

EM powerLED BASIC 50 W 4x300/350 mA Combined emergency lighting LED Driver

Product description

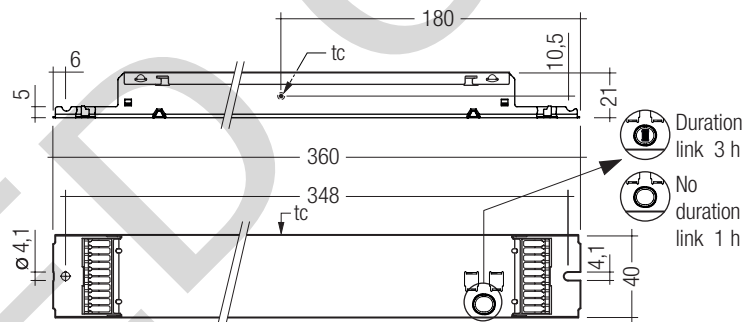
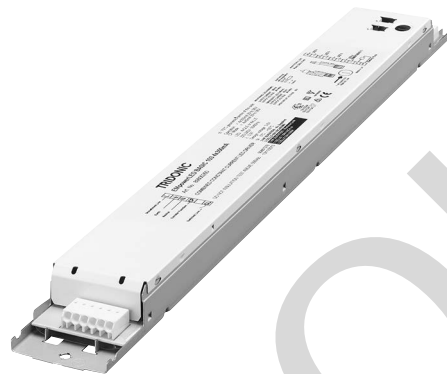
- LED Driver for mains operation with integrated Simple CORRIDOR FUNCTION (CF) and emergency lighting function for manual testing
- 4 channels in mains operation and 1 channel in emergency operation
- SELV for output voltage < 60 V DC
- For luminaire installation
- For the use with STARK QLE G2 CLASSIC 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
- Integrated emergency lighting unit
- 1 or 3 h rated duration selectable with plug (duration link)
- Green charge status display LED
- Electronic charge system
- Polarity reversal protection for battery
- Deep discharge protection
- Short-circuit-proof battery connection
- 5 years guarantee

Batteries

- High-temperature cells
- NiCd or NiMH batteries
- D-, Cs- or LA cells
- 4-year design life
- 1-year guarantee



Note: LED Driver supplied with duration link in 3 hours position. Remove duration link for 1 hour duration. Duration link must be set before battery and mains connection.

Technical data

Rated supply voltage	220 – 240 V
Mains frequency	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)
Battery charging time	24 h
Max. forward voltage V_f LED module	37.4 V
Min. forward voltage V_f LED module	28.0 V
Max. output voltage	60.0 V
Time to light	0.3 s from detection of emergency event
Typ. power input on standby	3.75 W ^b
Output current ripple	$\pm 25 \%$
Output current tolerance	- 9 / + 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 t_a	0 ... +50 °C
Max. casing temperature t_c	75 °C
Dimensions LxBxH	360 x 40 x 21 mm
Mains voltage changeover threshold	according to EN 60598-2-22
Type of protection	IP20



Standards, page 6

Wiring diagrams and installation examples, page 9/10

Ordering data

Type	Article number	Rated duration	Number of cells	Packaging carton	Packaging pallet	Weight per pc.
EM powerLED 4x300mA 103 BASIC	89800291	1/3 h	3	10 pc(s).	600 pc(s).	0.308 kg
EM powerLED 4x300mA 104 BASIC	89800292	1/3 h	4	10 pc(s).	600 pc(s).	0.308 kg
EM powerLED 4x300mA 134 NiCd BASIC	89800293	3 h	4	10 pc(s).	600 pc(s).	0.308 kg
EM powerLED 4x350mA 103 BASIC	89800260	1/3 h	3	10 pc(s).	600 pc(s).	0.308 kg
EM powerLED 4x350mA 104 BASIC	89800261	1/3 h	4	10 pc(s).	600 pc(s).	0.308 kg
EM powerLED 4x350mA 134 NiCd BASIC	89800262	3 h	4	10 pc(s).	600 pc(s).	0.308 kg

