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

Standards, page 6

Wiring diagrams and installation examples, page 8

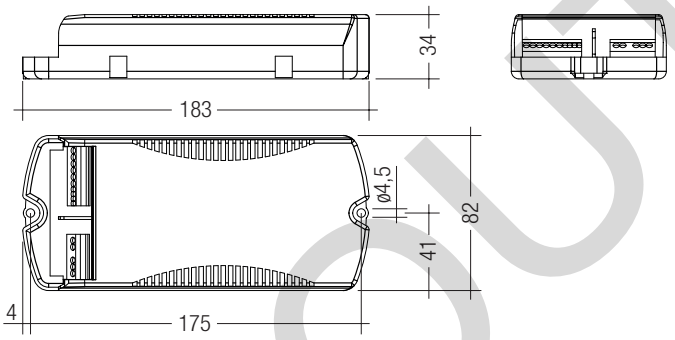
SELV RoHS

EM powerLED CPS FX C 50 W

LED Driver for AC and DC power supplies

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)	0.45c
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 ta > 45 W	50 °C
Ambient temperature ta ≤ 45 W	55 °C
Max. casing temperature tc	85 °C
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[3]	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[3]	Output current	Min. output voltage[2]	Max. output voltage[2]	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, full load)		Ambient temperature ta[1]	tc/ta for ≥ 50.000 h[1]	I sel resistor value
									AC	DC			
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 %	0.80c	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 %	0.85c	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 %	0.87c	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 %	0.89c	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 %	0.91c	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 %	0.92c	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 %	0.92c	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 %	0.93c	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 %	0.94c	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 %	0.84c	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 %	0.85c	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 %	0.30c	1	–	–	open
	38 mA	–	–	0.6 W	2.1 W	3.8 W	46 mA	50 %	0.35c	1	–	–	69.80 kΩ
	39 mA	–	–	0.6 W	2.1 W	3.8 W	46 mA	51 %	0.35c	1	–	–	62.00 kΩ
	52 mA	–	–	0.9 W	2.9 W	4.6 W	49 mA	57 %	0.40c	1	–	–	56.00 kΩ
	52 mA	–	–	0.9 W	2.9 W	4.6 W	49 mA	57 %	0.40c	1	–	–	48.70 kΩ
	52 mA	–	–	0.9 W	2.9 W	4.6 W	49 mA	57 %	0.40c	1	–	–	43.20 kΩ
	66 mA	–	–	1.1 W	3.6 W	5.2 W	51 mA	63 %	0.45c	1	–	–	36.50 kΩ
	69 mA	–	–	1.1 W	3.8 W	5.3 W	51 mA	65 %	0.45c	1	–	–	28.70 kΩ
	80 mA	–	–	1.3 W	4.4 W	6.0 W	54 mA	67 %	0.48c	1	–	–	24.00 kΩ
	83 mA	–	–	1.4 W	4.6 W	6.0 W	54 mA	69 %	0.48c	1	–	–	20.50 kΩ
	85 mA	–	–	1.4 W	4.7 W	6.0 W	54 mA	71 %	0.48c	1	–	–	18.00 kΩ
	92 mA	–	–	1.5 W	5.1 W	6.7 W	58 mA	69 %	0.50c	1	–	–	16.00 kΩ
	92 mA	–	–	1.5 W	5.1 W	6.7 W	58 mA	69 %	0.50c	1	–	–	13.30 kΩ
	105 mA	–	–	1.6 W	5.8 W	7.3 W	59 mA	72 %	0.53c	1	–	–	11.00 kΩ
	106 mA	–	–	1.6 W	5.8 W	7.3 W	59 mA	73 %	0.53c	1	–	–	9.31 kΩ
	118 mA	–	–	1.8 W	6.2 W	7.4 W	59 mA	76 %	0.53c	1	–	–	7.87 kΩ
	119 mA	–	–	1.8 W	6.0 W	7.1 W	59 mA	76 %	0.53c	1	–	–	6.49 kΩ
	130 mA	–	–	2.0 W	6.2 W	7.2 W	59 mA	79 %	0.53c	1	–	–	4.70 kΩ
	131 mA	–	–	2.0 W	6.0 W	7.2 W	59 mA	76 %	0.53c	1	–	–	3.83 kΩ
	144 mA	–	–	2.2 W	6.3 W	7.4 W	59 mA	78 %	0.53c	1	–	–	2.70 kΩ
	144 mA	–	–	2.2 W	6.1 W	7.4 W	59 mA	75 %	0.53c	1	–	–	2.20 kΩ
	145 mA	–	–	2.2 W	5.9 W	6.9 W	59 mA	78 %	0.53c	1	–	–	1.50 kΩ
	158 mA	–	–	2.4 W	6.1 W	7.4 W	59 mA	75 %	0.53c	1	–	–	short circuit (0 Ω)

