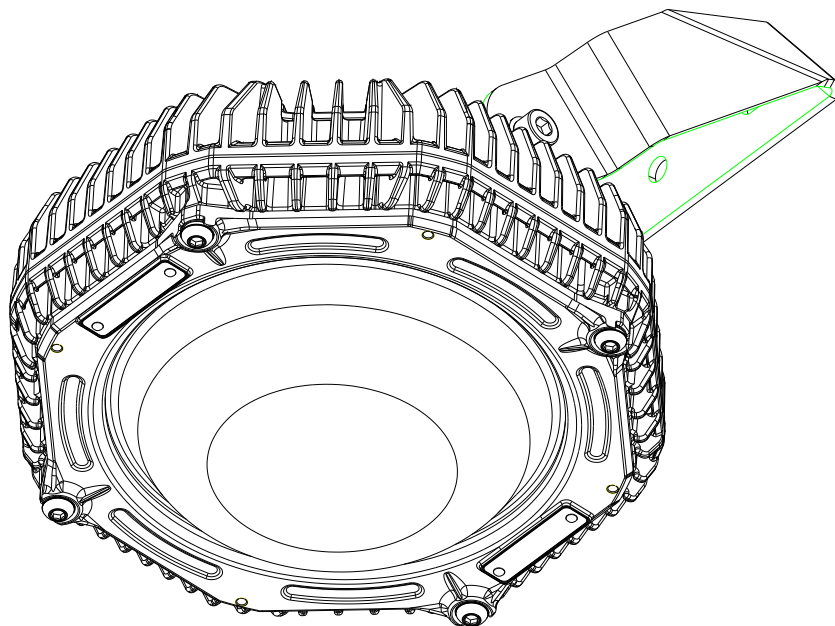


## Operation & Maintenance Manual KForestFrog Series-NV1.0






UK  
CA  II 2 G / II 2 D

**Important information:**

These instructions contain safety information, read and follow them carefully. KHJ will not accept any responsibility for injury, damage or loss which may occur due to incorrect installation, operation or maintenance

# Product Important Information

|                      |  |                    |       |                    |        |
|----------------------|--|--------------------|-------|--------------------|--------|
| Type Of Protection   | Ex db, Ex tb   |                    |       |                    |        |
| Protection Standards | EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-31:2014<br>IEC 60079-0:2017, IEC 60079-1:2014, IEC 60079-31:2013<br>EN 55015, EN 61547, EN 61000-3-2, EN 61000-3-3,<br>EN 60598-1, EN 60598-2-5, EN 62031, EN 62493,<br>IEC 62321-4, IEC 62321-5, IEC 62321-6, IEC 62321-7-1, IEC 62321-7-2, IEC 62321-8                                    |                    |       |                    |        |
| Area Classification  | Zone 1 and Zone 2 Areas to (IEC)EN 60079-10-1, Zone 21 and Zone 22 Areas to (IEC)EN 60079-10-2   |                    |       |                    |        |
| Installation         | (IEC)EN 60079-14   |                    |       |                    |        |
| Certificate          | EPT 18 ATEX 2977 X/IECEX CQM 15.0039X/CML 22 UKEX 1362 X   |                    |       |                    |        |
| Equipment Coding     | Ex db IIC T* Gb, Ex tb IIIC T* Db  |                    |       |                    |        |
| Temperature Class    | Rated power (W)  | -40°C ≤ Ta ≤ +40°C |       | -40°C ≤ Ta ≤ +55°C |        |
|                      |  | Gas                | Dust  | Gas                | Dust   |
|                      | 30   | T6                 | T80°C | T5                 | T95°C  |
|                      | 45   | T6                 | T80°C | T5                 | T95°C  |
|                      | 60   | T5                 | T95°C | T4                 | T130°C |
| ATEX/UKCA Coding     |  II 2 G / II 2 D  |                    |       |                    |        |
| Ingress Protection   | IP66 (IEC)EN 60529   |                    |       |                    |        |
| Cable entry          | M25*1.5, 3/4 NPT   |                    |       |                    |        |
| CE/UKCA Mark         | The CE/UKCA marking of this product applies to EU directives 2014/35/EU, 2014/30/EU, 2012/19/EU, 2011/65/EU and 2014/34/EU respectively.<br>The Equipment is declared to meet the provisions of the ATEX/UKCA directive (2014/34/EU) by reason of the EU Type Examination and compliance with the Essential Health and Safety Requirements |                    |       |                    |        |

| SYMBOL  | MEANING  |
|---|--|
|  | The symbol reported complies with annex X of the directive 2014/34/EU and identify that the product meets the Essential Health and Safety Requirement(E.H.S.R)of the directive.  |
| XXXX  | Registered number of the Notified Body involved in the verification of the product   |
|  | Specific symbol of ATEX/UKCA directive 2014/34/EU,given in the Annex II of the directive   |
| II 2GD  | This category comprises products designed to be capable of remaining within their operational parameters stated by the manufacturer and based on a high level of protection for their intended use, in areas in which explosive atmospheres caused by mixtures of air and gases, vapours, mists or air/dust mixtures are likely to occur.<br>The explosion protection relating to this category must function in such a way as to provide a sufficient level of safety even in the event of equipment with operating faults or in dangerous operating conditions which normally have to be taken into account. |
| Ex db   | Type of protection applied to enclosure in which the parts which can ignite an explosive gas atmosphere are placed and which can withstand the pressure developed during an internal explosion of an explosive mixture, and which prevents the transmission of the explosion to the explosive gas atmosphere surrounding the enclosure   |
| Ex tb   | Type of protection based on the risk of the electrical equipment becoming an ignition source in an explosive dust atmosphere   |
| II C  | Group of gas for which the equipment is suitable   |
| III C   | Group of dust for which the equipment is suitable  |
| T*  | Temperature class for gas  |
| T*°C  | Temperature class for dust   |
| Gb  | Equipment protection level, equipment for explosive gas atmospheres, having a "high" level of protection   |
| Db  | Equipment protection level equipment for explosive dust atmospheres, having a "high" level of protection   |
| -40°C ≤ Ta ≤ +40°C or<br>-40°C ≤ Ta ≤ +55°C                                       | Ambient temperature range  |

