

FusionSolar App

User Manual

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Contents

1 Downloading and Installing the App.....	1
2 Registering the Company's First Installer Account.....	3
3 Registering an Owner Account or Another Installer Account.....	5
4 Logging In to or Logging Out of FusionSolar App.....	7
5 I'm an Installer.....	9
5.1 Setup Wizard.....	9
5.1.1 Device Commissioning (Charger).....	9
5.1.1.1 Charger FE Port Directly Connected to a Meter.....	11
5.1.1.2 Charger FE Port Directly Connected to a Router.....	13
5.1.1.3 Charger Connected to a Router Through WLAN.....	16
5.1.1.4 Charger Using a Virtual Meter.....	19
5.1.2 Device Commissioning (PV+ESS).....	22
5.1.3 Connecting to a Plant.....	23
5.1.3.1 Connecting to a New Plant.....	24
5.1.3.2 Connecting to an Existing Plant.....	24
5.1.3.3 Connecting Devices to a Plant with Multiple Installers.....	26
5.1.4 Adding a Device.....	28
5.1.5 Setting the String Capacity.....	29
5.1.6 Setting Electricity Prices.....	29
5.1.7 Creating a Physical Location Layout.....	29
5.1.7.1 Automatically Generating a Physical Layout.....	30
5.1.7.2 Manually Creating a Physical Layout.....	32
5.1.7.3 Binding Optimizers and Inverters.....	35
5.2 Creating a User.....	35
5.3 Plant Overview.....	37
5.3.1 Viewing Status of a Charging-only Plant.....	38
5.3.2 Viewing Status of a PV+ESS+Charger Plant.....	42
5.3.3 Viewing Plant Profiles.....	44
5.3.4 Viewing EMMA Revenue and Energy Forecast.....	45
5.3.5 Optimizer Disconnection Detection.....	45
5.4 O&M Management.....	46
5.4.1 Monitoring Alarm Information.....	46

5.4.2 Mobile O&M.....	48
5.4.2.1 Defect Elimination.....	48
5.4.2.2 Inspection Management.....	50
5.5 Device Management.....	54
5.6 Customer Service Chatbot.....	55
5.7 Log Export.....	55
6 I'm an Owner.....	57
6.1 Viewing the PV Plant Status.....	59
6.2 Viewing the Battery Running Status.....	61
6.3 Using a Charger.....	61
6.3.1 Starting and Stopping Charging on the App.....	62
6.3.2 Start Charging Through Authentication via Bluetooth.....	63
6.3.3 Starting and Stopping Charging Using an RFID Card.....	63
6.3.4 Plug-and-Play Charging.....	64
6.3.5 Scheduled Charging.....	65
6.3.6 Settings.....	67
6.4 Managing Devices.....	69
6.5 Managing Plants.....	73
6.6 Enabling EMMA.....	76
6.7 Processing a Plant Migration Task.....	79
6.8 Processing an Upgrade Task.....	80
6.9 Customer Service Chatbot.....	81
6.10 Log Export.....	81
7 Device Commissioning.....	83
8 Account Security Settings.....	84
8.1 Verifying an Email Address.....	84
8.2 Changing Personal Passwords.....	85
8.3 Modifying Personal Information.....	86
9 FAQs.....	88
9.1 Resetting a Password Using the Associated Email Address.....	88
9.2 Resetting a User Password.....	89
9.3 Troubleshooting the No Data Fault After a User Logs In to App.....	90
9.4 Handling a Network Exception When a User Logs In to App.....	91
9.5 How Do I Reset the Default Password of a Charger Using an RFID Card When I Forgot the Password?	91
9.6 How Do I Connect to a Charger When I Cannot Log In to the FusionSolar App Due to Poor Network Connection?.....	92
9.7 What Should I Do If the Charging Connector Cannot Be Removed From the Charger?.....	93
9.8 What Should I Do If the App Cannot Identity the Charger?.....	94
9.9 Upgrading the Charger Software Version.....	94
9.10 What Should I Do If the Upgrade Package Obtained from an iPhone Cannot Be Selected on the Upgrade Screen?.....	95

9.11 What Should I Do If an Offline or Faulty Charger Is Displayed in the Plant After the Charger Is Replaced?.....	97
9.12 Why Is the Charger Displayed as Offline in the Management System after Factory Settings Are Restored?.....	98
9.13 Why Is the Pairing Request Displayed Twice During Bluetooth Pairing?.....	101
9.14 How Do I Obtain a Registration Code?.....	101
9.15 What Should I Do If My Android Phone Fails to Connect to the WLAN After I Scan the QR Code?.	101
9.16 Obtaining a Physical Layout Template.....	102
9.17 How Do I Invite a User to Register a FusionSolar Account?.....	103
9.18 How Do I Register a FusionSolar Account?.....	106
9.19 How Do I Add or Delete an RFID Card?.....	106
9.20 What Can I Do If the System Prompts Me to Reconnect to the Charger's WLAN Hotspot During Quick Settings?.....	109
10 Related Information.....	110
10.1 Charger Indicator Status.....	110
10.2 PV Power Generation Offsetting Carbon Emissions.....	112
10.3 Battery Parameters.....	115
10.4 Environment Parameters.....	116
10.5 Power Parameters.....	117
10.6 Commercial Smart Inverters Parameters.....	126
10.6.1 Grid parameters.....	127
10.6.2 Protection Parameters.....	128
10.6.3 Feature parameters.....	132
10.6.4 Power adjustment parameters.....	143
10.6.5 Grid-tied control parameters.....	149
10.7 Domain Name List of Management Systems.....	150
10.8 Public URLs.....	152

1 Downloading and Installing the App

NOTICE

- Mobile phone operating system: Android 8.0, iOS 11.0, or later versions.
- To ensure the stability of each function, you are advised to use mobile phones running Android 8.0, iOS 13.0, or later versions. (For the mobile phones running iOS, iPhone 6 and later versions are supported, but iPhone SE is not supported.)
- Use mobile phones that support the access to the Internet.
- Use mobile phones that support the WLAN function.
- The router supports WLAN (IEEE 802.11 b/g/n, 2.4 GHz) and the WLAN signal reaches the inverters.
- The WPA, WPA2, or WPA/WPA2 encryption mode is recommended for routers. The Enterprise mode is not supported (such as airport WLAN and other public hotspots that require authentication). WEP and WPA TKIP are not recommended because they have serious security vulnerabilities. If the access fails in WEP mode, log in to the router and change the encryption mode of the router to WPA2 or WPA/WPA2.

Procedure

Method 1: Download and install the app from the app store.

- Huawei mobile phone users: Search for **FusionSolar** in Huawei AppGallery.
- iPhone users: Search for **FusionSolar** in the App Store.
- Other mobile phone users: Select method 2.



Method 2: Scan the QR code to download and install the app.



 NOTE

Users who select method 2 can select the download method based on the mobile phone type.

- Huawei mobile phone users: Download from Huawei AppGallery.
- Non-Huawei phone users: Download on a browser.

When you select **Download via the Browser**, if a security warning message is displayed indicating that the app is from an external source, tap **ALLOW**.

2 Registering the Company's First Installer Account

An installer account is required for device deployment and commissioning. If you do not have an installer account of the FusionSolar Smart PV Management System (SmartPVMS) or FusionSolar app, perform the following steps to register an account.

Intended Audience

Installers who have not registered a company with the FusionSolar SmartPVMS or FusionSolar app.

Owners who commission chargers by themselves.

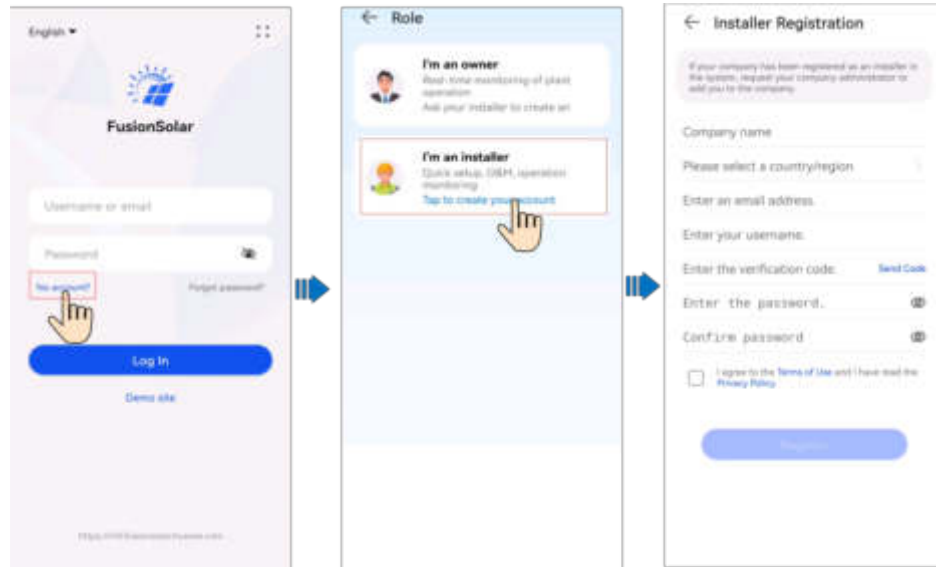
NOTE

If your company has registered an account, contact the administrator to add you to the company.

Procedure

1. Tap **No account?** in the lower part of the FusionSolar app login screen.
2. On the **Role** screen, tap **I'm an installer** and register an account as prompted.

After the account is registered, you can log in to the FusionSolar app with the registered username and password.

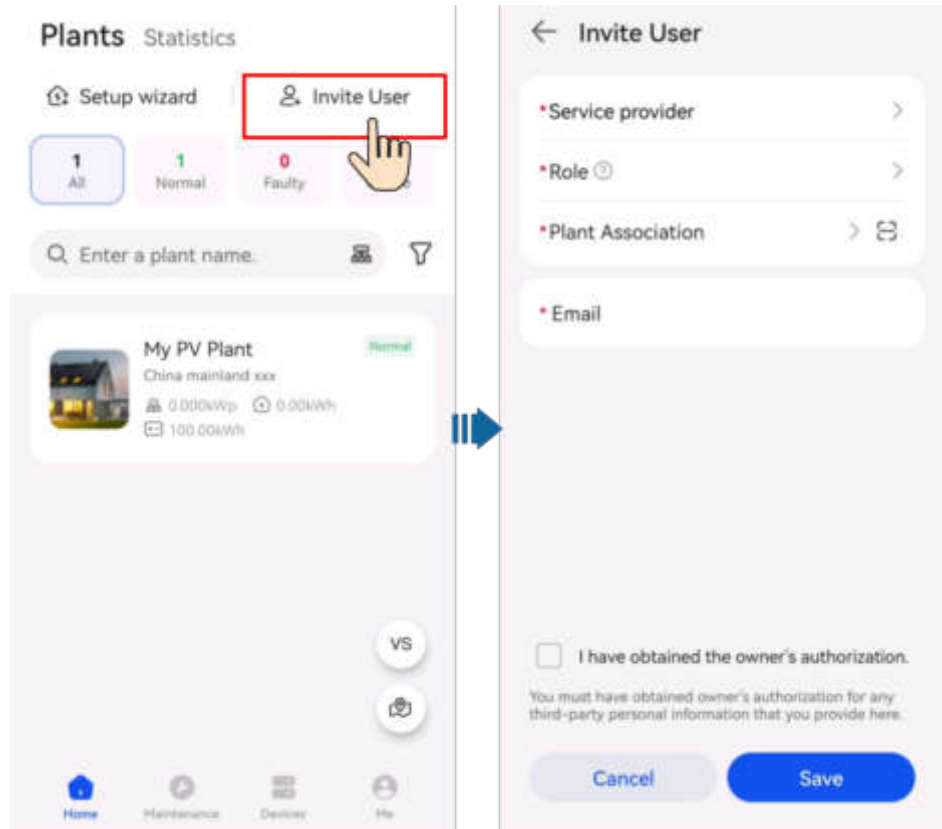


3 Registering an Owner Account or Another Installer Account

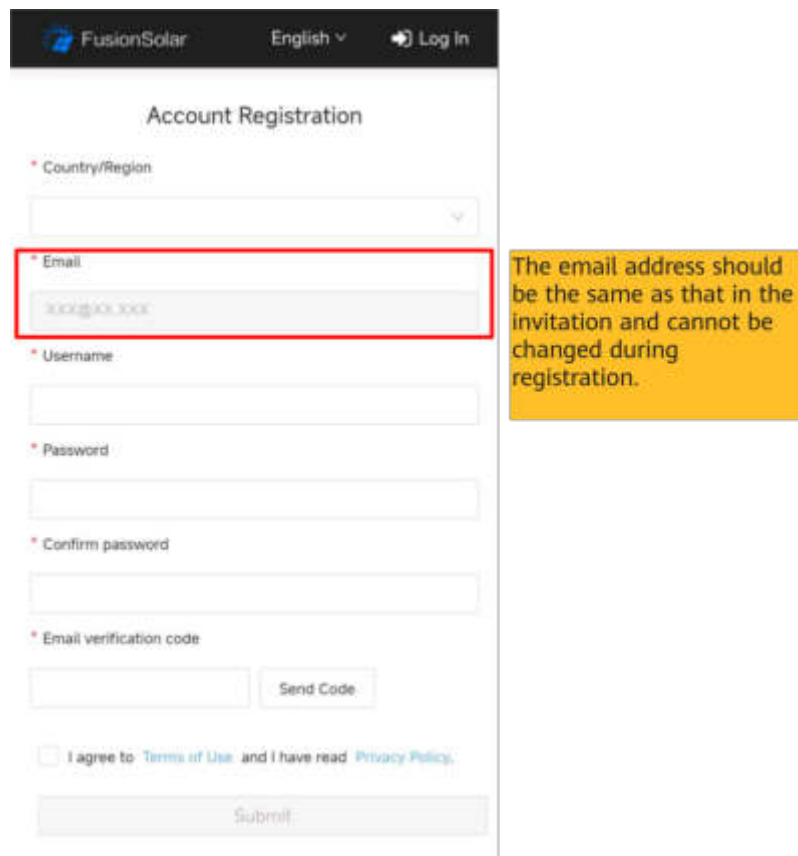
- If self-service registration is not supported in your region, your installer needs to **create an account** for you and bind a plant. After the account is created, the system will send you the username and initial password by email.
- If self-service registration is supported in your region, your installer needs to initiate an **invitation**. After receiving an invitation email from the installer, you can **register an account** on the registration screen according to the instructions.

After the account is registered, you can log in to the FusionSolar app with the registered username and password.

1. Invite a user.



2. Register an account.

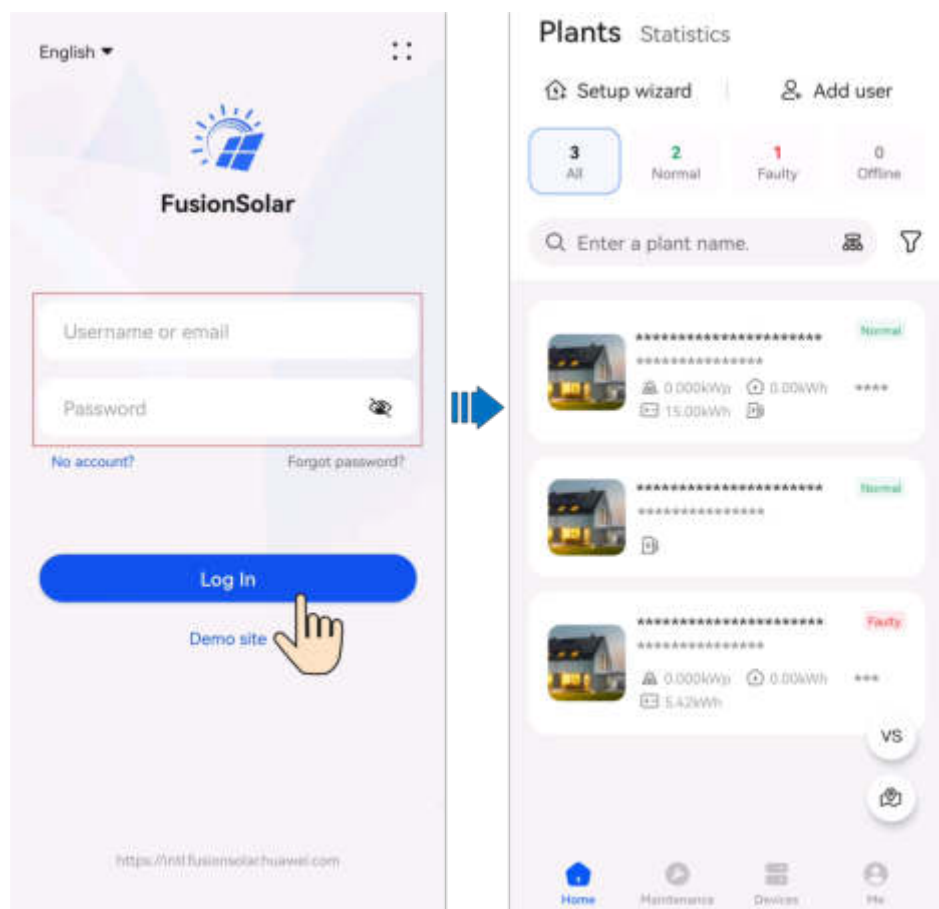


4 Logging In to or Logging Out of FusionSolar App

After the app is correctly installed on a mobile phone, you can access the management system through the app.

Logging In to the App

1. On the mobile device, tap the app icon to access the login screen.
2. On the app login screen, enter the account and password and tap **Log In**.



 **NOTE**

- If a new user logs in to the app for the first time or a user logs in to the app for the first time after the password is reset, change the login password as prompted.
- If a user enters incorrect passwords for five consecutive times within 5 minutes, the account will be locked for 30 minutes. The user can log in again after the lockout period expires or contact the installer or administrator to unlock the account.

Logging Out of the App

1. On the home screen, tap **Me**.
2. On the **Me** screen, tap **Settings** > **Log out**.

5 I'm an Installer

An installer can perform wizard-based commissioning and plant creation on the FusionSolar app, and monitor the overall running status of the plants. If a device is faulty, the installer can perform maintenance on the app to rectify the fault.

5.1 Setup Wizard

After devices are installed and commissioned, you can create a plant and configure basic information on the FusionSolar app to implement unified device monitoring and O&M.

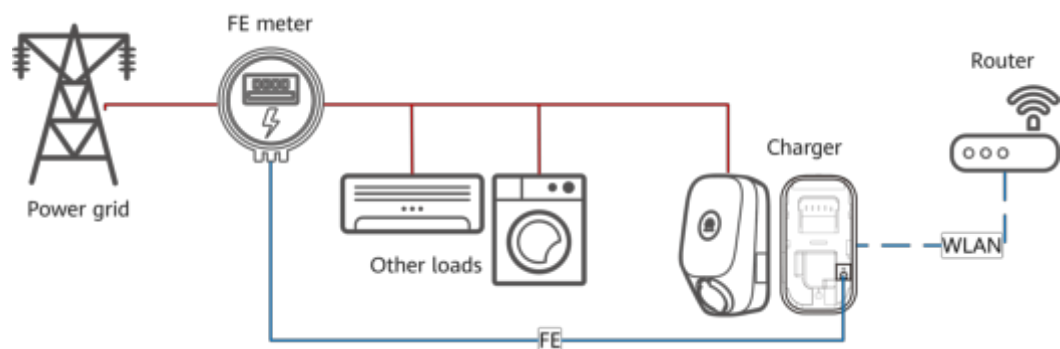
5.1.1 Device Commissioning (Charger)

NOTE

6.23.00.157 and later versions support chargers and new functions. Update the app to the latest version before connecting to chargers.

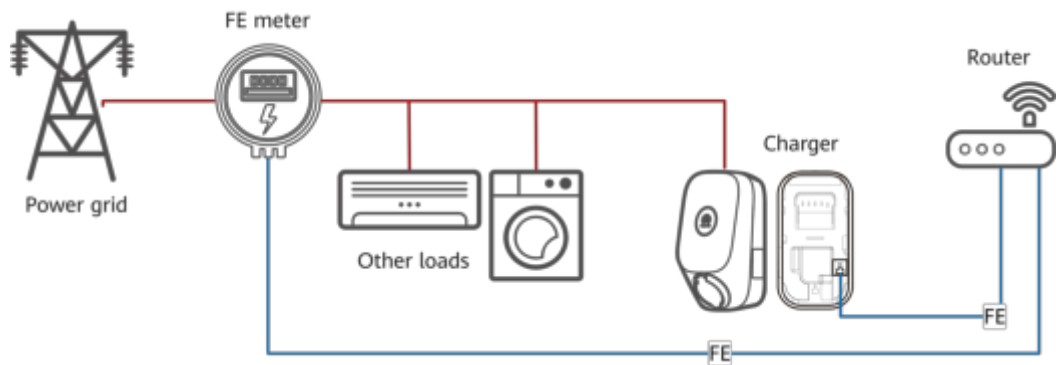
The chargers can implement dynamic power by connecting to the DTSU666-FE meter or the WLAN/FE Smart Dongle in the PV system through virtual meter networking to obtain RS485 meter detection data. Perform commissioning based on the actual networking scenarios of chargers, meters, and routers.

Figure 5-1 Charger FE port directly connected to a meter



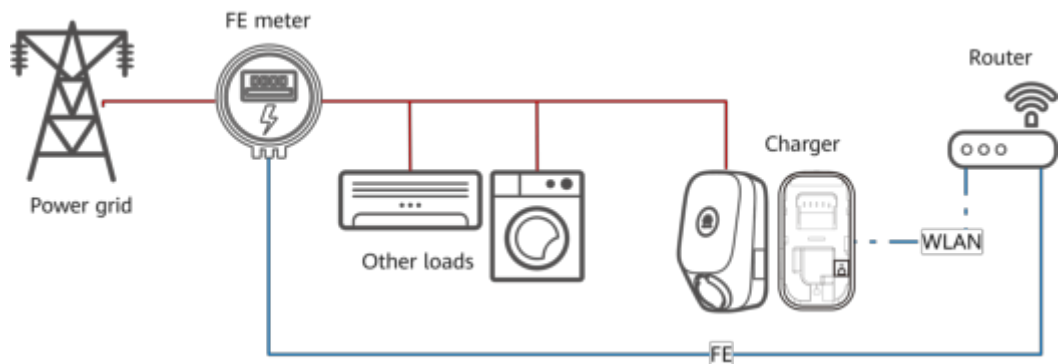
For details about the commissioning procedure, see [5.1.1.1 Charger FE Port Directly Connected to a Meter](#).

Figure 5-2 Charger FE port directly connected to a router



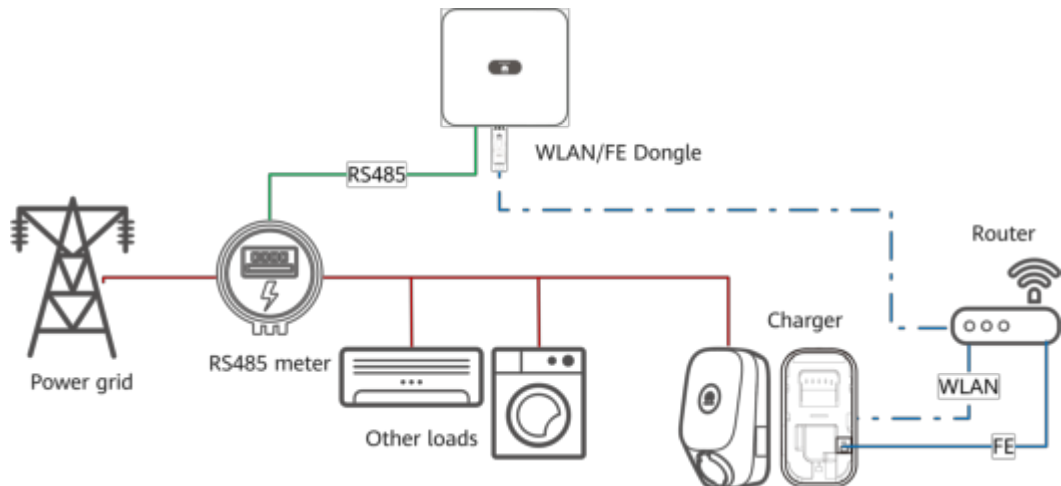
For details about the commissioning procedure, see [5.1.1.2 Charger FE Port Directly Connected to a Router](#).

Figure 5-3 Charger connected to a router through WLAN



For details about the commissioning procedure, see [5.1.1.3 Charger Connected to a Router Through WLAN](#).

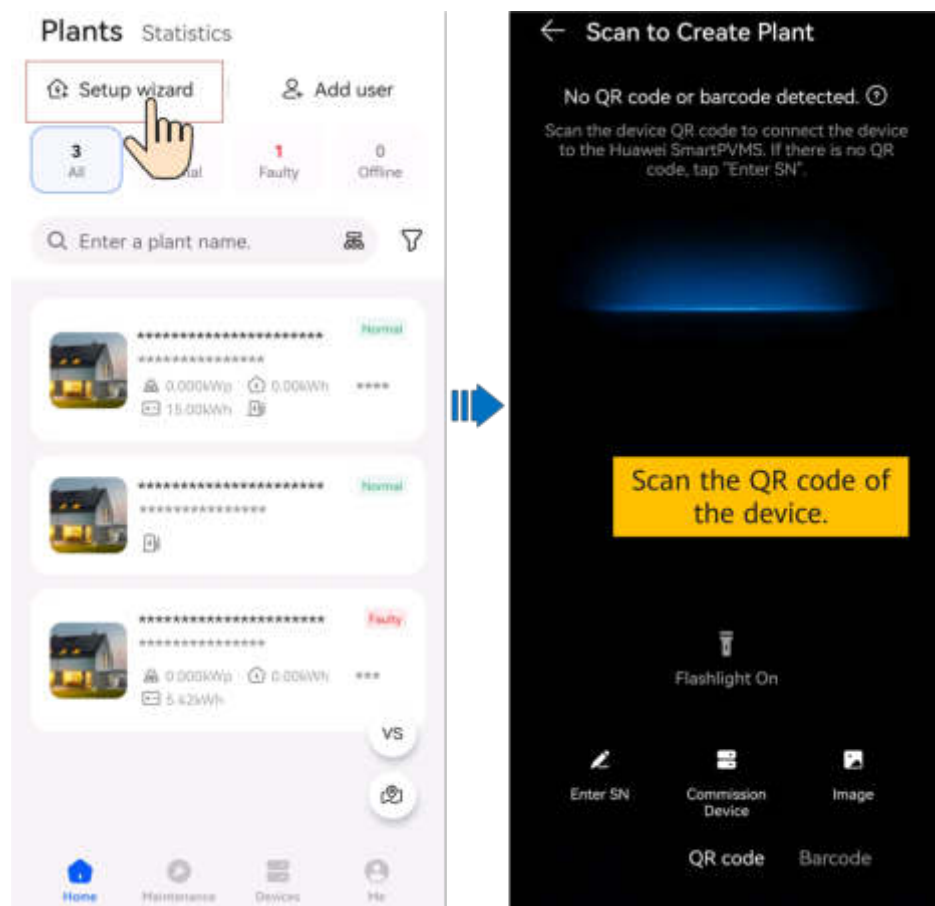
Figure 5-4 Charger using a virtual meter



For details about the commissioning procedure, see [5.1.1.4 Charger Using a Virtual Meter](#).

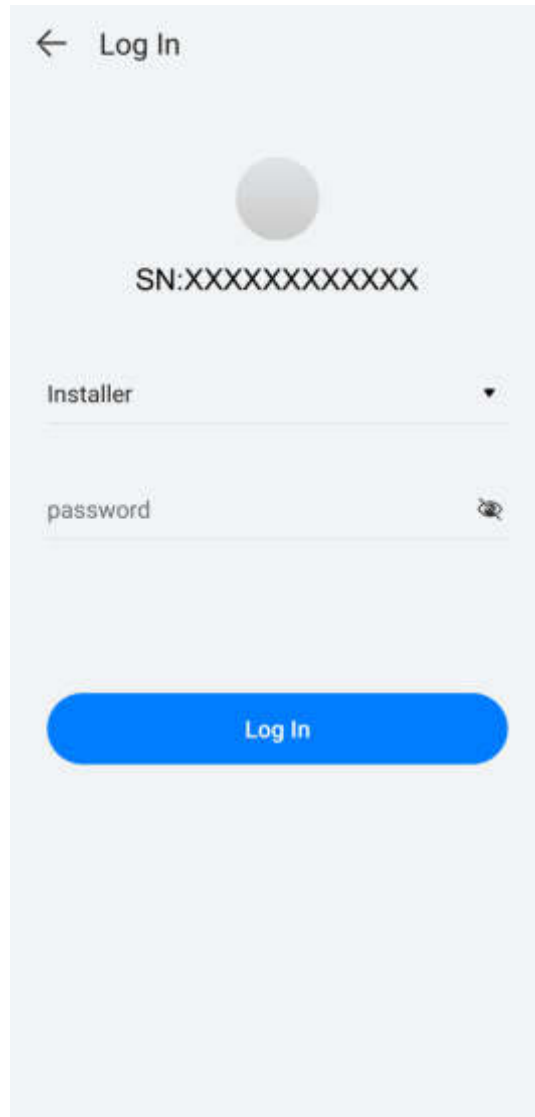
5.1.1.1 Charger FE Port Directly Connected to a Meter

1. Log in to the FusionSolar app as an installer, tap **Setup wizard** on the **Home** screen, scan the QR code of the device, and follow the instructions to connect to the WLAN.



NOTE

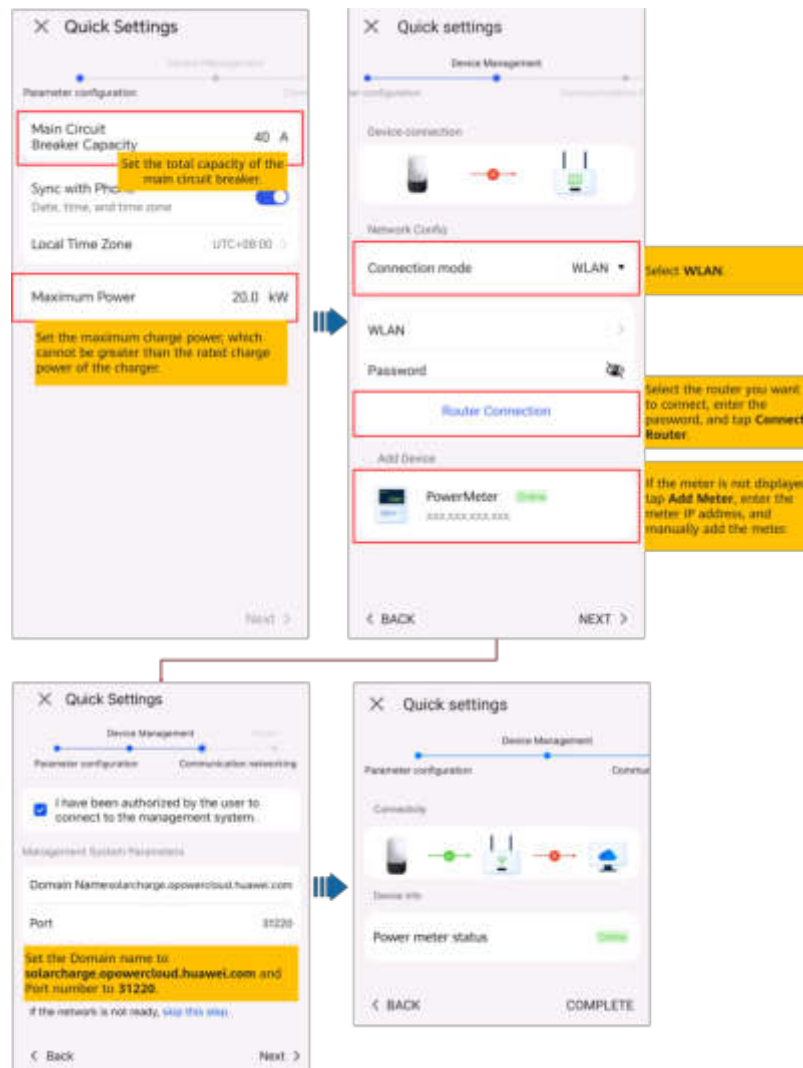
- The last six digits of the product WLAN name are the same as the last six digits of the product SN.
 - Use the initial password to log in for the first time and change the password as prompted. To ensure account security, protect the password by changing it periodically, and keep it secure. Your password might be stolen or cracked if it is left unchanged for extended periods. If a password is lost, devices cannot be accessed. In these cases, the Company shall not be liable for any loss.
 - If the login screen is not displayed after you scan the QR code, check whether the device is correctly connected to the WLAN network. If not, manually select and connect to the WLAN network and tap **Next**.
 - If the **This WLAN network has no Internet access. Connect anyway?** message is displayed when you connect to the device WLAN, tap **CONNECT**. Otherwise, you cannot log in to the system. The actual UI and messages may vary with mobile phones.
2. Log in to the app as an **Installer**.



 **NOTE**

For the first login, the initial password is **Changeme**. If the system prompts you to set a password, set the login password as prompted.

3. Commission the device according to the wizard procedure.

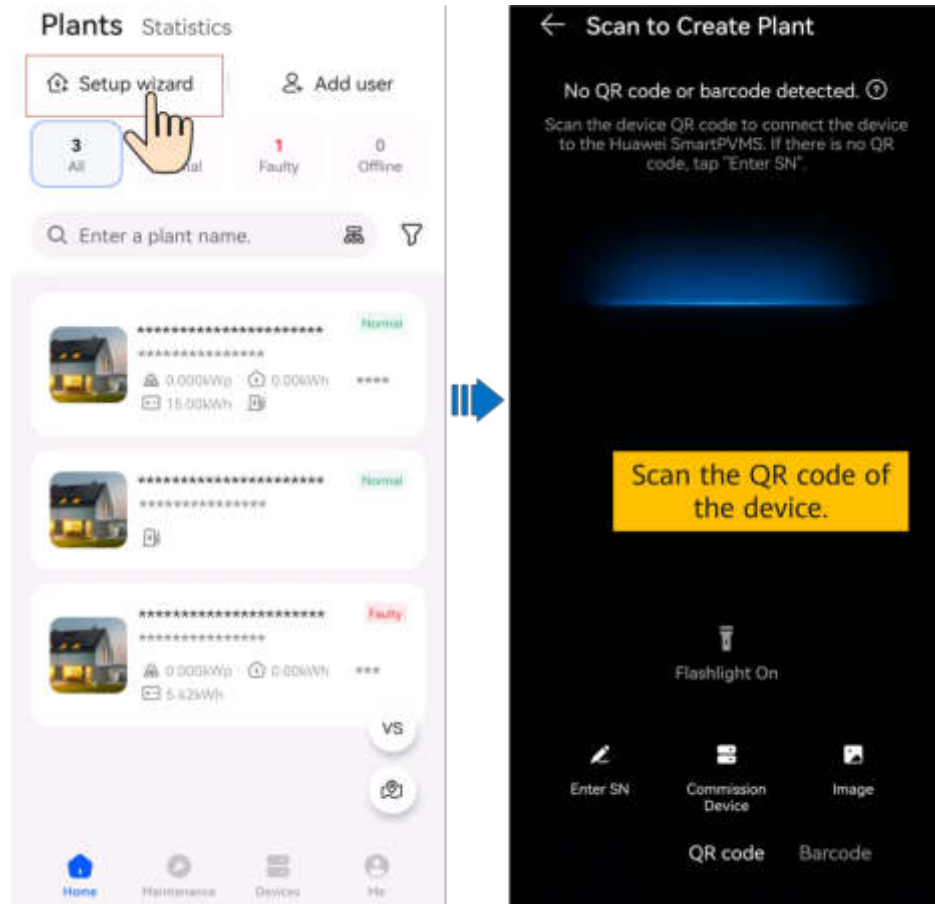


NOTE

Set the capacity of the main circuit breaker based on site requirements. If the set value is greater than the actual capacity, the circuit breaker trips due to overcurrent. If the set value is less than the actual capacity, the charger cannot work.

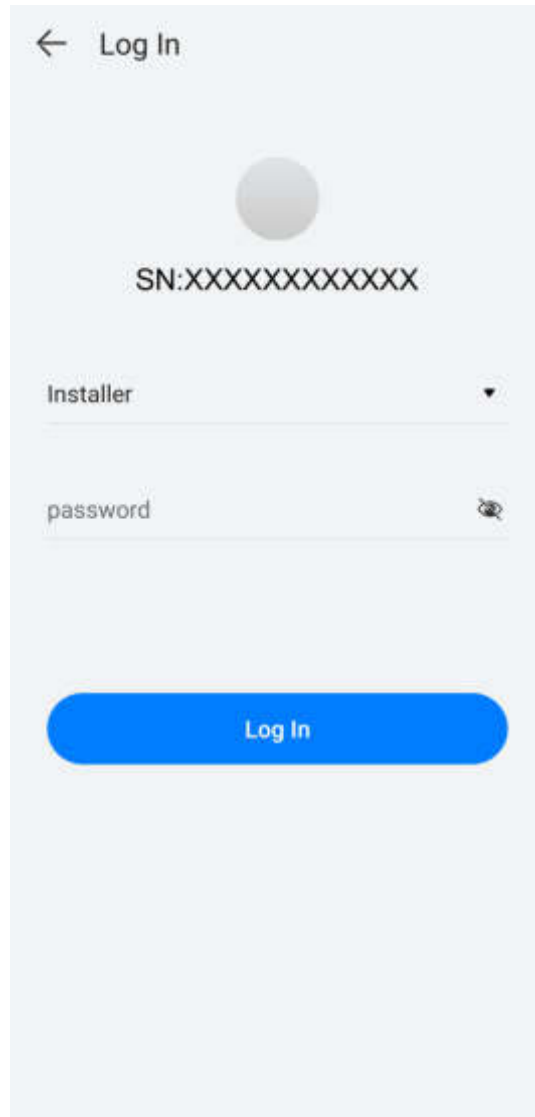
5.1.1.2 Charger FE Port Directly Connected to a Router

1. Log in to the FusionSolar app as an installer, tap **Setup wizard** on the **Home** screen, scan the QR code of the device, and follow the instructions to connect to the WLAN.



