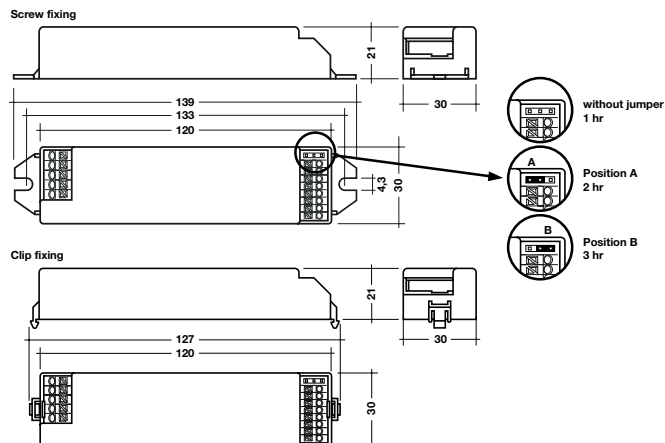


Low profile emergency lighting modules LED

EM powerLED BASIC 220–240 V 50/60 Hz



Description:

Low profile LED emergency lighting modules to cover 1 hour, 2 hours and 3 hours duration operating from NiMh Cs batteries. Duration can be selected by means of a removable 3 way link system (jumper). For normal mains and emergency operation of 1 W and 2 W Power LEDs. The 2 W module can either drive a single

LED at 600 mA or two LEDs at 350 mA in series. Both modules are able to operate multiple LED (3–12) wired in parallel for example with exit signs. Power control technology ensures maximum emergency light output for a given duration time with a minimum battery cell count in consideration of LED tolerances. The case is available for both clip and screw fixings.

Features:

Module

- LED emergency lighting module
- Normal and emergency operation
- Low-profile cross-section (21 x 30 mm)
- Constant current mode
- 1 W or 2 W version
- 3-hour, 2-hour or 1-hour operation
- Operating time selected by means of removable short circuit plugs (jumper)
- NiMh batteries
- Electronic multilevel charging system
- 12 hours accu recharge time
- Power output restriction
- Automatic restart after LED change within 2 s
- Green LED to indicate status
- powerLED output, battery, indicator LED and test switch output are SELV equivalent
- Reverse battery protection
- Deep discharge protection
- Short-circuit-proof

wattage W	type	article number	number of LED	LED current in mA		number of cells / jumper		
				emergency operation	mains operation	1 h / removed	2 h / position A	3 h / position B
Screw fix version								
1.2	EM powerLED 1 W BASIC	89899858	1 x LED	350	350	2	3	3
2.0	EM powerLED 2 W BASIC	89899859	1 x LED	600	350	3	4	5
2.4	EM powerLED 2 W BASIC	89899859	2 x LED	350	350	3	4	5
Clip fix version								
1.2	EM powerLED 1 W BASIC	89899865	1 x LED	350	350	2	3	3
2.0	EM powerLED 2 W BASIC	89899866	1 x LED	600	350	3	4	5
2.4	EM powerLED 2 W BASIC	89899866	2 x LED	350	350	3	4	5

type	article number
LED EM green	89899605
LED EM green UHB	89899756

Test switch

An optional test switch can be wired to the EM powerLED. This can be used to check local operation of the luminaire.

type	article number
test switch EM 2	89805277

Emergency-LED

Available – for further information please contact TridonicAtco.

Batteries

- NiMh Cs cells
- High temperature cells
- Spade terminals for easy connection

Approvals

ENEC
CE
according to EN 60598-2-22
according to EN 50172

NiMh 2.0 Ah, Cs cells	type	number of cells	article number
Accu-NiMh C 2A	stick	2	89899755
Accu-NiMh C 3A	stick	3	89899744
Accu-NiMh C 4A	stick	4	89899700
Accu-NiMh C 4B *	side by side	4	89899701
Accu-NiMh C 4C *	stick + stick	4	89899702
Accu-NiMh C 5A	stick	5	89899703
Accu-NiMh C 5B *	side by side	5	89899704
Accu-NiMh C 5C *	stick + stick	5	89899705

