

**AST-1600-2S SOLAR POWER MANAGEMENT CONTROLLER**

**(PV HUB)**

**USER'S MANUAL**

## Foreword

This Operation Instruction introduces how to use the AST-1600-2S solar power management controller(PV HUB) correctly.

### Statement:

1. Before commencing the use of this product, please peruse this document meticulously to ensure that you have a thorough understanding and can utilize it appropriately.
2. Once you have read this document, please store it in a secure location for future consultation.
3. Improper operation of this product might lead to severe injuries to yourself or others, or cause damage to this product and other properties.
4. By employing this product, you are regarded as having comprehended, acknowledged, and accepted all the terms and conditions stipulated in this document.
5. The Company will not be held accountable for any damages arising from the user's failure to operate this product in accordance with the instructions for use.
6. In compliance with laws and regulations, the Company reserves the right of final interpretation for this document and all documents related to this product.
7. This document is prone to update without prior notification. Kindly visit the official website for the most recent version.

### Precautions:

1. The illustrations in this manual are for illustrative purposes only and may differ from the products you ordered.
2. Due to product upgrade or change, and to improve the convenience and accuracy of the manual, the contents of this manual may be changed from time to time.
3. If the manual is damaged or lost and you need to order a new one, please contact our regional agents or our customer service directly.
4. If you still have some unclear issues during use, please contact our customer service center.



### Safety Precautions:

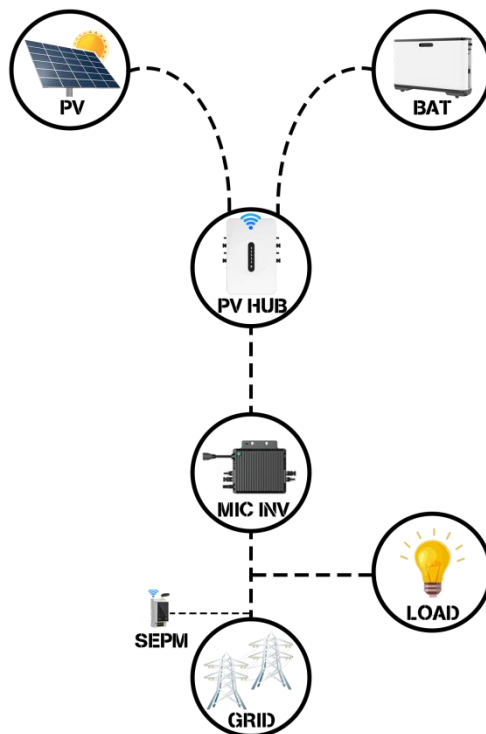
1. Before installation: Please carefully check the materials. If there are any missing or damaged materials, do not install the machine as it is dangerous.
2. Before installation: Be sure to read the operation manual carefully before operating.
3. When installing: Observe the installation sequence strictly.
4. All modules can be powered on only after they are properly connected. Plugging and unplugging are prohibited when they are powered on; otherwise, there is a risk of electric shock or burning out the modules.
5. Non-professionals are not allowed to disassemble the module shell or touch the internal circuit board to avoid electric shock accidents.
6. It is forbidden to modify or use this system on other projects without the confirmation of the manufacturer's technicians to avoid serious accidents.

## Chapter 1 Introduction of the Product

### 1.1 Overview

The AST-1600-2S solar power management controller (referred to as PV HUB) is an electrical system that regulates the working status of the electrical module to prompt the PV panel to output more electrical energy. It is like a bridge between solar energy, lithium batteries and the outside world. It can efficiently store the direct current generated by the solar panel in the battery and be connected to the electrical load and the power grid through a micro-inverter to supply power to households. It can effectively solve key technical problems such as safety, availability, ease of use, and service life in the Solar Power storage system.

### 1.2 Application Mod



**1.3 Application Scenarios**

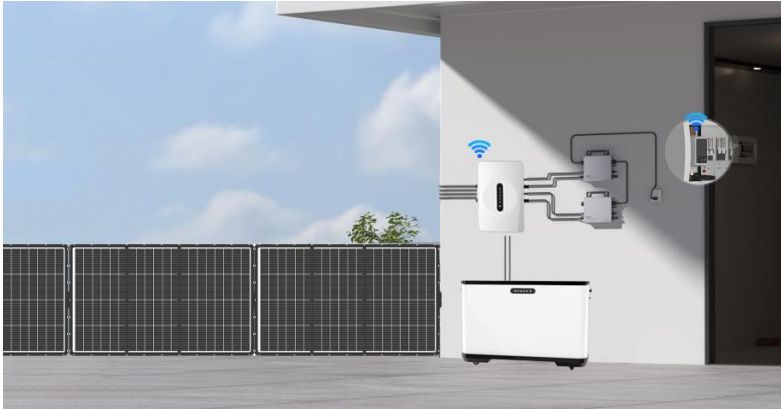


Figure 1-3-1 Balcony Solar Power Storage System



Figure 1-3-2 Rooftop Solar Power Storage System



Figure 1-3-3 Courtyard Solar Power Storage System

## 1.4 Function Introduction

The AST-1600-2S solar power management controller (referred to as PV HUB), in addition to the basic functions such as power quantification and flow path control, Wi-Fi communication control, temperature acquisition, current acquisition, maximum power point tracking of PV panels, and system self-check, also innovatively equips advanced functions such as multi-battery pack parallel strategy, cloud monitoring, capacity management, charging management, and power distribution management.

## 1.5 System Block Diagram

The PV HUB system consists of the main control module MCU, the drive control module, the power conversion part, the auxiliary power supply module, the Wi-Fi module, current sampling, voltage sampling, etc. The main control module MCU, through voltage and current sampling, identifies the access and load supply status of the PV panel, battery and micro-inverter, runs the algorithm to enable the drive module, and then controls the DCDC conversion power. This device allows users to set and adjust the power flow path and power size through the mobile phone APP. (Internally, PV HUB realizes information interaction control with the BMS of the battery pack through the RS485 communication module, and realizes the interaction between the cloud data uploaded by the Wi-Fi module and the control information of the mobile phone.)

