



INSTALLATION AND MAINTENANCE MANUAL FOR  
EXPLOSIONPROOF LIGHT FITTING

# EXL400LED-...-A3



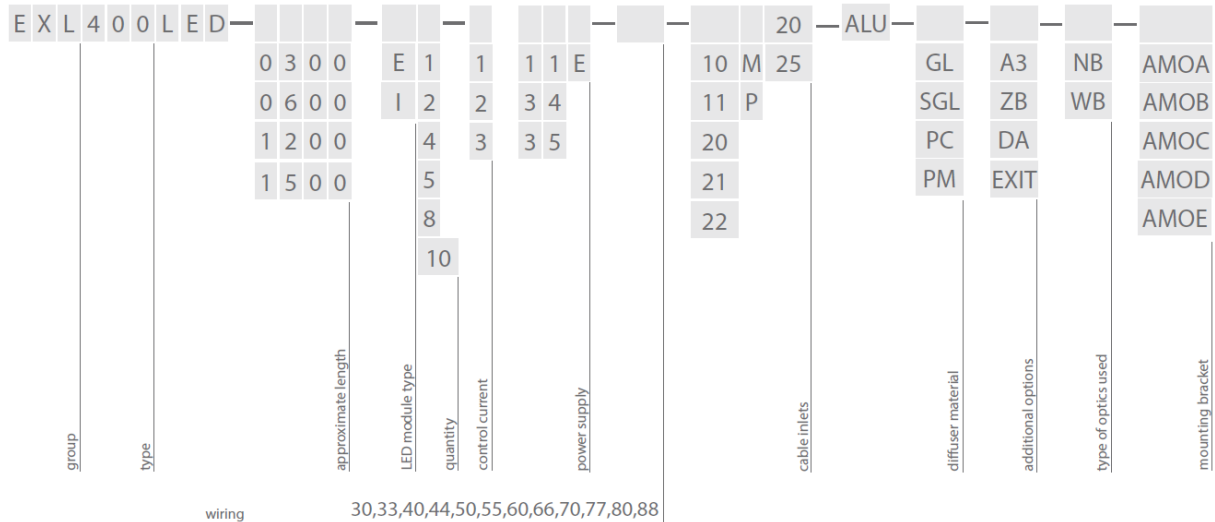
Carefully read the instructions before  
mounting the light fitting.

## TABLE OF CONTENTS

1.	GENERAL INFORMATION.....	3
2.	TECHNICAL INFORMATION .....	5
3.	PHOTOMETRICAL DATA.....	6
4.	CONSTRUCTION DESCRIPTION .....	6
5.	PRELIMINAIRES.....	7
6.	LIGHT FITTING MOUNTING .....	8
7.	ELECTRICAL CONNECTION .....	8
8.	EMERGENCY WORK .....	9
9.	CONDITIONS OF SAFETY USE.....	10
10.	LIGHT FITTING MAINTENANCE AND SERVICING.....	11
11.	CLEANING .....	12
12.	REPAIRING AND EXCHANGE PARTS.....	12
13.	LIGHT SOURCE EXCHANGE .....	12
14.	TRANSPORT AND CONDITIOINS OF STORAGE.....	12
15.	DISPOSAL OF WASTE EQUIPMENT.....	12
16.	WARRANTY .....	12

## 1. GENERAL INFORMATION

EXL400LED light fittings are designed to light indoor and outdoor areas in zone 2 of explosion hazard of gas, vapors, or clouds of flammable liquids mixed with air which belongs to IIA, IIB or IIC explosion group, T1-T6 temperature class. EXL400LED light fittings are also suitable to light areas in zone 22 of explosion hazard of dust and flammable fibers mixed with air. A3 version is prepared to emergency work.