## 01.Introduction-ForestFrog series LED light ATEX/UKCA and IECEx

- This user manual covers the range of ATEX/UKCA and IECEx ForestFrog Series LED luminaire. These luminaires are constructed with corrosion resistant epoxy coated free aluminum alloy body and high impact resistance tempered glass diffuser.
- ForestFrog Series LED are available from 30W to 60W, providing ideal solutions for a wide range of harsh and hazardous applications.

## 02.Electrical Supplies

| Size:Ø220*102mm           |                       |           |          |              |         |          |          |         |     |
|---------------------------|-----------------------|-----------|----------|--------------|---------|----------|----------|---------|-----|
| Voltage Range(AC)         | 100-277VAC (standard) |           |          | 24-48VDC/VAC |         |          | 10-30VDC |         |     |
| Frequency Range(Hz)       | 50/60Hz               |           |          | 50/60Hz      |         |          |          |         |     |
| Power Watts(W)            | 30W                   | 45W       | 60W      | 30W          | 45W     | 60W      | 30W      | 45W     | 60W |
| Standard Current Range(A) | 0.1~0.3               | 0.16~0.45 | 0.21~0.6 | 0.6~1.25     | 0.9~1.9 | 1.25~2.5 | 1~3      | 1.5~4.5 | 2~6 |

## 03.General

- These instructions should be read fully and carefully before attempting to install the luminaire.  
For details of servicing operations, opening etc. see section 5.
- Copies of these instructions should be held in a safe place for future reference.  
It is the responsibility of the installer to ensure that the apparatus selected is fit for its intended purpose and that the installation, operation and maintenance of the apparatus complies with applicable regulations, standards or codes of practice.  
Installation should be carried out in accordance with (IEC)EN60079-14 or with a local hazardous area code of practice, whichever is appropriate.
- Risk of electrostatic discharge:
  - a. Avoid mounting near fast moving streams of air and in areas where effective charging mechanism that could lead to brush propagating discharges could sussist.
- Any specific installation instructions must be referred to the luminaire should be considered Class I to EN 60598 and effectively earthed.  
Certification details on the nameplate must be verified against the application requirements before installation.
- The information in this leaflet is correct at the time of publication.
- Use in Combustible Dust Atmospheres.
  - a. De-rating of the surface temperature will be required where dust clouds may be present
  - b. Do not allow dust to accumulate in layers
  - c. Dust in layers has the potential to form ignitable clouds and to burn at lower temperatures
- Refer to (IEC)EN60079-10-1, (IEC)EN60079-10-2 & (IEC)EN60079-14 for additional details of selection and installation.
- Install the equipment as far away as possible from heating/cooling sources or areas subject to sudden temperature changes.

### 3.1 Tools

- 4 mm and 5 mm flat blade screwdriver, large cross head screwdriver and inner hexagon counter wrench, suitable spanners for installing cable gland, pliers, knife, wire stripper and cutter.

### 3.2 Mounting

- Luminaire should be installed where access for maintenance is practical and in accordance with lighting design information.  
Refer to the note in 3. concerning electrostatic charge.
- See 5 installation diagram for installation mode and method.

### 3.3 Cabling and Cable Gland

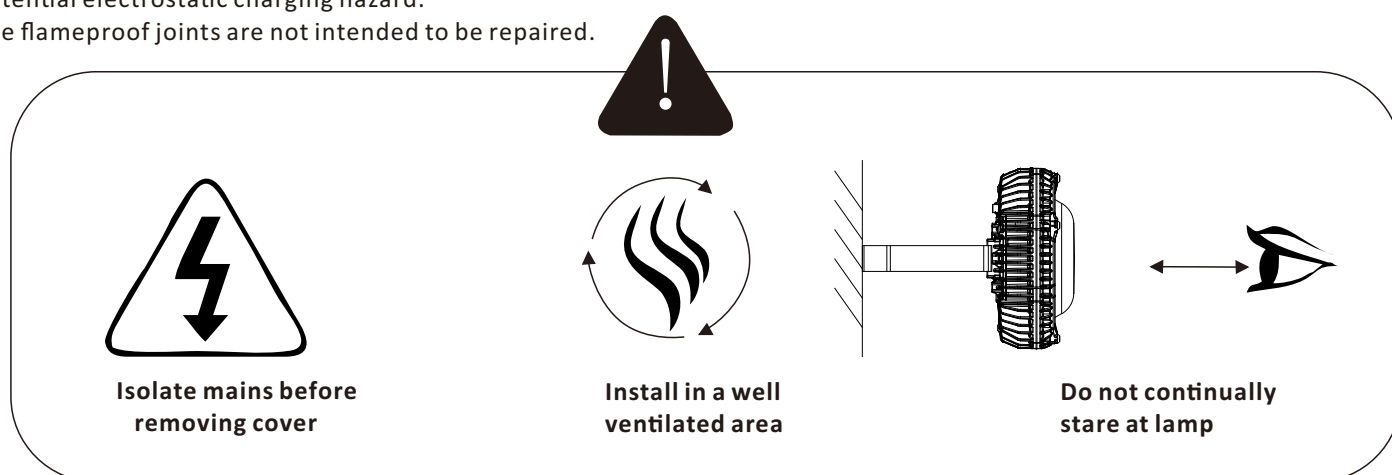
- The temperature conditions at the supply cable entry point are such that 90°C cable can be used.
- Equipment certified cable gland or sealing plugs must have suitable ATEX/UKCA/ IECEx approval.  
When installed the cable gland or sealing plug should maintain the IP rating of the enclosure IP66.
- The thread specification and installation requirements are detailed in the "remarks" part of Clause 5.
- Install the equipment as far away as possible from heating/cooling sources or areas subject to sudden temperature changes.

