



Complete LED Systems Selection Guide

Drivers + Modules + Emergency Backup



Fulham offers superior components for your luminaires, engineered to help you get exceptional products to market with ease.

As the preferred partner of over 3000 lighting manufacturers and distributors worldwide, Fulham offers complete LED system solutions, including drivers, modules, engine kits, and emergency backup.

- Wide range of drivers, including 0-10V, TRIAC & DALI dimming options, UNV & 120V input
- Programmable drivers enable customized output currents, dimming curves, step dimming, dim-to-off, and more
- High efficiency constant current LED modules for linear applications, with range of CRI and temperature options
- LED engine kits feature integrated drivers for simple installation; listed in ENERGY STAR® Certified Subcomponent Database
- HotSpot2 emergency system provides reliable backup lighting during power outages

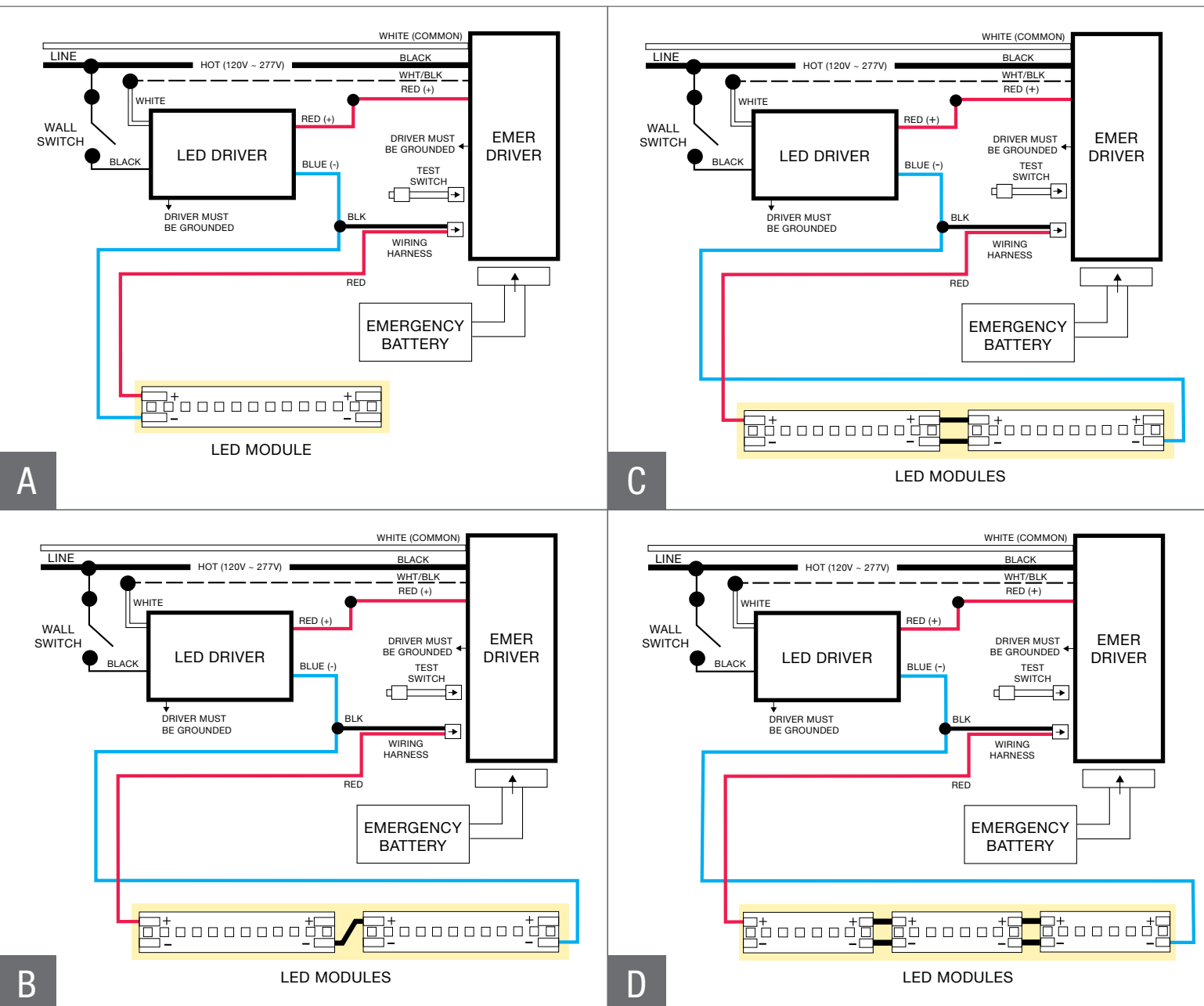
Think of this selection guide as a starting point: here you'll find the components you need to create the luminaires your customers demand. And if you can't find exactly what you're looking for, contact us. The Fulham team consistently ranks best in the industry for customer care. Together, we'll build a solution.

