



EM powerLED CPS FX C 50 W

LED Driver for AC and DC power supplies

Product description

- Fixed output LED Driver for mains operation with integrated Simple CORRIDOR FUNCTION (CF)
- Emergency lighting function for use in central battery systems
- For LED modules with a forward voltage of 15 – 50 V
- SELV for output voltage < 60 V DC
- For luminaire installation
- Compact plastic casing (183 x 82 x 34 mm)
- 5 years guarantee



Properties

- 4.9 – 50 W output power
- Constant current LED operation
- 300 – 1,400 mA output current selectable with I-SELECT PLUG in steps of 50 mA
- Simple CORRIDOR FUNCTION (CF) with 10 % light level
- Automatic shutdown of output if LED load is out of range
- For emergency lighting systems as per EN 50172



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Wiring diagrams and installation examples, page 8



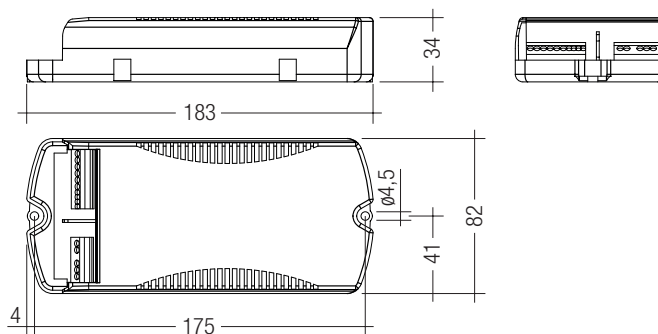


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Technical data

Rated supply voltage	220 – 240 V
Voltage range AC	198 – 264 V
Voltage range DC	176 – 280 V
Mains frequency	0 / 50 / 60 Hz
Typ. λ (at 230 V, 50 Hz, normal operation)	0.95
Typ. λ (at 230 V, 50 Hz, CF operation)	0.45
Overvoltage protection	320 V (for 1 h)
Max. open circuit voltage	60 V
Time to light	< 0.5 s
Output LF current ripple (< 120 Hz)	< 2 %
Output current tolerance	7 %
THD normal operation	< 25 %
THD CF operation	< 30 %
Ambient temperature $t_a > 45^\circ\text{C}$	50 °C
Ambient temperature $t_a \leq 45^\circ\text{C}$	55 °C
Max. casing temperature t_c	85 °C
Emergency output factor EOFx [®]	1
Dimensions LxBxH	183 x 82 x 34 mm
Type of protection	IP20



Note: I-SELECT PLUG must be set before mains connection.

Ordering data

Type	Article number	Packaging, carton	Packaging, pallet	Weight per pc.
EM powerLED CPS FX C 50W 50V	89800436	10 pc(s).	100 pc(s).	0.245 kg