### TECHNICAL INFORMATION


#### Ex marking:

- For version EXL400LED - \*\*\*\* - \*\* - \*\*\* - \*\* - \*\*\*\*\* - ALU - \*\* - A3 - \*\*\*\*



II 3G Ex ec IIC T6 Gc  
II 2D Ex tb IIIC T75°C Db

Interpretation of the use restrictions of the device by means of the symbols in the above marking and on the label of the device:

Name	Symbol	Description
Special explosionproof protection marking		Symbol of device intended for use in potentially explosive atmospheres.
Device group	II	Device intended for use in explosive atmospheres other than underground mine.
Device category	3G	Device can safely operate in zone 2 of the explosion hazard of gases, vapors and mists of flammable liquids with air.
	2D	Device can safely operate in zone 21 or 22 dust explosion hazard.
	3D	Device can safely operate in zone 22 dust explosion hazard.
Type of execution	Ex ec	Device secured with increased safety construction type "e".

	Ex tb	Device secured from dust ignition with the housing type „t” in zones 21 or 22.
	Ex tc	Device secured from dust ignition with the housing type „t” in zone 22.
Group	IIC	Device can be used in the presence of explosion hazard gases, vapors and mists of flammable liquids with air classified as explosive groups IIA, IIB, IIC.
	IIIC	Device can be used in the presence of explosion hazard of combustible dusts and filaments belonging to explosion groups IIIA, IIIB, IIIC (all types of dusts).
Temperature class	T5	Device intended for use in potentially explosive atmospheres of gases with self-ignition temperature > 100°C
	T6	Device intended for use in potentially explosive atmospheres of gases with self-ignition temperature > 85°C
Temperature	T75°C T100°C	Maximum surface temperature
Explosion protection level	Gc	Device intended for installation in zone 2 of gas explosion hazard, providing a „normal safety” and which will not become a source of ignition under normal conditions of use and during expected damage.
	Db	Device intended for installation in zones 21, 22 dust explosion hazard, providing a „high level of safety” and which will not become a source of ignition under normal conditions of use and during expected damage.
	Dc	Device intended for installation in zones 22 dust explosion hazard, providing a „normal level of safety” and which will not become a source of ignition under normal conditions of use and during expected damage.

**Protection degree:** IP66/IP67

**Admission wires diameter:** 1-2.5mm<sup>2</sup>

**Admission cable diameter:** Ø 7-13mm

**Voltage:** 230V, 50-60Hz

**Protection class:** I

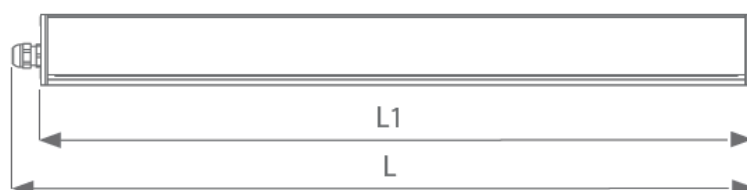
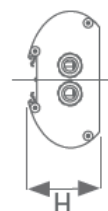
**Ambient temperature Ta:** -20°C ... +45°C for dark operation (no signal on L' line)

-20°C ... +45°C for bright operation (L' line continuous signal)

LED module risk group RG=1

## 2. TECHNICAL INFORMATION

Type	Power	Electrical unit	IP	Protection class	Power factor	Ambient temp.
EXL400LED-0300-E1-2-...-A3	10,5 W	230V 50,60Hz	66/67	I	≥0,97	-20 to +45°C
EXL400LED-0300-E2-1-...-A3	16,8 W					
EXL400LED-0600-E2-2-...-A3	19,8 W					
EXL400LED-0600-E2-3-...-A3	24,0 W					
EXL400LED-0600-E4-1-...-A3	33,7 W					
EXL400LED-0600-E4-2-...-A3	38,6 W					
EXL400LED-1200-E4-2-...-A3	38,6 W					
EXL400LED-1200-E4-3-...-A3	47,0 W					
EXL400LED-1200-E8-1-...-A3	64,8 W					
EXL400LED-1200-E8-2-...-A3	80,0 W					
EXL400LED-1200-E8-3-...-A3	93,5W					
EXL400LED-1500-E5-2-...-A3	48,0 W					
EXL400LED-1500-E5-3-...-A3	59,0 W					
EXL400LED-1500-E10-1-...-A3	80,0 W					