How to Use This Selection Guide

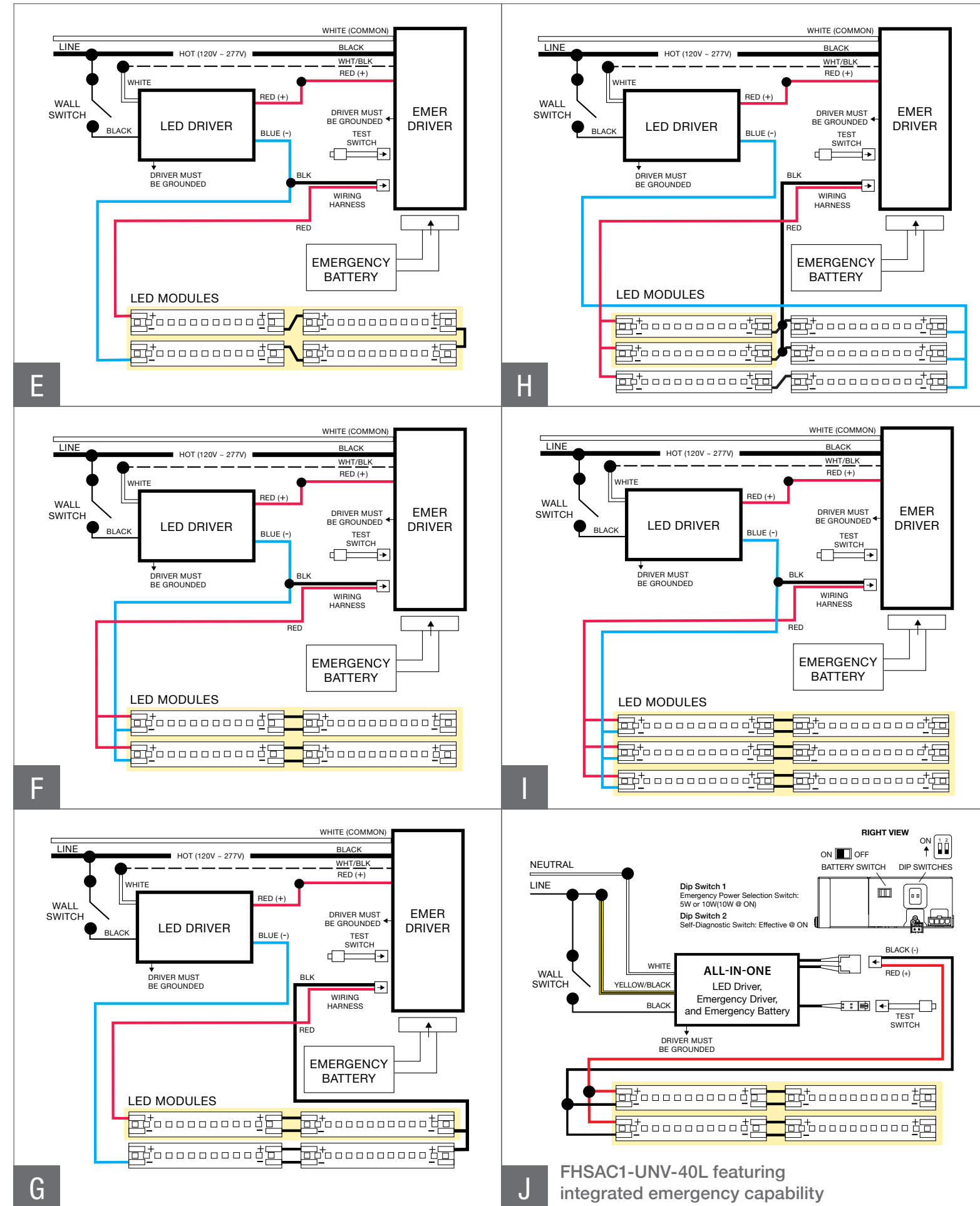
- 1 Using the fold-out chart, find your desired module shape, size, and quantity
- 2 Find your desired lumen output in the left column
- 3 Look in the LED Driver, LED Module, LED Engine Kit, and Diffuser Lens columns for recommended components
- 4 Look in the red emergency columns for recommended emergency components
- 5 Use the letter in the wiring diagram column to find the appropriate illustration

