60W

L05055 LED Driver 60W, 22-46 Vdc, 400-2000mA L1M1230200S-60E
L05059 LED Driver 60W, 18-60 Vdc, 280-1400mA L1M1230140S-60E

Engineered for Best Fixture Performance

Fulham LumoSeries drivers are all built on core engineering design principles for exceptional standards of performance and reliability in LED systems.Highest-grade critical components together with design featuresfor thermal management ensure excellent reliability. Our low ripple designs create flicker-free lighting and perfectly smooth dimming. Simplicity of specification and installation is a key characteristic of all Fulham LumoSeries drivers. Hence the wide voltage and current ranges andindustry leading low inrush current.

A versatile driver in a compact form factor that delivers best-in-class efficacy and flicker-free dimming for COB LED arrays.

Engineered for Performance

- Industry leading efficiency
- Excellent EMC behavior
- Very high power factor

Engineered for Reliability

- Low inrush current
- Thermal protection (automatic current limiter)
- Short and open circuit protection, overload and overvoltage protection

Engineered for Simplicity.

- Future-proof flexibility – industry leading voltage and current range enabling seamless support of LED generations and minimizing supply chain complexity

Product features

- Wide output voltage range 18-60 Vdc
- Wide range of current settings
- Max inrush current 1.620mA
- Low output current ripple (<15 %) at 100 Hz
- Thermal protection: dimming instead of switch off
- Open circuit output voltage protection
- Supports NTC temperature measurement and fan power output
- Up to 90 % efficiency across a wide range of loads
- Power factor 0.99
- 1-10 V- and potentiometer dimming
- ENEC
- Engineered and Manufactured in Europe
- SELV

5 year warranty

Fulham LumoSeries takes pride in the quality of its products. We not only develop all products in house, they are also produced to ensure guaranteed reliability and performance. Fulham LumoSeries drivers come with the assurance of a 5 year warranty. After all, with typical LED lifetimes of 50,000 hours, it is critical to have a power supply with equal reliability.

5 YEAR WARRANTY

Certificates and standards

- ENEC05, CE
- EN55015 / EN61000-3-2 / EN61347-2-13 / EN61347-1 / EN61547 / EN62384 / SELV

Classifications

1-10V

* Class II, enhanced insulation, when used with strain relieve.
** Class II, reinforced insulation, when built in without strain relieve.

Specific technical data

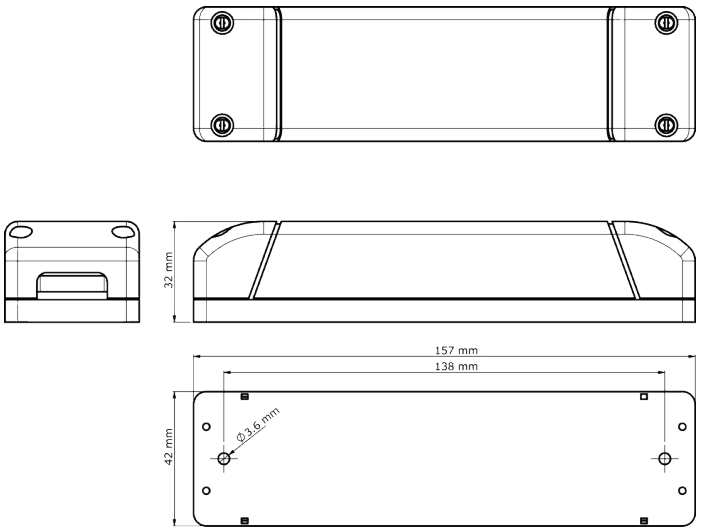
Type	Power factor at full load	Nominal line current @ 240Vac	Output current	Output voltage range	Open circuit output voltage	Minimum dim level
L05055	0.99	300mA	700 – 2000 mA	22 – 46 Vdc	50 Vdc	200mA +/- 20%
L05059	0.98	280mA	500 – 1400 mA	18 – 60 Vdc	68 Vdc	100mA +/- 20%

Technical data

Rated supply voltage	220-240 Vac
Input voltage	220-240 Vac / 150-375 Vdc*
Mains frequency	50/60 Hz
Output current tolerance	See table 2 on page 4
100 Hz ripple current	<15%
Efficiency at full load	90%
Max output power	60W @ 240Vac 30W @ 110Vac
Dimming	1-10V or potentiometer 100K log b (SELV)**
Dimming method	Linear
External NTC	See table 1 on page 4
Fan output voltage	See note 3 on page 4
Fan output current	100 mA max.
Startup time	< 500ms
Warm up time to 95% of light output	< 500ms
Output isolation	SELV
Surge protection (diff. / comm.)	3.5 kV / 6 kV
IP classification	IP 20
Circuit lifetime	50,000 hrs at Tc max.
Case dimensions	157 x 42 x 32 mm
Case material	Polyamide 6 (PA6)

* External DC fuse is required
** Driver cannot be switched on/off with the dim input

Dimensions



Inrush current

Mains max. peak inrush at full load	518mA per driver on phase 60º (average starting angle)* 1.620mA per driver on phase 90º (worst case starting angle)* 767mA per driver on phase 60º (average starting angle)** 1.539mA per driver on phase 90º (worst case starting angle)**

** Tested at 240 Vac 1 driver connected, with TTI HA1600A analyzer.
* Tested at 240 Vac 10 drivers parallel connected, with TTI HA1600A analyzer.

