

EM powerLED BASIC CLE 12/15 W

Emergency lighting LED Driver

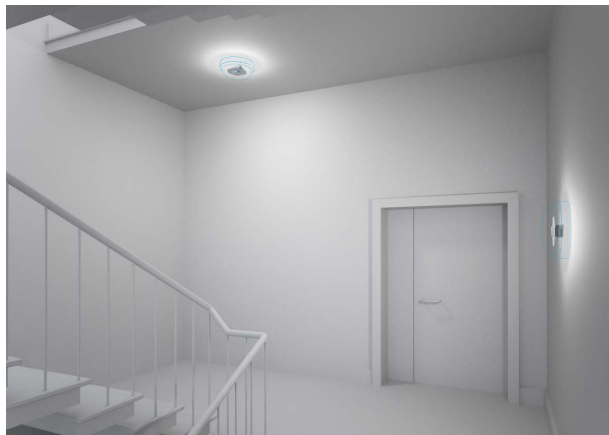
Product description

- LED Driver for mains operation with integrated Simple CORRIDOR FUNCTION (CF) and emergency lighting function for manual testing
- For self-contained emergency lighting
- For luminaire installation
- For the use with CLE 1500lm EM
- 5 years guarantee



Properties

- Constant current LED Driver with 350 or 470 mA output current
- Simple CORRIDOR FUNCTION (CF) with 10 % light level
- Integrated 1 W emergency lighting unit for non-maintained operation
- 3 h rated duration
- Constant current mode
- Green charge status display LED
- Electronic charge system
- Polarity reversal protection for battery
- Deep discharge protection
- Short-circuit-proof battery connection
- SELV
- Emergency lighting LEDs available
- LED module and sensor available



Batteries

- High-temperature cells
- NiMH batteries
- Cs cells
- Blade terminals for simple connection
- 4-year design life
- 2 years guarantee (conditions at www.tridonic.com)
- For battery compatibility refer to table „Battery selection“



Standards, page 5

Wiring diagrams and installation examples, page 7

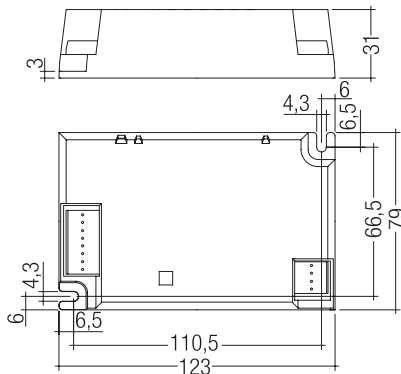


EM powerLED BASIC CLE 12/15 W

Emergency lighting LED Driver

Technical data

Rated supply voltage	220 – 240 V
Mains frequency	50 / 60 Hz
U-OUT	48 V
Overvoltage protection	320 V (for 1 h)
Battery charging time	24 h
Battery charge current	120 mA
Battery discharge current	see page 4
Rated duration	3 h
Number of cells	3
Turn on time (at 230 V, 50 Hz, full load)	100 ms
Ambient temperature t_a	0 ... 55 °C
Max. casing temperature t_c	75 °C
Dimensions LxBxH	123 x 79 x 31 mm
Mains voltage changeover threshold	according to EN 60598-2-22
Type of protection	IP20
Lifetime	up to 50,000 h
Guarantee	5 years



Ordering data

Type®	Article number	Packaging, carton	Packaging, pallet	Weight per pc.
EM powerLED 12W BASIC CLE NiMH	89800526	10 pc(s).	560 pc(s).	0.126 kg
EM powerLED 12W BASIC CLE NiCd	89800525	10 pc(s).	560 pc(s).	0.125 kg
EM powerLED 15W BASIC CLE NiMH	89800174	10 pc(s).	560 pc(s).	0.126 kg
EM powerLED 15W BASIC CLE NiCd	89800176	10 pc(s).	560 pc(s).	0.125 kg

