Product description
- Emergency lighting supply unit for manual testing
- For T5 fluorescent lamps
- Low-profile casing (21 x 30 mm cross-section)
- 5-year guarantee

Properties
- 1 or 3 h rated duration
- Selectable operating time (jumper)
- Compatible with all electronic ballasts (dimmable and non-dimmable)
- 5-pole technology: 4-pole lamp changeover and delayed power switching for the ballast
- High-frequency ac operation of the lamp
- Gentle on the lamp thanks to permanent cathode heating in emergency mode
- "Rest mode" function
- Green charge status display LED
- Electronically controlled battery charging
- Deep discharge protection
- Short-circuit-proof battery connection
- Polarity reversal protection for battery (not reversible)

Batteries
- High-temperature cells
- NiCd or NiMH batteries
- D, Cs or LA cells
- Blade terminals for simple connection
- 4-year design life
- 1-year guarantee
- For battery compatibility refer to chapter “Ballast-Lumen-Factor (BLF)"

Standards, page 5
Wiring diagrams and installation examples, page 7
EM T5 BASIC, 220 – 240 V 50/60 Hz
BASIC version

Technical data
 Rated supply voltage 220 – 240 V
 Mains frequency 50 / 60 Hz
 Mains current 1 h 25 mA
 Mains current 3 h 35 mA
 Rated power < 7 W
 Overvoltage protection 320 V (for 1 h)
 Maximum operating voltage (U-OUT of the ECG) 460 V
 Battery charging time 24 h
 Discharge current 11 A
 Charge current 1 h 100 mA
 Charge current 3 h 200 mA
 Leakage current (PE) < 0.5 mA
 Ambient temperature ta 5 ... +60 °C
 Max. casing temperature tc 70 °C
 Mains voltage changeover threshold according to EN 60598-2-22
 Min. lamp starting temperature (emergency mode) 5 °C
 Type of protection IP20
 Rest mode max. number of emergency units 100
 Rest mode max. wiring distance 1,000 m

Ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>Article number</th>
<th>Number of cells</th>
<th>Packaging, carton</th>
<th>Packaging, pallet</th>
<th>Weight per pc.</th>
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<tbody>
<tr>
<td>EM 14/24-4 T5 BASIC</td>
<td>89899822</td>
<td>4</td>
<td>25 pc(s)</td>
<td>475 pc(s)</td>
<td>0.197 kg</td>
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<td>6</td>
<td>25 pc(s)</td>
<td>475 pc(s)</td>
<td>0.197 kg</td>
</tr>
</tbody>
</table>

Remove short-circuit connector and select the correct battery to switch to 1-hour operation.

EM = Emergency

PHASED OUT
Emergency lighting units
EM Inverter

Test switch EM2

**Product description**
- For connection to the emergency lighting unit
- For checking the device function

**Ordering data**

<table>
<thead>
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<th>Type</th>
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<th>Packaging, carton</th>
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<td>25 pc(s)</td>
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Status indication green LED

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

**Ordering data**

<table>
<thead>
<tr>
<th>Type</th>
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<th>Packaging, carton</th>
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<tr>
<td>LED EM green, ultra high brightness</td>
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<td>25 pc(s)</td>
<td>800 pc(s)</td>
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### Ballast lumen factor (BLF) in %

**EM T5 BASIC for T5 fluorescent lamps, 3 or 1 h**

<table>
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<tr>
<th>Type</th>
<th>Article no.</th>
<th>3h or 1h</th>
<th>4 cells</th>
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<th>6 cells</th>
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<td>T5 BASIC</td>
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<td>T5 BASIC</td>
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<td>EM 35-6</td>
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</table>

<table>
<thead>
<tr>
<th>Lamp type</th>
<th>Wattage</th>
<th>BLF in emergency lighting mode in % for rated operating time</th>
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<tbody>
<tr>
<td>T5 FH</td>
<td>14 W</td>
<td>21</td>
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<tr>
<td></td>
<td>21 W</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>28 W</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>35 W</td>
<td>13</td>
</tr>
<tr>
<td>T5 FO</td>
<td>24 W</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>39 W</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>49 W</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>54 W</td>
<td>6.5</td>
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<tr>
<td></td>
<td>80 W</td>
<td>4.5</td>
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#### Technology and capacity

<table>
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<tr>
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<th>Assignable batteries</th>
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<td>Stick 4</td>
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<td>Side by Side 4</td>
<td>Accu-NiCd 4B 5S</td>
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<td>Stick + Stick 2 + 2</td>
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<td>NiMH 2.2 Ah Cs cells</td>
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<td>Stick 6</td>
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<td>NiMH 4 Ah LA cells</td>
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<td>Stick + Stick 2 + 3</td>
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<td>Accu-NiMH 4Ah 6C CON</td>
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</tbody>
</table>

For 3-hour operation: 4 Ah D-cells NiCd or 4 Ah Cs-cells NiMH.
For 1-hour operation: 1.6Ah Cs-cells NiCd or 2 Ah Cs-cells NiMH.
Standards

- EN 61347-2-7
- EN 60068-2-64
- EN 60929
- EN 55015
- EN 61000-3-2
- EN 61000-3-3
- EN 61547
- EN 60068-2-29
- EN 60068-2-30
- EN 50172
- according to EN 60959-2-22

Isolation and electric strength testing of luminaires

Electronic devices 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 subjected to an isolation test with 500 VDC for 1 second. This test voltage should be connected between the interconnected phase and neutral terminals and the earth terminal. The isolation resistance must be at least 2 MΩ.

