

## AKMUNVxxxRD9CCTA



### AKMUNVxxxRD9CCTA UNV CCT Selectable DC Engine Retrofit Kit with 0-10V Dimming

- Universal Voltage (120~277) DC Engine
- CCT Selectable: 2700K, 3000K, 3500K, 4000K, 4500K, 5000K
- CRI90 standard
- Potassium Fluorosilicate (PFS) phosphor LEDs to achieve as high efficacy as today's CRI80 LEDs
- Suitable for open or fully enclosed luminaires
- Suitable for luminaires with plastic and glass lenses
- cULus Classified 1598C
- cULus Recognized 8750
- Energy Star Luminaire 2.2 Listed and CSD<sup>①</sup>

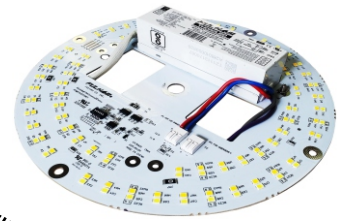
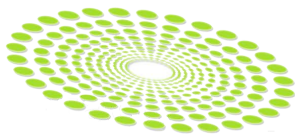
#### General Specifications

|  |   |
|--|---|
| Input Voltage <sup>②</sup>   | 120~277VAC (+/- 10%)  |
| Input Current <sup>②</sup>   | 10W: ~0.085A @120V, ~0.040A @277V    14.5W: ~0.122A @120V, ~0.055A @277V        |
| Input Power <sup>②</sup>   | 21W: ~0.172A @120V, ~0.078A @277V    29.5W: ~0.250A @120V, ~0.110A @277V        |
| Input PF   | 10W, 14.5W, 21W, 29.5W  |
| THD  | >0.98   |
| Input Frequency  | <20%  |
| Module Operating Voltage   | 50/60Hz   |
| Max Lumen Output @ Full Power <sup>②</sup>                         | 10W: 22.2VDC, 14.5W: 33.4VDC, 21W: 23.1VDC, 29.5W: 35.6VDC                      |
| Dimming Type/Range   | 10W - 1400lm, 14.5W - 2160lm, 21W - 2650lm, 29.5W - 3730lm @ 4000K/90CRI        |
| Beam Angle   | 0-10V / 100% ~ 10%  |
| Color Rendering Index  | 120°  |
| Storage Temperature Range  | CRI (Ra)>=90 / R9>=50 / TM-30 R <sub>a</sub> >=85 / TM-30 R <sub>f</sub> >=100  |
| Operating Ambient Temperature Range (Ta)                           | -35°C to 100°C / -31°F to 212°F   |
| Maximum Driver Case Temperature: per UL/ 5 year warranty           | -35°C to 60°C / -31°F to 140°F  |
| Maximum Module Case Temperature                                    | 90°C (194°F) / 80°C (176°F)   |
| Estimated Lumen Maintenance  | Safety: 105°C(221°F)/ L70(>60Khrs): 105°C(221°F)/ L90(36Khrs): 96°C(204.8°F)    |
| Color Consistency  | L70= >60,000 hours @ Tc max 105°C / L90= 36,000 hours @ Tc max 96°C             |
| Inrush Current / Duration  | Binning per ANSI C78.377-2015 @25°C; Typ. 3 SDCM, Max. 5 SDCM                   |
| Line Regulation / Load Regulation                                  | 10W/14.5W: 5A @ 277V / 100us    21W/29.5W: 20A @ 277V / 100us                   |
| Total Overall Ripple LF (<300Hz)/ HF(<40kHz) peak to peak          | <1% @100% Load / <3% @100% Load   |
| Low Frequency Ripple (120Hz ripple peak to peak)                   | <5% @100% Load  |
| Flicker Percentage   | <5% @100% Load  |
| Flicker P <sub>st</sub> / SVM @Min. Dimming Level per NEMA 77-2017 | <7% @100% - 20% Dimming Range   |
| Start-up Time / Standby Power                                      | <5% @<20% Dimming Range   |
| Overall Size   | P <sub>st</sub> : 1.154, 3.789, 2.602, 1.080    SVM: 0.674, 0.620, 0.686, 0.383 |
| Wire Type/ Length  | <500ms / <1W No Load  |
| LED Quantity   | 10W/14.5W: 7.83"Dia. x 0.92"H    21W/29.5W: 7.83"Dia. x 1.18"H                  |
| Driver Part Number   | 18AWG / 12" Black and White wires (Input 120~277VAC)                            |
| Module Part Number   | 18AWG / 12" Gray and Purple wires (Dimming 0-10VDC)                             |
| Weight   | 48pcs. CW + 48pcs. WW   |
| Maximum Screw Installation Torque                                  | T1M1UNV0350-15L   |
| Safety/Compliance  | VMU095023RD9TWA   |
|  | 320g / 0.71lbs.   |
|  | 35in-lb (560in-ozf)   |
|  | 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 2.2 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 80°C (Driver) from the date of manufacture |

① See page #5 "Certification Chart" for exact models

② Measured electrical data per UL file

\*Specifications subject to change without notice.



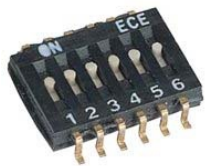
## AKMUNVxxxRD9CCTA



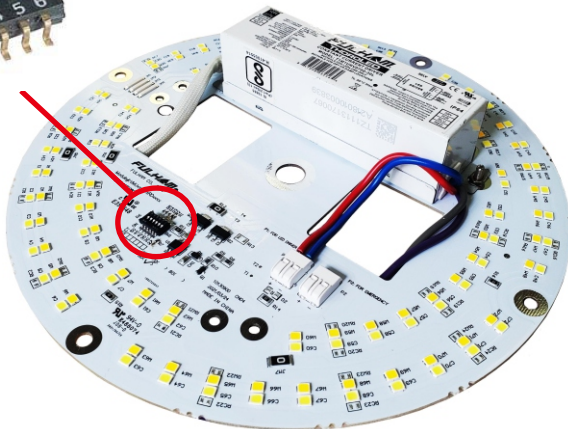
### CCT Selection Indication

1. The AKMUNVxxxRD9CCTA DC Engine Retrofit Kit is a dual-channel LED product, that allows for CCT selection via the dip switch on the PCB. Available CCTs include 2700K, 3000K, 3500K, 4000K, 4500K and 5000K.
2. A pre-set CCT will come from the factory. Check the product label or packaging to see the pre-set CCT level.
3. Change the dip switch position to “ON” (1~6) to set the desired CCT level; Mark the set CCT level on the retrofit kit warning label provided inside the accessory bag.

**NOTE: ONLY keep one dip switch in the “ON” position, not doing so may result in an undesired CCT.**



CCT Selection Dip Switch



CCT Indication Table

|       | 1   | 2   | 3   | 4   | 5   | 6   |
|-------|-----|-----|-----|-----|-----|-----|
| 2700K | ON  | OFF | OFF | OFF | OFF | OFF |
| 3000K | OFF | ON  | OFF | OFF | OFF | OFF |
| 3500K | OFF | OFF | ON  | OFF | OFF | OFF |
| 4000K | OFF | OFF | OFF | ON  | OFF | OFF |
| 4500K | OFF | OFF | OFF | OFF | ON  | OFF |
| 5000K | OFF | OFF | OFF | OFF | OFF | ON  |

2700K

3000K

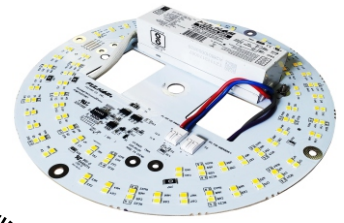
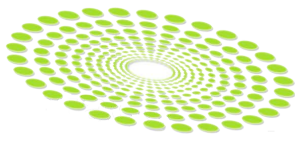
3500K

4000K

4500K

5000K

\*Specifications subject to change without notice.



