



TKMUNV011RTXX-X6
 TET120013RTXX-X6, TKT120013RTXX-X6,
 TEMUNV013RTXX-X6, TKMUNV013RTXX-X6,



120VAC / Universal Input Rectangular LED DC Engines and LED DC Engine Retrofit Kits

- High Density, high brightness chip array
- Suitable for open or fully enclosed luminaires
- Suitable for luminaires with plastic and glass lenses
- Constant Current module design for maximum efficacy
- Class 2 Lighting System
- 120VAC dedicated or UNV options
- No Flicker
- TRIAC/ELV or 0-10V Dimmable
- Full CCT Option Available (Standard CCT's: 3000K,4000K)
- 80 CRI standard and 90 CRI available
- UL Recognized (DC Engine option)
- UL Classified (DC Engine Retrofit Kit option)
- Suitable for DLC and Energy Star compliant luminaires
- Listed in Energy Star Certified Subcomponent Database (CSD) (for rebate programs): 13W
- Energy Star Listed Luminaire 2.0 (for rebate programs): 11W

General Ratings

Input Voltage	TET/TKT: 120VAC;50/60 Hz	TEM/TKM: 120~277VAC;50/60Hz
Input Current	11RT = 0.092A Max @120VAC 11RT = 0.04A Max @277VAC	13RT = 0.11A Max @120VAC 13RT = 0.05A Max @277VAC
Max. Input Power (UL)	11RT = 9.54W	13RT = 12.3W
Energy Star Input Power (Measured)	11RT = 9.5W (ES Lum. V2.0)	13RT = 12W (ES CSD)
Max Lumen Output @ Full Power (80CRI*)	11RT = 1155 lumens @ 4000K	13RT = 1445 lumens @ 4000K
Power Factor	>.98	
THD	<20%	
Dimming Type/Range	Leading Edge (TRIAC) or Trailing Edge (ELV) or 0-10V / 100% ~ 10%	
Beam Angle	120°	
CRI	80 (Standard), 90 available	
Operating Ambient Temperature Range (Ta)	Engine: -35 to +50°C / -31 to +122°F; Kit: -35 to +45°C / -31 to +113°F	
Maximum Driver Case Temperature (Tc driver)	TET/TKT: 88°C	TEM/TKM: 90°C
Maximum Module Case Temperature (Tc mod)	L70 = 90°C (Ts = 95°C)	L90 = 85°C (Ts = 90°C)
Estimated Lumen Maintenance at Max.	L70 = 50,000 hours	L90 = 40,000 hours
Color Consistency	Binning per ANSI C78.377-2011; 7 SDCM	
Overall Size	4.1" x 7.4" x 0.945"H	
Weight	TET/TKT: 190g	TEM/TKM: 200g
Maximum Screw Installation Torque	35 inch - ounces	
Safety/Compliance	DC Engines: cURus (File # E351548: PTL136X20www**, Driver File # E342838) DC Engines Retrofit Kits: cULus File # E365124 Class 2 Lighting System RoHS Compliant Energy Star Listed CSD: 13W Energy Star Luminaire 2.0: 11W	
Nominal Operating Voltage	11RT: 24.8VDC	13RT: 31VDC
Driver Part Number	TET/TKT: T1T11200350-15L	TEM/TKM: T1M1UNV0350-15L
DC Module Part Number	11RT: TM32RT05XX-2X6	13RT: TM40RT05XX-2X6
Warranty	5 years	

* At Tc mod = 25°C

** www = PCB Rev #



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Part Numbering Matrix

T E T 120 011 RT 40 - 0 6

Compliance E = LED DC Engines (UL Recognize) ****K = DC Engine Retrofit Kit (UL Classified)	Control† T*** = TRIAC/ELV M*** = 0-10V	Engine Input Voltage 120*** = 120VAC UNV*** = 120~277VAC	Engine Input Power 011 †† = 11W 013*** = 13W	Color Temperature 27 = 2700K 30***=3000K 35 = 3500K 40***=4000K 50 = 5000K	Configuration 0*** = 80 CRI 1 = 90 CRI 2 = 80 CRI + Conf Coat 3 = 90 CRI + Conf Coat
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*** Indicates standard engine options. All others are built to order.
**** LED Engine Retrofit Kit includes mounting hardware, retrofit labels, and installation instructions.
† TET/TKT: TRIAC/ELV Dimmable available only in 120VAC Input, TEM/TKM: 0-10V Dimmable available only in Universal Input.
†† 11W available only in UNV DC Retrofit Kit (TKMUNV).

