

# EMERGENCY LIGHTING

## ELCEM300/L IOT(BM)



### Features

- Self-contained emergency lighting LED driver with Bluetooth communication module and automatic test function.
- The emergency converter ELCEM300/L-IOT can be integrated into the Silvair ecosystem for use and supporting EnOcean switches.
- Communication type: BM
- Constant power output emergency power supply
- For LED module with a forward voltage of 10-54Vdc/10-300Vdc
- The product can be installed internally or externally
- Changeable built-in battery structure
- Compatible with all dimmable and non-dimmable constant current LED driver
- Automatic shutdown of output if LED load is out of range
- Constant power output, output current self-adjustable
- 5 years guarantee for electronic part

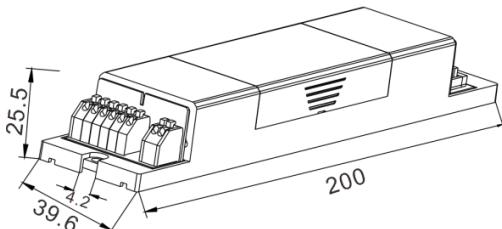
### Functions

- Bluetooth/Silvair Function
- Maintained/Non-maintained operation
- Electronic charge system
- Deep discharge protection
- Short-circuit-proof battery connection
- Open-circuit-proof
- Polarity reversal protection for battery



### Dimensions

Built-in product size



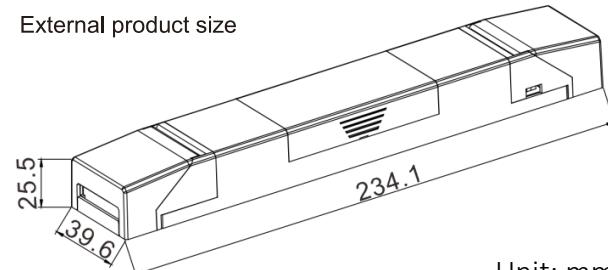
#### Notice:

Built-in product size

1. Product installation aperture size:  $4.2 \pm 0.2\text{mm}$

2. Recommended screw model size: M4

External product size



Unit: mm

	Item Code	Carton size	QTY	Weight per pc.	Battery
Built-in product size	300/L-1.2W-3H	380*250*170	40PCS	173g	18650 1cell
	300/L-2.5W-1H				
	300/L-2.5W-3H	380*250*170	40PCS	211g	18650 2cells
	300/L-3.5W-2H				
	300/L-5W-1H				
External product size	300/L-1.2W-3H	425*276*180	36PCS	193g	18650 1cell
	300/L-2.5W-1H				
	300/L-2.5W-3H	425*276*180	36PCS	231g	18650 2cells
	300/L-3.5W-2H				
	300/L-5W-1H				

## EMERGENCY LIGHTING

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#### Technical Data

Rated supply voltage	220-240VAC
AC voltage range	144-187VAC
Mains frequency	50/60Hz
Power factor	≥0.55
Starting time	1s
Output overvoltage protection	57/340V
U-OUT(including open-/short-circuit and double load)	60/350V
Ambient temperature ta	5-50°C
Max. Casing temperature tc	70°C
IP rating	IP20
In-rush current	1.5A
In-rush current duration	4ms
Mains surge capability (between L – N)	1KV
Maximum withstand voltage	2KV+4U
Withstand time	60s
Frequency	2.360Ghz to 2.500Ghz
TX Power	+8dBm
Maximum current	31mA TX only @ +8dBm
RX Sensitivity	-103 dBm@BLE 125kbps, -95 dBm@BLE 1M

Item Code	Typical output emergency power	Mains input current, min	Mains input current, max	Input power in mains operation, min	Input power in mains operation, max
ELCEM300-IOT ELCEM300L-IOT	1.2W	4.5mA	20mA	0.5W	3W
	2.5W				
	3.5W				
	5W				

Item Code	LED module forward voltage range Min-Max	LED module forward current range Min-Max	LED module forward power range Min-Typ-Max
ELCEM300-IOT-1.2W	10-300Vdc	2-100mA	0.6-0.8-1W
ELCEM300L-IOT-1.2W	10-54Vdc	11-100mA	
ELCEM300-IOT-2.5W	10-300Vdc	3-170mA	1.5-1.7-2W
ELCEM300L-IOT-2.5W	10-54Vdc	25-170mA	
ELCEM300-IOT-3.5W	10-300Vdc	6-240mA	2-2.4-2.6W
ELCEM300L-IOT-3.5W	10-54Vdc	35-240mA	
ELCEM300-IOT-5W	10-300Vdc	9-330mA	2.8-3.5-3.8W
ELCEM300L-IOT-5W	10-54Vdc	50-330mA	2.8-3.4-3.8W

#### Note:

1.All specifications are typical at 25°C unless otherwise stated.

