VJTUNV015AC9TWB

5" Round VividHorse 120/230/277VAC Power & CCT Selectable AC Engine Retrofit Kit

- 120/230/277V input AC Engine Retrofit Kit
- Power Selectable: 7W/10W/15W (Factory Default 15W)
- CCT Selectable: 2700K, 3000K(Default), 3500K, 4000K, 5000K
- 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: ~0.062A / 0.088A / 0.132A
	230VAC: ~0.028A / 0.037A / 0.055A
	277VAC: ~0.029A / 0.039A / 0.058A
Input Power ①	120VAC: 7W / 10W / 15W Selectable
	230VAC: 6W / 8W / 12W Selectable
	277VAC: 7.5W / 10W / 15W Selectable
Input PF	>0.9
THD	<45%
Max Lumen Output @ 4000K/90CRI	120VAC: 740lm / 1030lm / 1710lm
	230VAC: 680lm / 900lm / 1330lm
	277VAC: 780lm / 990lm / 1340lm
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_f>=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}: =0.812 SVM: =0.373
Start-up Time	Typ. 30ms
Overall Size with optical lens	5.07"Dia. x 0.79"H (128.6mm Dia. x 20mm H)
Wire Type / Length	18AWG / 12" Black & White wires
LED Quantity	28pcs. CW + 28pcs. WW
Weight	136g / 0.3lbs.
Packaging: Master Carton	96pcs
Maximum Screw Installation Torque	35in-lb (560in-ozf)
Safety	DirectAC Module (without lens): cURus File # E351548, VATUNV015AC9TWB
	DirectAC Retrofit Kits: cULus Classified File # E365124, VJTUNV015AC9TWB
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

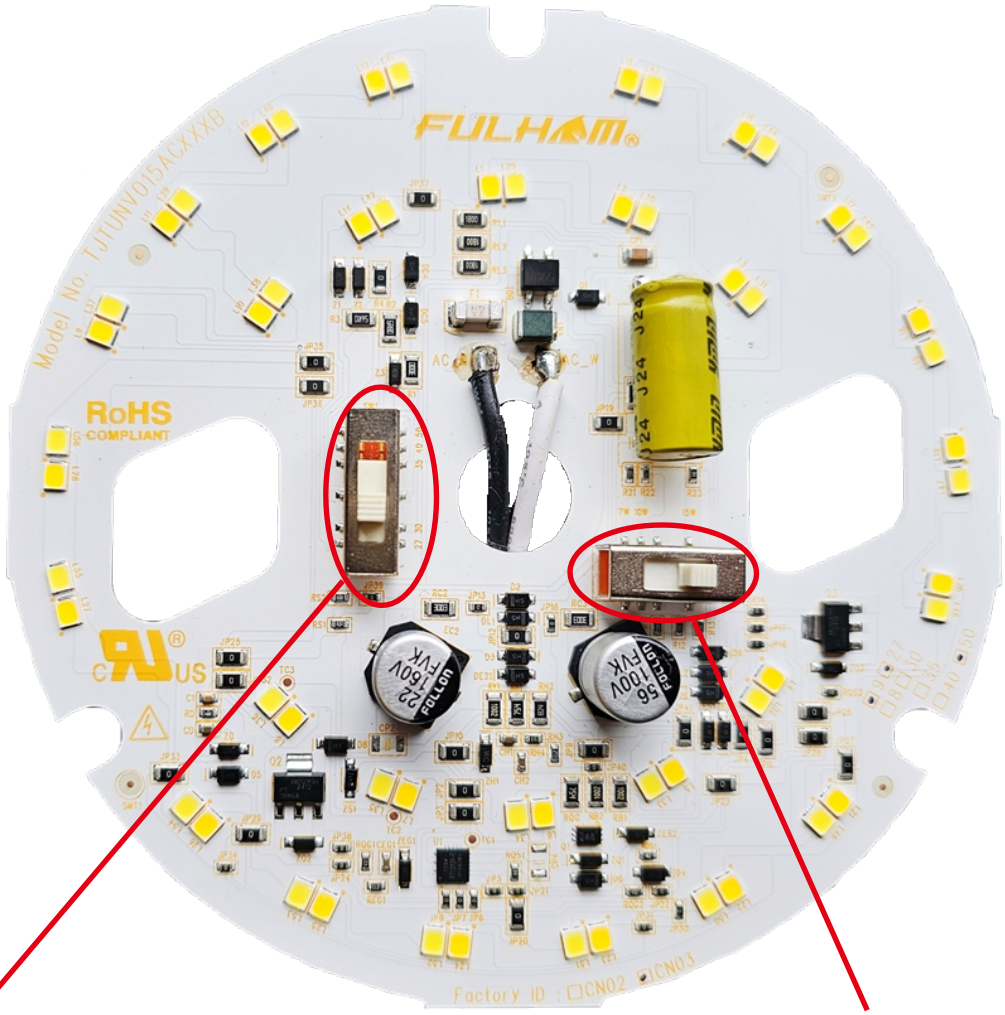
① Measured electrical data per UL file

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

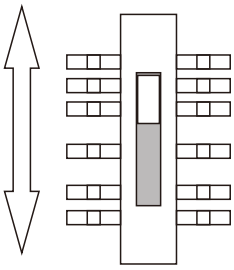
VJTUNV015AC9TWB

Power & CCT Selection Indication

1. The VividHorse DirectAC Engine Retrofit Kit is a dual-channel LED product that allows for Power & CCT selection via dip switches on the PCB. Available CCTs include 2700K, 3000K, 3500K, 4000K and 5000K.
2. A pre-set Power & CCT will come from the factory. Check the product label or packaging to see the pre-set level.
3. Change the Power dip switch for desired power level.
4. Change the CCT dip switch for desired CCT level.

