

FusionSolar App

User Manual

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About This Document

Overview

This document describes the common operations of the FusionSolar app.

Intended Audience

This document is intended for:

- Installers
- Users

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Change History

Changes between document issues are cumulative. The latest document issue contains all the changes made in earlier issues.

Issue 01 (2019-09-10)

Upgraded the FusionSolar app version to FusionSolar app 2.3.5 .

Issue 01 (2019-07-25)

This issue is used for first office application (FOA).

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1 Overview

1.1 Introduction to the App

The FusionSolar app is the software used to manage PV plants. On the FusionSolar app, you can perform local settings, create PV plants, and manage devices for solar inverters.

1.2 Downloading and Installing the FusionSolar App

NOTE

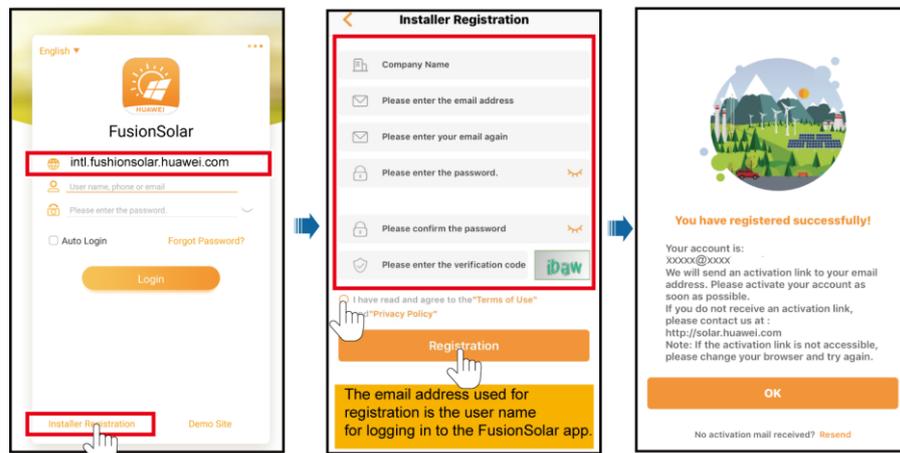
- The FusionSolar app will not be evolved in App Store (iOS) since 2.3.3. For new products and functions, use 2.3.5 or later versions in the Android system.
- The latest Android version is required for local commissioning. The iOS version is not updated and can be used only for viewing PV plant information. You can search for "FusionSolar" in App Store to download the iOS version.

Search for **FusionSolar** in Huawei app store (Android) or Google Play (Android) to download and install the app. You can also scan one of the following QR codes to obtain the app. The screenshots in this document correspond to app version 2.3.5.

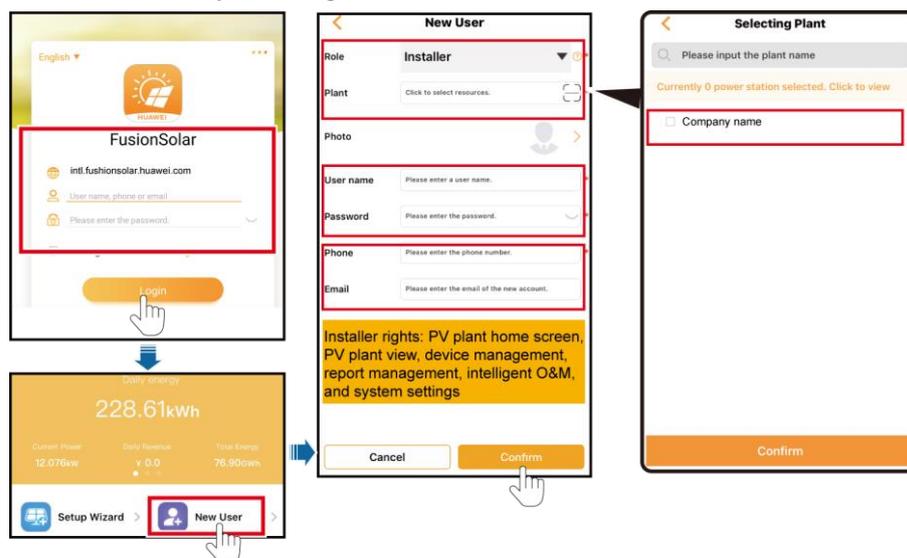


2 (Optional) Registering an Installer Account (When No Account Is Available)

- Creating the first installer account will generate a domain named after the company.



- To create multiple installer accounts for a company, log in to the app and create an installer account by choosing **New User**.