2.All specifications are typical on the 230VAC unless otherwise stated.

# EMERGENCY LIGHTING

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### Testing

Introduction:

Technology Partner

**SILVAIR**

Emergency lighting devices automatically provide enough light if the power is cut, allowing all occupants of a building to evacuate safely in the event of a fire or other emergency. The Silvair Emergency Lighting Testing feature is designed for self-testing emergency lighting devices with a backup battery. The Silvair Emergency Lighting Testing is not designed for use for emergency lighting solutions with a central battery system. Regular testing of emergency lighting is often mandatory by law and a condition of building insurance. The building owner may be required to carry out testing and keep the test results for a specified period of time.

#### ① Operation

The Silvair solution is based on emergency lighting testing (ELT) that is carried out automatically by each device according to a schedule defined by the user in the Silvair web app. Tests can also be started manually for a specific device using the Silvair mobile app for iOS/iPadOS.

The mobile app for iOS/iPadOS is used to collect the test results from all emergency devices in the project. The results are then sent to the cloud, can be viewed in the Silvair web app, and can be printed to a PDF file.

Two types of tests can be scheduled: functional and duration..

#### ② Type of tests

Type	Interval	Description
Functional	Every 1–52 weeks	<p>Short test. It checks the integrity of the circuit and the correct operation of the luminaire, switching device, and backup battery.</p> <p>Carried out at the same time for all zones.</p>
Duration	Every 4–52 weeks	<p>Long test. It checks if the backup battery provides power for the required period of emergency operation.</p> <p>A duration test should be carried out separately for at least two groups of zones so that luminaires in adjacent zones are not tested at the same time.</p> <p>You can create up to four groups of zones and configure the test to start in each group separately at intervals of one week.</p>

#### ③ Requirements

- For the Silvair Emergency Lighting Testing to work correctly, the following are necessary:
- The lighting project has been commissioned with the Silvair Commissioning tools.
- The project contains luminaires that support ELT.
- The project version is 202201 or later.
- All areas are within radio range and can communicate with each other.
- Silvair mobile app installed on an iOS/iPadOS mobile device.
- You or a collaborator with access to the project are on-site to collect the test results.

#### ④ Rest Mode / Inhibit Mode:

Emergency operation is automatically started when the mains supply is switched off.

If the Rest Mode is activated, the discharging of the battery will be minimized by switching off the LED output.

If the Inhibit Mode has been activated before the mains supply is switched off, Rest Mode will be automatically switched on if the mains supply is switched off within 15 minutes. REST Mode and Inhibit Mode can be initiated by the APP. The REST command has to be sent after the mains supply has been disconnected and whilst the ELCEM300/L is in emergency operation. The inhibit command has to be sent while the ELCEM300/L is supplied by mains. After a mains reset the ELCEM300/L exits the Rest Mode.

# EMERGENCY LIGHTING

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### Testing

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 underway	Function test underway
Slow flashing Green ( 1s on 1s off)	Duration test underway	Duration test underway
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
Slow flashing Red ( 1s on 3s off)	Battery temperature error	When power on and battery temperature is above 60(±2)°C or below 0(+2) °C
Green flashing (30ms on,270ms off)	Unallocated network	Bluetooth module not assigned to mesh network
Green flashing (125ms on,125ms off, 125ms on,125ms off, 1000ms on,1000ms off)	Inhibit mode	In inhibit mode
Green flashing (500ms on,500ms off)	Identify mode	In identify mode, instructions for searching devices on the APP
Green flashing (400ms on,100ms off)	Resetting in progress	Resetting in progress

#### Notice

##### 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

#### Notice

##### 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.

# EMERGENCY LIGHTING

## ELCEM300/L IOT(BM)

### Mode Switching

ELCEM300/L-IOT can be used as both a self-test product and a Bluetooth communication product.

In self-test mode, it is an independent self-test product that can carry out initial, weekly, and annual tests without a Bluetooth module.

In Bluetooth communication mode, a Bluetooth module is required for carrying out initial, weekly, and annual tests.

After the initial power-on or reset of the timer, within 24 hours, if the Bluetooth module is not connected, the product will work in self-test mode; if the Bluetooth module is connected, it will work in Bluetooth communication mode. At the exactly 24th hour, the working mode will be locked.

Within 24 hours, if the Bluetooth module is not connected, the product will be locked at the 24th hour in self-test mode and only work as self-test product, even though the module is connected after, and it will only carry out the tests and report results according to self-test program.

Within 24 hours, if the Bluetooth module is connected, the product will be locked at the 24th hour in Bluetooth mode and only work as Bluetooth communication product, even though the module is disconnected after, and it will only carry out the tests and report results according to Bluetooth system setting. After the working mode is locked, the product can be reset by holding the test button for 10 seconds or powering on and off 3 times within 20s. At the 24th hour after reset, the operating mode will be locked again.

