

## Product features

- Communication type: BM (Bluetooth mesh)
- Complete set with integrated electronics, LED module, housing, battery and a EIC-IOT/BM module.
- The LED emergency module EEC80L/H -IOT(BM) can be integrated into the Silvoir ecosystem for use and supporting EnOcean switches.
- For LED module with a forward voltage of 10-54/50-250Vdc
- EEC80L is SELV output voltage
- Plug-in Lithium Iron Phosphate battery
- Constant power output, output current self-adjustable
- Automatic shutdown of output if LED load is out of range
- 5 years guarantee electronic

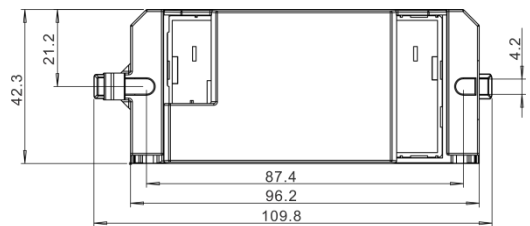
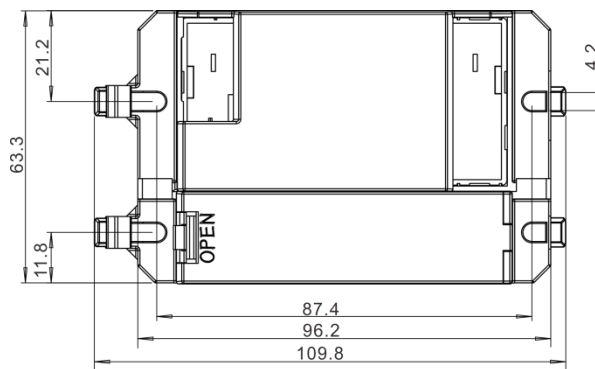
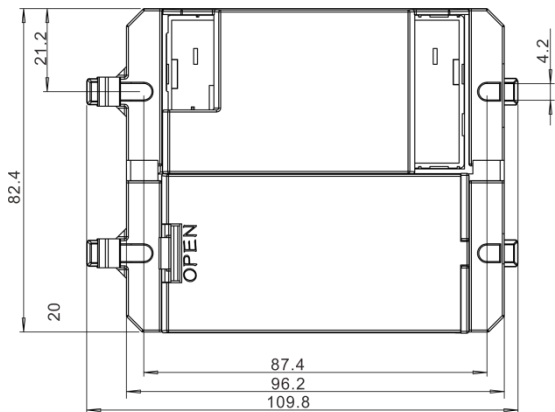


## Functions

- Maintained/Non-maintained operation
- Self-test function and Bluetooth/Silvoir Function
- Electronic charge system
- Deep discharge protection
- Short-circuit-proof battery connection
- Open-circuit-proof
- Polarity reversal protection for battery

## Mechanical Outline

unit:mm



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| Item Code                                                                        | Carton size | QTY   | Weight per pc. | Battery       |
|----------------------------------------------------------------------------------|-------------|-------|----------------|---------------|
| EEC80L/H-1.2/2.5/3W-1H<br>EEC80L/H--1.5W-3H<br>Single battery compartment series | 380*250*170 | 42PCS | 120g           | 18650 1 cell  |
| EEC80L/H-2.5W-3H<br>Side-by-side battery compartment series                      | 380*250*170 | 42PCS | 168g           | 18650 2 cells |
| EEC80L/H-2.5W-3H<br>No battery compartment series                                | 380*250*170 | 42PCS | 155g           | 18650 2 cells |

### Technical Data

|                                                            |                                      |
|------------------------------------------------------------|--------------------------------------|
| Rated supply voltage                                       | 220-240VAC                           |
| AC voltage range                                           | 144-187VAC                           |
| Mains frequency                                            | 50/60Hz                              |
| Power factor                                               | ≥0.5                                 |
| Starting time                                              | 1s                                   |
| Output overvoltage protection                              | 57/270V                              |
| U-OUT(including open-/short-circuit and double load) U-OUT | 60/350V                              |
| Ambient temperature ta                                     | 5-55℃                                |
| Max. Casing temperature tc                                 | 75℃                                  |
| IP rating                                                  | IP20                                 |
| In-rush current                                            | 3A                                   |
| In-rush current duration                                   | 3.5ms                                |
| 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 |

