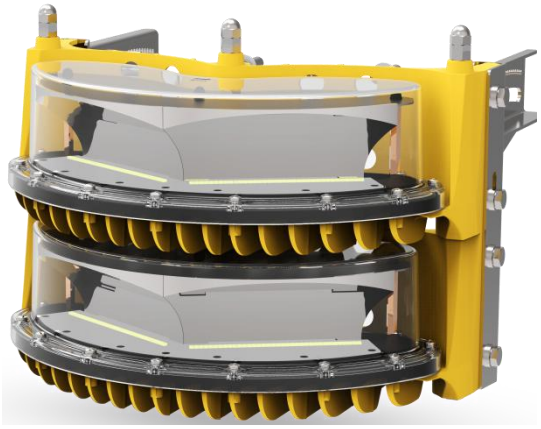
LH88
High Intensity Aviation Obstruction Light



Products description and application

LH88 High-intensity aviation obstruction lights are used to mark buildings that may cause damage to aircraft.
Combines with advanced LED, optical and system control technology to meet the most demanding applications.
Suitable for obstacles with a height of 150 meters.
Suitable for high salinity corrosion area.

Features

- Aluminum alloy die-cast shell, yellow electrostatic powder coating surface, anti-vibration, corrosion-resistant.
- Anti-UV, shock-resistant PC housing; flammability level: UL94V-2.
- Waterproof silicone seal structure.
- Light source using LED technology, long life, low energy consumption, high efficiency.
- Professional EMC design, anti-electromagnetic interference.
- Wind load level:≥240km/h.
- Day and night auto switch, can be controlled by local time or photocell.
- Lamp with fault alarm detection and alarm output.
- GPS synchronization function (optional).

Specifications

Standard	CAAC	MH6012-2015	Aviation Obstruction Light
	ICAO	ICAO Annex 14 Volume I, Sixth Edition	Aerodrome Design and Operations
	FAA	Advisory Circular 150/5345-43GH	Specification for Obstruction Lighting Equipment

Electrical parameters		**Mechanical parameters**	
Input Voltage	AC200~240V/AC100~130V/DC48V(power box) DC48V(Light head)	Operating temperature	-40˚C ~ +65˚C
		Ambient humidity	0% ~ 90% RH (No condensation)
Frequency	50-60Hz(AC power box)		
Rated Power	With power box, 1 layer 85W (daytime) With power box,2 layers 150W (daytime) With power box,3 layers 220W (daytime)	Storage temperature	-55˚C ~ +70˚C
		IP rate	IP66(Light) IP65(Power box)
Surge Lightning Protection	IEC61000-4-5 L- L 6kV IEC61000-4-5 L- G 6kV	Weight	6kg(One layer light head) 7.3kg(Junction box) 9.2kg(bracket)
Electrostatic discharge	IEC61000-4-2 Contact discharge 8kV		30kg(AC power box) 11kg(DC power box)

Meteorological	
Light source	LED
LED lifespan	≥100,000h
Signal Type	flashing
Flash Rate	40FPM
Horizontal Beam Spread	120°
Vertical Beam Spread	5°
Intensity	270,000±25% cd(FAA-L856,Our Model: LH88FA) 140,000±25% cd (FAA-L857,Our Model:LH88FB) 200,000±25% cd (ICAO-Type A,Our Model:LH88AA) 100,000±25% cd (ICAO-Type B,Our Model:LH88AB) 200,000±25% cd (CAAC-Type A,Our Model:LH88CA) 100,000±25% cd (CAAC-Type B,Our Mode:LH88CB)
On/Off level	Night(<50Lx),Dawn(50-500Lx),Day time(＜500Lx),Dusk(50-500Lx)

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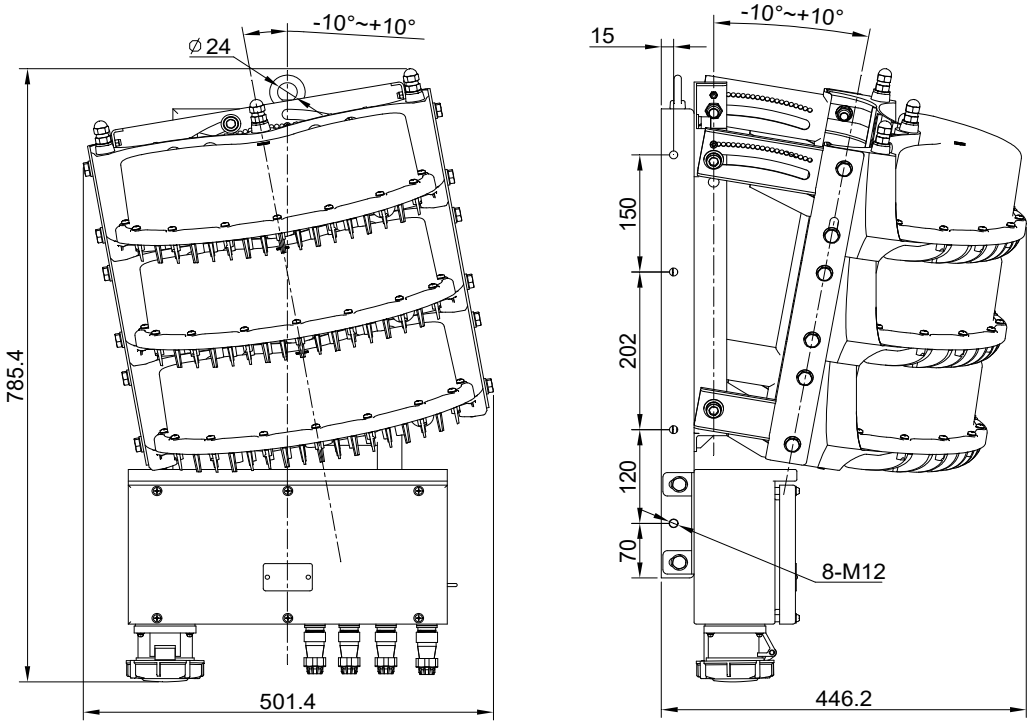
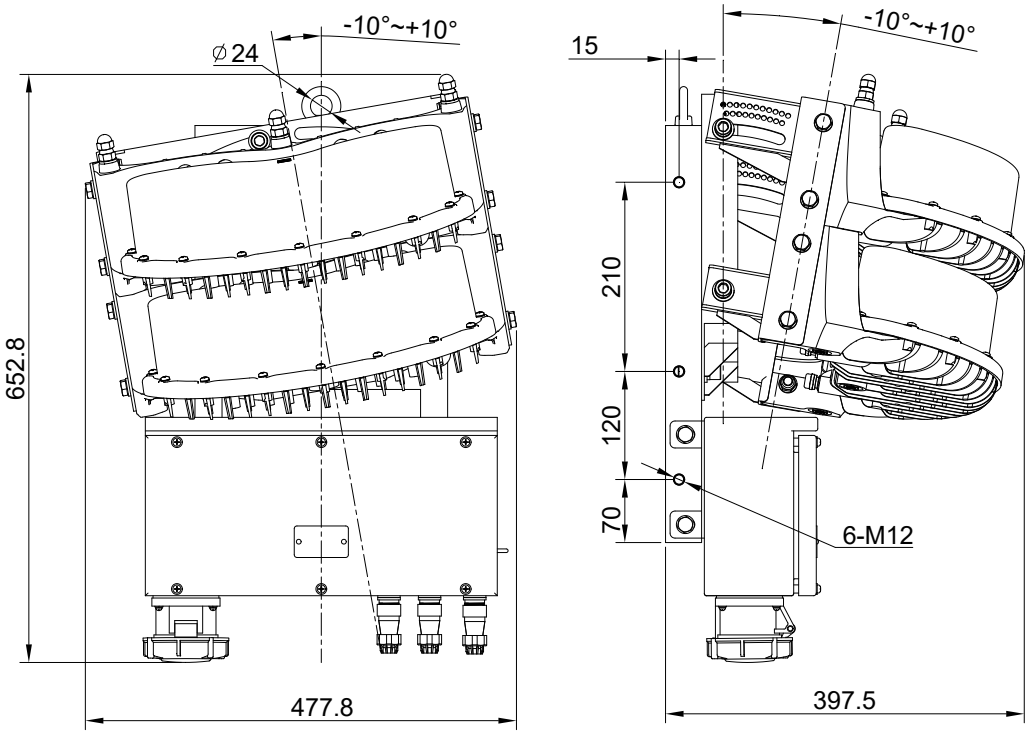
Mounting dimensions