NOTE

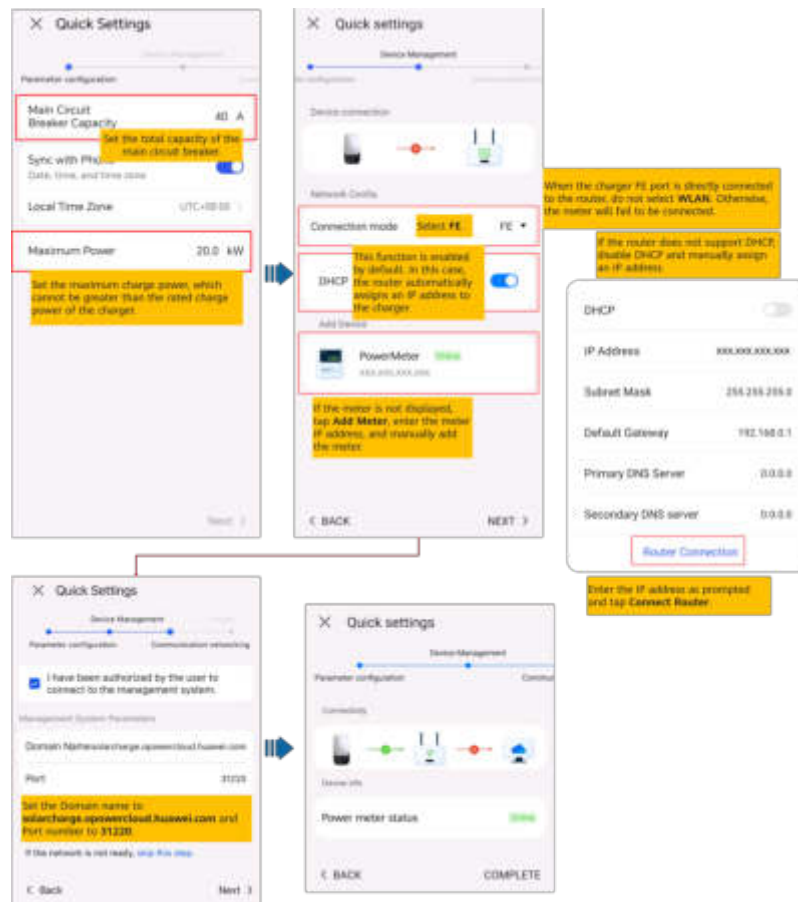
- The last six digits of the product WLAN name are the same as the last six digits of the product SN.
 - Use the initial password to log in for the first time and change the password as prompted. To ensure account security, protect the password by changing it periodically, and keep it secure. Your password might be stolen or cracked if it is left unchanged for extended periods. If a password is lost, devices cannot be accessed. In these cases, the Company shall not be liable for any loss.
 - If the login screen is not displayed after you scan the QR code, check whether the device is correctly connected to the WLAN network. If not, manually select and connect to the WLAN network and tap **Next**.
 - If the **This WLAN network has no Internet access. Connect anyway?** message is displayed when you connect to the device WLAN, tap **CONNECT**. Otherwise, you cannot log in to the system. The actual UI and messages may vary with mobile phones.
2. Log in to the app as an **Installer**.



 **NOTE**

For the first login, the initial password is **Changeme**. If the system prompts you to set a password, set the login password as prompted.

3. Commission the device according to the wizard procedure.

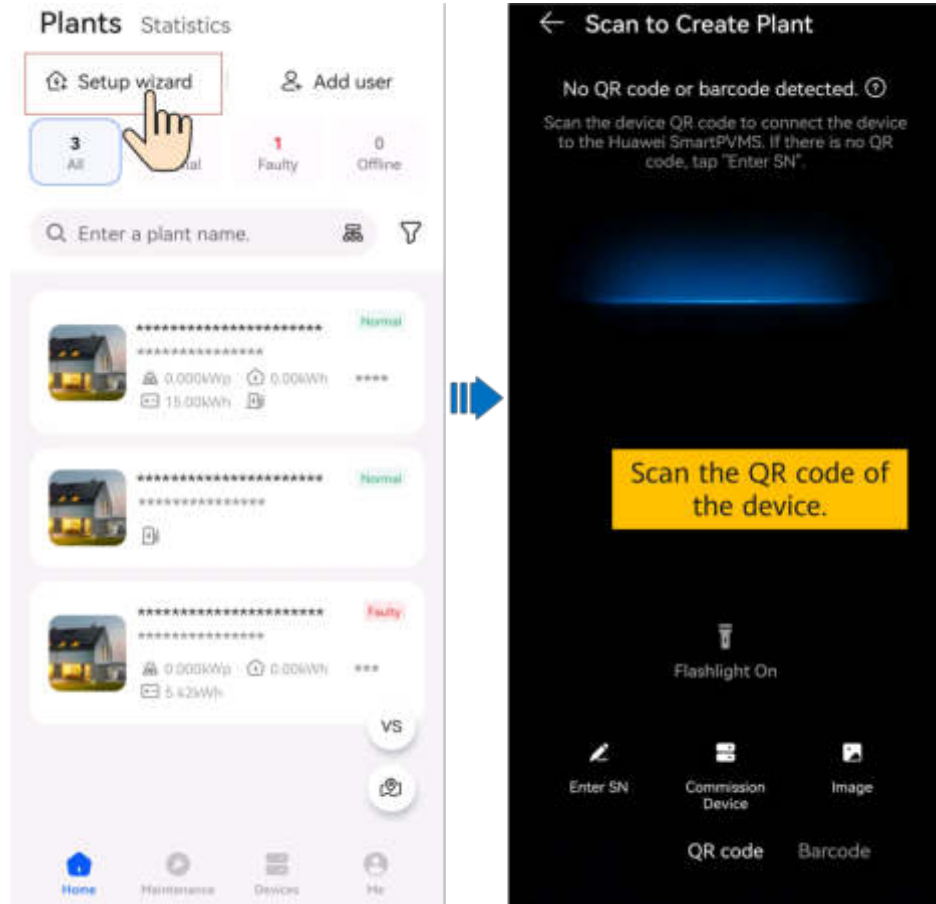


NOTE

Set the capacity of the main circuit breaker based on site requirements. If the set value is greater than the actual capacity, the circuit breaker trips due to overcurrent. If the set value is less than the actual capacity, the charger cannot work.

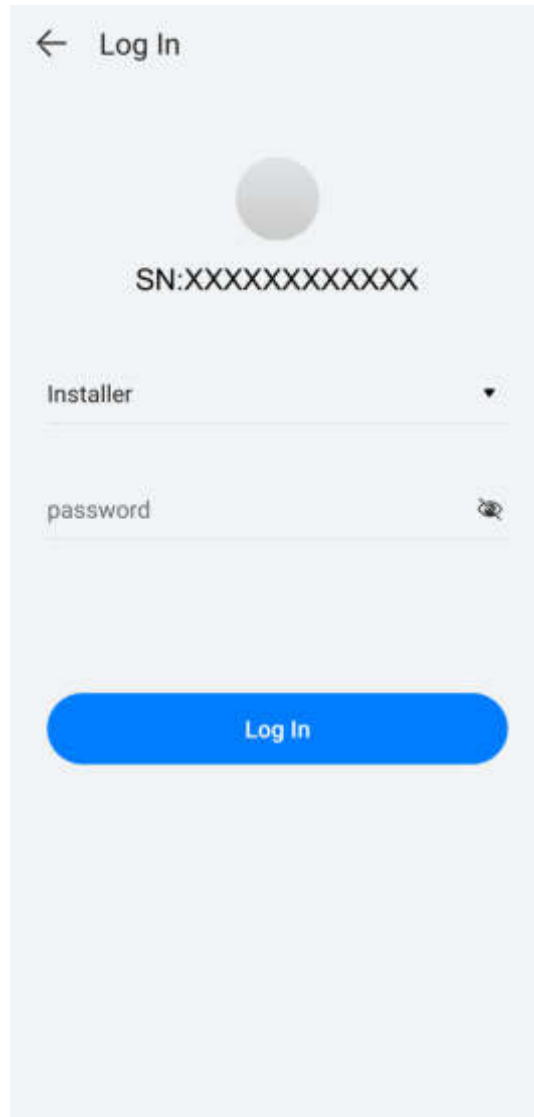
5.1.1.3 Charger Connected to a Router Through WLAN

1. Log in to the FusionSolar app as an installer, tap **Setup wizard** on the **Home** screen, scan the QR code of the device, and follow the instructions to connect to the WLAN.



NOTE

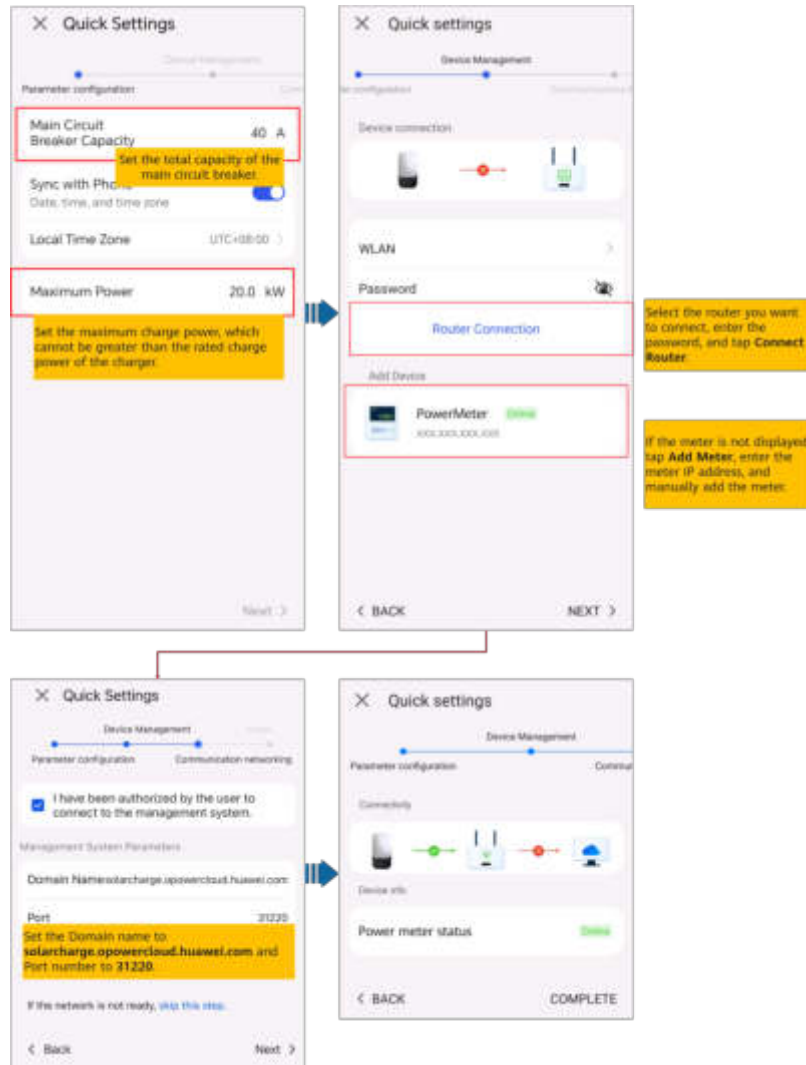
- The last six digits of the product WLAN name are the same as the last six digits of the product SN.
 - Use the initial password to log in for the first time and change the password as prompted. To ensure account security, protect the password by changing it periodically, and keep it secure. Your password might be stolen or cracked if it is left unchanged for extended periods. If a password is lost, devices cannot be accessed. In these cases, the Company shall not be liable for any loss.
 - If the login screen is not displayed after you scan the QR code, check whether the device is correctly connected to the WLAN network. If not, manually select and connect to the WLAN network and tap **Next**.
 - If the **This WLAN network has no Internet access. Connect anyway?** message is displayed when you connect to the device WLAN, tap **CONNECT**. Otherwise, you cannot log in to the system. The actual UI and messages may vary with mobile phones.
2. Log in to the app as an **Installer**.



 **NOTE**

For the first login, the initial password is **Changeme**. If the system prompts you to set a password, set the login password as prompted.

3. Commission the device according to the wizard procedure.



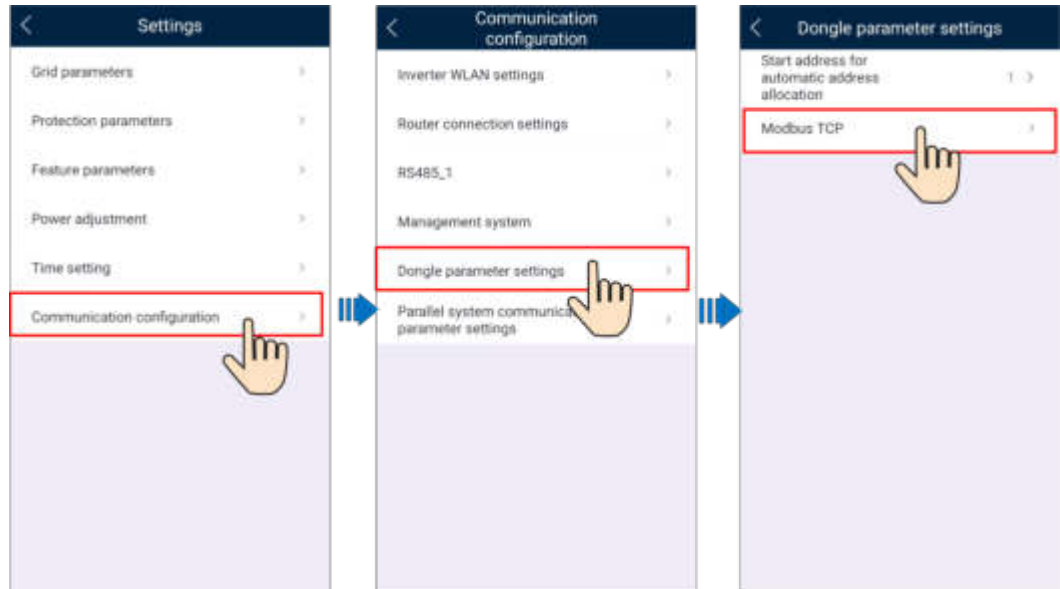
NOTE

Set the capacity of the main circuit breaker based on site requirements. If the set value is greater than the actual capacity, the circuit breaker trips due to overcurrent. If the set value is less than the actual capacity, the charger cannot work.

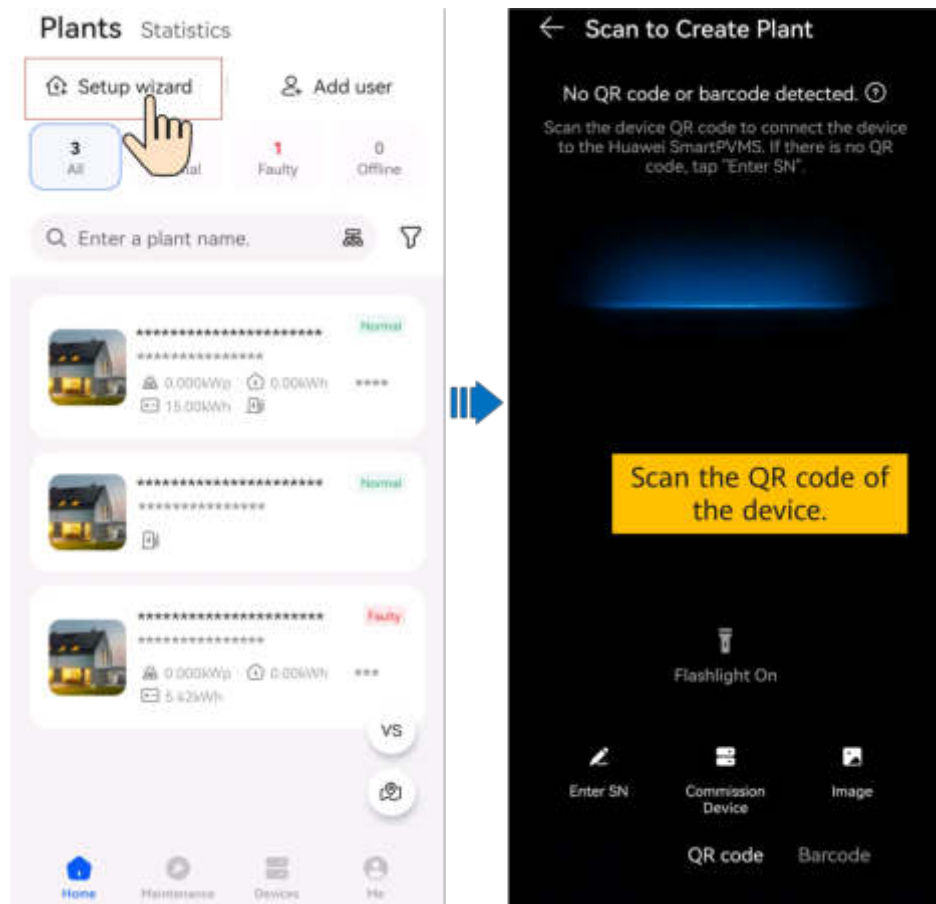
5.1.1.4 Charger Using a Virtual Meter

NOTE

If a virtual meter is used, log in to the inverter connected to the Smart Dongle, choose **Settings > Communication configuration > Dongle parameter settings**, and set Modbus TCP to **Enable (unrestricted)**. If an FE meter is used, set Modbus TCP to **Disable**.

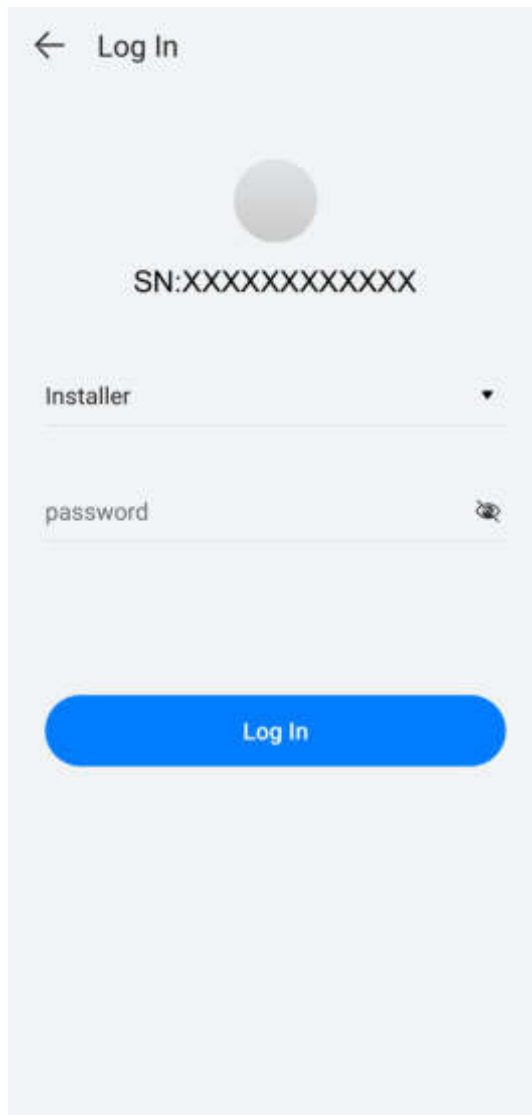


1. Log in to the FusionSolar app as an installer, tap **Setup wizard** on the **Home** screen, scan the QR code of the device, and follow the instructions to connect to the WLAN.



 **NOTE**

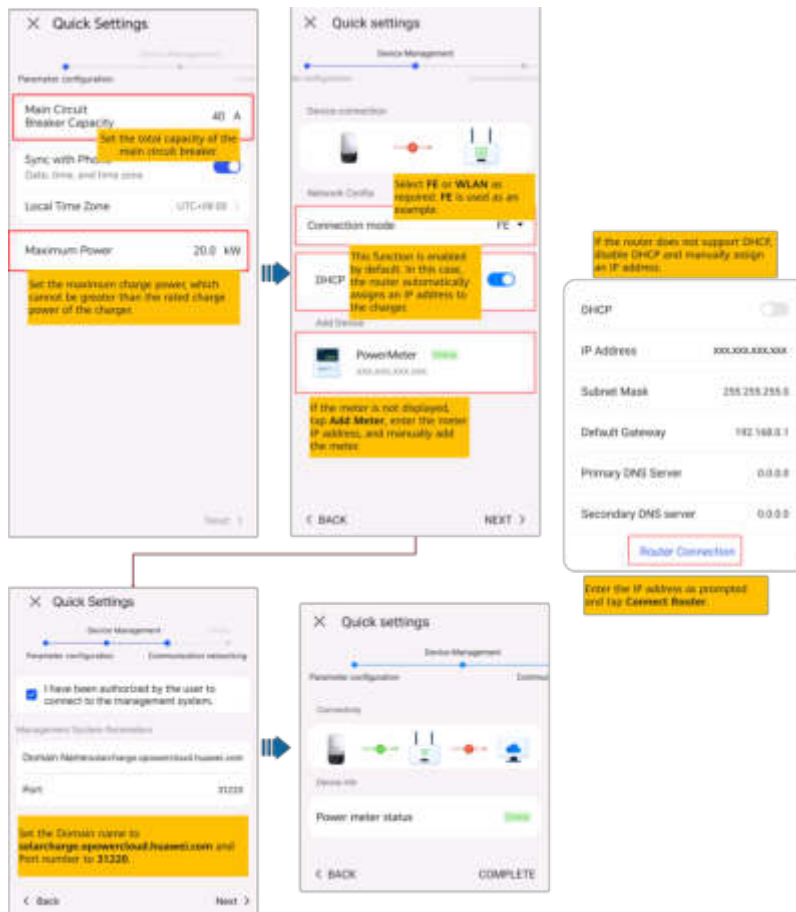
- The last six digits of the product WLAN name are the same as the last six digits of the product SN.
 - Use the initial password to log in for the first time and change the password as prompted. To ensure account security, protect the password by changing it periodically, and keep it secure. Your password might be stolen or cracked if it is left unchanged for extended periods. If a password is lost, devices cannot be accessed. In these cases, the Company shall not be liable for any loss.
 - If the login screen is not displayed after you scan the QR code, check whether the device is correctly connected to the WLAN network. If not, manually select and connect to the WLAN network and tap **Next**.
 - If the **This WLAN network has no Internet access. Connect anyway?** message is displayed when you connect to the device WLAN, tap **CONNECT**. Otherwise, you cannot log in to the system. The actual UI and messages may vary with mobile phones.
2. Log in to the app as an **Installer**.



NOTE

For the first login, the initial password is **Changeme**. If the system prompts you to set a password, set the login password as prompted.

- Commission the device according to the wizard procedure.



NOTE

Set the capacity of the main circuit breaker based on site requirements. If the set value is greater than the actual capacity, the circuit breaker trips due to overcurrent. If the set value is less than the actual capacity, the charger cannot work.

5.1.2 Device Commissioning (PV+ESS)

For details, see the app commissioning video or *FusionSolar App Quick Guide*.

Obtaining the Commissioning Video

Method 1: Visit the following link to obtain the commissioning video.

<https://support.huawei.com/enterprise/en/doc/EDOC1100165056>

Method 2: Scan the QR code below to obtain the commissioning video.



Obtaining the Quick Guide

Method 1: Visit the following link to obtain the quick guide.

<https://support.huawei.com/enterprise/en/doc/EDOC1100165052>

Method 2: Scan the QR code below to obtain the quick guide.

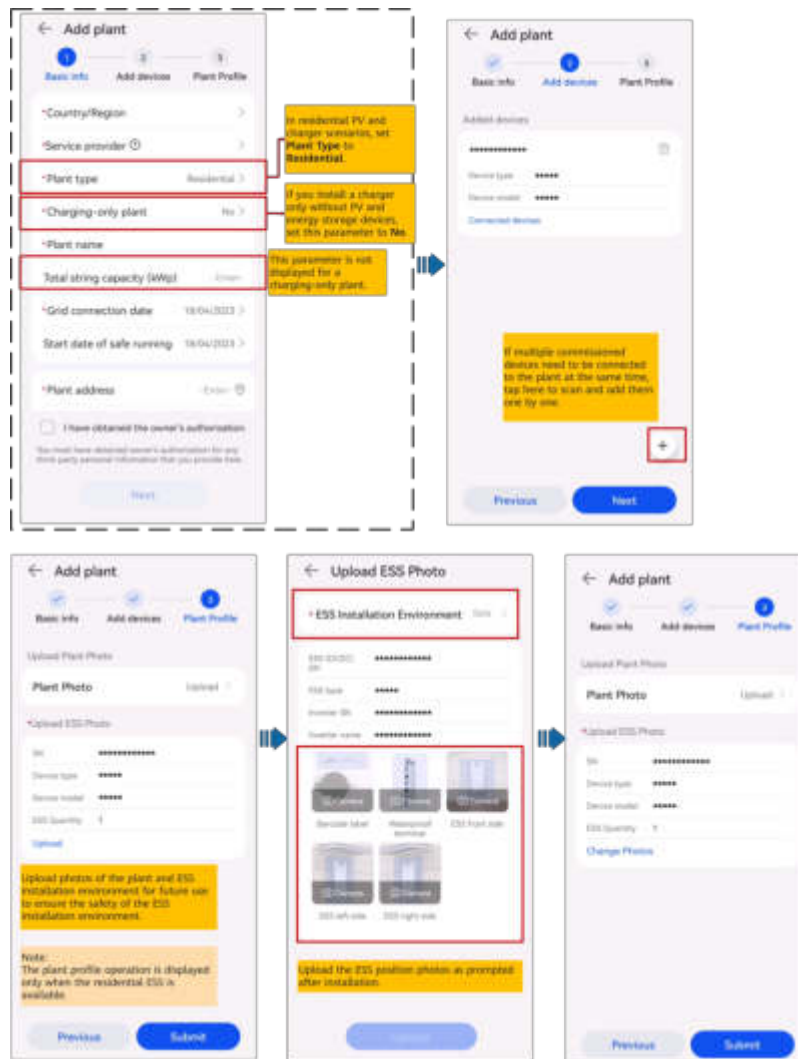


5.1.3 Connecting to a Plant

After devices are commissioned, you can create a plant and configure basic information on the FusionSolar app to implement unified device monitoring and O&M.

- If the owner does not have a plant on FusionSolar SmartPVMS or FusionSolar app, see [5.1.3.1 Connecting to a New Plant](#) to connect the devices to a new plant.
- If the owner has a plant on FusionSolar SmartPVMS or FusionSolar app, see [5.1.3.2 Connecting to an Existing Plant](#) to connect the devices to an existing plant.
- If PV and energy storage devices and chargers are not provided by the same installer, see [5.1.3.3 Connecting Devices to a Plant with Multiple Installers](#) to connect them to a plant.

5.1.3.1 Connecting to a New Plant

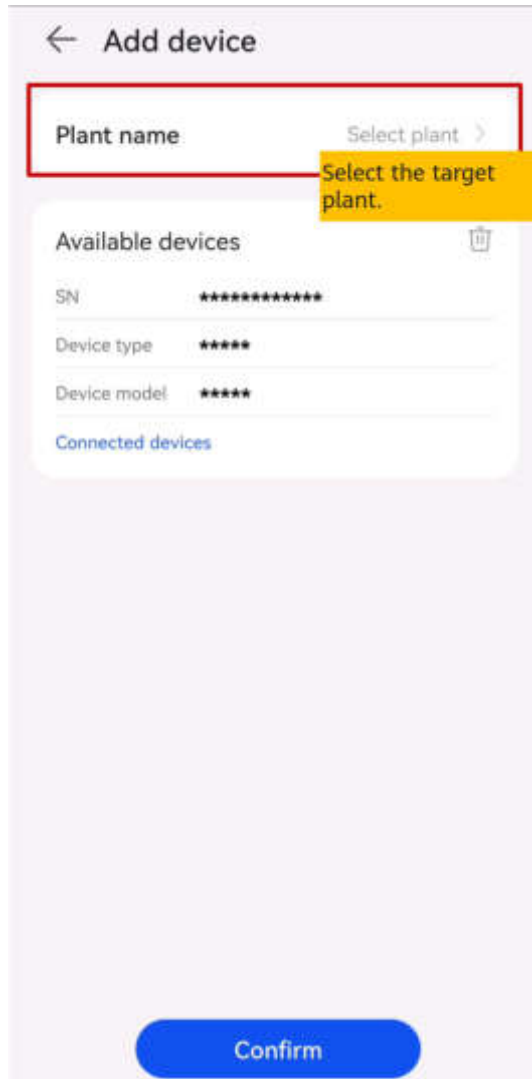


NOTE

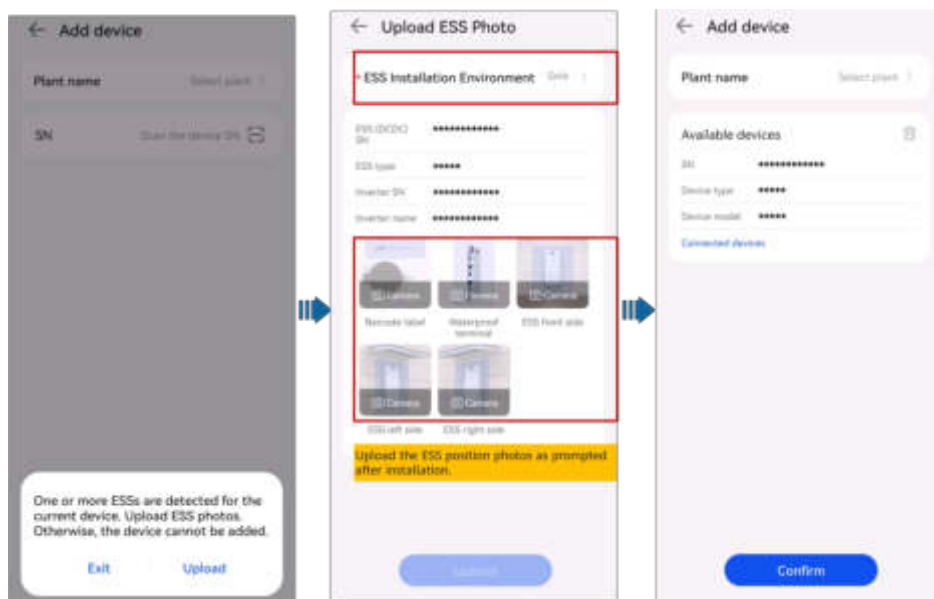
The **Plant Profile** function is not supported in some regions. The actual screen may vary.

5.1.3.2 Connecting to an Existing Plant

- Without the ESS




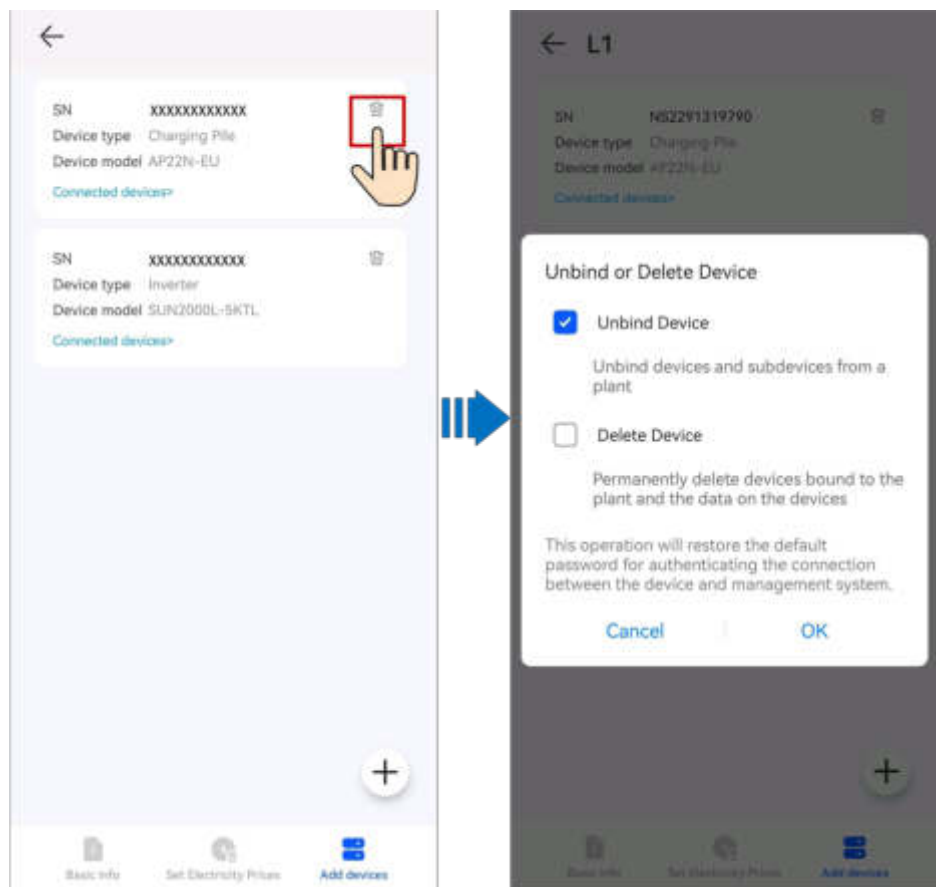
- With the ESS



5.1.3.3 Connecting Devices to a Plant with Multiple Installers

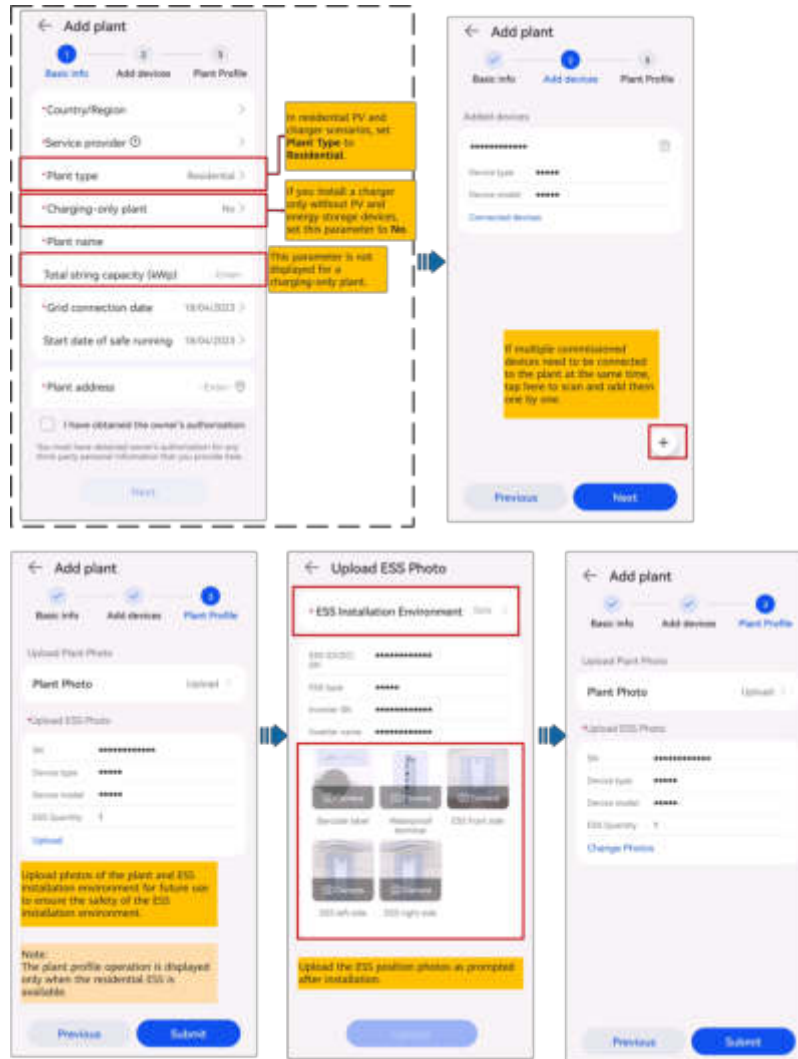
Charging-Only Plant Created by Installer A and PV Devices Connected by Installer B

1. The owner logs in to the FusionSolar app and unbinds the charger from the plant created by installer A.
 - a. Choose **Me > Plant management** and tap the target plant.
 - b. Tap **Add devices**.
 - c. Tap  and select **Unbind Device** or **Delete Device** based on the site requirements.



NOTE

- After a device is unbound, the running data of the device and its subdevices is stored in the database. The default data retention period is six months. To change the retention period, contact the system administrator.
 - If a device is rebound to a plant within the data retention period, the device inherits the retained data.
 - If a device is not bound to a plant within the data retention period, the data will be automatically deleted.
 - After a device is permanently deleted, the running data of the device and its subdevices is deleted immediately. When the device is bound to the plant again, the running data of the device is not restored.
2. Installer B connects the commissioned PV devices and charger to a new PV plant.



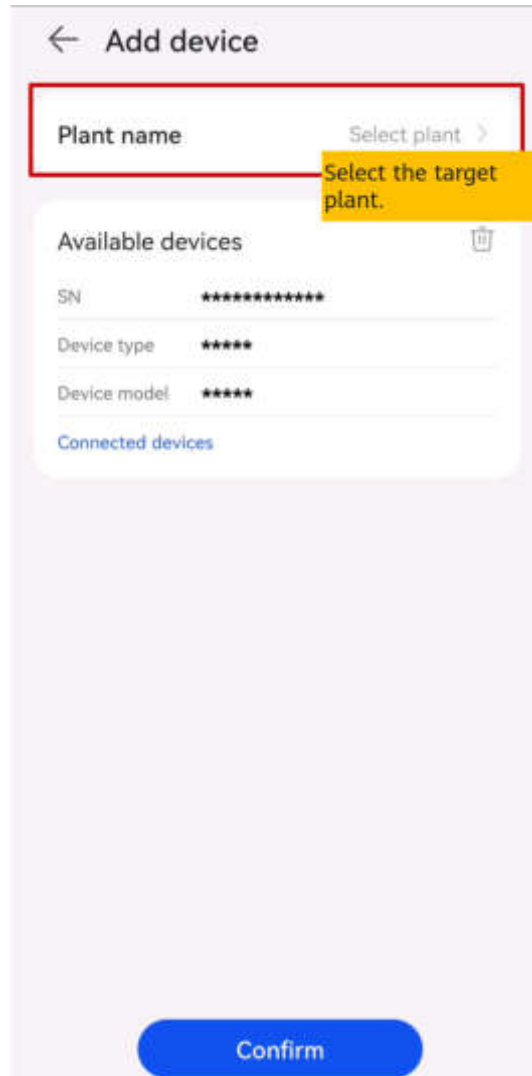
NOTE

The **Plant Profile** function is not supported in some regions. The actual screen may vary.

PV Plant Created by Installer A and Charger Connected by Installer B

Installer B does not bind the charger to a plant after commissioning. The owner sends the SN or QR code of the charger to installer A, and installer A connects the charger to an existing PV plant.

