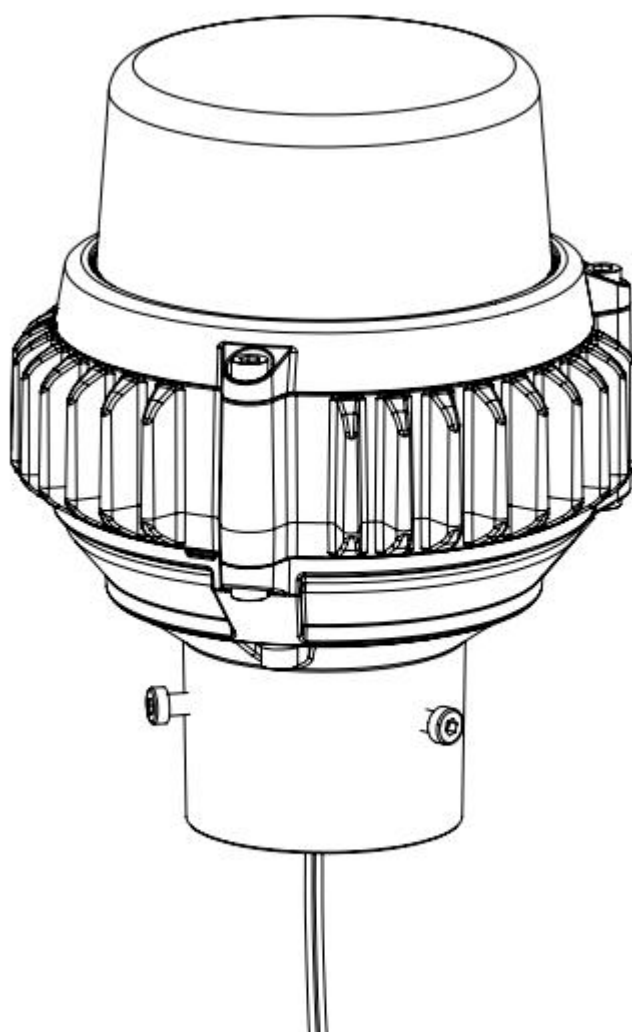


LED AIRFIELD LIGHTING



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Disclaimer/Standard Warranty

All products manufactured by Hangdakang Mechanical & Electrical technology (Wuhan) co. LTD, hereinafter referred to as HDK, meet the requirements of CAAC, ICAO and IEC. All warranties provided by HDK exclude all cases of gross negligence and handling of all products.

In case of avoidable defects or failure caused by mechanical, electrical or physical defects, the company will provide the necessary spare parts for repair.

The replacement and delivery of spare parts shall meet the requirements of proper storage, installation, and maintenance of the products, and shall submit the spare parts requirements to the Company in writing.

Hangdakang Mechanical & Electrical technology (Wuhan) co. LTD reserves the right to inspect the avoidable defective or damaged products in its own company facilities.

The obligations of Hangdakang Mechanical & Electrical technology (Wuhan) Co. LTD are limited to the labor cost required for disassembly and assembly of the product and the delivery of the corresponding products.

Hangdakang Mechanical & Electrical technology (Wuhan) co. LTD assumes no liability for injury or damage resulting from any incorrect use of the equipment. All products and their equipment are explicitly designed for their intended use only. Any other use outside the scope of the instructions is considered incorrect and excluded from the warranty.

Included are:

- Use HDK products outside of their intended operating use.
- Any changes or modifications to products that are not explicitly approved.
- Use of unauthorized, incompatible or unapproved tools by HDK or local regulations.

Local regulations on labour safety must always be followed in addition to those of HDK.

HDK reserves the right of interpretation within the scope permitted by law.

1. Safety

Airfield Ground Lighting is installed in high voltage series circuits, where the primary voltage is usually from several hundred to thousand volts and can be fatal if operated improperly. International or national standards referring to the electrical safety and safety of electrical operations should be strictly implemented during the operation and maintenance. Correct safety regulations must be always followed during any operation in lighting circuit On and Off state conditions.

Pay attention to all safety tips and instructions in this user manual. Negligence in following safety practices and instructions can result in serious injury, accident, or death. Safety instructions are categorized following the IEC standard and accompanied by an icon accordingly. Safety instructions and icons are listed and explained below:

**DANGER:**

Risk of electrical shock or flashover. Before any operations, please disconnect the equipment from line voltage, and never connect or disconnect live circuits. Failure to observe "Danger" may result in severe injury, death, or equipment damage.

**WARNING:**

Failure to strictly follow "Warning" may result in personal injury, death or equipment damage.

**CAUTION:**

Ignoring or violating "Caution" may cause damage to equipment.

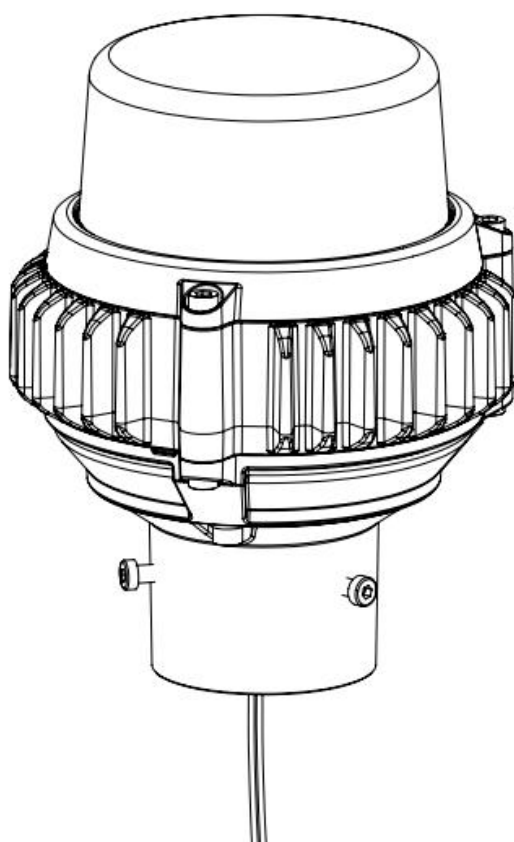
**Note:**

Explanations and supplements to some of the text description.

2. Introduction

The Bi-directional elevated light series produced by HDK can be applied to airfields with various conditions. It is equipped with Omni-directional circling guidance function. The product has met the requirements of ICAO, CAAC, IEC and FAA standard and is famous for its ultra-durable structure, extreme elegant design as well as long maintenance-free period. The light source is made from imported energy-saving and long-life LED.

Figure 1 – Bidirectional Elevated Light Series



2.1. Models & Variants

This manual is suitable for HDK Bi-Directional Elevated LED Light Fixture. Depending on the application, light output direction and color, this series of light fixture can be

divided into multiple different models, which are shown in Table 1 :

Table 1 - List of the Light Series

Application	Model	Control Type/ Color	CAAC Type	ICAO Type	FAA Type
Runway Edge	ELB-REH-WW/O(L)	Single/ White White (with Omni)	L-3K/L-3L	A2-9/A2-10	L-862
	ELB-REH-WR/O(L)	Single/ White Red (with Omni)	L-3K/L-3L	A2-9/A2-10	L-862
	ELB-REH-WY/O(L)	Single/ White Yellow (with Omni)	L-3K/L-3L	A2-9/A2-10	L-862
	ELB-REH-YR/O(L)	Single/ Yellow Red (with Omni)	L-3K/L-3L	A2-9/A2-10	L-862
Runway Edge	ELB-REH-WW(L)	Single/ White White		A2-9/A2-10	L-862
	ELB-REH-WR(L)	Single/ White Red		A2-9/A2-10	L-862
	ELB-REH-WY(L)	Single/ White Yellow		A2-9/A2-10	L-862
	ELB-REH-YR(L)	Single/ Yellow Red		A2-9/A2-10	L-862
Threshold	ELB-THR-L862E(L)	Single/ Green			L-862E
Threshold/ Runway End	ELB-THRE-L862E-S(L)	Single/ Green Red			L-862E
Runway End	ELB-RWE-L862E(L)	Single/ Red			L-862E



Note: In Table 1, ELB-REH-WR/O(L) contains ELB-REH-WR/O(L) and ELB-REH-RW/O(L) two models. They are only distinguished by glowing directions. Same rule applies to the ELB-REH-WY/O(L) and ELB-REH-YW/O(L), ELB-REH-YR/O(L) and ELB-REH- RY/O(L), ELB-REH-RW(L) and ELB-REH-WR(L), ELB-REH-WY-(L) and ELB-REH-YW(L), ELB-REH-YR(L) and ELB-REH-RY(L);

2.2.Product Features

This series of light fixture uses energy-saving, long-life LED light source.

