ENSA™

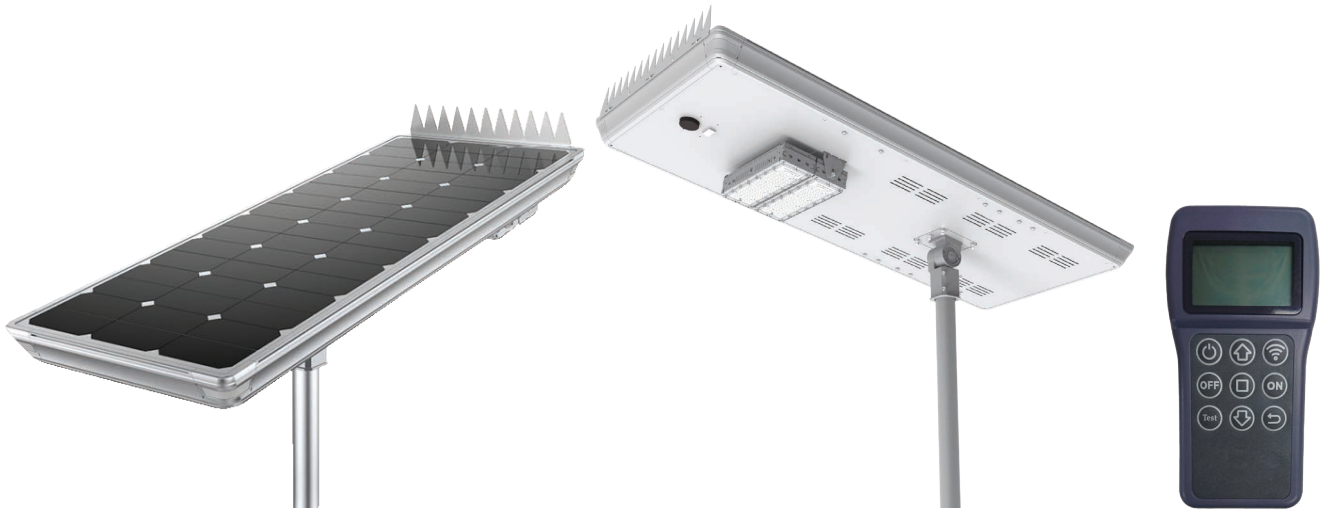# SSL-B Solar Light Series
Installation Manual

1. Pre-Install Information

Thank you for purchasing a SSL-B Series Solar Street Light.
This install guide covers basic setup, installation and use of your light.
For more information, please visit:
www.ensalife.com

1.1 Solar Light Information

Motion Sensing Solar Panel with Street Light

Note: This solar panel system is fitted with undervoltage protection, which disconnects the load at approximately 10.8V(SSL-B50) or 21.6V(SSL-B60). If you are not receiving any voltage on the output wires, place the panel in direct sunlight for a minimum of one hour and re-test. The output will be reconnected automatically when battery voltage reaches approximately 11.5V(SSL-B50) or 23.0V(SSL-B60).
Must be installed in direct sunlight. Shade will negatively impact performance.

This solar panel includes a motion-activated LED light. For more information, refer to *4. Solar Panel LED Configuration*.

- This product can withstand a class 12 storm. Storms above class 12 may damage the product.

- The Ingress Protection rating of this product is IP65, which is suitable for outdoor lighting, but cannot be soaked in water.

- The solar panel is fragile, do not scratch or break the solar cell.

- Do not clean the solar panel with an abrasive sponge or soap. Use solar panel cleaning kits.

- The product contains a Lithium battery - comply with the air transport regulations when shipping,

- The longest storage period of solar street lamps is 6 months after they are fully charged. If they are transported or stored for a long time, they need to be checked, recharged otherwise the battery will be damaged.

- Charging temperature: 0~60°C. Discharge temperature: 20~60°C

- Do not store the product in a temperature exceeding 45°C.

1.2 Solar Light Specifications

Model	SSL-B50M	SSL-B60M
Product Image		
Series Name	SSL-B Series Motion Activated Solar LED Street Lights	
Light		
Light Output	9400lm	11100lm
Luminous Efficacy	>180lm/W	
Colour Temperature	4000K natural white / 5700K cool white	
Beam Angle	145° x 100°	145° x 100°
Rated LED Lifespan	50,000hrs	
LED Testing	LM80 / TM21 (available on request)	
Power Consumption	50W	60W
Internal Battery	500Wh LiFePO$_4$	1200Wh LiFePO$_4$
Input Voltage	12.8VDC	25.6VDC
Operating Time	72~120 hours (intelligent mode, rainy weather)	120~168 hours (intelligent mode, rainy weather)
Light Bracket	Adjustable bracket angle -30° ~ 30°	
Solar Panel		
Panel Type	Monocrystalline silicon	Monocrystalline silicon
Panel Wattage	120W	180W
Panel Conversion Rate	≥21%	≥21%
Panel Bracket	Adjustable bracket angle -60° ~ 60°	
Rec. Install Height	8 ~ 10m	8 ~ 10m
Detection		
Motion Detection	Microwave motion sensor	
Detection Range	Ø8 ~ 15m (height: 8 ~ 10m)	Ø8 ~ 15m (height: 8 ~ 10m)
Light Mode Settings — Normal	Mode time period / Brightness	
Light Mode Settings — Morning	Mode time period / Brightness	
Light Mode Settings — Sensor	Mode time period / Brightness on motion / On-time delay / Brightness after motion	
General		
Ingress Protection	IP65	
Pole Diameter	Ø50~60mm	
Product Dimensions	1321 x 525 x 161mm	1496 x 685 x 161mm