The Block Diagram of PV HUB system is as shown in the figure:

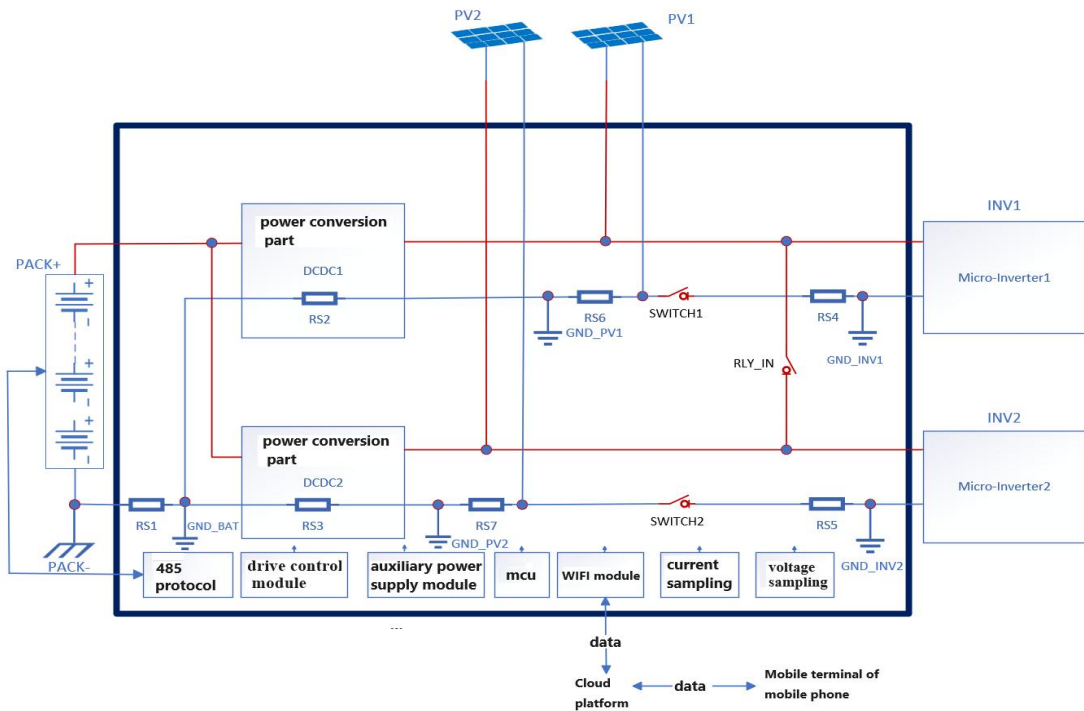


Figure 1-5 Block Diagram of PV HUB System

## 1.6 System Parameters

Table 1-6 Parameters of PV HUB

|                        |            |  |              |
|------------------------|------------|--|--------------|
| PV input voltage range | 12V-60V    | peak efficiency                          | 98%          |
| PV input power         | 800W×2 Max | MPPT tracking efficiency                 | 99%          |
| output voltage range   | 18V-55V    | battery short-circuit protection current | 66A          |
| output rating          | 800W×2 Max | operating ambient temperature            | -20°C~65°C   |
| battery voltage range  | 40V-58.4V  | protection level                         | IP65         |
| battery charging power | 1600W Max  | RS485 and CAN                            | support      |
| EMC grade              | CLASS-B    | Wi-Fi communication                      | support      |
| overall weight         | ≈3.2kg     | overall size                             | 320×200×65mm |
| PCBA weight            | ≈590g      | PCBA size                                | 280×160×35mm |

## Chapter 2 Port Function and Structure Description

### 2.1 Port Function

2.1.1 The external ports of the PV HUB mainly consist of 2 PV inputs, 2 micro-inverter outputs, and 1 battery. The PV HUB is connected to the solar PV panel and the micro-inverter by inserting the MC4 connector. The PV HUB is connected to the battery pack by the aviation plug connector. The outgoing lines of the solar PV panel and the micro-inverter must refer to the connector type shown in Figure 2-3-1

In the following description, Inverter1=INVA, Inverter2=INVB, PV1= PVA, and PV2=PVB.

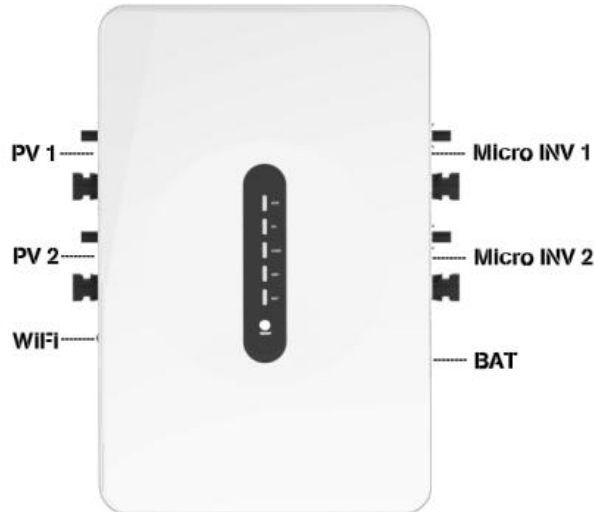


Figure 2-1-1 PV HUB ports

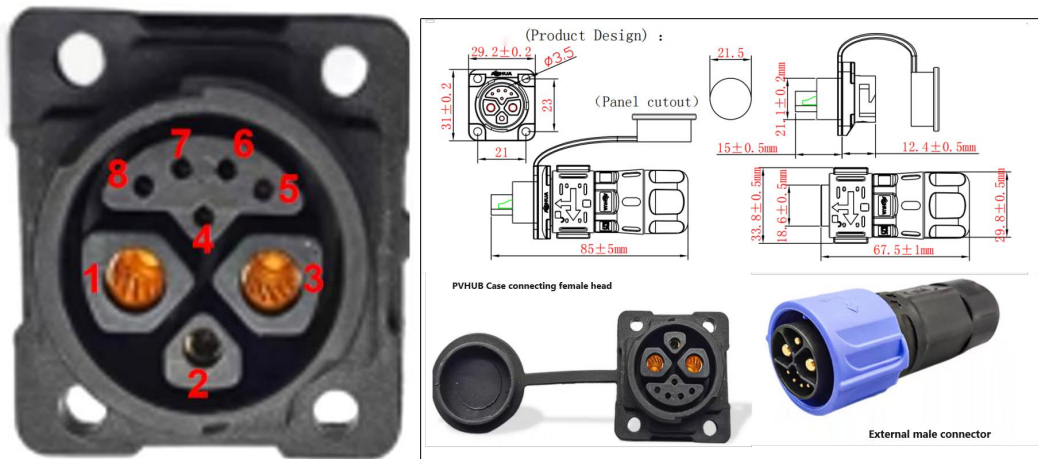
2.1.2 Port Definition

Table 2-1-2 Port Specification

| Port                    | Definition   |
|-------------------------|--|
| PV1+ / PV1-             | PV1 input+, input voltage range: 12-60V                          |
| PV2+ / PV2-             | PV2 input+, input voltage range: 12-60V                          |
| Inverter1+ / Inverter1- | Micro-inverter 1 output, output voltage range: 18V-55V           |
| Inverter2+ / Inverter2- | Micro-inverter 2 output, output voltage range: 18V-55V           |
| BAT                     | The connection socket of Wi-Fi antenna and built-in Wi-Fi module |
|                         | Battery Pack+  |
|                         | Battery Pack-  |
|                         | CAN communication H terminal                                     |
|                         | CAN communication L terminal                                     |
|                         | RS485 communication (communication with BMS of battery pack)     |
|                         | RS485 communication (communication with BMS of battery pack)     |

## 2.2 Connector Specifications

The connection between the PV HUB and the battery pack is made via the aviation plug connector. The pin numbers and positions of this connector are shown in Figure 2-3-2.