* on request

Low profile emergency lighting modules LED

Technical data EM powerLED BASIC

Rated mains supply voltage	220–240 V			
Mains frequency	50/60 Hz			
Mains input current:				
1 W unit	30 mA			
2 W unit	42 mA			
Mains power in maintained operation:				
1 W unit	4 W			
2 W unit	6 W			
Maximum LED forward voltage V_f	3.4 V			
Overvoltage protection	320 V for 1 hour			
Recharge period	12 hours			
Battery discharge current:	1 W		2 W	
	1 LED	1 LED	2 LED	
	790 mA	850 mA	830	
1 h			440 mA	
mA	2 h			
610 mA	600 mA	440 mA	480 mA	480 mA
Charge current NiMH 2.0 Ah:				
Initial	125 mA			
Power charge	210 mA			
Trickle	50 mA			
Earth leakage current	< 0.5 mA			
Ambient temperature range	-25 °C to +50 °C			
Maximum case temperature t_c	70 °C			
Mains change over voltage	in accordance with EN 60598-2-22			
Ingress protection	IP20			
Safety class	1			
Weight	73 g			
Type	Number of LED	LED current mains mode	LED current emergency mode	Nominal output power
1 W	1 x LED	350 mA	350 mA	1.2 W
2 W	1 x LED	350 mA	600 mA	2.0 W
2 W	2 x LED	350 mA	350 mA	2.4 W

The EM powerLED has a unique power regulation circuit; this is designed to limit the total power drawn from the battery in the event of using LED's with excessively high forward voltages (V_f).

In such cases the unit will reduce the LED current in order to maintain an acceptable drain current from the battery and hence meet the required duration time. This feature enables the EM powerLED to have minimum battery count for a given range of LED's.

At a low charge state of the battery (<1.5 V at the 1 W driver and <3 V at the 2 W driver) the LED will not be driven in maintained mode via the switched line until the rated battery voltage levels are exceeded.

Test switch

An optional test switch can be wired to each EM powerLED BASIC. This can be used to execute a function test as long as the switch is pressed (> 1 second press).

Status indication

System status is indicated by a green LED.

LED Indication	Status	Commentary
Permanent green	System OK	AC mode
LED off	DC mode or charging failure	Battery operation (Emergency mode) or charging failure in AC mode

Technical data Accu-NiMH

case temperature range to ensure 4 years design life 0 °C to +45 °C
 storage life in temperate conditions 4 years
 battery voltage 1.2 V per cell
 capacity Cs 2.0 Ah

Storage

- Batteries should be stored within the specified temperature range in low humidity conditions. Optimal storage conditions are
 - temperature: +5°C to +25°C
 - humidity: 65% ±20%
- Avoid atmosphere with corrosive gas
- It is recommended to disconnect the battery before store or delivery
- Avoid to store the batteries discharged
- A long term storage in open circuit leads to battery self discharge and deactivation of chemical components. It could be required to charge and discharge the batteries a few times to recover the initial performance.

Service life

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

Mechanical details

Case manufactured from polycarbonate.

LED status indicator

- Green
- Mounting hole 6.5 mm dia
- Lead length 1000 mm

Test switch

- Mounting hole 7.0 mm dia
- Lead length 550 mm

Battery leads

- Quantity: 1 red and 1 black
- Length: 1 m
- 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 receptacles at each end and insulating covers to connect the separate sticks together.

Batteries

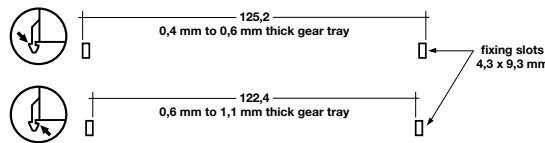
Connection method: 4.8 x 0.5 mm spade tag welded to end of cell

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.

Recommended fixing details for clip fixing



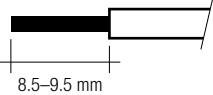
Wiring type and cross section

The wiring can be in flexible cable or solid. Strip 8.5–9.5 mm of insulation from the cables to ensure perfect operation of the push-wire terminals.