1. Choose **Home > Plants**, and tap **Setup wizard**. Scan the QR code of the target charger.
2. On the plant creation screen, tap **Connect to existing plant**.
3. On the **Add device** screen, select the target plant.
4. Tap **OK**.



5.1.4 Adding a Device



After a plant is created, you can bind a new device to the plant.

Prerequisites

- You have commissioned devices and set management system parameters using the local commissioning tool.
- If devices are connected to the management system through the SmartLogger or Smart Dongle, you need to enter the registration code of the SmartLogger or Smart Dongle when binding a plant. For details about how to obtain the registration code, see [9.14 How Do I Obtain a Registration Code?](#)

Procedure


- Method 1: Add devices on the **Setup wizard** screen. (This method is recommended if only one device or a group of cascaded devices are connected at a time.)
 - a. Choose **Home > Plants**, and tap **Setup wizard**.

- b. Scan the QR code of the device to be connected.
 - c. On the plant creation screen, tap **Connect to existing plant**.
 - d. Select the plant to be connected.
 - e. Tap **Confirm**.
- Method 2: Add devices on the **Add devices** screen. (This method is recommended if multiple devices or multiple groups of cascaded devices need to be connected.)
 - a. On the home screen of the app, choose **Me > Plant management**. In the plant list, tap the target plant.
 - b. Tap **Add devices**, and then tap .
 - c. Tap  on the right of **Device SN** to scan the QR code on the device to connect the device.
 - d. Tap **Save**.

----End

5.1.5 Setting the String Capacity

Configure the string capacity of a PV array to calculate the device operating efficiency.

1. On the home screen of the app, choose **Me > Plant management**. In the plant list, tap the target plant.
2. Tap **String capacity**.
3. Tap  in the upper right corner, select the device whose capacity needs to be set, and tap **Set string capacity**.


NOTE

You can select inverters of the same model or string capacity and set the string capacity.

4. Set the PV string capacity as prompted.

5.1.6 Setting Electricity Prices

Configure the time-of-use electricity prices to calculate the revenue based on different electricity prices in different time segments so that the calculation is more accurate.

1. On the home screen of the app, choose **Me > Plant management**. In the plant list, tap the target plant.
2. Tap **Set Electricity Prices**.
3. Tap  in the upper right corner and set **Feed-in tariff** and **Purchase price** as prompted.

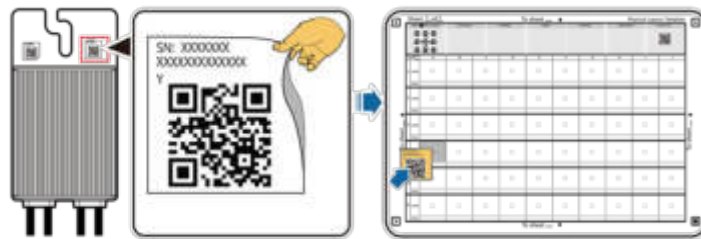
5.1.7 Creating a Physical Location Layout

5.1.7.1 Automatically Generating a Physical Layout

After optimizers are configured for PV modules and a physical layout is created, if a PV module is faulty, you can quickly locate the faulty PV module based on the physical layout to rectify the fault.

Procedure

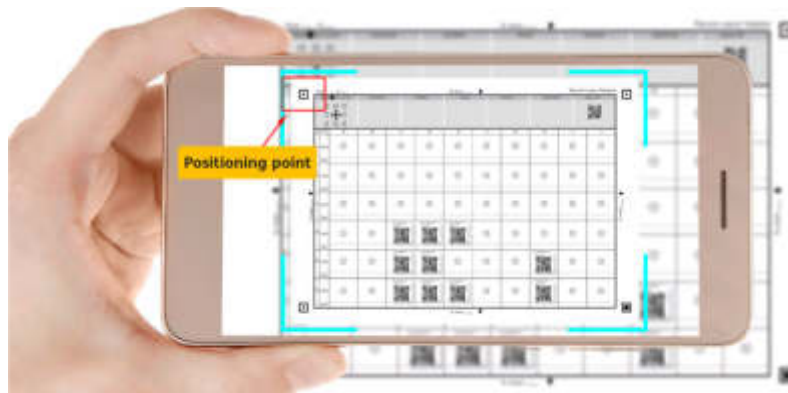
1. Remove the SN labels from optimizers and attach the SN labels to the corresponding positions in the physical layout template based on the optimizer positions



NOTE


The optimizer SN labels must be attached to the physical layout template. For details about how to obtain the physical layout template, see [Obtaining a Physical Layout Template](#).

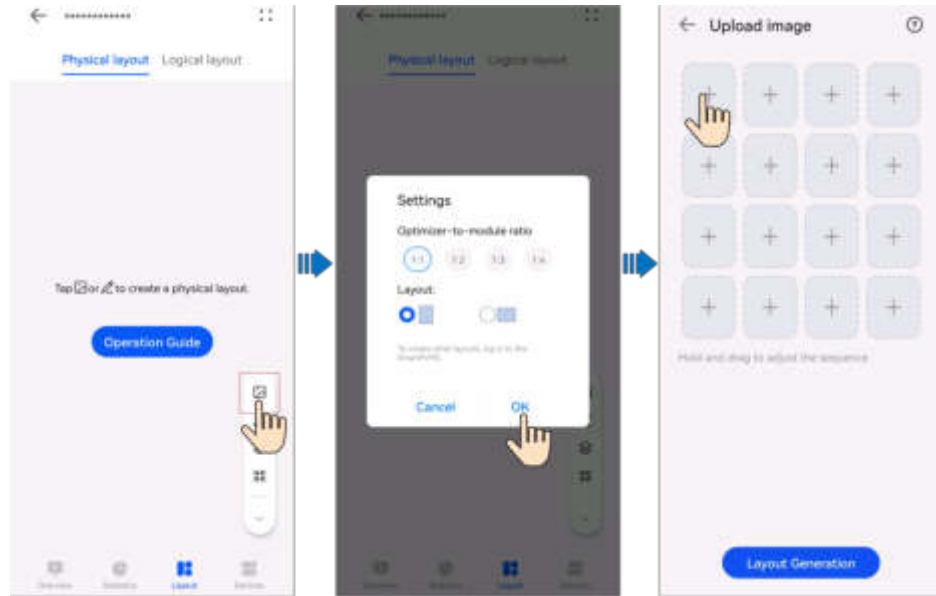
2. Take a photo of the physical layout.



NOTE

Pay attention to the following when taking photos of the drawings:

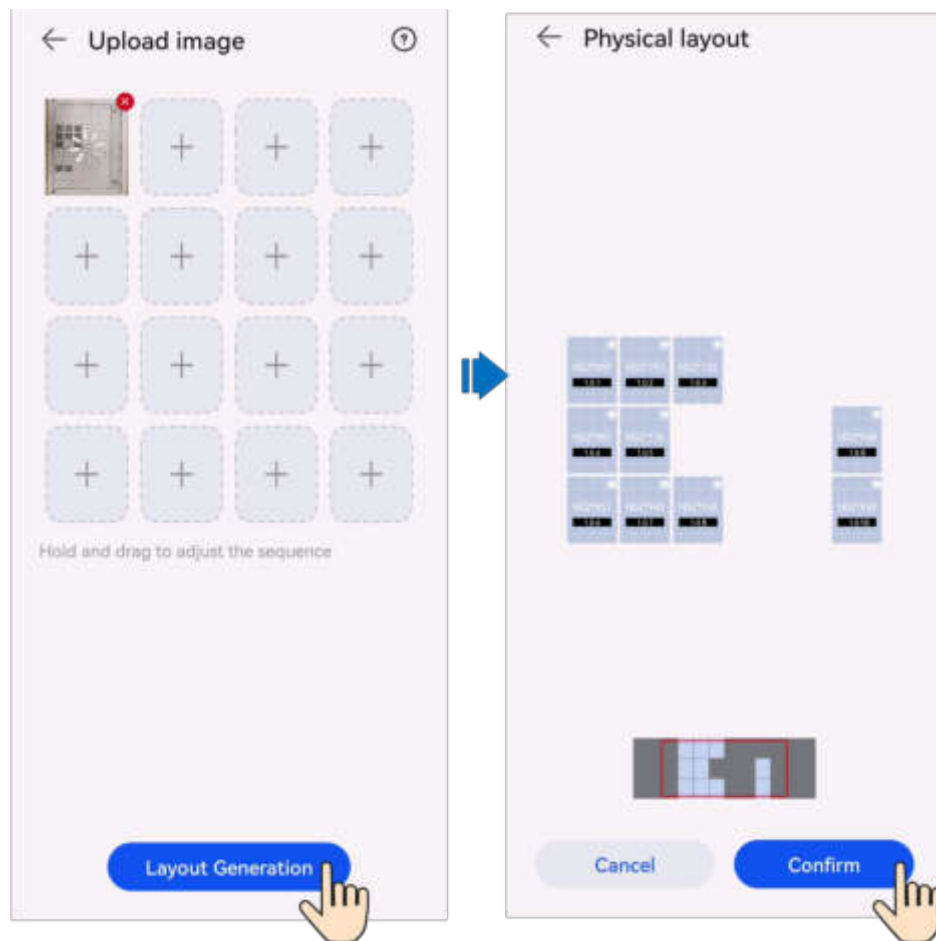
- Place the templates on a flat table, keep the phone level with the templates, and take photos in landscape mode.
 - Ensure that the four positioning points are within the picture.
 - Ensure that the QR code is attached in the frame and does not exceed the frame.
 - Ensure that the QR code in the picture is clear and has no reflection or shadow. Otherwise, the recognition accuracy will be reduced.
 - If a QR code cannot be recognized, you can manually bind the SN.
3. Tap the plant that has been connected to the optimizers, choose **Layout** > **Physical layout**, tap , and upload the physical layout template as prompted.



NOTE

For the first identification, set **Optimizer-to-module ratio** and **Layout** based on the actual optimizer installation.

4. After all drawings are uploaded, tap **Layout Generation** to generate the physical layout, and confirm the identification result.



5. Tap **Confirm** to save the physical layout.

 **NOTE**

If some QR codes cannot be identified, manually bind them by referring to [Binding Optimizers and Inverters](#).

Identifying Faulty Optimizers

The disconnection detection function can efficiently and accurately locate faulty optimizers, improving fault locating efficiency.

1. On the **Home** screen, tap **Plants** and tap the desired plant.
2. Choose **Layout** > **Logical layout**, and tap **Disconnection detection**.

 **NOTE**



If multiple inverters are installed in the plant and all of them are equipped with optimizers, select the inverter to be detected in the dialog box that is displayed and tap **OK**.

3. If a disconnected optimizer is detected, you can quickly locate the optimizer in the physical layout and rectify the fault based on the repair suggestions.


5.1.7.2 Manually Creating a Physical Layout

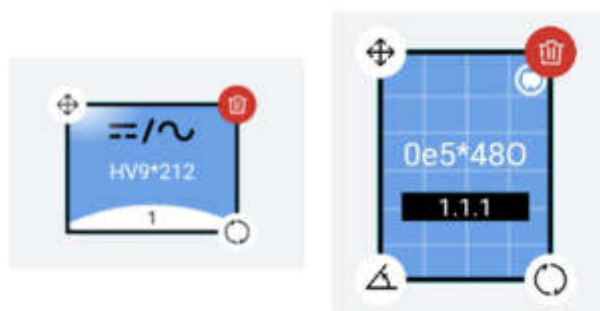
After optimizers are configured for PV modules and a physical layout is created, if a PV module is faulty, you can quickly locate the faulty PV module based on the physical layout to rectify the fault.






Adding Inverters and PV Modules

1. Tap the plant that has been connected to the optimizers, Choose **Layout** > **Physical layout**, and tap .
2. Tap the blank area to add inverters and PV modules.
3. Tap  to save the settings.



Adjusting the Position and Angle of an Inverter or PV Module

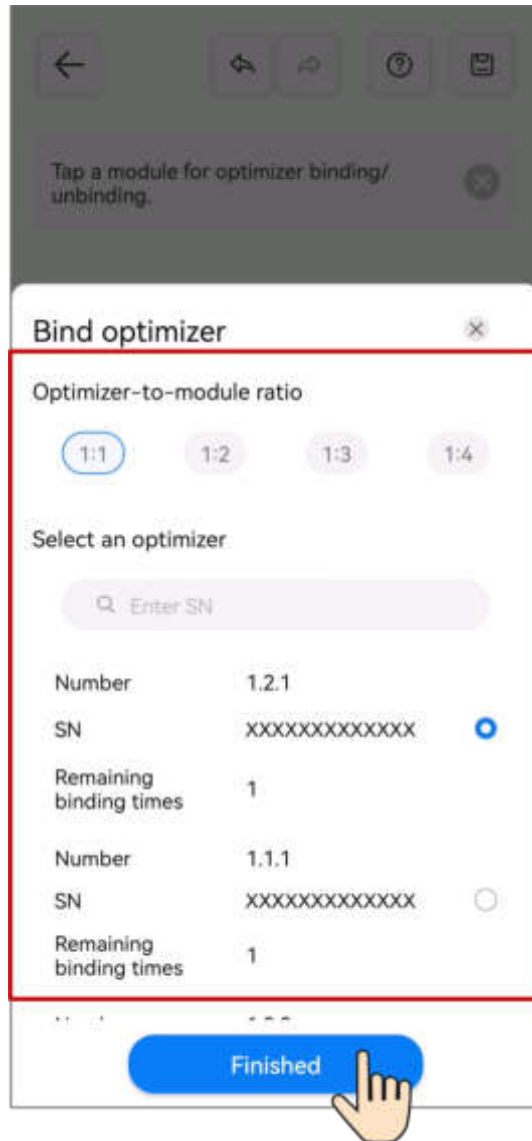
Tap an inverter or PV module, adjust the position and angle of the inverter or PV module, and tap  to save the settings.




Function	Operation
Adjusting the position	Press and hold  to move an inverter or PV module to an appropriate position.
Adjusting the azimuth	Press and hold  to move or tap  to enter the azimuth.
Adjusting the tilt angle	Tap  and enter the tilt angle of a PV module.
Deleting an inverter or PV module	Tap  to delete an inverter or PV module.

Binding Optimizers and Inverters

1. Tap the plant that has been connected to the optimizers, Choose **Layout** > **Physical layout**, and tap .
2. Tap , and then tap PV modules and inverters to bind the optimizers and inverters, respectively.



3. Tap  to save the settings.

Identifying Faulty Optimizers

The disconnection detection function can efficiently and accurately locate faulty optimizers, improving fault locating efficiency.



1. On the **Home** screen, tap **Plants** and tap the desired plant.
2. Choose **Layout** > **Logical layout**, and tap **Disconnection detection**.

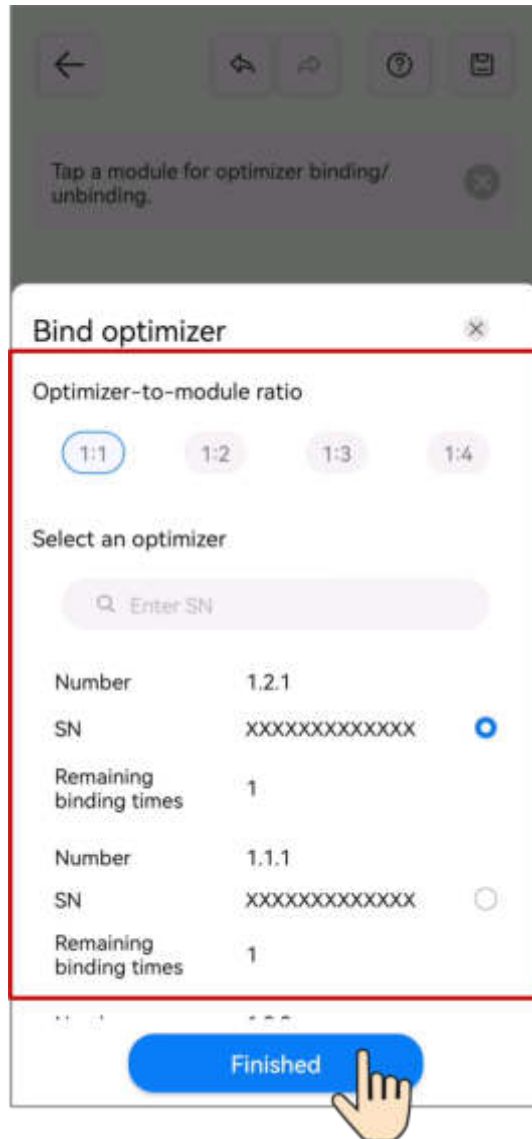
NOTE

If multiple inverters are installed in the plant and all of them are equipped with optimizers, select the inverter to be detected in the dialog box that is displayed and tap **OK**.

3. If a disconnected optimizer is detected, you can quickly locate the optimizer in the physical layout and rectify the fault based on the repair suggestions.

5.1.7.3 Binding Optimizers and Inverters

1. Tap the plant that has been connected to the optimizers, Choose **Layout** > **Physical layout**, and tap .
2. Tap , and then tap PV modules and inverters to bind the optimizers and inverters, respectively.



3. Tap  to save the settings.

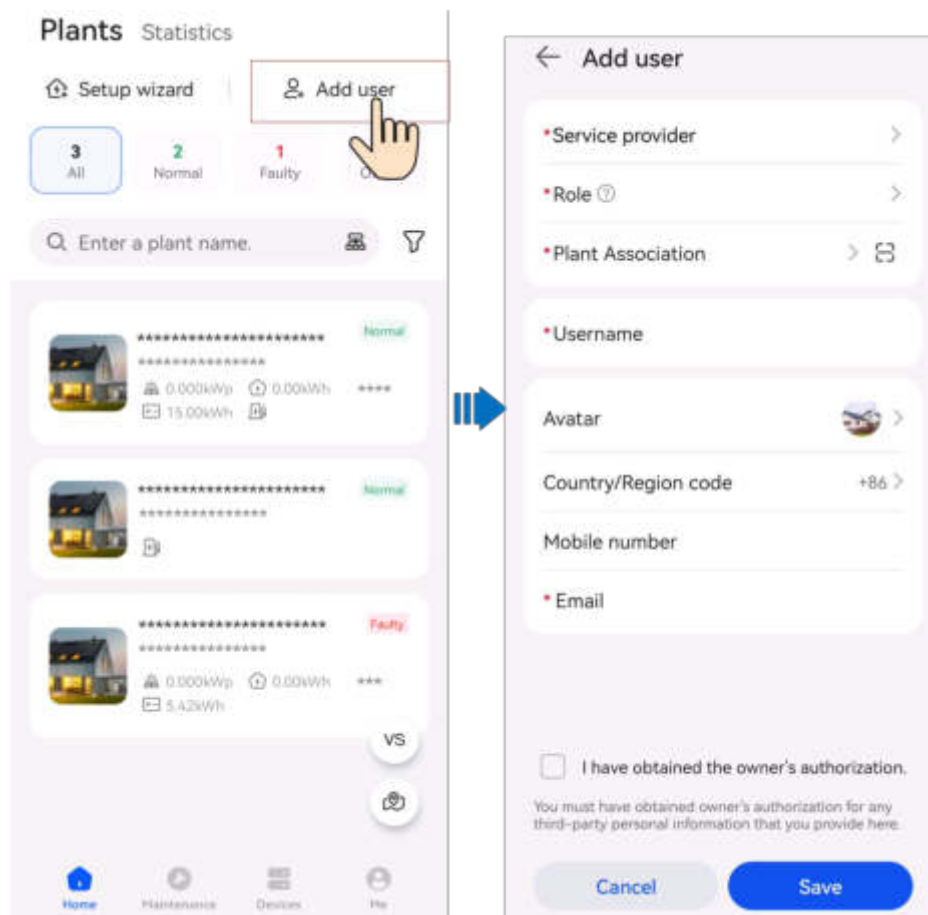
5.2 Creating a User

An installer can create owner user accounts and installer user accounts on the FusionSolar app. Owner users can monitor the device running status and start charging. Installer users can perform wizard-based commissioning and plant creation, monitor the running status of the plants, manage devices, query alarms, and perform mobile O&M.

When creating a user, ensure that the plant to be associated is available. If your company has created a plant, you can directly create a user and associate the user to the plant. If your company has not created a plant, create a plant and then add a user. For details, see [5.1.3 Connecting to a Plant](#).

Creating an Owner User

On the **Home** screen, tap **Plants**. Tap **Add user** and create an account as prompted.

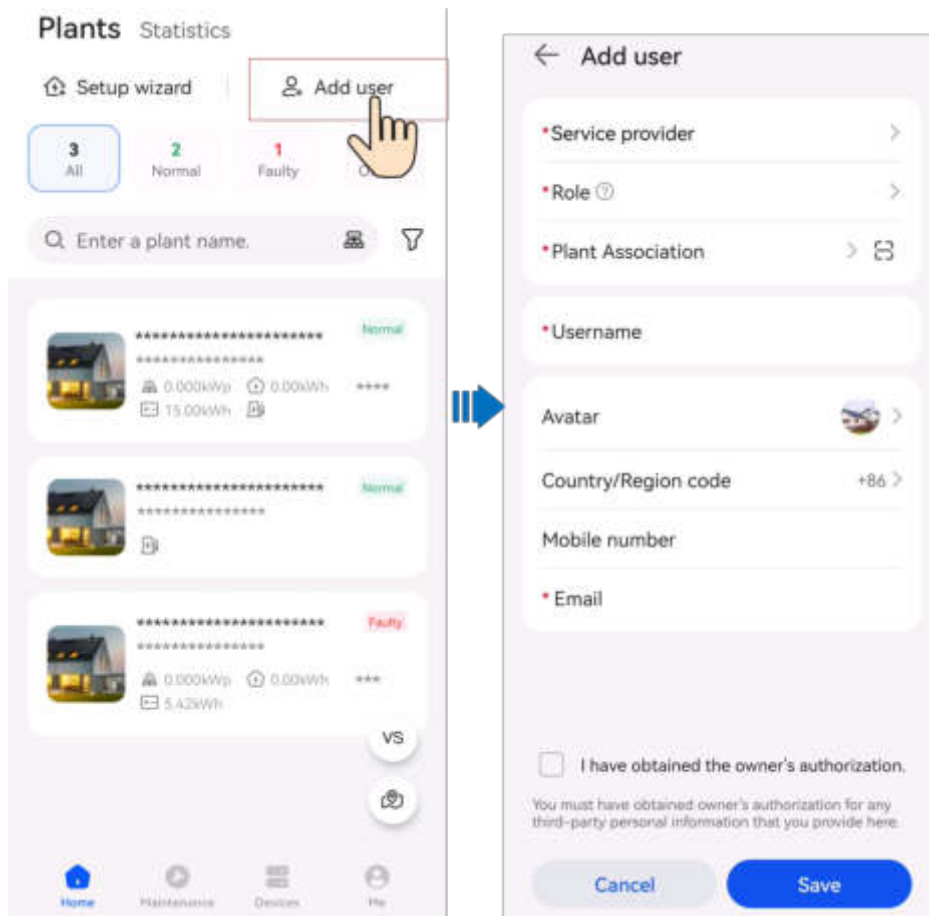


NOTE

After an account is created, the system sends a notification to the entered email address. Then the user can use the received username and password to log in to the FusionSolar app or SmartPVMS WebUI.

Creating an Installer User

1. On the **Home** screen, tap **Plants**. Tap **Add user** and create an account as prompted.



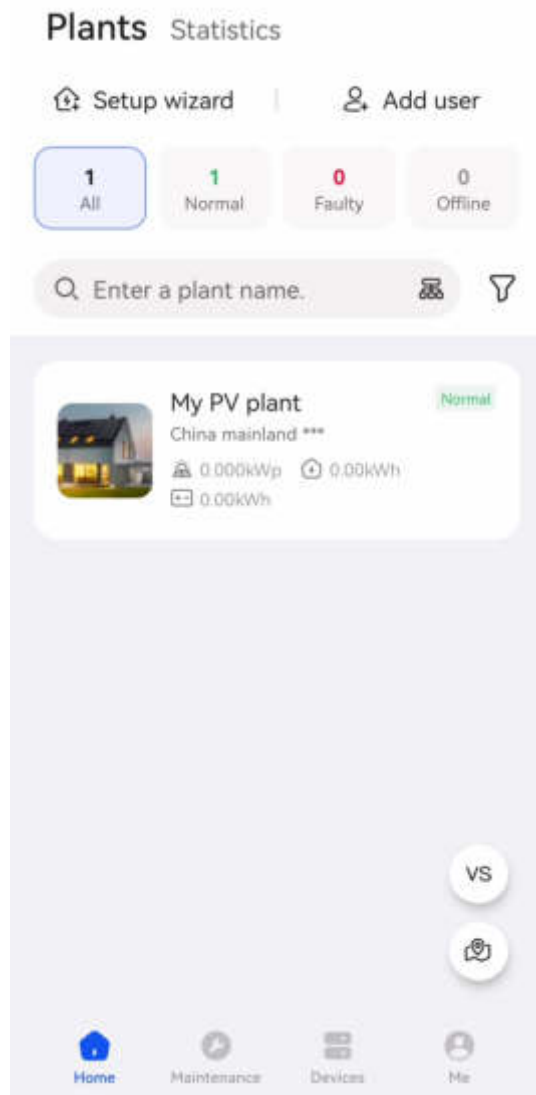
NOTE



- For a new user who is assigned the **Installer** role, if the user is associated with only plants, the installer can manage the associated plants within the permission of the role but cannot create a plant. If the installer is associated with a company, the installer can manage all plants of the associated company and has the permission to create plants.
- After an account is created, the system sends a notification to the entered email address. Then the user can use the received username and password to log in to the FusionSolar app or SmartPVMS WebUI.

5.3 Plant Overview

The FusionSolar app provides an overview of plants. You can view the plant running status, energy yield and consumption, revenue, and energy flow diagram in real time.

Log in to the app, tap **Home**, and tap **Plants**. This screen displays the real-time running status and basic information of all plants managed by the user by default.



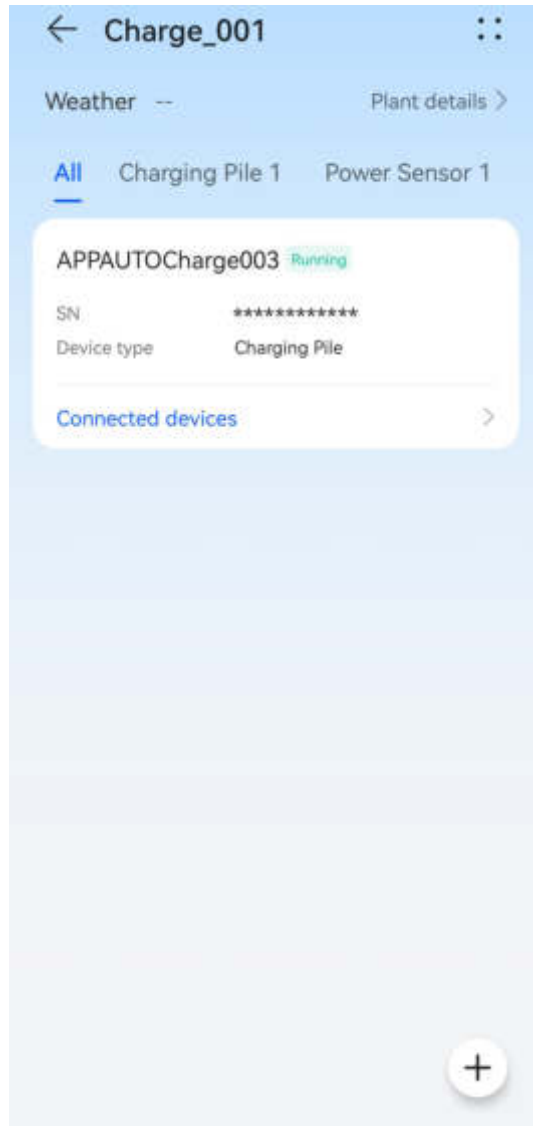
- Tap  to compare plants in the same environment to evaluate their energy yield efficiency.
- Tap  to switch to the map view and display the geographical distribution and alarm statistics of the plant.
- Tap the target plant to view the plant overview.

5.3.1 Viewing Status of a Charging-only Plant

The FusionSolar app provides an overview of plants. You can view the plant running status, energy yield and consumption, revenue, and energy flow diagram in real time.

Viewing Plant Overview

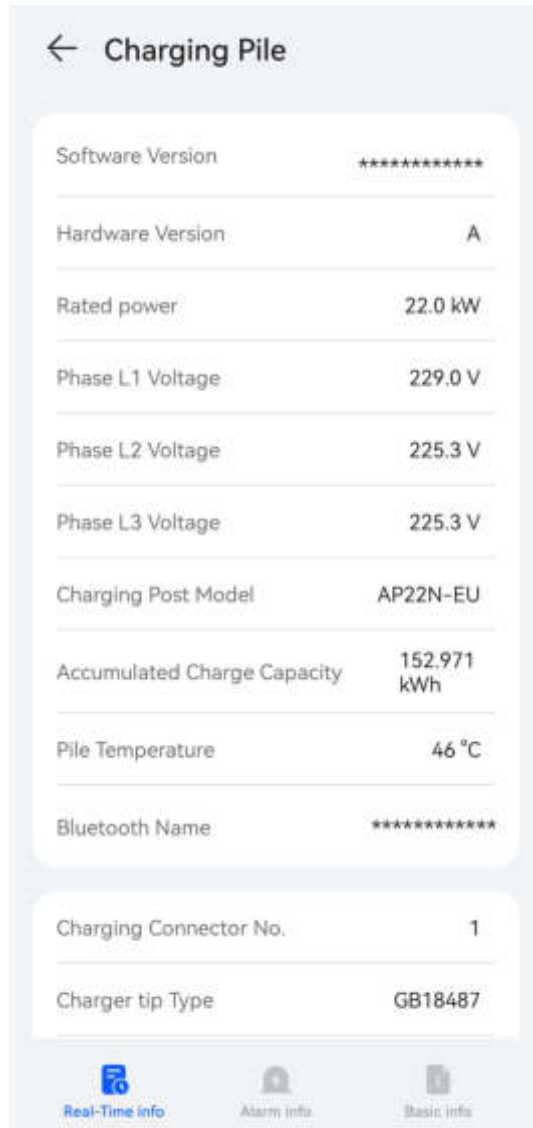
Log in to the app, choose **Home** > **Plants**, and tap a charging-only plant to view the charger status.



Tap the target charger to view its real-time information, alarm information, and device information, and set the charger parameters.

Viewing Real-Time Information

On the **Real-time info** screen, view key running parameters such as the device running status and total charge energy.



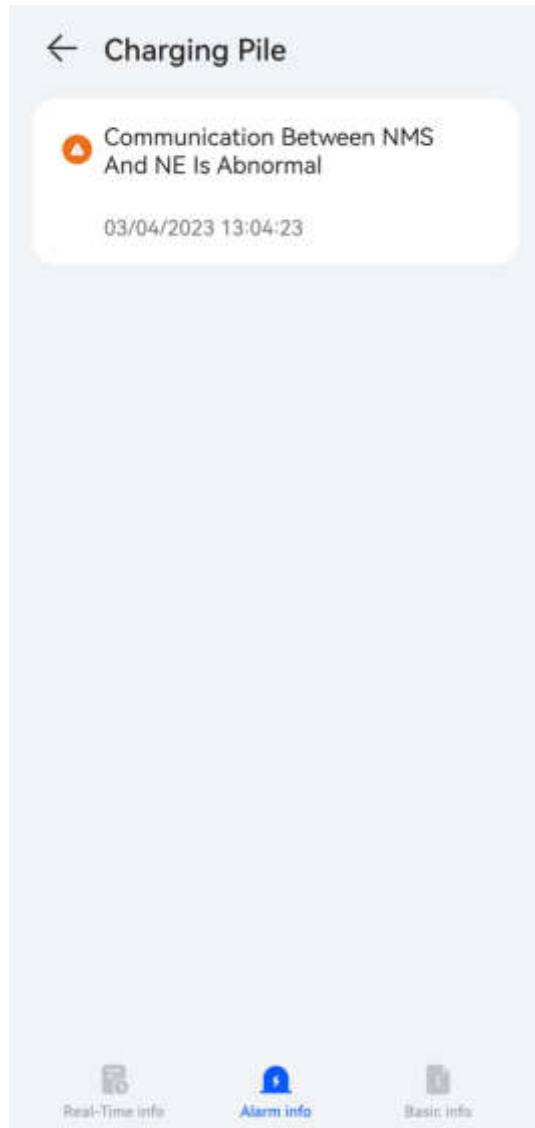
NOTE

The displayed parameters vary with the software version.

Viewing Alarm Information

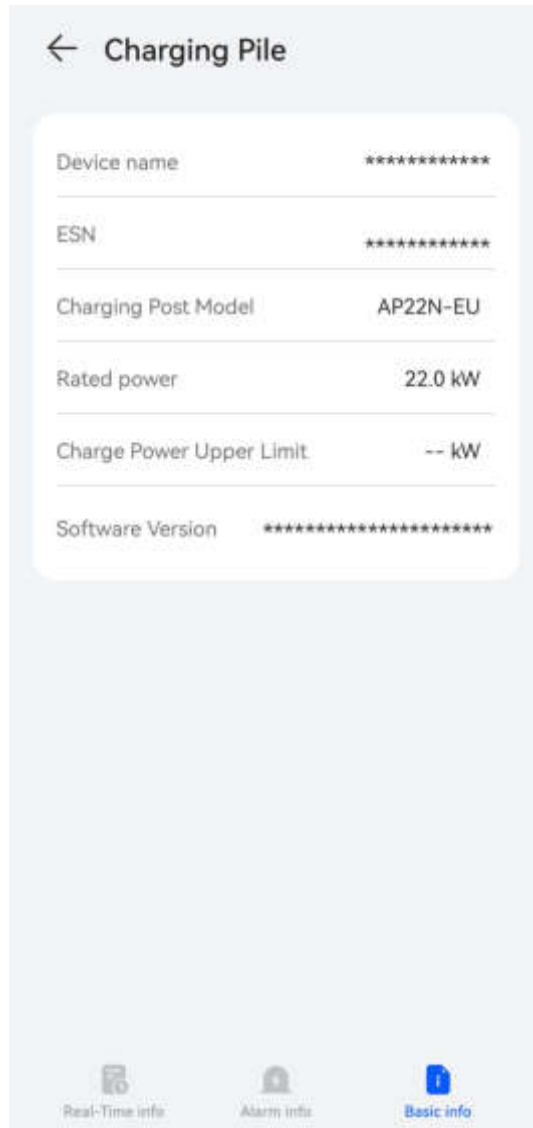
On the **Alarm info** screen, view the active alarms of the plant. Tap an alarm to view its details.

You can clear the alarm based on the alarm cause and handling suggestions.



Viewing Device Information

On the **Device Information** screen, view basic information such as the device type and software version.



NOTE

The displayed parameters vary with the software version.

5.3.2 Viewing Status of a PV+ESS+Charger Plant

The FusionSolar app provides an overview of plants. You can view the plant running status, energy yield and consumption, revenue, and energy flow diagram in real time.

Viewing Plant Overview

Log in to the app, tap **Home**, and tap **Plants**. Tap a desired plant to check its overview. The plant overview includes the basic plant information, energy yield and revenue statistics, real-time running status, and energy flow diagram.



- Basic plant information: Displays the weather information of the place where the plant is located on the current day. Tap **Plant details** to view the detailed plant information.
- Energy yield and revenue statistics: Displays the energy yield and revenue of the plant.
- Real-time running status: Allows you to check whether the current running status of the plant is normal.
- Energy flow diagram: Displays the current power supply direction of the plant. If a plant has active alarms, the latest alarm information is displayed above the energy flow diagram. You can tap **>** on the right of the alarm information to view and handle all active alarms of the plant.

Viewing Plant Statistics

Tap the **Statistics** tab to view the energy yield, energy consumption, revenue, and environmental benefits of a plant.



- Energy management: Displays the energy yield, energy consumption, and self-consumption of a plant in different time dimensions, helping you analyze and optimize energy consumption. When an ESS is available, it stores and discharges energy, improving the self-consumption rate.
- Revenue statistics: Calculate the sum of feed-in revenue of a PV plant (feed-in electricity x feed-in tariff) and savings in electricity bills (self-consumed electricity x purchase price) to display the benefits brought by the PV plant.
- Environmental benefits: Unlike thermal power plants, PV power plants generate electricity without CO₂ emissions, which is equivalent to planting trees. For details, see [10.2 PV Power Generation Offsetting Carbon Emissions](#).

5.3.3 Viewing Plant Profiles

View and edit the photos of the plant and devices in real time.

Procedure

1. On the **Overview** screen, tap **Plant details**.
2. Tap **Plant Profile**.
3. View and edit photos of the plant and devices on the screen that is displayed.

5.3.4 Viewing EMMA Revenue and Energy Forecast

The AI Energy Management Assistant (EMMA) provides intelligent energy scheduling and management functions. Based on big data analysis, it accurately predicts the power generation and consumption curves of households, and intelligently stores, purchases, and sells electricity to achieve optimal system performance, improve the utilization rate of PV power, and maximize financial benefits.

Prerequisites

The owner has enabled the EMMA function for the plant.

Viewing the Revenue After EMMA Was Enabled and Energy Forecast

1. On the **Overview** screen, tap ... in the upper right corner and then tap **EMMA** to view the revenue information, revenue comparison, and energy forecast.
 - Viewing the revenue comparison: In the **Revenue Comparison** area, you can view the comparison between the revenues when EMMA is enabled and disabled.
 - Viewing energy forecast: In the **Energy Forecast** area, you can view details about the energy yield, power consumption, and battery charge and discharge in the past 24 hours, and energy forecast in the next 24 hours.

5.3.5 Optimizer Disconnection Detection

Perform disconnection detection on optimizers and locate the disconnected optimizers.

Procedure

- Step 1** On the **Home** screen, tap **Plants** and tap the desired plant.
- Step 2** Tap **Layout**. If no physical layout diagram is created for the plant, the logical layout screen is displayed.
- Step 3** On the logical layout screen, tap **Disconnection detection**.
 - If multiple inverters are installed in the plant and all of them are equipped with optimizers, select the inverter to be detected in the dialog box that is displayed and tap **OK**.
 - If only one inverter in the plant is equipped with an optimizer, the detection task is directly executed after you tap **Disconnection detection**.
- Step 4** If a disconnected optimizer is detected, you can quickly locate the optimizer in the physical layout diagram and rectify the fault based on the repair suggestions.

----End

Follow-up Procedure

After the disconnection fault is rectified, perform the disconnection detection again to ensure that the fault is rectified.

