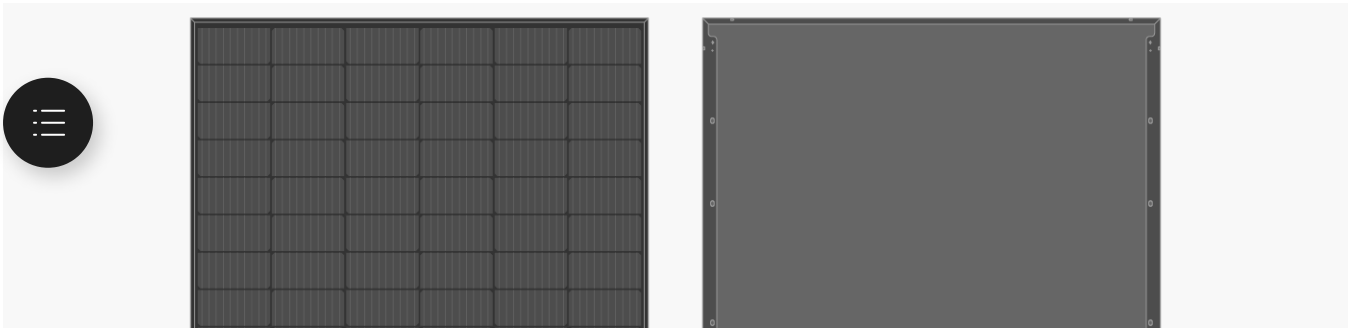
FAQs

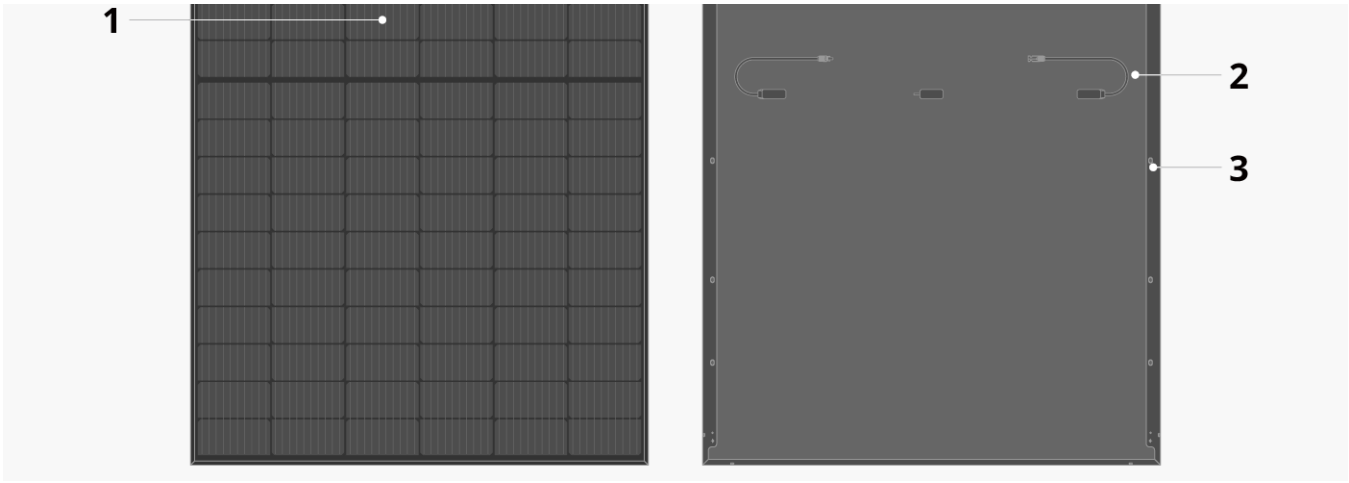
EcoFlow App

After-sales Policy

Downloads

Overview





1	**Photovoltaic module**	Face this side to the sun during use.
2	**Junction box**	Contains a solar output cable (1.1 m long). Pay attention to the positive and negative labels when connecting.
3	**Preset mounting holes**	The panel has preset mounting holes, which can be secured for use with tilt mount brackets, support brackets, bolts or pressing blocks.

Solar Panel Installation

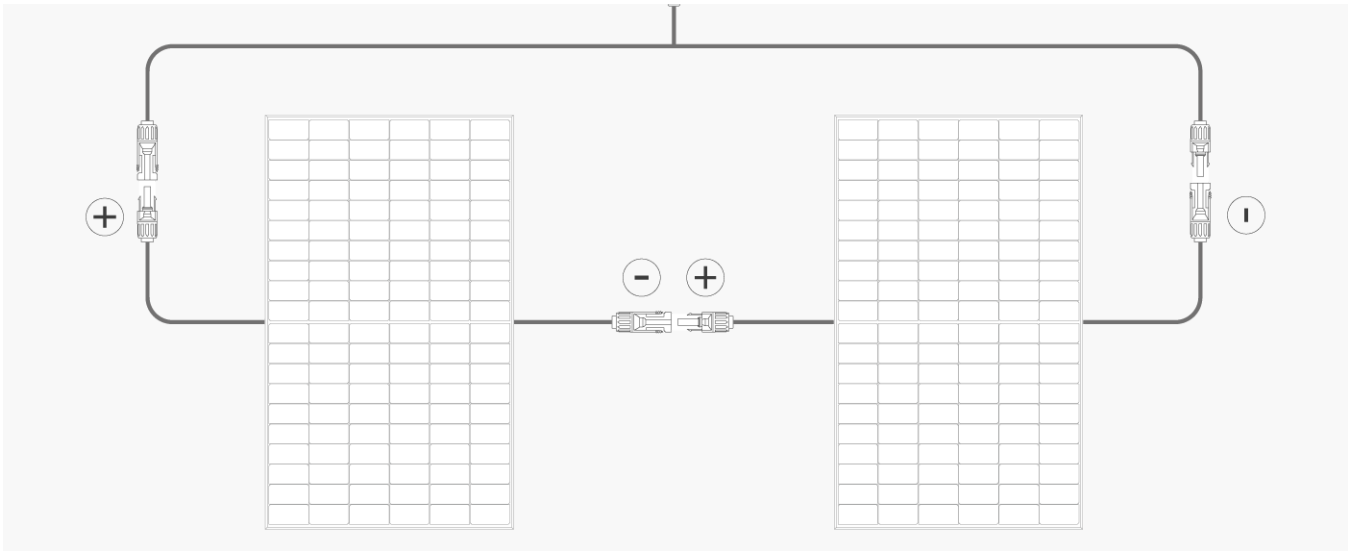
Pre-installation Requirements

How to Connect Multiple Solar Panels

You can connect multiple solar panels in series or parallel, but the series connection method is recommended. Please purchase the extension cable, parallel cable, and other accessories required for the connection by yourself. It should also be noted that all connections in a solar panel system should be made using solar panels with the same specifications. Connection methods are as follows:

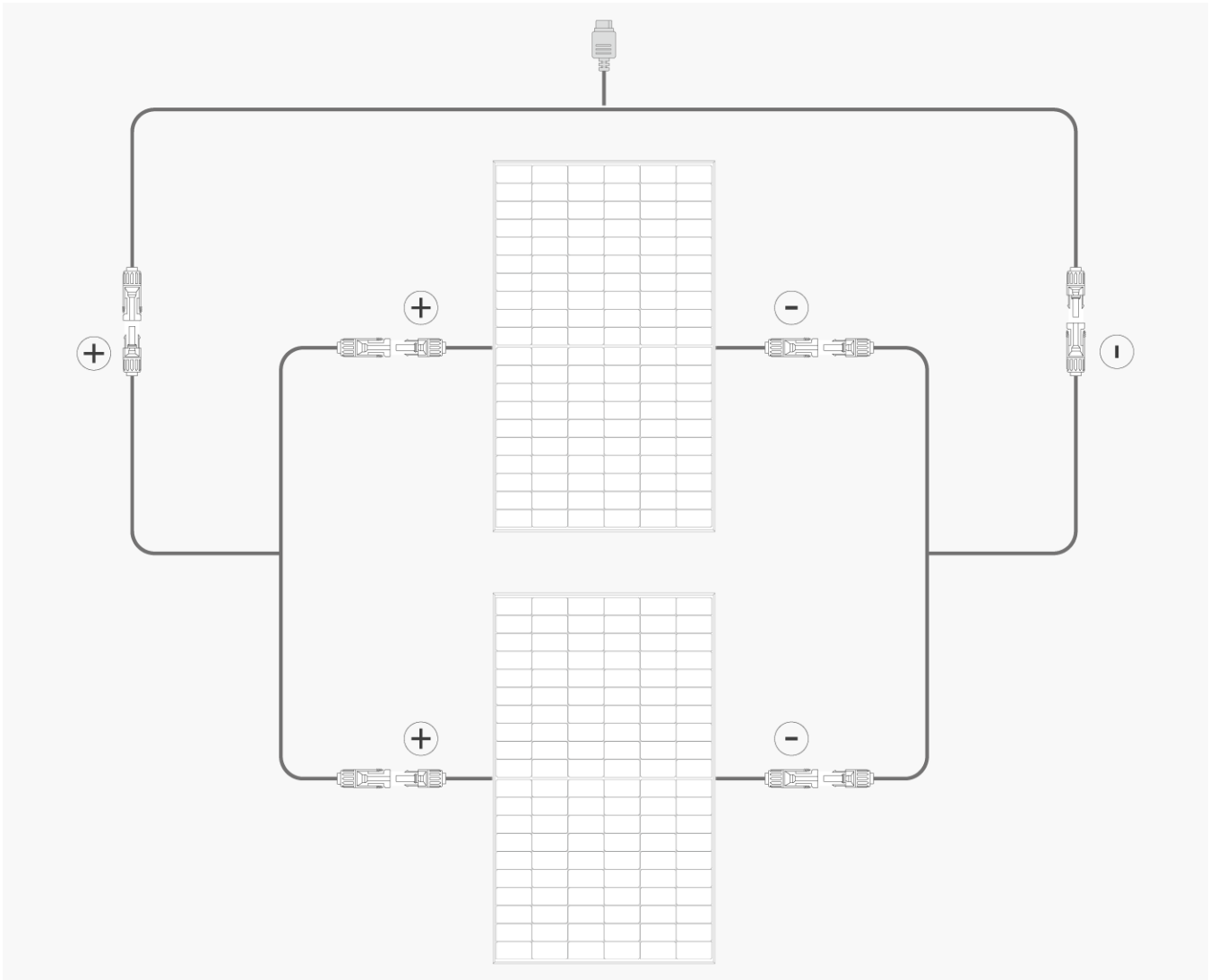
Series Connection

Series connection can increase the voltage value. When connecting in series, connect the positive pole of one module to the negative pole of the second module.



Parallel Connection

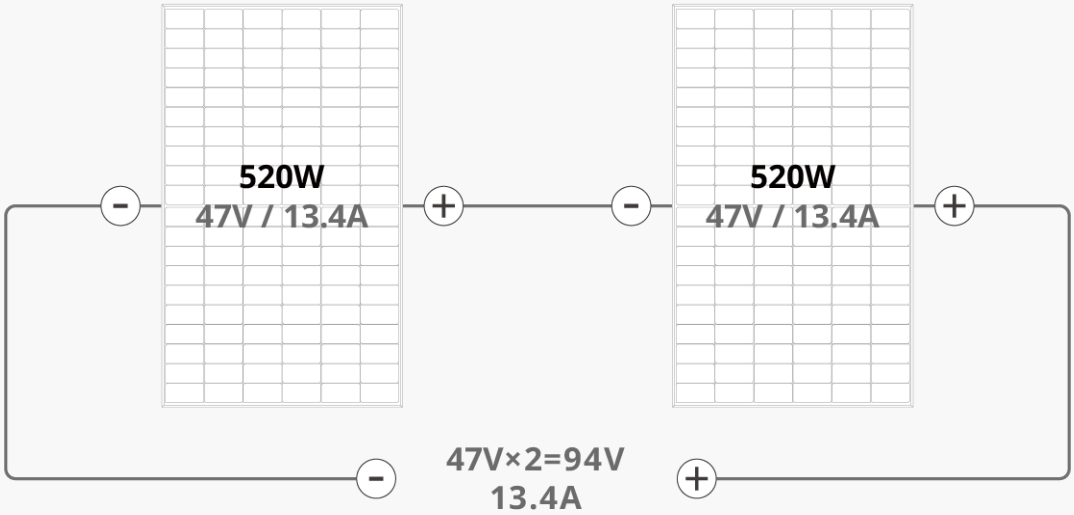
Parallel connection can increase the current value. For a parallel connection, connect the positive terminals of each solar panel with a parallel connection cable and connect the negative terminals of each solar panel with a parallel connection cable, then connect the two parallel connection cables with a solar charging cable.

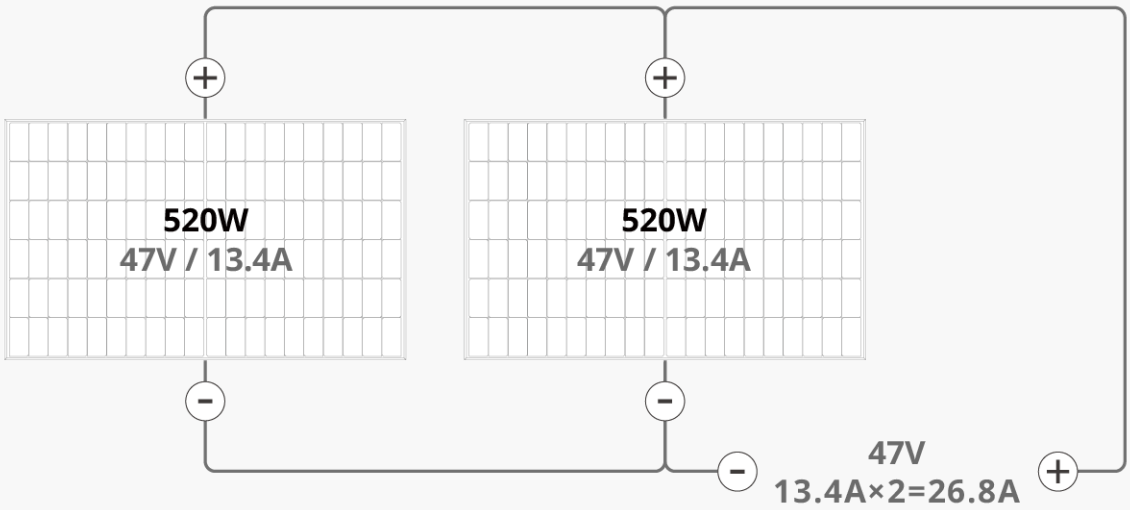


System Configuration

- **Wiring solar panels of same ratings**

	In Series	In Parallel
Total Voltage	Adds up	Same as single panel
Total Current	Same as single panel	Adds up
Total Power	Adds up	Adds up





Determine Wiring Plan

Take the following factors into consideration when determining whether to wire in series or in parallel.