Specific technical data

Type	Article number	Number of cells	Rated duration	Mains power	Mains current	Efficiency	Typ. output power	Typ. output current
Normal operation								
EM powerLED 4x300mA 103 BASIC	89800291	3	1/3 h	49 W	240 mA	85 %	40 W	300 mA
EM powerLED 4x300mA 104 BASIC	89800292	4	1/3 h	49 W	240 mA	85 %	40 W	300 mA
EM powerLED 4x300mA 134 NiCd BASIC	89800293	4	3 h	48 W	235 mA	85 %	40 W	300 mA
EM powerLED 4x350mA 103 BASIC	89800260	3	1/3 h	56 W	250 mA	85 %	46 W	350 mA
EM powerLED 4x350mA 104 BASIC	89800261	4	1/3 h	56 W	250 mA	85 %	46 W	350 mA
EM powerLED 4x350mA 134 NiCd BASIC	89800262	4	3 h	55 W	245 mA	85 %	46 W	350 mA
CF operation								
EM powerLED 4x300mA 103 BASIC	89800291	3	1/3 h	12 W	70 mA	45 %	4.6 W	42 mA
EM powerLED 4x300mA 104 BASIC	89800292	4	1/3 h	12 W	70 mA	45 %	4.6 W	42 mA
EM powerLED 4x300mA 134 NiCd BASIC	89800293	4	3 h	12 W	70 mA	45 %	4.6 W	42 mA
EM powerLED 4x350mA 103 BASIC	89800260	3	1/3 h	12 W	70 mA	45 %	4.6 W	42 mA
EM powerLED 4x350mA 104 BASIC	89800261	4	1/3 h	12 W	70 mA	45 %	4.6 W	42 mA
EM powerLED 4x350mA 134 NiCd BASIC	89800262	4	3 h	12 W	70 mA	45 %	4.6 W	42 mA
Emergency operation								
EM powerLED 4x300mA 103 BASIC	89800291	3	1/3 h	–	–	–	2.2 W	65 mA
EM powerLED 4x300mA 104 BASIC	89800292	4	1/3 h	–	–	–	2.9 W	95 mA
EM powerLED 4x300mA 134 NiCd BASIC	89800293	4	3 h	–	–	–	1.2 W	36 mA
EM powerLED 4x350mA 103 BASIC	89800260	3	1/3 h	–	–	–	2.2 W	65 mA
EM powerLED 4x350mA 104 BASIC	89800261	4	1/3 h	–	–	–	2.9 W	95 mA
EM powerLED 4x350mA 134 NiCd BASIC	89800262	4	3 h	–	–	–	1.2 W	36 mA

^① Battery charging power

RoHS

ACCESSORIES

Test switch EM3

Product description

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



Ordering data

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

ACCESSORIES

Status indication green LED

Product description

- A green LED indicates that charging current is flowing into the battery
- 0.3 / 1.0 m cable length
- Plug connection



Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
LED EM green 1,0 m	89800269	25 pc(s).	200 pc(s).	0.015 kg
LED EM green, ultra high brightness 1,0 m	89800271	25 pc(s).	200 pc(s).	0.015 kg
LED EM green 0,3 m	89800270	25 pc(s).	200 pc(s).	0.005 kg
LED EM green, ultra high brightness 0,3 m	89800272	25 pc(s).	200 pc(s).	0.005 kg



ACCES-
SORIES

SWITCH Sensor HF 5BP

Automatic switching based on motion and light level

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)



Ordering data

Type	Article number	Packaging, carton	Weight per pc.
SWITCH Sensor HF 5BP	28000086	4 pc(s).	0,079 kg