1.3 Diagrams

Solar Panel Dimensions

50W

60W
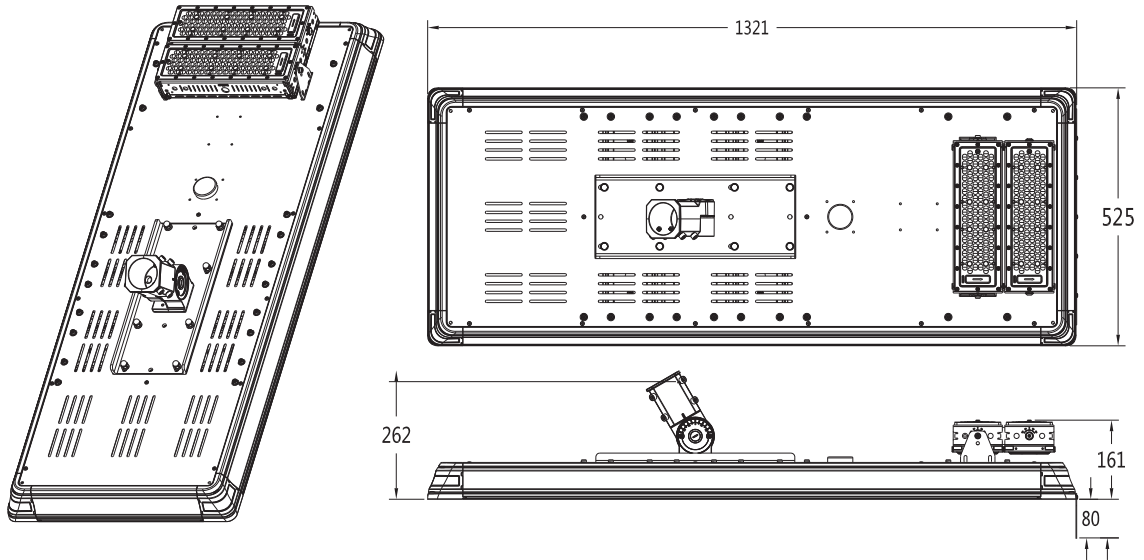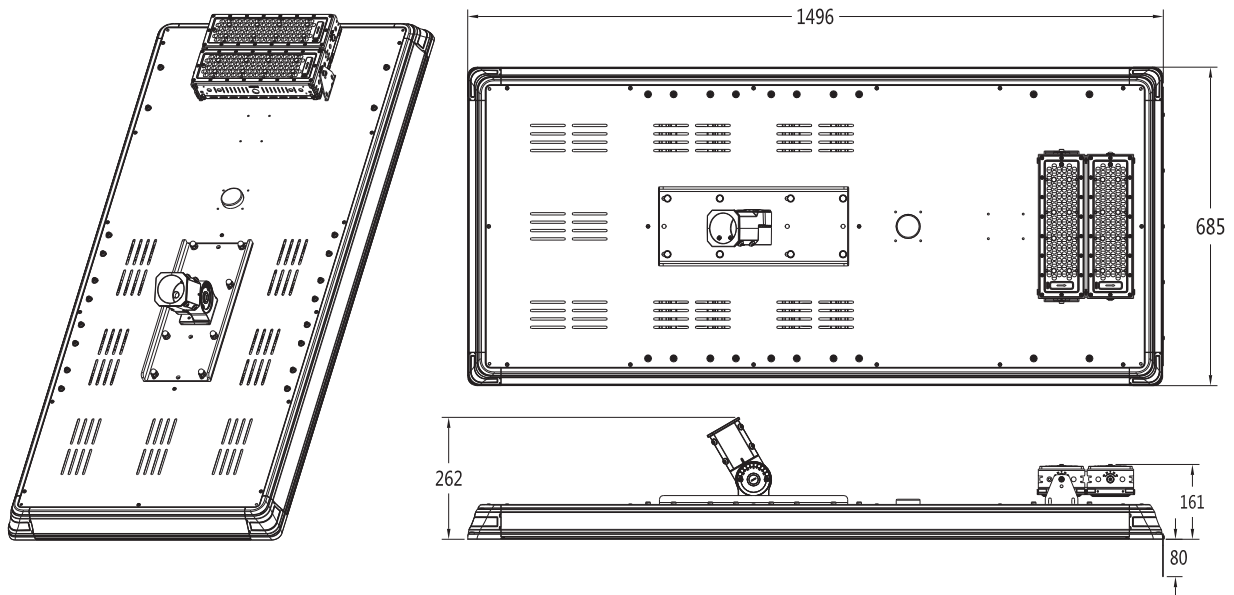
Solar Panel Assembly Diagram

