

## FREEDOM PLUS

Solar Street Light

### Operation Instruction

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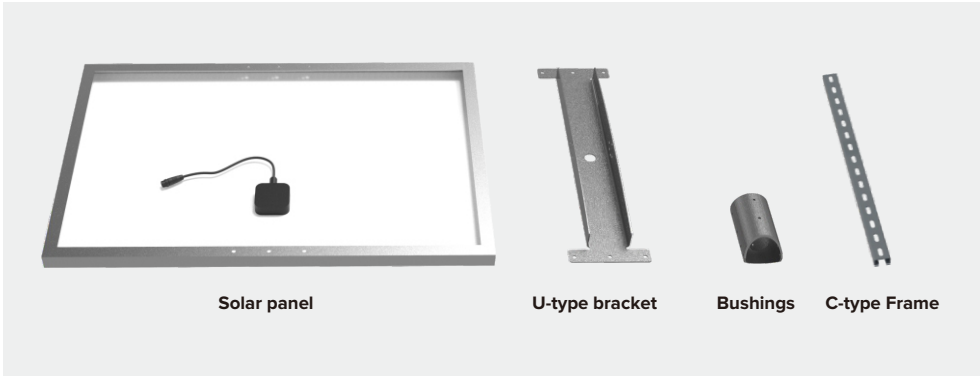
## FREEDOM PLUS

Solar Street Light

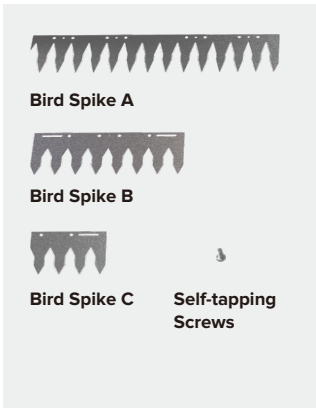
### Operation Instruction

Product Components

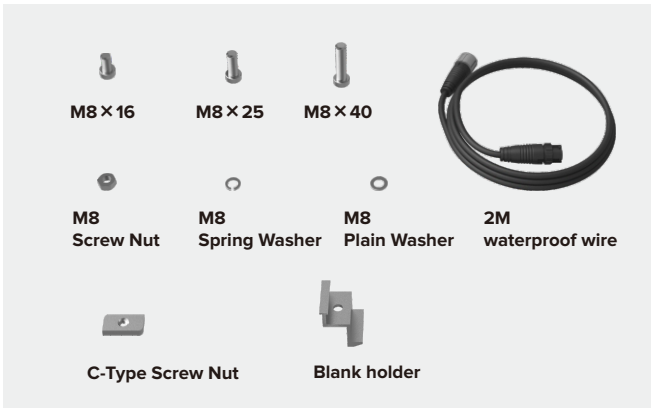
Solar Panel Components



Bird Spike Component



Accessories



Lighting



Part List



Check if all the components are complete before installation, the components and quantity of each set as follows:

Solar Panel Parts List

Parts	50W	80W	110W	130W/180W
	Quantity			
Solar panel	1	1	1	1
U-type bracket	1	1	1	1
Bushings	1	1	1	1
2M waterproof wire	1	1	1	1
M8 × 40				4
M8 × 25	4	4	4	10
M8 × 16	14	14	14	8
M8 Plain Washer	10	10	10	14
M8 Spring Washer	10	10	10	14
M8 Screw Nut	6	6	6	
Bird Spike A	1	1	2	1
Bird Spike B		1		
Bird Spike C				1
Self-tapping Screws	4	6	8	6
C-type Frame				2
C-Type Screw Nut				10
Blank holder				4

Lighting part list

Parts	UP15/UP20	UP30/UP40	UP50/UP60
	Quantity		
M8×16	6	6	6

## Cautions

**Please read the below cautions carefully before using the PLUS series solar street light to avoid physical injury and product failure caused by improper use.**



### Attention to the electric shock

- To avoid electric shock, street light with AC adapter must be installed by the construction qualified specialist.
- The street light with AC adapter is customized product, please confirm the street light AC adapter is in accord with the local electric supply standard.
- Make sure the electric supply power is cut off during the installation and implement waterproof and insulation protection.