Maximum number of drivers on automatic circuit breakers

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20
L05055 / L05059	32	41	51	63	32	41	51	63

Thermal specifications

	L05055	L05059
Ambient temperature range (Ta)	-20 to 50°C*	-20 to 45°C*
Maximum case temperature (Tc)	< 85°C*	< 75°C*
Storage temperature range	-20 to 50°C	-20 to 50°C

* When used with a load over 25W, the driver needs to be mountedon a heat conductive surface of at least 200cm²

Overload protection
If the maximum output power is exceeded, the LED driver reduces the LED output current. After elimination of the overload the nominal operation is restored automatically.

Over temperature protection
The LED driver is protected against thermal overload. If the temperature limit is exceeded, the output currentis reduced.

No-load operation
In no-load operation the output voltage will not exceed the specified open circuit output voltage.

Overcurrent protection
Overcurrent protection to allow hot swapping of LEDs higher than 3 Watt.

Dimming
The DIM-input can be controlled with a standard 1-10V controller or a 100K log b potentiometer.
The L05055 and L05059 cannot be switched on/off with the dim input. Always use a dimmer that complies with EN60929 Annex E.

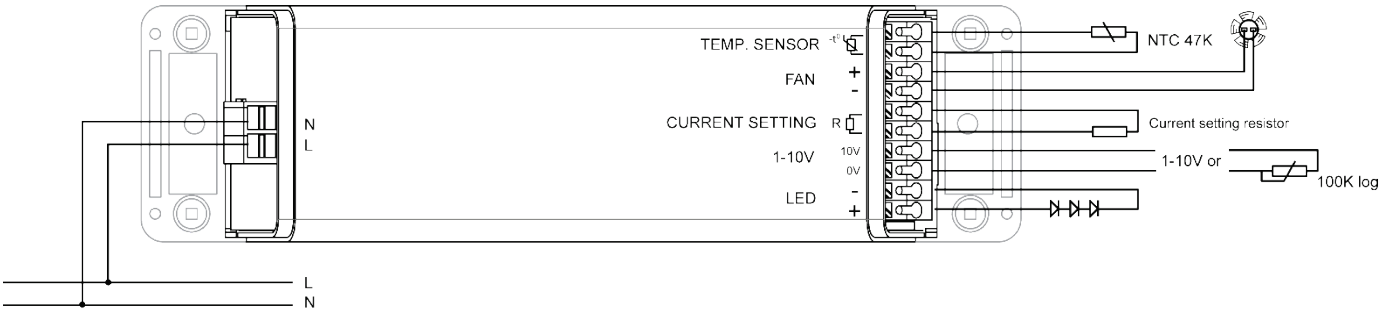
Short-circuit protection
In case of a short circuit the LED driver switches to protection mode. After the removal of the short-circuit the LED driver will recover automatically.

Mounting/ Cooling
Above an output power of 25W, the driver needs to be mounted on a heat conductive surface of at least 200cm². Always test if the surface is sufficient enough before installing the driver.

Secondary switching
The L05055 and L05059 are designed to switch the LEDs on/off by switching the mains.
The L05055 and L05059 are not designed to switch the LEDs directly on/off in the secondary power line.

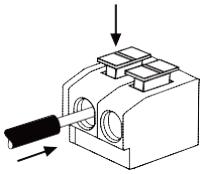
LED load
Fulham LumoSeries LED drivers are designed to drive passive LEDs, -COB's and -LED assemblies
Proper function is not guaranteed when (LED)loads with active components are used.

Wiring diagram

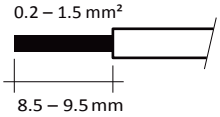


Wiring of device

Solid



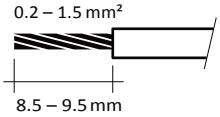
wire preparation:
0.2 – 1.5 mm²



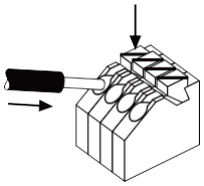
8.5 – 9.5 mm

Stranded

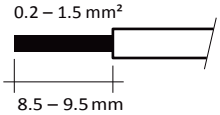
wire preparation:
0.2 – 1.5 mm²



8.5 – 9.5 mm

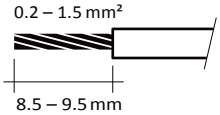


wire preparation:
0.2 – 1.5 mm²



8.5 – 9.5 mm

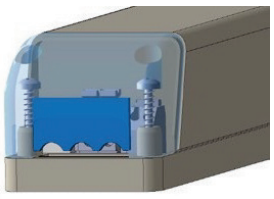
wire preparation:
0.2 – 1.5 mm²



8.5 – 9.5 mm

Strain relief

The strain relief insert can be reversed or removed to accommodate wiring of various diameters.