- Modules shown are available in 80 CRI or 90 CRI, and 2700K, 3000K, 3500K, 4000K, and 5000K. 80 CRI and 3000K and 4000K are standard.
- Many additional battery capacities, form factors, and lumen outputs are available for LED emergency.
- In wiring diagrams, modules that are powered during emergency mode are highlighted in yellow.
- For illustration purposes, linear modules are shown in wiring diagrams.

Wiring Diagrams



Wiring Diagrams



Normal System Operation ¹			LED Driver	LED Module	Diffuser Lens (~17% lumen reduction)	Wiring Diagram	Emergency System Operation ²			Emergency Driver	Emergency Battery	Wiring Harness	# Modules ON in Emergency
1-Foot Linear Modules x 1													
915 lm	700 mA	7.7W	TCD11200700-9C 3.15" L x 2.4" W x 1" H 700 mA CC 9W 120VAC Input TRIAC Dimming	TMU075007HL840A	TLE-OPT-120-003	A	495 lm 690 lm 915 lm	350 mA 500 mA 700 mA	3.1W 4.5W 6.5W	FHS2-UNV-36L	4W: FHSBATL3-1 6W: FHSBATL6-.6 8W: FHSBATL3-1.5	FHS-HARNESS-350 FHS-HARNESS-500 FHS-HARNESS-700	1
2-Foot Linear Modules x 1													
1720 lm	350 mA	13.6W	T1M1UNV0350-15L 3.94" L x 1.18" W x 0.91" H 350 mA CC 15W UNV Input 0-10V Dimming	TMU045015HL840A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	A	545 lm 805 lm 1055 lm	100 mA 150 mA 200 mA	3W 4.6W 6.3W	FHS2-UNV-36L	4W: FHSBATL3-1 6W: FHSBATL6-.6 8W: FHSBATL3-1.5	FHS-HARNESS-100 FHS-HARNESS-150 FHS-HARNESS-200	1
2020 lm	350 mA	15.9W	T1T11200350-15L 3.94" L x 1.18" W x 0.91" H 350 mA CC 15W 120VAC Input TRIAC Dimming	TMU045018HL840A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	A	630 lm 1245 lm 2020 lm	100 mA 200 mA 350 mA	3.6W 7.4W 13.5W	FHS2-UNV-56S	4W: FHSBATL3-1 8W: FHSBATL3-1.5 14W: FHSBATL6-1.5	FHS-HARNESS-100 FHS-HARNESS-200 FHS-HARNESS-350	1
1-Foot plus 2-Foot Linear Modules x 1 (for 3-Foot troffer)													
2745 lm	700 mA	22.9W	T1M1UNV0700-30L 4.65" L x 1.18" W x 1.16" H 700 mA CC 30W UNV Input 0-10V Dimming T1T11200700-30L 4.65" L x 1.18" W x 1.16" H 700 mA CC 30W 120VAC Input TRIAC Dimming	TMU075007HL840A + TMU075014HL840A	TLE-OPT-120-003 + TLE-OPT-120-004	B	670 lm 890 lm 1490 lm	150 mA 200 mA 350 mA	3.8W 5.1W 9.2W	FHS2-UNV-36L	4W: FHSBATL3-1 6W: FHSBATL6-.6 10W: FHSBATL9-.6	FHS-HARNESS-150 FHS-HARNESS-200 FHS-HARNESS-350	2
2-Foot Linear Modules x 2													
3440 lm	700 mA	27.2W	T1M1UNV0700-30L 4.65" L x 1.18" W x 1.16" H 700 mA CC 30W UNV Input 0-10V Dimming T1T11200700-30L 4.65" L x 1.18" W x 1.16" H 700 mA CC 30W 120VAC Input TRIAC Dimming	TMU045015HL840A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	C	530 lm 1095 lm 1355 lm	100 mA 200 mA 250 mA	2.9W 6.0W 7.6W	FHS2-UNV-36L	4W: FHSBATL3-1 6W: FHSBATL6-.6 8W: FHSBATL3-1.5	FHS-HARNESS-100 FHS-HARNESS-200 FHS-HARNESS-250	2
3660 lm	700 mA	30.4W		TMU075014HL840A	TLE-OPT-120-004	B	610 lm 1175 lm 1975 lm	100 mA 200 mA 350 mA	3.4W 6.7W 12.2W	FHS2-UNV-56S	4W: FHSBATL3-1 8W: FHSBATL3-1.5 14W: FHSBATL6-1.5	FHS-HARNESS-100 FHS-HARNESS-200 FHS-HARNESS-350	2