## AKMUNV008RD9CCTA

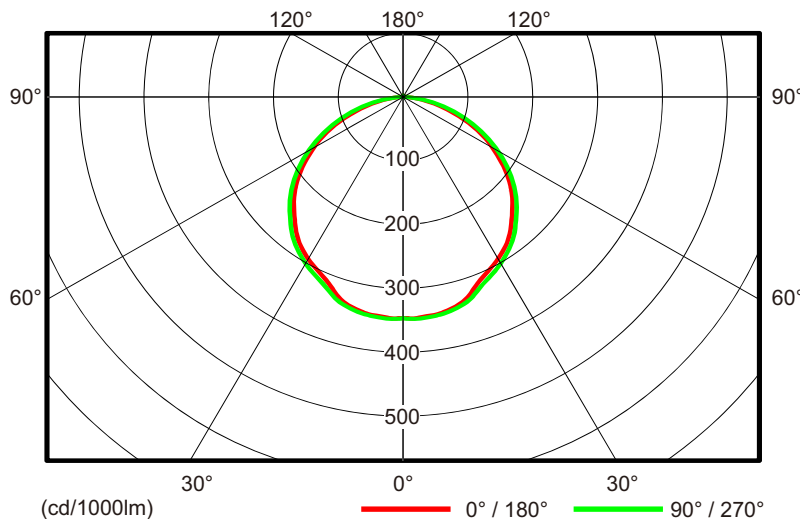


### Electrical and Optical Specifications

| CRI | Color Temperature | DC Engine Retrofit Kit Part Number | Input Power | Nominal Luminous Flux @ 90 CRI | Engine Efficacy @ 90 CRI |
|-----|-------------------|------------------------------------|-------------|--------------------------------|--------------------------|
| 90  | 2700K             | AKMUNV008RD9CCTA                   | 10W         | 1340 lumens                    | 134 lm/W                 |
|     | 3000K             | AKMUNV008RD9CCTA                   | 10W         | 1360 lumens                    | 136 lm/W                 |
|     | 3500K             | AKMUNV008RD9CCTA                   | 10W         | 1380 lumens                    | 138 lm/W                 |
|     | 4000K             | AKMUNV008RD9CCTA                   | 10W         | 1400 lumens                    | 140 lm/W                 |
|     | 4500K             | AKMUNV008RD9CCTA                   | 10W         | 1400 lumens                    | 140 lm/W                 |
|     | 5000K             | AKMUNV008RD9CCTA                   | 10W         | 1400 lumens                    | 140 lm/W                 |

### Light Distribution

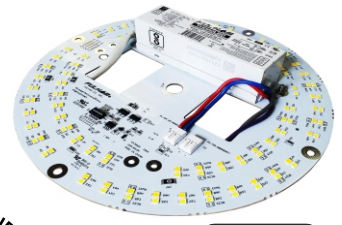
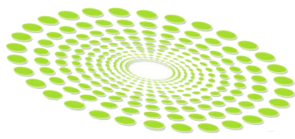
| Zone     | Zone Flux | Zone Flux% | Sum Zone Flux | Sum Zone Flux% |
|----------|-----------|------------|---------------|----------------|
| 0 ~ 10   | 45.6      | 3.3%       | 45.6          | 3.3%           |
| 10 ~ 20  | 130.7     | 9.5%       | 176.3         | 12.8%          |
| 20 ~ 30  | 194.5     | 14.1%      | 370.8         | 26.9%          |
| 30 ~ 40  | 238.3     | 17.3%      | 609.1         | 44.2%          |
| 40 ~ 50  | 251.3     | 18.2%      | 860.4         | 62.4%          |
| 50 ~ 60  | 228.2     | 16.6%      | 1088.6        | 79.0%          |
| 60 ~ 70  | 169.8     | 12.3%      | 1258.4        | 91.3%          |
| 70 ~ 80  | 91        | 6.6%       | 1349.4        | 97.9%          |
| 80 ~ 90  | 22.5      | 1.6%       | 1371.9        | 99.5%          |
| 90 ~ 180 | 6.6       | 0.5%       | 1378.5        | 100.0%         |



#### NOTES:

- 1) Electrical and optical specifications are based on Tc mod = 25°C. Reference Amb. Temp. vs Rel. Lum. Flux for other temperatures.
- 2) Performance for these components have been tested in accordance with Energy Star.
- 3) Refer to Energy Star CSD or Luminaires 2.2 for actual measurements on specific part numbers. Energy Star testing is done at elevated case temperature.
- 4) Specifications are subject to change without notice.
- 5) 70CRI & 80CRI are NOT available.

\*Specifications subject to change without notice.



## AKMUNV012RD9CCTA

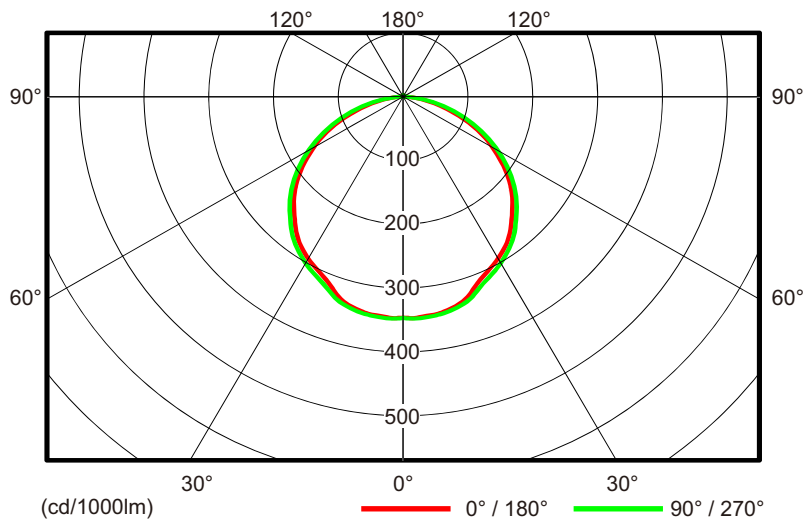


### Electrical and Optical Specifications

| CRI | Color Temperature | DC Engine Retrofit Kit Part Number | Input Power | Nominal Luminous Flux @ 90 CRI | Engine Efficacy @ 90 CRI |
|-----|-------------------|------------------------------------|-------------|--------------------------------|--------------------------|
| 90  | 2700K             | AKMUNV012RD9CCTA                   | 14.5W       | 2070 lumens                    | 142 lm/W                 |
|     | 3000K             | AKMUNV012RD9CCTA                   | 14.5W       | 2100 lumens                    | 144 lm/W                 |
|     | 3500K             | AKMUNV012RD9CCTA                   | 14.5W       | 2130 lumens                    | 146 lm/W                 |
|     | 4000K             | AKMUNV012RD9CCTA                   | 14.5W       | 2160 lumens                    | 148 lm/W                 |
|     | 4500K             | AKMUNV012RD9CCTA                   | 14.5W       | 2160 lumens                    | 148 lm/W                 |
|     | 5000K             | AKMUNV012RD9CCTA                   | 14.5W       | 2160 lumens                    | 148 lm/W                 |

### Light Distribution

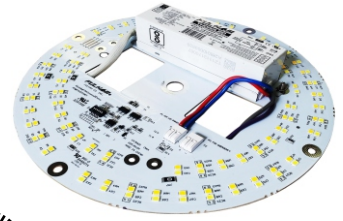
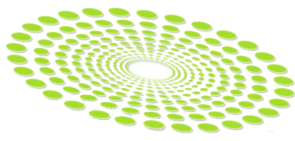
| Zone     | Zone Flux | Zone Flux% | Sum Zone Flux | Sum Zone Flux% |
|----------|-----------|------------|---------------|----------------|
| 0 ~ 10   | 67.6      | 3.3%       | 67.6          | 3.3%           |
| 10 ~ 20  | 195.1     | 9.4%       | 262.7         | 12.7%          |
| 20 ~ 30  | 295.4     | 14.3%      | 558.1         | 26.9%          |
| 30 ~ 40  | 364.6     | 17.6%      | 922.7         | 44.5%          |
| 40 ~ 50  | 379.8     | 18.3%      | 1302.5        | 62.8%          |
| 50 ~ 60  | 340.3     | 16.4%      | 1642.8        | 79.3%          |
| 60 ~ 70  | 245.7     | 11.9%      | 1888.5        | 91.1%          |
| 70 ~ 80  | 132.2     | 6.4%       | 2020.7        | 97.5%          |
| 80 ~ 90  | 37.4      | 1.8%       | 2058.1        | 99.3%          |
| 90 ~ 180 | 14.3      | 0.7%       | 2072.4        | 100.0%         |