3 Quick Settings

3.1 Setup Wizard

Scenario 1: 4G Dongle Communication

If the solar inverter has been connected to the FusionSolar management system, the [Figure 3-2](#) and [Figure 3-3](#) in the dotted box are skipped.

Figure 3-1 Login

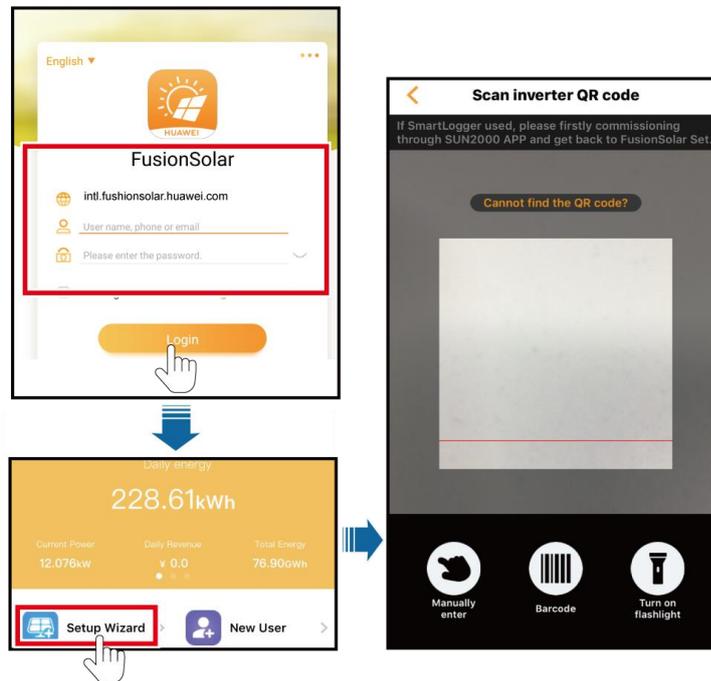


Figure 3-2 Quick Settings 1