5.4 O&M Management

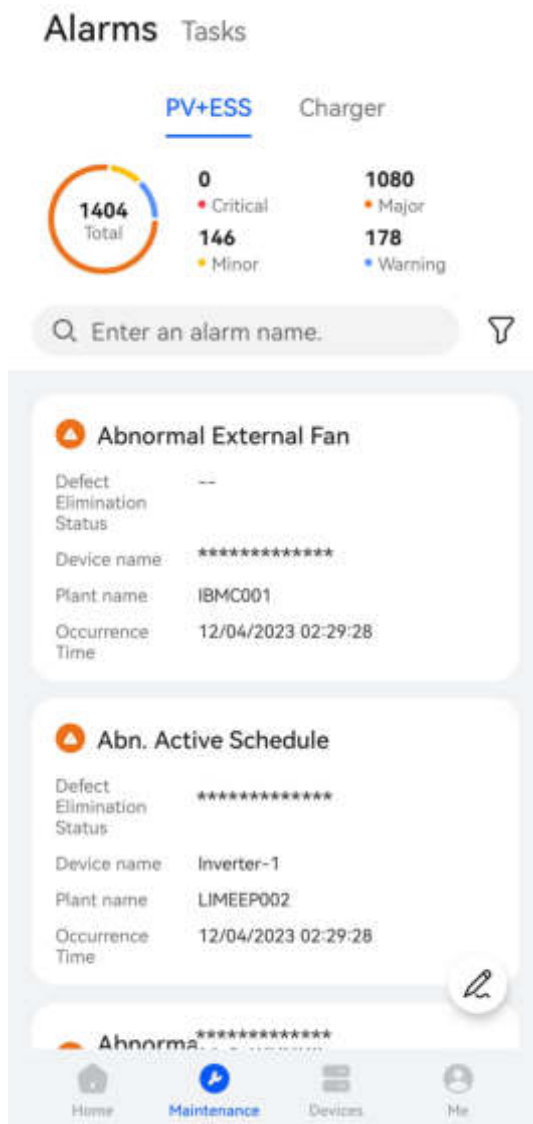
You can learn about the running status, location distribution, and alarm information of plants, and quickly track and handle plant faults.

5.4.1 Monitoring Alarm Information

You can monitor active alarms that are updated in real time to learn about the latest alarm status and handle alarms.

Viewing Alarm Information

1. Tap **Maintenance** on the home screen, and then tap the **Alarms** tab to view active alarms of all plants that you have permission to manage.



Handling Alarms

On the **Alarms** screen, tap an alarm to view its details.

You can create a ticket for, acknowledge, or clear an alarm based on the alarm cause and handling suggestions in the alarm details.

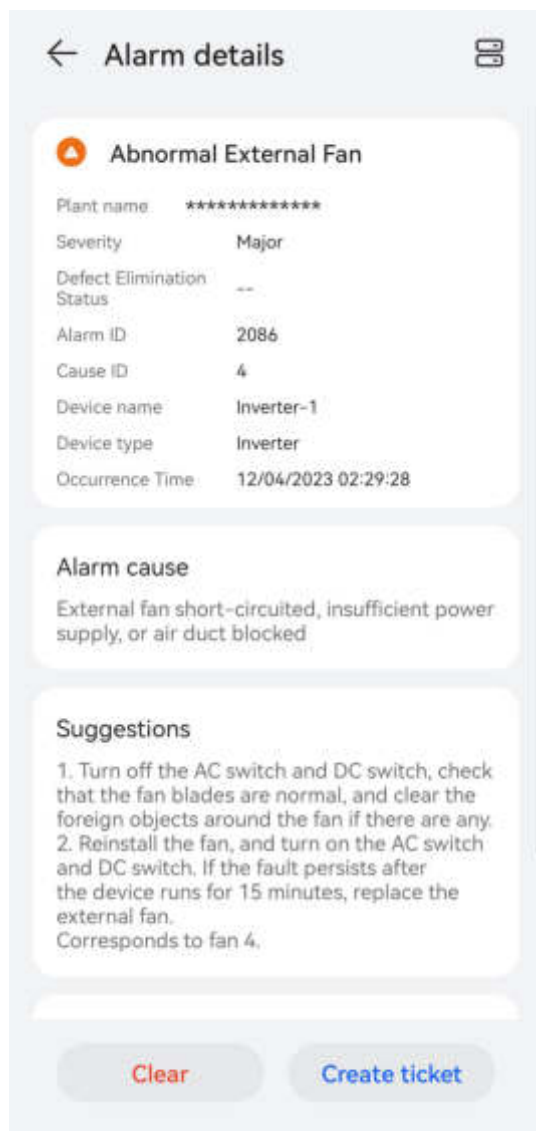


Table 5-1 Alarm handling

Operation	Description
New ticket	Record, track, and monitor the faults or defects that have occurred, and manage them using defect elimination tickets. If a defect elimination ticket has been created for the alarm, this button is not displayed.
Clear	If a fault is rectified but the alarm is not automatically cleared, tap Clear to manually clear the alarm.

 NOTE

- Charger alarms cannot be handled through defect elimination tickets.
- If a defect elimination ticket has been created for an alarm, you can [track and process the defect elimination task](#) on the **Tasks > Elimination tasks** screen.


5.4.2 Mobile O&M

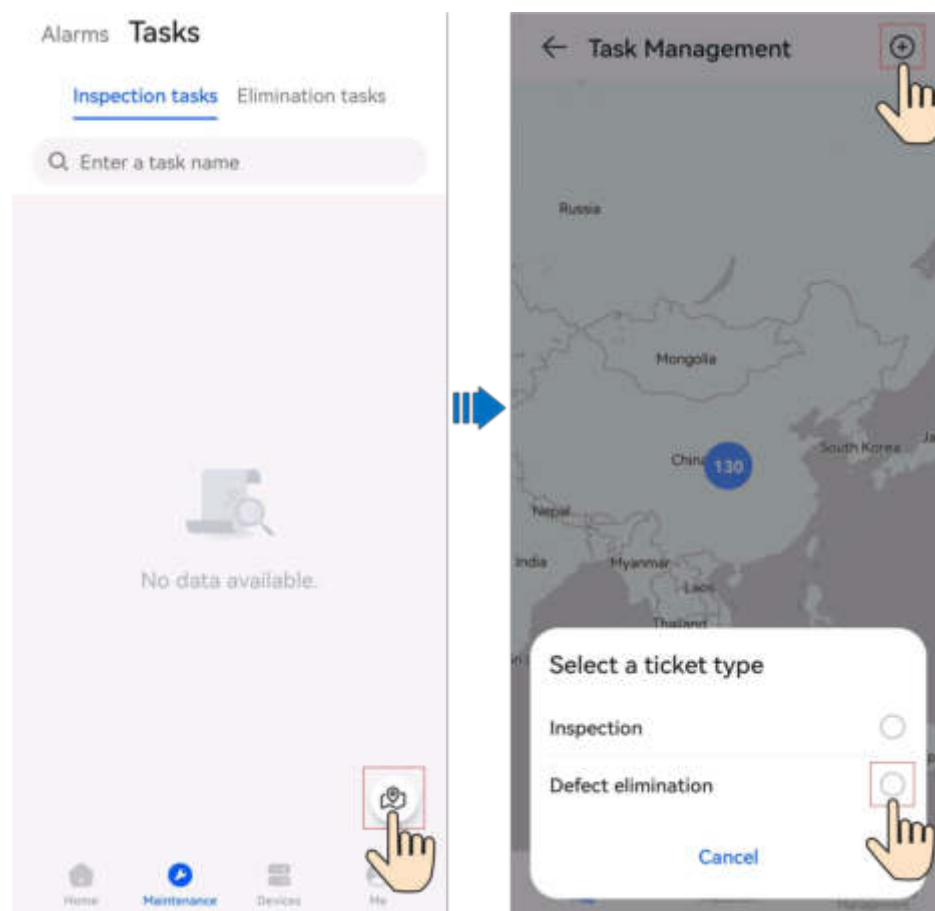
Create tasks to perform routine inspection on plant equipment, identify risks, and track and monitor faults or defects that have occurred.

5.4.2.1 Defect Elimination

You can record, track, and monitor the faults or defects that have occurred to eliminate them in a timely manner.

Creating a Defect Elimination Task

1. On the home screen, choose **Maintenance > Tasks**.
2. Tap . The **Task Management** screen is displayed.
3. Tap + in the upper right corner and select **Defect elimination**.
4. Fill in the ticket information as prompted and submit it.



Processing a Defect Elimination Task

1. On the home screen, choose **Maintenance** > **Tasks** > **Elimination tasks**.
2. On the **Elimination tasks** screen, view and process defect elimination tasks.




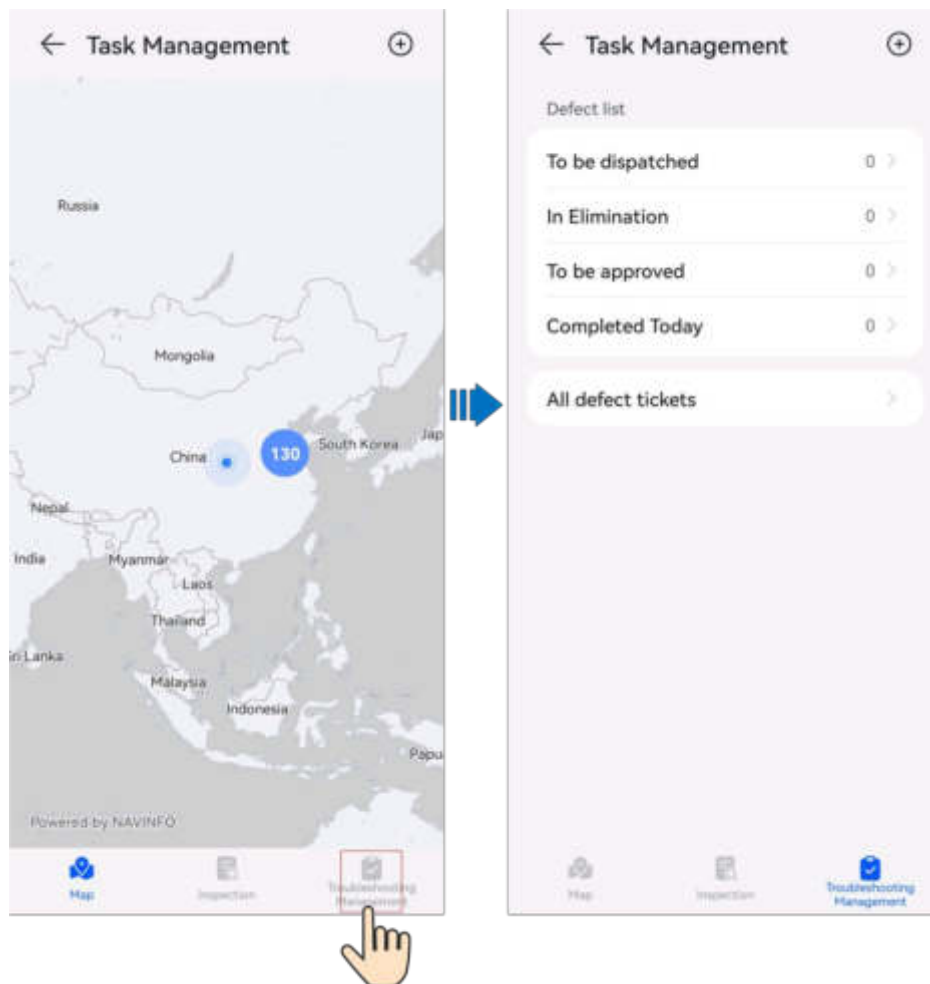
Table 5-2 Defect elimination task status description

Task Status	Description
To be dispatched	After the current handler returns a task in the In Elimination state to the creator, the task enters the To be dispatched state. The creator can re-assign or cancel a task.
In Elimination	Submit the defect handling description and handling result. Alternatively, you can return the task to the upper-level handler for re-assigning the task.

Task Status	Description
To be approved	Accept the completed defect elimination task to ensure that the defects are completely eliminated.

Managing Defect Elimination Tasks

1. On the **Elimination tasks** screen, tap . The **Task Management** screen is displayed.
2. Tap **Troubleshooting Management**, and tap and view all defect elimination tasks as required.




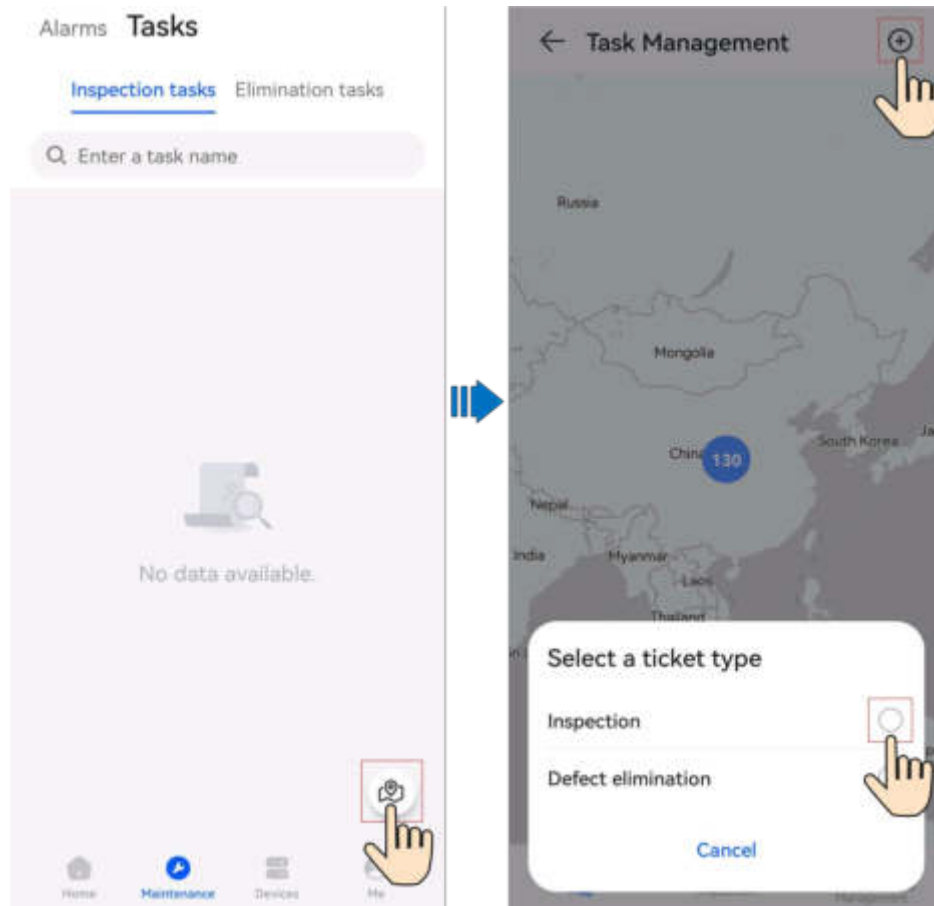
5.4.2.2 Inspection Management

Perform routine inspection on plant equipment to detect and report exceptions in a timely manner.

You can use the common inspection items preset by the management system for routine O&M of PV plants.

Creating an Inspection Task

1. On the home screen, choose **Maintenance** > **Tasks**.
2. Tap . The **Task Management** screen is displayed.
3. Tap + in the upper right corner and select **Inspection**.
4. Fill in the ticket information as prompted and submit it.



Processing an Inspection Task

1. On the home screen, choose **Maintenance** > **Tasks** > **Inspection tasks**.
2. On the **Inspection tasks** screen, view and process inspection tasks.

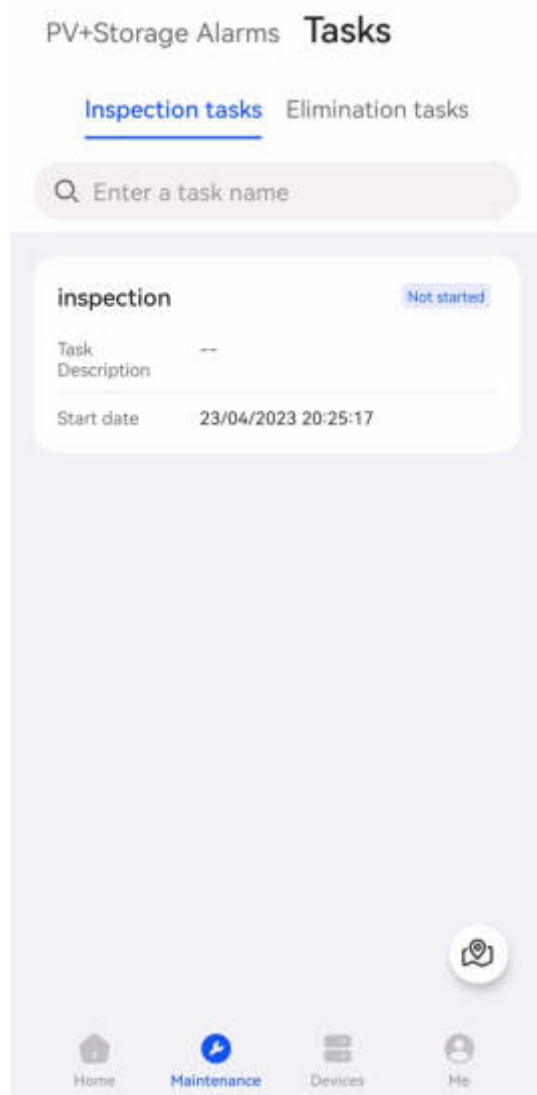


Table 5-3 Inspection task status description


Task Status	Description
Not started	After receiving a task, the inspection personnel can tap the task to be inspected to start it. 1. Tap a task in the Not started state. The Task details screen is displayed. 2. Tap Start Inspection to start the inspection task.
Inspection in progress	The inspection personnel can tap an inspection task to complete the inspection, fill in the inspection report as prompted, and save the report.
To be confirmed	You can accept the inspection tasks that have been completed.

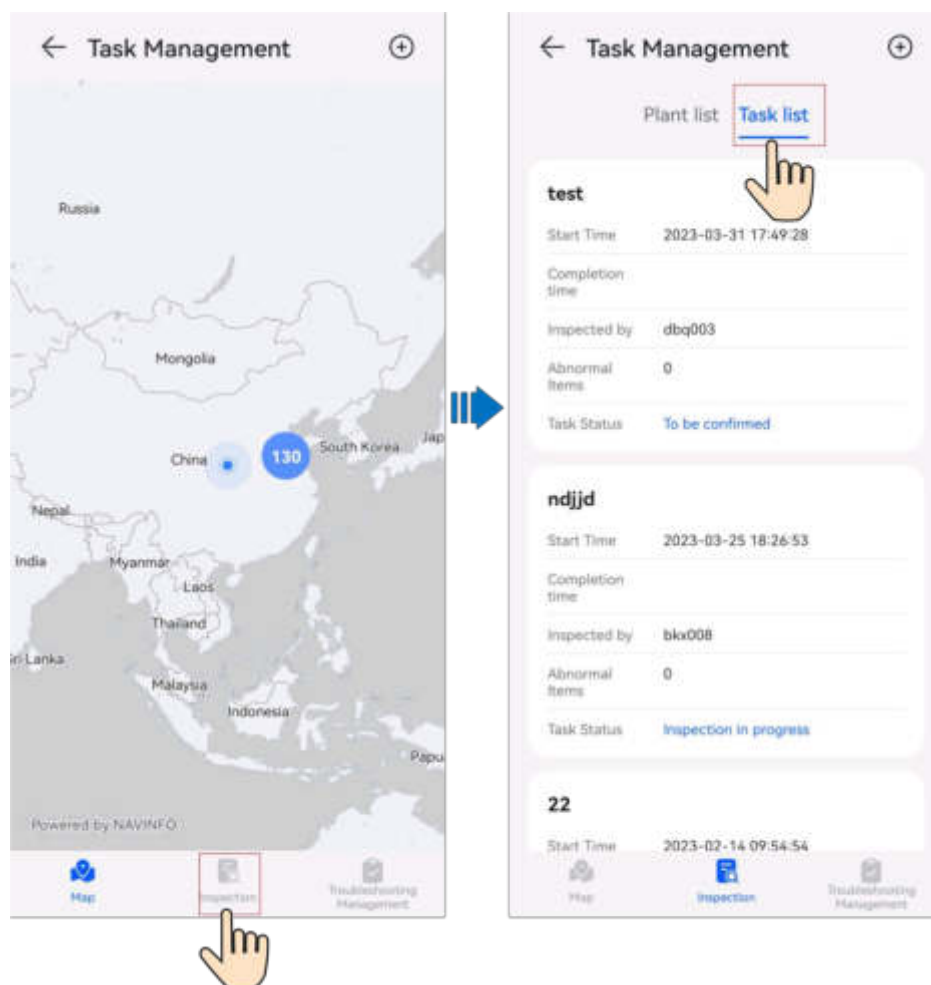
Task Status	Description
Terminated	The current inspection task is complete.

Managing Inspection Tasks

Inspection tasks can be viewed and managed by plant and task.

- By plant: View the historical inspection results and inspection details of a plant.
- By task: View the execution information about inspection tasks and process the tasks.

1. On the **Inspection tasks** screen, tap . The **Task Management** screen is displayed.
2. Tap **Inspection**. Tap **Plant list** or **Task list** as required to view all inspection tasks.
3. View and manage inspection tasks as prompted.



5.5 Device Management

You can monitor the device running status in real time, set parameters, replace devices, and change device names.

Setting Device Parameters

1. Log in to the app and tap **Devices** on the home screen.
2. On the **Device management** screen, tap a device name.
3. Tap **::** in the upper right corner and tap **Parameter settings**.
4. On the **Parameter settings** screen, set parameters as required.
5. Tap **Confirm**.

NOTE

- The parameters that can be set vary with the device model. For details about parameter settings, see the user manual of the device.
To obtain the manuals: Visit <https://support.huawei.com/enterprise/en/category/fusion-solar-pv-pid-1600073963553> and enter the desired device model to search for the corresponding user manual.
- For details about how to set energy storage parameters, see [10.3 Battery Parameters](#).

Changing a Device Name


1. Log in to the app and tap **Devices** on the home screen.
2. On the **Device management** screen, tap a device name.
3. Tap **...** in the upper right corner and tap **Modify device name**.
4. Enter a new device name and tap **Confirm**.

Replacing a Device

NOTICE



Ensure that the following conditions are met for device replacement:

- The current device is disconnected from the management system.
- The target device has been replaced and commissioned. For details, see *FusionSolar Smart PV Solution-Device Replacement Commissioning Guide* at <https://support.huawei.com/enterprise/en/doc/EDOC1100197498>.

-
1. Log in to the app and tap **Devices** on the home screen.
 2. On the **Device management** screen, tap a device name.
 3. Tap **...** in the upper right corner and tap **Device Replacement**.
 4. On the **Device Replacement** screen, tap  to scan the QR code of the target device or enter its SN.

5. Tap **Replace**.

O&M Authorization

1. Log in to the app and tap **Devices** on the home screen.
2. On the **Device management** screen, tap a device name.
3. Tap ... in the upper right corner and tap **O&M Authorization**.
 - When the button status is  , the WLAN is disabled.
 - To enable the WLAN, set the WLAN button to  .

Setting Third-Party Management System Parameters

1. Log in to the app and tap **Devices** on the home screen.
2. On the **Device management** screen, select the target Smart Dongle.
3. Tap ... in the upper right corner and tap **Parameter settings**.
4. In the management system-1 parameters, set **Connect** to **Enable**.
5. Set server parameters for the third-party management system as prompted.

5.6 Customer Service Chatbot

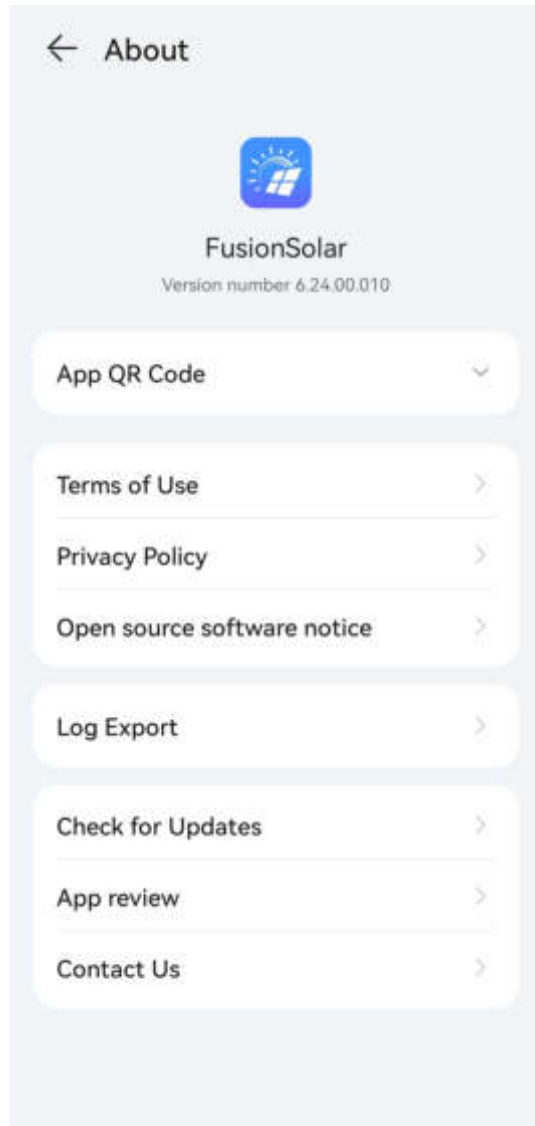
The chatbot provides product knowledge and technical self-service.

Procedure

1. On the home screen, choose **Me > Customer Service Chatbot**.

5.7 Log Export

On the home screen, tap **Me > About**.



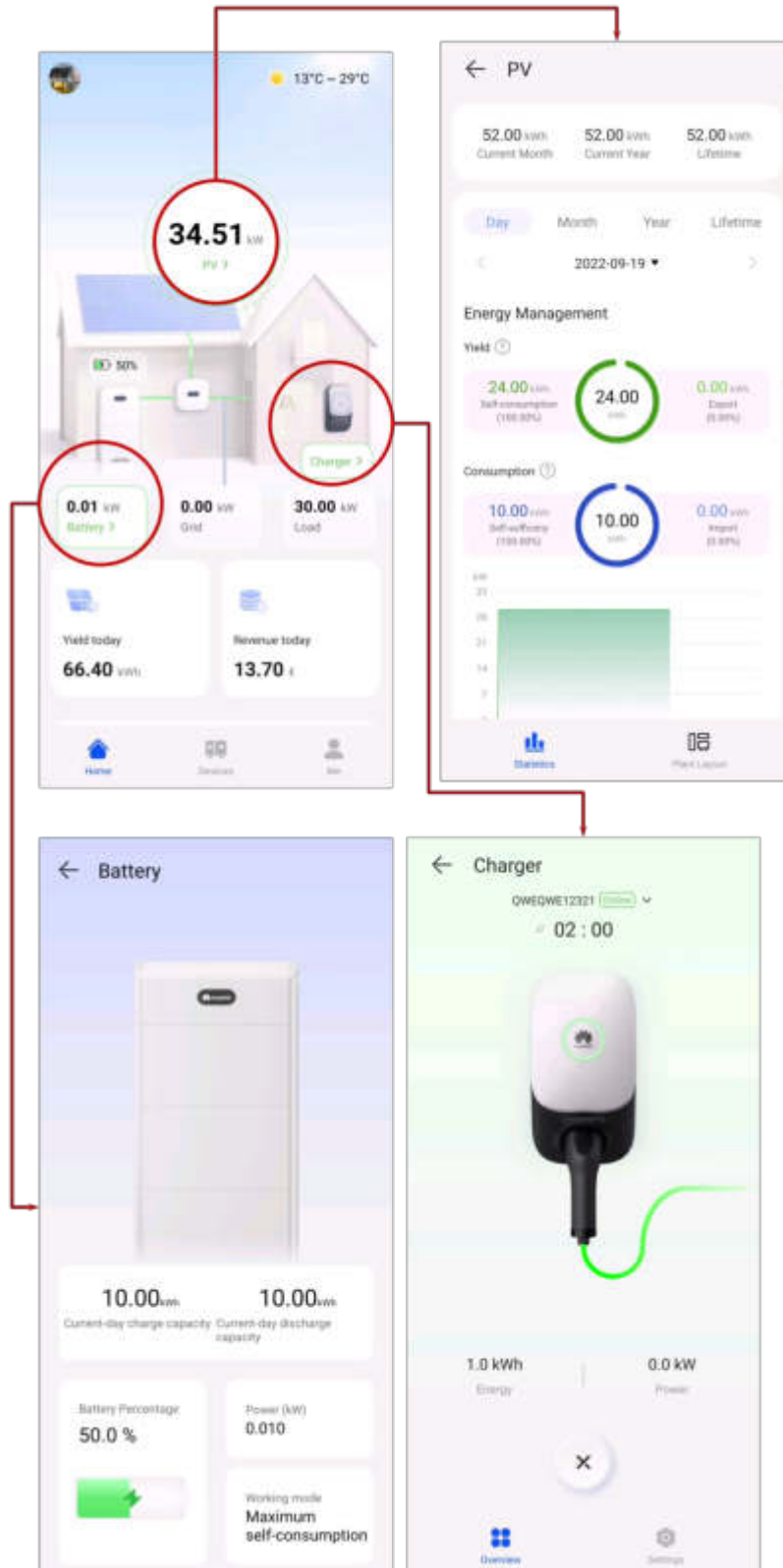
Tap **Log Export** to send logs to technical support engineers through Bluetooth, email, or other methods.

6 I'm an Owner

You can use the FusionSolar app to check the power generation and consumption information of your home energy system anytime and anywhere.

Home

After you update the software to 6.23.00.157 or later, if your associated plants do not exceed 10 and all plant types are **Residential**, you can tap **Me > New Version** to switch to the new home screen.



NOTE

For users with a charger only, the home screen is not displayed. In this case, the charger screen is displayed. For details, see [6.3 Using a Charger](#).

On the **Home** screen, tap **PV**, **Battery**, or **Charger** to view the running status and information of the corresponding device.

If a plant has active alarms, the latest alarm information is displayed in the upper part of the **Home** screen. Tap the alarm to view its details.

 **NOTE**

- For details about PV devices, see [6.1 Viewing the PV Plant Status](#).
- For details about energy storage devices, see [6.2 Viewing the Battery Running Status](#).
- For details about chargers, see [6.3 Using a Charger](#).
For details about environmental benefits, see [10.2 PV Power Generation Offsetting Carbon Emissions](#).

On the **Devices** screen, monitor the running status of devices in real time, change device names, and set parameters.

 **NOTE**

Only some devices support parameter settings. The parameter settings displayed on the screen may vary.

On the **Me** screen, set personal information and view more helpful information.

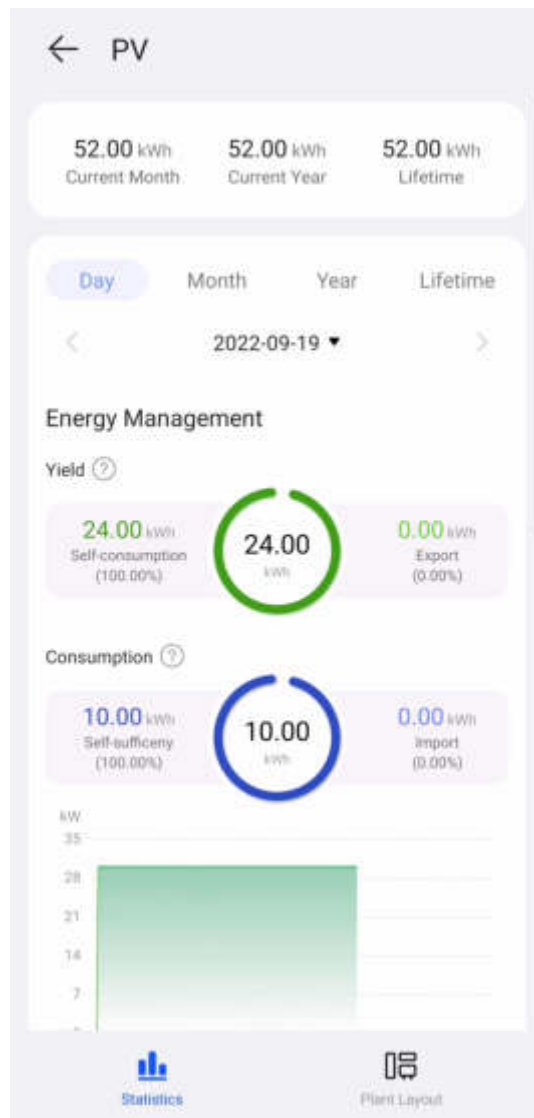
6.1 Viewing the PV Plant Status

Log in to the app and tap **PV** on the **Home** screen to view the PV yield statistics and plant layout.

Statistics

You can view the energy yield and consumption, revenue, energy flow diagram, and environmental benefits in real time.

Figure 6-1 Statistics




- Yield statistics: Displays the energy yield statistics of a plant.
- Energy management: Displays the energy yield, energy consumption, and self-consumption of a plant in different time dimensions, helping you analyze and optimize energy consumption. When an ESS is available, it stores and discharges energy, improving the self-consumption rate.
- Revenue statistics: Calculates the sum of feed-in revenue of a PV plant (feed-in electricity x feed-in tariff) and savings in electricity bills (self-consumed electricity x purchase price) to display the benefits brought by the PV plant.

Viewing the Plant Layout (with Optimizers)

Tap **Plant Layout**. The logical layout and physical layout are displayed. You can view the physical location and status of an optimizer.

- Tap a PV module to view the SN and running information.

- Tap  to display the logical connections between inverters and PV modules in different colors. PV modules connected to the same inverter are in the same color.

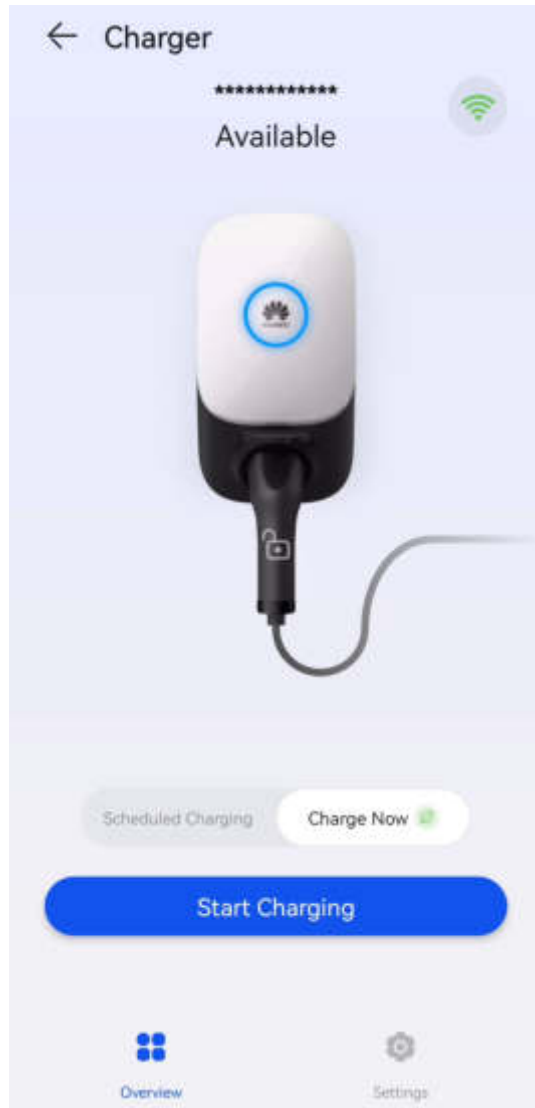
6.2 Viewing the Battery Running Status

Log in to the app and tap **Battery** on the **Home** screen to view the battery SOC, working mode, and charge and discharge energy of the current day in real time.



6.3 Using a Charger

The FusionSolar app can connect to chargers. You can use the app to charge a car, set the charging power, and charge with PV power.



6.3.1 Starting and Stopping Charging on the App

Precautions

Before charging, you need to completely insert the charging connector into the charger and vehicle. If the indicator on the charger turns blue on and off cyclically (on for 4s and off for 1s), the charger is successfully connected to the vehicle.

Starting Charging

On the charger screen, choose **Charge Now** > **Start Charging**. If the indicator on the charger turns blue on and off cyclically (on for 0.5s and off for 0.5s), the charger is in the charging state.

Stopping Charging

After the vehicle is fully charged, the charger automatically stops charging. In this

case, the indicator is steady blue. You can also touch and hold



on the app to stop charging.

6.3.2 Start Charging Through Authentication via Bluetooth

Complete the Bluetooth pairing of the charger on the app. Ensure that the app is running and that the Bluetooth function of the phone is enabled. When the phone is close to the charger, the identity authentication is automatically completed and the charging starts.

Precautions

Before charging, enable the [Authentication via Bluetooth](#) function.

Starting Charging

1. Log in to the FusionSolar app (if you did not log out last time, simply open the app), and move your phone close to the charger to complete identity authentication.
2. Insert the charging connector completely into the charger and the charging port of a vehicle. If the indicator on the charger turns blue on and off cyclically (on for 0.5s and off for 0.5s), the charger is in the charging state.

Stopping Charging

After the vehicle is fully charged, the charger automatically stops charging. In this

case, the indicator is steady blue. You can also touch and hold



or swipe the RFID card in the swiping area to stop charging.

6.3.3 Starting and Stopping Charging Using an RFID Card

Precautions

- Before charging, ensure that you [add an RFID card](#) to the system.
- Before charging, you need to completely insert the charging connector into the charger and vehicle. If the indicator on the charger turns blue on and off cyclically (on for 4s and off for 1s), the charger is successfully connected to the vehicle.

Starting Charging

Place the ring pattern on the [RFID](#) card in the swiping area. If the indicator blinks blue fast three times, the card is swiped successfully.

- If **Scheduled Charging** is not set, wait until the indicator on the charger turns blue on and off cyclically (on for 0.5s and off for 0.5s), indicating the charging state.
- If you have set the **Scheduled Charging**, the charger enters the waiting state. The indicator is pulsating blue for 4s and off for 1s. When the scheduled time arrives, the charger automatically starts. You can also swipe the card again to charge immediately.

Figure 6-2 Charging by card swiping



Stopping Charging

After the vehicle is fully charged, the charger automatically stops charging. In this case, the indicator is steady blue. You can also swipe the RFID card in the swiping area to stop charging.