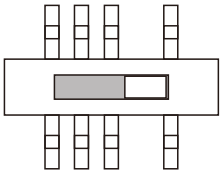


CCT Indication



2700K
3000K(Factory Default)
3500K
4000K
5000K

Power Indication



7W 10W 15W(Factory Default)

VJTUNV015AC9TWB

Electrical and Optical Specifications

CRI	DirectAC Retrofit Kit Part Number	Input Voltage	Selected Power	Selected CCT	Nominal Luminous Flux @ 90 CRI	Engine Efficacy @ 90 CRI
90	VJTUNV015AC9TWB	120VAC	7W	2700K	700 lumens	103 lm/W
				3000K	720 lumens	106 lm/W
				3500K	750 lumens	110 lm/W
				4000K	740 lumens	109 lm/W
				5000K	720 lumens	106 lm/W
			10W	2700K	960 lumens	103 lm/W
				3000K	990 lumens	106 lm/W
				3500K	1040 lumens	112 lm/W
				4000K	1030 lumens	111 lm/W
				5000K	990 lumens	106 lm/W
			15W	2700K	1540 lumens	97 lm/W
				3000K	1630 lumens	103 lm/W
				3500K	1730 lumens	109 lm/W
				4000K	1710 lumens	108 lm/W
				5000K	1630 lumens	103 lm/W
		230VAC	6W	2700K	640 lumens	107 lm/W
				3000K	660 lumens	110 lm/W
				3500K	690 lumens	115 lm/W
				4000K	680 lumens	113 lm/W
				5000K	670 lumens	112 lm/W
			8W	2700K	840 lumens	105 lm/W
				3000K	870 lumens	109 lm/W
				3500K	910 lumens	114 lm/W
				4000K	900 lumens	113 lm/W
				5000K	880 lumens	110 lm/W
			12W	2700K	1230 lumens	98 lm/W
				3000K	1290 lumens	103 lm/W
				3500K	1340 lumens	107 lm/W
				4000K	1330 lumens	106 lm/W
				5000K	1290 lumens	103 lm/W

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 = 25ºC. 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.

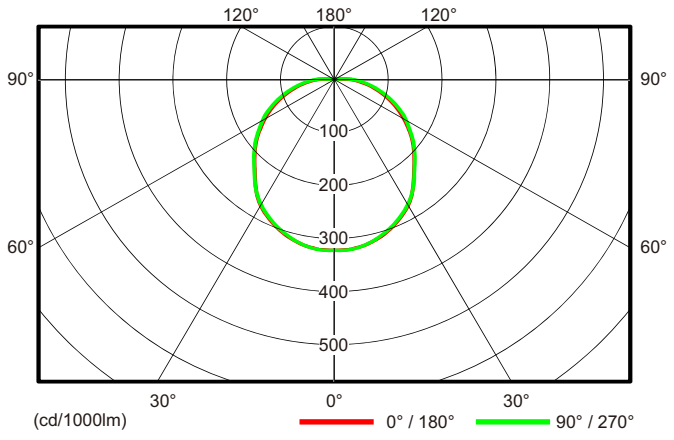
VJTUNV015AC9TWB

Electrical and Optical Specifications

CRI	DirectAC Retrofit Kit Part Number	Input Voltage	Selected Power	Selected CCT	Nominal Luminous Flux @ 90 CRI	Engine Efficacy @ 90 CRI
90	VJTUNV015AC9TWB	277VAC	7.5W	2700K	740 lumens	100 lm/W
				3000K	760 lumens	103 lm/W
				3500K	780 lumens	105 lm/W
				4000K	780 lumens	105 lm/W
				5000K	770 lumens	104 lm/W
			10W	2700K	940 lumens	94 lm/W
				3000K	970 lumens	97 lm/W
				3500K	990 lumens	99 lm/W
				4000K	990 lumens	99 lm/W
				5000K	980 lumens	98 lm/W
			15W	2700K	1250 lumens	81 lm/W
				3000K	1310 lumens	85 lm/W
				3500K	1340 lumens	87 lm/W
				4000K	1340 lumens	87 lm/W
				5000K	1310 lumens	85 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%



