Emergency lighting units
EM powerLED

Product description
- LED Driver for mains operation with integrated Simple CORRIDOR FUNCTION (CF)
- 4 channels in mains and emergency operation
- For use in central battery systems
- SELV for output voltage < 60 V DC
- For luminaire installation
- For the use with STARK QLE G2 CLASSIC and LLE 24-280-1250
- 5 years guarantee

Properties
- Constant current LED Driver with 4 x 300 mA or 4 x 350 mA output current in mains operation
- Simple CORRIDOR FUNCTION (CF) with 10 % light level
- 10 or 100 % output when connected to DC
- For emergency lighting systems as per EN 50172

Technical data
- Rated supply voltage 220 – 240 V
- Voltage range AC 196 – 264 V
- Voltage range DC 160 – 280 V
- Mains frequency 0 / 50 / 60 Hz
- Typ. λ (at 230 V, 50 Hz, normal operation) 0.97
- Typ. λ (at 230 V, 50 Hz, CF operation) 0.75
- Leakage current (PE) < 0.5 mA
- Overvoltage protection 320 V (for 1 h)
- Max. forward voltage VI LED module 37.4 V
- Min. forward voltage VI LED module 28.0 V
- Max. output voltage 60.0 V
- Time to light (at 230 V, 50 Hz, full load) 180 ms
- Output current ripple ± 25 %
- Output current tolerance - 5 / + 7 %
- Max. repetitive output peak current output current + 32 %
- Max. non-repetitive output peak current output current + 32 %
- THD normal operation 12 %
- THD CF operation 13 %
- Ambient temperature ta 0 ... +50 °C
- Max. casing temperature tc 75 °C
- Dimensions LxBxH 360 x 40 x 21 mm
- Type of protection IP20

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>EM powerLED 4x300mA CPS</td>
<td>89800294</td>
<td>10 pc(s).</td>
<td>600 pc(s).</td>
<td>0.233 kg</td>
</tr>
<tr>
<td>EM powerLED 4x350mA CPS</td>
<td>89800295</td>
<td>10 pc(s).</td>
<td>600 pc(s).</td>
<td>0.233 kg</td>
</tr>
</tbody>
</table>
## Specific technical data

<table>
<thead>
<tr>
<th>Type</th>
<th>Article number</th>
<th>Mains power</th>
<th>Mains current</th>
<th>Efficiency</th>
<th>Typ. output power</th>
<th>Typ. output current</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Normal operation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EM powerLED 4x300mA CPS</td>
<td>89800294</td>
<td>47 W</td>
<td>210 mA</td>
<td>85 %</td>
<td>39 W</td>
<td>300 mA</td>
</tr>
<tr>
<td>EM powerLED 4x350mA CPS</td>
<td>89800295</td>
<td>53 W</td>
<td>240 mA</td>
<td>85 %</td>
<td>45 W</td>
<td>350 mA</td>
</tr>
<tr>
<td><strong>CF operation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EM powerLED 4x300mA CPS</td>
<td>89800294</td>
<td>8.5 W</td>
<td>55 mA</td>
<td>62 %</td>
<td>4.6 W</td>
<td>42 mA</td>
</tr>
<tr>
<td>EM powerLED 4x350mA CPS</td>
<td>89800295</td>
<td>8.5 W</td>
<td>55 mA</td>
<td>62 %</td>
<td>4.6 W</td>
<td>42 mA</td>
</tr>
</tbody>
</table>
Product description
- Motion detector for luminaire installation
- Motion detection through glass and thin materials (except metal)
- For automatic on/off switching of electronic ballasts with corridor-
  FUNCTION
- “Bright-Out” function: luminaire is not switched on if there is
  adequate brightness
- Delay time, detection range and light value for the “Bright-Out”
  function can be set via 3 potentiometers
- Max. installation height 5 m
- Infinitely variable range (0.5 – 5.0 m)

SWITCH Sensor HF 5BP
Automatic switching based on motion and light level

Ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>Article number</th>
<th>Packaging, carton</th>
<th>Weight per pc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWITCH Sensor HF 5BP</td>
<td>28000086</td>
<td>4 pc(s).</td>
<td>0.079 kg</td>
</tr>
</tbody>
</table>
Standards
EN 55015
EN 61000-3-2
EN 61000-3-3
EN 61347-1
EN 61347-2-13
EN 61547
EN 62384
according to EN 60598-2-22
according to EN 50172

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

Module end termination
8.0 mm stripped insulation

Electrical connections

Wiring
LED module/LED Driver/supply

![Diagram]

Loosen wire through twisting and pulling or using a Ø 1 mm release tool

Earth connection
The earth connection via the terminal is classified as safety earth

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.

Installation instruction
Max. torque for the mounting screws: 0.5 Nm / M4.

You must make sure that the LED is connected with the correct polarity. LEDs that are connected to EM powerLED should have polarity reversal protection such as a Schottky diode. There may be irreversible damage if the LED is connected with the wrong polarity. The protection device must be capable of handling a load of more than 700 mA.

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.

Maximum lead length
LED
1 m

Note: care should be taken not to exceed the total maximum LED lead length for the LED Driver. Leads should always be kept as short as possible.
Short-circuit behaviour
In case of a short circuit on one of the channels the remaining LED start to flash rapidly (ca. 5 times per second). After elimination of the short circuit the nominal operation is restored automatically.