Lamp Body

Ø50~Ø60mm

Bird Spikes

PH1
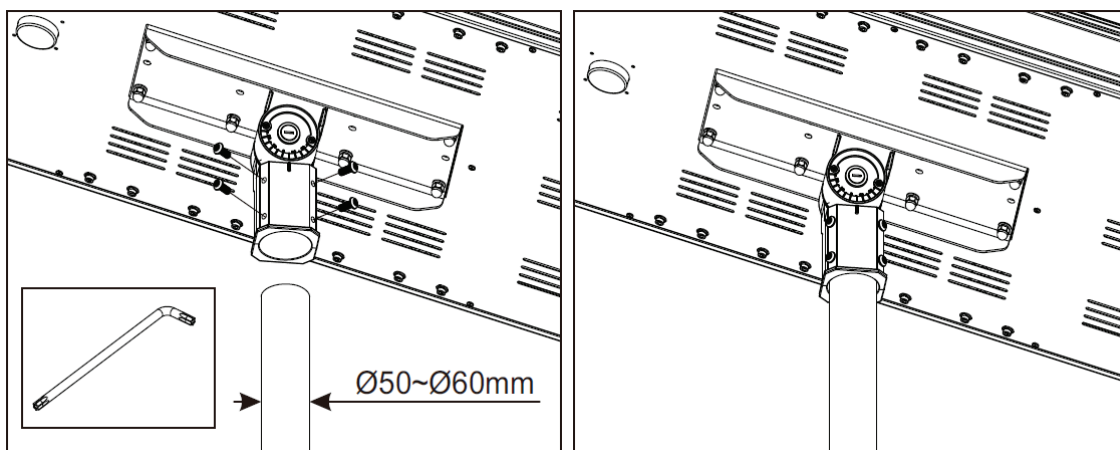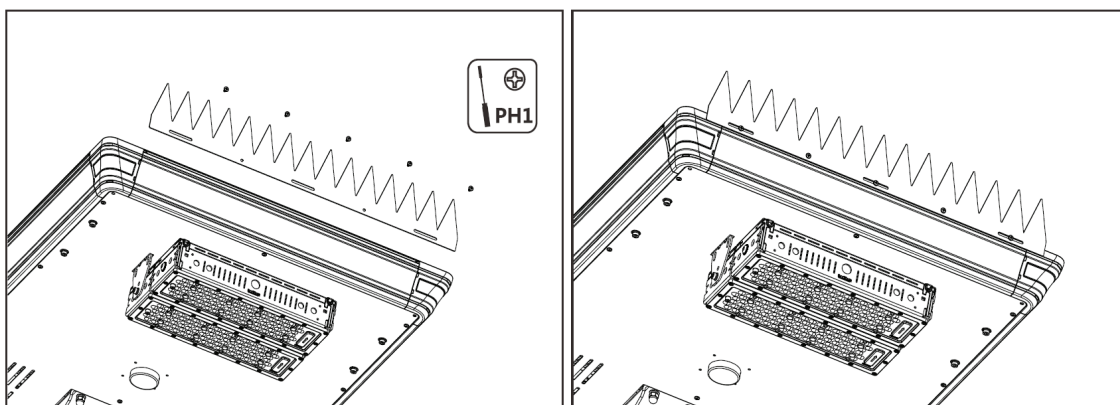
Accessories
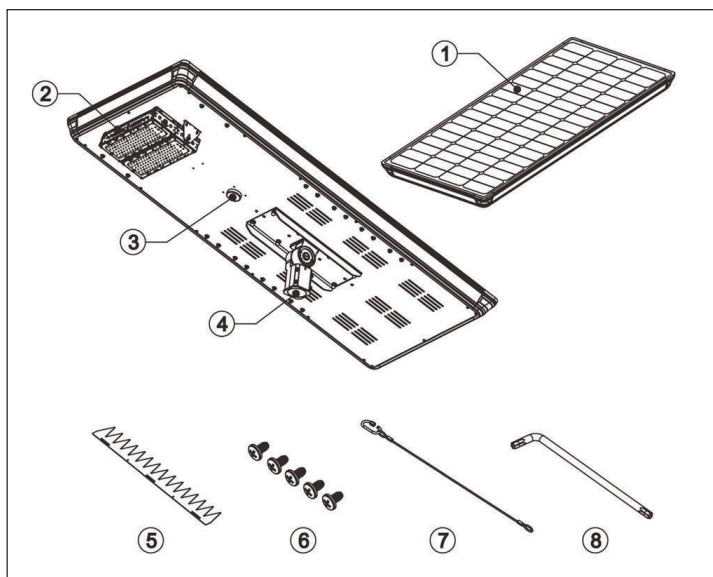
| #	Component	Function
1	Solar panel	Convert solar energy into electricity
2	LED light	Luminous component
3	Microwave sensor	Detect object moment
4	Lamp arm	Fix the solar panel
5	Bird spikes	Keep birds away from the solar panel
6	Screws	Fix bird spikes
7	Safety rope	Prevent the light from falling
8	T40 Torx	Tighten and release the lamp arm anti-theft screws

