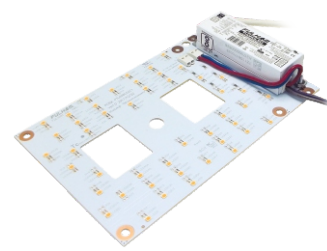




Planned Phase Out

Limited Stock Available While Supplies Last



VKMUNV018RTxxxA



UNV DC Engines Retrofit Kits with 0-10V Dimming

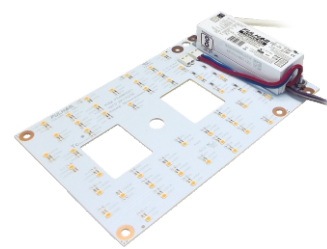
- Universal Voltage (120~277) DC Engine
- Suitable for open or fully enclosed luminaires
- Suitable for luminaires with plastic and glass lenses
- Class 2 design 141lm/W at system level
- cULus Classified 1598C
- cULus Recognized 8750
- Energy Star Luminaire 2.1 Listed and CSD ^①

General Specifications

| | |
|---|--|
| Input Voltage ^② | 120~277VAC (+/- 10%) |
| Input Current ^② | ~0.166A @120V ~0.072A @277V |
| Input Power ^② | 20W |
| Input PF | >0.98 |
| THD | <20% |
| Input Frequency | 50/60Hz |
| Module Operating Voltage | 23.1VDC |
| Max Lumen Output @ Full Power ^② | 2675 lumens @ 4000K / 80 CRI |
| Dimming Type/Range | 0-10V / 100% ~ 10% |
| Beam Angle | 120° |
| CRI | 80 (standard), 90 available (MTO) |
| Storage Temperature Range | -35°C to 100°C / -31°F to 212°F |
| Operating Ambient Temperature Range (Ta) | -35°C to 60°C / -31°F to 140°F |
| Maximum Driver Case Temperature: per UL/ 5 year warranty | 90°C (194°F) / 76°C (176°F) |
| Maximum Module Case Temperature | L70: Tc max=105°C (Ts=110°C) / L90: Tc max=105°C (Ts=110°C) |
| Estimated Lumen Maintenance (at Max Tc) | L70= >60,000 hours / L90= 40,000 hours |
| Color Consistency | Binning per ANSI C78.377-2015 @25°C; 3 SDCM |
| Inrush Current / Duration | 20A @ 277V / 250us |
| Line Regulation / Load Regulation | <1% @100% Load / <3% @100% Load |
| Total Overall Ripple LF (<300Hz)/ HF(<40kHz) peak to peak | <5% @100% Load |
| Low Frequency Ripple (120Hz ripple peak to peak) | <5% @100% Load |
| Flicker Percentage | <7% @100% - 20% Dimming Range <5% @<20% Dimming Range |
| Start-up Time / Standby Power | <500ms / <0.5W No Load |
| Overall Size | 7.4"L x 4.7"W x 1.18"H (187.96mm L x 119.38mm W x 29.89mm H) |
| Wire Type/ Length | 18AWG / 12" Black and White wires (Input 120~277VAC) 18AWG / 12" Pink and Purple wires (Dimming 0-10VDC) |
| LED Quantity | 48 Pcs. |
| Driver Part Number | T1M1UNV0700-30L |
| Module Part Number | VMU095023RTxxxA |
| Weight | 320g / 0.71lbs. |
| Packaging: Master Carton | 60pcs |
| Maximum Screw Installation Torque | 35in-lb (560in-ozf) |
| Safety/Compliance | Component: cURus Module File #E351548; Driver File #E342838 DC Engines Retrofit Kits: cULus Classified 1598C File # E365124 RoHS Compliant Dry and Damp Location Energy Star Luminaire 2.1 Listed and CSD ^① |
| 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 |
| Output Type | Class 2 (approved for luminaires glass or plastic lenses) |
| PCB Material / Connector Qty / Em. Connection | CEM1 / 2 / Yes |
| Warranty | 5 years @ Max. Tc 105°C (module) and 76°C (Driver) from the date of manufacture |

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

^② Measured electrical data per UL file



VKMUNV018RTxxxA



Typical Characteristics Graphs: Dimming and Thermal

Figure 1

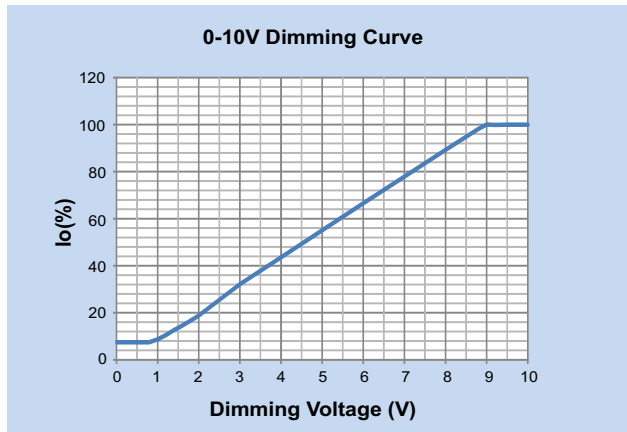
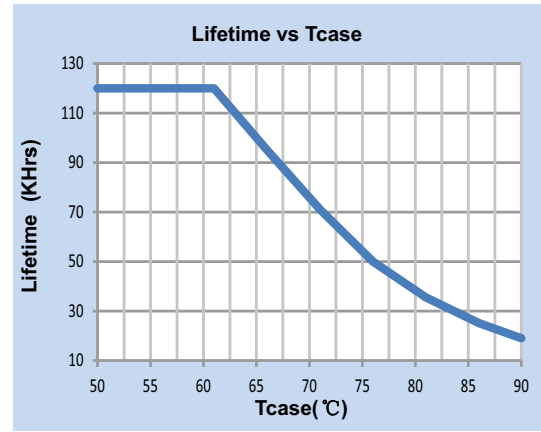
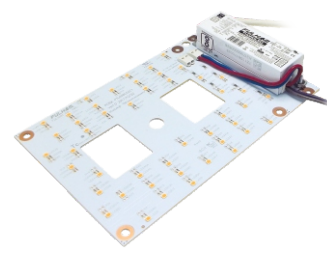