### Working condition

- Product protection grade IP65.
- High tensile structure design can withstand level 3 typhoon (58m/s), beyond this level might cause damage to the street light.
- Working temperature range from -20°C to 60°C (charging temperature is limited within 0°C to 60°C). The product with heating function can work under -40°C to 60°C.



### Transportation and storage

- The product includes high capacity lithium-ion battery components, please follow the aviation transport law. Please regard the product as the flammable and explosive hazardous substance and store it separately from other goods.
- The solar panel of the product is fragile, tier limitation is two layers. No stacking out of limits and No press with heavy stuff.
- Store the product under the temperature from 0°C to 45°C
- It should be charged every six months if the product is stored for long time. please use the special charger to charge the product (the charger needs additional purchase) in order to avoid battery or device damage.



### Product maintenance

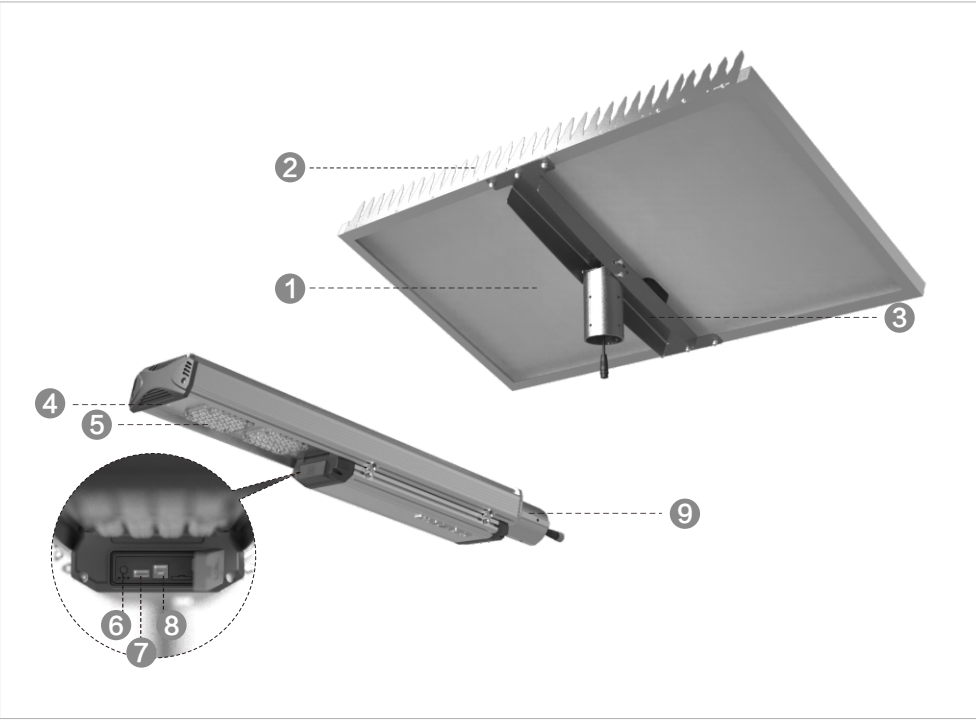
- In order to assure that the solar panel receive the light efficiently, please use clear water to clean the dirty mark on the surface of the panel regularly and prohibit the use of chemical or abradant which includes chlorobenzene.
- Only manufacturer, service agent or qualified personnel can replace the light source or other circuit components of the lighting device. Without authorization, using the third party component to replace is prohibited or it would cause serious damage to the product. if the user disassembles the product without authorization, warranty becomes void.
- If you need to replace the components /accessories, please go to [www.leadsun.globalcom](http://www.leadsun.globalcom), or contact the local distributor.



### Product recycling

- The product is made of recyclable high-performance materials and components, please don't dispose with other household garbage.
- Please understand the local rules about the separate collection of electronics and electrical products, dispose the waste products in the right way that avoids potential negative effects of environment and human health.