2. Installation

2.1 Installation Site

The solar panel should face **north**.
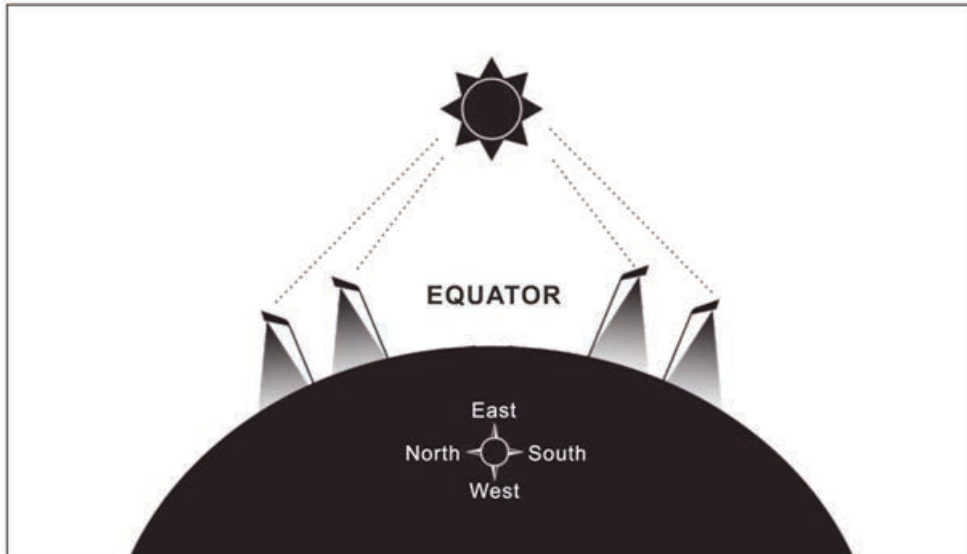
For the best solar panel efficiency, **ensure that sunlight is not blocked** by buildings or trees.
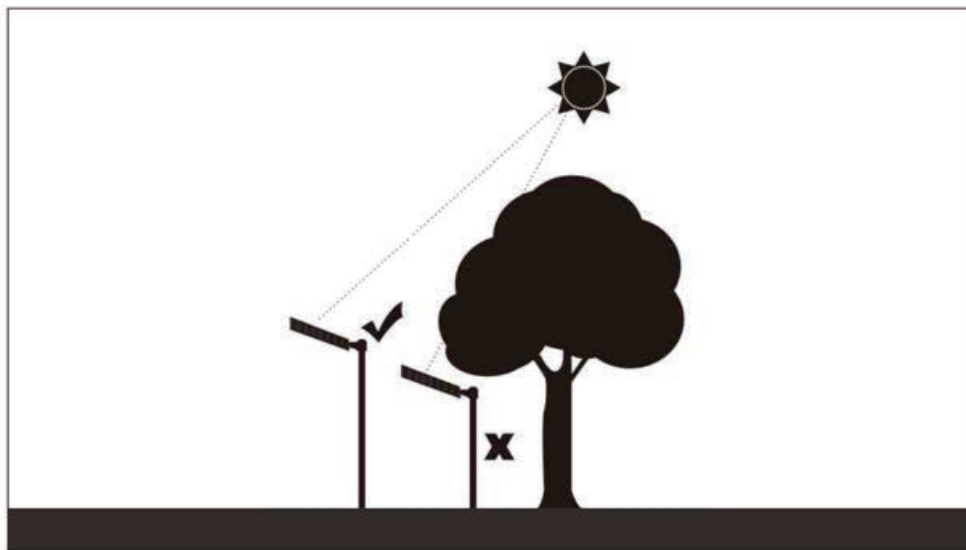
2. Installation

2.1 Mounting the Solar Panel to the Pole

> **Caution:** Solar panel **must** be placed so it is in **direct sunlight all day**.
>
> Any shading will greatly reduce the solar panel's performance!