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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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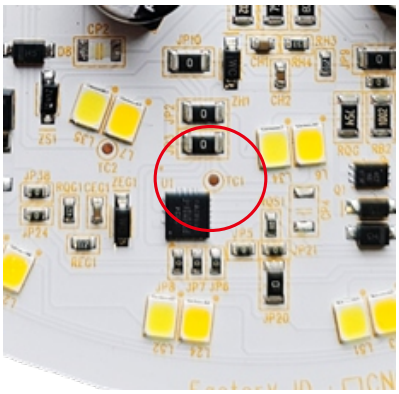
Thermal Specifications

	② 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
25ºC	1.000	1.000
30ºC	0.998	0.992
35ºC	0.995	0.984
40ºC	0.993	0.976
45ºC	0.990	0.967
50ºC	0.988	0.958
55ºC	0.986	0.949
60ºC	0.984	0.940
65ºC	0.982	0.931
70ºC	0.980	0.922
75ºC	0.978	0.913
80ºC	0.977	0.904
85ºC	0.976	0.895
90ºC	0.974	0.886
95ºC	0.973	0.877
100ºC	0.971	0.867
105ºC	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.

② Suitable for surface mounted luminaire with minimum dimensions or volume: 10" diameter with a height of 3.5" or 275 cubic inches. All target luminaires shall conclude a metal back plate at size diameter 10" or larger with grounding means.

VJTUNV015AC9TWB

Certification Chart

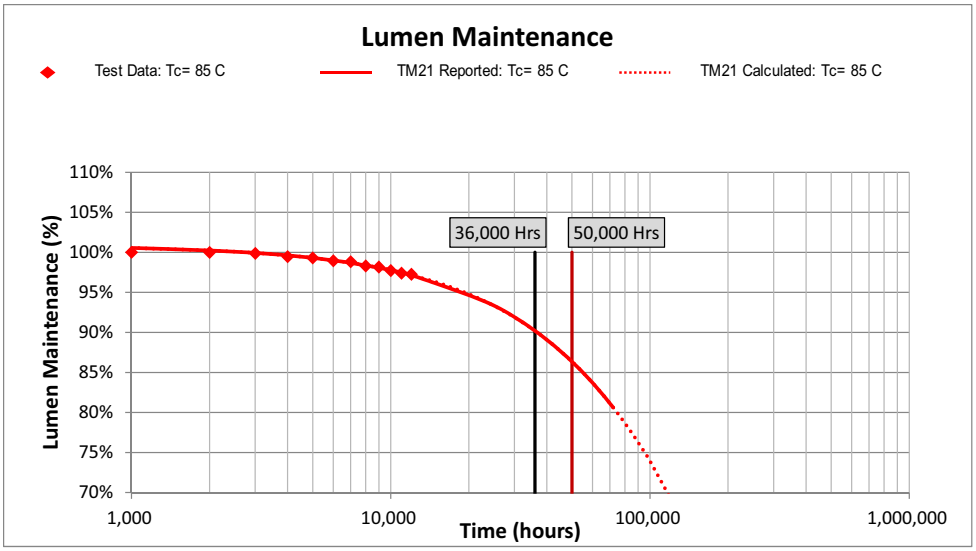
Classification \ Model	VJTUNV015AC9TWB
RoHS COMPLIANT	YES
c UL us	YES
c UL us (Classified)	YES

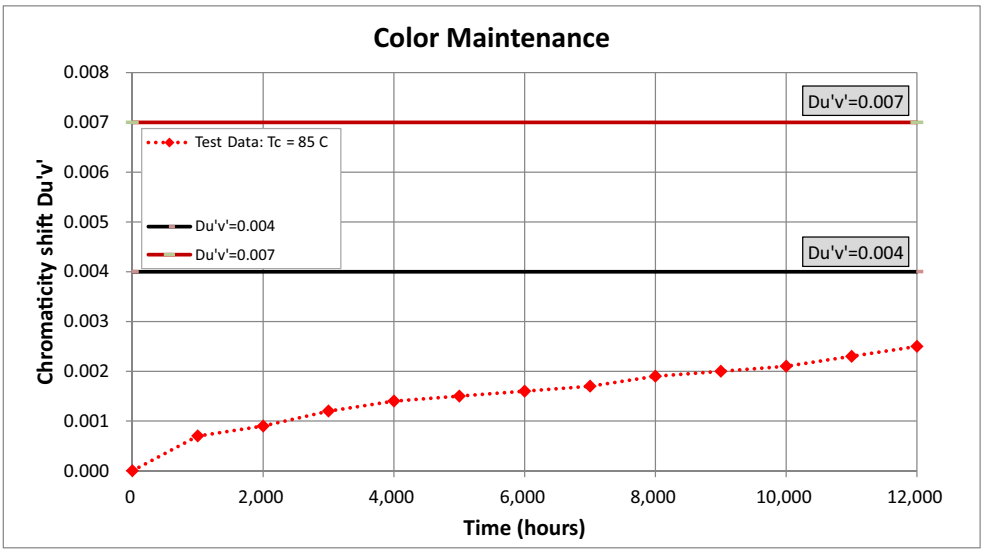
Energy Star™ TM-21 Calculator Data

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





VJTUNV015AC9TWB

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) A low-end trim adjustment on the dimmer is recommended to avoid flickering at low end dimming range.
3) 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	15	0.812	0.373	20%

