



FULHAM
Harness the Horsepower

China
 Featured Products Catalog
 2017



*Innovative Lighting Solutions
 LED, Emergency, Fluorescent & More*

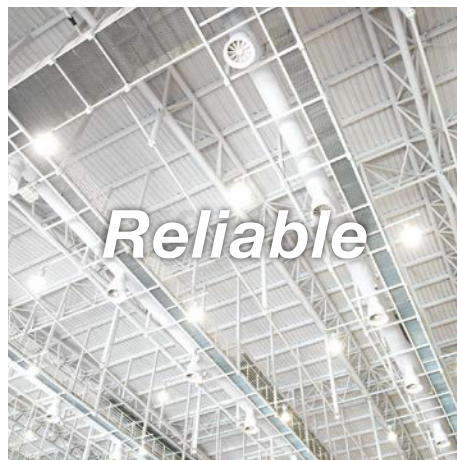
A Pioneer In Lighting Electronics



Fulham is dedicated to intelligent, sustainable lighting solutions that give our users the power to create or install differentiated, clever lighting. Fulham's revered product quality and world-class customer responsiveness make us the preferred partner to over 3000 lighting manufacturers and distributors worldwide.

Global Solutions for a Connected World

From our headquarters in Los Angeles, USA, and design centers in China, Europe, and India, our team of product managers and engineers work with our customers to conceive, design, and manufacture reliable, sustainable lighting solutions that bring cutting edge innovation to a global market.



LED Drivers and Modules

WorkHorse LED IP65 Programmable LED Drivers	4
WorkHorse LED Indoor Programmable LED Drivers	5
ThoroLED Dimmable Constant Current LED Drivers	6
ThoroLED Standard Constant Current LED Drivers	7
ThoroLED Dimmable Constant Voltage LED Drivers	8
ThoroLED Standard Constant Voltage LED Drivers	8
ThoroLED Modules	9-10
ThoroLED Engine Kits	11-13

LED Emergency Systems

HotSpot1 LED Emergency System	14
HotSpot2 LED Emergency System	15
HotSpot Plus LED Driver / Emergency System	15
HotSpot Constant Power Programmable LED Emergency Driver	16
HotSpot Constant Power LED Emergency Driver	16

Fluorescent Ballasts

WorkHorse Fluorescent Electronic Ballasts	17-19
RaceHorse Fluorescent Electronic Ballasts	20
IceHorse Low Temperature Electronic Ballasts	21
SunHorse UV/Purification Electronic Ballasts	21
FireHorse Fluorescent Emergency Electronic Ballasts	22

Warranty Information 23

Contact Us 24

Can't find what you're looking for? Fulham offers many additional products not shown here, including fluorescent lamps, halogen transformers, and more. Visit www.fulham.com or contact Fulham at +86 769 2199 2606 (South China) and +86 21 6495 2777 (Central/East/North China) for more information.



- IP65 for harsh, demanding environments
- 0-10V, DALI, and wireless dimming options
- Wide programmable current range in 1mA increments
- Advanced programmability of output current and dimming curve (for custom dimming profiles, step dimming and dim-to-off)
- MCU controlled circuit and health monitoring
- Operating Voltage: 120V-277V/347V



XP Series: Programmable output current, dimming curves, and NTC profile

Model Number	Input Voltage (VAC)	Output Wattage (W)	Output Voltage (VDC)	Output Current (mA)	Surge	Dimming Type	Dimensions (L x W x H)
T1R1UNV150P-40C	120-277; 50/60Hz	40	10-57	250-1500	6kV	Tvilight Wireless	5.96" x 3.54" x 1.1"
T1R1UNV210P-60C	120-277; 50/60Hz	60	10-57	500-2100	6kV	Tvilight Wireless	5.96" x 3.54" x 1.1"
T1M1UNV210P-60L	120-277; 50/60Hz	60	10-57	500-2100	6kV	0-10V	9.49" x 1.69" x 1.14"
T1M1347070P-80L	347; 60Hz	80	50-200	350-700	4kV	0-10V	9.49" x 1.69" x 1.17"
T1R1UNV150P-100C	120-277; 50/60Hz	100	50-150	500-1500	6kV	Tvilight Wireless	5.96" x 3.54" x 1.26"
T1M1UNV150P-100C	120-277; 50/60Hz	100	50-150	500-1500	6kV	0-10V	5.96" x 3.54" x 1.26"
T1A1UNV150P-100C	120-277; 50/60Hz	100	50-150	500-1500	6kV	DALI	5.96" x 3.54" x 1.26"
T1M1347105P-120L	347; 60Hz	120	50-225	350-1050	4kV	0-10V	9.47" x 2.33" x 1.46"
T1R1UNV150P-150L	120-277; 50/60Hz	150	70-280	500-1500	6kV	Tvilight Wireless	9.47" x 2.33" x 1.52"
T1M1UNV150P-150L	120-277; 50/60Hz	150	70-280	500-1500	6kV	0-10V	9.47" x 2.33" x 1.52"
T1A1UNV150P-150L	120-277; 50/60Hz	150	70-280	500-1500	6kV	DALI	9.47" x 2.33" x 1.52"
T1M1347105P-160L	347; 60Hz	160	75-300	350-1050	4kV	0-10V	9.47" x 2.33" x 1.46"
T1R1UNV140P-200L	120-277; 50/60Hz	200	80-280	500-1400	6kV	Tvilight Wireless	8.86" x 2.71" x 1.52"
T1M1UNV140P-200L	120-277; 50/60Hz	200	80-280	500-1400	6kV	0-10V	8.86" x 2.71" x 1.52"
T1A1UNV140P-200L	120-277; 50/60Hz	200	80-280	500-1400	6kV	DALI	8.86" x 2.71" x 1.52"

Certifications:

120-277V models: cULus Class P, CE, ENEC, CB Scheme, RoHS, FCC (for wireless models) / 347V models: cURus, RoHS

XE Series: Programmable output current

Model Number	Input Voltage (VAC)	Output Wattage (W)	Output Voltage (VDC)	Output Current (mA)	Surge	Dimming Type	Dimensions (L x W x H)
T1M1UNV240P-96L	120-277V; 50/60Hz	96	30-56VDC	700-2400	6kV	0-10V	6.69" x 2.56" x 1.26"
T1M1UNV500P-185L	120-277V; 50/60Hz	185	30-56VDC	1500-5000	6kV	0-10V	8.74" x 2.68" x 1.65"

Certifications: cULus Class P, RoHS

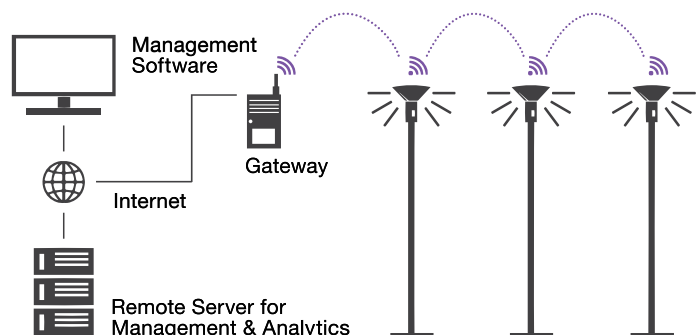
Wireless dimming and driver management

Fulham has teamed with Tvilight to develop the industry's first integrated driver with wireless, cloud-based IoT management and controls.

- Web-based management software for SmartCity applications
- Real-time driver and luminaire health monitoring
- Simplified installation and commissioning

Visit www.tvilight.com to learn more

TVILIGHT
EMPOWERING INTELLIGENCE



- 250mA - 1050mA programmable output current
- Handheld programmer or SmartSet software
- Use to set current, address, dimming curve, and thermal temperature protection
- Programmable dimming curve allows step dimming and dim-to-off
- Operating Voltage: 120V-277V/347V



DALI DIMMING

Watts (W)	Output Current (mA)	Output Voltage (VDC)	Model Number	Input Voltage (VAC)	Dimming Type	Ch.	Dimensions (L x W x H)	Case Type
40	250 - 1050	10 - 57	T1A1UNV105P-40E	120-277; 50/60Hz	DALI	1	10.83" x 1.22" x 0.98"	Linear w/End Terminals
60	250 - 1050	10 - 57	T1A1UNV105P-60E	120-277; 50/60Hz	DALI	1	9.33" x 1.6" x 1.18"	Linear w/End Terminals
60	250 - 1050	10 - 57	T1A1UNV105P-60F	120-277; 50/60Hz	DALI	1	5.0" x 3.0" x 1.22"	Compact w/ End and Back Terminals
60	250 - 1050	10 - 57	T1A1UNV105P-60G	120-277; 50/60Hz	DALI	1	5.0" x 3.0" x 1.22"	Compact w/ End and Back Terminals, Back Studs

0 - 10V DIMMING

Watts (W)	Output Current (mA)	Output Voltage (VDC)	Model Number	Input Voltage (VAC)	Dimming Type	Ch.	Dimensions (L x W x H)	Case Type
40	250 - 1050	10 - 57	T1M1UNV105P-40E	120-277; 50/60Hz	0 - 10V	1	10.83" x 1.22" x 0.98"	Linear w/End Terminals
60	250 - 1050	10 - 57	T1M1UNV105P-60E	120-277; 50/60Hz	0 - 10V	1	9.33" x 1.6" x 1.18"	Linear w/End Terminals
60	250 - 1050	10 - 57	T1M1UNV105P-60F	120-277; 50/60Hz	0 - 10V	1	5.0" x 3.0" x 1.22"	Compact w/ End & Back Terminals
60	250 - 1050	10 - 57	T1M1UNV105P-60G	120-277; 50/60Hz	0 - 10V	1	5.0" x 3.0" x 1.22"	Compact w/ End and Back Terminals, Back Studs

The Power of Programmability

All WorkHorse LED drivers feature Fulham's innovative SmartSet programming platform, which gives the user the power to create the right driver for any situation.

