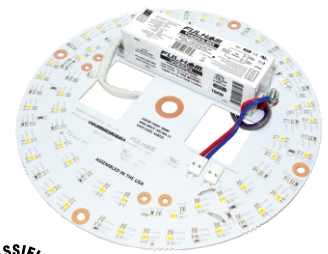




# Planned Phase Out

Limited Stock Available While Supplies Last



## VKMUNV018RDxxxA

### UNV DC Engines Retrofit Kits with 0-10V Dimming

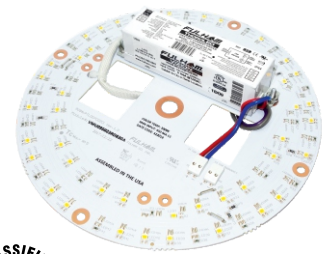
- Universal Voltage (120~277) DC Engine
- Suitable for open or fully enclosed luminaires
- Suitable for luminaires with plastic and glass lenses
- Class 2 design 141lm/W at system level
- cULus Classified 1598C
- cULus Recognized 8750
- Energy Star Luminaire 2.1 Listed and CSD <sup>①</sup>

#### General Specifications

|   |  |
|---|--|
| Input Voltage <sup>②</sup>                                | 120~277VAC (+/- 10%)   |
| Input Current <sup>②</sup>                                | ~0.166A @120V      ~0.072A @277V   |
| Input Power <sup>②</sup>                                  | 20W  |
| Input PF  | >0.98  |
| THD   | <20%   |
| Input Frequency   | 50/60Hz  |
| Module Operating Voltage                                  | 23.1VDC  |
| Max Lumen Output @ Full Power <sup>②</sup>                | 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<br><5% @<20% Dimming Range   |
| Start-up Time / Standby Power                             | <500ms / <0.5W No Load   |
| Overall Size  | 7.83"Dia. x 1.18"H (199mm Dia. x 29.89mm H)  |
| Wire Type/ Length   | 18AWG / 12" Black and White wires (Input 120~277VAC)<br>18AWG / 12" Pink and Purple wires (Dimming 0-10VDC)  |
| LED Quantity  | 48 Pcs.  |
| Driver Part Number  | T1M1UNV0700-30L  |
| Module Part Number  | VMU095023RDxxxA  |
| Weight  | 320g / 0.71lbs.  |
| Packaging: Master Carton                                  | 20pcs  |
| Maximum Screw Installation Torque                         | 35in-lb (560in-ozf)  |
| Safety/Compliance   | Component: cURus Module File #E351548; Driver File #E342838<br>DC Engines Retrofit Kits: cULus Classified 1598C File # E365124<br>RoHS Compliant<br>Dry and Damp Location<br>Energy Star Luminaire 2.1 Listed and CSD <sup>①</sup> |
| 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  |

<sup>①</sup> See page #4 "Certification Chart" for exact models.

<sup>②</sup> Measured electrical data per UL file



# VKMUNV018RDxxxA



## Typical Characteristics Graphs: Dimming and Thermal

Figure 1

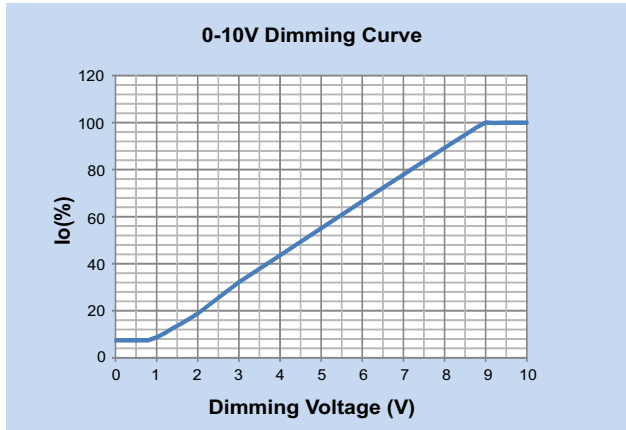
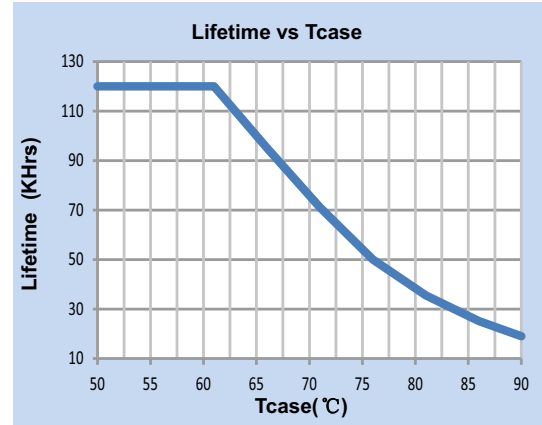
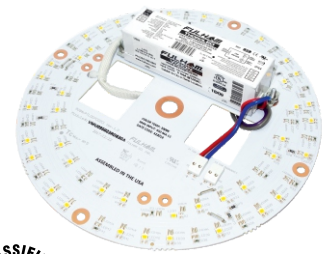