Unit:mm



Three layers light installation dimensions



Two layers light installation dimensions

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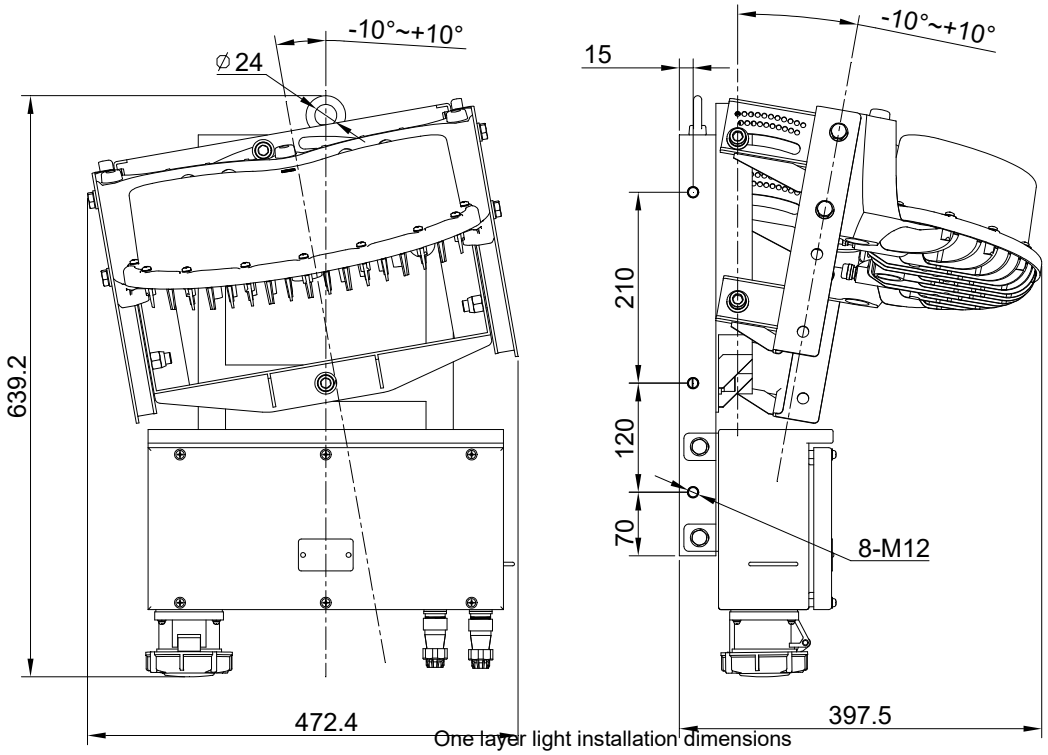

One layer light installation dimensions

Installation method of use

- Must be installed by professionals;
- Please make sure power-off when operation.
- Make sure the capacitor group's electricity of DC 48V has been released completely before install and maintain the AC power box;
- Please make sure the grid voltage and load capacity of power supply meet the requirement. Details please refer to the light's datasheet.:

Classification	Model	Input Voltage	Peak voltage	Power box rated power	Power box peak power
FAA-L856	LH88FA	AC200~AC240V	AC240V	650W	750W
		AC100~AC130V	AC130V	650W	750W
		DC48	DC60V	/	2880W
FAA-L857	LH88FB	AC200~AC240V	AC240V	430W	750W
		AC100~AC130V	AC130V	430W	750W
		DC48	DC60V	/	1920W
ICAO High Intensity A Type	LH88AA	AC200~AC240V	AC240V	430W	750W
		AC100~AC130V	AC130V	430W	750W
		DC48	DC60V	/	1920W
ICAO High Intensity B Type	LH88AB	AC200~AC240V	AC240V	220W	750W
		AC100~AC130V	AC130V	220W	750W
		DC48	DC60V	/	960W
CAAC High Intensity A Type	LH88CA	AC200~AC240V	AC240V	430W	750W
		AC100~AC130V	AC130V	430W	750W
		DC48	DC60V	/	1920W
CAAC High Intensity B Type	LH88CB	AC200~AC240V	AC240V	220W	750W
		AC100~AC130V	AC130V	220W	750W
		DC48	DC60V	/	960W

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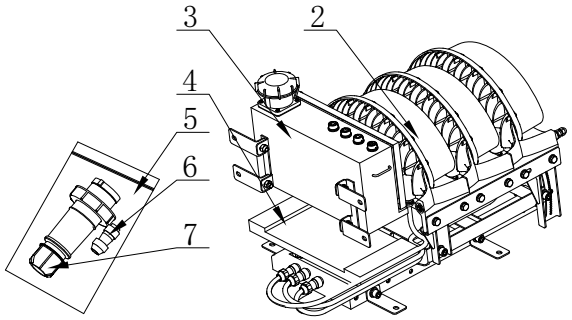
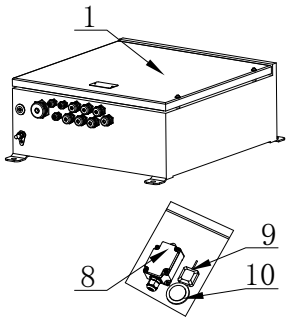
• Light head with one layer or two layers or three layers have the same installation procedures, this note No.1-No.8 takes three layers as demonstration.

1.Open the wooden case of light and power box, use a wrench to unscrew the M8 bolts between the product and the wooden case.The materials of the whole set are as below:

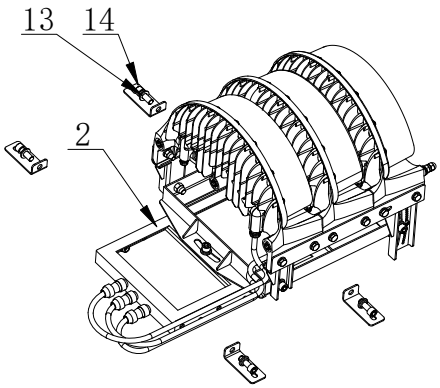


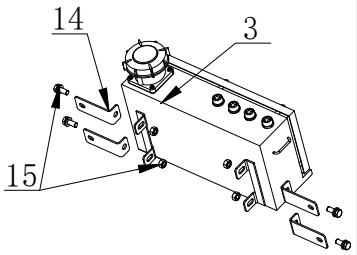


No	Parts Name	Quantity (PCS)		No	Parts Name	Quantity (PCS)
1	Power box	1		7	3-core aviation plug(big)	1(optional)
2	Light head	1		8	Photocell box	1(optional)
3	Junction box	1		9	GPS antenna	1(optional)
4	Pearl cotton	1		10	Gradienter	1
5	Self sealing bag	2		Others	Warranty card and instruction manual	Each 1
6	5-core aviation plug(small)	1(optional)				

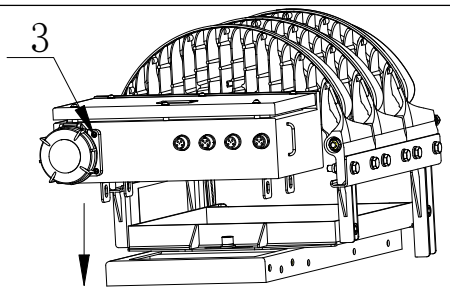
Please keep the warranty card and manual.