### NOTES:

- 1) Electrical and optical specifications are based on Tc mod = 25°C. Reference Amb. Temp. vs Rel. Lum. Flux for other temperatures.
- 2) Performance for these components have been tested in accordance with Energy Star.
- 3) Refer to Energy Star CSD or Luminaires 2.2 for actual measurements on specific part numbers. Energy Star testing is done at elevated case temperature.
- 4) Specifications are subject to change without notice.
- 5) 70CRI & 80CRI are NOT available.

\*Specifications subject to change without notice.



## AKMUNV018RD9CCTA

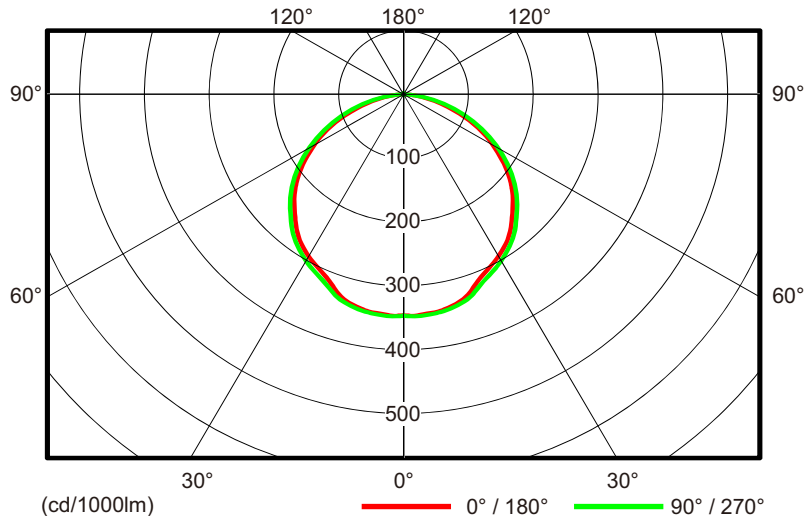


### Electrical and Optical Specifications

| CRI | Color Temperature | DC Engine Retrofit Kit Part Number | Input Power | Nominal Luminous Flux @ 90 CRI | Engine Efficacy @ 90 CRI |
|-----|-------------------|------------------------------------|-------------|--------------------------------|--------------------------|
| 90  | 2700K             | AKMUNV018RD9CCTA                   | 21W         | 2540 lumens                    | 121 lm/W                 |
|     | 3000K             | AKMUNV018RD9CCTA                   | 21W         | 2575 lumens                    | 122 lm/W                 |
|     | 3500K             | AKMUNV018RD9CCTA                   | 21W         | 2615 lumens                    | 124 lm/W                 |
|     | 4000K             | AKMUNV018RD9CCTA                   | 21W         | 2650 lumens                    | 126 lm/W                 |
|     | 4500K             | AKMUNV018RD9CCTA                   | 21W         | 2650 lumens                    | 126 lm/W                 |
|     | 5000K             | AKMUNV018RD9CCTA                   | 21W         | 2650 lumens                    | 126 lm/W                 |

### Light Distribution

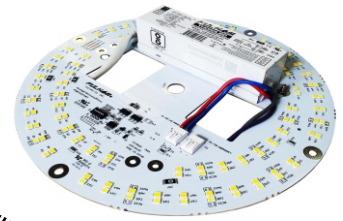
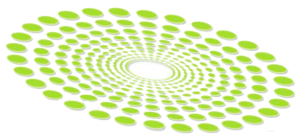
| Zone     | Zone Flux | Zone Flux% | Sum Zone Flux | Sum Zone Flux% |
|----------|-----------|------------|---------------|----------------|
| 0 ~ 10   | 83.2      | 3.3%       | 83.2          | 3.3%           |
| 10 ~ 20  | 239.9     | 9.5%       | 323.1         | 12.7%          |
| 20 ~ 30  | 358.0     | 14.1%      | 681.1         | 26.9%          |
| 30 ~ 40  | 439.8     | 17.4%      | 1120.9        | 44.2%          |
| 40 ~ 50  | 463.2     | 18.3%      | 1584.1        | 62.5%          |
| 50 ~ 60  | 415.1     | 16.4%      | 1999.2        | 78.9%          |
| 60 ~ 70  | 308.6     | 12.2%      | 2307.8        | 91.1%          |
| 70 ~ 80  | 167.7     | 6.6%       | 2475.5        | 97.7%          |
| 80 ~ 90  | 44.4      | 1.8%       | 2519.9        | 99.4%          |
| 90 ~ 180 | 14.7      | 0.6%       | 2534.6        | 100.0%         |



#### NOTES:

- 1) Electrical and optical specifications are based on Tc mod = 25°C. Reference Amb. Temp. vs Rel. Lum. Flux for other temperatures.
- 2) Performance for these components have been tested in accordance with Energy Star.
- 3) Refer to Energy Star CSD or Luminaires 2.2 for actual measurements on specific part numbers. Energy Star testing is done at elevated case temperature.
- 4) Specifications are subject to change without notice.
- 5) 70CRI & 80CRI are NOT available.

\*Specifications subject to change without notice.



## AKMUNV025RD9CCTA

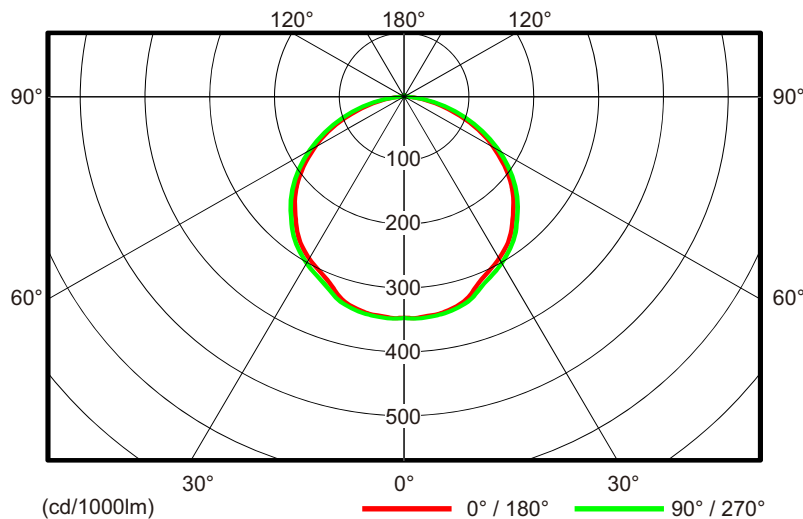


### Electrical and Optical Specifications

| CRI | Color Temperature | DC Engine Retrofit Kit Part Number | Input Power | Nominal Luminous Flux @ 90 CRI | Engine Efficacy @ 90 CRI |
|-----|-------------------|------------------------------------|-------------|--------------------------------|--------------------------|
| 90  | 2700K             | AKMUNV025RD9CCTA                   | 29.5W       | 3570 lumens                    | 121 lm/W                 |
|     | 3000K             | AKMUNV025RD9CCTA                   | 29.5W       | 3620 lumens                    | 122 lm/W                 |
|     | 3500K             | AKMUNV025RD9CCTA                   | 29.5W       | 3675 lumens                    | 124 lm/W                 |
|     | 4000K             | AKMUNV025RD9CCTA                   | 29.5W       | 3730 lumens                    | 126 lm/W                 |
|     | 4500K             | AKMUNV025RD9CCTA                   | 29.5W       | 3730 lumens                    | 126 lm/W                 |
|     | 5000K             | AKMUNV025RD9CCTA                   | 29.5W       | 3730 lumens                    | 126 lm/W                 |

