

EMERGENCY LIGHTING DEVICES FOR LED APPLICATIONS



ELECTRONIC EMERGENCY LIGHTING DEVICES WITH IRON PHOSPHATE BATTERIES

For nominal operating periods of 3 hours

Emergency lighting systems spring to life any time normal mains lighting systems fail. Emergency lighting is designed to ensure that staff can safely leave any rooms and that there is sufficient lighting to illuminate rescue paths/routes as well as to avoid panic situations.

VS emergency lighting devices are designed for use with LED applications and can be operated as part of a combined system with electronic LED drivers.



Emergency Complete

With or without self-diagnosis function and integrated battery

Product features

- Designed for operation of LED luminaires for safety lighting for rescue routes and extremely hazardous workplaces
- For emergency lighting for 3 hrs. operating time
- Suitable for emergency lighting acc. to VDE 0108 or EN 50172
- With self-diagnosis function acc. to EN 62034 (Self test switchable via Dip switch)
- Ambient temperature: 5 to 50 °C
- Iron phosphate (LiFePO₄) rechargeable battery is built-in into the casing
- Charging time of rechargeable battery: up to 24 hrs. depending on the capacity

Electrical features

- Mains voltage: 220–240 V ± 10%
- Mains frequency: 50–60 Hz
- Output voltage: 10–300 V
- Output power in emergency operation: 2.5 W

Safety features

- For luminaires of protection classes I and II
- Degree of protection: IP20
- Surge protection: 1 kV

Status LED

- The system status is displayed with a bi-color indicator LED

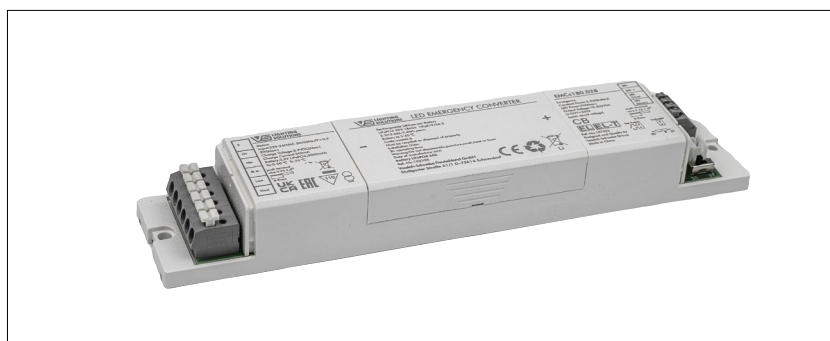
Packaging units

Ref. No.	Packaging unit		
	Pieces per box	Boxes per pallet	Weight g
187552	40	54	287

A version with pre-installed cord grip is available on request.

Product guarantee

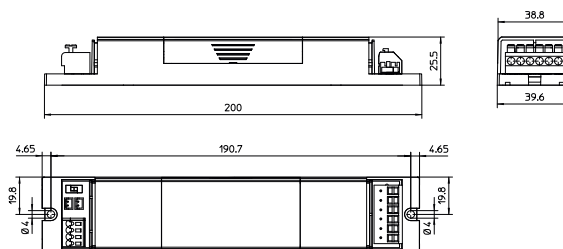
- 5 years on electronic parts
- The conditions for the Product Guarantee of the Vossloh-Schwabe Group shall apply as published on our homepage (www.vossloh-schwabe.com). We will be happy to send you these conditions upon request.



Dimensions

- Casing: K111
- Length: 200 mm
- Width: 39.6 mm
- Height: 25.5 mm

K111



Used standards

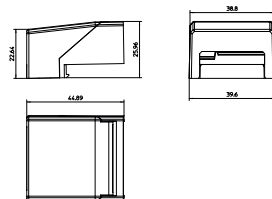
- EN 60598-2-22
- EN 61347-2-7
- EN 62034
- EN 62384
- EN 61547
- EN 55015
- EN 61000-3-2/-3-3

Cord grips K111

Available for independent operation

Contains two cord grips

Ref. No.: 187565



The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

LED Emergency Lighting Devices – Emergency Complete

Electrical characteristics

Type	Ref. No.	Battery	Nominal emergency operation period	Output power in emergency operation [W]	Min. lumen in emergency operation* [lm]	Output voltage
		Type	hrs.			V V max.