- Auto Programming capability for high volume usage
- Driver does not need to be powered during programming
- Programming via handheld controller or PC software



TPSB-100
SmartSet Controller



SmartSet
Software

To see Fulham's SmartSet Auto-Programming feature in action, visit www.fulham.com/smartsetauto

For a demonstration of dimming curve programming, visit www.fulham.com/smartsetdimmingcurve



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DIMMABLE CONSTANT CURRENT LED DRIVERS (120V/120V-277V/347V)

- Smooth dimming: 100% to 1% & 100% to 10% models
- Single and multiple channel models
- Wide range of output currents and voltages
- Compatible with leading dimmer brands
- Compact size



Constant Current Dimmable LED Drivers: 0 - 10V								
Watts (W)	Output Current (mA)	Output Voltage (VDC)	Model Number	Input Voltage (VAC)	Ch.	IP	Dimensions (Inches) (L x W x H)	Case Type
15	350	21 - 42	T1M1UNV0350-15F	120-277; 50/60Hz	1	64	3.19 x 2.83 x 0.98	Compact w/Terminals
15	350	21 - 42	T1M1UNV0350-15L	120-277; 50/60Hz	1	64	3.94 x 1.18 x 0.9	Linear w/End Leads
15	350	18 - 42	T1M13470350-15C	347; 60Hz	1	64	4.72 x 2.69 x 1.22	Compact w/End Leads
15	350	18 - 42	T1M13470350-15V	347; 60Hz	1	64	4.72 x 2.69 x 1.22	Compact w/Bottom Leads & Mounting Studs
28	700	18 - 40	T1M13470700-28C	347; 60Hz	1	64	4.33 x 2.69 x 1.18	Compact w/End Leads
28	700	18 - 40	T1M13470700-28V	347; 60Hz	1	64	4.72 x 2.69 x 1.22	Compact w/Bottom Leads & Mounting Studs
28	700	12 - 40	T1M1UNV0700-28C	120-277; 50/60Hz	1	64	3.15 x 2.99 x 1.06	Compact w/End Leads
28	700	12 - 40	T1M1UNV0700-28BL	120-277; 50/60Hz	1	64	3.15 x 2.99 x 1.06	Compact w/Bottom Leads & Mounting Studs
30	700	21 - 42	T1M1UNV0700-30F	120-277; 50/60Hz	1	64	2.83 x 2.4 x 0.98	Compact w/Terminals
30	700	21 - 42	T1M1UNV0700-30L	120-277; 50/60Hz	1	64	4.65 x 1.18 x 1.16	Linear w/End Leads
40	1000	18 - 40	T1M13471000-40C	347; 60Hz	1	64	4.72 x 2.69 x 1.22	Compact w/End Leads
40	1050	18 - 38	T1M13471050-40C	347; 60Hz	1	64	4.72 x 2.69 x 1.22	Compact w/End Leads
40	1050	18 - 38	T1M13471050-40V	347; 60Hz	1	64	4.72 x 2.69 x 1.22	Compact w/Bottom Leads & Mounting Studs
40	700	18 - 57	T1M13470700-40C	347; 60Hz	1	64	4.72 x 2.69 x 1.22	Compact w/End Leads
40	700	18 - 57	T1M13470700-40V	347; 60Hz	1	64	4.72 x 2.69 x 1.22	Compact w/Bottom Leads & Mounting Studs
40	700	18 - 58 /12	T1M1UNV0700-40C	120-277; 50/60Hz	1	64	4.72 x 2.69 x 1.22	Compact w/End Leads
40	700	18 - 58 /12	T1M1UNV0700-40V	120-277; 50/60Hz	1	64	4.72 x 2.69 x 1.22	Compact w/Bottom Leads & Mounting Studs
40	900	10 - 40	T1M1UNV0900-40L	120-277; 50/60Hz	1	64	9.49 x 1.3 x 1.06	Linear w/End Leads
40	1000	10 - 40	T1M1UNV1000-40L	120-277; 50/60Hz	1	64	9.49 x 1.3 x 1.06	Linear w/End Leads
42	760	30-54	T1M1UNV0760-42L	120-277; 50/60Hz	1	65	7.72 x 1.68 x 1.34	Linear w/End Leads
42	1050	12 - 40	T1M1UNV1050-42C	120-277; 50/60Hz	1	64	4.72 x 2.69 x 1.18	Compact w/End Leads
60	1400	18 - 42	T1M1UNV1400-60L	120-277; 50/60Hz	1	64	8.27 x 1.7 x 1.2	Linear w/End Leads
88	1680	21 - 44	T1M1UNV1680-88L	120-277; 50/60Hz	1	64	9.49 x 1.69 x 1.14	Linear w/End Leads
88	2000	21 - 44	T1M1UNV2000-88L	120-277; 50/60Hz	1	64	9.49 x 1.69 x 1.14	Linear w/End Leads
88	2100	21 - 42	T1M1UNV2100-88L	120-277; 50/60Hz	1	64	9.49 x 1.69 x 1.14	Linear w/End Leads
100	800	70 - 150	T1M1UNV0800-100A	120-277; 50/60Hz	1	Dry	8.4 x 1.97 x 1.3	Interconnect Terminals
100	800	70 - 130	T1M1UNV0800-100Z	120-277; 50/60Hz	1	Dry	8 x 1.97 x 1.42	Interconnect Terminals
150	1050	71-142	T1M1UNV1050-150L	120-277; 50/60Hz	1	65	8.86 x 2.71 x 1.52	Linear w/End Leads

Constant Current Dimmable LED Drivers: 0 - 10V Multiple Outputs								
49	700	23 - 35	T1M2UNV0700-49L	120-277; 50/60Hz	2	Damp	10.28 x 1.57 x 1.19	Linear w/End Leads

Constant Current Dimmable LED Drivers: TRIAC								
9	700	7 - 13	TCD11200700-9C	120	1	Damp	3.15 x 1.8 x 1.01	Compact w/End Leads
9	700	7 - 12.8	T1T11200700-9C	120	1	Damp	3.2 x 2.83 x 1	Compact w/End Leads
11	350	12 - 40	TCD11200350-11C	120	1	Damp	3.2 x 2.83 x 1	Compact w/End Leads
15	350	21 - 42	T1T11200350-15L	120	1	64	3.94 x 1.18 x 0.9	Linear w/End Leads
17	350	26 - 49	T1T11200350-17CB	120	1	64	2.83 x 3.2 x 1	Compact w/End Leads
18	650	17 - 27	TCD11200650-18C	120	1	Damp	2.13 x 2.36 x 1	Compact w/End Leads
18	700	17 - 26	T1T11200700-18C	120	1	62	3.2 x 2.83 x 1	Compact w/End Leads
18	700	13 - 26	T1T1120070018CA	120	1	64	2.83 x 3.2 x 1	Compact w/End Leads
30	700	21 - 42	T1T11200700-30C	120	1	64	3.35 x 2.56 x 0.75	Compact w/End Leads
30	700	21 - 42	T1T11200700-30L	120	1	64	4.65 x 1.18 x 1.16	Linear w/End Leads



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STANDARD CONSTANT CURRENT LED DRIVERS (120V/120V-277V/120V-240V)

- Optimized high efficiency performance
- Single and multiple channel models
- Ideal for interior luminaire applications
- Compact and linear case size variations to fit numerous applications



Single Output - Non-Dimmable Drivers

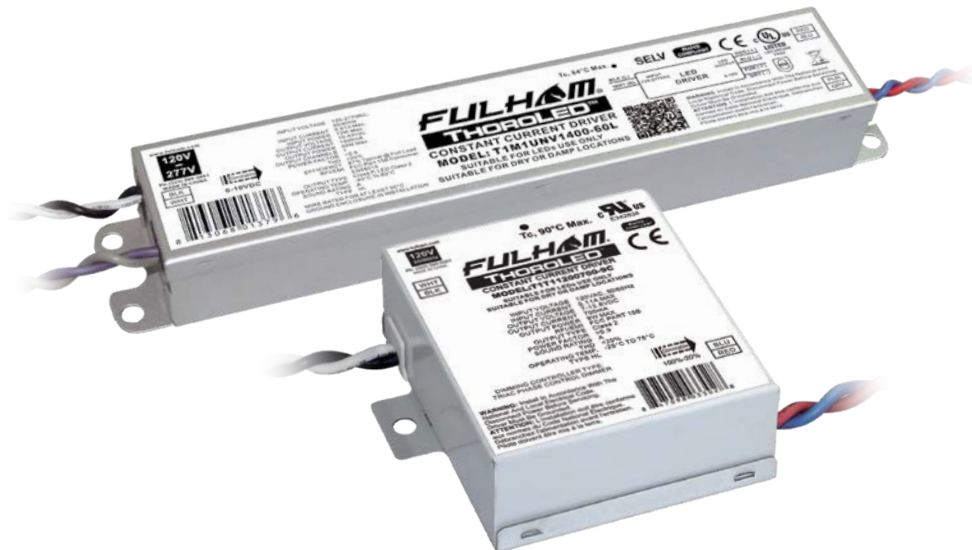
Watts (W)	Output Current (mA)	Output Voltage (VDC)	Model Number	Input Voltage (VAC)	Ch.	IP	Dimensions (Inches) (L x W x H)	Case Type
6	350	3 - 20	TC11200350-6C	120; 50/60Hz	1	62	2.57 x 1.77 x 0.98	Compact w/End Leads
15	350	20 - 46	TC11200350-15C	120; 50/60Hz	1	62	2.57 x 1.77 x 0.98	Compact w/End Leads
18	700	10 - 26	TC11200700-18C	120; 50/60Hz	1	62	2.13 x 2.36 x 1	Compact w/End Leads
28	700	12 - 40	T1UNV0700-28BL	120-277; 50/60Hz	1	62	3.15 x 2.99 x 1.06	Compact w/Bottom Leads & Mounting Studs
40	700	18 - 58	T1UNV0700-40C	120-277; 50/60Hz	1	64	3.74 x 2.76 x 1.26	Compact w/End Leads
42	1050	12 - 40	T1UNV1050-42C	120-277; 50/60Hz	1	64	3.74 x 2.76 x 1.26	Compact w/End Leads
60	350	80 - 180	T1UNV0350-60L	120-277; 50/60Hz	1	64	7.72 x 1.69 x 1.18	Linear w/End Leads
60	1400	20 - 43	T1UNV1400-60L	120-277; 50/60Hz	1	64	7.72 x 1.69 x 1.18	Linear w/End Leads

