EFFORT
EFFORT SEMICONDUCTOR LIGHTING LTD.

LED Emergency Bulkhead VALIANT-IOT(BM)

Product features

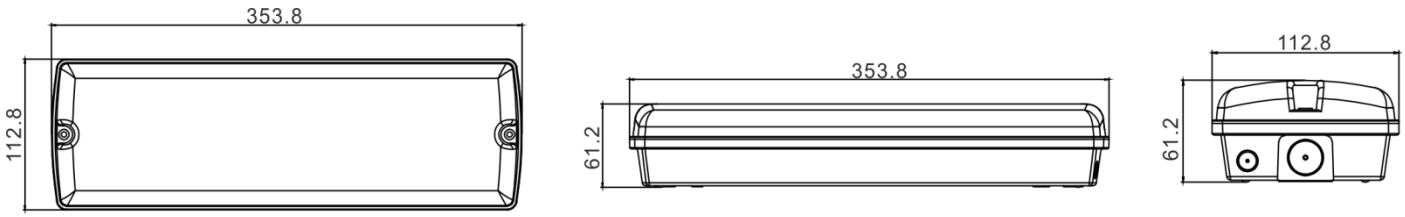
- Communication type： BM（Bluetooth mesh）
- LED emergency module suitable for direct installation in ceilings
- The LED emergency module VALIANT -IOT(BM) can be integrated into the Silvair ecosystem for use and supporting EnOcean switches.
- Complete set with integrated electronics, LED module, housing, battery and a EIC-IOT/BM module.
- Wall mounted/ Exit sign
- Polycarbonate white RAL 9016
- IP65 protection class
- Very low stand-by power loss
- 5 years guarantee electronic

Functions

- Self-test function and Bluetooth/Silvair Function
- Maintained and non-maintained mode
- Touch switch

Mechanical Outline

unit:mm



Item Code	Carton size	QTY	Weight per pc.
VAL	680*369*250	20PCS	475g

220-240V AC 50/60Hz | LED | LiFePO4 | CE | UKCA | IP65 | Technology Partner SILVAIR

Add:Block2-2F,No.1177 Lingyun Road,Hi-tech Zone,Ningbo City,China 315040 Tel:+86 574 2790 3031 Fax:+86 574 2769 3275 Http://www.effortled.com

LED Emergency Bulkhead VALIANT-IOT(BM)

Technical Data

Rated supply voltage	220-240VAC
AC voltage range	144-187VAC
Mains frequency	50/60Hz
Power factor	≥0.4
Starting time	0.5s
Ambient temperature ta	5-40℃
IP rating	IP65
In-rush current	1.5A
In-rush current duration	3.5ms
Mains surge capability (between L – N)	1KV
CCT	5700-6500K
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
VAL（Maintained）	1W	20mA	35mA	3W	4.5W
VAL（Non-maintained）		5mA	16mA	0.5W	1.3W
VAL（Maintained）	2W	25mA	50mA	3.5W	5W
VAL（Non-maintained）		5mA	25mA	0.4W	2.5W

Item Code	LED module forward voltage range Min-Max	LED module forward current range Min-Max	LED module forward power range Min-Max	Fixture Luminous Flux	Test Switch
VAL-M1N1WIOT-3H-LI	2.7-3Vdc	300-375mA	0.8-1.1W	150lm±10%	○
VAL-M1N1W(T)IOT-3H-LI					●
VAL-M2N2WIOT-1H-LI	9-12Vdc	150-170mA	1.5-1.85W	300lm± 10%	○
VAL-M2N2W(T)IOT-1H-LI					●
VAL-M2N2WIOT-3H-LI					○
VAL-M2N2W(T)IOT-3H-LI					●

Note:

1. All specifications are typical at 25°C unless otherwise stated.
2. All specifications are typical on the 230VAC unless otherwise stated.
3. ○Means “No”. ●Means "Yes".

Testing

Technology Partner

SILVAIR

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 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.

①Operation

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.

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. 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. 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. 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 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.

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 automa-tically 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 VAL is in emergency operation.The inhibit command has to be sent while the VAL is supplied by mains.

After a mains reset the VAL 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 （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 55(+2)℃ or below 0(+2)℃
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(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 (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 switches to RED. If the error has been corrected please re-connecting the battery after the mains power off, the indicator LED immediately switches 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 switches to GREEN.
NOTICE
When it is detected that the battery capacity is insufficient, power off and unplug the battery and power on again, which can be reset.

Mode switching

VAL-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.

