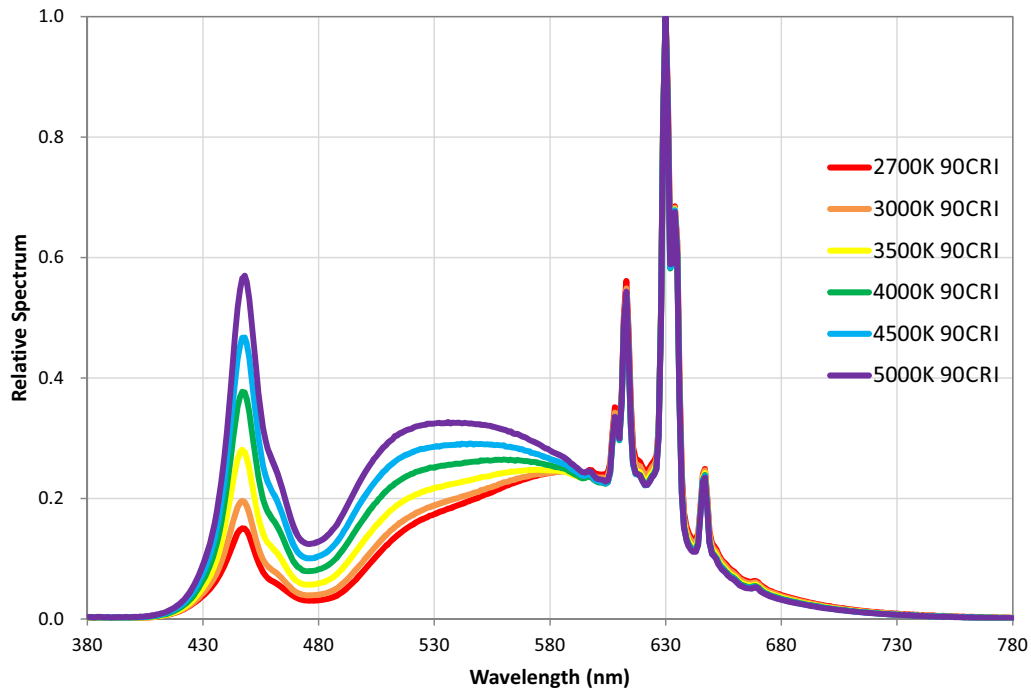
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Color and Binning



Optical Spectrum



NOTES:

- 1) The Color and Binning and Optical Spectrum charts are for reference only. For more detailed info, contact factory.
- 2) Reference Chromaticity Diagram for Color and Binning. Binning per given center point@ 25°C; Max. 6 SDCM.
- 3) The Optical Spectrum values vary depending on product type and color rank.



VJTUNV010AC9xxB



Guidelines

Reduced Flicker Operation Feature

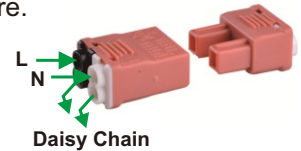
- DirectAC Engine models have added circuitry to help reduce the Flicker when operated on the 50/60Hz power lines. The Flicker percentage on these models is below 30% when operated at line voltage, per CEC requirement.
- Dimming by line voltage devices may increase the Flicker Percentage as the power 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.
- Use solid wire size 18-12 AWG per pole, rated at min. 300V load and 105°C operating temperature.
- Strip wires to 10mm (0.39in.).
- Connector not for multiple use.
- Connector Max. rating (including daisy-chain connection): 3.0A@120VAC; 1.3A@277VAC



Environmental Rating

- DirectAC Engine Retrofit Kits 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 temperature, the circuit will reduce the drive current to the LED there by reducing the thermal impact on the product.

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 mounting holes to ensure good contact between back side of DirectAC Engine Retrofit Kit and mounting surface.
- Refer to max specified torque for installation. Suggested screw sizes: #6 or M3 Pan Head screw. Fulham provides three 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 120V/230V/277VAC (+/-10%) application ONLY.
- Connect the Black wire from the DirectAC Engine Retrofit Kit to the building Line by using the proper connectors or wire nuts.
- Connect the White wire from the DirectAC Engine Retrofit Kit 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.



VJTUNV010AC9xxB



Part Number Matrix

V J T UNV 010 AC 9 xx B

Product Line
 V = VividHorse

Compliance
 J = DirectAC Retrofit Kit (cULus Classified)

Dimming
 T = TRIAC

Input Voltage
 UNV = 120/230/277VAC

Estimated Power
 010 = 10W

Shape
 AC = Circular

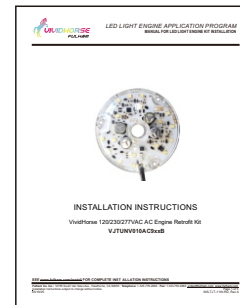
CRI
 9 = 90

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

- ③ Standard Product offering. Other CCT and CRI options will be Made to Order (MTO).
- ④ DirectAC Engine Retrofit Kit includes mounting hardware, retrofit labels, and installation instructions.

Product Image: 11W Round AC Engine Kit

VJTUNV010AC9xxB



This luminaire has been modified to operate LED lamps. Do not attempt to install or operate original lamps in this luminaire.
 REPLACE ONLY WITH FULHAM ELECTRONIC CO.: VJTUNV010AC9xxB

Ce luminaire a été modifié et ne peut plus utiliser la lampe prévue à l'origine.
 REMPLACER UNIQUEMENT AVEC FULHAM ELECTRONIC CO.: VJTUNV010AC9xxB

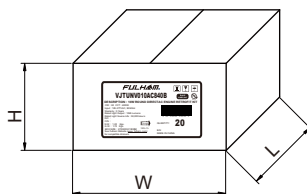


Hardware Kit: TLC-HW08

120/230/277V DirectAC Engine Retrofit Kits:
 Hardware, Quick disconnect, Labels & Installation Instructions

Packaging

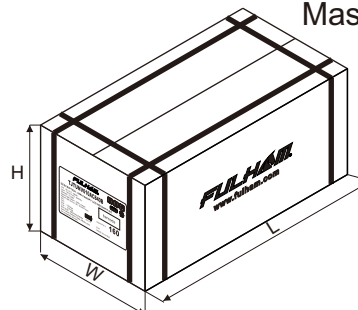
Carton



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.