If the product is completely powered off (without AC or battery connected) within 24 hours after its initial power-on or reset, the 24-hour timer will be cleared when it is powered on again.

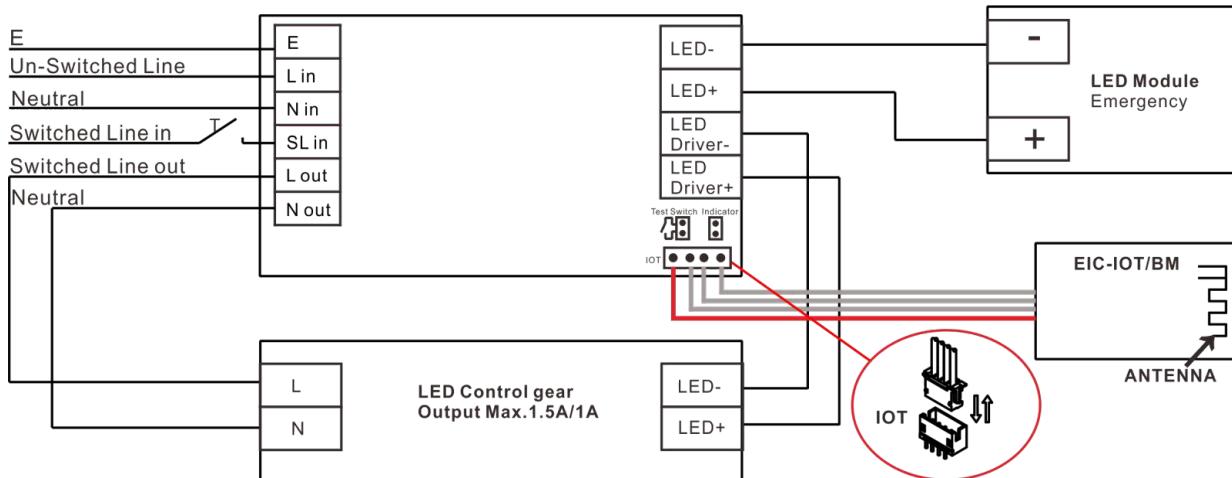
Timeline	Bluetooth module existence status	Product running status	
First power on/ start after reset	-	-	If running in self-test mode, please refer to the specification sheet of the self-test product for relevant operational details.
T<24H	exist	Bluetooth communication mode	
	not exist	Self-test mode	
T==24H	exist	Bluetooth communication mode (Not execute first-inspection)	
	not exist	Self-test mode (Execute first-inspection)	
T>24H	exist	According to the status at T==24	
	not exist		

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#### Wiring Diagram

U-OUT of the LED drive is 60V(ELCEM300L)/350V(ELCEM300).



#### Notice:

The indicator light will turn off under the following conditions:

1. When the power is off, the light enters the emergency mode

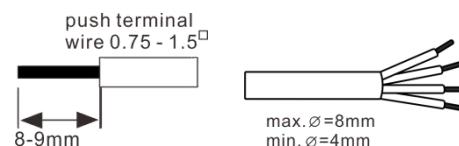
Requirements for LED Control gear:

1. If used together with ELCEM300L series, the LED driver U-OUT the shall not exceed 60V, and fulfill double/reinforced insulation between supply an output circuits, and the maximum current shall not exceed 1.5A.
2. If used together with ELCEM300 series, the LED driver U-OUT the shall not exceed 350V, and the maximum current shall not exceed 1A.
3. 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.

Requirements for wiring wires:

1. Wire diameter range: E, Lin, Nin, SLin, L out, N out, DA, LED-, LED+, LED Driver-, LED Driver+ cables 0.75-1.5 square millimeters,
2. Crimping buckle can be fastened, wire diameter range: maximum 8mm, minimum 4mm.



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#### Battery Data

Emergency power	Batteries	Emergency Duration	Battery discharge current Min-Max	Battery output power Min-Typ-Max	Battery fully charged time	Charge Current	Battery discharge voltage			
1.2W	18650/3.2V/1500mAhLiFePO4	3h	300-350-420mA	0.9-1.1-1.3W	16h	200mA±10%	2.5-3.2-3.6V			
2.5W	18650/3.2V/1500mAhLiFePO4	1h	650-740-840mA	1.9-2.4-2.7W						
	18650/3.2V/3000mAhLiFePO4	3h								
3.5W	18650/3.2V/3000mAhLiFePO4	2h	950-1050-1200mA	2.9-3.4-3.9W						
5W	18650/3.2V/3000mAhLiFePO4	1h	1400-1550-1800mA	4.2-4.9-5.5W						

#### Note:

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°C) or below 0 (+2°C) , 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