Figure 2



Failure Rate Info based upon MTBF modeling:
90% survivals at end of life @ <=Tc lifetime rating



VKMUNV018RTxxxA

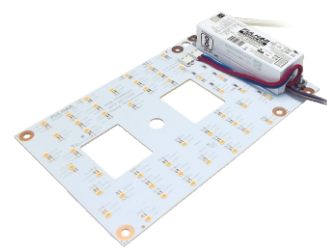


Electrical and Optical Specifications

| Color Temperature | DC Engine Retrofit Kit Part Number | Input Power | Nominal Luminous Flux @ 90 CRI | Engine Efficacy @ 90 CRI | Nominal Luminous Flux @ 80 CRI | Engine Efficacy @ 80 CRI |
|-------------------|------------------------------------|-------------|--------------------------------|--------------------------|--------------------------------|--------------------------|
| 2700K | VKMUNV018RT827A | 20W | 2180 lumens | 109 lm/W | 2600 lumens | 130 lm/W |
| 3000K | VKMUNV018RT830A | 20W | 2360 lumens | 118 lm/W | 2680 lumens | 134 lm/W |
| 3500K | VKMUNV018RT835A | 20W | 2340 lumens | 117 lm/W | 2720 lumens | 136 lm/W |
| 4000K | VKMUNV018RT840A | 20W | 2400 lumens | 120 lm/W | 2820 lumens | 141 lm/W |
| 5000K | VKMUNV018RT850A | 20W | 2440 lumens | 122 lm/W | 2860 lumens | 143 lm/W |
| 5700K | VKMUNV018RT857A | 20W | 2440 lumens | 122 lm/W | 2860 lumens | 143 lm/W |
| 6500K | VKMUNV018RT865A | 20W | 2400 lumens | 120 lm/W | 2820 lumens | 141 lm/W |

NOTES:

- 1) Electrical and optical specifications are based on Tc mod = 25°C. Reference Amb. Temp. vs Rel. Lum. Flux for other temperatures.
- 2) Nominal luminous flux at 90 CRI are calculated values, not measured.
- 3) Performance for these components have been tested in accordance with Energy Star.
- 4) Refer to Energy Star CSD or Luminaires 2.1 for actual measurements on specific part numbers. Energy Star testing is done at elevated case temperature.
- 5) Specifications are subject to change without notice.
- 6) 70CRI is NOT available.



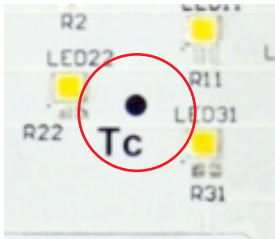
VKMUNV018RTxxxA



Thermal Specifications

③ DC Engine Retrofit Kit (A)

| | |
|-------------------------------------|---|
| Storage Temperature Range | -35°C to 100°C / -31°F to 212°F |
| Operating Ambient Temperature Range | -35°C to 60°C / -31°F to 140°F |
| Maximum Driver Case Temperature | 90°C / 194°F |
| Maximum Module Case Temperature | L70 = 105°C (221°F) / L90 = 105°C (221°F) |



Tc located on module



Tc located on driver

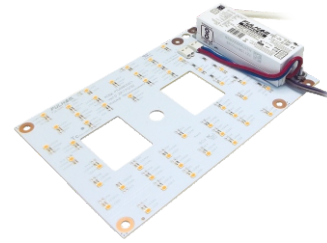
Thermal De-Rating: Tc vs. Luminous Flux

| Module Case Temperature (Tc) | Total Vf Multiplier | Luminous Flux Multiplier |
|------------------------------|---------------------|--------------------------|
| 25°C | 1.000 | 1.000 |
| 30°C | 1.000 | 0.991 |
| 35°C | 0.997 | 0.982 |
| 40°C | 0.993 | 0.973 |
| 45°C | 0.993 | 0.964 |
| 50°C | 0.990 | 0.953 |
| 55°C | 0.987 | 0.944 |
| 60°C | 0.987 | 0.935 |
| 65°C | 0.984 | 0.926 |
| 70°C | 0.984 | 0.917 |
| 75°C | 0.980 | 0.908 |
| 80°C | 0.977 | 0.899 |
| 85°C | 0.977 | 0.889 |
| 90°C | 0.974 | 0.880 |
| 95°C | 0.970 | 0.862 |
| 100°C | 0.967 | 0.853 |

NOTES:

- 1) Refer to DC Engine Retrofit Kit Installation Instructions for further detail.
- 2) This DC 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 DC Engine Retrofit 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: Length of 10.5", Height of 4.25", and Width of 6" or 267.75 cubic inches