Needed effort

- Series connection is simple and allows you to keep the total current at a relatively low level so that it will fall within the solar input range of the connected device.
- Parallel connection needs more effort and results in a higher total current, which, in turn, demands higher ratings for the solar cables and for the solar input of the connected device.。

Solar port ratings of connected device

The total voltage and the total current of the solar array should fall within the device's solar input range. When making your wiring plan, refer to the open circuit voltage and the short circuit current of the panels to calculate the total voltage and the total current.

Distance between panels and connected device

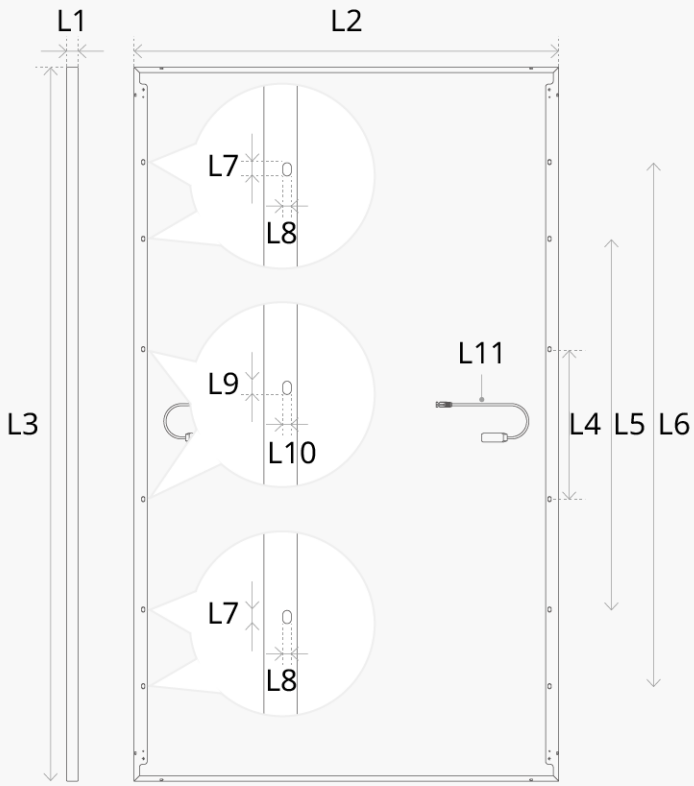
Long distances between panels and the device arouse needs for longer cables. Also, as currents add up in parallel connection, thicker cables are needed. As a result, the cost of cables increases. In this case, series connection is more economical.

Stability of solar array

For series connection, if one of the panels is shaded or damaged, the total output decreases noticeably. As for parallel connection, shaded or damaged panels barely influence the performance of other panels.

How to Use Preset Mounting Hole

When installing the bracket, be sure to use the mounting holes reserved for the solar panel. Do not modify the module frame without permission, otherwise this may void the warranty. Specific location as shown below:



L1=30 mm/1.18 in	**L7**=14 mm/0.55 in
L2=1134 mm/44.65 in	**L8**=9 mm/0.35 in
L3=2094 mm/82.4 in	**L9**=10 mm/0.39 in
L4=400 mm/15.75 in	**L10**=7 mm/0.28 in
L5=990 mm/38.98 in	**L11**=1100 mm/43.31 in
L6=1400 mm/55.12 in	

How to Choose the Installation Environment

In order to ensure the normal operation of the solar panel, please choose the suitable installation environment ac-cording to the following table:

No.	Environmental conditions	Range
1	Recommended operating temperature*	-20 to 50°C (-4 to 122°F)
2	Operating temperature limits	- 40 to 85°C (-40 to 185°F)
3	Storage temperature	-20 to 50°C (-4 to 122°F)

No.	Environmental conditions	Range
4	Relative humidity	<85RH%

*The operating environment temperature refers to the monthly average maximum and minimum temperature of the installation site.

1. If you plan to use the module in a place with high humidity (>85RH%), please consult the EcoFlow technical support team for a suitable installation method first.
2. Install the solar panel in an area that will not be shaded throughout the year. Even small amounts of shade should be avoided (e.g. overhead lines, dirt, snow).
3. For more solar system installation guidelines, please refer to your local solar system installation guide or the solar manufacturer's installation requirements.

Precautions

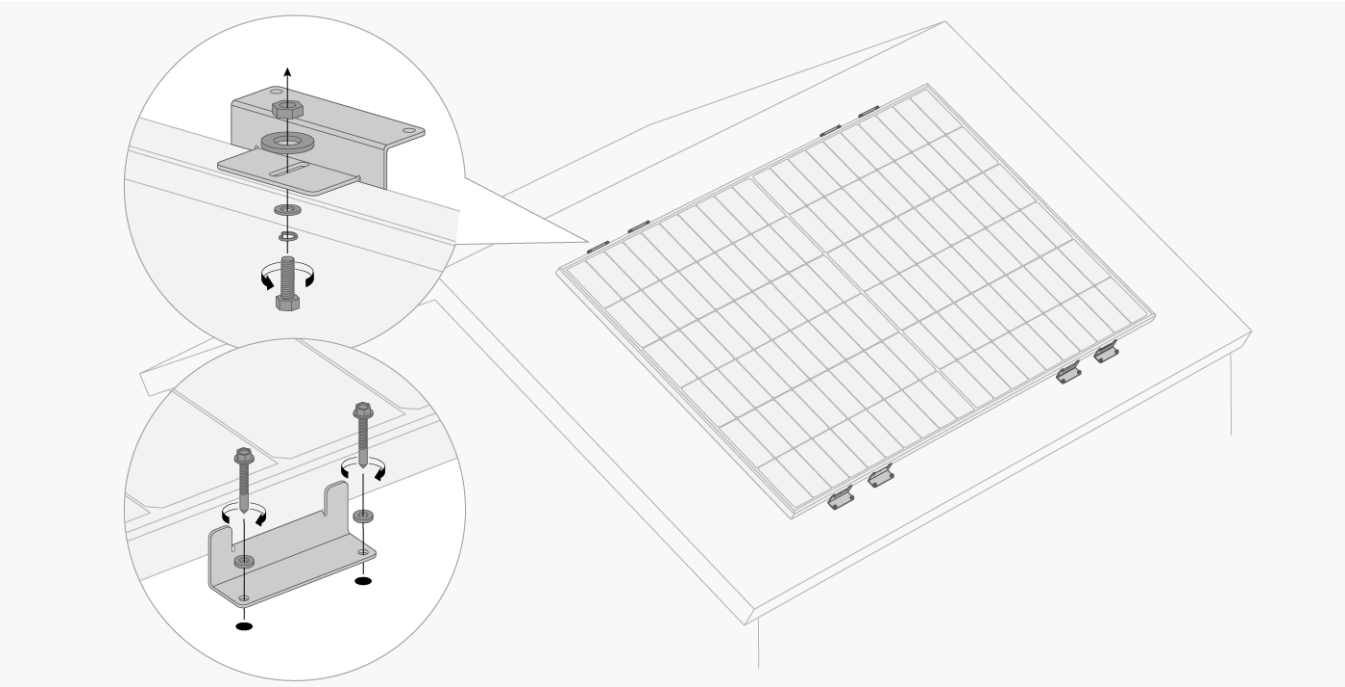
1. The installation methods listed in this manual are for reference only. Please purchase the required installation kit yourself. For specific installation steps, please refer to the manual of the corresponding kit.
2. The installation tilt angle of the solar panel should be kept above 10°, otherwise dust accumulation and damage to the performance of the module is likely. If the tilt angle is too small, please increase the frequency of cleaning the solar panel.
3. During solar system installation, it is recommended to install solar panel with similar appearance and color together.
4. The gap between two adjacent solar panels should not be less than 20mm. The minimum distance between the frame of a single solar panel and the installation plane should be 40mm.
5. The maximum design load of the solar panel, as well as excessive forces due to thermal expansion of the support structure, must be considered during system design. The specific system installation design is the responsibility of the installation company.
6. Determine the appropriate size and capacity of the solar panel system you need. Prior to installation on the roof, it is recommended that the roof condition and strength be evaluated by the solar panel installer.
7. Construction safety measures need to be taken before installation.