1. Drill an 8mm hole in the pole (minimum 15cm down from the top of the pole) on the same side that the camera will be mounted. This is for the solar panel cable to run through.

2. Feed the twin power cable connected to your solar panel through that hole

3. Place the solar panel bracket on top of the pole, pointing north.

   • **Note:** If you need to cover a different area with the light beam, keep the panel flat after repositioning .
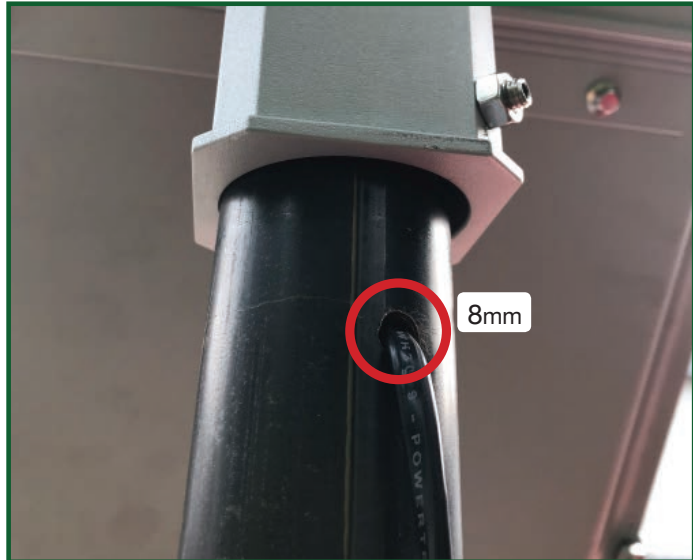

Fig. 2.1a
Solar panel power cable drill location

4. Securely fasten the included grub screws to the bracket. Tighten the locking bolts to prevent the grub screws from loosening. *(Fig. 2.1b)*

   • **Note:** For poles greater than 4m in height, tapered poles are preferable for camera stability and pole strength.


Fig. 2.1b
Installed grub screws

2.2 Adjusting the Solar Panel Tilt Angle

To ensure your solar panel absorbs as much light as possible, it's important to adjust the solar panel angle to an ideal angle, depending on your region (refer to table below).

For Australia and all locations in the southern hemisphere, the solar panel must be tilted directly north. Locations in the northern hemisphere must have the panel tilted directly south. The angle of tilt is determined by the installation location and is calculated as **installation latitude + 15°**.
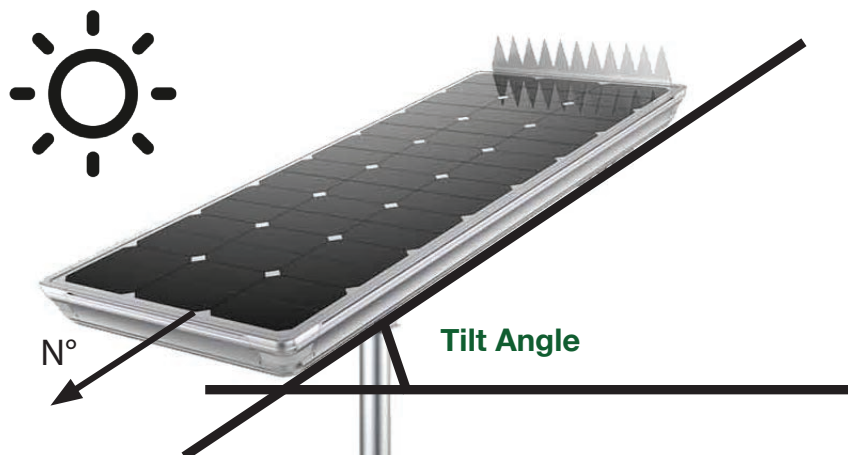
For example, Sydney has a latitude of 34°, therefore the solar panel should be tilted directly north with an angle of 34 + 15 = **49°**.

If you are uncertain the of your area, Google makes it easy to find the latitude for any location: For example, searching for "latitude Newcastle NSW Australia" will return 32.9283° S, 151.7817° E. The latitude is the first number shown (32.9283) which rounds up to 33°.

Example tilt angles for Australian cities

Sydney	Melbourne	Canberra	Perth	Brisbane	Hobart	Adelaide	Darwin
49°	53°	50°	47°	42.5°	58°	50°	27.5°

IMPORTANT: Failure to direct the panel correctly will cause system failure through insufficient power

How to adjust tilt angle:

1. Use a flat head screwdriver *to* remove the bracket cover.

2. Once the cover is removed, use a 10mm allen key to loosen the panel adjustment screw and tilt the panel to the required angle with the LED light at the high side*.

