

the mains network – red signal LED is on instead of the green one, may mean a failure or a damage of either an electronic circuit, a battery or a light source.

When the emergency luminaire is connected to mains and there is no voltage drop, pressing and holding TEST button will result in activation of the “voltage drop” mode, the green signal LED will go off and the luminaire should light up. When the button is released - the luminaire will switch back into its standard operation mode.

The above action means that in a case of emergency mode version the luminaire will go from unlit to illuminated. In a case of mains and emergency mode the luminaire will change a power source, from mains to a battery supply, the switch-over moment should be visible as a quick blink – during a very short while the light source will be off.

CAUTION! In a case of SA (M) luminaire version, but wired as A (NM) one, the lamp behaves according to A (NM) typical behaviour.

FAULTY OPERATION AND ITS POSSIBLE DIAGNOSIS

LED indicator does not light up

AC power failure.

LED indicator is red

Possible damage of one of a luminaire's elements: a charging circuit, a light source supply circuit, a light source itself, a battery or an autonomy operation in an emergency mode is too short. It is recommended to repeat the test and - in a case of confirmation of bad results to call a service team. For more information, please, refer to the “TESTING” section.

LED indicator blinks red

The luminaire performs testing. Please, refer to the “TESTING” section.

The luminaire does not operate in emergency mode the required time for a selected model

It is possible that the battery requires a full charge cycle (24h). If after 24 hours of charging the luminaire still does not keep a predefined autonomy, it is possible that the battery is run-down or damaged, e.g. due to possible incorrect formatting and needs to be replaced.

RECOMMENDED PERIODICAL MAINTENANCE

The luminaire should be tested on regular basis in accordance with valid laws and regulations. The results of the tests should be recorded and stored for the use of a fire safety inspector.

One time daily

It is suggested to check visually if the LED indicator in the luminaire lights up in green.

One time each month

It is necessary to perform a function test by disconnecting the AC power supply and checking whether the luminaire is operating in emergency mode - the green LED indicator should turn off, and LED light source light up. For an MT version the test is being performed manually, for AT version is being performed automatically, according to programmed cycles.

One time each year

In order to make an autonomy test, disconnect the AC power supply and test if the luminaire operates in emergency mode for a specified time. If the autonomy time of emergency operation is not sufficient, the battery needs to be fully recharged and the test is to be carried out again. If the result of the test continues to be negative, the battery needs to be replaced. For an MT version the test is being performed manually, for AT version is being performed automatically, according to programmed cycles.

CAUTION!

All damage that might occur as an effect of the device being used not in accordance to this instruction will result in loss of guarantee.

Used or damaged lamps including batteries, are subject to be recycled. They should be delivered to the point of collection of electrical and battery waste or to the manufacturer.

Handling of obsolete equipment



Pursuant to the Act of 29 July 2005 on waste electrical and electronic equipment and the Act of 24 April 2009 on batteries and accumulators, the presented device, after use, due to hazardous substances contained in it, is subject to collection of waste electrical and electronic equipment. Detailed information on WEEE collection can be obtained from municipal authorities.

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EMERGENCY LUMINAIRE STARLET WHITE LED

Installation and maintenance instructions



Version:

STARLET WHITE LED MT/AT

TECHNICAL SPECIFICATIONS:

Light source (replaceable):	White LED
Operating modes*:	SA (M) – mains and emergency operation or A (NM) – emergency operation
Test versions*:	MT – manual test or AT – auto test
Emergency autonomy*:	1h, 2h or 3h
Battery (replaceable)*:	LiFePO4 3.2V 1000mAh ÷ 5500mAh
Battery charging duration:	24h
Power supply:	220-240V AC 50Hz
Max. power*:	1W ÷ 10W
Module:	Starlet White
Luminous flux*:	min. 100lm ÷ min. 300lm
Enclosure IP rating:	IP20
Ambient temperature:	10°C ÷ 40°C

*- depending on model

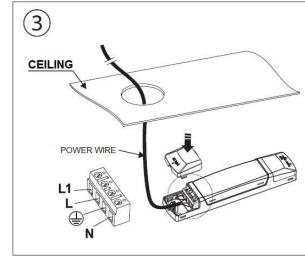
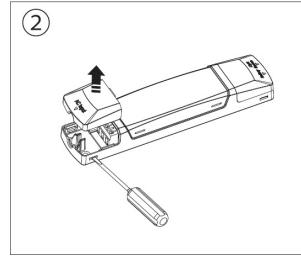
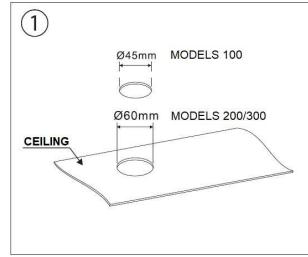