Battery selection

EM powerLED BASIC 4-channel, 1 / 3 h

				Type	EM powerLED 4x300mA 103 BASIC		EM powerLED 4x300mA 104 BASIC		EM powerLED 4x300mA 134 NiCd BASIC		EM powerLED 4x350mA 103 BASIC		EM powerLED 4x350mA 104 BASIC		EM powerLED 4x350mA 134 NiCd BASIC	
				Article no.	89800291		89800292		89800293		89800260		89800261		89800262	
				Cells	3 cells		4 cells		4 cells		3 cells		4 cells		4 cells	
				Duration	1 h	3 h	1 h	3 h	3 h		1 h	3 h	1 h	3 h	3 h	
Technology and capacity	Design	Number of cells	Type	Article no.	Assignable batteries											
NiCd 1.6Ah Cs cells	stick	1 x 3	Accu-NiCd C 3A	89899743	•						•					
	stick	1 x 4	Accu-NiCd C 4A	89899692			•			•			•			•
	stick + stick	2 + 2	Accu-NiCd C 4C	89899694			•			•			•			•
	side by side	4 x 1	Accu NiCd C4B	89899693			•			•			•			•
NiCd 4Ah D cells®	stick	1 x 3	Accu-NiCd 3A	89895960		•					•					
	stick	1 x 4	Accu-NiCd 4A 55	89800089				•						•		
	side by side	3 x 1	Accu NiCd 3B	89895976		•					•					
	side by side	4 x 1	Accu NiCd 4B	89895977				•						•		
	stick + stick	2 + 2	Accu-NiCd 4C	89895978				•						•		
NiMH 2Ah Cs cells	stick	1 x 3	Accu-NiMH C 3A	89899744	•						•					
	stick	1 x 4	Accu-NiMH C 4A	89899700			•			•			•			•
NiMH 4Ah LA cells	stick	1 x 3	Accu-NiMH 4 Ah 3A CON	89800441		•					•					
	stick	1 x 4	Accu-NiMH 4 Ah 4A CON	89800442				•						•		
	stick + stick	2 + 2	Accu-NiMH 4 Ah 4C CON	89800438				•						•		

[®] 50 °C batteries also available (see separate datasheet at www.tridonic.com).

Battery charge / discharge data

EM powerLED BASIC 4-channel, 1 / 3 h

Type	EM powerLED 4x300mA 103 BASIC		EM powerLED 4x300mA 104 BASIC		EM powerLED 4x300mA 134 NiCd BASIC	EM powerLED 4x350mA 103 BASIC		EM powerLED 4x350mA 104 BASIC		EM powerLED 4x350mA 134 NiCd BASIC
	Article no.		Article no.		Article no.	Article no.		Article no.		Article no.
	Cells		Cells		Cells	Cells		Cells		Cells
	Duration		Duration		Duration	Duration		Duration		Duration
	1 h	3 h	1 h	3 h	3 h	1 h	3 h	1 h	3 h	3 h
Charge current	125 mA	240 mA	125 mA	240 mA	125 mA	125 mA	240 mA	125 mA	240 mA	125 mA
Discharge current	750 – 1,050 mA	750 – 1,050 mA	750 – 1,050 mA	750 – 1,050 mA	360 – 400 mA	750 – 1,050 mA	750 – 1,050 mA	750 – 1,050 mA	750 – 1,050 mA	360 – 400 mA

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
 EN 61347-2-7

Technical data batteries**Accu-NiCd**

Case temperature range
 to ensure 4 years design life
 4.2 / 4.5 Ah D
 1.6 Cs
 Battery voltage/cell
 Single cell dimensions
 4.2/ 4.5 Ah D
 Diameter
 Height
 1.6 Ah Cs
 Diameter
 Height
 Capacity D
 Capacity Cs
 Max. short term temperature (reduced life-time)
 Max. number discharge cycles

+5 °C to +55 °C
 +5 °C to +50 °C
 1.2 V

32.5 mm
 60.5 mm

22.5 mm
 42.5 mm
 4.2 / 4.5 Ah

1.6 Ah
 70 °C
 4 cycles per year plus
 4 cycles during
 commissioning
 5 pcs. per carton

Packing quantity

Accu-NiMH

Case temperature range
 to ensure 4 years design life
 2.0 Ah Cs
 4.0 Ah LA
 Battery voltage
 Single cell dimensions
 2.0 Ah Cs
 Diameter
 Height
 4.0 Ah LA
 Diameter
 Height
 Capacity Cs / LA
 Max. short term temperature (reduced life-time)
 Max. number discharge cycles 2.0 Ah Cs

+5 °C to +55 °C
 +5 °C to +40 °C
 1.2 V

22 mm
 42.5 mm

18.3 mm
 90 mm
 2.0 Ah / 4.0 Ah
 70 °C

4 cycles per year plus
 4 cycles during
 commissioning
 2 cycles per year plus
 4 cycles during
 commissioning
 5 pcs. per carton

Max. number discharge cycles 4.0 Ah LA

Packing quantity

Storage, installation and commissioning

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

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.

