## FusionSolar App

# User Manual

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| **Issue** | 01 |
| **Date** | 2022-11-05 |

HUAWEI

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# Contents



# 1 Registering a FusionSolar App Installer Account

An installer account is required for device deployment and commissioning. If you do not have an installer account of the FusionSolar 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

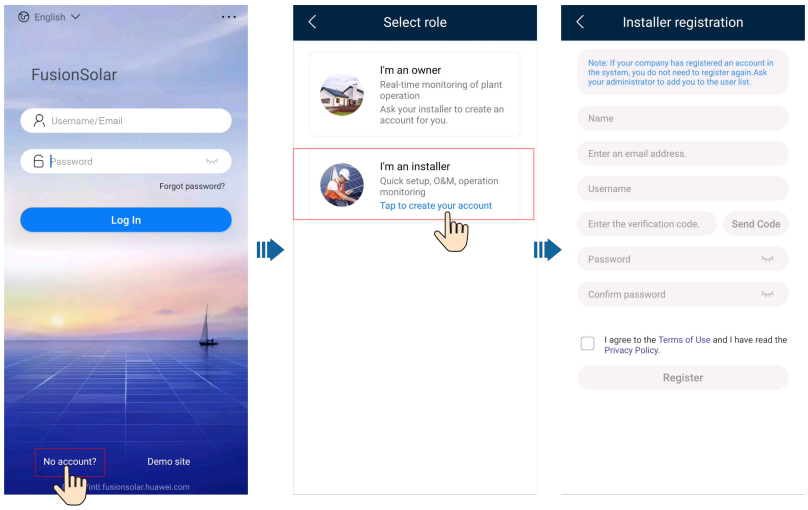
  If your company has registered an account, contact the administrator to add you to the user list.

## Procedure

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

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

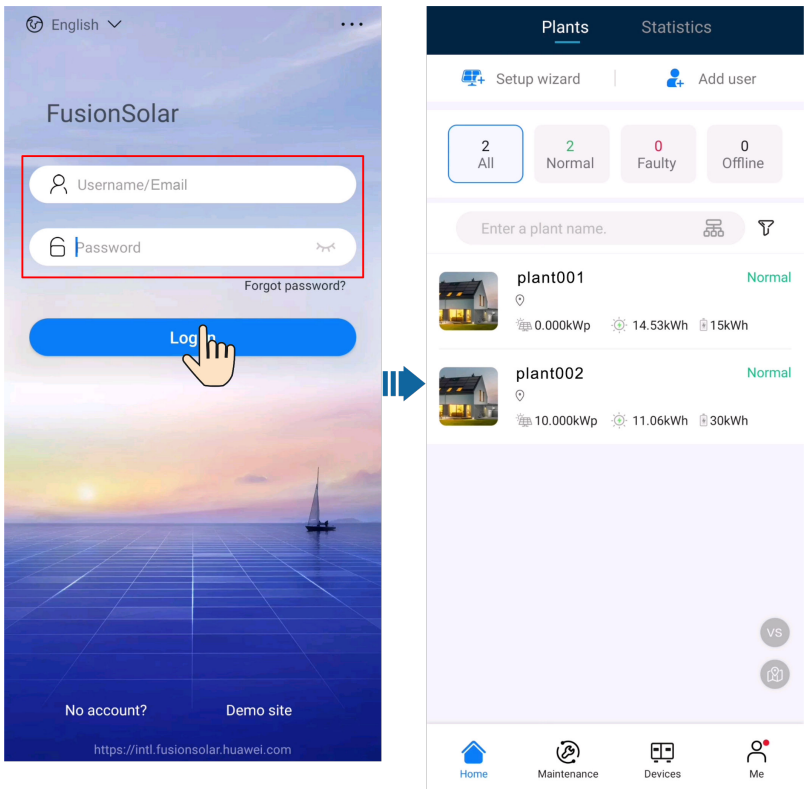

English
FusionSolar
Username/Email
Password
Forgot password?
Log In
No account?
Demo site
intl.fusionsolar.huawei.com
Select role
I'm an owner
Real-time monitoring of plant operation
Ask your installer to create an account for you.
I'm an installer
Quick setup, O&M, operation monitoring
Tap to create your account
Installer registration
Note: If your company has registered an account in the system, you do not need to register again.Ask your administrator to add you to the user list.
Name
Enter an email address.
Username
Enter the verification code.
Send Code
Password
Confirm password
I agree to the Terms of Use and I have read the Privacy Policy.
Register

# 2 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 gain 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**.

# 3 I'm an Installer

An installer can perform wizard-based site deployment commissioning on the FusionSolar app to monitor the overall running status of the plant. If a device is faulty, the installer can perform O&M on the app.

## 3.1 Setup Wizard

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

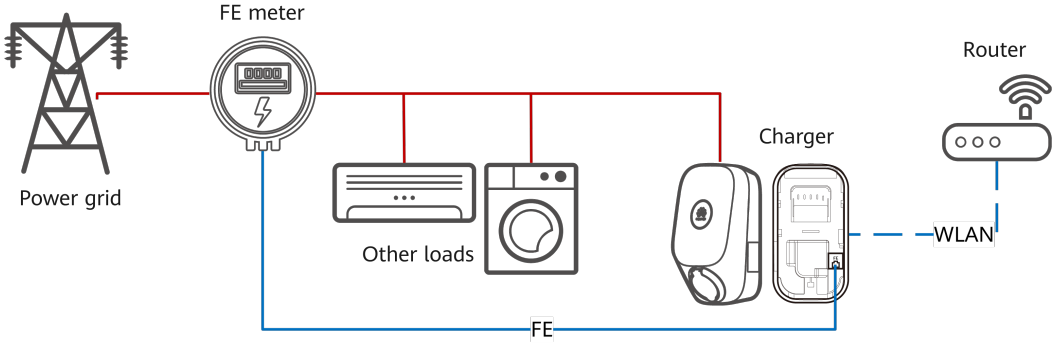
### 3.1.1 Device Commissioning (Charger)

NOTE

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

The charger can connect to the DTSU666-FE meter or connect to the WLAN/FE Dongle in the PV system through a virtual meter to obtain RS485 meter detection data for dynamic control. Perform commissioning based on the actual networking scenarios of chargers, meters, and routers.

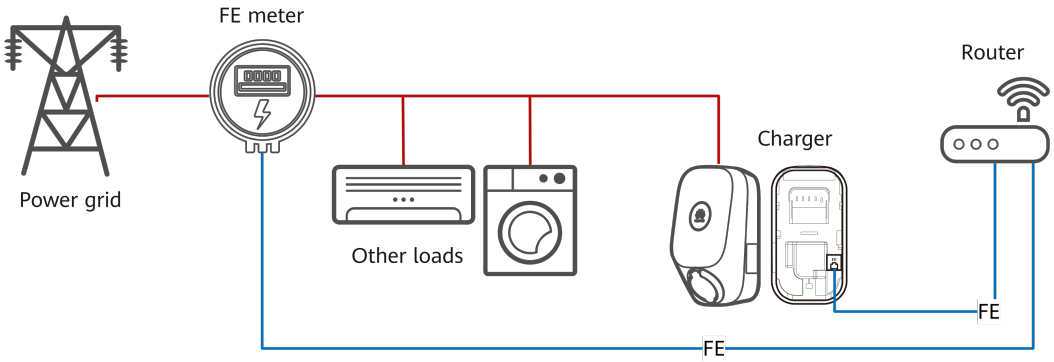
**Figure 3-1** Charger FE port directly connected to a meter




For details about the commissioning procedure, see **3.1.1.1 Charger FE Port Directly Connected to a Meter**.

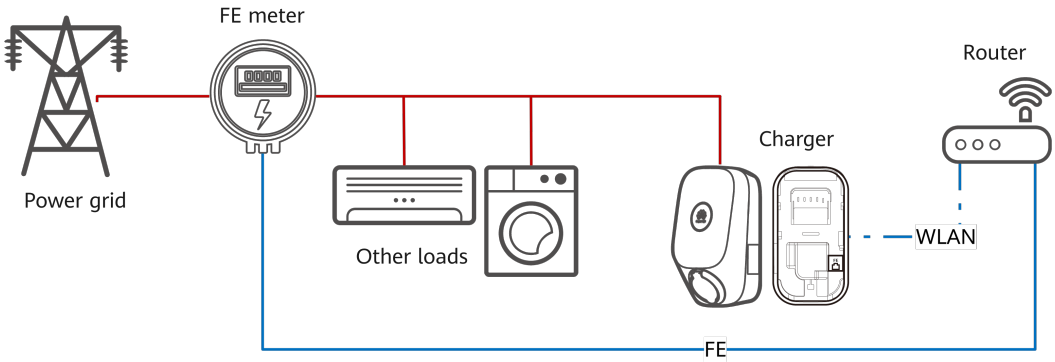
  

**Figure 3-2** Charger FE port directly connected to a router



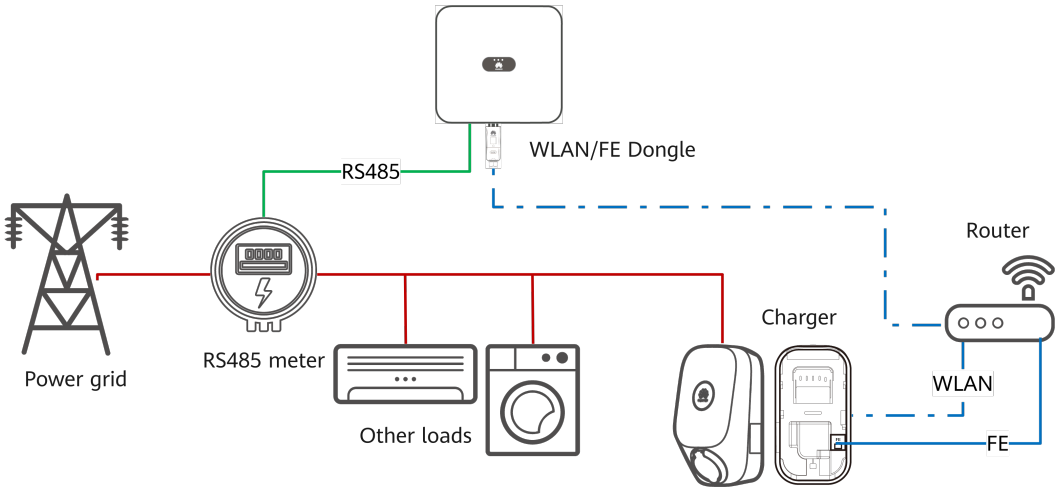

For details about the commissioning procedure, see **3.1.1.2 Charger FE Port Directly Connected to a Router**.

**Figure 3-3** Charger connected to a router through WLAN




For details about the commissioning procedure, see **3.1.1.3 Charger Connected to a Router Through WLAN**.

**Figure 3-4** Charger using a virtual meter

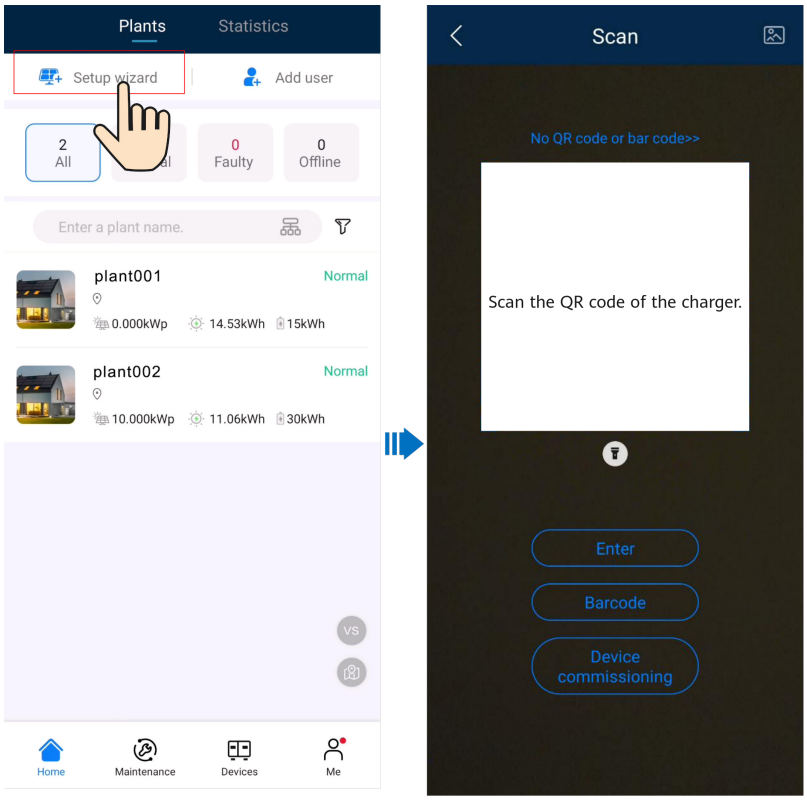


For details about the commissioning procedure, see **3.1.1.4 Charger Using a Virtual Meter**.

### 3.1.1.1 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, and scan the QR code of the charger.

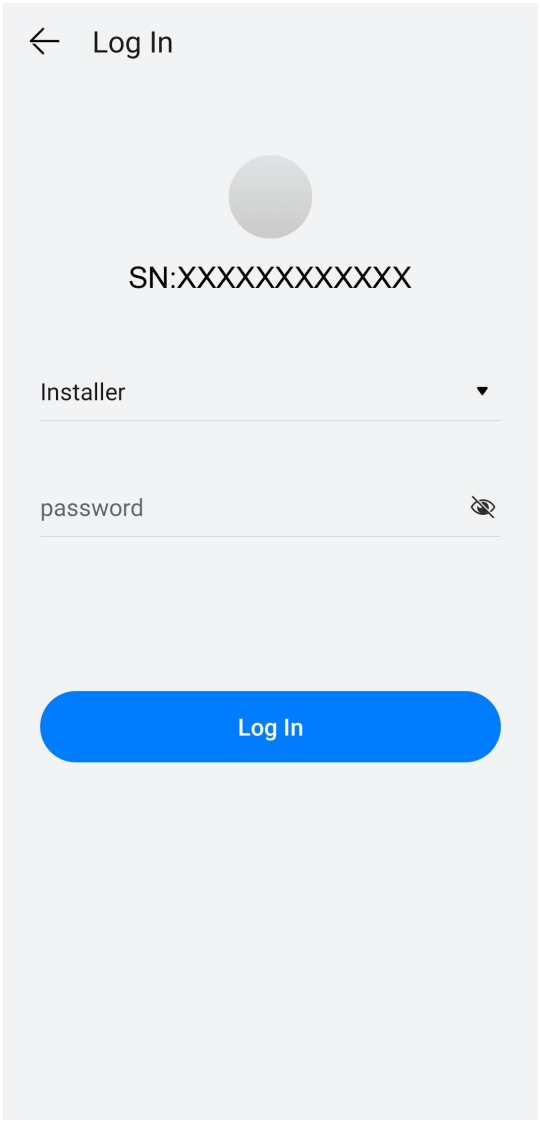



**NOTE**

- 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 upon the first power-on and change the password immediately after login. 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.

2. Log in to the app as an **Installer**.

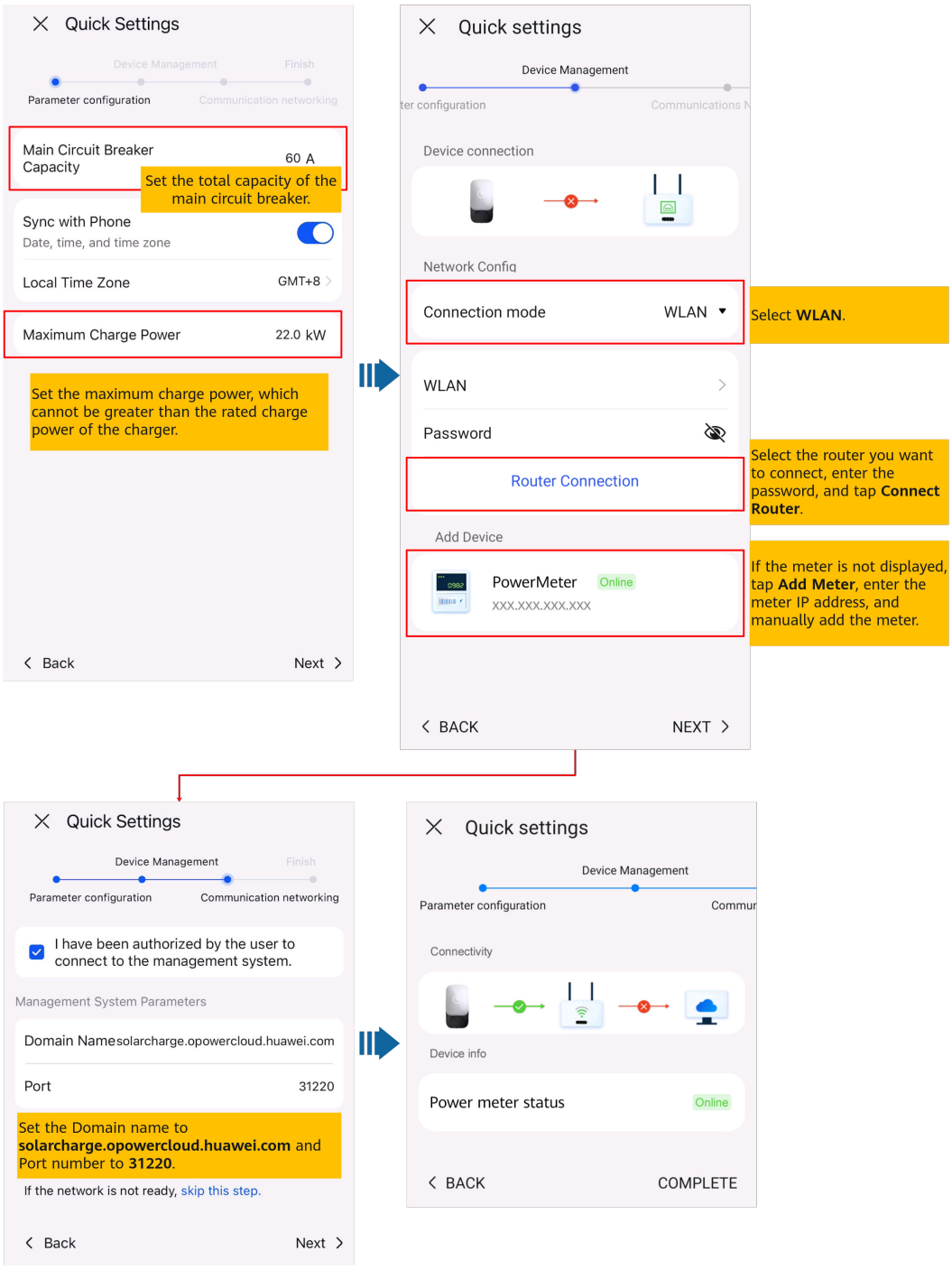



**NOTE**

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.

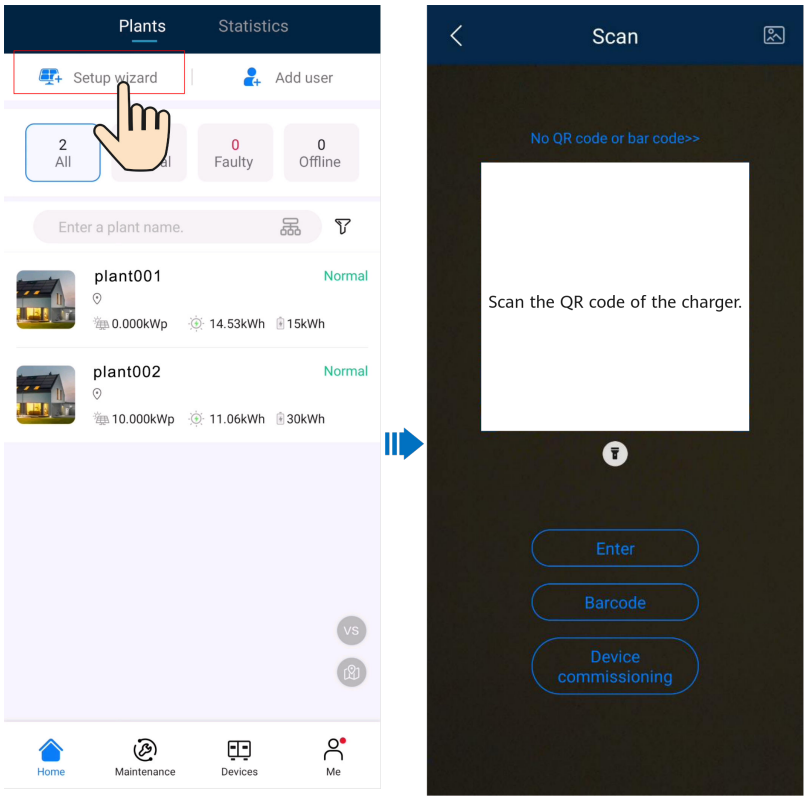



**NOTE**

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 capacity of the circuit breaker is too low, the charger cannot work.

## 3.1.1.2 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, and scan the QR code of the charger.




**NOTE**

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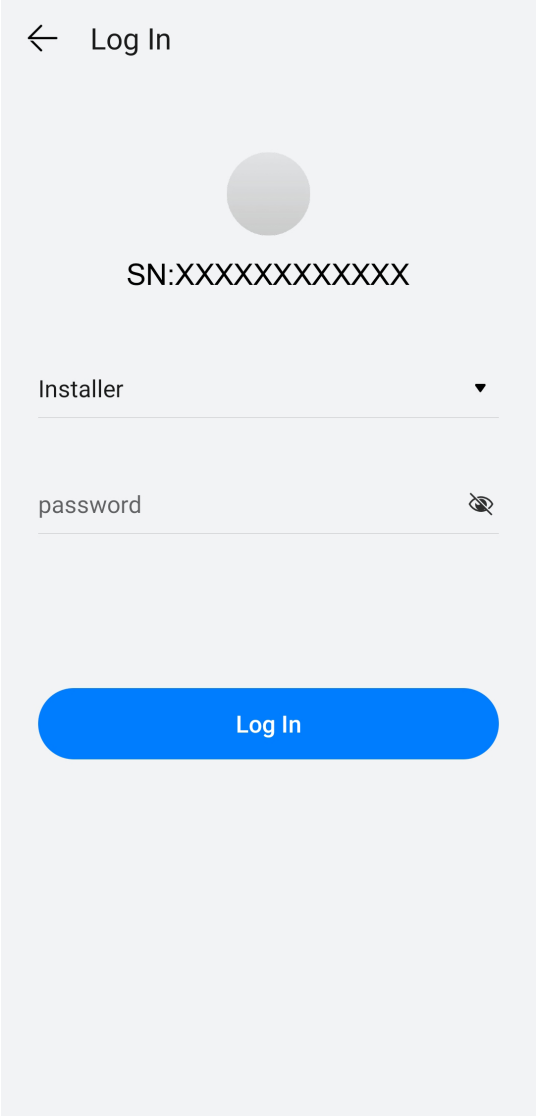
2. Log in to the app as an **Installer**.

