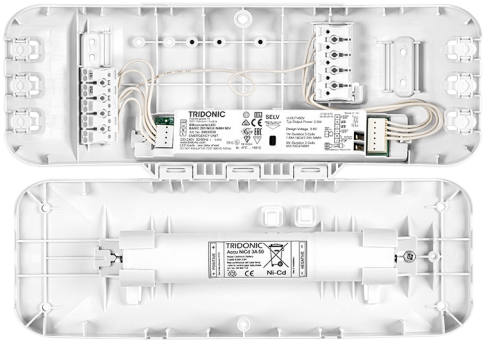
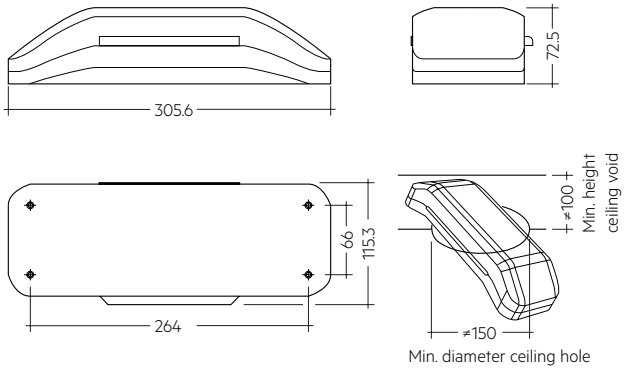
Non-maintained emergency lighting LED driver kit with self-test function for LED modules
with a forward voltage of 10 to 54 V
3 h rated duration

EM converterPACK SELFTEST Installation and wiring instructions





Technical data

Rated supply voltage	220 – 240 V
AC voltage range	198 – 264 V
Mains frequency	50 / 60 Hz
LED module forward voltage range	10 – 54 V
Output current	see respective EM converterLED data sheet
Starting time	< 0.5 s from detection of emergency event
Overvoltage protection	320 V (for 48 h)
U-OUT (including open- / short-circuit and double load)	60 V
Max. open circuit voltage	60 V
Rated duration	3 h
Number of cells	3
Ambient temperature range ta	+5 … +45 °C
Max. casing temperature tc (of EM converterLED inside)	80 °C
Mains voltage changeover threshold	according to EN 60598-2-22
Mains surge capability (between L – N)	1 kV
Mains surge capability (between L/N – PE)	2 kV
Type of protection	IP20
Rest mode max. number of emergency units	100
Rest mode max. wiring distance	1,000 m
Functional test	Weekly 5s test
Duration test	Yearly 3 h test
Life-time	up to 100,000 h
Dimensions LxWxH	305.6 x 115.3 x 72.5 mm

Battery charging time depending on battery type (NiCd or LifePO4).

Further information can be found in the respective datasheets on www.tridonic.com.

Ordering data

Type	Article number	Packaging carton	Packaging Pallet	Weight per pc.
EM converterPACK ST 233 NiCd 50V	**89801046**	1 pc(s).	126 pc(s).	0.81 kg
EM converterPACK ST 232A LiFePO4 50V	**89801047**	1 pc(s).	126 pc(s).	0.57 kg

Status indication LED (not included)

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
LED EM bi-colour, 1.0 m CON	**89800273**	25 pc(s).	200 pc(s).	0.015 kg
LED EM bi-colour, high brightness HO 1.0 m CON	**89800275**	25 pc(s).	200 pc(s).	0.015 kg
LED EM bi-colour, 0.6 m CON	**89800474**	25 pc(s).	200 pc(s).	0.005 kg
LED EM bi-colour, high brightness HO 0.6 m CON	**89800475**	25 pc(s).	200 pc(s).	0.005 kg
LED EM bi-colour, 0.3 m CON	**89800274**	25 pc(s).	200 pc(s).	0.005 kg
LED EM bi-colour, high brightness HO 0.3 m CON	**89800276**	25 pc(s).	200 pc(s).	0.005 kg

Test switch (not included)

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
Test switch EM 3	**89899956**	25 pc(s).	200 pc(s).	0.013 kg

ACD EM LED INDICATOR HOLDER (not included)

Type	Article number	Colour	Packaging, carton	Weight per pc.
ACD EM LED INDICATOR HOLDER	**28002189**	White	10 pc(s).	0.010 kg

Description

EM converterPACK SELFTEST is designed for use with emergency luminaries in conjunction with LED modules and LED drivers from Tridonic and other manufacturers. It is compatible with LED light modules for linear/area as well as downlight applications and can be used with fixed output or dimming LED drivers of up to 150 W power.
The incorporated EM converterLED is approved to IEC / EN 61347-2-7 and provides a battery charge current that is within the range of charge currents quoted on the Battery Manufacturers Declaration Form for the ended battery types. This compatibility allows converted luminaires to comply with the relevant parts of IEC / EN 60598-2-22.