Multiple Output - Dimmable Drivers

50	350	18 - 48	TCD3MLT0350-50L	100-240; 50/60Hz	3	62	14.39 x 1.72 x 1	Linear w/End Leads
55	350	18 - 56	TCD3MLT0350-55L	100-240; 50/60Hz	3	62	14.39 x 1.72 x 1	Linear w/End Leads

Multiple Output - Non-Dimmable Drivers

75	500	15 - 49	TC31200500-75LA	120; 50/60Hz	3	62	12 x 1.34 x 1	Linear w/End Leads
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DIMMABLE CONSTANT VOLTAGE LED DRIVERS (120V-277V)

- 0-10V Dimming
- Linear form factor
- Surge protection, overload protection



Constant Voltage Dimmable LED Drivers: 0 - 10V								
Watts (W)	Output Voltage (V)	Output Voltage (VDC)	Model Number	Input Voltage (VAC)	Ch.	IP	Dimensions (inches) (L x W x H)	Case Type
20	0 - 1660	12	T1M1UNV012V-20L	120-277; 50/60Hz	1	62	6.3 x 1.57 x 0.98	Linear w/End Leads
20	0 - 833	24	T1M1UNV024V-20L	120-277; 50/60Hz	1	62	6.3 x 1.57 x 0.98	Linear w/End Leads
60	0 - 5000	12	T1M1UNV012V-60L	120-277; 50/60Hz	1	64	9.49 x 1.69 x 1.22	Linear w/End Leads
60	0 - 2500	24	T1M1UNV024V-60L	120-277; 50/60Hz	1	64	9.49 x 1.69 x 1.22	Linear w/End Leads
75	0 - 6250	12	T1M1UNV012V-75L	120-277; 50/60Hz	1	64	9.49 x 1.69 x 1.22	Linear w/End Leads
75	0 - 3125	24	T1M1UNV024V-75L	120-277; 50/60Hz	1	64	9.49 x 1.69 x 1.22	Linear w/End Leads
150	N/A	24V	T1M1UNV024V150L	120-277; 50/60Hz	1	67	8.94 x 1.69 x 1.56	Linear w/End Leads



STANDARD CONSTANT VOLTAGE LED DRIVERS (120V-277V)

- Constant voltage - 12V and 24V models (48V in 150 Watt)
- Optimized high efficiency performance
- Low temperature performance



Single Output - Non-Dimmable Drivers							
Watts (W)	Output Voltage (V)	Model Number	Input Voltage (VAC)	Ch.	IP	Dimensions (Inches) (L x W x H)	Case Type
20	12V	T1UNV012V-20L	120-277; 50/60Hz	1	62	6.3 x 1.57 x 0.98	Linear w/End Leads
20	24V	T1UNV024V-20L	120-277; 50/60Hz	1	62	6.3 x 1.57 x 0.98	Linear w/End Leads
60	12V	T1120012V-60LE	120; 60Hz	1	64	9.49 x 1.69 x 1.22	Linear w/End Leads
60	12V	T1UNV012V-60LF	120-277; 50/60Hz	1	64	9.49 x 1.69 x 1.22	Linear w/End Leads
60	12V	T1UNV012V-60L	120-277; 50/60Hz	1	66	9.49 x 1.69 x 1.22	Linear w/End Leads
60	12V	T1UNV012V-60LG*	120-277; 50/60Hz	1	68	9.53 x 1.65 x 1.34	Linear w/End Leads
60	24V	T1UNV024V-60LF	120-277; 50/60Hz	1	64	9.49 x 1.69 x 1.22	Linear w/End Leads
75	12V	T1UNV012V-75L*	120-277; 50/60Hz	1	64	9.49 x 1.69 x 1.22	Linear w/End Leads
75	24V	T1UNV024V-75L*	120-277; 50/60Hz	1	64	9.49 x 1.69 x 1.22	Linear w/End Leads
100	24V	T1UNV024V-100LE (4KV/4KV)	120-277; 50/60Hz	1	64	9.49 x 1.69 x 1.22	Linear w/End Leads
100	24V	T1UNV024V-100LS (2KV/4KV)	120-277; 50/60Hz	1	64	10.27 x 1.59 x 1.19	Linear w/End Leads
150	24V	T1UNV024V-150L	120-277; 50/60Hz	1	67	8.94 x 2.66 x 1.56	Linear w/End Leads

* RCM, CE and cULus certified.

THOROLED LINEAR HIGH OUTPUT LED DC MODULES

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- Efficient, easy-to-install modules for high lumen linear applications
- Constant current, high-efficacy, 3 SDCM LEDs
- Aluminum extrusion mount for thermal management and quick install
- Suitable replacement for fluorescent T5HO lamps
- Up to 198 lm/W; output range 2,200 lm to 13,610 lm (@4000K/80CRI)
- Optimized for use with Fulham programmable drivers and HotSpot LED emergency systems



Specifications	
Operating Temperature Range	-40°C to +60°C / -40°F to 140°F
Lumen Maintenance @85°C	L70: >54,000Hrs / L90: 46,000Hrs (meets DLC Premium and Standard requirements)
Color Consistency	Binning per ANSI C78.377-2015 @ 25°C; 3 SDCM
PCB Material	CEM3
Connector Type	WAGO double pin push-in connectors
Warranty	5 years @ Max Tc from the date of manufacture
Safety/compliance	cURus (File # E351548), Class 2 Lighting System, RoHS Compliant

Linear: HO								
Model Number / Dimension (L x W x H)	Number of LED	Input Current (mA)	Nom. Fwd. Voltage (Vdc)	Nom. Rated Power (W)	Max. Fwd. Voltage (V)	Max. Rated Power (W)	Nom. Lum. @4000K/80CRI (lm)	Nom. Efficacy @4000K/80CRI (lm/W)
TMU125050CL8xxA 22" x 1.73" x 0.39"	96	350	33	12	35	12	2245	195
		700	34	24	36	26	4350	182
		1050	35	37	38	40	6210	169
		1250*	36	44	39	49	7130	161
TMU140055CL8xxA 44.1" x 1.73" x 0.39"	108	350	33	11	34	12	2255	196
		700	34	24	36	25	4385	185
		1050	35	36	38	39	6340	174
		1400*	36	50	39	55	8015	161
TMU240095CL8xxA 44.1" x 1.73" x 0.39"	180	350	32	11	34	12	2230	198
		700	33	23	35	24	4480	194
		1050	34	35	36	37	6605	187
		1400	34	48	37	52	8640	180
		2400*	36	85	39	94	13610	159

Colour Temperature
 30 = 3000K
 40 = 4000K
 50 = 5000K

TMU125050CL8xxA

* Indicates maximum rated current. Modules may be operated at a current less than or equal to this value, below the Tc rating.

Accessories	
Model Number	Description
TLEOPT120-020	Module end caps, 2 pieces
TLEOPT120-004	560mm snap-on lens, 82% transmissivity
TLEOPT120-013	1120mm snap-on lens, 82% transmissivity



TLEOPT120-020

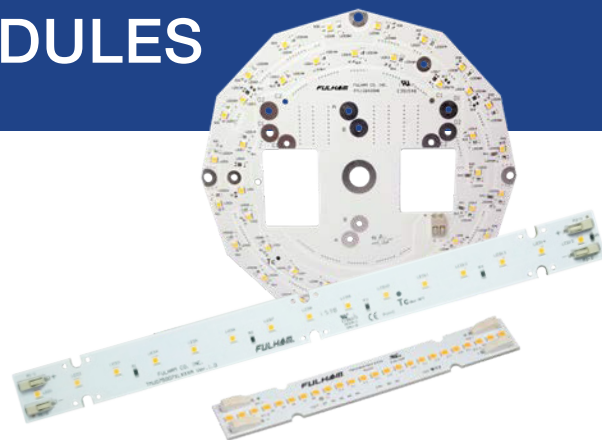


TLEOPT120-004, TLEOPT120-013



Module + End cap + Lens

- 2700K, 3000K, 3500K, 4000K and 5000K CCT choice available
- 80 CRI standard, 90 CRI available
- Choice of easy push-in dual connectors or pre-wired with leads
- Dimmable when used with dimming LED driver
- Optional diffusers available
- Visit www.fulham.com for additional options



Linear: 350mA ECO Series

Nominal Watts (W)	Lumen Output	Model Number	Max Input Current (mA)	Nominal Forward Voltage (VDC)	CCT	CRI	Termination Type	Board Material	Dimensions (L x W)
2.1	305	TMU040003EL840A	350	6.1	4000	80	Single Connector	FR-4	1.5" x 0.94"
4.2	590	TMU040005EL840A	350	12.1	4000	80	Single Connector	FR-4	1.5" x 0.94"
4.2	620	TMU040005EL840B	350	12.1	4000	80	Single Connector	FR-4	5" x 0.71"
6.3	925	TMU040008EL840A	350	18.1	4000	80	Single Connector	FR-4	5" x 0.71"
8.4	1230	TMU040010EL840A	350	24.1	4000	80	Single Connector	FR-4	5" x 0.71"
8.4	1230	TMU040010EL840B	350	24.1	4000	80	Single Connector	FR-4	11" x 0.71"
8.4	1230	TMU040010EL840C	350	24.1	4000	80	Single Connector	FR-4	17" x 0.71"
12.6	1845	TMU040015EL840A	350	36.1	4000	80	Single Connector	FR-4	17" x 0.71"

Linear: 450/750mA

7	850	TMU075007HL830A	750	9.3	3000	80	Single Connector	CEM1	11" x 0.94"
7	915	TMU075007HL840A	750	9.3	4000	80	Single Connector	CEM1	11" x 0.94"
14	1700	TMU075014HL830A	750	18.7	3000	80	Single Connector	CEM1	22" x 0.94"
14	1830	TMU075014HL840A	750	18.7	4000	80	Single Connector	CEM1	22" x 0.94"
15	1600	TMU045015HL830A	450	33.8	3000	80	Single Connector	CEM1	22" x 0.94"
15	1600	TMU045015HL830B	450	33.8	3000	80	Single Connector	CEM1	22.88" x 0.94"
18	1875	TMU045018HL830A	450	40	3000	80	Single Connector	CEM1	22" x 0.94"
18	1875	TMU045018HL830B	450	40	3000	80	Single Connector	CEM1	22.88" x 0.94"
19	2260	TMU075019HL830A	750	24.7	3000	80	Single Connector	CEM1	18" x 0.94"
19	2430	TMU075019HL840A	750	24.7	4000	80	Single Connector	CEM1	18" x 0.94"

Round

16	1950	TM40RD0540-201	500	32	4000	80	Dual Connector	CEM1	7" Dia.
26.5	3200	TM64RD0540-201	1050	25.2	4000	80	Dual Connector	CEM1	9" Dia.
33	4000	TM80RD0540-201	1050	31.5	4000	80	Dual Connector	CEM1	9" Dia.
300	41620	TNU150300AC850A	1500	300	5000	80	Wire Leads	MCPCB	8" Dia.