TYP   TYPE	L	L1	H	B
EXL400LED-0300-...-A3	554	525	75	145
EXL400LED-0600-...-A3	834	805	75	145
EXL400LED-1200-...-A3	1394	1365	75	145
EXL400LED-1500-...-A3	1674	1645	75	145

TYP   TYPE	L	L1	H	B
EXL400LED-0300-...-A3	744	685	75	145
EXL400LED-0600-...-A3	1024	965	75	145
EXL400LED-1200-...-A3	1584	1525	75	145
EXL400LED-1500-...-A3	1864	1805	75	145

### 3. PHOTOMETRICAL DATA

Type	Luminous flux - NB	Efficiency - NB	Luminous flux - WB	Efficiency - WB	Colour temperature	CRI	Lifetime
EXL400LED-0300-E1-2-...-A3	1395 lm	133 lm/W	1359 lm	129 lm/W	4000K 5000K 6500K	>80	>50000 h
EXL400LED-0300-E2-1-...-A3	2351 lm	140 lm/W	2291 lm	136 lm/W			
EXL400LED-0600-E2-2-...-A3	2810 lm	142 lm/W	2738 lm	138 lm/W			
EXL400LED-0600-E2-3-...-A3	3236 lm	135 lm/W	3154 lm	131 lm/W			
EXL400LED-0600-E4-1-...-A3	4735 lm	141 lm/W	4615 lm	137 lm/W			
EXL400LED-0600-E4-2-...-A3	5619 lm	138 lm/W	5477 lm	135 lm/W			
EXL400LED-1200-E4-2-...-A3	5340 lm	138 lm/W	5198 lm	135 lm/W			
EXL400LED-1200-E4-3-...-A3	6150 lm	131 lm/W	5986 lm	127 lm/W			
EXL400LED-1200-E8-1-...-A3	9000 lm	139 lm/W	8760 lm	135 lm/W			
EXL400LED-1200-E8-2-...-A3	10680 lm	134 lm/W	10395 lm	130 lm/W			
EXL400LED-1200-E8-3-...-A3	12300 lm	132 lm/W	11972 lm	128 lm/W			
EXL400LED-1500-E5-2-...-A3	6675 lm	139 lm/W	6497 lm	135 lm/W			
EXL400LED-1500-E5-3-...-A3	7688 lm	130 lm/W	7483 lm	127 lm/W			
EXL400LED-1500-E10-1-...-A3	11250 lm	141 lm/W	10950 lm	137 lm/W			

Lifetime of a LED modules: L<sub>70</sub>B<sub>10</sub>

Type	Mean Emergency Mode Luminous Flux
EXL400LED-0300-...-A3	550 lm
EXL400LED-0600-...-A3	585 lm
EXL400LED-1200-...-A3	560 lm
EXL400LED-1500-...-A3	565 lm

For the EXL400LED-...-EXIT luminaires the luminance of the pictogram is >50 cd/m<sup>2</sup>.

### 4. CONSTRUCTION DESCRIPTION

Light fittings are built according to common electrical engineering rules. The product meets the essential requirements of the Directives and the harmonized standards listed in the EU Declaration of Conformity. Used solutions and materials, electrical equipment and proper insulating spaces makes that during normal exploitation there is no possibility any sparks, electrostatic charge, dangerous heating or light fitting destruction caused by environment factors occurrence.

Light fittings are built as a one chamber equipment. Housing, endcaps and mounting tray are made of aluminum. Sealing is made of silicone.

Used terminals ensures safe and non-sparking connection of inner wires and admission cables. The diffuser is made of UV resistant polycarbonate (PC), PMMA or tempered glass.