### Light Distribution

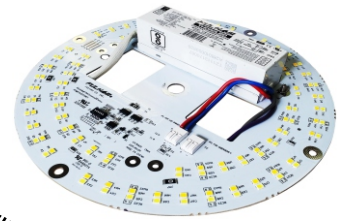
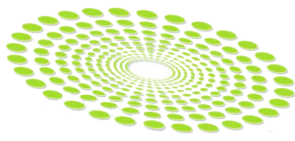
| Zone     | Zone Flux | Zone Flux% | Sum Zone Flux | Sum Zone Flux% |
|----------|-----------|------------|---------------|----------------|
| 0 ~ 10   | 117.4     | 3.3%       | 117.4         | 3.3%           |
| 10 ~ 20  | 339.6     | 9.5%       | 457.0         | 12.7%          |
| 20 ~ 30  | 514.7     | 14.4%      | 971.7         | 27.1%          |
| 30 ~ 40  | 629.1     | 17.5%      | 1600.8        | 44.6%          |
| 40 ~ 50  | 645.3     | 18.0%      | 2246.1        | 62.6%          |
| 50 ~ 60  | 576.0     | 16.1%      | 2822.1        | 78.7%          |
| 60 ~ 70  | 425.7     | 11.9%      | 3247.8        | 90.6%          |
| 70 ~ 80  | 235.0     | 6.6%       | 3482.8        | 97.1%          |
| 80 ~ 90  | 69.0      | 1.9%       | 3551.8        | 99.0%          |
| 90 ~ 180 | 34.3      | 1.0%       | 3586.1        | 100.0%         |



### NOTES:

- 1) Electrical and optical specifications are based on Tc mod = 25°C. Reference Amb. Temp. vs Rel. Lum. Flux for other temperatures.
- 2) Performance for these components have been tested in accordance with Energy Star.
- 3) Refer to Energy Star CSD or Luminaires 2.2 for actual measurements on specific part numbers. Energy Star testing is done at elevated case temperature.
- 4) Specifications are subject to change without notice.
- 5) 70CRI & 80CRI are NOT available.

\*Specifications subject to change without notice.



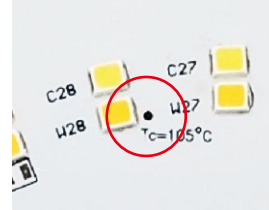
## AKMUNVxxxRD9CCTA



### Thermal Specifications

#### ③ DC Engine Retrofit Kit

|                                     |                                 |
|-------------------------------------|---------------------------------|
| 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     | 105°C / 221°F                   |

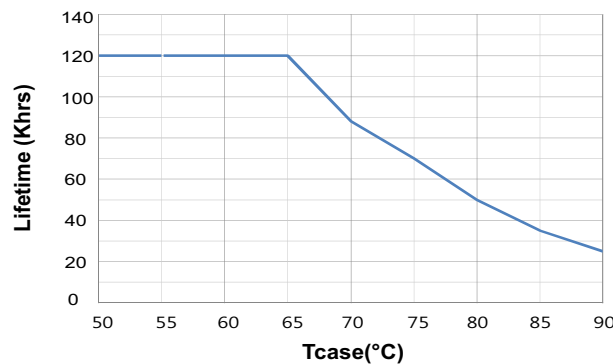


Tc located on module



Tc located on driver

### LED Driver Lifetime vs. Tcase



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

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

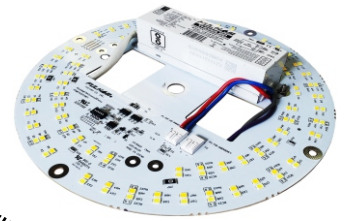
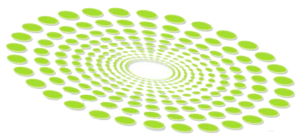
| Module Case Temperature (Tc) | Total Vf Multiplier | Luminous Flux Multiplier |
|------------------------------|---------------------|--------------------------|
| 25°C                         | 1.000               | 1.000                    |
| 30°C                         | 0.998               | 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 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

\*Specifications subject to change without notice.



## AKMUNVxxxRD9CCTA



### Certification Chart

| Classification | Model | AKMUNVxxxRD9CCTA         |
|----------------|-------|--------------------------|
|                |       | YES                      |
|                |       | YES<br>(Driver & Module) |
|                |       | YES                      |
|                |       | YES<br>(Exclude 4500K)   |
|                |       | YES<br>(Exclude 4500K)   |

### Energy Star™ TM-21 Calculator Data

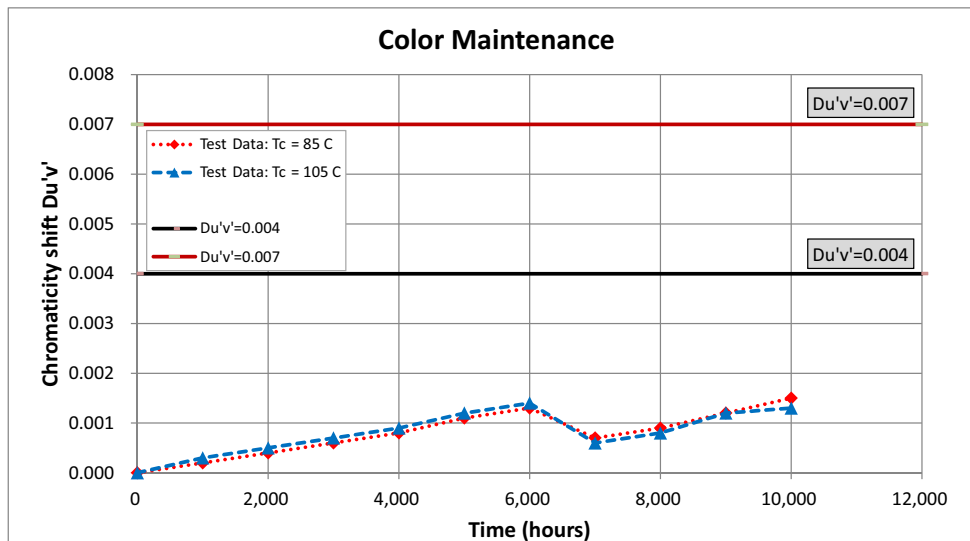
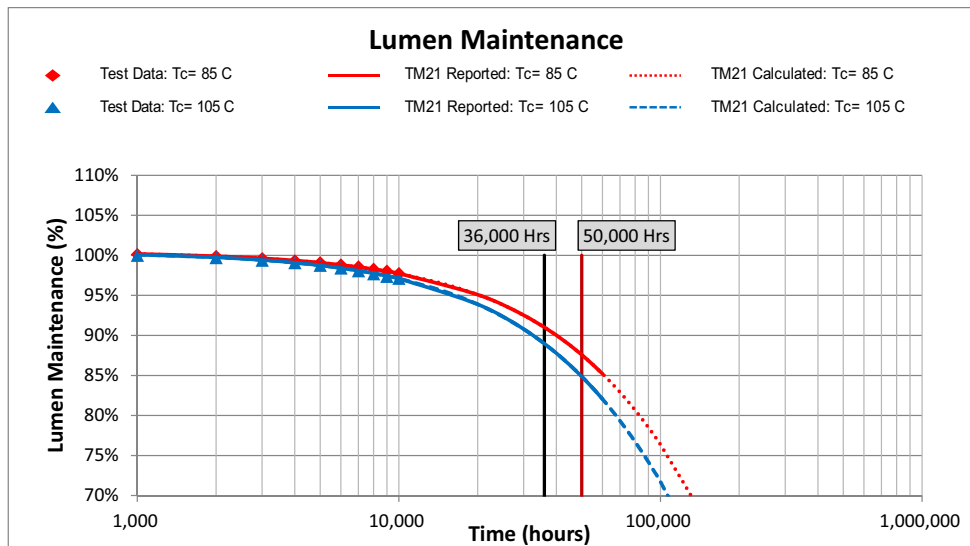
| Tc Module | Reported L70 | Reported L90 |
|-----------|--------------|--------------|
| 85°C      | >60,000 Hrs  | 40,000 Hrs   |
| 96°C      | >60,000 Hrs  | 36,000 Hrs   |
| 105°C     | >60,000 Hrs  | 33,000 Hrs   |

