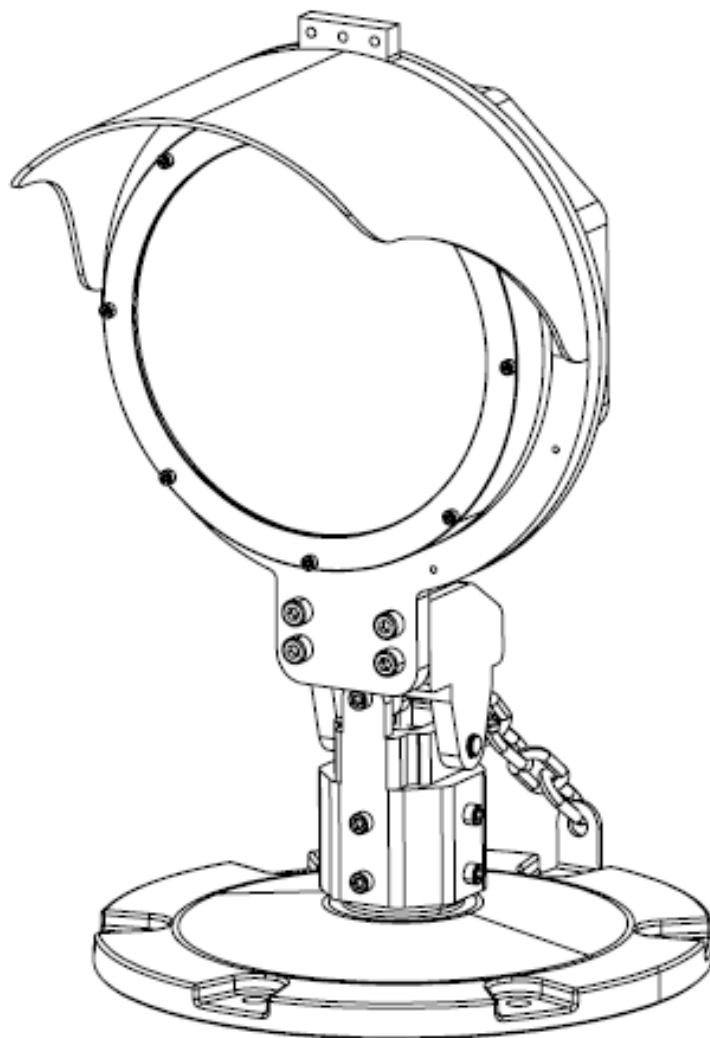


# LED AIRFIELD LIGHTING



# CONTENT

|                                                              |    |
|--------------------------------------------------------------|----|
| Disclaimer/Standard Warranty.....                            | 6  |
| 1 . Safety.....                                              | 6  |
| 2 . Introduction.....                                        | 7  |
| 2.1 Product Features .....                                   | 8  |
| 2.2 Electrical Properties .....                              | 9  |
| 2.3 Mechanical Properties.....                               | 10 |
| 2.4 Main Components .....                                    | 11 |
| 2.5 Nameplate.....                                           | 12 |
| 3 . Installation .....                                       | 13 |
| 3.1 Tools preparation .....                                  | 13 |
| 3.2 Unpacking Unit .....                                     | 13 |
| 3.3 Installation on light fixture base .....                 | 14 |
| 4 . Maintenance.....                                         | 17 |
| 4.1 General maintenance procedures.....                      | 17 |
| 4.2 Tools preparation.....                                   | 18 |
| 4.3 Maintenance items .....                                  | 19 |
| 4.4 Operation steps .....                                    | 20 |
| 4.4.1 Disassembly and assembly of glass front cover.....     | 20 |
| 4.4.2 Disassembly and assembly of light panel assembly ..... | 21 |
| 4.4.3 Disassembly and assembly of rear cover .....           | 23 |
| 4.4.4 Removal and installation driver module .....           | 24 |

|       |                                                             |    |
|-------|-------------------------------------------------------------|----|
| 4.4.5 | Disassembly and assembly of power cable in rear cover ..... | 25 |
| 4.5   | Trouble Shooting.....                                       | 26 |
| 5     | . Support.....                                              | 28 |
| 5.1   | Customer Service .....                                      | 28 |
| 5.2   | Recycling.....                                              | 28 |
| 5.3   | About HDK.....                                              | 28 |

### **Hangdakang Mechanical & Electrical Technology (Wuhan) Co., Ltd.**

Address: Building No. 10, Optic and mechanical park, High tech 5# Road, East lake tech district,  
Wuhan, Hubei, China

Tel: +86-27-63498449

Email: [airport@hdk-aero.com](mailto:airport@hdk-aero.com).

