EM powerLED BASIC FX C 50 W

Combined emergency lighting LED Driver

Product description

- Fixed output LED Driver for mains operation with integrated Simple CORRIDOR FUNCTION (CF)
- Emergency lighting LED Driver with manual test function
- For self-contained emergency lighting
- For LED modules with a forward voltage of 15 – 50 V
- SELV for output voltage < 60 V DC
- For luminaire installation
- Compact plastic casing (183 x 82 x 34 mm)
- 5 years guarantee

Properties

- 4.9 – 50 W output power
- Constant current LED operation
- 300 – 1,400 mA output current in mains operation selectable with I-SELECT PLUG in steps of 50 mA
- Simple CORRIDOR FUNCTION (CF) with 10 % light level
- Integrated emergency lighting unit
- 1 or 3 h rated duration selectable with plug (duration link)
- Automatic shutdown of output if LED load is out of range
- Green charge status display LED
- Electronic charge system
- Polarity reversal protection for battery
- Deep discharge protection
- Short-circuit-proof battery connection

Batteries

- High-temperature cells
- NiCd or NiMH batteries
- D, Cs, LA or LAL cells
- Battery box for independent use
- 4-year design life
- 1-year guarantee
- For battery compatibility refer to table „Battery selection“

Standards, page 9

Wiring diagrams and installation examples, page 10

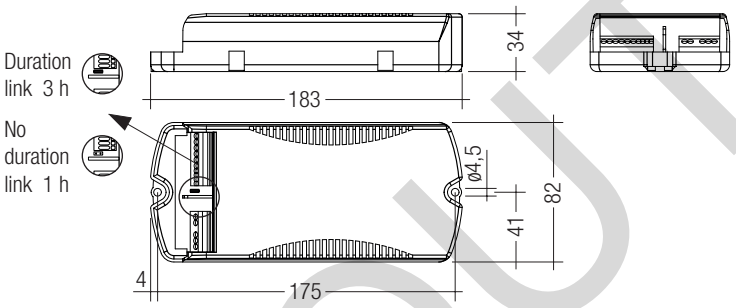
SELV RoHS

EM powerLED BASIC FX C 50 W

Combined emergency lighting LED Driver

Technical data

Rated supply voltage	220 – 240 V
Mains frequency	50 / 60 Hz
Typ. λ (at 230 V, 50 Hz, normal operation)	0.95
Typ. λ (at 230 V, 50 Hz, CF operation)	0.45
Overvoltage protection	320 V (for 1 h)
Battery charging time	24 h
Max. open circuit voltage	60 V
Time to light	< 0.5 s from detection of emergency event
Typ. power consumption in charging	3.5 W
Output LF current ripple (< 120 Hz)	< 2 %
Output current tolerance	7 %
THD normal operation	< 20 %
THD CF operation	< 30 %
Ambient temperature ta > 45 W	50 °C
Ambient temperature ta ≤ 45 W	55 °C
Max. casing temperature tc	85 °C
Dimensions LxBxH	183 x 82 x 34 mm
Mains voltage changeover threshold	according to EN 60598-2-22
Type of protection	IP20
Charge current 1h	100 mA
Charge current 3h	200 mA
Discharge current 1h	960 mA
Discharge current 3h	960 mA
Lifetime	up to 50,000 h
Guarantee	5 years



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

Ordering data

Type[3]	Article number	Rated duration	Number of cells	Packaging, carton	Packaging, pallet	Weight per pc.
EM powerLED BASIC FX 103 C 50W 50V	**89800429**	1/3 h	3	10 pc(s).	400 pc(s).	0.27 kg
EM powerLED BASIC FX 104 C 50W 50V	**89800411**	1/3 h	4	10 pc(s).	400 pc(s).	0.27 kg