Schematic Diagram of Pin Number of Aviation Plug Connector

Aviation plug connector pin definition

| pin number | definition                     | pin number | definition |
|------------|--------------------------------|------------|------------|
| 1          | Positive line of battery power | 2,4,6,7    | NC         |
| 3          | Negative line of battery power |            |            |
| 5          | RS485-B/CAN-H                  |            |            |
| 8          | RS485-A/CAN-L                  |            |            |



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## Chapter 3 Product installation

### 3.1 Wiring Introduction

#### 3.1.1 Wiring between PV panel and PV HUB

Before connecting the PV panel to the PV HUB, ensure that the PV panel is functioning properly. Please note the following before wiring:

|   |   |
|---|---|
| 1 | The maximum voltage of each connected PV panel should not exceed 60V.   |
| 2 | The polarity and model of the outgoing terminal of the PV panel should match the PV HUB. Refer to Section 2.1 - Port Function |
| 3 | The PV panel cannot be input in parallel. That is, PV1+, PV1- cannot be directly connected to PV2+, PV2-.                     |

#### 3.1.2 Wiring between micro-inverter and PV HUB

The following precautions should be confirmed before connecting the micro-inverter:

|   |   |
|---|---|
| 1 | The micro-inverter operates properly.   |
| 2 | The input voltage and power comply with the PV HUB system parameters.   |
| 3 | Never artificially connect or disconnect the wiring terminal between the micro-inverter and the PV HUB when the PV HUB is powered on.   |
| 4 | When the AC plug of the micro-inverter is connected to the power grid, it is necessary to ensure that the ground terminal in the AC plug can be reliably grounded. Otherwise, it will affect the communication between the PV HUB and the battery pack, resulting in abnormal system operation. |

#### 3.1.3 Connection between Battery Pack and PV HUB

The following matters should be noted before connecting the battery to the PV HUB:

|   |   |
|---|---|
| 1 | The battery pack functions properly, and the battery pack is equipped with a BMS. The BMS communication protocol has been connected in advance to the PV HUB. |
| 2 | The battery and the charge/discharge power and other parameters of the battery pack are in accordance with the parameters of the PV HUB system.               |

### 3.3 Installation and Use of the Smart Power Meter

#### 3.3.1 Parameter Description

If the smart power meter (AST-SEMS220V50) has been selected, the smart power meter needs to be installed at the location where the power grid enters the household.

The rated input voltage range of the smart power meter is AC 100 - 265V 50/60HZ. The maximum monitored current is 50A. The smart power meter AST-SEMS220V50 is a single-phase electricity meter and is not suitable for detecting three-phase electricity.

3.3.2 Installation Steps

Step 1: Incorporate the L line, N line and PE line of the electricity meter into the L line, N line and PE line of the power grid respectively.

Step 2: Insert the current transformer into the main body, confirm the current direction, and then clamp the current clamp on the L line.

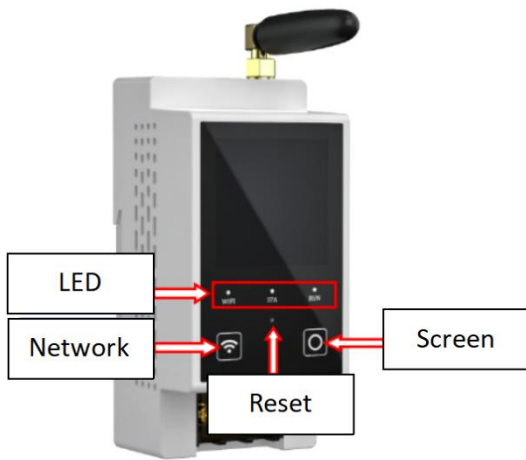


Figure 3-3-2-1 Smart Power Meter Main Body



Figure 3-3-2-2 Current Transformer

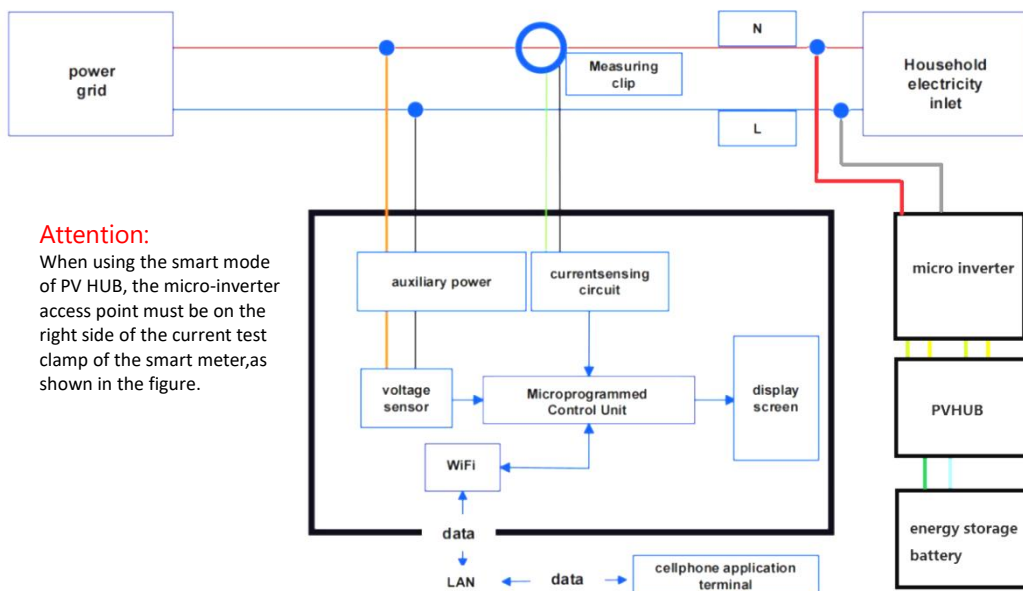


Figure 3-3-2-3 Wiring Diagram of the Smart Power Meter

### 3.3.3 Operation Instructions

Table 3-3-3 Operation Instructions of the Smart Power Meter

|   |                           |  |
|---|---------------------------|--|
| 1 | Wi-Fi LED Indicator       | Not utilized at present.   |
| 2 | STA LED Indicator         | When Wi-Fi fails to establish a successful network connection, it flashes rapidly. When Wi-Fi is networked successfully, it remains constantly on. |
| 3 | RUN LED Indicator         | It remains constantly on after the device is powered on and in operation.  |
| 4 | Network Configuration Key | Press and hold for 5 seconds to initiate reconfiguration of the network.   |
| 5 | Screen Display Key        | In the screen-off state, press the key and the screen lights up to view the power information.   |
| 6 | Reset Hole                | The reset key of the device.   |

### 3.4 System Installation Sequence

Step 1: Utilize the cables matched with the battery to connect the battery and the PV HUB.

Step 2: Firstly, connect the micro-inverter to the INV1 and INV2 ports of the PV HUB.

Step 3: Connect the grid-connected plug of the micro-inverter to the household socket.

Step 4: Connect the solar panel to the PV1 and PV2 ports of the PV HUB.

Step 5: Press the battery switch to start the system.