6.3.4 Plug-and-Play Charging

After the charging connector is inserted into the charging port of a vehicle, the charger automatically starts and stops charging.

Precautions

- To use plug-and-play charging, disable the **Identity Authentication** function, which may result in unauthorized charging.
- If the property safety is ensured, you can enable the **Lock Charging Connector** function and lock the charging connector to the charger. In this way, you only need to insert the charging connector to your vehicle to start a charging session.

Starting Charging

Insert the charging connector completely into the charger and the charging port of a vehicle. If the indicator on the charger turns blue on and off cyclically (on for 0.5s and off for 0.5s), the charger is in the charging state.

Stopping Charging

After the vehicle is fully charged, the charger automatically stops charging. In this

case, the indicator is steady blue. You can also touch and hold



on the app

or swipe the RFID card in the swiping area to stop charging.

6.3.5 Scheduled Charging

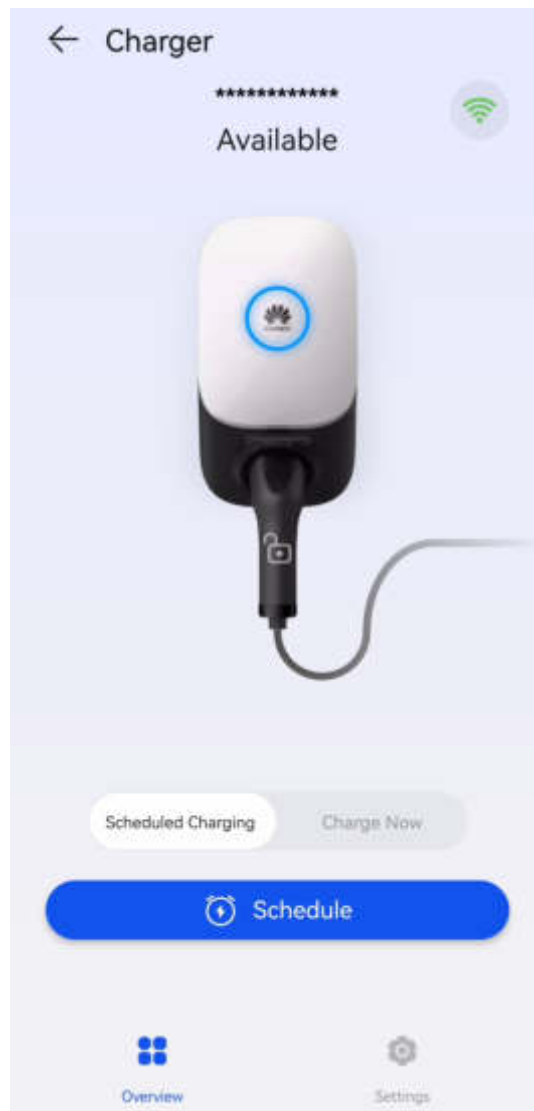
You can use the scheduled charging function to charge your car during off-peak hours to save electricity fees.

Precautions


Before charging, you need to completely insert the charging connector into the charger and vehicle. If the indicator on the charger turns blue on and off cyclically (on for 4s and off for 1s), the charger is successfully connected to the vehicle.

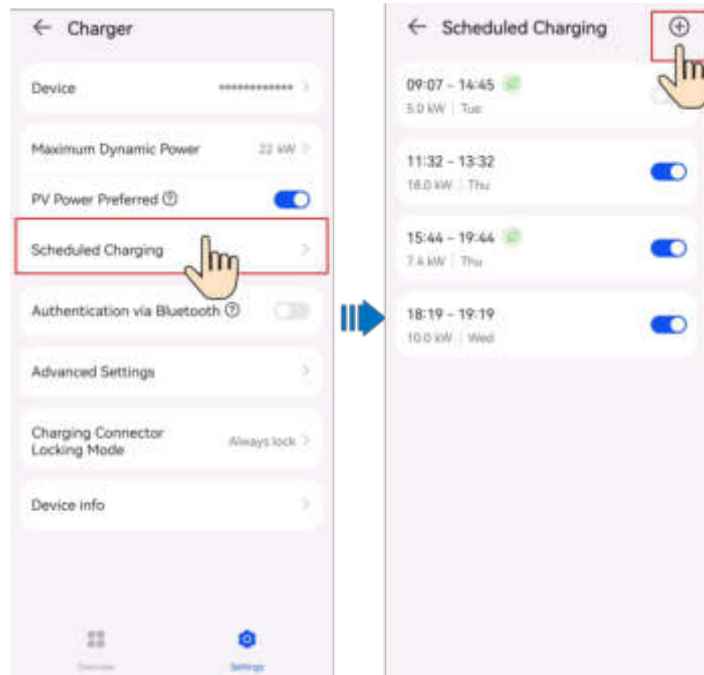
Charging Procedure


1. On the charger screen, tap **Scheduled Charging**.
2. Tap **Scheduled Charging**. If the indicator on the charger turns blue on and off cyclically (on for 4s and off for 1s), the charger is in the scheduled charging waiting state.

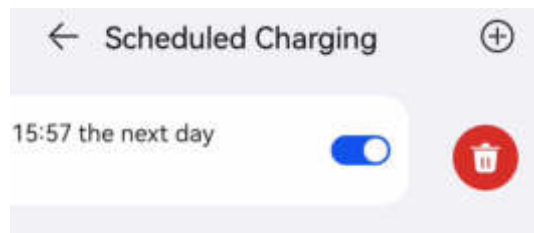


Setting the Scheduled Charging Time

1. On the charger screen, choose **Settings > Scheduled Charging**.
 - Tap  to set the charging start time and end time.
 - Tap a scheduled charging plan to edit it.



- Select a plan you want to delete, press and swipe left, and tap  to delete the scheduled time.



6.3.6 Settings

Changing a Device Name

1. On the charger screen, choose **Settings** > **Device**.
2. Enter the charger name and tap **OK**.

Configuring PV Power Parameters

After the **PV Power Preferred** mode is enabled, you need to set **Max Charging Power from Grid** and **Surplus Power to Start Charging** for the charger.

NOTE

This parameter is not displayed in non-PV scenarios.

1. On the charger screen, choose **Settings** > **Advanced Settings** > **PV Power Configuration**.
 - **Max Charging Power from Grid:** This means the maximum power that the charger can draw from the power grid during charging in PV power mode.

- **Surplus Power to Start Charging:** In PV power mode, when the PV feed-in power is greater than this set value, the charger starts to charge the vehicle.
- **Switch Between Single and Three Phases:** You are advised to enable this function in PV scenarios to increase the PV energy utilization.

After this function is enabled, the system automatically switches to the PV power charging mode when detecting that the phase switching conditions are met. To ensure charging safety, the ongoing charging task will be interrupted for a short period of time. After the switching is complete, the charging task will be restarted.

 **NOTE**

The temporary interruption of charging caused by switching between single- and three-phase power will not cause damage to the vehicle.

Authentication via Bluetooth

1. On the charger screen, tap **Settings**.
2. Enable **Authentication via Bluetooth**.
3. If you use the function for the first time, follow the instructions to perform Bluetooth pairing.

Identity Authentication

NOTICE

If identity authentication is disabled, the charger automatically starts charging after the charging connector is inserted into the charging port of a vehicle, which may result in unauthorized charging.

After identity authentication is enabled, you need to swipe card for authentication before charging.

1. On the charger screen, tap **Settings**.
2. Enable **Identity Authentication**.

Lock Charging Connector

Enable the **Lock Charging Connector** function. You can lock the charging connector to the charger. In this way, you only need to insert the charging connector to your vehicle to charge.

1. On the charger screen, tap **Settings**.
2. Enable **Lock Charging Connector**.

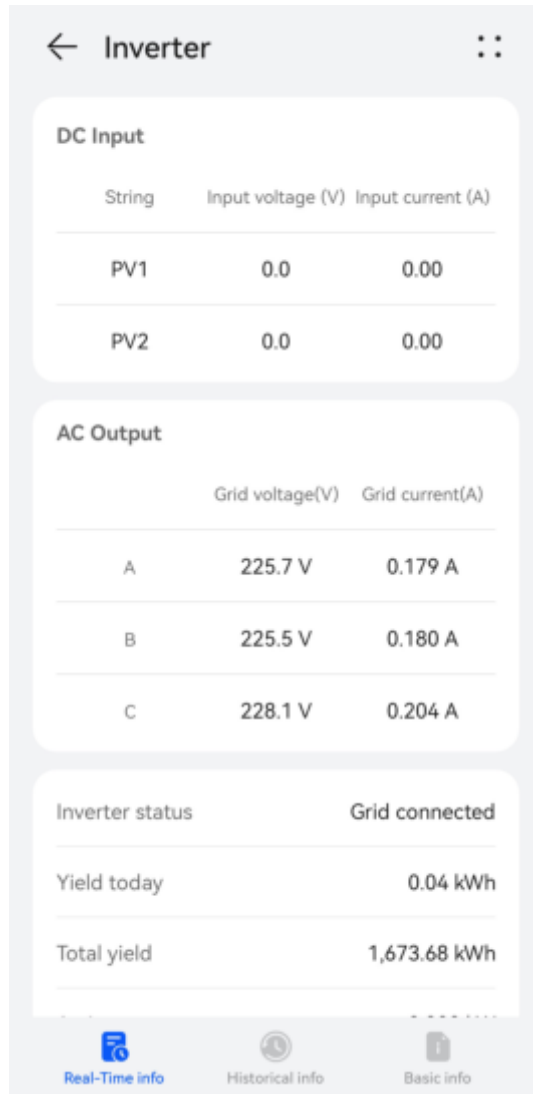


6.4 Managing Devices

You can view the real-time, historical, and basic information about a device.

Viewing Real-Time Information

On the **Real-time info** screen, you can view key running parameters such as the device running status and energy yield.



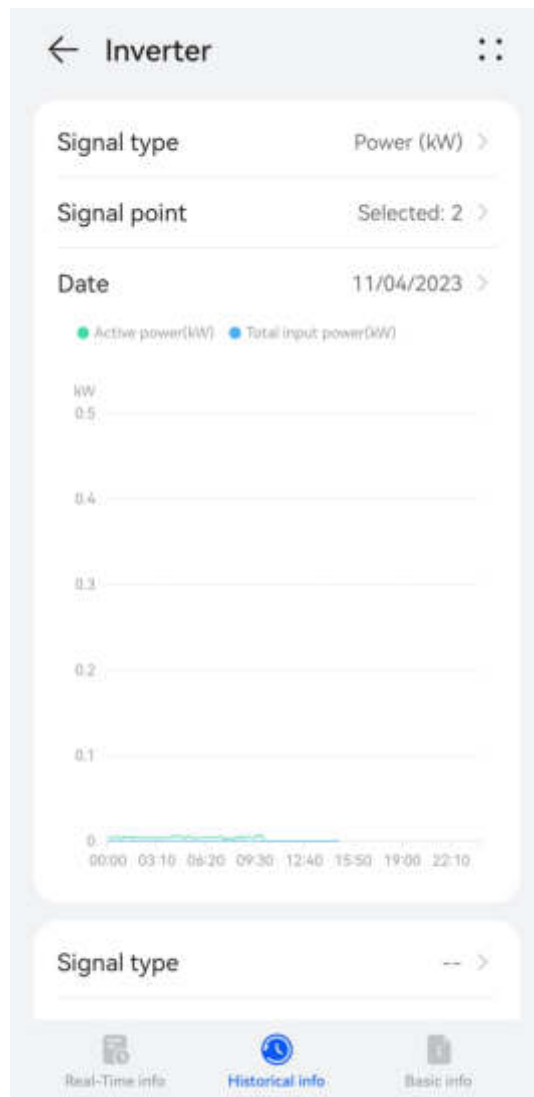
Viewing Historical Information

On the **Historical info** screen, you can query the running status of devices in a specified period.

Set **Signal type**, **Signal point** and **Query time**, and view the query results of historical information.

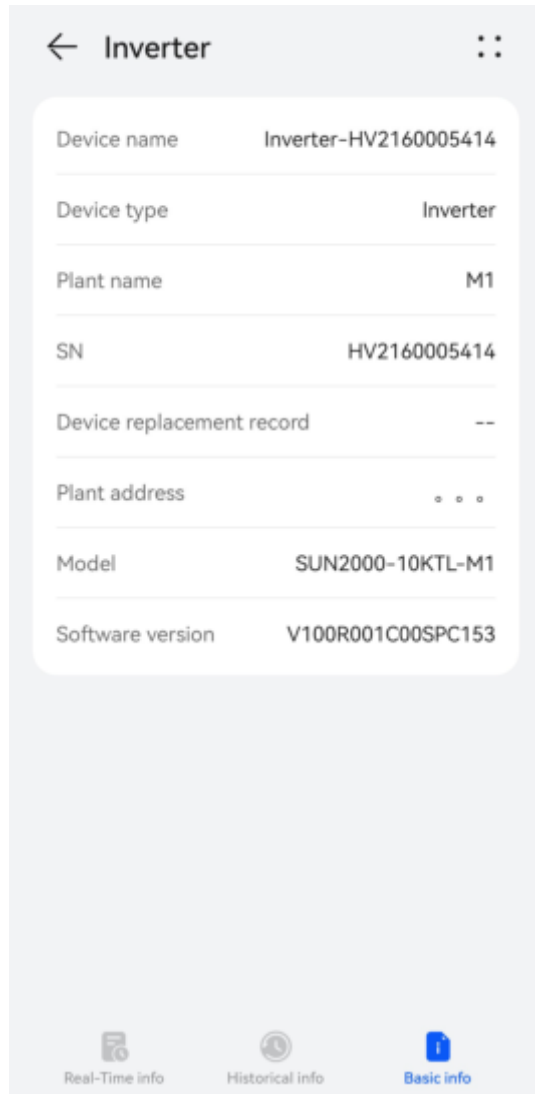
NOTE

If the data in a certain period is incomplete or missing, contact the installer to collect the missing data.



Querying Basic Information

On the **Basic info** screen, you can view basic information such as the device type and SN.



Setting Device Parameters

1. On the **Device** screen, tap a target device.
2. Tap **::** in the upper right corner and tap **Parameter settings**.
3. On the **Parameter settings** screen, set parameters as required.
4. Tap **Confirm**.

NOTE


- The parameters that can be set vary with the device model. For details about parameter settings, see the user manual of the device.
To obtain the manuals: Visit <https://support.huawei.com/enterprise/en/category/fusion-solar-pv-pid-1600073963553> and enter the desired device model to search for the corresponding user manual.
- For details about how to set energy storage parameters, see [10.3 Battery Parameters](#).

6.5 Managing Plants

On the app, you can modify the basic plant information and electricity price information, and unbind or delete devices.

Modifying Basic Plant Information


You can change the plant address, time zone, and other information.

1. Choose **Me > Plant management** and tap the target plant.
2. On the **Enter basic info** screen, tap  in the upper right corner.
3. Modify related information as required and tap **Save**.



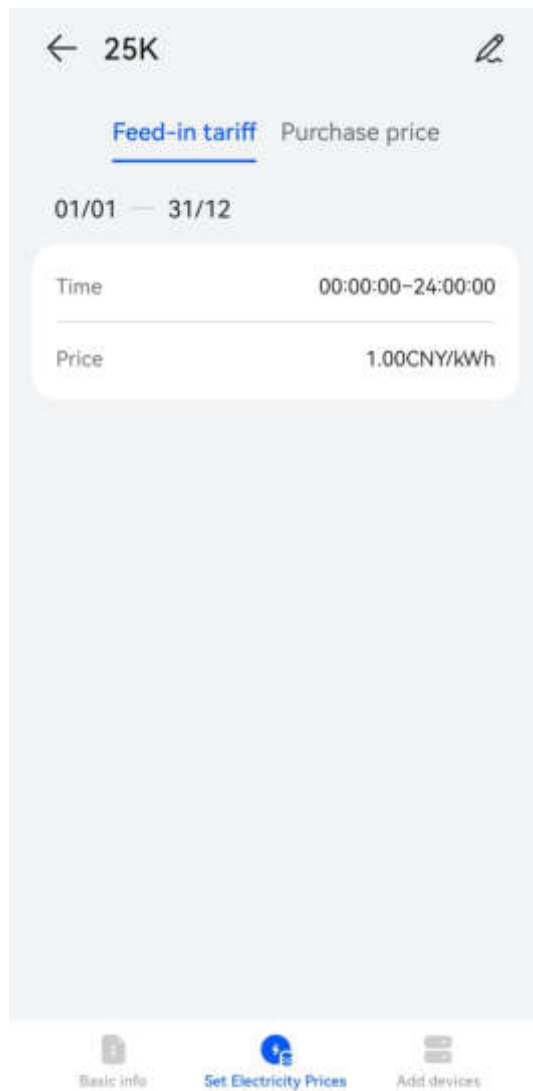
Modifying the Electricity Price

If the electricity price varies or changes in different time periods, you need to modify the electricity price to ensure that the plant benefit calculation is more accurate.



1. Choose **Me > Plant management** and tap the target plant.
2. Tap **Set Electricity Prices**.
3. Tap  in the upper right corner and set **Feed-in tariff** and **Purchase price** as prompted.
4. Tap **Save**.

 **NOTE**

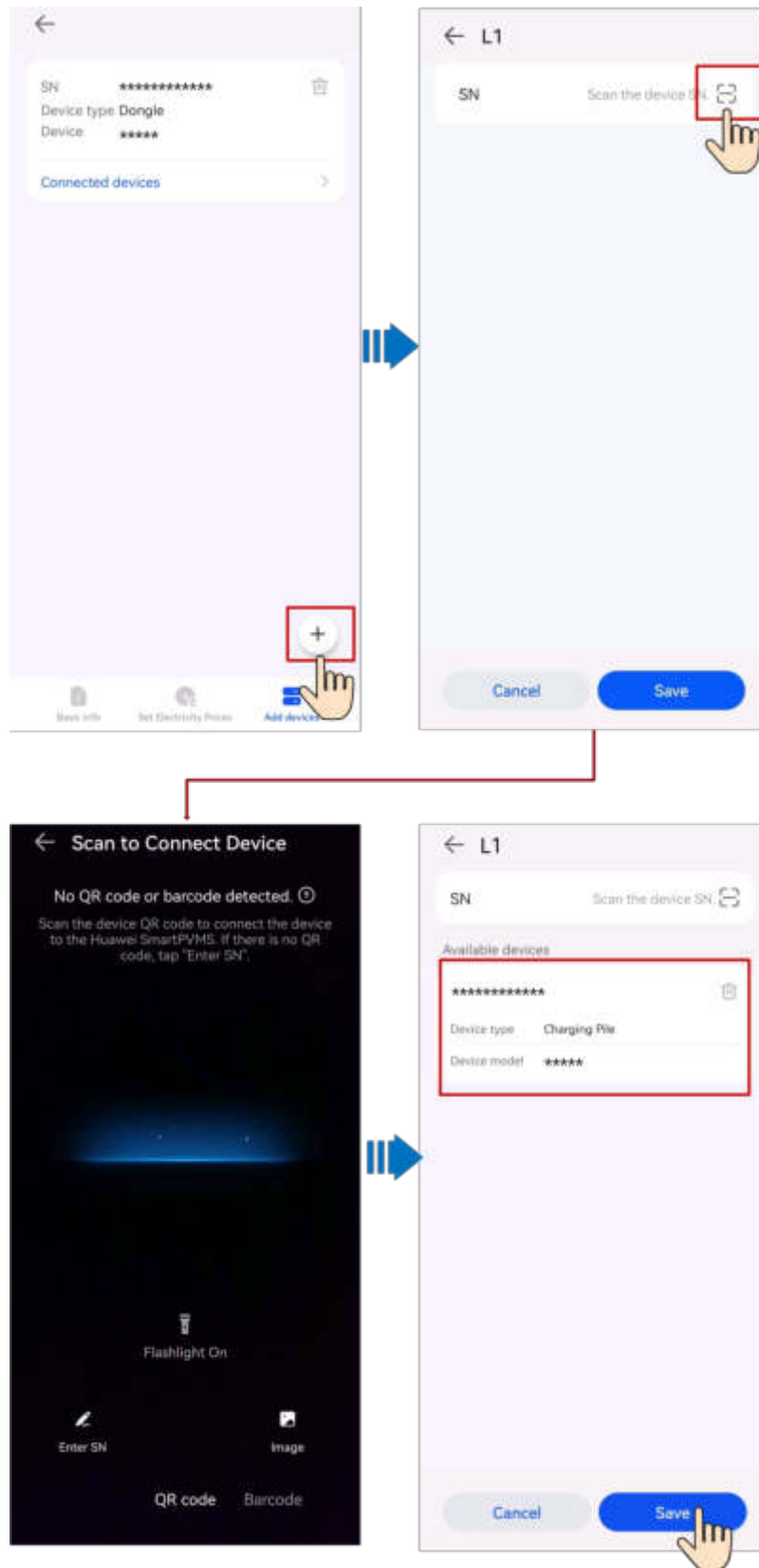
If the electricity price unit is inconsistent with the local currency, contact the installer to change the currency.




Binding a Charger

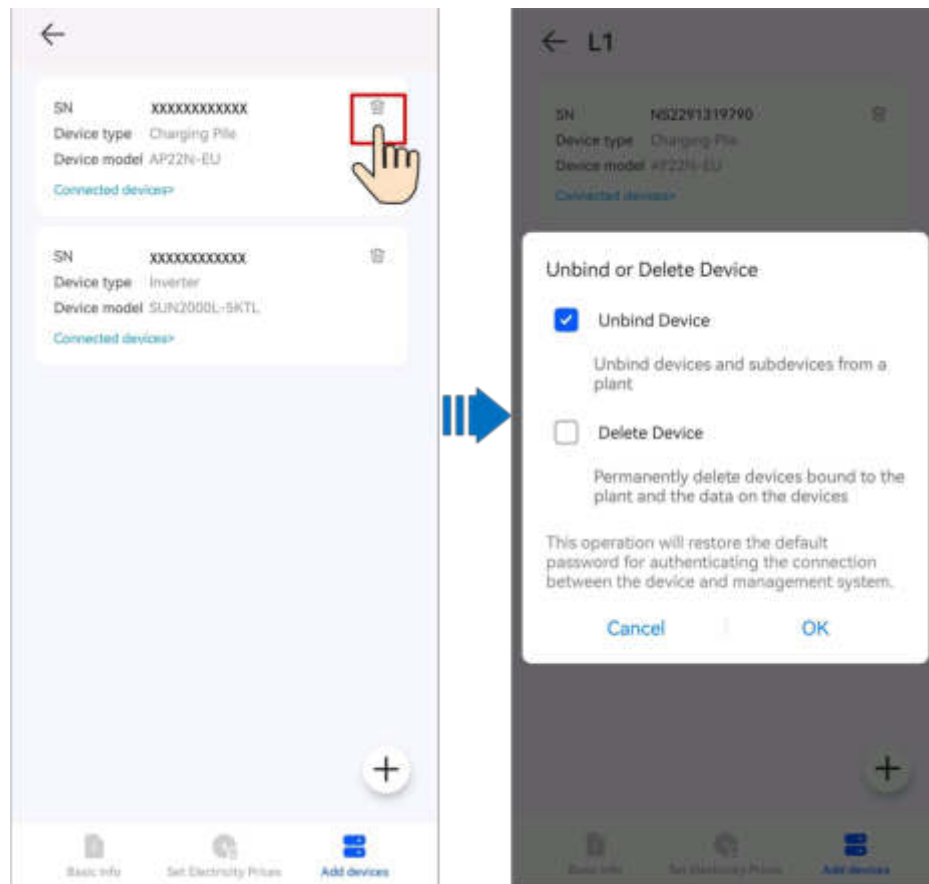
1. Choose **Me > Plant management** and tap the target plant.
2. Tap **Add devices**, and then tap .
3. Tap  on the right of **Device SN** to scan the QR code on the charger.

4. Tap **Save**.



Unbinding or Deleting Devices

1. Choose **Me > Plant management** and tap the target plant.
2. Tap **Add devices**.
3. Tap  and select **Unbind Device** or **Delete Device** based on the site requirements.



NOTE

- After a device is unbound, the running data of the device and its subdevices is stored in the database. The default data retention period is six months. To change the retention period, contact the system administrator.
 - If a device is rebound to a plant within the data retention period, the device inherits the retained data.
 - If a device is not bound to a plant within the data retention period, the data will be automatically deleted.
- After a device is permanently deleted, the running data of the device and its subdevices is deleted immediately. When the device is bound to the plant again, the running data of the device is not restored.


6.6 Enabling EMMA

The AI Energy Management Assistant (EMMA) provides intelligent energy scheduling and management functions. Based on big data analysis, it accurately predicts the power generation and consumption curves of households, and intelligently stores, purchases, and sells electricity to achieve optimal system

performance, improve the utilization rate of PV power, and maximize financial benefits.

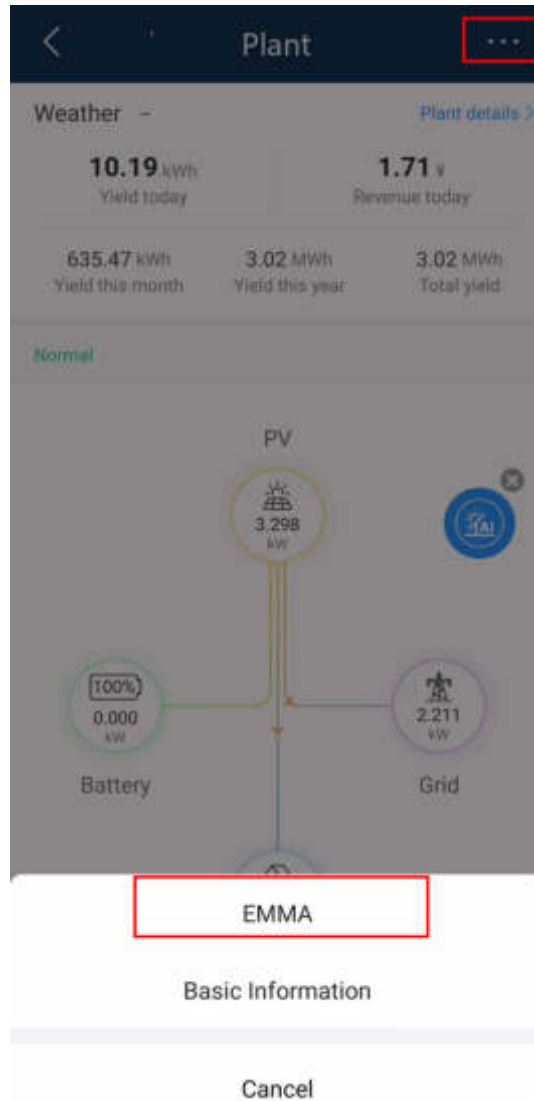
Procedure

1. On the **Overview** screen, if the system determines that the plant meets the

conditions for enabling the EMMA function,  is displayed in the energy flow diagram. You can tap this icon to enable the EMMA function.



Alternatively, tap ... in the upper right corner and then tap **EMMA**.



NOTE

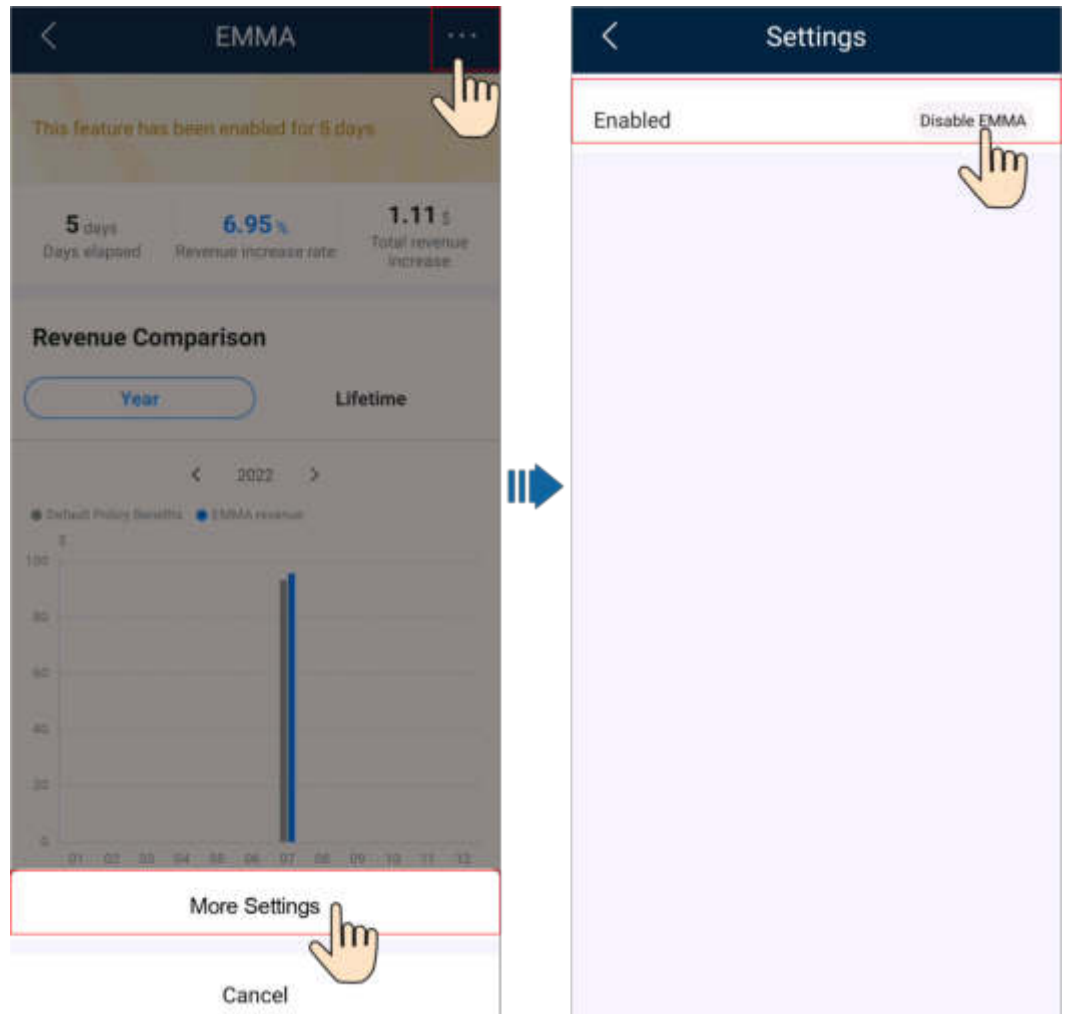
Only owners have the permission to enable the EMMA function. After the EMMA function is enabled, owners and installers can view the EMMA revenue and energy forecast.

Viewing the Revenue After EMMA Was Enabled and Energy Forecast

1. On the **Overview** screen, tap ... in the upper right corner and then tap **EMMA** to view the revenue information, revenue comparison, and energy forecast.
 - Viewing the revenue comparison: In the **Revenue Comparison** area, you can view the comparison between the revenues when EMMA is enabled and disabled.
 - Viewing energy forecast: In the **Energy Forecast** area, you can view details about the energy yield, power consumption, and battery charge and discharge in the past 24 hours, and energy forecast in the next 24 hours.

Disabling EMMA

1. On the top of the **EMMA** screen, choose ... > **More Settings** to disable the EMMA function as prompted.



NOTE

- After the EMMA function is disabled, you can still view historical revenue information and revenue comparison.
- You cannot enable EMMA again in the same month after disabling it to ensure the accuracy of revenue calculation. In the next month, when the system determines that the plant meets the conditions for enabling EMMA, you can enable EMMA again as prompted.

6.7 Processing a Plant Migration Task

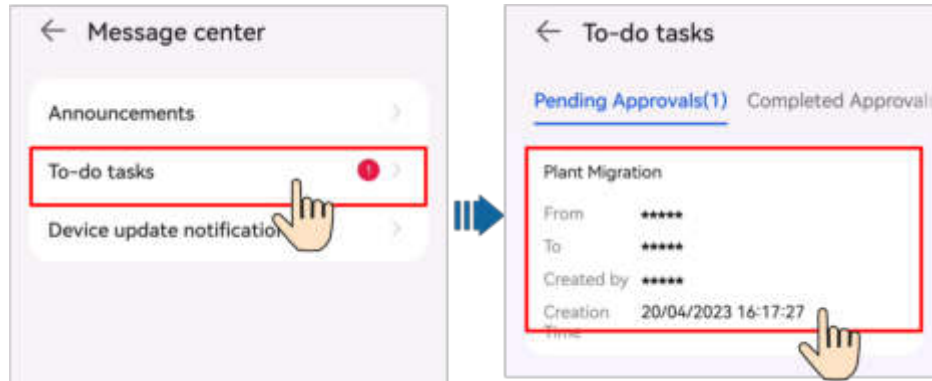
After the administrator creates a plant migration task, the owner user needs to approve the task in the app to complete the plant migration.

1. On the home screen, choose **Me** > **Message center** > **To-do tasks**.
2. In the task list to be approved, tap the plant migration task to be processed, and then tap **Process Request**.

- If you agree to migrate the plant, tap **Approve** to start the migration.
- If you do not agree to migrate the plant, tap **Reject**.

NOTE

When you migrate a plant, your personal account and associated plants will also be migrated to the new company.



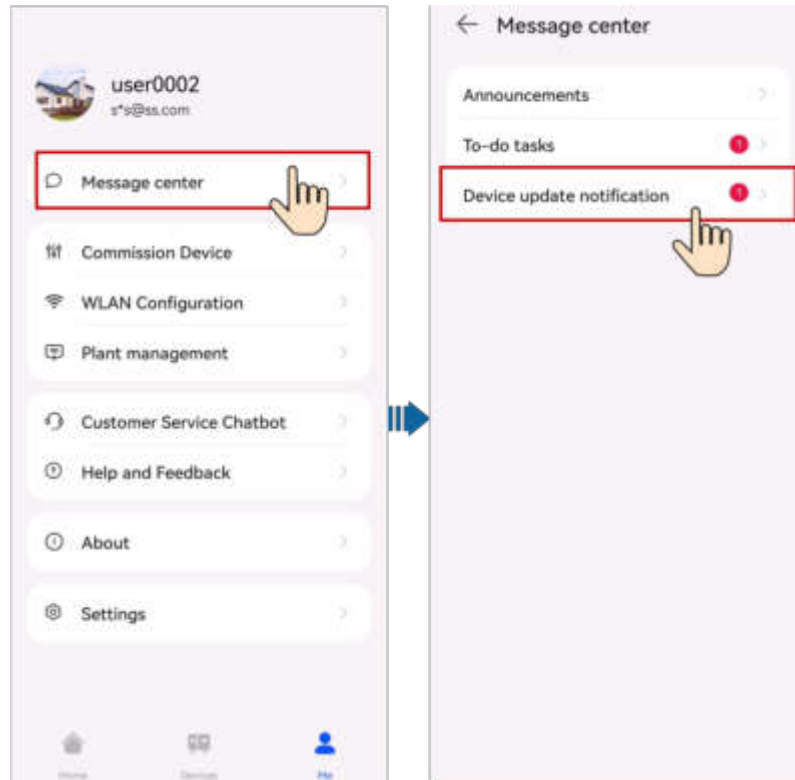
6.8 Processing an Upgrade Task

After the management system pushes a device version upgrade message to an owner user, the owner user can process the upgrade task on the app.

1. On the home screen, choose **Me > Message center > Device update notification**.
2. Tap the upgrade task to be processed to view the upgrade details.
 - If you agree to upgrade the device, tap **OK** to start the upgrade.
 - If you do not agree to upgrade the device, tap **Cancel** to cancel the upgrade task.

NOTE

A discarded task cannot be restarted. If the device still needs to be upgraded, contact the installer to create an upgrade task again.



6.9 Customer Service Chatbot

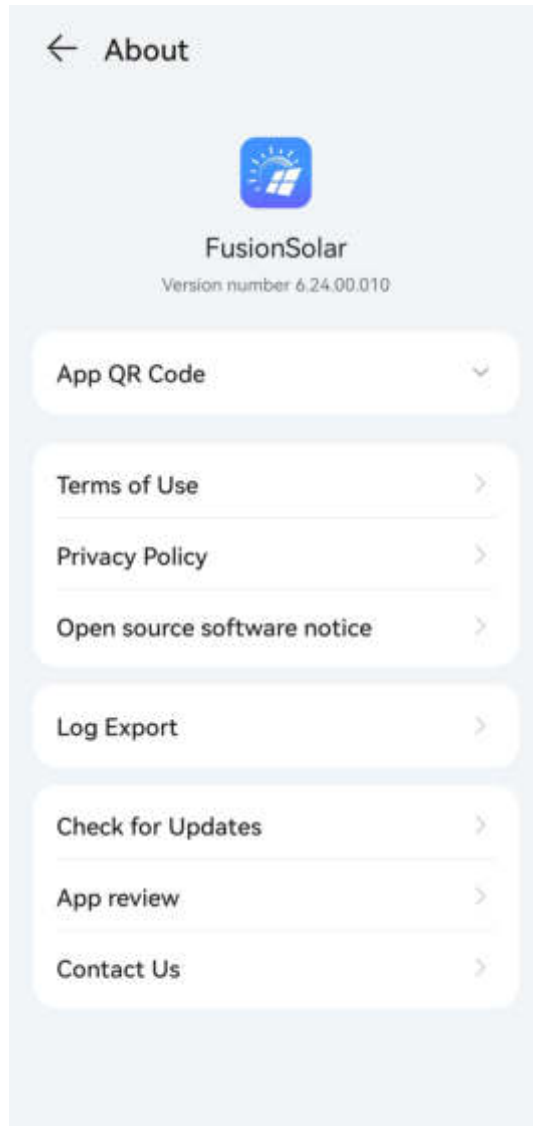
The chatbot provides product knowledge and technical self-service.

Procedure

1. On the home screen, choose **Me** > **Customer Service Chatbot**.

6.10 Log Export

On the home screen, tap **Me** > **About**.



Tap **Log Export** to send logs to technical support engineers through Bluetooth, email, or other methods.

7 Device Commissioning

For details, see the *FusionSolar App, SUN2000 App Device Commissioning Manual*.

Obtaining the Device Commissioning Manual

Method 1: Visit the following link to obtain the commissioning manual.

<https://support.huawei.com/enterprise/en/doc/EDOC1100273864>

Method 2: Scan the QR code below to obtain the device commissioning manual.



8 Account Security Settings

Account security settings include verifying email address and changing the passwords. The email address verification is performed to reset the password if a user forgot the login password. If a password is disclosed or remains unchanged for a long time, you can change the password to improve account security.