No-load operation
In case of a no-load operation (open circuit) on one channel the remaining LED start to flash rapidly (ca. 5 times per second). After elimination of the open circuit the nominal operation is restored automatically. The LED Driver is not damaged in the no-load operation. The max. output voltage can be obtained during no-load operation.

Storage conditions
Humidity: 5 % up to max. 85 %, not condensed
(max. 56 days/year at 85 %)

Storage temperature: -40 °C up to max. +80 °C
The devices have to be within the specified temperature range (ta) before they are operated.

Maximum loading of automatic circuit breakers

<table>
<thead>
<tr>
<th>Automatic circuit breaker type</th>
<th>C10</th>
<th>C13</th>
<th>C16</th>
<th>C20</th>
<th>B10</th>
<th>B13</th>
<th>B16</th>
<th>B20</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>Imax time</td>
</tr>
<tr>
<td>EM powerLED 4x300mA CPS</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>30</td>
<td>29 A 190 μs</td>
</tr>
<tr>
<td>EM powerLED 4x350mA CPS</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>30</td>
<td>29 A 190 μs</td>
</tr>
</tbody>
</table>

Harmonic distortion in the mains supply (at 230 V / 50 Hz and full load) in %

<table>
<thead>
<tr>
<th>Type</th>
<th>THD</th>
<th>3</th>
<th>5</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM powerLED 4x300mA CPS</td>
<td>15 %</td>
<td>14 %</td>
<td>8 %</td>
<td>5 %</td>
</tr>
<tr>
<td>EM powerLED 4x350mA CPS</td>
<td>11 %</td>
<td>8 %</td>
<td>5 %</td>
<td>6 %</td>
</tr>
</tbody>
</table>

Light output in corridor operation

<table>
<thead>
<tr>
<th>Type</th>
<th>Approx. light output in corridor operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM powerLED 4x300mA CPS</td>
<td>14 %</td>
</tr>
<tr>
<td>EM powerLED 4x350mA CPS</td>
<td>12 %</td>
</tr>
</tbody>
</table>

Expected life-time

<table>
<thead>
<tr>
<th>Type</th>
<th>ta = 40 °C</th>
<th>ta = 50 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM powerLED 3x300mA CPS</td>
<td>Life-time 100,000 h</td>
<td>50,000 h</td>
</tr>
<tr>
<td>EM powerLED 3x350mA CPS</td>
<td>Life-time 100,000 h</td>
<td>50,000 h</td>
</tr>
</tbody>
</table>
Wiring guidelines
- The 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.
- LED leads should be separated from the mains connections and wiring for good EMC performance.
- Maximum lead length on the LED terminals is 1 m. For a good EMC performance keep the LED wiring as short as possible.

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 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 LED leads. Through wiring may affect the EMC performance of the luminaire.

The length of LED leads must not be exceeded.

The output current must not be exceeded.

The output current depends on the forward voltage and the tolerance of the LED modules.

Wiring diagram EM powerLED 4-channel without sensor

The sensor is not active in DC operation.

PIR input @ 230 V
**Wiring diagram EM powerLED 4-channel with bridged channels (1 x 700 mA, 2 x 350 mA)**

220–240 V 0/50/60 Hz

<table>
<thead>
<tr>
<th>L</th>
<th>N</th>
<th>G</th>
<th>CH 1</th>
<th>CH 2</th>
<th>CH 3</th>
<th>CH 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>N</td>
<td>G</td>
<td>LED</td>
<td>LED</td>
<td>LED</td>
<td>LED</td>
</tr>
</tbody>
</table>

EM powerLED 4-channel

**Wiring diagram EM powerLED 4-channel with bridged channels (2 x 700 mA)**

220–240 V 0/50/60 Hz

<table>
<thead>
<tr>
<th>L</th>
<th>N</th>
<th>G</th>
<th>CH 1</th>
<th>CH 2</th>
<th>CH 3</th>
<th>CH 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>N</td>
<td>G</td>
<td>LED</td>
<td>LED</td>
<td>LED</td>
<td>LED</td>
</tr>
</tbody>
</table>

EM powerLED 4-channel

**Wiring diagram EM powerLED 4-channel with bridged channels (1 x 1,400 mA)**

220–240 V 0/50/60 Hz

<table>
<thead>
<tr>
<th>L</th>
<th>N</th>
<th>G</th>
<th>CH 1</th>
<th>CH 2</th>
<th>CH 3</th>
<th>CH 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>N</td>
<td>G</td>
<td>LED</td>
<td>LED</td>
<td>LED</td>
<td>LED</td>
</tr>
</tbody>
</table>

EM powerLED 4-channel

**Switching behaviour**

<table>
<thead>
<tr>
<th>L</th>
<th>CF</th>
<th>LED Maintained</th>
</tr>
</thead>
<tbody>
<tr>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>off</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td>on</td>
<td>off</td>
<td>12–14 %</td>
</tr>
<tr>
<td>on</td>
<td>on</td>
<td>100 %</td>
</tr>
</tbody>
</table>

The mains power must be removed before changing the LED load.

Secondary switching of LEDs is not allowed and may cause damage to the LEDs. The hot plug-in of LEDs during normal operation may result in high current peaks.

**Additional information**

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

Guarantee conditions at www.tridonic.com → Services

No warranty if device was opened.