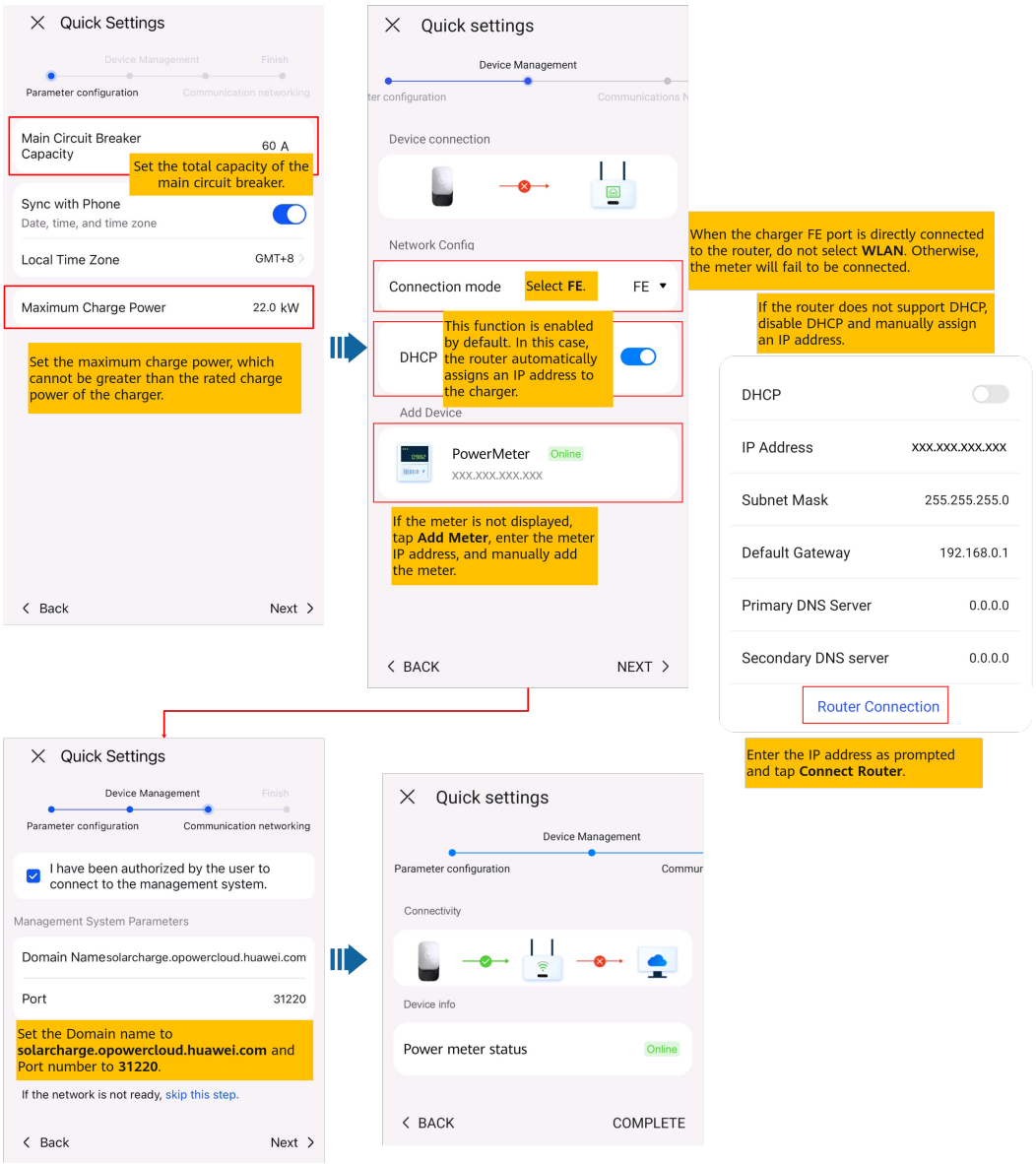



**NOTE**

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.

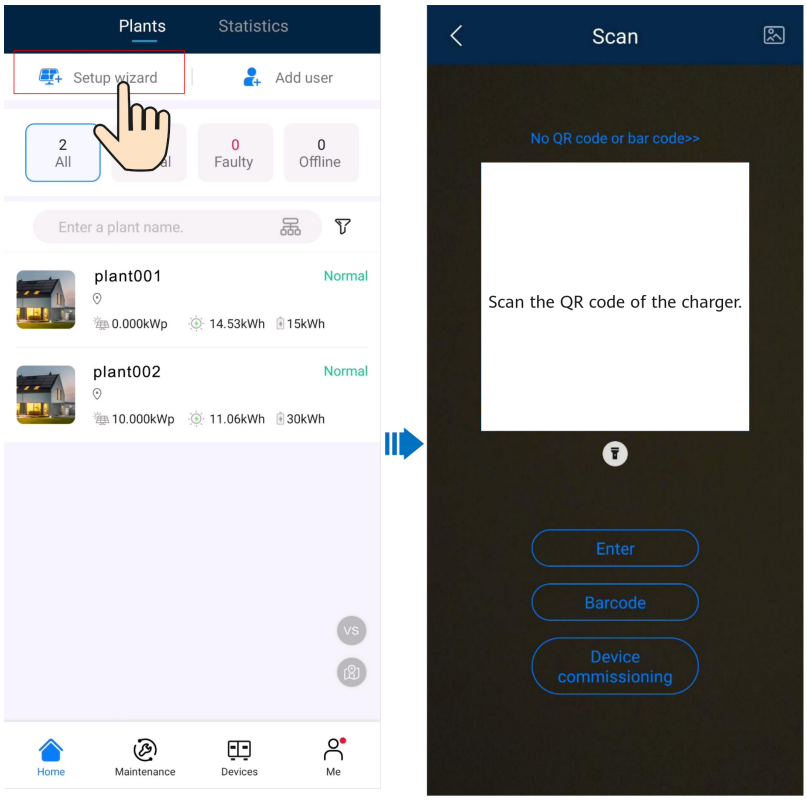



**NOTE**

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 capacity of the circuit breaker is too low, the charger cannot work.

## 3.1.1.3 Charger Connected to a Router Through WLAN

1. Log in to the FusionSolar app as an installer, tap **Setup wizard** on the home screen, and scan the QR code of the charger.




**NOTE**

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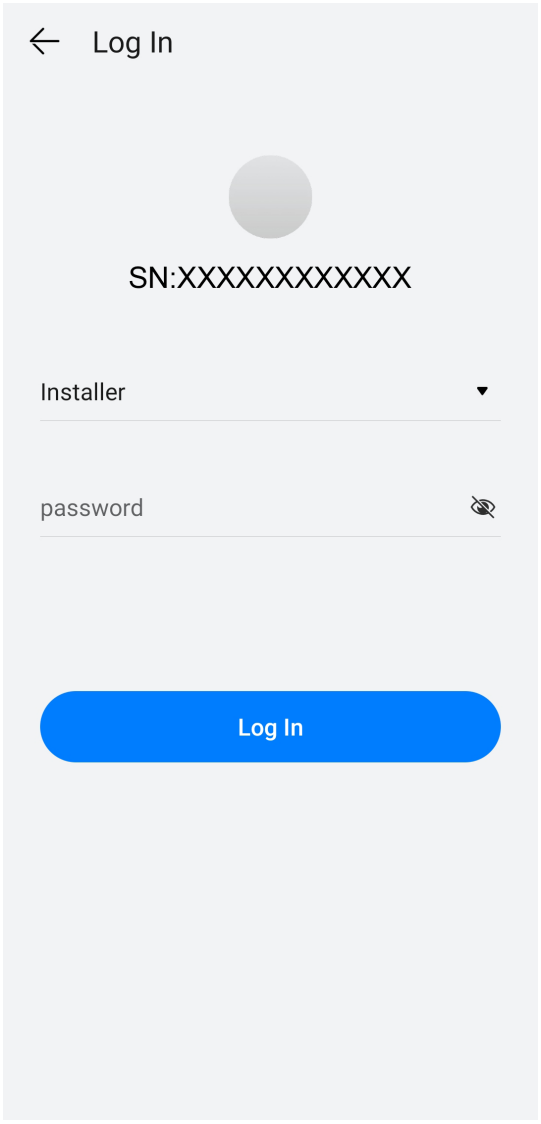
- Use the initial password upon the first power-on and change the password immediately after login. To ensure account security, protect the password by changing it periodically, and keep it secure. Your password might be stolen or cracked if it is left unchanged for extended periods. If a password is lost, devices cannot be accessed. In these cases, the Company shall not be liable for any loss.

2. Log in to the app as an **Installer**.

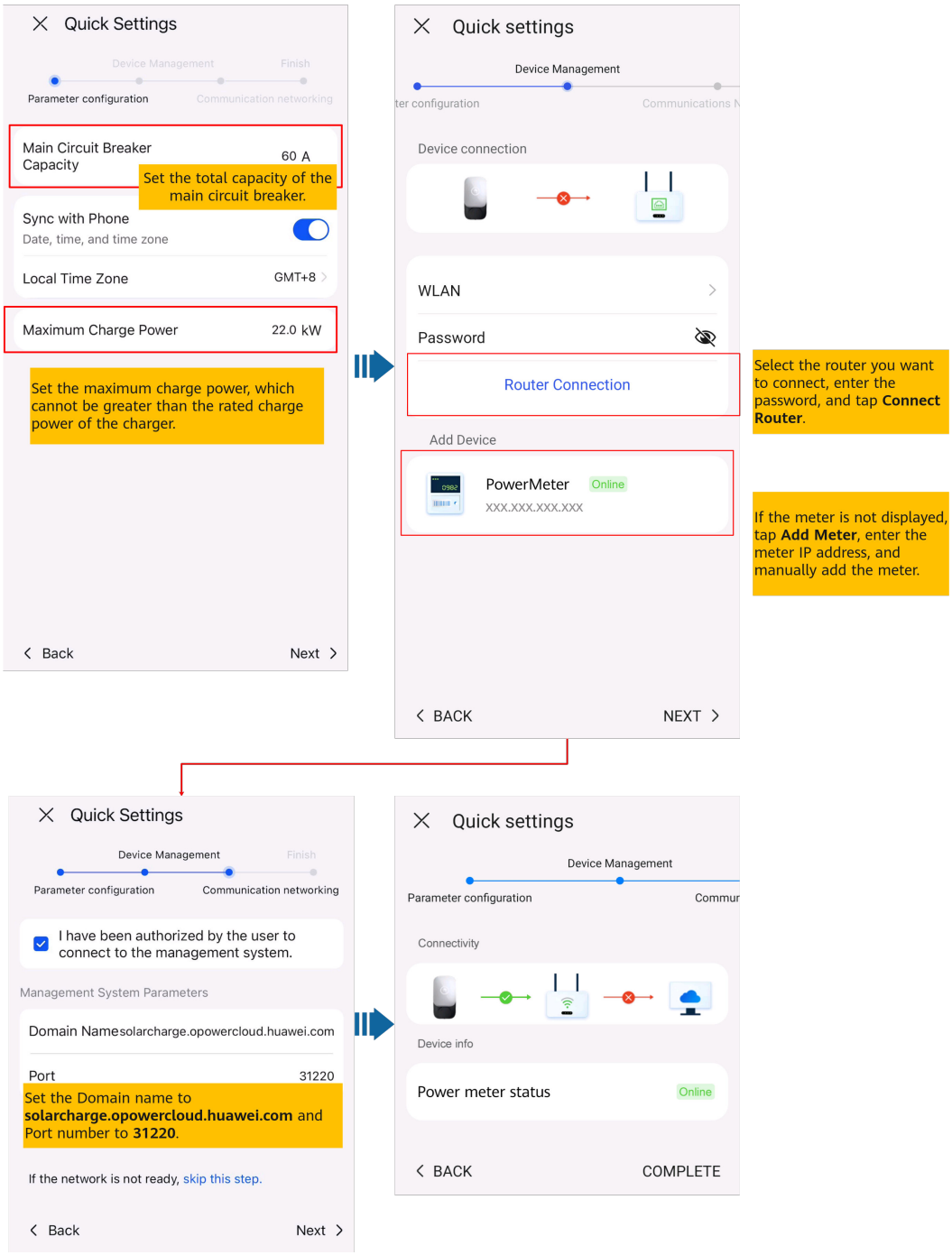



**NOTE**

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**

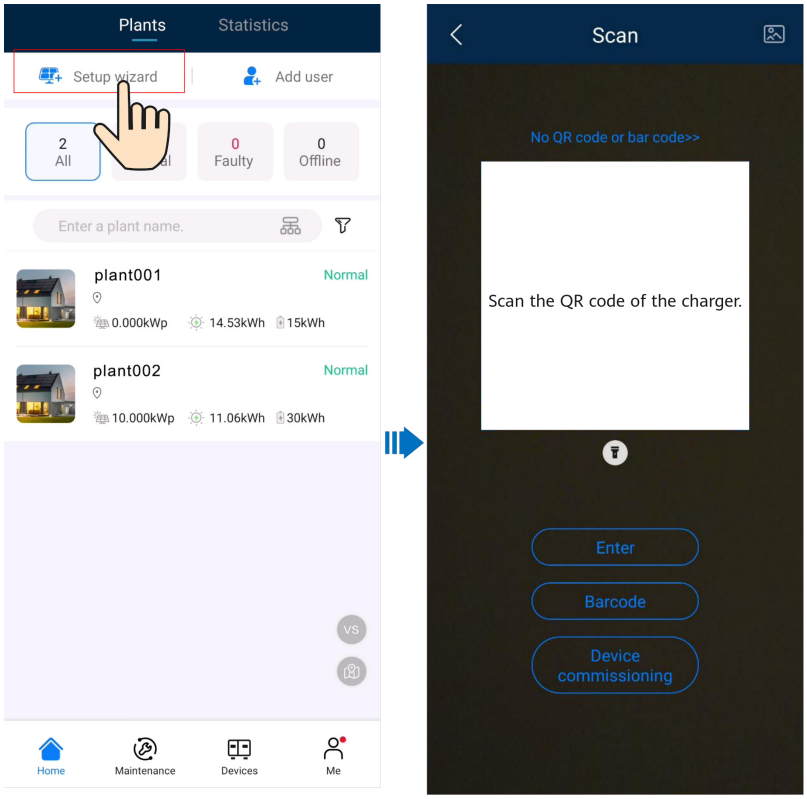
Set the capacity of the main circuit breaker based on site requirements. If the set value is greater than the actual capacity, the circuit breaker trips due to overcurrent. If the capacity of the circuit breaker is too low, the charger cannot work.

## 3.1.1.4 Charger Using a Virtual Meter

**NOTE**

If a virtual meter is used, log in to the inverter connected to the 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, and scan the QR code of the charger.

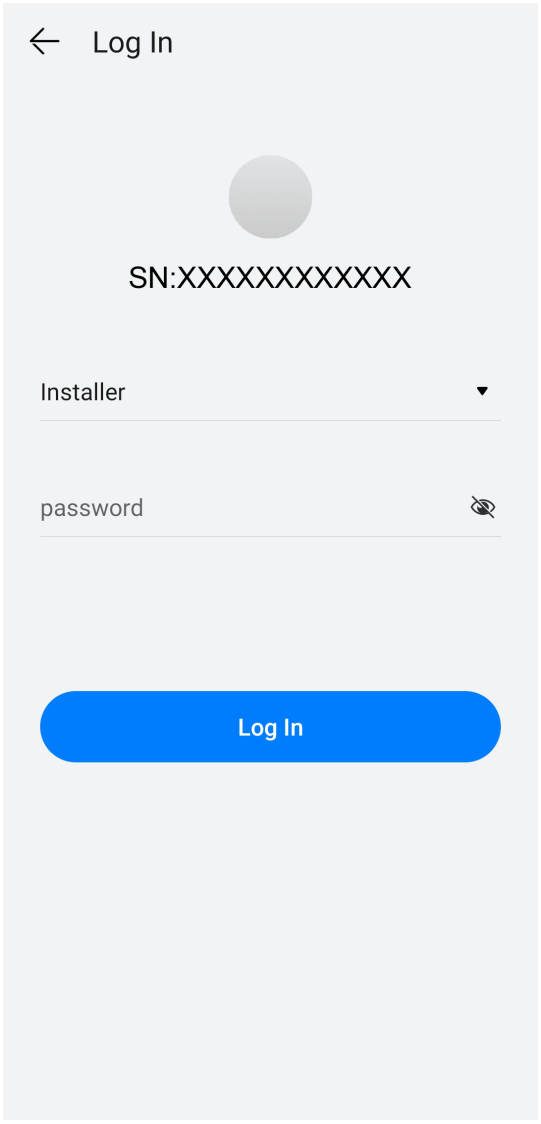



**NOTE**

- 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 upon the first power-on and change the password immediately after login. 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.

2. Log in to the app as an **Installer**.

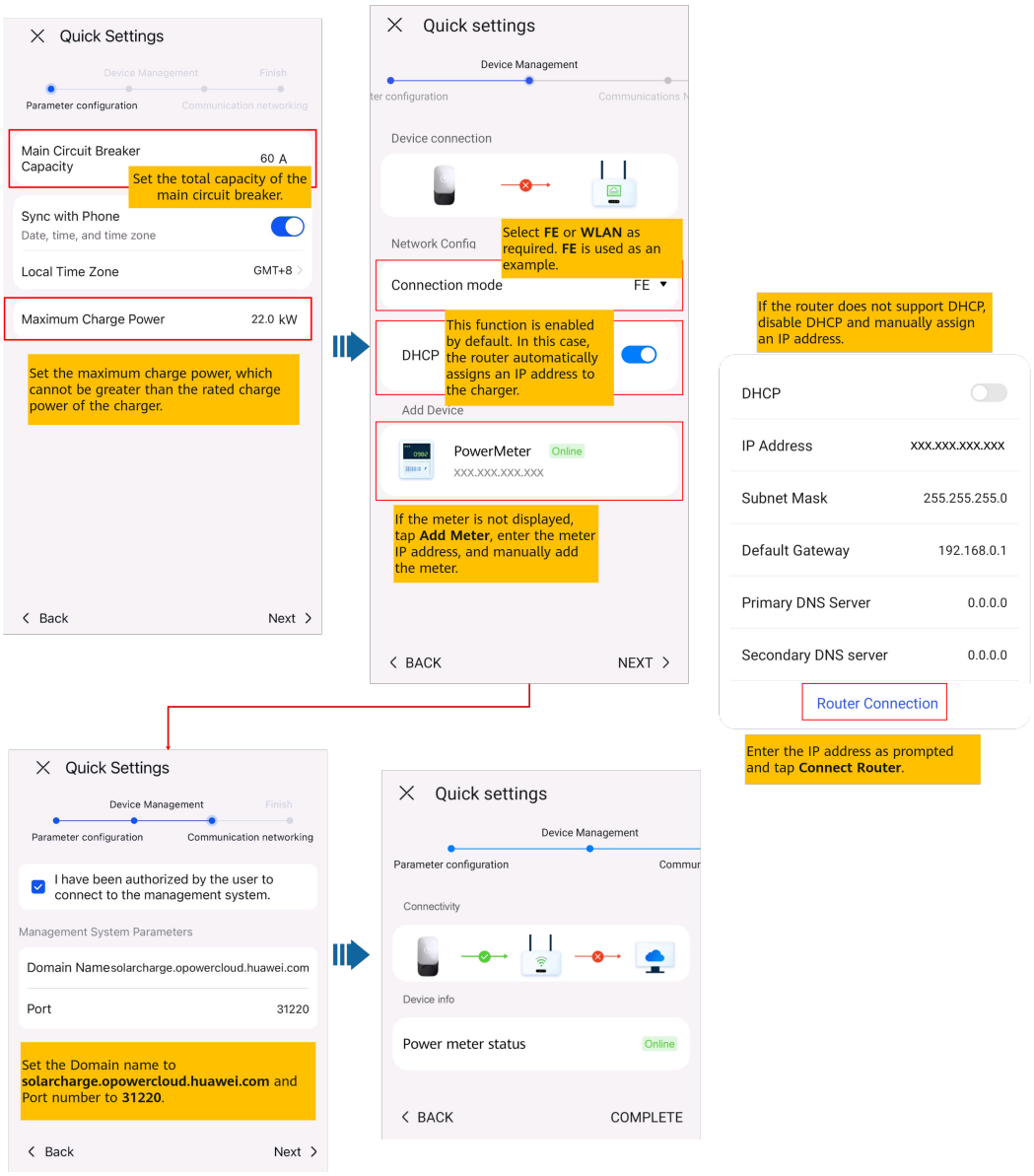



**NOTE**

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 capacity of the circuit breaker is too low, the charger cannot work.

## 3.1.2 Device Commissioning (PV+ESS)

For details about how to create a PV plant, see the app commissioning video or *FusionSolar App Quick Guide*.

### Obtaining the Commissioning Video

Method 1: Visit the following website 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 website 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.

