

EM powerLED CPS CLE C 14W

LED driver for AC and DC power supplies



Product description

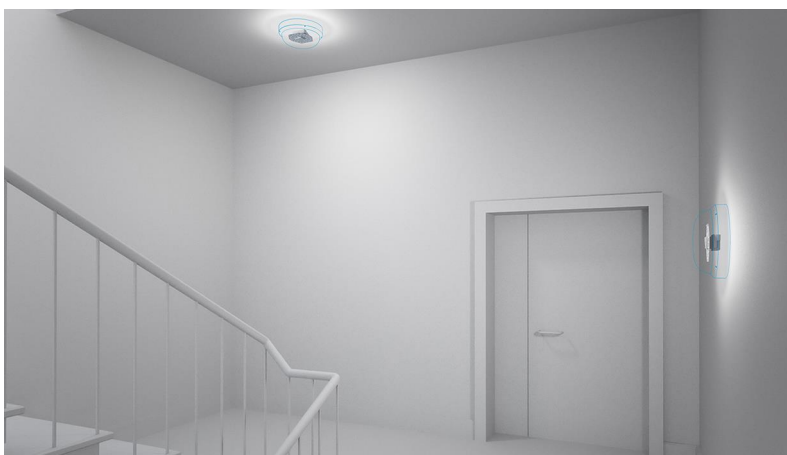
- _ LED driver for mains operation with integrated Simple CORRIDOR FUNCTION (CF)
- _ For use in central battery systems
- _ For luminaire installation
- _ For the use with CLE ADV5 EM
- _ EM = Emergency
- _ 5 years guarantee (conditions at <https://www.tridonic.com/en/int/services/manufacturer-guarantee-conditions>)

Properties

- _ Constant current LED driver with 350 mA output current
- _ Simple CORRIDOR FUNCTION (CF) with 10 % light level
- _ Constant current mode
- _ Light output in DC operation (EoFI): 0.1 or 1
- _ SELV
- _ For emergency lighting systems as per EN 50172
- _ LED module and sensor available

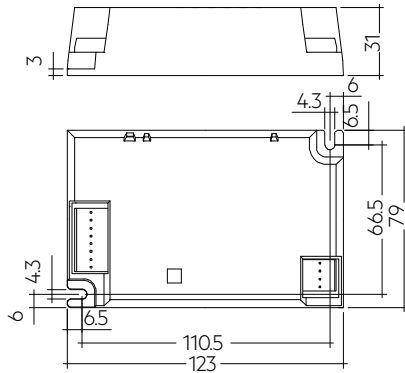
Website

<http://www.tridonic.com/89801089>



EM powerLED CPS CLE C 14W

LED driver for AC and DC power supplies



Ordering data

Type	Article number	Packaging, carton	Packaging, pallet	Weight per pc.
EMpLED CPS CLE C 14W	89801089	10 pc(s).	560 pc(s).	0.105 kg

Technical data

Rated supply voltage	220 – 240 V
AC voltage range	198 – 264 V
DC voltage range	176 – 280 V
Mains frequency	0 / 50 / 60 Hz
U-OUT (including open- / short-circuit and double load)	48 V
Overvoltage protection	320 V (for 1 h)
Min. forward voltage	31 V
Max. forward voltage	40 V
Starting time (at 230 V, 50 Hz, full load)	254 ms
Switchover time from mains to emergency operation	< 380 ms
Switchover time from emergency to mains operation	< 100 ms
Ambient temperature ta	-25 ... +55 °C
Max. casing temperature tc	82 °C
Dimensions L x W x H	123 x 79 x 31 mm
Type of protection	IP20
Lifetime	up to 50,000 h
Guarantee (conditions at www.tridonic.com)	5 Year(s)

Approval marks



Standards

EN 55015, EN 61000-3-2, EN 61000-3-3, EN 61347-1, EN 61347-2-13, EN 61547, EN 62384, according to EN 60598-2-22, according to EN 50172