2.Use a wrench to unscrew theno.13- M12 bolt set (bolt, flat pad, spring pad) on the bottom of light's bracket and no. 14- packaging bracket (4 sets); unscrew the no. 15-M10 bolt set (bolt, flat pad, spring pad, nut) on the bottom of the power box and no. 14- packaging bracket (4 sets).All the bolt sets please reserve for future use.

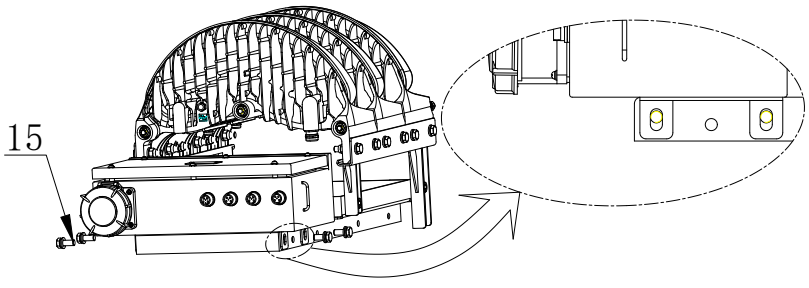




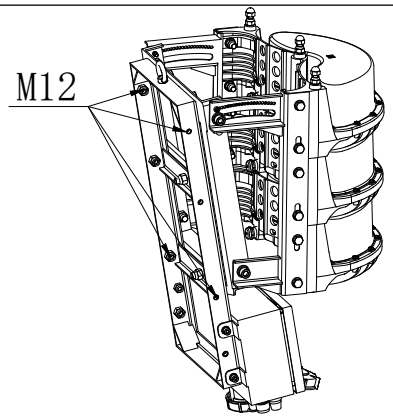
3.Please install the junction box vertically onto the light bracket, make sure the aviation plug facing outward.



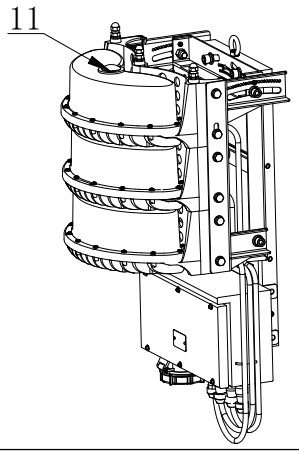
4.Make sure the mounting hole position of the junction box is the same as the light's bracket; use 4 sets of M10 bolt set unscrewed from step 2 to fix the junction box onto the light's bracket.
Notice: During the whole assembly process, please make sure there is no collision between the light's wiring harness and the aviation plug.



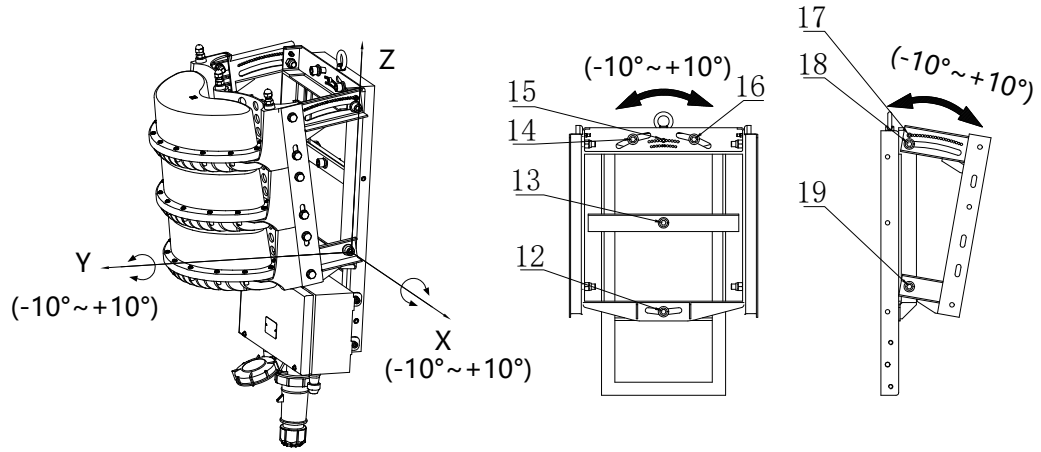
5.Using 4 sets of M12 bolt set unscrewed from step 2, tightly mount the set of step 3 onto the bracket through 4 mounting holes on the side.

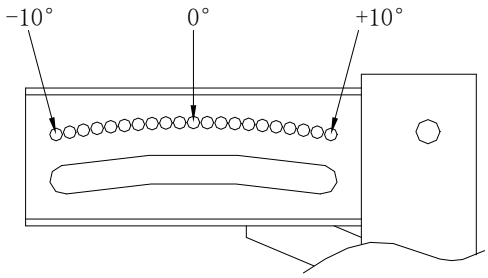


6.After fixing the light head, put the Gradienter (no. 11) on the top of the light case to make sure the light is fixed horizontally. If the light is not fixed horizontally, please adjust according to step 7(below).

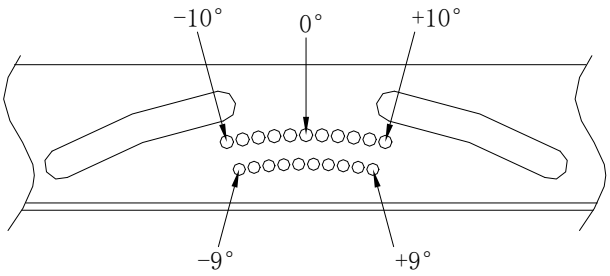


7.As shown below, the light head can adjust through X axis from -10°to +10°, Y axis from -10°to +10°.





