



Solar Power Kit Version 1.1

USER MANUAL

1ST Edition

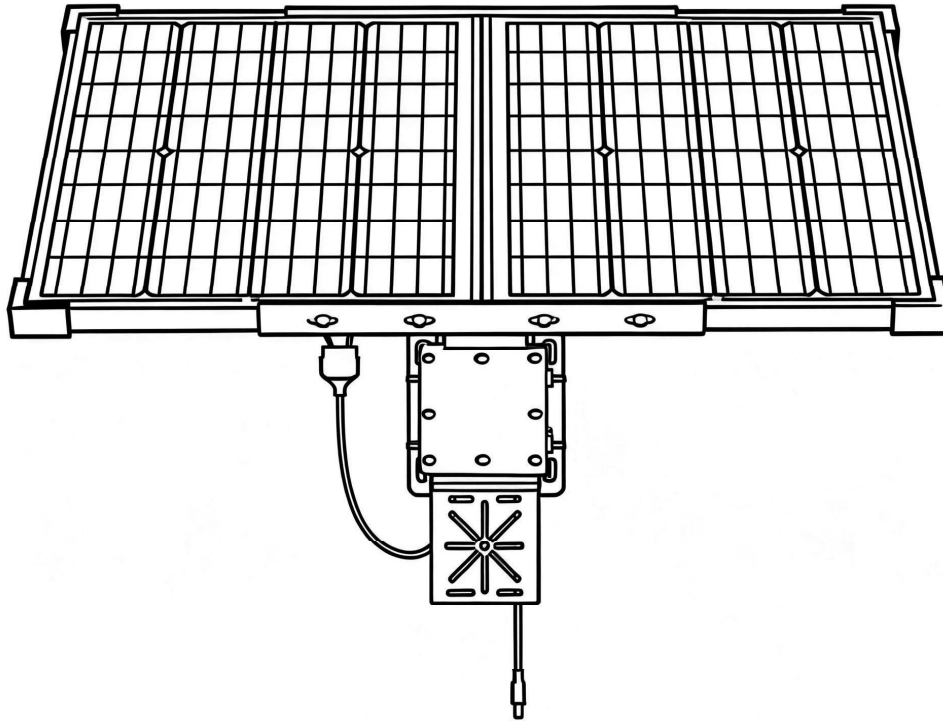
A.U.G. SIGNALS LTD.

Solar Power System User Manual

For Outdoor Monitoring & Communication Devices



 **Read all safety instructions before installation**



Safety Warnings

Do not proceed with installation until you have read and understood all safety instructions to prevent electric shock.

1. Electrical Safety

- Do not install or handle components during rain, snow, or wet conditions.
- Ensure all power switches are OFF before making connections.
- Use only insulated tools and wear appropriate personal protective equipment if necessary.

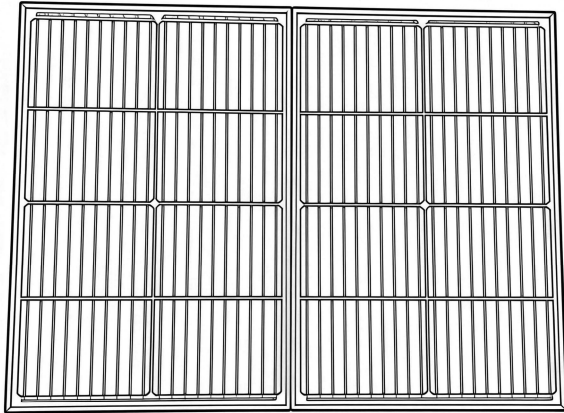
2. Installation Environment

- Install in a well-ventilated area, away from flammable or explosive materials.
- Keep children and pets away during installation and operation.
- Avoid placing the battery in direct sunlight or near heat sources.

3. Product Safety

- Do not disassemble, crush, or puncture the battery.
- Use only the provided cables and connectors. Modifications may cause malfunction or hazard.
- If the system is damaged, contact support immediately. Do not attempt to repair high-voltage parts yourself.