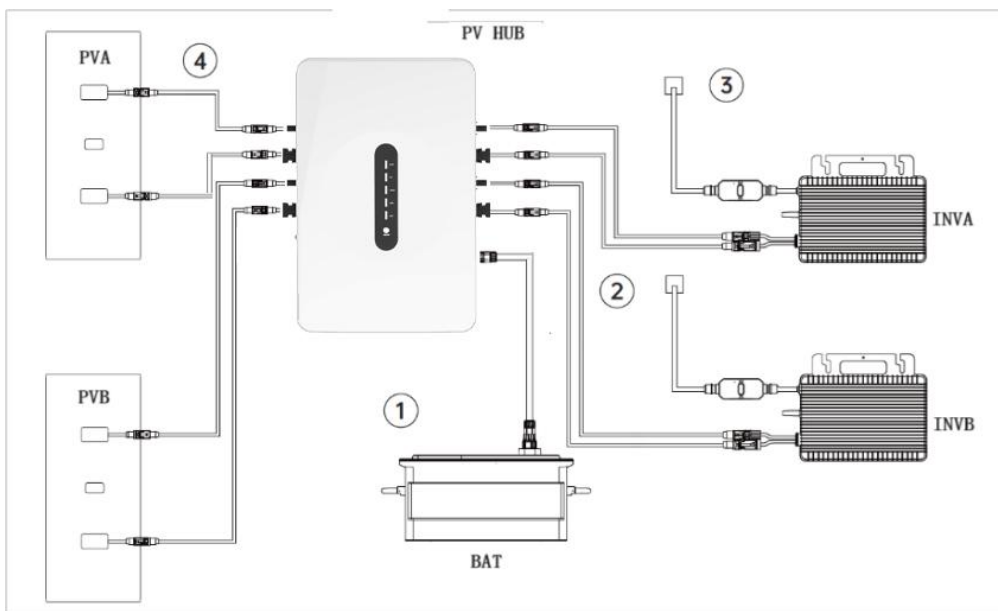


Figure 3-4 System Installation Schematic Diagram

### 3.5 System Disassembly Sequence

Step 1: Turn off the battery pack and the PV HUB (keep pressing the button on the PV HUB panel for 3 seconds or use the on-off control on the APP to turn it off).

Step 2: Disconnect from the home power grid and unplug the inverter and household appliances.

Step 3: Disconnect the solar panels and unplug the cables of the two solar panels and the PV HUB.

Step 4: Disconnect the battery and unplug the cable connecting the battery pack and the PV HUB.

Step 5: Disconnect the micro-inverter and unplug the cable connecting the micro-inverter and the PV HUB.

**Tips:** Please take good care of all components for re-installation if necessary.

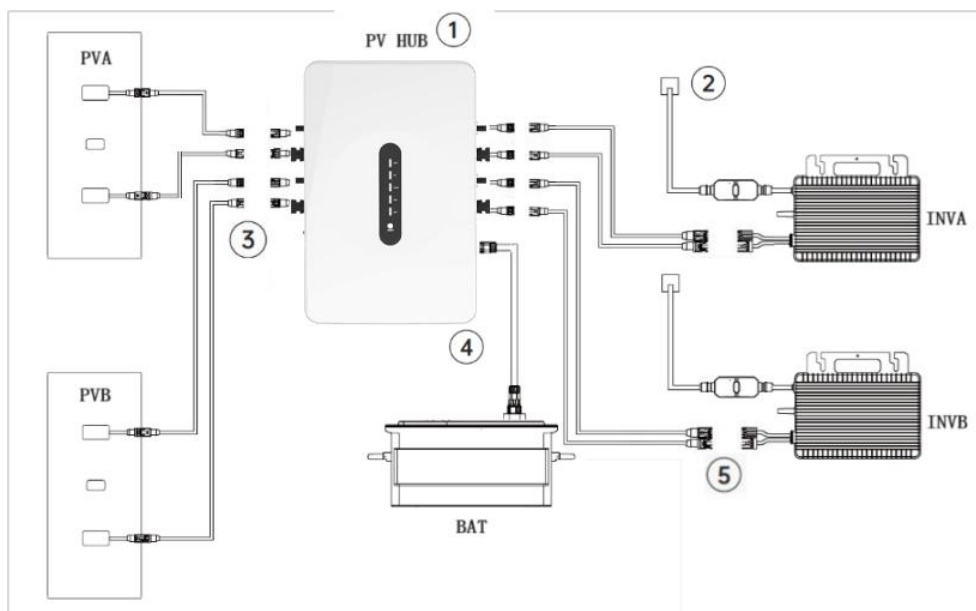


Figure 3-5 System Disassembly Schematic Diagram

## Chapter 4 System Operation Instructions

### 4.1 System Startup

1. When the device is powered on for the first time or re-run, if the battery is connected normally, it will immediately enter the self-check state. If the battery connection is not detected within one minute, the electrical energy of the PV will be bypassed and output to the micro-inverter.
2. After entering the self-check state, the equipment will detect the connection status of the PV and the micro-inverter, as well as the maximum power of the micro-inverter. Please ensure the normal grid connection of the micro-inverter. The self-check time is approximately up to 8 minutes.
3. After the self-check is completed, it operates normally according to the battery power and working mode.
4. At 9:30 am and 21:30 every day, the device suspends charging and discharging and detects the connection status of the PV for approximately 15 seconds. After the detection is completed, it resumes the operating state before the suspension.

### 4.2 Mode Description

#### 4.2.1 Charge priority mode

When the user selects the charging priority mode, it is necessary to set the discharge time period and discharge power.

(1) When the current time is not within the discharge time period range, or when no micro-inverter is detected during self-inspection:

- If the battery power is lower than a certain threshold (default is 95%), the device will turn off the INV output. The single-channel charging limit of charging power is 800W, and the total power limit is 1600W.
- If the battery power is higher than a certain threshold (default is 95%) but not reaching 100%, the device will turn off the INV output. The single-channel limit of charging power is 200W, and the total power limit is 200W.
- If the battery is fully charged to 100%, the PV power will be bypassed to the INV output.

(2) When the current time is within the discharge time period range and a micro-inverter is detected during self-inspection:

- The device simulates the I-V curve output of the PV panel. The open-circuit voltage is the open-circuit voltage of the PV during self-inspection. If there is no PV connected, the open-circuit voltage is defaulted to 45V. The preset power setting value is the maximum power point of the I-V curve. In this working state, the MPPT tracking function is completed by the micro-inverter.
- When the INV output power reaches the preset power, if there is surplus PV energy, the excess energy will be used to charge the battery. After the battery is fully charged, the PV will supply power to the micro-inverter entirely.
- When the PV energy is lower than the preset power, the battery will supplement the power supply until the battery power is lower than a certain threshold (default is 10%), and the battery will stop discharging.

This mode is applicable to situations where electricity needs to be concentratedly used in a certain time period, and the open-circuit voltage of the PV panel is low and the power is small. It is necessary to charge first and then discharge.

#### 4.2.2 Discharge priority mode

When the user selects the discharge priority mode, only the power that needs to be discharged needs to be set.