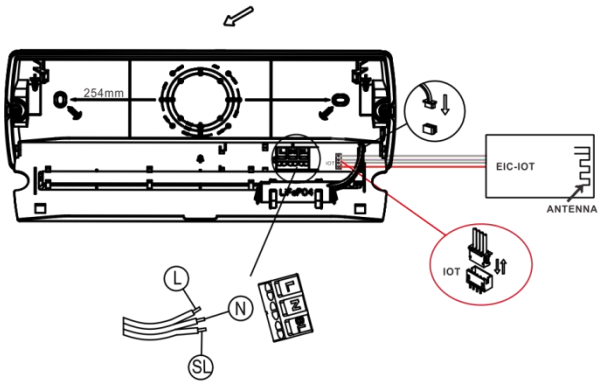
After the working mode is locked, the product can be reset by holding the test button for 10 seconds or powering on and off 3 times within 20s. At the 24th hour after reset, the operating mode will be locked again.

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.

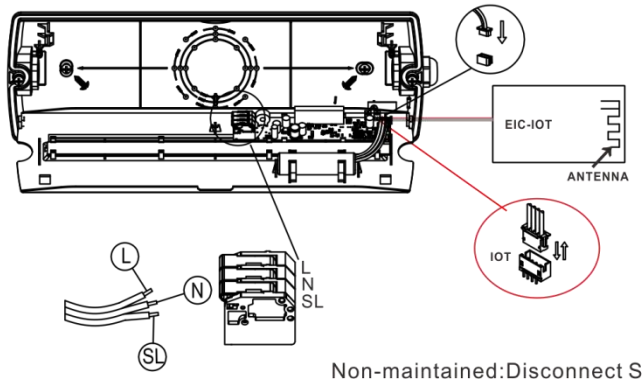
<table>
<tr><th>Timeline</th><th>Bluetooth module existence status</th><th>Product running status</th><th></th></tr>
<tr><td>First power on/
start after reset</td><td>-</td><td>-</td><td rowspan="6">If running in self-test mode, please refer to the specification sheet of the self-test product for relevant operational details.</td></tr>
<tr><td rowspan="2">T<24H</td><td>exist</td><td>Bluetooth communication mode</td></tr>
<tr><td>not exist</td><td>Self-test mode</td></tr>
<tr><td rowspan="2">T==24H</td><td>exist</td><td>Bluetooth communication mode
(Not execute first-inspection)</td></tr>
<tr><td>not exist</td><td>Self-test mode
(Execute first-inspection)</td></tr>
<tr><td rowspan="2">T>24H</td><td>exist</td><td rowspan="2">According to the status at T==24</td></tr>
<tr><td>not exist</td></tr>
</table>

Wiring Diagram

VAL-M1N1WIOT
VAL-M1N1W(T)IOT



VAL-M2N2WIOT
VAL-M2N2W(T)IOT



Non-maintained:Disconnect SL
Maintained:connect SL

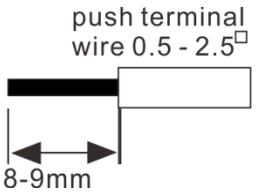
Note:

1. Connect the EIC-IOT/BM module to the motherboard.
2. Lead the AC cables from the waterproof connector，connect the SL、L、N cables to the terminal respectively to complete the wiring, and turn on the maintain mode.

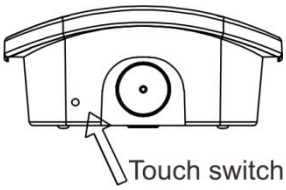
Note:

1.If the installation location of the module is covered with metal, it will affect the communication distance.

2.Wire diameter range: 0.5-2.5 square millimeters;



Test switch



Touch switch:

When 220VAC is powered on, touch this place, the product will enter the function check for 5 seconds, and the product will reset after touching 10 seconds.

Battery data

●Battery selection

Emergency power	Batteries	Emergency Duration	Battery discharge current Min-Max	Battery output power Min-Max	Battery fully charged time	Charge Current	Battery discharge voltage Min-Typ-Max
1W	18650/3.2V/1500mAhLiFePO4	3h	320-400mA	1-1.3W	24h	70mA	2.6-3.2-3.65V
2W	18650/3.2V/1500mAhLiFePO4	1h	600-800mA	2-2.5W	24h	125mA	
	18650/3.2V/3000mAhLiFePO4	3h					

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 55 （± 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 2.6 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 data