Packing List



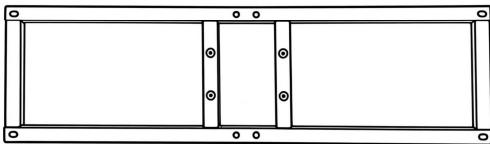
Solar panel × 2



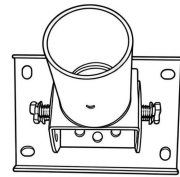
M6*20 Screw × 8



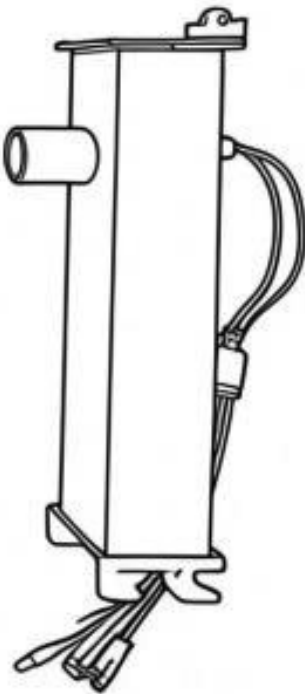
Protective Case × 4



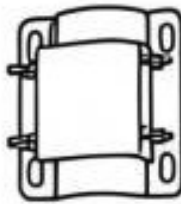
I-beam × 1



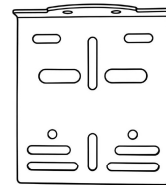
Solar Panel Angle Adjustment Mounting Bracket × 1



Solar Mount with Integrated Battery Enclosure × 1



Mounting Plate × 1



Equipment mounting plate × 1



Clamp × 2



User Manual × 1

Product Specifications

This is a configurable system. Your specific configuration may vary. Please refer to your order details.

Component	Specification
Solar Panel	Configurable (e.g., 30W, 40W, 50W,60W,80W)
Battery	12.8V LiFePO4 (Lithium Iron Phosphate) battery, capacity varies
Controller	MPPT (Maximum Power Point Tracking)
Output	DC 12V/4A OR DC 5V/4A (Customer-selectable configuration)
Operating Temp.	-20°C ~ 60°C

Important First-Use Notice: Charge Before Use

Before connecting any device to the system, the battery must be fully charged. Choose one of the following methods based on your situation:

Method A: Charge with Dedicated Charger (Before Installation)

Applicable only if you have purchased the optional dedicated charger.

When to do it: Before going to the installation site.

Why: The installation location (e.g., a pole) typically has no AC power outlet.

Instructions: If you have purchased the optional dedicated lithium battery charger (with a 5.5*2.1mm output connector), use it to fully charge the battery before assembling and mounting the system.

Method B: Charge with Solar Power (After Installation)

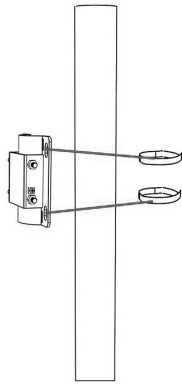
When to do it: After the system is completely assembled and installed outdoors.

Prerequisite: Ensure the forecast shows clear weather for the charging period.

Instructions: Leave the fully installed system under direct sunlight for 6-8 hours to charge.

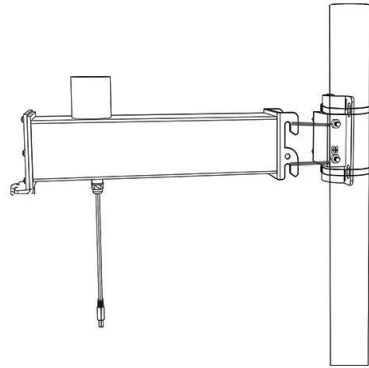
Only after completing either Method A or Method B should you connect your electronic device (load) and turn on the system.

Installation Steps



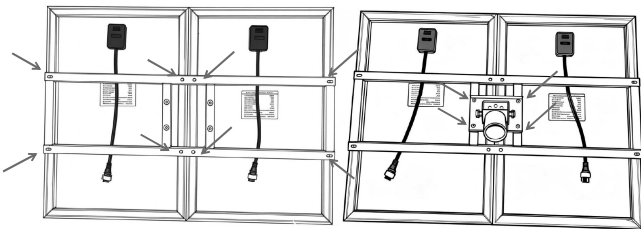
Step 1: Attach Mounting Plate

Attach the mounting plate to the pole or wall using the provided clamp. Ensure it is level and tighten all bolts securely.