K111 – Dimensions (LxWxH): 200x39.6x25.5 mm

EMCc 180.028	187552	3,2 V/3 Ah	3	2.5	250	10–300 350
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* at 100 lm/W per LED unit

VS LIGHTING SOLUTIONS

Mains:
Input: 220-240VAC 50/60Hz, PF > 0.9
3W (Max.)
Charge Voltage: 3.7VDC (Max.)
Charge Current: 200mA
Battery: 3.2V LiFePO4, 3000mAh
Ta: -5-50 °C Tc: 70 °C

push terminal wire 0.75-2.5²
8-9mm

UK ENEC

VS LIGHTING SOLUTIONS LED EMERGENCY CONVERTER

Rechargeable Lithium-ion Battery
LiFePO4 21FR 18650 11FpR19/66-2
3.2V-3.0Ah 9.6Wh perm.
Battery to 5-60 °C
Code: XXXXXX**
Must be recycled or disposed of properly.
Installation Date:
3h operating time
Warning: Do not disassemble, puncture, crush, heat or burn
Date of manufacture: YYMM
Battery LiFePO4 3Ah
Ref.-No. 183208
Vossloh-Schwabe Deutschland GmbH
Stuttgarter Straße 61/1 D-73614 Schorndorf www.vossloh-schwabe.com

CE **RECYCLE** **Li**

EMCc180.028

Ref.-No. 187552
Emergency:
Output Power: 2.5W
Output Voltage: 10-300VDC
U-OUT=350V
(open circuit voltage)

CB EL-EL-T

Designed and Quality by
Vossloh-Schwabe Group
Made in China

push terminal wire 0.75-1.5²
8-9mm

Test Switch Indicator
BS ST

Status LED

LED indication	Status	Description
Permanent Green	Standby ,System OK	Mains Operation ,battery is charged
Fast flashing Green (0.25s on 0.25s off)	Function test in progress	Function test in progress
Slow flashing Green (1s on 1s off)	Duration test in progress	Duration test in progress
Permanent Red	Lamp failure	Open Circuit or Short circuit or LED failure
Fast flashing Red (0.25s on 0.25s off)	Battery capacity failure	Battery failed duration test
Slow flashing Red (1s on 1s off)	Battery fault	Incorrect battery voltage or Short circuit or Open Circuit
Green and Red off	Battery Operation	Emergency mode: Mains disconnected or Mains failure

Note:

Fault status:

If an error is detected, the indicator LED will switch to red. If the error has been corrected please re-connecting the battery after the mains power off, the indicator LED immediately will switch back to green when mains power on.

Battery failed duration test:

After an exchange of the battery and holding down the button (>10S) reset the timer, the indicator LED will switch to green.

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Installation must be carried out under observation of the relevant regulations and standards. Installation must be carried out in a voltage-free state (i.e. disconnection from the mains). The following advices must be observed; non-observance can result in the destruction of the LED emergency lighting devices, fire and/or other hazards.

- DIN VDE 0100
- EN 60598-1

- Mounting position: Outside of an LED luminaire; suitable for independent operation
- Fastening: Using two suitable screws
- Ambient temperature: max. 50 °C
- Length of the status LED lead: 500 mm

- Connection terminals prim. (E, Lin, Nin, Slin, Lout, Nout):
Push-in terminals for leads of 0.75-2.5 mm²
- Connection terminals sec. (LED Driver +/-, LED+/-):
Push-in terminals for leads of 0.75-1.5 mm²
- Stripped length: 8–9 mm
- Battery discharge current:
The deep discharge protection of all lithium ion batteries is lower than 10 µA. This makes deliveries with connected battery possible, as long as no logistics restrictions apply.
- Polarity:
Please ensure the correct polarity of the leads prior to commissioning. Reversed polarity can destroy the modules.
- Secondary load (LED):
The sum of forward voltages of LED loads has to be within the tolerances which are mentioned in the table "Electrical Characteristics" in this data sheet.
- Wiring:
During mains-powered operation, the current that flows into the LED luminaire is regulated by the LED driver.
During emergency lighting operation, the LED unit will be supplied by the battery.
The current that is supplied by the battery during emergency lighting operation is converted into "LED current" by the Complete emergency lighting unit.
- Insulation:
Double or reinforce insulation between supply and battery/ESS circuits and based on a working voltage of 250V;
Insulation between battery circuits/test circuits and LED circuits fulfills basic insulation and based on a working voltage of 350 V.
Insulation between supply and LED circuits fulfills double insulation with a voltage above ELV (350V).

The diagram illustrates the electrical connections for the EMCc 180.028 LED module and its driver. The central component is the EMCc 180.028 module, which has a terminal block on the left and a control interface on the right. The terminal block includes terminals for Earth (E), Permanent Line in (Lin), Neutral (Nin), Switched Line in (SL in), Switched Line out (Lout), and Neutral (Nout). The control interface includes terminals for LED+, LED-, LED Driver+, and LED Driver-, a test switch, an indicator LED, and a battery symbol (BS/ST). The LED module is connected to the LED+ and LED- terminals. The LED Driver+ and LED Driver- terminals are connected to the LED Driver+ and LED Driver- terminals of the LED Driver/Control gear. The LED Driver/Control gear is connected to the PE, N, and L terminals of the main power supply. The test switch and indicator LED are connected to the Lout and Nout terminals of the EMCc 180.028 module. The battery symbol (BS/ST) is connected to the Lout and Nout terminals of the EMCc 180.028 module.