### 3.4 Electrical Connections and Testing

- If any operation is to be done on any luminaire already connected to the electrical system, the luminaire must be isolated from the system.
- To access the mains terminals, loosen the fixing screws, remove the power cover.
- The cable connection method is detailed in 5.2.1. The minimum cross sectional area of the conductor involved in the equipment earth bonding shall be 4mm<sup>2</sup>.
- The normal method of insulation testing is to connect Live and Neutral together and test between this point.  
However, if this is not possible luminaire can be tested with an insulation tester that complies with IEC 364 with a maximum output current of 1mA and output voltage of 500V dc. (Units damaged by incorrect insulation testing can be detected).  
Before completing the wiring, ensure that all the connections are correctly introduced into place before reassembling the luminaire.

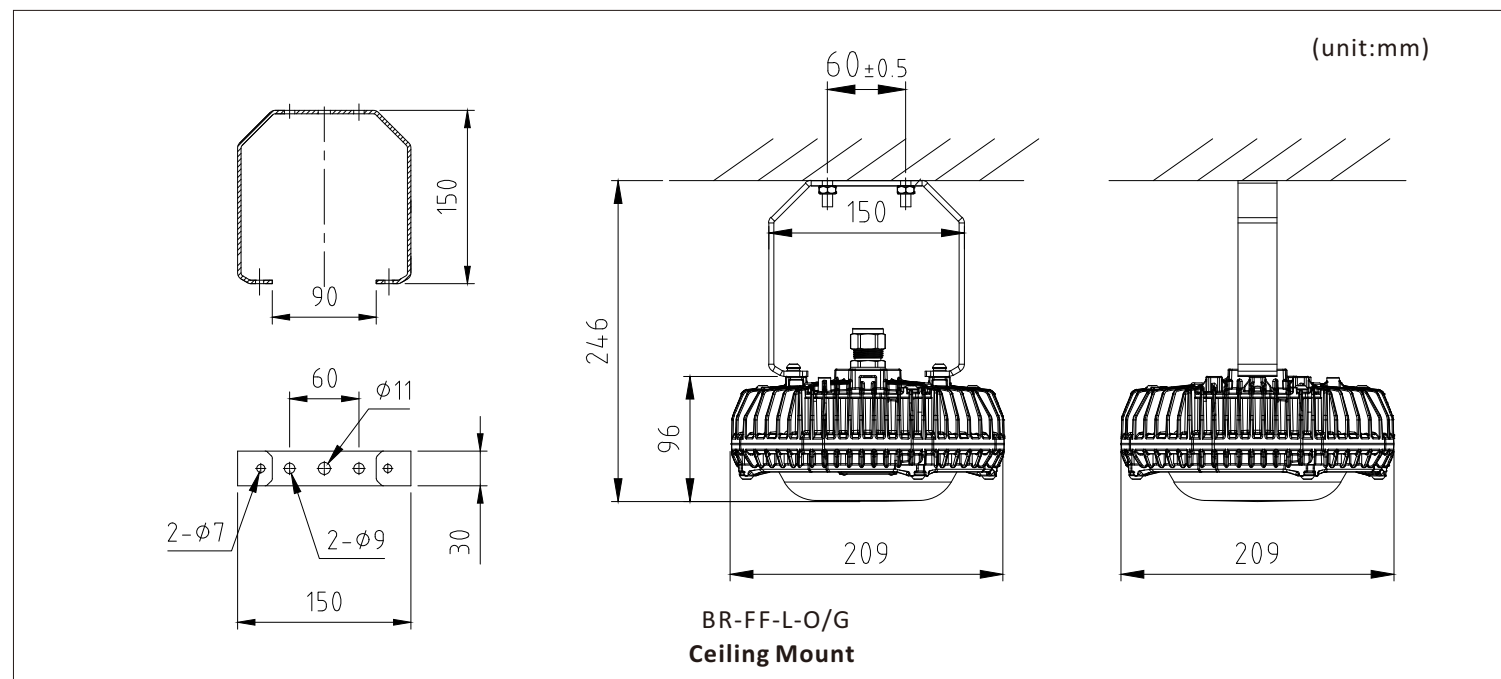
## 04.Safety instruction

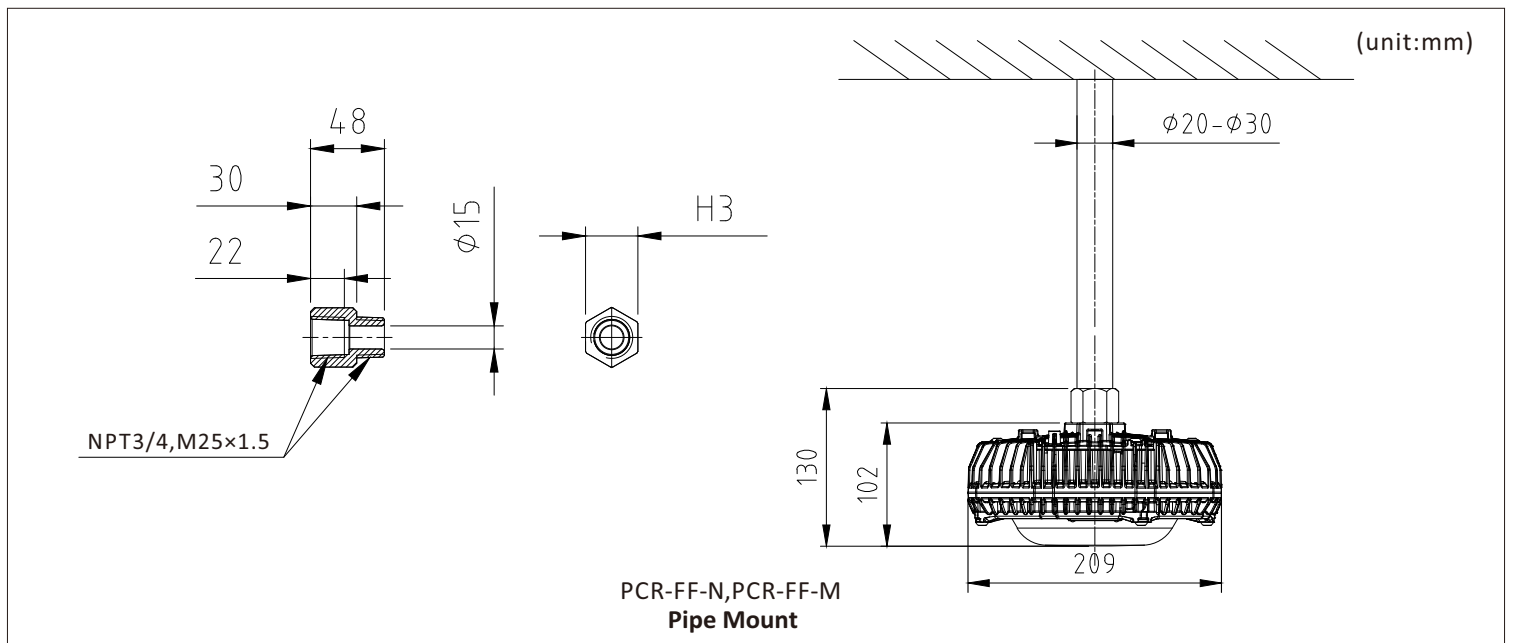
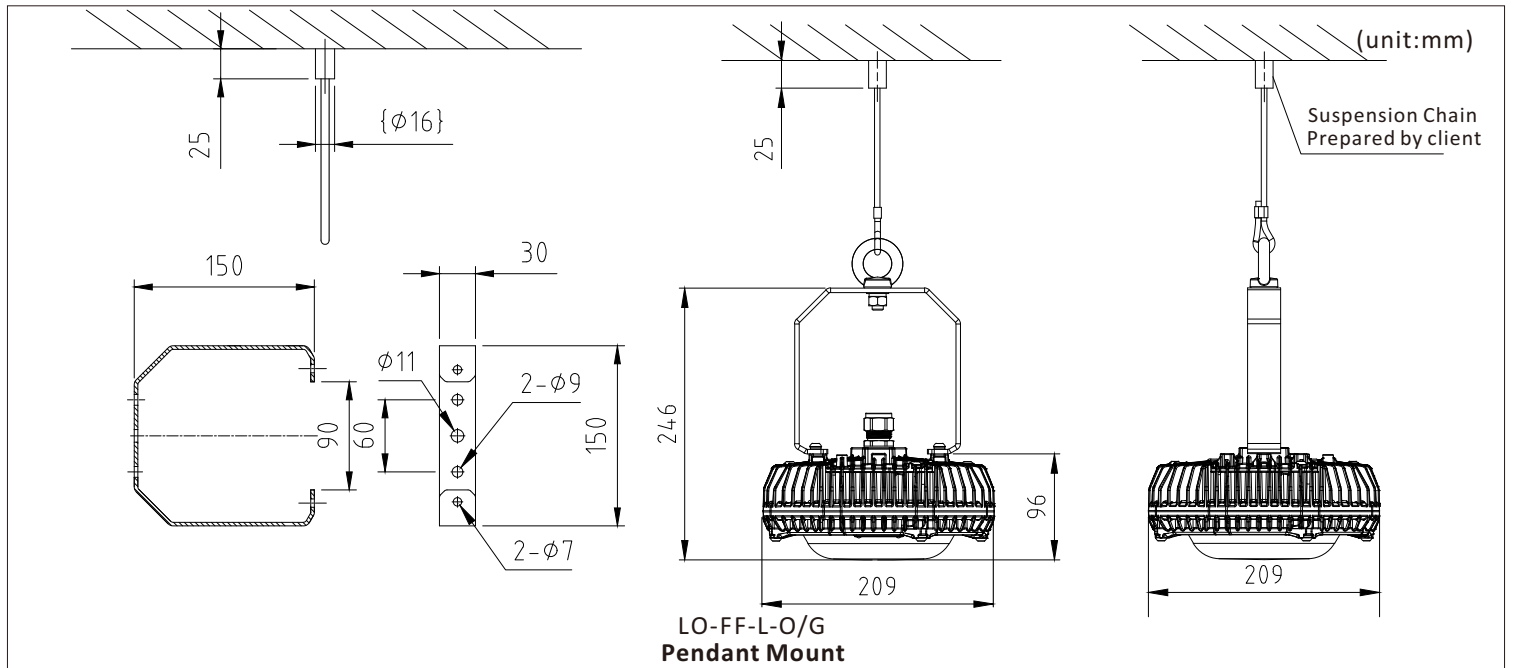
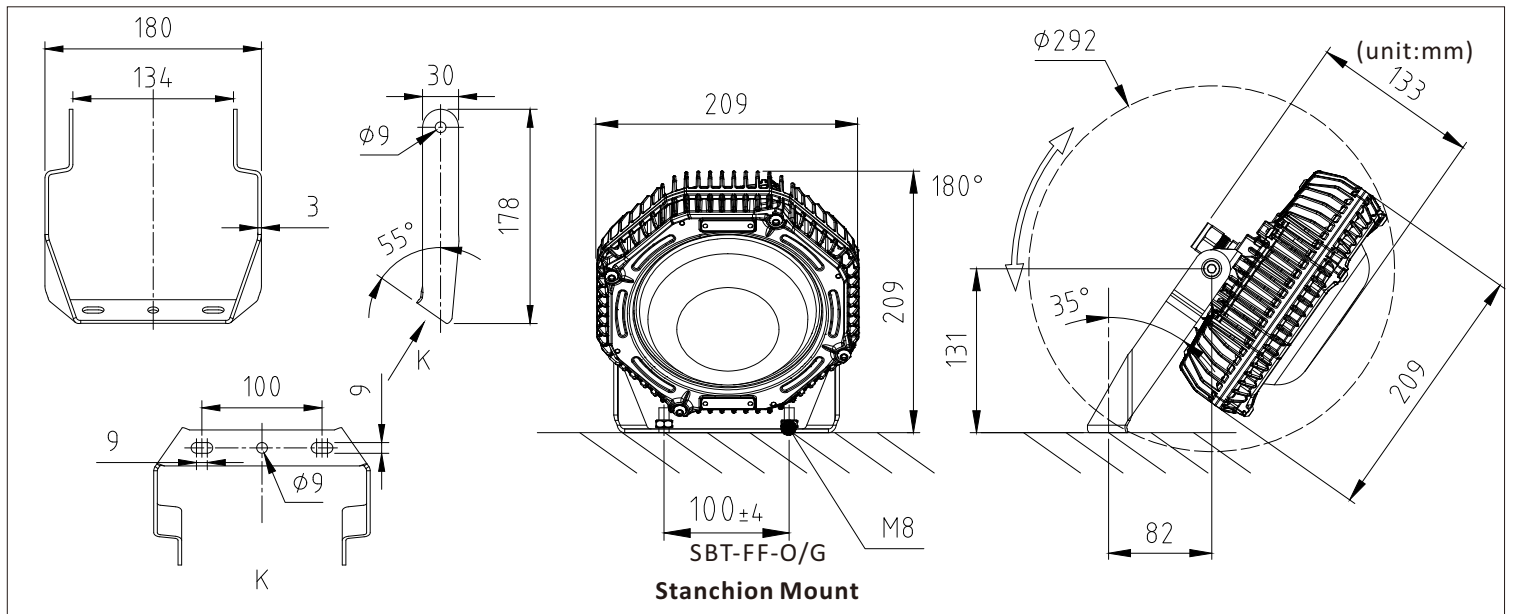
- Read this leaflet carefully before commencing to install the luminaire unit and retain it for future use. Installation can only be carried out by suitably qualified personnel.
- Check the certification to ensure that the Zone, mains supply, ambient temperature present and "T" rating are suitable for the environment the unit is being installed in.
- Check Product Important Information in this user manual to ascertain type of threaded cable entry on the luminaire. Select suitably certified ATEX/UKCA/IECEx cable glands and stopper plugs with a minimum of 5 full thread engagement and be of a medium/fine tolerance to ISO965-1 and ISO965-3. The cable entry devices selected must maintain the IP rating of the luminaire.
- The incoming mains cable should not exceed a temperature rise of 20°C above the ambient conditions; select suitable cable.
- To ensure the safety of the equipment, ensure that the 'flame-path' on Zone 1 variants are free from any corrosion. No repairs are possible to flameproof joints if in doubt please consult the manufacturer.
- External fasteners must have a yield strength of at least 450N/mm<sup>2</sup>.
- On Zone 1 variants the LED assembly contains no user service able parts, the luminaire must not be operated without all the individual LED covers in position, the IP66 rating must be maintained.
- Potential electrostatic charging hazard.
- The flameproof joints are not intended to be repaired.