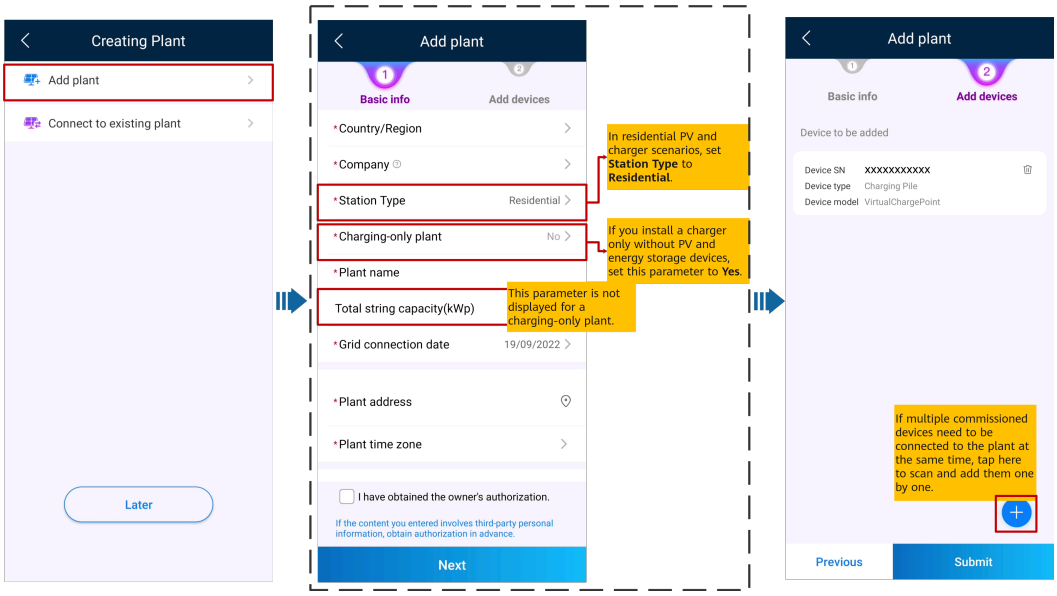
## 3.1.3 Connecting to a Plant

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

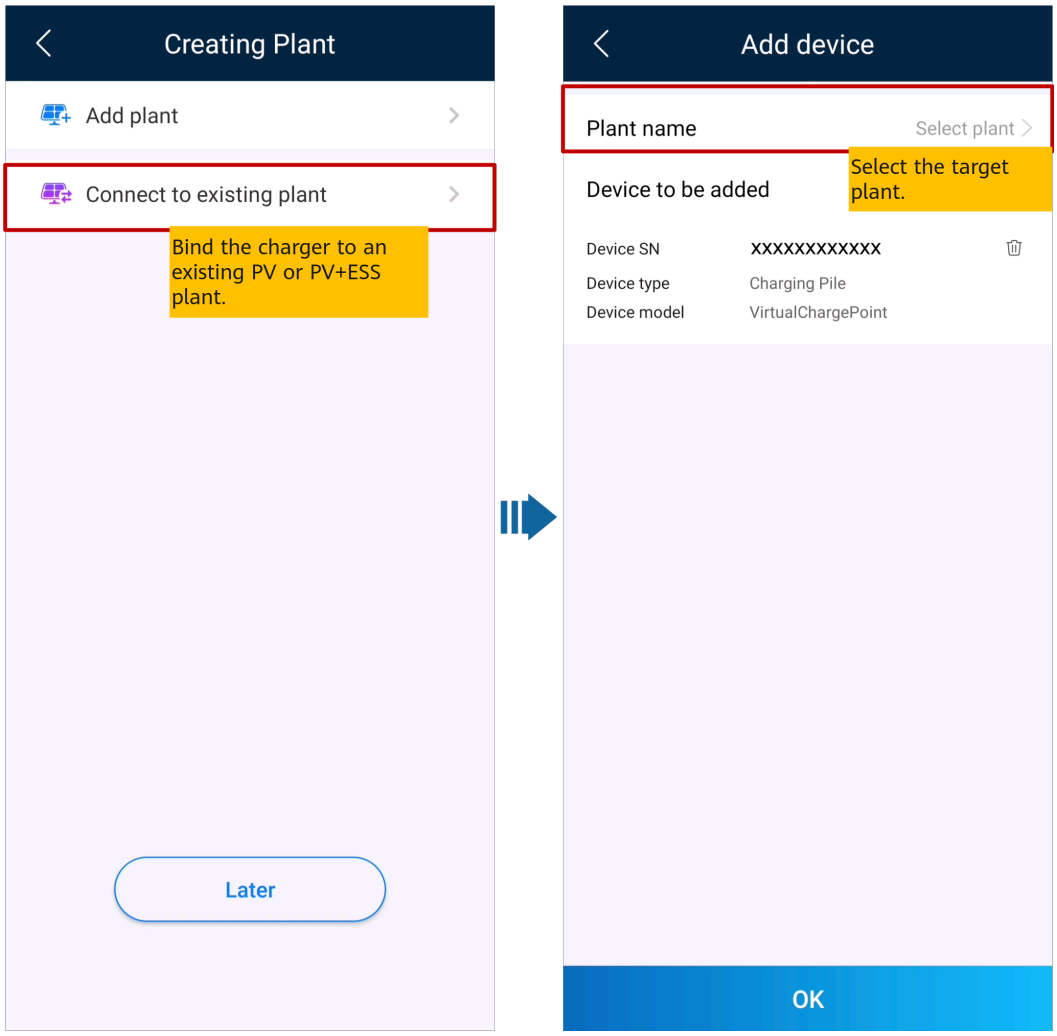
- If the owner does not have a PV (or PV+ESS) plant on FusionSolar SmartPVMS (Cloud) or FusionSolar app, see **3.1.3.1 Connecting to a New Plant** to connect the charger to a new plant.
- If the owner has a PV (or PV+ESS) plant on FusionSolar SmartPVMS (Cloud) or FusionSolar app, see **3.1.3.2 Connecting to an Existing Plant** to connect the charger to an existing plant.
- If PV and energy storage devices and chargers are not provided by the same installer, see **3.1.3.3 Connecting Devices to a Plant with Multiple Installers** to connect them to a plant.

## 3.1.3.1 Connecting to a New Plant




## 3.1.3.2 Connecting to an Existing Plant



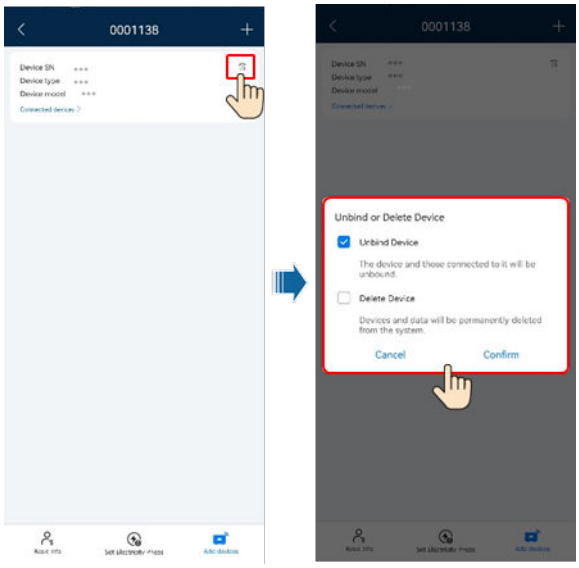
### 3.1.3.3 Connecting Devices to a Plant with Multiple Installers

## 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. On the **Overview** screen, tap **Plant details**.
   b. Tap **Add devices**.
   c. Tap and select **Unbind Device** based on the site requirements.

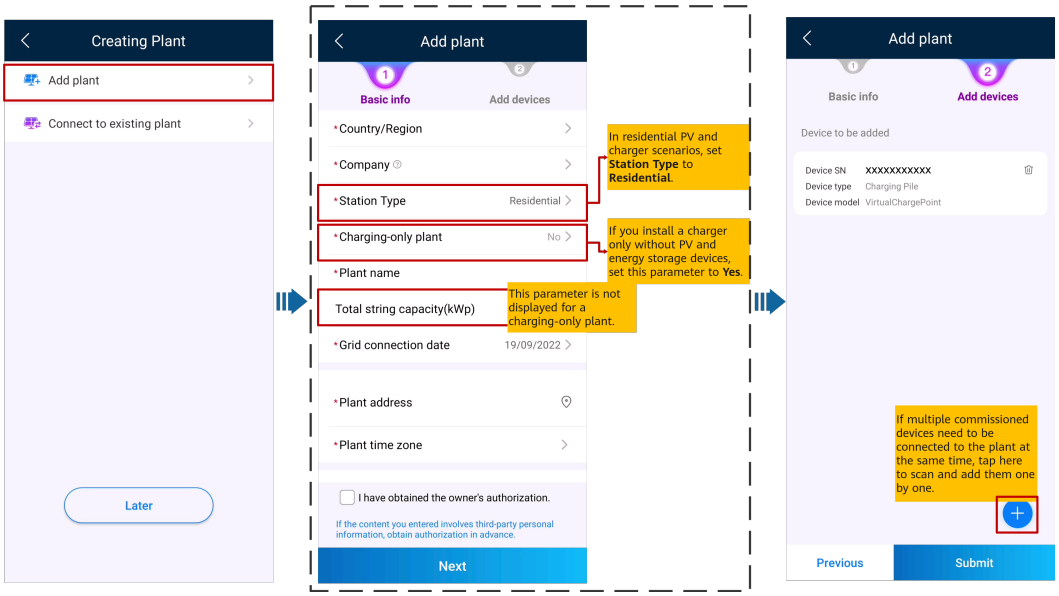
      NOTE

      - 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.




2. Installer B connects the commissioned PV devices and charger to a new PV plant.

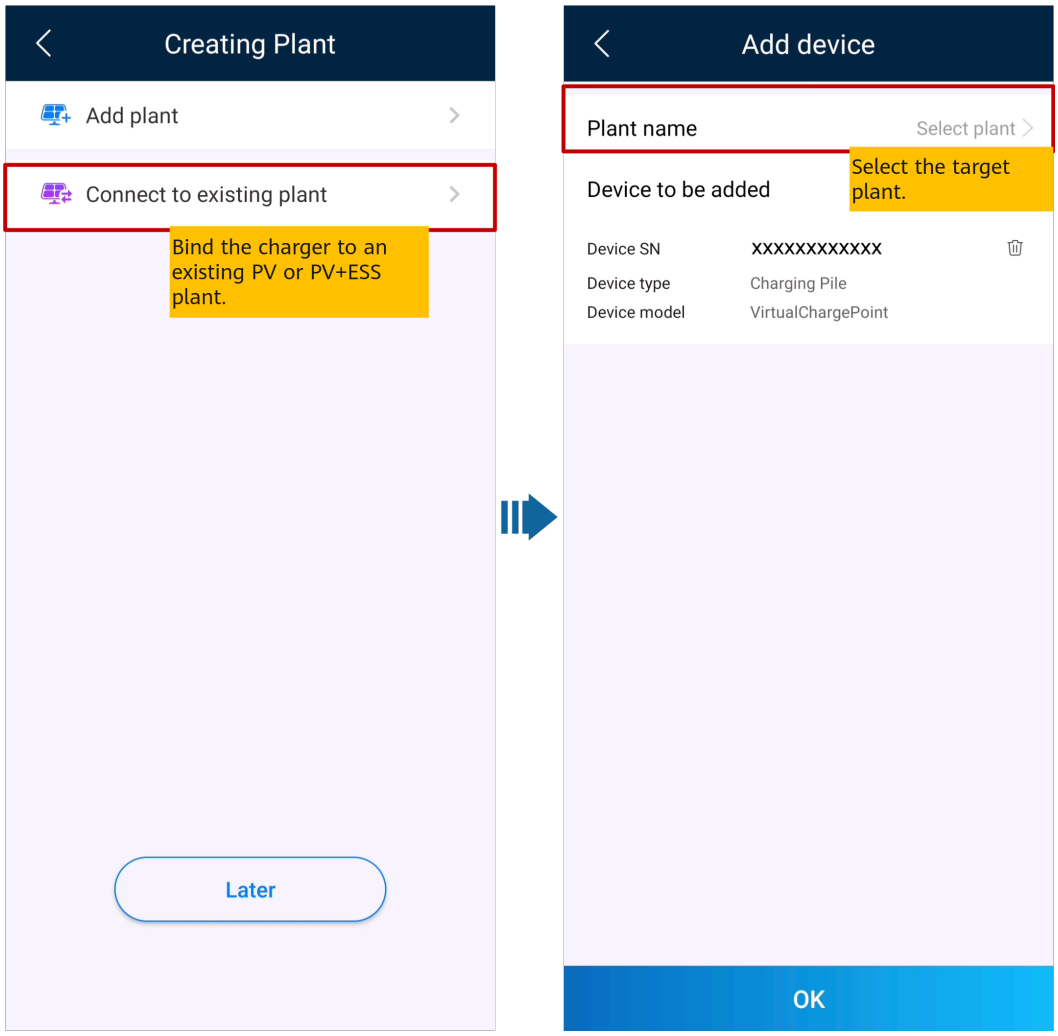



## PV Plant Created by Installer A and Charger Connected by Installer B

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




## 3.1.4 Adding a Device

After a PV 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. For details, see the *FusionSolar App Quick Guide*.

### 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. Tap **Home** > **Plants**, and tap **Setup wizard**.
  b. Scan the QR code on the inverter or SmartLogger to be connected.
  c. On the **Creating Plant** screen, tap **Connect to existing plant**.
  d. On the **Add device** screen, tap a desired plant and enter the string capacity.
  e. Tap **OK**.

- Method 2: Add devices on the **Add device** 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, **Me** > **Plant management**. In the plant list, tap the target plant.
  b. Tap **Add device** and then tap  .
  c. Tap  on the right of **Device SN** and scan the QR code on the device to connect the device.
  d. Tap **Save**.

**----End**

## 3.1.5 Setting the String Capacity

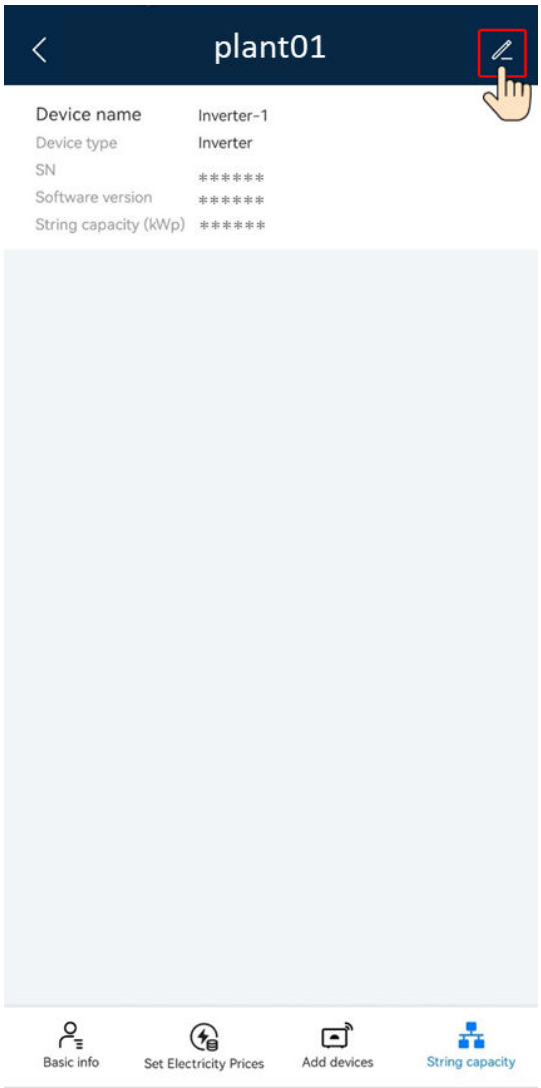
Configure the string capacity of a PV array to calculate the device operating efficiency.

1. On the home screen of the app, **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. Enter the PV capacity and tap **Confirm**.

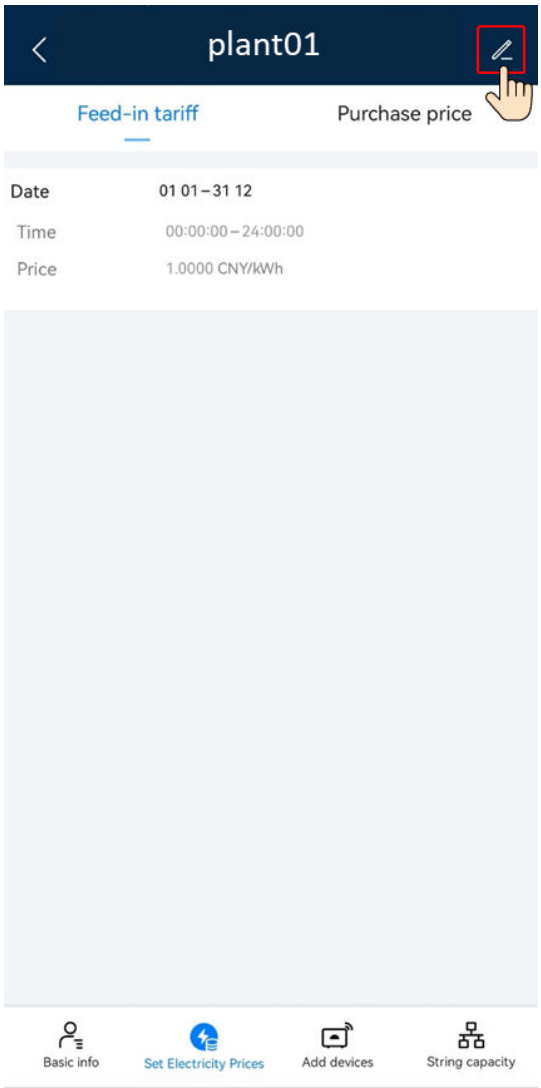



## 3.1.6 Setting Electricity Prices

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, **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.
4. Tap **Save**.




## 3.1.7 Creating a Physical Location Layout (with Optimizers)

Create a physical location layout diagram. If an optimizer is faulty, you can locate the faulty optimizer based on the physical location layout diagram. This facilitates optimizer replacement. For details, see the *FusionSolar App Quick Guide*.

### Obtaining the Quick Guide

Method 1: Visit the following website 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.

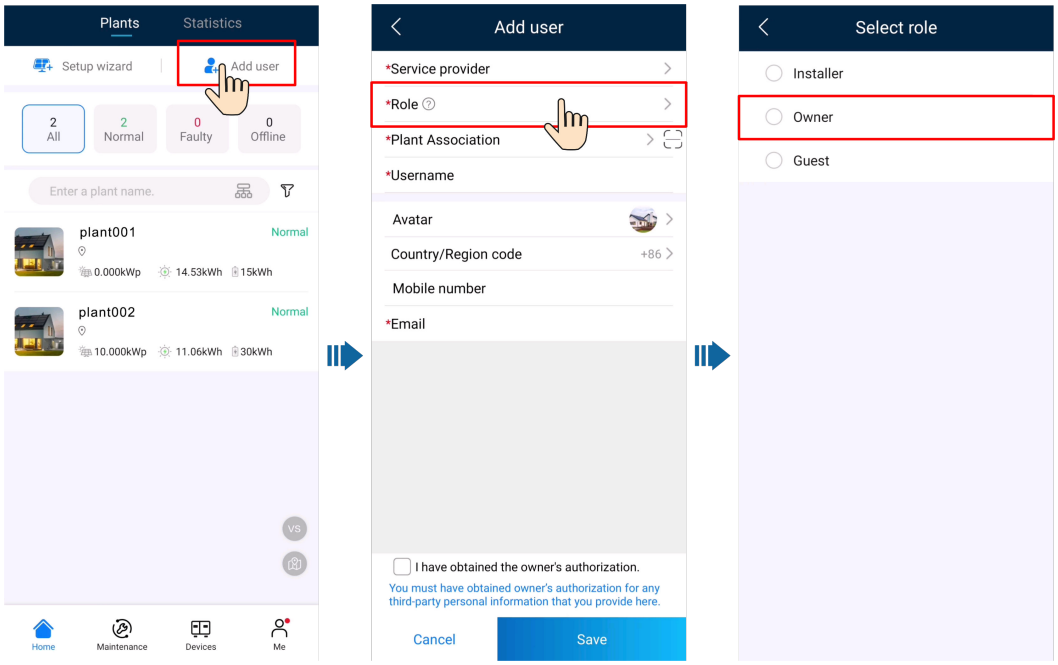
# 3.2 Creating a User

An installer can create owner user accounts and installer user accounts on the FusionSolar app. Owner users can monitor the running status, energy yield, and revenue of plants. Installer users can perform wizard-based site deployment and commissioning, monitor the running status of the plants, manage devices, query alarms, and perform mobile O&M.

When creating a user, ensure that the PV 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 **3.1.3 Connecting to a Plant**.

## Creating an Owner User

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



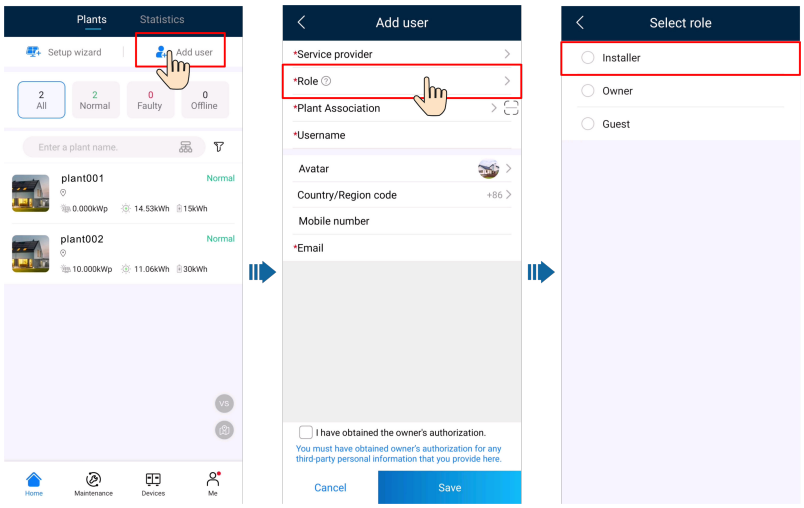

**NOTE**

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

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




**NOTE**

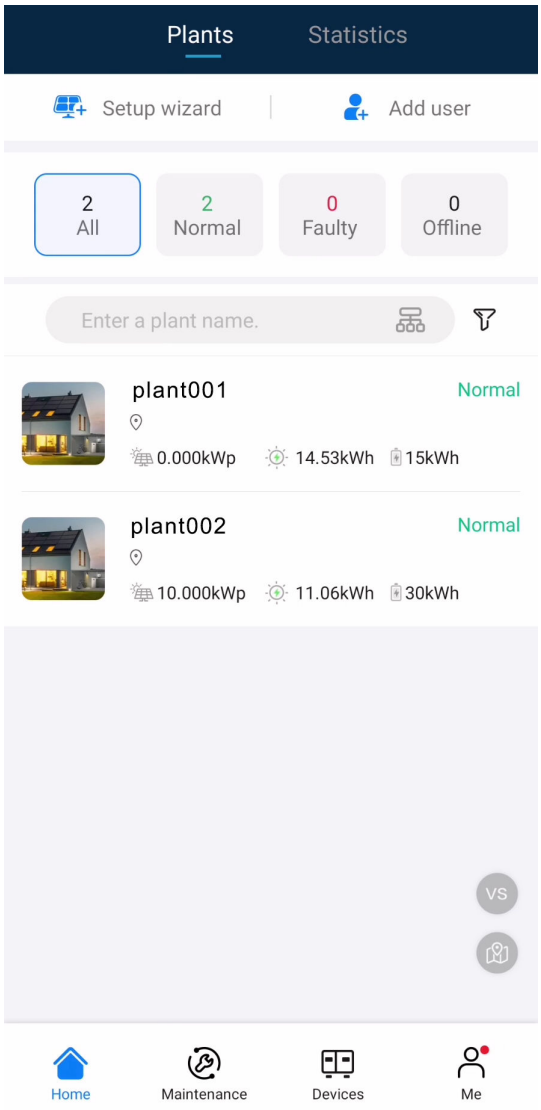
- For a new user who is assigned the **Installer** role, if the user is associated with only PV plants, the installer can manage the associated PV plants within the permission of the role but cannot create a PV plant. If the installer is associated with a company, the installer can manage all PV plants of the associated company and has the permission to create PV 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.

# 3.3 Viewing PV Plant Status

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.



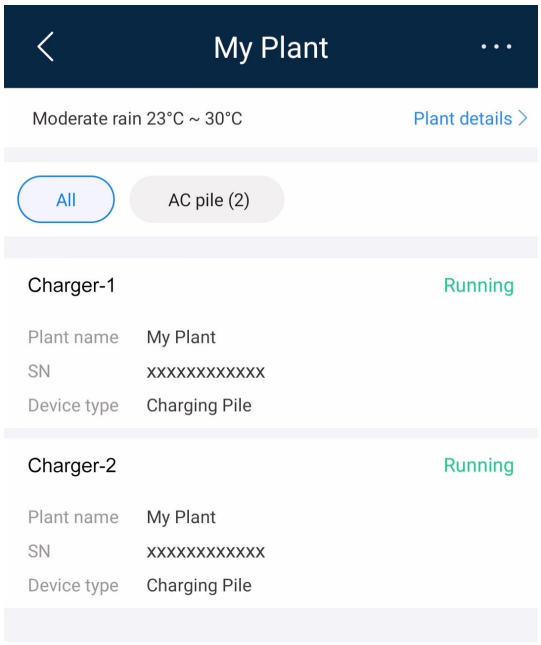

- Tap 

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.