# Functional Specification



No.	Component	Brief description
1	Solar panel	Absorb Solar power and transform it into electric power, control the light by light-operated switch
2	Bird spike	Avoiding birds dropping to cover the solar panel
3	Solar panel bracket	Use to fasten the solar power supply system
4	PIR Motion sensor	Adjust the brightness automatically by the motion sensor
5	LED	Lighting
6	LED street light switch	Switch on or off the LED street light at night
7	USA Type-A charging port	Charging for the battery ( Please use 14V, 1.5A dedicated charger)
8	USB Type B port	Programming special port
9	Street light bracket	Use to fasten the LED street light

# Operation instruction

## Overview

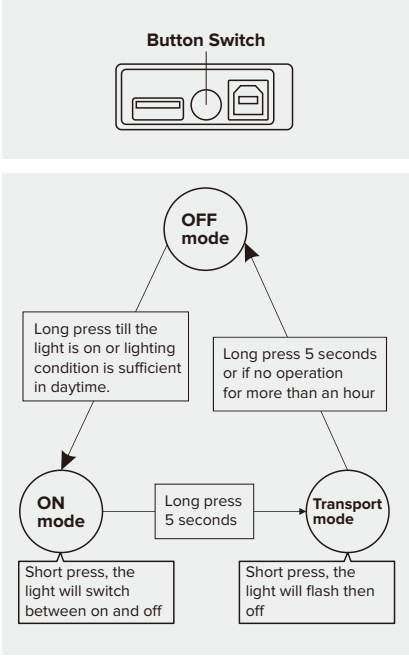
FREEDOM PLUS series intelligent lithium battery solar led street light integrates LED street light, long lifespan LiFePO4 lithium battery pack, high-efficiency smart controller, and Aluminum structure shell.

The product not only can apply to the traditional split type solar street light maintenance or replacement but also a brand new cost-efficient solution for newly installed lithium battery solar street light.

FREEDOM PLUS intelligent lithium battery solar LED street light, with the advantages of longer lifespan, simple installation, and less maintenance provides a perfect solution to the user.

## 1. Definition of the native mode

- ★ **OFF mode:** The system will not work, charge or discharge.
- ★ **Transport (idle) mode:** the system will power off in an hour and goes to the OFF mode.
- ★ **ON mode:** the system will work normally, charging in the daytime and discharging at night.



## 2. Start up

- ★ **Daytime start-up:** when the lighting condition is sufficient (>30lx), the product connects to the solar panel if it lights 20 seconds then off, it means the product has started up and goes to the ON mode. If the lighting condition is not good, it needs Night start-up method.
  - ★ **Night start-up:** long press the button (5s), the light is on and release the button, the light is off, it will go to the OFF mode.
- After the light went off, if it meets the normal lighting condition (<30lx) the light will on, if it does not, then the product will go into the OFF mode.

## 3. Button instructions

Short press the button (1s) to find out the current product mode:

- ★ Short press the button, if the lighting status does not change, it is in the OFF mode.
- ★ Short press the button, if the light flash and then off, it is in transport (idle) mode;
- ★ Short press the button, if the light switch between ON and OFF directly, it is in ON mode, In this mode, it can switch the light ON by short press the button.

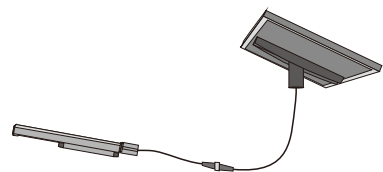
## Operation instruction

### Long press the button for (5s) to switch the working modes:

- ★ In the OFF mode, when connected to the solar panel, if the lighting condition is normal, it will start up automatically; or long press the button 5s, if the light is ON and then OFF, the product will go into the ON mode.
- ★ In the ON mode, long press the button 5s, the light flash 3 times then off, the product will go into the transport (idle) mode; if disconnected from the solar panel, the product will go into the OFF mode directly;
- ★ In the transport (Idle) mode, long press the button 5s, if the light flash one time and then off, the product will go into the OFF mode; or without any operation after an hour, the product will go into OFF mode automatically.

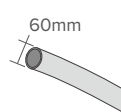
4. The solar panel module of UP series solar street light is optional, you can use either your own existing solar panel or our standard optional solar panel module and bracket.

6. If you choose your own solar panel, just connect the solar panel output cable to the UP series solar street light input terminal.

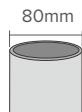


5. The output voltage of the solar panel is **18V DC, 50Wp~180Wp**, the operation efficiency will be affected if the voltage is beyond this range.