Specific technical data

Type	Output current	Min. output voltage [®]	Max. output voltage [®]	Min. output power	Max. output power	Input power (230 V, 50 / 0 Hz, full load)	Input current (230 V, 50 / 0 Hz, full load)	Efficiency (230 V, 50 / 0 Hz)	λ (230 V, 50 / 0 Hz, full load)	Ambient temperature ta [®]	tc/ta for ≥ 50.000 h [®]	I sel resistor value
Normal operation AC / DC (100 %)												
EM powerLED CPS FX C 50W 50V	300 mA	16.6 V	50.0 V	5.0 W	15.0 W	19 W	102 / 84 mA	79 %	0.80 / 1	-5 ... 55 °C	85 / 55 °C	open
	350 mA	16.6 V	50.0 V	5.8 W	17.5 W	22 W	112 / 96 mA	80 %	0.85 / 1	-5 ... 55 °C	85 / 55 °C	69.80 kΩ
	400 mA	16.6 V	50.0 V	6.6 W	20.0 W	25 W	122 / 106 mA	80 %	0.87 / 1	-5 ... 55 °C	85 / 55 °C	62.00 kΩ
	450 mA	16.6 V	50.0 V	7.5 W	22.5 W	28 W	132 / 119 mA	80 %	0.89 / 1	-5 ... 55 °C	85 / 55 °C	56.00 kΩ
	500 mA	16.6 V	50.0 V	8.3 W	25.0 W	30 W	143 / 134 mA	83 %	0.91 / 1	-5 ... 55 °C	85 / 55 °C	48.70 kΩ
	550 mA	16.6 V	50.0 V	9.1 W	27.5 W	33 W	157 / 147 mA	83 %	0.92 / 1	-5 ... 55 °C	85 / 55 °C	43.20 kΩ
	600 mA	16.6 V	50.0 V	10.0 W	30.0 W	36 W	169 / 159 mA	83 %	0.92 / 1	-5 ... 55 °C	85 / 55 °C	36.50 kΩ
	650 mA	16.6 V	50.0 V	10.8 W	32.5 W	39 W	181 / 172 mA	83 %	0.93 / 1	-5 ... 55 °C	85 / 55 °C	28.70 kΩ
	700 mA	16.6 V	50.0 V	11.6 W	35.0 W	42 W	193 / 186 mA	83 %	0.94 / 1	-5 ... 55 °C	85 / 55 °C	24.00 kΩ
	750 mA	16.6 V	50.0 V	12.5 W	37.5 W	43 W	195 / 189 mA	87 %	0.84 / 1	-5 ... 55 °C	85 / 55 °C	20.50 kΩ
	800 mA	16.6 V	50.0 V	13.3 W	40.0 W	46 W	206 / 200 mA	87 %	0.85 / 1	-5 ... 55 °C	85 / 55 °C	18.00 kΩ
	850 mA	16.6 V	50.0 V	14.1 W	42.5 W	49 W	218 / 213 mA	87 %	0.95 / 1	-5 ... 55 °C	85 / 55 °C	16.00 kΩ
	900 mA	16.6 V	50.0 V	14.9 W	45.0 W	52 W	234 / 230 mA	87 %	0.96 / 1	-5 ... 55 °C	85 / 55 °C	13.30 kΩ
	950 mA	15.7 V	50.0 V	14.9 W	47.5 W	55 W	246 / 243 mA	86 %	0.96 / 1	-5 ... 50 °C	85 / 50 °C	11.00 kΩ
	1,000 mA	15.0 V	50.0 V	15.0 W	50.0 W	57 W	264 / 260 mA	88 %	0.97 / 1	-5 ... 50 °C	85 / 50 °C	9.31 kΩ
	1,050 mA	15.0 V	47.6 V	15.8 W	50.0 W	59 W	270 / 265 mA	85 %	0.97 / 1	-5 ... 50 °C	85 / 50 °C	7.87 kΩ