## 3.3.1 Viewing Status of a Charging-only Plant

### Viewing Plant Overview

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

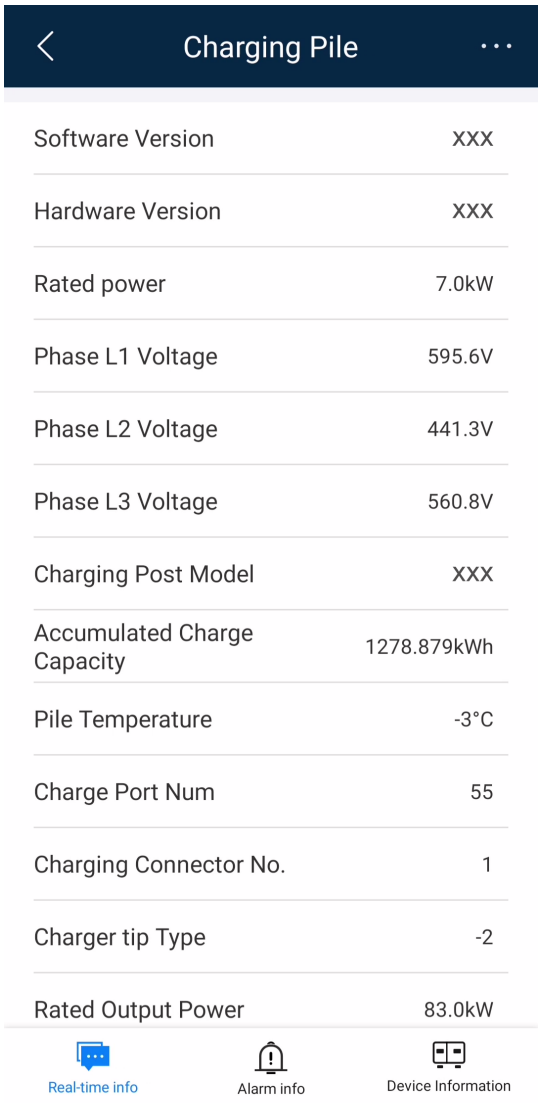



Tap the target charger to view its real-time information, alarm information, and device information, and set the charger parameters.

## Viewing Real-Time Information

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

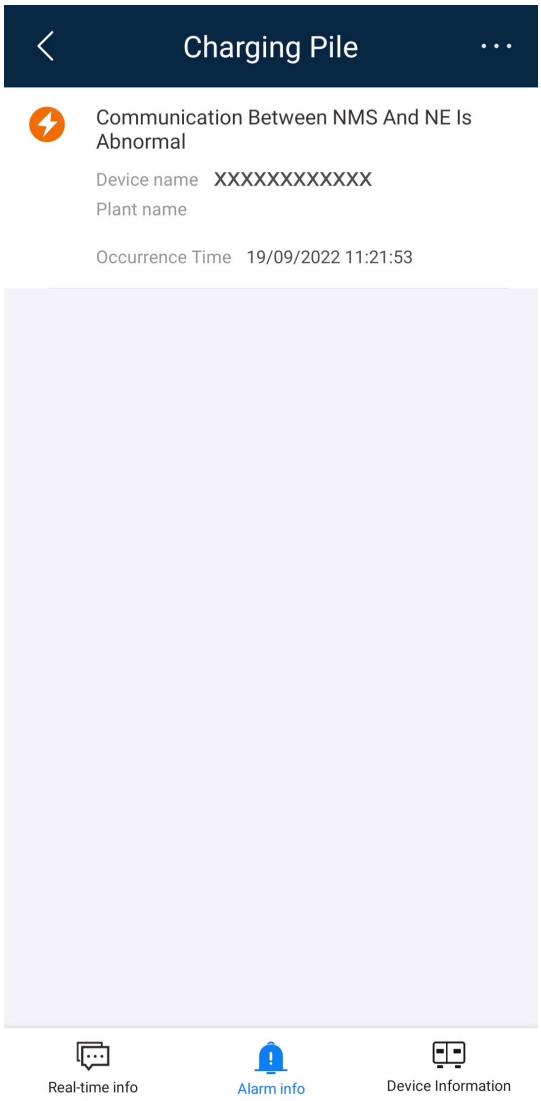



## Viewing Alarm Information

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

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

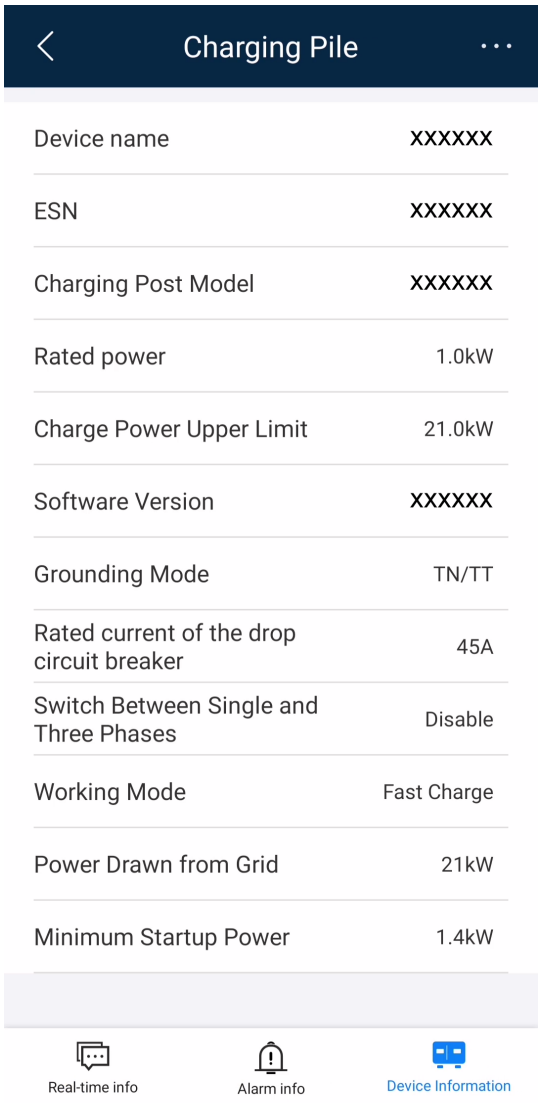
  




## Viewing Device Information

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



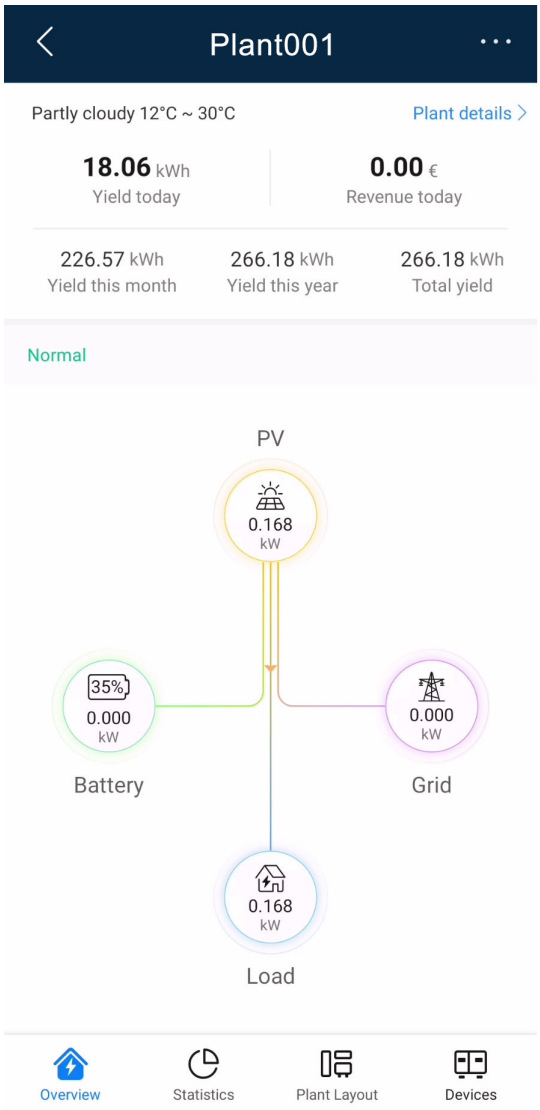

## 3.3.2 Viewing Status of a PV+ESS+Charger Plant

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.



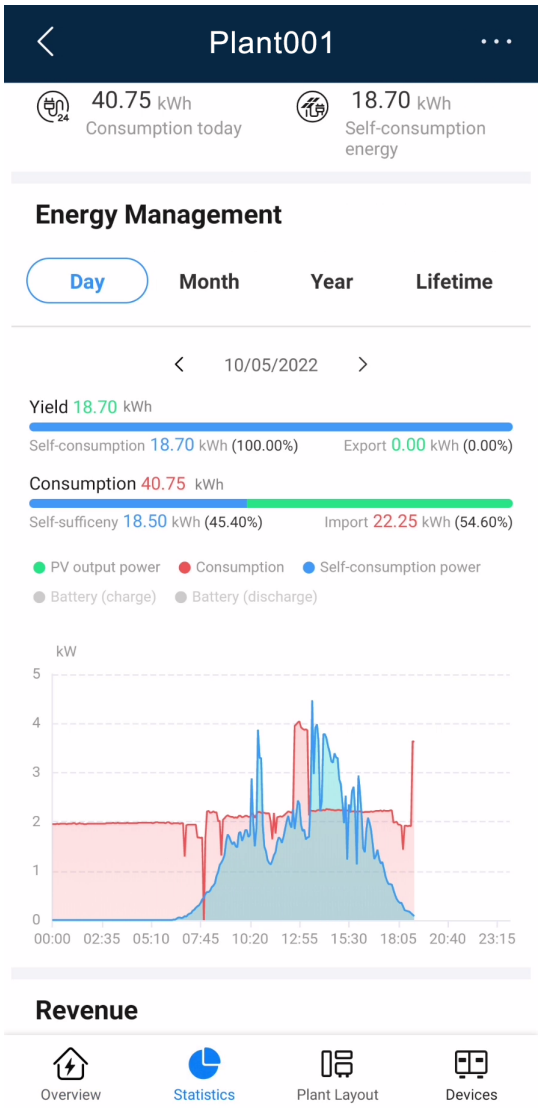

- Basic plant information: Displays the weather information of the place where the plant is located on the current day. Tap **Plant details** to view the detailed plant information.
- Energy yield and revenue statistics: Displays the energy yield and revenue of the plant.
- Real-time running status: 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 current alarms, the latest alarm information is displayed in the upper part of the energy flow diagram. You can tap > on the right of the alarm information to view and handle all current alarms of the plant.

## Viewing Plant Statistics

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




- Energy management: Displays the energy yield, energy consumption, and self-consumption of a plant in different time dimensions, helping you analyze the energy consumption trend and optimize electricity consumption. In the energy storage scenarios, energy is stored and discharged, 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 $CO_2$ emissions, which is equivalent to planting trees. For details, see **8.2 PV Power Generation Offsetting Carbon Emissions**.

## 3.3.3 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.

## 3.3.4 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 **Plant 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 displayed dialog box 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.

# 3.4 O&M Management

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

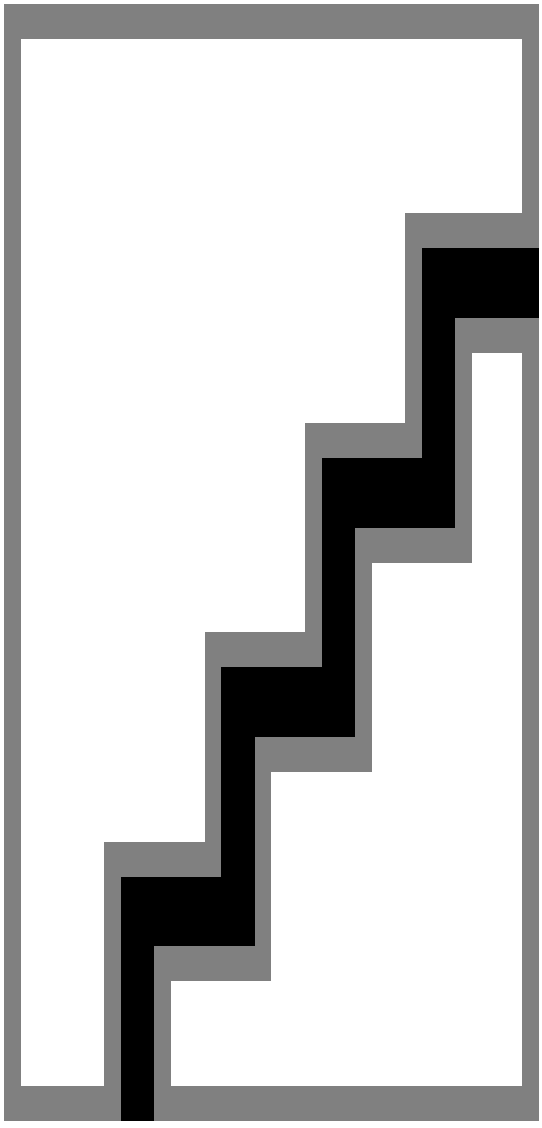
# 3.4.1 Monitoring Alarm Information

You can monitor current 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. The **Plant status** screen is displayed by default.

   Tap  to switch between PV+ESS alarms and charger alarms.



## Handling Alarms

On the **Alarm** 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.

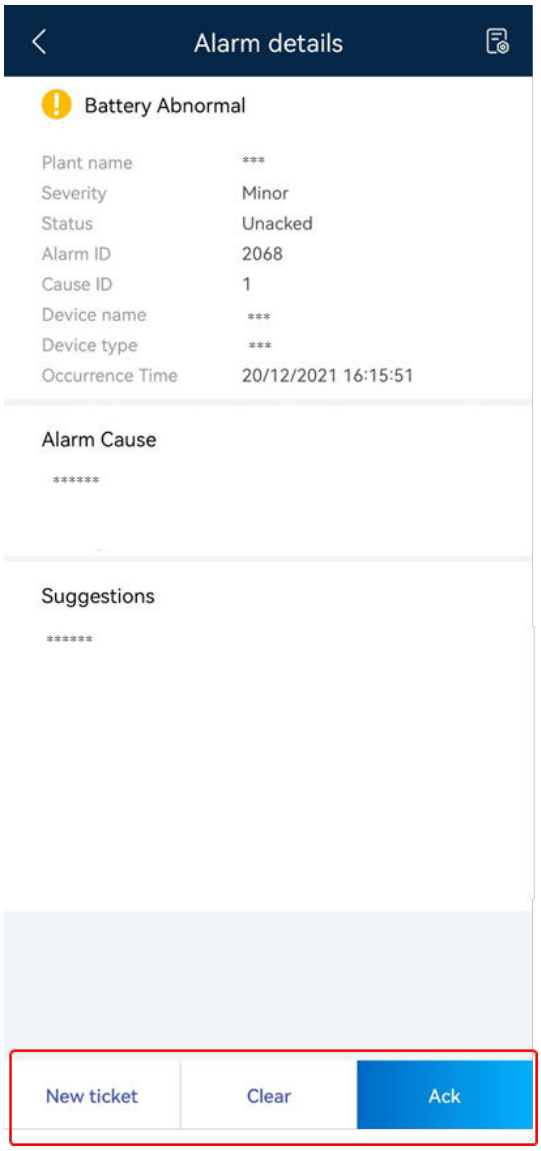



**Table 3-1** Alarm handling

| 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. |
| Ack | Acknowledging an alarm indicates that an alarm is to be or has been handled. After an alarm is acknowledged, the alarm status is changed from **Unacked** to **Acked**. |
| 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 **Task** > **Elimination task** screen. For details, see **3.4.2.1 Defect Elimination**.

# 3.4.2 Mobile O&M

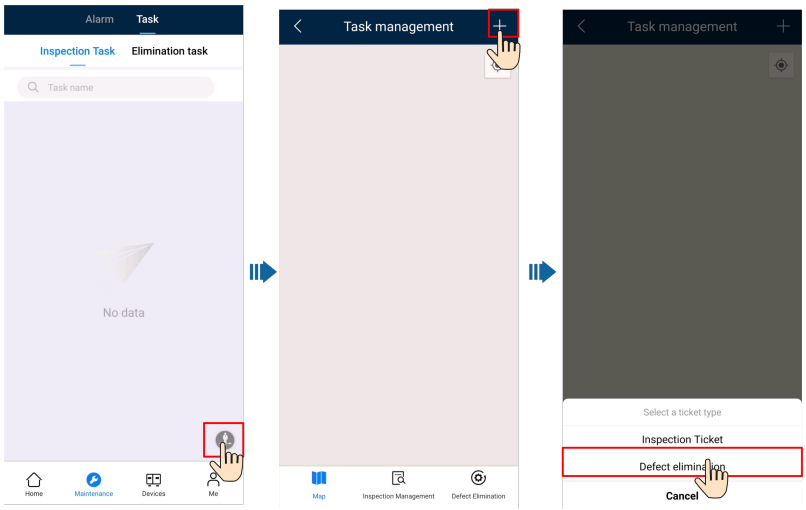
Create tasks to perform routine inspection on plant equipment, identify risks, and track and monitor faults or defects that have occurred.

## 3.4.2.1 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. Tap **Maintenance** on the home screen. The **Plant status** screen is displayed by default.
2. On the **Plant status** screen, tap **Task**.
3. On the **Task** screen, tap . The **Task management** screen is displayed.
4. Tap **+** in the upper right corner and tap **Defect elimination**.
5. Fill in the ticket information as prompted and submit it.




### Processing a Defect Elimination Task

1. Tap **Maintenance** on the home screen. The **Plant status** screen is displayed by default.
2. On the **Plant status** screen, tap **Task** > **Elimination task**.
3. On the **Elimination task** screen, view and process defect elimination tasks.

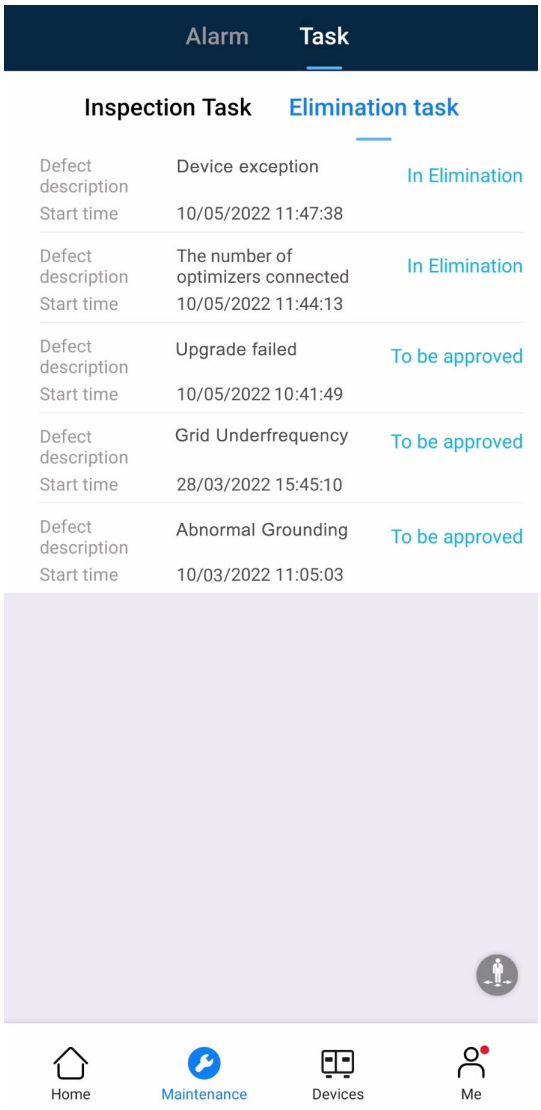


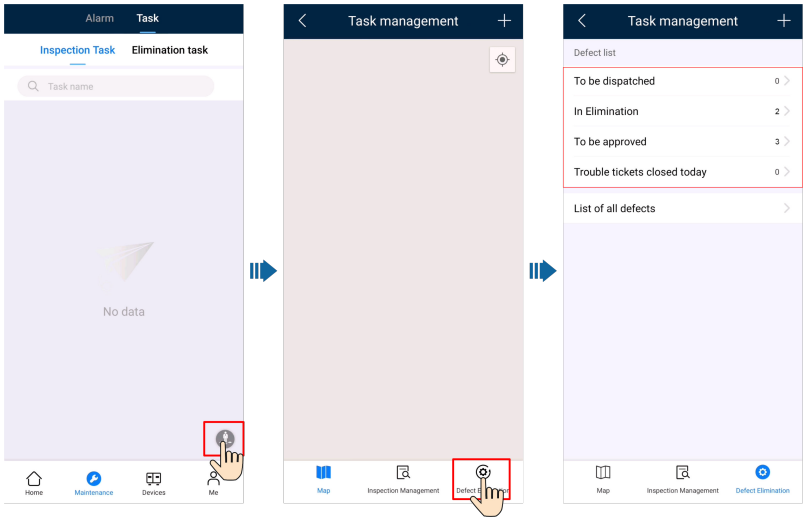

**Table 3-2** Defect elimination task status description

| 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. |
| 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 task** screen, tap . The **Task management** screen is displayed.
2. Tap **Defect Elimination**, tap and view all defect elimination tasks as required.




## 3.4.2.2 Inspection Management

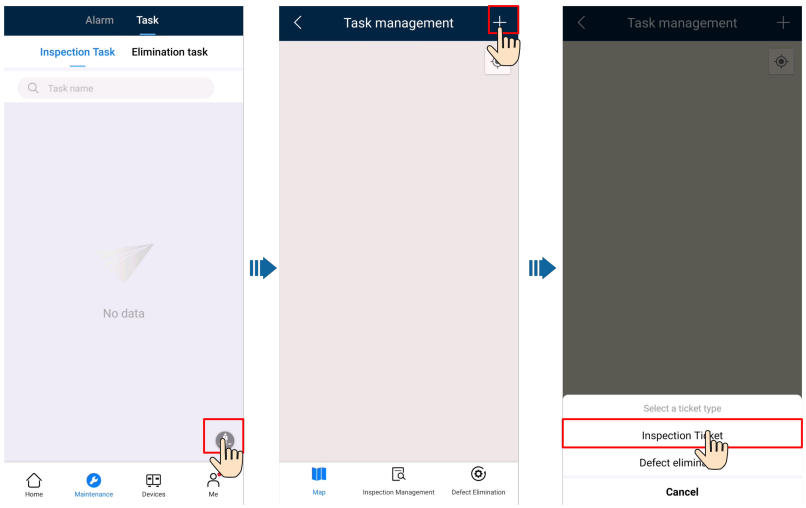
Perform routine inspection on plant equipment to detect and report exceptions in a timely manner.

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

## Creating an Inspection Task

1. Tap **Maintenance** on the home screen. The **Plant status** screen is displayed by default.
2. On the **Plant status** screen, tap **Task**.
3. On the **Task** . The **Task management** screen is displayed.
4. Tap **+** in the upper right corner and tap **Inspection Ticket**.
5. Fill in the ticket information as prompted and submit it.




## Processing an Inspection Task

1. Tap **Maintenance** on the home screen. The **Plant status** screen is displayed by default.
2. On the **Plant status** screen, tap **Task** > **Inspection Task**.
3. On the **Inspection Task** screen, view and process inspection tasks.