## 05.Installation method

Based on the use of the scene and actual requirements, we have designed the following installation methods for customers to choose from:





Remarks:

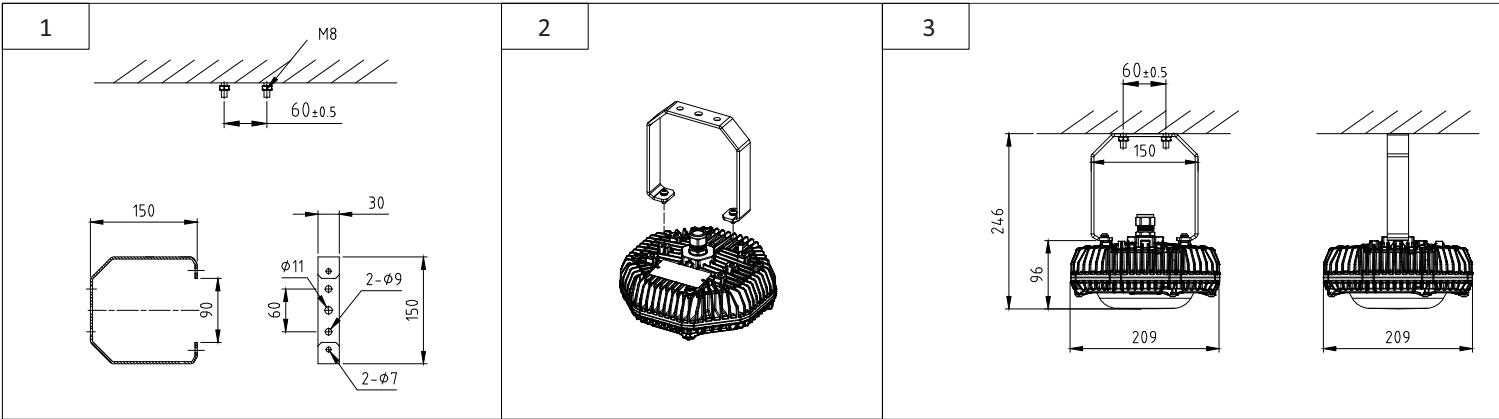
- External grounding cable cross-sectional area shall not be less than 4mm<sup>2</sup>.
- Entries into enclosures torque of locking cable introduction device 40 N.M.
- Select the cable glands or plug that meets the requirements in the (IEC)EN60079-0 and (IEC)EN60079-1 and the relevant requirements in the (IEC)EN60079-14.