Website: <http://www.hdk-aero.com>

## LIST OF TABLES

|         |                                                |    |
|---------|------------------------------------------------|----|
| Table 1 | Rated Power of Light Fixture                   | 9  |
| Table 2 | General maintenance plan for Light Fixture     | 17 |
| Table 3 | Specification of Screw & Washers               | 18 |
| Table 4 | Maintenance Items for Light Fixture (Deployed) | 19 |
| Table 5 | Trouble Shooting                               | 26 |

## LIST OF FIGURES

|           |                                                           |    |
|-----------|-----------------------------------------------------------|----|
| Figure 1  | LED Road-holding Position Light                           | 7  |
| Figure 2  | Main dimensions of LED Road-holding Position Light        | 10 |
| Figure 3  | Exploed View of LED Road-holding Position Light Structure | 12 |
| Figure 4  | Road-holding Position Light Installed on base             | 14 |
| Figure 5  | Pitch Angle Adjustment                                    | 15 |
| Figure 6  | Diagram of Disassembly Front Cover                        | 20 |
| Figure 7  | Diagram of Disassembly Light Panel                        | 22 |
| Figure 8  | Diagram of Disassembly Rear Cover                         | 23 |
| Figure 9  | Diagram of Disassembly Drive Module                       | 24 |
| Figure 10 | Diagram of Driver Module Interface                        | 24 |
| Figure 11 | Diagram of Removing Rear Cover Power Cord                 | 25 |

## 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 not operated properly. International or national standards referring to the electrical safety and safety of electrical operations should be strictly implemented during the operation and at any stage where powered lighting products are handled or maintained. Correct safety code must be followed during any operation in lighting circuit (On and Off state).

Various safety tips in the manual will be marked with different icons. The icons and their explanations are as follows: icons used in the manual (in accordance with GB and IEC standards)

**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.  
circuit.

**WARNING:**

Failure to strictly comply with national and international electrical safety regulations may result in personal injury and equipment damage.

**CAUTION:**

Failure to follow this "caution" may result in equipment damage.

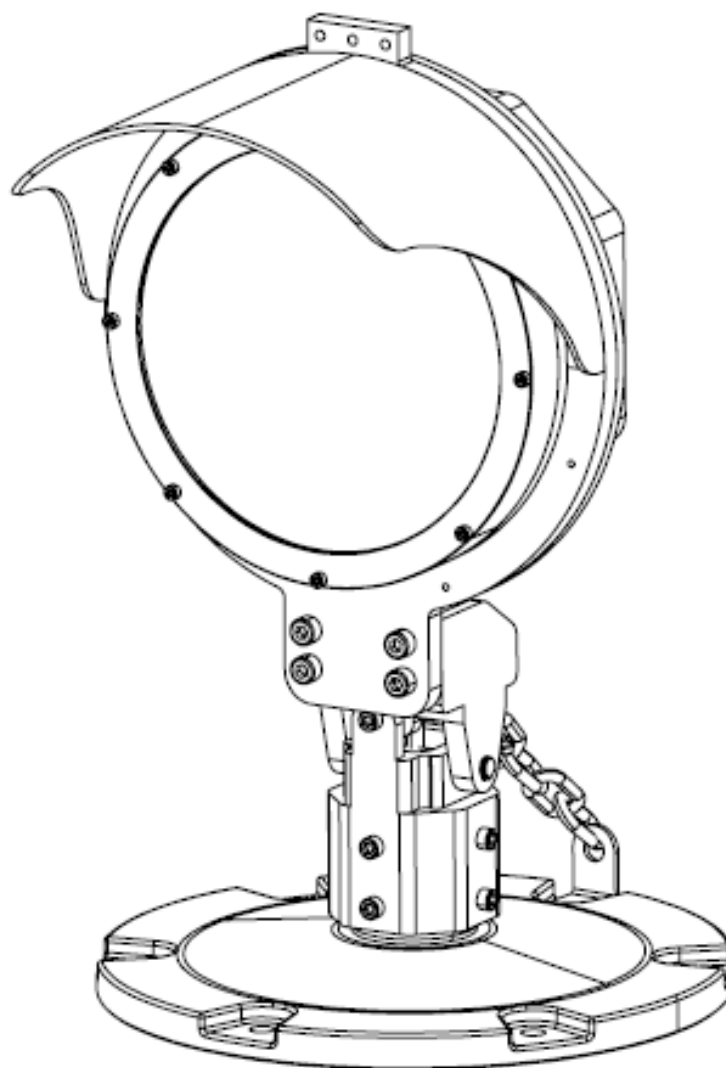
**Note:**

Explanations and supplements to some of the text description

## 2. Introduction

The LED Road-holding Position Light produced by HDK adopt imported LED light sources with energy saving and long service life. This series of light fixture has the characteristics of durable structure, exquisite appearance, long maintenance-free period, etc. The products are designed and produced in accordance with ICAO, CAAC, IEC, FAA standards, and applicable to airports in various environments.

**Figure 1 - LED Road-holding Position Light**





## 2.1 Product Features

The lamp adopts LED light source, with longer service life and better stability.

The main structure of the light fixture is precision machining, the surface is treated with anti-corrosion treatment (plastic spraying, oxidation, etc.), and all fasteners are made of 316 stainless steel, so that the light fixture has good weather resistance.

The protection grade of the light fixture is IP54, and waterproof and dustproof performance is good.