7. It is suggested to choose cantilever light pole for the UP series solar street light installation, the diameter of the light pole top which uses to install the solar panel bracket should no more than 80mm.

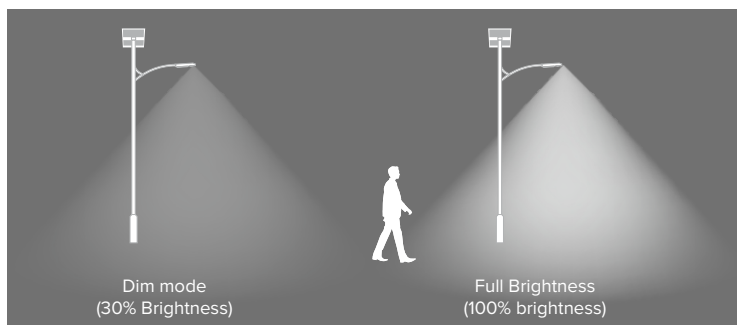


Cantilever



Top of the Light pole

8. The product default setting is using light-operated switch to control the light through the solar panel (light-operated control threshold is 30lx). It means light up automatically when dark and light off when dawn. The street light will go into the dim mode when no one around at night and it will full brightness when someone around.

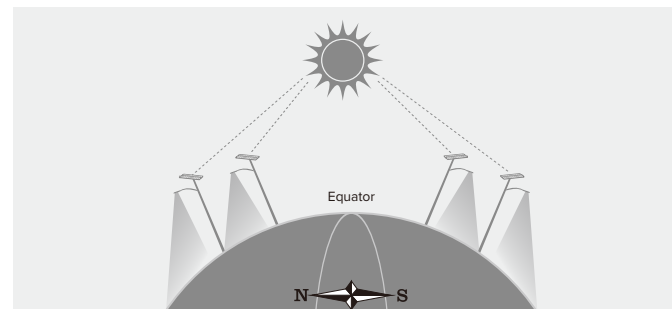


## Product installation

### 1. Installation conditions

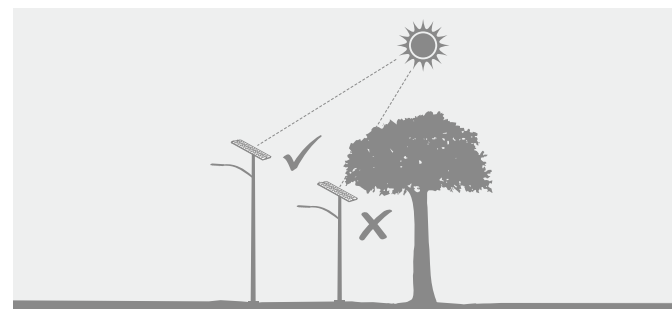
- 1 Please choose the appropriate model depending on the sunlight intensity of the place and required working time.

If the installation site is on the northern hemisphere, the solar panel should face to the south as far as possible and if it is on the southern hemisphere, the panel should face to the north as much as possible. (see picture 1)



Picture 1

- 2 Make sure the sunlight is not blocked by any constructions or trees during the installation or it will affect the charging and discharging efficiency of the solar power system and the operation of the street light. (see picture 2)



Picture 2

# Product Installation

If you choose LEADSUN solar panel module and bracket, please follow the below installations. If you use your own solar panel module, it can be used for reference.

## 2. Solar Panel Bracket Module Installation

### 50~110W Bracket Module Installation

- 1 Fasten the U-type bracket to the solar panel frame, see figure 1, the accessories are M8\*16 screw, M8 screw nut, M8 plain washer, M8 spring washer.

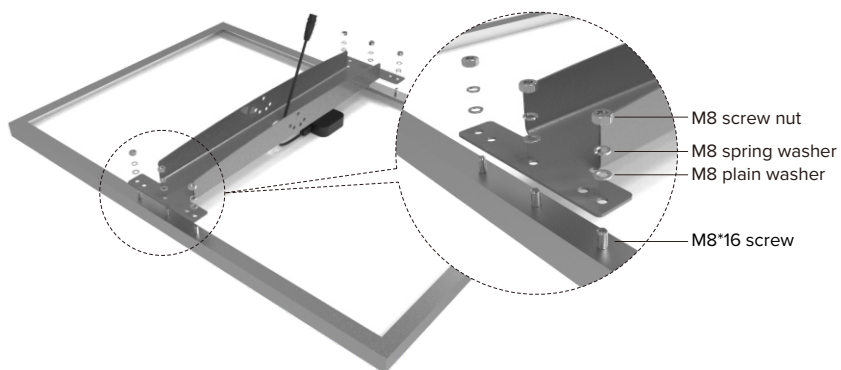


Figure 1

- 2 Choose an appropriate angle to fasten the bushings, the accessories are M8\*25 screw, M8 spring washer, M8 plain washer. See figure 2.