Half-Round

16	1950	TM40HR0540-201	500	32	4000	80	Dual Connector	CEM1	7" Dia. Half-Round
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Rectangular

16	1950	TM40RT0540-206	500	32	4000	80	Dual Connector	CEM1	7" x 4"
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- Very low flicker, meets Title 24 requirements
- DirectAC Drive with integrated LED board
- Smooth TRIAC/ELV dimming down to 10%
- High voltage barrier and 5VA flame rated lens
- Low cost initial investment, and longer life span than fluorescent
- Standard mounting holes for easy installation



Specifications	
Input Voltage	120-277VAC
Angle	120°
Flicker Percentage	<30%
CRI	80 standard, 90 available
Operating Ambient Temperature Range (Ta)	-35°C to +50°C
Estimated Lumen Maintenance (L70)	50,000 hours
PCB Material	MCPCB (for superior thermal management)
Lens Material	Optical Grade Polycarbonate (5VA Flame rated)
Protections	Surge 2.5kV; Over temperature control
Available Color Temperatures	Standard options: 2700K, 3000K, 4000K Also available: 3500K, 5000K
Warranty	5 Years @ Max Tc from the date of manufacture

Leading Edge (TRIAC) or Trailing Edge (ELV) Dimmable from 100% ~ 10%					
Model Number	Description	Input Power	Max Lumens @4000K/80CRI	Dimensions	Plate Shape
TJTUNV010ACxxxB	Engine with lens • Retrofit hardware and labels included. • Suitable for glass or plastic diffusers, open or closed luminaires.	10W	1035	3.11" Dia. x 0.71" H	Circular
TJTUNV015ACxxxB		15W	1575	5.08" Dia. x 0.69" H	Circular
TJTUNV015ARxxxB		15W	1725	4" L x 7.4" W x 0.74" H	Rectangular
TJTUNV023ACxxxB		23W	2300	6.97" Dia. x 0.37" H	Circular
TJTUNV034ACxxxB		34W	3465	9.55" Dia. x 0.37" H	Circular

THORLED LED DC ENGINE KITS

FULHAM

- ENERGY STAR® Luminaire 2.0 and Certified Subcomponent Database listed for rebate programs
- cULus classified kits include mounting hardware, installation instructions, and required cULus labels
- 2700K, 3000K, 3500K, 4000K and 5000K CCT choice available
- Round, half-round, and rectangular light engine kits
- Perfect for ceiling and wall mounted sconces
- Visit www.fulham.com for additional options



Round										
INPUT WATTS	LUMEN OUTPUT	DIMMING TYPE	cULus KIT NUMBER	ENGINE NUMBER	INPUT VOLTAGE (VAC)	CCT	CRI	DIMENSIONS (Dia. x H)	ENERGY STAR LISTED*	ENERGY STAR CSD*
11	1100	0-10V	TKMUNV011RD3001	TEMUNV011RD3001	UNV	3000	80	7" x 0.94"		
13	1310	TRIAC/ELV	TKT120013RD3001	TET120013RD3001	120	3000	80	7" x 0.94"		
13	1310	0-10V	TKMUNV013RD3001	TEMUNV013RD3001	UNV	3000	80	7" x 0.94"		
21	2140	TRIAC/ELV	TKT120021RD3001	TET120021RD3001	120	3000	80	9" x 1.20"		
21	2140	0-10V	TKMUNV021RD3001	TEMUNV021RD3001	UNV	3000	80	9" x 1.20"		
25	2650	TRIAC/ELV	TKT120025RD3001	TET120025RD3001	120	3000	80	9" x 1.20"		
25	2650	0-10V	TKMUNV025RD3001	TEMUNV025RD3001	UNV	3000	80	9" x 1.20"		
32	3050	0-10V	TKMUNV032RD40-01	TEMUNV032RD40-01	UNV	4000	80	9" x 1.22"		
39	4055	0-10V	TKMUNV039RD40-01	TEMUNV039RD40-01	UNV	4000	80	9" x 1.22"		

Half-Round										
INPUT WATTS	LUMEN OUTPUT	DIMMING TYPE	cULus KIT NUMBER	ENGINE NUMBER	INPUT VOLTAGE (VAC)	CCT	CRI	Dimensions (L x W x H)	ENERGY STAR LISTED*	ENERGY STAR CSD*
11	1155	0-10V	TKMUNV011HR3001	TEMUNV011HR3001	UNV	3000	80	7" x 3.5" x 0.94"		
13	1315	TRIAC/ELV	TKT120013HR3001	TET120013HR3001	120	3000	80	7" x 3.5" x 0.94"		
13	1315	0-10V	TKMUNV013HR3001	TEMUNV013HR3001	UNV	3000	80	7" x 3.5" x 0.94"		

Rectangular										
INPUT WATTS	LUMEN OUTPUT	DIMMING TYPE	cULus KIT NUMBER	ENGINE NUMBER	INPUT VOLTAGE (VAC)	CCT	CRI	Dimensions (L x W x H)	ENERGY STAR LISTED*	ENERGY STAR CSD*
11	1155	0-10V	TKMUNV011RT3006	TEMUNV011RT3006	UNV	3000	80	7.4" x 4.0" x 0.94"		
13	1315	TRIAC/ELV	TKT120013RT3006	TET120013RT3006	120	3000	80	7.4" x 4.0" x 0.94"		
13	1315	0-10V	TKMUNV013RT3006	TEMUNV013RT3006	UNV	3000	80	7.4" x 4.0" x 0.94"		

* ENERGY STAR designations: Listed = Luminaire 2.0. CSD= Certified Subcomponent Database



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LED HIGHBAY RETROFIT KIT

LED RETROFIT SYSTEM



- Fully assembled LED retrofit kit providing up to 25,466 lumens
- Listed on DLC® Qualified Products List for energy rebates
- cULus Classified for 10-minute field installation
- cULus Classified for use as luminaire
- Programmable driver allows replacement of common 100, 175, 250, and 400W HID systems
- L70 Calculated, per TM-21, at 100,000 hours (Tc=100°C)
- Module features surface mounted device (SMD) LEDs and integrated thermal feedback for higher efficiency and reliability



Specifications

Beam Angle	120°
Power Factor	> 0.9
Operating Ambient Temperature Range (Ta)	-25 to +45°C / -13 to +113°F
Estimated Lumen Maintenance	L70 > 60,000hrs / L90 > 38,000hrs (TM-21 Reported)
	L70 > 100,000hrs / L90 > 20,000hrs (TM-21 Calculated)
Color Consistency	Binning per ANSI C78.377-2015; 3 SDCM
Warranty	5 years
Safety/compliance	cULus Classified (E365124), DLC 4.0 High Bay Retrofit category: Indoor High-Bay*, Non-Class 2 Lighting System, IP20: Dry and Damp Locations, Surge Protection: L-N 4kV, L&N-G 6kV, RoHS compliant

Standard model (TRMUNV220AC850A) is DLC QPL Listed. Other CCT and CRI options are not listed. Visit <https://www.designlights.org/search/> for more details.

Universal Voltage Highbay LED Retrofit Kit

Model Number	Input Voltage (VAC)	Input Current (A)	Input Power (W)	Nominal Lumens @ 5000K/80CRI	Dimming Type	Dimensions (mm) (Dia. x H)
TRMUNV220AC850A	120-277; 50/60 Hz	1.79 @ 120VAC	214	25,466	0-10V	11.5" x 12.4"



THORLED
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LED CANOPY RETROFIT KIT

LED RETROFIT SYSTEM



- Listed on DLC Qualified Products List
- cULus Classified for field installation
- High power factor (>0.97) and low THD (<10%)
- Integrated thermal feedback/management
- 80 CRI. 4000K and 5000K options available
- 0-10V dimmable. Compatible with daylight harvesting controls, occupancy sensors, and building automation

Specifications

Power Factor	>0.97
THD	<10%
Estimated Lumen Maintenance	L90 >54,000hrs @ 80°C (TM-21 Reported)
Surge Protection	2kV/4kV
Warranty	5 years

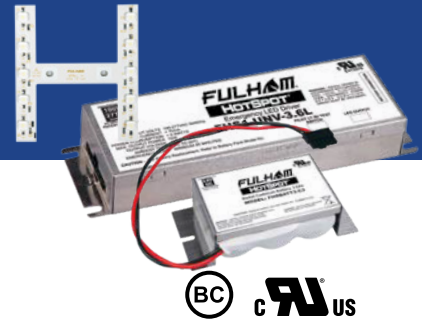
Universal Voltage Canopy LED Retrofit Kit

Model Number	Input Voltage (VAC)	Input Current (A)	Input Power (W)	Nominal Lumens @ 4000K/80CRI	Dimming Type	Dimensions (mm) (Dia. x H)
TRMUNV065EACxxxA	120-277; 50/60 Hz	0.54	65	8,700	0-10V	10" x 1.26"



HOTSPOT
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HOTSPOT1 LED EMERGENCY SYSTEMS



HotSpot1 modular systems add LED emergency lighting capability to existing luminaires. A complete system consists of an emergency driver, emergency module, and emergency battery pack. The HotSpot1 system operates independently of the luminaire's light source, ensuring compatibility with many types of luminaires.