The main components of the light fixture include transparent top cover, light fixture body, optical components, driver module, and sealing ring, etc. Aluminum alloy high pressure casting technique is adopted in the making of light fixture body and the transparent top cover is made of high strength Pyrex glass material. All fasteners are made of 316 stainless steel and the sealing ring is made of high temperature and aging resistant silicone rubber. The overall design logic of the light fixture is for stable installation and heat dissipation.

The LED light source is imported from OSRAM brand. The optical components of the product adopt a fully universal design.

This series of LED light fixture can be used in the existing AC series circuit. A dimming control of 5 light intensity levels can be performed with the equipped isolation transformer in corresponding power.

The light fixture is equipped with secondary cables and L-823 electrical connection plugs that comply with FAA standards. Also, the light fixture can be mounted on flange using a frangible mast or on the top cover of an isolated transformer box.

Compliance with Standards (current version)

- ICAO Annex 14, Volume 1, & Aerodrome Design Manual
- EASA CS-ADR-DSN
- IEC TS 61827
- FAA AC150/5345-46 & Engineering Brief NO. 67D
- AENA DIN-DSEYN-PPT
- TCCA TP 312
- UK CAA CAP 168

2.3. Electrical Properties

Input Cable

- FAA L823 Class A, Type II, Style 6 ; Plug*1

Input Current

- 2.8A-6.6A_{eff} AC

Sine Wave CCR

- $I_{\text{peak max}} = 9.88\text{A}$

Thyristor CCR

- $I_{\text{peak max}} = 12.60\text{A}$, $j_{\text{min}} = 45^\circ$

Table 2 - Requirements for Specification of Isolation Transformer

Application	Model	Suggested Transformer Specs
Runway Edge	ELB-REH-WW/O(L)	$\geq 45\text{W}$
	ELB-REH-WR/O(L)	$\geq 45\text{W}$
	ELB-REH-WY/O(L)	$\geq 45\text{W}$
	ELB-REH-YR/O(L)	$\geq 45\text{W}$
Runway Edge	ELB-REH-WW(L)	$\geq 45\text{W}$
	ELB-REH-WR(L)	$\geq 45\text{W}$
	ELB-REH-WY(L)	$\geq 45\text{W}$
	ELB-REH-YR(L)	$\geq 45\text{W}$
Threshold	ELB-THR-L862E(L)	$\geq 45\text{W}$

Threshold/ Runway End	ELB-THRE-L862E-S(L)	≥45W
Runway End	ELB-RWE-L862E(L)	≥25W

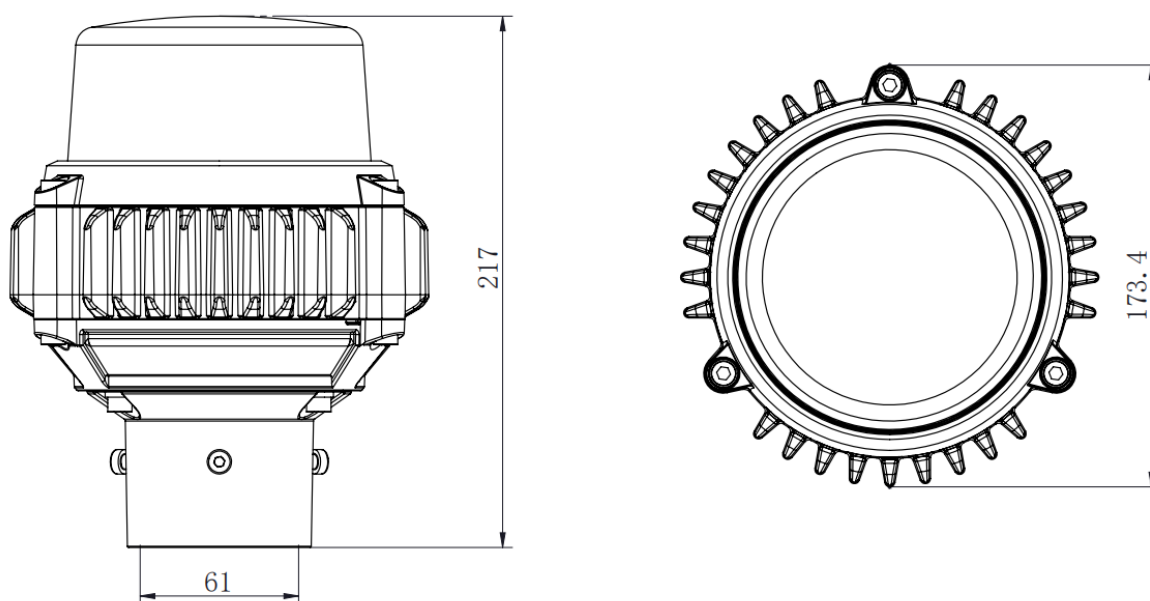
2.4. Mechanical Properties

Diameter of light fixture: 173.4mm

Height of light fixture: 217mm

Inner Diameter of mounting hole: 60mm

Figure 2 – Major Dimensions of the Light Fixture



Degree of Protection

- IP67 (IEC 60598-1)

Operating Temperature

- -55°C ~ +55°C

Storage Temperature

- -55°C ~ +85°C

Weight

- Net Weight: 3.5 kg
- Gross Weight: 7.4kg (2 Sets / Package)

Package Dimensions

- 360mmx225mmx350mm (2 Sets / Package)

2.5. Main Components

The HDK bi-directional elevated LED light fixture contains following main components:

Transparent Top Cover

- Transparent top cover - High-strength Pyrex glass material

Optical Component

- LED luminaire source with the color of white, red, yellow and green.
- LED Aluminum-based circuit board
- Unidirectional light reflector
- Omnidirectional circling guidance lens

The upper half of light fixture body

- Aluminum alloy Body Top Cover with spray plastic anti-corrosion treatment
- Cover fastener with spray plastic anti-corrosion treatment

Driver Module

- Driver circuit board
- Potting compound
- Heat sink

The lower half of the light fixture

- Aluminium alloy bottom cover with spray plastic anti-corrosion treatment
- Adjustable & supporting part including electronic and plug with spray plastic anti-corrosion treatment
- Power cord - Plug: FAA L-823 Class A, Type II, Style 6, Secondary cable: FAA