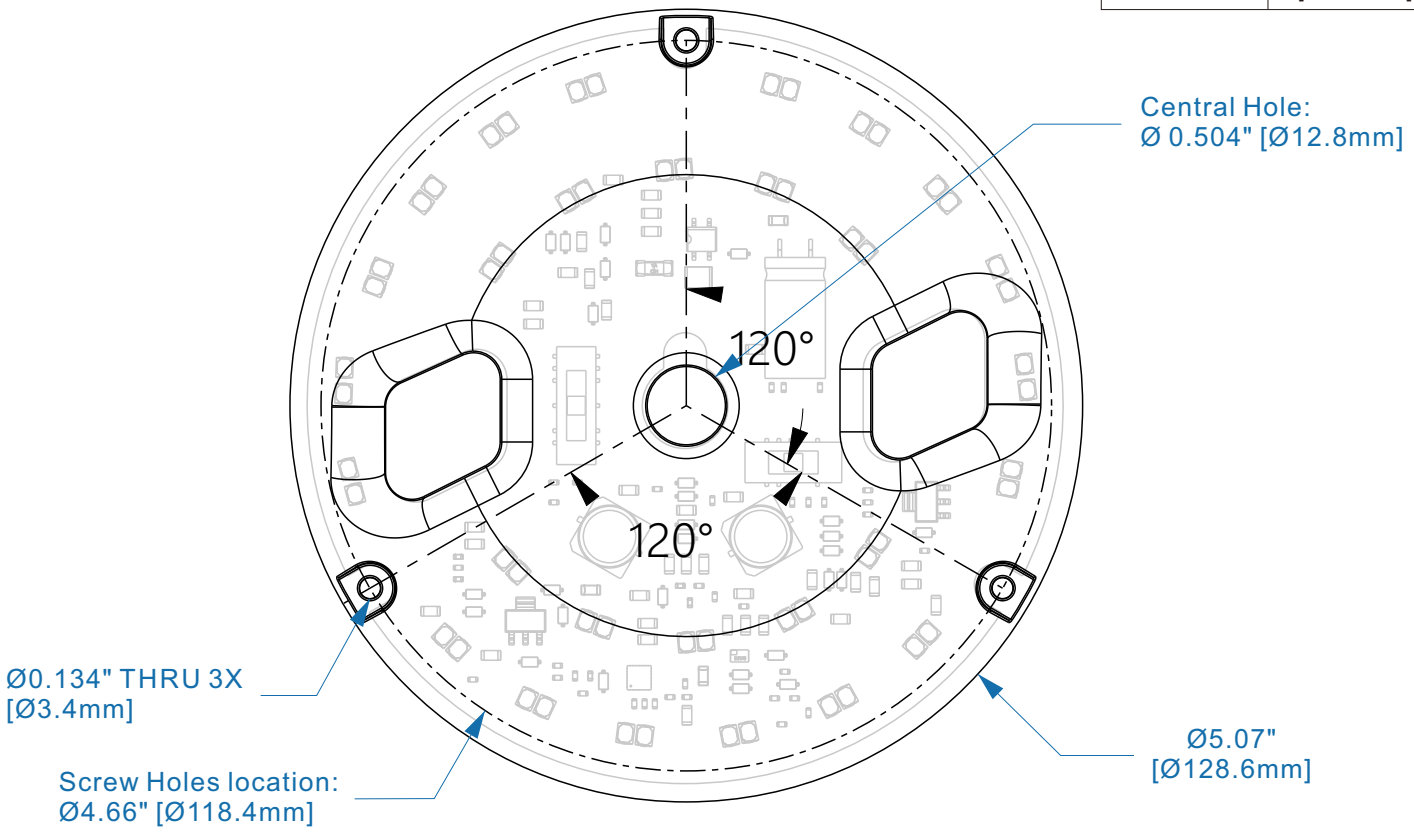
Note: Flicker Percent Amplitude Modulation is no longer required by EnergyStar.
The test data per CEC JA10-2016 are from Fulham internal lab.

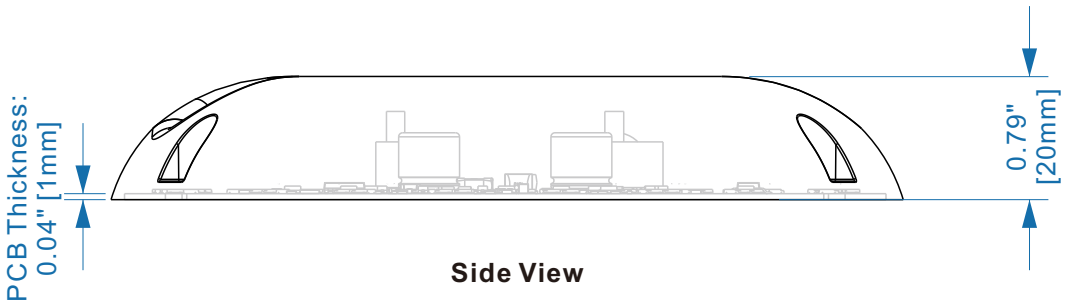
VJTUNV015AC9TWB

Mechanical Drawings

Φ5.07" [128.6mm]