[1] Ambient temperature range ta defined in normal operation

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

[3] EM = Emergency

RoHS

ACCES-SORIES

smartSWITCH HF 5DP f

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
- 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 9 dip switches
- Max. installation height 5 m
- Two housing options allowing flexible installation
- Variable detection area (100 – 10 %)
- Zero cross switching supported
- 5-year guarantee

smartSWITCH HF 5DP f

smartSWITCH HF 5DP S f

Ordering data

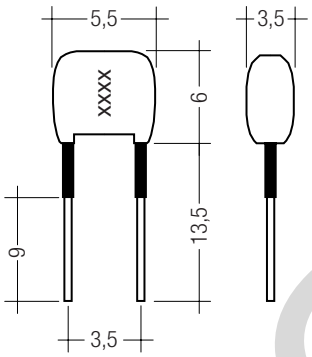
Type	Article number	Dimensions L x W x H	Packaging, carton	Weight per pc.
smartSWITCH HF 5DP f	**28002214**	70 x 36.5 x 24.5 mm	5 pc(s).	0.040 kg
smartSWITCH HF 5DP S f	**28002235**	58 x 48.5 x 24.5 mm	5 pc(s).	0.040 kg

ACCES-SORIES

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 ± 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 kΩ	350 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001166**	Green	62k	62.00 kΩ	400 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000627**	Green	56k	56.00 kΩ	450 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000626**	Green	48k7	48.70 kΩ	500 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000625**	Green	43k2	43.20 kΩ	550 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000624**	Green	36k5	36.50 kΩ	600 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000622**	Green	28k7	28.70 kΩ	650 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001165**	Green	24k	24.00 kΩ	700 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001164**	Green	20k5	20.50 kΩ	750 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001163**	Green	18k	18.00 kΩ	800 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001162**	Green	16k	16.00 kΩ	850 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001161**	Green	13k3	13.30 kΩ	900 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001160**	Green	11k	11.00 kΩ	950 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000617**	Green	9k31	9.31 kΩ	1,000 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001159**	Green	7k87	7.87 kΩ	1,050 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000616**	Green	6k49	6.49 kΩ	1,100 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001158**	Green	4k7	4.70 kΩ	1,150 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001157**	Green	3k83	3.83 kΩ	1,200 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001156**	Green	2k7	2.70 kΩ	1,250 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001155**	Green	2k2	2.20 kΩ	1,300 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001154**	Green	1k5	1.50 kΩ	1,350 mA	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000612**	Green	0R	0 kΩ	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 50172
- according to EN 60598-2-22

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 ≤ 1 %.
Resistor power has to be ≥ 0.1 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 ta.
The relation of tc to ta temperature depends also on the luminaire design. If the measured tc temperature is approx. 5 K below tc max. or higher, ta temperature should be checked and eventually critical components (e.g. ELCAP) measured.
Detailed information on request.