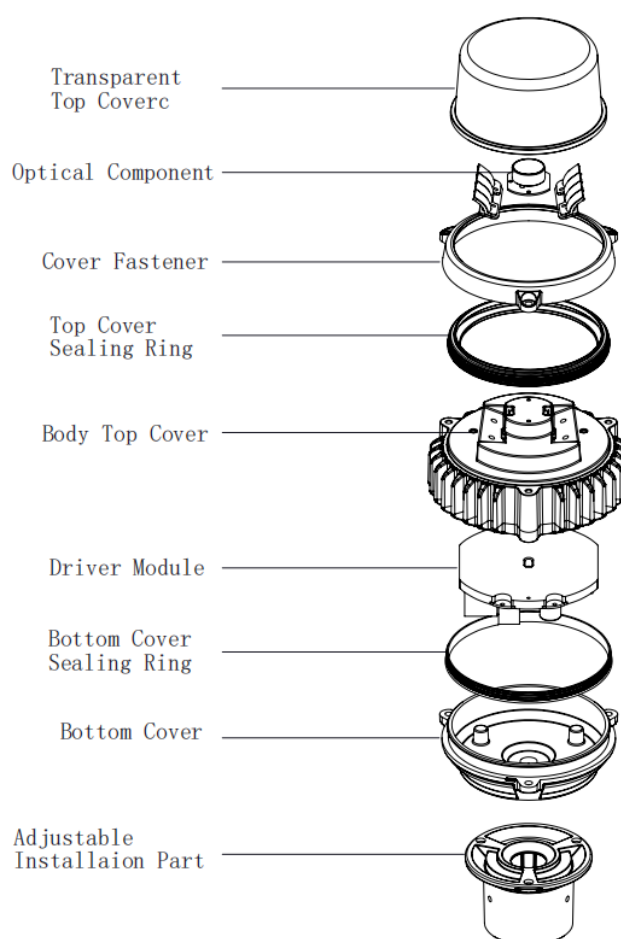
150/5345-7F

- Power cord sealing head

Others

- Light fixture Body sealing ring- "O" Type
- Fastener - Anti-corrosion 316 stainless steel
- Thermal grease

Figure 3 – Exploded View of the Light Structure



2.6. Symbol on the Light Fixture

CAUTION: The following content is crucial for both installation and maintenance.
Please pay attention.

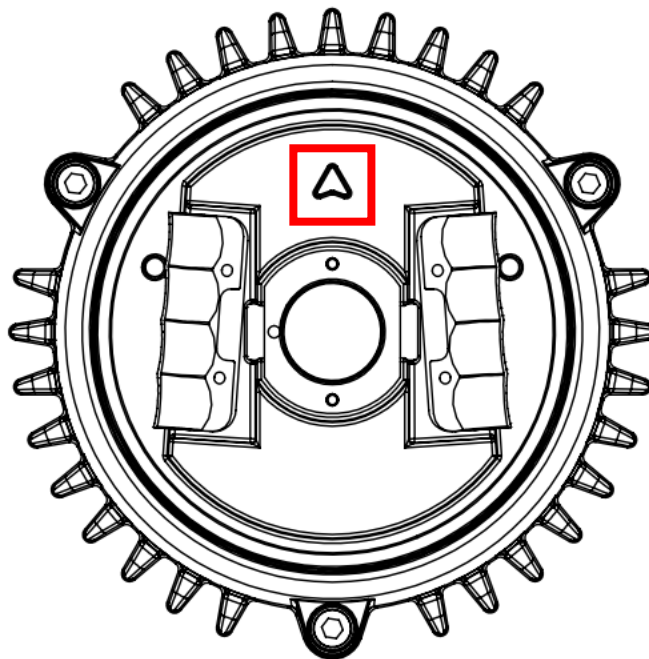


2.6.1. Arrow Mark

The arrow mark located on the top cover is a crucial symbol for light fixture assembling and installation. Please make sure that:

For runway light fixture, the arrow mark on the top cover should always point to the direction of runway center line.

Figure 4 – Arrow Mark on the Body Top Cover

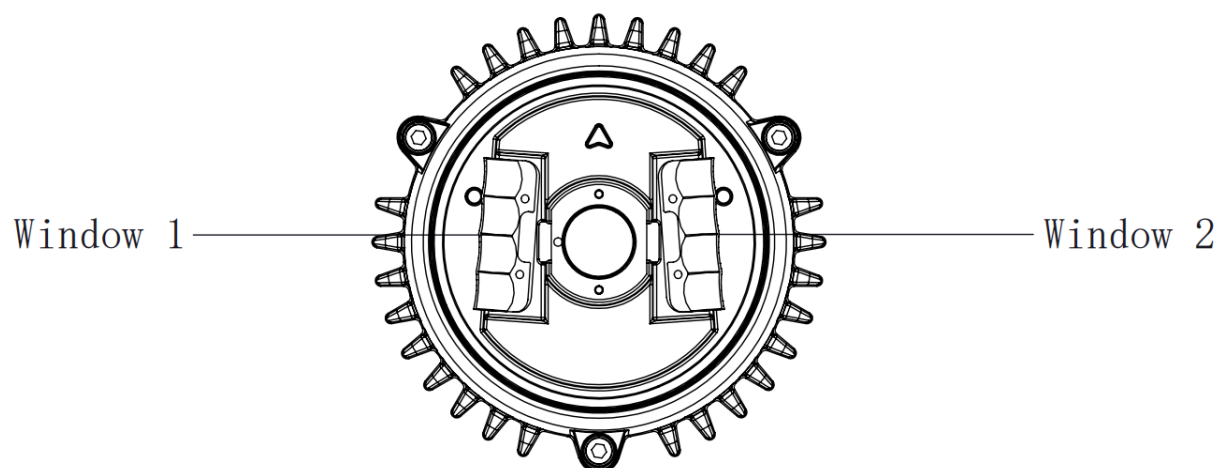


2.6.2. Window Number

Overlooking the top cover of light fixture, the left side is window 1 and the right side is

window 2 when the arrow mark is pointing upwards. Conversely, the right side is Window 1, the left side is window 2 when the arrow mark is downwards.

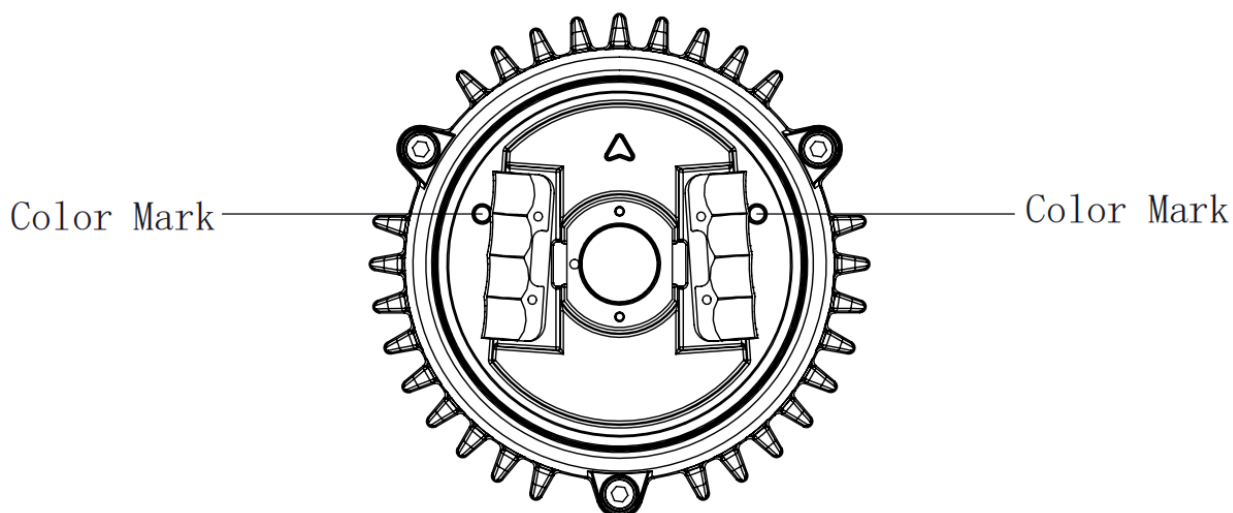
Figure 5 – Window Number



2.6.3. Glowing Color & Direction Mark

The glowing color marks of the HDK bi-directional elevated light fixture are located on the top cover.

Figure 6 – Glowing Color Mark



Note:



White



Red



Yellow



Green



2.7. Nameplate



3. Installation

WARNING:

Before installation, please make sure that the primary circuit of the light fixture is powered off, that is, turn off the constant current regulators power of the circuit.