Specific technical data

Type®	Output current	Output current tolerance	Min. output voltage [®]	Max. output voltage [®]	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)	λ (at 230 V, 50 Hz, full load)	Ambient temperature t_a [®]	t_c/t_a for $\geq 50,000$ h [®]
Normal operation											
EM powerLED 12W BASIC CLE NiMH	350 mA	5 %	22 V	33 V	10.61 W	15 W	85 mA	71 %	0.8c	-5 ... 55 °C	85 / 55 °C
EM powerLED 12W BASIC CLE NiCd	350 mA	5 %	22 V	33 V	10.61 W	15 W	85 mA	71 %	0.8c	-5 ... 55 °C	85 / 55 °C
EM powerLED 15W BASIC CLE NiMH	470 mA	5 %	22 V	33 V	14.25 W	18 W	110 mA	82 %	0.8c	-5 ... 55 °C	85 / 55 °C
EM powerLED 15W BASIC CLE NiCd	470 mA	5 %	22 V	33 V	14.25 W	18 W	110 mA	82 %	0.8c	-5 ... 55 °C	85 / 55 °C
CF operation											
EM powerLED 12W BASIC CLE NiMH	29 mA	15 %	22 V	33 V	0.75 W	3.1 W	26 mA	23 %	0.5c	–	–
EM powerLED 12W BASIC CLE NiCd	29 mA	15 %	22 V	33 V	0.75 W	3.1 W	26 mA	23 %	0.5c	–	–
EM powerLED 15W BASIC CLE NiMH	43 mA	15 %	22 V	33 V	1.12 W	3.5 W	30 mA	49 %	0.5c	–	–
EM powerLED 15W BASIC CLE NiCd	43 mA	15 %	22 V	33 V	1.12 W	3.5 W	30 mA	49 %	0.5c	–	–
Emergency operation											
EM powerLED 12W BASIC CLE NiMH	400 mA	5 %	2.5 V	3.4 V	1.32 W	–	–	–	–	–	–
EM powerLED 12W BASIC CLE NiCd	320 mA	5 %	2.5 V	3.4 V	1.06 W	–	–	–	–	–	–
EM powerLED 15W BASIC CLE NiMH	400 mA	5 %	2.5 V	3.4 V	1.32 W	–	–	–	–	–	–
EM powerLED 15W BASIC CLE NiCd	320 mA	5 %	2.5 V	3.4 V	1.06 W	–	–	–	–	–	–

[®] Ambient temperature range t_a defined in normal operation

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

[®] EM = Emergency

ACCES-
SORIES

Status indication green LED

Product description

- A green LED indicates that charging current is flowing into the battery



Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
LED EM green	89899605	25 pc(s).	200 pc(s).	0.011 kg
LED EM green, ultra high brightness	89899756	25 pc(s).	200 pc(s).	0.012 kg

**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 years 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

Standards

- EN 55015
- EN 61000-3-2
- EN 61000-3-3
- EN 61347-1
- EN 61347-2-13
- EN 61547
- EN 62384
- EN 61347-2-7
- according to EN 50172
- according to EN 60598-2-22

Further technical data**Battery discharge current**

Max. LED forward voltage (3,40 V)	
12W CLE NiMH	500 mA
12W CLE NiCd	375 mA
15W CLE NiMH	500 mA
15W CLE NiCd	375 mA

Technical data batteries**Accu-NiMH 2.2 Ah**

Battery voltage/cell	1.2 V
Cell type	Cs
Case temperature range to ensure 4 years design life	+5 °C to +50 °C
Max. short term battery case temperature (shorter than 1 month over the battery lifetime)	70 °C
Max. number discharge cycles	4 cycles per year plus 30 cycles during commissioning
Max. storage time	12 months

Accupack-NiMH 2.2 Ah

Battery voltage/cell	1.2 V
Cell type	Cs
Ambient temperature range to ensure 4 years design life to tc point	+5 °C to +35 °C +40 °C
Max. short term battery case temperature (shorter than 1 month over the battery lifetime)	70 °C
Max. number discharge cycles	4 cycles per year plus 4 cycles during commissioning
Max. storage time	12 months

Batteries

Connection method: 4.8 x 0.5 mm spade tag welded to end of cell

For stick packs this connection is accessible after the battery caps have been fitted.

To inhibit inverter operation disconnect the batteries by removing the connector from the battery spade tag.

For further information refer to corresponding battery datasheet.

Storage of batteries

- Store batteries within the specified temperature range in low humidity conditions. Optimal storage conditions are:
 - temperature: +5... +25 °C
 - humidity: 65 % ±5 %
- Avoid atmosphere with corrosive gas
- Disconnect batteries before store or delivery
- Avoid storage of discharged batteries
- A long term storage in open circuit leads to battery self discharge and deactivation of chemical components. It could be required to charge and discharge the batteries a few times to recover the initial performance.

Mechanical details

Case manufactured from polycarbonate.

Glow-wire test according to EN 60598-1
650 °C and 850 °C passed

LED status indicator

- Green
- Mounting hole 6.5 mm diameter, 1 – 1.6 mm thickness
- Lead length 1,000 mm

Battery leads

- Quantity: 1 red and 1 black
- Length: 1,000 mm
- Wire type: 0.5 mm² solid conductor
- Insulation rating: 90 °C

Battery end termination

Push on 4.8 mm receptacle to suit battery spade fitted with insulating cover

Module end termination

8.0 mm stripped insulation

Battery selection**EM powerLED BASIC CLE**

				Type	EM powerLED 12W BASIC CLE NiMH	EM powerLED 12W BASIC CLE NiCd	EM powerLED 15W BASIC CLE NiMH	EM powerLED 15W BASIC CLE NiCd
				Article no.	89800526	89800525	89800174	89800176
				Duration	3 h	3 h	3 h	3 h
Technology and capacity	Design	Number of cells	Type	Article no.	Assignable batteries			
NiMH 2.2 Ah Cs-Cells	stick	1 x 3	Accu-NiMH 3A	28002088	•	•	•	•

Short-circuit behaviour

In case of a short circuit on the secondary side (LED) the LED output is switched off. After elimination of the short circuit the nominal operation is restored automatically.