8.1 Verifying an Email Address

After an account is successfully registered, you are advised to associate the account with your email address by verifying the email address. After the verification, you can reset your password using the email address if you forgot the password.

Procedure

Method 1: When you log in to the system for the first time, the system automatically prompts you to verify your email address.

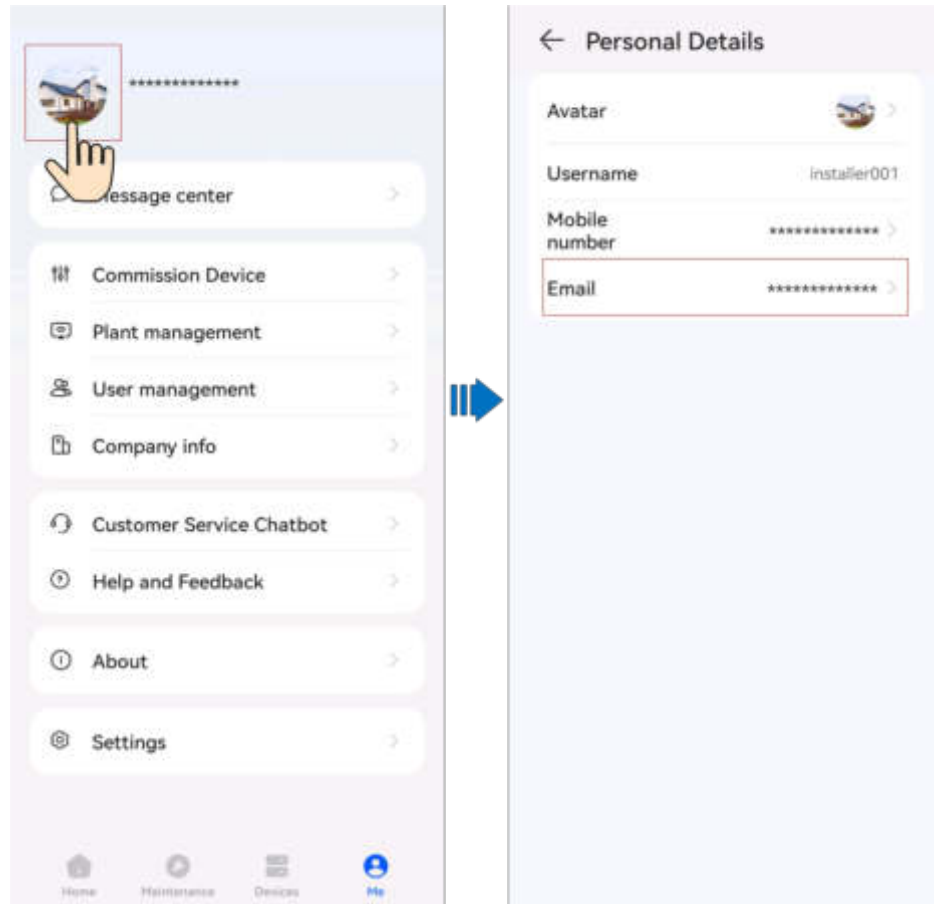
1. Enter the password for logging in to the FusionSolar app and tap **Next**.
2. After confirming that the email address is correct, tap **Send Code** and enter the verification code to verify the email address.
3. Tap **Confirm**.

NOTE

If the user does not verify the email address, this dialog box is displayed each time the user logs in to the FusionSolar app.

Method 2: Verify the email address on the **Personal Details** screen.

1. On the home screen, tap **Me** and tap your avatar.
2. Tap **Email**.



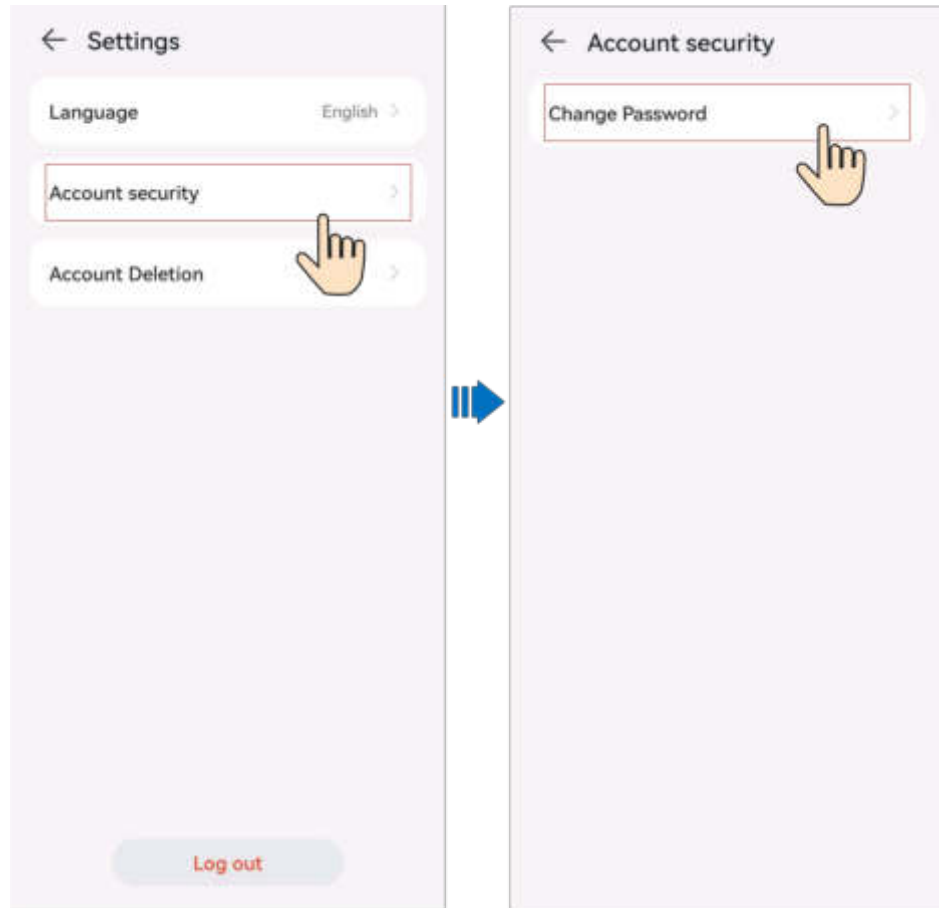
3. Enter the password for logging in to the FusionSolar app and tap **Next**.
4. After confirming that the email address is correct, tap **Send Code** and enter the verification code to verify the email address.
5. Tap **Confirm**.

NOTICE

- If the SMS verification code cannot be received, check whether the mobile number is correct and whether the user is suspended due to arrears.
- When modifying personal data, such as mobile numbers and email addresses, you are obligated to take considerable measures, in compliance with the laws of the countries concerned and the user privacy policies of your company, to ensure that the user's personal information is fully protected.
- To ensure the security of personal information, such as mobile numbers and email addresses, the data is anonymized on the screen, and HTTPS encryption transmission channels are used.

8.2 Changing Personal Passwords

1. On the home screen, choose **Me > Settings > Account security**.
2. Tap **Change password**.



3. On the **Change password** screen, enter the **Old password**, **New password**, and **Confirm password**.
4. Tap **Submit**.

 **NOTE**

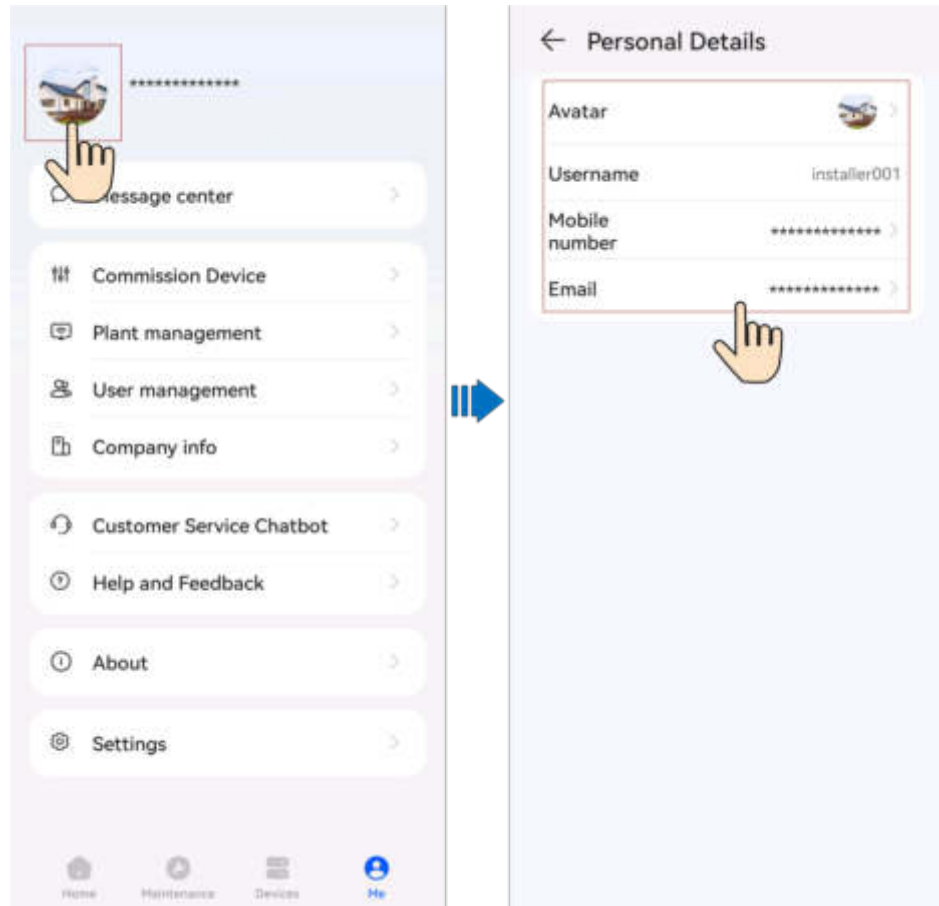
- For security purposes, you are advised to change the password periodically (for example, every three months).
- If you cannot change your password, contact the administrator.

8.3 Modifying Personal Information

When personal information such as mobile numbers and email addresses changes or needs to be supplemented, you can periodically maintain personal information on the **Personal Details** screen to ensure the accuracy of personal information.

Procedure

1. On the home screen, tap **Me** and tap your avatar.
2. On the **Personal Details** screen, change the avatar and email address.



- Tap the avatar, and take a photo or select an existing picture from your album as the new avatar.
- Tap **Mobile number** or **Email** and change the mobile number or email address as prompted.

NOTICE

- When modifying personal data, such as mobile numbers and email addresses, you are obligated to take considerable measures, in compliance with the laws of the countries concerned and the user privacy policies of your company, to ensure that the user's personal information is fully protected.
 - To ensure the security of personal information, such as mobile numbers and email addresses, the data is anonymized on the screen, and HTTPS encryption transmission channels are used.
-

9 FAQs

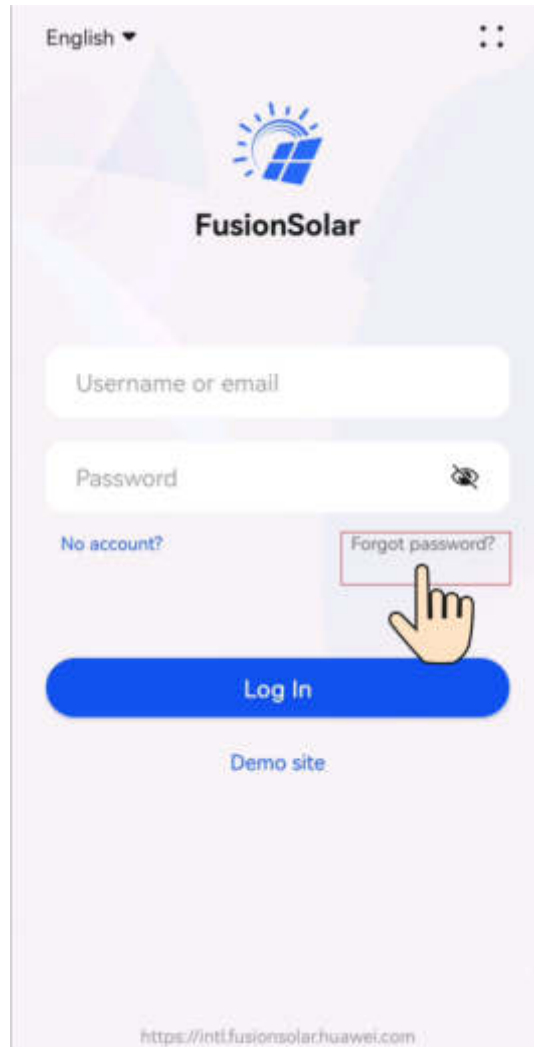
9.1 Resetting a Password Using the Associated Email Address

Prerequisites

The user has an associated and [verified email address](#).

Procedure

1. On the app login screen, tap **Forgot password?**.



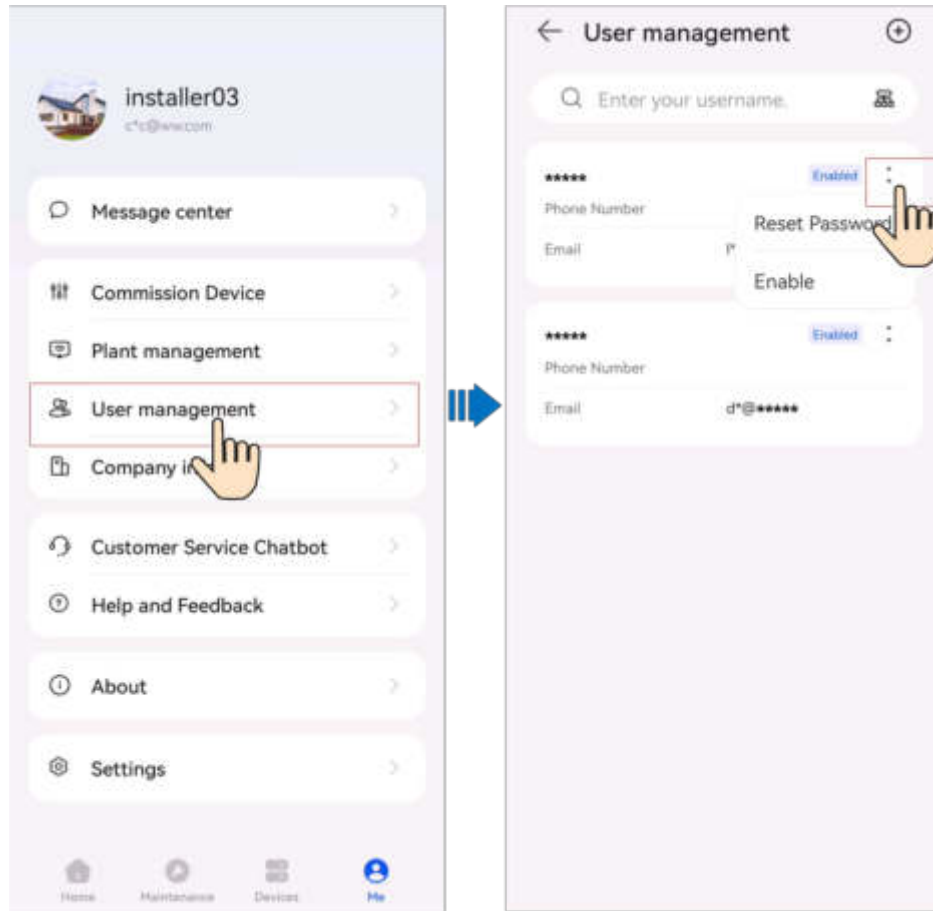
2. Enter the email address associated with the account and the verification code, and tap **Next**.
3. Tap **Send Code** and enter the verification code to verify the email address.
4. Tap **Next**.
5. Enter the new password as prompted and tap **Confirm**.

9.2 Resetting a User Password

When a user cannot reset a password by tapping **Forget Password?**, the user can authorize the installer to log in to the app to reset the password.

Procedure

1. Log in to the app as an installer and tap **Me** on the home screen.
2. Tap **User management**.
3. On the **User management** screen, select a user, slide left, and tap **Reset password**.
4. On the **Reset password** screen, set the new password.



9.3 Troubleshooting the No Data Fault After a User Logs In to App

Cause

The app is an earlier version and needs to be upgraded to the latest version.

Procedure

Method 1: Download and install the app from the app store.

- Huawei mobile phone users: Search for **FusionSolar** in Huawei AppGallery.
- iPhone users: Search for **FusionSolar** in the App Store.
- Other mobile phone users: Select method 2.



Method 2: Scan the QR code to download and install the app.



 NOTE

Users who select method 2 can select the download method based on the mobile phone type.

- Huawei mobile phone users: Download from Huawei AppGallery.
- Non-Huawei phone users: Download on a browser.

When you select **Download via the Browser**, if a security warning message is displayed indicating that the app is from an external source, tap **ALLOW**.

9.4 Handling a Network Exception When a User Logs In to App

Solution

- Check whether the WLAN or mobile network connection is normal.
- Check whether the account is forcibly logged out on the SmartPVMS client.
- Check whether the network permission is enabled for the app.
- If the account and network are normal and the permission has been granted, tap **::** in the upper right corner of the login screen, tap **Log Export**, and contact technical support.

9.5 How Do I Reset the Default Password of a Charger Using an RFID Card When I Forgot the Password?

Precautions

- This operation will reset both the WLAN password and login password. The charger login password will be reset to **Changeme**. The WLAN connection password will be reset to the initial password.
- Before resetting the password, ensure that the charger is idle.

Procedure

1. Swipe the card for five consecutive times (at an interval of less than 5s). Then, the indicator on the charger is steady white for 3s and the charger enters the swipe protection state. Stop swiping the card now.

2. After 3s, the indicator blinks white fast for 20s. If you swipe the card again within this 20s, the indicator turns off and pulsates after 3s, indicating that the charger password has been successfully reset.



 **NOTE**

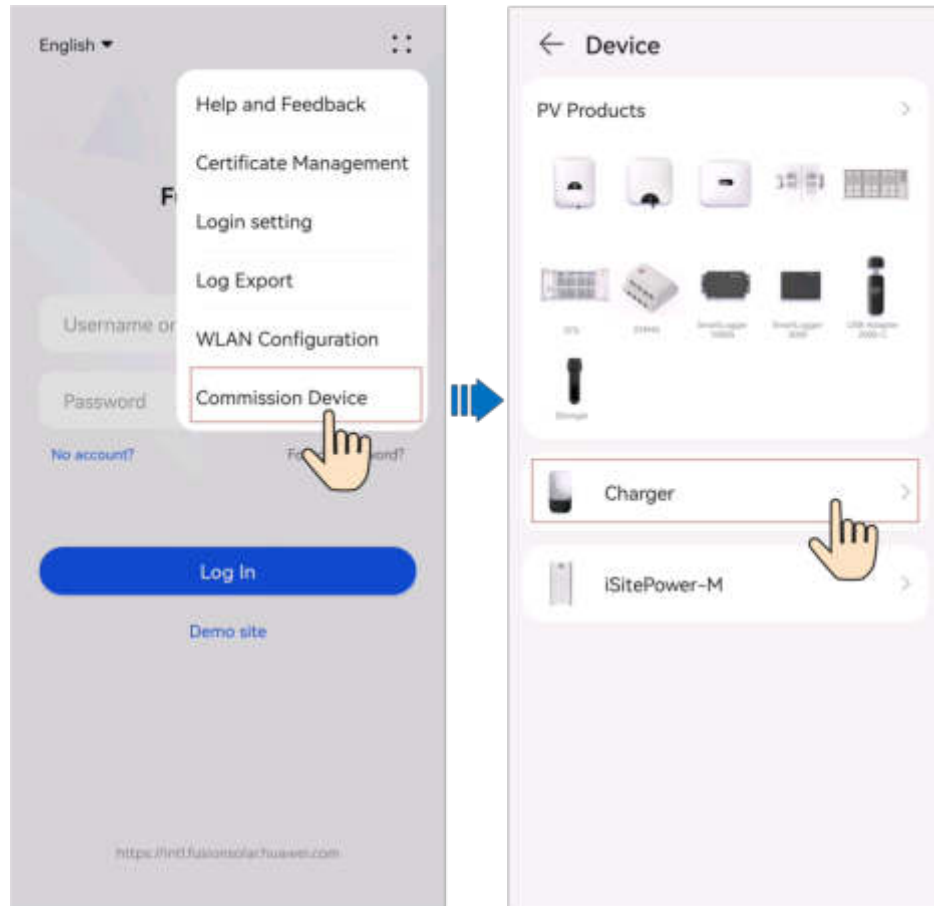
If you swipe your card in the swipe protection state, the swipe protection time will start again.

9.6 How Do I Connect to a Charger When I Cannot Log In to the FusionSolar App Due to Poor Network Connection?

 **NOTE**

Before connecting to the WLAN of the charger, disable the mobile network function and ensure that the mobile phone cannot connect to the Internet. When connecting to the WLAN of the charger, enable the WLAN as prompted.

1. On the app login screen, tap **:: > Device commissioning (When no network available)**.
2. Tap **Charger** and connect to the WLAN of the charger as prompted.



9.7 What Should I Do If the Charging Connector Cannot Be Removed From the Charger?

Scenario 1: Charging Connector Cannot Be Removed After an AC Power Outage

Solution: Remove the charging connector only after the AC power supply is recovered and the charger enters the standby state.

Scenario 2: Charging Connector Locked

Solution:

1. Unlock the charging connector on the app.
 - a. On the **Overview** screen, tap **Settings**.
 - b. Disable **Lock Charging Connector**.
2. Insert the charging connector back into the charger. When you hear a **click**, remove the charging connector.

9.8 What Should I Do If the App Cannot Identify the Charger?

Upgrade the app to the latest version and reconnect to the charger.

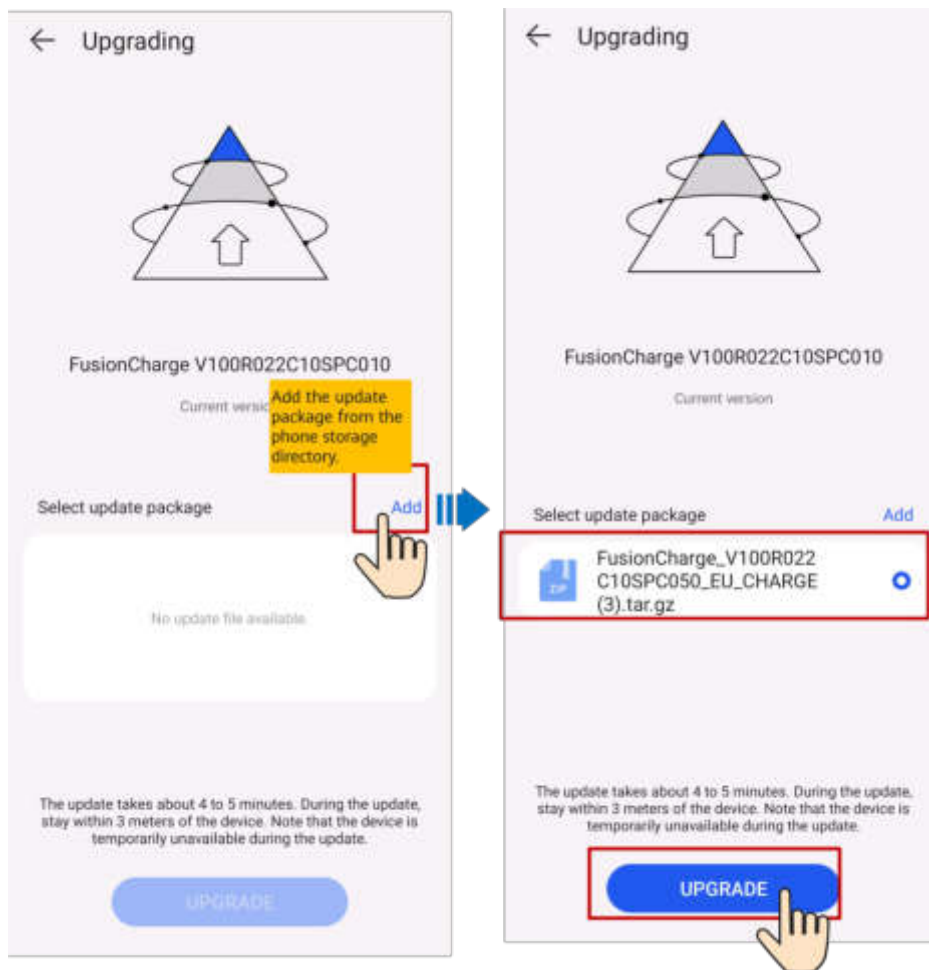
9.9 Upgrading the Charger Software Version

Prerequisites

- You have obtained the upgrade package from your supplier or engineers. After the download is complete, use the digital certificate and verification tool available at Huawei technical support website to verify the digital signature of the software package.
 - a. Log in to Huawei enterprise technical support website (<http://support.huawei.com/enterprise>).
 - b. Browse or search for **PGP Verify**.
- You have copied the upgrade package to the storage directory of the mobile phone that connects to the charger.

Procedure

1. On the home screen, choose **Maintenance > Upgrade Management**.



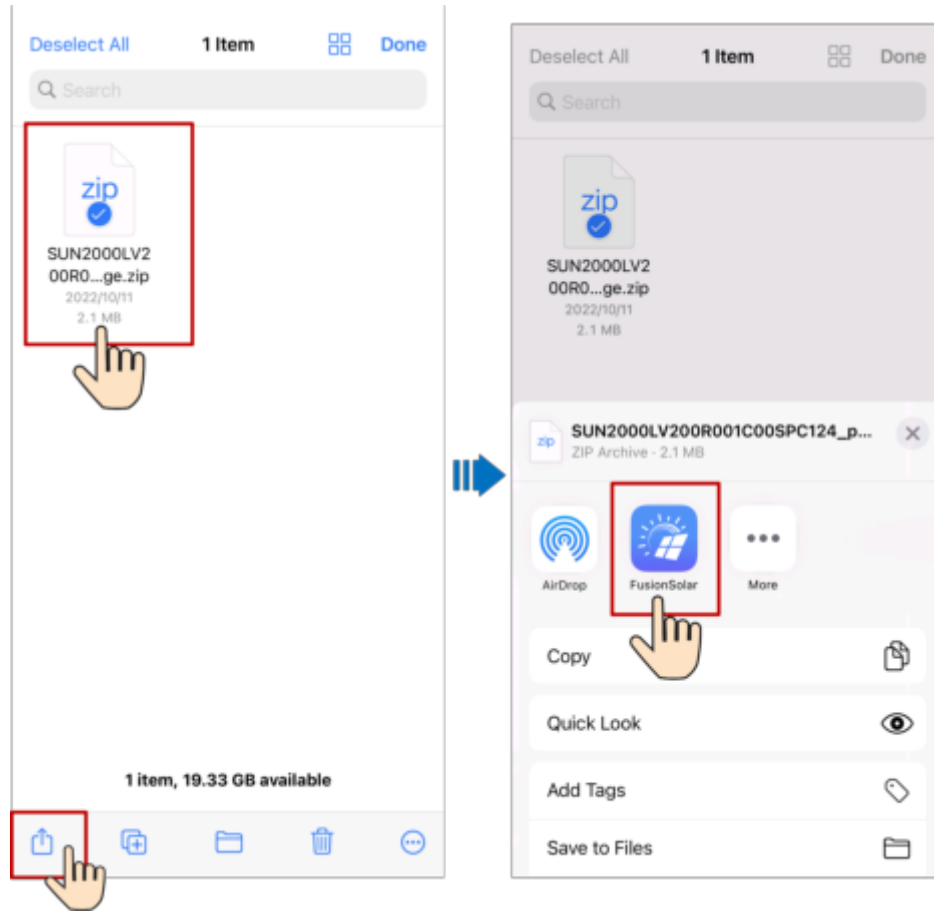
9.10 What Should I Do If the Upgrade Package Obtained from an iPhone Cannot Be Selected on the Upgrade Screen?

Cause

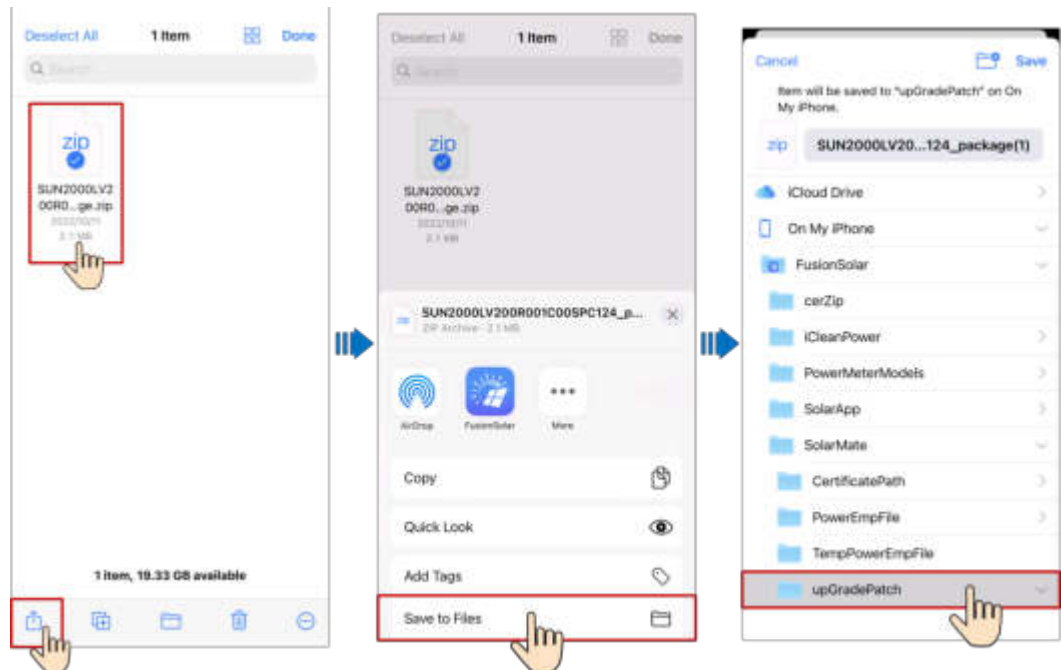
In the iOS system, the upgrade package can be selected only from the software installation path. If the upgrade package is not in the software installation path, the upgrade cannot be performed. You need to place the upgrade package in the installation path before the upgrade.

Procedure

Method 1: Share the upgrade package to the FusionSolar app.



Method 2: Save the upgrade package to the specified path (FusionSolar/SolarMate/upGradePatch) of the FusionSolar app.




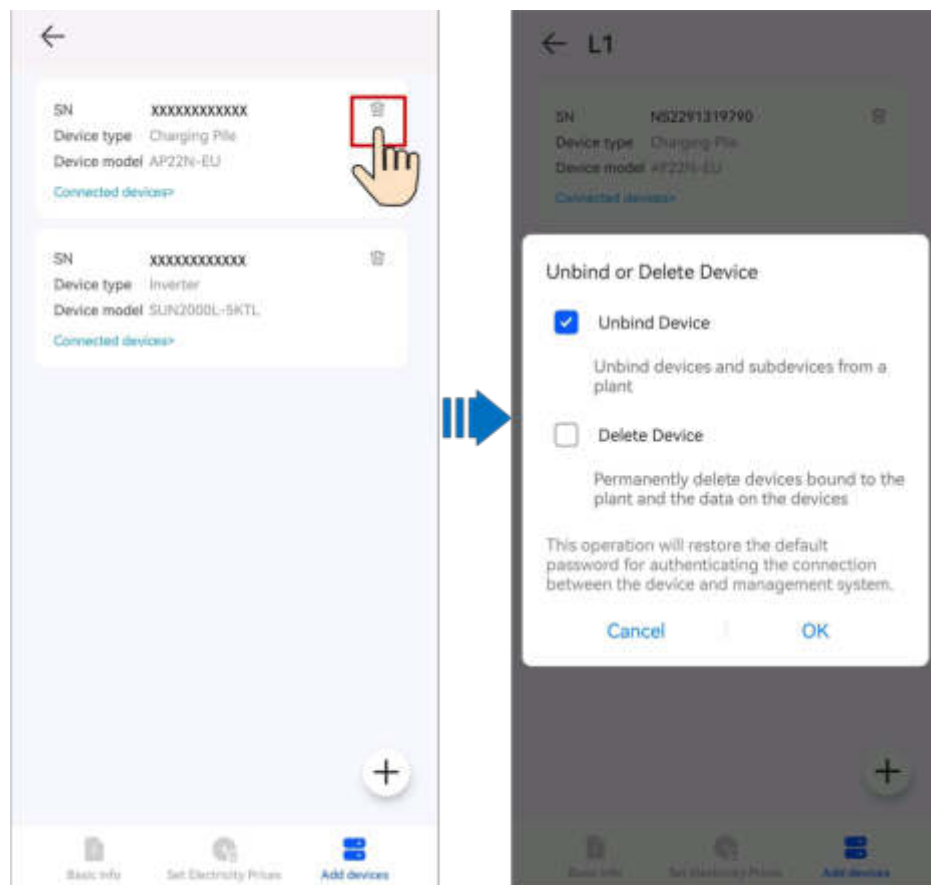
9.11 What Should I Do If an Offline or Faulty Charger Is Displayed in the Plant After the Charger Is Replaced?

Cause

If the old charger is not deleted after the replacement, it will be displayed as offline or faulty. In this case, you need to unbind the old charger from the plant.

Procedure

1. Choose **Me > Plant management** and tap the target plant.
2. Tap **Add devices**.
3. Tap  and select **Unbind Device** or **Delete Device** based on the site requirements.



 NOTE


- After a device is unbound, the running data of the device and its subdevices is stored in the database. The default data retention period is six months. To change the retention period, contact the system administrator.
 - If a device is rebound to a plant within the data retention period, the device inherits the retained data.
 - If a device is not bound to a plant within the data retention period, the data will be automatically deleted.
- After a device is permanently deleted, the running data of the device and its subdevices is deleted immediately. When the device is bound to the plant again, the running data of the device is not restored.

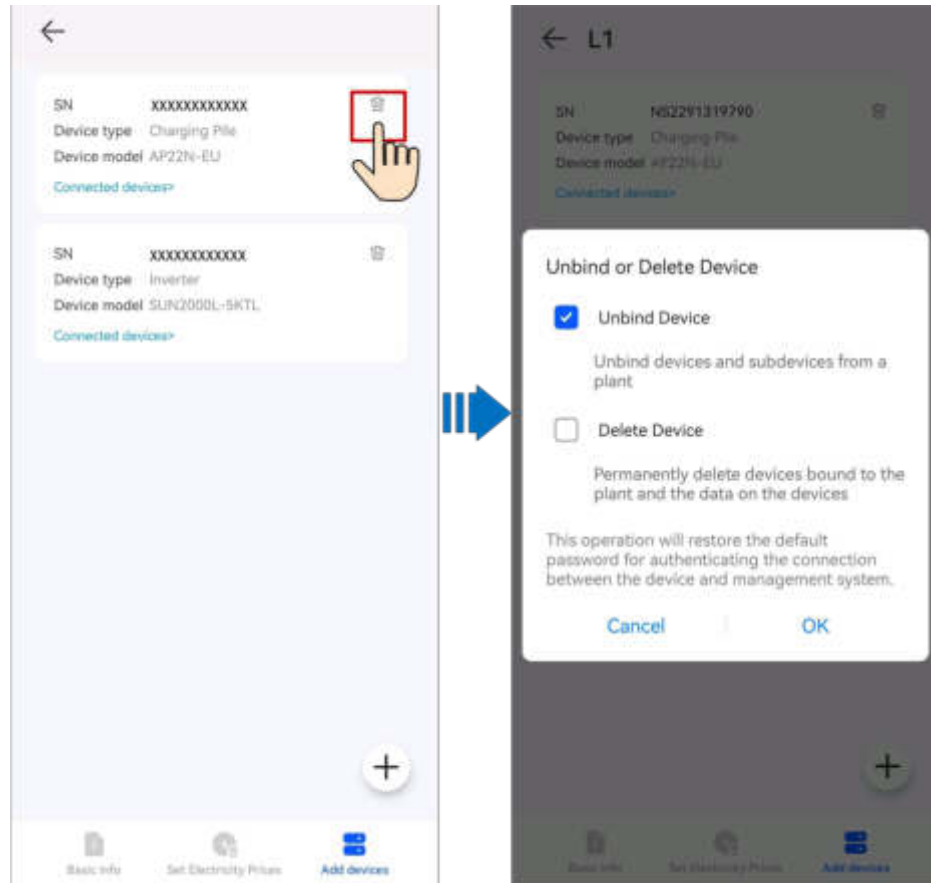
9.12 Why Is the Charger Displayed as Offline in the Management System after Factory Settings Are Restored?

Cause



After the charger is restored to factory settings, the charger is disconnected from the management system. You need to unbind the charger from the management system and then bind it again.