For the installation position requirements of the light fixture, please refer to the MH5001 Technical Standards for airfield area of civil airports and the ICAO Annex 14, Volume 1.

3.1. Tools Required

The tools and materials required for installation are listed below:

- Hexagon wrench (Specification: 11mm, 17mm)
- Cable seam sealing material and insulating tape
- Bi-directional elevated light fixture calibrator
- Impact drill and accessories
- Clean cloth

Note: The bi-directional elevated light fixture calibrator is a special designed tool for installation and maintenance of the HDK light fixture and can be ordered from HDK.



3.2. Unpack the Unit

Please check carefully whether the package is in good condition. After opening the package, please promptly claim compensation from the carrier if the product and accessories in the package are damaged.

When receiving the light fixture cargo, please confirm whether the product information on the cargo list is consistent with the actual construction design. At the same time, please check the quantity, type, specification, color and other characteristics of the light fixtures on the cargo list are consistent with those of the

actual cargo. If you find any problem, please contact the supplier as soon as possible.

CAUTION: The packaging of this product can be used for various purposes such as future maintenance, uninstallation and transportation of the light fixture. Please keep the product packaging properly after receiving the cargo.



3.3. Installation on the Light Fixture Base

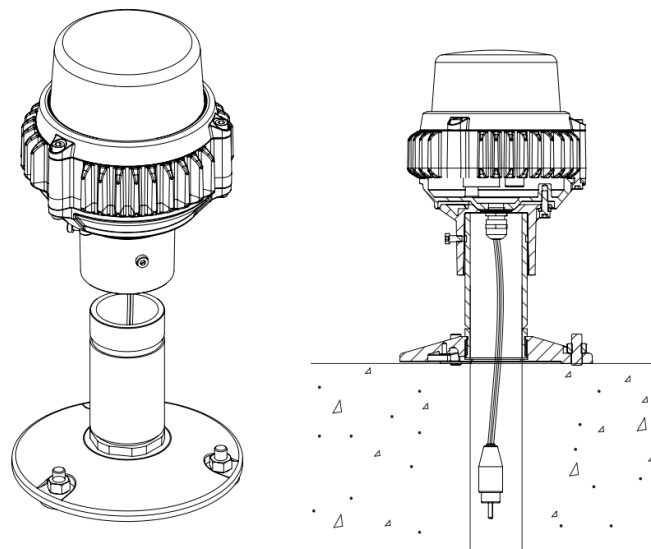
Please check the following items before proceeding:

Please confirm that the angle of the light fixture base is consistent with the design requirements and construction regulations.

Make sure that the breakable coupling parts meet the lighting installation requirements

Please make sure that the length of the reserved secondary cable is 30-50cm for installation and maintenance.

Figure 7 – Installation on the Light Fixture Base



- Use an air compressor to blow and dry the threading tube;
- Confirm the installation position of the flange. Pre-embed M10 bolts or M10

expansion bolts, and fix the flange of the light fixture on the pavement, then tighten the frangible mast sleeve tube of the light fixture after fixing the flange ;

- Assemble the secondary power supply cable of the light fixture through the frangible mast sleeve tube according to the L-823 plug and socket connection method (Plug: FAA L-823, Type 1; Socket: FAA L-823, Type 12). Use sealing tape if necessary;
- Insert the light fixture into the frangible mast sleeve tube according to the glowing direction ;
- Adjust the aiming direction of the light fixture (See section 3.5 for detail);
- Tighten the fixing bolts so that the light fixture can be fixed to the frangible mast.

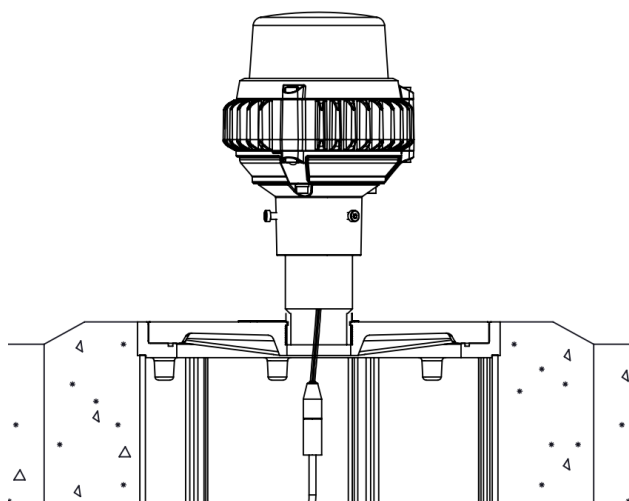
CAUTION: Be careful not to cut or press the cable during the operation.



Do not use high-speed power tools to tighten the bolts, as this may cause slippage.

3.4. Installation on the Top Cover of the Isolation Transformer

Figure 8 – Installation on the Top of the Isolation Transformer



- Screw the frangible mast on the 1-inch or 2-inch screw holes on the top cover of the isolation transformer;

- Assemble the secondary power supply cable of the light fixture through the frangible mast according to the L-823 plug and socket connection method (Plug: FAA L-823, Type II; Socket: FAA L-823, Type 12). Use sealing tape if necessary;
- Insert the light fixture into the frangible mast sleeve tube according to the glowing direction;
- Adjust the aiming direction of the light fixture (See section 3.5 for detail);
- Tighten the three M6 fixing bolts so that the light fixture can be fixed to the frangible mast sleeve.

CAUTION: Do not use high-speed power tools to tighten the bolts, as this may cause slippage.



Be careful not to cut or press the cable during the operation.

3.5. Leveling and alignment

CAUTION: These steps only apply to the installation of new light fixture.



Visually check the gradienter during the adjusting process so that the small liquid bead in every gradienter installed on the calibrator is always stabilized within the range of the black line.

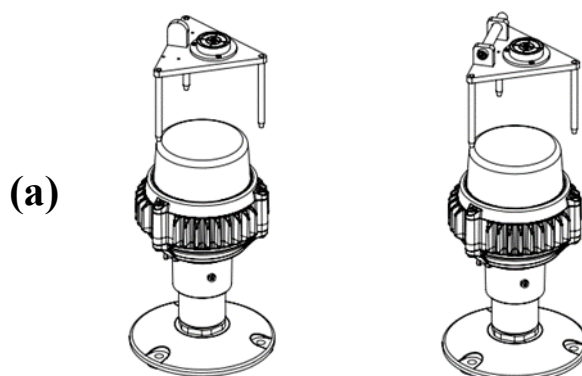
Note:



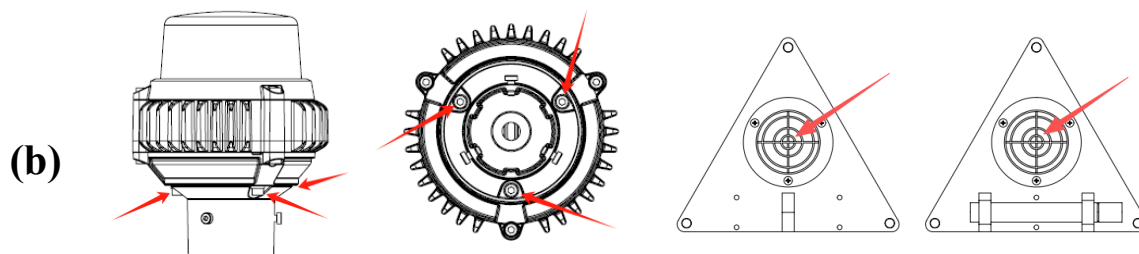
The first lamp requires an auxiliary laser positioning tool to ensure that the arrow direction of the lamp is perpendicular to the runway centerline.

- Align the three brackets of the calibrator to the middle of the three fixing bolts of the transparent top cover and keep the calibrator steady (Removing the transparent top cover is not required).