On the Roof

Installation with EcoFlow Rigid Solar Panel Mounting Feet

The solar panels in this system can be fixed parallel to the installation surface using the support brackets. Each module requires the installation of at least eight support brackets to ensure the stability of the system.
Please use the support bracket kit to connect the solar panel, and fix the solar panel to the pre-installation surface with the self-drilling screws. If needed, please visit EcoFlow's official sales channel for the relevant purchase information on the kit.
Click on the link below for installation instructions:

EcoFlow Rigid Solar Panel Mounting Feet



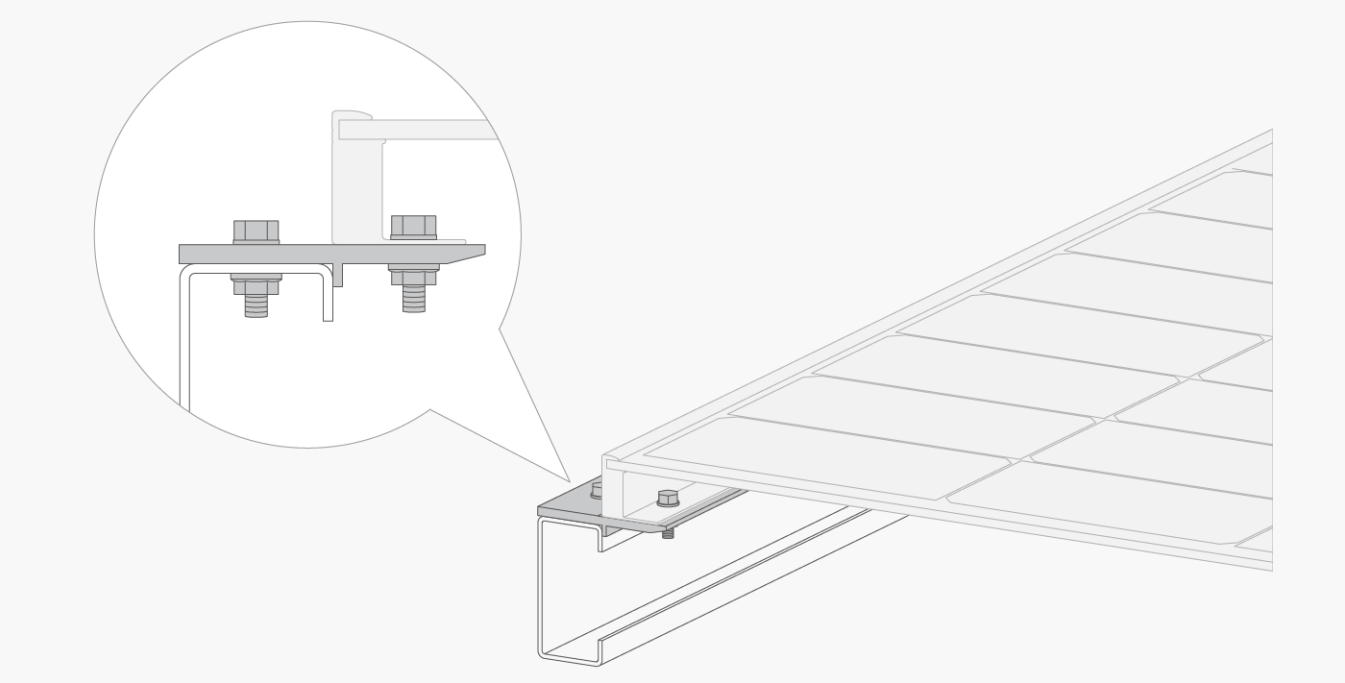
Installation with Third-Party Solar Panel Mounting System

Select the solar panel mounting system based on the type of roof tiles. The third-party solar panel mounting system normally consists of hooks, rails, bolts and pressing blocks. The mainstream roof tile types can be categorized as: metal tiles, cement tiles, flat tiles, and asphalt shingles. Before installation, you need to measure and mark the solar panel mounting system layout on the roof.

Installation with Bolt Kit

The solar panels in this system can be fixed on the bracket with a bolt kit. It is recommended that you place the module vertically when using the bolts to ensure the

stability of the system.
Please use the bolt kit to fix the solar panel on the bracket system. The applied torques are 16–20 N·m for M8 and 14–18 N·m for M6. You need to purchase the bolt kit yourself. Please select anti-corrosion stainless steel fas-tening materials.