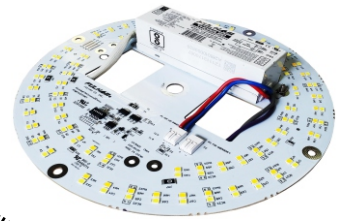
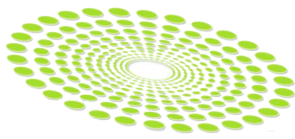
| Tc Module | Calculated L70 | Calculated L90 |
|-----------|----------------|----------------|
| 85°C      | 131,000 Hrs    | 40,000 Hrs     |
| 96°C      | 117,000 Hrs    | 36,000 Hrs     |
| 105°C     | 106,000 Hrs    | 33,000 Hrs     |

- 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)
- Energy Star Listed

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





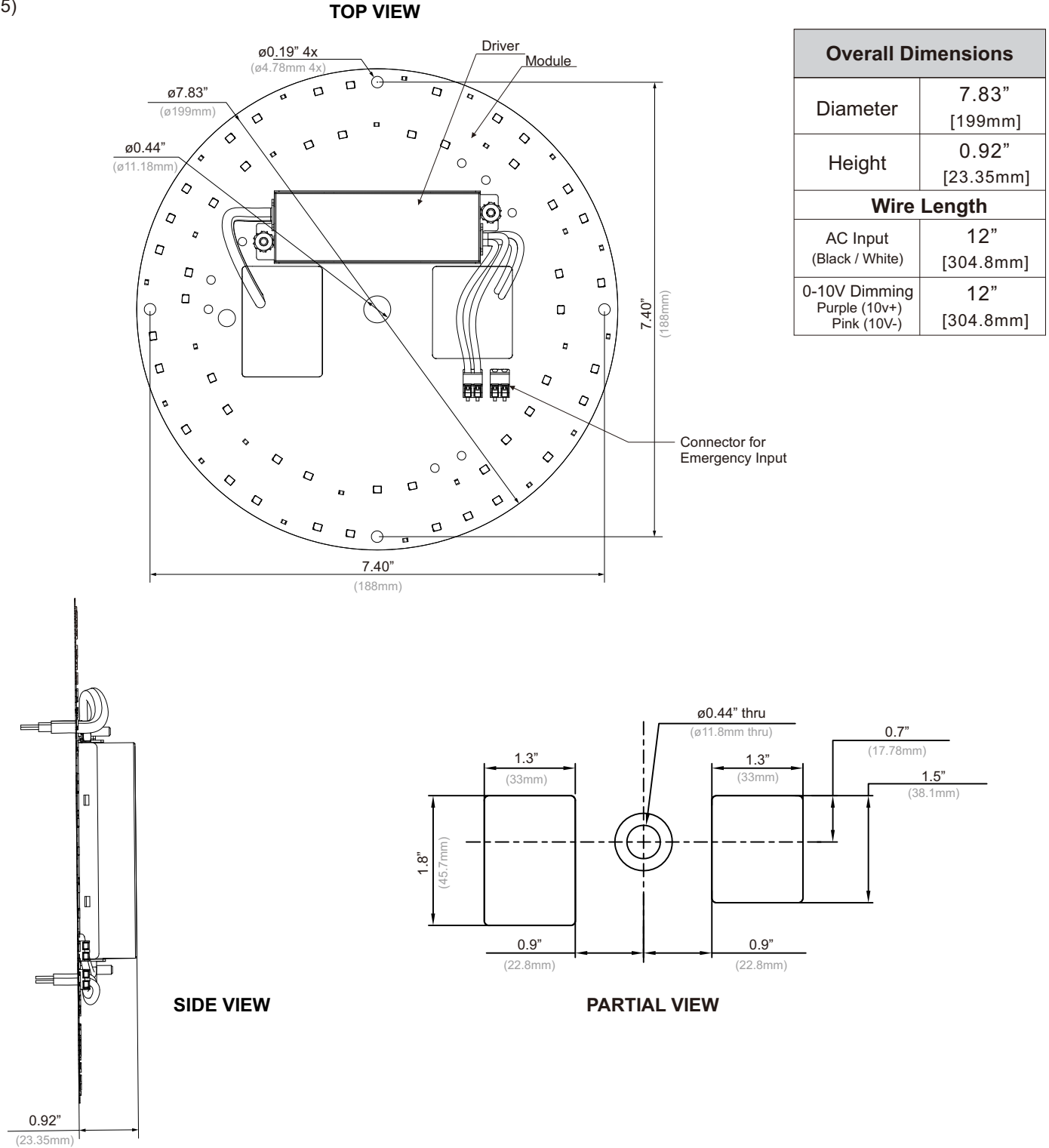


## AKMUNVxxxRD9CCTA

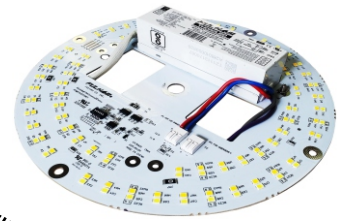
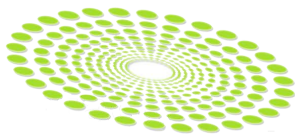


### Mechanical Drawings

(Scale 3 : 5)



\*Specifications subject to change without notice.



## AKMUNVxxxRD9CCTA



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

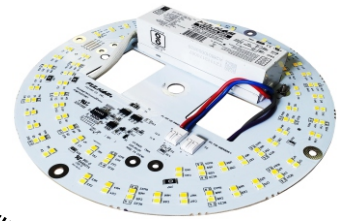
| DC Engine Retrofit Kit (7.8" Round) |                |                    |          | CFL       |              |            |               |              |          |
|-------------------------------------|----------------|--------------------|----------|-----------|--------------|------------|---------------|--------------|----------|
| DC Engine Retrofit Kit Part Number  | System Wattage | Lumen Output       | Efficacy | CFL Style | Lamp Wattage | # of Lamps | Total Wattage | Lumen Output | Efficacy |
| AKMUNV008RD9CCTA                    | 10W            | 1400 lm (4K/90CRI) | 140 lm/W | Quad      | 13W          | 1          | 13W           | 775 lm       | 59 lm/W  |
|                                     |                |                    |          |           | 18W          | 1          | 18W           | 1075 lm      | 63 lm/W  |
|                                     |                |                    |          | Triple    | 13W          | 1          | 13W           | 825 lm       | 63 lm/W  |
|                                     |                |                    |          |           | 18W          | 1          | 18W           | 1020 lm      | 56 lm/W  |
|                                     |                |                    |          | Quad      | 13W          | 2          | 26W           | 1550 lm      | 59 lm/W  |
|                                     |                |                    |          |           | 26W          | 1          | 26W           | 1550 lm      | 59 lm/W  |
|                                     |                |                    |          | Triple    | 13W          | 2          | 26W           | 1650 lm      | 63 lm/W  |
|                                     |                |                    |          |           | 26W          | 1          | 26W           | 1536 lm      | 59 lm/W  |
| Circline T5                         | 22W            | 1                  | 22W      | 1530 lm   | 69 lm/W      |            |               |              |          |
| Circline T9                         | 22W            | 1                  | 22W      | 775 lm    | 35 lm/W      |            |               |              |          |