	1,100 mA	15.0 V	45.5 V	16.5 W	50.1 W	56 W	253 / 254 mA	89 %	0.97 / 1	-5 ... 50 °C	85 / 50 °C	6.49 kΩ
	1,150 mA	15.0 V	43.5 V	17.3 W	50.0 W	58 W	265 / 265 mA	86 %	0.97 / 1	-5 ... 50 °C	85 / 50 °C	4.70 kΩ
	1,200 mA	15.0 V	41.7 V	18.0 W	50.0 W	58 W	260 / 264 mA	86 %	0.97 / 1	-5 ... 50 °C	85 / 50 °C	3.83 kΩ
	1,250 mA	15.0 V	40.0 V	18.8 W	50.0 W	58 W	261 / 264 mA	86 %	0.97 / 1	-5 ... 50 °C	85 / 50 °C	2.70 kΩ
	1,300 mA	15.0 V	38.5 V	19.5 W	50.1 W	58 W	260 / 264 mA	86 %	0.97 / 1	-5 ... 50 °C	85 / 50 °C	2.20 kΩ
	1,350 mA	15.0 V	37.0 V	20.3 W	50.0 W	58 W	262 / 264 mA	86 %	0.97 / 1	-5 ... 50 °C	85 / 50 °C	1.50 kΩ
	1,400 mA	15.0 V	35.0 V	21.0 W	49.0 W	59 W	264 / 264 mA	83 %	0.97 / 1	-5 ... 50 °C	85 / 50 °C	short circuit (0 Ω)
CF operation AC												
EM powerLED CPS FX C 50W 50V	30 mA	–	–	0.5 W	1.7 W	3.5 W	44 mA	30 %	0.30	–	–	open
	38 mA	–	–	0.6 W	2.1 W	3.8 W	46 mA	50 %	0.35	–	–	69.80 kΩ
	39 mA	–	–	0.6 W	2.1 W	3.8 W	46 mA	51 %	0.35	–	–	62.00 kΩ
	52 mA	–	–	0.9 W	2.9 W	4.6 W	49 mA	57 %	0.40	–	–	56.00 kΩ
	52 mA	–	–	0.9 W	2.9 W	4.6 W	49 mA	57 %	0.40	–	–	48.70 kΩ
	52 mA	–	–	0.9 W	2.9 W	4.6 W	49 mA	57 %	0.40	–	–	43.20 kΩ
	66 mA	–	–	1.1 W	3.6 W	5.2 W	51 mA	63 %	0.45	–	–	36.50 kΩ
	69 mA	–	–	1.1 W	3.8 W	5.3 W	51 mA	65 %	0.45	–	–	28.70 kΩ
	80 mA	–	–	1.3 W	4.4 W	6.0 W	54 mA	67 %	0.48	–	–	24.00 kΩ
	83 mA	–	–	1.4 W	4.6 W	6.0 W	54 mA	69 %	0.48	–	–	20.50 kΩ
	85 mA	–	–	1.4 W	4.7 W	6.0 W	54 mA	71 %	0.48	–	–	18.00 kΩ
	92 mA	–	–	1.5 W	5.1 W	6.7 W	58 mA	69 %	0.50	–	–	16.00 kΩ
	92 mA	–	–	1.5 W	5.1 W	6.7 W	58 mA	69 %	0.50	–	–	13.30 kΩ
	105 mA	–	–	1.6 W	5.8 W	7.3 W	59 mA	72 %	0.53	–	–	11.00 kΩ
	106 mA	–	–	1.6 W	5.8 W	7.3 W	59 mA	73 %	0.53	–	–	9.31 kΩ
	118 mA	–	–	1.8 W	6.2 W	7.4 W	59 mA	76 %	0.53	–	–	7.87 kΩ
	119 mA	–	–	1.8 W	6.0 W	7.1 W	59 mA	76 %	0.53	–	–	6.49 kΩ
	130 mA	–	–	2.0 W	6.2 W	7.2 W	59 mA	79 %	0.53	–	–	4.70 kΩ
	131 mA	–	–	2.0 W	6.0 W	7.2 W	59 mA	76 %	0.53	–	–	3.83 kΩ
	144 mA	–	–	2.2 W	6.3 W	7.4 W	59 mA	78 %	0.53	–	–	2.70 kΩ
	144 mA	–	–	2.2 W	6.1 W	7.4 W	59 mA	75 %	0.53	–	–	2.20 kΩ
	145 mA	–	–	2.2 W	5.9 W	6.9 W	59 mA	78 %	0.53	–	–	1.50 kΩ
	158 mA	–	–	2.4 W	6.1 W	7.4 W	59 mA	75 %	0.53	–	–	short circuit (0 Ω)