Specific technical data

Type[3]	Number of battery cells	Output current	Min. output voltage[2]	Max. output voltage[2]	Min. output power	Max. output power	Input power (at 230 V, 50 Hz, full load)	Input current (at 230 V, 50 Hz, full load)	Efficiency (at 230 V, 50 Hz)	λ (at 230 V, 50 Hz, full load)	Ambient temperature ta[1]	tc/ta for ≥ 50.000 h[1]	I sel resistor value
Normal operation													
	–	300 mA	16.6 V	50.0 V	5.0 W	15.0 W	20 W	110 mA	74	0.80	-5 … 55 °C	85 / 55 °C	open
	–	350 mA	16.6 V	50.0 V	5.8 W	17.5 W	22 W	120 mA	79	0.80	-5 … 55 °C	85 / 55 °C	69.80 kΩ
	–	400 mA	16.6 V	50.0 V	6.6 W	20.0 W	25 W	130 mA	79	0.85	-5 … 55 °C	85 / 55 °C	62.00 kΩ
	–	450 mA	16.6 V	50.0 V	7.5 W	22.5 W	27 W	140 mA	82	0.85	-5 … 55 °C	85 / 55 °C	56.00 kΩ
	–	500 mA	16.6 V	50.0 V	8.3 W	25.0 W	31 W	150 mA	81	0.90	-5 … 55 °C	85 / 55 °C	48.70 kΩ
	–	550 mA	16.6 V	50.0 V	9.1 W	27.5 W	34 W	165 mA	81	0.90	-5 … 55 °C	85 / 55 °C	43.20 kΩ
	–	600 mA	16.6 V	50.0 V	10.0 W	30.0 W	36 W	175 mA	83	0.90	-5 … 55 °C	85 / 55 °C	36.50 kΩ
	–	650 mA	16.6 V	50.0 V	10.8 W	32.5 W	40 W	185 mA	81	0.90	-5 … 55 °C	85 / 55 °C	28.70 kΩ
	–	700 mA	16.6 V	50.0 V	11.6 W	35.0 W	44 W	200 mA	80	0.95	-5 … 55 °C	85 / 55 °C	24.00 kΩ
	–	750 mA	16.6 V	50.0 V	12.5 W	37.5 W	46 W	210 mA	82	0.95	-5 … 55 °C	85 / 55 °C	20.50 kΩ
	–	800 mA	16.6 V	50.0 V	13.3 W	40.0 W	49 W	225 mA	81	0.95	-5 … 55 °C	85 / 55 °C	18.00 kΩ
EM powerLED BASIC FX 103 / 104 C 50W 50V	–	850 mA	16.6 V	50.0 V	14.1 W	42.5 W	52 W	235 mA	81	0.95	-5 … 55 °C	85 / 55 °C	16.00 kΩ
	–	900 mA	16.6 V	50.0 V	15.0 W	45.0 W	55 W	250 mA	82	0.95	-5 … 55 °C	85 / 55 °C	13.30 kΩ
	–	950 mA	15.7 V	50.0 V	15.0 W	47.5 W	58 W	265 mA	82	0.95	-5 … 50 °C	85 / 50 °C	11.00 kΩ
	–	1,000 mA	15.0 V	50.0 V	15.0 W	50.0 W	61 W	275 mA	82	0.97	-5 … 50 °C	85 / 50 °C	9.31 kΩ
	–	1,050 mA	15.0 V	47.6 V	15.0 W	50.0 W	60 W	280 mA	84	0.97	-5 … 50 °C	85 / 50 °C	7.87 kΩ
	–	1,100 mA	15.0 V	45.5 V	15.0 W	50.0 W	60 W	280 mA	88	0.97	-5 … 50 °C	85 / 50 °C	6.49 kΩ
	–	1,150 mA	15.0 V	43.5 V	15.0 W	50.0 W	60 W	280 mA	88	0.97	-5 … 50 °C	85 / 50 °C	4.70 kΩ
	–	1,200 mA	15.0 V	41.7 V	15.0 W	50.0 W	60 W	280 mA	88	0.97	-5 … 50 °C	85 / 50 °C	3.83 kΩ
	–	1,250 mA	15.0 V	40.0 V	15.0 W	50.0 W	60 W	280 mA	88	0.97	-5 … 50 °C	85 / 50 °C	2.70 kΩ
	–	1,300 mA	15.0 V	38.5 V	15.0 W	50.0 W	60 W	280 mA	88	0.97	-5 … 50 °C	85 / 50 °C	2.20 kΩ
	–	1,350 mA	15.0 V	37.0 V	15.0 W	50.0 W	61 W	280 mA	87	0.97	-5 … 50 °C	85 / 50 °C	1.50 kΩ
	–	1,400 mA	15.0 V	35.0 V	15.0 W	50.0 W	62 W	285 mA	87	0.97	-5 … 50 °C	85 / 50 °C	short circuit (0 Ω)
CF operation													
	–	30 mA	–	–	0.5 W	1.7 W	4.0 W	50 mA	50	0.40	–	–	open
	–	38 mA	–	–	0.6 W	2.1 W	4.5 W	50 mA	56	0.40	–	–	69.80 kΩ
	–	39 mA	–	–	0.6 W	2.1 W	4.5 W	50 mA	56	0.40	–	–	62.00 kΩ
	–	52 mA	–	–	0.9 W	2.9 W	5.0 W	55 mA	60	0.40	–	–	56.00 kΩ
	–	52 mA	–	–	0.9 W	2.9 W	5.0 W	55 mA	60	0.40	–	–	48.70 kΩ
	–	52 mA	–	–	0.9 W	2.9 W	5.0 W	55 mA	70	0.40	–	–	43.20 kΩ
	–	66 mA	–	–	1.1 W	3.6 W	5.5 W	55 mA	73	0.45	–	–	36.50 kΩ
	–	69 mA	–	–	1.1 W	3.8 W	5.5 W	55 mA	73	0.45	–	–	28.70 kΩ
	–	80 mA	–	–	1.3 W	4.4 W	6.0 W	60 mA	75	0.45	–	–	24.00 kΩ
	–	83 mA	–	–	1.4 W	4.6 W	6.0 W	60 mA	83	0.45	–	–	20.50 kΩ
	–	85 mA	–	–	1.4 W	4.7 W	6.0 W	60 mA	83	0.45	–	–	18.00 kΩ
EM powerLED BASIC FX 103 / 104 C 50W 50V	–	92 mA	–	–	1.5 W	5.1 W	6.5 W	60 mA	85	0.50	–	–	16.00 kΩ
	–	92 mA	–	–	1.5 W	5.1 W	6.5 W	60 mA	92	0.50	–	–	13.30 kΩ
	–	105 mA	–	–	1.6 W	5.8 W	7.0 W	60 mA	86	0.50	–	–	11.00 kΩ
	–	106 mA	–	–	1.6 W	5.8 W	7.0 W	60 mA	86	0.50	–	–	9.31 kΩ
	–	118 mA	–	–	1.8 W	6.2 W	7.5 W	65 mA	87	0.55	–	–	7.87 kΩ
	–	119 mA	–	–	1.8 W	6.0 W	7.5 W	65 mA	87	0.55	–	–	6.49 kΩ
	–	130 mA	–	–	2.0 W	6.2 W	8.0 W	65 mA	88	0.55	–	–	4.70 kΩ
	–	131 mA	–	–	2.0 W	6.0 W	8.0 W	65 mA	88	0.55	–	–	3.83 kΩ
	–	144 mA	–	–	2.2 W	6.3 W	8.0 W	65 mA	88	0.55	–	–	2.70 kΩ
	–	144 mA	–	–	2.2 W	6.1 W	8.0 W	65 mA	88	0.60	–	–	2.20 kΩ
	–	145 mA	–	–	2.2 W	5.9 W	8.5 W	65 mA	88	0.60	–	–	1.50 kΩ
	–	158 mA	–	–	2.4 W	6.1 W	9.0 W	70 mA	83	0.60	–	–	short circuit (0 Ω)
Emergency operation													
EM powerLED BASIC FX 103 C 50W 50V	3	see page 8	15 V	50 V	2.1 W	2.75 W	–	–	–	–	–	–	all
EM powerLED BASIC FX 104 C 50W 50V	4	see page 8	15 V	50 V	2.7 W	3.50 W	–	–	–	–	–	–	all