The light-emitting can be dimmed with 5 levels of light intensity.

The installation angle of light fixture is easy to adjust, and additional calibration equipment is not required.

The performance index of the light fixture meets the following standards:

### **(current version)**

- ICAO      Annex 14, Volume 1, & Aerodrome Design Manual
- EASA      CS-ADR-DSN

## 2.2 Electrical Properties

### Input Cable

- FAA L823 connection 1

### Input Current

- 2.8-6.6A<sub>eff AC</sub>

### Sinusoidal CCR

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

### Thyristor CCR

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

### Flashing Rate

- Between 30 and 60 per minute

**CAUTION:** Inputting electrical parameters beyond the specified range above is highly likely to damage the fixture

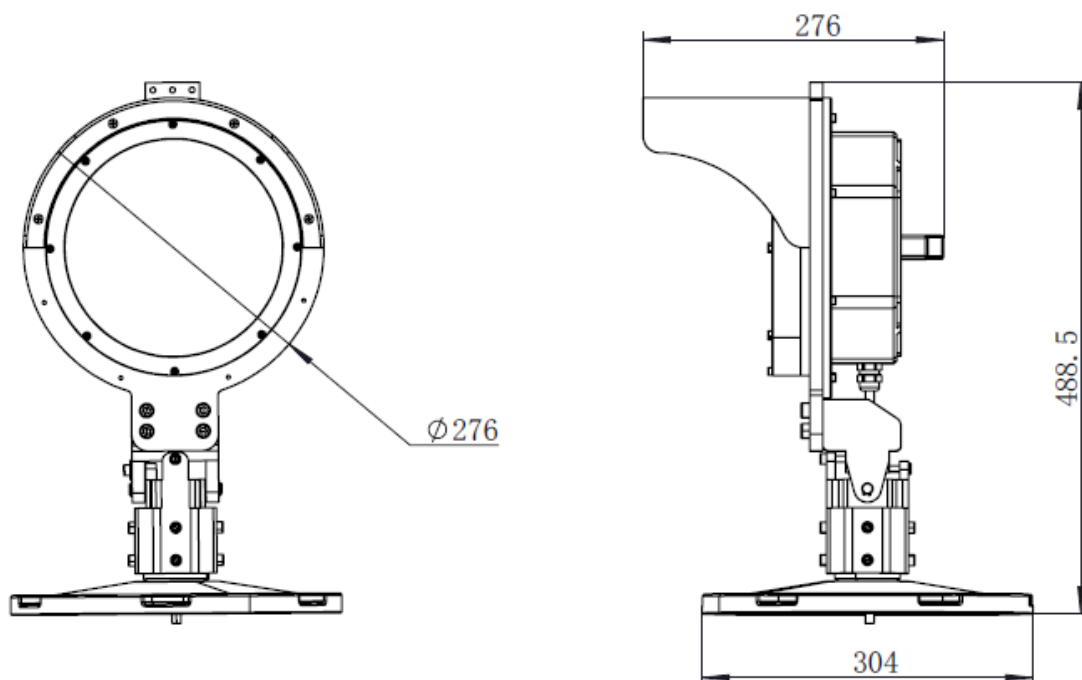


Table 1 Rated Power of Light Fixture

| Product name                   | Model        | Rated Power (W) |
|--------------------------------|--------------|-----------------|
| Road-holding Position<br>Light | ELH-RHP-C(L) | 6.5             |

## 2.3 Mechanical Properties

**Figure 2 - Main dimensions of Road-holding Position Light**



### Vertical Adjustment

- 0 ° to 10 °

### Degree of Protection

- IP54 (IEC60598-1)

### Operating Temperature

- -40°C – +55°C

### Storage Temperature

- -40°C – +85°C

### Net Weight

- 8kg

## 2.4 Main Components

**HDK LED Road-holding Position Light contains the following components:**

### **Optical components**

- LED light source- Red light source
- LED PCB circuit board
- Lens, front glass cover
- PC diffuser plate red

### **Lamp body assembly**

- Aluminum alloy main board - spray anti-corrosion treatment on the surface
- Sun visor - surface electrophoresis low gloss black finish anti-corrosion treatment
- High performance sealing silicone rubber ring