Figure 2



Failure Rate Info based upon MTBF modeling:  
90% survivals at end of life @  $\leq T_c$  lifetime rating



# VKMUNV018RDxxxA

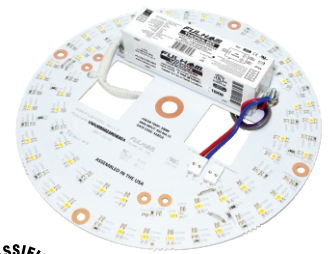


## Electrical and Optical Specifications

| 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             | VKMUNV018RD827A                    | 20W         | 2180 lumens                    | 109 lm/W                 | 2600 lumens                    | 130 lm/W                 |
| 3000K             | VKMUNV018RD830A                    | 20W         | 2360 lumens                    | 118 lm/W                 | 2680 lumens                    | 134 lm/W                 |
| 3500K             | VKMUNV018RD835A                    | 20W         | 2340 lumens                    | 117 lm/W                 | 2720 lumens                    | 136 lm/W                 |
| 4000K             | VKMUNV018RD840A                    | 20W         | 2400 lumens                    | 120 lm/W                 | 2820 lumens                    | 141 lm/W                 |
| 5000K             | VKMUNV018RD850A                    | 20W         | 2440 lumens                    | 122 lm/W                 | 2860 lumens                    | 143 lm/W                 |
| 5700K             | VKMUNV018RD857A                    | 20W         | 2440 lumens                    | 122 lm/W                 | 2860 lumens                    | 143 lm/W                 |
| 6500K             | VKMUNV018RD865A                    | 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.



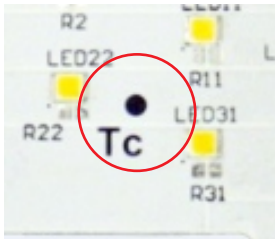
# VKMUNV018RDxxxA



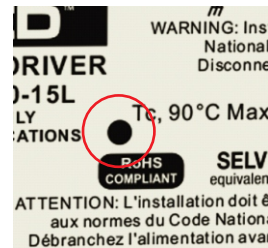
## Thermal Specifications

### 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

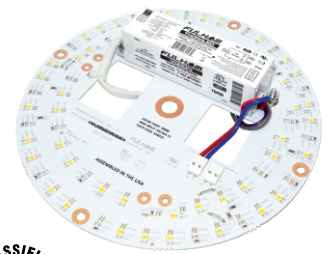
## Thermal De-Rating: Tc vs. Luminous Flux

| 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: 10" diameter with a height of 3" or 30 cubic inches



# VKMUNV018RDxxxA



## Certification Chart

## Energy Star™ TM-21 Calculator Data

| Model                 | VKMUNV018RDxxxA          |
|-----------------------|--------------------------|
| <b>Classification</b> |                          |
|                       | YES                      |
|                       | YES<br>(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     |

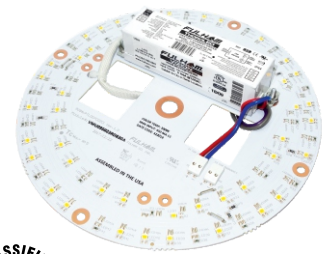
### NOTES:

1) Energy Star CSD:

[https://www.energystar.gov/products/lighting\\_fans/certified\\_lighting\\_subcomponent\\_database\\_csd](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](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)