5.1 Installation decomposition

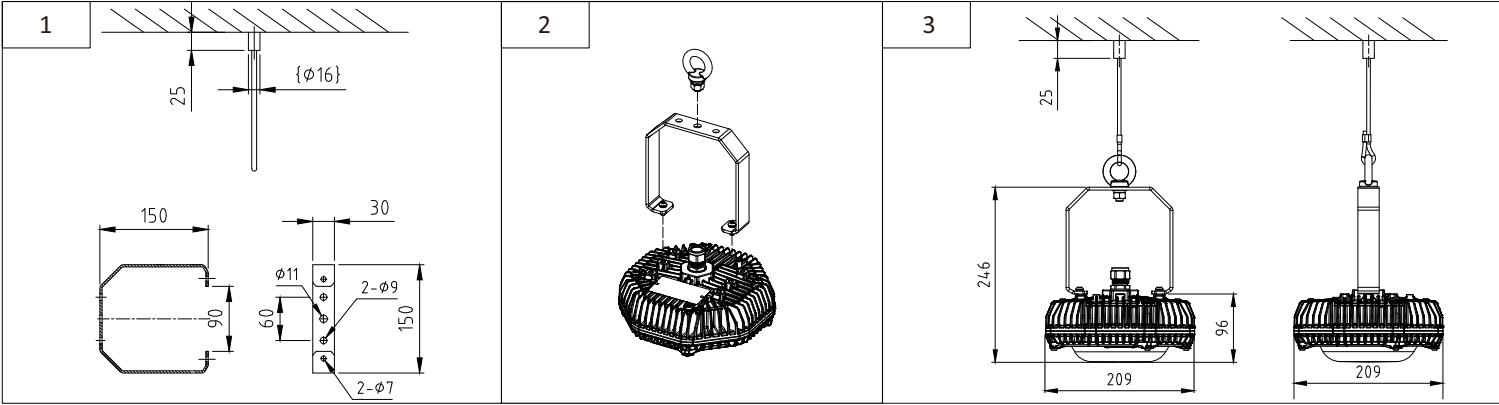
It is the responsibility of the installer to ensure that the apparatus selected is fit for it is intended purpose and that the installation, operation and maintenance of the apparatus complies with applicable regulations, standards or codes of practice. Installation should be carried out in accordance with (IEC)EN60079-14 or with local hazardous area code of practice, whichever is appropriate.

Please refer to the following installation drawing for different installation methods.

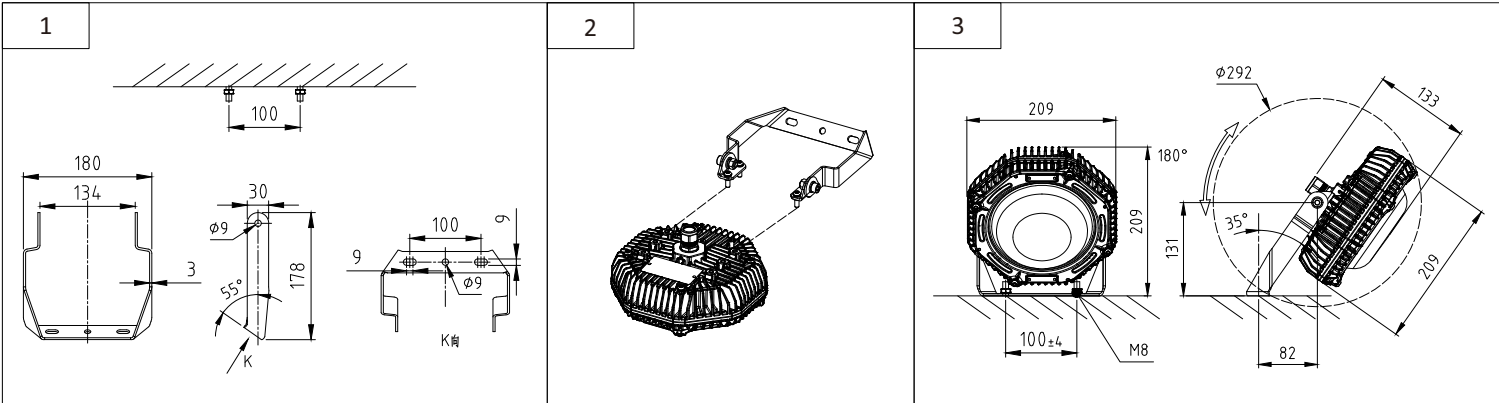
• 5.1.1 Ceiling mount(unit:mm)