VKMUNV018RTxxxA



Certification Chart

Energy Star™ TM-21 Calculator Data

| Model | VKMUNV018RTxxxA |
|---|--------------------------|
| Classification | |
|  | YES |
|  | YES (Driver & Module) |
|  | YES |
|  | YES |
|  | YES |

| Tc Module | Reported L70 | Reported L90 |
|-----------|----------------|----------------|
| 55°C | >60,000 Hrs | >54,000 Hrs |
| 85°C | >60,000 Hrs | 46,000 Hrs |
| 105°C | >60,000 Hrs | 40,000 Hrs |
| Tc Module | Calculated L70 | Calculated L90 |
| 55°C | 180,000 Hrs | 54,000 Hrs |
| 85°C | 154,000 Hrs | 46,000 Hrs |
| 105°C | 133,000 Hrs | 40,000 Hrs |

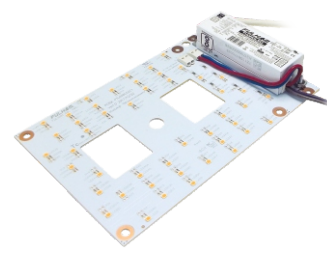
NOTES:

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

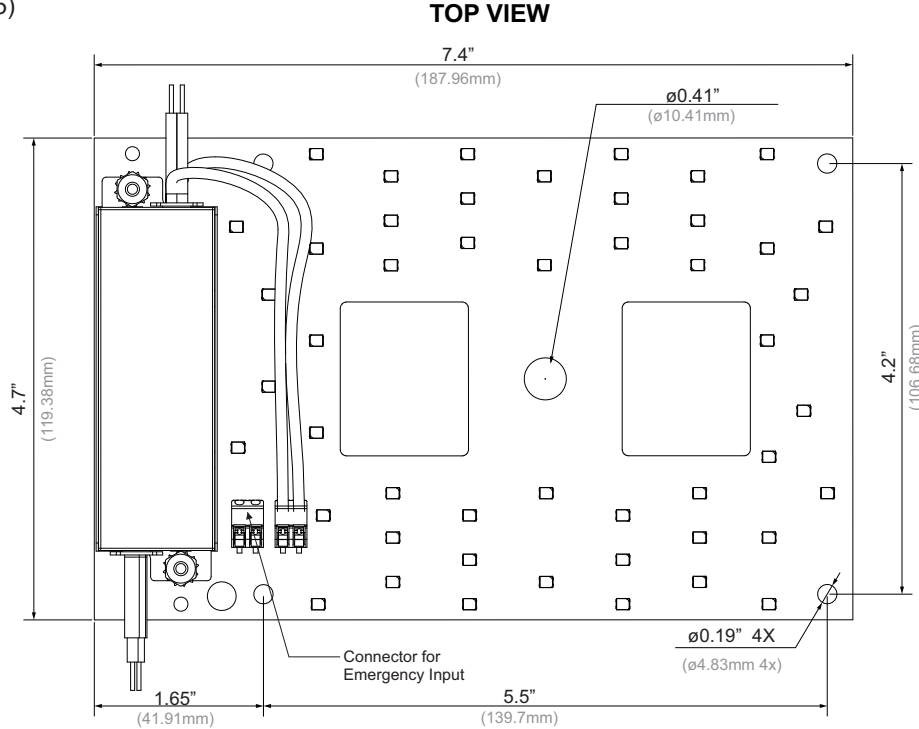


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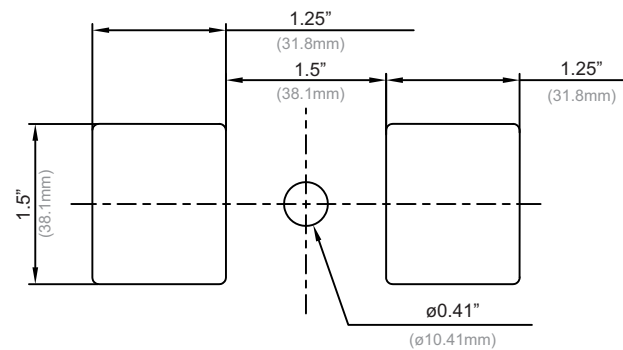
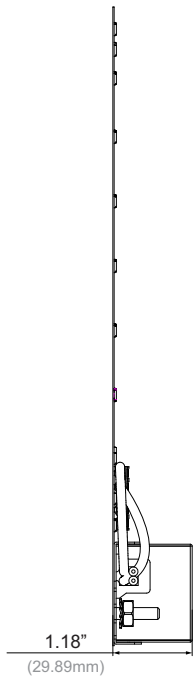


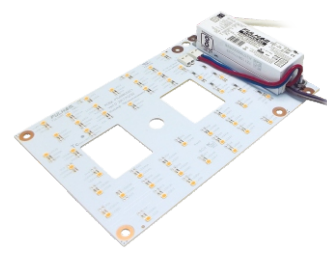
Mechanical Drawings

(Scale 4 : 5)



| Overall Dimensions | |
|---|-----------------|
| Length | 7.4" [187.96mm] |
| Width | 4.7" [119.38mm] |
| Height | 1.18" [29.89mm] |
| Wire Length | |
| AC Input (Black / White) | 12" [304.8mm] |
| 0-10V Dimming (Purple (10v+) Pink (10V-)) | 12" [304.8mm] |