4040 lm	700 mA	31.9W		TMU045018HL840A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	C	630 lm 1300 lm 2205 lm	100 mA 200 mA 350 mA	3.5W 7.1W 12.8W	FHS2-UNV-56S	4W: FHSBATL3-1 8W: FHSBATL3-1.5 14W: FHSBATL6-1.5	FHS-HARNESS-100 FHS-HARNESS-200 FHS-HARNESS-350	2
4260 lm	900 mA	35.9W		TMU045015HL840A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	C	530 lm 1095 lm 1355 lm	100 mA 200 mA 250 mA	2.9W 6.0W 7.6W	FHS2-UNV-36L	4W: FHSBATL3-1 6W: FHSBATL6-.6 8W: FHSBATL3-1.5	FHS-HARNESS-100 FHS-HARNESS-200 FHS-HARNESS-250	2
5020 lm	900 mA	42.4W		TMU045018HL40A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	C	625 lm 1295 lm 2205 lm	100 mA 200 mA 350 mA	3.5W 7.1W 12.8W	FHS2-UNV-56S	4W: FHSBATL3-1 8W: FHSBATL3-1.5 14W: FHSBATL6-1.5	FHS-HARNESS-100 FHS-HARNESS-200 FHS-HARNESS-350	2
2-Foot Linear Modules x 3													
5160 lm	1050 mA	40.8W	T1x1UNV105P-40E 10.83" L x 1.22" W x 0.98" H Programmable Output 250-1050 mA CC 40W UNV Input x: M (0-10V) or A (DALI)	TMU045015HL840A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	D	525 lm 840 lm 1355 lm	100 mA 150 mA 250 mA	2.9W 4.6W 7.5W	FHS2-UNV-36L	4W: FHSBATL3-1 6W: FHSBATL6-.6 8W: FHSBATL3-1.5	FHS-HARNESS-100 FHS-HARNESS-150 FHS-HARNESS-250	3
2-Foot Linear Modules x 4													
3960 lm	1400 mA	28.8W	FHSAC1-UNV-40L 9.50" L x 2.40" W x 1.34" H Programmable Output 250-1400 mA CC 40W UNV Input 0-10V Driver+Emergency	TMU075014HL840A	TLE-OPT-120-004	J	User selectable emergency power switch 5W: 900 lm for 180 min 10W: 1780 lm for 90 min			FHSAC1-UNV-40L features integrated emergency capability. Additional emergency components are not required .			4
6880 lm	1400 mA	54.4W	T1M1UNV1400-60L 9.49" L x 1.70" W x 1.20" H 1400 mA CC 60W UNV Input 0-10V Dimming T1UNV1400-60L 7.72" L x 1.69" W x 1.18" H 1400 mA CC 60W UNV Input	TMU045015HL840A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	F	520 lm 1080 lm 1350 lm	100 mA 200 mA 250 mA	2.9W 5.9W 7.4W	FHS2-UNV-36L	4W: FHSBATL6-.6 6W: FHSBATL6-.6 8W: FHSBATL3-1.5	FHS-HARNESS-100 FHS-HARNESS-200 FHS-HARNESS-250	4
7320 lm	1400 mA	60.8W		TMU075014HL840A	TLE-OPT-120-004	G	610 lm 1175 lm 1975 lm	200 mA 400 mA 700 mA	3.4W 6.7W 12.2W	FHS2-UNV-56S	4W: FHSBATL3-1 8W: FHSBATL3-1.5 14W: FHSBATL6-1.5	FHS-HARNESS-200 FHS-HARNESS-400 FHS-HARNESS-700	2
8080 lm	1400 mA	63.8W		TMU045018HL40A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	F	615 lm 1280 lm 2250 lm	100 mA 200 mA 350 mA	3.4W 7.0W 12.4W	FHS2-UNV-56S	4W: FHSBATL3-1 8W: FHSBATL3-1.5 14W: FHSBATL6-1.5	FHS-HARNESS-100 FHS-HARNESS-200 FHS-HARNESS-350	4

1. Based on 4000K, 80 CRI, 82% driver efficiency and full load
2. Based on 4000K, 80 CRI, 90 min runtime. Lumen and power data are based on calculated values.