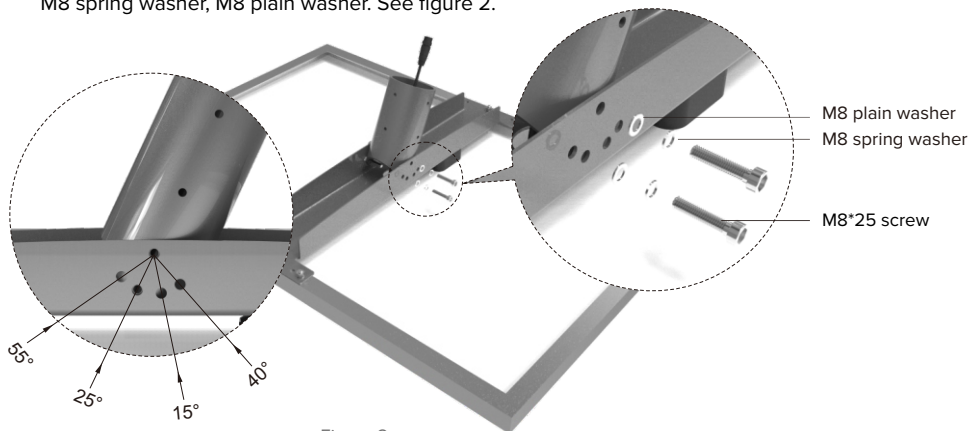


Figure 2

### 130~180W bracket module installation

- 1 Embed 5pcs C-type screw nuts into the cross-bar. As shown in figure 3.

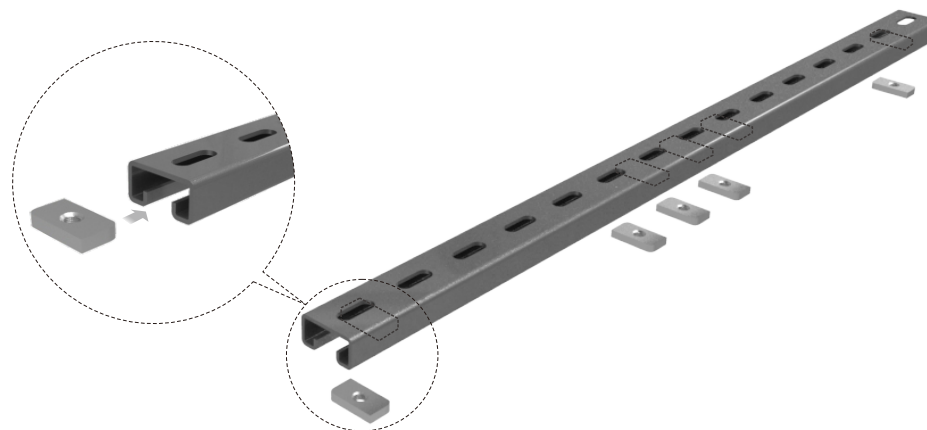


Figure 3

- 2 Using 4pcs blank-holders, M8\*40 screw, M8 spring washer, M8 plain washer, C-type screw nut to fasten the solar panel frame by the two cross-bars, adjusting the two cross-bars center distance to 640mm and mediate the solar panel. as shown in figure 4.