### **Driver module**

- LED drive circuit board
- Potting adhesive
- Cooling box

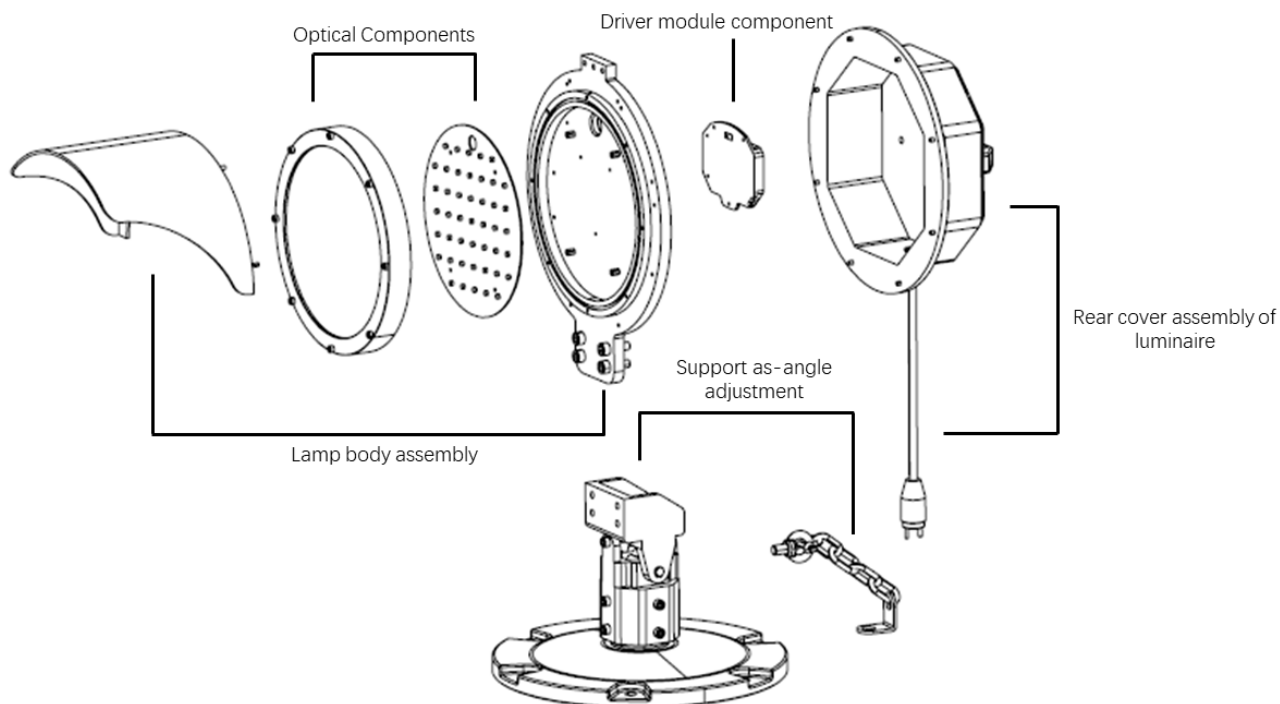
### **Angle adjustment support assembly**

- Angle adjuster
- Chain SUS304
- Support parts, breakable coupling parts
- Flange

### **Rear cover assembly of light fixture**

- Aluminum alloy rear cover - plastic spraying anti-corrosion treatment
- Power cord - plug: FAA L-823 type 1, secondary cable: FAA 150/5345-70 standard
- Power cord sealing head
- High performance sealing silicone rubber ring

**Figure 3 - Exploded View of LED Road-holding Position Light Structure**



## 2.5 Nameplate

### Road-holding Position Light

Model: ELH-RHP-C(L)

Input: AC 2.8A-6.6A

Color: Red

Power: 6.5W

Function: FOM

SN: 4HJ1009



## 3. Installation

**WARNING:** Before installation, confirm that the primary circuit of the light is in the power-off state, that is, turn off the power supply of the constant current regulator of the circuit.



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



### 3.1 Tools preparation

Installation tools and materials are as follows:

- Open-end Wrench (10mm and 17mm)
- Allen wrench (metric 2-5)
- Cable joint sealing material and insulating tape
- Impact drill and accessories
- Clean cloth

### 3.2 Unpacking Unit

Please carefully check whether the outer packaging is in good condition. If the products and accessories are damaged after opening the packaging, please claim for compensation from the carrier in time. When receiving light fixture, please confirm whether the product information on the goods list is consistent with the construction design. At the same time, check whether the quantity, type, specification, color and other characteristics of light on the goods list are consistent with the real object. If any problem is found, please contact the supplier in time.

**CAUTION:** This product package can be used for maintenance, disassembly



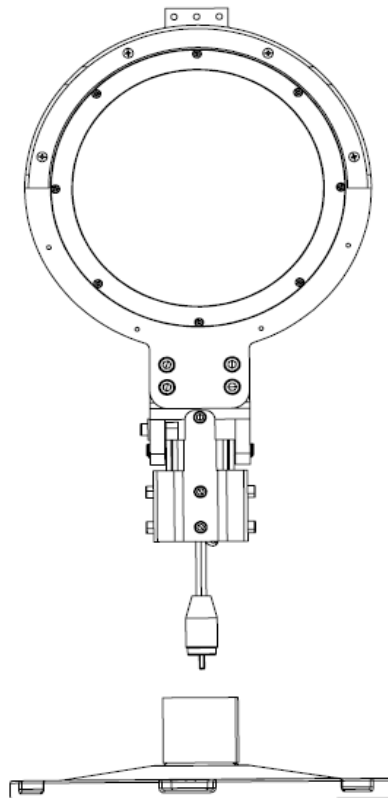
and subsequent transportation of light fixture. Please keep this product package properly after receiving the goods.