INTRODUCTION

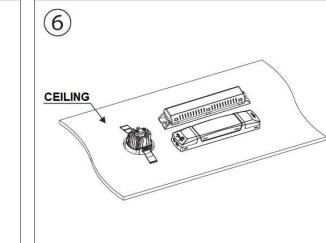
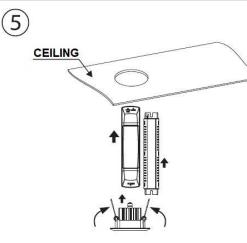
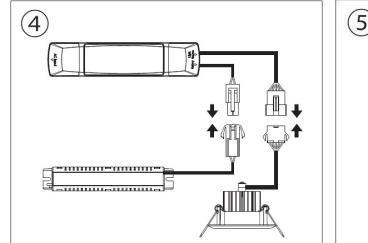
1. The lamp should be installed when power supply is off. Safety rules, construction and electrical installation standards should be followed all the time.
2. The luminaire should not be powered with circuits connected to inductive power-receiving devices at the same time. This type of solution may cause damage to the electronic module of the luminaire.
3. The luminaire should be used indoors.

INSTALLATION

1. Before installation one has to make sure that the luminaire will be connected to 220-240VAC power supply by the use of minimum a 1,5mm² wire.
2. In order to install the luminaire, one need first to make an appropriate hole in the ceiling, depending on the luminaire's LED head diameter (fig.1).
3. Then one need to open the terminal block's cap (fig.2), prepare a power cable, conduct it through the hole in the ceiling and connect all the wires to the appropriate terminal block entries, then locking the terminal block's cap back in its position (fig.3).
4. The description of luminaire's terminals:
L – phase wire - brown or black insulation colour; power source for battery charging, presence signalled by signal LED lighting up in green;
L1 – a terminal to be optionally used for a wall switch connection, enabling to switch a luminaire off during M mode operation, if no switch is used the terminal L1 should be connected to a phase wire in parallel with the L terminal (for M versions);
N – neutral wire - blue insulation colour;
PE – protective earth wire – green and yellow insulation colour.



5. **Luminaire designed for EMERGENCY operation (A, NM).** To wire a luminaire designed for a Non-Maintained operation, AC mains power has to be connected to appropriate terminals: **L** (phase) and **N** (neutral). One need always to remember about connecting **PE** (protective earth) wire. The luminaire should be constantly supplied by power - voltage drop on **L** will result in emergency mode activation.
6. **Luminaire designed for MAINS AND EMERGENCY operation (SA, M).** To wire a luminaire designed for a Maintained operation, AC mains supply needs to be connected to appropriate terminals: **L** (phase), **N** (neutral) and **L1** (wall switch wire). One need always to remember about connecting **PE** (protective earth) wire. **L1** terminal can be optionally connected through a wall switch, enabling switching the luminaire off for a time (the luminaire stays ready for an emergency operation). The luminaire should be constantly AC supplied, phase loss on **L** will cause automatic activation of the emergency mode.
7. Before installation one need to connect the luminaire's LED head and a battery pack with electronic module by appropriate connectors (fig.4), then put the electronic module and the battery pack through the hole in the ceiling and spread evenly on the other side of the ceiling (fig.5).
8. To finish installation mount the LED head in its place by means of two spring fixings (fig.6).



9. Please remember to indicate the date of installation on the label attached to the battery pack.
10. For quick operation testing – switch on the AC power supply. The green LED indicator should light up, signaling the mains connection and battery charging. After battery is charged, the LED indicator should still light up in green, what means readiness for emergency operation. By pressing the test button, one can check if the luminaire enters the emergency operation when the power supply is off. The way how to press the test button and how to read the luminaire's behaviour depends on its version. You can find detailed information in the "TESTING" section.
11. First-time charge of the luminaire battery pack should be carried out continuously for 48 hours. This will allow appropriate formatting of the battery pack. During the first-time charge, no testing should be carried out and power supply should not be disconnected for any other purpose. Power supply should be disconnected after 48 hours for the first time. The luminaire should complete a full emergency operation cycle, after which it should be connected to power supply for another 36 hours. This sequence shall complete the formatting cycle.

OPERATION

Emergency operation mode

In this mode (A, NM) the luminaire does not light when powered by AC supply voltage. Correct operation of the device is confirmed by LED indicator lighting up in green. The battery is being continuously trickle charged for the purpose of a possible emergency operation. When AC power supply is off (no voltage on **L**), the luminaire automatically starts operating in emergency mode and the source of light is activated for the period specific for a particular model. During emergency operation, the LED indicator is off.

Mains and emergency operation mode

In this mode (SA, M) the luminaire lights up when powered by AC supply voltage. Correct operation of the device is also confirmed by LED indicator lighting up in green. The battery is being continuously trickle charged for the purpose of possible emergency operation. When AC power supply is off (no voltage on **L**), the luminaire automatically starts operating in emergency mode and the source of light is activated for the period specific for a particular model. During emergency operation, the LED indicator is off.

Information on lamp operation

The green LED indicator signals connection to a mains network. For a luminaire installed properly it means that a battery is being continuously charged / trickle charged. If the green indicator does not light up, it may mean that the lamp is not operating with AC

power supply or any luminaire's element (e.g. the battery) has been damaged. See more info about signaling in "TESTING" section.