[1] Ambient temperature range ta defined in normal operation

[2] Output voltage range defined in normal operation. LED forward voltage will decrease in CF operation.

[3] EM = Emergency

RoHS

ACCES-SORIES

Test switch EM2

Product description

- For connection to the emergency lighting LED Driver
- For checking the device function

Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
Test switch EM 2	**89805277**	25 pc(s).	600 pc(s).	0.009 kg

ACCES-SORIES

Status indication green LED

Product description

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

Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
LED EM green	**89899605**	25 pc(s).	200 pc(s).	0.011 kg
LED EM green, ultra high brightness	**89899756**	25 pc(s).	200 pc(s).	0.012 kg

ACCES-SORIES

smartSWITCH HF 5DP f

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
- 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 9 dip switches
- Max. installation height 5 m
- Two housing options allowing flexible installation
- Variable detection area (100 – 10 %)
- Zero cross switching supported
- 5 years guarantee

smartSWITCH HF 5DP f

smartSWITCH HF 5DP S f

Ordering data

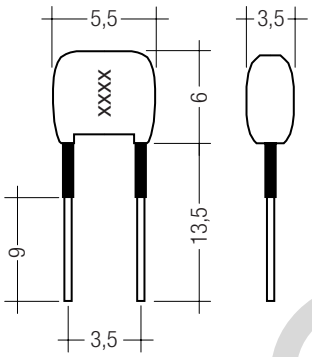
Type	Article number	Dimensions L x W x H	Packaging, carton	Weight per pc.
smartSWITCH HF 5DP f	**28002214**	70 x 36.5 x 24.5 mm	5 pc(s).	0.040 kg
smartSWITCH HF 5DP S f	**28002235**	58 x 48.5 x 24.5 mm	5 pc(s).	0.040 kg