X axis- angle adjustment (-10°to +10°)



Y axis- angle adjustment (-10°to +10°)

7.1 Detailed angle adjustment procedures:

a. Along X axis (as picture shown) to adjust the angle:

(1) Loose the bracket fixing screw (no. 19) on both sides of the mounting bracket;
(2) Loose the angle fixing screw (no. 17) on both sides of the mounting bracket;
(3) Slowly loose the angle adjusting screw (no. 18) on both sides of the mounting bracket;
(4) As required, refer to picture 'X axis- angle adjustment (-10°to +10°)', choose an angle to fix. Use the angle fixing screw (no. 17) on both sides to fix the adjustment;
(5) Tighten the angle adjusting screw (no. 18) on both sides of the mounting bracket;
(6) Tighten the bracket fixing screw (no. 19) on both sides of the mounting bracket.

b.Along Y axis (as picture shown) to adjust the angle:

(1) Loose the bracket fixing screw (no. 12& 13) in any order; (2) Loose the angle fixing screw (no. 15);
(3) Slowly loose the angle adjusting screw (no. 14& 16) in any order;
(4) As required, refer to picture 'Y axis- angle adjustment (-10°to +10°)', choose an angle to fix. Use the angle fixing screw (no. 15);
(5) Tighten the angle adjusting screw (no. 14& 16);

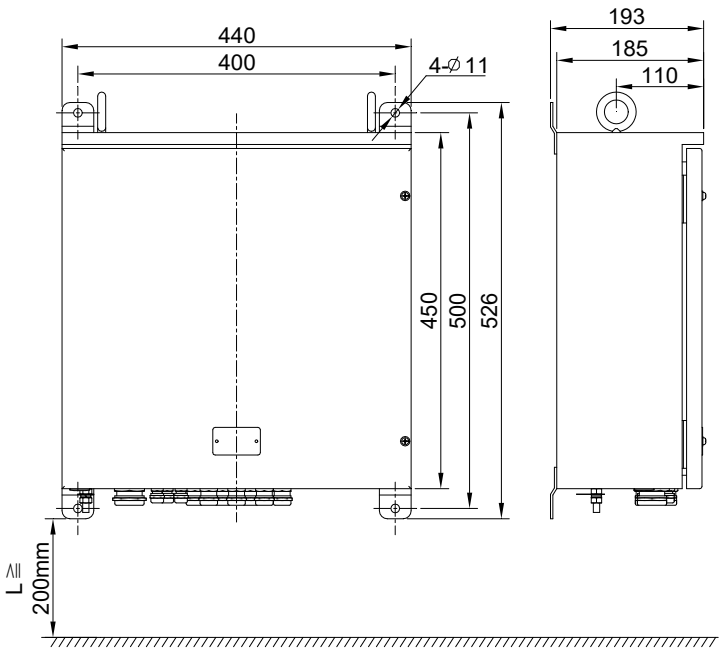
(6) Tighten the bracket fixing screw (no. 12& 13).

7.2 After the adjustment like 7.1, you can make sure the light is installed horizontally through visual inspection o the level. Then tighten the bolt and remove the level.

8.Installation of power box
(choose according to the product)

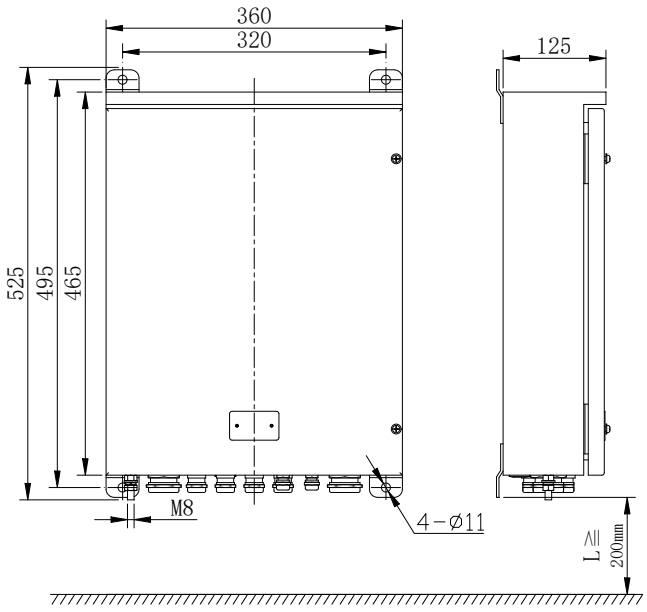
8.1 AC power box:

Mounting dimension 500mm*400mm. Use 4 sets of M10 bolt set to fix the power box onto the mounting surface. Make sure the minimum open range of the power box is 60mm*500mm*800mm and the power box can open normally. For convenient wiring, the power box should better be away from the ground at least 200mm.



8.2 DC power box:

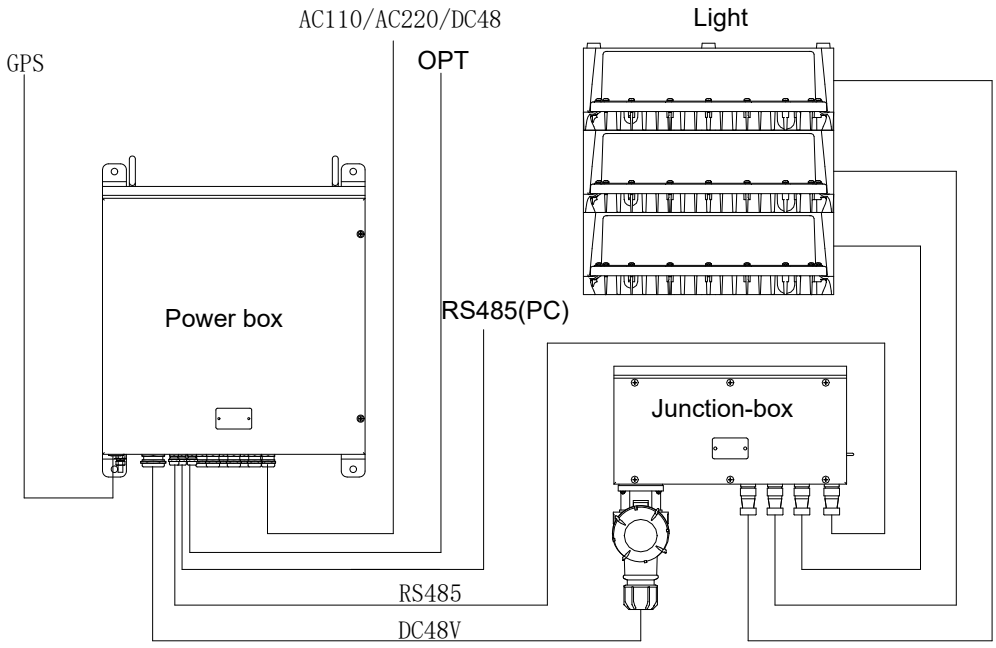
Mounting dimension 495mm*320mm. Use 4 sets of M10 bolt set to fix the power box onto the mounting surface. Make sure the minimum open range of the power box is 500mm*380mm*750mm and the power box can open normally. For convenient wiring, the power box should better be away from the ground at least 200mm.



Wiring method of use

Light head with one layer or two layers or three layers have the same wiring procedures, this notice takes three layers as demonstration:

1.Wiring diagram



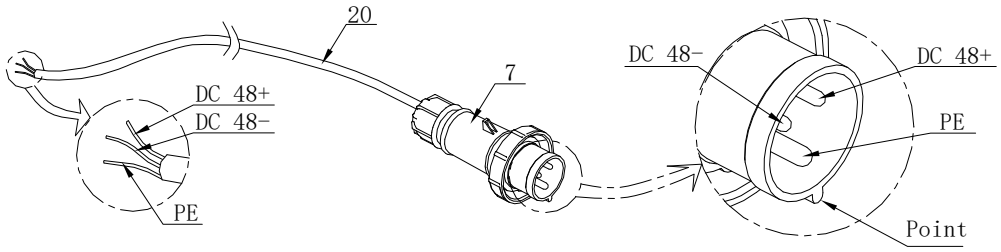
DC power supply wire between the power box output and the junction box. Wire specification as below chart:

Product classification	Model	Cable Specification		
		18M< Distance <25M	10M< Distance <18M	Distance<10M
FAA-L856(three layers)	LH88FA	Core dia≥10mm²	Core dia≥8mm²	Core dia≥6mm²
FAA-L857(two layers)	LH88FB	Core dia≥8mm²	Core dia≥6mm²	Core dia≥4mm²
ICAO-High intensity type A(two layers)	LH88AA	Core dia≥8mm²	Core dia≥6mm²	Core dia≥4mm²
ICAO-High intensity type B(one layer)	LH88AB	Core dia≥6mm²	Core dia≥4mm²	Core dia≥4mm²
CAAC-High intensity type A(two layers)	LH88CA	Core dia≥8mm²	Core dia≥6mm²	Core dia≥4mm²
CAAC-High intensity type B(one layer)	LH88CB	Core dia≥6mm²	Core dia≥4mm²	Core dia≥4mm²

2.Take out the three core aviation plug (big), five core aviation plug (small) and the photocell box. Below wires please equipped by customers according to the construction site;

2.1 Please equipped with a three core sheathed wire (no.20) which is long enough for connection of power box output and junction box. Detailed specifications please refer to the chart in step 1. Then please refer to below picture, tightly connect the wire with the three core aviation plug (big).