Short-circuit protection

The LED output of the driver has a short circuit protection circuit, which protects against shorts and overloads. This circuit consists of a current sensing resistor and a power mosfet. The current sensor is used to detect and convert current to an easily measured output voltage, which is proportional to the current through the measured path. The mosfet is used to switch fast the current on or off.

The sensor is measuring the LED voltage with a current of 10mA. If the LED voltage is higher than 21 V the mosfet will be activated. The driver is then turned on.

In case of a short circuit, the voltage is lower than 18V. If the LED voltage is lower than 18V, the mosfet will be switched off. The driver is then turned off.

Table 1.
Fan output voltage versus NTC value*

NTC Value (Ω)	L05055 Fan output Voltage	L05059 Fan output Voltage
0	12.00 V	11.39 V
5	11.27 V	11.39 V
10	11.27 V	11.39 V
22	11.27 V	11.39 V
33	11.27 V	11.39 V
47	11.27 V	11.39 V
56	11.27 V	11.39 V
100	11.27 V	11.39 V
150	11.27 V	11.39 V
220	11.27 V	11.39 V
330	11.27 V	11.39 V
560	11.27 V	11.39 V
820	11.27 V	11.39 V
1K	11.27 V	11.39 V
1.5K	11.27 V	11.39 V
2.2K	11.27 V	11.39 V
3.3k	11.27 V	11.39 V
4.7k	11.27 V	11,39 V
5.6k	11.26 V	11.30 V
6.8k	11.10 V	10.92 V
8.2k	10.66 V	9.71 V
10k	10.02 V	9.31 V
15k	8.36 V	6.73 V
22k	6.68 V	4.60 V
33k	4.98 V	2.46 V
47k	3.70 V	1.55 V
56k	3.10 V	1.50 V
68k	2.54 V	1.48 V
82k	2.05 V	1.47 V
100K	1.65 V	1.45 V
150k	1.5 V	1.45 V
220k	1.48 V	1.45 V
330k	1.47 V	1.45 V
470k	1.46 V	1.45 V
560k	1.46 V	1.45 V
680k	1.46 V	1.45 V
1M	1.46 V	1.45 V

Table 2.
Output current resistor setting

Resistor value (Ω)	L05055 Output current (mA)	L05059 Output current (mA)	Tolerance (%)	
0	400	280	± 35.4	high output current tolerance
100	416	280	± 35.4	
220	433	291	± 34.0	
330	448	302	± 32.8	
560	479	325	± 30.5	
820	513	341	± 29.0	
1K0	535	367	± 27.0	
1K5	595	410	± 24.2	
2k2	668	463	± 21.4	
3k3	766	536	± 18.5	
4k7	874	612	± 16.2	
5k6	929	657	± 15.1	
6k8	994	705	± 14.0	
8k2	1065	752	± 13.2	
10k	1132	804	± 12.3	
15k	1277	909	± 10.9	
22k	1404	1000	± 9.9	
33k	1521	1085	± 9.1	
47k	1605	1144	± 8.7	
56k	1642	1164	± 8.5	
68k	1676	1169	± 8.5	
82k	1708	1197	± 8.3	
100k	1736	1244	± 8.0	
150k	1806	1307	± 7.6	
220k	1903	1352	± 7.3	
330k	1933	1375	± 7.2	
470k	1950	1386	± 7.1	
560k	1954	1391	± 7.1	
680k	1960	1395	± 7.1	
1000k	1967	1402	± 7.1	
∞ (No resistor)	2000	1415	± 7.0	

* 1) This table is measured at a LED voltage of 34 V
2) The maximum fan output voltage is 12 V
3) At a LED voltage lower than 36 V, the maximum fan voltage is equal to the LED voltage divided by three.

Ordering data

Part	Part number	Alternate part number	EAN code	Packaging carton	Multibox carton	Weight per piece
L05055 LED Driver 60W, 22-46 Vdc,400-2000 mA	L05055	L1M12300200S-60E	8718801703823	50 pieces	150 pieces	216 g
L05059 LED Driver 60W, 18-60 Vdc, 280-1400 mA	L05059	L1M1230140S-60E	8718801703793	50 pieces	150 pieces	216 g

Berenkoog 56
NL-1822 BZ Alkmaar
The Netherlands

www.Fulham.com