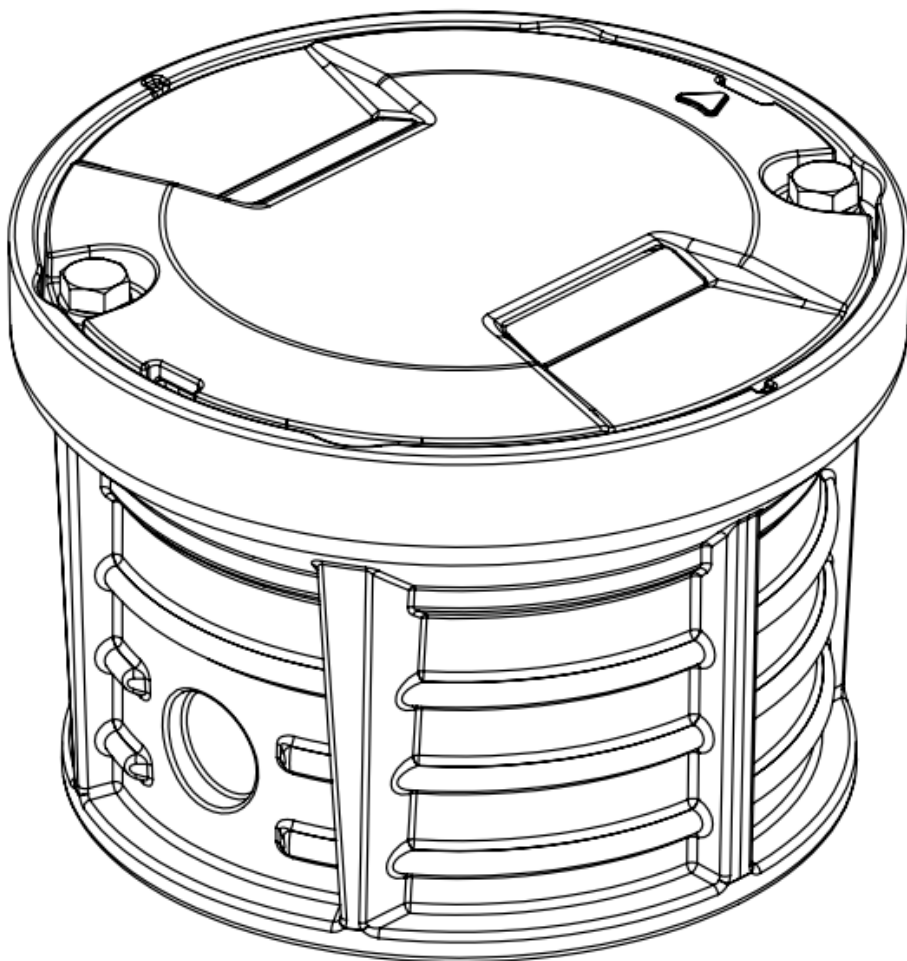


LED AIRFIELD LIGHTING



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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 disconnect the equipment from line voltage, never connect or disconnect live circuits. Failure to observe "Danger" may result in severe injury, death, or equipment damage.

**WARNING:**

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

**CAUTION:**

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

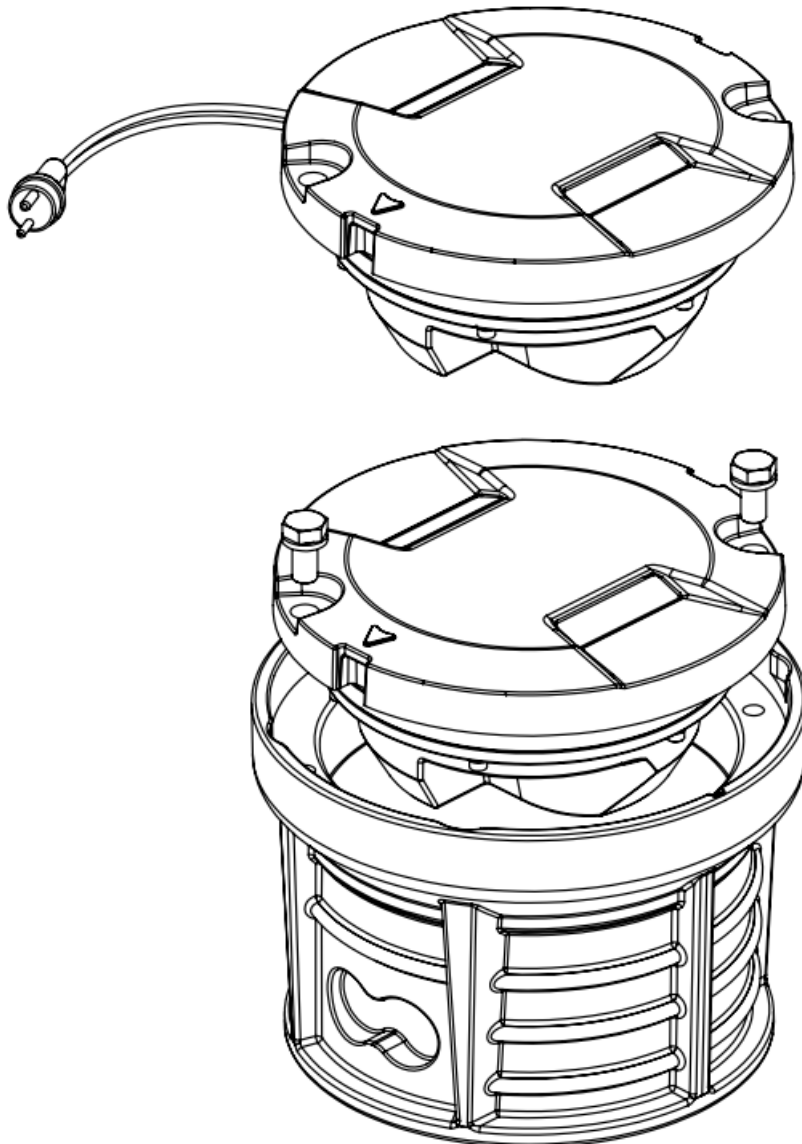
**Note:**

Explanations and supplements to some of the text description

2.Introduction

The 8-inch LED inset light produced by HDK can be applied to airfields with various conditions. 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 itself is made from imported energy-saving and long-life LED.