ACCES-SORIES

I-SELECT PLUG E

Product description

- Ready-for-use resistor to set output current value
- Resistor is base insulated
- Resistor power 0.25 W
- Resistor value tolerance ± 1 %



Ordering data

Type	Article number	Colour	Marking	Resistor value	Packaging bag	Weight per pc.
I-SELECT PLUG E	**28001167**	Green	69k8	69.80 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001166**	Green	62k	62.00 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000627**	Green	56k	56.00 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000626**	Green	48k7	48.70 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000625**	Green	43k2	43.20 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000624**	Green	36k5	36.50 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000622**	Green	28k7	28.70 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001165**	Green	24k	24.00 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001164**	Green	20k5	20.50 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001163**	Green	18k	18.00 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001162**	Green	16k	16.00 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001161**	Green	13k3	13.30 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001160**	Green	11k	11.00 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000617**	Green	9k31	9.31 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001159**	Green	7k87	7.87 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000616**	Green	6k49	6.49 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001158**	Green	4k7	4.70 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001157**	Green	3k83	3.83 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001156**	Green	2k7	2.70 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001155**	Green	2k2	2.20 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28001154**	Green	1k5	1.50 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG E	**28000612**	Green	0R	0 kΩ	10 pc(s).	0.001 kg

RoHS

ACCES-SORIES

NiCd Battery pack 1.8 – 4.5 Ah

Batteries

Product description

- High-temperature NiCd battery pack for use with emergency lighting units

Properties

- Constant high-temperature operation – depending on the emergency lighting unit used (refer to respective emergency control gear datasheet)
- Good charging properties at high temperature
- High energy maintenance of the charged battery
- 4 year lifetime in operation at max. temperature
- Certified quality manufacturer
- Casing material made of polycarbonate
- 0.2 m double-insulated cable with plug connection
- 0.8 m double-insulated cable with plug and pre-stripped ends for connection with the emergency unit
- 1.0 mm² solid wire, pre-stripped
- Suitable for emergency lighting equipment as per IEC 60598-2-22

Ordering data

Type	Article number	Packaging, carton	Weight per pc.
Battery pack 1.8 Ah with plug			
Pack-NiCd 3C CON	**28001221**	5 pc(s).	0.270 kg
Pack-NiCd 4C CON	**28001222**	5 pc(s).	0.320 kg
Battery pack 4.5 Ah with plug			
Pack-NiCd 3D CON	**89800389**	5 pc(s).	0.534 kg
Pack-NiCd 4D CON	**89800390**	5 pc(s).	0.661 kg

ACCES-SORIES

NiMH Battery pack 2.2 – 4.0 Ah

Batteries

Product description

- High-temperature NiMH battery pack for use with emergency lighting units
- 4-year design life
- 1-year guarantee

Properties

- Constant high-temperature operation
- Temperature depending on the used emergency lighting unit (refer to respective emergency control gear datasheet)
- Good charging properties at high temperature
- High energy maintenance of the charged battery
- Certified quality manufacturer
- Casing material made of polycarbonate
- 1.0 mm² stranded wire
- Suitable for emergency lighting equipment as per IEC 60598-2-22

Fig. 1

Fig. 2

Battery pack 2.2 Ah				
Pack-NiMH 2.2Ah 3 CON	**28001898**	5 pc(s).	25 pc(s).	0.32 kg
Pack-NiMH 2.2Ah 4 CON	**28001899**	5 pc(s).	25 pc(s).	0.36 kg
Battery pack 4.0 Ah				
Pack-NiMH 4Ah 3 CON	**28001896**	5 pc(s).	25 pc(s).	0.40 kg
Pack-NiMH 4Ah 4 CON	**28001897**	5 pc(s).	25 pc(s).	0.48 kg

1. Standards

- EN 55015
- EN 61000-3-2
- EN 61000-3-3
- EN 61347-2-13
- EN 61547
- EN 62384
- EN 61347-2-7
- according to EN 50172
- according to EN 60598-2-22

1.1 Glow-wire test

according to EN 60598-1 with increased temperature of 850 °C passed.

1.2 Temperature range

The LED Driver life duration is related to the ambient temperature ta.
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. or higher, ta temperature should be checked and eventually critical components (e.g. ELCAP) measured. Detailed information on request.