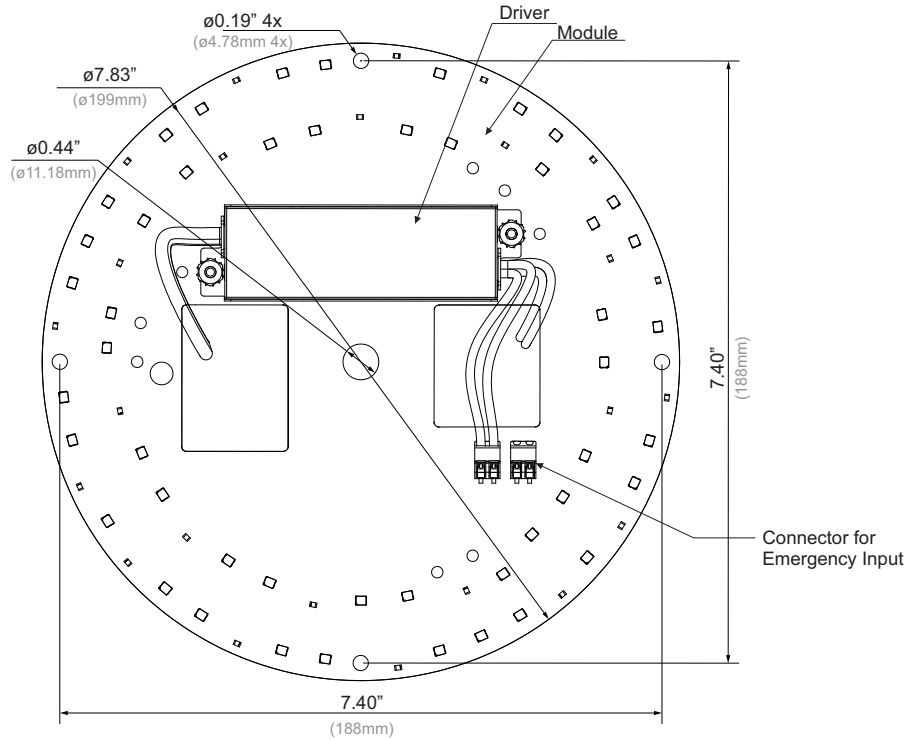
# VKMUNV018RDxxxA



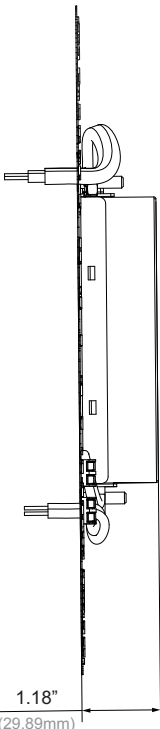
## Mechanical Drawings

(Scale 3 : 5)

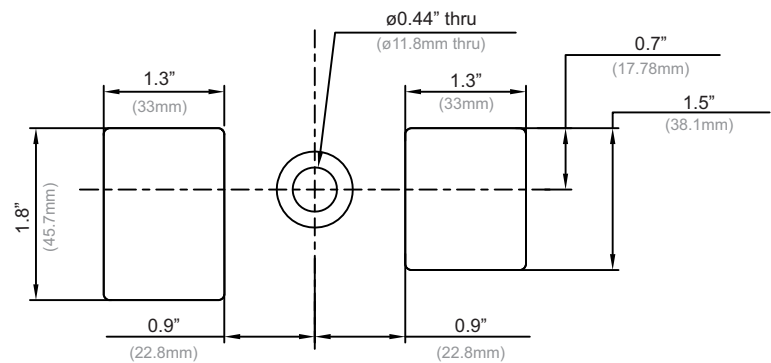
**TOP VIEW**



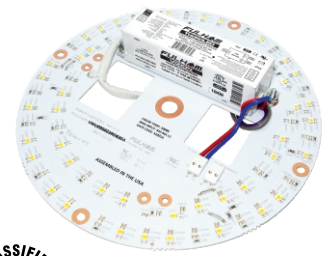
| Overall Dimensions                        |                 |
|---|-----------------|
| Diameter                                  | 7.83" [199mm]   |
| Height                                    | 1.18" [29.89mm] |
| Wire Length                               |                 |
| AC Input (Black / White)                  | 12" [304.8mm]   |
| 0-10V Dimming (Purple (10v+) Pink (10v-)) | 12" [304.8mm]   |



**SIDE VIEW**



**PARTIAL VIEW**



# VKMUNV018RDxxxA

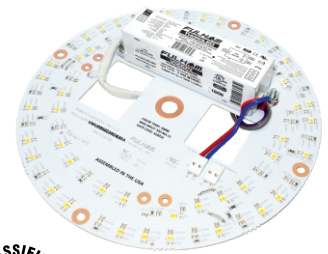


## DC Engine Retrofit Kit Equivalency Chart: FLUO to LED

| DC Engine Retrofit Kit (7.83" Round) |                |                    |          | CFL         |              |            |               |              |          |
|--------------------------------------|----------------|--------------------|----------|-------------|--------------|------------|---------------|--------------|----------|
| DC Engine Retrofit Kit Part Number   | System Wattage | Lumen Output       | Efficacy | CFL Style   | Lamp Wattage | # of Lamps | Total Wattage | Lumen Output | Efficacy |
| VKMUNV018RDxxxA                      | 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) 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.



