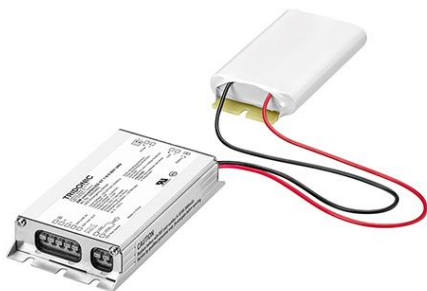


EM converterLED ST 60 V UNV

SELFTEST version (US applications)



Product description

- _ Emergency lighting LED driver with selftest function
- _ Only for US applications
- _ Battery pack enclosed
- _ For self-contained emergency lighting
- _ For LED modules with a forward voltage up to 57 V
- _ Class 2
- _ UL certified
- _ For luminaire installation
- _ EM = Emergency
- _ 5 years guarantee (conditions at <https://www.tridonic.com/en/int/services/manufacturer-guarantee-conditions>)

Properties

- _ Non maintained operation
- _ Self-test
- _ 90 minutes rated duration
- _ Compatible with most constant current LED drivers (see data sheet, LED driver compatibility)
- _ 3-pole technology: 2-pole LED module changeover and delayed power switching for the LED driver
- _ Automatic shutdown of output if LED load is out of range
- _ Constant power output
- _ Combined status display LED and test switch
- _ Electronic charge system
- _ Deep discharge protection
- _ Short-circuit-proof battery connection
- _ Polarity reversal protection for battery
- _ Self-test:
 - _ Status of the battery
 - _ Status of the LED
 - _ Function test
 - _ Duration test

Batteries

- _ High-temperature cells
- _ NiMH batteries
- _ 5 years guarantee for NiMH batteries (conditions at <https://www.tridonic.com/en/int/services/manufacturer-guarantee-conditions>)

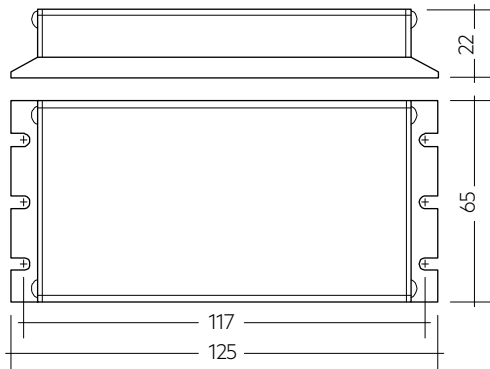
Website

<http://www.tridonic.com/28002863>

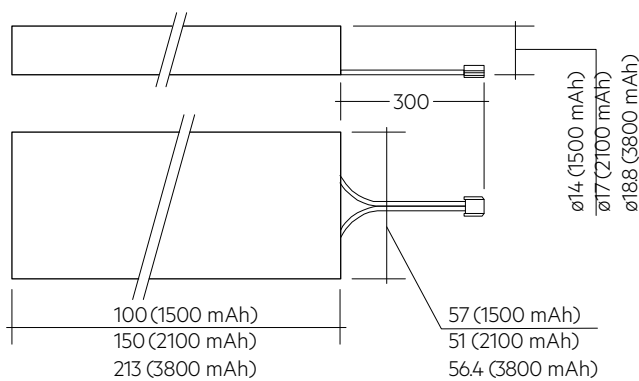


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Note: Do not change the position of the DIP switches.



Dimensions in mm

Ordering data

| Type | Article number | Rated duration | Packaging, carton | Packaging, pallet | Weight per pc. | Dimensions L x W x H |
|-----------------------------------|----------------|----------------|-------------------|-------------------|----------------|----------------------|
| EM converterLED ST 1-9-5 60V UNV | 28002863 | 1.5 h | 16 pc(s). | 960 pc(s). | 0.42 kg | 125 x 65 x 22 mm |
| EM converterLED ST 1-9-9 60V UNV | 28002866 | 1.5 h | 16 pc(s). | 960 pc(s). | 0.54 kg | 125 x 65 x 22 mm |
| EM converterLED ST 1-9-15 60V UNV | 28002869 | 1.5 h | 12 pc(s). | 720 pc(s). | 0.82 kg | 125 x 65 x 22 mm |

