

FAULTY OPERATION AND ITS POSSIBLE DIAGNOSIS

LED indicator does not light up

AC power failure.

LED indicator is green, SA (M) luminaire is off

Possible damage of one of a luminaire's elements, e.g.: a light source supply circuit or a light source itself. It is recommended to call a service team. For more information, please, refer to the "TESTING" section.

Luminaire is off during emergency operation

Possible damage of one of a luminaire's elements: a charging circuit, a light source supply circuit, a light source itself or a battery. It is recommended to charge the battery for 24h, then 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.

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.

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.

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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MILO LED EMERGENCY LUMINAIRE

Installation and maintenance instructions



MILO LED

Versions:

MILO LED SA

MILO LED SA ECO

TECHNICAL SPECIFICATIONS:	
Light source (replaceable):	White LED 10W
Operating modes*:	M (SA) – mains and emergency operation or NM (A) – emergency operation
Test versions:	MT – manual test
Emergency autonomy*:	1h, 2h or 3h
Battery (replaceable)*:	LiFePO4: 6.4V 600mAh ÷ 1500mAh
Battery charging duration:	24h
Power supply:	220-240VAC 50Hz
Max. power (consumption)*:	13W ÷ 20W
Module:	Primus LED Slim
Luminous flux (emergency operation)*:	standard version: min. 450lm; ECO version: min. 225lm
Enclosure IP rating:	IP65
Ambient temperature*:	standard version: 10°C ÷ 40°C; LT version: -25°C ÷ 40°C

*- depending on model



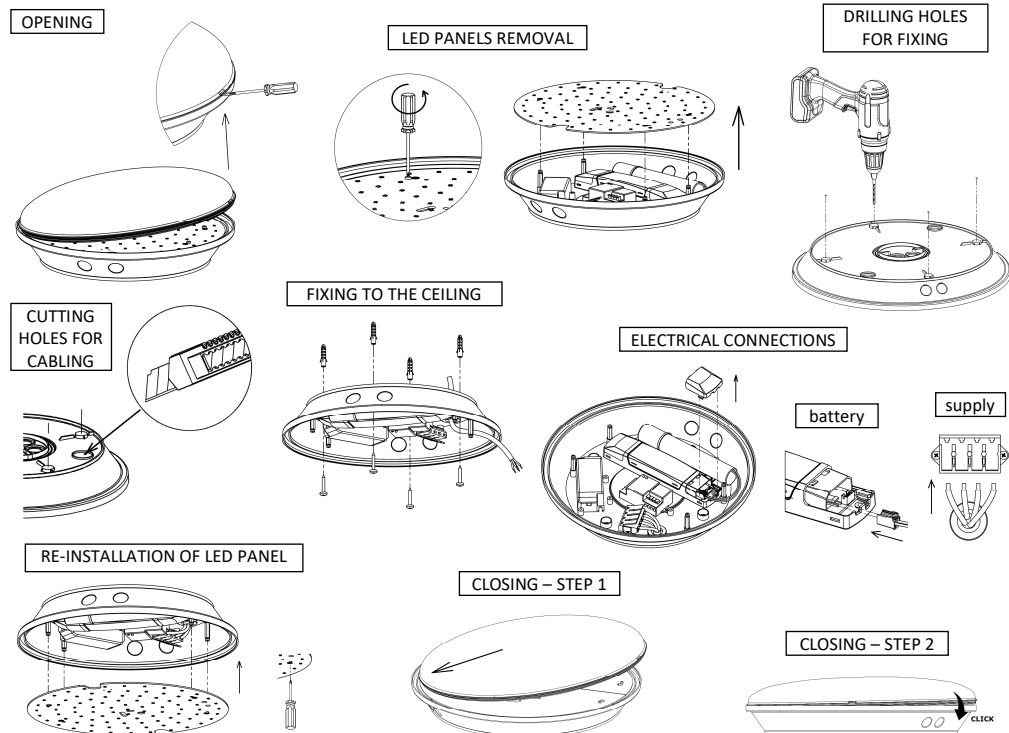
INTRODUCTION

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. The luminaire is designed both for general lighting and emergency operation and requires right cabling to assure proper operation.
3. To install the luminaire in the ceiling first one need to open its housing by removing a snapped-on cover. Then to remove an LED panel by unscrewing 4 screws, then sliding it to side and pulling it off installation studs and disconnecting its powering connector. Next fix a base of the luminaire (containing electronic circuits and a battery pack) to the ceiling through dedicated installation holes using plugs and screws, after making proper holes in the ceiling. Then one need to guide powering cable to the inside through a chosen cable entry (make a cut out when needed). One need to always remember to mount a cable gland in the cable entry hole and make a proper size hole in the gland thus taking care of a tight sealing.