# VKMUNV018RDxxxA



## DC Engine Retrofit Kit with Emergency Options

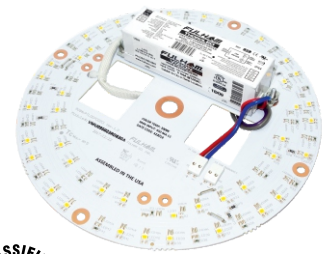
NOTE: Emergency systems are not UL classified for field installation.

| 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) |
|------------------------------------|-------------------------------|-----------------|--|-----------------|------------|-------------|-----------------|------------------------|-------------|
| VKMUNV018RD840A                    | FHS2-UNV-36L/<br>FHS2-UNV-56S | 4W              | FHSBATT8-AA9<br>FHSBATL3-1                     | FHS-HARNESS-175 | 21.5       | 175         | 3.8             | 720 <sup>Ⓢ</sup>       | 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 <sup>Ⓢ</sup>      | 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/<br>FHS2-UNV-56S | 8W              | FHSBATL3-1.5<br>FHSBATL3-1.5S                  | FHS-HARNESS-350 | 22.2       | 350         | 7.8             | 1412 <sup>Ⓢ</sup>      | 182         |
|                                    | FHS2-UNV-36L                  | 10W             | FHSBATL9-6                                     | FHS-HARNESS-450 | 22.4       | 450         | 10.1            | 1791 <sup>Ⓢ</sup>      | 178         |
|                                    | FHSCP-UNV-10P-L-SD            | 10W             | FHSBATL3-3-SD<br>FHSBATL6-1.5L-SD <sup>Ⓢ</sup> | 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/<br>FHS2-UNV-56S | 16W             | FHSBATL3-3                                     | FHS-HARNESS-650 | 22.9       | 650         | 14.9            | 2496 <sup>Ⓢ</sup>      | 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.