Overall Dimensions with 5VA Lens	
Diameter	5.07" [128.6mm]
Height	0.79" [20mm]
Wire Length	
AC Input (Black / White)	12" [304.8mm]





Side View

VJTUNV015AC9TWB

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
VJTUNV015AC9TWB	10W	1030 lm (4K/90CRI)	111 lm/W	Quad	13W	1	13W	775 lm	59 lm/W
				Triple	13W	1	13W	825 lm	63 lm/W

DirectAC Engine/Kit (15W)				CFL					
Engine/Kit Part Number	System Wattage	Lumen Output	Efficacy	CFL Style	Lamp Wattage	# of Lamps	Total Wattage	Lumen Output	Efficacy
VJTUNV015AC9TWB	15W	1710 lm (4K/90CRI)	108 lm/W	Quad	13W	2	26W	1550 lm	59 lm/W
					18W	1	18W	1075 lm	
					26W	1	26W	1550 lm	
				Triple	13W	2	26W	1650 lm	63 lm/W
					18W	1	18W	1020 lm	56 lm/W
					26W	1	26W	1536 lm	59 lm/W
				Circline T9	22W	1	22W	775 lm	35 lm/W
				Circline T5	22W	1	22W	1530 lm	69 lm/W

NOTES:

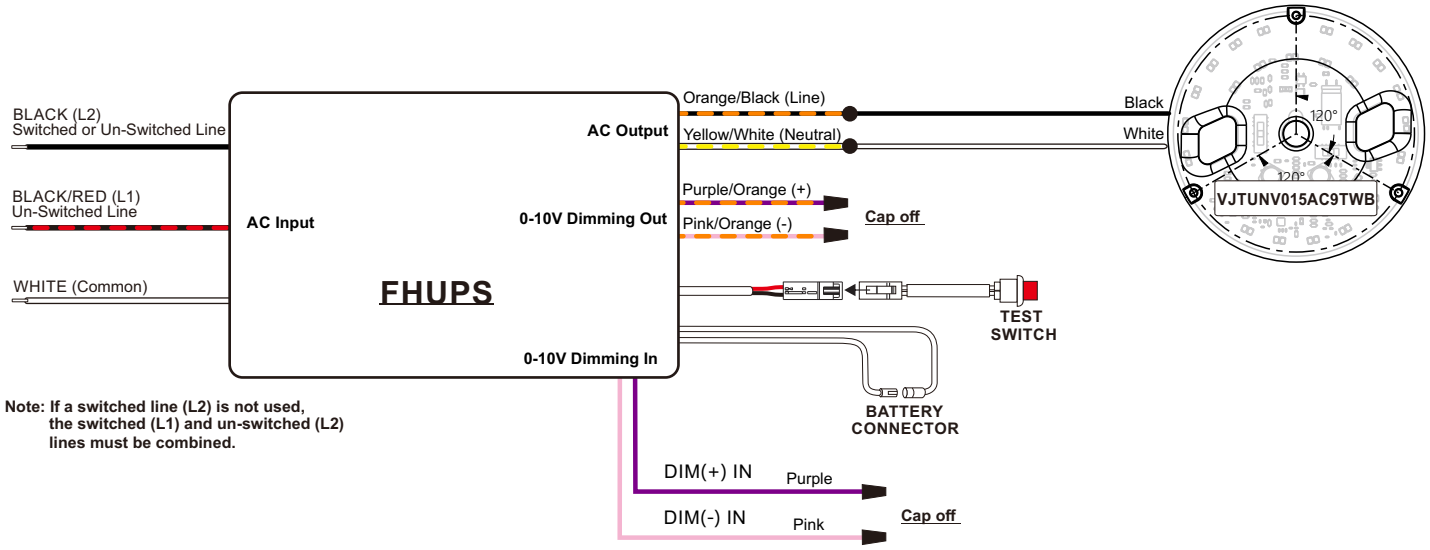
1) LED is a point source and FLUO is 360, there is more light lost with FLUO especially during the reflection. Therefore it is recommended to use a 65 percent of the original light source total lumens when converting FLUO to LED. For example original FLUO lumens of 2000 x .65% = 1300 LED lumens. This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