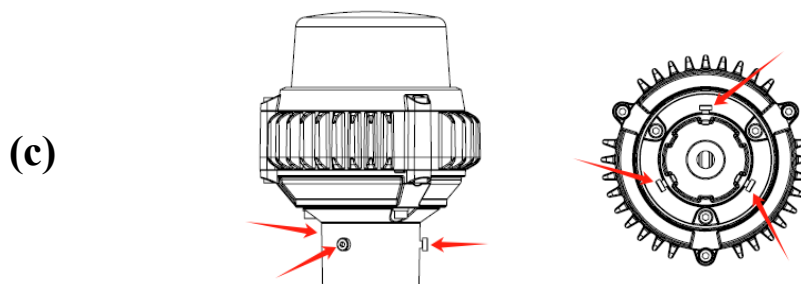
Figure 9 – Leveling and alignment (a~d)



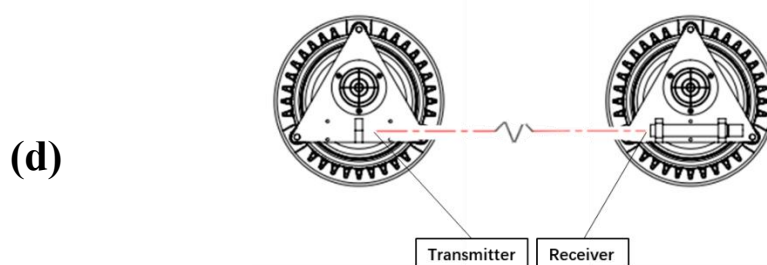
- Turn the three M6 hexagon socket set screws that connect the lamp support body to the lower cover, and stabilize the small liquid bead in the level installed on the calibrator within the black line area to complete the horizontal adjustment of the lamp;



- Then loosen the three M6 bolts between the adjacent lamp body and the frangible component to facilitate rotating the direction of the lamp;



- Turn on the laser on the calibrator of the adjacent lamp, and rotate this lamp until the laser emitted by the laser transmitter can be received by the laser baffle on the calibrator of the previously adjusted lamp;



- After adjusting the horizontal inclination angle, tighten the three fixing bolts and lock nuts connecting the lamp body and the frangible component in sequence, so as to securely fasten the lamp to the frangible component. (For the adjustment of subsequent lamps, simply follow the above steps in order.)

WARNING:

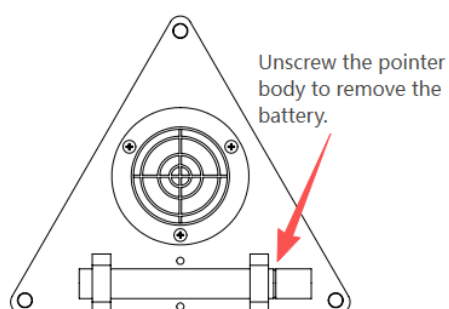
Do not look directly at the laser from the laser sight, Safety Goggles must be worn during installation and positioning.

Due to shipping restrictions, the battery for the laser equipment is not included and must be purchased separately.

Battery model: TR10440 600mAh 3.7V

Note:

The laser pointer is equipped with a rechargeable battery. Please unscrew the laser pointer body to remove the battery for timely charging when the battery is nearly depleted.



3.6. Removal of the Light Fixture

- Loosen the fixing bolts at the bottom of the light fixture ;
- Separate the light fixture from the frangible mast sleeve ;
- Separate the secondary cable connector that connects the light fixture and the isolation transformer ;
- Pack the light fixture.

WARNING:

After disassembling the light fixture, all tools and parts on the site should be carefully checked and taken away to avoid "FOD".

During the on-site operation, dust on the surface of the light fixture should be cleaned as much as possible.

4. Maintenance

Note: For method of replacing the spare parts, please refer to section 4.3;
For troubleshooting, please refer to section 4.6;



4.1. Basic Maintenance Program

According to the requirements of ICAO, Airport Services Manual Part 9, Airport Maintenance Practice and FAA AC 150/5340-26, Maintenance of airport visual aids facilities, the suggested maintenance program plan is listed in Table 5.

Table 3 - Basic Maintenance Program of Bidirectional Elevated Light

Maintenance Frequency	Maintenance Task
Daily	Check if the glowing condition
	Check if there is any damage to the light fixture.
	Clean the dust and dirt on the light fixture surface.
Semiannual	Make sure the light fixture is in the correct position inside the flange and frangible mast, and then check the bolt torque
	Check the airtight performance of the light fixture
Annual/Biennial	Clean the optical component (If necessary).

Note: The above is the recommended plan. The actual implementation of the plan should be subject to the maintenance regulations of the customers;



4.2. Tools Preparation

The maintenance tools and materials are as follows

- Phillips screwdriver, specifications: PH1
- Allen wrench, specification: Metric 5
- Flat-blade screwdriver, specifications: Metric 4-8
- Open-end Wrench
- Special tool for removing and assembling power cables
- Clean cloth
- Special non-woven cloth for cleaning optical lenses
- Optical lens cleaner
- Thermal grease
- Tweezers

Table 4 - Specification of Screws (For Maintenance)

Screw Name	Screw Specs	Installation Torque	Quantity
Light fixture body screw	M6*16 Inner hexagon head	6Nm	3 (cover fastener)
	M6*16 Inner hexagon head	6Nm	3 (bottom cover)
	M6*20 Inner hexagon head and spring washer	6Nm	3/3(adjustable supporting part)
Driver module	M3*6 Phillips round head	1.2Nm	4
Optical component screw	M3*12 Phillips round head	1.2Nm	2*2(reflector)
	M3*6 Phillips round head	1.2Nm	2(circling guidance function)
Fixed Frangible Rod	M6*20 Inner hexagon head with nut	2	3/3

4.3. Maintenance Items

For the light fixtures deployed on the runway / taxiway, the following maintenance items can be applied:

Table 5 - Maintenance Items for Light Fixture (Deployed)

Maintenance Items	Method/Steps
Check the glowing condition	Visual inspection
Check if there is any damage to the transparent top cover	Visual inspection
Clean the dust and dirt on the light fixture surface	Use a clean cloth or brush
Check the fixing condition	Visual inspection
Check the bolt torque	Using torque wrench to confirm the torque is 24.5Nm
Check the airtight performance of the light fixture	Check if there is any moisture/ water stains(inside the light fixture) through the transparent top cover
Malfunctioning light fixture removal	See section 3.6
FAIL OPEN reset (Online)	See section 4.5

CAUTION:  When cleaning the dirt on the surface of the light fixture, do not use a cloth covered with dirt and sand, or a hard brush to rub the surface of the transparent top cover to avoid scratching the transparent top cover (as it may reduce the luminous performance of the light fixture). A clean soft cloth should be used to gently wipe the glass surface. Optical lens cleaner can be used if necessary.

When elevated light fixtures are not in use, please avoid outdoor storage. They should be stored in a dry and clean indoor environment. Also, keep the storage temperature in accordance with the requirements.

After removing the light fixtures from the runway/taxiway, the maintenance items in Table 6 can be applied:

Table 6 - Maintenance Items for Light Fixture (Non-deployed)

Maintenance Items	Method/Steps
Test whether the light fixture works properly	Connect the light fixture with power and visually inspect the light fixture
Trouble shooting	See section 4.6
Check the airtight performance of the light fixture	Check if there is any moisture/ water stains(inside the light fixture) through the transparent top cover or after disassembling the light fixture
Replace transparent top cover	See section 4.4.1
Replace transparent top cover sealing ring	See section 4.4.1
Replace driver module	See section 4.4.1, 4.4.3,4.4.4 in order
Clean optical components	See section 4.4.1, 4.4.2 in order
Replace optical components	See section 4.4.1, 4.4.2 in order
Replace bottom cover	See section 4.4.1, 4.4.3 in order
Replace power cord	See section 4.4.1, 4.4.3, 4.4.5 in order

4.4. Operation Step

WARNING: Before operating, please make sure to read the "Safety Instructions" carefully.