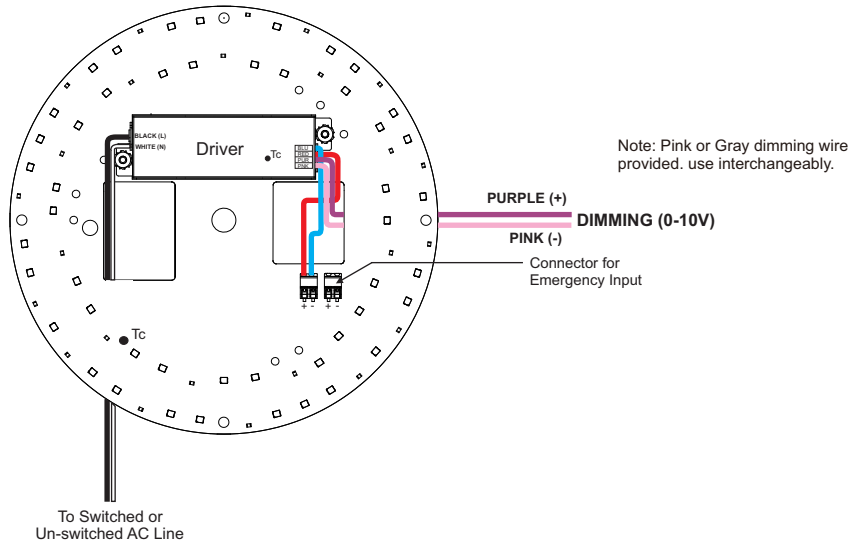




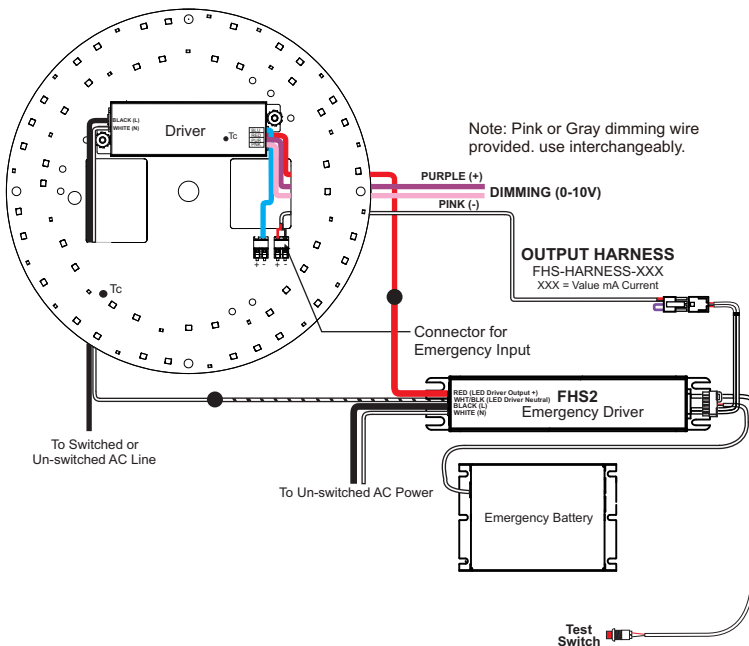
# VKMUNV018RDxxxA



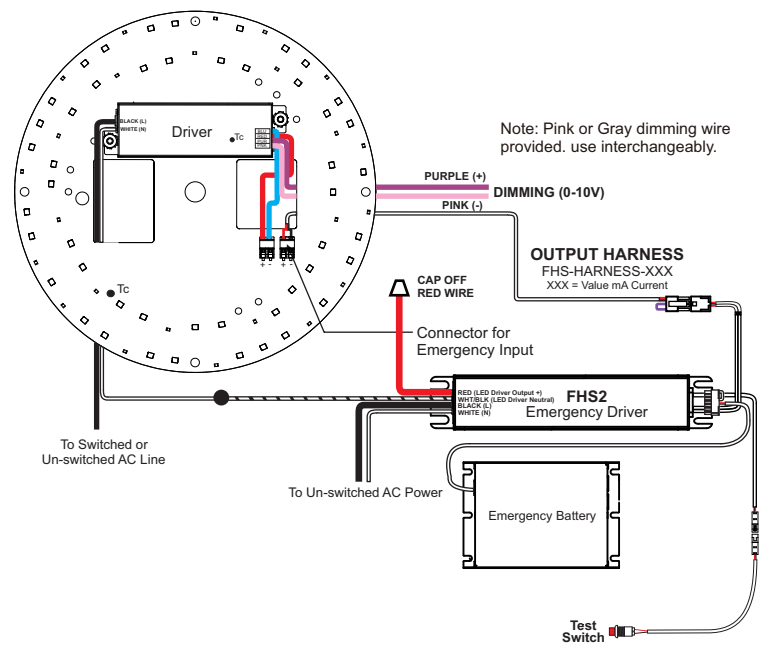
## Wiring Diagram: Standard Option



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

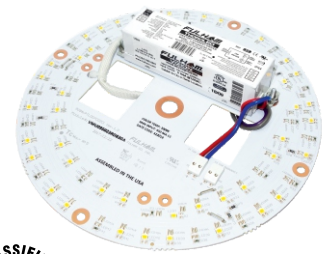


## Wiring Diagram: HotSpot2 (FHS2) EM- In Parallel (Recommended for Fulham LED EM)



### NOTES:

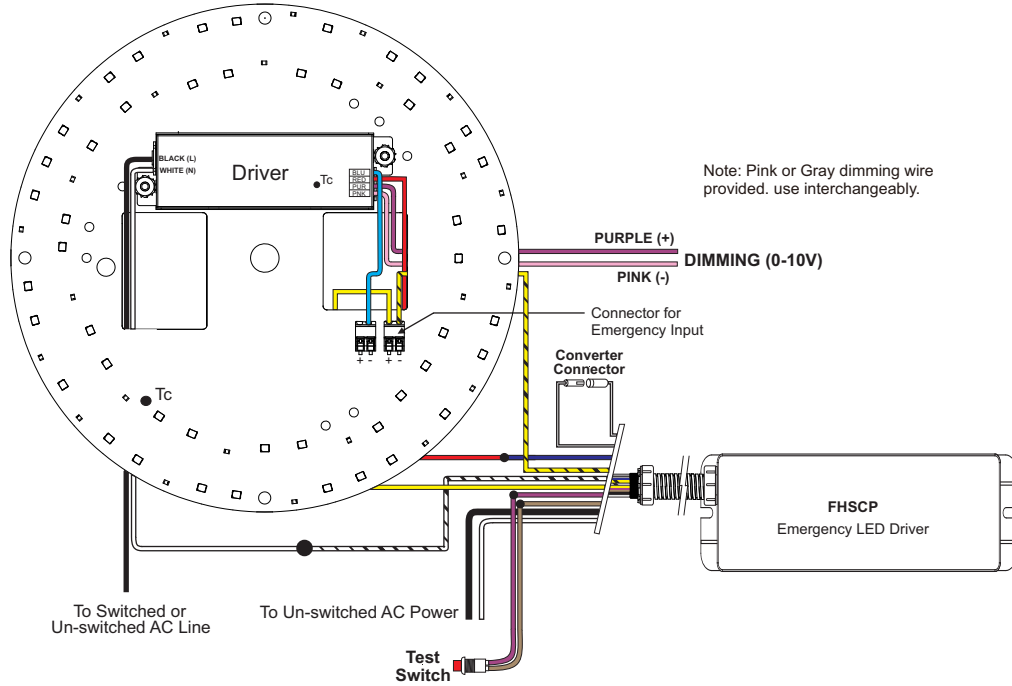
- 1) For reference only, several factors apply.
- 2) Emergency systems are not UL classified for field installation.