Electrical and Optical Specifications

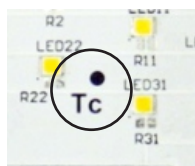
Color Temperature	Part Number	Input Power	Nominal Luminous Flux @ 90 CRI	Nominal Luminous Flux @ 80 CRI	Efficacy @ 80 CRI
3000K	TKMUNV011RT30-x6	9.5W	925 lumens	1155 lumens	121 lm/W
	TET120013RT30-x6 TKT120013RT30-x6 TEMUNV013RT30-x6 TKMUNV013RT30-x6	12W	1050 lumens	1315 lumens	109 lm/W
	TKMUNV011RT40-x6	9.5W	995 lumens	1245 lumens	131 lm/W
	TET120013RT40-x6 TKT120013RT40-x6 TEMUNV013RT40-x6 TKMUNV013RT40-x6	12W	1130 lumens	1415 lumens	117 lm/W

- 1) Electrical and optical specifications are based on a 2700K model and at Energy Star elevated case temperature (13W, CSD) or at 25C (11W, Lum. V2.0).
- 2) Nominal lumen output and efficacies for standard models are calculated. Reference CCT vs Lumen Output chart for other CCT's.
- 3) Specifications are subject to change without notice.
- 4) Nominal luminous flux at 90 CRI are calculated values, not measured.
- 5) Refer to Energy Star CSD (13W) or Luminaires 2.0 (11W) for actual measurements on specific part numbers.
- 6) Performance for these components have been tested in accordance with Energy Star.

Thermal Specifications

	LED Engine	LED Engine Retrofit Kit****
Storage Temperature Range	-35°C to 100°C / -31°F to 212°F	-35°C to 100°C / -31°F to 212°F
Operating Ambient Temperature Range	-35°C to 50°C / -31°F to 122°F	-35°C to 45°C / -31°F to 113°F
Maximum Case Temperature (Tc)	Module : 90°C; Driver: 88°C/90°C	Module : 90°C; Driver: 88°C/90°C

**** Suitable for wall sconce luminaire with minimum dimensions: 3.75" width with a height of 11.75".



Tc located on module



Tc located on driver

CAUTION: THIS LUMINAIRE HAS BEEN MODIFIED TO OPERATE LED LAMPS. DO NOT ATTEMPT TO INSTALL OR OPERATE FLUORESCENT LAMPS IN THIS LUMINAIRE.

Model: TKxxxx01xRTxx-06
Information: Replace only with:
DRIVER MODEL #: T1x1200350-15L
LED MODULE #: TMxxRT0xx-2x6



LED Engine Retrofit Kit only: Hardware and Labels

Refer to LED Engine Retrofit Kit Installation Instructions for further detail. This LED Engine Kit can retrofit any luminaire with a length/height greater or equal to the minimum dimensions shown on the Installation Instructions. This LED Engine Kit can be used with luminaires similar to the one illustrated on the Installation Instructions.