Figure 1 – Product Appearance



2.1.Models & Variants

This manual presents essential information for handling, installation and maintenance operations of the 8" LED inset light series. The series can be divided into different models according to the application, color, direction of light output, and power supply type of the system. All models are shown in Table 1 and Table 2:

Table 1 List of the Runway Light

Application	Model	Direction / Control Type	Color	CAAC Type	ICAO Type	FAA Type
Runway Center	ILA-RCL-WW-S(L)	Bidirection/Single	White/White	L-1D/1E	A2-6/A2-7	L-850A
	ILA-RCL-WR-S(L)	Bidirection/Single	White/Red	L-1D/1E	A2-6/A2-7	L-850A
	ILA-RCL-WW-D(L)	Bidirection/Dual	White/White	L-1D/1E	A2-6/A2-7	L-850A
	ILA-RCL-WR-D(L)	Bidirection/Dual	White/Red	L-1D/1E	A2-6/A2-7	L-850A
	ILA-RCL-R(L)	Unidirection	Red	L-1D/1E	A2-6/A2-7	L-850A
	ILA-RCL-W(L)	Unidirection	White	L-1D/1E	A2-6/A2-7	L-850A
Touchdown Zone	ILA-TDZ(L)	Unidirection	White	L-1C	A2-5	L-850B
Rapid Exit Taxiway Indicator	ILA-RETIL(L)	Unidirection	Yellow	L-1D/1E	A2-6/A2-7	
Runway Turn Pad	ILA-RTPLS(L)	Unidirection	Green		A2-12	
	ILA-RTPLC(L)	Unidirection	Green		A2-14	
Runway End	ILA-RWE(L)	Unidirection	Red	L-1F	A2-8	L-850D
Take-off Hold	ILA-THLS(L)	Unidirection	Red		A2-26	L-850T

Note: The photometry of the HDK Runway Center Light has covered the CAAC L-1D/1E and ICAO Figure A2-6/A2-7



The photometry of the HDK Rapid Exit Taxiway Indicator has covered the CAAC L-1D/1E and ICAO Figure A2-6/A2-7

Table 2 List of the Taxiway Light

Application	Model	Direction Control Type	/ Color	CAAC Type	ICAO Type	FAA Type
Taxiway Center (Straight)	ILA-TCLS-GG-S(L)	Bidirection/Single	Green/Green	L-2A	A2-12	
	ILA-TCLS-YY-S(L)	Bidirection/Single	Yellow/Yellow	L-2A	A2-12	
	ILA-TCLS-YG-S(L)	Bidirection/Single	Yellow/Green	L-2A	A2-12	
	ILA-TCLS-G(L)	Unidirection	Green	L-2A	A2-12	
	ILA-TCLS-Y(L)	Unidirection	Yellow	L-2A	A2-12	
	ILA-TCLS-GG-D(L)	Bidirection/Dual	Green/Green	L-2A	A2-12	
	ILA-TCLS-YY-D(L)	Bidirection/Dual	Yellow/Yellow	L-2A	A2-12	
	ILA-TCLS-YG-D(L)	Bidirection/Dual	Yellow/Green	L-2A	A2-12	
Taxiway Center (Curved)	ILA-TCLC-GG-S(L)	Bidirection/Single	Green/Green	L-2C	A2-14	L-852K
	ILA-TCLC-YY-S(L)	Bidirection/Single	Yellow/Yellow	L-2C	A2-14	L-852K
	ILA-TCLC-YG-S(L)	Bidirection/Single	Yellow/Green	L-2C	A2-14	L-852K
	ILA-TCLC-GY-S(L)	Bidirection/Single	Green/Yellow	L-2C	A2-14	L-852K
	ILA-TCLC-G(L)	Unidirection	Green	L-2C	A2-14	L-852K
	ILA-TCLC-Y(L)	Unidirection	Yellow	L-2C	A2-14	L-852K
	ILA-TCLC-GG-D(L)	Bidirection/Dual	Green/Green	L-2C	A2-14	L-852K
	ILA-TCLC-YY-D(L)	Bidirection/Dual	Yellow/Yellow	L-2C	A2-14	L-852K
Intermediate Hold Position	ILA-TCLC-YG-D(L)	Bidirection/Dual	Yellow/Green	L-2C	A2-14	L-852K
	ILA-TCLC-GY-D(L)	Bidirection/Dual	Green/Yellow	L-2C	A2-14	L-852K
	ILA-IHPS(L)	Unidirection	Yellow	L-2A	A2-12	
Runway Entrance	ILA-IHPC(L)	Unidirection	Yellow	L-2C	A2-14	
	ILA-RELS	Unidirection	Red			L-852S
No-entry Bar	ILA-NEB(L)	Unidirection	Red	L-2A	A2-12	
Stop Bar	ILA-STBS(L)	Unidirection	Red	L-2A	A2-12	L-852S
	ILA-STBC(L)	Unidirection	Red	L-2C	A2-14	L-852S

2.2.Product Features

The main components of the light fixture are aluminum alloy top cover and bottom cover, glass prism, LED light source and electrical drivers as well as sealing ring. The top cover uses aluminum alloy forging and casting techniques, while the bottom cover uses aluminum alloy high-pressure precision casting and molding techniques. 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 light source of the product is OSRAM LED. The optic components of the product adopt a fully universal design.

This series of LED light fixture can be used on 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 an 8-inch base or on a 12-inch isolated transformer box using a ring adapter.

The performance parameters of the light fixture meet the following standards:

- CAAC AC-137-CA-2015-01~04 & MH 5001-2021
- ICAO Annex 14, Volume 1, 9th Edition & Aerodrome Design Manual
- EASA CS-ADR-DSN Issue 6
- FAA AC150/5345-46E & Engineering Brief No. 67D
- IEC TS 61827-2004
- AENA DIN-DSEYN-PPT
- TCCA TP312 5th Edition
- UK CAA CAP 168 Edition 12

2.3. Electrical Properties

Input Cable

- FAA L823 Class A, Type II, Style 6 ; Plug*1 or Plug*2

Input Current

- 2.8A-6.6A_{eff} AC

Sine Wave CCR

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

Thyristor CCR

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

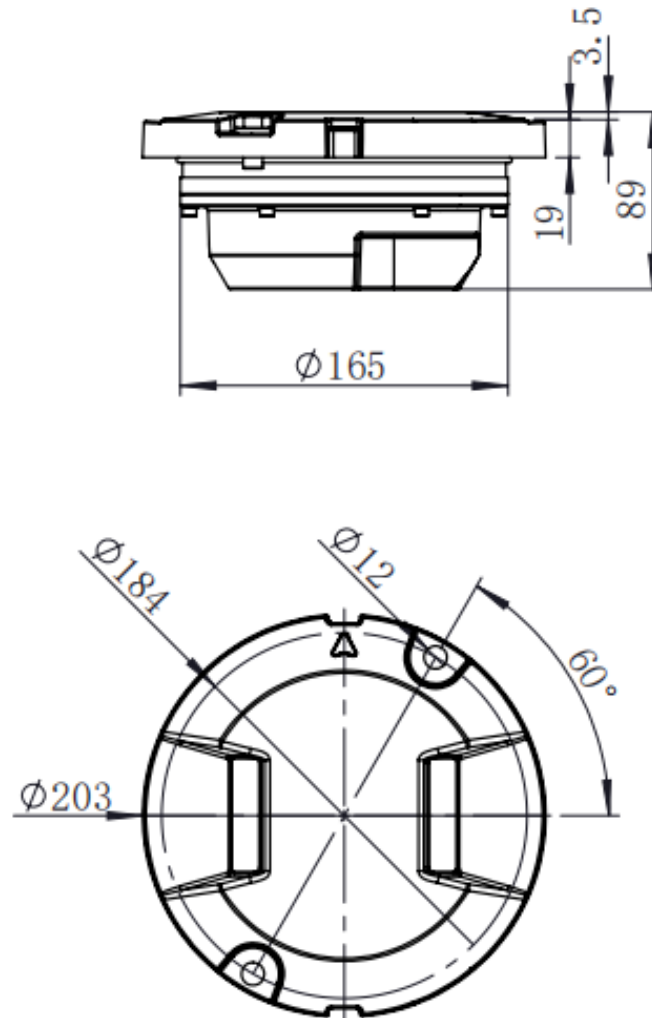
Table 3 Requirements for Specification of Isolation Transformer