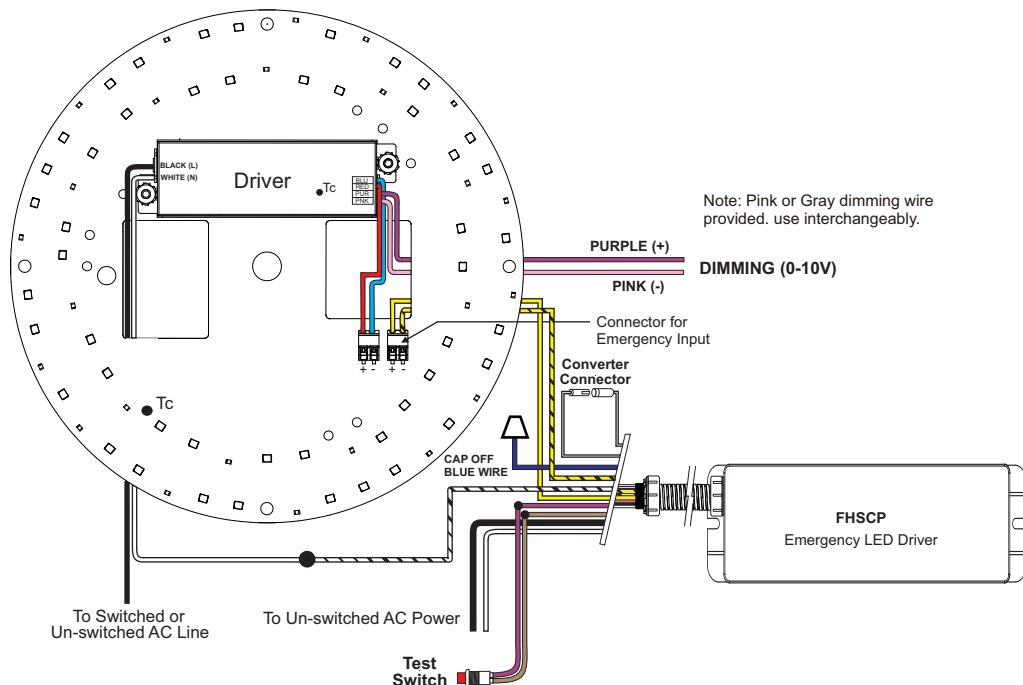
# VKMUNV018RDxxxA



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

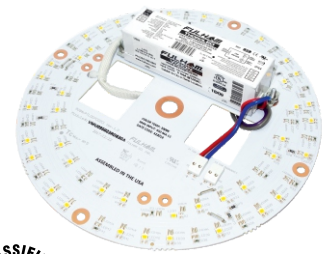


## Wiring Diagram: Constant Power with conduit (FHSCP) EM- In Parallel (Recommended for Fulham LED EM)



**NOTES:**

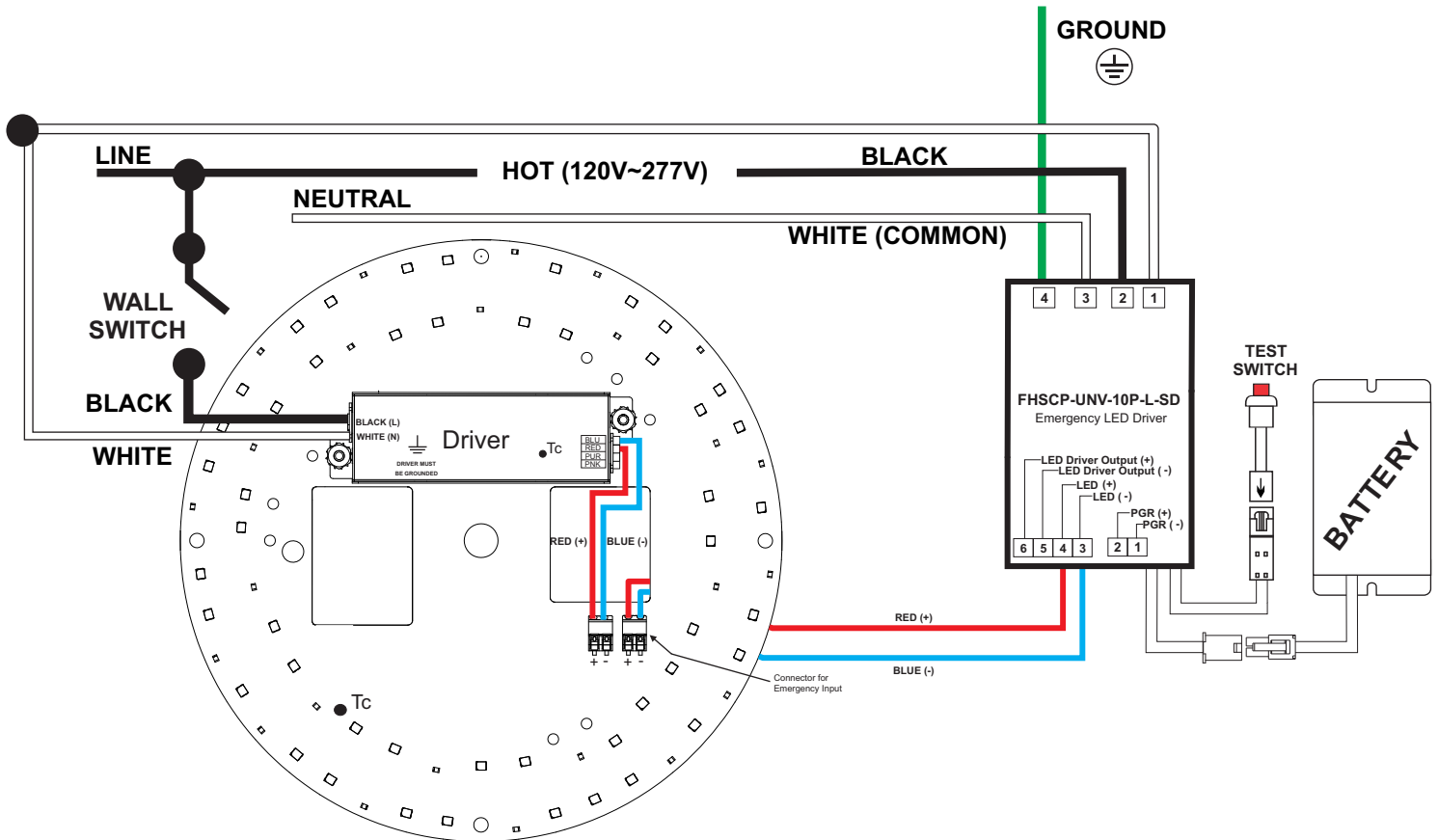
- 1) For reference only, several factors apply.