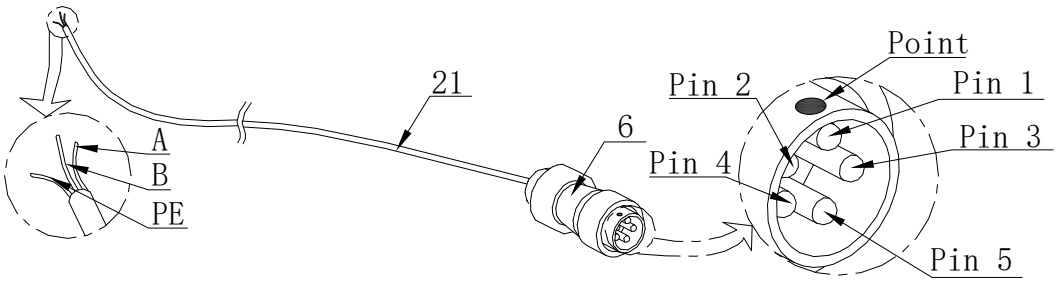
Notice: After connection, the back nut of the three core aviation plug (big) must be tightly screwed. Make sure the screw of back nut is also tightly screwed to meet the water proof requirement. Make sure single core's color of 'DC 48+', 'DC 48-' and 'PE' on both ends of the wire are the same.



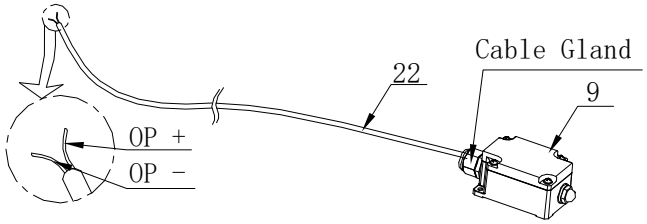
2.2 Please equipped with a RS485 communication sheild cable (no.21) which is long enough for connection of powerbox output and junction box. The communication cable should be general STP(shielded twisted Pair), 1mm² is recommended;Connect and fix the RS485 communication cable with the five-core aviation plug (small) according to the picture below

1) Pin 5 connect with the PE ground terminal of RS485 communication cable;
2) Pin 4 connect with the B terminal of RS485 communication cable;
3) Pin 3 connect with the A terminal of RS485 communication cable;
4) Pin 1& 2 reserve, do not connect.

Notice: After connection,the back nut of the five Core aviation plug (small) must be tightly screwed.Make sure the screw of back nut is also tightly screwed to meet the water proof requirement.Make sure no short circuit of Pin 3, 4 and 5 in five core aviation plug (small). Make sure single core's color of 'A', 'B' and 'PE' on both ends of the wire are the same.



2.3 Please equipped with a two-core sheathed wire (no.22) with 0.5-1mm2 which is long enough for connection of power box output to outdoor. Unscrew 4 screws on the photocell box,connect wire 22 through the cable gland of photocell box and connect the wire with the photocell box according to the '+' and'-' label inside. Tightly screw the photocell box's screw and cable gland. Make sure single core's color of '+' and '-' on both ends of the wire are the same.

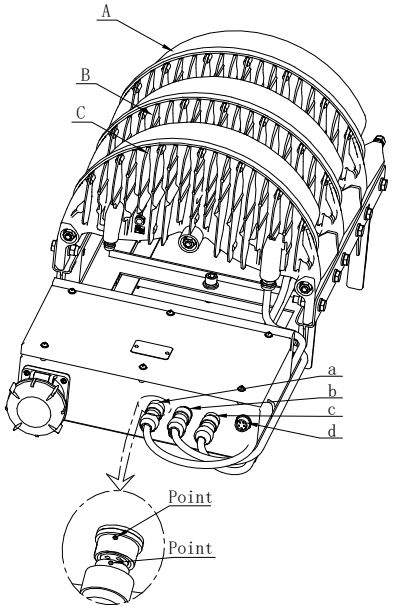


2.4 Please equipped with an external power supply cable which is long enough for connection of power box (choose according to the product classification):
(1) When the power box is AC 220V-AC240V, the external power supply cable should use a three-core plug line, core dia at least 1.5mm², input power 1560W;
(2)When the power box is AC 100V-AC130V, the external power supply cable should use a three-core plug line,core die at least 2.5mm², input power 1560W;
(3) When the power box is DC 48V, the external power supply cable's specification please refer to the chart in step 1;

2.5 Please equipped with ground cable long enough for the power box and the light, details please refer to the country's electricity regulation.

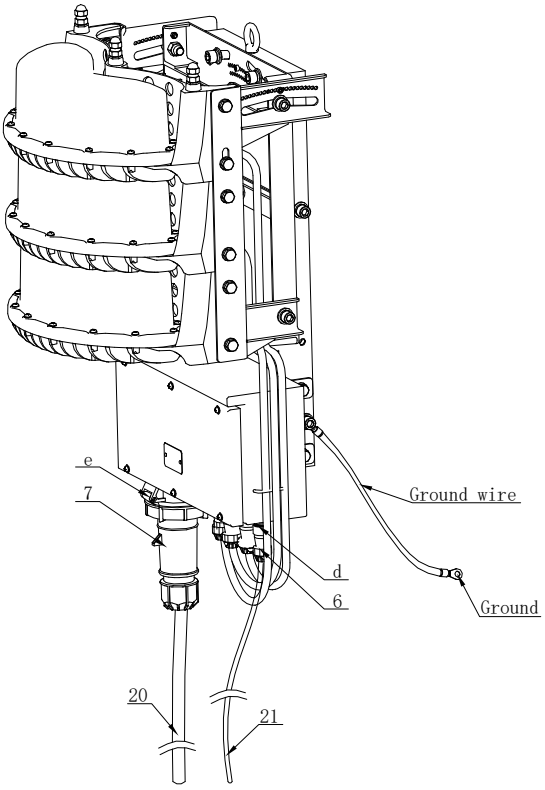
3. Unscrew the lid of female terminals a, b and c on the junction box, connect the male terminals of light's five-

core aviation plug (small) to the female terminal on the junction box accordingly and tightly screw the nut on the plug;Light head ‘A’ terminal to junction box ‘a’ terminal; Light head ‘B’ terminal to junction box ‘b’ terminal; Light head ‘C’ terminal to junction box ‘c’ terminal.