CAUTION: During the maintenance process, make sure to use screws and gaskets that meet the required specifications. Otherwise, it may cause potential safety issue.



Please keep a clean working condition during the maintenance process.

Use a soft, clean and dry cloth to wipe the optical components. Do not touch the optical parts with bare hands. Otherwise it may affect the life of the light source and reduce optical performance. Optical components include transparent top cover and LED light source.

4.4.1. Installation and Removal of the Transparent Top Cover

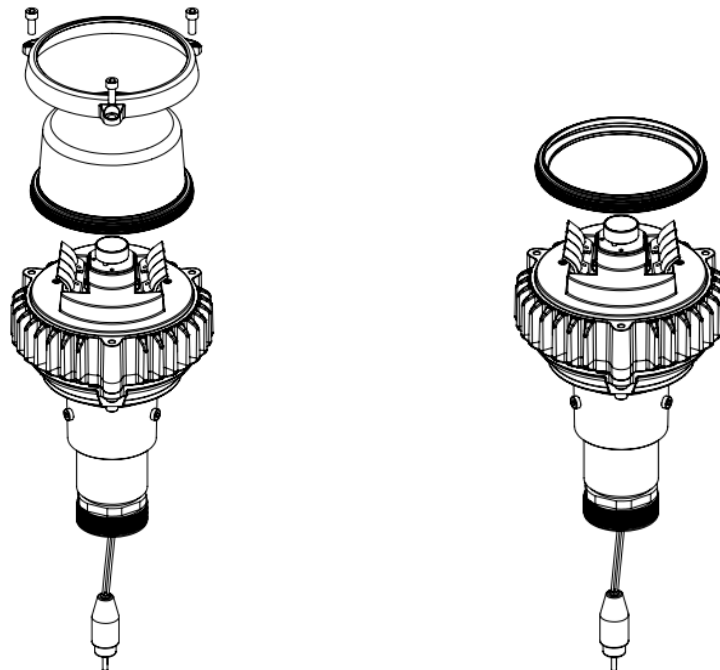
CAUTION: Please wear rubber gloves for the following operations. During the operation, avoid direct contact with the light-emitting surface of the optical component. These include the transparent top cover, LED light source, and the inner surface of the reflector.



Remove the transparent top cover

- Use an a metric No. 5 Allen wrench to remove the three M6 screws on the cover fastener
- Remove the cover fastener
- Take out the sealing ring

Figure 10 – Installation and Removal of the Transparent Top Cover



Install the transparent top cover

- Replace the sealing ring at the transparent top cover
- Place the transparent top cover (with sealing ring) on the body top cover
- Align the installation holes of the cover fastener. Tighten the three M6 screws on the body top cover (the torque is 6Nm).

4.4.2. Installation and Removal of the Optical Components

Optical components include LED aluminum-based circuit boards and reflectors

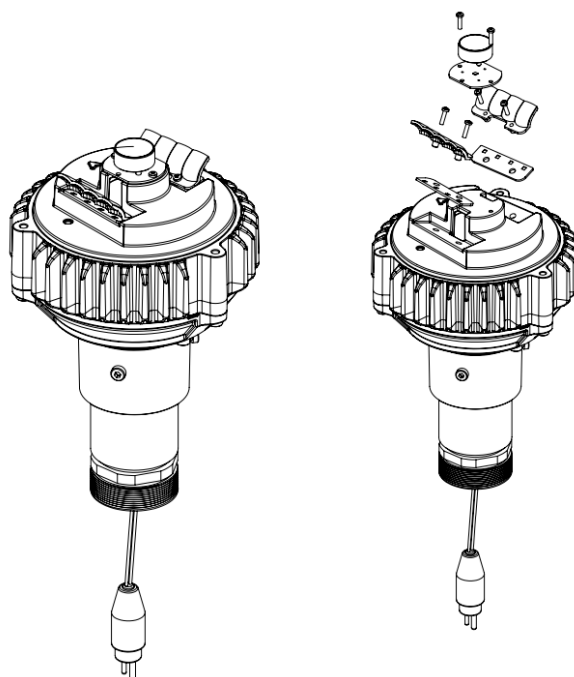


CAUTION: Please wear rubber gloves to perform the following operations. During the operation, avoid direct contact with the optical surface, including the light cover, LED luminaire, and the inner surface of the reflector

Remove the optical module

- Carefully pull out the cable from the light source component
- Use a Phillips screwdriver (PH1) to remove the screws of the light source component
- Remove the reflector, LED aluminum-based circuit board and circling guidance circuit board from the light source component in turn
- After removing the light source component, please place it properly

Figure 11 – Installation and Removal of the Optical Components



NOTE: The "mounting foot" of the reflector is stuck in the mounting hole. When separating the reflector, be careful to avoid damaging the optical components. Small plain-end screwdriver can be used along the seam gently pry open.

There is thermal grease under the LED aluminum-based circuit board. Do not place it at will to avoid staining the workbench.

Install the optical module

- Coat the LED aluminum-based circuit board with thermal grease
- Attach the LED aluminum-based circuit board to the inclined surface next to the top cover window and align the two holes

- Insert the "mounting feet" of the reflector into the two holes and fasten them tightly
- Use a Phillips screwdriver (PH1) to tighten the screws. The torque is 2Nm
- Align the circling guide circuit board with the double holes and tighten the screws using a Phillips screwdriver (PH1) for 1.2Nm
- Connect the cable

Note:

Thermal grease should not be applied too much or too thick, just cover the aluminum substrate evenly

When installing the reflector, the two mounting feet should be placed at the same time, and brute force should not be used to avoid damage to the reflector.

4.4.3. Installation and Removal of the Light Fixture Body

Remove the light fixture body

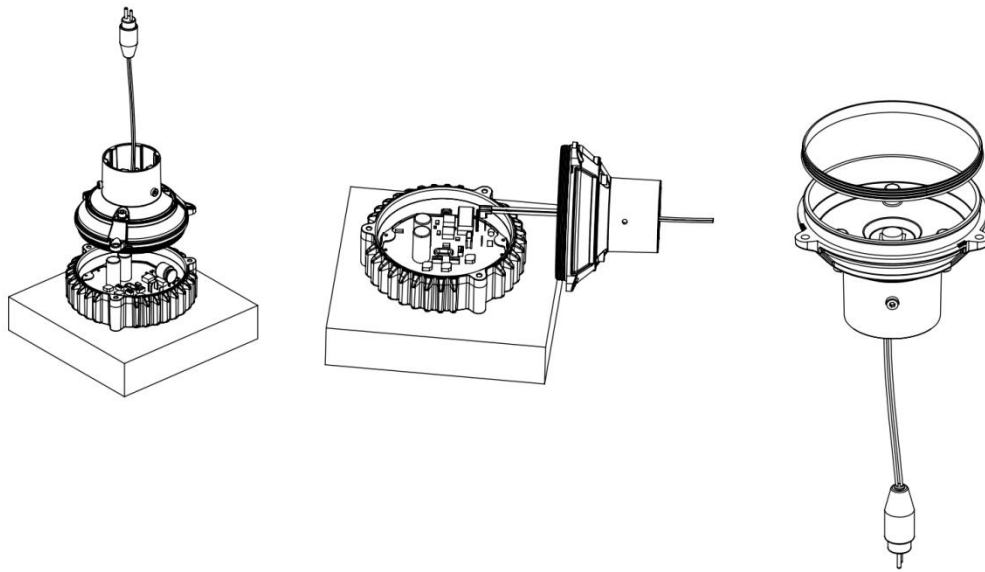
- Flip the light fixture
- Use an Allen wrench (Specification: Metric No. 5) to remove 3 M6 screws
- Open the body bottom cover
- Unplug the power cord terminal
- Take out the sealing ring of the light fixture body that is installed on the sealing ring groove (Located on the body bottom cover)



NOTE: If the screws are tightly fixed, do not directly use the power tool to remove the screws. Instead, use the hand tool to loosen the screws before using the power tool.

