**Product description**
- Self-contained emergency lighting LED driver with self-test function
- Non maintained operation
- For LED modules with a forward voltage of 48 – 250 V
- For luminaire installation
- Nominal lifetime up to 100,000 h
- 5 years guarantee (conditions at www.tridonic.com)

**Functions**
- 1, 2 or 3 h rated duration selectable with duration link
- Constant power output
  
  Self-test:
  - Weekly function test
  - Yearly duration test

**Driver compatibility**
- 3-pole technology: 2-pole LED module changeover and delayed power switching for the LED driver
- For further information see chapter „LED driver compatibility”

**Battery management**
- Intelligent charge system
- Deep discharge protection
- Polarity reversal protection for battery

**Batteries**
- NiCd or NiMH batteries
- 4-year design life
- 1-year guarantee
- For battery compatibility refer to chapter „Battery selection”

*Standards*, page 4

*Wiring diagrams and installation examples*, page 5
Emergency lighting units
EM converterLED

Technical data

Rated supply voltage
220 – 240 V
AC voltage range
198 – 264 V
Mains frequency
50 / 60 Hz
LED module forward voltage range
48 – 250 V
Output current
see chapter 5.3
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)
300 V
Max. open circuit voltage
300 V
Ambient temperature range ta
-25 ... +55 °C
Max. casing temperature tc
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
1000 m
Functional test
Weekly 5s test
Duration test
Yearly 1 h / 2 h / 3 h test
Lifetime
up to 100,000 h
Guarantee (conditions at www.tridonic.com)
5 years
Dimensions LxWxH
179 x 30 x 21 mm

Specific technical data

<table>
<thead>
<tr>
<th>Type</th>
<th>Rated duration</th>
<th>Typ. λ (at 230 V, 50 Hz)</th>
<th>Rated power in charging operation</th>
<th>Rated power in charging operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Typ. output power P emergency</td>
<td>Initial charge</td>
<td>Fast recharge</td>
</tr>
<tr>
<td>EM converterLED ST 203 NiCd/NiMH 250 V</td>
<td>1 h</td>
<td>0.60C</td>
<td>2.5 W</td>
<td>16 mA</td>
</tr>
<tr>
<td></td>
<td>2 h</td>
<td>0.70C</td>
<td>2.5 W</td>
<td>20 mA</td>
</tr>
<tr>
<td></td>
<td>3 h</td>
<td>0.70C</td>
<td>2.5 W</td>
<td>20 mA</td>
</tr>
<tr>
<td>EM converterLED ST 204 NiCd/NiMH 250 V</td>
<td>1 h</td>
<td>0.60C</td>
<td>3.5 W</td>
<td>17 mA</td>
</tr>
<tr>
<td></td>
<td>2 h</td>
<td>0.70C</td>
<td>3.5 W</td>
<td>23 mA</td>
</tr>
<tr>
<td></td>
<td>3 h</td>
<td>0.70C</td>
<td>3.5 W</td>
<td>23 mA</td>
</tr>
<tr>
<td>EM converterLED ST 205 NiCd/NiMH 250 V</td>
<td>1 h</td>
<td>0.60C</td>
<td>4.5 W</td>
<td>18 mA</td>
</tr>
<tr>
<td></td>
<td>2 h</td>
<td>0.70C</td>
<td>4.5 W</td>
<td>25 mA</td>
</tr>
<tr>
<td></td>
<td>3 h</td>
<td>0.70C</td>
<td>4.5 W</td>
<td>25 mA</td>
</tr>
</tbody>
</table>

Note: LED driver supplied with duration link in 3 hours position. Duration link must be set before battery and mains connection.

Ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>Article number</th>
<th>Rated duration</th>
<th>Packaging, carton</th>
<th>Packaging, pallet</th>
<th>Weight per pc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM converterLED ST 203 NiCd/NiMH 250 V</td>
<td>89800656</td>
<td>1/2/3 h</td>
<td>10 pc(s)</td>
<td>1,600 pc(s)</td>
<td>0.073 kg</td>
</tr>
<tr>
<td>EM converterLED ST 204 NiCd/NiMH 250 V</td>
<td>89800657</td>
<td>1/2/3 h</td>
<td>10 pc(s)</td>
<td>1,600 pc(s)</td>
<td>0.073 kg</td>
</tr>
<tr>
<td>EM converterLED ST 205 NiCd/NiMH 250 V</td>
<td>89800658</td>
<td>1/2/3 h</td>
<td>10 pc(s)</td>
<td>1,600 pc(s)</td>
<td>0.073 kg</td>
</tr>
</tbody>
</table>
Product description

- Optional strain-relief set for independent applications
- Transforms the LED driver into a fully class II compatible LED driver (e.g. ceiling installation)
- Easy and tool-free mounting to the LED driver, screwless cable-clamp channels with strain-relief (240 x 43 x 30 mm)

Ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>Article number</th>
<th>Packaging, carton</th>
<th>Packaging, pallet</th>
<th>Weight per pc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMcLED SR</td>
<td>28003813</td>
<td>10 pc(s)</td>
<td>1,260 pc(s)</td>
<td>0.08 kg</td>
</tr>
</tbody>
</table>
Product description

- For connection to the emergency lighting unit
- For checking the device function
- Plug connection

Ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>Article number</th>
<th>Packaging, bag</th>
<th>Packaging, carton</th>
<th>Weight per pc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test switch EM 3</td>
<td>89899956</td>
<td>25 pc(s)</td>
<td>200 pc(s)</td>
<td>0.013 kg</td>
</tr>
</tbody>
</table>

Product description

- Two-colour status display LED
- Green: system OK, red: fault
- Plug connection

Ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>Article number</th>
<th>Packaging, bag</th>
<th>Packaging, carton</th>
<th>Weight per pc</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED EM bi-colour, 1.0 m CON</td>
<td>89800273</td>
<td>25 pc(s)</td>
<td>200 pc(s)</td>
<td>0.015 kg</td>
</tr>
<tr>
<td>LED EM bi-colour, high brightness HO 1.0 m CON</td>
<td>89800275</td>
<td>25 pc(s)</td>
<td>200 pc(s)</td>
<td>0.015 kg</td>
</tr>
<tr>
<td>LED EM bi-colour, 0.6 m CON</td>
<td>89800474</td>
<td>25 pc(s)</td>
<td>200 pc(s)</td>
<td>0.005 kg</td>
</tr>
<tr>
<td>LED EM bi-colour, high brightness HO 0.6 m CON</td>
<td>89800475</td>
<td>25 pc(s)</td>
<td>200 pc(s)</td>
<td>0.005 kg</td>
</tr>
<tr>
<td>LED EM bi-colour, 0.3 m CON</td>
<td>89800274</td>
<td>25 pc(s)</td>
<td>200 pc(s)</td>
<td>0.005 kg</td>
</tr>
<tr>
<td>LED EM bi-colour, high brightness HO 0.3 m CON</td>
<td>89800276</td>
<td>25 pc(s)</td>
<td>200 pc(s)</td>
<td>0.005 kg</td>
</tr>
</tbody>
</table>
1. Standards

- EN 61347-1
- EN 61347-2-13
- EN 61347-2-7
- EN 55015
- EN 61000-3-2
- EN 61000-3-3
- EN 61547
- EN 60068-2-64
- EN 60068-2-29
- EN 60068-2-30
- EN 62384
- according to EN 50172
- according to EN 60598-2-22
- according to EN 62034

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 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.