Application	Model	Suggested Transformer Specs
Runway Center	ILA-RCL-WW-S(L)	≥45W
	ILA-RCL-WR-S(L)	≥45W
	ILA-RCL-WW-D(L)	≥45W*2
	ILA-RCL-WR-D(L)	≥45W*2
	ILA-RCL-R(L)	≥25W
	ILA-RCL-W(L)	≥45W
Touchdown Zone	ILA-TDZ(L)	≥45W
Rapid Exit Taxiway Indicator	ILA-RETIL(L)	≥45W
Runway end	ILA-RWE(L)	≥45W

Taxiway Center (Straight)	ILA-TCLS-GG-S(L)	≥25W
	ILA-TCLS-YY-S(L)	≥25W
	ILA-TCLS-YG-S(L)	≥25W
	ILA-TCLS-G(L)	≥25W
	ILA-TCLS-Y(L)	≥25W
	ILA-TCLS-GG-D(L)	≥25W*2
	ILA-TCLS-YY-D(L)	≥25W*2
	ILA-TCLS-YG-D(L)	≥25W*2
Taxiway Center (Curved)	ILA-TCLC-GG-S(L)	≥25W
	ILA-TCLC-YY-S(L)	≥25W
	ILA-TCLC-YG-S(L)	≥25W
	ILA-TCLC-GY-S(L)	≥25W
	ILA-TCLC-G(L)	≥25W
	ILA-TCLC-Y(L)	≥25W
	ILA-TCLC-GG-D(L)	≥25W*2
	ILA-TCLC-YY-D(L)	≥25W*2
Intermediate Hold Position (Straight)	ILA-TCLC-YG-D(L)	≥25W*2
	ILA-TCLC-GY-D(L)	≥25W*2
Intermediate Hold Position (Curved)	ILA-IHPS(L)	≥25W
Intermediate Hold Position (Curved)	ILA-IHPC(L)	≥25W
Stop Bar (Straight)	ILA-STBS(L)	≥25W
Stop Bar (Curved)	ILA-STBC(L)	≥25W
Runway Status Lights	ILA-RELS(L)	≥25W
	ILA-THLS(L)	≥45W
Runway Turn Pad Light (Straight)	ILA-RTPLS(L)	≥25W
Runway Turn Pad Light (Curved)	ILA-RTPLC(L)	≥25W
No-entry Bar Light	ILA-NEB(L)	≥25W

2.4.Mechanical Properties

Figure 2 – Major Dimensions of the Light Fixture



Diameter of top cover: 203mm, **Thickness of Flange:** 19mm

Diameter of bottom cover: 165mm, **Height of Fixture:** 89mm

Degree of Protection

- IP68 (IEC 60598-1)

Operating Temperature

- -55°C ~ +55°C

Storage Temperature

- -55°C ~ +85°C

Weight

- Net Weight: 3.1 kg
- Gross Weight: 3.5kg

Package Dimensions

- 250mmx235mmx110mm

2.5.Main Components

The HDK 8-inch LED inset light fixture contains following main components:

Top Cover

- Aluminum alloy top cover with surface anodizing treatment or hard anodizing treatment
- Ultra-durable silicate glass prism or Reinforced prism
- High performance sealing silicone gel

Optic Module

- LED light source with the color of White, Red, Yellow and Green.
- LED Aluminum-based circuit board
- Reflector

Driver Module

- Driver circuit board
- Potting compound
- Heat sink

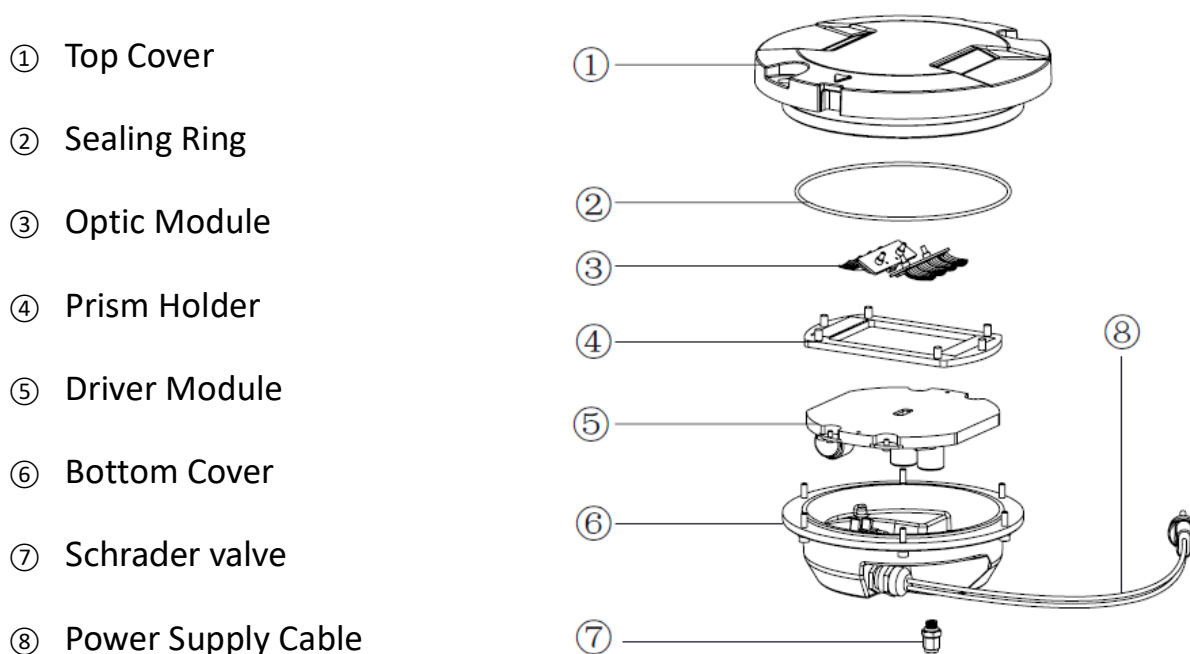
Bottom Cover

- Aluminum alloy bottom cover with electrophoretic anti-corrosion treatment
- Power cord - Plug: FAA L-823 Class A, Type II, Style 6. Secondary cable: FAA AC 150/5345-7F
- Power cord sealing head

Consumable Parts

- Light fixture body sealing ring - Rubber O-ring
- Fastener - Anti-corrosion 316 stainless steel
- Stainless steel pressure plate
- Thermal grease
- Prism gasket (With window mark)

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.