| DC Engine Retrofit Kit (7.8" Round) |                |                    |          | CFL       |              |            |               |              |          |
|-------------------------------------|----------------|--------------------|----------|-----------|--------------|------------|---------------|--------------|----------|
| DC Engine Retrofit Kit Part Number  | System Wattage | Lumen Output       | Efficacy | CFL Style | Lamp Wattage | # of Lamps | Total Wattage | Lumen Output | Efficacy |
| AKMUNV012RD9CCTA                    | 15W            | 2160 lm (4K/90CRI) | 148 lm/W | Quad      | 13W          | 1          | 13W           | 775 lm       | 59 lm/W  |
|                                     |                |                    |          |           | 18W          | 1          | 18W           | 1075 lm      | 63 lm/W  |
|                                     |                |                    |          | Triple    | 13W          | 1          | 13W           | 825 lm       | 63 lm/W  |
|                                     |                |                    |          |           | 18W          | 1          | 18W           | 1020 lm      | 56 lm/W  |
|                                     |                |                    |          | Quad      | 13W          | 2          | 26W           | 1550 lm      | 59 lm/W  |
|                                     |                |                    |          |           | 26W          | 1          | 26W           | 1550 lm      | 59 lm/W  |
|                                     |                |                    |          | Triple    | 13W          | 2          | 26W           | 1650 lm      | 63 lm/W  |
|                                     |                |                    |          |           | 26W          | 1          | 26W           | 1536 lm      | 59 lm/W  |
| 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.

\*Specifications subject to change without notice.



## AKMUNVxxxRD9CCTA



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

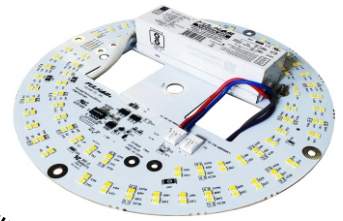
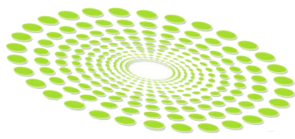
| DC Engine Retrofit Kit (7.8" Round) |                |                       |          | CFL         |              |            |               |              |          |
|-------------------------------------|----------------|-----------------------|----------|-------------|--------------|------------|---------------|--------------|----------|
| DC Engine Retrofit Kit Part Number  | System Wattage | Lumen Output          | Efficacy | CFL Style   | Lamp Wattage | # of Lamps | Total Wattage | Lumen Output | Efficacy |
| AKMUNV018RD9CCTA                    | 21W            | 2650 lm<br>(4K/90CRI) | 126 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  |

| DC Engine Retrofit Kit (7.8" Round) |                |                       |          | CFL         |              |            |               |              |          |
|-------------------------------------|----------------|-----------------------|----------|-------------|--------------|------------|---------------|--------------|----------|
| DC Engine Retrofit Kit Part Number  | System Wattage | Lumen Output          | Efficacy | CFL Style   | Lamp Wattage | # of Lamps | Total Wattage | Lumen Output | Efficacy |
| AKMUNV025RD9CCTA                    | 30W            | 3730 lm<br>(4K/90CRI) | 126 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.

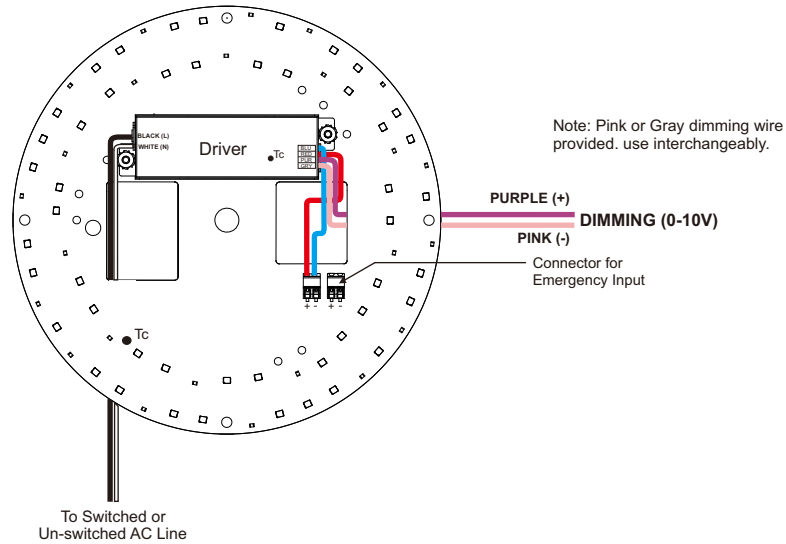
\*Specifications subject to change without notice.



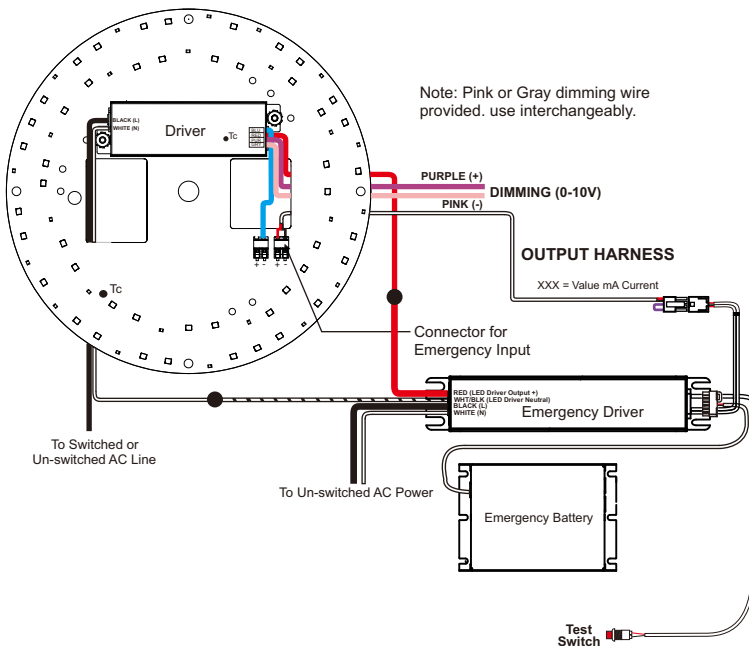
## AKMUNVxxxRD9CCTA



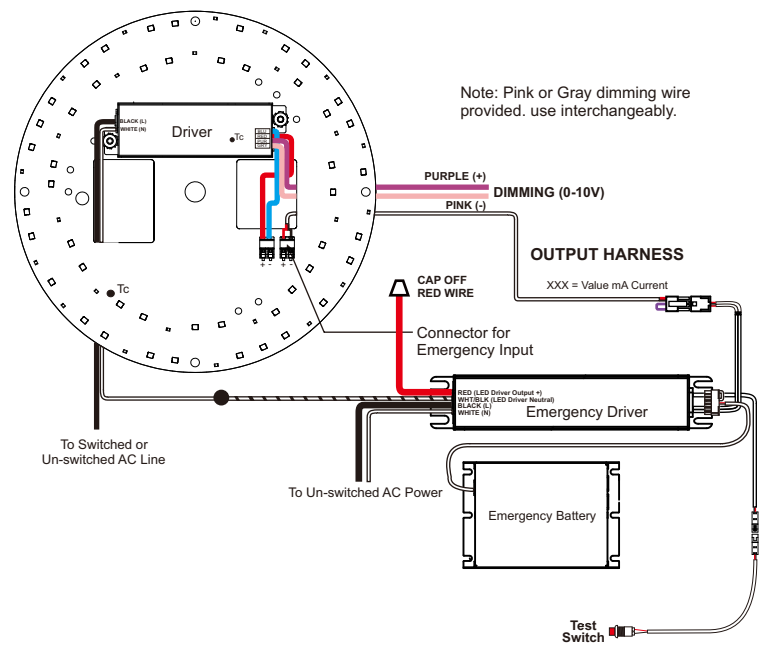
### Wiring Diagram: Standard Option



### Wiring Diagram: Opt. 1 EM- Pass Through



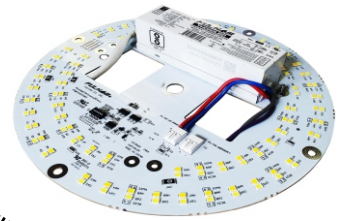
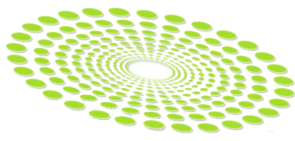
### Wiring Diagram: Opt. 2 EM- In Parallel