- 2) Emergency systems are not UL classified for field installation.



# VKMUNV018RDxxxA

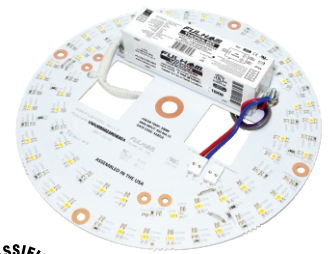


## Wiring Diagram: Parallel Wiring (FHSCP-UNV-10P-L-SD)



### NOTES:

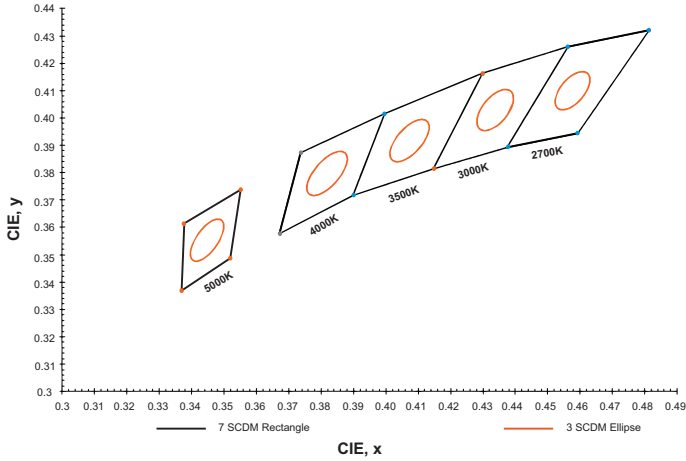
- 1) For reference only, several factors apply.
- 2) Emergency systems are not UL classified for field installation.