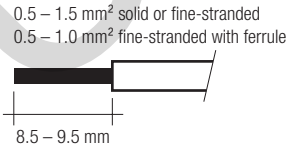
Isolation and electric strength testing of luminaires
Electronic LED Driver can be damaged by high voltage. This has to be considered during the routine testing of the luminaires in production.

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 VDC 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 VAC (or 1,414 x 1,500 VDC). 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



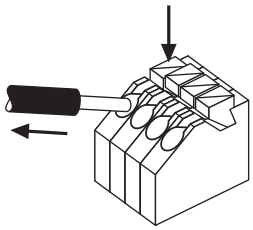
Use one wire for each terminal connector only.

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 mm²	1.5 mm²	2.5 mm²	2.5 mm²	1.5 mm²	1.5 mm²	2.5 mm²	2.5 mm²	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	1

The sensor is not activ in DC operation.

Wiring guidelines

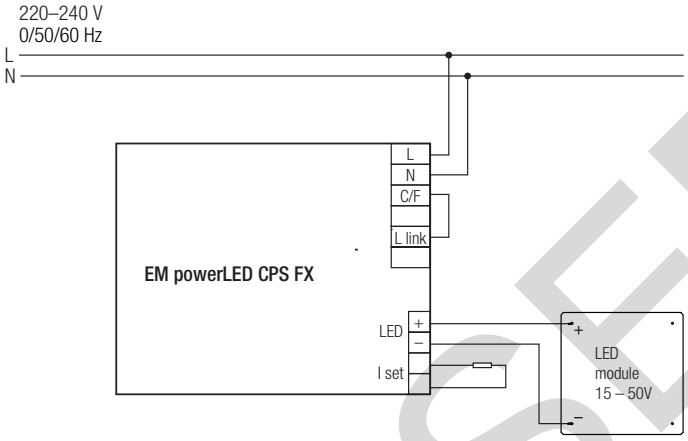
- The output to the LED is DC but has high frequency content, which should be considered for good EMC compliance.
- LED leads should be separated from the mains connections and wiring for good EMC performance.
- Maximum total lead length on the LED terminals is 3 m. For a good EMC performance keep the LED wiring as short as possible.
- To avoid the damage of the control gear, the wiring must be protected against short circuits to earth (sharp edged metal parts, metal cable clips, louver, etc.).

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.

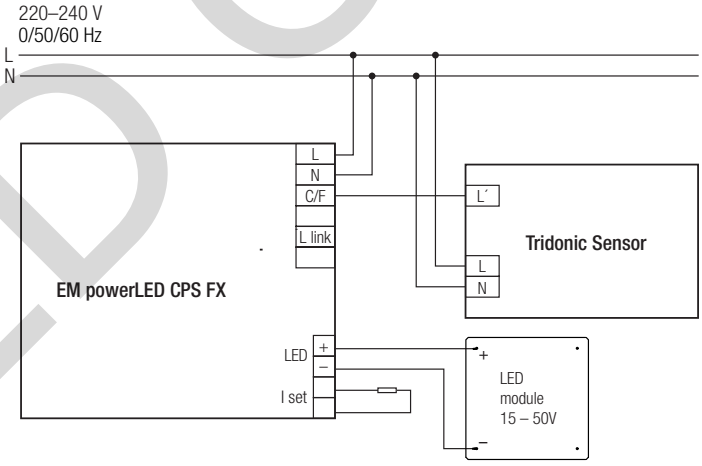
Wiring diagram EM powerLED CPS FX without sensor



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.

Wiring diagram EM powerLED CPS FX with sensor



PIR output ≙ 230 V

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.

Maximum number of switching cycles

All LED Drivers are tested with 50,000 switching cycles.
The actually achieved number of switching cycles is significantly higher.

Additional information

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

Guarantee conditions at www.tridonic.com → Services

Life-time declarations are informative and represent no warranty claim.
No warranty if device was opened.