Specific technical data

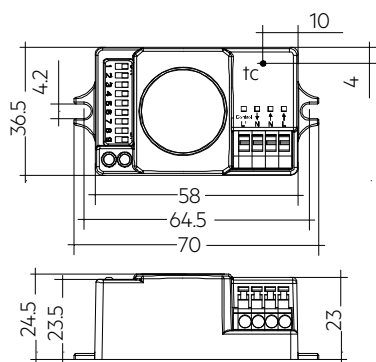
Type ^①	Typ. output current	Output current tolerance	Min. output voltage ^②	Max. output voltage ^②	Typ. output power	Input power (at 230 V, 50 Hz, full load)	Input current (at 230 V, 50 Hz, full load)	Efficiency (at 230 V, 50 Hz, full load)	λ (at 230 V, 50 Hz, full load)
Normal operation at 100 %									
EMpLED CPS CLE C 14W	350 mA	10 %	31 V	40 V	14.0 W	16.5 W	101 mA	83 %	0.69C
CF operation at 10 %									
EMpLED CPS CLE C 14W	35 mA	10 %	31 V	40 V	1.3 W	2.0 W	30 mA	65 %	0.20C
Emergency operation at 100 %									
EMpLED CPS CLE C 14W	350 mA	10 %	31 V	40 V	14.0 W	16.5 W	75 mA	83 %	-
Emergency operation at 10 %									
EMpLED CPS CLE C 14W	35 mA	10 %	31 V	40 V	1.3 W	2.0 W	13 mA	65 %	-

① EM = Emergency

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

smartSWITCH G2 HF 5DP f

Accessory



Product description

- _ Motion detector for luminaire installation
- _ Motion detection through glass and thin materials (except metal)
- _ For automatic on/off switching of luminaires with electronic ballasts and LED drivers
- _ 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
- _ Second neutral terminal for easy wiring
- _ Optimised for applications and environments with other wireless communication systems
- _ 5 years guarantee (conditions at

<https://www.tridonic.com/en/int/services/manufacturer-guarantee-conditions>)

Website

<http://www.tridonic.com/28004370>



Ordering data


Type	Article number	Dimensions L x W x H	Packaging, carton	Weight per pc.
smartSWITCH G2 HF 5DP f	28004370	70 x 36.5 x 24.5 mm	100 pc(s).	0.036 kg
smartSWITCH G2 HF 5DP S f	28004371	58 x 52.0 x 24.5 mm	100 pc(s).	0.036 kg

Approval marks



1. Standards

- EN 55015
- EN 61000-3-2
- EN 61000-3-3
- EN 61347-1
- EN 61347-2-13
- EN 61547
- EN 62384
- according to EN 60598-2-22
- according to EN 50172

Meaning of marking 

Double or reinforced insulation for built-in electronic LED Drivers. The control gear relies upon the luminaire enclosure for protection against accidental contact with live parts.

1.1 Glow-wire test

according to EN 61347-1 with increased temperature of 850 °C passed.

1.2 Insulation and electric strength testing of luminaires

Electronic LED-Drivers 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 insulation 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 insulation 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**.

2. Thermal details and lifetime

2.1 Expected lifetime

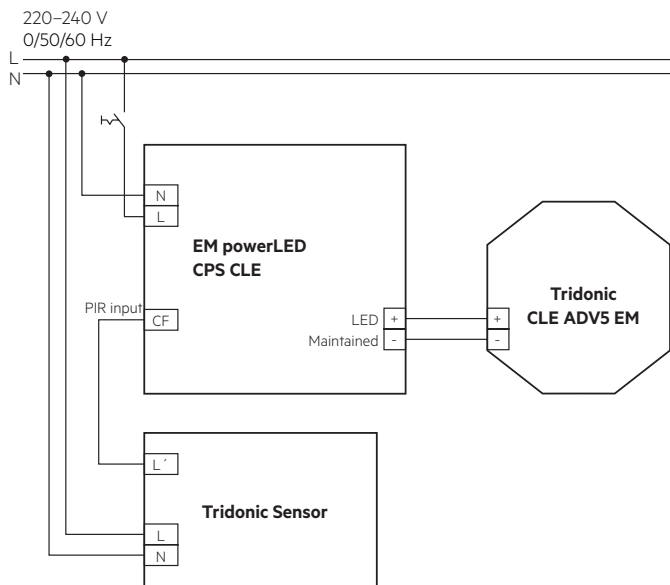
Expected lifetime

Type		ta = 25 °C	ta = 35 °C	ta = 40 °C	ta = 45 °C	ta = 50 °C	ta = 55 °C
EM powerLED CPS CLE C 14W	tc	57 °C	62 °C	67 °C	72 °C	77 °C	82 °C
	Lifetime	>100,000 h	>100,000 h	>100,000 h	>100,000 h	>100,000 h	>100,000 h

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., ta temperature should be checked and eventually critical components (e.g. ELCAP) measured. Detailed information on request.