1.3 Insulation and electric strength testing of luminaires

Electronic LED Driver 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 data

2.1 Expected 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.

Expected lifetime

Type	Output power	ta	40 °C	50 °C	55°C
EM powerLED BASIC FX 103 / 104 C 50W 50V	10 W	tc	56 °C	66 °C	71 °C
		lifetime	> 100,000 h	> 100,000 h	> 100,000 h
	20 W	tc	59 °C	69 °C	74 °C
		lifetime	> 100,000 h	> 100,000 h	> 100,000 h
	30 W	tc	63 °C	73 °C	78 °C
		lifetime	> 100,000 h	> 100,000 h	> 100,000 h
	40 W	tc	69 °C	79 °C	79 °C
		lifetime	> 100,000 h	> 90,000 h	> 90,000 h
	45W	tc	70 °C	80 °C	85 °C
		lifetime	> 100,000 h	> 90,000 h	> 50,000 h
	50 W	tc	76 °C	85 °C	x
		lifetime	> 95,000 h	> 50,000 h	x

x = not permitted

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.

2.2 Storage conditions

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

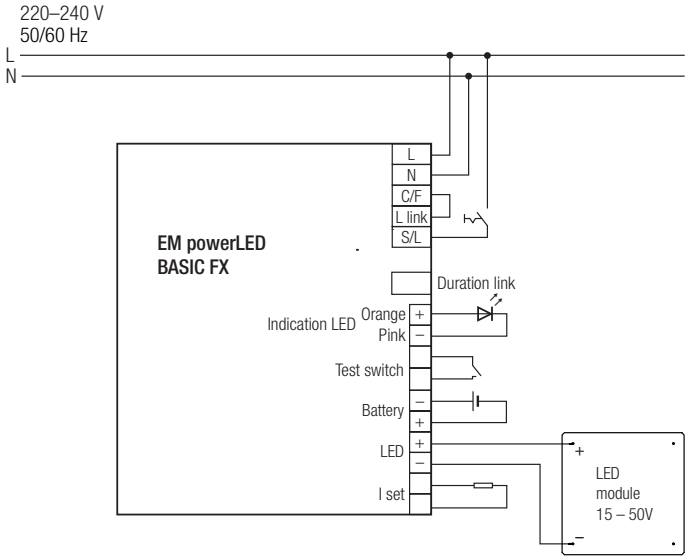
Storage temperature: -40 °C up to max. +80 °C

The devices have to be within the specified temperature range (ta) before they are operated.

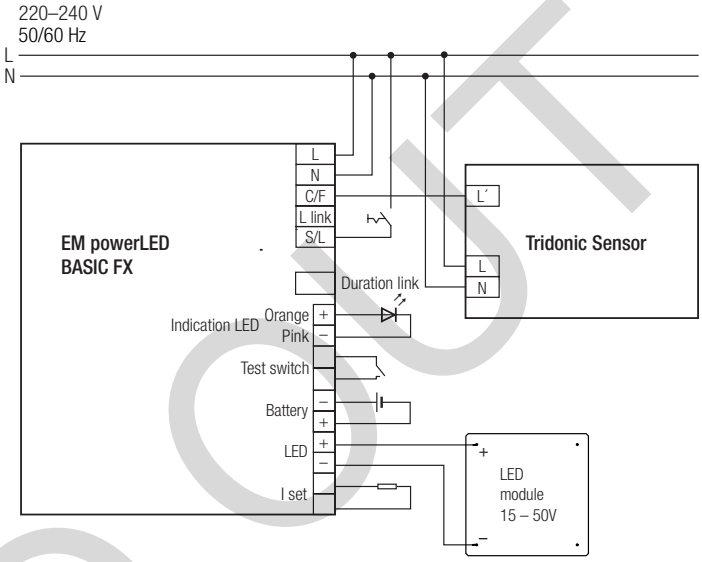
3. Installation / Wiring

3.1 Wiring diagrams

Wiring diagram EM powerLED BASIC FX without sensor



Wiring diagram EM powerLED BASIC FX with sensor



When using the EM powerLED without a sensor, connect the terminals C / F and L link with a wire.

PIR output ≙ 230 V

The connected LED module will be used for mains and emergency operation.

Switching behaviour

S/L	C/F	LED
off	off	off
off	on	off
on	off	10 %
on	on	100 %

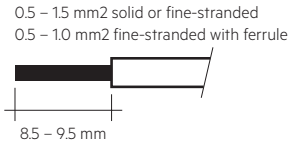
The mains power must be removed before changing the LED load.

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.

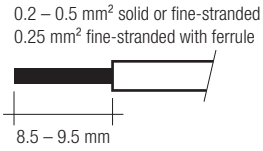
Note
The EM powerLED BASIC FX 50W uses pulse width modulation (PWM) for the LED operation in CORRIDOR mode. This can have an adverse effect on video recording equipment e.g. cctv.
Caution should be observed when using the CORRIDOR FUNCTION in cctv monitored areas.