No-load operation

The LED Driver is not damaged in the no-load operation. The max. output voltage can be obtained during no-load operation.

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.

Expected lifetime

Type		ta = 45 °C	ta = 55 °C
EM powerLED 12W BASIC CLE NiMH	tc	65 °C	75 °C
	Lifetime	100,000 h	50,000 h
EM powerLED 12W BASIC CLE NiCd	tc	65 °C	75 °C
	Lifetime	100,000 h	50,000 h
EM powerLED 15W BASIC CLE NiMH	tc	65 °C	75 °C
	Lifetime	100,000 h	50,000 h
EM powerLED 15W BASIC CLE NiCd	tc	65 °C	75 °C
	Lifetime	100,000 h	50,000 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.

Maximum loading of automatic circuit breakers

Automatic circuit breaker type	B10	B13	B16	B20	Inrush current	
Installation Ø	1.5 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	I _{max}	time
EM powerLED 12W BASIC CLE NiMH	90	130	130	130	10 A	120 µs
EM powerLED 12W BASIC CLE NiCd	90	130	130	130	10 A	120 µs
EM powerLED 15W BASIC CLE NiMH	90	130	130	130	10 A	120 µs
EM powerLED 15W BASIC CLE NiCd	90	130	130	130	10 A	120 µs

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

Type	THD	3	5	7
EM powerLED 12W BASIC CLE NiMH	43	32	9	12
EM powerLED 12W BASIC CLE NiCd	43	32	9	12
EM powerLED 15W BASIC CLE NiMH	39	33	20	12
EM powerLED 15W BASIC CLE NiCd	39	33	20	12

Ballast lumen factor in %

	Emergency BLF	EBLF	Corridor mode
EM powerLED 12W BASIC CLE NiMH	10	9.5	10
EM powerLED 12W BASIC CLE NiCd	8	7.7	10
EM powerLED 15W BASIC CLE NiMH	10	9.5	10
EM powerLED 15W BASIC CLE NiCd	8	7.7	10

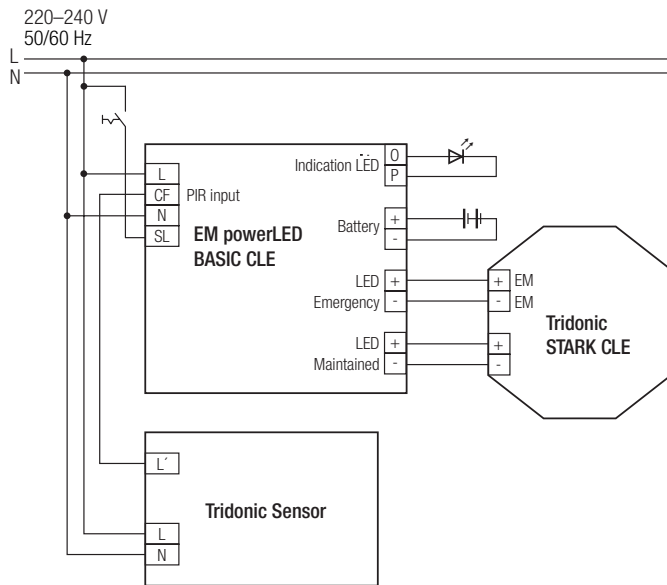
Insulation matrix

	Mains	Switched Live	C/F	Battery, LED, Test switch, Indicator LED
Mains	–	•	•	••
Switched Live	•	–	•	••
C/F	•	•	–	••
Battery, LED, Test switch, Indicator LED	••	••	••	–