If the back cover is not easily separated from the top cover, a flat screwdriver can be used to pry lightly at the joint.

Figure 12 – Installation and Removal of the Light Fixture Body



Install the light fixture body

- Clean the inside of the light fixture body, the contact surface between the top cover and the bottom cover, and the sealing ring groove to keep them clean and dry
- Install a new light fixture body sealing ring on the sealing ring groove (Located on the body bottom cover)
- Insert the plug of the power cord to the driver board, and make sure it is firmly inserted
- The light fixture can be checked (with power on) before the body bottom cover is re-installed if necessary
- Install the bottom cover. Align the three screw holes on each side and use an Allen wrench (Specification: Metric No. 5) to tighten the bolts. The torque is 6Nm

CAUTION: When disassembling the light fixture body, the old sealing ring of the light fixture body must be replaced every time.

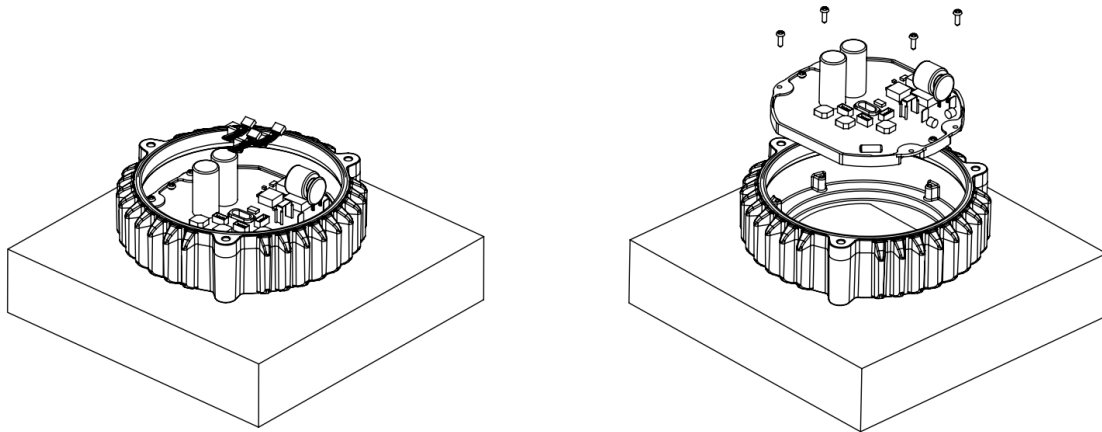


4.4.4. Installation and Removal of the Driver Module

Remove the driver module

- Flip the body top cover
- Loosen the cable clamps between the driver modules and gently pull out the cable
- Unplug the jumper of the light source
- Use a Phillips screwdriver (PH1) to remove 4 Phillips screws of the driver module.
- Take out the driver module

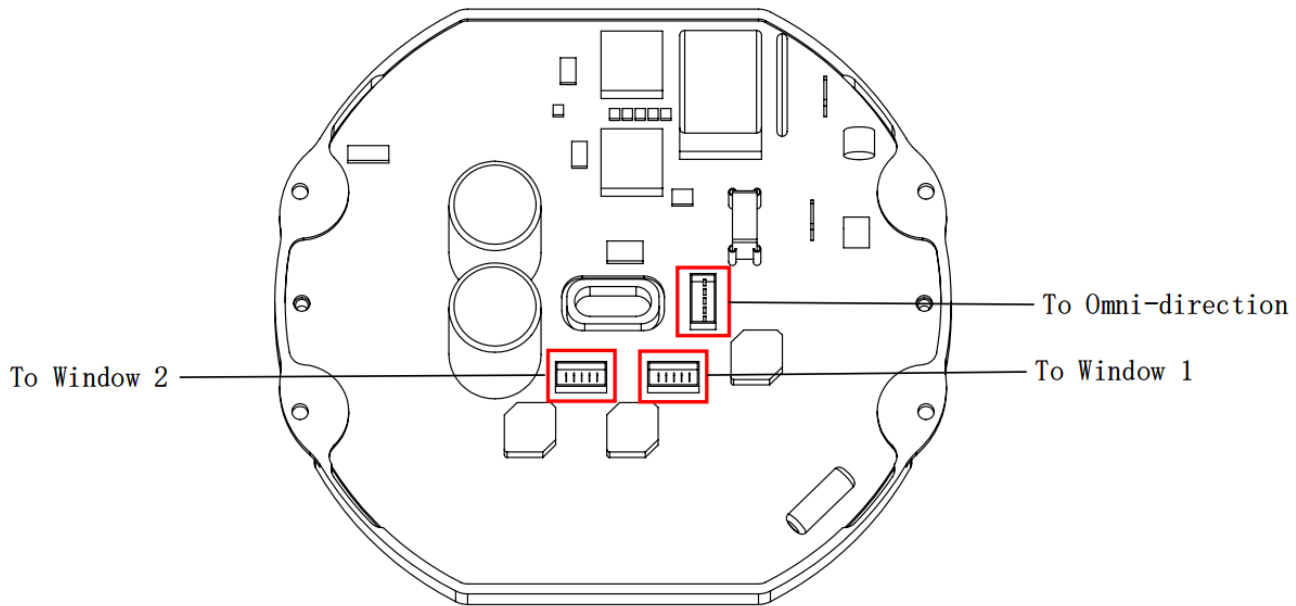
Figure 13 – Installation and Removal of the Driver Module



Install the driver module

- Make sure the cable that connects to the light source is plugged in
- Insert the light source cable into the terminal block on the driver module. The light source should be connected to the driver module at the correct connector socket(See Figure 14). Be careful, do not make a mistake
- Put the driver module into the top cover and align the screw holes
- Use a Phillips screwdriver (PH1) to install the screws with a torque of 1.2Nm

Figure 14 – Connections of Driver Module



Note:



Make sure that the wire is plugged into place and gently pulled without falling off.

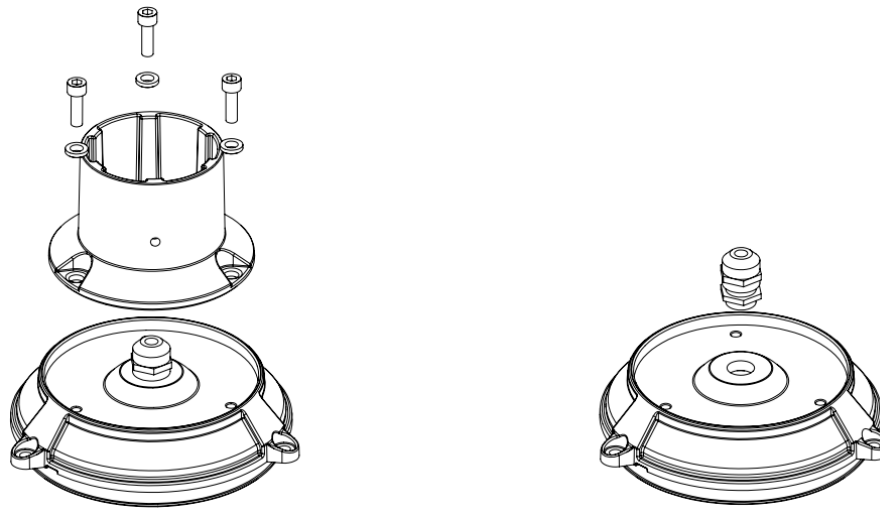
The driver modules must correspond to the light fixture models and glowing directions listed in Table 4.