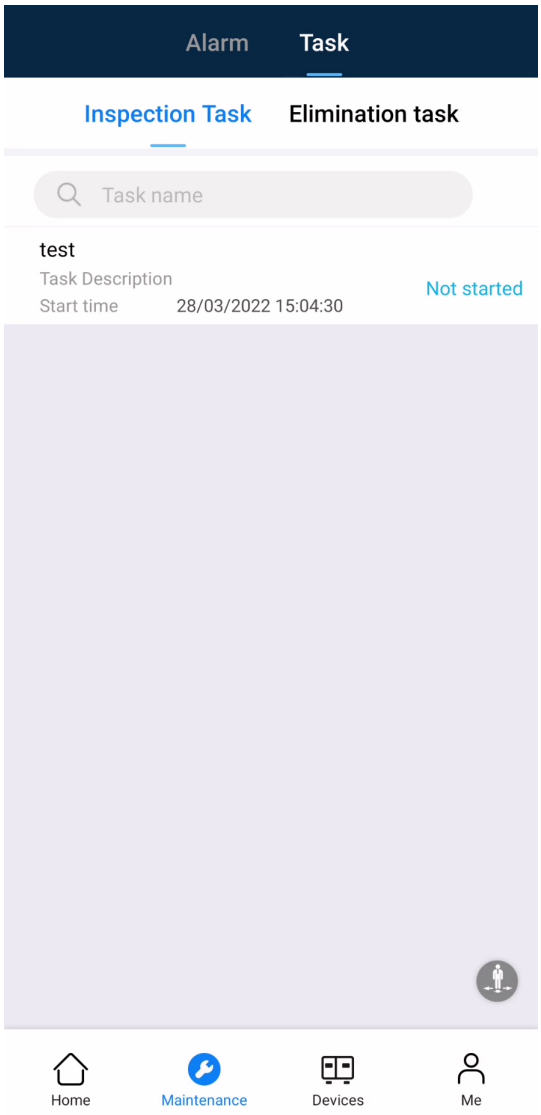



**Table 3-3** Inspection task status description

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

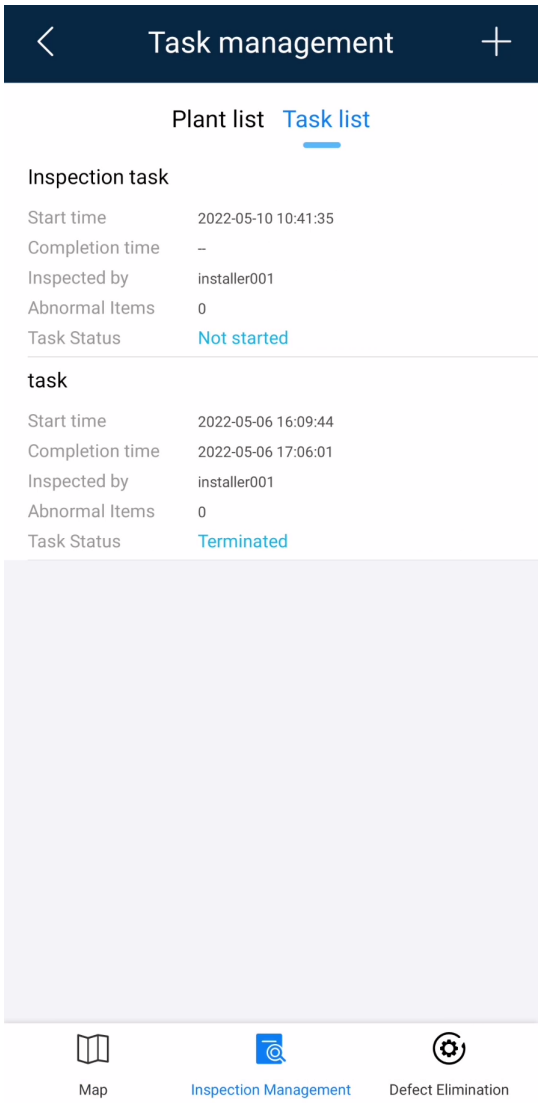
  

## Managing Inspection Tasks

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



# 3.5 Device Management

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

## Setting Device Parameters

1. Log in to the app on the home screen and tap **Devices**.
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 **8.3 Battery Parameters**.

## Changing a Device Name

1. Log in to the app on the home screen and tap **Devices**.
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. 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 management** screen, tap  to scan the QR code of the target device or enter its SN.

5. Tap **Replace**.

### O&M Authorization

1. 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 network, set the WLAN button to .

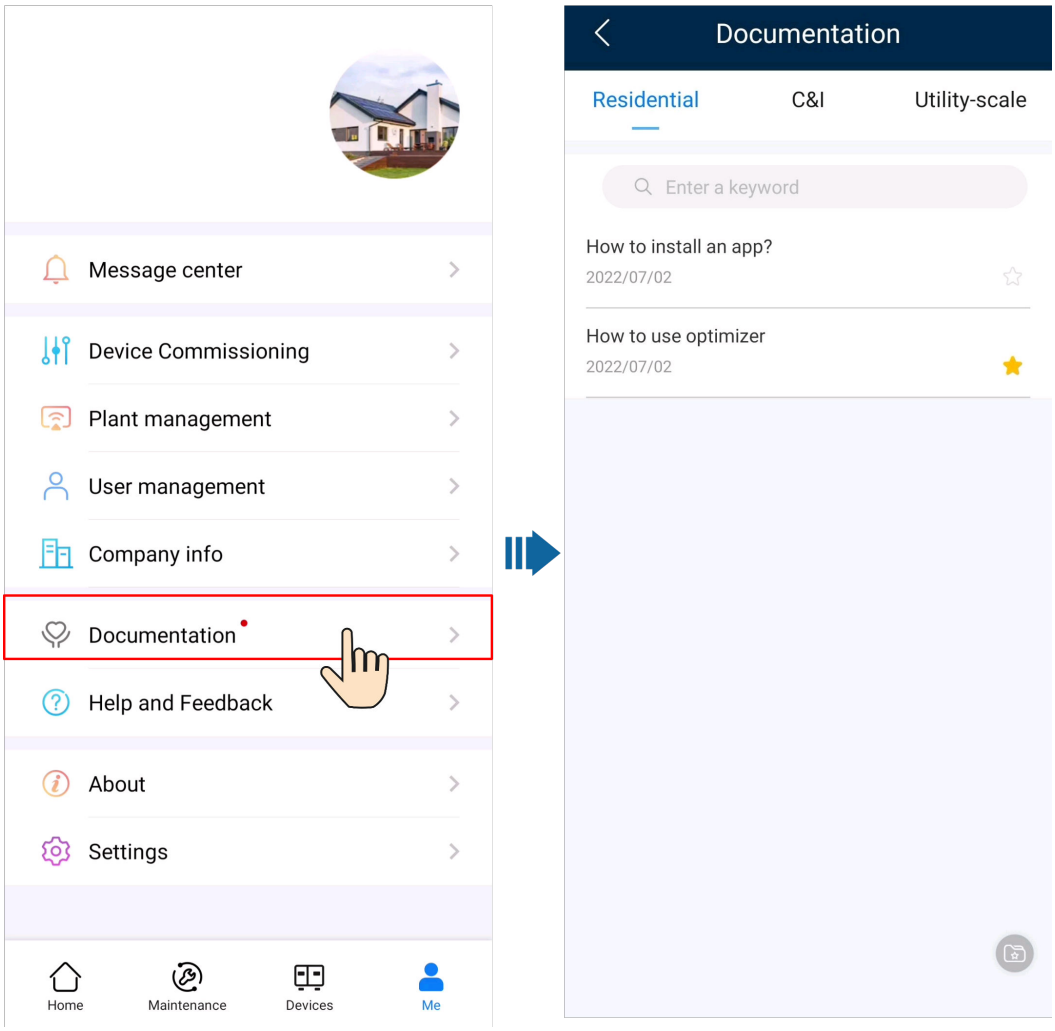
## 3.6 Documentation

The documentation service provides product knowledge, common troubleshooting solutions, and operation guides in managing PV plants. In addition, the intelligent assistant function is supported. You can enter keywords for quick search and query.

### Procedure

1. On the home screen, choose **Me** > **Documentation**.
   - Tap the target document to read it.
   - Tap  next to a document title to add the document to your favorites.
   - Tap  to view your favorite documents. On this screen, you can pin a document to the top or remove it from your favorites.

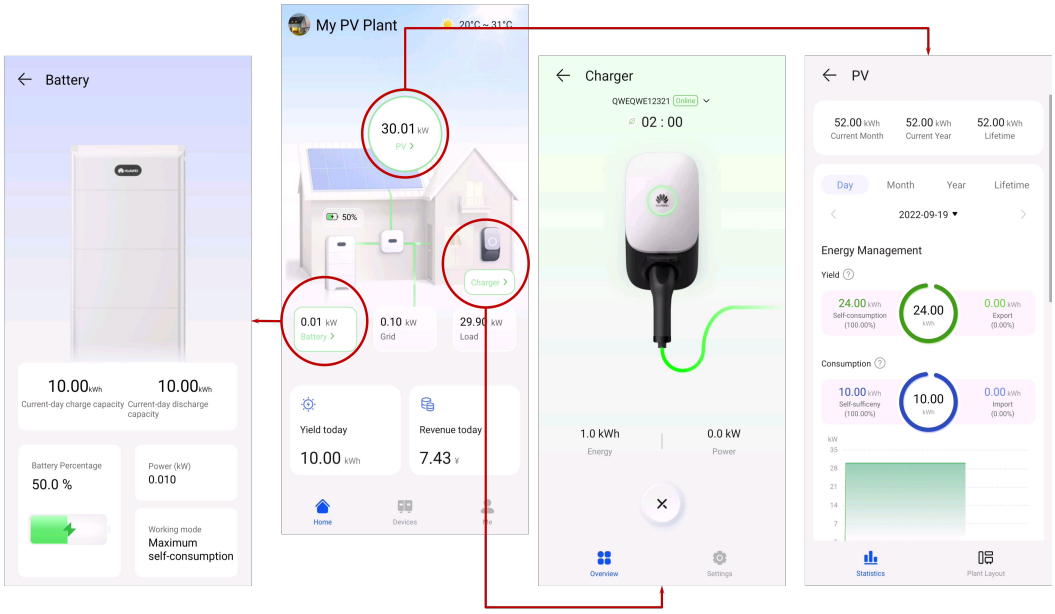

Message center
Device Commissioning
Plant management
User management
Company info
Documentation
Help and Feedback
About
Settings
Home
Maintenance
Devices
Me
Documentation
Residential
C&I
Utility-scale
Enter a keyword
How to install an app?
2022/07/02
How to use optimizer
2022/07/02

# 4 I'm an Owner

The FusionSolar app helps you check the power generation and consumption information of your home energy system anytime and anywhere.

You can use PV and energy storage devices to save electricity fees and obtain more benefits. In addition, you can also use various devices such as chargers for your energy requirements.

**Figure 4-1** Home




**NOTE**

For users with a charger only, the home screen is not displayed. In this case, the charger screen is displayed. For details, see **4.3 Using a Charger**.

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

NOTE

- For details about PV devices, see **4.1 Viewing the PV Plant Status**.
- For details about energy storage devices, see **4.2 Viewing the Battery Running Status**.
- For details about chargers, see **4.3 Using a Charger**.
- Environmental benefits, see **8.2 PV Power Generation Offsetting Carbon Emissions**.

On the **Device** 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.

# 4.1 Viewing the PV Plant Status

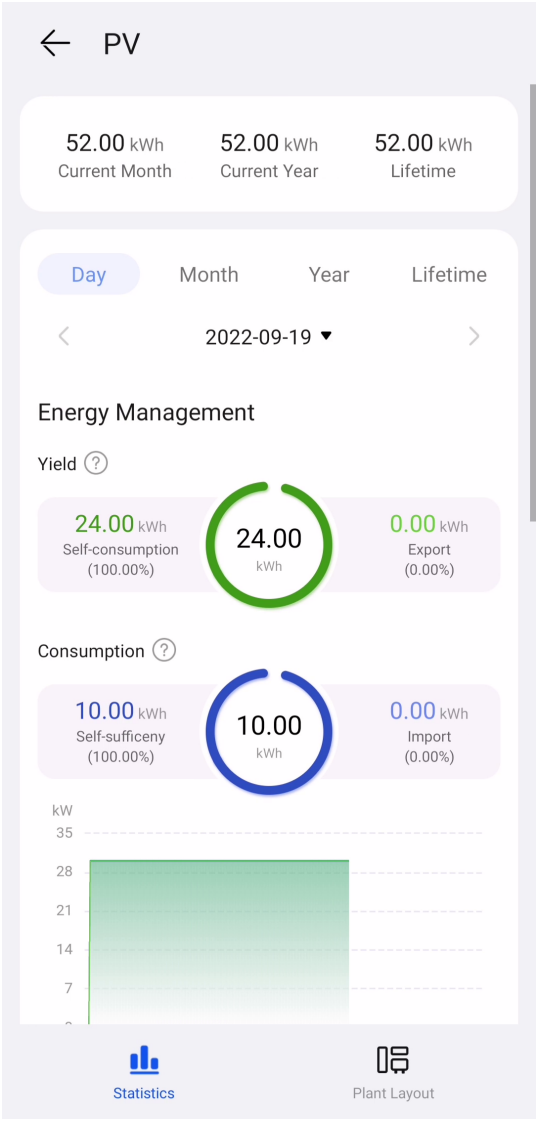
Log in to the app and tap **PV** on the **Home** screen to view the PV yield statistics and plant layout.

## Statistics

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

**Figure 4-2** Statistics




- Yield statistics: Displays the energy yield statistics of the 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. In the energy storage scenarios, energy is stored and discharged, 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.

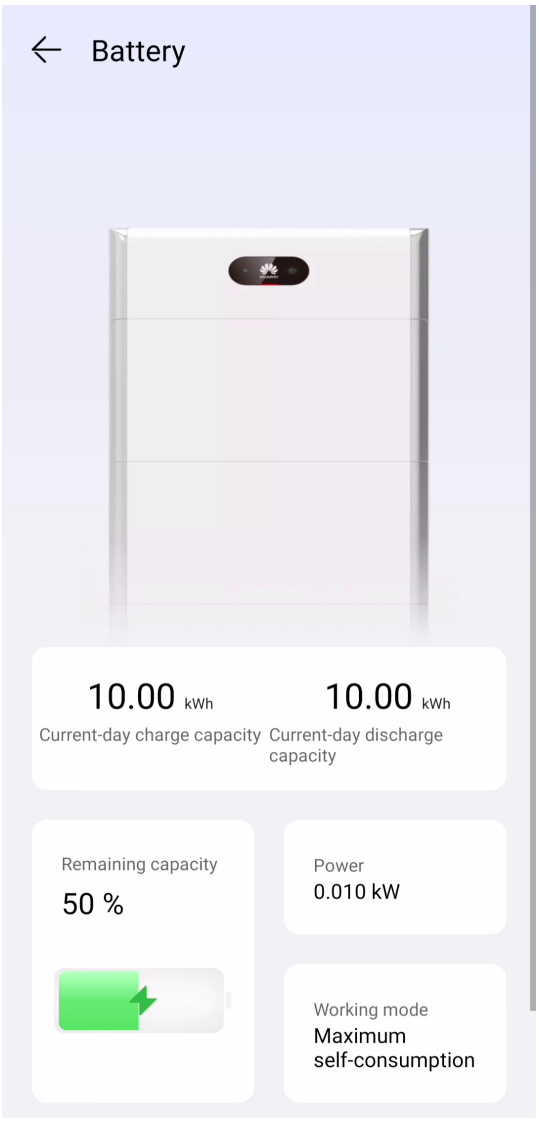
  

- Tap  to display the logical connections between inverters and PV modules in different colors. PV modules connected to the same inverter are in the same color.

# 4.2 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.

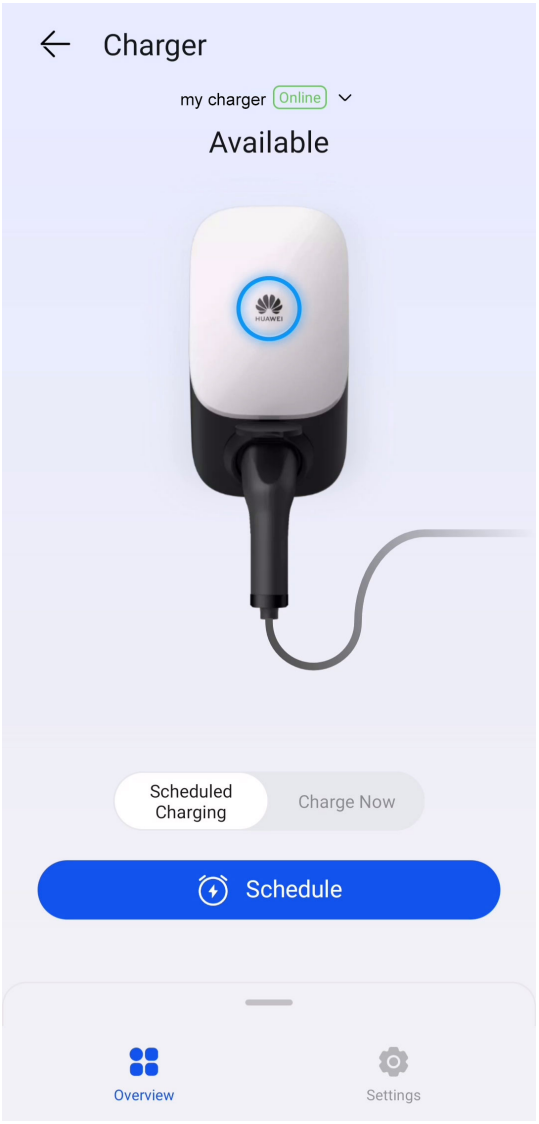
**Figure 4-3** Battery




# 4.3 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.




## 4.3.1 Starting and Stopping Charging on the App

### Precautions

Before charging, you need to completely insert the charging connector into the charger and car. 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 car.

### Starting Charging

On the charger screen, tap **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 car 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.

## 4.3.2 Start Charging Through Bluetooth Authentication

Complete the Bluetooth pairing of the charger on the app. Ensure that the app is running and 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 auto authentication. For details, see **Auto Authentication**.

### Starting Charging

Insert the charging connector completely into the charger and the charging port of a car. 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 car 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.

## 4.3.3 Starting and Stopping Charging Using an RFID Card

### Precautions

- Before charging, make sure your RFID card has been added to the system. For details, see Adding an RFID Card.
- Before charging, you need to completely insert the charging connector into the charger and car. 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 car.

### Starting Charging

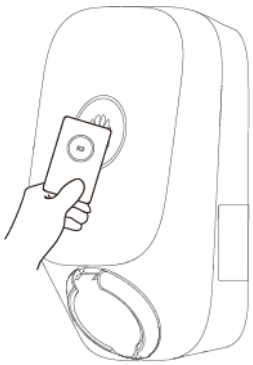
Place the ring pattern on the RFID card in the swiping area. If the indicator blinks blue fast three times, the card is swiped successfully.

- 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 4-4** Charging by card swiping



### Stopping Charging

After the car 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.

## 4.3.4 Plug-and-Play Charging

After the charging connector is inserted into the charging port of a car, 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.
- You can also lock the charging connector to the charger if the property safety is ensured. In this way, you only need to insert the charging connector to your car to charge. For details, see **Lock Charging Connector**.

### Starting Charging

Insert the charging connector completely into the charger and the charging port of a car. 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 car 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.

# 4.3.5 Scheduled Charging

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

For example, in Shanghai, the electricity price during peak hours (from 6:00 to 22:00) is CNY0.617/kWh and that of off-peak hours (from 22:00 to 6:00 the next day) is CNY0.307/kWh. You can schedule the charging time to off-peak time with 50% less electricity costs.

NOTE

The electricity fee calculation method varies in regions with different energy policies.

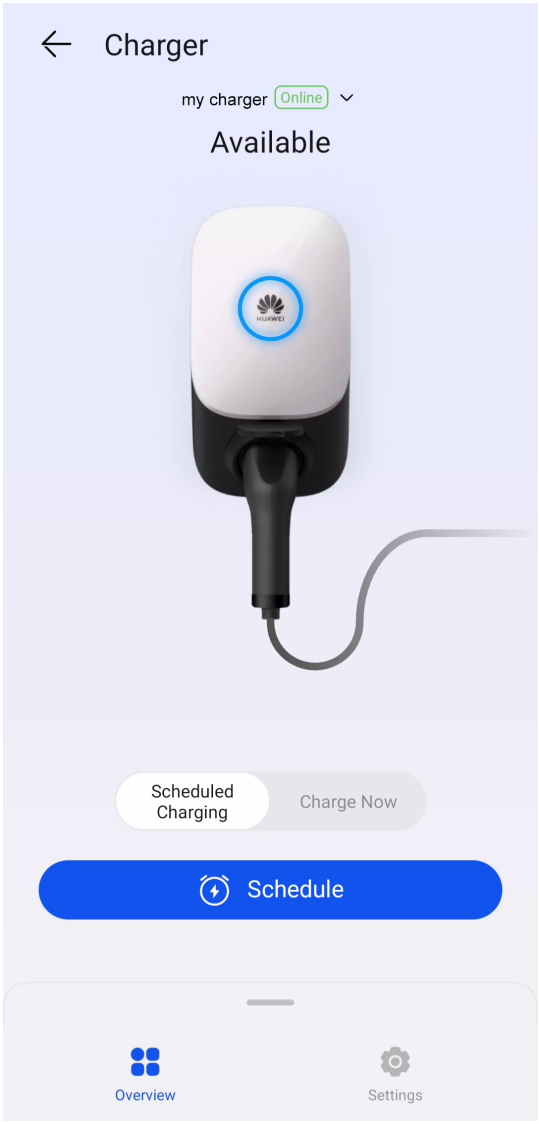
## Precautions

Before charging, you need to completely insert the charging connector into the charger and car. 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 car.

## 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.

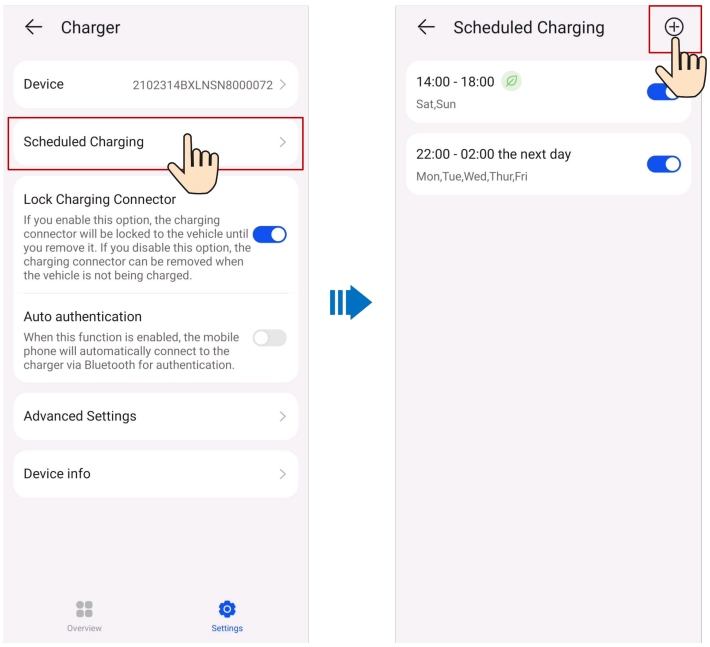



## Setting the Scheduled Charging Time

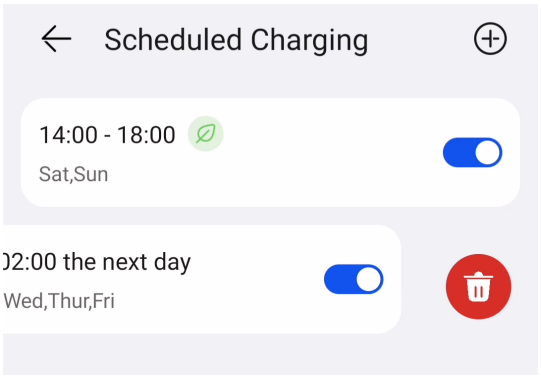
1. On the charger screen, choose **Settings** > **Scheduled Charging**.