3.2 Wiring type and cross-section

Wiring
Mains (N, L, C/F, L link, S/L)
LED (LED +, LED –)
Batteries (Bat +, Bat –)
I set



Wiring
Test switch
Indication LED



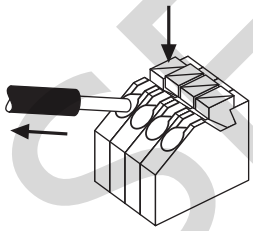
Use one wire for each terminal connector only.
Use each strain relief channel for one cable only.

max. = 10 mm
min. = 6,3 mm

Max. lead insulation diameter		Maximum lead length	
Battery	2.1 mm	LED	3 m
Test switch	2.1 mm	status indication LED	1 m
Indicator LED	2.1 mm	batteries	1 m

3.3 Release of the wiring

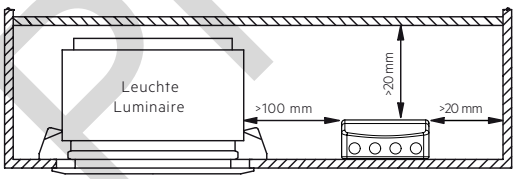
Press down the “push button” and remove the cable from front.



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

3.4 Fixing conditions

Dry, acidfree, oilfree, fatfree. It is not allowed to exceed the maximum ambient temperature (ta) stated on the device. Minimum distances stated below are recommendations and depend on the actual luminaire. Is not suitable for fixing in corner.



3.5 Wiring guidelines

- 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 3 m. For a good EMC performance keep the LED wiring as short as possible.
- The secondary wires (LED module) should be routed in parallel to ensure good EMC performance.
- 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 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.).

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.

4. Mechanical data

4.1 Housing properties

- Polycarbonat white
- Type of protection IP 20

4.2 Mechanichal data accessories

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

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

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 insulting covers to connect the separate sticks together.

5. Electrical data

5.1 Maximum loading of automatic circuit breakers

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20	Inrush current	
Installation Ø	1.5 mm²	1.5 mm²	2.5 mm²	2.5 mm²	1.5 mm²	1.5 mm²	2.5 mm²	2.5 mm²	I_{max}	time
EM powerLED BASIC FX 103 C 50W 50V	20	30	40	50	16	24	32	40	6.6 A	30 µs
EM powerLED BASIC FX 104 C 50W 50V	20	30	40	50	16	24	32	40	6.6 A	30 µs

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

Type	THD	3	5	7
EM powerLED BASIC FX 103 C 50W 50V	6.5 %	4.5 %	2 %	1 %
EM powerLED BASIC FX 104 C 50W 50V	6.5 %	4.5 %	2 %	1 %

5.3 Insulation matrix

	Mains	Switched Live	C/F	L link	Battery, LED, Test switch, Indicator LED	I-Select 2
Mains	–	•	•	•	••	•
Switched Live	•	–	•	•	••	•
C/F	•	•	–	•	••	•
L link	•	•	•	–	••	•
Battery, LED, Test switch, Indicator LED	••	••	••	••	–	••
I-Select 2	•	•	•	•	••	–