- The device simulates the I-V curve output of the PV panel. The open-circuit voltage is the open-circuit voltage of the PV during self-inspection. If there is no PV connected, the open-circuit voltage is defaulted to 45V. The preset power setting value is the maximum power point of the I-V curve. In this working state, the MPPT tracking function is completed by the micro-inverter.
- When the INV output power reaches the preset power, if there is surplus PV energy, the excess energy will be used to charge the battery. After the battery is fully charged, the PV will supply power to the micro-inverter entirely.
- When the PV energy is lower than the preset power, the battery will supplement the power supply until the battery power is lower than a certain threshold (default is 10%), and the battery will stop discharging.

This mode is suitable for use when the PV panel has strong capacity and the micro-inverter cannot completely use up the PV energy.

#### 4.2.3 Smart mode

The smart mode requires the use of a smart power meter, and the compatible model is MS-SM220V50. The smart power meter serves as a sub-device of the PV HUB.

When the user adds this sub-device in the APP, the smart mode can be selected in the APP.

- In the smart mode, the user does not need to set the discharge power and discharge time.
- The output power of the micro-inverter can be adjusted by real-time detection of the household electricity consumption power through the smart power meter to reduce the grid power to 0W.

This mode is suitable for families that have the conditions to install a smart power meter.

### 4.3 Device Status Description

Table 4-3 Device Status Description

| Status      | Description   |
|-------------|---|
| Standby     | device stops charging and discharging.  |
| Self-check  | The device detects battery, PV and micro-inverter connection status and the micro-inverter's maximum power. Self-check time is affected by micro-inverter grid connection speed, max 8 minutes.   |
| Running     | 1.Without micro-inverter connection, device turns off output. If no PV connection, waits for PV. With PV connection, charges battery until full.<br>2.With micro-inverter connection, works as configured. Micro-inverter's grid-connected power doesn't exceed max power during self-check.  |
| Low battery | When the battery power is lower than the low battery threshold (default is 10% power), it enters a low battery state. In the low battery state, the device stops discharging the battery. If the PV input power is lower than the power demand at this time, the output will be bypassed to INV. If the PV input power is higher than the power demand at this time, after about one minute, the excess PV energy will be used to charge the battery. When the battery power is lower than the ultra-low battery level (default is 5% power), the output will be turned off. All the energy of PV will be used for charging until it reaches 10%. |
| Calibration | When detecting large deviation between battery power and actual SOC, enters calibration state. Turns off micro-inverter and charges battery first. Exits automatically when fully charged. User can restart on APP to exit actively.  |
| Fault       | When detecting sudden battery disconnection or abnormal PV connection, enters fault state. Shut down and restart after normal connection is restored.   |

### 4.4 Indicator Light Signal

The PV HUB is equipped with 5 LED indicators to indicate the current operating status of the PV HUB. The definitions of the indicators are presented in the table below:

Table 4-4 Indicators on the PV HUB

| Indicator | Status   | Description               | Solution  |
|-----------|----------|---------------------------|---|
| ALM       | light up | System failure/Protection | First, turn off the device operation and then turn it on again to see if it can be restored. If it cannot be restored, power off the system and restart it. If the restart fails to restore, please contact the after-sales technical |

|       |                 |  |  |
|-------|-----------------|--|--|
|       |                 |  | support.   |
|       | slow flashing   | Alarm  | Under normal circumstances, the device will recover automatically. If the device fails to recover automatically, first turn off the device operation and then turn it on again, and it can return to normal. |
|       | light off       | The total input power of PV is less than 30W, or the total input current is less than 1A.        |  |
| PV    | light up        | The total input power of PV is greater than 30W, and the total input current is greater than 1A. |  |
|       | slow flashing   | PV is in self-check  |  |
|       | light off       | No PV charging power   |  |
| LOAD  | light up        | The total output power of INV is greater than 20W.   |  |
|       | slow flashing   | The micro-inverter is in self-check  |  |
|       | light off       | The total output power of INV is less than 20W.  |  |
| Wi-Fi | light up        | The device is successfully configured with the network.  |  |
|       | slow flashing   | The device is not connected to the network and is in STA mode.                                   |  |
|       | double flashing | The device is not connected to the network and is in AP mode.                                    |  |
| BAT   | light up        | The battery is normally connected.   |  |
|       | light off       | The battery is not connected.  |  |
| RUN   | light up        | Power supply is normal.  |  |
|       | light off       | Power off  |  |

#### 4.5 Button Control

The PV HUB features a control button. Different triggering methods can yield diverse control effects. The specific definitions are presented in the table below:

Table 4-5 Button Functions

| button       | control mode                            | description  |
|--------------|---|--|
| power button | Press and hold for 3 seconds or more    | Device power on/off  |
|              | Press consecutively for 5 times or more | Clear Wi-Fi network configuration  |
|              | Press consecutively for 3 times or more | Switch Wi-Fi network configuration mode (effective in the unconfigured network mode) |

#### 4.6 Status Information

The PV HUB periodically reports the status information of the system operation to the APP, including the operation status information of the device itself, the photovoltaic power generation module, the household power supply module and the battery pack module. Refer to the table below for details:

Table 4-6 List of Status Information Submitted by PV HUB

| module                        | status messages                        | unit |
|-------------------------------|--|------|
| photovoltaic power generation | PV1 voltage                            | V    |
|                               | PV1 current                            | A    |
|                               | PV1 power                              | W    |
|                               | PV2 voltage                            | V    |
|                               | PV2 current                            | A    |
|                               | PV2 power                              | W    |
|                               | Total PV power                         | W    |
| home power supply             | INV1 voltage                           | V    |
|                               | INV1 current                           | A    |
|                               | INV1 power                             | W    |
|                               | INV2 voltage                           | V    |
|                               | INV2 current                           | A    |
|                               | INV2 power                             | W    |
|                               | Total INV power                        | W    |
| battery pack                  | battery voltage                        | V    |
|                               | Battery current                        | A    |
|                               | Battery charging and discharging power | W    |
|                               | Battery capacity                       | %    |
| device                        | device switch                          | --   |
|                               | device temperature                     | °C   |



|  |              |    |
|--|--------------|----|
|  | device alarm | -- |
|--|--------------|----|

#### 4.7 Alarm Threshold

Table 4-7 PV HUB preset protection alarm parameter list

| alarm type                           | trigger condition | Protection action                  | recovery condition  | alarm delay (100ms) |
|--------------------------------------|-------------------|------------------------------------|---|---------------------|
| battery overvoltage                  | > 58V             | shut down charging                 | < 57V   | 10                  |
| battery undervoltage                 | < 48V             | shut down discharge                | > 49V   | 10                  |
| PV overvoltage                       | > 60V             | shut down charging and discharging | < 58V   | 10                  |
| environmental overheating            | > 65°C            | shut down charging and discharging | < 63°C  | 10                  |
| battery overvoltage protection       | > 60V             | shut down charging and discharging | < 60V   | /                   |
| battery short-circuit protection     | > 66A             | shut down charging and discharging | Non-recoverable   | /                   |
| DCDC inductor overcurrent protection | > 46A             | shut down charging and discharging | Non-recoverable   | /                   |
| output overcurrent protection        | > 78A             | shut down discharge                | Automatically recover after 1ms. If triggered 3 times within 10ms, it cannot be recovered again | /                   |

#### 4.8 Power Derating

When the device temperature exceeds 75°C, the output of the PV HUB to the micro-inverter side begins to reduce power. The power derating curve is as shown in the following figure.