<table>
<thead>
<tr>
<th>Expected lifetime</th>
<th>TC</th>
<th>65 °C</th>
<th>70 °C</th>
<th>75 °C</th>
<th>80 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM converter LED ST 203 NiCd/NiMH 250V</td>
<td>tc</td>
<td>&gt;100,000 h</td>
<td>&gt;100,000 h</td>
<td>&gt;70,000 h</td>
<td>55,000 h</td>
</tr>
<tr>
<td>EM converter LED ST 204 NiCd/NiMH 250V</td>
<td>tc</td>
<td>&gt;100,000 h</td>
<td>&gt;100,000 h</td>
<td>&gt;70,000 h</td>
<td>55,000 h</td>
</tr>
<tr>
<td>EM converter LED ST 205 NiCd/NiMH 250V</td>
<td>tc</td>
<td>&gt;100,000 h</td>
<td>&gt;100,000 h</td>
<td>&gt;70,000 h</td>
<td>55,000 h</td>
</tr>
</tbody>
</table>

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.
EM converterLED SELFTEST with one LED module for non-maintained emergency operation

Not connected
Neutral
Rest mode control
Rest mode control
Un-Switched Line

Control gear
LED
Control gear
Battery
Battery

LED Module
Emergency

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

Switched Line out
Switched Line in
Neutral
Rest mode control
Rest mode control
Un-Switched Line

Control gear
LED
Control gear
Battery
Battery

LED Module
Emergency

LED control gear max. 150 W in operation

EM converterLED SELFTEST with a standard LED driver and series operation of LED modules

Switched Line out
Switched Line in
Neutral
Rest mode control
Rest mode control
Un-Switched Line

Control gear
LED
Control gear
Battery
Battery

LED Module
Emergency

LED control gear max. 150 W in operation

One LED module is operated in emergency mode.
All LED modules are operated in mains mode.
EM converterLED SELFTEST with a standard LED driver and parallel operation of LED modules

One LED module is operated in emergency mode. All LED modules are operated in mains mode.

3.2 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.

3.3 Loose wiring
Loosen wire through twisting and pulling or using a Ø 1 mm release tool.

3.4 Wiring guidelines
- 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.

Do not exceed the max. length of LED leads to the LED module. Note that the length of the EM converterLED leads to the LED module is added to the length of the leads from the LED driver to the EM converterLED module when considering the max. permitted lead length of the LED driver.

3.5 Maximum lead length
- LED: 3 m
- Status indication LED: 1 m
- Batteries: 1 m

Note: The length of LED leads to the LED module must not be exceeded. Note that the length of the EM converterLED leads is added to the length of the leads from the LED driver to the EM converterLED module when considering max. permitted lead length of the LED driver. Leads should always be kept as short as possible.

Data sheet 05/22-EM099-15
Subject to change without notice. Information provided without guarantee.
www.tridonic.com
3.6 Use of different phases

The use of different phases for switched line and unswitched line is allowed. When using different phases, the unswitched line must fail if the switched line fails. This is required to assure correct switching into emergency mode. It can be realised with a relay.

4. Mechanical values

4.1 Housing properties

- Casing manufactured from polycarbonate.
- Type of protection: IP20

4.2 Mechanical data accessories

LED status indicator
- Bi-colour
- Mounting hole 6.5 mm diameter, 1 – 1.6 mm thickness
- Lead length 0.3 m / 1.0 m
- Insulation rating: 90 °C
- Plug connection

Test switch
- Mounting hole 7.0 mm diameter
- Lead length 0.55 m
- Plug connection

Battery connection
- Plug connection 0.3 m
- Extension 0.5 m

5. Electrical values

5.1 Maximum loading of automatic circuit breakers

<table>
<thead>
<tr>
<th>Automatic circuit breaker type</th>
<th>B10</th>
<th>B13</th>
<th>B16</th>
<th>B20</th>
<th>C10</th>
<th>C13</th>
<th>C16</th>
<th>C20</th>
<th>Inrush current</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation Ø</td>
<td>1.5 mm²</td>
<td>1.5 mm²</td>
<td>1.5 mm²</td>
<td>2.5 mm²</td>
<td>1.5 mm²</td>
<td>1.5 mm²</td>
<td>1.5 mm²</td>
<td>2.5 mm²</td>
<td>Iₘₖₜ, time</td>
</tr>
<tr>
<td>EM converterLED ST NiCd/NiMH 250V</td>
<td>90</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>180</td>
<td>260</td>
<td>260</td>
<td>260</td>
<td>10 A, 120 μs</td>
</tr>
</tbody>
</table>