Wiring

mains (SL, N, L)
LED (LED +, LED -)

wire preparation:
0.5–1.5 mm



Maximum lead length

LED	3 m
status indication LED	1 m
batteries	1 m

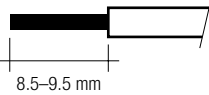
Max. lead insulation diameter

Battery	2.1 mm
Test switch	2.1 mm
Indicator LED	2.1 mm

Wiring

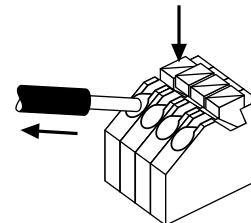
batteries (Bat +, Bat -)
test switch (switch)
status indication LED (status K, A)

wire preparation:
Ø 0.6–0.8

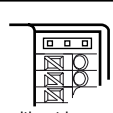

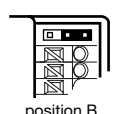


Release of the wiring

Press down the “push button” and remove the cable from front.



Link positions for duration and cell count

Duration	Link Position	1 W Power	2 W Power
1 hr	 without jumper	2 cell	3 cell
2 hr	 position A	3 cell	4 cell
3 hr	 position B	3 cell	5 cell

Jumper selection

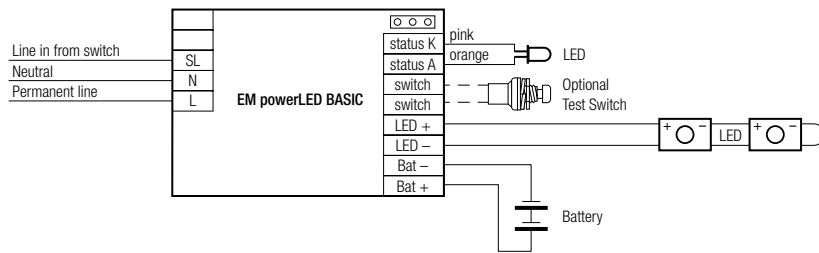
Module supplied with jumper in 3 hours position (position B).

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 powerLED 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.

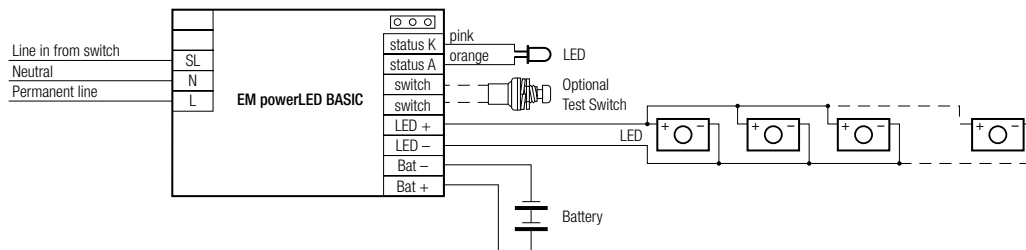
Low profile emergency lighting modules LED

Wiring diagram

Wiring diagram for one LED or two LED in series



Wiring diagram for multiple LED (3–12) in parallel



Take care that the LED is connected with the right polarity. LED that are connected to the EM powerLED devices should have a reverse polarity protection device such as a schottky diodes fitted, otherwise irreversible damage could occur if the LED is connected in reverse polarity. Any protection device must be capable of handling in excess of 700 mA.

Note: The TridonicAtco Emergency-LED is therefore fitted with a protection diode across the powerLED.

Packaging

EM powerLED BASIC
box of 25

Status LED
box of 25

Accu NiMh
25 pieces per box

Wiring instructions

- The powerLED terminals, battery, indicator LED and test switch terminals are classified as SELV. 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 at 125 kHz, which should be considered for good EMC compliance.
- powerLED leads should be separated from the mains connections and wiring for good EMC performance.
- Maximum lead length on the powerLED terminals is 3 m. For a good EMC performance keep the LED wiring as short as possible.
- Maximum lead length for the Test switch and Indicator LED connection is 1 m. The test switch and Indicator LED wiring should be separated from the powerLED leads to prevent noise coupling.
- Battery leads are specified with 0.8 mm cross section and a length of < 1 m
- Switched live and unswitched live supplies must be off the same phase.

① For comprehensive instructions consult the TridonicAtco website www.tridonicatco.com