3. Tighten the bolt after adjusting the angle to secure the solar panel in place.

4. Replace the cover.

Lamp arm angle adjustment

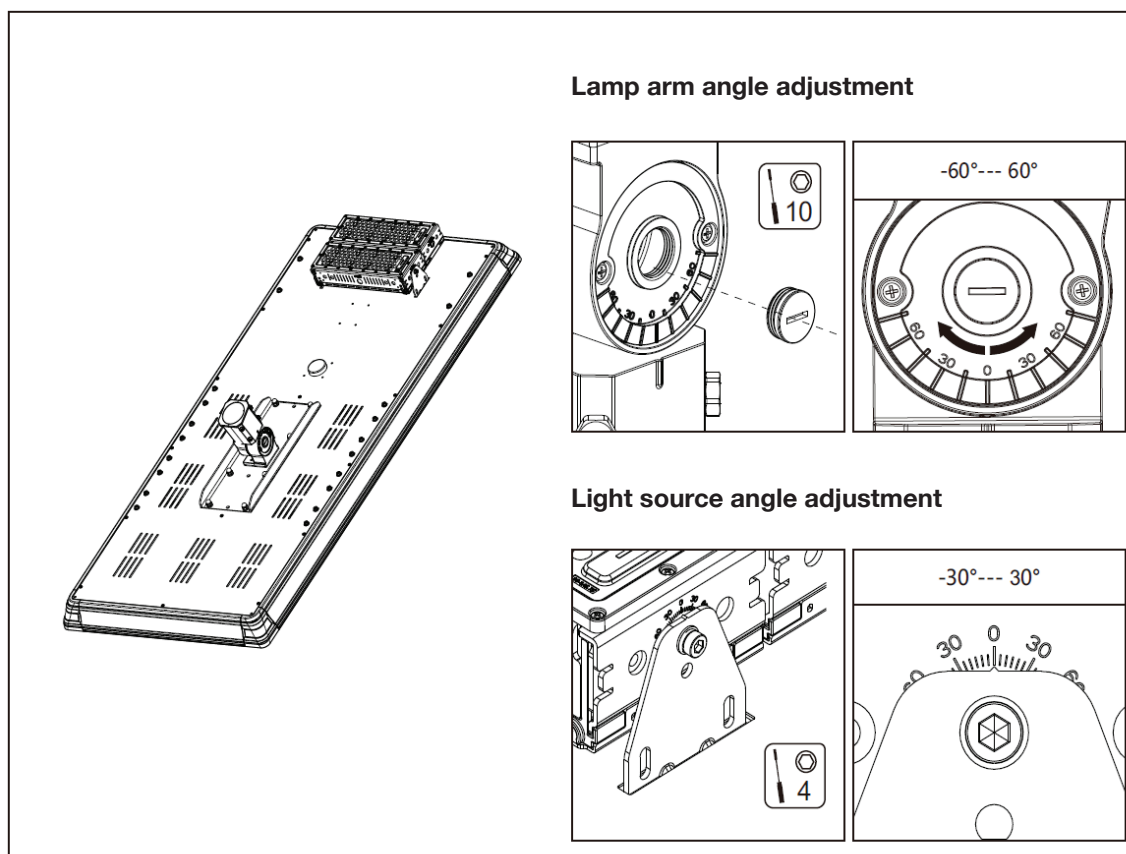-60°--- 60°

Light source angle adjustment

-30°--- 30°

Fig. 2.2a
Angle adjustment

2.3 Safety Rope Installation

Attach the safety rope between the solar light and the panel base, as pictured.

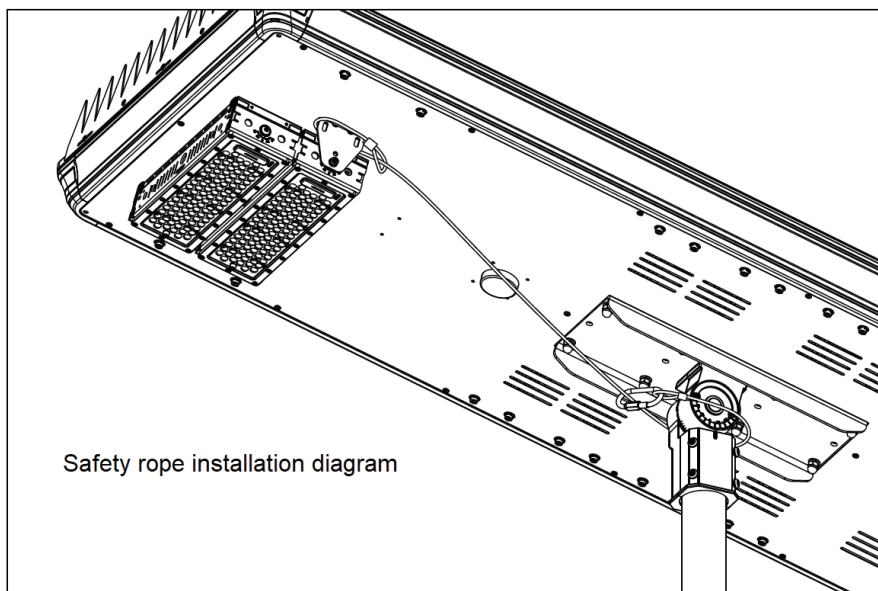Safety rope installation diagram

Fig. 2.3a
Safety rope installation diagram

4. Solar Sensor Light Configuration (Optional)

4.1 Solar Sensor Light Introduction

This section covers how to set up the motion-activated LED light on the solar panel. Our example will show you how to configure your solar panel & light with the remote control, showing you the steps required to set up the light to activate after motion is detected at night.