### 3.3 Installation on light fixture base

Please check the following items before proceeding:

- Blow the threading pipe clean and dry with compressed air
- Confirm the installation position of the flange, pre-embed M10 bolts or M10 expansion bolts, then fix the flange on the pavement, and then tighten the breakable coupling sleeve of light fixture.
- It is recommended that the reserved length of the secondary cable be 30 to 50cm for easy installation and maintenance

**Figure 4 - Road-holding Position Light Installed on base**



- Assemble the secondary power supply cable of the light fixture through the breakable coupling sleeve according to the L-823 plug and socket connection method (Plug: FAA L-823, Type II; Socket: FAA L-823, Type II). Use sealing tape if necessary; Insert the lamp into the flexible part sleeve
- Insert the light fixture into the breakable coupling sleeve
- Tighten the fixing bolts to fix the light fixture on the breakable coupling
- Adjust the pitch angle of light fixture according to the design requirements
- Secure the tether to the flange bolts

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

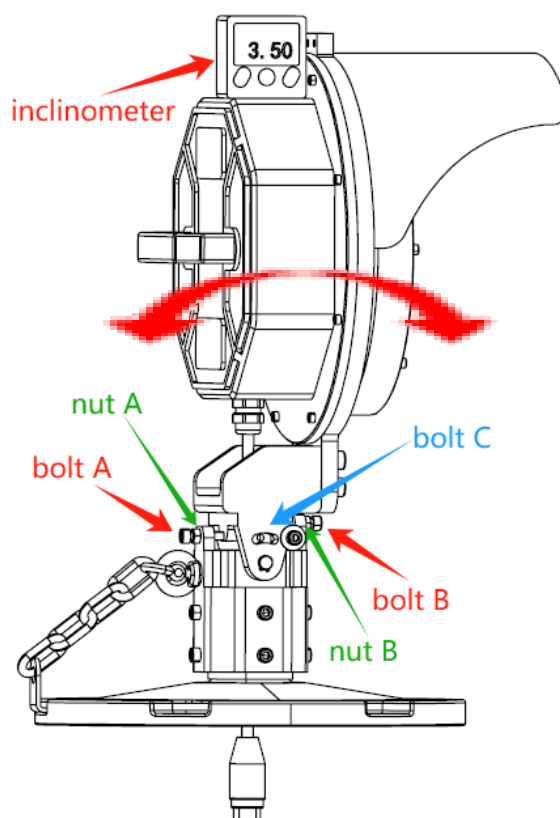


**Do not use high-speed power tools to tighten the bolts, as this may cause slippage.**

**NOTE: Pitch angle adjustment: adjustable from 0 ° to 10 °, as shown in the following figure:**



**Figure 5 - Pitch angle adjustment**





- Loosen the pitch angle fixing bolt C, and loosen the angle adjusting bolt A and bolt B,
- Place the inclinometer along the direction of the light emission on the light fixture head
- Turn the light fixture vertically to the design angle, then tighten the fixing bolt A and bolt B, Tighten the lock nuts A and B.
- Tighten the pitch angle fixing bolt C

## 4. Maintenance

**Note:** For trouble shooting, please refer to 4.5 in this manual



### 4.1 General maintenance procedures

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 2.

**Note:** The following is the recommended scheme. The actual



implementation of the plan should be subject to the maintenance regulations of the customers

**Table 2 - General Maintenance Plan for Light Fixture**

| Maintenance frequency | Method                                                                                                                             |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Everyday              | Check the light-emitting<br>Check whether the light fixture glass cover is damaged                                                 |
| Semiannual            | Check whether the light fixture is damaged<br>Clean the dust and dirt on the surface<br>Check the fixing condition and bolt torque |
| Annual/Biennial       | Check the sealing performance<br>Clean optical components (if necessary)                                                           |

## 4.2 Tools preparation

**Maintenance tools and materials are as follows:**

- torque wrench: nut 16mm/17mm
- Socket wrench : 16mm/17mm
- Allen wrench : metric 3-5
- Phillips screwdriver, specifications: PH1/ PH3
- 13/16/10 open-end wrench
- Clean cloth
- Special dust-free cloth for optical lens cleaning
- Optical lens cleaner
- Thermal grease
- Tweezers

**Table 3 Specification of Screw & Washers**

| Screw Name                  | Screw Specs                                                            | Installation Torque (Nm) | Quantity   |
|-----------------------------|------------------------------------------------------------------------|--------------------------|------------|
| LED PCB circuit board Screw | M3*6 Phillips round head                                               | 1.2                      | 4          |
| Sun Visor Screw             | M4*12 Inner hexagon head and M4 Flat washer                            | 2                        | 4/4        |
| Optical Hood Screw          | M4*35 Inner hexagon head and M4 Flat washer and spring washer          | 2                        | 8/8/8      |
| Driver Module Screw         | M3*6 Phillips round head                                               | 1.2                      | 3          |
| Rear Cover Screw            | M4*16 Inner hexagon head and M4 Flat washer                            | 2                        | 8/8        |
| Rear Cover Handle Screw     | M8*16 Inner hexagon head                                               | 4                        | 2/2        |
| Pitch Angle Fixing Screw    | M6*25 Inner hexagon head with flat washer and spring washer            | 6                        | 1/1/1      |
| Angle Adjusting Screw       | M6*25 Inner hexagon head with nut<br>M6*35 Inner hexagon head with nut | 2                        | 1/1<br>1/1 |
| Lamp body assembly Screw    | M8*30 Inner hexagon head with flat washer and spring washer            | 6                        | 4/4/4      |
| Fixed Frangible Rod         | M6*16 Inner hexagon head with nut                                      | 2                        | 3/3        |