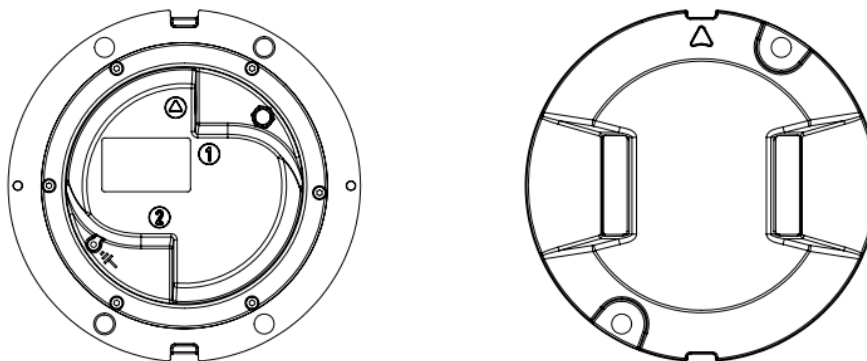


2.6.1. Arrow Mark

The arrow mark locate on the top cover is a crucial symbol for light fixture assembling.

- The arrow of the bottom cover of the same light fixture is kept in the same direction as the top cover, so that the mounting hole of the bottom cover can be aligned with the top cover.

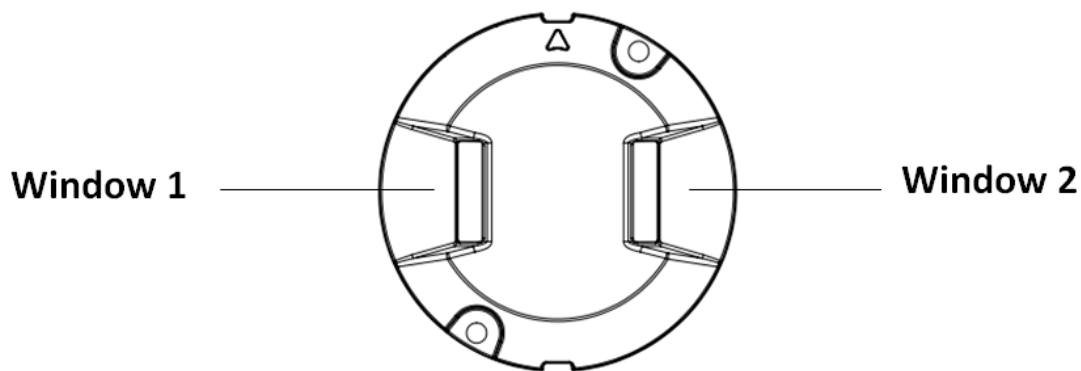
Figure 4 – Arrow Mark on the Top Cover / Bottom Cover



2.6.2. Window Number

Overlooking the top cover of 8 inch 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 and the left side is window 2 when the arrow mark is downwards.

Figure 5 – Window Number



2.6.3. Glowing Color & Direction Mark

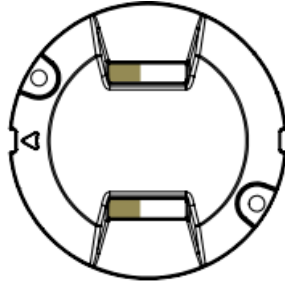
Optical toe-in has been adopted in HDK 8-inch inset light fixture, which means that the screw hole and window positions of the light fixture with toe-in lighting are same as those of the light fixture without toe-in lighting. The color and direction of the light are marked inside the prisms.

Note: For the Bidirectional light fixture, window 1 only leans to the right and window 2 only leans to the left

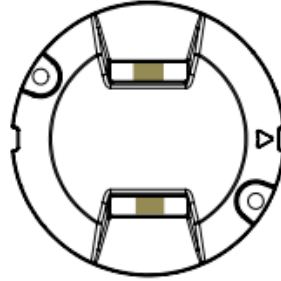


Figure 6 – Glowing color & direction Mark

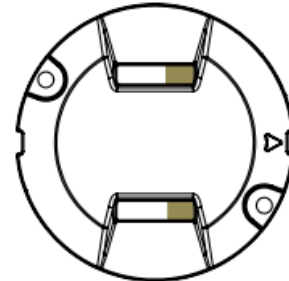
Bidirection: 1 Right 2 Left



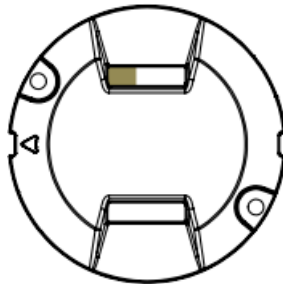
Bidirection: Straight



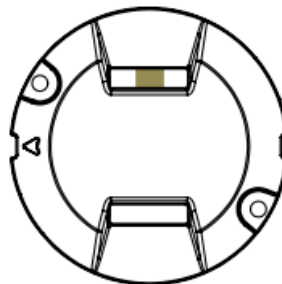
Bidirection: 1 Right 2 Left (Reverse)



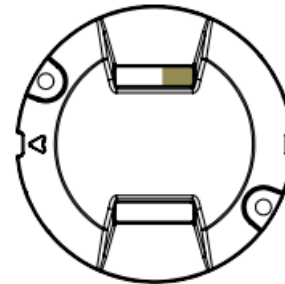
Unidirection: Left



Unidirection: Middle



Unidirection: Right



2.6.4.Nameplate

Touchdown Zone Light

Model: ILA-TDZ(L)
 Type: A2-5(ICA0) L-850B(FAA)
 U-9(EASA)
 Input: AC 2.8A-6.6A
 Color: White
 Power: 18W
 Function: FOA
 SN: 4L53037
www.hdk-aero.com



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. Meantime, ensure the integrity of the light fixture, and it is strictly prohibited to cut the cable plug to avoid affecting the watertightness and after-sales service of it.

Note: For the installation position requirements of the light fixture, refer to the Aerodrome Design Manual and the ICAO Annex 14, Volume 1.



3.1.Tools Requirement

The tools and materials required for installation are listed below:

- HDK light fixture handle (or 2 large size slotted screwdriver)
- Torque wrench (Specification: 16mm/17mm nut)
- Socket wrench (Specification: 16mm / 17mm)
- Cable seam sealing material and insulating tape
- Clean cloth

Note: The HDK light fixture handle is a special designed tool for uninstalling 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.