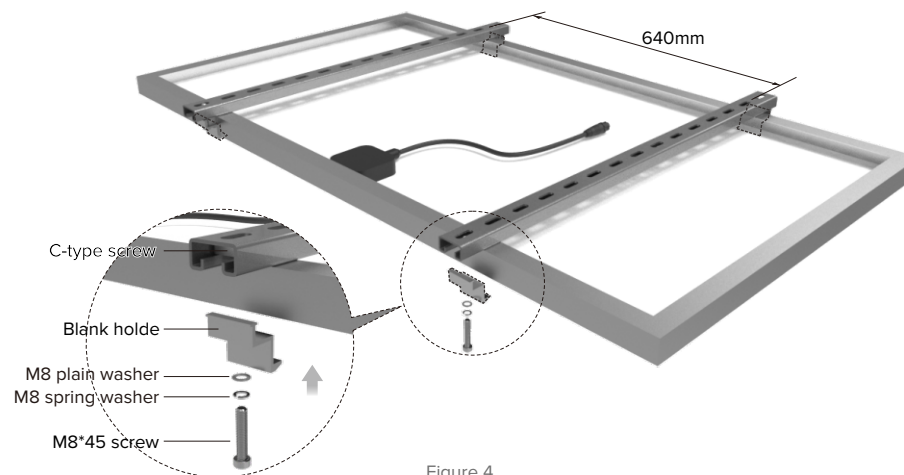


Figure 4

## Product Installation

- 3 As shown in figure 5, use the accessories M8\*25 screw, M8 spring washer, M8 plain washer, C-type screw nut to fasten the U-type bracket on the cross-bar.

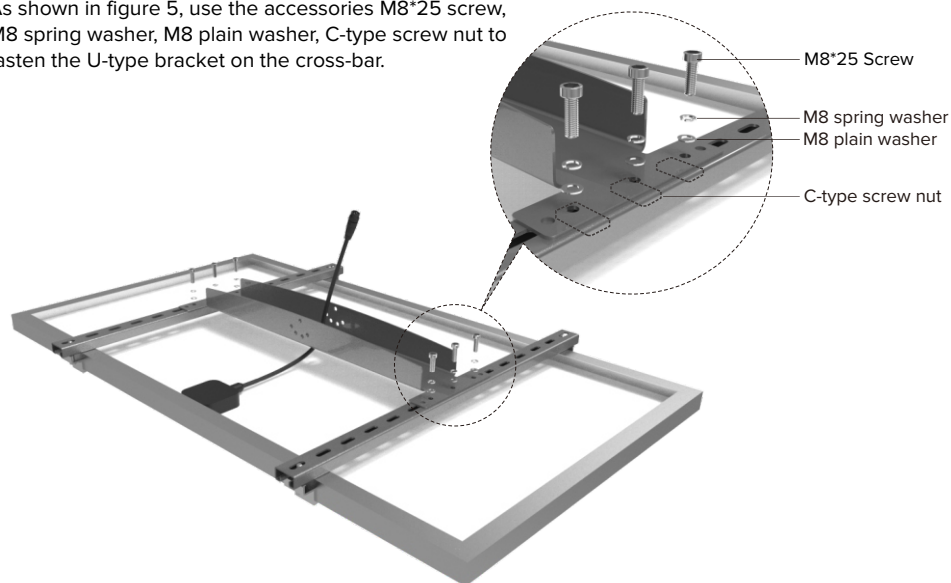


Figure 5

- 4 Choose a proper angle to fasten the bushings, the accessories are M8\*25 screw, M8 spring washer, M8 plain washer. as shown in figure 6.