## 4.3 Maintenance items

For the light fixture deployed on the pavement, the following maintenance items are available:

**Table 4 - Maintenance Items for Light Fixture (Deployed)**

| Maintenance Items                                    | Method/Steps                                                                                           |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Check if the light is emitted/illuminated.           | 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 the fixing condition                           | Visual inspection                                                                                      |
| Check the bolt torque                                | Using torque wrench to confirm the torque is 24.5Nm                                                    |
| Check the sealing performance of the light fixture   | Check if there is any moisture/ water mark(inside the light fixture) through the transparent top cover |
| Malfunctioning light fixture removal                 | See section 4.4                                                                                        |

**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 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.

## 4.4 Operation steps

**WARNING:** Before operation, please make sure that the Safety Instructions are read carefully.



**CAUTION:** During maintenance, please use the screws and washers which can meet the required specifications, otherwise, the potential safety hazard may arise.



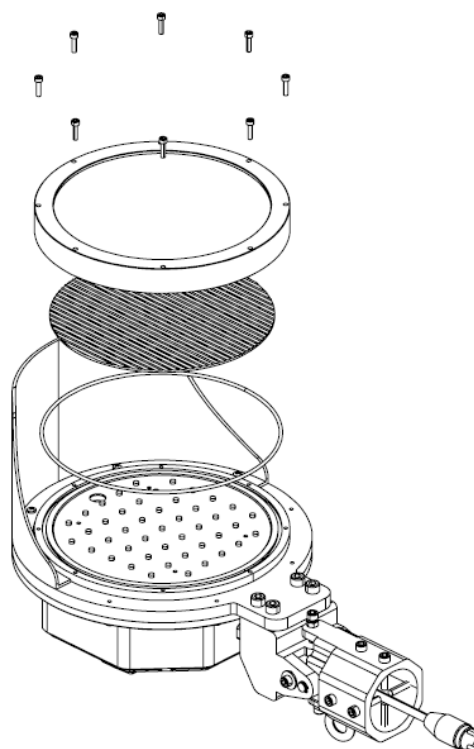
Please keep the onsite environment clean during the maintenance. Please do not touch the optical components directly by bare hands, otherwise, the service life of light source and optical performance will be reduced. If there are dirties and dust on the optical components, a soft, clean and dry non-woven cloth can be used to clean it. The optical components include prism, LED light source

### 4.4.1 Disassembly and assembly of glass front cover

**Disassembling the front cover:**

- Turn the lamp upside backwards
- Remove the screw with an Allen wrench (metric No. 3)
- Open the glass front cover
- Remove O-ring from light fixture

**Figure 6 - Diagram of disassembly front cover**



#### Assemble the front cover:

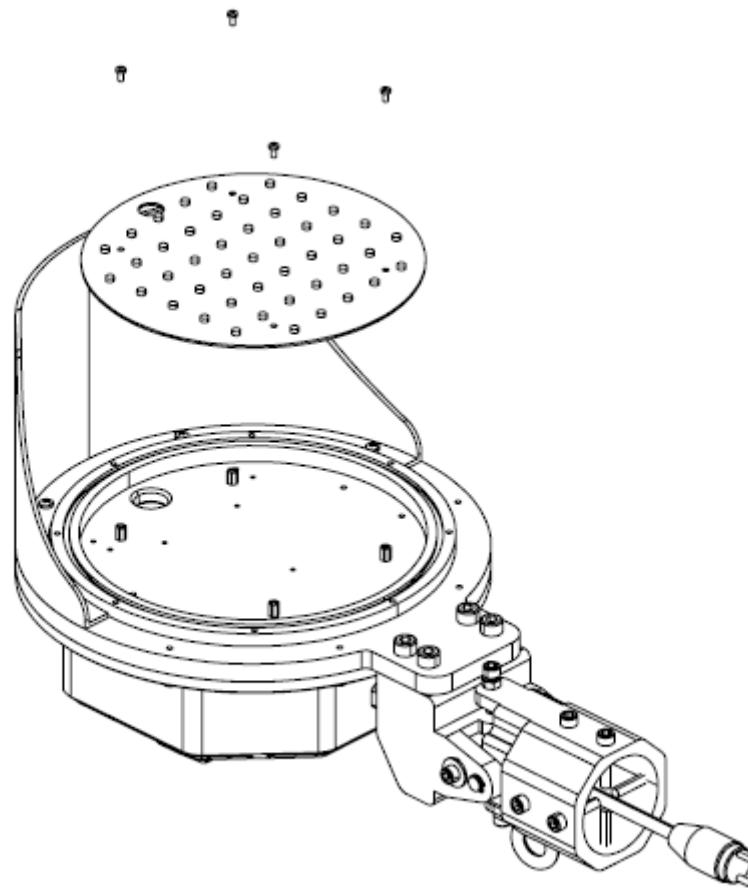
- Clean the dirt and dust in the O-ring groove and keep it clean and dry
- Put in a new light fixture body sealing ring
- Insert the flat cable at the light source end into the main board
- If possible, the light fixture can be checked by power-on before installation.
- Close the glass front cover, align the screw holes, and screw the bolts with an Allen wrench (specification: metric 3), with a torque of 2Nm