- Test button function: A short press (>1s) on the button start a function test lasting 5 seconds (The battery's capacity should be more than 5%=charging 30mins. Holding down the button(>10s) resets the timer(System-reset)
- Function test: The 5 second long, each 7 days function test serves to check the functionality of the emergency unit, the batteries and LED module.

Notice: If a mains supply failure occurs while a function test is in progress, the test will be postponed and the system will enter emergency operation. Following restoration of the mains supply, a postponed functional test will re-commence automatically as soon as conditions permit.

- **Duration test:**
First test: After 24 hours of AC mains power input, the emergency lighting unit will enter into a 3-hour duration test.
Half year duration test: Conduct 3-hour duration test every 180-182 days to check the battery capacity. If the duration test is successful, the indicator LED will flash green slowly within 5 days.
- **Self-test:**
Self-testing function in acc. with EN 62034 included.
Every 7 days an automatic self-test will be carried out. During this time, the LED unit will be supplied by the battery for 5 seconds via the emergency device.
This ensures the LED unit and the correct functioning of the emergency lighting can be checked.



Notice:

The indicator light will turn off under the following conditions:

1. When the power is off, the light enters the emergency mode
2. Normal Function: When the power is on, the battery is disconnected
3. After the power is connected, disconnect the power and reconnect the battery

(Note: in this case, please reset the AC power supply)

Requirements for LED Control gear:

the maximum output voltage shall not exceed 350V, and the maximum current shall not exceed 1A.

When the SLin is connected, the LED is in the maintenance state.

When the SLin is disconnected, the LED is in the no maintenance state.

Function switching:

Step 1: According to the diagram, switch the BS/ST function by the dip switch.

Step 2: Turn to the left and switch the function to standard version (BS).

Step 3: Turn to the right and switch the function to self-test version (ST).

Please note that functions switching by dip switch would only be available when all the wiring is disconnected, including the AC input, DC output and the battery

Accessory

Status indication

bi-colour LED:	Two-colour status display LED Green:system OK,Red:fault Plug connection Opening size:6 x 6 mm Line length 50 cm
Test switch:	For connection to the emergency lighting unit For checking the device function Plug connection Dielectric strength:500V AC for 60 seconds Opening size: 7.5 x 7.5 mm Line length 50 cm

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Batterys for Emergency Complete

LiFePO4 rechargeable batteries

Charging time of rechargeable batteries:
up to 24 hrs. depending on the capacity

This battery is a replacement.

A battery is included when you order the
187552 emergency kit.



Emergency Power W	Ref.No.	Rechargeable Lithium-ion Battery	Battery full charge time h	Charge current mA $\pm 10\%$	Battery discharge voltage Min-Typ-Max V	Battery discharge current Min-Typ-Max mA	Battery output power Min-Typ-Max W	Emergency duration h
2,5	183208	LiFePO4 2IFR 18650	16	200	2.5 - 3.2 - 3.6	650 - 740 - 840	1.9 - 2.4 - 2.7	3

Battery data

Capacity	3.0 Ah
International designation	IFpR 18/65
Battery voltage/cell	3.2V
Cell type	18650
Case temperature range to ensure	
4 years design life	+5°C to +55°C
5 years design life	+5°C to +45°C
6 years design life	+5°C to +35°C
Max. short term battery case temperature (shorter than 1 month over the battery lifetime)	70°C
Max. number discharge cycles	50 cycles total
Max. storage time	12 months

Automatically charge when the voltage of a single battery drops below 3.4V.
When the voltage of a single battery exceeds 3.6 V, the charger turns off (0mA).
If the battery temperature is above 60 ± 2 or below 0 ± 2 , the battery will stop charging.
The emergency lighting LED driver will recharge the battery normally after running the test of 61347-2-7 CL22.3 (abnormal operating conditions).
When the voltage of a single battery is below min 2.0 V, the battery will not enter an emergency state.
The minimum charging environment temperature of the battery is 5°C, to ensure that the battery can be charged

Storage condition

Batteries should be stored within the specified temperature range in low humidity conditions.
Optimal storage conditions are
- Temperature: -20°C to +40°C
- Humidity: 45% - 85%
Avoid atmosphere with corrosive gas
It is recommended to disconnect the battery before storage or delivery
Battery should be charged every three months in order to keep its initial performance.

Product guarantee

- 5 years on Battery
- The conditions for the Product Guarantee of the Vossloh-Schwabe Group shall apply as published on our homepage (www.vossloh-schwabe.com).
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