

EM converterPACK ST 60 V UNV COND

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
- _ 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 included
- _ 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>)

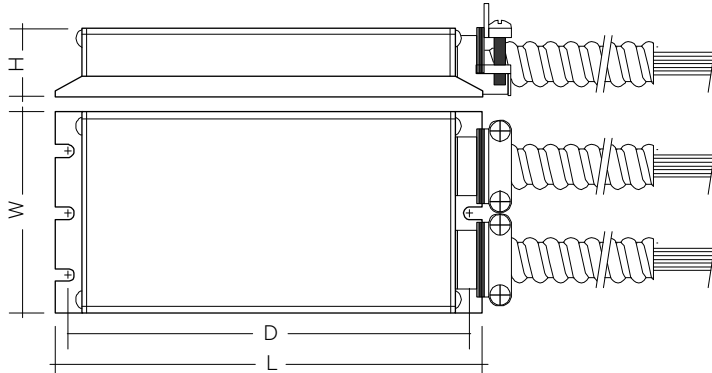
Website

<http://www.tridonic.com/28002865>



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Ordering data

Type	Article number	Rated duration	Packaging, carton	Packaging, pallet	Weight per pc.	Hole spacing D	Dimensions L x W x H
EM converterPACK ST 1-9-5 60V UNV COND	28002865	1.5 h	16 pc(s).	480 pc(s).	0.90 kg	252 mm	260 x 65 x 22 mm
EM converterPACK ST 1-9-9 60V UNV COND	28002868	1.5 h	10 pc(s).	400 pc(s).	1.05 kg	299 mm	307 x 65 x 22 mm
EM converterPACK ST 1-9-15 60V UNV COND	28002871	1.5 h	10 pc(s).	400 pc(s).	1.35 kg	364 mm	372 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 ta	0 ... +50 °C
Max. casing temperature tc	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

Approval marks



Standards

UL 924, FCC PART 15, ICES-005

Specific technical data

Type	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 converterPACK ST 1-9-5 60V UNV COND	120 V	13 – 57 V	5 W	40 mA	36 mA	5.1 mA	2.1 W	1.8 W	0.5 W
EM converterPACK ST 1-9-5 60V UNV COND	277 V	13 – 57 V	5 W	25 mA	22 mA	3.7 mA	2.5 W	2.0 W	0.5 W
EM converterPACK ST 1-9-9 60V UNV COND	120 V	14 – 57 V	9 W	51 mA	50 mA	5.9 mA	2.9 W	2.8 W	0.5 W
EM converterPACK ST 1-9-9 60V UNV COND	277 V	14 – 57 V	9 W	30 mA	29 mA	4.2 mA	3.2 W	2.8 W	0.6 W
EM converterPACK ST 1-9-15 60V UNV COND	120 V	15 – 57 V	15 W	62 mA	68 mA	6.9 mA	3.9 W	3.9 W	0.6 W
EM converterPACK ST 1-9-15 60V UNV COND	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 converterPACK ST 1-9-x 60V UNV COND	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 %.

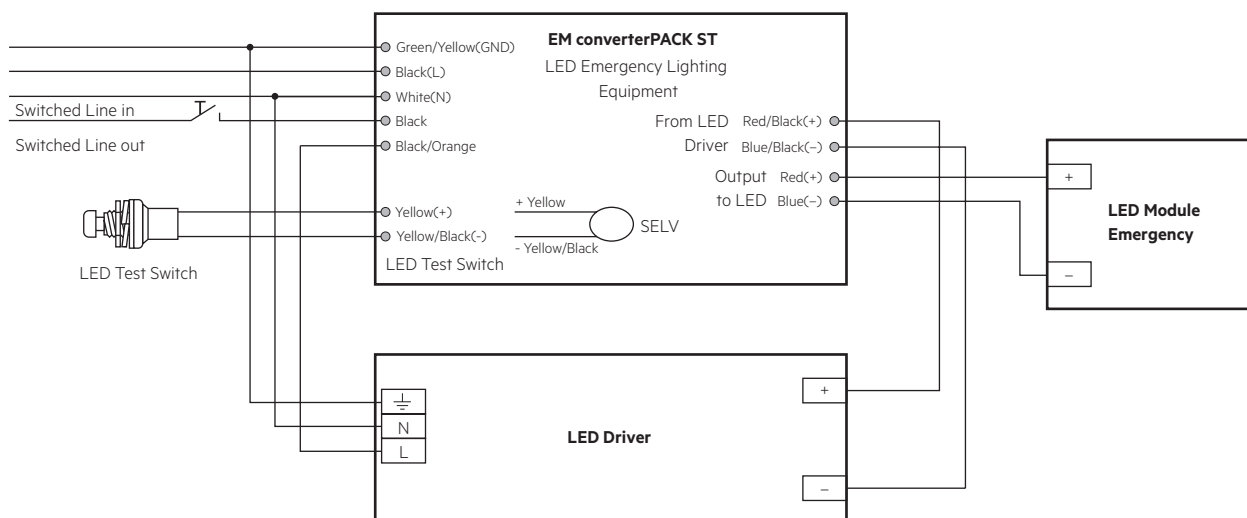
The relation of tc to ta temperature depends also on the luminaire design. If the measured tc temperature is approx. 5 K below tc max., ta temperature should be checked and eventually critical components (e.g. ELCAP) measured. Detailed information on request.