[®] EOFx = Emergency light output ratio

[®] Ambient temperature range ta defined in normal operation

[®] Output voltage range defined in normal operation. LED forward voltage will decrease in CF operation.



ACCES-
SERIES

SWITCH Sensor HF 5BP

Automatic switching based on motion and light level

Product description

- Motion detector for luminaire installation
- Motion detection through glass and thin materials (except metal)
- For automatic on/off switching of electronic ballasts with corridor-FUNCTION
- "Bright-Out" function: luminaire is not switched on if there is adequate brightness
- Delay time, detection range and light value for the "Bright-Out" function can be set via 3 potentiometers
- Max. installation height 5 m
- Infinitely variable range (0.5 – 5.0 m)



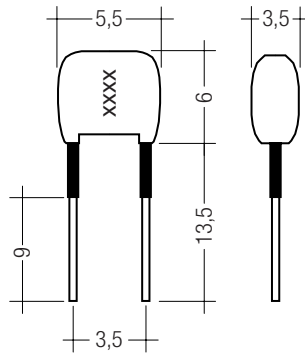
Ordering data

Type	Article number	Packaging, carton	Weight per pc.
SWITCH Sensor HF 5BP	28000086	4 pc(s).	0,079 kg

I-SELECT PLUG E

Product description

- Ready-for-use resistor to set output current value
- Resistor is base isolated
- Resistor power 0.25 W
- Resistor value tolerance $\pm 1\%$



Ordering data

Type	Article number	Colour	Marking	Resistor value	Output current	Packaging bag	Weight per pc.
I-SELECT PLUG E	28001167	Green	69k8	69.80 k Ω	350 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28001166	Green	62k	62.00 k Ω	400 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28000627	Green	56k	56.00 k Ω	450 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28000626	Green	48k7	48.70 k Ω	500 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28000625	Green	43k2	43.20 k Ω	550 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28000624	Green	36k5	36.50 k Ω	600 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28000622	Green	28k7	28.70 k Ω	650 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28001165	Green	24k	24.00 k Ω	700 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28001164	Green	20k5	20.50 k Ω	750 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28001163	Green	18k	18.00 k Ω	800 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28001162	Green	16k	16.00 k Ω	850 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28001161	Green	13k3	13.30 k Ω	900 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28001160	Green	11k	11.00 k Ω	950 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28000617	Green	9k31	9.31 k Ω	1,000 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28001159	Green	7k87	7.87 k Ω	1,050 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28000616	Green	6k49	6.49 k Ω	1,100 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28001158	Green	4k7	4.70 k Ω	1,150 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28001157	Green	3k83	3.83 k Ω	1,200 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28001156	Green	2k7	2.70 k Ω	1,250 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28001155	Green	2k2	2.20 k Ω	1,300 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28001154	Green	1k5	1.50 k Ω	1,350 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	28000612	Green	0R	0 k Ω	1,400 mA	10 pc(s).	0.001 kg

Standards

EN 55015
 EN 61000-3-2
 EN 61000-3-3
 EN 61347-2-13
 EN 61547
 EN 62384
 according to EN 60598-2-22
 according to EN 50172

Output current setting

Output current can be set by connecting a resistor between the 2 "I set" terminals. Relationship between output current and resistor value can be found at the table "Specific technical data". Resistor values specified from standardised resistor value ranges.

Resistor value tolerance has to be $\leq 1\%$.

Resistor power has to be $\geq 0.1\text{ W}$.

Resistor detection at each start.

Change of the resistor value during the operation will be not considered.

Resistors for the main output current values can be ordered from Tridonic (see accessories).

Overload protection

LED Driver will switch off at overload operation. Mains reset is required to restart the LED Driver.

Underload operation

LED Driver will switch off at underload operation. Mains reset is required to restart the LED Driver.

Short-circuit behaviour

In case of a short circuit the unit switches to shut down mode. After elimination of the short circuit a mains reset is necessary.

Forward voltage out of range

If the forward voltage is out of range the unit switches to shut down mode. After elimination of the short circuit a mains reset is necessary.