When the device temperature is higher than 80°C, to protect the equipment, the PV HUB will shut down charging and discharging until the temperature drops to 75°C before recovering.

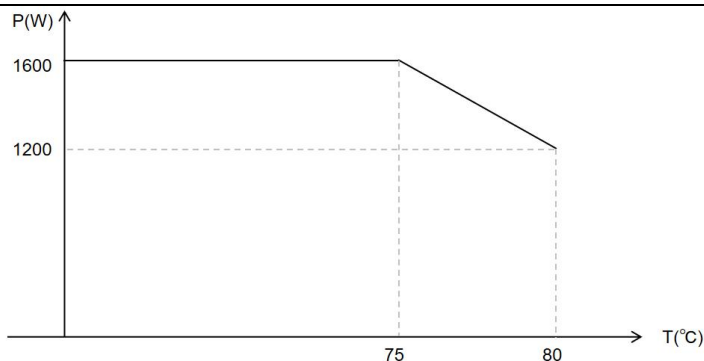


Figure 4-8 Power Derating Curve Graph

## Chapter 5 APP User Manual

### 5.1 Download and Installation of the APP

#### 5.1.1 Download Methods

The download the SOLAR EMS APP from apple store or google play, please refer to the following table.

#### 5.1.2 Installation

After the download is completed, click "Install". Then open the APP. On the startup interface, two connection modes will be presented for your selection:

##### **Wi-Fi Mode:**

Suitable for usage in homes equipped with Wi-Fi. In this mode, it can be shared among multiple family members to jointly view the operating status of the device.

##### **AP Mode:**

When there is no Wi-Fi in the home, the Wi-Fi module within the device can serve as an AP hotspot for direct connection to the mobile phone. Users can connect to the device via this mode to view the operating status.

In this mode, only one mobile phone can be connected.

The system is set to Wi-Fi mode by default. If the AP mode needs to be selected, please clear the network configuration of the device and configure it to AP mode through the button.

Regarding how to clear the network configuration and switch the network configuration mode via the button, please refer to Section 2.3 - Indicator Signal and Section 2.4 - Button Control.

### 5.2 Wi-Fi Mode

#### 5.2.1 Login / Register for an Account

- 1 . Select the "Wi-Fi Mode" to access the login interface.
- 2 . Register for a new account or log in to an existing account.
- 3 . Select the country or region.

4 . Register for an account with an email address.

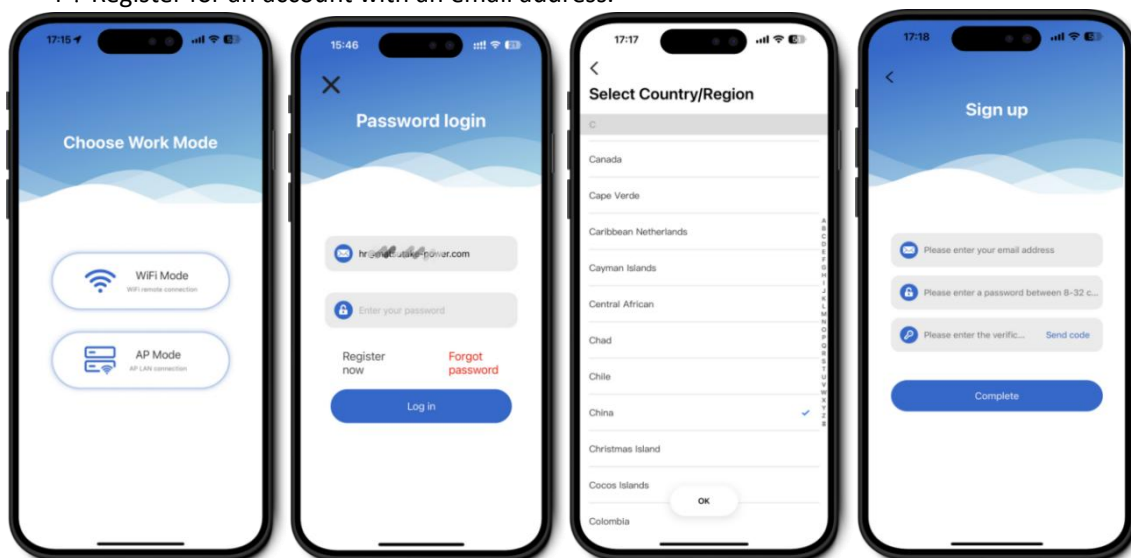


Figure 5-2-1 Login / Register for an Account

### 5.2.2 Adding the Device

Before starting to add the device, please ensure that it has been powered on normally. The operation steps for adding the device are as follows:

- 1 . Firstly, confirm that the device is powered on and operating properly. Click on "Add Device".
- 2 . The discovered devices will pop up on the page. Click the "+" to add the device.
- 3 . Wait for the successful addition of the device.
- 4 . If desired, you can rename the device.

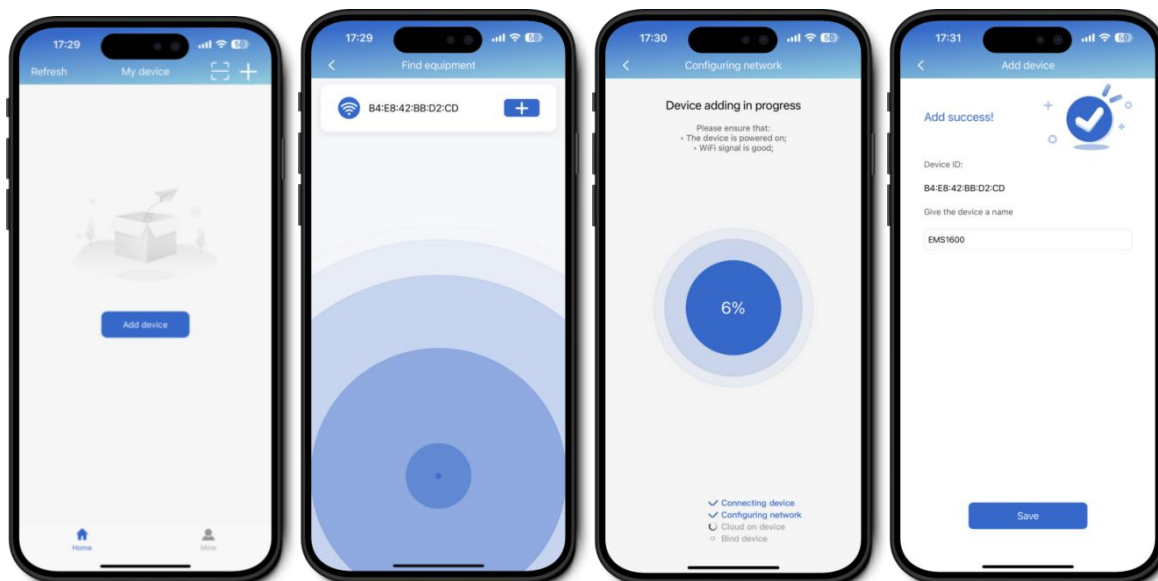


Figure 5-2-2 Adding the Device

**Notice:** If the device is not found, please verify whether the device is powered on. If the power supply is normal, you can reset the network information by pressing the button on the device five times. If the device is still not detectable, turn off the power and attempt again.