## 5. PRELIMINAIRES

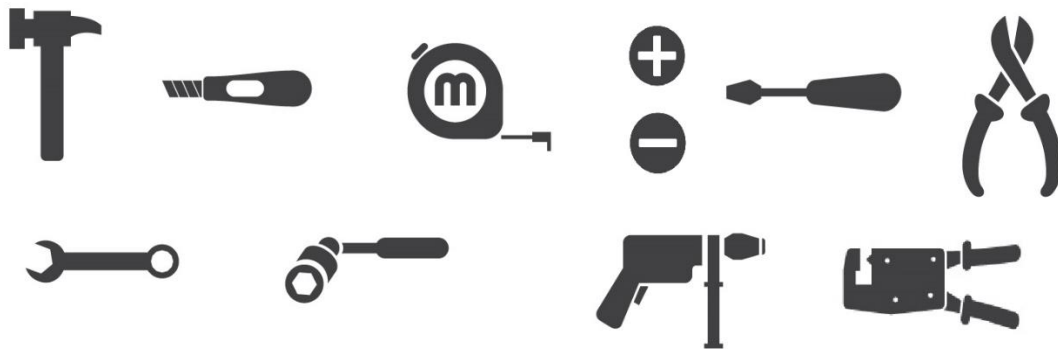
### SAFETY RULES

- Carefully read all the information included in the manual before mounting the light fitting.
- General safety rules must be followed.
- Failure to comply with rules of the installation and use can lead to personal injury or property loses. ATM Lighting sp. z o.o. company takes no responsibility in such cases.
- Failure to comply with rules included in manual results with void of the manufacturer warranty.
- Manufacturer takes no responsibility for any damages resulting from improper installation, maintenance or improper use.
- It is the responsibility of the user to perform the installation in accordance with this manual and the safety regulations and standards applicable to the type of installation
- In case of malfunction, the device must be turned off and returned for repair to the manufacturer or his authorized entity.



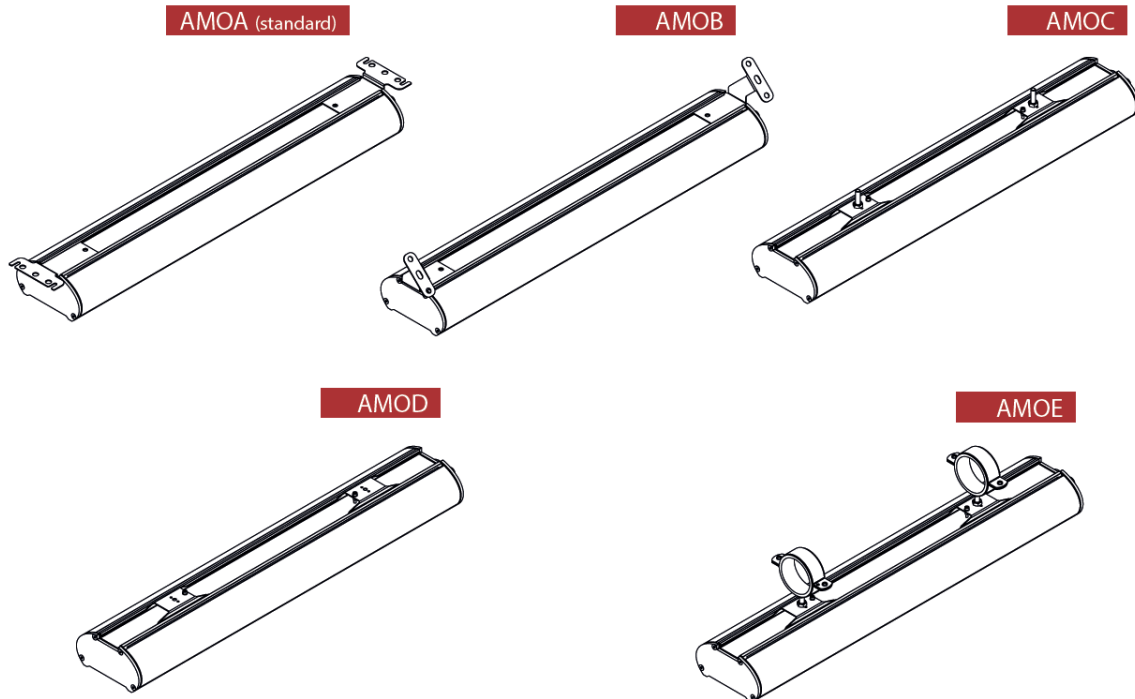
Before performing any installation work, including opening the enclosure, be absolutely sure to disconnect the unit from the power source

### NECESSARY TOOLS



## 6. LIGHT FITTING MOUNTING

The EXL400LED luminaire should be fixed directly to the ceiling with screws. The size of the mounting holes is  $\varnothing 6\text{mm}$ . The spacing is adjustable by positioning the brackets.