As an alternative, IEC 60598-1 Annex Q describes a test of the electrical strength with 1500 VAC (or 1414 x 1500 VDC). To avoid damage to the electronic devices this test must not be conducted.

Technical data batteries

Accu-NiCd

4.2 / 4.5 Ah

Battery voltage/cell

12 V

Cell type

D

Case temperature range to ensure 4 years design life

+5°C to +55°C

Max. short term temperature (reduced life-time)

70°C

4 cycles per year plus 4 cycles during commissioning

6 months

Max. storage time

Accu-NiMH

2.2 Ah

Battery voltage/cell

12 V

Cell type

Cs

Case temperature range to ensure 4 years design life

+5°C to +50°C

Max. short term temperature (reduced life-time)

70°C

4 cycles per year plus 30 cycles during commissioning

12 months

Max. storage time

4.0 Ah

Battery voltage/cell

12 V

Cell type

LA

Case temperature range to ensure 4 years design life

+5°C to +40°C

Max. short term temperature (reduced life-time)

70°C

4 cycles per year plus 30 cycles during commissioning

12 months

Max. storage time

For further informations refer to corresponding battery datasheet.

Ballast compatibility

The EM T5 BASIC emergency units use 5 pole technology and are compatible with most high frequency ballasts on the market, however it is important to check that the U-OUT rating of the ballast does not exceed the value specified under "Technical data".

Mechanical details

Channel manufactured from galvanised steel. Cover manufactured from white pre-coated steel.

LED status indicator

- Green
- Mounting hole 6.5 mm diameter, 1 – 1.6 mm thickness
- Lead length 750 mm
- Insulation rating: 90 °C

Test switch

- Mounting hole 7.0 mm diameter
- Lead length 550 mm

Battery leads

- Quantity: 1 red and 1 black
- Length: 1300 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

Two-piece batteries are supplied with a 200 mm lead with 4.8 mm receptacle at each end and insulating covers to connect the separate sticks together.

Rest mode

Rest mode can be initiated by applying a short pulse of between 9.5 VDC and 22.5 VDC in amplitude for a period of between 200 ms and 1.0 second. This should be applied to terminals marked Rest after the mains supply has been disconnected and whilst the module is in emergency operation. A mains reset is required to exit the rest mode. The Rest terminals are sensitive to polarity.

Life-time

Average life-time 50,000 hours under rated conditions with a failure rate of less than 10 %. Average failure rate of 0.2 % per 1000 operating hours.

For further informations refer to corresponding battery datasheet.

Storage, installation and commissioning

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

**EM Inverter**

---

**Electrical connections**

An earthed starting aid is recommended. The module should be earthed by the fixings used to attach it to the luminaire.

**Wiring**

**Lamp/ballast/supply**

- **Electrical connections**
  - An earthed starting aid is recommended. The module should be earthed by the fixings used to attach it to the luminaire.

- **Wiring**
  - **Lamp/ballast/supply**
    - **IDC interface**
      - Solid wire with a cross section of 0.5 mm² according to the specification from WAGO.
    - **Horizontal interface**
      - Solid wire with a cross section of 0.5–0.75 mm² according to the specification from WAGO.
      - Solid wire with a cross section of 1.0 mm² with an insulation diameter up to 2.5 mm.
      - Strip 9 mm of insulation from the cables.
      - Loosen wire through twisting and pulling.

- **Batteries/LED/Test switch**
  - Push terminal with button release:
    - 0.5 mm².
    - 6.5 mm strip.

- **Maximum lamp lead capacitance**
  - Terminals 5 and 6 (*hot leads*):
    - 100 pF.
  - Terminals 3 and 4:
    - 200 pF.

  **Note:** Care should be taken not to exceed the total maximum lamp lead capacitance for HF ballast. Leads should always be kept as short as possible.

**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 battery data see separate data sheet.

**Wiring guidelines**

To ensure that a luminaire containing high frequency 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 the switched and unswitched 50 Hz supply wiring must be routed as short as possible and be kept as far away as possible from the lamp leads. This means, for example, in a linear T8 or T5 luminaire the mains wiring should be routed along one side of the luminaire body, while the wires to the emergency lamp from the emergency module are routed along the other side.

The high frequency emergency lamp wiring contains “hot” leads at pins 1 and 6, which have high voltage to earth. These should be kept as short as possible and separated from other wiring to minimize coupling. They also have a restriction on capacitance to other wiring and earth of 100 pF, which must be observed to ensure good lamp starting.

With an earth connection of the metal case of the emergency module the noise suppression can be further improved. The wiring of the earth should be kept as short as possible.

Through wiring may affect the EMC performance of the luminaire.

With the use of the fifth pole possible compatibility problems between the products can be prevented. Depending on the luminaire wiring the radio suppression in the emergency mode of operation can be further improved.

Capacitive loading limits of lamp leads must not be exceeded. Note the capacitance of the emergency lamp leads adds to the capacitance of the leads from the ballast to the EM T5 BASIC module when considering ballast loading.

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.).

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Data sheet 06/19-640-17

Subject to change without notice.

www.tridonic.com
EM T5 BASIC emergency module wiring diagrams

Not for use with magnetic ballasts and switch start circuits

Wiring diagrams:
- Wiring diagram for single lamp high frequency ballasts
- Wiring diagram for twin lamp high frequency ballasts with 6 terminals
- Wiring diagram for twin lamp high frequency ballasts with 7 terminals
- Wiring diagram for twin lamp high frequency ballasts with 8 terminals
- Wiring diagram for non-maintained operation

Note:
All hot leads normally marked with an * should be kept as short as possible. For comprehensive wiring diagrams and instructions consult the Tridonic website www.tridonic.com

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.