VJTUNV015AC9TWB

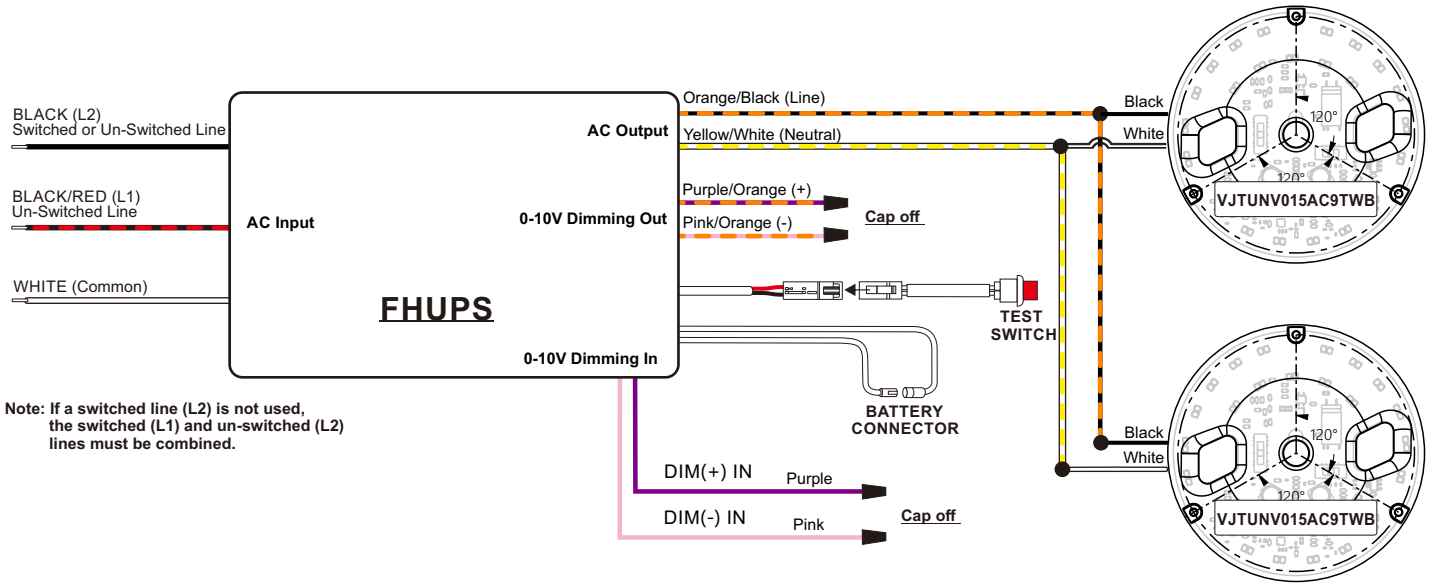
RoHS COMPLIANT

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

Single Luminaire



Multiple Luminaires



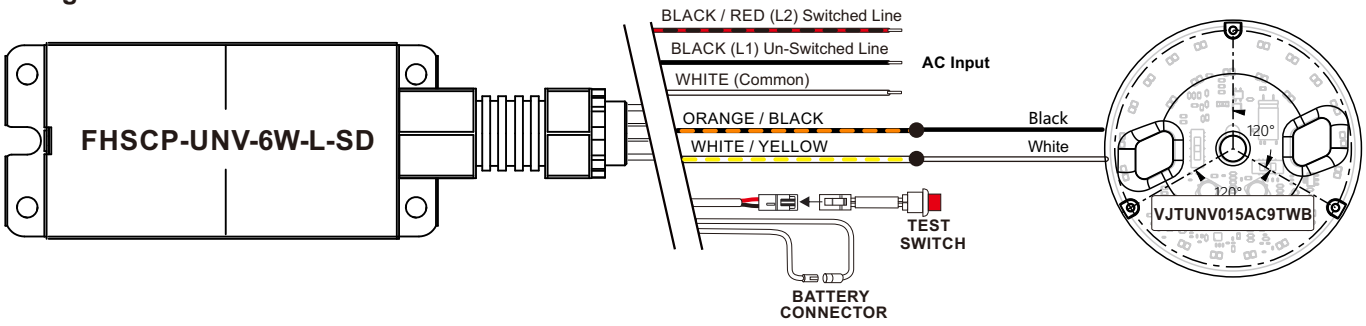
Max. Qty. / Inverter PN#	VJTUNV015AC9TWB		
	Select to 7W	Select to 10W	Select to 15W
FHUPS1-UNV-12L-SD	1 pcs	1 pcs	1 pcs
FHUPS1-UNV-25L-SD	3 pcs	2 pcs	1 pcs
FHUPS1-UNV-50L-SD	7 pcs	5 pcs	3 pcs