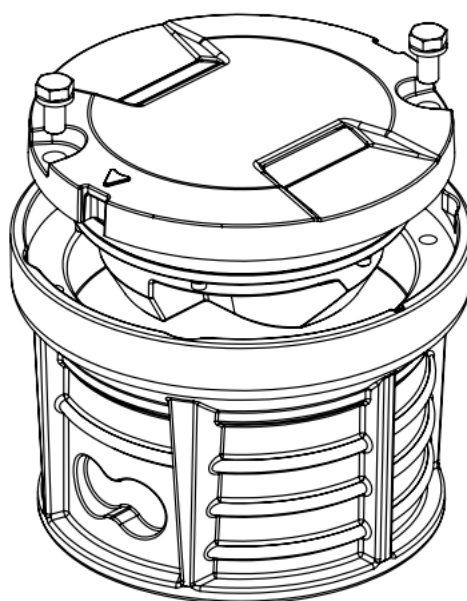


3.3. Installation on 8-inch Light Base

Please check the following items before proceeding:

- Please confirm that the angle of the light fixture base have met the standard of FAA AC 150/5345-42L-868, otherwise the installation may not be proceeded.
- Please confirm that the angle of the pre-embedded light fixture base is consistent with the design requirements and construction regulations.
- Please make sure that the length of the reserved secondary cable is 30- 50cm for installation and maintenance.

Figure 7 – Install 8-inch Inset Light on 8-inch Light Base



- Remove the dirt and moisture inside the base and make sure that the base of the light fixture is clean and dry during the subsequent operation.
- Install the sealing ring of the light fixture.



Note: The sealing ring of the light fixture is used when installing the light fixture on the base, while the sealing ring of the light fixture body is used for the assembly of the light fixture itself. It should be distinguished. The specification of the sealing ring of the light fixture should be determined by the type of base used in construction, HDK provides different types of sealing ring of the light fixture such as O-Type and T-Type.

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



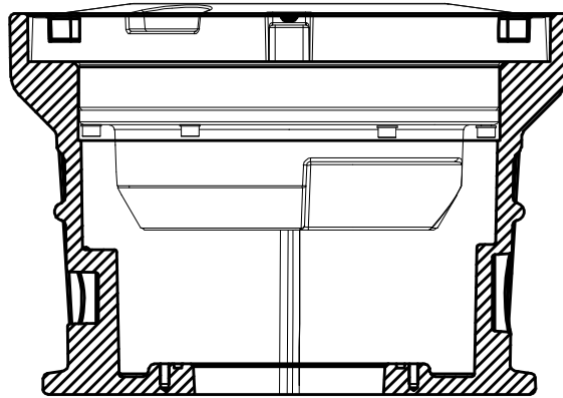
- Assemble the secondary power supply cable of the light fixture according to the L-823 plug and socket connection method. (Plug: FAA L-823, Style 6; Socket: FAA L-823, Style 12). Place the plug and socket along the side wall of the base after connected.
- Connecting the ground wire between light base and bottom cover of the light is necessary.
- Use the HDK special handle (or 2 large size slotted screwdriver) to lift the light fixture into the base.
- Align the pins and pin holes, and slowly move the light fixture into the base according to its direction of glowing.
- Tighten the two M10 fixing bolts and use a torque wrench to gradually tighten the bolts to a torque value, torque value refer to section 4.4, Table 6

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.

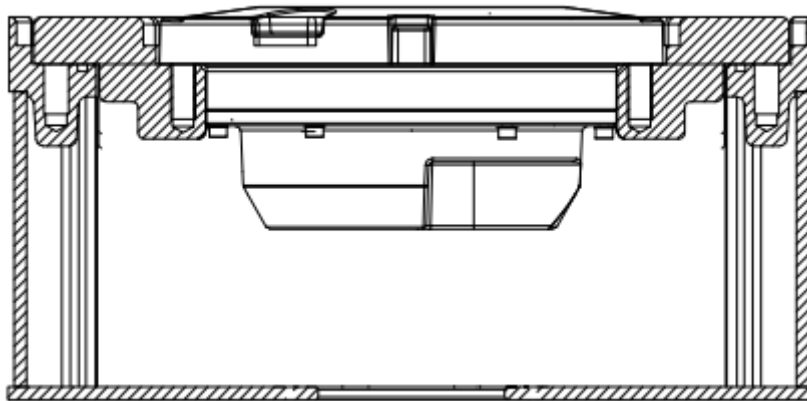
Please make sure the sealing ring stay at its correct position during the entire inserting process.

Figure 8 – Install completed 8-inch Inset Light on 8-inch Light Base

3.4. Installation on the 12-inch Light Base

If the light fixture needs to be installed on a 12-inch base, it must be installed with a adapter ring.

Note: The adapter ring should meet the requirement of FAA AC 150/5345-42.
HDK provides customized adapter ring and can be ordered if it is necessary.

**Figure 9 – Install 8-inch Light on 12-inch Light Base with Adapter Ring**

- Keep the inside of the light fixture base clean and dry.

- Assemble the adapter ring and put the sealing ring in reserved slot above the adapter ring. The installation direction of the adapter ring must take into account the light output direction required by the 8-inch light fixture. Install six M10 bolts and use a torque wrench to tighten the bolts in a diagonal sequence to a torque value, torque value refer to section 4.4, Table 6
- Assemble the secondary power supply cable of the light fixture according to the L-823 plug and socket connection method to assemble the socket (assembled connector). Coil the cables after plugging along the side wall of the base.
- Connecting the ground wire between light base and bottom cover of the light is necessary.
- Use the HDK special handle (or 2 large size slotted screwdriver) to lift the light fixture into the base. Be careful not to cut the cable during the operation.
- Align the pins and pin holes, and slowly move the light fixture into the adapter ring according to its direction of glowing. Please make sure the sealing ring stay at its correct position during the entire inserting process.
- Tighten the two M10 fixing bolts and use a torque wrench to gradually tighten the bolts to a torque value, torque value refer to section 4.4, Table 6
- Do not use high-speed power tools to tighten the bolts, as this may cause slippage.

3.5. Removal of the Light Fixture

- Loosen the two M10 inside hexagonal bolts at the bottom. Take out the light fixture with special tools.
- Separate the secondary cable connector that connects to the isolation transformer.
- Take out the light fixture.

WARNING:



After the airport is put into use, the airfield lighting maintenance department should equip with sufficient spare parts in accordance with the relevant management requirements. After the light fixtures are disassembled, the spare parts should be installed on the original base in accordance with the steps in section 3.3 of this manual as

soon as possible.

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

CAUTION:



During the on-site operation, dust or any other kind of pollution on the prism of the light fixture should be avoided. After the light fixture is removed, it should be properly placed on the transport vehicle to avoid damage.

4. Maintenance

Note: For method of replacing the spare parts, please refer to section 4.5.