HotSpot1 Emergency Driver	
Model Number	FHS1-UNV-3.6L
Input Voltage	100-277VAC (UNV)
Input Frequency	50/60Hz
Input Current	0.06 A Max.
Input Wattage	10W Max.
Standby Input Power	<0.8W
Compatible Batteries	NiCd, 3.6 VDC
Battery Capacities	3AH, 4AH, 8AH
Total LED Power	1-10W
Illumination Time	90 - 360 Min.
Surge Protection	C62.41 (TVS)
Over Current Protection	Fuse
Recharge Time	32 - 48 Hrs
LED Connection	Parallel
LED Output Protection	Self Resetting PTC
Output Classification	UL1310/Class 2

HotSpot1 Emergency Modules				
Model Number	Watts	Shape	Applications	
FHS6-AR-3WL	3	Linear	Wall sconce, ceiling flush mount, low level lighting	
FHS1-AR4-WL	4	Linear	Wall sconce, ceiling flush mount, low level lighting	
FHS2-AR4-WC	4	Circular	Recessed down lighting, wall sconce cylinder	
FHS5-AR-6W-CL	6	Cluster	Circular lamp applications, e.g. Parking lot luminaires	
FHS3-AR-6W-SH	6	Small-H	Wall sconce, ceiling flush mount	
FHS4-AR-8W-LH	8	Large-H	Wall sconce, ceiling flush mount	
FHS3-AR-10W-SH	10	Small-H	Wall sconce, ceiling flush mount	
FHS4-AR-10W-LH	10	Large-H	Wall sconce, ceiling flush mount	

HotSpot1 Emergency Battery Packs				
Model Number	Battery Qty/Type	Operation Duration	Output Power/Time	Dimensions (L x W x H)
FHSBATT3-C3	3/C	3 Amp/Hrs	4W: 145min, 6W: 90min	3.1" x 2.00" x 1.00"
FHSBATT3-D4	3/D	4 Amp/Hrs	4W: 200min, 6W: 125min, 8W: 90min	4.00" x 2.50" x 1.35"
FHSBATT3-F7	3/F	8 Amp/Hrs	4W: 360min, 6W: 235min, 8W: 175min, 10W: 135min	4.00" x 3.60" x 1.35"
FHSBATT3-F7L	3/F	8 Amp/Hrs	4W: 360min, 6W: 235min, 8W: 175min, 10W: 135min	11.75" x 1.56" x 1.37"



HOTSPOT
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HOTSPOT1 UL CLASSIFIED LED EMERGENCY KITS

HotSpot1 kits are UL Classified emergency lighting systems, ideal for troffers and approved for field or factory installation. A complete kit includes an emergency driver, emergency module, emergency battery, installation instructions, and all necessary hardware and labels. The system operates independently of the luminaire's light source and can be used with both fluorescent and LED tubes. Choose the right kit for the job according to lumen output, run time, and emergency module dimensions.



HotSpot1 UL Classified LED Emergency Kits											
Model Number	Watts	Lumen Output	Estimated Run Time	Module Type	Dimensions (L x W)	Model Number	Watts	Lumen Output	Estimated Run Time	Module Type	Dimensions (L x W)
FHSKITT03LNC	3	450	145 Mins	Linear	4.68" x 0.82"	FHSKITT07LND*	7	900	100 Mins	Linear	4.68" x 0.82"
FHSKITT03LND	3	450	200 Mins	Linear	4.68" x 0.82"	FHSKITT07LNF*	7	900	180 Mins	Linear	4.68" x 0.82"
FHSKITT03LNF	3	450	360 Mins	Linear	4.68" x 0.82"	FHSKITT07LNFL*†	7	900	180 Mins	Linear	4.68" x 0.82"
FHSKITT03LNFL†	3	450	360 Mins	Linear	4.68" x 0.82"	FHSKITT08LHD	8	1000	90 Mins	Large-H	5.71" x 3.93"
FHSKITT04LNC	4	500	145 Mins	Linear	4.68" x 0.82"	FHSKITT08LHF	8	1000	175 Mins	Large-H	5.71" x 3.93"
FHSKITT04LND	4	500	200 Mins	Linear	4.68" x 0.82"	FHSKITT10LHF	10	1250	135 Mins	Large-H	5.71" x 3.93"
FHSKITT04LNF	4	500	360 Mins	Linear	4.68" x 0.82"	FHSKITT10SHF	10	1250	135 Mins	Small-H	3.54" x 3.93"
FHSKITT06SHC	6	750	90 Mins	Small-H	3.54" x 3.93"	FHSKITT10LNF**	10	1350	120 Mins	Linear	4.68" x 0.82"
FHSKITT06SHD	6	750	125 Mins	Small-H	3.54" x 3.93"	FHSKITT10LNFL**†	10	1350	120 Mins	Linear	4.68" x 0.82"
FHSKITT06SHF	6	750	235 Mins	Small-H	3.54" x 3.93"						

*Includes 2 linkable 450lm linear modules

** Includes 3 linkable 450lm linear modules

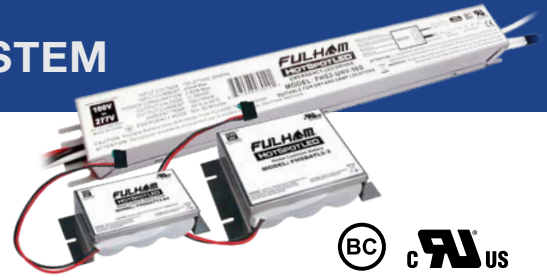
†Linear Battery



HOTSPOT

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HOTSPOT2 LED EMERGENCY SYSTEM



The HotSpot2 emergency lighting system drives existing constant current LED modules during power outages. A complete system is composed of an emergency driver, emergency battery, and output wire harness. A wide range of lumen output and run times are available.



HotSpot2 Emergency Drivers		
Model Number	FHS2-UNV-36L	FHS2-UNV-56S
Input Voltage	100-277VAC	
Input Frequency	50/60Hz	
Input Current	0.1 A Max	
LED Currents	100mA - 700mA	
Standby Input Power	<0.8W	
Total LED Power	20W	
Illumination Time	90 - 350 Min	
Input Surge Protection	2.5KV Ring Wave	
Over Current Protection	Fuse	
Recharge Time	24-32 Hrs	
LED Connection	Series	
LED Output Protection	Self Resetting PTC	
Output Classification	UL1310/Class 2	
Output Working Voltage	12-55 VDC	12 - 56 VDC
Dimensions (L x W x H)	5.3" x 1.7" x .93"	9.5" x 1.19" x 1"

HotSpot2 Emergency Battery Packs							
Model Number	Dimensions (L x W x H)	Chem.	Capacity (mAh)	Battery Count	Recharge Time (Hrs)	Max. Load for 90mi (W)	
FHSBATT8-AA.9	5.23" x 2.39" x 0.66"	NiCd	900	8 Cells	24	4	
FHSBATT8-C3	4.15" x 3.29" x 2.11"	NiCd	3000	8 Cells	24	16	
FHSBATT8-C3L	7.89" x 2.06" x 1.04"	NiCd	3000	8 Cells	24	16	
FHSBATT8-D4	4.95" x 3.84" x 2.66"	NiCd	4000	8 Cells	24	20	
FHSBATL3-1	3.48" x 2.29" x 0.91"	LiFePO4	1000	3 Cells	24	4	
FHSBATL3-1.5	3.48" x 2.70" x 0.91"	LiFePO4	1500	3 Cells	24	8	
FHSBATL3-1.5S	8.87" x 1.11" x 0.96"	LiFePO4	1500	3 Cells	24	8	
FHSBATL3-3	4.39" x 2.76" x 1.22"	LiFePO4	3000	3 Cells	24	16	
FHSBATL6-.6	5.23" x 1.88" x 0.88"	LiFePO4	1200	6 Cells	24	6	
FHSBATL6-1.5	5.70" x 2.70" x 0.91"	LiFePO4	3000	6 Cells	24	16	
FHSBATL6-1.5L	7.89" x 1.50" x 1.19"	LiFePO4	3000	6 Cells	24	16	
FHSBATL6-1.5S	16.7" x 1.11" x 0.96"	LiFePO4	3000	6 Cells	24	16	
FHSBATL6-3	7.52" x 2.76" x 1.22"	LiFePO4	6000	6 Cells	32	20	
FHSBATTCC3-3	6.00" x 3.60" x 1.55"	LiFePO4	3000	3 Cells	24	14	
FHSBATL6-3L	8.00" x 2.09" x 1.18"	LiFePO4	6000	6 Cells	32	20	
FHSBATL9-.6	7.52" x 1.81" x 1.18"	LiFePO4	1800	9 Cells	24	10	

Wiring harnesses are used to set the output current to the LED module during emergency operation.

HotSpot2 Emergency Wire Harnesses							
Model Number	mA	Model Number	mA	Model Number	mA	Model Number	mA
FHS-HARNESS-100	100	FHS-HARNESS-200	200	FHS-HARNESS-350	350	FHS-HARNESS-550	550
FHS-HARNESS-125	125	FHS-HARNESS-225	225	FHS-HARNESS-400	400	FHS-HARNESS-600	600
FHS-HARNESS-150	150	FHS-HARNESS-250	250	FHS-HARNESS-450	450	FHS-HARNESS-650	650
FHS-HARNESS-175	175	FHS-HARNESS-300	300	FHS-HARNESS-500	500	FHS-HARNESS-700	700



HOTSPOT

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HOTSPOT PLUS LED DRIVER PLUS EMERGENCY SYSTEM

ALL-IN-ONE

- HotSpot Plus programmable 40 Watt LED driver / emergency battery back up combination unit
- Programmable output current from 250mA to 1400mA in 1mA increments
- Selectable emergency output: 5W for 180 minutes or 10W for 90 minutes
- Compact size and simple installation for maximum flexibility



HotSpot Plus LED Driver and Emergency System								
Watts	Output Current (mA)	Output Voltage (VDC)	Model Number	Input Voltage (VAC)	Dimming Type (V)	Ch.	Dimensions (L x W x H)	Case Type
40	250-1400	10-55	FHSAC1-UNV-40BLS	120-277; 50/60Hz	0-10	1	6.38" x 3.15" x 1.54"	Compact w/ Bottom Leads
40	250-1400	10-55	FHSAC1-UNV-40C	120-277; 50/60Hz	0-10	1	6.3" x 3" x 1.1"	Compact w/ End Leads
40	250-1400	11-55	FHSAC1-UNV-40L	120-277; 50/60Hz	0-10	1	9.49" x 2.40" x 1.34"	Linear w/ End Leads
45	250-1400	11-50	FHSAC1-230-45CE	220-240; 50/60Hz	0-10	1	9.0" x 3.23" x 1.34"	Linear w/ Terminals



HOTSPOT
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HOTSPOT CONSTANT POWER PROGRAMMABLE LED EMERGENCY DRIVER

Provides programmable, constant power emergency output for existing LED modules. Advanced features include self-diagnostics and detailed data logging. Meets CEC Title 20 battery charger requirements. Compatible with Fulham SmartSet Programming Platform and TPSB-100 handheld controller. Complete system includes emergency driver and emergency battery.