●Battery selection

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

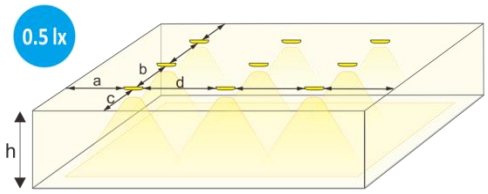
- Temperature: -20℃ to +40℃
- Humidity: 45% - 85%

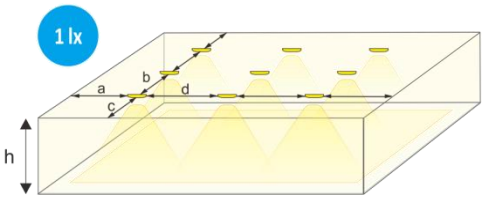
●Avoid atmosphere with corrosive gas

●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.

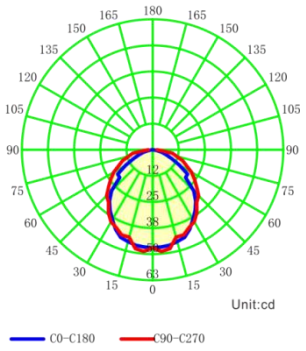
Photometric





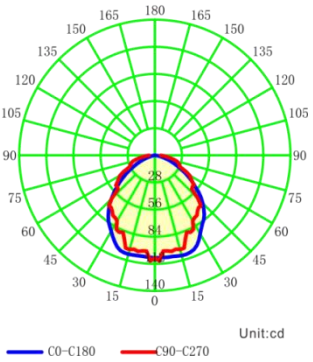
VAL-M1N1W

Open Area 150lm 0.5/1lux				
Height(m)	(a)	(b)	(c)	(d)
2.5	4.1/3.2	9.2/7.6	3.8/3	10.3/8.2
2.8	4.3/3.3	9.7/7.8	3.9/3.1	10.8/8.5
3	4.4/3.3	10/8	4/3.1	11.1/8.7
4	4.6/3.2	11.2/8.6	4.3/3.2	12.1/9.2
5	4.6/3	11.6/9	4.5/3	12.8/9.3
6	4.5/2.2	12.4/8.9	4.5/2.3	13.2/9.1
7	4.3/0	12.8/8.4	4.2/0	13.2/8.5
8	3.6/0	12.8/7.3	3.6/0	13/7.4
9	2.4/0	12.4/5.3	2.7/0	12.7/5
10	/	11.8/0		12/0
11	/	11.1/0		11.7/0
12	/	9.2/0		9.1/0
13	/	6.9/0		6.4/0
14	/	1/0		2.2/0



VAL-M2N2W

Open Area 300lm 0.5/1lux				
Height(m)	(a)	(b)	(c)	(d)
2.5	5/4.1	10.9/9.4	4.7/3.9	12.2/9.9
2.8	5.3/4.2	11.6/9.9	5/4.1	12.8/10.4
3	5.4/4.3	12.1/10.2	5.1/4.2	13.1/10.8
4	6/4.5	14.1/11.6	5.8/4.7	14.9/11.8
6	6.5/4.7	16.8/13.4	6.6/4.9	17.1/13
8	6.7/3.8	18.6/13.9	6.9/4.3	18.1/13.3
10	6/1.2	19.5/13.4	6.7/1.9	19.1/12
12	4.9/0	19.7/11.4	5.7/0	18.7/10
15	/	18.3/0	/	16.4/0
18	/	14.6/0	/	12.6/0
20	/	8.2/0	/	5.4/0

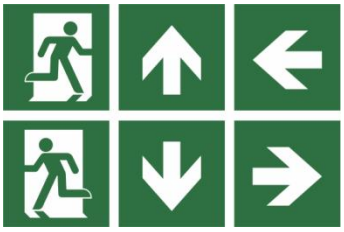


Standard

This product meets the following standards:

- EN IEC60598-1
- EN IEC60598-2-1
- EN IEC60598-2-22
- EN IEC61347-1
- EN IEC61347-2-7
- EN 61000-3-2
- EN 61000-3-3
- EN 61547
- EN 62034
- EN 55015
- ROHS 2.0
- EN IEC61347-2-13

Mounting Accessories

Item Code	Evacuation direction sign
Accessories' Images	

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 light source contained in this luminaire shall only be replaced by the manufacturer or his 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 24 hours for duration test.
The recharging device will recharge the battery ESSS normally after removal the short circuit link and reconnecting the ESSS.
Double or recinforce insulation between supply and battery/ESS circuits and based on a working voltage of 250V;