## 4.4.2 Disassembly and assembly of light panel assembly

#### Disassembling the light panel:

- Unplug the cables from the light source assembly
- Remove the screws of the light source assembly with a phillips screwdriver (specification: Ph1)
- Remove the LED PCB circuit board from the light source assembly
- After removing the light source assembly, place it properly

**Figure 7 - Diagram of disassembly light panel**



### Assemble the light panel:

- Attach the LED PCB circuit board on the main board, and align the holes
- Use a phillips screwdriver (specification: Ph1) to tighten the screws with a torque of 1.2Nm
- Connect the flat cable
- Use a phillips screwdriver (specification: Ph1) to tighten the screws with a torque of 1.2Nm

**NOTE:** Make sure that the cable is plugged tightly and gently pulled without



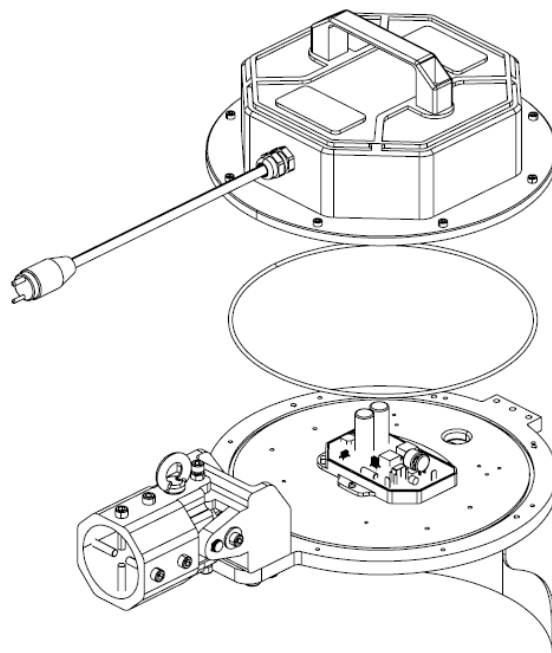
falling off

### 4.4.3 Disassembly and assembly of rear cover

#### Disassemble the bottom cover:

- Turn the light fixture upside down
- Remove 8 screws with an Allen wrench (metric No. 3)
- Open the rear cover
- Remove the connection terminal of the power cable
- Take out the light body O-shaped sealing ring

**Figure 8 - Diagram of disassembly rear cover**



#### Assembling rear cover:

- Clean the dirt and dust in the O-shaped sealing ring groove of the rear cover and keep it clean and dry
- Put in a new sealing ring
- If possible, the light fixture can be checked by power-on before the bottom cover is installed.
- Close the top and bottom covers, and use an Allen wrench (specification: metric 3) to screw the bolts with a torque of 2Nm

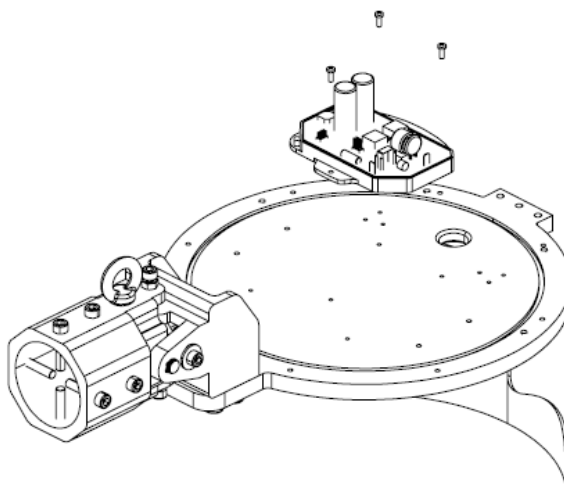


## 4.4.4 Removal and installation driver module

### Disassembling the driver module:

- Unplug all cables
- Use a Phillips screwdriver (Ph1) to remove 3 screws of the driver module.
- Pick up the drive module