Battery pack

The luminaire is equipped with a rechargeable lithium-iron-phosphate LiFePO4 battery pack. Please remember to carry out the correct first-time charge cycle (see "INSTALLATION", p.11). After such a formatting cycle it achieves its capacity and is prepared to perform a possible full time emergency operation. It is suggested to discharge and then to re-charge the battery every three months, even if it hasn't been used, in order to extend its performance. It is recommended to replace the battery once every four years of operation or in a case of poor test results. Obsolete batteries, similarly to packaging, fluorescent lamps or electronics, are recyclable products that should be disposed to a recyclable waste collection point.

TESTING

STARLET WHITE LED luminaire can be delivered with a manual MT, auto AT or central CT test versions. This instruction manual covers MT and AT versions. It is equipped with a test button which is being used for MT version for quick testing. For AT version it can be optionally used for resetting of planned testing schedules or manual tests' initiations, what enables to check the readiness for emergency operation at any time, apart from planned tests.

AT auto test function

If a luminaire version has an AT auto test functionality, during standard operation both functional and autonomy tests are being initiated automatically, functional tests every 30 days, autonomy tests every 360 days. There is no possibility to break any automatically planned test (while manually initiated tests can be interrupted). There is also no possibility to erase any test results, this means that any signalled failures will be cancelled only after making the luminaire repaired.

In order to avoid a situation when all luminaires are being tested at the same time, both first functional and first autonomy tests are initiated randomly. First functional test starts between 16th and 30th day after the system is powered on, while first autonomy test starts between 200th and 360th day, respectively.

The TEST button can be used to reset the testing schedule and to manual tests' initiations. One quick pressing ($t < 2s$) resets the testing schedule, the luminaire randomly chooses its new first days for both functional and autonomy tests. When the luminaire is connected to mains network and there is no voltage drop, pressing and holding the test button, depending on time of pressing, will result in activation of any of the two. Keeping the button pressed for $2s < t < 6s$ initiate the functional test. For convenient counting of consecutive seconds – 3rd, 4th and 5th second are being confirmed by single blinks of a red LED. Keeping the button pressed for $t > 6s$ initiate the autonomy test, regardless if the button was then released or not.

All the possible luminaire working states and LED indications are gathered in the table below.

LUMINAIRE WORKING STATE OR ACTION	GREEN LED INDICATION	RED LED INDICATION	COMMENTS
BASIC STATES			
MAINS SUPPLY ON, BATTERY BEING CHARGED	ON	OFF	
MAINS SUPPLY FAILURE, EMERGENCY OPERATION	OFF	OFF	
CONTINUOUS WORK & TEST STATES			
BATTERY CHECK - CONNECTED, CORRECT CHARGING	ON	OFF	
BATTERY CHECK - NOT CONNECTED OR NO VOLTAGE	ON	ON	
FUNCTIONAL TEST STATES			
FUNCTIONAL TEST - IN PROGRESS (LIGHT SOURCE AND ELECTRONICS) (**)	OFF	FLASHES (1/T2)	DURATION: 10min
LIGHT SOURCE, ELECTRONIC CIRCUIT, CHARGING OR BATTERY FAILURE	ON	ON	
LUMINAIRE (LIGHT SOURCE, ELECTRONICS, BATTERY) – OK	ON	OFF	
AUTONOMY TEST STATES			
FUNCTIONAL TEST - IN PROGRESS (LIGHT S., ELECTRONICS AND AUTONOMY)	OFF	FLASHES (2/T2)	DURATION: 1h, 2h, 3h (*)
LIGHT SOURCE, ELECTRONICS, CHARGING, BATTERY OR AUTONOMY FAILURE	ON	ON	
LUMINAIRE (LIGHT SOURCE, ELECTRONICS, BATTERY, AUTONOMY) – OK	ON	OFF	
MANUAL TEST BUTTON FUNCTIONS			
RESETTING OF A TESTING SCHEDULE – SHORT ($t < 2s$) PRESSING OF THE BUTTON	ON	OFF	SINGLE FLASHES IN 3s, 4s AND 5s
INITIATION OF A FUNCTIONAL TEST – PRESSING A BUTTON FOR A $2s < t < 6s$ (**)	ON	FLASHES (3s, 4s, 5s)	HELP (t) TIME COUNTING
INITIATION OF AN AUTONOMY TEST – PRESSING A BUTTON FOR $t > 6s$	ON	OFF	

$T2 = 10s$ period; t – time of pressing the test button

FLASHING: (1/T2) / (2/T2) – 1 flash / 2 flashes every 10s period

(*): test duration is same as an autonomy time declared for a given luminaire

(**): functional test initiated manually lasts 5min., while initiated automatically lasts 10min

MT manual test function

This luminaire's version is equipped in two signal LEDs – green one and red one. Green LED is on when the luminaire is connected to a mains network. For a luminaire installed properly it means that a battery is being continuously charged / trickle charged. Mains failure makes the signal LED going off and powering the luminaire from its battery pack. A situation when – despite connection to