## 7. ELECTRICAL CONNECTION

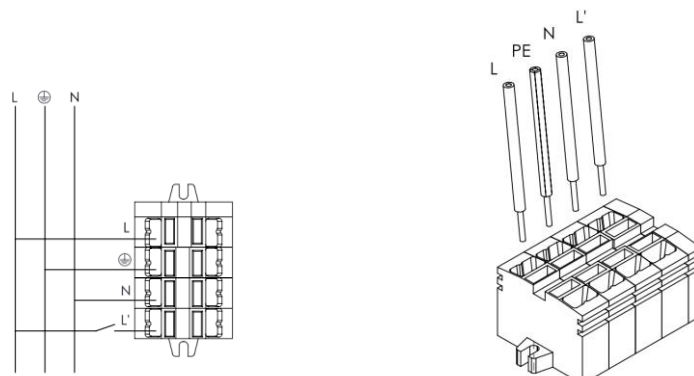


Installation and electrical connection should be in accordance with the requirements of PN-EN 60079-14.

To connect power supply:

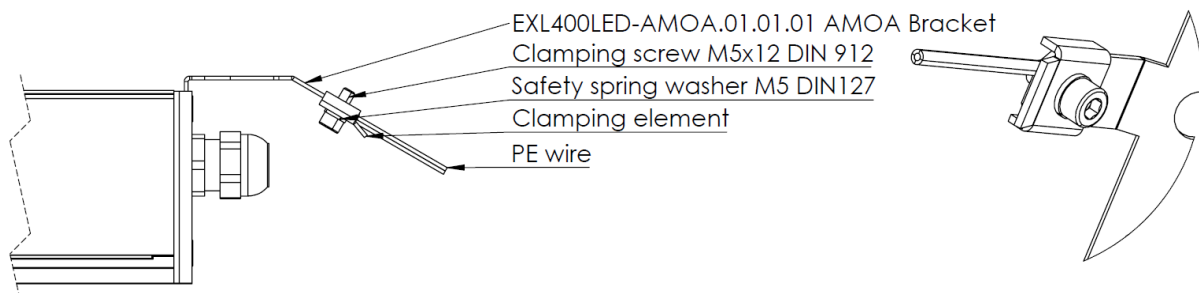
- enter the power cable to the housing through the cable entry (gland),
- carefully unisolate the wires (8-10mm), and put it into the connector according to a label inside the light fitting,
- precisely tighten power cable in the gland with two wrench,
- check the effectiveness of grounding.

Power connection:





- EXL400LED luminaire is equipped with an external terminal for equalizing connections. Use a wire with a minimum cross-section of 4mm<sup>2</sup> for equalization connections. Please refer to the overview drawing below:



#### Remarks:

- Use one wrench to tighten the sealing nut, while using the second wrench to block gland body against rotation, otherwise damage of the sealing can be caused and therefore sealing level will be decreased.

## 8. EMERGENCY WORK

- The light fitting is equipped with emergency power supply module EM converterLED ST 250V made by TRIDONIC, which is powered by 230V AC, 50-60Hz. During normal work module charges the battery pack with appropriate current. Failure of mains supply will switch light fitting into emergency mode.
- Time of full charge of battery is 24h (first charge is 48h). Beside this emergency module has:
  - a) Stability control system – it ensures that battery is not overcharged or discharged too much, which may shorten its life or even destroy the battery.
  - b) Automatic switch system – switches light fitting between emergency and standard work.
  - c) Signaling system – LED which shows current work state.