**Figure 9 - Diagram of disassembly drive module**

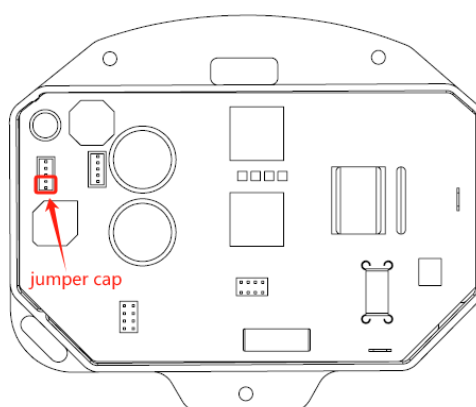


### Assembly driver module:

- 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
- Connect the cables

### Driver module interface description:

**Figure 10 - Diagram of driver module interface**

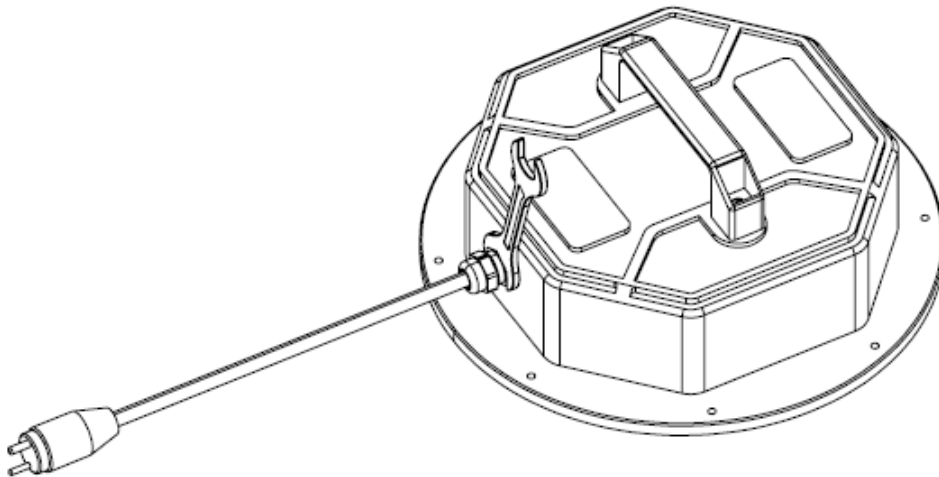


## 4.4.5 Disassembly and assembly of power cable in rear cover

### Disassembly:

- Remove the power cord sealing head and place the opening of the rear cover down and parallel on a working surface
- Use a 13/16 open-end wrench to hold the root of the power cord sealing head and turn it counterclockwise until the sealing head is completely separated from the mounting hole of the bottom cover
- Pull out the cable and clean the mounting hole

**Figure 11 - Diagram of removing rear cover power cord**



### Assembly:

- Take the new parts to be replaced, pass the cables through the mounting holes of the bottom cover and reserve 10 cm cable inside
- Screw the sealing head of the power cord clockwise into the mounting hole, tighten the hexagon nut at the root of the head and the cable locking hexagon nuts with a 13/16 open-end wrench. If the power cord is loose, tighten the locking nut

## 4.5 Trouble Shooting

**Table - 5 Trouble Shooting**

| Malfunction                                 | Trouble shooting steps                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Can not work normally                       | <ol style="list-style-type: none"> <li>1. Turn on the light again after turning it off for one minute;</li> <li>2. If the fault is not eliminated, check the plug of power cord</li> <li>3. If the fault is not eliminated, check the cable connection between the power cable and the driver board;</li> <li>4. If the fault is not eliminated, check the LED panel;</li> </ol> |
| Water leakage                               | <ol style="list-style-type: none"> <li>1. Check the sealing condition of the front cover;</li> <li>2. If the fault is not eliminated, check the seal ring and the seal groove on the light body;</li> <li>3. If the fault is not eliminated, check the sealing head of the power cord;</li> </ol>                                                                                |
| Can not adjust the light intensity normally | <ol style="list-style-type: none"> <li>1. Confirm that the CCR and isolation transformer are fault-free and operation without problems;</li> <li>2. If the fault is not eliminated, replace the driver board;</li> </ol>                                                                                                                                                         |
| Light-emitting                              | <ol style="list-style-type: none"> <li>1. Confirm that the specifications of the CCR and isolation</li> </ol>                                                                                                                                                                                                                                                                    |

unstable and flickering transformer match the operation requirements of the light fixture, and fault-free and operation without problems;

2. If the fault is not eliminated, replace the driver board;

3.if the fault is not eliminated, contact the manufacturer for further instructions;

---

## 5. Support

### 5.1 Customer Service

If you need after-sales service, please 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

Hangdakang Mechanical & Electrical Technology (Wuhan) Co., Ltd established in 2003 in Wuhan/China is an already professional 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.

You can contact us at

**Beijing****Address**

Room 607-610, Building 2 of Sailing International Greenland,  
Houshayu, Shunyi District, Beijing

**Tel**

+86-10-80480105

**Email**

airport@hdk-aero.com

**Wuhan****Address**

Building No. 10, Optic and mechanical park, High tech 5# Road,  
East lake tech district, Wuhan, Hubei, China

**Tel**

+86-27-63498449

**Email**

airport@hdk-aero.com

**Homepage**

[www.hdk-aero.com](http://www.hdk-aero.com)

**WeChat official account**