Normal System Operation ¹			LED Driver	LED Module	Diffuser Lens (~17% lumen reduction)	Wiring Diagram	Emergency System Operation ²			Emergency Driver	Emergency Battery	Wiring Harness	# Modules ON in Emergency
2-Foot Linear Modules x 4 (continued)													
8000 lm	1680 mA	66.6W	T1M1UNV1680-88L 9.49" L x 1.69" W x 1.14" H 1680 mA CC 88W UNV Input 0-10V Dimming	TMU045015HL840A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	F	520 lm 1080 lm 1350 lm	100 mA 200 mA 250 mA	2.9W 5.9W 7.4W	FHS2-UNV-36L	4W: FHSBATL3-1 6W: FHSBATL6-.6 8W: FHSBATL3-1.5	FHS-HARNESS-100 FHS-HARNESS-200 FHS-HARNESS-250	4
9440 lm	1680 mA	78.5W		TMU045018HL840A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	F	615 lm 1280 lm 2250 lm	100 mA 200 mA 350 mA	3.4W 7.0W 12.4W	FHS2-UNV-56S	4W: FHSBATL3-1 8W: FHSBATL3-1.5 14W: FHSBATL6-1.5	FHS-HARNESS-100 FHS-HARNESS-200 FHS-HARNESS-350	4
8520 lm	1800 mA	71.8W	T1M1UNV1800-88L 9.49" L x 1.69" W x 1.14" H 1800 mA CC 88W UNV Input 0-10V Dimming	TMU045015HL40A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	F	520 lm 1080 lm 1350 lm	100 mA 200 mA 250 mA	2.9W 5.9W 7.4W	FHS2-UNV-36L	4W: FHSBATL3-1 6W: FHSBATL6-.6 8W: FHSBATL3-1.5	FHS-HARNESS-100 FHS-HARNESS-250 FHS-HARNESS-250	4
10040 lm	1800 mA	84.8W		TMU045018HL40A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	F	615 lm 1280 lm 2250 lm	100 mA 200 mA 350 mA	3.4W 7.0W 12.4W	FHS2-UNV-56S	4W: FHSBATL3-1 8W: FHSBATL3-1.5 14W: FHSBATL6-1.5	FHS-HARNESS-100 FHS-HARNESS-200 FHS-HARNESS-350	4
2-Foot Linear Modules x 6													
10320 lm	2100 mA	81.5W	T1M1UNV2100-88L 9.49" L x 1.69" W x 1.14" H 2100 mA CC 88W UNV Input 0-10V Dimming	TMU045015HL840A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	I	520 lm 1055 lm 1325 lm	100 mA 200 mA 250 mA	2.9W 5.8W 7.3W	FHS2-UNV-36L	4W: FHSBATL3-1 6W: FHSBATL6-.6 8W: FHSBATL3-1.5	FHS-HARNESS-100 FHS-HARNESS-200 FHS-HARNESS-250	6
10980 lm	2100 mA	91.2W		TMU075014HL840A	TLE-OPT-120-004	H	610 lm 1175 lm 1975 lm	200 mA 400 mA 700 mA	3.4W 6.7W 12.2W	FHS2-UNV-56S	4W: FHSBATL3-1 8W: FHSBATL3-1.5 14W: FHSBATL6-1.5	FHS-HARNESS-200 FHS-HARNESS-400 FHS-HARNESS-700	2
12090 lm	2100 mA	95.7W		TMU045018HL40A/B A: 22" B: 22.88"	A: TLE-OPT-120-004 B: TLE-OPT-120-005	I	615 lm 1245 lm 2555 lm	100 mA 200 mA 400 mA	3.4W 6.8W 14.0W	FHS2-UNV-56S	4W: FHSBATL3-1 8W: FHSBATL3-1.5 14W: FHSBATL6-1.5	FHS-HARNESS-100 FHS-HARNESS-200 FHS-HARNESS-400	6
Normal System Operation ¹			LED Engine Kit (integrated module + driver)		Dimming	Wiring Diagram	Emergency System Operation ²			Emergency Driver	Emergency Battery	Wiring Harness	# Modules ON in Emergency
Round Engine Kits													
1450 lm	120VAC	13W	TKT120013RD40-01 7" diameter		TRIAC	A	460 lm 675 lm	100 mA 150 mA	2.9W 4.5W	FHS2-UNV-36L	4W: FHSBATL3-1 6W: FHSBATL6-.6	FHS-HARNESS-100 FHS-HARNESS-150	1
1450 lm	120-277VAC	13W	TKMUNV013RD40-01 7" diameter		0-10V	A							
2300 lm	120VAC	21W	TKT120021RD40-01 9" diameter		TRIAC	A							
2300 lm	120-277VAC	21W	TKMUNV021RD40-01 9" diameter		0-10V	A							
2800 lm	120VAC	25W	TKT120025RD40-01 9" diameter		TRIAC	A							
2800 lm	120-277VAC	25W	TKMUNV025RD40-01 9" diameter		0-10V	A							
3200 lm	120-277VAC	32W	TKUNV032RD40-01 9" diameter		Non-Dimming	A	870 lm 1215 lm	250 mA 350 mA	5.5W 7.8W	FHS2-UNV-36L	6W: FHSBATL6-.6 8W: FHSBATL3-1.5	FHS-HARNESS-250 FHS-HARNESS-350	1
3200 lm	120-277VAC	32W	TKMUNV032RD40-01 9" diameter		0-10V	A							
4000 lm	120-277VAC	39W	TKUNV039RD40-01 9" diameter		Non-Dimming	A	875 lm 1090 lm	200 mA 250 mA	5.4W 6.9W	FHS2-UNV-36L	6W: FHSBATL6-.6 8W: FHSBATL3-1.5	FHS-HARNESS-200 FHS-HARNESS-250	1
4000 lm	120-277VAC	39W	TKMUNV039RD40-01 9" diameter		0-10V	A							
Half-round Engine Kits													
1450 lm	120VAC	13W	TKT120013HR40-01 7" diameter half-round		TRIAC	A	460 lm 675 lm	100 mA 150 mA	2.9W 4.5W	FHS2-UNV-36L	4W: FHSBATL3-1 6W: FHSBATL6-.6	FHS-HARNESS-100 FHS-HARNESS-150	1
1450 lm	120-277VAC	13W	TKMUNV013HR40-01 7" diameter half-round		0-10V	A							
Rectangular Engine Kits													
1450 lm	120VAC	13W	TKT120013RT40-06 7" L x 4" W		TRIAC	A	460 lm 675 lm	100 mA 150 mA	2.9W 4.5W	FHS2-UNV-36L	4W: FHSBATL3-1 6W: FHSBATL6-.6	FHS-HARNESS-100 FHS-HARNESS-150	1
1450 lm	120-277VAC	13W	TKMUNV013RT40-06 7" L x 4" W		0-10V	A							