No-load operation or load loss during operation

LED Driver will detect a load loss during operation. In this case and no-load operation the max. output voltage can apply at the LED output for max. 5 s before LED Driver shuts down. Mains reset is required to restart the LED Driver.

Glow-wire test

according to EN 60598-1 with increased temperature of 850 °C passed.

Temperature range

The LED Driver life duration is related to the ambient temperature t_a .

The relation of t_c to t_a temperature depends also on the luminaire design. If the measured t_c temperature is approx. 5 K below t_c max. or higher, t_a temperature should be checked and eventually critical components (e.g. ELCAP) measured. Detailed information on request.

Isolation and electric strength testing of luminaires

Electronic LED Driver can be damaged by high voltage. This has to be considered during the routine testing of the luminaires in production.

According to IEC 60598-1 Annex Q (informative only) or ENEC 303-Annex A, each luminaire should be submitted to an isolation test with 500 V_{dc} for 1 second. This test voltage should be connected between the interconnected phase and neutral terminals and the earth terminal. The isolation resistance must be at least 2 MΩ.

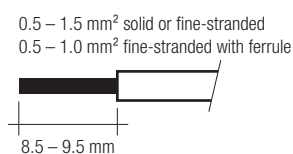
As an alternative, IEC 60598-1 Annex Q describes a test of the electrical strength with 1,500 V_{AC} (or 1,414 x 1,500 V_{dc}). To avoid damage to the electronic devices this test **must not be conducted**.

Electrical connections**Wiring**

Mains (N, L, C/F, L link)

LED (LED +, LED -)

I set



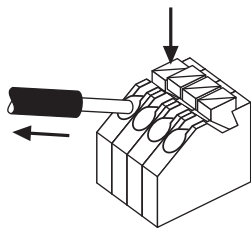
Use one wire for each terminal connector only.

Maximum lead length

LED 3 m

Release of the wiring

Press down the "push button" and remove the cable from front.

**Installation instruction**

Max. torque for the mounting screws: 0.5 Nm / M4.

Life-time

Average life-time 50,000 hours under rated conditions with a failure rate of less than 10 %. Average failure rate of 0.2 % per 1000 operating hours.

Expected life-time

Type	Output power	ta	40 °C	50 °C	55 °C
EM powerLED CPS FX C 50W 50V	10 W	tc	56 °C	66 °C	71 °C
		life-time	> 100,000 h	> 100,000 h	> 100,000 h
	20 W	tc	59 °C	69 °C	74 °C
		life-time	> 100,000 h	> 100,000 h	> 100,000 h
	30 W	tc	63 °C	73 °C	78 °C
		life-time	> 100,000 h	> 100,000 h	> 100,000 h
	40 W	tc	69 °C	79 °C	79 °C
		life-time	> 100,000 h	> 90,000 h	> 90,000 h
	45W	tc	70 °C	80 °C	85 °C
		life-time	> 100,000 h	> 90,000 h	> 50,000 h
	50 W	tc	76 °C	85 °C	x
		life-time	> 95,000 h	> 50,000 h	x

x = not permitted

Storage conditions

Humidity: 5 % up to max. 85 %,
not condensed
(max. 56 days/year at 85 %)

Storage temperature: -40 °C up to max. +80 °C

The devices have to be within the specified temperature range (ta) before they are operated.

Maximum loading of automatic circuit breakers

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20	Inrush current	
Installation Ø	1.5 mm ²	1.5 mm ²	2.5 mm ²	2.5 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	2.5 mm ²	I _{max}	time
EM powerLED CPS FX C 50W 50V	20	30	40	50	16	24	32	40	6.6 A	30 µs

Harmonic distortion in the mains supply (at 230 V / 50 Hz and full load) in %

Type	THD	3	5	7
EM powerLED CPS FX C 50W 50V	6.5 %	4.5 %	2 %	1 %

Switching behaviour

L	CF	LED
off	off	off
off	on	off
on	off	10 %
on	on	100 %

The mains power must be removed before changing the LED load.