5.2 Insulation matrix

<table>
<thead>
<tr>
<th></th>
<th>Mains</th>
<th>Switched Live</th>
<th>Battery, LED, Test switch, Indicator LED</th>
<th>REST</th>
<th>LED driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mains</td>
<td>–</td>
<td>–</td>
<td>**</td>
<td>•</td>
<td>–</td>
</tr>
<tr>
<td>Switched Live</td>
<td>–</td>
<td>–</td>
<td>•</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Battery, LED, Test switch, Indicator LED</td>
<td>• •</td>
<td>• •</td>
<td>–</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>REST</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>•</td>
<td>–</td>
</tr>
<tr>
<td>LED driver</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

• Represents basic insulation
• • Represents double or reinforced insulation

When using a non-SELV LED driver insulate the battery, LED, test switch and indicator LED in the luminaire according to the U-OUT rating of the LED driver.
5.3 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 203 NiCd/NiMH 250V
Article number: 89800656
3.6 V battery voltage
800 – 860 mA battery discharge current (tolerance)

EM converterLED ST 204 NiCd/NiMH 250V
Article number: 89800657
4.8 V battery voltage
810 – 870 mA battery discharge current (tolerance)

EM converterLED ST 205 NiCd/NiMH 250V
Article number: 89800658
6.0 V battery voltage
820 – 880 mA battery discharge current (tolerance)
5.4 LED driver compatibility

The EM converterLED 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 the EM converterLED).
- The max. allowed output voltage (U-OUT) of the associated LED driver applied to the EM converterLED output is 450 V (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.

6. Functions

6.1 Duration link selection

<table>
<thead>
<tr>
<th>Duration</th>
<th>Link position</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 hr</td>
<td>Position A</td>
</tr>
<tr>
<td>2 hr</td>
<td>No duration link</td>
</tr>
<tr>
<td>1 hr</td>
<td>Position B</td>
</tr>
</tbody>
</table>

Emergency lighting LED driver supplied with duration link in 3 hours position (position A).

The position of the link will only be read on first power up. If it is changed afterwards both the battery and mains supply must be disconnected for 10 seconds to enable the EM converterLED to read the new link position on reconnection of the battery and mains. It will lead to a false battery failure indication if the link is changed after installation without this reset.

6.2 Status indication

System status is indicated by a bi-colour LED.

<table>
<thead>
<tr>
<th>LED indication</th>
<th>Status</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent green</td>
<td>System OK</td>
<td>AC mode</td>
</tr>
<tr>
<td>Fast flashing green (0.1 sec on – 0.1 sec off)</td>
<td>Function test</td>
<td>underway</td>
</tr>
<tr>
<td>Slow flashing green (1 sec on – 1 sec off)</td>
<td>Duration test</td>
<td>underway</td>
</tr>
<tr>
<td>Red LED on</td>
<td>Load failure</td>
<td>Open circuit / Short circuit / LED failure</td>
</tr>
<tr>
<td>Slow flashing red (1 sec on – 1 sec off)</td>
<td>Battery failure</td>
<td>Battery failed the duration test or function test / Battery is defective or deeply discharged / Incorrect battery voltage</td>
</tr>
<tr>
<td>Fast flashing red (0.1 sec on – 0.1 sec off)</td>
<td>Charging failure</td>
<td>Incorrect charging current</td>
</tr>
<tr>
<td>Double pulsing green</td>
<td>Inhibit mode</td>
<td>Switching into inhibit mode via controller</td>
</tr>
<tr>
<td>Green and red off</td>
<td>DC mode</td>
<td>Battery operation (emergency mode)</td>
</tr>
</tbody>
</table>

6.3 Commissioning

After installation of the luminaire and initial connection of the mains supply and battery supply to the EM converterLED ST the unit will commence charging the batteries for the initial charge time. The recharge occurs also if a new battery is connected or the module exits the rest mode condition.