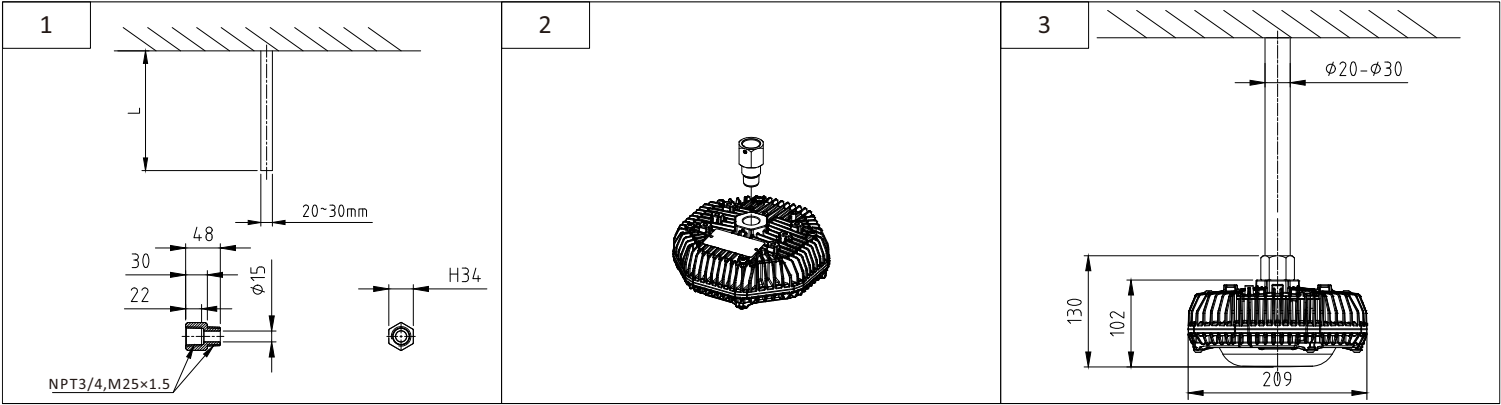
• 5.1.2 Pendant mount(unit:mm)



• 5.1.3 Stanchion mount / Wall mount



• 5.1.4 Pipe mount

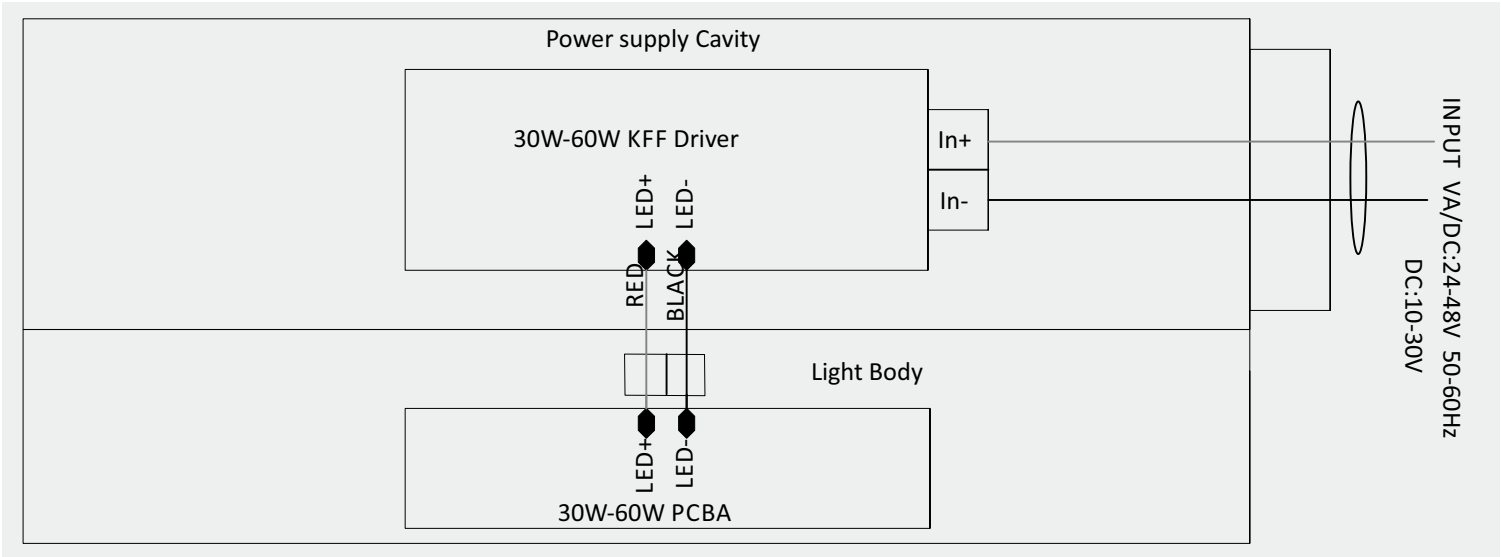
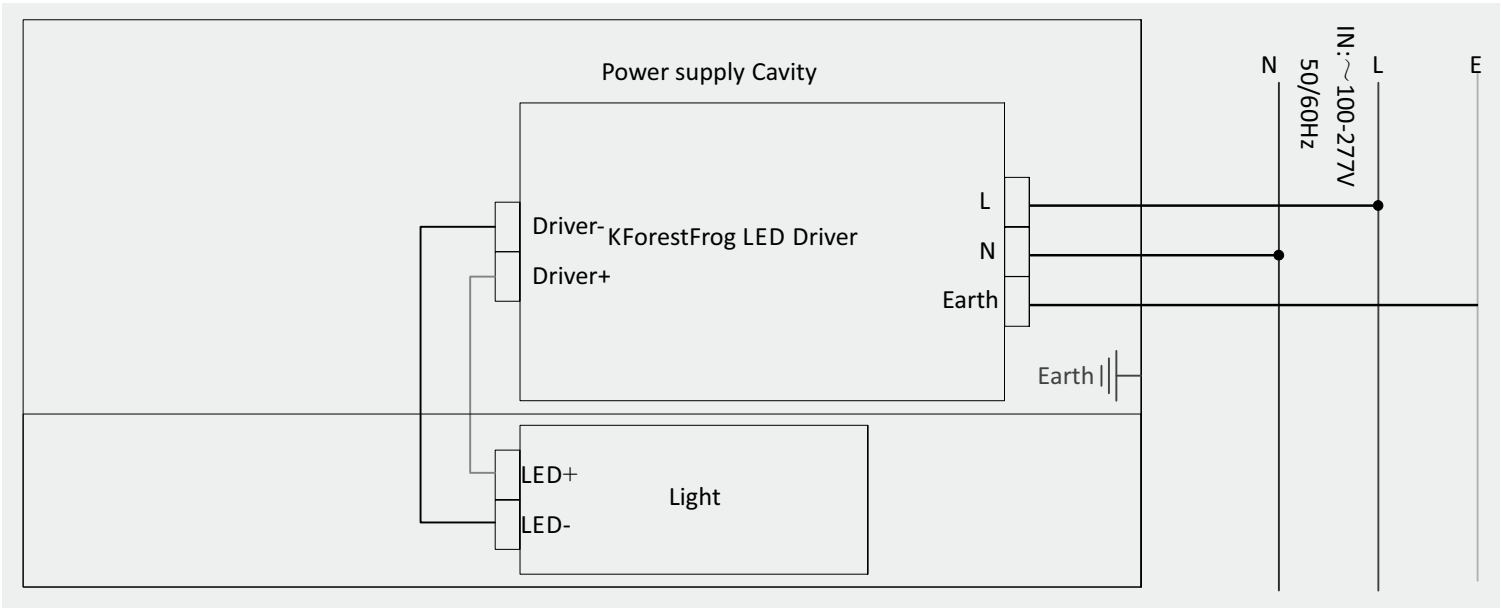