Specifications

Model Number	FHSCP-UNV-10P-L-SD	RFI/EMI	FCC Part 15A Non-Consumer
Input Voltage	100-277VAC, 50/60Hz	Number of Output Channels	1 Channel
Input Current	0.06A Max.	Output Type	Class 2
Output Power	1-10W	Battery Type	LiFePO4 9.6VDC
Output Current	620mA Max.	Battery Recharge Time	12 Hours
Output Voltage Range	16-55VDC	Dimension	2.05" x 7.89" x 1.17"
Ambient Operating Temperature Range	10°C to 55°C (50°F to 131°F)	Input Surge Protection	Line-Neutral 2kV, Line & Neutral-Ground 2kV

HotSpot Constant Power Programmable Battery Packs

Model number	Max. load for 90 min	Capacity	Dimensions (L x W x H)
FHSBATL3-1.5-SD	5W	1500mAh	3.48" x 2.76" x 0.99"
FHSBATL3-3-SD	10W	3000mAh	4.39" x 2.82" x 1.3"
FHSBATL9-.6-SD	6W	1800mAh	7.52" x 1.87" x 0.85"
FHSBATL6-1.5L-SD*	10W	3000mAh	7.89" x 1.56" x 0.92"

*Does not include mounting means. Use mounting bracket FHSBATSC6-1.5L



HOTSPOT
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HOTSPOT CONSTANT POWER LED EMERGENCY DRIVER

Adds field-installable emergency capability to LED luminaires. Provides a constant source of emergency backup power to the luminaire's LED modules for at least 90 minutes. The cULus Classified driver is designed for flexibility, with multiple mounting options, a conduit feed, and an illuminated test switch.



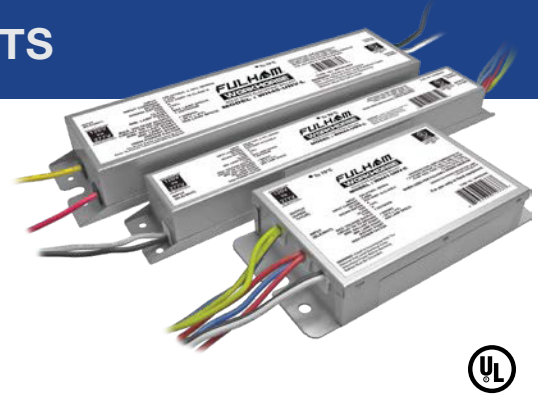
Common Specifications

Input Voltage	120-277V (UNV)	Ambient Temperature	0°C - 50°C
Output Voltage	20-50VDC	Output Type	Class 2
Surge Protection	Per C62.41 (TVS)	RFI/EMI	FCC Part 15A Non-Consumer
Recharge Time	24 hours	Illumination Time	Minimum 90 minutes

HotSpot Constant Power LED Emergency Driver Models

Model	Output Power (W)	Output Lumens*	Output Current (mA)	Dimensions (L x W x H)
FHSCP-UNV-5WL	5	800	100-250	11.5" x 2.6" x 1.5"
FHSCP-UNV-7.8WL	7.8	1250	156-390	15.4" x 2.6" x 1.5"
FHSCP-UNV-10.7WL	10.7	1700	214-535	15.4" x 2.6" x 1.5"
FHSCP-UNV-13.7WL	13.7	2200	274-685	19.2" x 2.6" x 1.5"
FHSCP-UNV-17WL	17	2700	340-850	19.2" x 2.6" x 1.5"

* Based on 160 lumens/watt light source



Universal Voltage (120-277V)

Model Number	Dimensions (L x W x H)	Input Current	Master Carton Qty.
WH41-UNV-C	5.77" x 2.99" x 1.05"	0.488A	30
WH41-UNV-L	9.48" x 1.41" x 1.02"	0.496A	25
WH43-UNV-L	9.48" x 1.41" x 1.02"	0.88A	20
WH44-UNV-L	9.48" x 1.41" x 1.02"	0.96A	20
WH45-UNV-L	9.48" x 2.25" x 1.22"	1.23A	25

Dedicated Voltage (120, 230, and 277V)

	WORKHORSE 1	WORKHORSE 2	WORKHORSE 22	WORKHORSE 3	WORKHORSE 33
Model No. 120V	WH1-120-L	WH2-120-L WH2-120-C (BLS)	WH22-120-L WH22-120-C (BLS)	WH3-120-L WH3-120-C (BLS)	WH33-120-L
Max. Current 120VAC	.20 A	.33 A	.25 A	.56 A	.53 A
Model No. 230V	N/A	WH2-230-L	N/A	WH3-230-L	N/A
Max. Current 230VAC	N/A	.26 A	N/A	.29 A	N/A
Model No. 277V	WH1-277-L	WH2-277-L WH2-277-C (BLS)	WH22-277-L	WH3-277-L WH3-277-C (BLS)	N/A
Max. Current 277VAC	.11 A	.15 A	.15 A	.24 A	N/A
Max. Power	28W	35W	35W	64W	64W
Black/White wires	12"	L-18" C-12"	L-18" C-12"	L-18" C-12"	L-18" C-12"
Red/Yellow wires	24"	L-36" C-12"	L-36" C-12"	L-36" C-12"	L-36" C-12"
Dimensions (L x W x H)	120L: 6" x 1" x .75" 277L: 7.5" x 1" x .75"	120L, 230L, 277L: 5.5" x 1" x 1" 120C: 3.3" x 1.75" x 1" 277C: 3.3" x 2.3" x 1"	120L, 277L: 5.5" x 1" x 1" 120C: 3.3" x 1.75" x 1" 277C: 3.3" x 2.3" x 1"	120L, 230L, 277L: 6.5" x 1.5" x 1" 120C: 3.8" x 2.5" x 1" 277C: 3.8" x 3.1" x 1"	120L: 6.5" x 1.5" x 1" 120C: 3.8" x 3.1" x 1"
Weight	4.5 oz.	7 oz.	7 oz.	10 oz.	10 oz.
Case Qty	50 pcs.	50 pcs.	50 pcs.	50 pcs.	50 pcs.
	WORKHORSE 4	WORKHORSE 5	WORKHORSE 6	WORKHORSE 7	WORKHORSE 8
Model No. 120V	WH4-120-L	WH5-120-L	WH6-120-L	WH7-120-L WH7-120-H	WH8-120-L
Max. Current 120VAC	.56 A	1.15 A	1.04 A	1.82 A	1.8 A
Model No. 230V	N/A	WH5-230-L	N/A	WH7-230-L	WH8-230-L
Max. Current 230VAC	N/A	0.57 A	N/A	1.10 A	1.1 A
Model No. 277V	WH4-277-L	WH5-277-L	WH6-277-L	WH7-277-L	WH8-277-L
Max. Current 277VAC	.21 A	0.48 A	0.50 A	.85 A	.74 A
Max. Power	70W	128W	140W	220W	220W
Black/White wires	18"	18"	18"	18"	18"
Red/Yellow wires	36"	36"	36"	36"	36"
Dimensions (L x W x H)	L: 6.5" x 1.5" x 1"	120L: 8.5" x 1.72" x 1" 277L: 9.5" x 1.72" x 1"	L: 8.5" x 1.72" x 1" 277L: 9.5" x 1.72" x 1"	L: 19.25" x 1.72" x 1" H: 11.75" x 3.25" x 1.25"	L: 19.25" x 1.72" x 1"
Weight	10 oz.	14 oz.	15 oz.	32.8 oz.	34 oz.
Case Qty	50 pcs.	50 pcs.	50 pcs.	WH7-120-L: 25pcs. WH7-120-H: 16pcs.	25 pcs.



Canadian UL Listed WorkHorse Ballasts

Model Number	Description	Model Number	Description	Model Number	Description
CWH2-120-C	WH2, 120V, Cube Case	CWH3-120-C	WH3, 120V, Cube Case	CWH5-120-L	WH5, 120V, Long Case
CWH2-120-L	WH2, 120V, Long Case	CWH3-120-L	WH3, 120V, Long Case	CWH6-120-L	WH6, 120V, Long Case
CWH22-120-C	WH22, 120V, Cube Case	CWH3-277-L	WH3, 277V, Long Case	CWH7-120-L	WH7, 120V, Long Case
CWH22-120-L	WH22, 120V, Long Case	CWH33-120-C	WH33, 120V, Cube Case	CWH8-120-L	WH8, 120V, Long Case
CWH22-277-L	WH22, 277V, Long Case	CWH4-120-L	WH4, 120V, Long Case		



FLUORESCENT PROGRAM START T8 BALLASTS

Specifications	
Operating Voltage	WHPS: 120-277VAC (UNV) ± 10%
Frequency	50/60Hz
Power Factor	98.6% Min.
ATHD	< 10%
Ballast Factor	>.93
EMI	FCC CFR Title 47 Part 18 non-consumer
Lamp CF	< 1.7
Min. Operating Temp.	0°F (-18°C)
Inherent Thermal Protection	Class P
Dimensions (L x W x H)	8.91" x 1.32" x 1.05"
Sound Rating	"A"
Regulatory Approvals	UL & cULus Listed Type1 or Type 2 Type HL, CC