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

VJTUNV015AC9TWB

Wiring Diagram with Fulham Emergency Driver: FHSCP-UNV-6W-L-SD

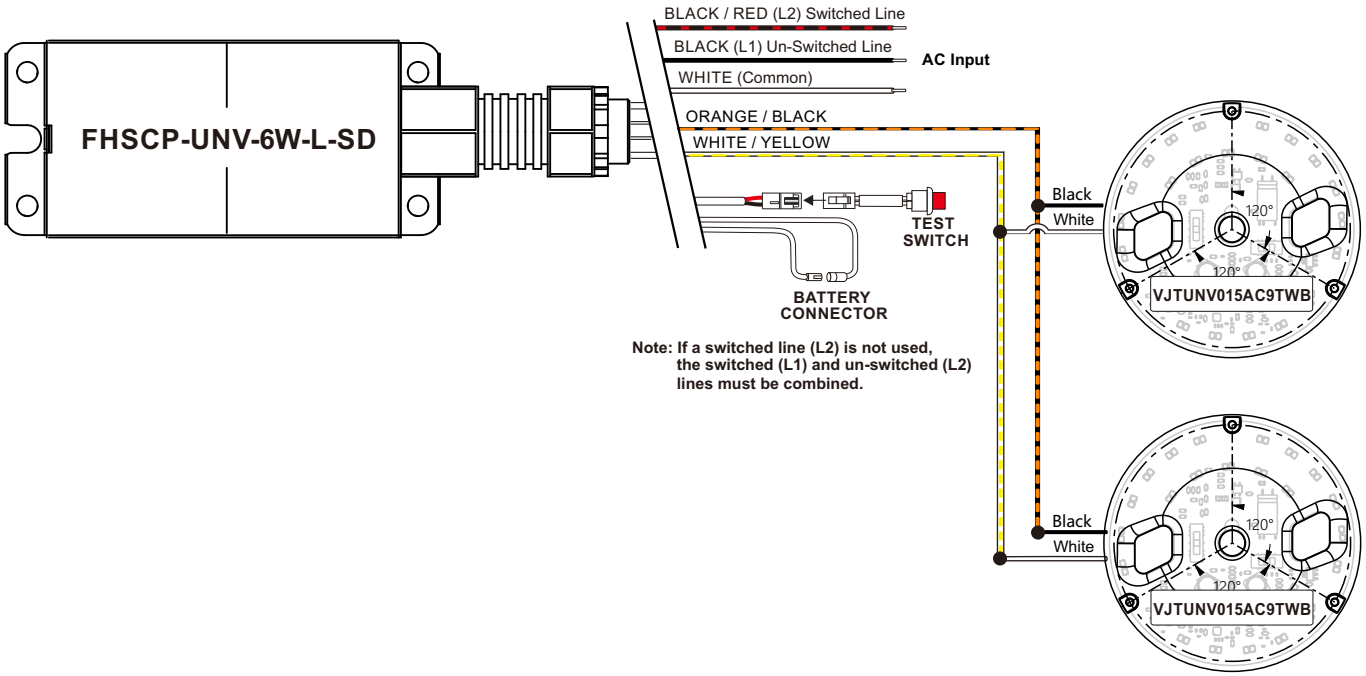
Single Luminaire



Note: If a switched line (L2) is not used, the switched (L1) and un-switched (L2) lines must be combined.

Multiple Luminaires

FHSCP-UNV-6W-L-SD can connect up to one(1x) VJTUNV015AC9TWB engines.



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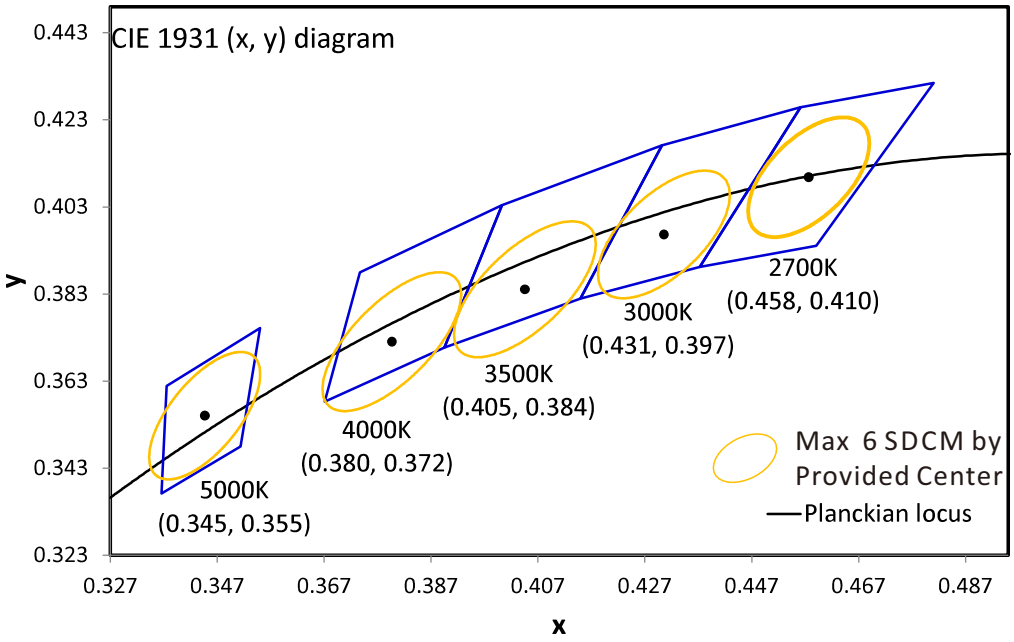
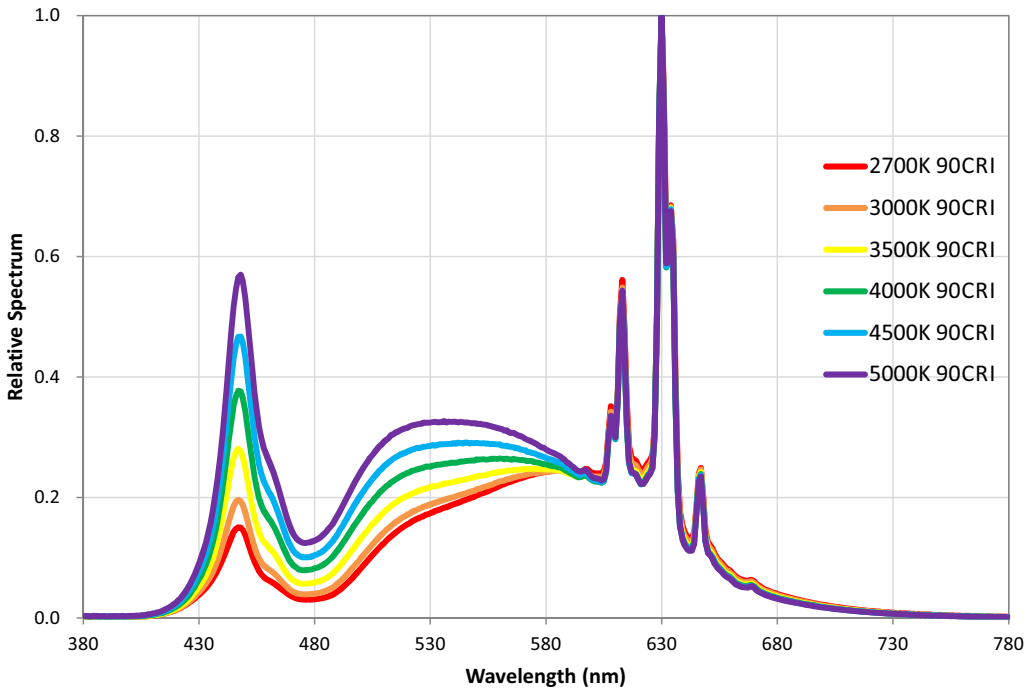
VJTUNV015AC9TWB