Technical data

| | |
|---|--|
| Rated supply voltage | 120 – 277 V |
| Mains frequency | 50 / 60 Hz |
| Typ. λ | 0.5C |
| Output current | Refer to data sheet |
| Starting time | < 0.25 s from detection of emergency event |
| Overvoltage protection | 305 V |
| U-OUT (including open- / short-circuit and double load) | 60 V |
| Max. open circuit voltage | 60 V |
| Ambient temperature t_a | 0 ... +50 °C |
| Max. casing temperature t_c | 70 °C |
| Mains voltage changeover threshold emergency mode | 30 V |
| Mains voltage changeover threshold mains mode | 70 V |
| Type of protection | IP20 |
| Functional test | Monthly 30 s test |
| Duration test | Yearly 90 minutes test |
| Lifetime | 50,000 h |
| Guarantee (conditions at www.tridonic.com) | 5 Year(s) |
| Dimensions L x W x H | 125 x 65 x 22 mm |

Approval marks



Standards

UL 924, FCC PART 15, ICES-005

Specific technical data

| Type | Battery technology | Mains voltage | LED module forward voltage range | Typ. output power P emergency | Mains current in charging operation | | | Mains power in charging operation | | |
|--|--------------------|---------------|----------------------------------|-------------------------------|-------------------------------------|---------------|----------------|-----------------------------------|---------------|----------------|
| | | | | | Initial charge | Fast recharge | Trickle charge | Initial charge | Fast recharge | Trickle charge |
| EM converterLED ST 1-9-5 60V UNV | NiMH | 120 V | 13 – 57 V | 5 W | 40 mA | 36 mA | 5.1 mA | 2.1 W | 1.8 W | 0.5 W |
| EM converterLED ST 1-9-5 60V UNV | NiMH | 277 V | 13 – 57 V | 5 W | 25 mA | 22 mA | 3.7 mA | 2.5 W | 2.0 W | 0.5 W |
| EM converterLED ST 1-9-9 60V UNV | NiMH | 120 V | 14 – 57 V | 9 W | 51 mA | 50 mA | 5.9 mA | 2.9 W | 2.8 W | 0.5 W |
| EM converterLED ST 1-9-9 60V UNV | NiMH | 277 V | 14 – 57 V | 9 W | 30 mA | 29 mA | 4.2 mA | 3.2 W | 2.8 W | 0.6 W |
| EM converterLED ST 1-9-15 60V UNV | NiMH | 120 V | 15 – 57 V | 15 W | 62 mA | 68 mA | 6.9 mA | 3.9 W | 3.9 W | 0.6 W |
| EM converterLED ST 1-9-15 60V UNV | NiMH | 277 V | 15 – 57 V | 15 W | 38 mA | 39 mA | 4.8 mA | 4.0 W | 4.0 W | 0.6 W |

1. Standards

UL 924
 FCC Part 15, Class A
 ICES-005

Product not designed for European Economic Area.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

2. Thermal details and lifetime

2.1 Lifetime

Average lifetime 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 lifetime

| Type | ta | 40 °C | 50 °C | 55 °C | 60 °C |
|---|----------|----------|----------|----------|----------|
| EM converterLED ST 1-9-x 60V UNV | tc | 55 °C | 65 °C | 70 °C | 75 °C |
| | lifetime | 65,000 h | 55,000 h | 50,000 h | 45,000 h |

The emergency lighting LED Driver is designed for a lifetime stated above under reference conditions and with a failure probability of less than 10 %.

The relation of tc to ta temperature depends also on the luminaire design.

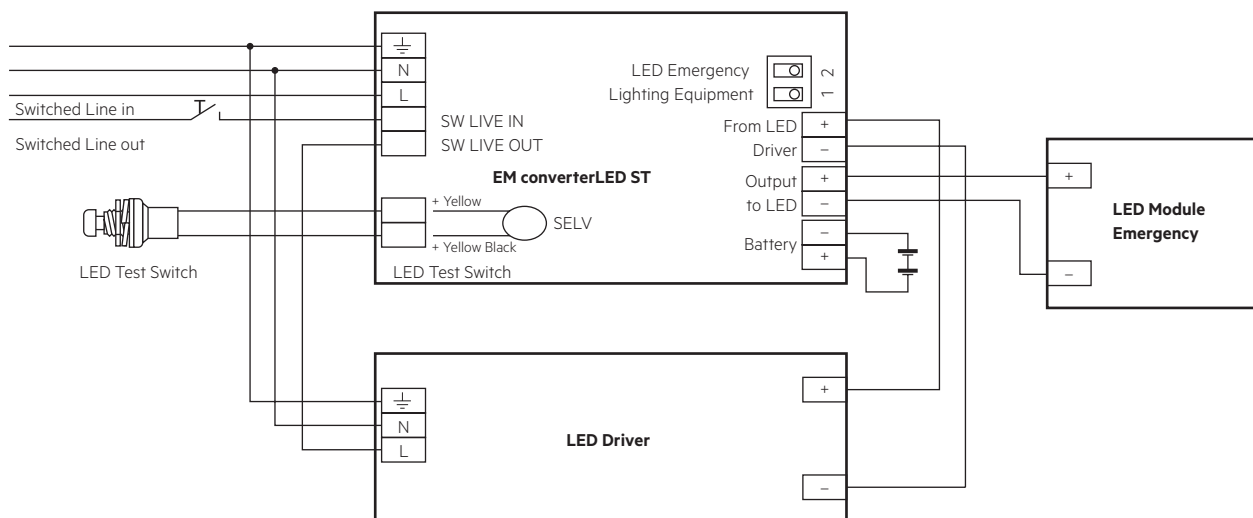
If the measured tc temperature is approx. 5 K below tc max., ta temperature should be checked and eventually critical components (e.g. ELCAP) measured. Detailed information on request.