3. Installation / wiring

3.1 Wiring diagram EM powerLED with sensor



PIR input $\hat{=}$ 230 V

Switching behaviour:

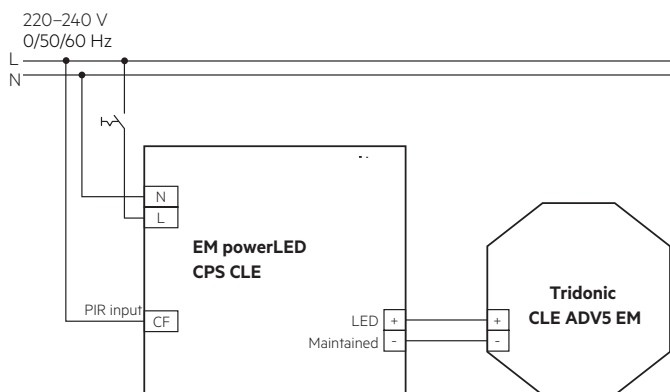
L	CF	Output LED
off	off	off
off	on	off
on	off	10 %
on	on	100 %

DC operation behaviour:

Emergency level EoF_i: 0.1

The sensor is not active in DC operation.

3.2 Wiring diagram EM powerLED



PIR input $\hat{=}$ 230 V

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 current peaks of up to 50% above the typical output current.

DC operation behaviour:

The emergency level EoF_i (0.1 or 1) depends on the polarity of the DC voltage.

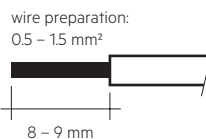
Polarity of the DC voltage

	+	-
L	+	-
N	-	+
CF	+	-
Emergency level EoF _i	1	0.1

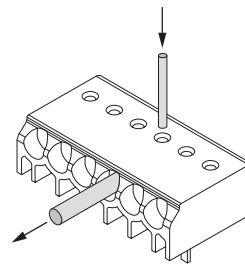
3.3 Wiring type and cross section

Solid wire with a cross section of 0.5 – 1.5 mm². Strip 8 – 9 mm of insulation from the cables to ensure perfect operation of terminals.

Wiring: LED module/LED Driver/supply



3.4 Loose wiring



Loosen wire through twisting and pulling or using a \varnothing 1mm release tool

3.5 Installation instruction

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

You must make sure that the LED is connected with the correct polarity. LEDs that are connected to EM powerLED should have polarity reversal protection such as a Schottky diode. There may be irreversible damage if the LED is connected with the wrong polarity. The protection device must be capable of handling a load of more than 700 mA.

3.6 Wiring guidelines

- The LED terminals are classified as SELV (output voltage < 60 V DC). Keep the wiring of the input terminals separated from the wiring of the SELV classified terminals or consider special wiring (double insulation, 6 mm creepage and clearance) when these connections should be kept SELV.
- 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 lead length on the LED terminals is 3 m. For a good EMC performance keep the LED wiring as short as possible.
- The secondary wires (LED module) should be routed in parallel to ensure good EMC performance.
- 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.)

To ensure that a luminaire containing LED emergency units complies with EN 55015 for radio frequency conducted interference in both normal and emergency mode it is essential to follow good practice in the wiring layout.

Within the luminaire the switched and unswitched 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.

3.7 Maximum lead length

LED 3 m (6 m loop)^①

^① Note: Do not exceed the length of LED leads to the LED module. Leads should always be kept as short as possible.

4. Mechanical values

4.1 Housing properties

- Casing manufactured from polycarbonate.
- Type of protection: IP20
- Max. torque at the mounting screws: 0.5 Nm / M4

5. Electrical values

5.1 Maximum loading of automatic circuit breakers

Automatic circuit breaker type	B10	B13	B16	B20	C10	C13	C16	C20	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 CLE C 14W	90	130	130	130	150	216	216	216	7.86 A	296 µs

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

Type	THD	3	5	7	9	11	13
EM powerLED CPS CLE C 14W	34	28	19	7	15	8	13

5.3 Ballast lumen factor (BLF) in %

	Corridor mode	DC operation
EM powerLED CPS CLE C 14W	10	100 / 10

5.4 Insulation matrix

	Mains	corridorFUNCTION	LED
Mains	–	•	••
corridorFUNCTION	•	–	••
LED	••	••	–

• Represents basic insulation

•• Represents double or reinforced insulation

6. Functions

6.1 Short-circuit behaviour

In case of a short-circuit at the LED output the LED output is switched off. After restart of the LED Driver the output will be activated again. The restart can be done via mains reset.

6.2 No-load operation

The LED Driver will not be damaged in no-load operation. The output will be deactivated and is therefore free of voltage. If a LED load is connected the device has to be restarted before the output will be activated again.

7. Miscellaneous

7.1 Mains-connected transformers

The EM powerLED does not contain mains-connected windings of transformers.

7.3 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.

7.4 Additional information

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

Guarantee conditions at www.tridonic.com → Services

Lifetime declarations are informative and represent no warranty claim. No warranty if device was opened.