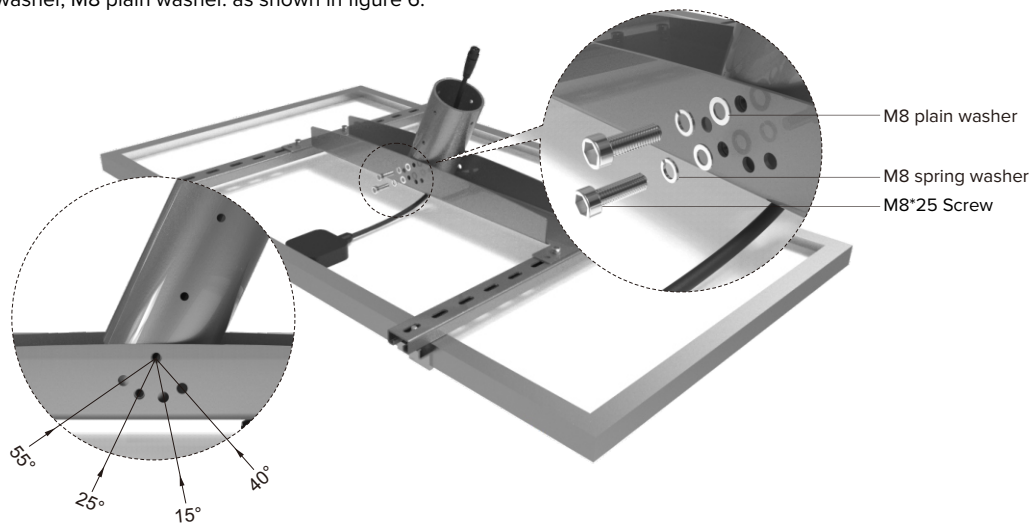


Figure 6

### 3. Install the bird spike

Using the self-tapping screw in the accessory to fasten the bird spike on the top frame of the solar power system. (see figure 7)

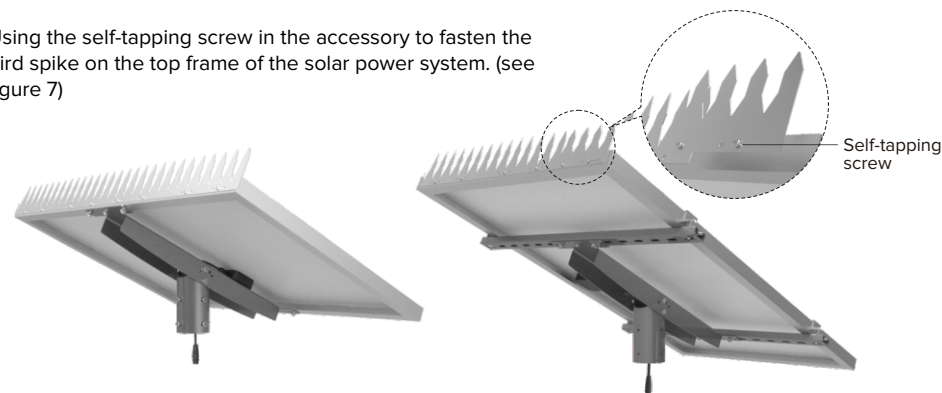
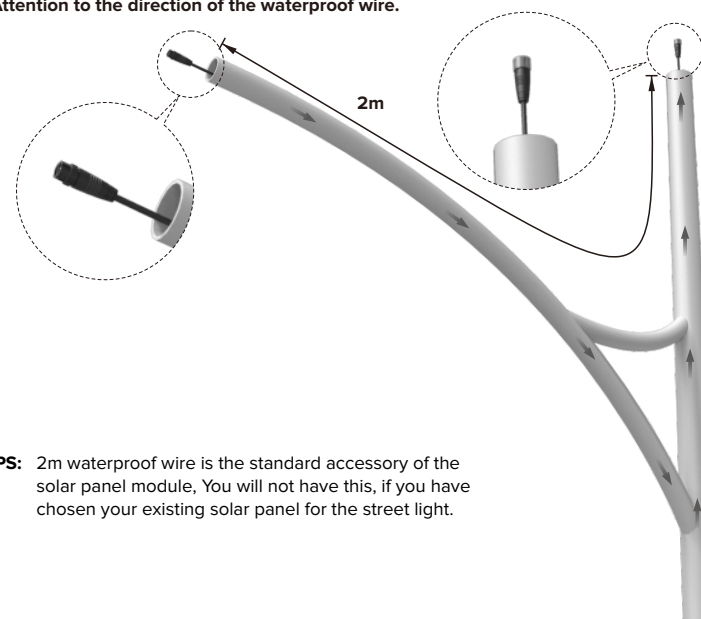


Figure 7

### 4. light pole cantilever wire threading

Thread the waterproof wire into the cantilever of the light pole and lead out from the top of the light pole. (see figure 8)

⚠ Attention to the direction of the waterproof wire.



**PS:** 2m waterproof wire is the standard accessory of the solar panel module, You will not have this, if you have chosen your existing solar panel for the street light.

Figure 8



# Product Installation

## 5. Solar Power System Installation

Connect the solar power system with the waterproof wire in the light pole and lock the connectors in turns; embed the light pole into the X bracket and use the special tool to fasten the M8\*16mm screw. (if using the electric wrench, torsion should set to 14N.m) (see figure 9).