The following automatic commissioning duration test is only performed when a battery is replaced and fully charged.

6.4 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 ST. This can be used to:
- Initiate a 5 seconds function test: press 200 ms < T < 1s
- Execute function test as long as switch pressed: press > 1s
- Reset selftest timer (adjust local timing): press > 10s
**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 osc 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 ST 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.

<table>
<thead>
<tr>
<th>Pulse/Mode</th>
<th>Standby</th>
<th>Emergency</th>
<th>Rest</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 – 1,000 ms</td>
<td>Inhibit</td>
<td>Rest</td>
<td>–</td>
</tr>
<tr>
<td>1,000 – 2,000 ms</td>
<td>Cancel inhibit</td>
<td>–</td>
<td>Re-light</td>
</tr>
</tbody>
</table>
## 7. Battery data

### 7.1 Battery selection

<table>
<thead>
<tr>
<th>Technology and capacity</th>
<th>Design</th>
<th>Number of cells</th>
<th>Type</th>
<th>Article no.</th>
<th>Assignable batteries</th>
</tr>
</thead>
<tbody>
<tr>
<td>NiCd 4 Ah D cells</td>
<td>stick</td>
<td>1 x 3</td>
<td>Accu-NiCd 5A</td>
<td>2800074</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>stick</td>
<td>1 x 4</td>
<td>Accu-NiCd 4A</td>
<td>89800089</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>stick</td>
<td>1 x 5</td>
<td>Accu-NiCd 5A</td>
<td>28000774</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>side by side</td>
<td>3 x 1</td>
<td>Accu-NiCd 3B</td>
<td>89800384</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>side by side</td>
<td>4 x 1</td>
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</tr>
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<td>28000775</td>
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<tr>
<td></td>
<td>stick + stick</td>
<td>3 x 2</td>
<td>Accu-NiCd 5C</td>
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<td></td>
<td>remote box</td>
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<td>Pack-NiCd 3D</td>
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<td>+</td>
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<td></td>
<td>remote box</td>
<td>1 x 5</td>
<td>Pack-NiCd 5D</td>
<td>280001181</td>
<td>+</td>
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<tr>
<td>NiMH 2.2 Ah Cs cells</td>
<td>stick</td>
<td>1 x 3</td>
<td>Accu-NiMH 3A</td>
<td>280002088 +</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>stick</td>
<td>1 x 4</td>
<td>Accu-NiMH 4A</td>
<td>280002089 +</td>
<td>+</td>
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<td>stick</td>
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<td>Accu-NiMH 5A</td>
<td>280002090 +</td>
<td>+</td>
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<td>side by side</td>
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<td>+</td>
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<tr>
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<td>remote box</td>
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<td>280001898</td>
<td>+</td>
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<td>remote box</td>
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<td>Pack-NiMH 2.2 Ah 4 CON</td>
<td>280001899</td>
<td>+</td>
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<td>NiMH 4 Ah LA cells</td>
<td>stick</td>
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<td>2 x 2</td>
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### 7.2 Battery charge / discharge data

<table>
<thead>
<tr>
<th>Type</th>
<th>EM converterLED ST 203 NICd/NiMH 250V</th>
<th>EM converterLED ST 204 NICd/NiMH 250V</th>
<th>EM converterLED ST 205 NICd/NiMH 250V</th>
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<tbody>
<tr>
<td>Article no.</td>
<td>89800656</td>
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<tr>
<td>Duration</td>
<td>1 h</td>
<td>2 / 3 h</td>
<td>1 h</td>
</tr>
<tr>
<td>Battery charge time</td>
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</tr>
<tr>
<td>Initial charge</td>
<td>20 h</td>
<td></td>
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</tr>
<tr>
<td>Fast recharge</td>
<td>10 h</td>
<td>15 h</td>
<td>10 h</td>
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<tr>
<td>Trickle charge</td>
<td>continuously</td>
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<td></td>
</tr>
<tr>
<td>Initial charge</td>
<td>110 - 150 mA</td>
<td>280 - 320 mA</td>
<td>110 - 150 mA</td>
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<tr>
<td>Fast recharge</td>
<td>190 - 230 mA</td>
<td>310 - 350 mA</td>
<td>190 - 230 mA</td>
</tr>
<tr>
<td>Trickle charge</td>
<td>50 - 90 mA</td>
<td>110 - 150 mA</td>
<td>50 - 90 mA</td>
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<td>Discharge range</td>
<td>800 - 860 mA</td>
<td>800 - 860 mA</td>
<td>810 - 870 mA</td>
</tr>
<tr>
<td>Charge voltage range³</td>
<td>0.9 - 1.65 V per cell</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discharge voltage range</td>
<td>1.65 - 105 V per cell</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