The solar panel's motion-activated LED light is disabled by default. Solar panel configuration requires the remote control *(provided on request)*.

> **Note:** Enabling the LED light and sensor will increase power consumption and reduce battery power available for the system.
>
> **Incorrectly editing power settings can permanantly damage the solar panel, solar battery and/or LED light. Consult ENSA for more information. Only edit power settings exactly as outlined in this guide.**

Understanding Settings:

Before adjusting solar panel settings, familiarise yourself with the setting definitions below:

1. **Battery Type:** Type of battery installed in the solar panel (Li_Po=LiFePO$_4$ battery or Lead acid). Warning: SSL-B50/60 uses LiFePO$_4$ battery, DO NOT change this parameter.

2. **Boost Charge:** Battery overcharge voltage. To protect the battery from overcharging, the battery stops charging when it is above this voltage.

3. **Voltage Low:** Battery cut-off voltage. When the battery voltage falls below this value, output will be disabled.

4. **Recover Voltage:** Minimum voltage for the battery to start. Battery output is enabled or resumed from cut-off when battery voltage is above this value.

5. **Power Saving:** When turned on, the battery will adjust power output automatically to save energy (On/Off).

6. **Turn-On PV Voltage:** The light turns on when the solar panel is below this voltage (dark). Note: LED light turns on/off condition must meet other settings.

7. **Output Current:** Set the constant current output level.

8. **Drive Mode:**
   Time Control - 5 individual intervals of maximum 9 hours each can be set to turn LED light on.
   Move Sensor - Motion detect. The LED light will switch to higher intensity when it detects movement. If no movement is detected, the intensity will be lower to save power. The intensity can be adjusted for both settings to meet customer's requirements.

9. **Light Delay:** The on-time delay after last detection motion. Suggested value: 30 seconds.

10. **First/Second/Third/Fourth/Fifth Time:** User-programmable light on/off schedule. Maximum 9 hours for each setting.

11. **Light Ratio:** Set light output (%) for when movement is detected.

12. **Idle ratio:** Set light output (%) for when no movement is detected.

4.2 Default Settings

Default pre-delivery time control settings:

	Period	Light Ratio	Idle Ration
First Time	9 Hours	10%	0%
Second Time	9 Hours	10%	0%

Battery type: Li_PO for both SSL-B50 and SSL-B60

Battery and charging settings: (DO NOT ADJUST)	SSL-B50	SSL-B60
Overcharge Protection Voltage (Boost Charge):	14.4V	28.8V
Cut-off Voltage (Voltage Low):	10.5V	21.0V
Start Up Voltage (Recover Voltage):	12.0V	24.0V

Warning: Changing the above settings may damage the battery and charging circuit.

4.3 Remote Control

1. Take the solar panel outside and wait for it to charge in the sunlight for at least one hour.

2. Use the remote control and point it towards the black sensor at the back of the solar panel and press ⏻ **Power**. The remote control will be powered up. It will then try to connect the solar panel.

   - If connection is successful, the LCD will show "Read OK".

   - If connection fails, the LCD will show "Disconnect"
     Note: Direct sunlight can interfere with the transmission. The sensitivity of the transmitter is higher when in dark environment.

   Important: Do not change the device number otherwise it may not work properly.
   The device number for this system is: **PCC_G05**

3. Press and hold the ⏻ON **ON** button to enable the solar light.

Fig. 4.3a
Solar panel remote control
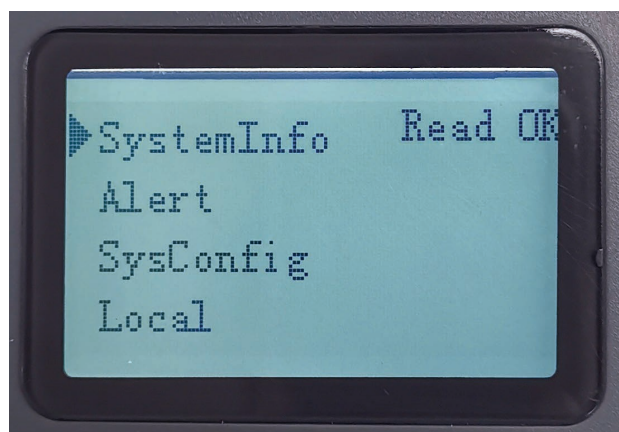
Fig. 4.3b
Remote control LCD

⏻	**Power**	Press to power on. Press and hold for 2 seconds, then release to power off the remote control.
⬆	**Scroll Up**	Press to scroll up.
⬇	**Scroll Down**	Press to scroll down.
ON	**Controller On**	Press and hold to enable the LED light control.
OFF	**Controller Off**	Press and hold to disable the LED light control.
▢	**Enter**	Press to select item or confirm changes.
↩	**Back**	Press to select item or confirm changes.
📶	**Transmit**	Press to transmit parameters to the control board.
Test	**Test**	Press to test the LED light.