- Battery should be connected to emergency module with mains supply switched off. After that mains must be switched on. During maintenance, transport or storage battery must be disconnected from emergency module. It is unacceptable to continuously switch on and off the mains when battery is connected to emergency module.

- To ensure reliable work of emergency module batteries must be changed each 4 years or when the capacity falls below 50% or emergency work time is lower than 3h. Temperature while battery charging must be  $\geq 0^{\circ}\text{C}$

- The battery pack shall be replaced by ATM Lighting Sp. z o.o. and specially trained personnel, using original components supplied by ATM Lighting Sp. z o.o.



- The battery pack should be replaced only in a safe atmosphere.
- The luminaire should be marked "Use only ATM Lighting replacement battery packs",
- The replacement battery pack shall be marked:

"Battery pack - ATM Lighting - EXL400LED-...-A3".

- Discharged battery obtains full capacity after 24h of charging. To ensure appropriate forming of battery first charging must last for 48h. It is unacceptable to make any test or witch light fitting into emergency mode during this time. After 48 hours light fitting must be switched into emergency mode to complete discharge of battery. Then the battery must be charged for 36h. This ends the process of forming.

LED indication	Status	Comment
Permanent green	System OK	AC mode
Fast flashing green (0,1 sec on – 0,1 sec off)	Function test underway	
Slow flashing green (1 sec on – 1 sec off)	Duration test underway	
Red LED on	Load failure	Open circuit / Short circuit / LED failure
Slow flashing red ( 1 sec on – 1 sec off)	Battery failure	Battery failed the duration test or function test / Battery is defect or deep discharged / incorrect battery voltage
Fast flashing red (0,1 sec on – 0,1 sec off)	Chargin failure	Incorrect charging current
Double pulsing green	Inhibit mode	Switching into inhibit mode via controller
Green and red off	DC mode	Battery operation (emergency mode)

## 8.1 Testing

### Commissioning test

A full commissioning test is carried out automatically after permanent connection of the supply for 5 days. The easy commissioning feature will set the initial test day and time to ensure random testing of units.

### Functional test

Functional tests are carried out for 5 seconds on a weekly basis under the control of the Micro controller. Initiation and timing of these tests is set during the commissioning of the luminaire.

### Duration test

A full duration test is carried out yearly to check the capacity of the batteries. For a full description of commissioning and test features please refer to application notes.

## 9. CONDITIONS OF SAFETY USE

- Every light fitting must have label with rating data on it. Each light fitting is equipped with this „Installation and maintenance manual”, which must be kept by user until the end of exploitation.
- Each luminaire must have a label "Warning: do not open under voltage".
- Light fittings are designed for fixed installations only.
- Using light fitting outside the designated operating temperature range is unacceptable and will decrease a lifetime of light fitting and/or damage it. It will also cause a loss of warranty.



**Remark:** Using light fitting beyond the designated operating temperature range may result in the loss of explosion protection measures, such as exceed temperature class and explosion.

- Each light fitting must have a warning sign: „DO NOT OPEN UNDER VOLTAGE” on it.
- Admission cables must have 4-wires (with PE wire) and diameter 7-13mm.
- Use power wires with cross section 1-2,5mm<sup>2</sup>.
- Maximum cross current I=16A.

- Depending on the version, the diffuser is made of tempered glass, PMMA or PC. Versions with PC or PMMA diffusers should not be exposed to chemicals that can damage them, in particular: oil, acetone, chlorine, ethyl, ether, solvents. If there is uncertainty about the substances present in the luminaire's work area that could lead to damage to any of the components, then determination measures should be taken. Luminaires fitted with a PC or PMMA diffuser shall carry the warning label "Caution! Risk of electrostatic charge" (see point 11).



- Do not stare into working light source.



- Risk of electrical shock.

## 10. LIGHT FITTING MAINTENANCE AND SERVICING

**REMARK:** during the servicing and maintenance touching of LED are prohibited, because it will decrease the lifetime of light fitting and cause the loss of manufacturer's warranty.