VKMUNV018RTxxxA

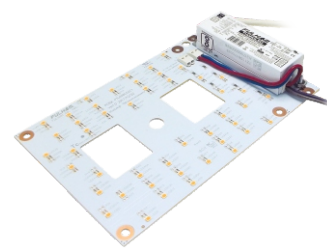


DC Engine Retrofit Kit Equivalency Chart: FLUO to LED

| DC Engine Retrofit Kit(7.4"x 4.7" Rectangular) | | | | CFL | | | | | |
|--|----------------|--------------------|----------|-------------|--------------|------------|---------------|--------------|----------|
| DC Engine Retrofit Kit Part Number | System Wattage | Lumen Output | Efficacy | CFL Style | Lamp Wattage | # of Lamps | Total Wattage | Lumen Output | Efficacy |
| VKMUNV018RTxxxA | 18W | 2820 lm (4K/80CRI) | 141 lm/W | Quad | 13W | 1 | 13W | 775 lm | 59 lm/W |
| | | | | | 18W | 1 | 18W | 1075 lm | |
| | | | | Triple | 13W | 1 | 13W | 825 lm | 63 lm/W |
| | | | | | 18W | 1 | 18W | 1020 lm | |
| | | | | Quad | 13W | 2 | 26W | 1550 lm | 59 lm/W |
| | | | | | 26W | 1 | 26W | | |
| | | | | Triple | 13W | 2 | 26W | 1650 lm | 63 lm/W |
| | | | | | 26W | 1 | 26W | | |
| | | | | Circline T5 | 22W | 1 | 22W | 1530 lm | 69 lm/W |
| | | | | Circline T9 | 22W | 1 | 22W | 775 lm | 35 lm/W |

NOTES:

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



VKMUNV018RTxxxA



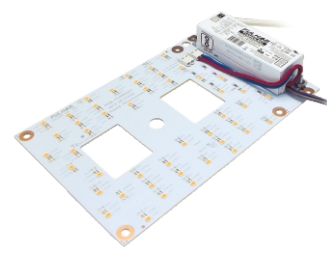
DC Engine Retrofit Kit with Emergency Options

NOTE: Emergency systems are not UL classified for field installation.

| DC Engine Retrofit Kit Part Number | Emer. Driver Part Number | Battery Wattage | Battery Part Number | Harness (mA) | LED Vf (V) | LED If (mA) | Total Power (W) | Total Lum. Output (lm) | Eff. (lm/W) |
|------------------------------------|-------------------------------|-----------------|--|-----------------|------------|-------------|-----------------|------------------------|-------------|
| VKMUNV018RT840A | FHS2-UNV-36L/ FHS2-UNV-56S | 4W | FHSBATT8-AA9 FHSBATL3-1 | FHS-HARNESS-175 | 21.5 | 175 | 3.8 | 720 [Ⓢ] | 191 |
| | FHSCP-UNV-5WL | 5W | N/A | N/A | 21.8 | 228 | 5.0 | 934 | 187 |
| | FHSCP-UNV-10P-L-SD | 5W | FHSBATL3-1.5-SD | N/A | 21.8 | 228 | 5.0 | 934 | 187 |
| | FHS2-UNV-36L | 6W | FHSBATL6-6 | FHS-HARNESS-250 | 21.8 | 250 | 5.5 | 1022 [Ⓢ] | 187 |
| | FHSCP-UNV-10P-L-SD | 6W | FHSBATL9-6-SD | N/A | 21.9 | 368 | 6.0 | 1124 | 187 |
| | FHSCP-UNV-7.8WL | 7.8W | N/A | N/A | 22.2 | 354 | 7.8 | 1428 | 183 |
| | FHS2-UNV-36L/ FHS2-UNV-56S | 8W | FHSBATL3-1.5 FHSBATL3-1.5S | FHS-HARNESS-350 | 22.2 | 350 | 7.8 | 1412 [Ⓢ] | 182 |
| | FHS2-UNV-36L | 10W | FHSBATL9-6 | FHS-HARNESS-450 | 22.4 | 450 | 10.1 | 1791 [Ⓢ] | 178 |
| | FHSCP-UNV-10P-L-SD | 10W | FHSBATL3-3-SD FHSBATL6-1.5L-SD [Ⓢ] | N/A | 22.4 | 444 | 10.0 | 1769 | 177 |
| | FHSCP-UNV-10.7WL | 10.7W | N/A | N/A | 22.5 | 474 | 10.7 | 1880 | 176 |
| | FHSCP-UNV-13.7WL | 13.7W | N/A | N/A | 22.8 | 600 | 13.7 | 2328 | 170 |
| | FHS2-UNV-36L/ FHS2-UNV-56S | 16W | FHSBATL3-3 | FHS-HARNESS-650 | 22.9 | 650 | 14.9 | 2496 [Ⓢ] | 168 |
| | FHSCP-UNV-17WL | 17W | N/A | N/A | 23.1 | 735 | 17.0 | 2772 | 163 |

NOTES:

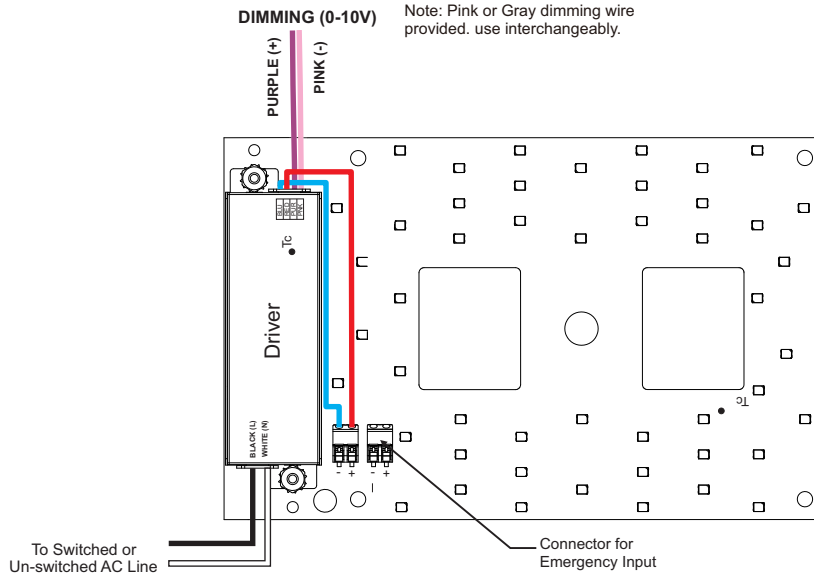
- 1) For reference only, several factors apply.
 - 2) Emergency systems are not UL classified for field installation.
- Ⓢ These batteries do not include mounting means, separate mounting brackets are available
- Ⓢ Initial lumen output. Will reduce to no less than ~65% of total lumen output.