Mechanical details

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

LED status indicator

- Green
- Mounting hole 6.5 mm dia
- Lead length 0.3 m / 1.0 m
- Insulation rating: 90 °C
- Plug connection

Test switch

- Mounting hole 7.0 mm dia
- Lead length 0.55 m
- Plug connection

Battery leads

- Quantity: 1 red and 1 black
- Length: 1.3 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

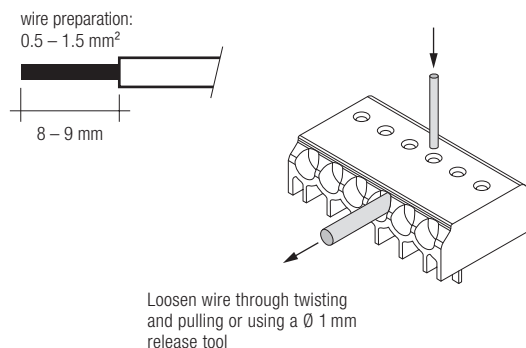
8.0 mm stripped insulation

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

Electrical connections

Wiring

LED module/LED Driver/supply



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 [®]
Status indication LED	1 m
Batteries	1.3 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 controlgear 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.

Expected life-time

Type		ta = 40 °C	ta = 50 °C
EM powerLED 3x300mA 103 BASIC	tc	65 °C	75 °C
	Life-time	100,000 h	50,000 h
EM powerLED 3x300mA 104 BASIC	tc	65 °C	75 °C
	Life-time	100,000 h	50,000 h
EM powerLED 3x300mA 134 NiCd BASIC	tc	65 °C	75 °C
	Life-time	100,000 h	50,000 h
EM powerLED 3x350mA 103 BASIC	tc	65 °C	75 °C
	Life-time	100,000 h	50,000 h
EM powerLED 3x350mA 104 BASIC	tc	65 °C	75 °C
	Life-time	100,000 h	50,000 h
EM powerLED 3x350mA 134 NiCd BASIC	tc	65 °C	75 °C
	Life-time	100,000 h	50,000 h

Maximum loading of automatic circuit breakers

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20	Inrush current	
Installation Ø	1.5 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	1.5 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	I _{max}	time
EM powerLED 4x300mA 103 BASIC	20	30	40	50	10	15	20	30	20 A	190 µs
EM powerLED 4x300mA 104 BASIC	20	30	40	50	10	15	20	30	20 A	190 µs
EM powerLED 4x300mA 134 NiCd BASIC	20	30	40	50	10	15	20	30	20 A	190 µs
EM powerLED 4x350mA 103 BASIC	20	30	40	50	10	15	20	30	20 A	190 µs
EM powerLED 4x350mA 104 BASIC	20	30	40	50	10	15	20	30	20 A	190 µs
EM powerLED 4x350mA 134 NiCd BASIC	20	30	40	50	10	15	20	30	20 A	190 µs



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

Type	THD	3	5	7
EM powerLED 4x300mA 103 BASIC	15 %	14 %	8 %	5 %
EM powerLED 4x300mA 104 BASIC	15 %	14 %	8 %	5 %
EM powerLED 4x300mA 134 NiCd BASIC	15 %	14 %	8 %	5 %
EM powerLED 4x350mA 103 BASIC	11 %	8 %	5 %	6 %
EM powerLED 4x350mA 104 BASIC	11 %	8 %	5 %	6 %
EM powerLED 4x350mA 134 NiCd BASIC	11 %	8 %	5 %	6 %