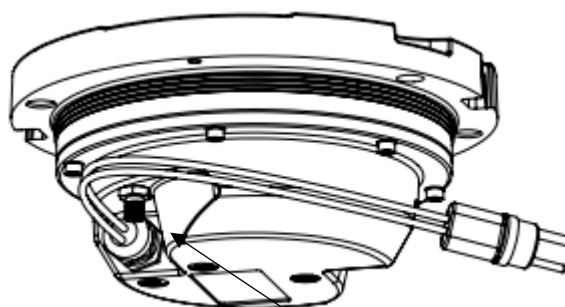
For trouble shooting, please refer to section 4.7;

After any bottom cover opening operation, the inset light watertightness must be checked again. The method of checking can refer to IEC 61827 section 6.4.1.6.

4.1. Watertightness Test Procedure

- Prior to performing this test, the wire leads shall be subjected to a tension of 14 kg, for 5 min to test the integrity of the seal where the leads enter the inset light fixture.
- The entire inset light fixture shall then be submerged in water at least 76 mm below the surface, subjected to an internal air pressure of 140 kPa and maintained for a period of 10 min.
- Any leakage shall be reason for rejection.
- Press the thimble in the middle of the schrader valve core with allen wrench for 10 seconds to deflate the light fixture after this test.

Figure 10 – Watertightness Test



Inflate before test and deflate after test

4.2. 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 4.

Table 4 Basic Maintenance Program of Inset Light

Maintenance Frequency	Maintenance Task
Daily	1.Check the glowing condition 1.Check if there is any damage to the top cover.
Semiannual	2.Clean the dust and dirt on the light fixture surface. 3.Make sure the light fixture is in the correct position 4.inside the base and check the bolt torque.
Annual/Biennial	1.Check the airtight performance of the light fixture 2.Clean the optic component (If necessary).

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



4.3.Tools Preparation

The maintenance tools and materials are as follows

- HDK light fixture handle (or 2 large size slotted screwdriver)
- Torque wrench, nut specs: 16mm / 17mm
- Socket wrench, 16mm / 17mm
- Phillips screwdriver, specifications: PH1/ PH3
- Allen wrench, specification: Metric 3
- Flat-blade screwdriver, specifications: Metric 4~8
- 13/16 open-end wrench
- Clean cloth
- Special non-woven cloth for cleaning optic lenses
- Optic lens cleaner
- Thermal grease
- Tweezers

Table 5 Specification of Screw & Washers

Screw Name	Screw Specs	Installation Torque (Nm)	Quantity
Light Fixture Body Screw	M4*16 Hexagon socket head M4 Flat washer	2	6/6
Driver Module Screw	M3*6 Phillips round head	1.2	4
Optic Module Screw	M3*5 Phillips round head	1.2	4
Prism Holder	M5*14 Inner hexagon head	4	6

4.4.Maintenance Items

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

Table 6 Maintenance Items for Light Fixture (Deployed)

Maintenance Items	Method/Steps
Check the glowing condition	Visual inspection
Check if there is any damage to the top cover	Visual inspection
Clean the dust and dirt on the light fixture surface	Use a clean cloth or brush
Check that the light fixture is in the correct position inside the base	Visual inspection
Check the bolt torque	Using torque wrench to confirm the torque is 4F Airport^①: Not less than 37.28 Nm^② 4E Airport^①: Not less than 33.69 Nm 4D and Inferior Airport: Not less than 24.5 Nm Notes: ①. Including taxiway light fixture installed in the runway area ②.According to FAA ENGINEERING BRIEF NO.83A In-Pavement Light Fixture Bolts, With the largest A380 model for the calculation
Check the airtight performance of the light fixture	Check if there is any moisture/ water stains(inside the light fixture) through the transparent front cover
Malfunctioning light fixture removal	See section 3.5
Fail Open	See section 4.6



Note: The bolt torque of table above is the recommended plan. The actual implementation of the plan should be subject to setting torque value according to the airport scale.

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 front cover to avoid scratching the transparent front

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. Optic lens cleaner can be used if necessary.

When inset 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 7 can be applied:

Table 7 Maintenance items for Light Fixture (Non-deployed)

Maintenance Items	Method/Steps
Test whether it works properly	Connect the light fixture with power and visually inspect the light fixture
Trouble shooting	See section 4.7
Check the airtight performance of the light fixture	Check if there is any moisture/ water stains(inside the light fixture) through the transparent front cover or after disassembling the light fixture
Replace sealing ring	See section 4.5.1
Replace driver module	See section 4.5.1, 4.5.2 in order
Clean optic components	See section 4.5.1, 4.5.2, 4.5.3 in order
Replace optic components	See section 4.5.1, 4.5.2, 4.5.3 in order
Replace top cover / prism	See section 4.5.1, 4.5.2, 4.5.3, 4.5.5 in order
Replace bottom cover	See section 4.5.1
Replace power supply cable	See section 4.5.1, 4.5.5 in order

4.5.Light Fixture Removal and Installation

WARNING: Before operation, make sure that you have read the Safety Instructions carefully.



CAUTION: Use screws and gaskets that meet the requirements during maintenance. Otherwise, security risks may arise. Keep the site environment clean during maintenance.



Do not touch the optic components with bare hands during maintenance. Otherwise, the service life of the light source may be affected and the optical performance may be reduced. If dirt is found on optic components, such as lampshades and LED light sources, carefully wipe them with a soft, clean and dry dust-free cloth.

4.5.1.Removal and Installation of the Light Bottom Cover

Remove the bottom cover:

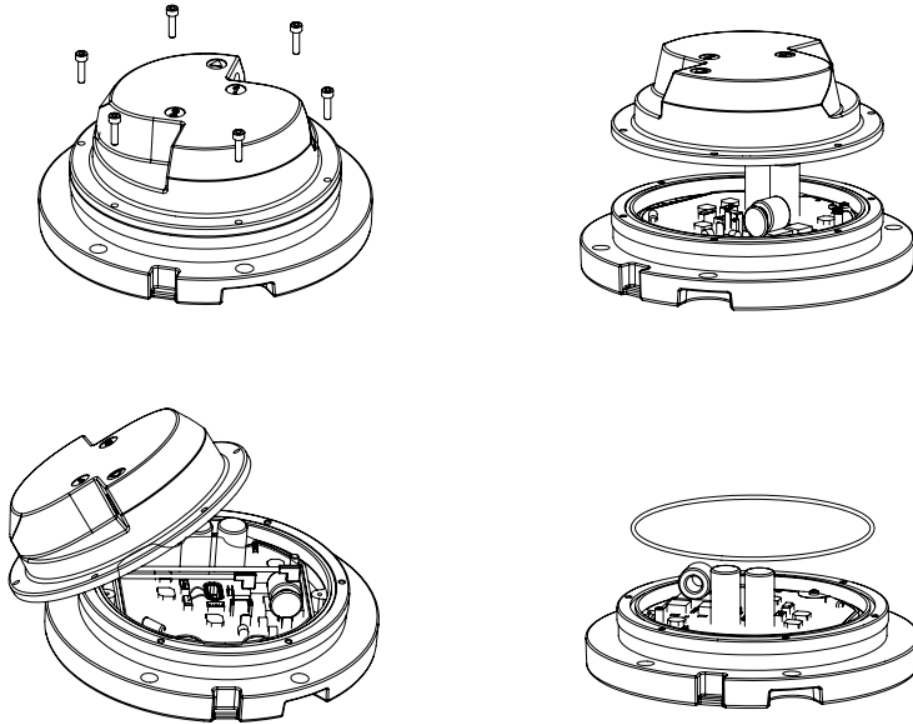
- Turn the light fixture upside down.
- Use an Allen wrench (specification: Metric No. 3) to remove 6 screws.
- Open the bottom cover
- Unplug the power cord terminal.
- Take out the sealing ring of the light fixture body.