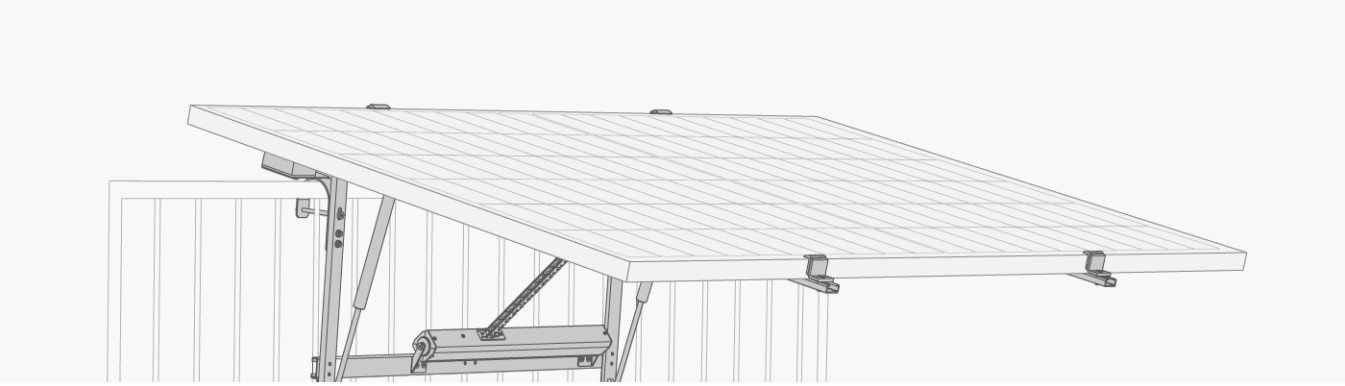


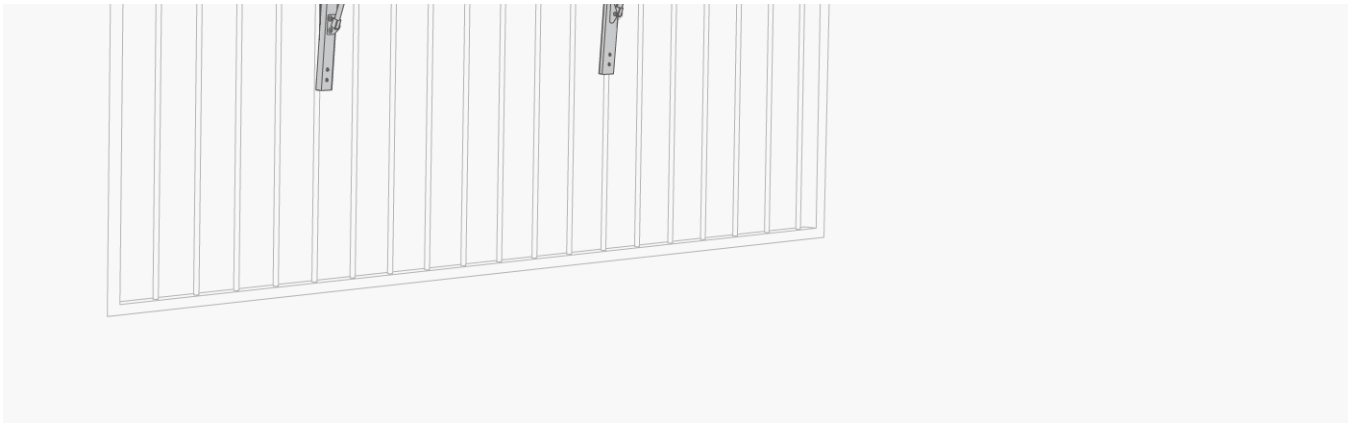
On the Balcony Railing

Installation with EcoFlow Single Axis Solar Tracker

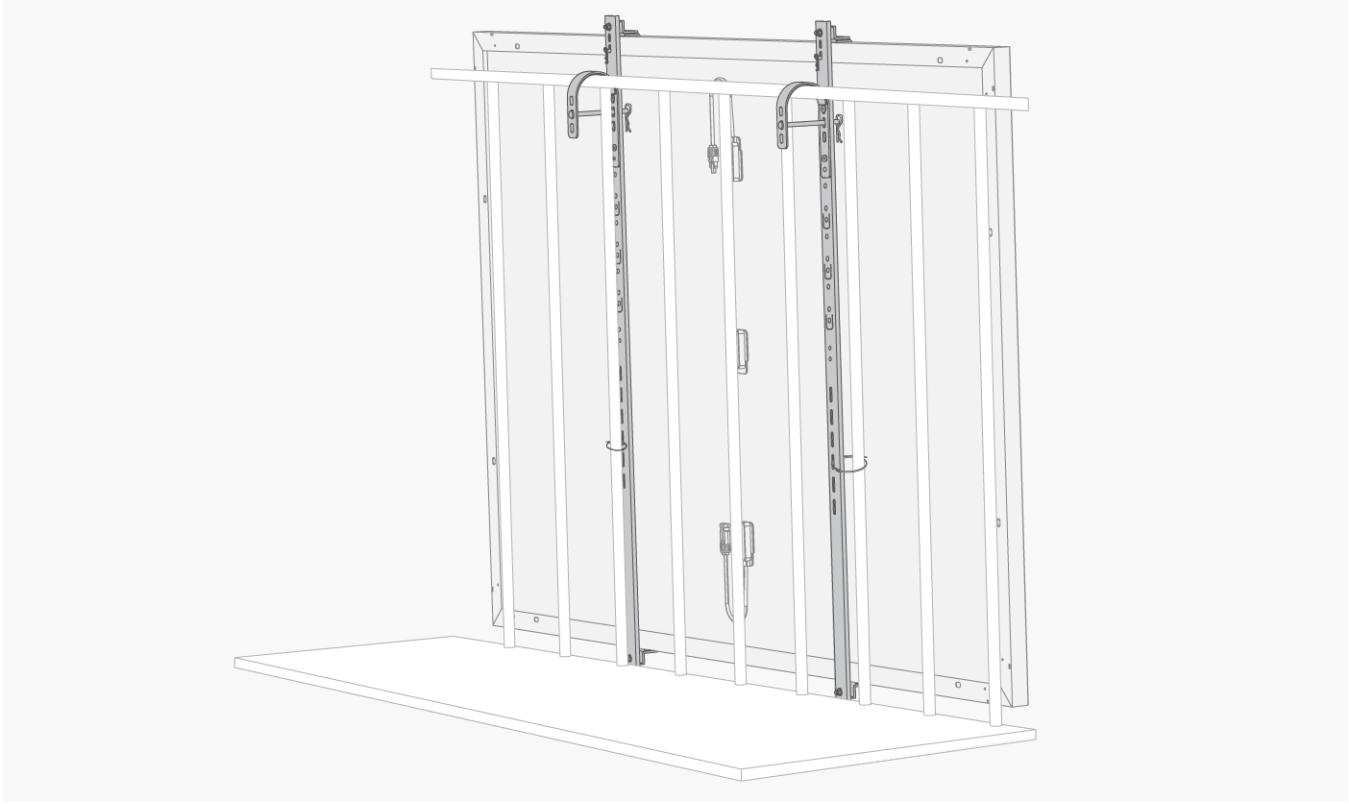
The solar panels in this system can be fixed parallel to the the Balcony Railing using EcoFlow Single Axis Solar Tracker or EcoFlow Balcony Hook Kit. If needed, please visit EcoFlow's official sales channel for the relevant purchase information on the kit.
Click on the link below for installation instructions:

EcoFlow Single Axis Solar Tracker





EcoFlow Balcony Hook Kit



In the Yard

Installation with EcoFlow Adjustable Ground & Suspended Solar Bracket

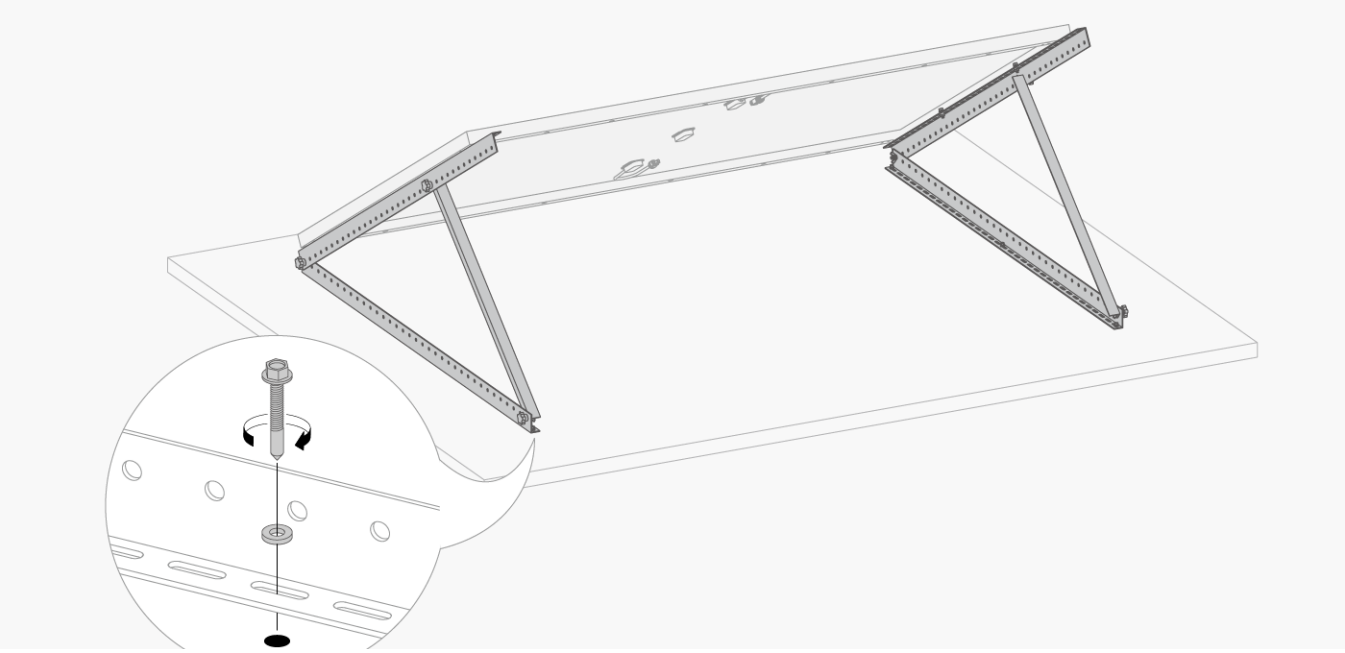
The solar panels in this system can be fixed parallel in the yard using EcoFlow Adjustable Ground & Suspended Solar Bracket. If needed, please visit EcoFlow's official sales channel for the relevant purchase information on the kit.
Click on the link below for installation instructions:

EcoFlow Adjustable Ground & Suspended Solar Br...

Installation with EcoFlowEcoFlow Adjustable Tilt Mount Bracket

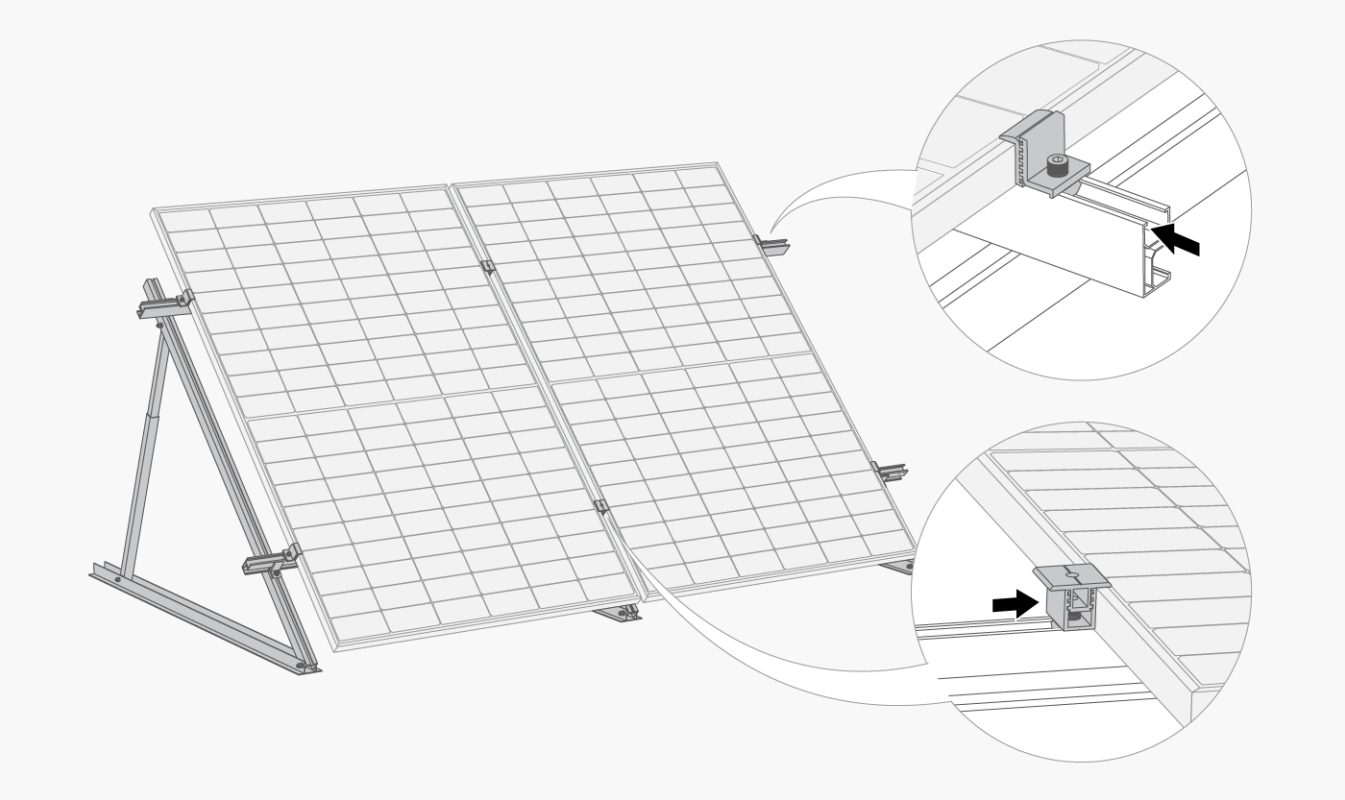
The solar panels in this system can be fixed parallel in the yard using EcoFlowEcoFlow Adjustable Tilt Mount Bracket. If needed, please visit EcoFlow's official sales channel for the relevant purchase information on the kit.
Click on the link below for installation instructions:

EcoFlowEcoFlow Adjustable Tilt Mount Bracket



Installation with Pressing Blocks

In this system, pressing blocks can be used to fix single solar panels or connect multiple solar panels. It is recommended that you place the panels vertically during use to ensure the stability of the system.
Please use a certain number of pressing blocks and M8 bolts to fix the module on the bracket. Each module must be fixed with at least four pressing blocks. The applied torque is 16–20 N·m. You need to purchase the pressing blocks and the bolt kit yourself.Please make sure the length of the pressing blocks is over 50mm,and the thickness is over 3mm.



1. Considering the actual situation of local wind load and snow load, you may need to use other means to ensure the stability of the system, such as increasing the number of pressing blocks, strengthening the mounting holes, or increasing the length of the pressing blocks.
2. Do not allow deformation of the aluminum frame caused by the pressure of the pressing block. At the same time, do not use pressing blocks that are too thick and cast shadows over the module.
3. It is necessary to ensure that the pressing block is in contact with the surface of the solar panel for more than 7mm, and to avoid blocking the front of the solar panel.