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) 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.

VJTUNV015AC9TWB

Guidelines

Reduced Flicker Operation Feature

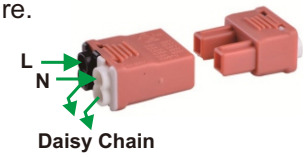
- DirectAC Engine models have added circuitry to help reduce the Flicker when operated on the 50/60Hz power lines. The Flicker percentage on these models is below 30% when operated at line voltage, per CEC requirement.
- Dimming by line voltage devices may increase the Flicker Percentage as the power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

VJTUNV015AC9TWB

RoHS COMPLIANT

Part Number Matrix

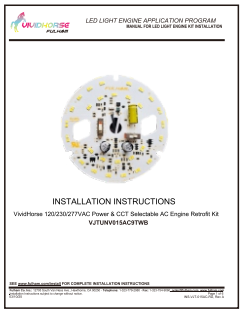
V	J	T	UNV	015	AC	9	TW	B

Product Line	Compliance	Dimming	Input Voltage	Estimated Power	Shape	CRI	Color Temperature
V = VividHorse	④**J**= DirectAC Retrofit Kit (cULus Classified)	**T** = TRIAC	**UNV** = 120/230/277VAC	**015** = 15W (15/10/7W Selectable) Factory Default 15W	**AC**=Circular	③**9** = 90	③**TW** = 2700-5000K CCT Selectable, Factory Default 3000K

③Standard Product offering. Default Power setting is 15W, default CCT setting is 3000K.
④DirectAC Engine Retrofit Kit includes mounting hardware, retrofit labels, and installation instructions.

Product Image: 15W Round AC Engine Kit

VJTUNV015AC9TWB



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. : VJTUNV015AC9TWB

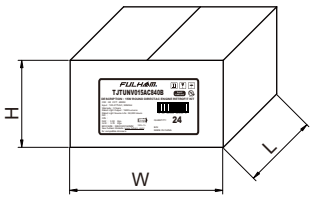
Ce luminaire a été modifié et ne peut plus utiliser la lampe prévue à l'origine.
REMPLACER UNIQUEMENT AVEC FULHAM ELECTRONIC CO. : VJTUNV015AC9TWB

Hardware Kit: TLC-HW08

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

Packaging

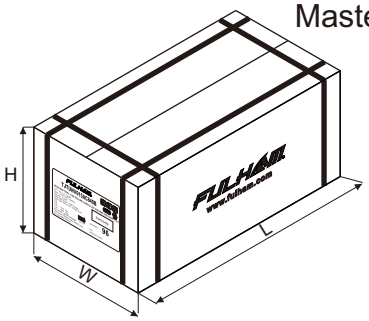
Carton



OUTER DIMENSION		
L	W	H
15.55"(395mm)	12.99"(330mm)	6.30"(160mm)
Net Weight	Gross Weight	QUANTITY
7.28 lbs. (3.30kg)	8.16 lbs. (3.70kg)	24pc.

Twenty-Four (24) LED AC Engine retrofit kits inside each carton.

Master Carton



OUTER DIMENSION		
L	W	H
26.77"(680mm)	16.33"(415mm)	13.78"(350mm)
Net Weight	Gross Weight	QUANTITY
29.10 lbs. (13.20kg)	34.83 lbs. (15.80kg)	96pcs.

Four (4) cartons inside each Master Carton.