³ The battery will be discharged below 0.9 V. The EM converterLED will indicate a battery fault.

The emergency lighting LED driver will recharge the battery normally after running the test of 6347-2-7 CL 223 (abnormal operating conditions)
Emergency lighting units
EM converterLED

7.3 Accu-NiCd

4.2 / 4.5 Ah
International designation KRMU 33/62
Battery voltage/cell 12 V
Cell type D
Case temperature range +5 °C to +55 °C
Max. short term battery case temperature 70 °C
(Max. shorter than 1 month over the battery lifetime)
Max. number discharge cycles 12 cycles per year plus comissioning
Max. storage time 12 months

7.4 Accu-NiMH

2.2 Ah
International designation HRMU 23/43
Battery voltage/cell 12 V
Cell type Cs
Case temperature range +5 °C to +50 °C
Max. short term battery case temperature 70 °C
(Max. shorter than 1 month over the battery lifetime)
Max. number discharge cycles 4 cycles per year plus 30 cycles during comissioning
Max. storage time 12 months

4.0 Ah
International designation HRMU 19/90
Battery voltage/cell 12 V
Cell type LA
Case temperature range +5 °C to +45 °C
Max. short term battery case temperature 70 °C
(Max. shorter than 1 month over the battery lifetime)
Max. number discharge cycles 4 cycles per year plus 30 cycles during comissioning
Max. storage time 12 months

7.5 Accupack-NiCd

4.5 Ah
Battery voltage/cell 12 V
Cell type D
Ambient temperature range +5 °C to +40 °C
Max. short term battery case temperature 70 °C
(Max. shorter than 1 month over the battery lifetime)
Max. number discharge cycles 4 cycles per year plus 4 cycles during comissioning
Max. storage time 6 months

7.6 Accupack-NiMH

2.2 Ah
Battery voltage/cell 12 V
Cell type Cs
Ambient temperature range +5 °C to +35 °C
Max. short term battery case temperature 70 °C
(Max. shorter than 1 month over the battery lifetime)
Max. number discharge cycles 4 cycles per year plus 4 cycles during comissioning
Max. storage time 12 months

4.0 Ah
Battery voltage/cell 12 V
Cell type LAL
Ambient temperature range +5 °C to +35 °C
Max. short term battery case temperature 70 °C
(Max. shorter than 1 month over the battery lifetime)
Max. number discharge cycles 4 cycles per year plus 4 cycles during comissioning
Max. storage time 12 months

For a higher battery temperature rating for NiMH 4 Ah refer to the EM converterLED xx MH/LiFePO4 product range.

7.7 Wiring batteries

To inhibit inverter operation disconnect the batteries by removing the connection at battery side.

For further informations refer to corresponding battery datasheet.

7.8 Storage, installation and commissioning

Relevant information about storage conditions, installation and commissioning are provided in the battery datasheets.

8. Miscellaneous

8.1 Maximum number of switching cycles

EM converterLEDs are tested with 50,000 mains switching cycles of the associated LED driver.

8.2 Battery replacement

After a battery replacement and a subsequent full charge cycle (24 h) a duration test is mandatory to prove that with the new battery the rated duration is achieved.

8.3 Mains-connected transformers

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

8.4 Additional information

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

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