### Specific technical data

| 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 |
|--------------|--------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| EEC80L/H-IOT | 1.2W                           | 3mA                      | 30mA                     | 0.5W                                | 3.5W                                |
|              | 1.5W                           |                          |                          |                                     |                                     |
|              | 2.5W                           |                          |                          |                                     |                                     |
|              | 3W                             |                          |                          |                                     |                                     |

| Item Code       | LED module forward current range Min-Max | LED module forward power range Min-Max | LED module forward voltage range Min-Typ-Max |
|-----------------|------------------------------------------|----------------------------------------|----------------------------------------------|
| EEC80L-IOT-1.2W | 11-90mA                                  | 0.6-0.9W                               | 10-54V                                       |
| EEC80L-IOT-1.5W | 16-110mA                                 | 0.8-1.1W                               |                                              |
| EEC80L-IOT-2.5W | 25-170mA                                 | 1.4-1.8W                               |                                              |
| EEC80L-IOT-3W   | 36-200mA                                 | 1.6-2.2W                               |                                              |
| EEC80H-IOT-1.2W | 3-20mA                                   | 0.8-1W                                 | 50-250V                                      |
| EEC80H-IOT-1.5W | 4-26mA                                   | 1-1.2W                                 |                                              |
| EEC80H-IOT-2.5W | 5-38mA                                   | 1.7-1.9W                               |                                              |
| EEC80H-IOT-3W   | 8-50mA                                   | 2.2-2.4W                               |                                              |

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

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

## Testing

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Introduction:

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 Silvoir Emergency Lighting Testing feature is designed for self-testing emergency lighting devices with a backup battery.

The Silvoir 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.

### ①Operation

The Silvoir 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 Silvoir web app. Tests can also be started manually for a specific device using the Silvoir 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 Silvoir web app, and can be printed to a PDF file.

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

### ②Type of tests

| Type       | Interval         | Description                                                                                                                                                                                                                                                                                                                                                                                          |
|------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Functional | Every 1–52 weeks | Short test. It checks the integrity of the circuit and the correct operation of the luminaire, switching device, and backup battery.<br>Carried out at the same time for all zones.                                                                                                                                                                                                                  |
| Duration   | Every 4–52 weeks | Long test. It checks if the backup battery provides power for the required period of emergency operation.<br>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.<br>You can create up to four groups of zones and configure the test to start in each group separately at intervals of one week. |

### ③Requirements

- For the Silvoir Emergency Lighting Testing to work correctly, the following are necessary:
- The lighting project has been commissioned with the Silvoir 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.
- Silvoir 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.

### ④Rest 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 EEC80L/H is in emergency operation. The inhibit command has to be sent while the EEC80L/H is supplied by mains.

After a mains reset the EEC80L/H exits the Rest Mode.

**Indicator LED System status is locally by a bi-color indicator LED.**

| LED Indication                                                                 | Status                    | Description                                                                                                                                          |
|--------------------------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Permanent Green                                                                | Standby ,System OK        | Mains Operation ,battery is charged                                                                                                                  |
| Fast flashing Green<br>( 0.25s on 0.25s off )                                  | Function test underway    | Function test underway                                                                                                                               |
| Slow flashing Green<br>( 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<br>( 0.25s on 0.25s off )                                    | Battery capacity failure  | Battery failed duration test                                                                                                                         |
| Slow flashing Red<br>( 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<br>( 1s on 3s off )                                          | Battery temperature error | When power on and battery temperature is above $60(\pm 2)^{\circ}\text{C}$ or below $0(+2)^{\circ}\text{C}$                                          |
| Green flashing<br>(30ms on,270ms off)                                          | Unallocated network       | Bluetooth module not assigned to mesh network                                                                                                        |
| Green flashing<br>(125ms on,125ms off,125ms on,125ms off,1000ms on,1000ms off) | Inhibit mode              | In inhibit mode(mode in which the control gear is powered from the mains but prevented from going into emergency mode in the event of mains failure) |
| Green flashing<br>(500ms on,500ms off)                                         | Identify mode             | In identify mode, instructions for searching devices on the APP                                                                                      |
| Green flashing<br>(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.

## Mode switching

EEC80L/H-IOT(BM) 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.