It is recommended to carry out inspections of electrical equipment in accordance with the requirements of PN-EN 60079-17.

**INSPECTION:** at least once a month. Inspection is made without opening the light fitting. User must check admission cables condition (insulation damage, cracks, burns etc.). Cables must not have any acute bends. Outside parts of the light fitting must be checked. No cracks or corrosion signs may occur. Bolts used to mount light fitting should be properly tightened, washers mustn't be cracked. Cleanliness of outer surfaces and light fittings surroundings must be checked. Light fittings may not be soiled by paint or grease. Do not allow for dust (dirt) deposition on the light fitting. The readability of rating and warning plates must be checked. Abnormalities found must be fixed.

**NOTE:** due to the risk of explosion caused by electrostatic charges, the luminaire should be properly maintained by regular cleaning with a damp cloth with anti-electrostatic liquid.

**SERVICE AND MAINTENANCE:** at least once a year. Service and maintenance must be made with power supply turned off. User must make inspection steps first. After opening: metal parts painting, condition of inner wiring and its mounting, insulating materials, cable glands gaskets, terminals. Abnormalities found must be fixed. Rating and warning plates must be cleaned. Surfaces of insulating materials and covers must be clean.

**VERIFICATION OF TECHNICAL CONDITION:** at least once for 2 years. Power supply must be switched off. Verification of technical condition must be proceeded outside of Ex zone. Light fitting must be uninstalled. Besides all the examination from inspection, service and maintenance paragraphs electrical examination from the inspection, service and maintenance paragraphs electrical examination must be also made: light fitting current consumption, insulation examination, protective earthing condition. Special attention must be paid to insulating parts condition. No crack or burns may occur.

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## 11. CLEANING



Do not allow dust to accumulate on the light fitting. Cleaning have to be carried out using vacuum cleaners or a soft cloth with antistatic agent suitable to working conditions. Do not use chemicals that can damage any part of the light fitting.

## 12. REPAIRING AND EXCHANGE PARTS

All parts considered as a spare parts must be ordered at manufacturer of light fitting. Additionally, the replacement of the battery and the light source may be performed by ATM Lighting Sp. z o.o and specially trained personnel, using original components supplied by ATM Lighting Sp. z o.o.

If batteries have to be replaced, use only the battery packs supplied by the luminaire manufacturer. Do not change batteries in the presence of an explosive atmosphere



All repairs may be made only by manufacturer or authorized repair workshops according to PN-EN 60079-19.

## 13. LIGHT SOURCE EXCHANGE

The light source used in this luminaire should be replaced only by the manufacturer or its service representative, or a similarly qualified person, using original components supplied by ATM Lighting sp.z o.o.

## 14. TRANSPORT AND CONDITIONS OF STORAGE

During transport light fittings shouldn't be exposed to precipitation or mechanical shock.

Light fittings may be storage only in sheltered warehouses, within +5°C to +35°C temperature range, and relative humidity lower than 75%. No corrosion causing vapors or gases should be present

## 15. DISPOSAL OF WASTE EQUIPMENT



User must obey relevant rules and regulations about disposal of wasted equipment valid in their country.

## 16. WARRANTY

- It is forbidden to use a damaged or malfunctioning luminaire. Installation checks must be carried out to detect any anomalies.
- It is required to disconnect power supply from the light fitting before any maintenance work.
- It is forbidden to make any changes to the light fitting construction. Any unauthorized interference may result in reduced functionality or damage to the device and may in some cases endanger life or health. At the same time it relieves the manufacturer of all warranty liability.
- All specific information can be found in document „General terms and conditions warranty ATM Lighting sp. z o.o.” available at the website [www.atmlighting.pl/en/](http://www.atmlighting.pl/en/)







## ADDRESS:

**ATM Lighting sp. z o.o.**

ul. Budowlanych 31 80-298 Gdańsk

tel: +48 58 347 51 07 fax: +48 58 347 51 08

office[at]atmlighting.pl