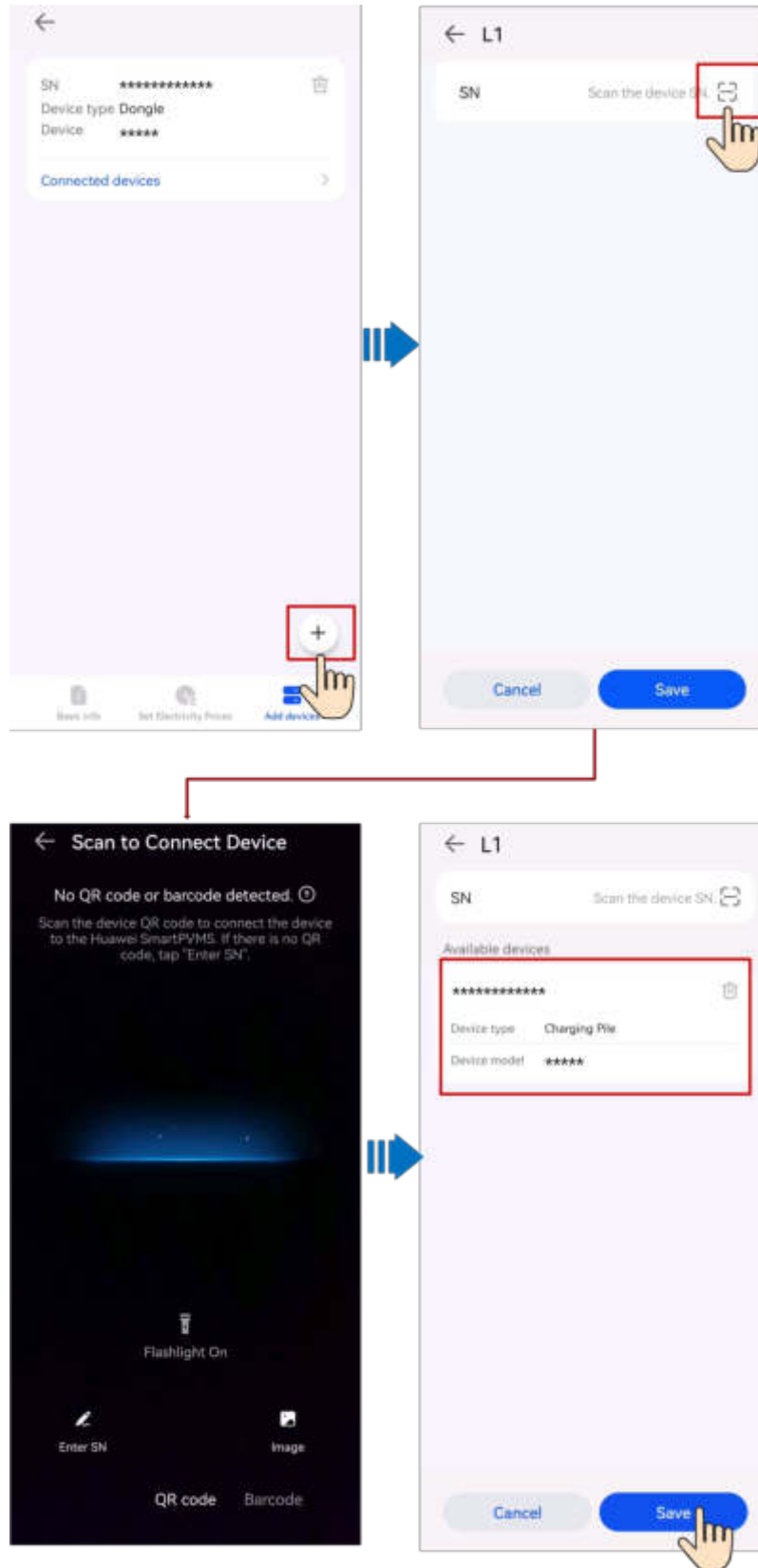
Procedure

- Unbind a charger.
 1. Choose **Me > Plant management** and tap the target plant.
 2. Tap **Add devices**.
 3. Tap  and select **Unbind Device** or **Delete Device** based on the site requirements.



NOTE

- After a device is unbound, the running data of the device and its subdevices is stored in the database. The default data retention period is six months. To change the retention period, contact the system administrator.
 - If a device is rebound to a plant within the data retention period, the device inherits the retained data.
 - If a device is not bound to a plant within the data retention period, the data will be automatically deleted.
 - After a device is permanently deleted, the running data of the device and its subdevices is deleted immediately. When the device is bound to the plant again, the running data of the device is not restored.
- Bind a charger.
 1. Choose **Me > Plant management** and tap the target plant.
 2. Tap **Add devices**, and then tap .
 3. Tap  on the right of **Device SN** to scan the QR code on the charger.
 4. Tap **Save**.



9.13 Why Is the Pairing Request Displayed Twice During Bluetooth Pairing?

When you pair the charger to your phone through Bluetooth, the Bluetooth pairing request is displayed twice.

This is normal. Please allow pairing each time the request is displayed.

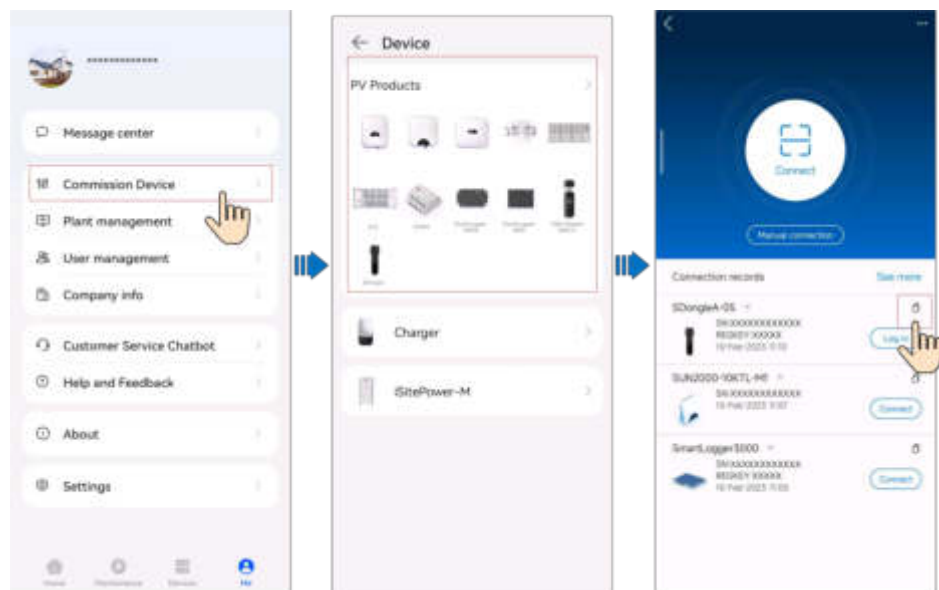
9.14 How Do I Obtain a Registration Code?


Context

If devices are connected to the management system through the SmartLogger or Smart Dongle, you need to enter the registration code when binding a plant.

Procedure

1. Log in to the FusionSolar app and choose **Me > Device commissioning**.
2. Tap **Inverter** and connect to the WLAN of the device as prompted.



3. On the connection record screen, select the connection record of the target device and tap  to copy the registration code and device information.

9.15 What Should I Do If My Android Phone Fails to Connect to the WLAN After I Scan the QR Code?

Symptom

After the device QR code is scanned using an Android phone, the **Device to use with** message is displayed. After **CONNECT** is tapped three times, the **The WLAN**

connection has changed. Try to connect to the system WLAN message is displayed.

Solution

- For Huawei mobile phones on Android 10 or later:
 - a. On the home screen of your mobile phone, tap **Settings > WLAN**.
 - b. Tap **More settings**.
 - c. Disable **WLAN+**.
- For other mobile phones:
 - a. On the home screen of your mobile phone, tap **Settings > WLAN**.
 - b. Tap the WLAN of the target device, select **FORGET** or **DELETE**, and scan the QR code to connect to the WLAN again.

NOTE

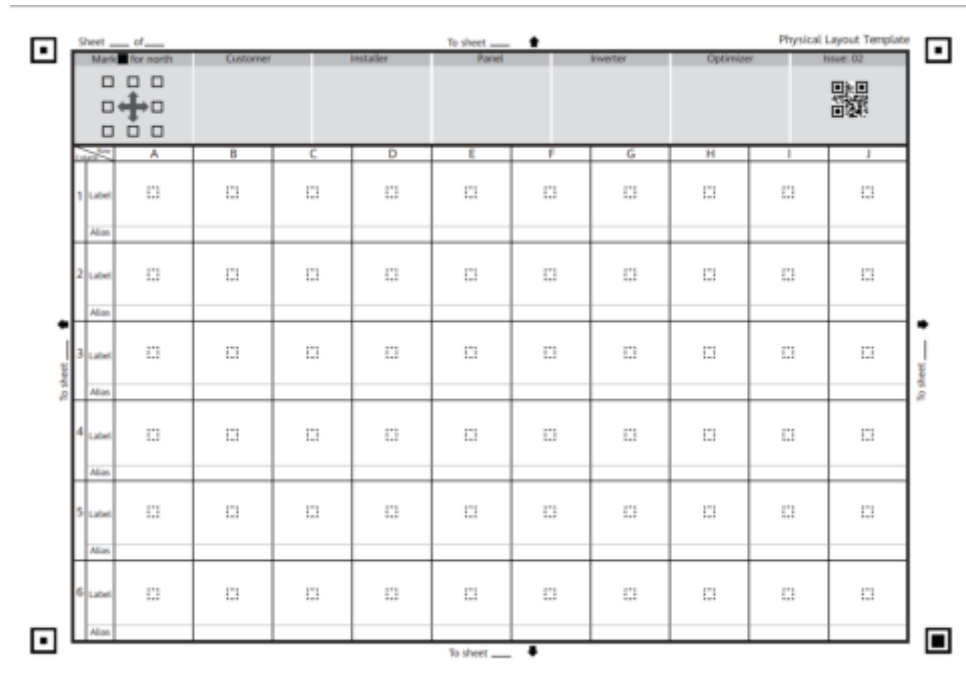
If the **This WLAN network has no Internet access. Connect anyway?** message is displayed when you connect to the built-in WLAN, tap **CONNECT**. Otherwise, you cannot log in to the system. The actual UI and messages may vary with mobile phones.

9.16 Obtaining a Physical Layout Template

Before creating a physical layout, you need to obtain a physical layout template for attaching optimizer labels.

You can obtain a physical layout template in either of the following ways:

- Method 1: Use the paper physical layout template delivered with the optimizers.
- Method 2: Log in to <https://solar.huawei.com>, choose **Service & Support > Technical Support Center > Download > Product Document > FusionSolar > Product > Smart PV Optimizer**, select the corresponding optimizer quick guide, and download and print the physical layout template.
- Method 3: Log in to <https://support.huawei.com/enterprise/en/index.html>, choose **FusionSolar > SUN2000P** in the **Digital Power** module, select the corresponding optimizer quick guide, for example, [SUN2000-\(600W-P, 450W-P2\) Smart PV Optimizer Quick Guide](#), and download and print the physical layout template.

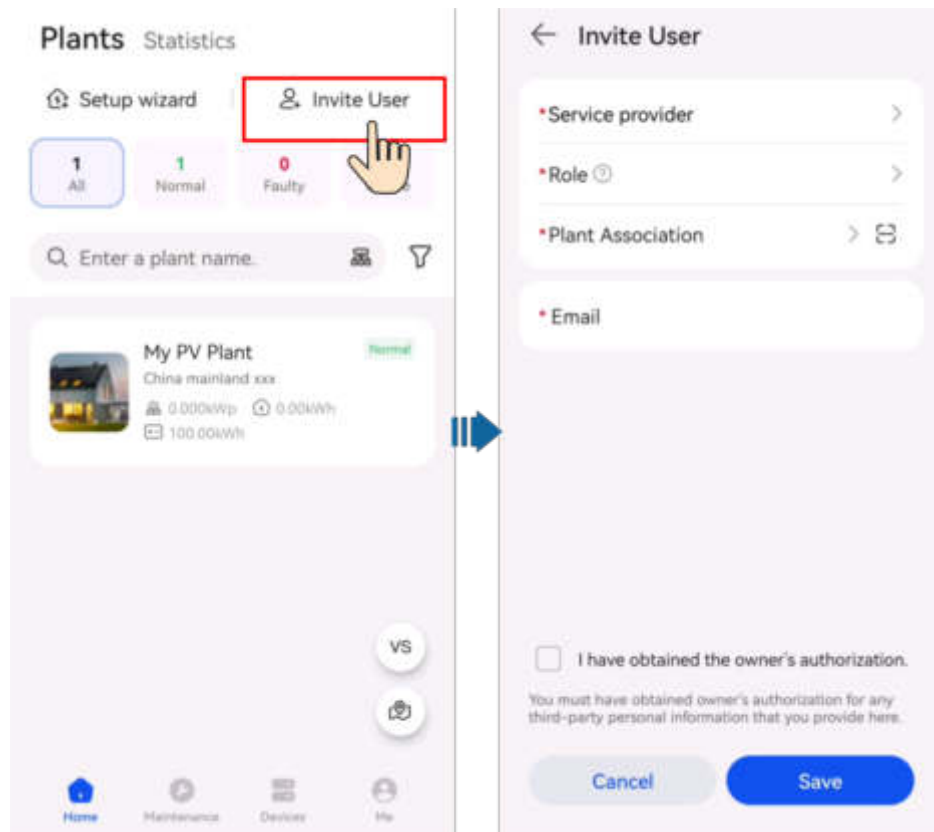


NOTE

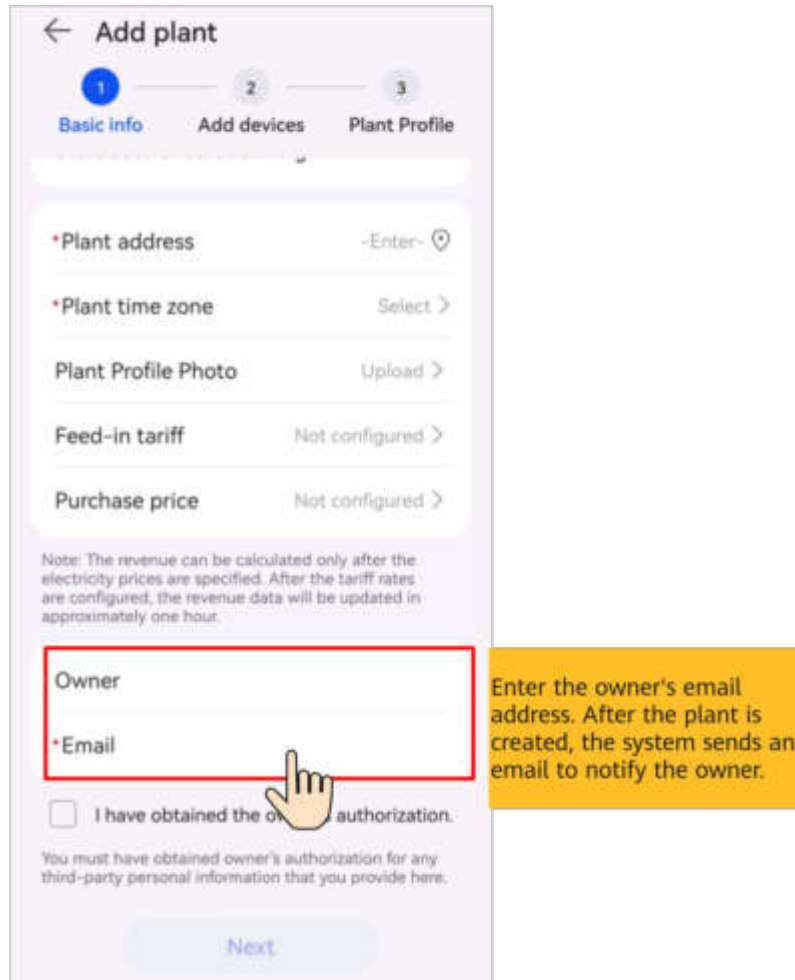
You are advised to use the A4 glossy paper to print templates, which facilitates re-attaching if the label is incorrectly attached.

9.17 How Do I Invite a User to Register a FusionSolar Account?

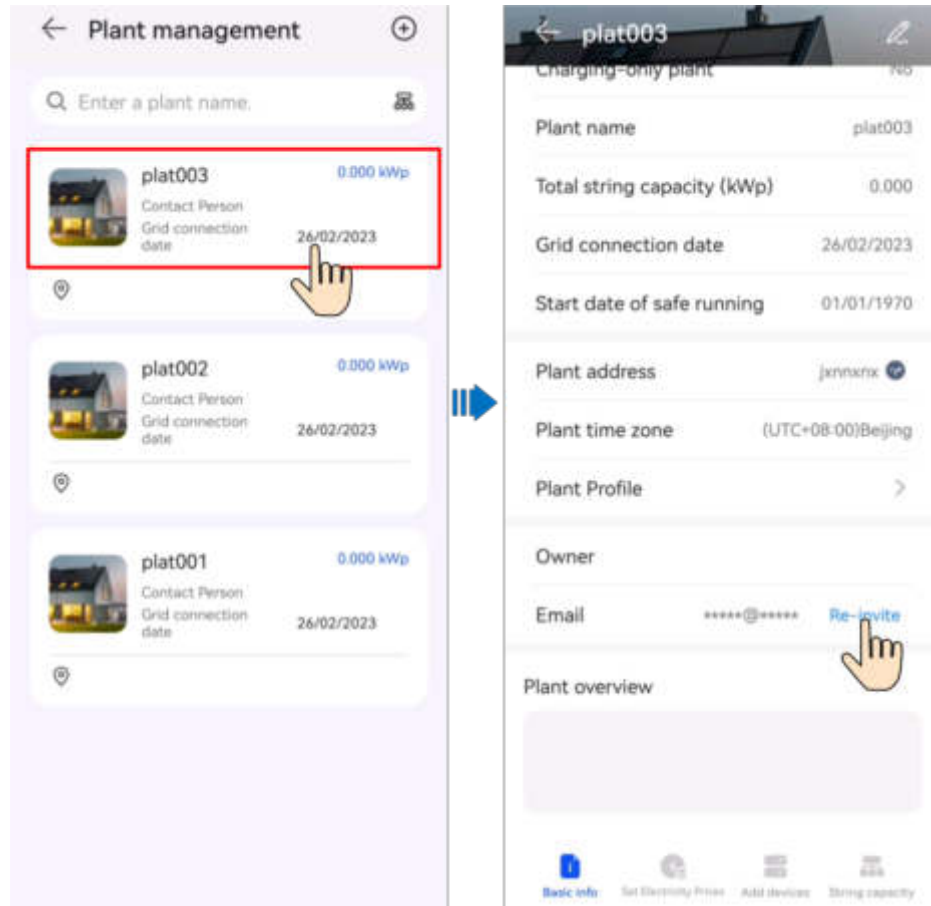
Method 1: Log in to the FusionSolar app as an installer and tap **Invite User** on the **Home** screen. (You can invite owners or installers using this method.)



Method 2: On the **Add plant** screen, invite an owner to register. (You can invite only owners using this method.)



Method 3: On the **Basic info** screen, invite an owner to register. (You can invite only owners using this method.)




9.18 How Do I Register a FusionSolar Account?

- If self-service registration is not supported in your region, your installer needs to **create an account** for you and bind a plant. After the account is created, the system will send you the username and initial password by email.
- If self-service registration is supported in your region, your installer needs to initiate an **invitation**. After receiving an invitation email from the installer, you can **register an account** on the registration screen according to the instructions.

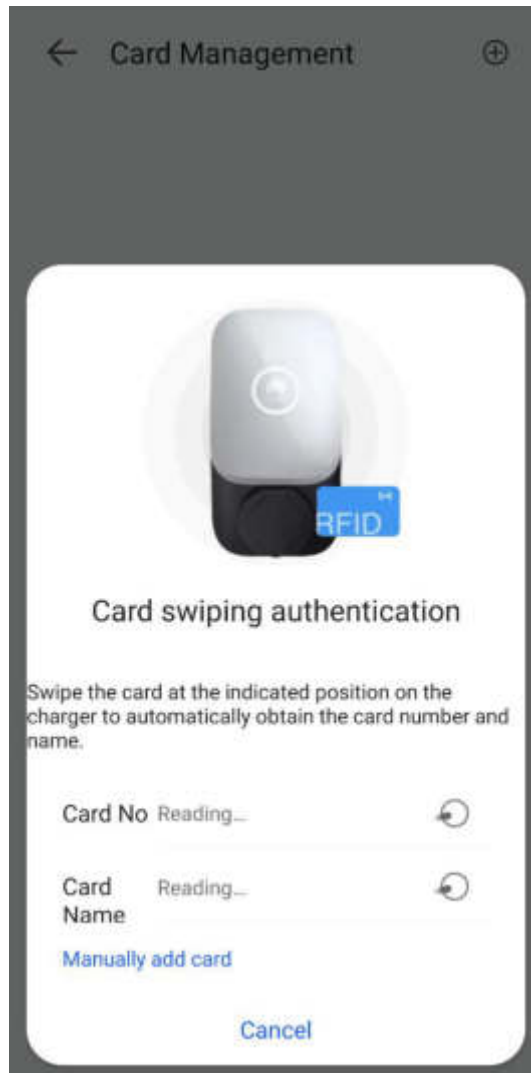
9.19 How Do I Add or Delete an RFID Card?

Adding an RFID Card

1. On the **Status** screen, choose **Settings > Card Management**.
2. In the upper right corner of the **Card Management** screen, tap  and select a card adding mode.
 - i. After the indicator blinks white fast twice, place the ring pattern on the RFID card in the swiping area. If the indicator is steady white for 5s, the card is successfully swiped.

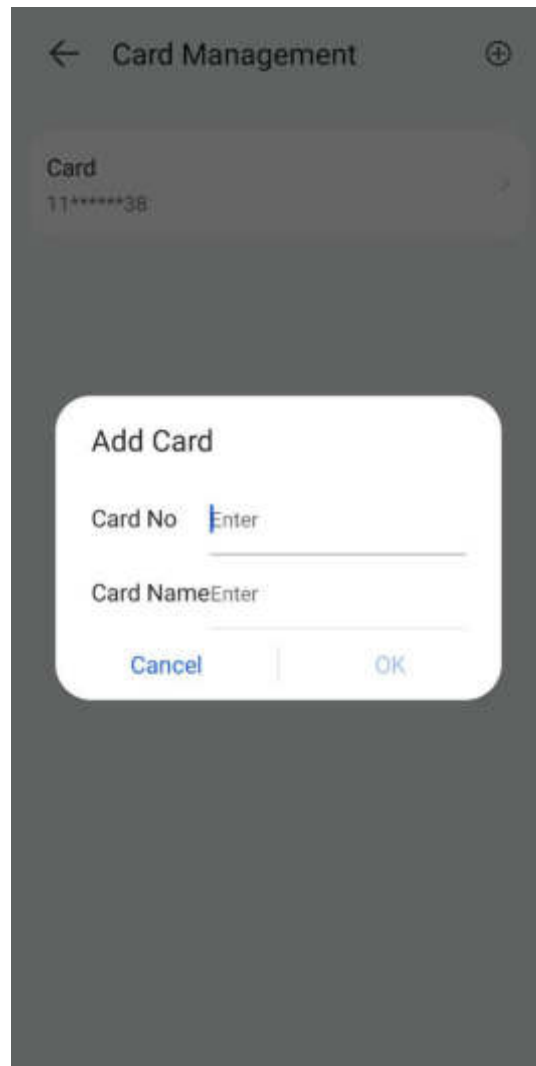
- ii. Enter the user-defined card name and tap **Confirm**.

Figure 9-1 Add by swiping



- Add manually
Enter the card number and user-defined name of the RFID card, and tap **Confirm**.

Figure 9-2 Add manually




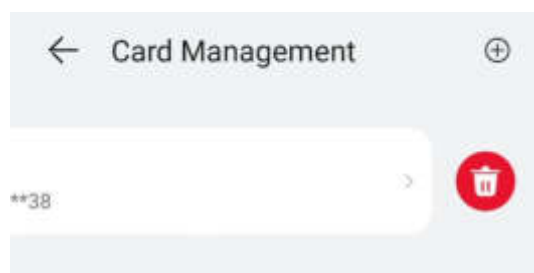
NOTE

A maximum of eight RFID cards can be added to each charger.

After you add an RFID card, you can use the card to start or stop charging.

Deleting an RFID Card

1. Select the card you want to delete, and then press and swipe left.
2. Tap  to delete the card.



9.20 What Can I Do If the System Prompts Me to Reconnect to the Charger's WLAN Hotspot During Quick Settings?

Cause

After setting routing parameters on some chargers, you need to restart the chargers for the settings to take effect. During the restart, the WLAN connection between your phone and the charger will become invalid.

Solution





Reconnect to the charger's WLAN hotspot as prompted.


NOTE

When reconnecting to the WLAN hotspot, you are advised not to stop the process of the FusionSolar app. Otherwise, you need to log in to the local commissioning screen of the charger again after the connection is set up.

10 Related Information

10.1 Charger Indicator Status


Indicator	Indicator Status	Charger Status
Blue 	Cycle: steady blue for 4s and off for 1s	Charging connector plugged (The authentication function is disabled.)
	Cycle: pulsating blue for 1s	Charging
	Steady blue	Charging ended (The charging connector is not removed.)
	Cycle: pulsating blue for 4s and off for 1s	Scheduled charging waiting
	Fast flashing blue for three times for 0.75s	Card swiping successful/Authentication successful
White 	Cycle: pulsating white for 4s and off for 1s	Idle (default state or charging connector removed from the vehicle)
	Cycle: flashing white for 0.5s	Software upgrading
	Flashing white for 0.5s	RFID card waiting to be swiped
	Steady white for 5s	RFID card added successfully
	Steady white for 3s and then flashing white (0.5s/time, lasts for a maximum of 20s)	Preparing for password reset
	Off for 3s and then pulsating white	Password reset successfully
Green 	Cycle: pulsating green for 1s	PV power charging waiting and PV power charging in progress*
Red 	Cycle: flashing red for 0.5s	Alarming

Indicator	Indicator Status	Charger Status
	Steady red	Faulty
	Fast flashing red for three times for 0.75s	Card swiping failed

10.2 PV Power Generation Offsetting Carbon Emissions

A **100 MW** PV plant
can avoid **6.41** tons of CO₂ emissions every year,
which is equivalent to planting **87,602** trees
(based on the assumption of 1350 sun hours per year)

How to Calculate Equivalent Trees Planted



Greenhouse gas emissions have increased global temperatures, leading to serious consequences such as sea level rise and extreme weather events (floods, droughts, hurricanes, etc.).

Unlike thermal power plants, PV power plants generate electricity without CO₂ emissions, which is equivalent to planting trees.

How much CO₂ can be avoided for each kilowatt-hour of electricity generated from PV? How many trees are equivalent to the CO₂ emissions avoided?

Fossil fuels saved and CO₂ emissions avoided *

If fossil fuels are used, 1 kWh of electricity consumes 400 g coal (international standard value), generating about 475 g CO₂ (global average value). When PV is used, no CO₂ is emitted.

Formula:

- PV energy yield x Coefficient of CO₂ emissions avoided (0.475) = CO₂ emissions avoided (unit: kg)

Equivalent trees planted

For example, if the lifecycle of a tree is 40 years, the average CO₂ that can be absorbed each year reaches 18.3 kg.

Formula:


- CO₂ emissions avoided/Coefficient of equivalent trees planted (18.3)/40 = Equivalent trees planted

Example:

The total energy yield of a plant is 739,600 kWh.


Equivalent CO₂ emissions avoided \approx 351.31 tons

739600 kWh x 0.475 = 351310 kg




Equivalent trees planted \approx 480

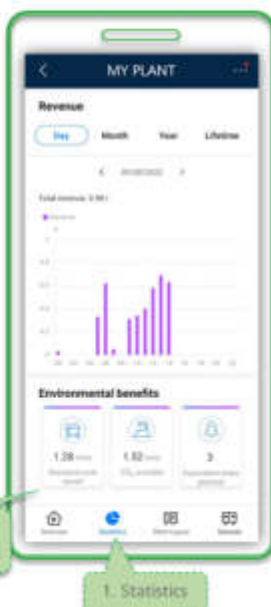
351310 kg / 731.5/40 = 480



How do I view the CO₂ emissions avoided and equivalent trees planted of a PV plant?

- Log in to the **FusionSolar Smart PV Management System (Cloud)**, click the target PV plant, and choose **Monitoring > Overview**.
- Log in to the **FusionSolar app**, tap the target PV plant and then the **Statistics** tab, and scroll to the bottom of the screen.





* Formula for calculating the coal saved: PV energy yield x Coefficient of coal saved (0.4) = Coal saved (unit: kg)

10.3 Battery Parameters

Battery Control Parameters

Category	Parameter	Description
Battery working mode	TOU charge/discharge parameters	Manually set the charge and discharge periods, for example, set the charge period to the low-price period at night.
	Redundant PV energy priority	<ul style="list-style-type: none"> • Charge preference: When the PV power is greater than the load power, the excess PV energy is used to charge batteries. After the charge power reaches the maximum value or the battery is fully charged, the excess PV energy is fed to the grid. • Fed to grid preference: When the PV power is greater than the load power, the excess PV energy is preferentially fed to the grid. After the inverter output power reaches the maximum value, the excess PV energy is used to charge batteries. (Applicable to scenarios where the FIT is higher than the electricity price. Batteries are used only for backup power.)
	Maximum charge power of grid	Specifies the maximum charge power allowed by the grid, which is determined by the local power grid company. If there is no requirement, the default maximum value configured on the ESS is used.
Battery parameter setting	End-of-charge SOC (%)	Set the end-of-charge SOC.
	End-of-discharge SOC (%)	Set the end-of-discharge SOC.
	Charge from AC	To use this function, you must comply with the local regulations on charge from the grid.
	AC charge cutoff SOC (%)	Set the cutoff SOC for charge from the grid.
Inverter feature parameter	Off-grid mode	If this parameter is set to Enable , the ESS switches to the off-grid mode when the grid fails.
	Backup power SOC	If the battery SOC reaches the set value, the battery stops discharging.

 NOTE

- You are advised not to set **End-of-discharge SOC** to 0.
- When the battery SOC drops to 0%, charge the battery in a timely manner.
- If batteries are not fully charged or discharged, the SOH calculation may be inaccurate. To ensure battery safety, the system automatically calculates the battery SOH. When the battery pack is in SOH calibration state, the SOC is not restricted.
- If the battery is not charged in a timely manner, the battery capacity will attenuate irreversibly. The resulting battery faults are not covered under warranty.

10.4 Environment Parameters

Parameter	Unit	Definition	Formula	PV +Storage	PV - Only	Storage-Only	Remarks
Global irradiation	kWh /m ²	Total solar radiation energy measured by an environmental monitoring instrument (EMI).	/	Optional	Optional	Optional	An EMI is required.
Average temperature	°C	Average ambient temperature measured by the EMI in the plant.	/	Optional	Optional	Optional	
CO ₂ avoided	kg	Amount of CO ₂ emitted by burning fossil fuel to produce the same amount of power generated by the plant. 1 kWh of power is equivalent to about 475 g of CO ₂ emission (global average value).	Energy yield (kWh) of the plant x per kWh CO ₂ emission (0.475)	Supported	Supported	Not supported	-

Parameter	Unit	Definition	Formula	PV +S tor age	PV - On ly	Sto ra ge-On ly	Remar ks
Equivalent trees planted	N/A	Number of trees that can absorb the amount of CO ₂ avoided by the plant. A tree absorbs 18.3 kg of CO ₂ in one year and has a lifespan of 40 years.	CO ₂ avoided/CO ₂ absorbed by a tree in one year (18.3)/40	Supported	Supported	Not supported	
Standard coal saved	kg	Amount of standard coal needed to produce the amount of PV power generated by the plant. 0.4 kg of standard coal is needed to produce 1 kWh of power.	Energy yield (kWh) of the plant x Standard coal needed per kWh (0.4)	Supported	Supported	Not supported	

10.5 Power Parameters

Parameter	Unit	Definition	Formula	PV +S tor age	PV - On ly	Sto rag e-On ly	Remar ks
Total string capacity	kWp	Total capacity of PV arrays installed in the PV plant.	Total capacity of the strings connected to all inverters	Supported	Supported	Not supported	This parameter is configured during plant creation.

Parameter	Unit	Definition	Formula	PV + Storage	PV - Only	Storage-Only	Remarks
Power per MWp	kW/MWp	Power generated per MWp.	Active power/ Total string capacity x 1000	Supported	Supported	Not supported	-
Theoretical yield (daily/monthly/yearly)	kWh	Theoretical amount of power that can be generated by the PV arrays installed in a plant.	Hourly: Hourly global irradiation x String capacity Daily: Daily irradiation x String capacity Monthly: Total theoretical yield of each day in a month Yearly: Total theoretical yield of each month in a year	Supported	Supported	Not supported	An EMI is required.
PV output power	kW	Total output power of PV arrays.	PV output power	Supported	Supported	Not supported	-
PV yield	kWh	Total yield of PV arrays in a given reporting period.	Hourly: PV yield each hour Daily: PV yield each day Monthly: Total yield of each day in a month Yearly: Total yield of each month in a year	Supported	Supported	Not supported	-

Parameter	Unit	Definition	Formula	PV + Storage	PV - Only	Storage-Only	Remarks
Inverter yield	kWh	Yield of a plant.	Hourly: Inverter output energy each hour Daily: Inverter output energy each day Monthly: Total inverter output energy of each day in a month Yearly: Total inverter output energy of each month in a year	Supported	Supported	Supported	-
Total yield	kWh	Total output energy of the PV plant throughout the lifetime.	Total PV energy yield	Supported	Supported	Not supported	-
Performance ratio	%	Ratio of measured output energy to total irradiation received by the plant.	PV energy yield / Theoretical energy yield	Supported	Supported	Not supported	-
Specific yield	kWh /kWp	Ratio of the energy yield to the total string capacity.	PV energy yield / Total PV string capacity	Supported	Supported	Not supported	-

Parameter	Unit	Definition	Formula	PV+S Storage	PV- Only	Storage- Only	Remarks
Consumption (daily/monthly/yearly)	kWh	Power consumed by the loads during a given reporting period.	Daily: Amount of power consumed by the loads each day Monthly: Total amount of power consumed by the loads each day in a month Yearly: Total amount of power consumed by the loads each month in a year	Supported	Supported	Supported	-
Feed-in to grid (daily/monthly/yearly)	kWh	Amount of power fed to the power grid from the plant in a give reporting period.	Daily: Amount of power fed to the grid from the plant each day Monthly: Total amount of power fed to the grid from the plant each day in a month Yearly: Total amount of power fed to the grid from the plant each month in a year	Supported	Supported	Supported	A power meter is required. Otherwise, the amount of power purchased from or fed to the grid cannot be displayed.

Parameter	Unit	Definition	Formula	PV + Storage	PV - Only	Storage-Only	Remarks
Supply from grid (daily/monthly/yearly)	kWh	Amount of power purchased from the grid in a given reporting period.	Daily: Amount of power purchased from the grid each day Monthly: Total amount of power purchased from the grid each day in a month Yearly: Total amount of power purchased from the grid each month in a year	Supported	Supported	Supported	
Self-consumption (daily/monthly/yearly)	kWh	PV energy consumed by loads and charged to batteries. It includes the amount of PV power consumed directly by loads and the amount of PV power stored in batteries.	Daily: Daily PV yield – Daily feed-in to grid Monthly: Total amount of self-consumed power of each day in a month Yearly: Total amount of self-consumed power of each month in a year	Supported	Supported	Not supported	-

Parameter	Unit	Definition	Formula	PV + Storage	PV - Only	Storage - Only	Remarks
Self-supplied power (daily/monthly/yearly)	kWh	Load consumption from PV. It includes the amount of PV power consumed directly by loads and the amount of PV power discharged from batteries.	Daily: Daily power consumption - Daily supply from grid Monthly: Total amount of self-supplied power of each day in a month Yearly: Total amount of self-supplied power of each day month in a year	Supported	Supported	Not supported	-
Load power	kW	Load consumption power.	Load consumption power	-	-	-	Supported when loads exist. Not supported when no load exists.

Parameter	Unit	Definition	Formula	PV + Storage	PV - Only	Storage-Only	Remarks
Self-consumption power	kW	Power of PV energy consumed locally.	When feeding to the grid: PV output power – Feed-in power When purchasing power from the grid: PV output power	Supported	Supported	Not supported	When the active power of the bi-directional meter is a positive value, the power is the feed-in power. When the active power of the bi-directional meter is a negative value, the power is the power of supply from the grid.

Parameter	Unit	Definition	Formula	PV + Storage	PV - Only	Storage-Only	Remarks
Battery charge/discharge power	kW	Battery charge/discharge power.	Battery charge/discharge power	Supported	Not supported	Supported	If the symbol before the power value is +, the battery is charging. If the symbol before the power value is -, the battery is discharging.
Yield loss due to curtailment	kWh	Energy yield loss caused by power limitation at the grid-connection point.	Theoretical yield x Performance ratio - Actual PV yield	Supported	Supported	Not supported	An EMI is required.
Revenue loss due to curtailment	-	Loss of revenue due to power limitation.	Yield loss due to curtailment x Feed-in tariff	Supported	Supported	Not supported	-

Parameter	Unit	Definition	Formula	PV + Storage	PV - Only	Storage - Only	Remarks
PV revenue	-	Revenues from photovoltaic power generation. It consists of two parts, which are revenue of power fed in to the grid and the saved electricity bills. Electricity prices need to be configured.	Revenue of power fed in to the grid (power fed to the grid x feed-in tariff) + Saved electricity bills (self-supplied power x electricity price)	Supported	Supported	Not supported	
On-grid duration	h	The time period during which the inverter is connected to the power grid.	Daily: daily on-grid duration Monthly: total daily on-grid durations in a month Year: total monthly on-grid durations in a year	Supported	Supported	Not supported	The string capacity needs to be configured. If the string capacity is not configured, the calculated on-grid duration will be inaccurate.
Peak Power	kW	Maximum active power of a plant in a statistical period.	Maximum active power of a plant in a statistical period	Supported	Supported	Supported	-

Parameter	Unit	Definition	Formula	PV+S Storage	PV- Only	Storage- Only	Remarks
Load Rate	%	Ratio of the peak power to the string capacity of a plant in a statistical period.	Daily: Daily peak power/ String capacity Monthly: Monthly peak power/ String capacity Yearly: Yearly peak power/ String capacity	Supported	Supported	Not supported	The string capacity needs to be configured. The load rate can be calculated only when the string capacity is configured.
Planned Yield	kWh	Planned energy yield in a statistical period.	Planned energy yield in a statistical period	Supported	Supported	Not supported	Contact the system administrator to configure the planned yield.
Plan Completion Rate	%	Ratio of the actual feed-in energy to the planned yield of a plant in a statistical period.	Monthly: Monthly feed-in energy/ Planned monthly yield Yearly: Yearly feed-in energy/ Planned yearly yield	Supported	Supported	Not supported	Contact the system administrator to configure the planned yield.

 NOTE

Unless otherwise specified, the energy yield in this document refers to AC power yield.

10.6 Commercial Smart Inverters Parameters

10.6.1 Grid parameters

Advanced User

No.	Parameter	Description
1	Grid Code	Set this parameter based on the grid code of the country or region where the inverter is used and the inverter application scenario.
2	Isolation settings	Set the working mode of the inverter based on the grounding status at DC side and the connection to the power grid.