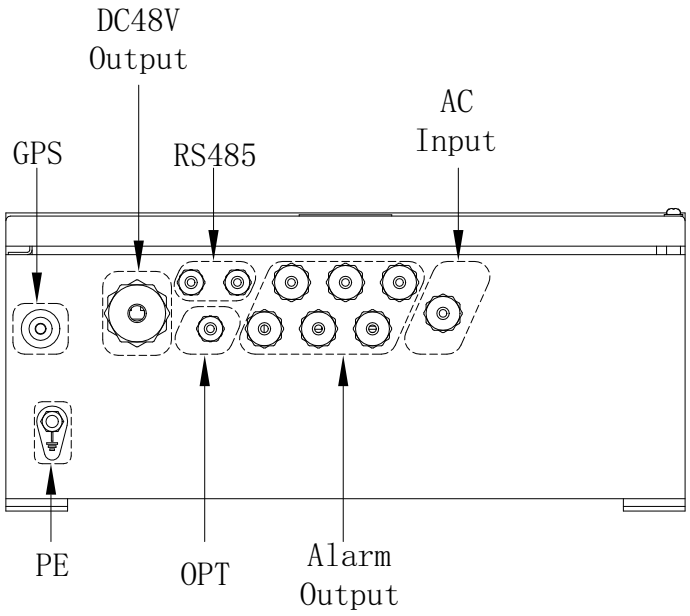


Notice: The white dots on male and female terminals are positioning point, can only be plugged in when they are matched. Tightly screw the nut on the aviation plug to avoid poor wire contact.

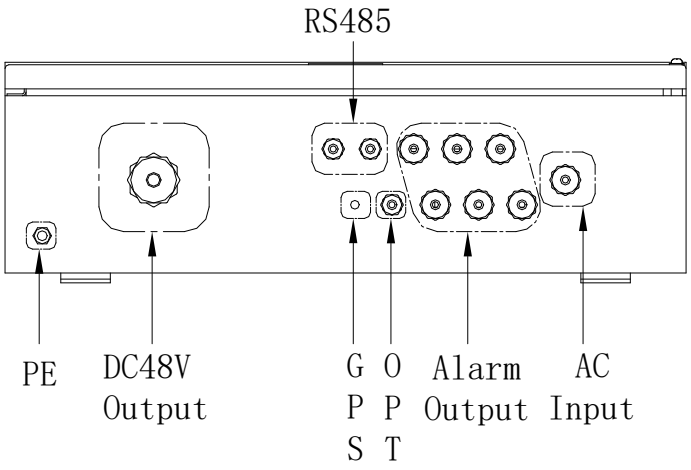
4. Unscrew the lid ‘e’ of big aviation plug on the junction box, plug the aviation plug 7 of power supply cable in step 2 into ‘e’ and tightly screw the nut of aviation plug 7. Plug the aviation plug 6 of RS485 communication cable in step 2 into ‘d’ and tightly screw the nut of aviation plug 6. Connect the light component to the ground through the ground wire.



5. Power box wiring instruction:
a. Remove the screw oh the lid of the power box, open the power box and do as below:
(1) Put the other end of wire no. 20 in step 2 through the cable gland at the bottom of the power box (DC 48V outlet hole);
(2) Put the other end of RS485 communication cable (no. 21) in step 2 through the cable gland at the bottom of the power box (RS485 signal outlet hole, choose either of them);
(3) Put the other end of photocell cable (no. 22) in step 2 through the cable gland at the bottom of the power box (photocell outlet hole);
(4) Connect the GPS antenna with the GPS outlet hole at the bottom of the power box and tightly screw the nut.
(5) Connect the power box external power supply cable through the cable gland at the bottom of the power box (AC inlet hole);
(6) Connect other fault alarm cables through the cable gland at the bottom of the power box (fault alarm outlet hole). **This connection is optional depending on if the customer needs the fault alarm function. Fault alarm function is a standard configuration of this product.**



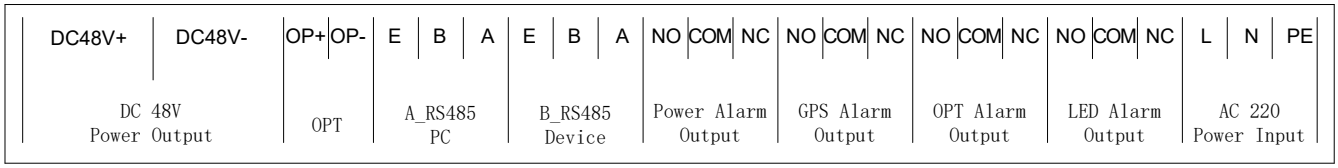
AC Power Box Wiring Instructions



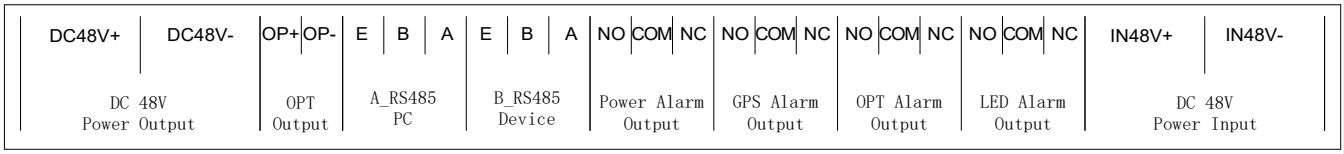
DC Power Box Wiring Instructions

6. Power box internal wiring instruction (please refer to the wiring label inside the power box). Before connection, please make sure the air switch of input terminal is off:
(1) Connect the ‘DC 48+’ and ‘DC48-’ of DC 48V power cable (no.20) with ‘DC 48V+’ and ‘DC 48V-’ output of DC breaker inside the power box. Please connect‘PE’ ground terminal to the ground terminal block.
(2) Connect the ‘A’, ‘B’ and ‘E’ of RS485 communication cable (no.21) with the‘A’, ‘B’ and ‘E’ terminal of B-

RS485 in the power box.
(3) Connect the '+' and '-' of photocell cable (no. 22) with the 'OP+' and 'OP-' terminal of photocell inside the power box.
(4) Connect the 'L', 'N' and 'PE' of power supply cable with the 'L', 'N' and 'PE' terminal of AC220 inside the power box. **This only applies to AC power box.**
(5) Connect the '+' and '-' of power supply cable with the 'DC 48V+' and 'DC 48V-' terminals of DC 48Vinside the power box. Connect 'PE' ground terminal to the ground terminal block. **This only applies to DC power box**.
(6) Connect the power box with the ground through the earthing screw outside the power box. The ground wire should comply with the state electricity regulation.
(7) If equipped with fault alarm cable, please consider whether you need 'normal open contact' or 'normal close contact' and wiring according to the wiring label and wiring diagram inside the power box. **If you don't need this function, this step can be omitted.**
(8) The 'A', 'B' and 'E' terminal of A- RS485 inside the power box should be connected to PC terminals, to be used by the host computer.



Wiring instructions of power box (AC)



Wiring instructions of power box (DC)

Remarks: A_RS485 interface for PC-side control software connection interface.
B_RS485 interface for the power chassis and aviation light lamp communication interface.

7.After wiring is completed, tightly lock all the cable glands at the bottom of the power box to make sure all the cable glands are sealed and waterproof.

8.Put the photocell box at a position with no shading to sense the light movement.

9.Put the GPS antenna at an outdoor open position (with no signal block and shield).

10.Connect the RS485 communication line with the PC terminal to apply the setting of aviation light on PC (when needed).

11.After checking the wiring is correct,clog the air switch of power supply side.

Debug Method

The following are example of AC200-240V power box.

1.Please check the components are intact, the environment grid voltage and load power to meet the demand, see the lamp power instructions.