4. Point the remote control at the solar panel's black sensor and scroll to the SysConfig (System Configure) and press ▢ (Enter) to enter the system configuration menu.

- Use ⬆ and ⬇ to scroll.

- Press ▢ **Enter** to begin editing values. The value will be shown in reverse colour.

- Use ⬆ and ⬇ to change the value.

- Press ▢ **Enter** again to confirm.

Note: The remote will power off automatically if no key is pressed for 3 minutes.

Five periods of time can be set to turn on the solar panel LED light. These periods can be set with a min. of 0 and max. of 9 hours.
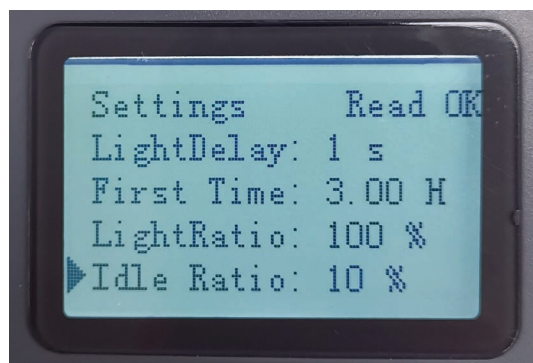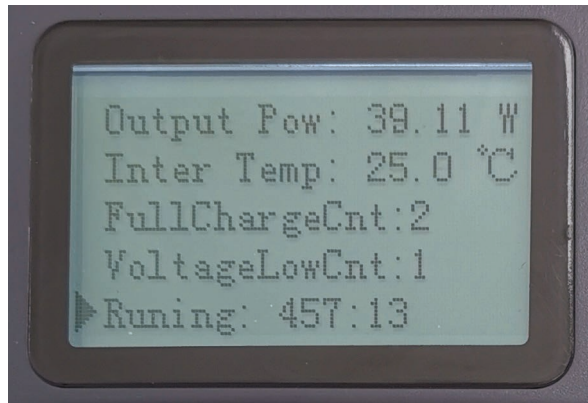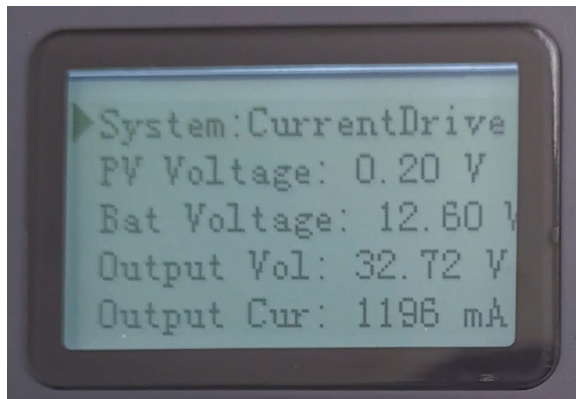

5. Point the remote control at the solar panel's black sensor and press 📶 **Transmit** to update the solar panel with your new configuration. If you hear a long beep, the configuration settings are transmitted succesfully.

4.4 Disable Motion Activated LED Light

To disable the LED light system again, simply change the **Drive Mode** from **Move Sensor** to **Time Ctrl.** This will skip every Interval after the sun sets, so editing other values after this point is unnecessary.

4.5 Check Solar Pabel On/Off Duration

To check the solar panel's current settings configuration, scroll to the SysConfig menu and press **Enter**. This will show info such as photovoltaic voltage, battery voltage, output voltage, current and power, temperature and total operating time in minutes and more.

4.6 Test LED Light

1. Point the remote control at the solar panel's black sensor and press Test.
2. Test the LED light by adjusting the light level on the remote screen with the Test button. This scrolls through different light percentages. (100%, 70%, 50%, 30% and 0%)

4.7 Lock/Unlock the Remote Control

After setup has been completed, you can lock the remote control to prevent changing the parameters accidentally.

To lock/Unlock the remote control, press the **Test,** **Enter and** **Back** buttons together.

If you hear a single beep, the remote is locked. If you hear three beeps, the remote is unlocked.

Notes

Notes

ENSA™

Version: ENSASSLB-Q219A

Note:

All products, designs and software here are subject to change without prior written notice.