• Represents basic insulation

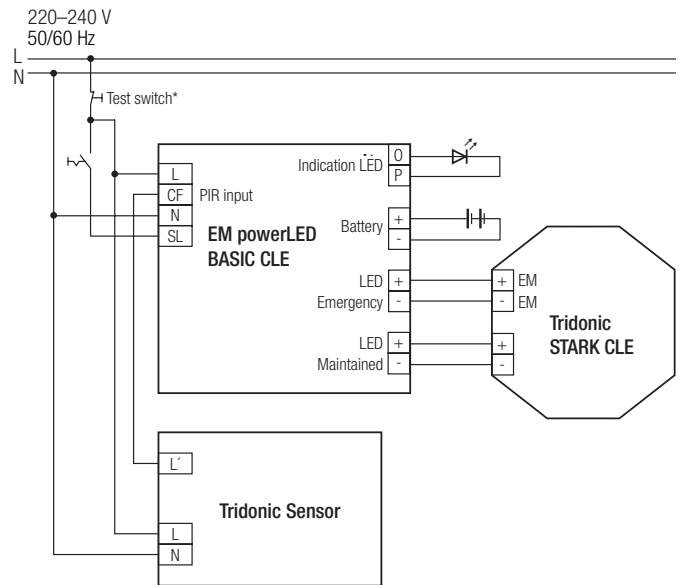
•• Represents double or reinforced insulation

Wiring diagram EM powerLED with sensor



PIR input $\hat{=}$ 230 V

Wiring diagram EM powerLED with sensor and testswitch

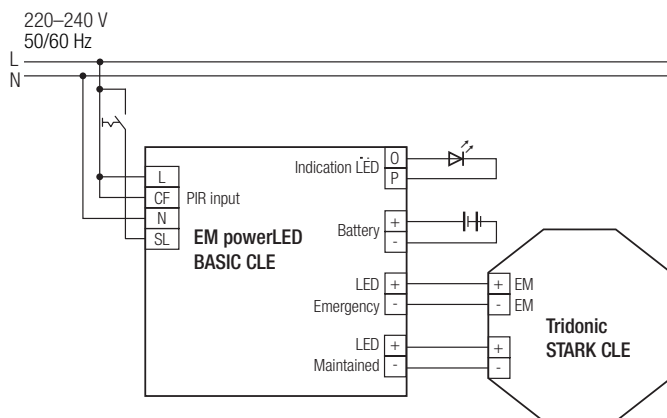


* Use 230 V Test switch

Switching behaviour

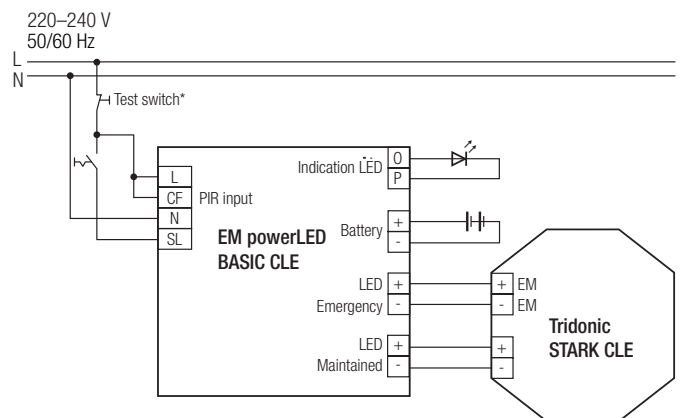
SL	CF	LED Maintained
off	off	off
off	on	off
on	off	10 %
on	on	100 %

Wiring diagram EM powerLED



PIR input $\hat{=}$ 230 V

Wiring diagram EM powerLED with testswitch



* Use 230 V Test switch

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.

Note for manually tested emergency lighting with combined LED modules:

For manually tested emergency applications when used with combined LED light modules for general and emergency lighting (e. g. Tridonic modules QLE, LLE 24, CLE and SLE) it is important that the normal supply of the mains LED Driver together with the permanent emergency supply is switched off prior to checking the operation of the emergency LEDs. These combined LED modules use independent circuits for general and emergency lighting.

If this is not done, it may not be possible to see that the emergency LEDs are operating.

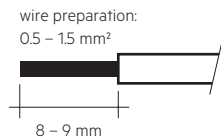
Use a similar circuit to that shown above.

Wiring instructions

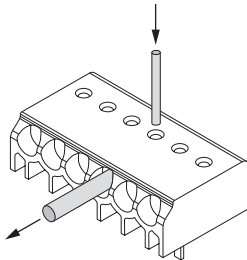
- Secondary leads should be separated from the mains connections and wiring for good EMC performance.
- The EM powerLED terminals, battery and indicator LED terminals are classified as SELV. Keep the wiring of the input terminals separated from the wiring of the SELV equivalent terminals or consider special wiring (double insulation, 6 mm creepage and clearance) when these connections should be kept SELV.
- Maximum lead length on the EM powerLED 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.
- Maximum lead length for the indicator LED connection is 1 m. The indicator LED wiring should be separated from the EM powerLED leads to prevent noise coupling.
- Battery leads are specified with 0.8 mm cross section and a length of < 1 m.
- Switched live and unswitched live supplies must be off the same phase.
- 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.).

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.



Loose wiring



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

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.

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

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