Power Your Devices

Prerequisites

How to Connect

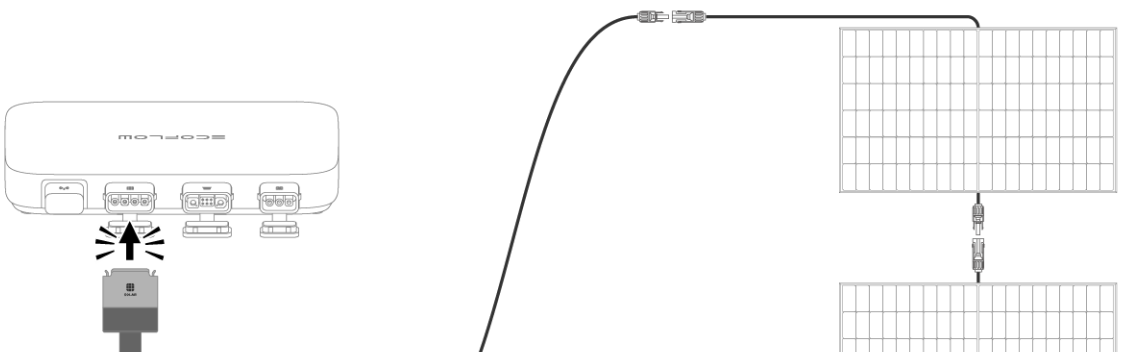
You can connect the panel to an EcoFlow portable power station to store power, or to EcoFlow PowerStream or EcoFlow PowerOcean to implement energy self-generation and self-consumption. This section uses the EcoFlow PowerStream as an example.

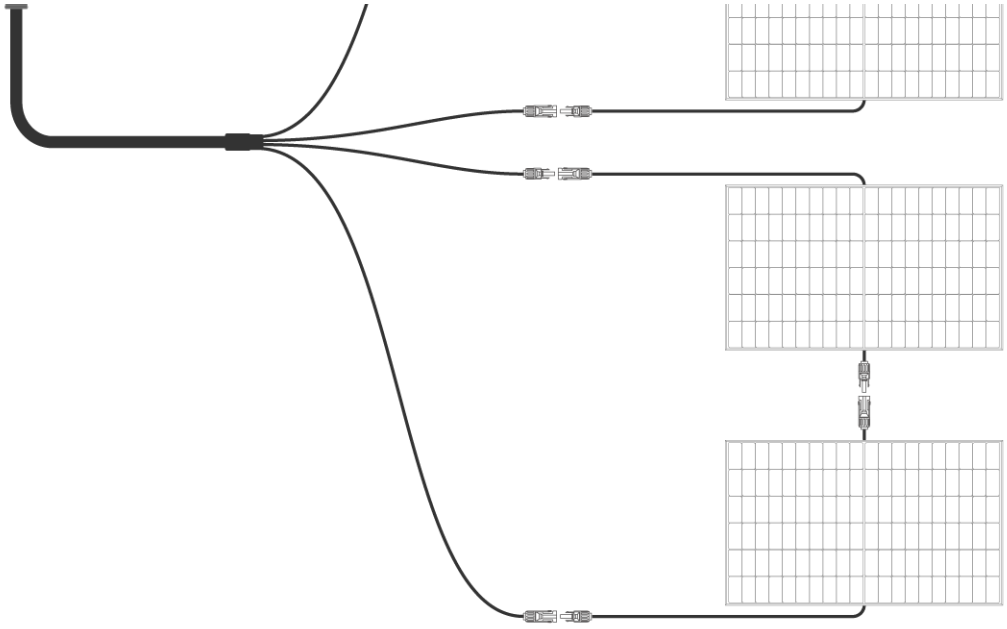
When using the panel with your devices, please make sure the **maximum output parameters**[1] of the panel are within the input range of the devices. Otherwise, your devices may be damaged. To connect the panel with a third-party device, please make sure that the device allows solar input, and that its output ports and electrical parameters meet the panel's requirements.

Maximum output parameters[1]
Refer to the open circuit voltage and the short circuit current of the panel.

1 When the panel is in place, connect the output cable to the connectors of the **BKW-SOLAR cable**[1]. To do so, **connect male connectors to female ones**[2].

2 Connect the other end of the charging cable to the **solar input port (PV)**[3] of the device to complete connection. If the port is not of the PV variety, refer to the device's user manual for connection instructions.





⚠ **BKW-SOLAR cable[1]**

Use the charging cable included in the box. Third-party cables are not recommended.

Connect male connectors to female ones[2]

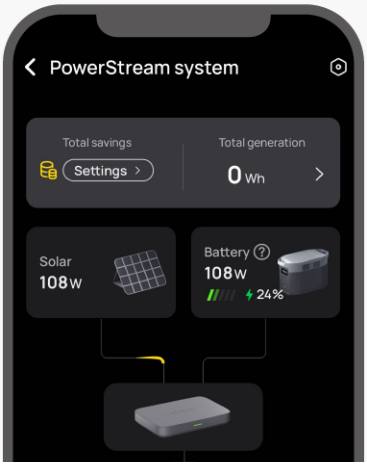
Do not connect the output connectors of a panel to each other. Otherwise, short circuits will occur.

Solar input port (PV)[3]

Make sure the cables were connected firmly before use to avoid port melting caused by bad connection.

3

If the panel is connected to an EcoFlow device, you can check real-time output data on the screen of the device or on the device's homepage of EcoFlow app.



Maximize Power Output

Find an Ideal Environment & Configuring Solar Tracker Accessories

Use the panel on sunny or mostly sunny days

On a sunny noon, sunlight is strong and the panel yields more power. On cloudy or rainy days, sunlight is weak and the panel's output decreases as a result.

Minimize shading

Keep the panel free from shading, dust, leaves, droppings, or other debris. Otherwise, the panel's power output will decrease dramatically.

Ensure a 90° tilt angle

The direction of sun rays changes throughout the day. It's recommended to configure Solar Tracker kit, which adjusts the angle of the sun's rays to the solar panels in real time, maintaining a vertical angle.

Wire Your Panels

You can wire panels in series or in parallel to get higher output. When wiring, pay

attention to the electrical parameters of your solar array and make sure that the parameters meet the requirements of the device that the panels will be connected to. Generally speaking, it's recommended to wire solar panels in series for connecting with a portable power station.
About How to connect, see the section **Solar Panel Installation**

Care and Maintenance

The following maintenance is recommended to maintain optimal performance of the module:

1. When there is dust accumulation on the glass surface of the solar panel, please clean it with a soft sponge or damp cloth. To remove stubborn dirt, you can wipe it with a mild detergent. It is recommended to clean in the morning and evening when sunlight is weak (irradiance ≤ 200W/m2).
2. Prevent the accumulation of leaves and other debris on the surface of solar panels. Otherwise, this will not only affect the efficiency of power generation but also cause excessive local current and burn solar components.
3. Check electrical and mechanical connections at least every six months to confirm that they are clean, secure, and undamaged.

Common Faults and Handling

1. All commissioning and repair work on this solar system must be performed by a qualified solar technician. Maintenance instructions for all components used in the system (such as brackets, charging regulators, inverters, batteries, etc.) must be followed.
2. Before commissioning, please test the serial modules of the system.
3. When testing module performance outdoors, do not connect the system to the load and pay attention to person-al safety.
4. Should abnormal power generation occur, troubleshoot the issue by following the steps below:

- Check all wiring to ensure that there are no open circuits or poor connections;
- Check the open circuit voltage of each module;
- First cover the module with opaque material to check the open circuit voltage. Then

remove the opaque mate-rial, measure the open circuit voltage at its terminals, and compare the data from both points.