Warranty

- 5 years excluding batteries
- Batteries: 1 year NiCd, 4 years $LiFePO_4$

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Components matrix

Type	Article number	EM converterLED		Battery	
		Type	Article number	Type	Article number
EM converterPACK ST 233 NiCd 50V	**89801046**	EM converterLED ST 203 NiCd/NiMH 50V	89800647	Accu-NiCd 3A 55	28002773
EM converterPACK ST 232A LiFePO4 50V	**89801047**	EM converterLED ST 202A MH/LiFePO4 50V	89800900	ACCU-LiFePO4 4.5Ah 3A CON	28002320

Further information can be found in the respective datasheets on www.tridonic.com.

Important

These instructions contain important safety information, read and follow them carefully. Tridonic will not accept any responsibility for injury, damage or loss, which may arise as a result of incorrect installation, operation, maintenance or disposal.

Isolate switched and unswitched mains and negative battery supply before installing or maintaining.

Insulation testing with 500 V DC is only allowed between the line and neutral connected together and the earth.

Note to the installer:

Please ensure this leaflet is made available to the user and/or maintenance engineer together with a test record card.

Conversion

1. It is recommended to carry out the conversion of a luminaire in accordance with ICEL 1004.
2. Ensure that the module and associated battery operate within their temperature ratings.
3. After conversion of a luminaire existing components must continue to operate below their temperature rating.
4. Wire the module and battery into the luminaire according to the wiring diagram.
5. Clearly identify the new unswitched supply to the converted luminaire.
6. Check operation of the LED charge indicator by connecting the unswitched line.
7. Check operation of the LED in the emergency mode by disconnecting the unswitched supply after 15 minutes.
8. Relabel the luminaire to identify the company responsible for the conversion.
9. Fill in test record card if the luminaire is being converted on site.
10. Mark the date of commissioning on the battery label.

Failure to do as mentioned above will invalidate any warranty claims.

LED driver compatibility

The EM converterPACK emergency unit use 3 pole technology and is compatible with most LED drivers on the market, however it is important to check that the rating of the LED driver does not exceed the values specified below:

- The max. allowed output current rating of the associated LED Driver is 2 A eff (current rating of the terminals of EM converterLED) and 2.4 A peak (current rating of switching relays of EM converterLED)
- The max. allowed inrush current rating of the associated LED driver is 60 A peak for 1 ms or 84 A for 255 µs (inrush current rating of switching relay of EM converterLED)
- The max. allowed output voltage of the associated LED driver applied to the EM converterLED output is 450V (voltage withstand between adjacent contact of the single switching relay of the EM converterLED)
- The max. allowed LED load of the associated LED driver is 150 W in operation. The load must be an LED module.

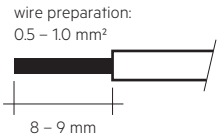
Maximum lead length

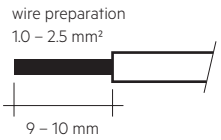
LED	1 m
Status indication LED	1 m
Test switch	1 m

Wiring type and cross section

Strip from the cables to ensure perfect operation of terminals.

Wire type	Cross section	Strip length at cross section ≤ 1 mm²	Strip length at cross section > 1 mm²
Solid	0.5 – 1.0 mm²	8 – 9 mm	9 – 10 mm
Stranded	0.75 – 2.5 mm²	8 – 9 mm	9 – 10 mm



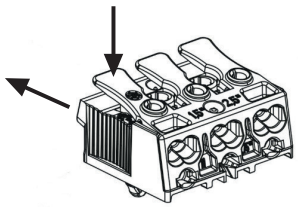


Use one wire for each terminal connector only.