Program Start T8 Ballasts				
Model Number	Max. Load (W)	Max. Current (A)	Case Quantity (pcs.)	CEE
WHPS1-UNV-T8-PS	30	0.25	25	
WHPS2-UNV-T8-PS	57	0.48	25	



FLUORESCENT COMMERCIAL GRADE T8/T12 BALLASTS

Specifications	
Power Factor	97.5% Min.
ATHD	Less than 20%
EMI	FCC CFR Title 47 Part 18 non-consumer
Ballast Factor	>.87
Lamp CF	< 1.7
Regulatory Approvals	UL & cULus Listed Type 1 or Type 2
Min. Starting Temp.	0°F (-18°C)
Inherent Thermal Protection	Class P
Dimensions (L x W x H)	9.5" x 1.7" x 1.2"
Weight	1.7 lb. (760g)






Commercial Grade T8/T12 Ballasts										
Model Number	Input Voltage (VAC)	Input Power (W)	Starting Method	Max. Current (A)	Black/White Wires	Red Wires	Blue Wires	Yellow Wires	Case Qty (pcs.)	CEE
WHCG2-120-T8-IS	120; 50/60Hz	58 (with T8 32W lamp)	Instant Start	.50	24"	48"	32"	N/A	25	
WHCG3-120-T8-IS	120; 50/60Hz	85 (with T8 32W lamp)	Instant Start	.71	24"	48"	32"	N/A	25	
WHCG4-120-T8-IS	120; 50/60Hz	112 (with T8 32W lamp)	Instant Start	.93	28"	30"	30"	46"	25	
WHCG5-120-T12-RS	120; 50/60Hz	74 (with T12 40W lamp)	Rapid Start	.62	24"	32"	32"	48"	25	

Specifier Grade T8/T12 Specifications

Power Factor	98.5% Min.
ATHD	Less than 10%
EMI	FCC CFR Title 47 Part 18 non-consumer
Ballast Factor	>.87
Starting Method	T8: Instant Start, T12HO: Modified Rapid Start
Regulatory Approvals	UL & cULus Listed Type 1 or Type 2
Inherent Thermal Protection	Class P
Transient Protection	C62.41 Class A 7 strikes
Dimensions (L x W x H)	T8: 9.5" x 1.3" x 1.0", T12HO: 11.75" x 2.3" x 1.6"
Lamp CF	< 1.7
Min. Starting Temp.	0°F (-18°C)
Weight	T8: 1.5 lbs. (700g), T12HO: 4.0lb. (1.8 kg)



Specifier Grade T8/T12 Ballasts



Model Number	Input Voltage (VAC)	Input Power (W)	Max. Current (A)	Black/White Wires	Red Wires	Blue Wires	Yellow Wires	Case Qty (pcs.)	CEE
WHS2-UNV-T8-IS	120-277; 50/60Hz	59	.50	24"	46"	32"	N/A	25	
WHS3-UNV-T8-IS	120-277; 50/60Hz	85	.71	24"	46"	32"	N/A	25	
WHS4-UNV-T8-IS	120-277; 50/60Hz	112	.93	28"	30"	30"	46"	25	
WHS7-UNV-T12 HO	120; 50/60Hz	200	1.65	22"	46"	46"	70"	10	

Specifier Grade T8 High & Low Ballast Factor Specifications

Power Factor	98.5% Min.
ATHD	Less than 10%
EMI	FCC CFR Title 47 Part 18 non-consumer
Ballast Factor	>.87
Starting Method	Instant Start
Regulatory Approvals	UL & cULus Listed Type 1 or Type 2
Inherent Thermal Protection	Class P
Transient Protection	C62.41 Class A 7 strikes
Dimensions(L x W x H)	9.5" x 1.3" x 1.0"
Lamp CF	< 1.7
Min. Starting Temp.	0°F (-18°C)
Weight	1.5 lbs. (700g)



Specifier Grade T8 Fluorescent High & Low Ballast Factor Ballasts

Model Number	Input Voltage (VAC)	Input Power (W)	Max. Current (A)	Black/White Wires	Red Wires	Blue Wires	Yellow Wires	Case Qty (pcs.)	CEE
WHS2-UNV-T8-HB	120-277; 50/60Hz	74	.62	24"	46"	32"	N/A	25	
WHS3-UNV-T8-LB	120-277; 50/60Hz	76	.64	24"	46"	32"	N/A	25	

Find Fulham WorkHorse wiring diagrams at
www.fulham.com/wiring

T5HO & T5HE Specifications	
Operating Voltage	120V-277V; 50/60Hz
ATHD	< 10%
Protection/Output: Protection/Input	End of Life (EOL)
Over Current	Fuse
Transient Protection	C62.41 Class A 7 strikes
Regulatory Approvals	UL & cULus Listed Type 1 Outdoor
EMI	FCC CFR Title 47 Part 18 non-consumer
High Power Factor	> .98
Open Circuit Voltage	600 V RMS Max.
Ballast Min. Operating Temp.	-18°C (0°F)
Ballast Maximum Case Temp.	167°F (75°C) - 5 Year Warranty
Ballast Maximum Case Temp.	194°F (90°C) - 3 Year Warranty
Ballast Lamp Starting Mode	Program Start
Sound Rating	"A"
Inherent Thermal Protection	Class P



T5HO & T5HE Electronic Fluorescent Ballasts						
Model Number	Max. Load (W)	Max. Current (A)	Dimensions (L x W x H)	Connector Type	Case Qty (pcs.)	Compliance
RHA-UNV-224-LT5	54W	0.45 A	9.45" x 1.31" x 1.06"	Leads	20	RoHS
RHA-UNV-228-LT5	67W	0.56 A	9.45" x 1.31" x 1.06"	Leads	20	RoHS
RHA-UNV-254-LT5	120W	1.0 A	9.53" x 1.32" x 1.05"	Leads	25	
RHA-UNV-454-LT5	240W	2.0 A	16.88" x 1.69" x 1.18"	Leads	20	

T5HO & T5HE Lamp Operation		
Model Number	# of Lamps	Lamp Type / Designation
RHA-UNV-224-LT5	1 x	F24T5HO, F39T5HO, FT24W, T5CR22W, T5CR40W, FT40W, FT36W
	2 x	F24T5HO, FT24W, T5CR22W
RHA-UNV-254-LT5	1 x	F54T5/HO, FC12T5/HO, FT55, FT50, F54T5HO/49W
	2 x	F54T5/HO, FC12T5/HO, FT55, FT50, F54T5HO/49W
RHA-UNV-454 LT5	2 x	FT36W, FT55W, F54T5HO, F54T5HO/49W
	3 x	FT36W, FT55W, F54T5HO, F54T5HO/49W
	4 x	FT36W, FT55W, F54T5HO, F54T5HO/49W
RHA-UNV-228-LT5	1 x	F28T5/HE, F21T5/HE, F14T5/HE
	2 x	F28T5/HE, F21T5/HE, F14T5/HE



LOW TEMPERATURE ELECTRONIC BALLASTS

Specifications			
Input Voltage	120V-277V; 50/60Hz	Lamp Operation Mode	Programmed Start
High Power Factor	> 0.98	Ignition Method	Programmed Pre-Heat Start
ATHD	< 10%	Min. Operating Temperature	-30°C (-22°F)



Fluorescent Low Temperature Electronic Ballasts					
Model Number	Max. Current (A)	Max. Power (W)	Dimensions (L x W x H)	Weight (lbs)	Case Qty. (pcs.)
IH1-UNV-232-T8	.85	100	12" x 1.7" x 1"	1.4	25
IH2-UNV-270-T8	1.35	155		1.5	25
IH3-UNV-272T12HO	1.38	150		1.4	25

Lamp Operation		
Model Number	# of Lamps	Lamp Type / Designation
IH1-UNV-232-T8	1 or 2	F25 / F32 / F40 T8
IH2-UNV-270-T8	1 or 2	F58 / F70 T8
IH3-UNV 272 T12HO	1 or 2	F48 / F60 T8HO, F48 / F60 T10VHO, F48 / F60 / F72 T12HO
	1	F72T8HO, F72T10VHO, F96T12VHO



UV/PURIFICATION ELECTRONIC BALLASTS

Specifications			
Frequency	50/60Hz	Protection Input	Fuse/MOV
Protection Output	Yes	Over Current	Yes

Standard Electronic Ballasts For UV & Tanning								
Model Number	Operating Voltage (VAC)	Max. Input Current (A)	Rated Max. Load (W)	Min. Operating Temp.	Max Case Temp.	Dimensions (L x W x H)	UL US	CE
SHS2-MLT-L	120-240	0.19	17	0°C (32°F)	75°C (167°F)	5.87" x 1.50" x 1.04"		
SHS4-120-C	120	0.303	21	0°C (32°F)	75°C (167°F)	3.09" x 1.45" x 1"	✓	
SHS3-MLT-L	120-240	0.29	32	-10°C (14°F)	75°C (167°F)	5.87" x 1.50" x 1.04"		✓
SHS1-UNV-C-I	120-277	0.408	42	0°C (32°F)	75°C (167°F)	5.05" x 2.36" x 1.00"	✓	
SHS5-024-C	24	2.59	42	0°C (32°F)	75°C (167°F)	3.64" x 3.12" x 1.01"	✓	
SHS10-UNV-H	120-277	1.25	150	0°C (32°F)	80°C (176°F)	10" x 2.6" x 1.26"		
SHS14-UNV-H	120-277	1.6	150	0°C (32°F)	70°C (158°F)	10" x 2.6" x 1.26"		
SHS11-UNV-H	120-277	1.35	190	0°C (32°F)	70°C (158°F)	10" x 2.6" x 1.26"		
SHS15-UNV-H	120-277	2.9	310	0°C (32°F)	75°C (167°F)	10" x 2.6" x 1.26"		
FEP-120-600-L	120	2.86	320	-18°C (0°F)	70°C (158°F)	19.25" x 3" x 1.25"	✓	
FEP-210-600-L	210	1.52	320	0°C (32°F)	70°C (158°F)	19.25" x 3" x 1.25"	✓	✓
FEP-230-600-L	230	1.50	320	-18°C (0°F)	70°C (158°F)	19.25" x 3" x 1.25"	✓	
SHGS1 MID 2 200 L	208-240	1.85	380	0°C (32°F)	75°C (167°F)	12" x 3.11" x 1.73"	✓	
SHGS5 MID 2 200 N	208-240	1.70	400	10°C (50°F)	N/A - No case	9.84" x 2.76" x 1.89"		✓
SHGS6 MID 4 120 N	208-240	1.70	480	10°C (50°F)	N/A - No case	9.84" x 2.76" x 1.89"		✓
SHGS3 MID 6 100 L	208-240	2.50	600	0°C (32°F)	75°C (167°F)	16" x 3.11" x 1.77"	✓	
SHGS7 MID 6 120 N	208-240	2.50A	720W	10°C (50°F)	N/A - No case	12.72" x 2.95" x 1.97"		✓