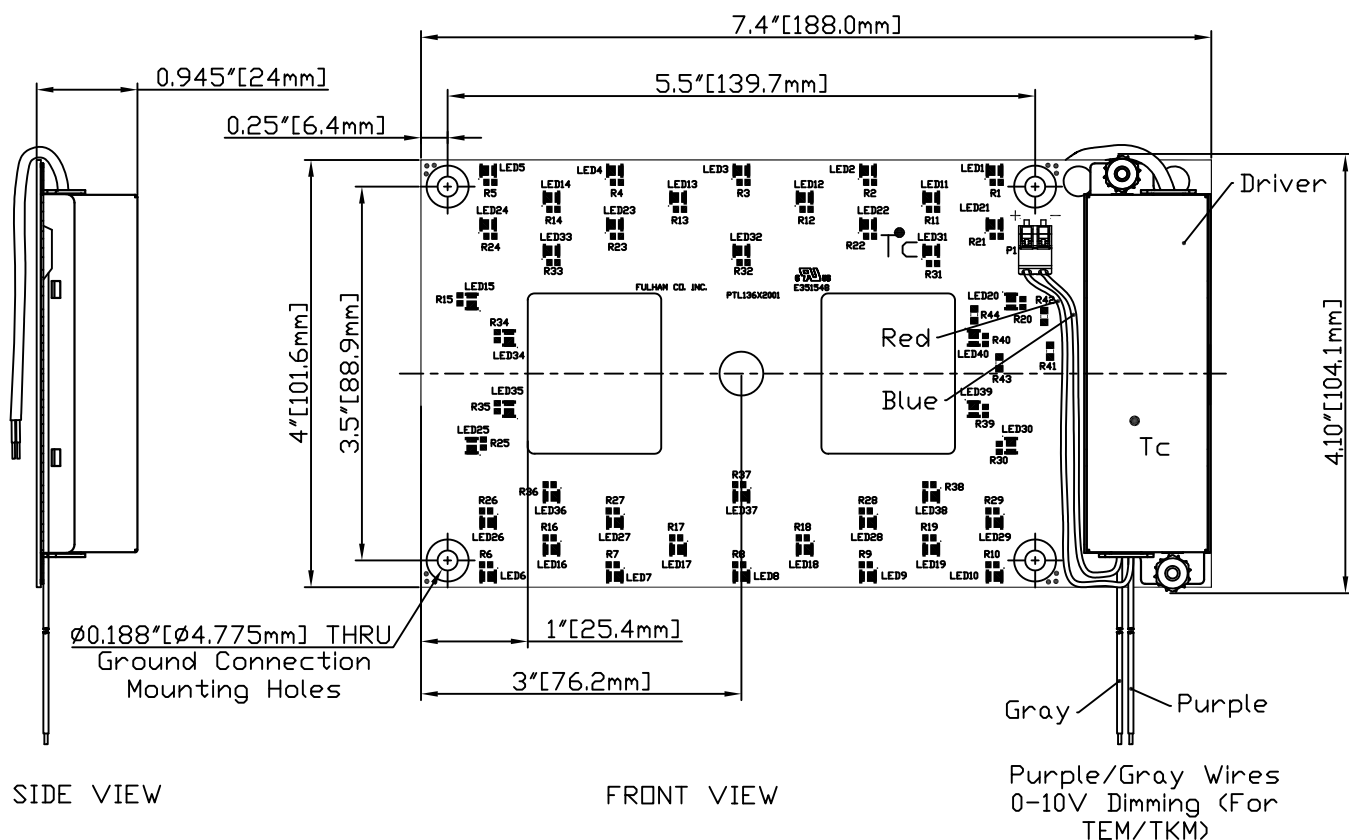
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Mechanical Drawings

Wire Length - Inches

AC Input - Black / White	12
0-10V Dimming - Purple (10V+) / Gray (10V-)	12



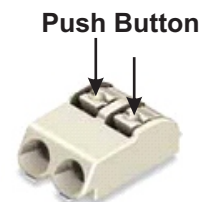


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Termination Notes

- If connectors are used, use solid wire size 24 – 18 AWG, rated at a minimum 50V, minimum 105°C, and stripped to length between 6-7 mm (0.24-0.28 inches).
- Push button for insertion of conductor and for easy removal of wires.
- Connector not for multiple use



Fastening Notes

- If fastening by screw hole, use any screw with diameter less than 0.185 in (4.7mm). Use all available screw holes to ensure good contact between back side of module and mounting surface. Refer to max specified torque for installation. Suggested screw sizes: #6 or M4 Pan Head screw.
- If fastening using double-sided tape, start with clean, dust-free surface. Peel backing and place LED module on mounting surface. Firmly press down on the module to ensure good adherence. Follow the double-side tape manufacturer's installation instructions.

Environmental Rating

- LED DC Engines Modules are rated for dry locations, unless option for conformal coating is requested.
- Conformal coating is Acrylic/RTV based and rated for Environment and Moisture Protection per IPC-CC-830.