Note: If the screw is tightly fixed, do not remove the screw with a power tool.



Loosen the screw with a hand tool and then use a power tool.

If the bottom cover is not easy to break away from the top cover, the flat opener can be used at the joint.

Figure 11 – Remove the Light Bottom Cover**Install the bottom cover:**

- Clean the dirt and dust in the inside of the light body, the contact surface between the top and bottom cover, and the O-ring groove, keep it clean and dry and put a new light body sealing ring
- Insert the plug-in of the power cable into the driver module and ensure that it is tightly inserted
- If possible, the light can be checked for power before installing the bottom cover
- Close the top and bottom cover, and align the six screw holes, then tighten the bolts using an inner hexagon wrench (metric No. 3) with torque of 2Nm

Note: The installation of the lower cover has an fool-proofing design. If the orientation of the bottom cover is not correct, the screw holes cannot be aligned totally



WARNING: A light fixture body sealing ring must be replaced each time to ensure the best sealing status.

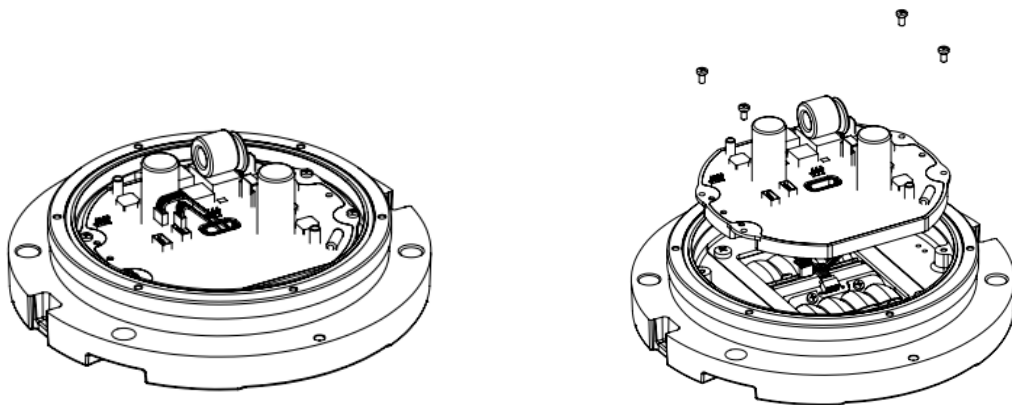


4.5.2. Removal and Installation of the Driver Module

Remove the driver module:

- Unplug the plug of the light source
- Use a Phillips screwdriver (PH1) to remove 4 screws from the driver module
- Pick up the driver module

Figure 12 – Remove the Driver Module



Install the driver module:

- Ensure that the cables at the light source are properly inserted
- Insert the light source cable into the wiring terminal on the driver module, and connect the light source assembly on the same side to the driver module. Make sure that the connection is correct.
- Place the driver module into the top cover and align the screw holes
- Use a Phillips screwdriver (PH1) to install 4 screws of the driver module with a torque of 1.2Nm.
- Insert the cables between the driver modules, and fasten the clips

Note: Make sure that the wire is plugged in place and gently pulled without falling off



4.5.3. Removal and Installation of the Optic Module

CAUTION:



Please wear rubber gloves for the following operations. During the operation, avoid direct contact with the light-emitting surface of the optic component, including the prism, LED light source, and the inner surface of the reflector.

Remove the optic module:

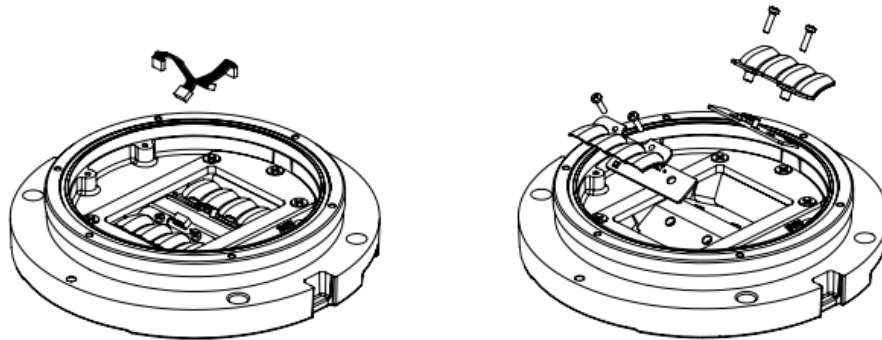
- Carefully remove the cables from the light source component
- Use a Phillips screwdriver (PH1) to unscrew the light source component
- Remove the reflector and LED aluminum-based circuit board from the light source component
- After removing the optic module, please place it properly

Note:



The “mounting feet” of the reflector are stuck in the mounting holes. Be careful when separating the reflector to avoid damaging the light source component. A small flat screwdriver can be used to gently pry open along the seam.

There is thermal grease under the LED aluminum-based circuit board. Please place it properly to avoid polluting the workbench.

Figure 13 – Remove the Optic Module**Install the optic 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 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.

If the light fixture has a toe-in angle, the deflection direction of the light source component should correspond to the glowing color & direction mark on the light fixture.

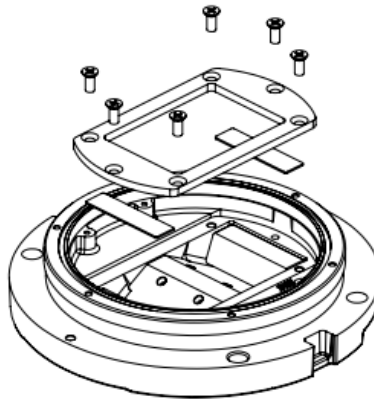
4.5.4. Removal and Installation of the Prism Holder

Maintenance of the light source does not require the disassembly of the prism holder. The prism holder will have to be removed only when the top cover or prism needs to be replaced.