- 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 time.




# 4.3.6 Settings

## Changing a Device Name

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

## PV Power Configuration

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, tap **Settings** > **Advanced Settings** > **PV Power Configuration**.

- **Max Charging Power from Grid**: 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 car.
- **Switch Between Single- and Three-Phase**: You are advised to enable this function in PV scenarios to increase the PV energy utilization rate.

  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 car.

## Auto Authentication

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

## 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 car, 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. Tap **Advanced Settings** and 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 car to charge.

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

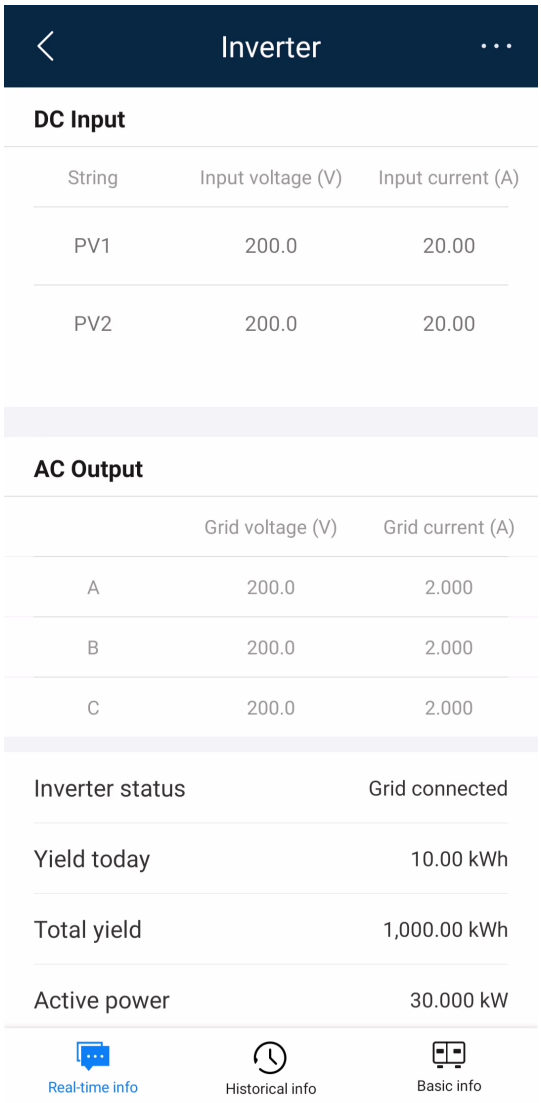
# 4.4 Managing Devices

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

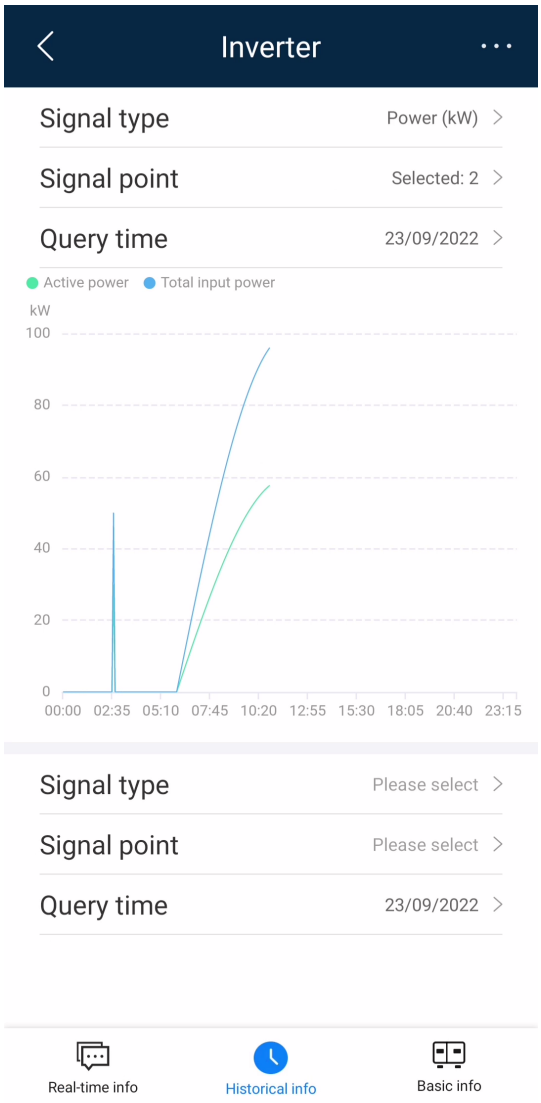
On the **Historical info** screen, you can query the running status of devices in a specified period.

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

**NOTE**

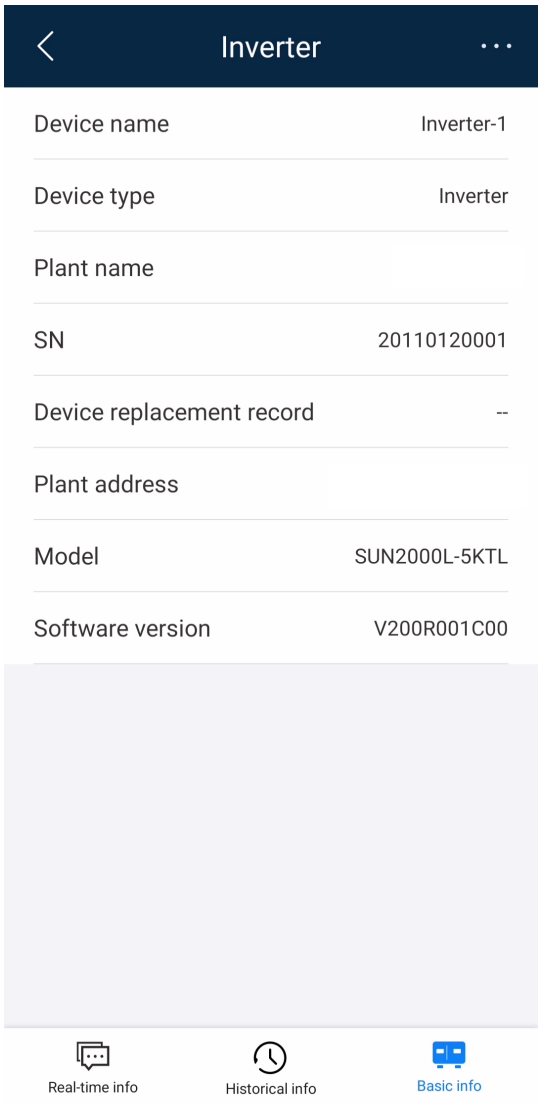
If the data in a certain period is incomplete or missing, contact the installer to collect the missing data.




## 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 **8.3 Battery Parameters**.

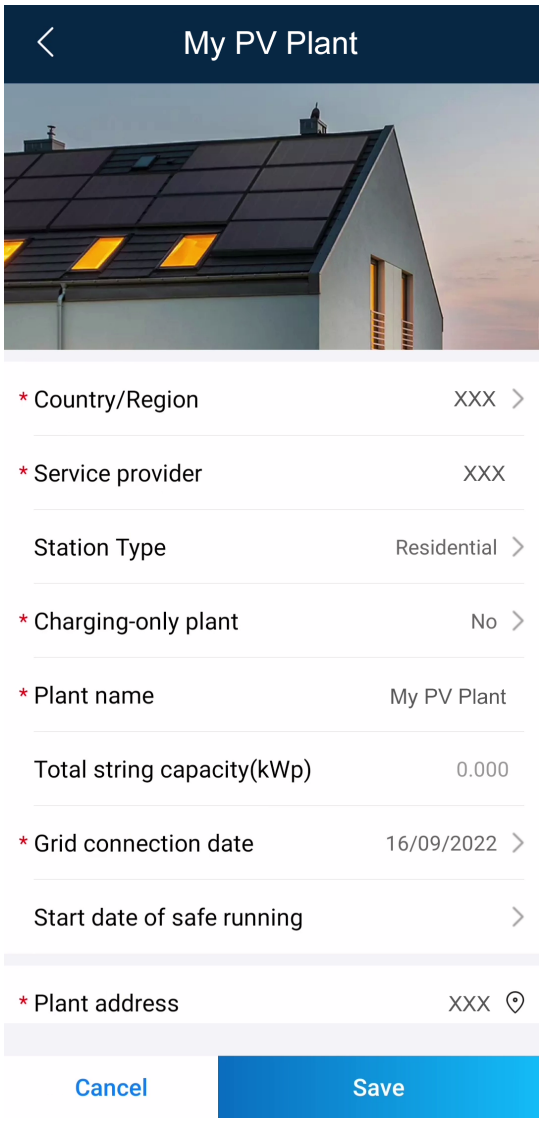
# 4.5 Managing Plants

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 **Basic info** screen, tap  in the upper right corner.
3. Modify related information as required and tap **Save**.



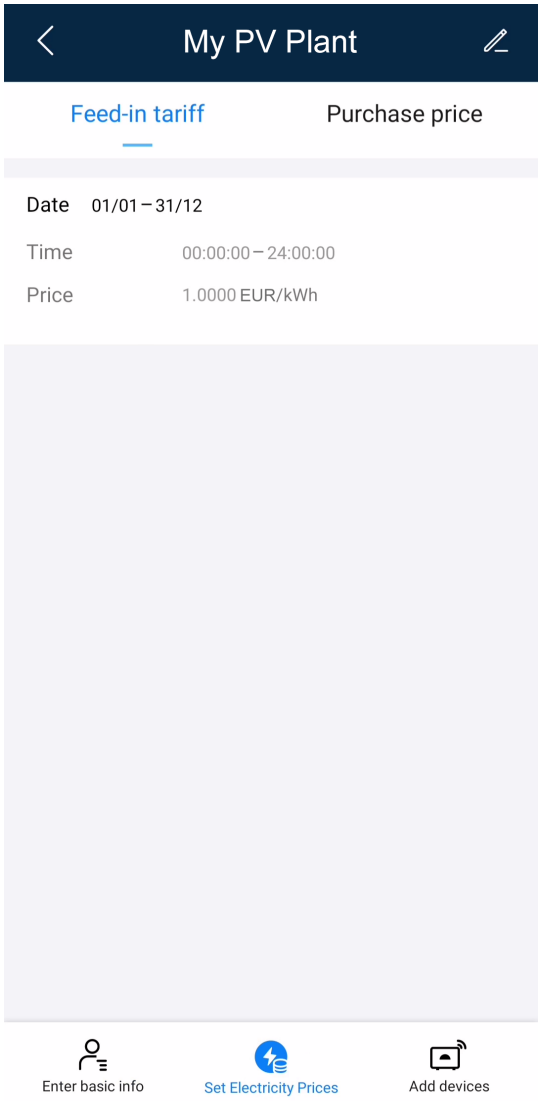
## Modifying the Electricity Price

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**.

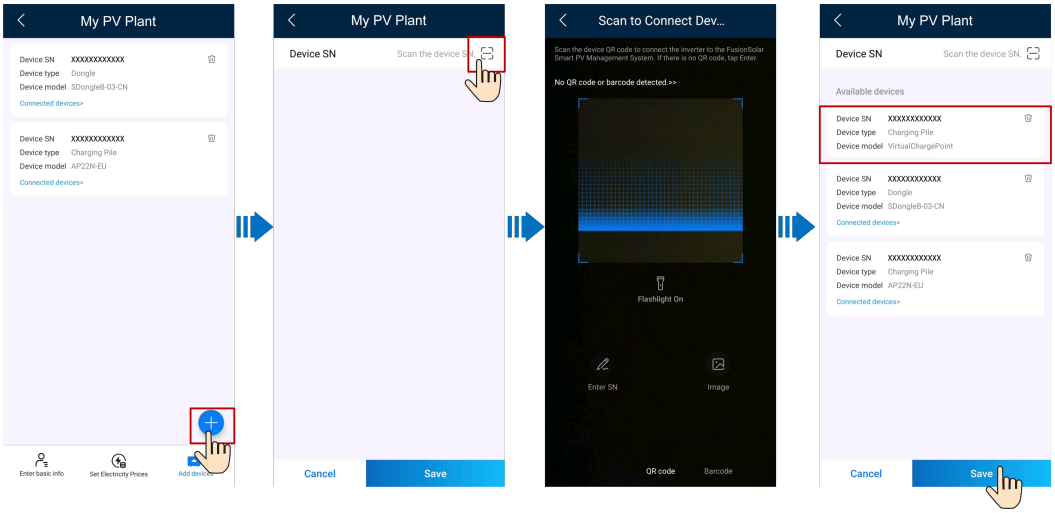
NOTE

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



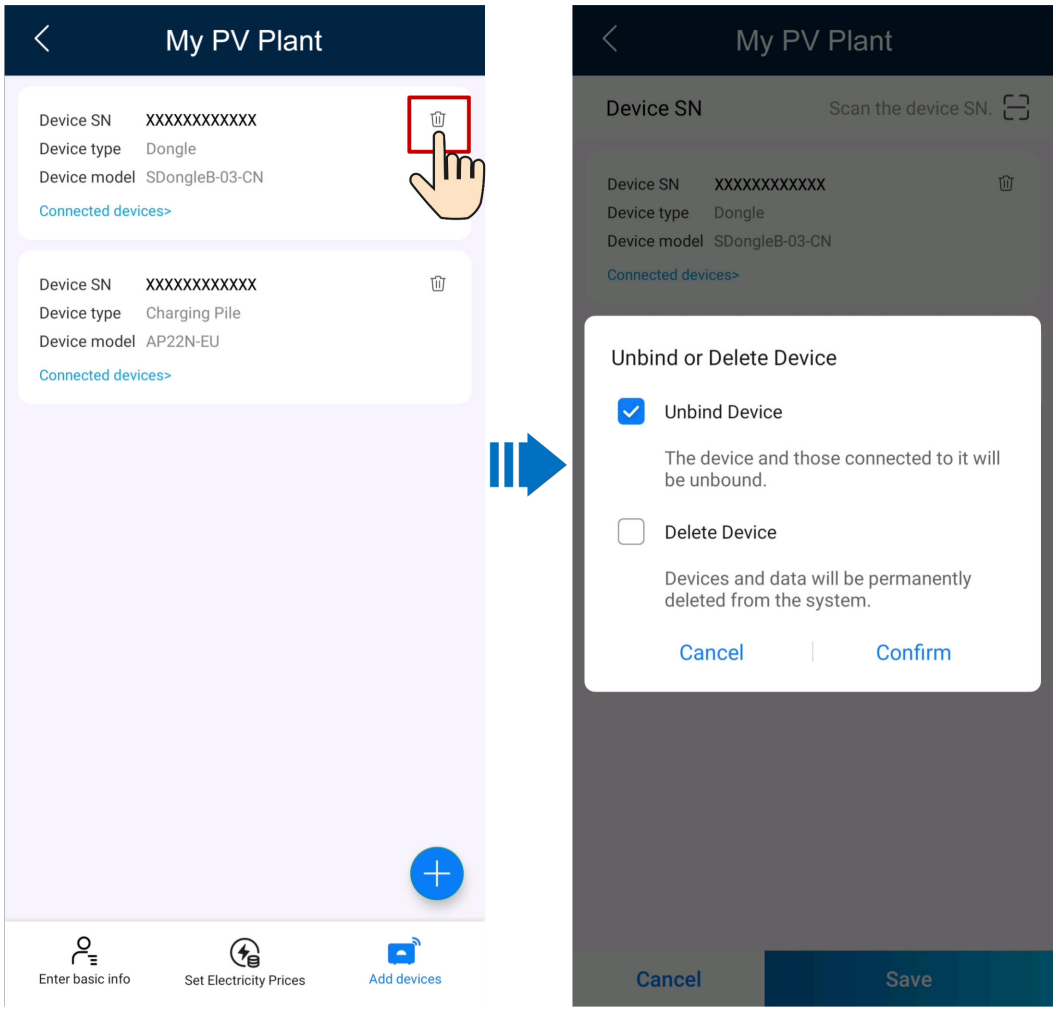
## Binding a Charger

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** as prompted.




**NOTE**

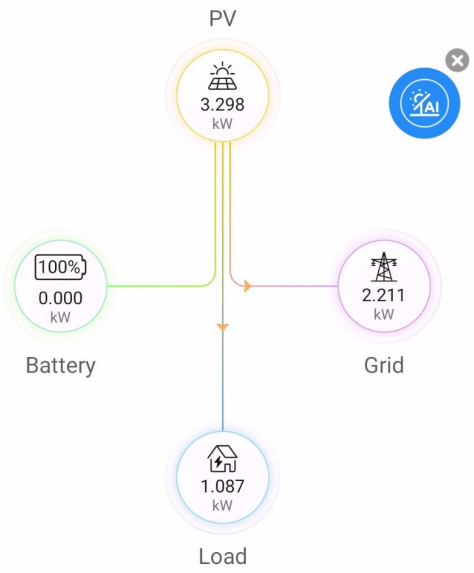
- After a device is unbound, the running data of the device and its subdevices is stored in the database. The default data retention period is six months. To change the retention period, contact the system administrator.
  - If a device is rebound to a plant within the data retention period, the device 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.

# 4.6 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.

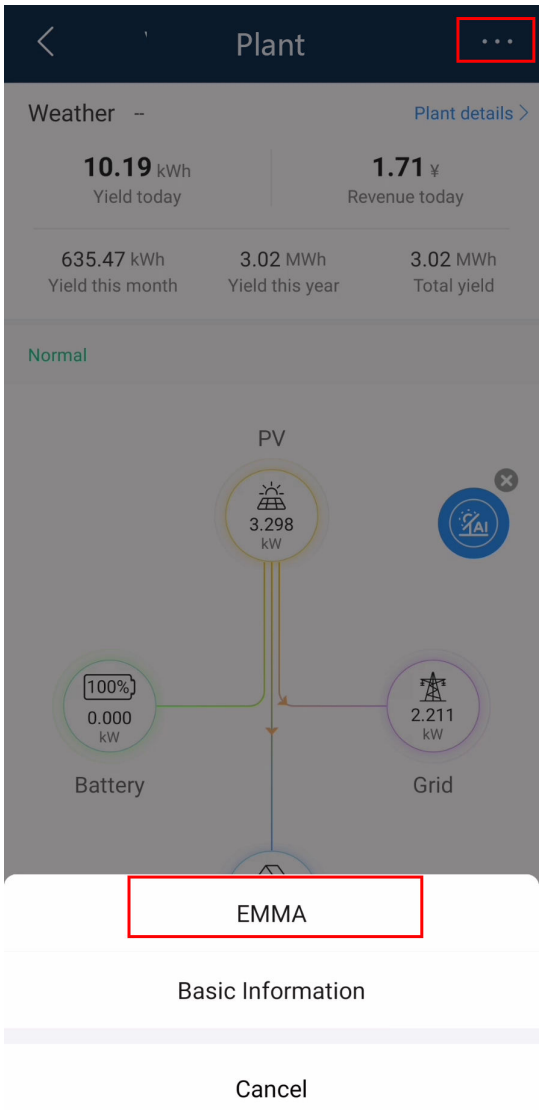
## Procedure

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.

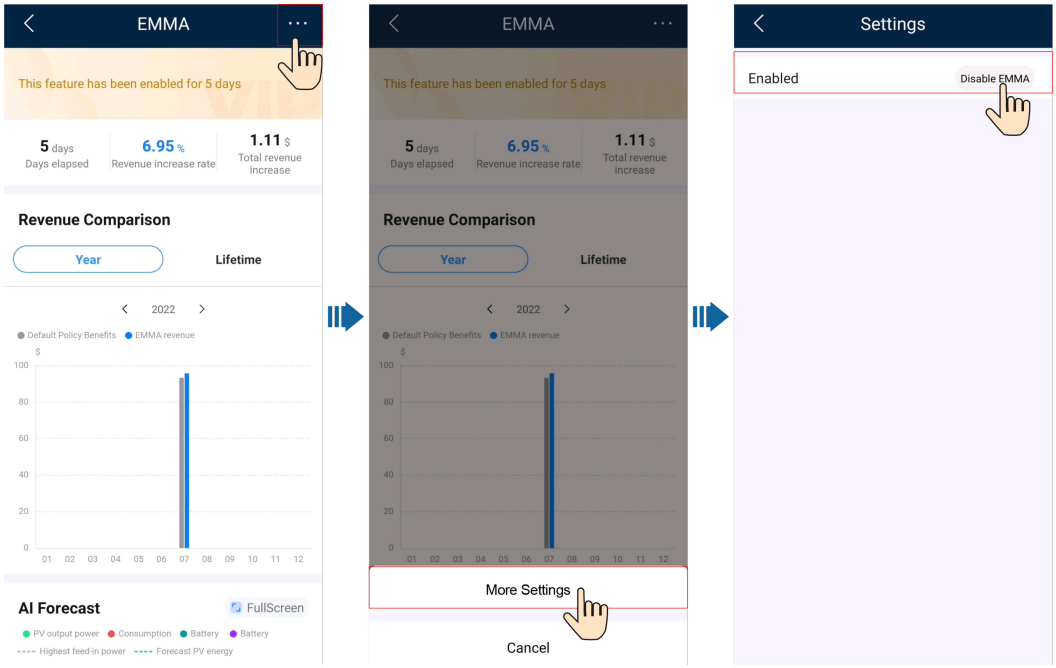
## Viewing the Revenue After EMMA Was Enabled and Energy Forecast

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.

# 4.7 Processing a Plant Migration Task

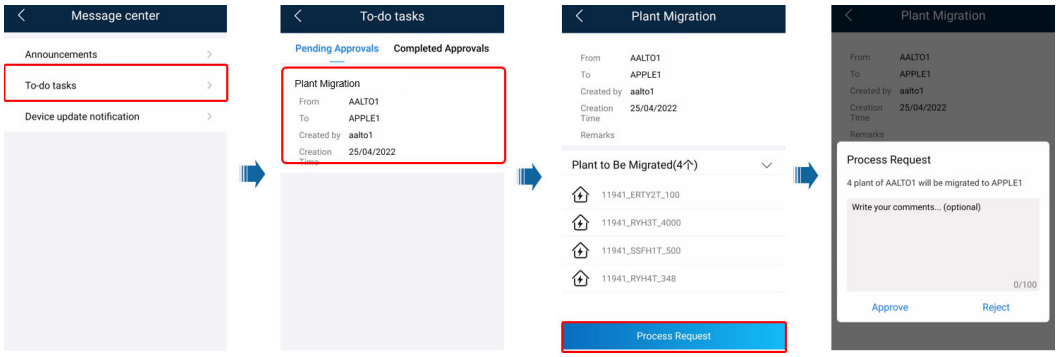
After the administrator creates a plant migration task, the owner user needs to approve the task in the app to complete the plant migration.

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 PV plant, your personal account and associated plants will also be migrated to the new company.