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.
- Use of thermal grease, paste, pad, or other material interface is highly recommended.

Polarity Notes

- LED Modules are polarity sensitive.
- Ensure that “positive” from LED Driver is connected to “positive” of LED modules and that “negative” from LED Driver is connected to “negative” of LED modules.
- Polarities of LED modules are marked with “+” for positive and “-” for negative.

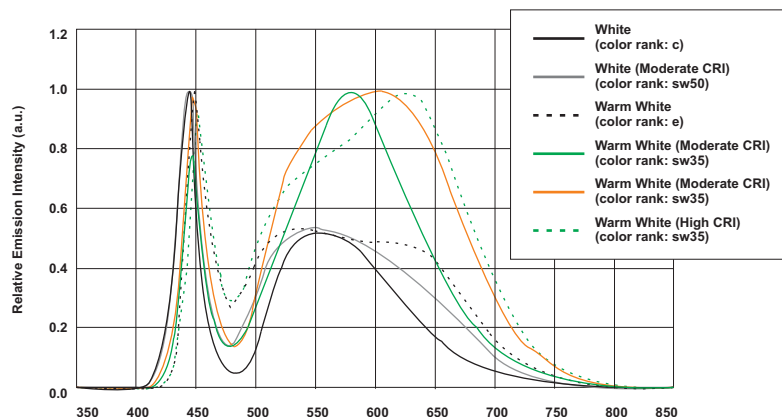
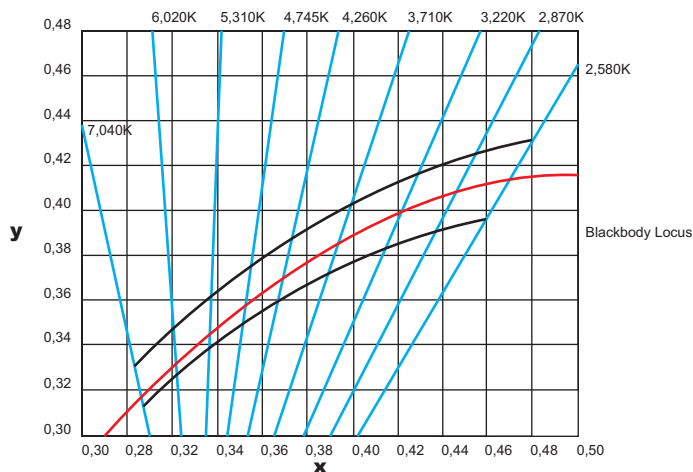


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Color and Binning

Optical Spectrum †††



Ref. Nichia
Chromaticity Diagram for ANSI bins
For reference only. For more detailed info, contact factory.

††† Value varies depending on product type and color rank
Ref. Nichia
LED Catalogue 2013
For reference only. For more detailed info, contact factory.

Thermal De-Rating

CCT vs Luminous Flux

Ambient Temperature (Ta)	Thermal De-rating Multiplier
25°C	1
30°C	0.991
35°C	0.989
40°C	0.980
45°C	0.975
50°C	0.970
55°C	0.960
60°C	0.950

CCT	Luminous Flux Ratio
2700K	0.87
3000K	0.93
3500K	0.96
4000K	1.00
5000K	1.07

Ref. Nichia
LED757 Spec Sheet
For reference only. For more detailed info, contact factory.