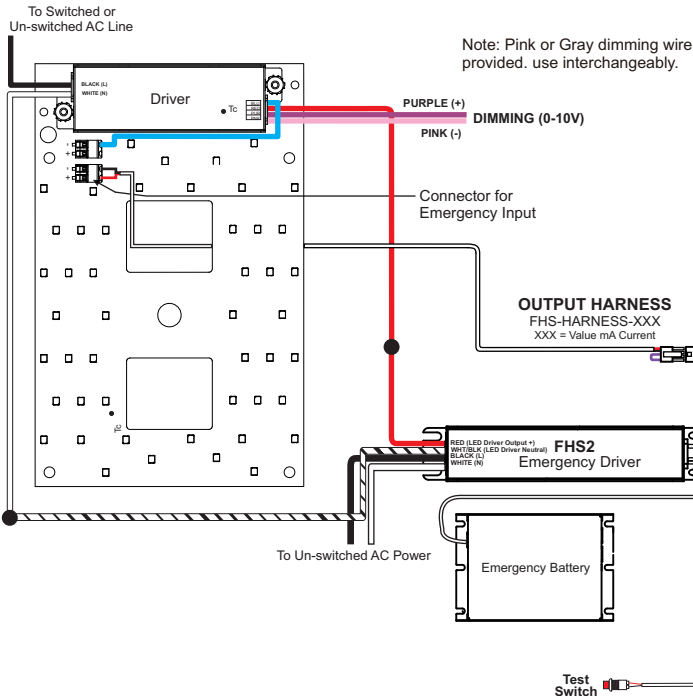
VKMUNV018RTxxxA



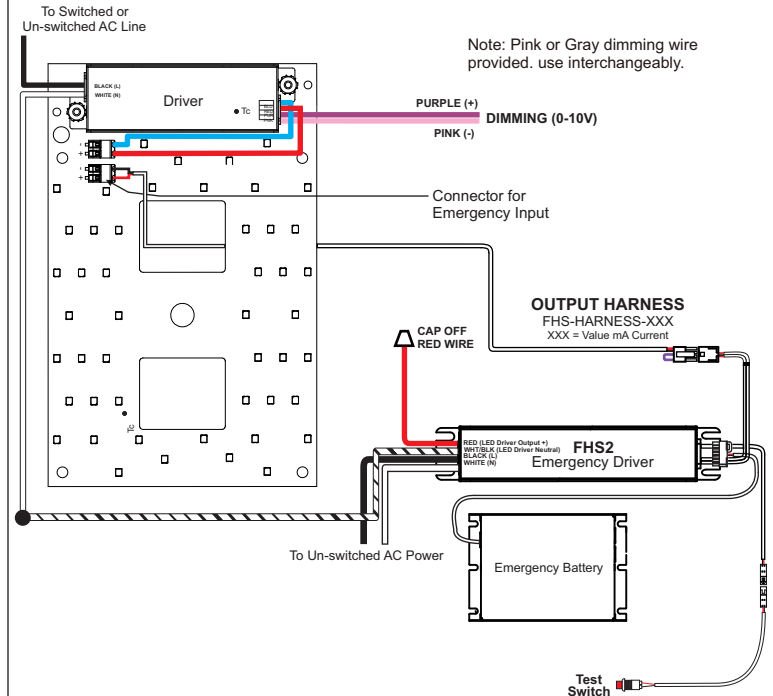
Wiring Diagram: Standard Option



Wiring Diagram: HotSpot2 (FHS2) EM- Pass Through (Recommended for non-Fulham LED EM)

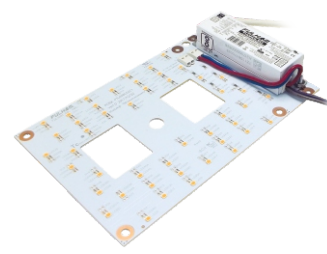


Wiring Diagram: HotSpot2 (FHS2) EM- In Parallel (Recommended for Fulham LED EM)



NOTES:

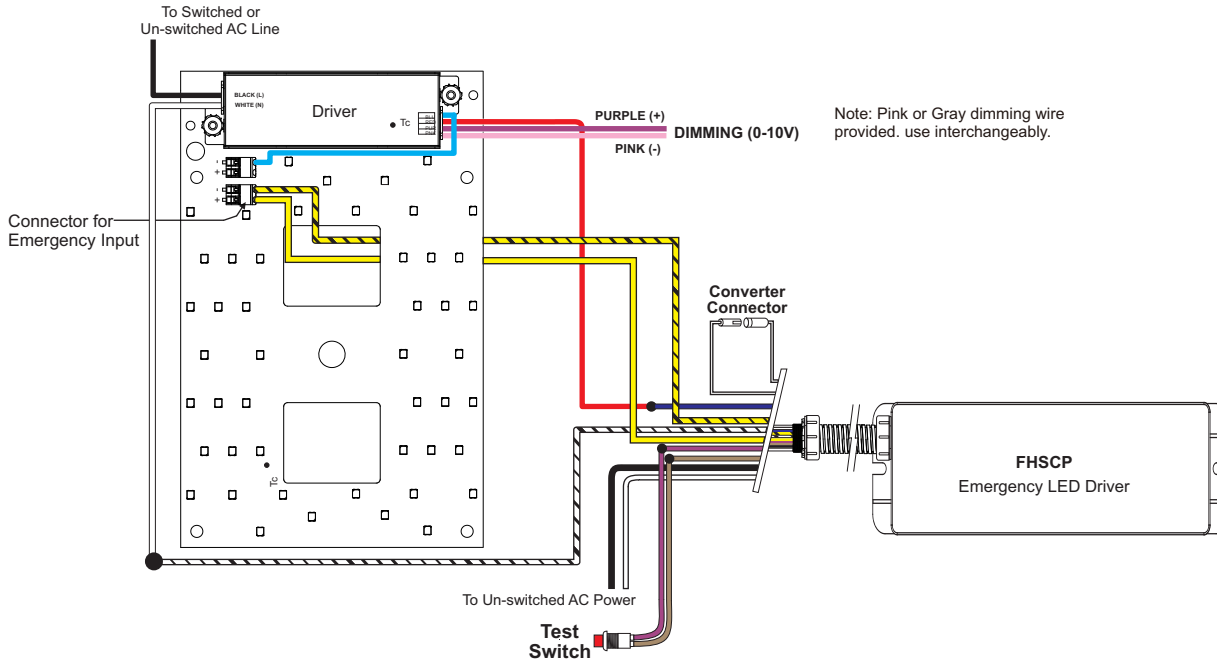
- 1) For reference only, several factors apply.
- 2) Emergency systems are not UL classified for field installation.



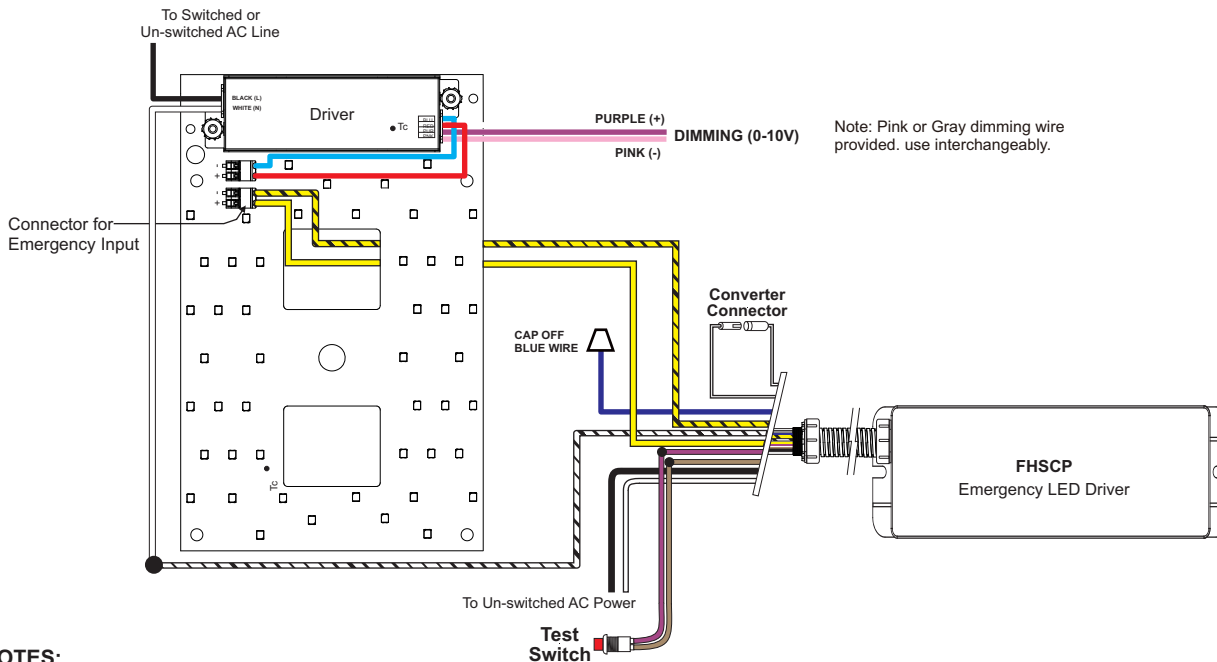
VKMUNV018RTxxxA



Wiring Diagram: Constant Power with conduit (FHSCP) EM- Pass Through (Recommended for non-Fulham LED EM)

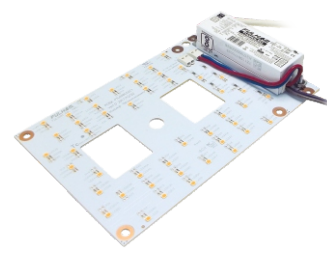


Wiring Diagram: Constant Power with conduit (FHSCP) EM- In Parallel (Recommended for Fulham LED EM)



NOTES:

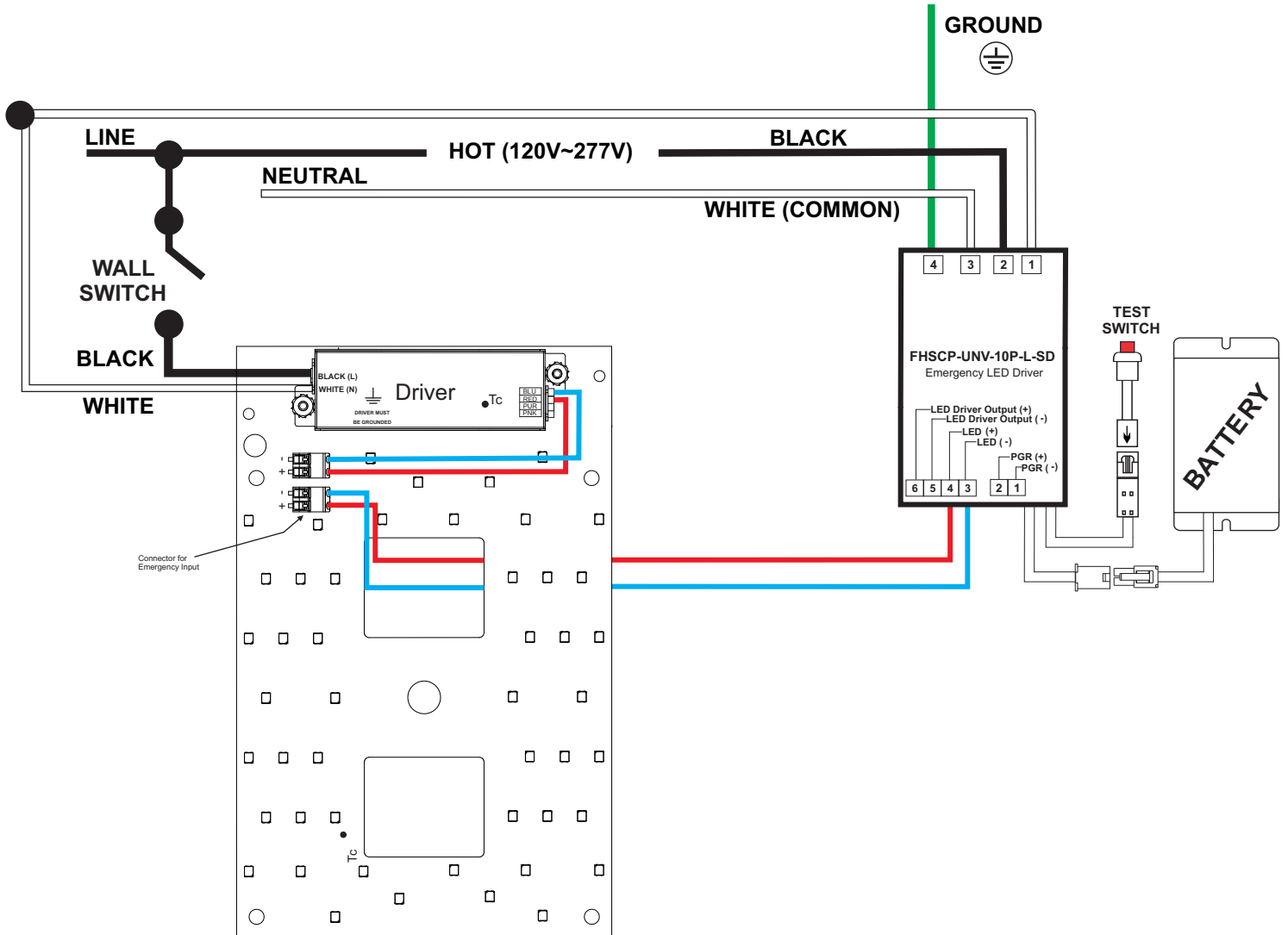
- 1) For reference only, several factors apply.
- 2) Emergency systems are not UL classified for field installation.



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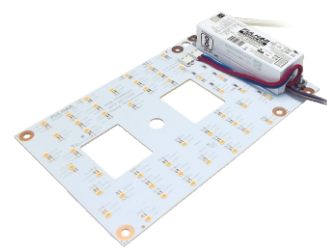


Wiring Diagram: Parallel Wiring (FHSCP-UNV-10P-L-SD)



NOTES:

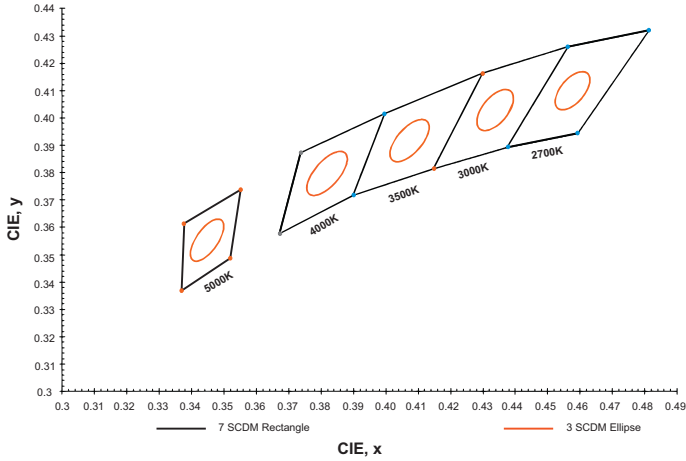
- 1) For reference only, several factors apply.
- 2) Emergency systems are not UL classified for field installation.