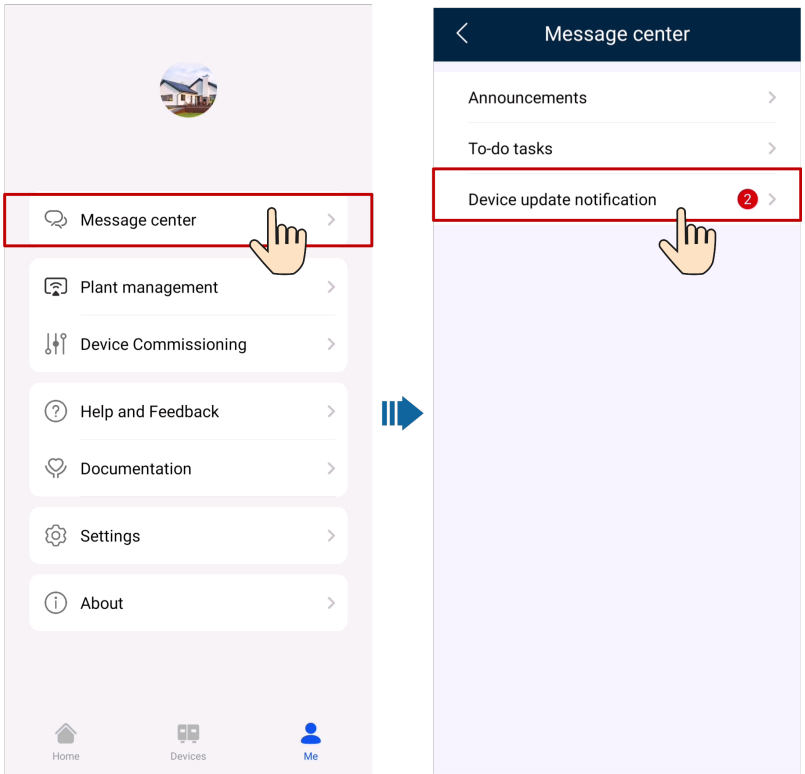

# 4.8 Processing an Upgrade Task

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.

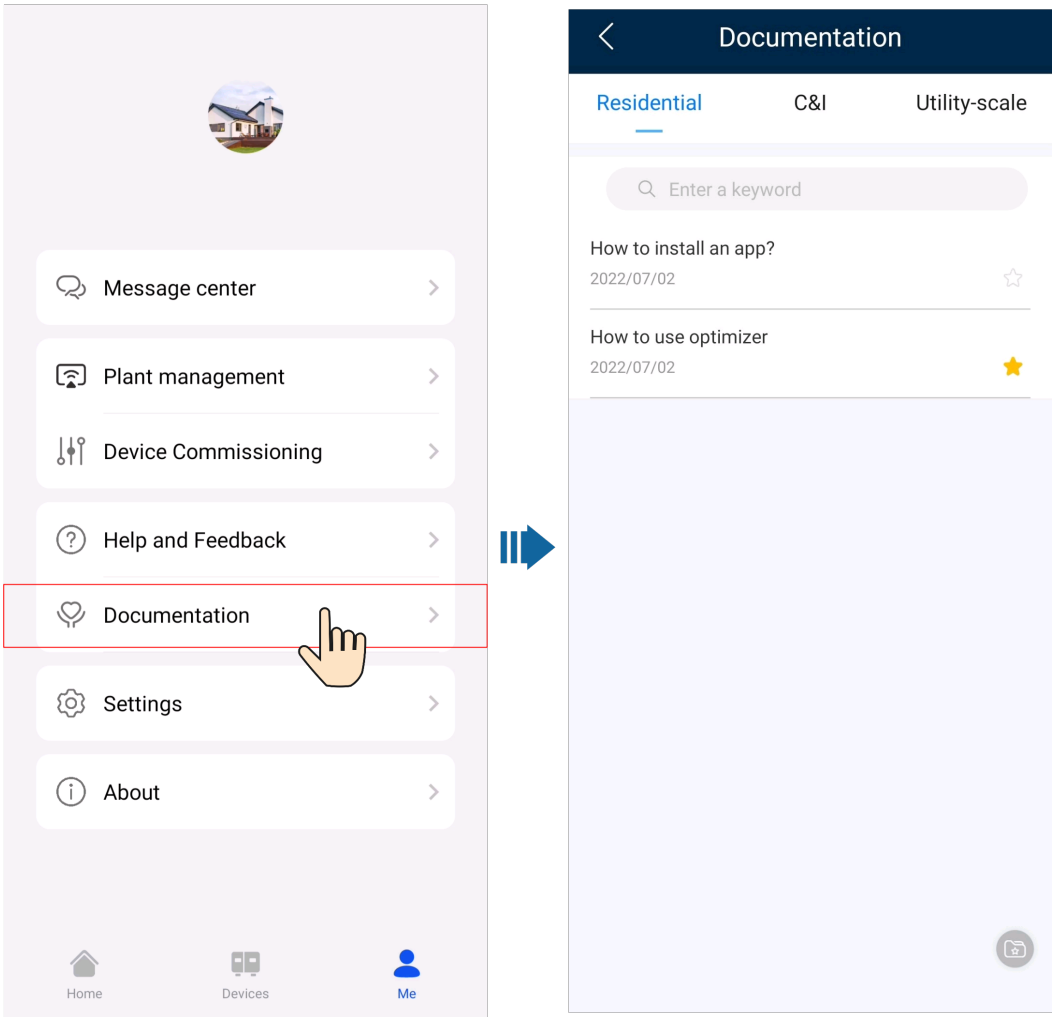


# 4.9 Documentation

The documentation service provides product knowledge, common troubleshooting solutions, and operation guides in managing PV plants. In addition, the intelligent assistant function is supported. You can enter keywords for quick search and query.

## Procedure

1. On the home screen, choose **Me** > **Documentation**.
   - Tap the target document to read it.
   - Tap  next to a document title to add the document to your favorites.
   - Tap  to view your favorite documents. On this screen, you can pin a document to the top or remove it from your favorites.



# 5 Device Commissioning

For details about how to commission devices, see the or *FusionSolar App, SUN2000 App Device Commissioning Manual*.

## Obtaining the Device Commissioning Manual

Method 1: Visit the following website to obtain the device commissioning manual:

**https://support.huawei.com/enterprise/en/doc/EDOC1100273864**

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

# 6 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.

## 6.1 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 displays the personal settings screen, asking 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**.

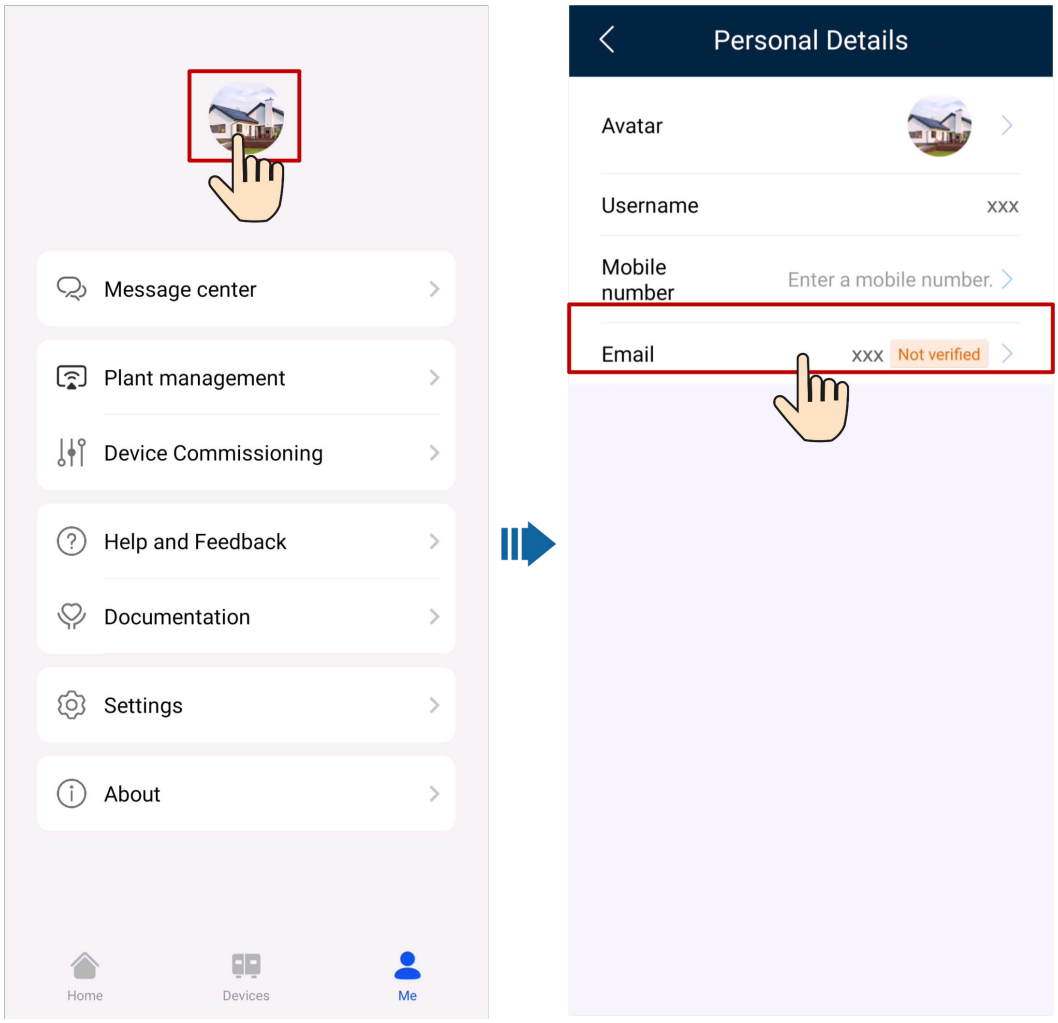
   NOTE

   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 page, and HTTPS encryption transmission channels are used.

# 6.2 Changing Personal Passwords

If your personal password is disclosed or remains unchanged for a long time, you can change the password. For security purposes, you are advised to change the password periodically (for example, every three months).

## Context

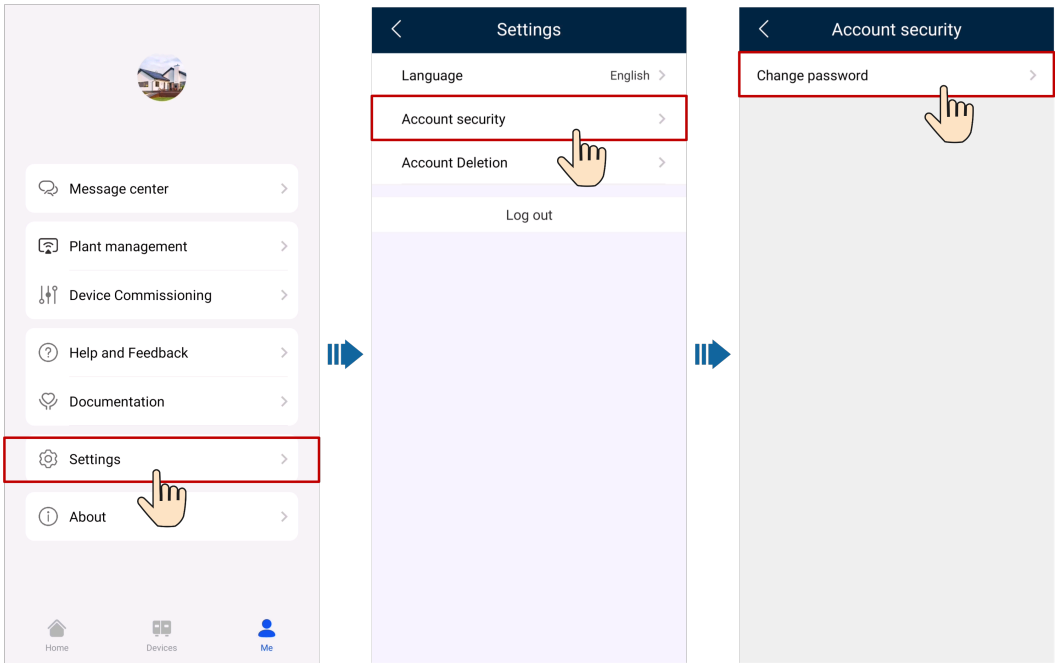
- When you use the password of a new account to log in to the system, change the initial password as prompted.
- If you cannot change your password, contact the administrator.

## Procedure

1. On the home screen, tap **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

User information is more secure if a password is changed more frequently. If a user forgot the password due to frequent password changes, the user needs to reset the password using the associated mobile number. For details, see **6.1 Verifying an Email Address**.




# 6.3 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.
   - Changing the avatar

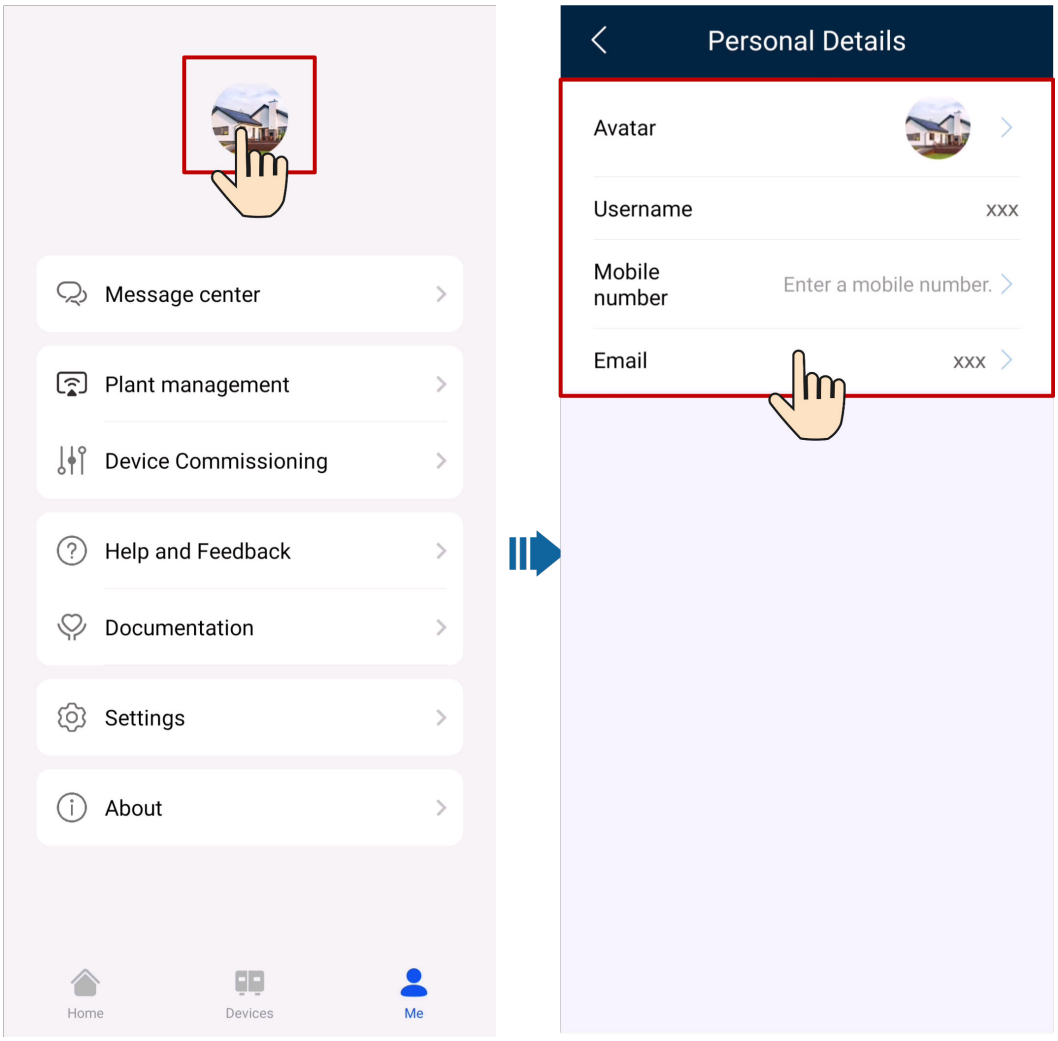
Tap the avatar, and take a photo or select an existing picture from your album as the new avatar.

– Changing the mobile number or email address

  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 page, and HTTPS encryption transmission channels are used.



# 7 FAQs

## 7.1 Resetting a Password Using the Associated email address

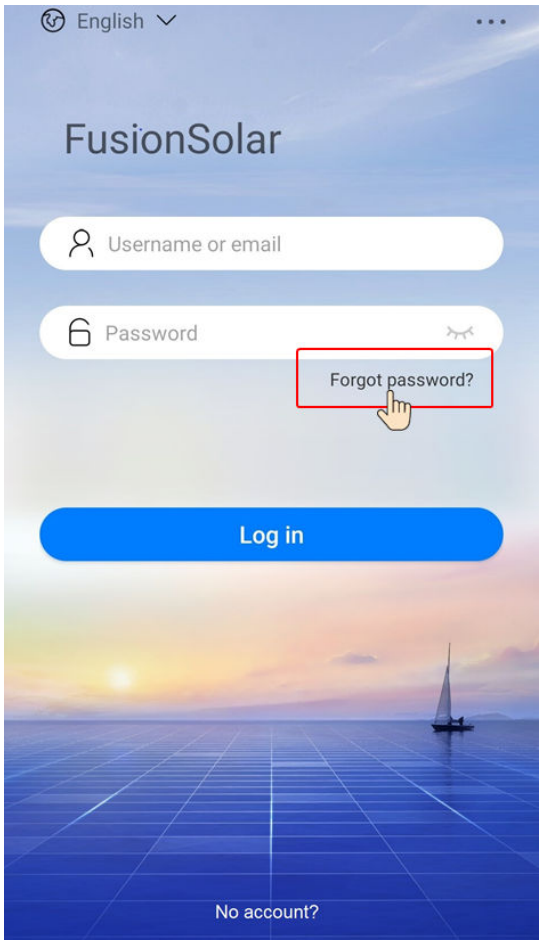
### Prerequisites

The user's email address has been associated and verified.

### 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**.



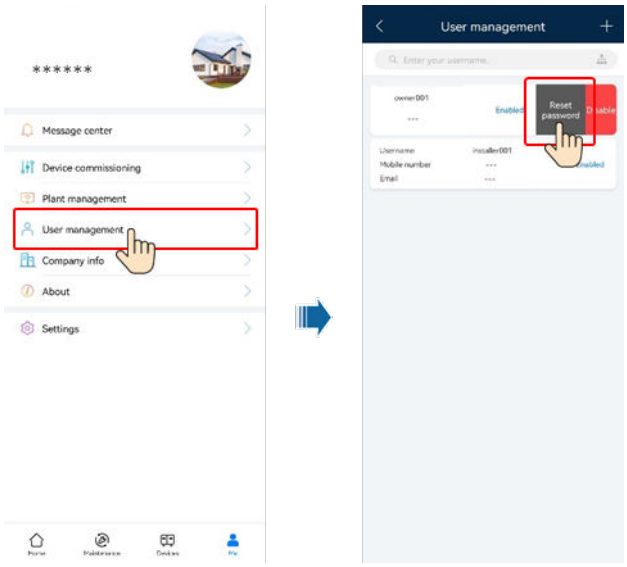

# 7.2 Resetting a User Password

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.




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

## Problem Description

After a user logs in to the FusionSolar, no data is displayed on the home screen.

## Cause

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

## Procedure

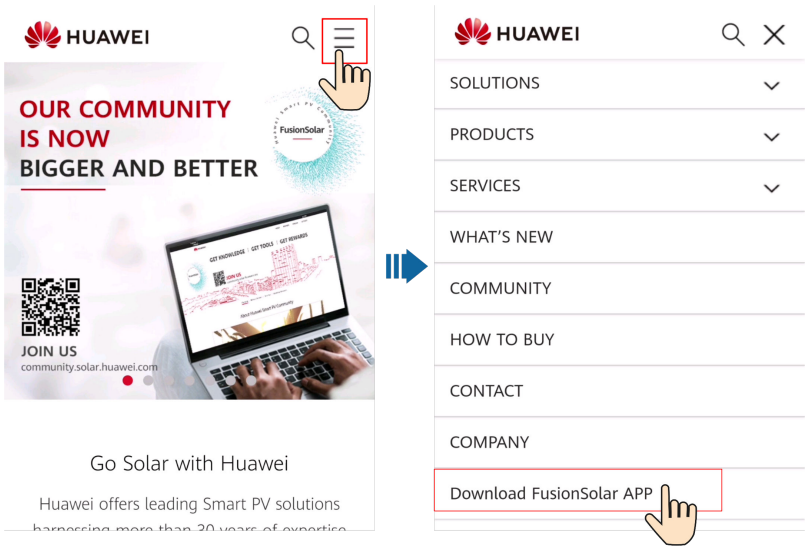
Method 1: Download and install the app from the app store.

- Huawei mobile phone users: Search for **FusionSolar** in Huawei AppGallery.
- iPhone users: Search for **FusionSolar** in App Store.
- Other mobile phone users: Select method 2 or 3.

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

Method 3: Visit **https://solar.huawei.com** using a browser on your mobile phone to download and install the app.




**NOTE**

Users who select method 2 or 3 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.
- iPhone users: Download from the App Store.

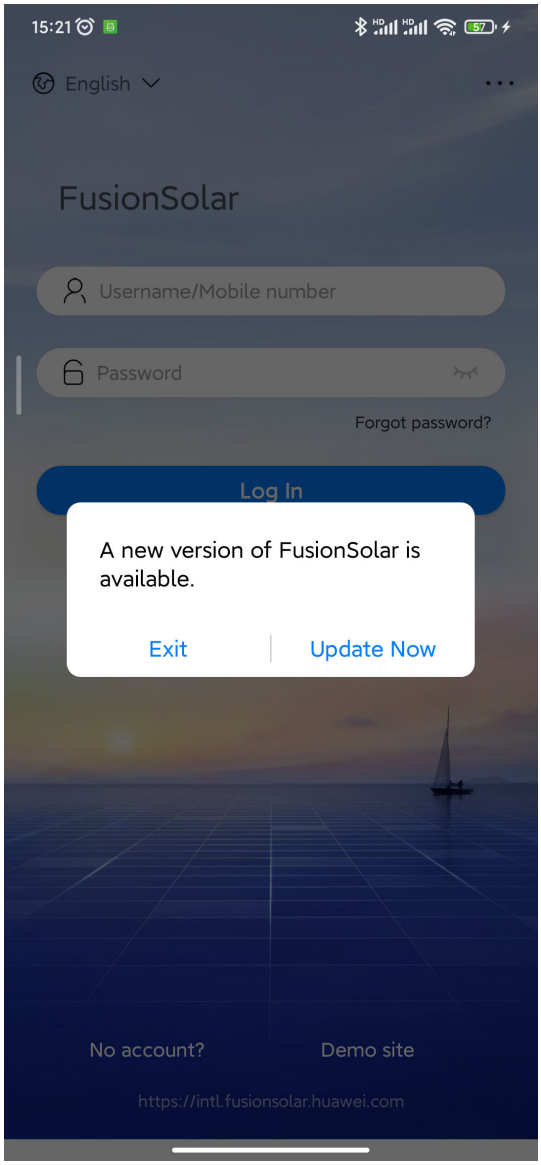
When you select **Download via the Browser**, if a security warning message is displayed indicating that the app is from an external source, tap **ALLOW**.