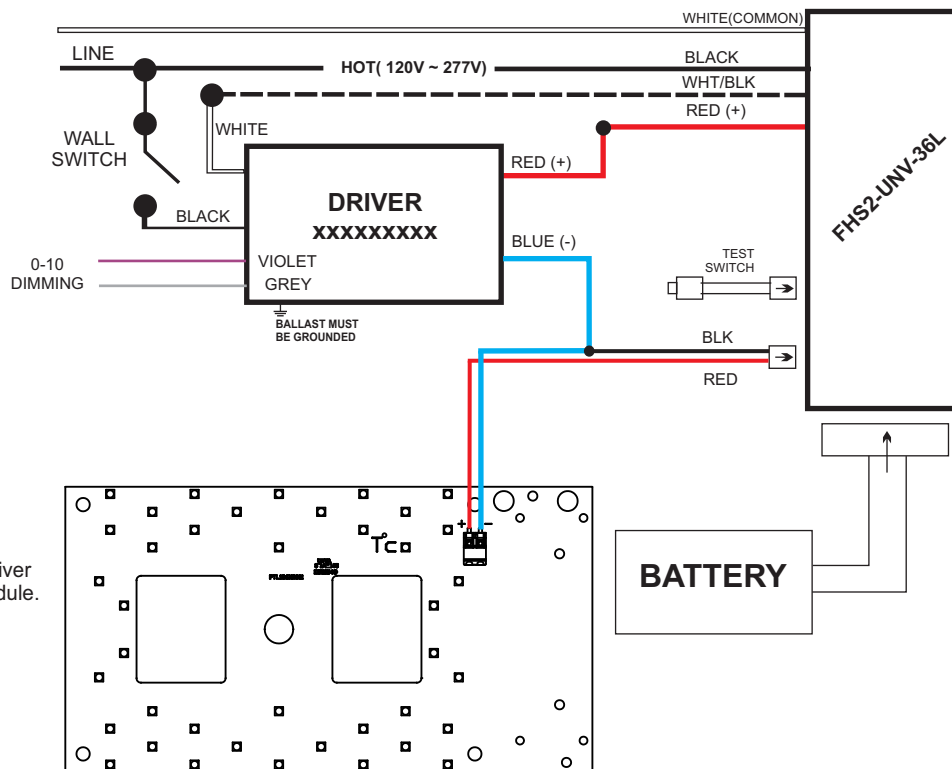
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WIRING DIAGRAM (TYP)



NOTE: For illustration purposes, LED driver is shown separate from LED module.

DC ENGINES/KITS WITH EMERGENCY OPTIONS

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

DC Engine/Kit Part Number	Emer. Driver Part Number	Wattage	Battery Part Number	Harness (mA)	Total Vf (V)	Total Power (W)	Total Lum. Output (lm)	Eff. (lm/W)
TKMUNV011RT40-06	FHS2-UNV-36L	4W	FHSBATT8-AA9 FHSBATL3-1	FHS-HARNESS-150	23.8	3.6	540	151
		6W	FHSBATL6-.6	FHS-HARNESS-150	29.7	4.5	675	151
		8W	FHSBATL3-1.5 FHSBATL3-1.5S	FHS-HARNESS-300	24.6	7.4	1000	136
TET120013RT40-06	FHS2-UNV-36L	4W	FHSBATT8-AA9 FHSBATL3-1	FHS-HARNESS-100	29.3	2.9	455	156
TKT120013RT40-06		6W	FHSBATL6-.6	FHS-HARNESS-150	29.7	4.5	675	151
TEMUNV013RT40-06		8W	FHSBATL3-1.5 FHSBATL3-1.5S	FHS-HARNESS-250	30.3	7.6	1070	141
TKMUNV013RT40-06								



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DC Engine Equivalency Chart

DC Engine/Kit (4" x 7" Rectangular)				CFL					
DC Engine/Kit Part Number	System Wattage	Lumen Output	Efficacy	CFL Style	Lamp Wattage	# of Lamps	Total Wattage	Lumen Output	Efficacy
TKMUNV011RTxx-06	9.5W	1245 lm (4K/80CRI)	131 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	
TET120013RTxx-06	12W	1415 lm (4K/80CRI)	117 lm/W	Quad	13W	2	26W	1550 lm	59 lm/W
26W					1	26W			
TKT120013RTxx-06				Triple	13W	2	26W	1650 lm	63 lm/W
TEMUNV013RTxx-06					26W	1	26W	1536 lm	
TKMUNV013RTxx-06				Circline T5	22W	1	22W	1530 lm	69 lm/W
TKMUNV013RTxx-06				Circline T9	22W	1	22W	775 lm	35 lm/W

For reference only, several factors apply.

Certification Chart

Model	TKMUNV011RTxx-x6	TxT120013RTxx-x6 TxMUNV013RTxx-x6
Classification		
	YES	YES
	YES	YES
	YES	YES
	YES (ES Luminaire 2.0)	YES (ES Listed CSD)