INSTALLATION STEPS ILLUSTRATED



- Connect all the wires of the power cable to corresponding terminals of a power terminal block. 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 for a luminaire delivered as SA / M version - brown or black insulation colour; a supply that is connected through a wall switch, enabling using the luminaire for general lighting and switching it 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;
N - neutral wire - blue insulation colour;
PE - protective wire - green and yellow insulation colour (concerns only LT versions).
- 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), **N** (neutral) and (only for LT versions) **PE** (protection). The luminaire should be constantly supplied by power - voltage drop on L will result in emergency mode activation.
- 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) and (only for LT version) **PE** (protection). Switching the luminaire off, when it is connected to mains network through L1 terminal, doesn't affect its readiness for emergency operation. The luminaire should be constantly AC supplied, phase loss on L will cause automatic activation of the emergency mode.
- Please remember about putting of the white battery plug into the socket on the PCB and indicating the date of installation on the label attached to the battery pack.
- In order to finish installation, one need to mount the LED panel back in its place and connect its powering connector, then put the cover on the housing base and snap it on it firmly.
- The luminaire can be delivered as a basic version, with an ON-OFF movement detector or with a DIM (dimnable) movement detector. Movement detectors are pre-programmed with factory settings enabling easy testing of luminaires' operation. If a luminaire is equipped in a movement detector, to finish installation one need to change factory settings for target ones, according to a user's needs.
- Factory settings of the ON-OFF detector: Daylight Sensor (light sensor) = 2000lx, Detection Area (sensitivity) = 100%, Hold Time (time delay) = 5s. All possible settings are shown in the below table.

Detector type	ON-OFF										DIM					
	Detection Area		Hold Time		Daylight Sensor		Detection Area		Hold Time		Daylight Sensor		Stand-by Period		Stand-by DIM	
Function	1 & 2		3 & 4 & 5		6 & 7 & 8		1		2 & 3		4 & 5		6 & 7		8	
Switch(es)	Positions	Settings	Positions	Settings	Positions	Settings	Position	Settings	Positions	Settings	Positions	Settings	Positions	Settings	Position	Settings
Switch(es) position(s) and resulting setting	●●	100%	●●●	5s	●●●	2000lx	●	100%	●●	5s	●●	5lx	●●	0s	●	10%
	●○	75%	●○●	30s	○●●	50lx	○	50%	●○	1min	●○	25lx	●○	1min	○	25%
	○●	50%	○●○	1min	○●○	20lx			○●	5min	○●	50lx	○●	10min		
	○○	20%	○●○	5min	○●○	5lx			○○	10min	○○	disabled	○○	+		
			○●○	10min	○●○	2lx										
			○●○	20min												
			○●○	30min												

- Factory settings of the DIM detector: Daylight Sensor (light sensor) = Disable (i.e. inactive), Detection Area (sensitivity) = 100%, Hold Time (time delay) = 5s, Stand-by Period (time delay for comfort light) = 1min, Stand-by DIM Level (brightness of a comfort light) = 10%. All possible settings are shown in the above table.
- The luminaire can be optionally delivered as an LT – low temperature version. The heater circuit requires connection to PE wire. The heater circuit assures proper work of a luminaire's battery pack in low temperatures down to -25°C. A built-in thermostat controls work of the heater by increasing its power depending on a falling ambient temperature.
- For quick operation testing – switch on the AC power supply. The green LED indicator should light up, signalling 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.
- 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 (NM, A) 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 (M, SA) 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 luminaire operates correctly and charging circuit works if the LED indicator lights up in green. If the indicator does not light up in green, the lamp is not operating with AC power supply on or any luminaire's element 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. The proper formatting process (see "INSTALLATION", p.14) enables to get right battery capacity which helps later to achieve full time emergency operations. 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

MILO LED luminaire is being delivered with a manual MT test version. It is equipped with a test button that can be used for manual tests.

MT manual test version

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 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 reflects the A (NM) typical behaviour.