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 converterPACK 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 converterPACK SELFTEST with one LED module for mains and emergency operation



3.2 Wiring type and cross section

	Solid / Stranded	Cross section
Earth	Solid	0.5 – 1.5 mm ²
L	Solid	0.5 – 1.5 mm ²
N	Solid	0.5 – 1.5 mm ²
Live in	Stranded	0.5 – 1.5 mm ²
Live out	Stranded	0.5 – 1.5 mm ²
Test switch +	Stranded	0.5 – 1.5 mm ²
Test switch -	Stranded	0.5 – 1.5 mm ²
LED driver +	Solid	0.5 – 1.5 mm ²
LED driver -	Solid	0.5 – 1.5 mm ²
LED +	Solid	0.5 – 1.5 mm ²
LED -	Solid	0.5 – 1.5 mm ²
Battery +	Stranded	0.5 – 1.5 mm ²
Battery -	Stranded	0.5 – 1.5 mm ²

3.3 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.).

3.4 Maximum lead length

LED test switch 250 mm

3.5 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

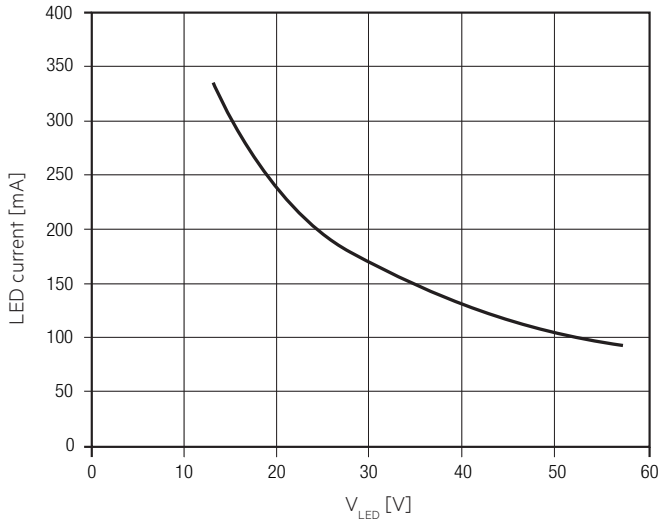
The LED current in emergency mode is automatically adjusted by the EM converterPACK module based on the total forward voltage of the LED modules connected and the associated battery. The start of the LED in emergency mode does not result in a current peak.

EM converterPACK ST 1-9-5 60V UNV COND

Article number: 28002865

NiMH battery, 9.6 V battery voltage

540 – 630 mA battery discharge current (tolerance)

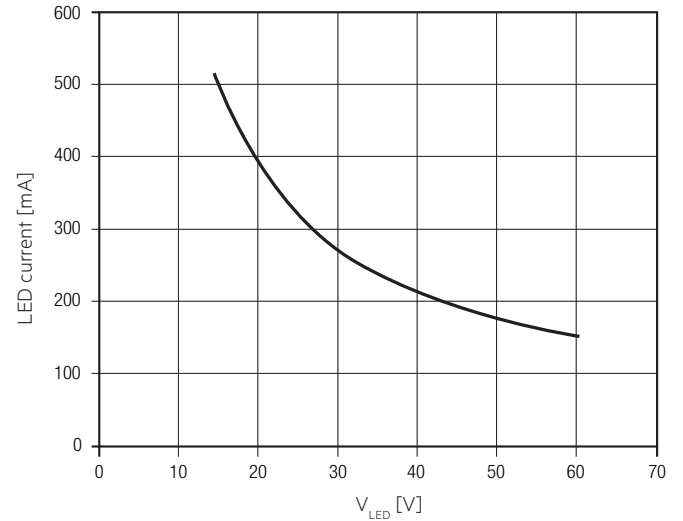


EM converterPACK ST 1-9-9 60V UNV COND

Article number: 28002868

NiMH battery, 10.8 V battery voltage

860 – 1,150 mA battery discharge current (tolerance)

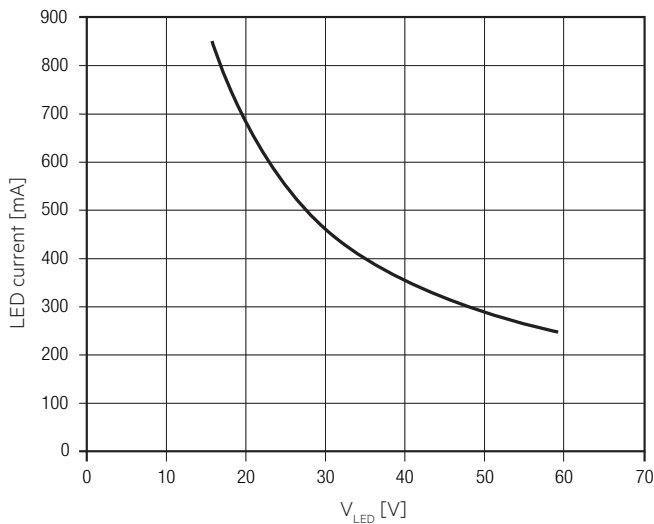


EM converterPACK ST 1-9-15 60V UNV COND

Article number: 28002871

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 converterPACK ST 1-9-x 60V UNV

Type	EM converterPACK ST 1-9-5 60V UNV COND	EM converterPACK ST 1-9-9 60V UNV COND	EM converterPACK ST 1-9-15 60V UNV COND	
Article no.	28002865	28002868	28002871	
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 converterPACK ST 1-9-5 60V UNV COND	EM converterPACK ST 1-9-9 60V UNV COND	EM converterPACK ST 1-9-15 60V UNV COND
Article no.	28002865	28002868	28002871
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.