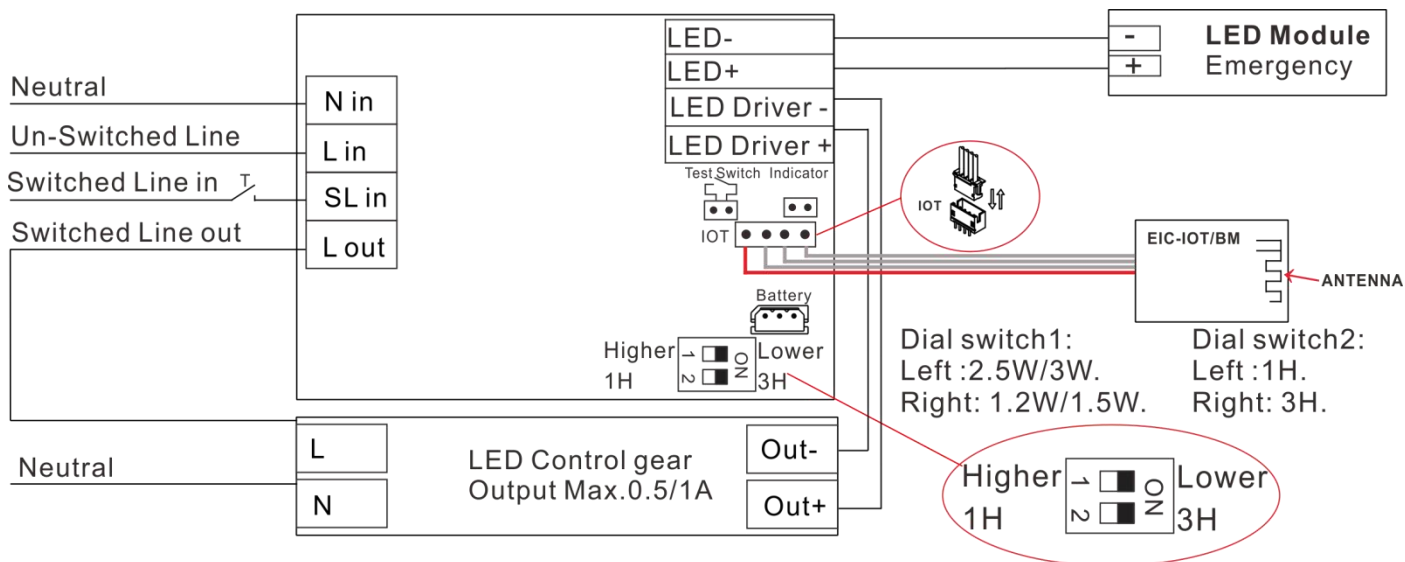
After the working mode is locked, the product can be reset by holding the test button for 10 seconds or powering on and off 3 times within 20s. At the 24th hour after reset, the operating mode will be locked again.

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/<br>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<br>(Not execute first-inspection) |                                                                                                                                  |
|                                      | not exist                         | Self-test mode<br>(Execute first-inspection)                   |                                                                                                                                  |
| T>24H                                | exist                             | According to the status at T==24                               |                                                                                                                                  |
|                                      | not exist                         |                                                                |                                                                                                                                  |

## Wiring Diagram

U-OUT of the LED drive is 60V(EEC80L)/350V(EEC80H)



Notice:

With the following cases, the indicator will be off:

1. Mains power off, the light goes into emergency mode.
2. Battery is disconnect when mains power on.

### Requirements for LED Control gear:

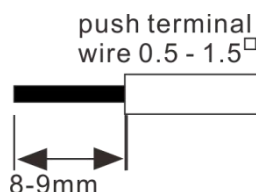
- 1.If used together with EEC80L series , the LED drive U-OUT the shall not exceed 60V, and fulfil double/reinforced insulation between supply an output circuits,and the maximum current shall not exceed 1A.
- 2.If used together with EEC80H series , the LED drive U-OUT the shall not exceed 350V, and the maximum current shall not exceed 0.5A.

Note:

1. Please noted that functions switching by dial switch would only be available when all the wiring is disconnected, including the AC input, DC output and the battery.
2. Checking battery capacity before doing switch.
3. If the installation location of the module is covered with metal, it will affect the communication distance.

### Requirements for wiring wires:

- 1.Wire diameter range: 0.5-1.5 square millimeters;



**Battery data**
**Battery selection**

| Emergency power | Batteries                 | Emergency Duration | Battery discharge current<br>Min-Max | Battery output power<br>Min-Max | Battery discharge voltage<br>Min-Max | Charge Current | Battery fully charged time |
|-----------------|---------------------------|--------------------|--------------------------------------|---------------------------------|--------------------------------------|----------------|----------------------------|
| EEC80L-1.2W     | 18650/3.2V/1500mAhLiFePO4 | 3h                 | 300-400mA                            | 1.05-1.25W                      | 10-54V                               | 250-300mA      | 24h                        |
| EEC80L-1.5W     | 18650/3.2V/2000mAhLiFePO4 | 3h                 | 450-530mA                            | 1.35-1.65W                      |                                      |                |                            |
| EEC80L-2.5W     | 18650/3.2V/1500mAhLiFePO4 | 1h                 | 600-850mA                            | 2.2-2.65W                       |                                      |                |                            |
|                 | 18650/3.2V/3000mAhLiFePO4 | 3h                 |                                      |                                 |                                      |                |                            |
| EEC80L-3W       | 18650/3.2V/1500mAhLiFePO4 | 1h                 | 800-1100mA                           | 2.75-3.35W                      |                                      |                |                            |
| EEC80H-1.2W     | 18650/3.2V/1500mAhLiFePO4 | 3h                 | 300-400mA                            | 1.05-1.3W                       | 50-250V                              |                |                            |
| EEC80H-1.5W     | 18650/3.2V/2000mAhLiFePO4 | 3h                 | 450-530mA                            | 1.45-1.75W                      |                                      |                |                            |
| EEC80H-2.5W     | 18650/3.2V/1500mAhLiFePO4 | 1h                 | 600-850mA                            | 2.3-2.7W                        |                                      |                |                            |
|                 | 18650/3.2V/3000mAhLiFePO4 | 3h                 |                                      |                                 |                                      |                |                            |
| EEC80H-3W       | 18650/3.2V/1500mAhLiFePO4 | 1h                 | 800-1100mA                           | 2.75-3.2W                       |                                      |                |                            |