## 6. LED Street Light Installation

Connect the waterproof wire from the cantilever part with wire of the LED street light part and lock the connectors in turns; Embed the LED street light bracket into the cantilever and fasten it by the M8\*16 screw, make sure the LED street light has installed stably on the light pole then the installation is finished.

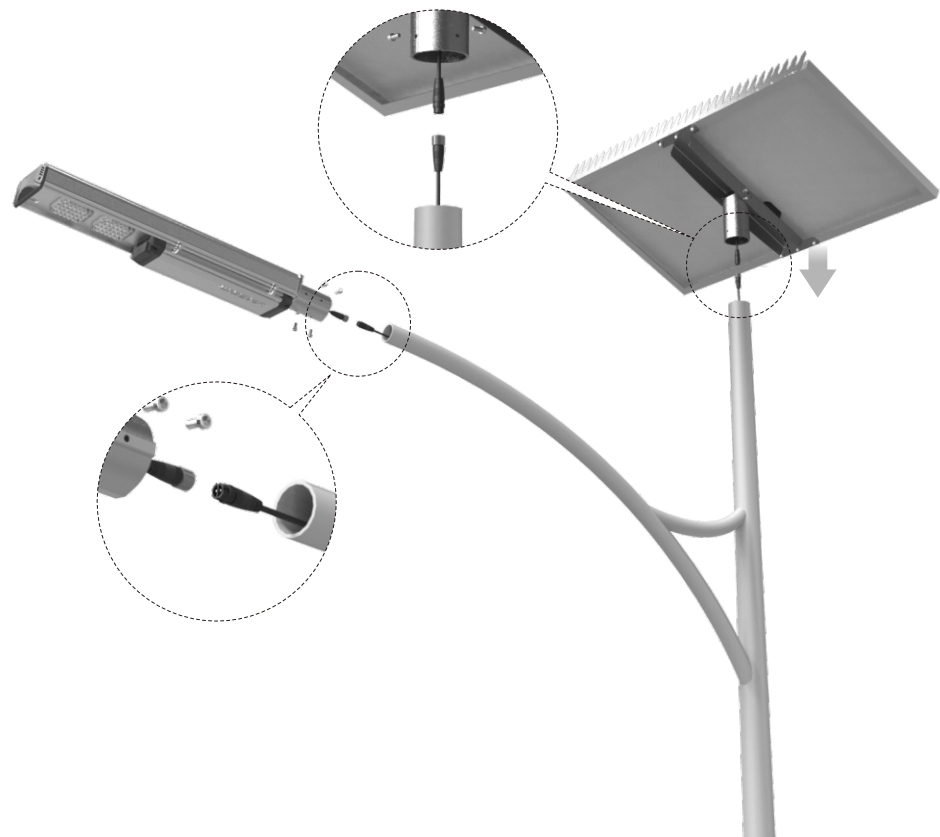


Figure 9

# Troubleshooting

No.	Negative Phenomenon	Inspection Process	Approach
1	No lighting at the night	Check if the light is in ON mode or not.	Test according to the "Button Instructions" from the chapter "Operation instruction" in this manual.
		Check if the solar panel is blocked by any buildings or trees during daytime, which will influence the sunlight.	Clear away the blockade or change the street light installation site.
		Check if the solar panel is illuminated by any other artificial light source at night.	Move the artificial light source away or change the light installation site.
2	Lighting time is seriously inadequate	Check if the solar panel is blocked by any building or trees during the daytime, which might influence the sunlight.	Clear away any blockades or change the street light installation site.
		Check if the solar panel has dirt or any blocks covering on the surface which might influence the sunlight.	Clean the solar panel surface.
3	Abnormal motion detection	Check if the lighting environment temperature is same as that of human bodytemperature.	If the external temperature is same as of the human body temperature, the sensitivity of PIR motion sensor will reduce. It will return back to normal when the external temperature decreases.
		Check if the lighting is installed too high.	When the lighting installation is higher than 8 meters, the sensitivity of the motion detection function will drop and it is suggested to lower the height or use other working mode.
			Change the broken PIR motion sensor or controller.