### 5.3 AP Mode

Before entering the AP mode, if the device has been networked, it is necessary to continuously short-press the button 5 times to clear the network configuration information.

Observe the status of the Wi-Fi indicator light:

If the Wi-Fi indicator light flashes slowly, it indicates that the device is currently in the Wi-Fi mode, and it is necessary to continuously short-press the button 3 more times to enter the AP mode;

If the Wi-Fi indicator light flashes twice quickly and periodically, it indicates that the device is currently already in the AP mode.

When the device is in the AP mode, the AP hotspot named SR-xxx opened by the device can be found through the mobile phone. The password is 12345678. After connecting to this Wi-Fi, return to the APP and click to select the AP mode to enter it.

### 5.4 APP Operation Interface

#### 5.4.1 Device Status Checking

1. Click on the online device to enter the "Home Page" to view the operating status and energy flow direction of the device.
2. Click "Mode" to enter the device mode setting interface. In this interface, you can view the device operating condition, operating mode and power.
3. Click "Details" to view the detailed information of each component of the device.
4. Click "Energy" to view the energy statistics situation of the device.

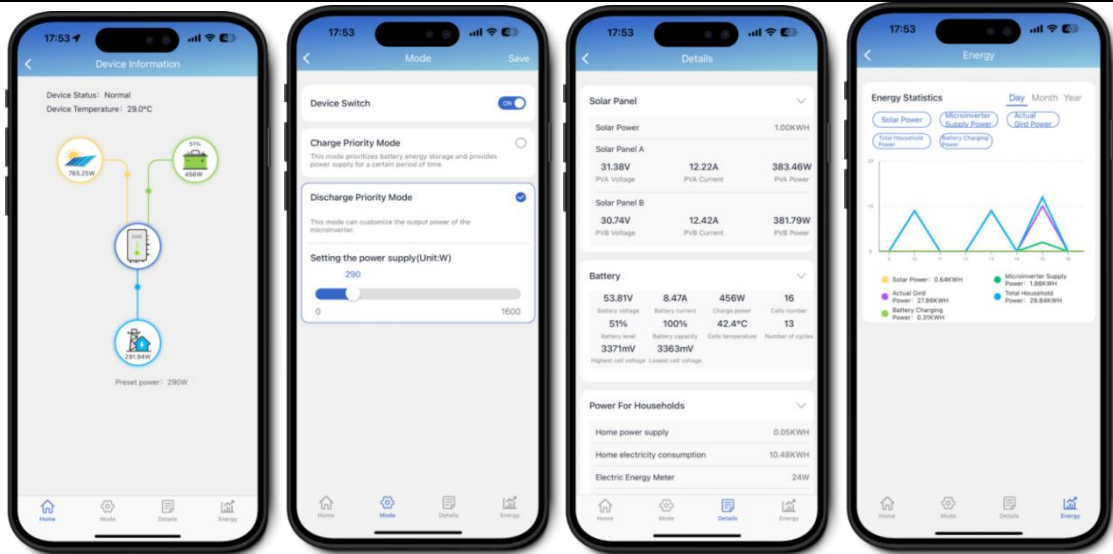


Figure 5-4-1 Device Status Checking

#### 5.4.2 Charging Priority Mode Setting

- 1 . Click the small circle on the right side of the charging priority mode to select the mode;
- 2 . Set the start time and end time of the discharge.
- 3 . Set the discharge power, click Save, and complete the settings.

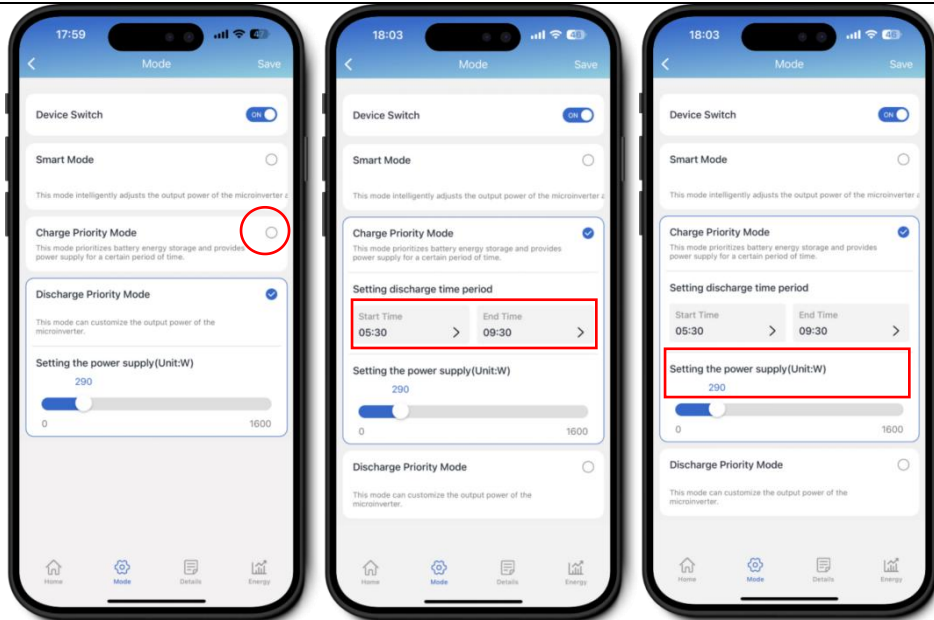


Figure 5-4-2 Charging Priority Mode Setting

#### 5.4.3 Discharge Priority Mode Setting

- 1 . Click the discharge priority mode Option to enter the discharge priority mode.
- 2 . Set the discharge power and click "Save" to complete the Settings.