Light output in emergency and corridor operation

	Approx. light output in emergency operation	Approx. light output in corridor operation
EM powerLED 4x300mA 103 BASIC	5.25 %	14 %
EM powerLED 4x300mA 104 BASIC	7.50 %	14 %
EM powerLED 4x300mA 134 NiCd BASIC	2.75 %	14 %
EM powerLED 4x350mA 103 BASIC	4.40 %	12 %
EM powerLED 4x350mA 104 BASIC	6.40 %	12 %
EM powerLED 4x350mA 134 NiCd BASIC	2.30 %	12 %

Duration link selection

Duration	Usage duration link
3 h	 With link
1 h	 Without link

Note: LED Driver supplied with duration link in 3 hours position. Remove duration link for 1 hour duration. Duration link must be set before battery and mains connection.

Wiring guidelines

- The LED terminals, battery, indicator LED and test switch 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.
- 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 LED leads to prevent noise coupling.
- Battery leads are specified with 0.5 mm cross section and a length of 1.3 m

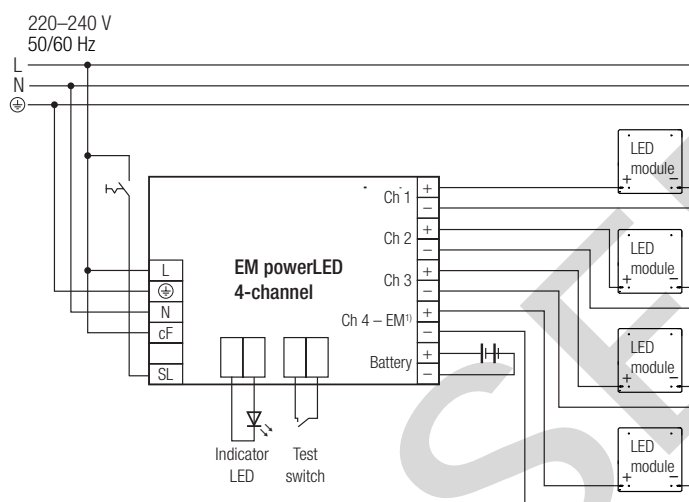
To ensure that a luminaire containing LED emergency units complies with EN 55015 for radio frequency conducted interference in both normal and emergency mode it is essential to follow good practice in the wiring layout.

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.

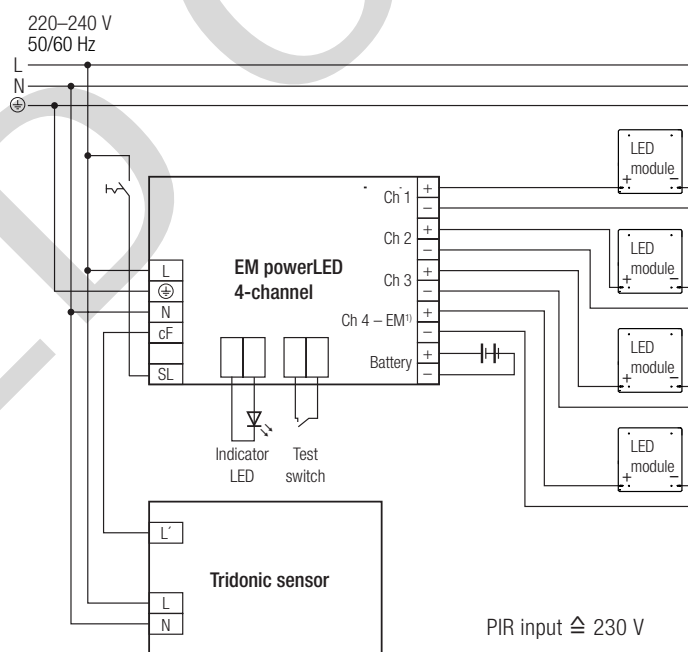
The length of LED leads must not be exceeded.