5. If the voltage between the terminals differs by over 5% from the nominal value at an irradiance of ≥ 700W/m2, this indicates a poor electrical connection.

FAQ

1. Is the panel waterproof?

The panel has an IP68 rating. If the panel gets wet in the rain or falls into water by accident, check if water has got into the connectors immediately. If yes, dry the connectors with rags and the panel will function properly. However, pay attention not to soak the panel in water.

2. Why can't the solar panel reach the nominal power in actual use?

It is normal that the actual power does not reach the nominal power. You can get close to the nominal power by correcting for the following factors:

- Light Intensity

Changes in the intensity of sunlight will cause the output power to fluctuate up and down. The actual power will be closer to the nominal power when used at noon on a sunny day, and will be less than the nominal value in the early morning or afternoon. Weather conditions will also affect the amount of sunlight that shines on the panel.For example, you are much less likely to achieve the nominal power in hazy, cloudy, or rainy conditions.

- Surface Temperature

The surface temperature of the solar panel affects the power performance of the solar panel. The lower the surface temperature, the better the power performance. For example, when using solar panels in winter, the power is usually higher than in summer. Solar panels generally reach temperatures close to 60°C (140°F) during summer. This reduces nominal power by 10–15%, despite the higher levels of light shining on the panel.

- Light Angle

When the solar panel and the light angle are perpendicular, better power performance

can be obtained. However, under special installation conditions (such as the roof of an RV), the solar panel can only be used in a horizontal manner, which makes it impossible to form a vertical angle with the sunlight, resulting in a power loss of about 5–15%.

- Light Occlusion

When using solar panels, try to ensure that the surface is not covered, including projection, foreign objects, glass, etc., which will cause a significant drop in power.

3. Why isn't my panel generating power?

Make sure the connection is correct, the terminals are tight, and the environmental conditions, including sunlight, are ideal for solar power generation. If the panel still generates no power after you exclude the factors above, contact EcoFlow's official customer service for help.

4. What are the precautions for the use of solar panels?

The solar panel is made of monocrystalline silicon wafer. During installation and use, please do not drop it on the ground with force, or use tools to hit the surface. Do not step on or sit on the solar panel, so as not to cause the monocrystalline silicon wafer to break and affect its use. Artificial damages will void the warranty.

5. Can I use solar panels of different specifications for mixed use?

Yes, but it is not recommended. Different energy storage controllers have requirements and restrictions on the output of solar panels. When solar panels with different current values are used in series, they will be limited, resulting in the inability to release the output power and even the short-board effect of 1+1<2.

6. Can I connect solar panels in parallel?

Yes. Parallel connection can double the current and increase the power. You can refer to the requirements for solar controllers and energy storage devices to ensure that they support larger values of input current to better determine the number of parallel connected solar panels. Additionally, it is necessary to pay attention to select a wire with a suitable wire diameter for safe connection according to the change of the output current.

7. Do solar panels need to be cleaned frequently?

Yes. When used outdoors for a long time, solar panels are prone to accumulate dust and foreign objects on the surface, causing a certain degree of light occlusion and reducing the output of power generation. Frequent cleaning keeps the surface of the solar panel

clean and free of obstructions, allowing for better solar panel power output.

What's in the Box

1. EcoFlow 520W Rigid Solar Panel
2. Quick Start Guide, Safety Instructions, Warranty Card

Accessories

Solar to XT60i Charging Cable(3.5m)

Solar Extension Cable

Solar Parallel Connection Cable

View More →

Specifications

Model	EF-SG-520
Rated Power	520W (±5W)
Open Circuit Voltage	47V
Short Circuit Current	13.4A
Maximum Operating Voltage	40.1V

Model	EF-SG-520
Maximum Operating Current	13A
Temperature Coefficient of Rated Power	-0.30%/°C
Temperature Coefficient of Open Circuit Voltage	-0.25%/°C
Temperature Coefficient of Short Circuit Current	0.045%/°C
Maximum System Voltage	1500V DC (UL)
Maximum Fuse Current	25A
Specifications	
Net weight	Approx. 24.6 kg (54.2 lbs)
Dimensions	2094×1134×30 mm (82.4×44.6×1.2 in)

- Standard Test Conditions: 1000W/m^2 (92.9W/ft^2), AM1.5, 25°C (77°F)
- When the temperature is too high or too low, the panel's open circuit voltage and short circuit current will vary.

Safety Instructions

Disclaimer

Please read the product document and ensure that you understand it fully before using the product. After reading this document, keep it for future reference. Improper use of this product may cause serious injury to yourself or others, or cause product damage and property loss. Once you use this product, it is deemed that you understand, approve and accept all the terms and content in this document. EcoFlow is not liable for any loss caused by the user's failure to use the product in compliance with the product document.

In compliance with laws and regulations, EcoFlow reserves the right to the final interpretation of this document and all documents related to the product. This document

is subject to changes (updates, revisions, or termination) without prior notice. Please visit EcoFlow's official website to obtain the latest product information: https://www.ecoflow.com/.

INSTALLATION

1. This solar system is to be installed by a qualified solar installation company.
2. Do not disassemble the module or nameplate by yourself, otherwise this may void the warranty.
3. Please make sure to use the installation components (including connectors, connecting cables, and brackets) provided by us. Before installation, the solar panel should be completely covered with opaque material and the positive and negative terminals disconnected to prevent power generation.
4. Please carefully check whether the solar panel has broken glass or a damaged back panel. If it does, please stop installing or using it immediately.
5. When installing, do not wear any jewelry made of metal, and only use insulated tools approved for electrical installation.
6. When multiple solar panels are installed in series or parallel, the cross-sectional area of the cable and the capacity of the connector must be appropriate to the maximum short circuit current of the system.
7. Do not install modules near open flames or inflammables and explosives. Do not install solar system in places with water immersion, watering devices, or sprinklers.
8. Do not let children approach the installation site or touch any electrical modules.
9. Do not step on the solar panel or any parts.
10. Do not use a sharp tool to score, cut, slice, or slash the module, especially the back plate.
11. You must comply with local and national regulations during roof and ground installations.
12. When installing on the roof or body of a vehicle, be sure to leave a gap between the solar panel and the roof or body to facilitate airflow and heat dissipation.

USAGE

1. The module overcurrent protection rating applies to DC fuses.
2. Do not plug or unplug any system connectors while the circuit is under load.
3. Make sure the fire resistance rating of the system is up to standard, comply with local electrical safety regulations, and configure module accessories (such as fuses, circuit

breakers, grounding connectors, etc.) as needed.

4. Please make sure that the installation area of the solar panel system is well ventilated and the connectors are clean and dry.
5. All solar system connections must be sealed to prevent moisture.
6. When installing and using solar system, be sure to follow the safety regulations for all other modules in the system, including connecting wires and cables, connectors, controllers, charging regulators, inverters, accumulators, and other rechargeable batteries.
7. Do not apply any substance that may block light (such as paint, adhesive, etc.) on the light-receiving surface of the solar panel.
8. Do not directly irradiate the surface of the module with artificially amplified sunlight.
9. Do not put heavy objects on the solar panel during use, to avoid damage to the panel.