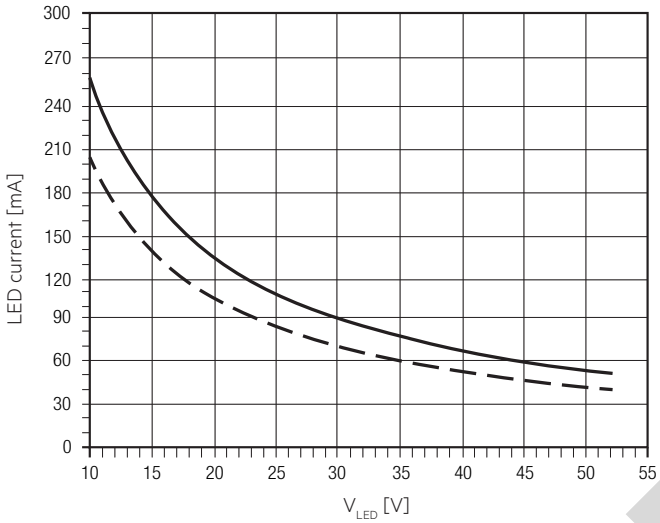
• Represents basic insulation

• • Represents double or reinforced insulation

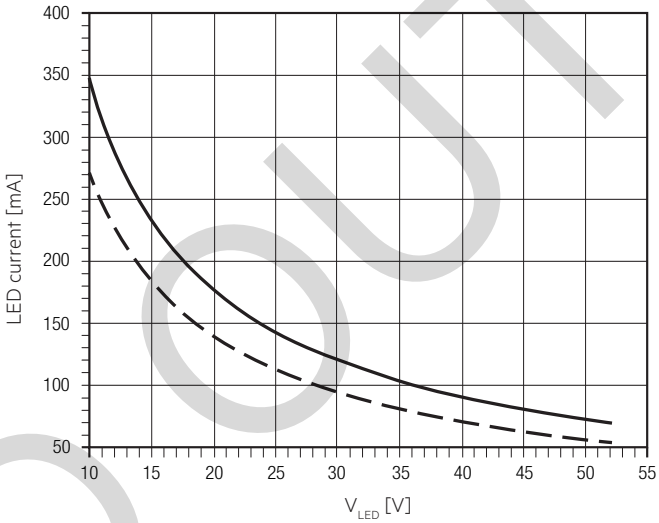
5.4 Typ. LED current/voltage characteristics

The LED current in emergency mode is automatically adjusted by the EM powerLED module based on the total forward voltage of the LED modules connected and the associated battery.

EM powerLED BASIC FX 103 C 50W 50V – 3 cells
Article number: 89800429
3.6 V battery voltage,
750 – 960 mA battery discharge current



EM powerLED BASIC FX 104 C 50W 50V – 4 cells
Article number: 89800411
4.8 V battery voltage,
750 – 960 mA battery discharge current



LED current at nominal battery voltage and min. battery discharge current

LED current at nominal battery voltage and max. battery discharge current

LED peak current at start in emergency mode – 3 cells

Voltage	Inrush current	Duration
46.0 V	209 mA	7.35 ms
43.5 V	218 mA	7.85 ms
41.0 V	229 mA	8.10 ms
38.5 V	241 mA	8.25 ms
36.0 V	255 mA	8.35 ms
33.5 V	270 mA	8.55 ms
31.0 V	288 mA	8.85 ms
28.5 V	307 mA	9.10 ms
26.0 V	330 mA	9.40 ms
23.0 V	354 mA	9.80 ms
20.5 V	383 mA	10.45 ms
18.0 V	417 mA	11.40 ms
15.5 V	455 mA	11.95 ms
13.0 V	500 mA	15.10 ms

LED peak current at start in emergency mode – 4 cells

Voltage	Inrush current	Duration
46.5 V	252 mA	8.65 ms
44.0 V	259 mA	9.30 ms
41.5 V	268 mA	8.10 ms
39.0 V	288 mA	8.45 ms
36.5 V	300 mA	9.45 ms
34.0 V	323 mA	9.60 ms
31.5 V	340 mA	9.95 ms
29.0 V	364 mA	10.85 ms
26.0 V	388 mA	11.60 ms
23.5 V	414 mA	12.40 ms
21.0 V	446 mA	13.35 ms
18.5 V	479 mA	15.20 ms
16.0 V	520 mA	16.90 ms
13.5 V	564 mA	18.95 ms

Note: LED peak current is measured at the max. battery discharge current.

5.5 Output current setting

Output current can be set by connecting a resistor between the 2 "I set" terminals. Relationship between output current and resistor value can be found at the table "Specific technical data". Resistor values specified from standardised resistor value ranges.
Resistor value tolerance has to be ≤ 1 %.
Resistor power has to be ≥ 0.1 W.
Resistor detection at each start.
Change of the resistor value during the operation will be not considered.
Resistors for the main output current values can be ordered from Tridonic (see accessories).

6. Functions

6.1 Short-circuit behaviour

In case of a short circuit the unit switches to shut down mode. After elimination of the short circuit a mains reset (SL off/on) is necessary.

6.2 No-load operation or load loss during operation

LED Driver will detect a load loss during operation. In this case and no-load operation the max. output voltage can apply at the LED output for max. 5 s before LED Driver shuts down. Mains reset is required to restart the LED Driver.

6.3 Overload protection

LED Driver will switch off at overload operation. Mains reset is required to restart the LED Driver.

6.4 Underload operation

LED Driver will switch off at underload operation. Mains reset is required to restart the LED Driver.

6.5 Forward voltage out of range

If the forward voltage is out of range the unit switches to shut down mode. After elimination of the short circuit a mains reset (SL off/on) is necessary.

6.6 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 and I-SELECT PLUG must be set before battery and mains connection.