3. Installation / Wiring

3.1 Wiring diagram

One or more LED modules with a total forward voltage in the forward voltage range of the EM converterLED can be connected. These LED module(s), marked with "Emergency" are operated in emergency mode from the associated battery. In normal mains mode all LED modules are operated by the mains LED Driver.

EM converterLED SELFTEST with one LED module for mains and emergency operation

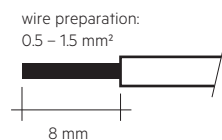


3.2 Wiring type and cross section

Solid wire with a cross section of 0.5 – 1.5 mm².

Strip 8 mm of insulation from the cables to ensure perfect operation of terminals.

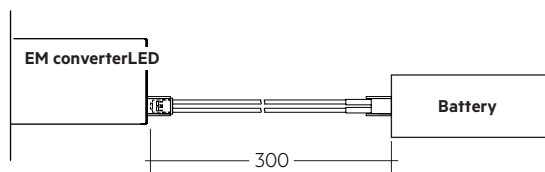
Wiring: LED module/LED Driver/supply



Battery connection

- Plug connection 300 mm

3.3 Battery connection



3.4 Wiring guidelines

- For good EMC compliance consider that the output to the LED is DC but has high frequency content.
- Separate LED leads from the mains connection and wiring for good EMC performance.
- Keep the LED wiring as short as possible for a good EMC performance.
- Route the secondary wires (LED module) in parallel to ensure good EMC performance.
- Maximum lead length for the LED test switch connection is 250 mm / 9.84 inch. Separate the LED test switch wiring from the LED leads to prevent noise coupling.
- 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.).

3.5 Maximum lead length

| | |
|-----------------|---------|
| LED test switch | 250 mm |
| Battery | 1000 mm |

3.6 Use of different phases

The use of different phases for switched line and unswitched line is prohibited.

4. Mechanical values

4.1 Housing properties

- Casing manufactured from metal.
- Type of protection: IP20
- The housing incorporates DIP switches. The position of the DIP switches is essential for the correct operation and must not be changed. Altering their position will prohibit the correct operation of the emergency lighting LED Driver.

4.2 Mechanical data accessories

LED test switch

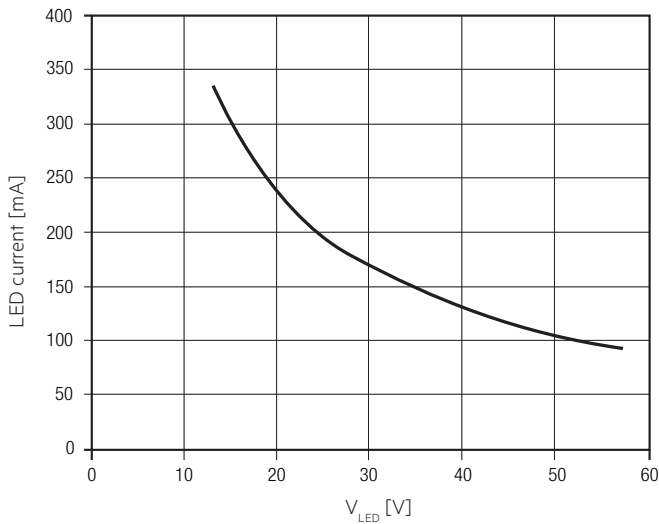
- Mounting hole 4.2 mm diameter
- Mounting hole strength < 5 mm
- Lead length 250 mm
- For direct installation or use in a separate junction box