Secondary switching of LEDs is not allowed and may cause damage to the LEDs. The hot plug-in of LEDs during normal operation may result in high current peaks.

DC operation

Polarity of the DC voltage	
L	+
N	—
CF	+
Emergency level	100 %

The sensor is not active in DC operation.

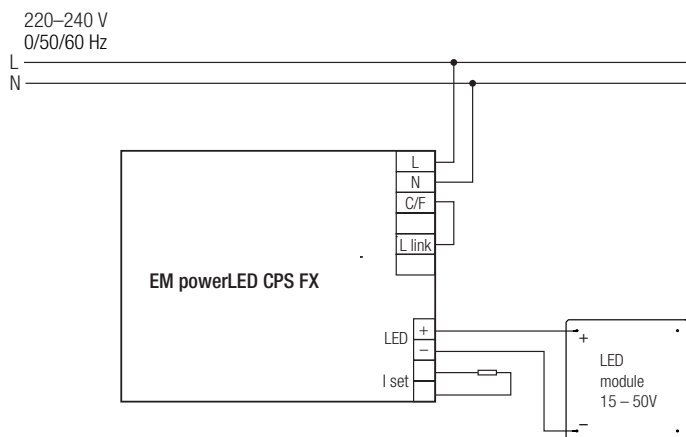
Wiring guidelines

- The output to the LED is DC but has high frequency content, which should be considered for good EMC compliance.
- LED leads should be separated from the mains connections and wiring for good EMC performance.
- Maximum total lead length on the LED terminals is 3 m. For a good EMC performance keep the LED wiring as short as possible.

Within the luminaire the 50 Hz supply wiring must be routed as short as possible and be kept as far away as possible from the LED leads. Through wiring may affect the emc performance of the luminaire.

The length of LED leads must not be exceeded.

The output current depends on the forward voltage and the tolerance of the LED modules.

Wiring diagram EM powerLED CPS FX without sensor

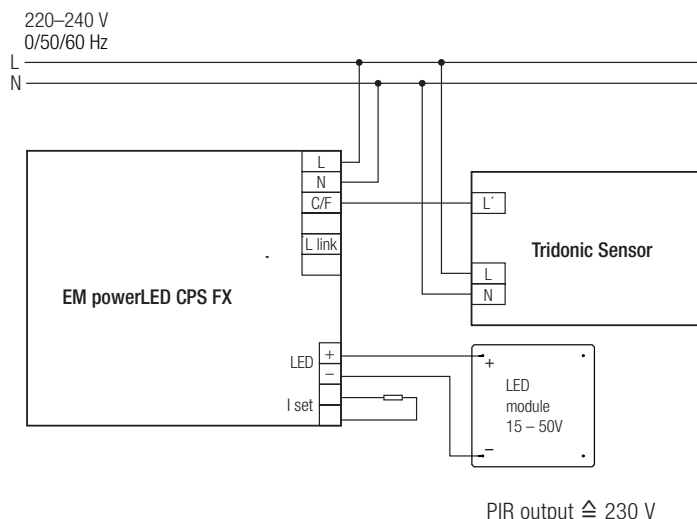
When using the EM powerLED without a sensor, connect the terminals C / F and L link with a wire.

The connected LED module will be used for mains and emergency operation.

Note

The EM powerLED CPS FX 50W 50V uses pulse width modulation (PWM) for the LED operation in CORRIDOR mode. This can have an adverse effect on video recording equipment e.g. cctv.

Caution should be observed when using the CORRIDOR FUNCTION in cctv monitored areas.

Wiring diagram EM powerLED CPS FX with sensor

PIR output $\cong$ 230 V

Additional information

Additional technical information at www.tridonic.com → Technical Data

Guarantee conditions at www.tridonic.com → Services

No warranty if device was opened.