**Note:**

Automatically charge when the voltage of a single battery drops below 3.4V. When the voltage of a single battery exceeds 3.65V, the charger turns off (0mA).

If the battery temperature is above 60 (± 2 °C) or below 0 (± 2 °C), the battery will stop charging.

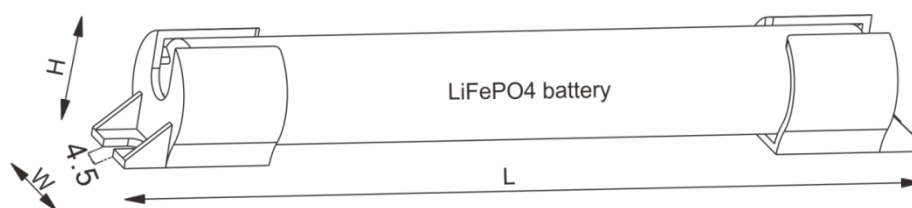
The emergency lighting LED driver will recharge the battery normally after running the test of 61347-2-7 CL22.3 (abnormal operating conditions).

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

**Battery Size**

unit:mm



| Item Code    | L   | W  | H  | Center hole distance |
|--------------|-----|----|----|----------------------|
| 18650 2cells | 158 | 22 | 21 | 145.5                |

## Battery data

### ● Battery selection

|                                                                                              |                 |
|----------------------------------------------------------------------------------------------|-----------------|
| Capacity                                                                                     | 1.5/2.0/3.0Ah   |
| 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<br>(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 its initial performance.

## Standard

This product meets the following standards:

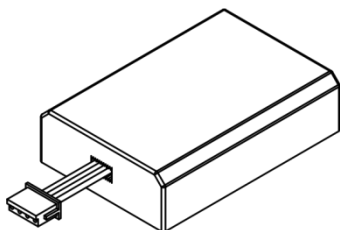
- EN IEC61347-2-7
- EN 61000-3-2
- EN 55015
- EN IEC61347-1
- EN IEC61347-2-13
- EN 61000-3-3
- EN 61547
- ROHS 2.0

## Mounting Accessories

### Item Code

### EIC-IOT bluetooth module

### Accessories' Images



- Wireless intelligence controller
- Module size: 43mm\*30mm\*11mm
- Line length: 210mm
- Master chip: nrf52840
- 4P connector
- Voltage: 3.3V
- 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

**Product accessory description: 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


**Product accessory description: 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


**Product accessory description: 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


**Product accessory description: 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


**Product accessory description: 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



**Product accessory description: White indicator base**

- For fixation status indication bi-colour LED


**Product accessory description: 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 unit use dangerous mains voltage, it should be installed by qualified electricians only according to European safety standard or relevant nation regulations.

The emergency converter can only be used with the LED lamps and only suitable for use in indoors. Protect the electronics converter against excessive heat.

Connect the LED lamps to the emergency converter with correct polarity according to the schematic drawing.

The maximum length of the output cable to the LED lamps should not exceed 3m according to the EMC standard.

Connect the unit to AC power only after the wiring been completed between emergency converter and LED lamps.

About such situations, no ability can be taken over for possible damage: the emergency converter is used for purposes other than originally intended; connected in the wrong way.

Battery should be charged every three months in order to keep it's initial performance.

The emergency function test must be performed when a battery is fully charged for 24 hours.

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 (S/C battery +/-) and reconnecting the ESSS.

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.

Insulation between battery circuits / indicator circuits / MT (ATS) circuits and normal supply fulfils reinforced insulation for all models.

Insulation between battery circuits / indicator circuits / MT (ATS) circuits and LED circuits fulfils reinforced insulation for "L" series.

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 reinforced insulation between input circuits and output circuits.

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

Test switch and indicator can only be used internally.

The controlgear relies upon the luminaire enclosure for protection against accidental contact with live parts.

The circuit is protected after a battery short circuit, after the battery is restored, the charging circuit can charge normally.

The emergency converter is not proof against supply voltage polarity reversal.

The controlgear is suitable for use only on battery supply not having a trickle or intermittent re-charging circuits.