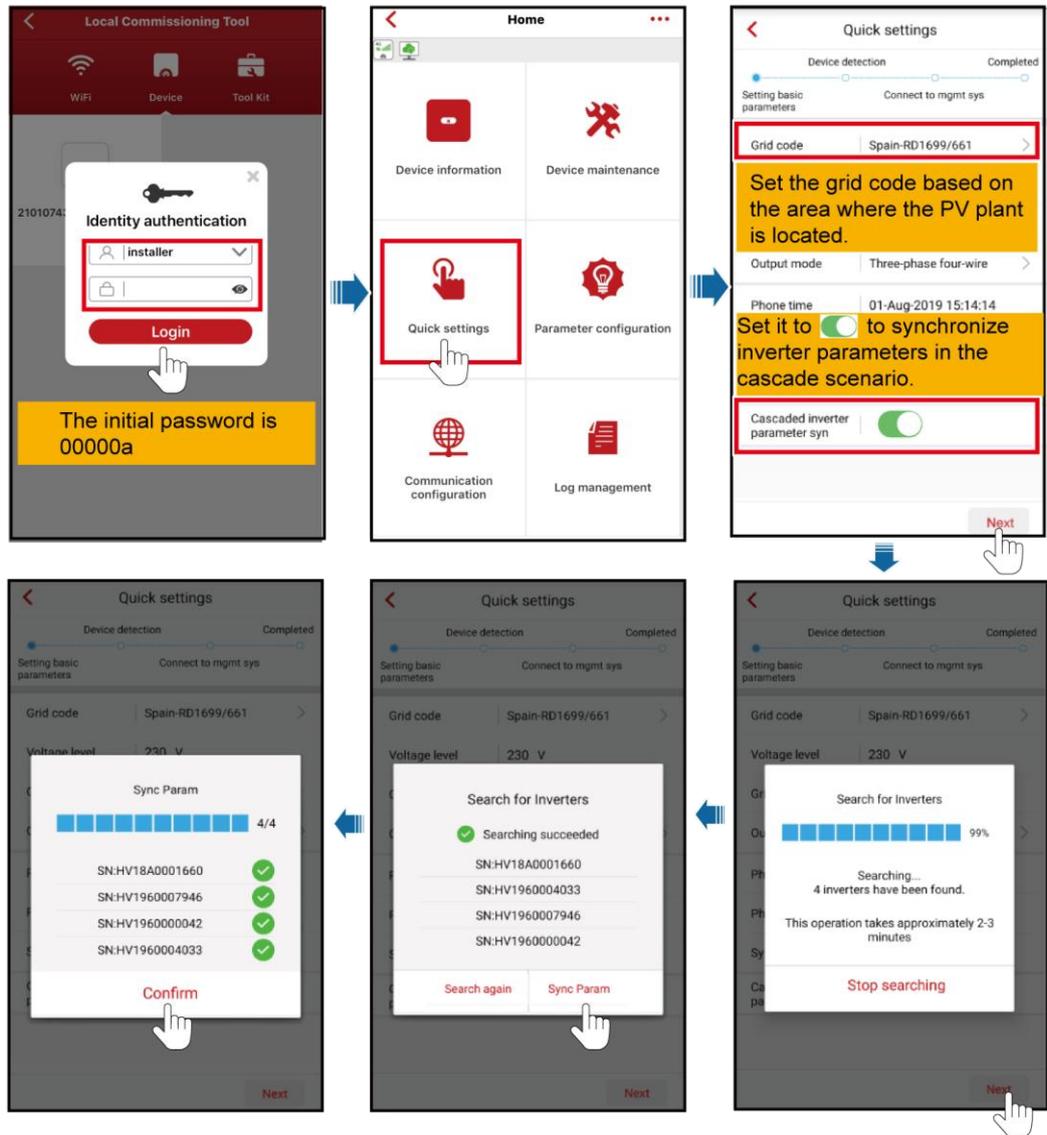


Figure 3-3 Quick Settings 2

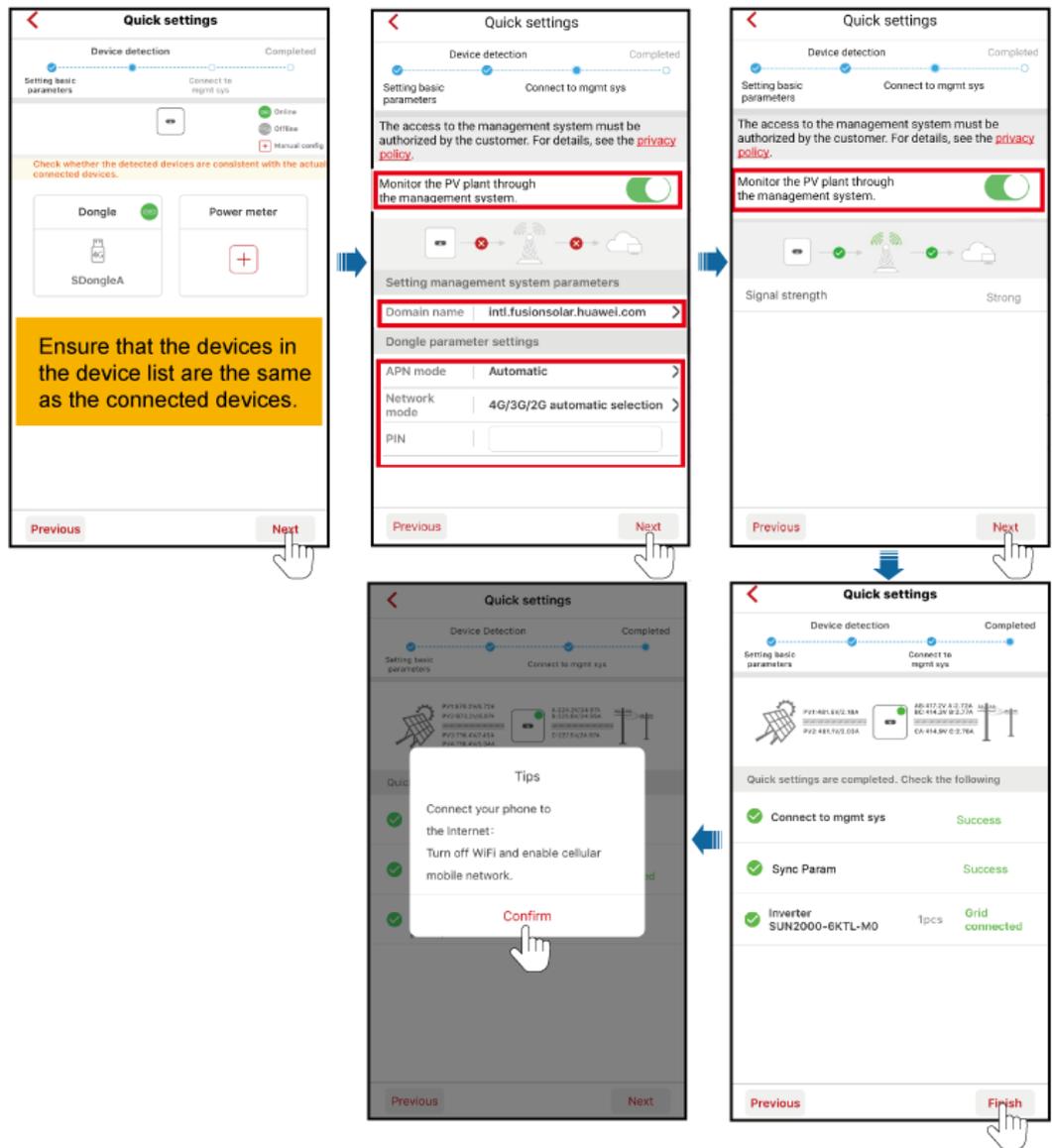
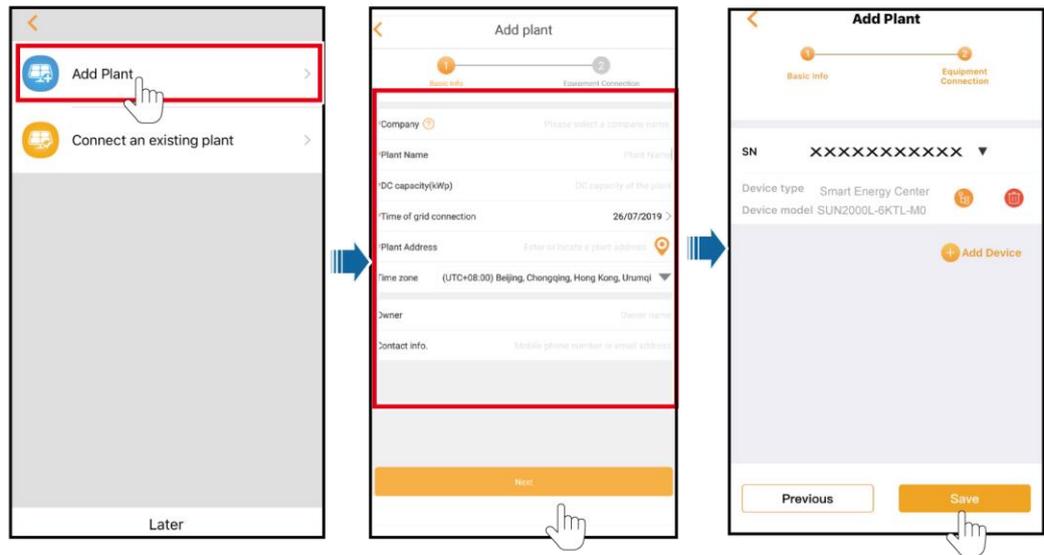