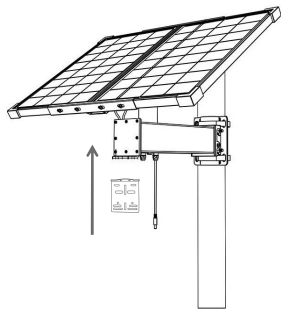
Step 2: Mount Battery Bracket

Hook the battery bracket onto the mounting plate. Align it properly and tighten the securing screws.



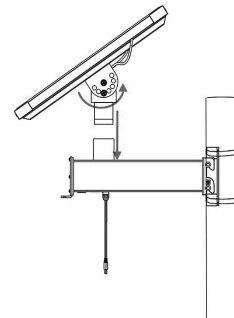
Step 3: Assemble Solar Panels (For Dual-Panel Kits)

Align the two solar panels back-to-back, with their backs facing the same direction, and match their edges. Position the I-beam frame over the eight mounting holes on the backs of the panels and secure it with screws. Finally, attach the Solar Panel Angle Adjustment Mounting Bracket to the exact center of the I-beam frame and tighten the screws to lock it in place.



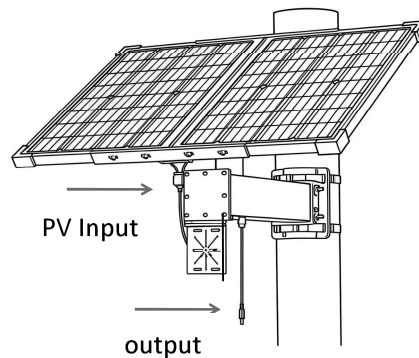
Step 5: Install Equipment Mounting Plate

Secure the equipment mounting plate (for your camera/router etc.) directly below the battery bracket, using the appropriate screws. Now all mechanical components are installed. Proceed to electrical connections.



Step 4: Mount Solar Panel Assembly

Rotate the solar panel assembly to the desired angle. Slide it onto the round tube of the bracket from top to bottom. Tighten the fixing screws to lock the angle.



Step 6: Make Electrical Connections

Connect the solar panel cable to the controller's "SOLAR" input port.

Connect the system output to your device:

Locate the output cable from the controller (either the DC 12V/4A cable or the DC 5V/4A cable, per your order).

Plug this cable into the power input port of your device (e.g., camera, router).

Ensure all connections are tight and weatherproof.

Helpful Tips

To ensure your solar power system performs at its best, please follow these installation guidelines, which are suitable for most regions worldwide.

1. **Northern Hemisphere:** Panels should face True South. For balanced seasonal efficiency, a slight 5°–10° west offset can be beneficial.

2. **Southern Hemisphere:** Panels should face True North.

3. Install panels in a location free of shadows throughout the day, avoiding shade from trees, buildings, or chimneys.

4. Avoid areas prone to falling debris, heavy dust, or bird nesting. Clean the panel surface periodically.

5. Set the Correct Tilt Angle: A 10° deviation from the optimal tilt can reduce efficiency by 15–20%.

6. How to Find the Optimal Tilt Angle?

• **General Advice (“Set and Forget”):** Set the angle equal to your local latitude for a good year-round compromise.

• **For Seasonal Optimization:**

• **Winter Optimization (enhances low-angle sun):** Increase the base angle (from the table above) by 10°–15°.

• **Summer Optimization (enhances high-angle sun):** Decrease the base angle by 10°–15°.

7. Recommended Tilt Angles by Latitude Zone

Tilt Angle	Suggested Regions (Based on Latitude)	Example Areas
10°–20°	Low-latitude zones (near Equator)	Singapore, Malaysia, Indonesia, Amazon, North Africa
20°–30°	Mid-low latitude zones	Southern USA, Southern Europe, Middle East, Northern India, Southern China
30°–40°	Mid-latitude zones	Central USA, Most of Europe, Central China, Japan, South Korea
40°–50°	Mid-high latitude zones	Southern Canada, UK, Northern Europe, Southern Russia, Southern New Zealand
50°–60°	High-latitude zones	Northern Canada, Alaska, Northern Scandinavia, Iceland

Note:

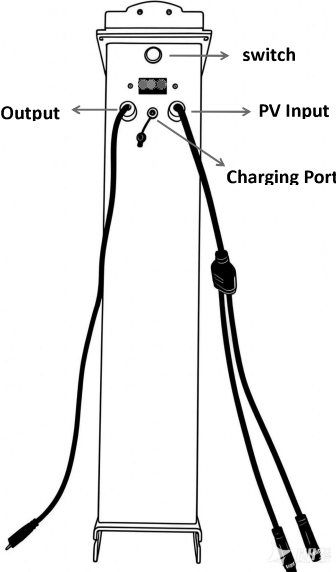
The table provides a general reference based on latitude zones. The most precise angle should be fine-tuned according to your exact longitude & latitude, local climate, and seasonal energy needs.

Controller Indicator Light Status Description

This controller uses three LED indicators—PV (Blue), BAT (Red), and LOAD (Green)—to display the system status.

1. Normal Operation Status Description

The table below explains the meaning of the indicator lights under different normal working conditions.

Condition	Indicator Light	Status	Meaning / Description
	PV (Blue) ●	Solid On	The battery is fully charged. The solar panel is in float charge or maintenance mode.
		Slow Flash	The solar panel is charging the battery.
		Off	The solar panel input voltage is below the start-up charging voltage (e.g., on cloudy days, at night, or due to a disconnected line).
	BAT (Red) ●	Off	The battery voltage is normal and functioning properly.
		Slow Flash	Battery Abnormal (Usually indicates severely low voltage).
	LOAD (Green) ●	Solid On	The load output port is ON and supplying power normally to the connected device(s).
		Off	The load output port is OFF, no output.
		Slow Flash	Load Short-Circuit. The controller has activated protection.
		Fast Flash	Load Overcurrent. The load power exceeds the controller's rated capacity.

2. Abnormal Status Diagnosis and Troubleshooting

When the indicator lights display the following unusual combinations, it indicates a system abnormality. Please refer to the table below to troubleshoot and resolve the issue in the given order. **Before any operation, ensure relevant power connections are disconnected and pay attention to safety.**

Abnormal Indication	Problem Diagnosis	Resolution Steps (Please follow in order)
●● Blue and Red lights flash simultaneously ● Green light is OFF	Battery voltage is too low and has entered protection mode: 1. Battery voltage is below 11.1V. 2. The battery is in deep sleep and requires activation.	Step 1: Attempt Solar Charging Activation 1. Check Sunlight: Ensure the solar panel is correctly oriented and under sufficient sunlight (e.g., midday sunny conditions). 2. Continuous Charging: Allow the system to charge continuously in sunlight for 1-2 hours to try and raise the battery voltage above 11.6V. The system may recover automatically. Step 2: External Power Source Activation (If Step 1 fails) 3. Preferred Method — Use the Optional Dedicated Charger: If you have purchased the optional dedicated lithium battery charger (with a 5.5*2.1mm output connector), use it to charge the battery until the red light stops flashing. 4. Alternative Method — Use a Compatible Li-ion Charger: If you do not have the dedicated charger, you may use another lithium battery charger that meets both criteria: Output Voltage: 16.8V - 21V Output Connector: 5.5*2.1mm male plug Connect it to the system's charging port to activate the battery. 5. Reconnect: After successful activation, reconnect the entire system in the correct order.
● Blue ● Red ● Green lights flash simultaneously	The system has detected a severe short circuit.	Important: First, disconnect power and investigate 1. Immediately turn OFF the load switch (if present). 2. Wait for Self-Recovery: Wait for approximately 3 minutes to observe if the controller automatically restarts and recovers. 3. If Not Recovered: Unplug ALL external cables (solar panel, load), then reconnect them one by one to locate the short circuit point. 4. Check Common Short Circuit Points: • Are the positive and negative terminals reversed? • Are the cable connectors wet or flooded? • Is there an internal fault in the load device?
● Blue light solid ON ● Red light flashing ● Green light OFF	Battery is not activated, and the solar panel voltage is normal. (The battery is in protection mode, and the solar panel is mistakenly detected as "fully charged".)	1. Disconnect Input: First, disconnect the solar panel from the controller. 2. Activate Battery: Follow the "Step 2: External Power Source Activation" method described for the first abnormal case above. 3. Reconnect: After the battery is activated, reconnect the battery first, then reconnect the solar panel.



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