2.During the commissioning phase, when the cover chassis cover is opened, close the travel switch ,turn off the AC air switch for power-on operation of the entire light.
Description: This action commissioning phase operation only, please use caution when normal.

3.When first time power-on, the light will delay 30S to do self-test layer by layer.

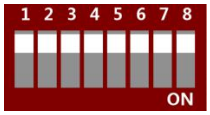
4.Power management board normally indicates the status of LD9 (3.3V +) is steady burning;LD3 \ LD3 \ LD4 According to the ambient voltage, only one group is steady burning;LD5 is steady burning, LD1 (SYS) is the system running status indicator, and the normal status is flashing mode
Description:LD2 steady burning:AC200-220V,LD4 steady burning:AC220-230V,LD3 steady burning:AC230-240V,LD5 steady burning:Power off the chassis into the discharge mode.

5.In the control panel power-on normal status indicator is: LD10 (3.3V +) is steady burning, LD4 (SYS) is flashing, LD3 (NIGHT) into the night mode is steady burning,LD5 \ LD6 \ LD7 \ LD8 (fault alarm) is steady burning.
Description:LD5 on:Power is normal,LD6 on:GPS is normal,LD7 on:Photocell is normal,LD8 on:Light is normal.

6.Connect the A-RS485 interface to the PC according to the actual needs, modify and monitor the related parameters.

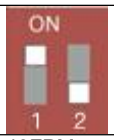
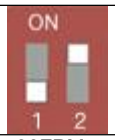
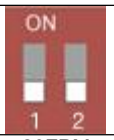
LH88
High Intensity Aviation Obstruction Light

Lightdial switch function using the method



•This product has a flash mode manual adjustment function.
• Flash mode manual adjustment method, please operate in the case of power off: open the lamp body, with a screwdriver toggle DIP switch

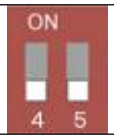
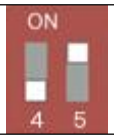
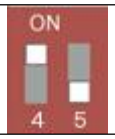
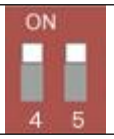
BIT1,BIT2:Obstruction light daytime flashing FPM setting as below:**(The factory setting defaults to 40FPM.)**

Dial Number	11	10	01	00
DIP figure				
Flash frequency	60 FPM	40FPM	30FPM	20FPM

BIT3:Obstruction light working model setting as below:**(The factory setting defaults to night flashing model.)**

Dial Number	1	0
DIP figure		
Working status	Night steady burning	Night flashing

BIT4,BIT5:Obstruction light night flashing FPM setting as below: **(The factory setting defaults to 40FPM.)**

Dial Number	00	01	10	11
DIP figure				
Flash frequency	20FPM	30FPM	40FPM	60FPM

BIT6:Day and night switch selection as below:**(The factory setting defaults to photocell controlled priority.)**

Dial value	0	1
DIP		
Work status	Time control priority	Photocell priority

BIT7:DIP switch function setting below: **(The factory setting defaults to flash frequency setting valid.)**

Dial Number	0	1
DIP figure		
Control	Dial the frequency non-effective	Dial the frequency

BIT8:DIP switch function setting below: **(If the lamp including red light, the factory setting defaults to red light priority.)**

Dial Number	0	1
DIP figure		
Red light optional	YES	NO

Note 1:The DIP switch is 0 at the digital end, and 1 at the ON.
Note 2:Aviation lights working hours provided by the GPS module simultaneously; No GPS signal when power is initialized, that is night mode.

Time control priority application Introduction

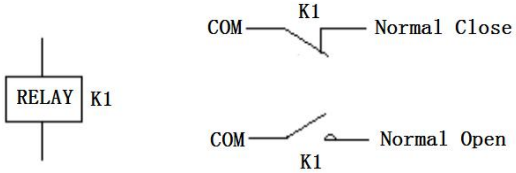
•Time-controlled factory default setting time slot open schedule:

Time section / Season(Start-End Date)	Dawn	Day time	Dusk	Night
Spring (20th March-20th June)	5：00	7：00	17：00	19：00
Summer(21th June-22th Sep)	4：00	6：00	18：00	20：00
Autumn(23th Sep- 21th Dec)	5：00	7：00	17：00	19：00
Winter(22th Dec- 19th March)	6：00	8：00	16：00	18：00

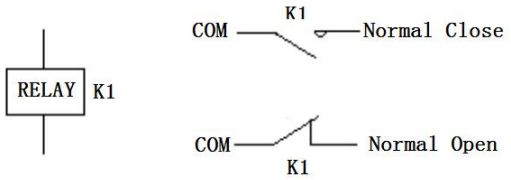
Noted 1: When the time into the night, photocell control is invalid, the lamp is forced to run in the night mode.
Noted 2: When the time into the dawn, photocell control effectively, The device automatically switches to the corresponding period according to the illuminance of the environment.(Please check the details from the on/off level in specifications chart)
Noted 3: When the time into the daytime, photocell control is invalid, the lamp is forced to run in daytime mode.
Noted 4: When the time into the dusk, photocell control effectively, The device automatically switches to the corresponding period according to the illuminance of the environment.(Please check the details from the on/off level in specifications chart)
Noted 5:The period of spring, summer, autumn and winter is subject to the northern hemisphere

Fault alarm function

When the lamp is not receiving a power supply or a lamp fault:The relay has no action,“ common terminal“ and “normal close terminal“close, as below:

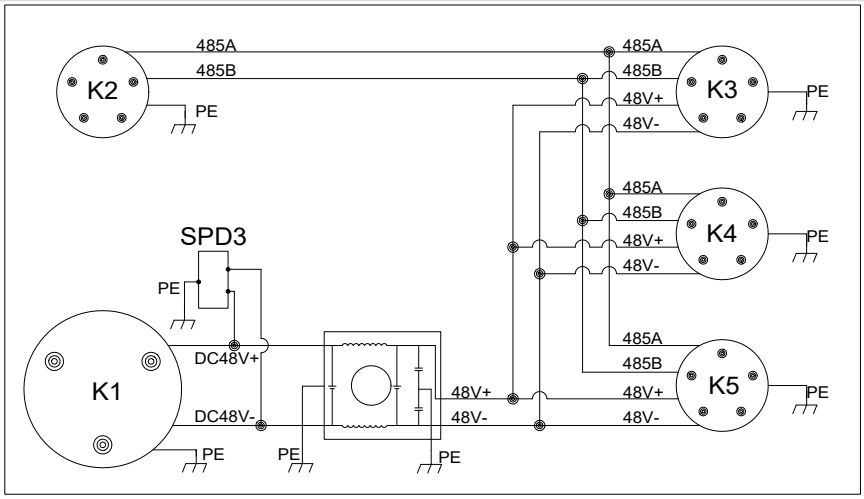


The lights are connected to the power supply and are working properly:Relay action, “common terminal“ and “normal open terminal“close, as below:

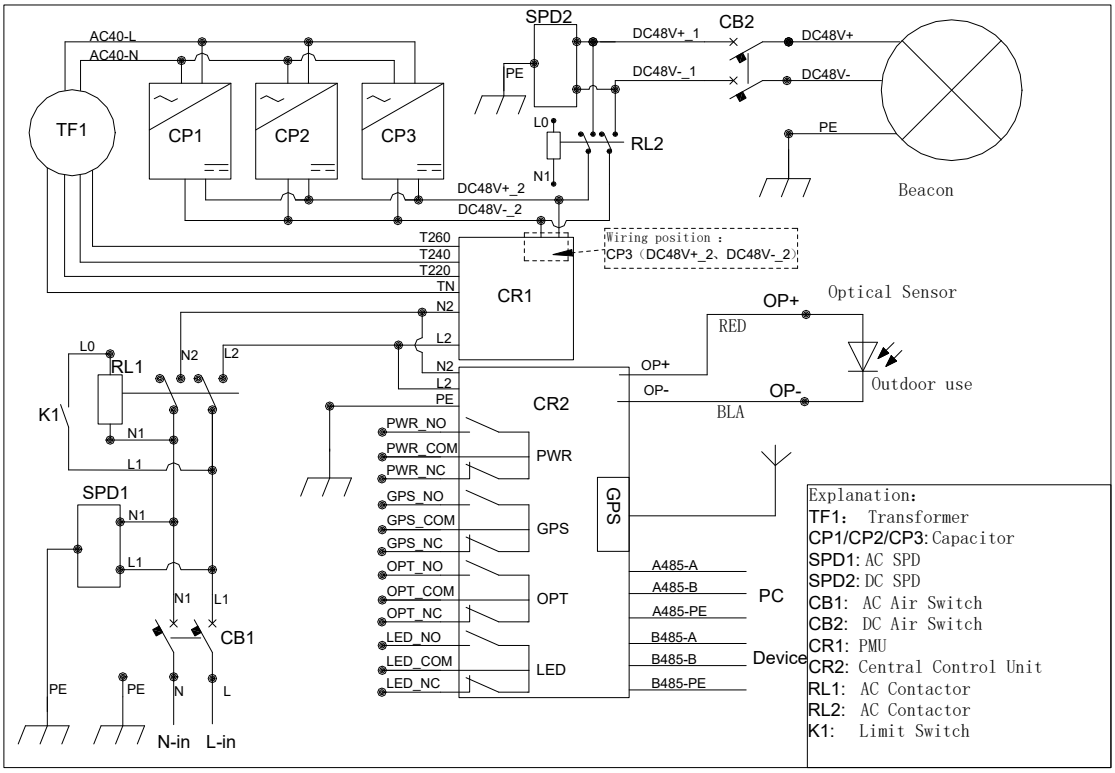


•If there is no power access, or failure are received "disconnect" signal, the alarm signal line connected to the "common" + "normally open".
•If the "closed" signal is received when there is no power supply access or fault, the alarm signal line is connected to "common" + "normal closed".

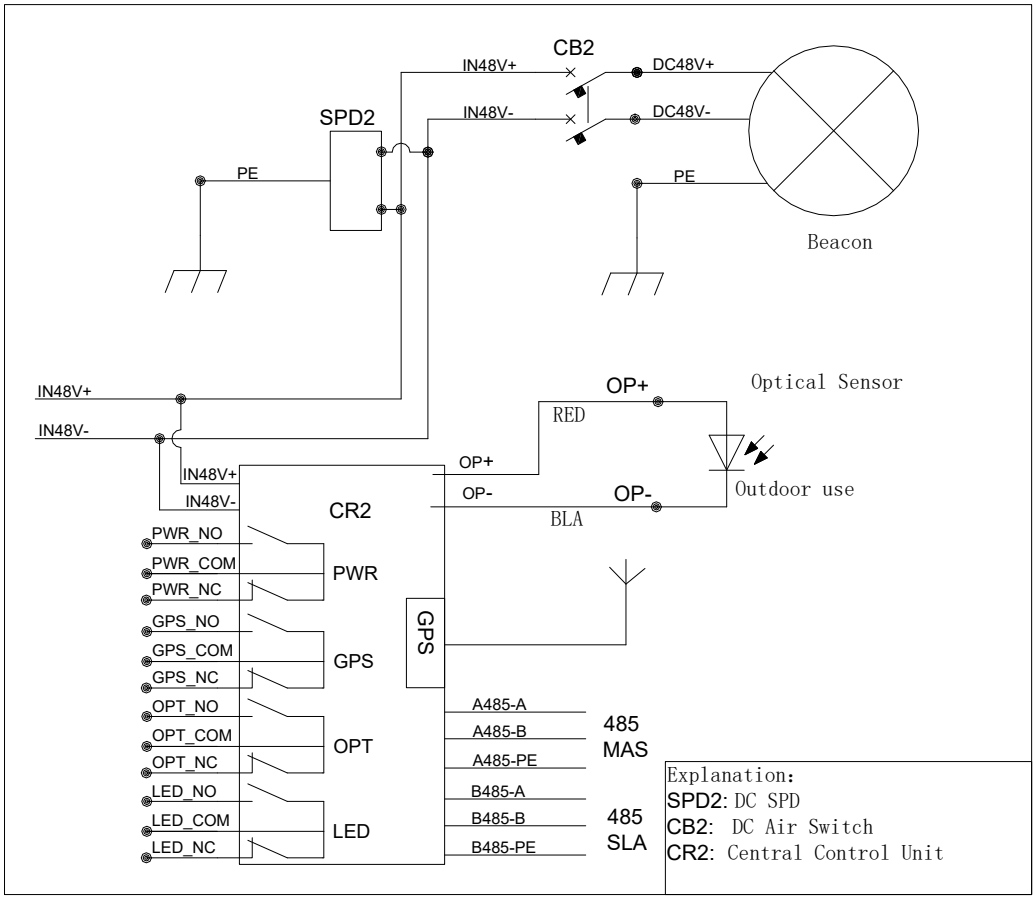
Wiring diagram



Junction box wiring diagram



Power box wiring diagram (AC)



Power box wiring diagram (DC)

Trouble clearing

Symptom	Reason analysis
Light Fault	Please check whether the power supply chassis power, the electrical lights are normal, the output DC air switch is turn off.
	Please check the connection between the power supply chassis and the junction box, and the connection between the power supply cable and the RS485 communication cable is intact.
	Power cable and RS485 communication cable is intact.
	Please connect the power supply chassis and PC-side software to check the setting parameters are normal.
	Try to power off, re-power tens of seconds after the normal.
Light can not synchronized (with GPS)	Please check if the RS485 communication cable between the power supply chassis and the junction box is intact
	Please connect the power supply chassis and PC-side software to check if the setting parameters are normal.
	Please check whether GPS has fault alarm.
No fault alarm signal	Please check the corresponding fault alarm relay side is normally closed or open, whether the relay designated lamp is normal
	Please check if the wiring line is connected.

Precautions

- For high-power lamp , the surface temperature is high, it cannot be covered. And the distance from the object no less than 3m, to avoid burns or fire.
- The part of material of products is PC(like lamp cover and lamp shell), so it cannot direct or indirect touch the organic solvent, such as industrial alcohol, banana oil, isopropyl alcohol, carbon tetrachloride, cyclohexanone and so on, otherwise, the product will be corroision.
- If there is a temperature rise during operation, it is normal.
- It with delay judgment after photocell change detected which as normal phenomenon.
- Fault alarm will be delayed, is a normal phenomenon(For example, the maximum 24-hour delay of photocell fault, the maximum 1 hour delay of GPS fault).
- Please do not open any components inside by yourself and do not look light horizontally to protect your eyes when light is working.
- This product is sealed structure, non-professional maintenance personnel do not disassemble, once discovered, the company will not warranty.

Thanks for choosing our products, NANHUA Electronics is the professional brand of signal transmission and high quality industrial lighting which is trusted and loved by global users from various industries.
Read and understand these instructions completely and carefully. Wrong installation and operation may lead to fires, electric shock, and others. Due to our continued efforts to improve our products, product specifications are subject to change without notice.