5. Electrical values

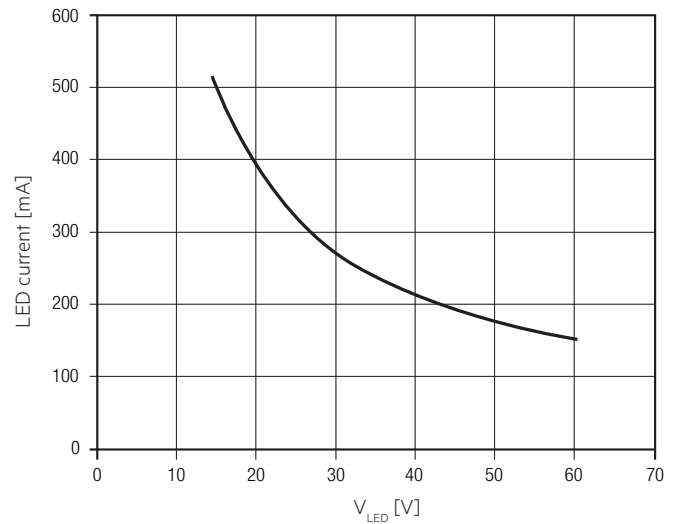
5.1 Typ. LED current/voltage characteristics

The LED current in emergency mode is automatically adjusted by the EM converterLED module based on the total forward voltage of the LED modules connected and the associated battery. The start of the LED in emergency mode does not result in a current peak.

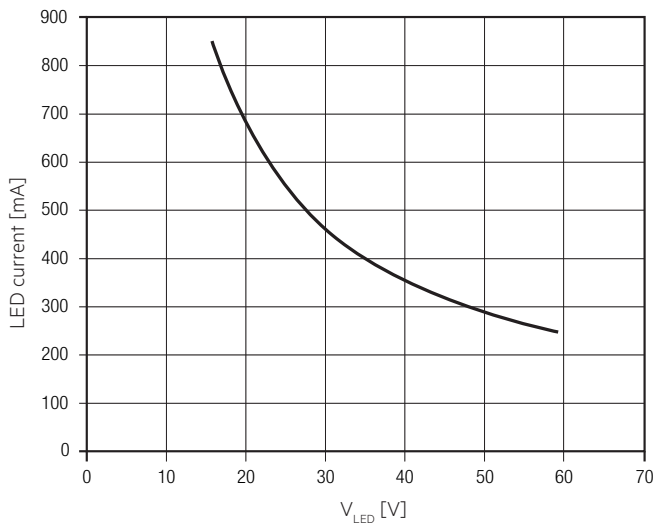
EM converterLED ST 1-9-5 60V UNV
 Article number: 28002863
 NiMH battery, 9.6 V battery voltage
 540 – 630 mA battery discharge current (tolerance)



EM converterLED ST 1-9-9 60V UNV
 Article number: 28002866
 NiMH battery, 10.8 V battery voltage
 860 – 1,150 mA battery discharge current (tolerance)



EM converterLED ST 1-9-15 60V UNV
 Article number: 28002869
 NiMH battery, 10.8 V battery voltage
 1,410 – 1,720 mA battery discharge current (tolerance)



7. Battery data

7.1 Battery charge / discharge data

EM converterLED ST 1-9-x 60V UNV

| Type | EM converterLED ST 1-9-5 60V UNV | EM converterLED ST 1-9-9 60V UNV | EM converterLED ST 1-9-15 60V UNV | |
|------------------------|-------------------------------------|-------------------------------------|--------------------------------------|--------------|
| Article no. | 28002863 | 28002866 | 28002869 | |
| Battery charge time | Initial charge | | 24 h | |
| | Fast recharge | | 24 h | |
| | Trickle charge | | | continuously |
| Charging current | Initial charge | 119 mA | 153 mA | 210 mA |
| | Fast recharge | 90 mA | 110 mA | 190 mA |
| | Trickle charge | 75 mA | 105 mA | 190 mA |
| Discharge current | 0.35 C | 0.45 C | 0.45 C | |

7.2 Technical data batteries

| Type | EM converterLED ST 1-9-5 60V UNV | EM converterLED ST 1-9-9 60V UNV | EM converterLED ST 1-9-15 60V UNV |
|------------------|-------------------------------------|-------------------------------------|--------------------------------------|
| Article no. | 28002863 | 28002866 | 28002869 |
| Voltage | 9.6 V | 10.8 V | 10.8 V |
| Capacity | 1,500 mAh | 2,100 mAh | 3,800 mAh |
| Discharge cycles | 500 | 500 | 500 |

8. Miscellaneous

8.1 Maximum number of switching cycles

EM converterLEDs are tested with 10,000 mains switching cycles of the associated LED driver.

8.2 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.