Capacity	1.5/3.0 Ah
International designation	IFpR 18/65
Battery voltage/cell	3.2V
Cell type	18650
Case temperature range to ensure	
4 years design life	+5°Cto+55°C
5 years design life	+5°Cto+45°C
6 years design life	+5°Cto+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	6 months

#### Notice: 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 it's initial performance.

#### Standard

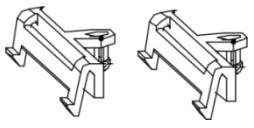
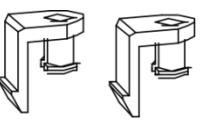
This product meets the following standards:

- EN IEC61347-2-7
- EN 61000-3-2
- EN 61547
- EN IEC61347-2-13
- EN IEC61347-1
- EN 61000-3-3
- EN 55015
- ROHS 2.0

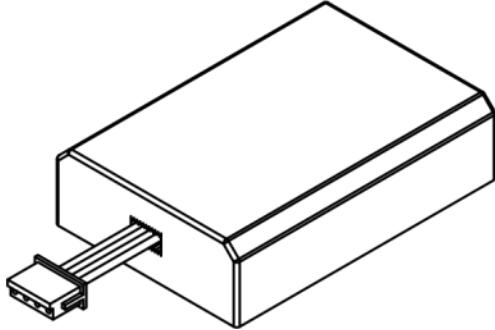
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### Battery Data

Item Code	External left and right end caps	Built-in left and right end caps	Double claw buckle	Single claw buckle
Accessories' Images				

**Notice:** After using this accessory, the built-in products can be converted to external products

Item Code	AC quick plug in connector	
Accessories' Images		<ul style="list-style-type: none"> <li>·Wireless intelligence controller</li> <li>·Module size:43mm*30mm*11mm</li> <li>·Line length:210mm</li> <li>·Master chip:nrf52840</li> <li>·4P connector</li> <li>·Voltage: 3.3V</li> <li>·Frequency: 2.360Ghz to 2.500Ghz</li> <li>·TX Power: +8dBm</li> <li>·Maximum current: 31mA(TX only) @ +8dBm</li> <li>·RX Sensitivity:-103 dBm@BLE 125kbps,-95 dBm@BLE 1M</li> </ul>



#### Status indication bi-colour LED

Two-colour status display LED  
Green:system OK,Red:fault  
Plug connection  
Opening size:6\*6mm  
Line length:12cm/23cm/50cm/1m/2m



#### 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\*7.5mm  
Line length:12cm/23cm/50cm/1m/2m



#### Test switch

For connection to the emergency lighting unit  
For checking the device function  
Plug connection  
Dielectric strength:1KV AC for 60 seconds  
Opening size:7.5\*7.5mm  
Line length:12cm/23cm/50cm/1m/2m

## EMERGENCY LIGHTING

### ELCEM300/L IOT(BM)



#### 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:12\*12mm  
 Line length:12cm/23cm/50cm/1m/2m



#### Integrated waterproof button indicator light

For connection to the emergency lighting unit  
 For checking the device function  
 Plug connection  
 Dielectric strength:1000V AC for 60 seconds  
 Two-colour status display LED  
 Green:system OK,Red:fault  
 Opening size:12\*12mm  
 Line length:12cm/23cm/50cm/1m/2m



#### White indicator base

For fixation status indication bi-colour LED  
 Opening size:19\*19mm

#### Battery extension cable

Cable length:  
 60mm/150mm/200mm/350mm  
 3-pole plug connection

## Service Life

Average life-time 50,000 hours under rated conditions with a failure rate of less than 10% for the emergency converter as rated power. Average failure rate of 0.2% per 1000 operating hours.

## Important

The electric source for safety service is not a user serviceable item and shall only be replaced by the manufacturer service agent or a similar qualified person.

The company accept no responsibility for incorrect installation, incorrect operation or improper maintenance.

After installation of the fitting, the battery must be charged for 16 hours for duration test.

The controlgear is not intended for use in luminaires for high-risk task area lighting.

The recharging device will recharge the battery ESSS normally after removal the short circuit link and reconnecting the ESSS.

Double or reinforce insulation between supply and battery/ESS circuits and based on a working voltage of 250V,Meanwhile, insulation between battery circuits/test circuits and LED circuits fulfills basic insulation and based on a working voltage of 350 V; Furthermore, insulation between supply and LED circuits fulfills double insulation with a voltage above ELV (350V).Additional,Insulation between battery circuits / indicator circuits / MT (ATS) circuits and normal supply fulfills reinforced insulation. If a LED driver is used with these control gears,The LED driver shall be in compliance with IEC/EN 61347-2-13 and shall provide double or reinforce insulation between input circuits and output circuits.

For built-in convertors: rely upon the luminaire enclosure for protection against electric shock .

Test switch and indicator can only be used internally.