7. Battery data

7.1 Battery selection

EM powerLED BASIC FX C 50 W 50 V, 1 / 3 h

				Type	EM powerLED BASIC FX 103 C 50W 50V		EM powerLED BASIC FX 104 C 50W 50V	
				Article no.	89800429		89800411	
				Cells	3 cells		4 cells	
				Duration	1 h	3 h	1 h	3 h
Technology and capacity	Design	Number of cells	**Type**	**Article no.**	Assignable batteries			
NiCd 4 Ah D cells	stick	1 x 3	**Accu-NiCd 3A 55**	**28002773**		•		
	stick	1 x 4	**Accu-NiCd 4A 55**	**89800089**				•
	stick + stick	2 + 2	**Accu-NiCd 4C 55**	**28002775**				•
	side by side	3 x 1	**Accu-NiCd 3B 55**	**89800384**		•		
	side by side	4 x 1	**Accu-NiCd 4B 55**	**89800385**				•
NiMH 2.2 Ah Cs cells	stick	1 x 3	**Accu-NiMH 3A**	**28002088**	•			
	stick	1 x 4	**Accu-NiMH 4A**	**28002089**			•	
NiMH 4 Ah LA cells	stick	1 x 3	**Accu-NiMH 4Ah 3A CON**	**89800441**		•		
	stick	1 x 4	**Accu-NiMH 4Ah 4A CON**	**89800442**				•
	stick + stick	2 + 2	**Accu-NiMH 4Ah 4C CON**	**89800438**				•
NiCd 1.8 Ah Cs cells	remote box	1 x 3	**Pack-NiCd 3C CON**	**28001221**	•			
	remote box	1 x 4	**Pack-NiCd 4C CON**	**28001222**			•	
NiCd 4.5 Ah D cells	remote box	1 x 3	**Pack-NiCd 3D CON**	**89800389**		•		
	remote box	1 x 4	**Pack-NiCd 4D CON**	**89800390**				•
NiMH 2.2 Ah Cs cells	remote box	1 x 3	**Pack-NiMH 2.2Ah 3 CON**	**28001898**	•			
	remote box	1 x 4	**Pack-NiMH 2.2Ah 4 CON**	**28001899**			•	
NiMH 4 Ah LAL cells	remote box	1 x 3	**Pack-NiMH 4Ah 3 CON**	**28001896**		•		
	remote box	1 x 4	**Pack-NiMH 4Ah 4 CON**	**28001897**				•

7.2 Accu-NiCd

4.2 / 4.5 Ah

Battery voltage/cell	1.2 V
Cell type	D
Case temperature range to ensure 4 years design life	+5 °C to +55 °C
Max. short term temperature (reduced lifetime)	70 °C
Max. number discharge cycles	12 cycles per year plus 4 cycles during comissioning
Max. storage time	6 months

7.3 Accu-NiMh

2.2 Ah

Battery voltage/cell	1.2 V
Cell type	Cs
Case temperature range to ensure 4 years design life	+5 °C to +50 °C
Max. short term temperature (reduced lifetime)	70 °C
Max. number discharge cycles	4 cycles per year plus 30 cycles during comissioning
Max. storage time	12 months

4.0 Ah

Battery voltage/cell	1.2 V
Cell type	LA
Case temperature range to ensure 4 years design life	+5 °C to +45 °C
Max. short term temperature (reduced lifetime)	70 °C
Max. number discharge cycles	4 cycles per year plus 30 cycles during comissioning
Max. storage time	12 months

7.4 Accupack-NiCd

1.8 Ah

Battery voltage/cell	1.2 V
Cell type	Cs
Ambient temperature range to ensure 4 years design life	+5 °C to +40 °C
tc point	+45 °C
Max. short term temperature (reduced lifetime)	70 °C
Max. number discharge cycles	4 cycles per year plus 4 cycles during comissioning
Max. storage time	6 months

4.5 Ah

Battery voltage/cell	1.2 V
Cell type	D
Ambient temperature range to ensure 4 years design life	+5 °C to +40 °C
tc point	+45 °C
Max. short term temperature (reduced lifetime)	70 °C
Max. number discharge cycles	4 cycles per year plus 4 cycles during comissioning
Max. storage time	6 months

7.5 Accupack-NiMH

2.2 Ah

Battery voltage/cell	1.2 V
Cell type	Cs
Ambient temperature range to ensure 4 years design life	+5 °C to +35 °C
tc point	+40 °C
Max. short term temperature (reduced lifetime)	70 °C
Max. number discharge cycles	4 cycles per year plus 4 cycles during comissioning
Max. storage time	12 months

4.0 Ah

Battery voltage/cell	1.2 V
Cell type	LAL
Ambient temperature range to ensure 4 years design life	+5 °C to +35 °C
tc point	+40 °C
Max. short term temperature (reduced lifetime)	70 °C
Max. number discharge cycles	4 cycles per year plus 4 cycles during comissioning
Max. storage time	12 months

7.6 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 further information refer to corresponding battery datasheet.

7.7 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

All LED Drivers are tested with 50,000 switching cycles.
The actually achieved number of switching cycles is significantly higher.

8.2 Additional information

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

Guarantee conditions at www.tridonic.com → Services

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