4.4.5. Installation and Removal of the Power Cord

Remove the power cord

- Place the light fixture body opening downwards on the worktop.
- Use an Allen wrench (Specification: Metric No. 5) to remove 3 M6 screws, then remove the adjustable supporting part and spherical gasket
- Twist the sealing head of the power cable counterclockwise using a 20mm open wrench until the sealing head is completely detached from the installation hole on the bottom cover
- Remove cables and clean the lower cover mounting holes

Figure 15 – Installation and Removal of the Power Cord



Install the power cord

- Prepare the new accessories to be replaced, then pass the cables through the mounting holes of the body bottom cover and leave cable with 10 cm length inside
- Screw the sealing head of the power cord clockwise into the mounting hole of the body bottom cover, then use the 20cm open-end wrench to tighten the hexagon nuts at the root of the sealing head and the cable locking hexagon nuts. Check whether the cable is tight. If it is loose, you need to tighten the lock nuts

4.5. Fail Open Function

Description of English abbreviation:

- FON: No fail open.
- FOA: Fail open and automatic reset
- FOM: Fail open and manual reset.

Application scenarios:

- FON: Applicable for circuits without a individual lamp monitoring unit.
- FOA: Applicable for circuits with specific a individual lamp monitoring unit.
- FOM: Applicable for circuits with a individual lamp monitoring unit.

Note:

With the corresponding module (FOA / FOM) inserted in the drive of the lamp, the drive has the function of fail open. See Figure Figure 12 for the FOA / FOM module.

Functional characteristics:

- FON: There is no fail open function. After the LED light source is damaged, the master control will not take any action on the secondary side of the lamp input terminal.
- FOA: a) The automatic fail open function of LED is achieved through the driver with FOA module. When the LED damaged, the driver will disconnect the relay, and the lamp input terminal will form an open circuit. The individual-lamp monitoring unit can detect the lamp LED failure fault by detecting the lamp open circuit.

b) It can prevent accidental misjudgment of lamps. When the individual-lamp monitoring unit detects the lamp failure, if the lamp can be powered on again for detection, the lamp will judge whether the LED is invalid again. If the lamp LED is working normal again, it will maintain normal operation. (When the lamp is powered on again, the driver needs about 10s of power-on detection time.)

Note:

The lamp with the FOA module, after the FOA module is disconnected and the lamp is powered on again, the master control takes about 10s of power-on detection time to re-determine whether the LED is faulty.

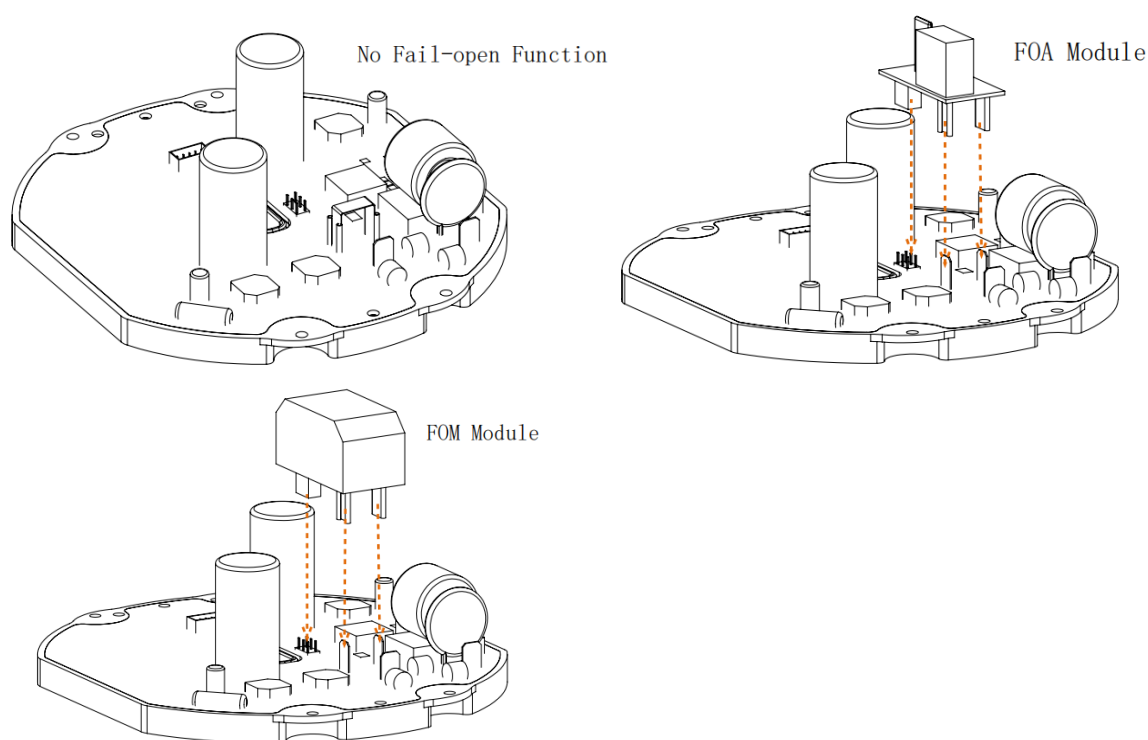
c) For the repair of failed LED lamps, after replacing a new LED light source, the lamps can continue to be used without replacing the FOA module components

Note:

If the lamp with LED failure is not replaced in time, the driver will be powered off, the open circuit status will be cleared, and the resistance value will return to normal, which will cause misjudgment to the individual-lamp monitoring unit on the lamp (mistaken for replacing the normal lamp), and the lamp will be powered on repeatedly to detect and feedback the LED failure fault in several times.

- FOM: a) It has the LED failure detection function. When the LED fails, the driver with FOM module will permanently disconnect the input terminal secondary to form an open circuit. The individual-lamp monitoring unit can detect the LED failure of the lamp. In principle, it can be compatible with all individual-lamp monitoring units.
- b) FOM module is a disposable part. When repairing the LED failure lamp, the FOM module must be replaced synchronously before it can be used again.

Figure 16 – Driver with Fail Open Module



4.6. Trouble Shooting

Table 7 - Trouble Shooting

Malfunction	Trouble Shooting Step
The light stops working completely (glowing)	1. Turn off the light and restart after 1 min 2. If the fault is not eliminated, check the power cord plug 3. If the fault is not eliminated, check the wiring between the power cord and the driver board 4. If the fault is not eliminated, check the driver board
Only part of the light source stops working (glowing)	1. Open the bottom cover and check the wiring between the light source and the driver board 2. If the fault is not eliminated, replace the light source 3. If the fault is not eliminated, replace the driver board
Water leakage inside the light fixture	1. Check the sealing of the transparent front cover 2. If the fault is not eliminated, check the sealing rings 3. If the fault is not eliminated, check the power cord seal head
Unable to dim normally	1. Confirm that the dimmer and isolation transformer are fault-free and operate without problems 2. If the fault is not eliminated, replace the driver board
Unstable glowing and flickering	1. Make sure that the specifications of the dimmer and isolation transformer match the operation requirements of the light fixture, no operational problem 2. If the fault is not eliminated, replace the driver board 3. If the fault is not eliminated, contact the manufacturer for customers service and update the program

5. Support

5.1. Customer Service

If you need after-sales service, you can contact us through the after-sales service hotline or sales consultant.

After-sales service hotline

China: +86-27-63498449

Please prepare the following information in advance in order to get the service quickly:

- Product name and serial number
- Airport code or company name
- Your phone and email address

5.2. Recycling

Improper disposal of scrapped electronic equipment may have a negative impact on the environment and human health. Regarding the recycling of electronic products, please follow the local laws and regulations.

5.3. About HDK

Handakang Electrical & Mechanical Technology Corp. Ltd., established in 2003 in Wuhan/China is a professional locally known provider of Airfield Lighting, Navigation Aids, Frangible Mast Systems and Heavy Duty Support Equipment. In 2017 HDK started to create a new LED Airfield Lighting Portfolio supported by known capacities from Europe, to become the supplier for Airfield Customers in China, Asia, Europe and all over the World for reliable, efficient and innovative Airfield Lighting Products at highest quality.

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