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

Wiring diagram EM powerLED 4-channel without sensor

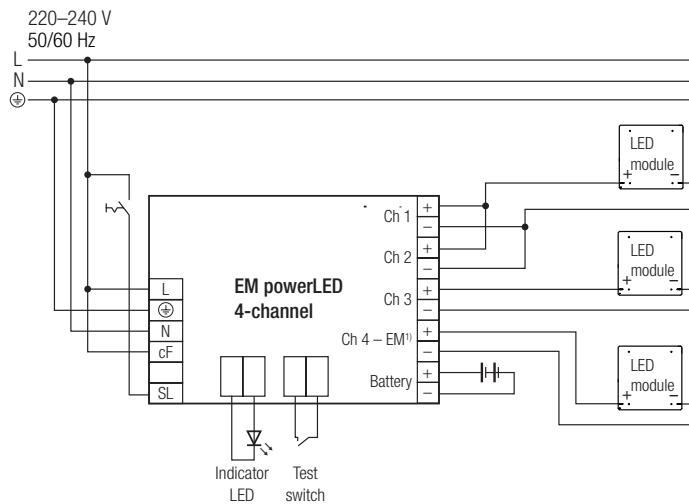


Wiring diagram EM powerLED 4-channel with sensor

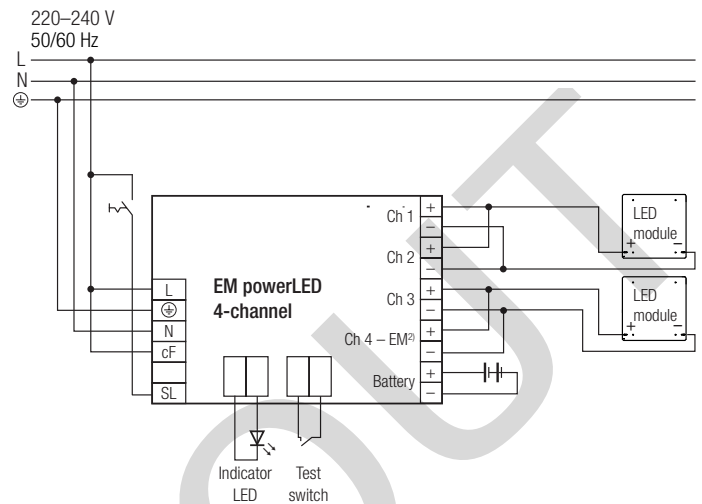


¹⁾ The LED module which is connected with channel 4 (Ch 4) will be used for mains and emergency operation.

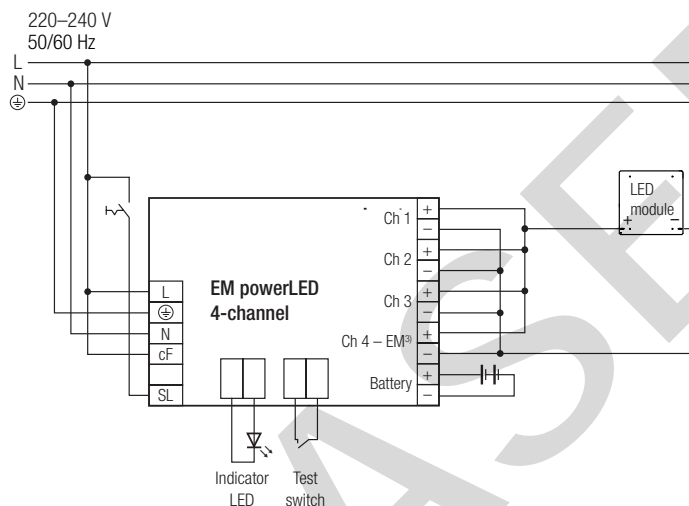
Wiring diagram EM powerLED 4-channel with bridged channels (1 x 700 mA, 2 x 350 mA)⁴⁾



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



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



¹⁾ The LED module which is connected with channel 4 (Ch 4) will be used for mains and emergency operation.

²⁾ The LED module which is connected with channel 3 (Ch 3) and 4 (Ch 4) will be used for mains and emergency operation.

³⁾ The LED module which is connected with channel 1 to 4 (Ch1, Ch 2, Ch 3, Ch 4) will be used for mains and emergency operation.

⁴⁾ Note: In case of parallel wiring of LED modules consider the max. currents of LED modules.

Switching behaviour

L	CF	LED Maintained
off	off	off
off	on	off
on	off	12 – 14 %
on	on	100 %

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.