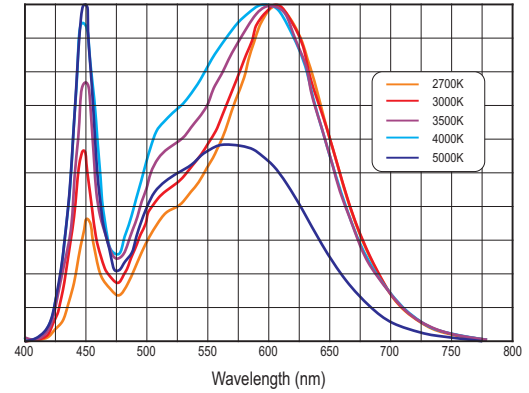
# VKMUNV018RDxxxA



## Color and Binning

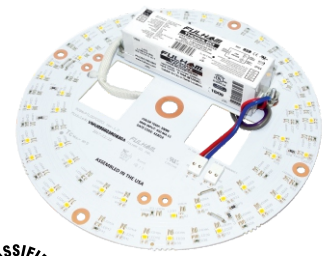


## Optical Spectrum



### 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.



# VKMUNV018RDxxxA

## 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](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)

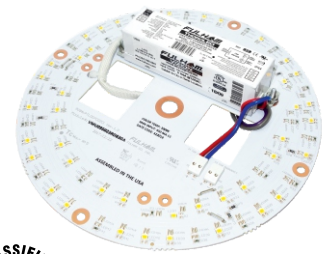
- Fulham LED products should be handled with proper measures to protect against any potential ESD damage.
- When servicing, personnel should be ground and direct contact with LED should be avoided.

### 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.



# VKMUNV018RDxxxA



## Part Number Matrix

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

**Product Line**  
 V = Vizion   <sup>Ⓢ</sup>K = DC Engine Retrofit Kit (cULus Classified)

**Compliance**  
 M = 0-10V   UNV = 120V~277V

**Dimming**  
 018 = 18W

**Estimated Power**  
 RD=Round

**Shape**  
<sup>Ⓢ</sup>8 = 80   <sup>Ⓢ</sup>9 = 90

**CRI**  
<sup>Ⓢ</sup>27 = 2700K   <sup>Ⓢ</sup>30 = 3000K   <sup>Ⓢ</sup>35 = 3500K   <sup>Ⓢ</sup>40 = 4000K   50 = 5000K   57 = 5700K   65 = 6500K

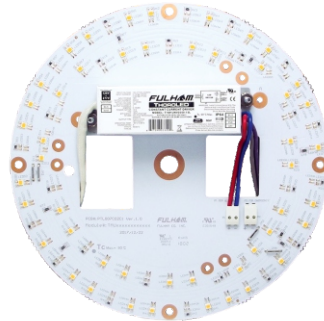
**Color Temperature**  
<sup>Ⓢ</sup>A = CEM1

**Material**

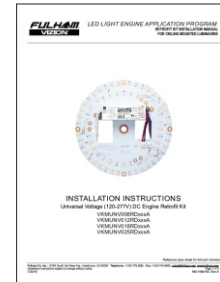
<sup>Ⓢ</sup> Standard Product offering, in addition to 90CRI / 3000K. (All other options are made to order with MOQ and lead time).  
<sup>Ⓢ</sup> DC Engine Retrofit Kit includes mounting hardware, retrofit labels, and installation instructions.

## Product Image: 18W Round DC Engine Retrofit Kit

VKMUNV018RDxxxA



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.

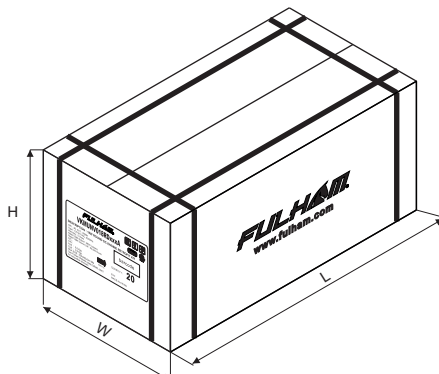


### Hardware Kit: TLC-HW08

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     |
| 14.52 lbs. (6.6 kg) | 20.24 lbs. (9.2 kg) | 20pcs.       |