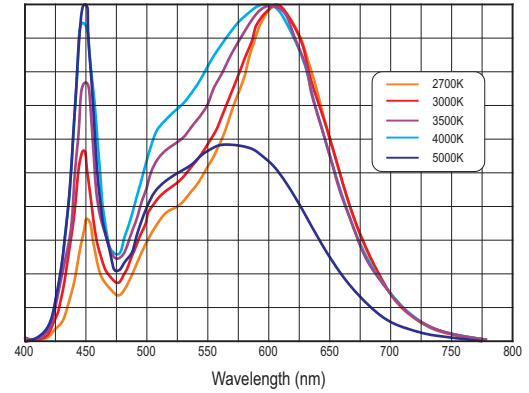
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Color and Binning

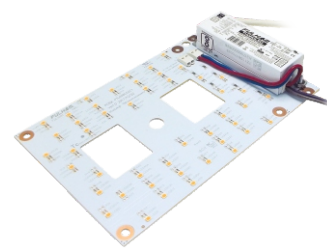


Optical Spectrum



NOTES:

- 1) The Color and Binning and Optical Spectrum charts are for reference only. For more detailed info, contact factory.
- 2) Reference Samsung Chromaticity Diagram for Color and Binning. Binning per ANSI C78.377-2015 @ 25°C; 3 SDCM.
- 3) The Optical Spectrum values vary depending on product type and color rank.



VKMUNV018RTxxxA



Guidelines

Reduced Flicker Operation Feature

- DC 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.

Termination Notes

- A luminaire disconnect UL listed connector is included, as part of DC Engine Retrofit Kit 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/flipviewerexpress.html



Environmental Rating

- DC Engine Retrofit Kit are rated for dry and damp locations.

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 4 mounting holes to ensure good contact between back side of DC Engine Retrofit Kit and mounting surface. Refer to max specified torque for installation. Suggested screw sizes: #5 or M3 Pan Head screw.

Electrostatic Sensitive Product (ESD)

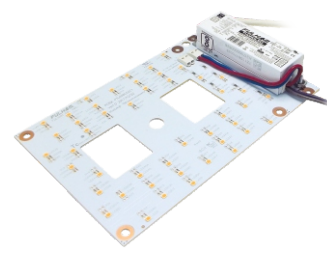
- Fulham LED products should be handled with proper measures to protect against any potential ESD damage.
- When servicing, personnel should be ground and direct contact with LED should be avoided.

Thermal Management

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

Wiring

- Intended for UNV (120-277V) application ONLY.
- Connect the Black wire from the DC Engine Retrofit Kit to the building Line by using the proper connectors or wire nuts.
- Connect the White wire from the DC Engine Retrofit Kit to the building/source Neutral by using the proper connectors or wire nuts.
- DC Engine Retrofit Kit and luminaire must be grounded.



VKMUNV018RTxxxA



Part Number Matrix

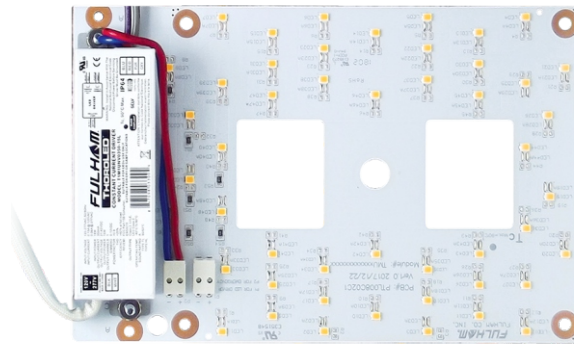
V **K** **M** **UNV** **018** **RT** **8** **40** **A**

Product Line
 V = Vizion
Compliance
 K = DC Engine Retrofit Kit (cULus Classified)
Dimming
 M = 0-10V
Input Voltage
 UNV = 120V~277V
Estimated Power
 018 = 18W
Shape
 RT=Rectangular
CRI
 8 = 80
 9 = 90
Color Temperature
 27 = 2700K
 30 = 3000K
 35 = 3500K
 40 = 4000K
 50 = 5000K
 57 = 5700K
 65 = 6500K
Material
 A = CEM1

^① Standard Product offering, in addition to 90CRI / 3000K. (All other options are made to order with MOQ and lead time).
^② DC Engine Retrofit Kit includes mounting hardware, retrofit labels, and installation instructions.

Product Image: 18W Rectangular DC Engine Retrofit Kit

VKMUNV018RTxxxA



This luminaire has been modified and can no longer operate the originally intended lamp. Ce luminaire a été modifié et ne peut plus utiliser la lampe prévue à l'origine.

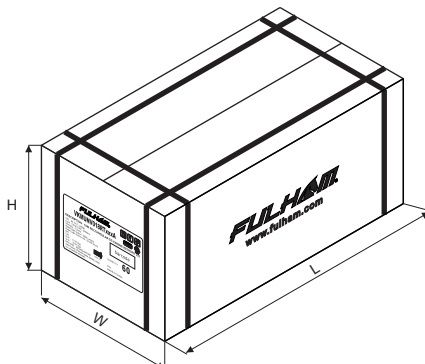


Hardware Kit: TLC-HW08

UNV DC Engines Retrofit Kits with 0-10V Dimming :
Hardware, Quick disconnect, Labels & Installation Instructions

Packaging

Master Carton



| OUTER DIMENSION | | |
|--------------------------|--------------------------|--------------|
| L | W | H |
| 21.65"(550mm) | 15.75"(400mm) | 9.45"(240mm) |
| Net Weight | Gross Weight | QUANTITY |
| 27.06 lbs. (12.27 kg) | 36.30 lbs. (16.47 kg) | 60pcs. |