1. Based on 4000K, 80 CRI, 82% driver efficiency and full load
 2. Based on 4000K, 80 CRI, 90 min runtime. Lumen and power data are based on calculated values.

LED Drivers, Modules, Engines & Emergency Systems



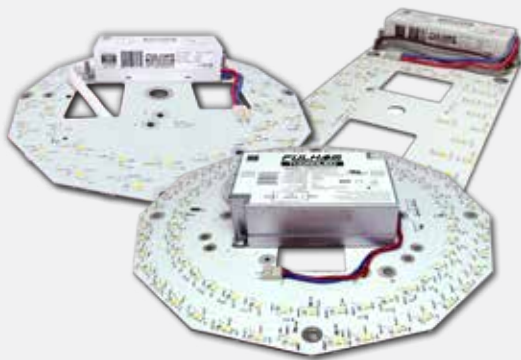
LED Drivers

Fulham's wide range of LED drivers provide the right solution for almost any luminaire. Programmable drivers allow customized output currents, dimming curves, step dimming, dim-to-off and more. DALI, 0-10V, and TRIAC dimming drivers are available in many power levels and sizes.



LED Modules

Fulham's constant current LED modules are designed for efficiency, flexibility and reliability. With popular models providing over 140 lumens per watt, Fulham LED modules also offer significant energy savings. Multiple color temperatures and CRI levels are available.



LED Engine Kits

LED engine kits provide efficient, flexible solutions for non-linear applications. Module and driver are integrated in a single unit, simplifying installation. Listed in the ENERGY STAR® Certified Subcomponent Database to help customers qualify for rebate programs, all kits include an LED engine, installation hardware and instructions, and UL labels.



LED Emergency

The award-winning HotSpot2 emergency system provides reliable backup LED lighting during power outages. A complete system is composed of an emergency driver (also called a charger), a battery, and a wiring harness. A wide range of lumen output and run times are available.



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