# 7.4 Handling a Version Update Message After a User Logs In to App

## Problem Description

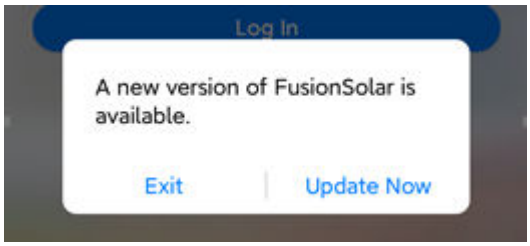
After logging in to the app, a user receives a version update message similar to that shown in **Figure 7-1**.

**Figure 7-1** Version update message




## Procedure

Tap **Update Now** and upgrade the app to the latest version as prompted.



# 7.5 Handling a Network Exception When a User Logs In to App

## Problem Description

When a user logs in to the FusionSolar, a message is displayed, indicating that the network is abnormal.

## 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 is granted, tap  in the upper right corner of the login screen and tap **Log Export**. The system will send the problem to technical support engineers for analysis.

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

## Description

If you forgot the password, you can reset the password by swiping the card.

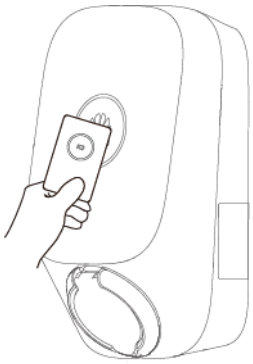
## Precautions

- 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). 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**

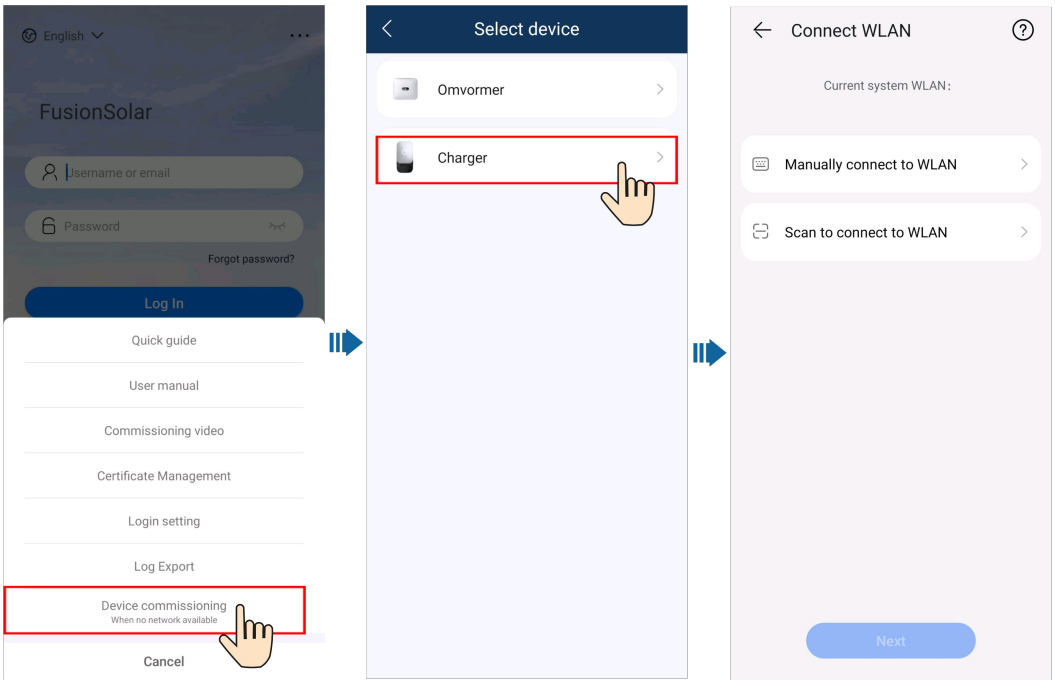
If you swipe your card in the swipe protection state, the swipe protection time will start again.

# 7.7 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.



# 7.8 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.

# 7.9 What Should I Do If the App Cannot Identity the Charger?

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

# 7.10 What Should I Do If the Upgrade Package Obtained from an iPhone Cannot Be Selected on the Upgrade Page?

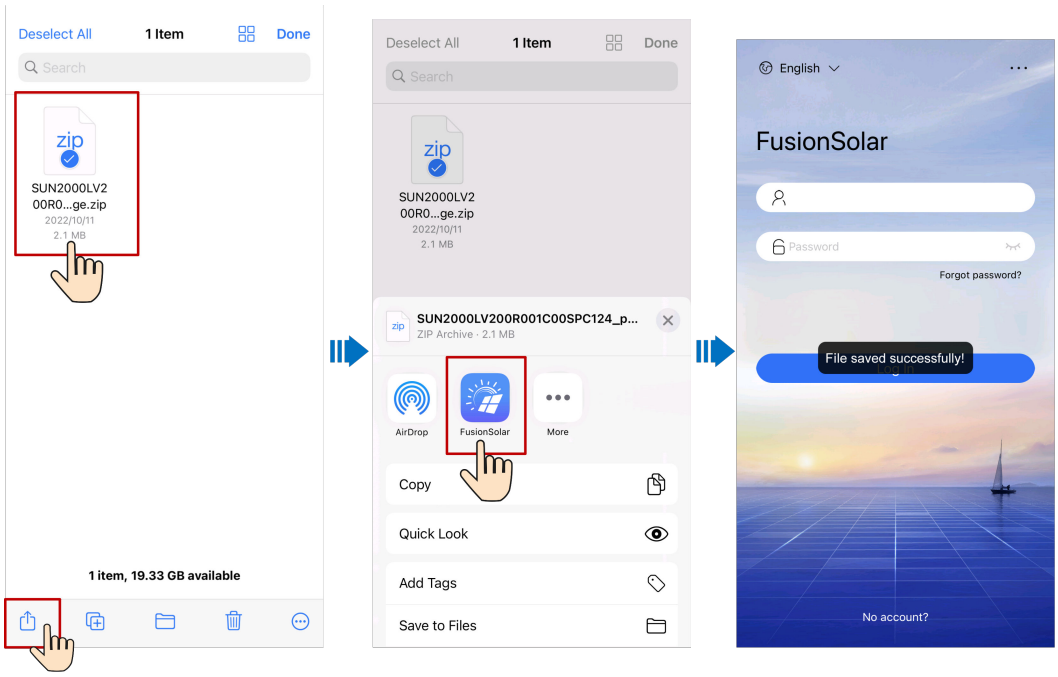
## Cause

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.

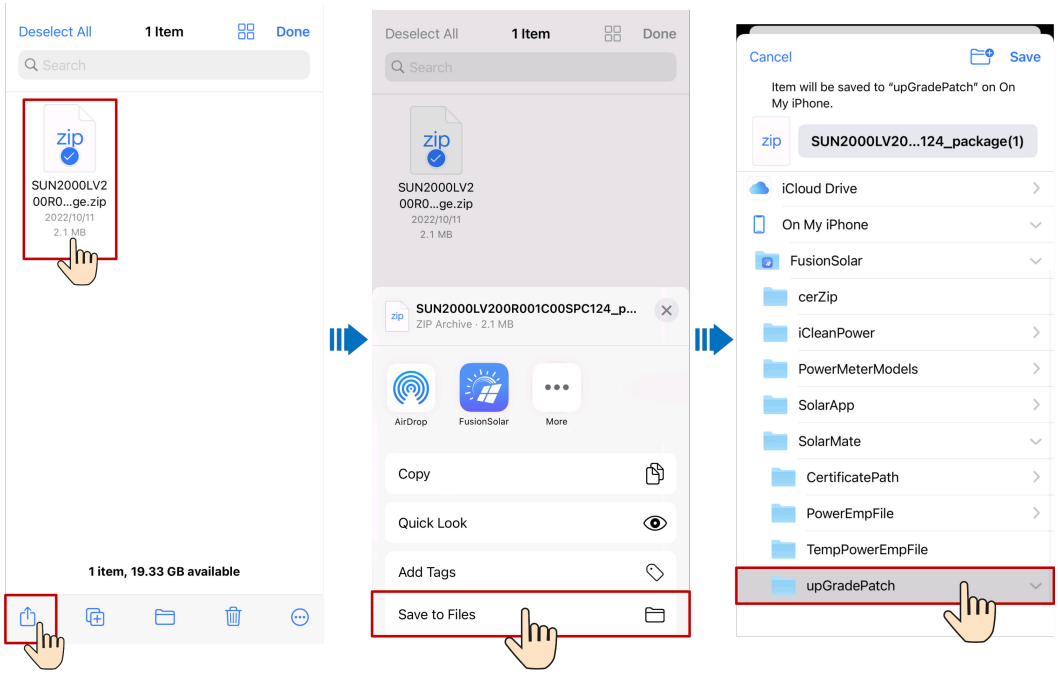
## Procedure

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




Method 2: Save the upgrade package to the specified path of the FusionSolar app.



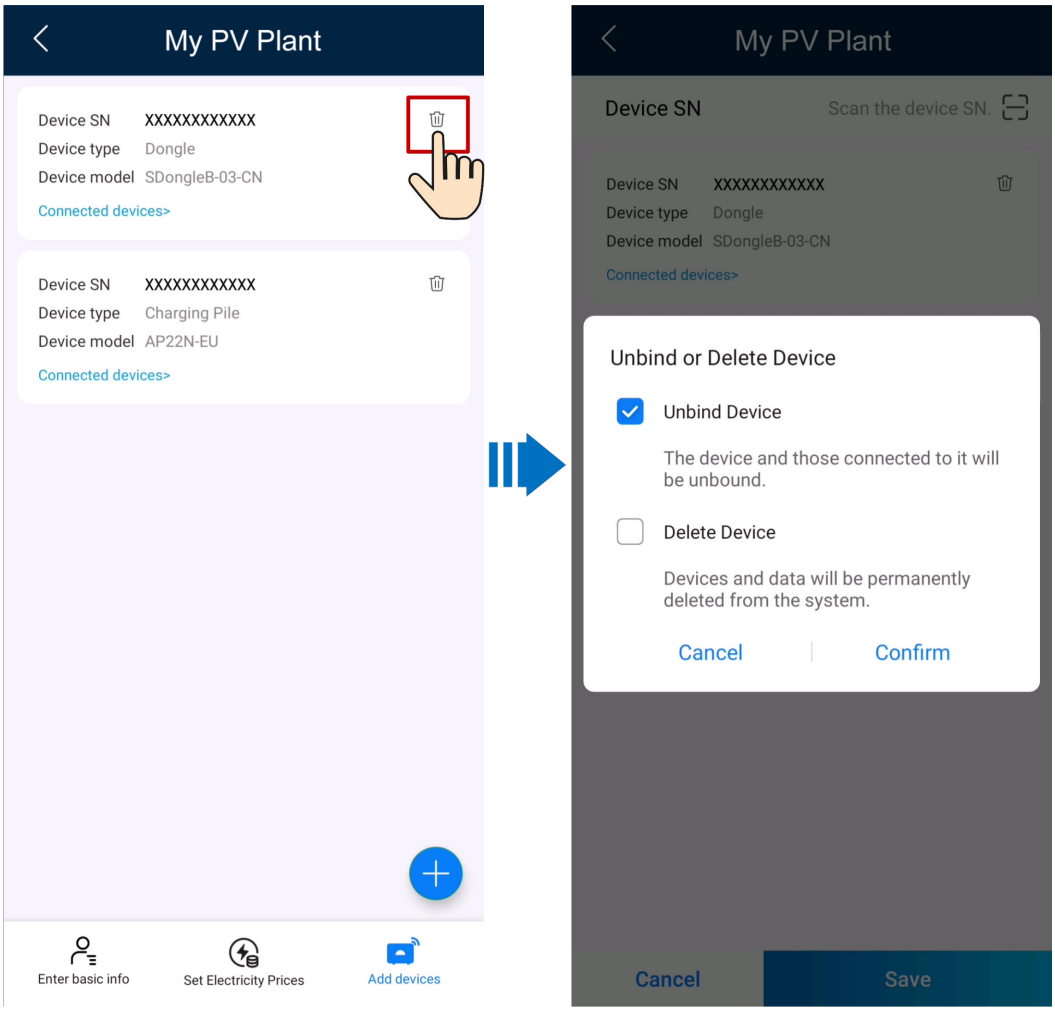

# 7.11 What Should I Do If an Offline or Faulty Charger Is Displayed in the Plant After the Charger Is Replaced?

## 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** as prompted.




**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.

# 7.12 Why are two pairing requests popped up during Bluetooth pairing?

When you pair the charging post through Bluetooth, the Bluetooth pairing request dialog box pops up twice.

This is normal, please allow pairing at each prompt.

# 8 Related Information

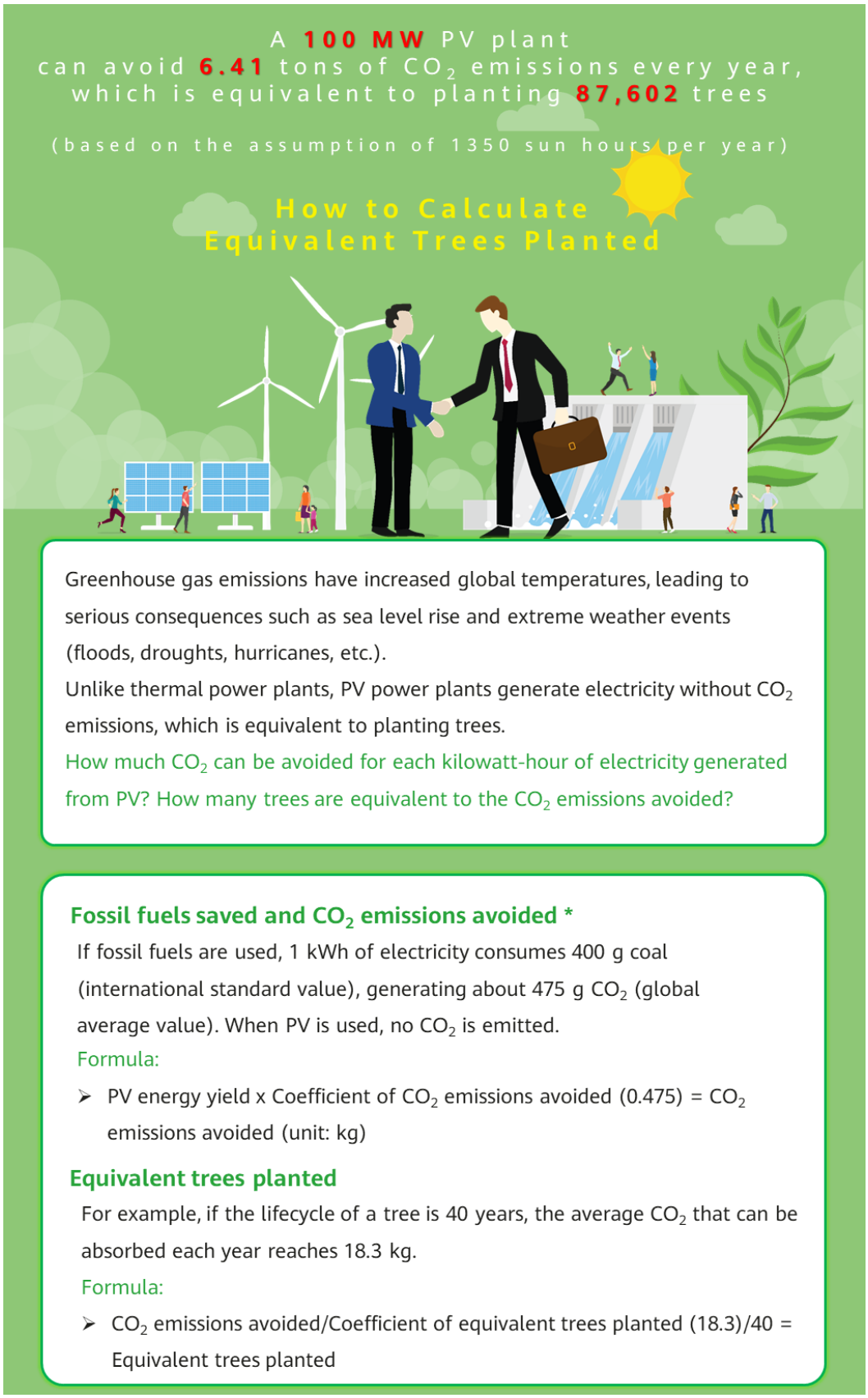
## 8.1 Indicator of Charger

| 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 |

# 8.2 PV Power Generation Offsetting Carbon Emissions




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 $CO_2$ emissions, which is equivalent to planting trees.

How much $CO_2$ can be avoided for each kilowatt-hour of electricity generated from PV? How many trees are equivalent to the $CO_2$ emissions avoided?

### Fossil fuels saved and $CO_2$ emissions avoided *

If fossil fuels are used, 1 kWh of electricity consumes 400 g coal (international standard value), generating about 475 g $CO_2$ (global average value). When PV is used, no $CO_2$ is emitted.

Formula:

- PV energy yield x Coefficient of $CO_2$ emissions avoided (0.475) = $CO_2$ emissions avoided (unit: kg)

### Equivalent trees planted

For example, if the lifecycle of a tree is 40 years, the average $CO_2$ that can be absorbed each year reaches 18.3 kg.

Formula:

- $CO_2$ 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 $CO_2$ emissions avoided ≈ 351.31 tons

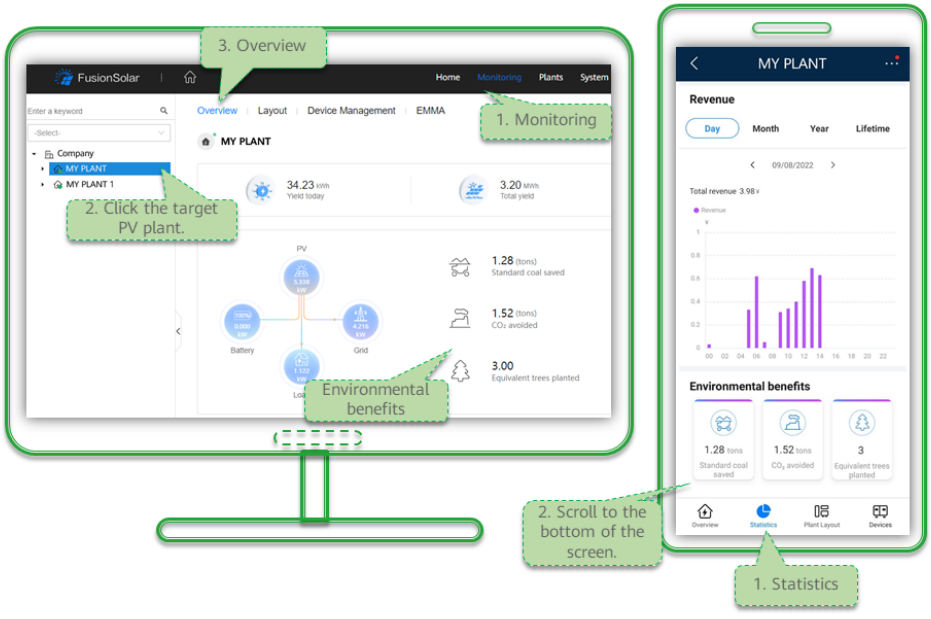
739600 kWh x 0.475 = 351310 kg

Equivalent trees planted ≈ **480**

351310 kg/18.3/40 ≈ 480

## How do I view the $CO_2$ 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)

# 8.3 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 | • **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.<br>• **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.

# 8.4 Environment Parameters

| Parameter | Unit | Definition | Formula | PV+Storage | PV-Only | Storage-Only | Remarks |
|---|---|---|---|---|---|---|---|
| Global irradiation | kWh/m² | 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+Storage | PV-Only | Storage-Only | Remarks |
|---|---|---|---|---|---|---|---|
| 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 | |

# 8.5 Power Parameters

| Parameter | Unit | Definition | Formula | PV+Storage | PV-Only | Storage-Only | Remarks |
|---|---|---|---|---|---|---|---|
| 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<br>Daily: Daily irradiation x String capacity<br>Monthly: Total theoretical yield of each day in a month<br>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<br>Daily: PV yield each day<br>Monthly: Total yield of each day in a month<br>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<br>Daily: Inverter output energy each day<br>Monthly: Total inverter output energy of each day in a month<br>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+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<br>Monthly: Total amount of power consumed by the loads each day in a month<br>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<br>Monthly: Total amount of power fed to the grid from the plant each day in a month<br>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<br>Monthly: Total amount of power purchased from the grid each day in a month<br>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<br>Monthly: Total amount of self-consumed power of each day in a month<br>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<br>Monthly: Total amount of self-supplied power of each day in a month<br>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.<br>Not supported when no load exits. |

| 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<br>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.<br>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.<br>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<br>Monthly: total daily on-grid durations in a month<br>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+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<br>Monthly: Monthly peak power/String capacity<br>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<br>Yearly: Yearly feed-in energy/ Planned yearly yield | Supported | Supported | Not supported | |

NOTE

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

# 8.6 Commercial Smart Inverters Parameters

# 8.6.1 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. |

## 8.6.2 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. |

# 8.6.3 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. | • 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.<br>• When concentration PV modules are used:<br>– 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.<br>– 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. | • 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.<br>• 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 | 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.<br>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. | |
| 8 | LVRT compensation power factor of reactive power in negative sequence | 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.<br>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. | |
| 9 | Percentage of LVRT reactive current limiting | During LVRT, the solar inverter needs to limit the reactive current.<br>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. | |
| 10 | Threshold of LVRT zero-current mode | 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. | |

| 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. | • This parameter is displayed when **LVRT** is set to **Enable**.<br>• 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 | 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.<br>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. | |

| No. | Parameter | Description | Remarks |
| --- | --- | --- | --- |
| 17 | HVRT compensation power factor of reactive power in negative sequence | 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.<br>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. | |
| 18 | HVRT compensation power factor of reactive power in positive sequence | 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. | |
| 19 | VRT exit hysteresis threshold | Specifies the LVRT/HVRT recovery threshold. | • This parameter is displayed when **LVRT** or **HVRT** is set to **Enable**.<br>• LVRT recovery threshold = Threshold for triggering LVRT + VRT exit hysteresis threshold<br>• 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. | • This parameter is displayed when **Voltage rise suppression** is set to **Enable**.<br>• 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. | - |

## 8.6.4 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**.<br>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**.<br>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. | • This parameter is displayed when **Overfrequency derating** is set to **Enable**.<br>• When setting this parameter, ensure that the following condition is met: **Frequency for exiting overfrequency derating** ≤ **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. | • This parameter is displayed when **Voltage derating** is set to **Enable**.<br>• 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(%). | - |

# 8.6.5 Grid-tied control parameters

## Special User

**Table 8-1** 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. |

# 8.7 Domain Name List of Management Systems

NOTE

The list is subject to change.

**Table 8-2** Domain names of management systems

| Domain Name | Data Type | Scenario |
| --- | --- | --- |
| intl.fusionsolar.huawei.com | Public network address | Global domain name of FusionSolar<br>**NOTE**<br>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 |
| intlobt.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 |

# 8.8 Public URLs

**Table 8-3** 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 solar 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 8-4** 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 SmartPVMS Official Website |
| eu_inverter_support@huawei.com | FusionSolar SmartPVMS Service Email |