Remove the optic module:

- Use a Allen wrench(Metric 3) to remove the 6 M5 screws.
- Gently pick up the stainless-steel holder.
- There is a silicone gasket between the prism and the holder, remove it together

Figure 14 – Remove the Prism Holder



Install the optic module:

- Prepare silicone gaskets, one silicone gasket for each prism, and place it on the bottom of the prism. Please pay attention to the mark on the gasket, the surface with the mark is attached to the prism.
- Place the prism holder on its groove, press the gasket and align 6 mounting holes. Pay attention to avoid displacement of the gasket during the process.
- Use a Allen wrench(Metric 3) to tighten the 6 M5 screws with a torque of 4Nm



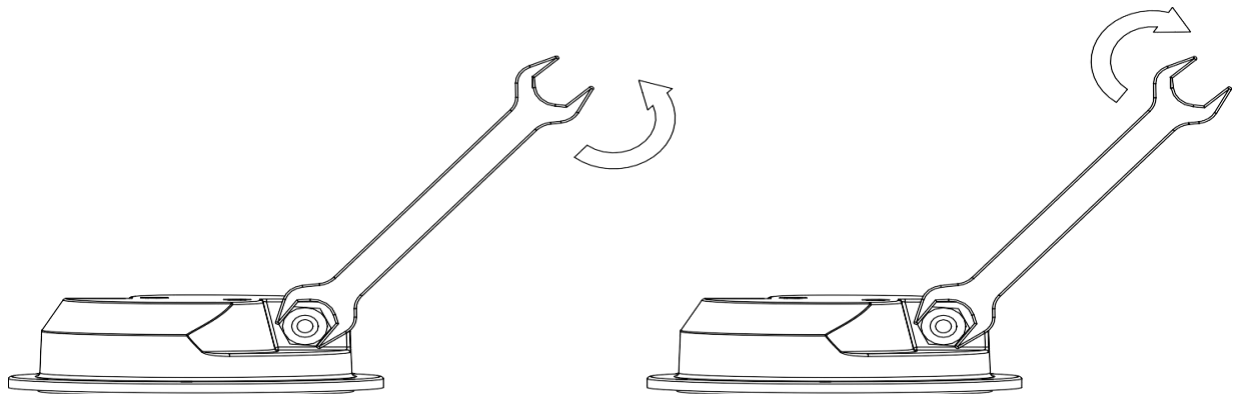
CAUTION: The back of the silicone gasket has the glowing color & direction marking information, please select the gasket corresponding to the window light color and direction. See 2.6.3 for a detailed description of glowing color & direction markers

4.5.5. Removal and Installation of the Power Supply Cable

Remove the Power Supply Cable:

- Place the bottom cover (with the opening downwards, see figure below) on a flat working surface.
- Use a 13/16 open-end wrench to clamp the base of the power cord seal head and turn it counterclockwise until the seal head is completely separated from the mounting hole of the bottom cover.
- Pull out the cable and clean the mounting hole of the bottom cover.

Figure 15 – Remove the Power Supply Cable



Install the Power Supply Cable:

- Prepare a new accessories to be replaced, then pass the cable through the mounting holes of the bottom cover and reserve about 10 cm length cable inside.
- Screw the sealing head of the power cord clockwise into the mounting hole of the bottom cover, and use a 13/16 open-end wrench to tighten the hexagon nuts at the root of the sealing head and the cable locking nuts. Check whether the cable is tight. If it is loose, you need to tighten the lock Nut.

4.6.Fail Open Function

Description of English abbreviation:

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

Applicable environment:

- FON: Applicable for circuits without a individual lamp monitoring unit.
- FOA: Applicable for circuits with specific a individual lamp monitoring units.
- 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 16 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.

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.

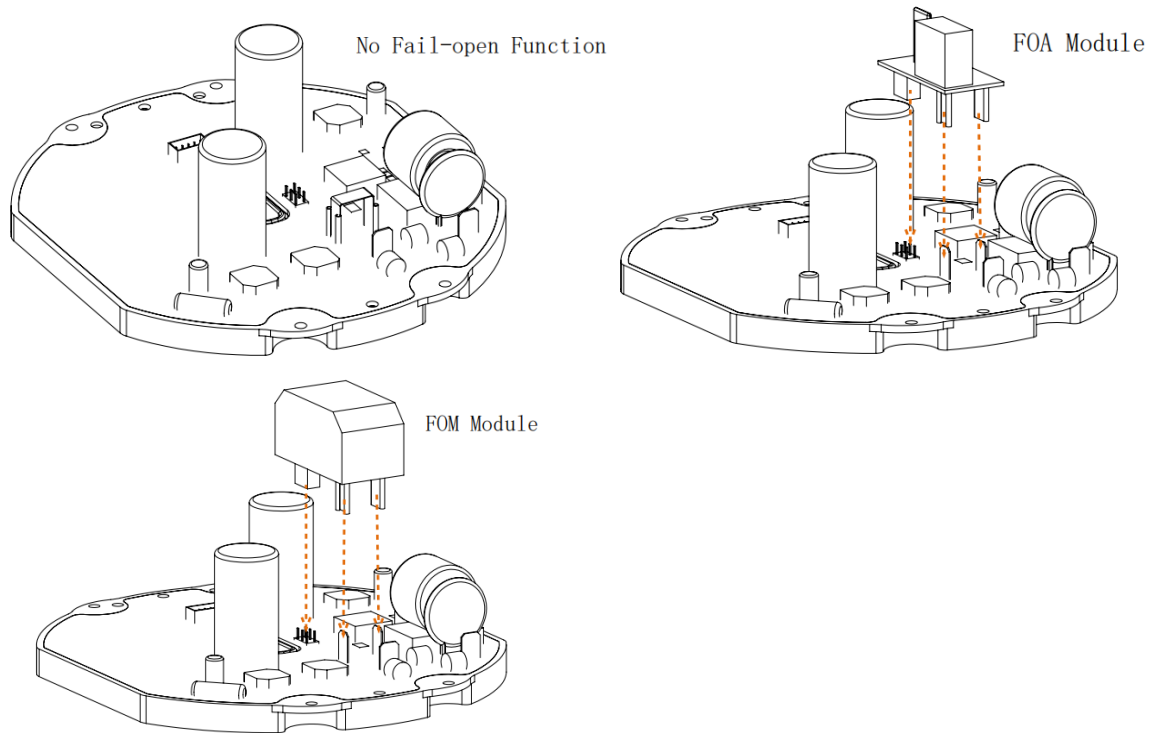
c) For the repair of failed LED lamps, after replacing a new LED light source, the lamps can continue to be used without replacing the FOA module components

Note:

If the failed LED lamp 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 by 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 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



4.7.Trouble Shooting

Table 8 Trouble Shooting

Malfunction	Trouble Shooting Step
The light stops working (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, open the bottom cover and check the cable connection between the power cable and the driver board 4. If the fault persists, check the main driver board
Water leakage inside the light fixture	1. Check the seal performance of windows 2. If the fault is not eliminated, open the bottom cover, check the seal groove on the O-ring and lamp housing 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. 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
The light is on on one side and off on the other	1. Open the bottom cover and check the indirect lines of the two drive plates. 2. If the fault is not eliminated, check the indirect cable between the light source and the driver on the fault side 3. If the fault is not eliminated, replace the faulty light source 4. If the fault is not eliminated, replace the driver board on the faulty side

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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