#### NOTES:

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

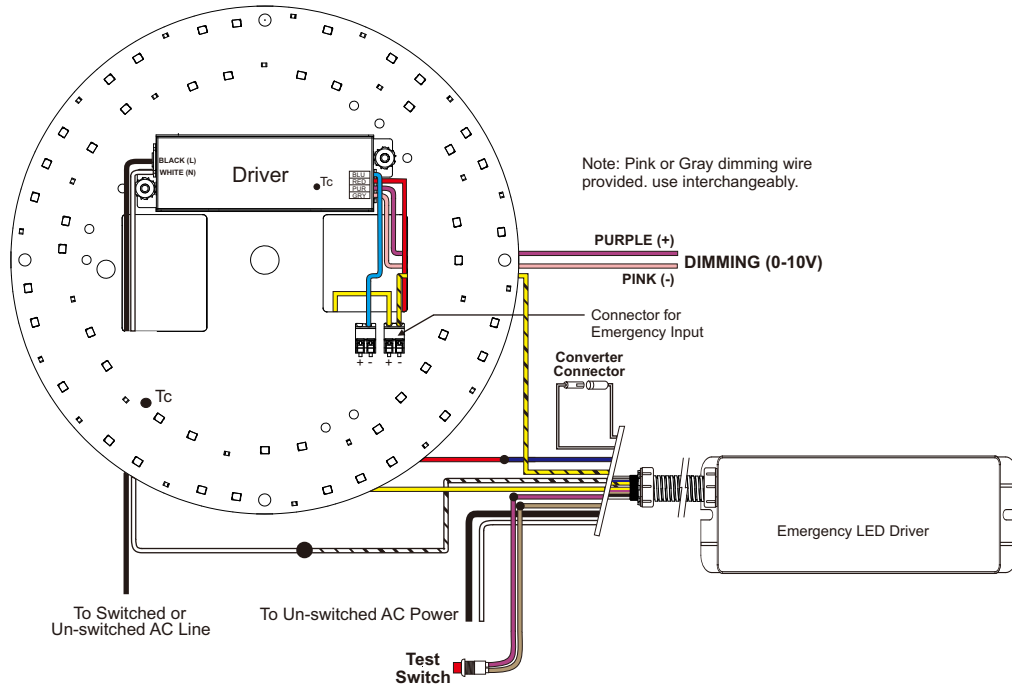
\*Specifications subject to change without notice.



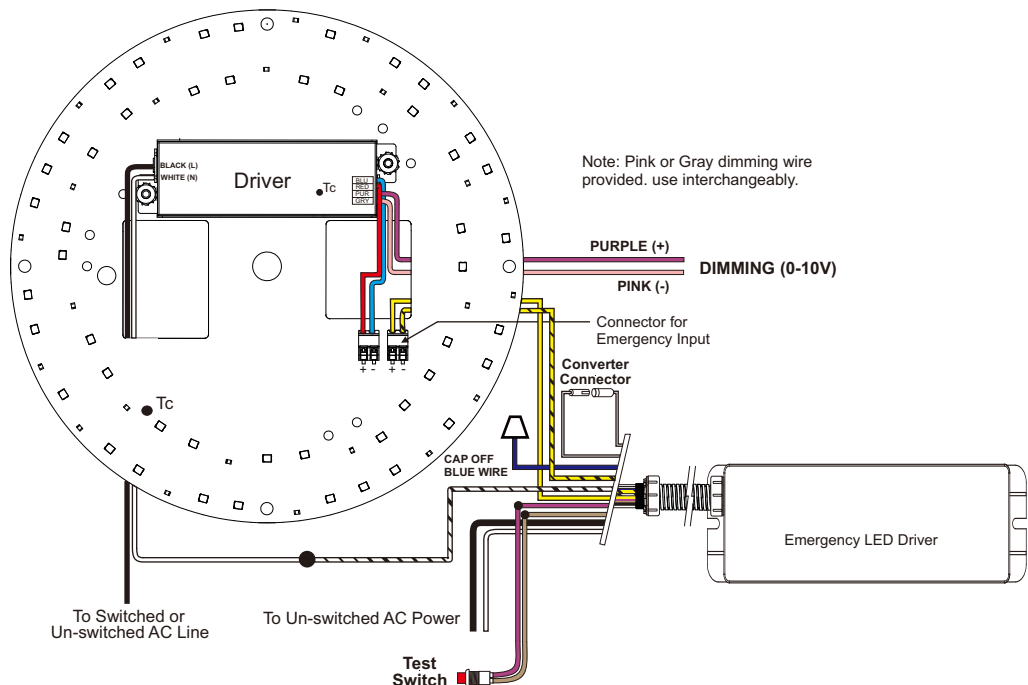
## AKMUNVxxxRD9CCTA



### Wiring Diagram: Constant Power with Emergency Driver EM- Pass Through



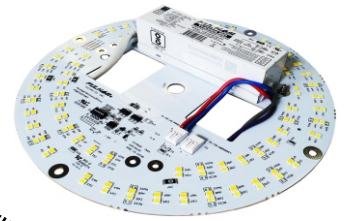
### Wiring Diagram: Constant Power with conduit EM- In Parallel



#### NOTES:

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

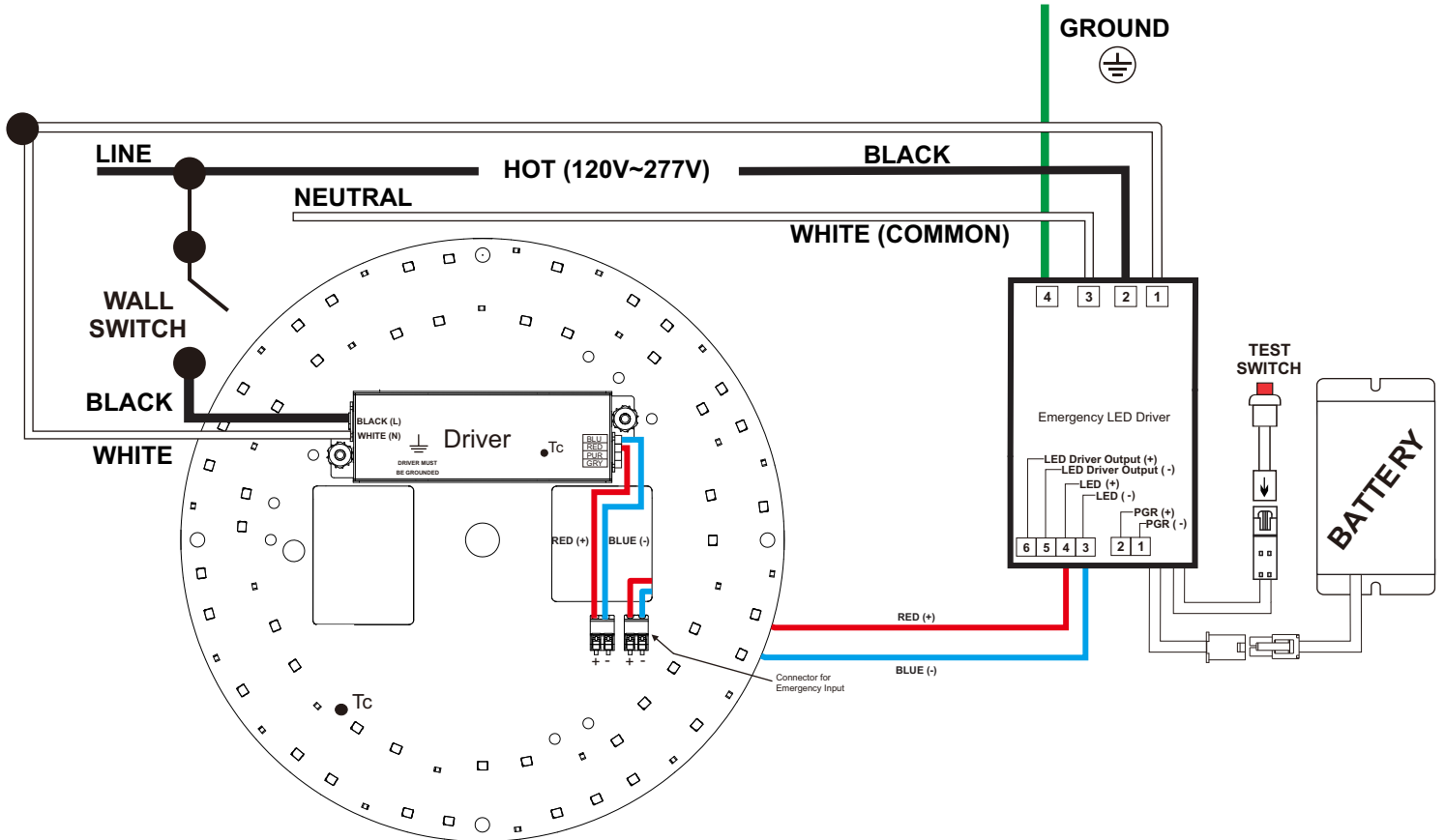
\*Specifications subject to change without notice.