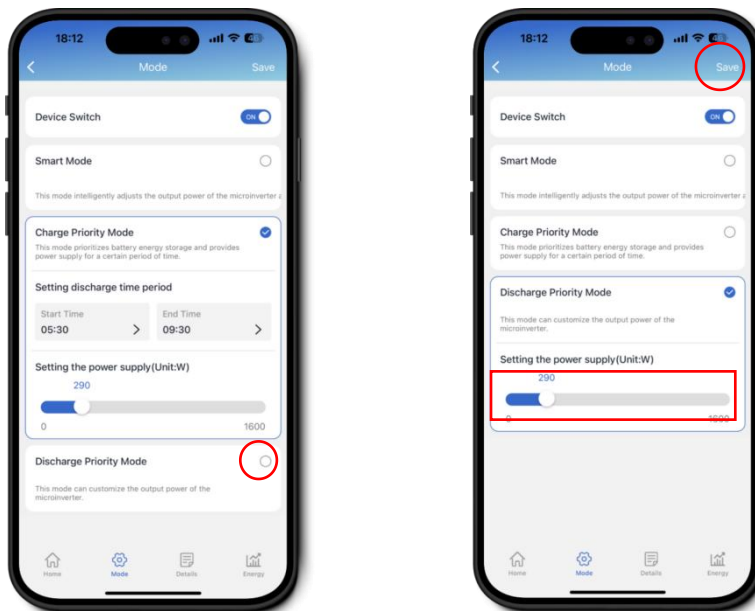


Figure 5-4-3 Discharge Priority Mode Setting

## 5.4.4 Smart Mode Setting

First, install the smart power meter correctly. Once both the smart power meter and the PV HUB are powered on, add the sub-device, namely the smart power meter, in the APP as follows:

- 1 . Long press the online device and click the popped-up option "Adding a Sub-device".
- 2 . Click the "+" sign on the right side of the sub-device's Mac address.
- 3 . Fill in the Wi-Fi information and proceed to the next step.
- 4 . Select "Smart Mode" and click "Save".

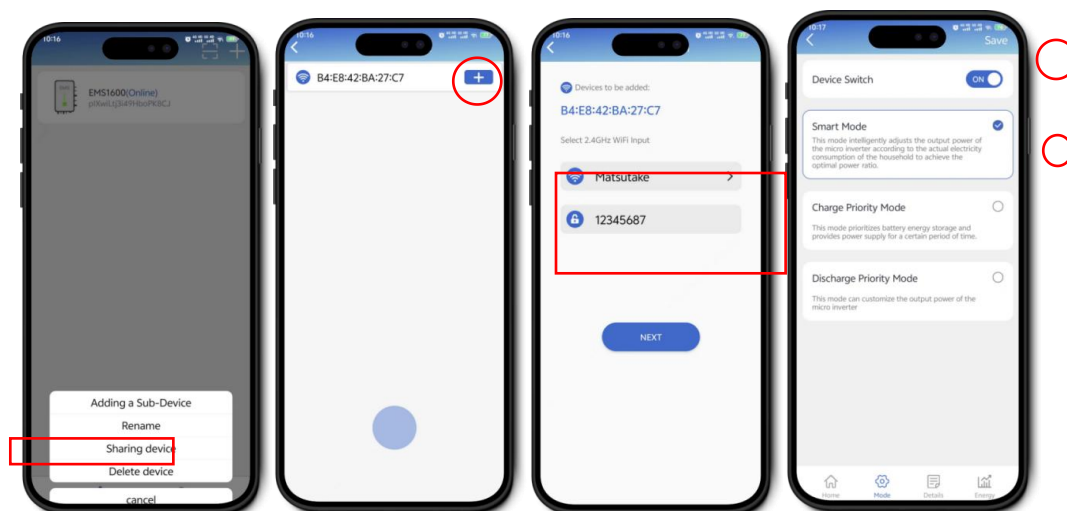


Figure 5-4-4 Smart Mode Setting

## 5.5 Device Deleting

- 1 . Press and hold the added device.
- 2 . Select "Delete Device".
- 3 . Click "OK". The device will be successfully deleted.

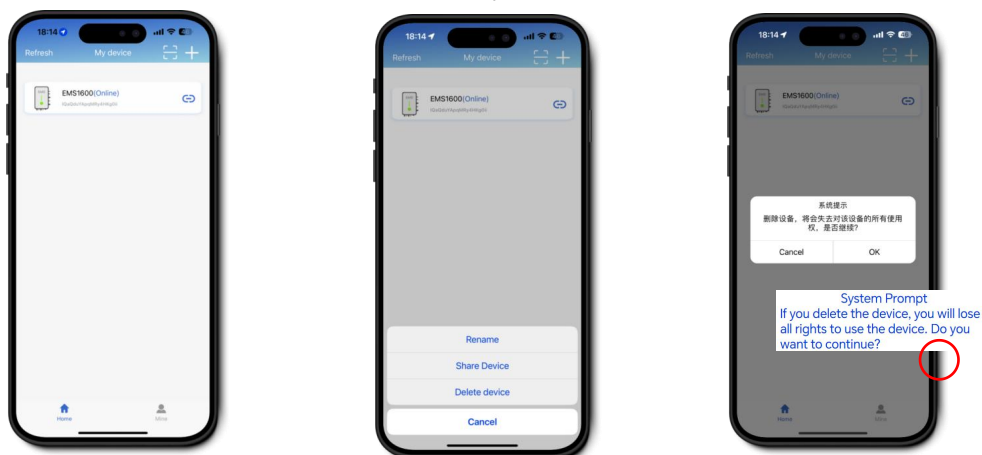


Figure 5-5 Device Deleting

## Chapter 6 Fault Resolution and Prohibited Matters

### 6.1 Fault Resolution


| Phenomenon   | Probable Cause   | Solutions   |
|--|--|---|
| Red light alarm, the micro-inverter fails to output.   | Battery short circuit protection;<br>DCDC inductor overcurrent protection;<br>Output overcurrent protection.   | Press the physical button or use the APP to turn off and restart the PV HUB. If the issue persists, please contact the after-sales technicians. |
| Unable to power on.  | Unable to start after PV connection.   | Check whether the wiring harness is properly connected.   |
| After the PV is connected, it cannot be charged and discharged, and the battery indicator light does not light up. | Poor contact of the power line, abnormal communication of the battery pack.  | Check whether the wiring harness is properly connected.   |
| After the PV is connected, it cannot be charged and discharged immediately, and the battery indicator light is on. | After PV HUB is activated, it will be in the self-checking state for 150 seconds continuously to check the connection status of the PV panel and the micro-inverter. | If the system connection is correct, wait for 150 seconds.  |
| The device is not found.   | Abnormal query of Wi-Fi device.  | Check the mobile phone network and the device to determine if it has been bound by other devices.   |

### 6.2 Prohibited Matters

| No. | Prohibited Matters   |
|-----|--|
| 1   | The input voltage at the PV terminal is strictly forbidden to exceed 60V.  |
| 2   | The voltage input at the micro-inverter terminal is strictly forbidden to exceed 60V.  |
| 3   | The four sockets at the PV terminal and the four sockets at the micro-inverter terminal must not be connected without adhering to the correct connection method. |
| 4   | Cross-connections between the PV port and the micro-inverter port are strictly prohibited.   |
| 5   | Connecting a battery with a voltage exceeding 60V to the PV HUB is strictly prohibited.  |
| 6   | Using the PV HUB in a sealed environment with a temperature exceeding 65°C is strictly prohibited.   |
| 7   | Disassembling the outer shell for operation is strictly prohibited.  |
| 8   | Short-circuit wiring between the various ports on the PV HUB is prohibited.  |



|   |   |
|---|---|
| 9 | Touching the PHUB shell with exposed high-voltage wires is strictly prohibited. |
|---|---|

 **Warning:** If the requirements in Table 6-2 are violated, it will cause damage to the PV HUB and even lead to safety accidents. Our company assumes no responsibility for the consequences resulting from the user's operation in violation of the above requirements.