Special User

No.	Parameter	Description
1	Grid Code	Set this parameter based on the grid code of the country or region where the inverter is used and the inverter application scenario.
2	Isolation settings	Set the working mode of the inverter based on the grounding status at DC side and the connection to the power grid.
3	Output mode	Specifies whether the inverter output has a neutral wire based on the application scenario.
4	PQ mode	If this parameter is set to PQ mode 1 , the maximum AC output power equals the maximum apparent power. If this parameter is set to PQ mode 2 , the maximum AC output power equals the rated output power.
5	Automatically start upon grid recovery	Specifies whether to allow the inverter to automatically start after the power grid recovers.
6	Grid connected recovery time from grid faults (s)	Specifies the time after which the inverter begins restarting after the power grid recovers.
7	Startup voltage lower threshold of grid connection (V)	According to the standards of certain countries and regions, after the inverter is powered on for the first time for grid connection, if the power grid voltage is lower than Startup voltage lower threshold of grid connection , the inverter is not allowed to connect to the grid.
8	Startup frequency upper threshold of grid connection (Hz)	According to the standards of certain countries and regions, after the inverter is powered on for the first time for grid connection, if the power grid voltage is higher than Startup frequency upper threshold of grid connection , the inverter is not allowed to connect to the grid.

No.	Parameter	Description
9	Startup frequency lower threshold of grid connection (Hz)	According to the standards of certain countries and regions, after the inverter is powered on for the first time for grid connection, if the power grid voltage is lower than Startup frequency lower threshold of grid connection , the inverter is not allowed to connect to the grid.
10	Grid reconnection voltage upper limit (V)	The standards of certain countries and regions require that after the inverter shuts down for protection due to a fault, if the power grid voltage is higher than Grid reconnection voltage upper limit , the inverter is not allowed to reconnect to the grid.
11	Grid reconnection voltage lower limit (V)	The standards of certain countries and regions require that after the inverter shuts down for protection due to a fault, if the power grid voltage is lower than Grid reconnection voltage lower limit , the inverter is not allowed to reconnect to the grid.
12	Grid reconnection frequency upper limit (Hz)	The standards of certain countries and regions require that after the inverter shuts down for protection due to a fault, if the power grid frequency is higher than Grid reconnection frequency upper limit , the inverter is not allowed to reconnect to the grid.
13	Grid reconnection frequency lower limit (Hz)	The standards of certain countries and regions require that after the inverter shuts down for protection due to a fault, if the power grid frequency is lower than Grid reconnection frequency lower limit , the inverter is not allowed to reconnect to the grid.
14	Reactive power compensation (cosφ-P) trigger voltage (%)	Specifies the voltage threshold for triggering reactive power compensation based on the cosφ-P curve.
15	Reactive power compensation (cosφ-P) exit voltage (%)	Specifies the voltage threshold for exiting reactive power compensation based on the cosφ-P curve.

10.6.2 Protection Parameters

Advanced User

No.	Parameter	Description
1	Insulation resistance protection threshold (MΩ)	To ensure device safety, the inverter detects the insulation resistance of the input side with respect to ground when it starts a self-check. If the detected value is less than the preset value, the inverter does not connect to the grid.

Special User

No.	Parameter	Description
1	Voltage unbalance protection threshold (%)	Specifies the inverter protection threshold when the power grid voltage is unbalanced.
2	Phase protection point (°)	The Japanese standard requires that during passive islanding detection, protection should be triggered if an abrupt voltage phase change is detected.
3	Phase angle offset protection	The standards of certain countries and regions require that the inverter needs to be protected when the phase angle offset of the power grid three phases exceeds a certain value.
4	10-min overvoltage protection threshold (V)	Specifies the 10-minute overvoltage protection threshold.
5	10-min overvoltage protection duration (ms)	Specifies the 10-minute overvoltage protection duration.
6	Level-1 overvoltage protection threshold (V)	Specifies the level-1 overvoltage protection threshold.
7	Level-1 overvoltage protection duration (ms)	Specifies the level-1 overvoltage protection duration.
8	Level-2 overvoltage protection threshold (V)	Specifies the level-2 overvoltage protection threshold.
9	Level-2 overvoltage protection duration (ms)	Specifies the level-2 overvoltage protection duration.
10	Level-3 overvoltage protection threshold (V)	Specifies the level-3 overvoltage protection threshold.
11	Level-3 overvoltage protection duration (ms)	Specifies the level-3 overvoltage protection duration.
12	Level-4 overvoltage protection threshold (V)	Specifies the level-4 overvoltage protection threshold.
13	Level-4 overvoltage protection duration (ms)	Specifies the level-4 overvoltage protection duration.
14	Level-5 overvoltage protection threshold (V)	Specifies the level-5 overvoltage protection threshold.
15	Level-5 overvoltage protection duration (ms)	Specifies the level-5 overvoltage protection duration.
16	Level-6 overvoltage protection threshold (V)	Specifies the level-6 overvoltage protection threshold.
17	Level-6 overvoltage protection duration (ms)	Specifies the level-6 overvoltage protection duration.

No.	Parameter	Description
18	Level-1 undervoltage protection threshold (V)	Specifies the level-1 undervoltage protection threshold.
19	Level-1 undervoltage protection duration (ms)	Specifies the level-1 undervoltage protection duration.
20	Level-2 undervoltage protection threshold (V)	Specifies the level-2 undervoltage protection threshold.
21	Level-2 undervoltage protection duration (ms)	Specifies the level-2 undervoltage protection duration.
22	Level-3 undervoltage protection threshold (V)	Specifies the level-3 undervoltage protection threshold.
23	Level-3 undervoltage protection duration (ms)	Specifies the level-3 undervoltage protection duration.
24	Level-4 undervoltage protection threshold (V)	Specifies the level-4 undervoltage protection threshold.
24	Level-4 undervoltage protection duration (ms)	Specifies the level-4 undervoltage protection duration.
26	Level-5 undervoltage protection threshold (V)	Specifies the level-5 undervoltage protection threshold.
27	Level-5 undervoltage protection duration (ms)	Specifies the level-5 undervoltage protection duration.
28	Level-6 undervoltage protection threshold (V)	Specifies the level-6 undervoltage protection threshold.
29	Level-6 undervoltage protection duration (ms)	Specifies the level-6 undervoltage protection duration.
30	Level-1 overfrequency protection threshold (Hz)	Specifies the level-1 overfrequency protection threshold.
31	Level-1 overfrequency protection duration (ms)	Specifies the level-1 overfrequency protection duration.
32	Level-2 overfrequency protection threshold (Hz)	Specifies the level-2 overfrequency protection threshold.
33	Level-2 overfrequency protection duration (ms)	Specifies the level-2 overfrequency protection duration.
34	Level-3 overfrequency protection threshold (Hz)	Specifies the level-3 overfrequency protection threshold.
35	Level-3 overfrequency protection duration (ms)	Specifies the level-3 overfrequency protection duration.
36	Level-4 overfrequency protection threshold (Hz)	Specifies the level-4 overfrequency protection threshold.

No.	Parameter	Description
37	Level-4 overfrequency protection duration (ms)	Specifies the level-4 overfrequency protection duration.
38	Level-5 overfrequency protection threshold (Hz)	Specifies the level-5 overfrequency protection threshold.
39	Level-5 overfrequency protection duration (ms)	Specifies the level-5 overfrequency protection duration.
40	Level-6 overfrequency protection threshold (Hz)	Specifies the level-6 overfrequency protection threshold.
41	Level-6 overfrequency protection duration (ms)	Specifies the level-6 overfrequency protection duration.
42	Level-1 underfrequency protection threshold (Hz)	Specifies the level-1 underfrequency protection threshold.
43	Level-1 underfrequency protection duration (ms)	Specifies the level-1 underfrequency protection duration.
44	Level-2 underfrequency protection threshold (Hz)	Specifies the level-2 underfrequency protection threshold.
45	Level-2 underfrequency protection duration (ms)	Specifies the level-2 underfrequency protection duration.
46	Level-3 underfrequency protection threshold (Hz)	Specifies the level-3 underfrequency protection threshold.
47	Level-3 underfrequency protection duration (ms)	Specifies the level-3 underfrequency protection duration.
48	Level-4 underfrequency protection threshold (Hz)	Specifies the level-4 underfrequency protection threshold.
49	Level-4 underfrequency protection duration (ms)	Specifies the level-4 underfrequency protection duration.
50	Level-5 underfrequency protection threshold (Hz)	Specifies the level-5 underfrequency protection threshold.
51	Level-5 underfrequency protection duration (ms)	Specifies the level-5 underfrequency protection duration.
52	Level-6 underfrequency protection threshold (Hz)	Specifies the level-6 underfrequency protection threshold.
53	Level-6 underfrequency protection duration (ms)	Specifies the level-6 underfrequency protection duration.

10.6.3 Feature parameters

Advanced User

No.	Parameter	Description	Remarks
1	MPPT multi-peak scanning	When the inverter is used in scenarios where PV strings are greatly shaded, set this parameter to Enable , and then the inverter will perform MPPT scanning at regular intervals to locate the maximum power.	-
2	MPPT multi-peak scan interval (min)	Specifies the MPPT scanning interval.	This parameter is displayed when MPPT multi-peak scanning is set to Enable .
3	RCD enhancement	RCD refers to the residual current of the inverter to the ground. To ensure device and personal safety, RCD should be limited to the specified value in the standard. If an AC switch with a residual current detection function is installed outside the inverter, this function should be enabled to reduce the residual current generated when the inverter is running, thereby preventing the AC switch from misoperations.	-
4	Night-time reactive power output	In some specific application scenarios, a power grid company requires that the inverter can perform reactive power compensation at night to ensure that the power factor of the local power grid meets requirements.	This parameter is displayed when Isolation settings is set to Input ungrounded, with TF .
5	PID protection at night	When the inverter outputs reactive power at night and this parameter is set to Enable , the inverter will shut down automatically if it detects abnormal status of the PID compensation.	-
6	Strong adaptability	If the power grid short-circuit capacity or PV plant installed capacity is less than 3, the power grid quality will be affected if the power grid impedance is too high, which may cause the inverter to malfunction. In this case, if the inverter is required to work properly, set this parameter to Enable .	-

No.	Parameter	Description	Remarks
7	Power quality optimization mode	If this parameter is set to Enable , the inverter output current harmonics will be optimized.	-
8	PV module type	This parameter is used to set different types of PV modules and the shutdown time of the concentration PV module. If the concentration PV modules are shaded, the power drops drastically to 0 and the inverter shuts down. The energy yield would be affected since it takes too long for the power to resume and inverter to restart. The parameter does not need to be set for crystalline silicon and filmy PV modules.	<ul style="list-style-type: none"> • If this parameter is set to Crystalline silicon or Film, the inverter automatically detects the power of PV modules when they are shaded and shuts down if the power is too low. • When concentration PV modules are used: <ul style="list-style-type: none"> - If this parameter is set to CPV 1, the inverter can quickly restart in 60 minutes if the input power of PV modules drops drastically due to shading. - If this parameter is set to CPV 2, the inverter can quickly restart in 10 minutes if the input power of PV modules drops drastically due to shading.
9	Built-in PID compensation direction	When the external PID module compensates the PID voltage for the PV system, set Built-in PID compensation direction to the actual compensation direction of the PID module so that the inverter can output reactive power at night.	This parameter is displayed when PV module type is set to Crystalline silicon . Select PV-positive offset for P-type PV modules. Select PV+ negative offset for N-type PV modules.
10	PID running mode	Specifies the operation mode of the inverter built-in PID.	-
11	PID nighttime off-grid repair	Specifies whether to enable the PID nighttime off-grid repair.	If PID running mode is not set to Disable , the parameter can be set.
12	PID daytime off-grid repair	Specifies whether to enable the PID daytime off-grid repair.	

No.	Parameter	Description	Remarks
13	String connection mode	Specifies the connection mode of PV strings.	<ul style="list-style-type: none"> When PV strings connect to the inverter separately (All PV strings separated), there is no need to set this parameter. The inverter can automatically detect the connection mode of the PV strings. When PV strings connect to one another in parallel outside the inverter and then connect to it independently (All PV strings connected), set this parameter to All PV strings connected.
14	Automatic OFF due to communication interrupted	The standards of certain countries and regions require that the inverter must shut down after the communication is interrupted for a certain time.	If Automatic OFF due to communication interrupted is set to Enable and the inverter communication is interrupted for a specified time (set by Communication interruption duration), the inverter will automatically shut down.
15	Communication interruption duration (min)	Specifies the duration for determining communication interruption. Used for automatic shutdown for protection in case of communication interruption.	-
16	Automatic ON due to communication resumed	If this parameter is set to Enable , the inverter automatically starts after communication recovers. If this parameter is set to Disable , the inverter needs to be started manually after communication recovers.	This parameter is displayed when Automatic OFF due to communication interrupted is set to Enable .
17	Soft start/boot time (s)	Specifies the duration for the power to gradually increase when the inverter starts.	-
18	Shutdown gradient (%/s)	Specifies the power change speed when the inverter shuts down.	-
19	AFCI	The North American standard requires that the inverter should have DC arc detection function.	-

No.	Parameter	Description	Remarks
20	AFCI detection adaptive mode	Adjusts the sensitivity of arc detection.	This parameter is displayed only when AFCI is set to Enable .
21	AFCI self-test	Send the AFCI self-check command manually.	-
22	Current error during the scan (A)	To prevent inaccurate scanning caused by sunlight change, the current change of PV strings operating properly should be monitored when the I-V curves of PV strings are being scanned. When the current exceeds the specified value, it is determined that the sunlight changes. The I-V curves should be scanned again.	-
23	OVGR associated shutdown	If this parameter is set to Enable , the inverter shuts down after receiving the OVGR signal. If this parameter is set to Disable , the inverter does not shut down after receiving the OVGR signal.	This parameter is displayed if the Japanese grid code is selected.
24	Dry contact function	Identifies the dry contact signals from the SmartLogger.	Set this parameter to OVGR for OVGR signals, and set it to NC for other signals. This parameter is displayed if the Japanese grid code is selected.
25	Commanded shutdown hold after power recovery	The standards of certain countries and regions require that if the inverter is shut down after receiving a command and powered on again after power recovers, it should still be in commanded shutdown state.	-
26	Night-time hibernation	The inverter monitors PV strings at night. If this parameter is set to Enable , the monitoring function of the inverter will hibernate at night to reduce power consumption.	-
27	MBUS communication	For inverters that support RS485 communication and MBUS communication, you are advised to set this parameter to Disable to reduce power consumption.	-
28	RS485-2 communication	If this parameter is set to Enable , the RS485-2 port can be used. If the port is not used, you are advised to set this parameter to Disable to reduce power consumption.	-

No.	Parameter	Description	Remarks
29	Delay upgrade	This parameter is mainly used in the upgrade scenarios where the PV power supply is disconnected at night due to no sunlight or unstable at dawn or dusk due to poor sunlight.	After the inverter starts to upgrade, if Delay upgrade is set to Enable , the upgrade package is loaded first. After the PV power supply recovers and the activation conditions are met, the inverter automatically activates the upgrade.
30	String monitor	The inverter monitors PV strings in real time. If any PV string is abnormal (such as the PV string is shaded or the electric energy yield decreases), the inverter generates an alarm to remind maintenance personnel to maintain the PV string in a timely manner.	If PV strings are often shaded, you are advised to set String monitor to Disable to prevent false alarms.
31	String detection low power delay (min)	Specifies the delay time for generating abnormal string alarms when the inverter detects that a PV string is working with low power. This parameter is mainly used in the scenario where PV strings are shaded for a long time in the morning and evening, and is used to prevent false alarms.	This parameter is displayed when String monitor is set to Enable .
32	String detection high power delay (min)	Specifies the delay time for generating abnormal string alarms when the inverter detects that a PV string is working with high power.	
33	String detection power segment division percentage (%)	Specifies the thresholds for determining whether a PV string is working with high power or low power. This parameter is used to distinguish the working status of PV strings.	
34	String detection reference asymmetric coefficient	Specifies the threshold for determining PV string exception. The false alarms caused by fixed shadow shading can be controlled by changing this parameter.	
35	String detection starting power percentage (%)	Specifies the threshold for starting PV string exception detection. The false alarms caused by fixed shadow shading can be controlled by changing this parameter.	

No.	Parameter	Description	Remarks
36	OFF at 0% power limit	If this parameter is set to Enable , the inverter shuts down after receiving the 0% power limit command. If this parameter is set to Disable , the inverter does not shut down after receiving the 0% power limit command.	-
37	Maximum apparent power (kVA)	Specifies the output upper threshold for the maximum apparent power to adapt to the capacity requirements of standard and customized inverters.	If the maximum active power equals the value of Smax_limit, this parameter is not displayed.
38	Maximum active power (kW)	Specifies the output upper threshold for the maximum active power to adapt to different market requirements.	For 1000 V inverters, this parameter is configurable only for the SUN2000-25KTL-US, and the maximum value is 27.5 kW.
39	Tracker controller	Selects a controller vendor.	-
40	Adjust total energy yield (kWh)	Specifies the initial energy yield of the inverter. This parameter is used in inverter replacement scenarios. Set the initial energy yield of the new inverter to the total energy yield of the old inverter to ensure continuous statistics of cumulative energy yield.	-
41	Duration for determining short-time grid disconnection (ms)	The standards of certain countries and regions require that the inverter should not disconnect from the power grid if the power grid experiences a short-time failure. After the fault is rectified, the inverter output power needs to be quickly restored.	-
42	Buzzer	If this parameter is set to Enable , the buzzer sounds when the DC input cable is incorrectly connected. If this parameter is set to Disable , the buzzer does not sound when the DC input cable is incorrectly connected.	-

Special User

No.	Parameter	Description	Remarks
1	Automatic OFF due to communication interrupted	The standards of certain countries and regions require that the inverter must shut down after the communication is interrupted for a certain time.	If Automatic OFF due to communication interrupted is set to Enable and the inverter communication is interrupted for a specified time (set by Communication interruption duration), the inverter will automatically shut down.
2	Communication interruption duration (min)	Specifies the duration for determining communication interruption. Used for automatic shutdown for protection in case of communication interruption.	-
3	Automatic ON due to communication resumed	If this parameter is set to Enable , the inverter automatically starts after communication recovers. If this parameter is set to Disable , the inverter needs to be started manually after communication recovers.	This parameter is displayed when Automatic OFF due to communication interrupted is set to Enable .
4	Soft start/boot time (s)	Specifies the duration for the power to gradually increase when the inverter starts.	-
5	LVRT	LVRT is short for low voltage ride-through. When the grid voltage is abnormally low for a short time, the inverter cannot disconnect from the power grid immediately and has to work for some time.	-
6	Threshold for triggering LVRT (V)	Specifies the threshold for triggering LVRT. The threshold settings should meet the local grid standard.	This parameter is displayed when LVRT is set to Enable .

No.	Parameter	Description	Remarks
7	LVRT compensation power factor of reactive power in positive sequence	<p>During LVRT, the solar inverter needs to generate positive-sequence reactive power to support the power grid. This parameter is used to set the positive-sequence reactive power generated by the solar inverter.</p> <p>For example, if you set LVRT compensation power factor of reactive power in positive sequence to 2, the positive-sequence reactive current generated by the solar inverter is 20% of the rated current when the AC voltage decreases by 10% during LVRT.</p>	
8	LVRT compensation power factor of reactive power in negative sequence	<p>During LVRT, the solar inverter needs to generate negative-sequence reactive power to support the power grid. This parameter is used to set the negative-sequence reactive power generated by the solar inverter.</p> <p>For example, if you set LVRT compensation power factor of reactive power in negative sequence to 2, the negative-sequence reactive current generated by the solar inverter is 20% of the rated current when the AC voltage decreases by 10% during LVRT.</p>	
9	Percentage of LVRT reactive current limiting	<p>During LVRT, the solar inverter needs to limit the reactive current.</p> <p>For example, if you set Percentage of LVRT reactive current limiting to 50, the reactive current upper limit of the solar inverter is 50% of the rated current during LVRT.</p>	
10	Threshold of LVRT zero-current mode	<p>When Zero current due to power grid fault is enabled, if the power grid voltage is less than the value of Threshold of LVRT zero-current mode during LVRT, the zero current mode is used. Otherwise, the mode configured in LVRT mode is used.</p>	

No.	Parameter	Description	Remarks
11	LVRT mode	Sets LVRT mode. The options are Zero-current mode , Constant current mode , Reactive power priority mode , and Active power priority mode .	
12	LVRT reactive power compensation factor	During LVRT, the inverter needs to generate reactive power to support the power grid. This parameter is used to set the reactive power generated by the inverter.	<ul style="list-style-type: none"> • This parameter is displayed when LVRT is set to Enable. • For example, if this parameter is set to 2, the reactive power generated by the inverter is 20% of the rated power when the AC voltage drops by 10% during LVRT.
13	LVRT characteristic curve	Specifies the low voltage ride-through capability of the inverter.	-
14	HVRT	HVRT is short for high voltage ride-through. When the grid voltage is abnormally high for a short time, the inverter cannot disconnect from the power grid immediately and has to work for some time.	-
15	Threshold for triggering HVRT (V)	Specifies the threshold for triggering HVRT. The threshold settings should meet the local grid standard.	This parameter is displayed when HVRT is set to Enable .
16	HVRT compensation power factor of reactive power in positive sequence	<p>During HVRT, the solar inverter needs to generate positive-sequence reactive power to support the power grid. This parameter is used to set the positive-sequence reactive power generated by the solar inverter.</p> <p>For example, if you set HVRT compensation power factor of reactive power in positive sequence to 2, the positive-sequence reactive current generated by the solar inverter is 20% of the rated current when the AC voltage increases by 10% during HVRT.</p>	

No.	Parameter	Description	Remarks
17	HVRT compensation power factor of reactive power in negative sequence	<p>During HVRT, the solar inverter needs to generate negative-sequence reactive power to support the power grid. This parameter is used to set the negative-sequence reactive power generated by the solar inverter.</p> <p>For example, if you set HVRT compensation power factor of reactive power in negative sequence to 2, the negative-sequence reactive current generated by the solar inverter is 20% of the rated current when the AC voltage increases by 10% during HVRT.</p>	
18	HVRT compensation power factor of reactive power in positive sequence	<p>During HVRT, the inverter needs to generate reactive power to support the power grid. This parameter is used to set the reactive power generated by the inverter.</p>	
19	VRT exit hysteresis threshold	Specifies the LVRT/HVRT recovery threshold.	<ul style="list-style-type: none"> • This parameter is displayed when LVRT or HVRT is set to Enable. • LVRT recovery threshold = Threshold for triggering LVRT + VRT exit hysteresis threshold • HVRT recovery threshold = Threshold for triggering HVRT + VRT exit hysteresis threshold
20	LVRT undervoltage protection shield	Specifies whether to shield the undervoltage protection function during LVRT.	This parameter is displayed when LVRT is set to Enable .
21	Grid voltage protection shield during VRT	Specifies whether to shield the undervoltage protection function during LVRT or HVRT.	This parameter is displayed when LVRT or HVRT is set to Enable .

No.	Parameter	Description	Remarks
22	Grid voltage jump triggering threshold (%)	Specifies the LVRT or HVRT threshold for triggering a transient voltage jump of a power grid. A transient voltage jump indicates that the inverter cannot immediately disconnect from the power grid when the power grid is abnormal due to transient changes.	This parameter is available when Grid code is set to VDE 4120 .
23	Zero current due to power grid fault	Certain countries and regions have requirements on the output current during high/low voltage ride-through. In this case, set this parameter to Enable . After this parameter is set to Enable , the output current is less than 10% of the rated current during high/low voltage ride-through.	This parameter is displayed when LVRT or HVRT is set to Enable .
24	Active islanding protection	Specifies whether to enable the active islanding protection function.	-
25	Passive islanding protection	Specifies whether to enable the passive islanding protection function.	This parameter is displayed if the Japanese grid code is selected.
26	Voltage rise suppression	The standards of certain countries and regions require that when the output voltage exceeds a certain value, the inverter must suppress voltage rise by outputting reactive power and reducing active power.	-
27	Voltage rise suppressing reactive power adjustment point (%)	The standards of certain countries and regions require that the inverter generate a certain amount of reactive power when the output voltage exceeds a certain value.	<ul style="list-style-type: none"> • This parameter is displayed when Voltage rise suppression is set to Enable. • The value of Voltage rise suppressing active power derating point must be greater than that of Voltage rise suppressing reactive power adjustment point.
28	Voltage rise suppressing active power derating point (%)	The standards of certain countries and regions require that the active power of the inverter be derated according to a certain slope when the output voltage exceeds a certain value.	
29	Voltage rise suppression P-U curve	The standards of certain countries and regions require that the P-U curve be set.	This parameter is displayed when Voltage rise suppression is set to Enable .

No.	Parameter	Description	Remarks
30	Voltage rise suppression Q-U curve	The standards of certain countries and regions require that the Q-U curve be set.	
31	Frequency change rate protection	Set this parameter to Enable to protect the inverter when the grid frequency changes too fast.	-
32	Frequency change rate protection threshold (Hz/s)	Specifies the frequency change rate protection threshold.	This parameter is displayed if Frequency change rate protection is set to Enable .
33	Frequency change rate protection duration (s)	The inverter is protected when the grid frequency change duration exceeds the value.	
34	Soft start time after grid failure (s)	Specifies the time for the power to gradually increase when the inverter restarts after the power grid recovers.	-
35	TCP heartbeat interval (s)	Specifies the TCP link timeout period for the solar inverter to connect to the management system.	-
36	TCP frame length	Specifies the maximum length of the TCP frame sent by the northbound device to the solar inverter.	-
37	Heartbeat period at application layer (min)	Specifies the timeout period for the solar inverter to connect to the management system.	-

10.6.4 Power adjustment parameters

Special User

No.	Parameter	Description	Remarks
1	Remote power schedule	If this parameter is set to Enable , the inverter responds to the scheduling instruction from the remote port. If this parameter is set to Disable , the inverter does not respond to the scheduling instruction from the remote port.	-

No.	Parameter	Description	Remarks
2	Schedule instruction valid duration (s)	Specifies the time for maintaining the scheduling instruction.	When this parameter is set to 0, the scheduling instruction takes effect permanently.
3	Maximum apparent power (kVA)	Specifies the output upper threshold for the maximum apparent power to adapt to the capacity requirements of standard and customized inverters.	If the maximum active power equals the value of Smax_limit, this parameter is not displayed.
4	Maximum active power (kW)	Specifies the output upper threshold for the maximum active power to adapt to different market requirements.	-
5	OFF at 0% power limit	If this parameter is set to Enable , the inverter shuts down after receiving the 0% power limit command. If this parameter is set to Disable , the inverter does not shut down after receiving the 0% power limit command.	-
6	Active power change gradient (%/s)	Specifies the change speed of the inverter active power.	-
7	Derated by fixed active power (kW)	Adjusts the active power output of the inverter by fixed value.	This parameter is displayed if Remote power schedule is set to Enable . For 1000 V inverters, the maximum value of this parameter for the SUN2000-25KTL-US is 27.5 kW.
8	Derated by active power % (%)	Adjusts the active power output of the inverter by percentage.	This parameter is displayed if Remote power schedule is set to Enable . If this parameter is set to 100 , the inverter outputs based on the maximum output power.
9	Reactive power change gradient (%/s)	Specifies the change speed of the inverter reactive power.	-
10	Plant active power gradient (min/100%)	Specifies the rate of active power rise due to sunlight changes.	-

No.	Parameter	Description	Remarks
11	Average active power filtering time (ms)	Specifies the period of active power rise due to sunlight changes. This parameter is used with Plant active power gradient .	-
12	PF (U) voltage detection filtering time (s)	Specifies the time for filtering the grid voltage in the PF-U curve.	-
13	Reactive power adjustment time (s)	Specifies the adjustment time for the reactive power to reach the target value during reactive power adjustment.	-
14	Power factor	Specifies the power factor of the inverter.	This parameter is displayed if Remote power schedule is set to Enable .
15	Reactive power compensation (Q/S)	Specifies the reactive power output by the inverter.	
16	Night-time reactive power compensation (Q/S)	During the reactive power compensation at night, the reactive power is scheduled by percentage.	-
17	Night-time reactive power output	In some specific application scenarios, a power grid company requires that the inverter can perform reactive power compensation at night to ensure that the power factor of the local power grid meets requirements.	This parameter is displayed when Isolation settings is set to Input ungrounded, with TF .
18	Enable reactive power parameters at night	When this parameter is set to Enable , the inverter outputs reactive power based on the setting of Reactive power compensation at night . Otherwise, the inverter executes the remote scheduling command.	This parameter is displayed when Night-time reactive power output is set to Enable .
19	Fixed nighttime reactive power	During the reactive power compensation at night, the reactive power is scheduled by fixed value.	This parameter is displayed when Night-time reactive power output and Enable reactive power parameters at night are set to Enable .
20	Overfrequency derating	If this parameter is set to Enable , the active power of the inverter will be derated according to a certain slope when the grid frequency exceeds the frequency that triggers overfrequency derating.	-

No.	Parameter	Description	Remarks
21	Frequency for triggering overfrequency derating (Hz)	The standards of certain countries and regions require that the output active power of inverters be derated when the power grid frequency exceeds a certain value.	<ul style="list-style-type: none"> This parameter is displayed when Overfrequency derating is set to Enable. When setting this parameter, ensure that the following condition is met: Frequency for exiting overfrequency derating \leq Frequency for triggering overfrequency derating $<$ Cutoff frequency of overfrequency derating.
22	Frequency for exiting overfrequency derating (Hz)	Specifies the frequency threshold for exiting overfrequency derating.	
23	Cutoff frequency of overfrequency derating (Hz)	Specifies the frequency threshold for cutting off overfrequency derating.	
24	Cutoff power of overfrequency derating (%)	Specifies the power threshold for cutting off overfrequency derating.	
25	Frequency detection filtering time (ms)	Specifies the frequency detection filter time.	
26	Overfrequency derating power drop gradient (%/s)	Specifies the decrease rate of the overfrequency derating power.	
27	Power recovery gradient of overfrequency derating (%/min)	Specifies the recovery rate of the overfrequency derating power.	
28	Voltage derating	If this parameter is set to Enable , the active power of the inverter will be derated according to a certain slope when the grid voltage exceeds the voltage that triggers overfrequency derating.	-
29	Voltage derating start point (V)	Specifies the start point for voltage derating.	<ul style="list-style-type: none"> This parameter is displayed when Voltage derating is set to Enable. When setting this parameter, ensure that the following condition is met: Voltage derating start point $<$ Voltage derating stop point.
30	Cut-off point of voltage derating (V)	Specifies the stop point for voltage derating.	
31	Voltage derating cut-off power (V)	Specifies the power threshold for cutting off voltage derating.	

No.	Parameter	Description	Remarks
32	Communication disconnection fail-safe	In the inverter export limitation scenario, if this parameter is set to Enable , the inverter will perform active power derating by percentage when the communication between the inverter and the SmartLogger or Smart Dongle is disconnected for more than the time specified by Communication disconnection detection time .	N/A
33	Communication disconnection detection time (s)	Specifies the fail-safe detection time for the disconnection between the inverter and the SmartLogger or Smart Dongle.	This parameter is displayed when Communication disconnection fail-safe is set to Enable .
34	Active power output limit for fail-safe (%)	Specifies the derating value of the inverter active power by percentage.	
35	Apparent power baseline (kVA)	Adjusts the apparent output baseline of the inverter.	-
36	Active power baseline (kW)	Adjusts the active output baseline of the inverter.	-
37	Frequency modulation control	The standards of certain countries and regions require that if the power grid frequency fluctuates around a certain value, the inverter needs to fine-tune the active power output based on Frequency modulation control droop to help stabilize the power grid frequency. In this case, set this parameter to Enable	-
38	Adjustment ratio of frequency modulation control	Specifies the droop of the active power output.	This parameter is displayed when Frequency modulation control is set to Enable .
39	Underfrequency rise power	The standards of certain countries and regions require that if the power grid frequency is lower than Frequency for triggering of underfrequency rise power , the inverter needs to increase the active power output to help increase the power grid frequency. In this case, set this parameter to Enable .	-
40	Frequency for triggering of underfrequency rise power (Hz)	Specifies the frequency threshold of Underfrequency rise power .	This parameter is displayed when Underfrequency rise power is set to Enable .

No.	Parameter	Description	Remarks
41	Power recovery gradient of underfrequency rise (%/min)	Specifies the recovery rate of Underfrequency rise power .	
42	Cutoff frequency of underfrequency rise power (Hz)	Specifies the cutoff frequency of Underfrequency rise power .	
43	Cutoff power of underfrequency rise power (%)	Specifies the cutoff power of Underfrequency rise power .	
44	Frequency for exiting of underfrequency rise power (Hz)	Specifies the exit frequency of Underfrequency rise power .	
45	Q-U characteristic curve mode	Specifies the reactive power compensation mode of the inverter output.	-
46	Power percentage for triggering Q-U scheduling	Specifies the reference apparent power, in percentage. When the actual apparent power of the inverter is greater than the value of this parameter, the Q-U characteristic curve scheduling function is enabled.	-
47	Q-U characteristic curve	The inverter adjusts Q/S (the ratio of the output reactive power to apparent power) in real time based on U/Un(%) (the ratio of the actual power grid voltage to the rated power grid voltage).	-
48	Q-P characteristic curve	The inverter adjusts Q/Pn (the ratio of the output reactive power to the rated active power) in real time based on P/Pn(%) (the ratio of the actual active power to the rated active power).	-
49	Cosφ-P/Pn characteristic curve	The inverter adjusts the output power factor cosφ in real time based on P/Pn(%).	-

10.6.5 Grid-tied control parameters

Special User

Table 10-1 Grid-tied control parameters

Parameter	Description
Active power control mode	Specifies the active power output mode at the grid-tied point.
Closed-loop controller	Specifies the grid-tied power controller. Before setting the parameter, confirm the controller type. Incorrect setting will result in abnormal power output of the solar inverter. Solar inverter applies only to the scenario where a single solar inverter is used or where a single solar inverter is used with an SDongle.
Limitation mode	Specifies the active power limitation mode as required by the power grid.
PV plant capacity (kW)	Specifies the PV array capacity.
Maximum grid feed-in power (kW)	In Grid connection with limited power (kW) mode, set the maximum power fed to the power grid from the PV array.
Maximum grid feed-in power (%)	In Grid connection with limited power (%) mode, set the proportion of the maximum power fed to the power grid from the PV array to the capacity of the PV plant.
Power adjustment period (s)	Specifies the interval for sending adjustment commands.
Maximum protection time (s)	Specifies the protection duration to determine whether the communication between the external controller and the Smart Power Sensor is interrupted.
Power control hysteresis (kW)	Specifies the dead zone for adjusting the inverter output power. If the power fluctuation is within the power control hysteresis, the power is not adjusted.
Fail-safe power threshold (%)	When the communication between the SDongle/SmartLogger, power meter, and solar inverter is interrupted, the solar inverter generates power based on this threshold.

Parameter	Description
Reactive power control mode	Specifies the reactive power output mode at the grid-tied point.
Power factor	Specifies the target power factor of the power meter.
Adjustment period (s)	Specifies the interval for sending adjustment commands.
Adjustment deadband	Specifies the adjustment power factor precision.
Fail-safe power factor	When the communication between the SDongle/SmartLogger, power meter, and solar inverter is interrupted, the solar inverter generates power based on this threshold.
Communication disconnection fail-safe	When this parameter is set to Enable , and the communication between the solar inverter and the SDongle/SmartLogger is interrupted for a certain period (set by Communication disconnection detection time), the solar inverter generates power based on Fail-safe power .
Communication disconnection detection time (s)	Specifies the protection duration to determine whether the communication between the SDongle/SmartLogger and the solar inverter is interrupted.

10.7 Domain Name List of Management Systems

 NOTE

The list is subject to change.

Table 10-2 Domain names of management systems

Domain Name	Data Type	Scenario
intl.fusionsolar.huawei.com	Public network address	Global domain name of FusionSolar NOTE Compatible with the former FusionSolar hosting cloud domain name cn.fusionsolar.huawei.com for the Chinese mainland.

Domain Name	Data Type	Scenario
au7.fusionsolar.huawei.com	Public network address	Australia single-node server domain name
eu5.fusionsolar.huawei.com	Public network address	FusionSolar domain name of Europe
intlbt.fusionsolar.huawei.com	Public network address	FusionSolar domain name of Europe
jp5.fusionsolar.huawei.com	Public network address	FusionSolar domain name of Japan
la5.fusionsolar.huawei.com	Public network address	FusionSolar domain name of South America
kr5.fusionsolar.huawei.com	Public network address	FusionSolar domain name of South Korea
sg5.fusionsolar.huawei.com	Public network address	FusionSolar domain name of Asia-Pacific and Australia
region01eu5.fusionsolar.huawei.com	Public network address	Cluster Server 1 of Europe
region02eu5.fusionsolar.huawei.com	Public network address	Cluster Server 2 of Europe
region03eu5.fusionsolar.huawei.com	Public network address	Cluster Server 3 of Europe
region04eu5.fusionsolar.huawei.com	Public network address	Cluster Server 4 of Europe
neteco.alsoenergy.com	Public network address	Partner's management system
re-ene.kyuden.co.jp	Public network address	Remote output control server of Kyushu Electric Power Company
re-ene.yonden.co.jp	Public network address	Remote output control server of Shikoku Electric Power Company
au1.fusionsolar.huawei.com	Public network address	FusionSolar domain name of Australia
br1.fusionsolar.huawei.com	Public network address	FusionSolar domain name of Brazil
huawei.devicedataacquisition.com	Public network address	Third-party network management system Locus dedicated for the United States

10.8 Public URLs

Table 10-3 Public URLs of the SUN2000 app

URL	Description
https://solar.huawei.com/~media/Solar/Device/invert.xml	The mobile phone automatically detects software updates when connected to the Internet. If the device upgrade package or grid code is updated, a message is displayed to prompt users to download the upgrade package or grid code. After the distributed inverter is connected, the system prompts you to install the upgrade package.
https://solar.huawei.com/~media/Solar/Device/DeviceUpgrade.zip	Download the device upgrade package.
https://solar.huawei.com/~media/Solar/Device/InverterGridCode.zip	Download the grid code update package.
https://support.huawei.com/enterprise/en/doc/EDOC1100054980	View the app quick guide.
https://solar.huawei.com/na/appversion	The mobile phone automatically obtaining app version information when connected to the Internet.

Table 10-4 Public URLs of the FusionSolar app

URL	Description
https://support.huawei.com/enterprise/	View the app guide.
*.apple.com	Official website of Apple. The iOS version of the FusionSolar app needs to connect to this website for upgrade.
*.pinnettech.com	Official website of Pinnet Technologies. The FusionSolar app needs to connect to this website for upgrade.
https://solar.huawei.com	FusionSolar official website
eu_inverter_support@huawei.com	FusionSolar service email
baidumap://map/marker	Baidu Maps

URL	Description
androidamap://viewMap	Amap
http://maps.google.com	Google Maps
qqmap://map/marker	Tencent Maps