## AKMUNVxxxRD9CCTA



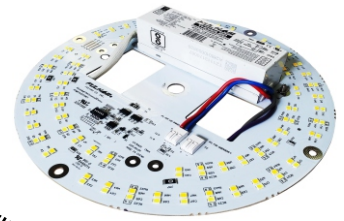
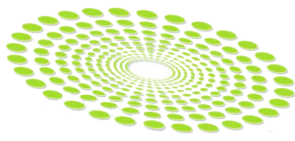
### Wiring Diagram: Parallel Wiring



#### NOTES:

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

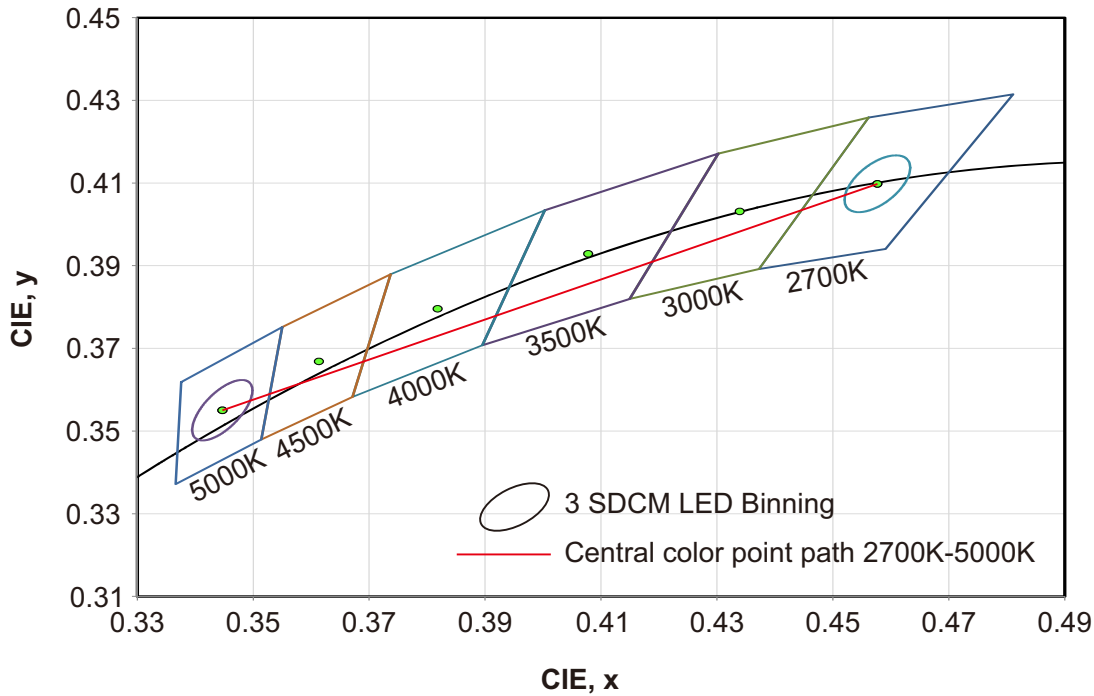
\*Specifications subject to change without notice.



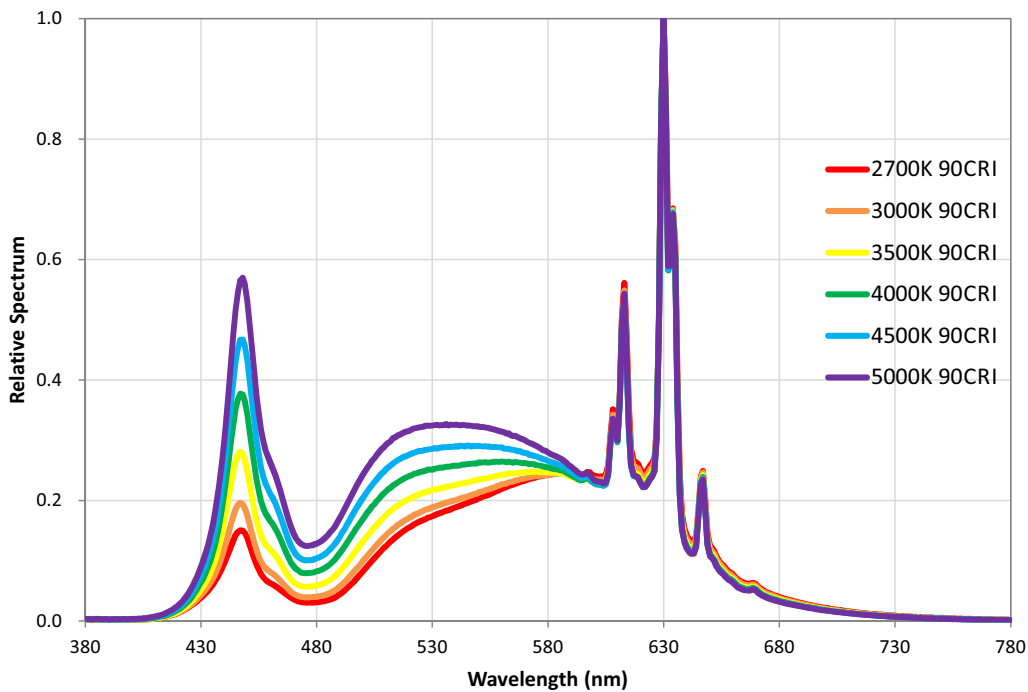
## AKMUNVxxxRD9CCTA



### Color and Binning



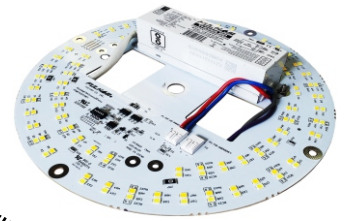
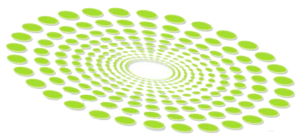
### Optical Spectrum



#### 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.

\*Specifications subject to change without notice.



## AKMUNVxxxRD9CCTA



### 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:



#### 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)

- 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.

\*Specifications subject to change without notice.