Use each strain relief channel for one cable only

max. ∅ = 10 mm
min. ∅ = 6,3 mm

Loosen wiring



Wiring guidelines

- EM converterLED SELFTEST:
  The LED terminals, battery and indicator 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 equivalent 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.
- Separate LED leads from the mains and REST 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.
- Route the secondary wires (LED module) in parallel to ensure good EMC performance.
- Maximum lead length for the Test switch and Indicator LED connection is 1 m. Separate the test switch and Indicator LED wiring from the LED leads to prevent noise coupling.
- Battery leads are specified with 0.5 mm cross section and a length of 0.8 m
- REST terminals are mains proof
- Protect the wiring against short circuits to earth (sharp edged metal parts, metal cable clips, louver, etc.) to avoid the damage of the control gear.

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 route the switched and unswitched 50 Hz supply wiring as short as possible and keep it as far away as possible from the LED leads. Through wiring may affect the EMC performance of the luminaire.

For maintained operation in conjunction with a LED driver:
Do not exceed the length of LED leads. Note the length of the EM converterPACK leads to the LED module adds to the length of the leads from the LED driver to the EM converterPACK when considering the lead length of the LED driver.

General notes

Safety
This module and associated luminaire has both an unswitched mains electricity supply and a switched supply as well as an internal battery. To ensure safety disconnect all three before installation or maintenance work begins. (Isolate battery by disconnecting the negative lead.)

The batteries used together with this module contain an electrolyte which can be harmful to eyes and poisonous on open wounds. Take care when handling the batteries, to avoid puncturing the case.
If electrolyte comes into contact with skin wash immediately in water.

Do not subject batteries to excessive charge or discharge currents. When working with batteries take care not to short circuit them with tools or jewellery etc.

Installation
Installation must be carried out by a competent person, in accordance with the national or local wiring regulations and BS 5266 Part 1; Code of Practice for Emergency Lighting. If in any doubt consult a qualified electrician.

Ensure that voltage and frequency requirements are compatible with the available supply.

Observe the correct polarity when making electrical connections.

Maintenance
The EM converterPACK contains a battery and EM converterLED which can be exchanged.
The EM converterLED does not contain serviceable parts and should not be opened. Doing so will invalidate the warranty.

Disposal of batteries
Do not incinerate batteries. Whilst disposing of small quantities is possible with little or no risk, large numbers require expert handling. Consult the relevant Local Authority Health and Safety Officers.

User obligation
Every care is taken by Tridonic, in the design and construction of its products, to ensure that as far as is reasonably practical, the products, when properly used are safe, and without risk to health.

The health and safety at work act, however, imposes upon the users of a Company's products, an obligation to ensure that all personnel involved with the installation, handling, use or disposal of the products are acquainted with the information provided by the Company, and are made fully aware of any precautions that need to be taken.

Modification
Do not attempt to modify this product. Any modification will invalidate the safety/approval marks, and may render the product unsafe. Tridonic will not accept responsibility for any modified product, or any injury damage, or loss, which may arise as a result of unauthorised modification.

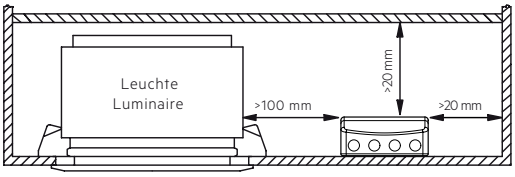
Change of specification
Tridonic reserve the right to change specifications without prior notification or public announcement.

Housing properties
- Casing manufactured from polycarbonate
- Type of protection IP20
- Max. torque for the mounting screws: 0.8 Nm

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

Fixing conditions

Dry, acidfree, oilfree, fatfree. It is not allowed to exceed the maximum ambient temperature (ta) stated on the device. Minimum distances stated below are recommendations and depend on the actual luminaire. Is not suitable for fixing in corner.



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.

Testing

Commissioning test
A full commissioning test is carried out automatically after permanent connection of the supply for 5 days. The easy commissioning feature will set the initial test day and time to ensure random testing of units.

Functional test
Functional tests are carried out for 5 seconds on a weekly basis under the control of the Micro controller. Initiation and timing of these tests is set during the commissioning of the luminaire.

Duration test
A full duration test is carried out yearly to check the capacity of the batteries.

For a full description of commissioning and test features please refer to application notes.