Please use the cable with outer diameter of 7-14mm. The tightening torque of pipe connector is 40N.M .

5.2 Electrical Principles and Connections

In addition to referring to the relevant contents of this manual, the certified personnel who have obtained the corresponding certificate according to (IEC)EN60079-14 shall strictly comply with the requirements of (IEC)EN60079-14 when installing luminaire. When installed, ensure that the luminaire is effectively grounded (internal or external).

• 5.2.1 Electrical Principles





### • 5.2.2 Cascade

| MCB Type | Rating | 30W | 45W | 60W |
|----------|--------|-----|-----|-----|
| B        | 16A    | 12  | 12  | 9   |
| C        | 16A    | 18  | 18  | 14  |

According to MCB data sheet, the qty of luminaires in one Parallel connection is calculated at 230VAC

## 06.Repairs Maintenance

Visual tests and checks should be carried out at intervals described by the appropriate regulations, (IEC)EN 60079-17, and should include the following (including but not limited to).

- Check for mechanical damage/corrosion.
- Check connections, fixings, glands and plugs.
- Check for undue accumulations of dust, dirt or moisture.
- Check for unauthorized modifications.

Periodic inspection of the enclosure seal should be checked out to ensure that the seal is sound.

If the luminaire has been subject to abnormal conditions, for example, severe mechanical impact or chemical spillage, it must be de-energised until it has been inspected by an authorized and competent person.

## 07.Cleaning of luminaire

- The complete luminaire (without disassemble) can be cleaned with neutral water solution.  
After cleaning, rinse or wipe dry with clean water.
- It is forbidden to use any chemical or hydrocarbon solvent cleaner to clean the diffuser, otherwise serious damage may be caused.

## 08.Disposal of Material

### General

Disposal of the luminaire as waste should be carried out in accordance with national regulations.

Any disposal must satisfy the requirements of the WEEE directive [2012/19/EU] and therefore must not be treated as commercial waste.

The unit is mainly made from incombustible materials.

The control gear contains plastic, resin and electronic components.

All electrical components may give off noxious fumes if incinerated.



To comply with the Waste Electrical and Electronic Equipment directive 2012/19/EU the apparatus cannot be classified as commercial waste and as such must be disposed of or recycled in such a manner as to reduce the environmental impact.

## 9.Transportation

Weatherproof measures should be taken during transportation.

It is strictly forbidden to load and unload violently, and it is strictly forbidden to drop and roll from high altitude, so as to prevent mechanical damage.

## 10.Storage

The luminaire should be stored in ventilated, non-dropping and non-liquid warehouse at the temperature of -20°C to +40°C and relative humidity ≤95%RH.

The surroundings should be kept from corrosive gases which may damage metal and insulation.

## 11.Optional Parts

WARNING – DO NOT OPEN WHEN ENERGISED

WARNING – AFTER DE-ENERGISING, DELAY 10 MINUTES BEFORE OPENING

CAUTION – USE FASTENERS WITH YIELD STRESS  $\geq 450\text{MPa}$






WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD

CAUTION – ONLY USE CABLES SUITABLE FOR  $90^{\circ}\text{C}$

WARNING – DO NOT OPEN WHEN AN EXPLOSIVE GAS ATMOSPHERE IS PRESENT

WARNING – CLEAN ONLY WITH A DAMP CLOTH

## 12.Optional Parts

| No. | Installation accessories | Part No.             | Picture   | Material | Weight(Kg) | QTY | Remark          |
|-----|--------------------------|----------------------|---|----------|------------|-----|-----------------|
| 1   | Bracket                  | BR-FF-O/G            |    | Q235     | 0.24       | 1   | Ceiling mount   |
| 2   | Loop                     | LO-FF-O/G            |    | Q235     | 0.36       | 1   | pendant mount   |
| 3   | Stanchion bracket        | SBT-FF-O/G           |   | Q235     | 0.47       | 1   | Stanchion mount |
| 4   | Pipe connector           | PCR-FF-N<br>PCR-FF-M |  | SUS304   | 0.28       | 1   | Pipe mount      |
| 5   | Guard                    | GU-FF                |  | SUS304   | 0.13       | 1   | /               |



NOTE: The manufacturer reserves its right to translate this document in other languages depending on the destination country of the goods keeping the same content and level of detail of this document

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