Dimmable Electronic Ballasts For UV & Tanning								
SHD21-230-L-I	230	1.64A	320W	0°C (32°F)	70°C (158°F)	16.69" x 1.72" x 1.18"	✓	
SHGD1 MID 2 200 L	208-240	1.71A	400W	0°C (32°F)	75°C (167°F)	12" x 3.11" x 1.73"	✓	



UNIVERSAL VOLTAGE FLUORESCENT EMERGENCY BALLASTS

- Universal voltage (120-277V, 50/60Hz)
- Lamps operated on AC during emergency operation
- Wide range of lumen output

- UL listed for damp locations
- Integrated LED power indicator/test switch
- CEC Title 20 Compliant models available



Specifications

Operating Voltage	Universal 120 - 277V	Ballast Compatibility	Electronic/Energy Saving
Frequency	50/60Hz	Lamp Compatibility	Fluorescent Type/TCLP
Regulatory Compliance	Meets or Exceeds N.E.C./LSC	Output Type	AC
Operating Temp Range	0°C - 55°C	Fixture Wiring	Switched or Unswitched
Operating Temp Range FH7	20°C - 55°C	Minimum Emergency Operation	90 Mins.
Test Switch	LED Push Button	Min. Required Charging Time	24 Hours
Indicator Type	LED Type	Case Construction	Vandal Resistant Painted Steel
Special Ballast Compatibility	Electronic Dimming Type/End-of-Life	Battery Type	High Temp. Long Life Rechargeable NiCd

Universal Voltage Fluorescent Emergency Ballasts

Model Number	Initial Lumen Output	AC Input	Max Charge Current (120VAC)	Max Charge Current (277VAC)	Battery Voltage (VDC)	Battery Rating (Wh)	Dimensions (L x W x H)	Weight (lbs)
FH7-UNV-500L	500	3W	50mA	30mA	6.0	12.0	9.60" x 2.16" x 1.13"	1.7
FH11-UNV-750L	750	3W	50mA	30mA	3.6	14.4	9.37" x 2.33" x 1.53"	2.0
FH12-UNV-1400L	1400	4W	60mA	40mA	12.0	24.0	14.58" x 2.17" x 1.23"	1.7
FH7-UNV-500L-CEC*	500	1.1W	50mA	30mA	6.0	12.0	9.60" x 2.16" x 1.13"	1.7
FH11-UNV-750L-CEC*	750	1.1W	50mA	30mA	3.6	14.4	9.37" x 2.33" x 1.53"	2.0
FH12-UNV-1400L-CEC*	1400	1.1W	60mA	40mA	12.0	24.0	14.58" x 2.17" x 1.23"	1.7

* California Energy Commission Small Battery Charging Title 20 compliant.



DUAL VOLTAGE FLUORESCENT EMERGENCY BALLASTS

- End of Life (EOL) Time Delay
- Wide range of lamp and ballast compatibility

- Damp location rated
- Wide range of lumen output



Specifications

Operating Voltage	Dual 120/277V	Ballast Compatibility	Electronic/Energy Saving
Frequency	50/60Hz	Lamp Compatibility	Fluorescent Type/TCLP
Regulatory Compliance	Meets or Exceeds N.E.C./LSC	Fixture Wiring	Switched or Unswitched
Operating Temp Range	0°C - 55°C	Minimum Emergency Operation	90 Mins.
Test Switch	LED Push Button	Min. Required Charging Time	24 Hours
Indicator Type	LED Type	Case Construction:	Vandal Resistant Painted Steel
Special Ballast Compatibility	Electronic Dimming Type/ End-of-Life	Battery Type	High Temp. Long Life Rechargeable NiCd

Dual Voltage Fluorescent Emergency Ballasts

Model Number	Initial Lumen Output	EOL Time Delay	AC Input	Max Charge Current	Battery Voltage (VDC)	Battery Rating (Wh)	Warranty (Yrs.)	Dimensions (L x W x H)	Weight (lbs)	Case QTY	Carton QTY
FH1-DUAL-750CFL	750	Yes	3.5W	280mA	3.6VDC	14.4Wh	2	9.4" x 2.4" x 1.5"	2.8lbs	1	6
FH3-DUAL-450L	450		2.5W		2.4VDC	9.6Wh	2	9.4" x 2.4" x 1.5"	2.5lbs		
FH4-DUAL-700L	700		3.5W		3.6VDC	14.4Wh	3	9.4" x 2.4" x 1.5"	2.8lbs		
FH5-DUAL-1400L	1400		3.5W		6.0VDC	24.0Wh	5	13.3" x 2.4" x 1.5"	3.4lbs		

Limited Warranty

Fulham Electronic Co. Ltd.
Fulham Co., Inc.
Fulham Company B.V.

Length of Warranty and Coverage

Warranty period will be determined from the date of manufacture as indicated by the date code stamped on each product and will be covered as follows:

FireHorse™ - 2 to 5 Years
FREELITE™ - 5 Years
HighHorse™ Electronic HID Ballast - 3 Years
HighHorse™ Induction - 5 to 7 Years (If installed per instructions)
HotSpot™ - 3 to 5 Years*
IceHorse™ Ballast - 3 Years
LongHorse™ Electronic Remote Fluorescent Ballast - 5 Years
LumoSeries™ - 5 Years
PONY™ Electronic Ballast - 2 Years
PONY™ Electronic SugarCube™ - 2 Years
PONY™ Electronic Transformer - 2 Years
RaceHorse™ Electronic Ballast – 70°C 5 Years, 90°C 3 Years
SunHorse™ Ballast - 3 Years
SineHorse™ Ballast - 3 Years
ThoroLED™ Drivers - 2 to 5 Years
ThoroLED™ Modules - 3 to 5 Years*
ThoroLED™ Retrofit - 5 Years
ThoroLED™ Luminaire - 5 Years
WorkHorse™ Electronic Fluorescent Ballast - 5 Years
WorkHorse LED™ Drivers - 5 Years

* Covered defects for ThoroLED and HotSpot LED modules. For purposes of this limited warranty, a defect in a module shall be defined as one or more individual LEDs dark at initial installation or greater than 10% of individual LEDs dark during the Warranty Period. Replacement and/or repair of individual ThoroLED or HotSpot LED Modules does not extend this limited warranty beyond the original Warranty Period.

Warranty Conditions

Fulham extends this express limited warranty only to the original purchaser or to the first user. This constitutes the complete warranty for the product. Fulham is not responsible for any auxiliary equipment not furnished by Fulham, which is used in connection with or attached to the product, or for operation of the product with any auxiliary equipment. Damage to all such equipment is expressly excluded from this warranty. In addition, Fulham is not responsible for any damage to the product resulting from the use of auxiliary equipment not supplied by Fulham.

Warranty Conditions Not Covered

This warranty is not applicable to any product manufactured by Fulham not installed and operated in accordance with:

- * Underwriters Laboratories Inc. (UL)
- * National Electrical Code (NEC)
- * Standards set by the International Electrotechnical Commission (IEC)
- * European Norms Electrical Certification (ENEC)
- * Applicable international federal, state and local codes
- * Remote applications beyond specifications:
 - WorkHorse - Length of the leads
 - HighHorse - 9 feet
 - LongHorse - 20 feet

* Fulham specific, most recent instructions and application guidelines provided for installation of the product

Additionally, this warranty is not applicable to Fulham manufactured products that have been subjected to excessive stress including, but not limited to, operating temperatures exceeding the recommended maximum temperature on any part of the product.

Obtaining Warranty Service

If within the warranty period it appears that the installed product does not meet the warranty conditions specified, the purchaser must notify Fulham of its warranty claim. Fulham or its authorized service company will provide warranty service directly to you.

General Provisions

All responsibilities regarding the product are set forth by this warranty. Replacement or repairs of the product is your exclusive remedy. For purposes of clarity, "replacement or repairs of the product" does not include any removal or reinstallation costs or expenses, including, without limitation, any labor costs or expenses, shipping costs to return non-conforming products or any damages that may occur during the return of product to Fulham. If Fulham chooses to replace the product and is not able to do so because it has been discontinued or is not available, Fulham may replace it with a comparable product. Fulham reserves the right to use new, reconditioned, refurbished, repaired or remanufactured products or parts in the repair or replacement of any product covered by this warranty.

This warranty is given in lieu of all other express warranties. Implied warranties, including those without limitation, warranties of merchant ability and fitness for a particular purpose, are limited to the duration of this limited warranty. Fulham shall in no event be liable for damages in excess of the purchase price of the product, for any loss of use, loss of time, inconvenience, commercial loss, lost profits or savings or other incidental, special or consequential damages arising out of the use or inability to use such product, to the full extent such may be claimed by law.

Local Exceptions

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, therefore the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and purchasers may have other rights that vary by jurisdiction.

Returned Materials Authorizations (RMA)

Customers shall contact Fulham directly for all RMA's.

After receiving the RMA, the user shall promptly return the product at the user's expense to Fulham after receiving instructions as to when and where to ship product. Failure to follow this procedure shall void this warranty. Should the number of pieces received by Fulham differ from the RMA either +/-, the customer will be notified and adjustments will be made at that time.

Fulham reserves the right to examine all failed products to determine the cause of failure and patterns of usage and reserves the right to be the sole judge as to whether any products are defective and covered under this warranty.

Contact Information

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CONTACT US

Visit www.fulham.com for product information, sales representative contact info, technical documentation, and more.

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