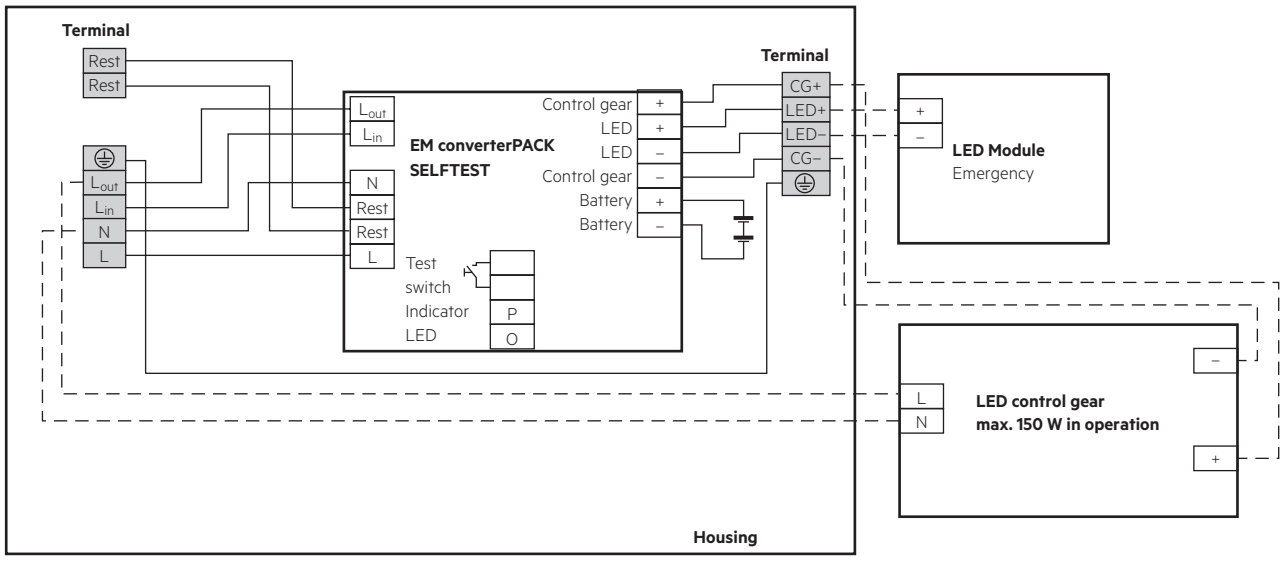
Test switch
An optional test switch can be wired to each EM converterLED. This can be used to to:
- Initiate a 5 seconds function test: press 200 ms < T < 1 s
- Execute function test as long as switch pressed: press > 1 s
- Reset selftest timer (adjust local timing): press > 10 s

Timer reset functionality
The timer for function and duration test can be set to a particular time of the day by either pressing the test switch for longer than 10 seconds or cycling the unswitched line supply 5 times within 1 minute. The timer adjustment will enable the test start time to be defined manually at time in day when the timer was reset. It will also disable the adaptive test algorithm thereby forcing the unit to perform the test at the same time rather than it being defined by the adaptive algorithm. This function will only work provided the interval time is greater than zero (automatic test mode enabled). The delay timer value set when the unit was commissioned will be reloaded in order to randomise the tests between adjacent units.

Rest Mode / Inhibit Mode
Emergency operation is automatically started when the mains supply is switched off. If the Rest Mode is activated, the discharging of the battery will be minimized by switching off the LED output. If the Inhibit Mode has been activated before the mains supply is switched off, Rest Mode will be automatically activated if the mains supply is switched off within 15 minutes.
Rest Mode and Inhibit Mode can be initiated by applying a short pulse between 9.5 and 22.5 V_{DC} in amplitude for a period of 150 to 1,000 ms. This pulse shall be applied to terminals marked Rest.
After a mains reset the EM converterLED exits the Rest Mode. Rest Mode and Inhibit Mode can both be disabled by applying a voltage pulse of 1,000 to 2,000 ms to the terminals marked as Rest to send the RE-LIGHT/RESET INHIBIT command.
Rest Mode / Inhibit Mode are not supported from the EM converterLED in case of combination with a 1-cell battery.

Pulse/Mode	Standby	Emergency	Rest
150 – 1,000 ms	Inhibit	Rest	–
1,000 – 2,000 ms	Cancel inhibit	–	Re-light

Wiring – EM converterPACK SELFTEST with a standard LED driver and one LED module for mains and emergency operation



To be wired by customer
Pre-wired