Figure 3-4 Add Plant



Scenario 2: Non-4G Dongle Communication

If the solar inverter has been connected to the FusionSolar management system, the [Figure 3-6](#) and [Figure 3-7](#) in the dotted box are skipped.

Figure 3-5 Login

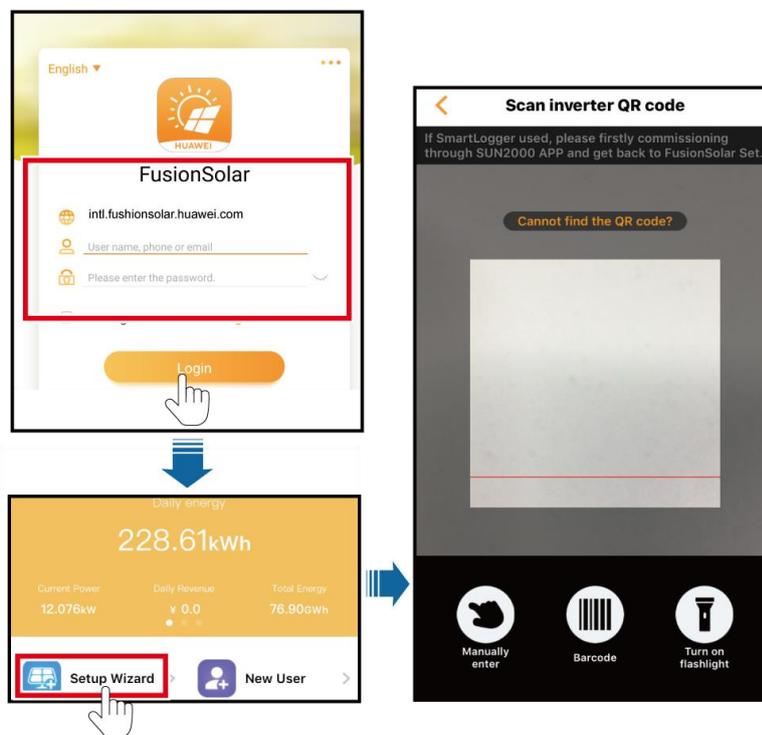


Figure 3-6 Quick Settings 1

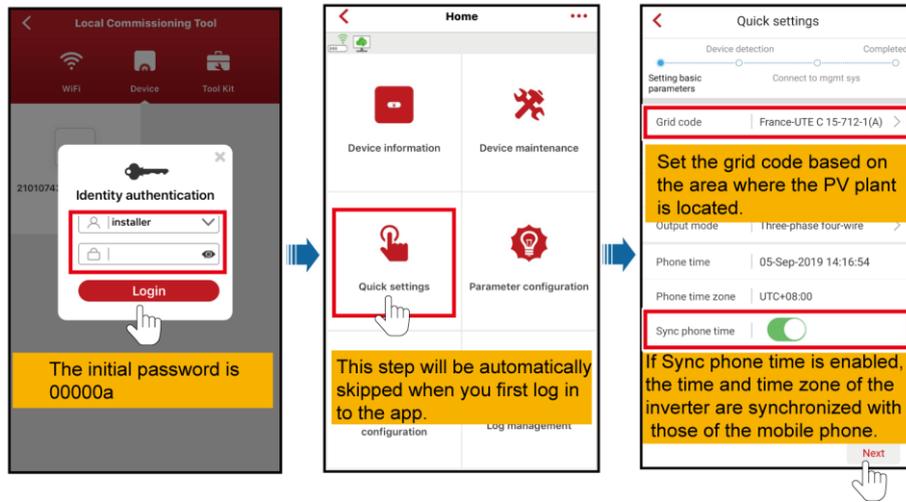


Figure 3-7 Quick Settings 2

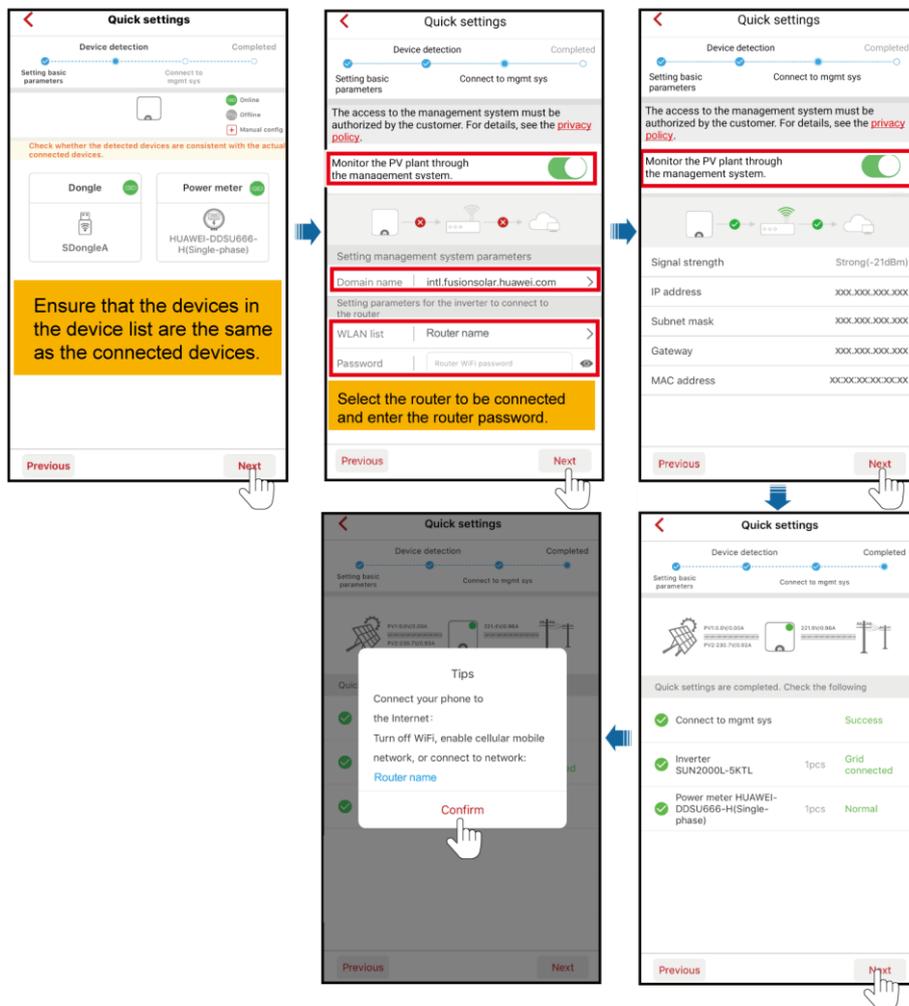
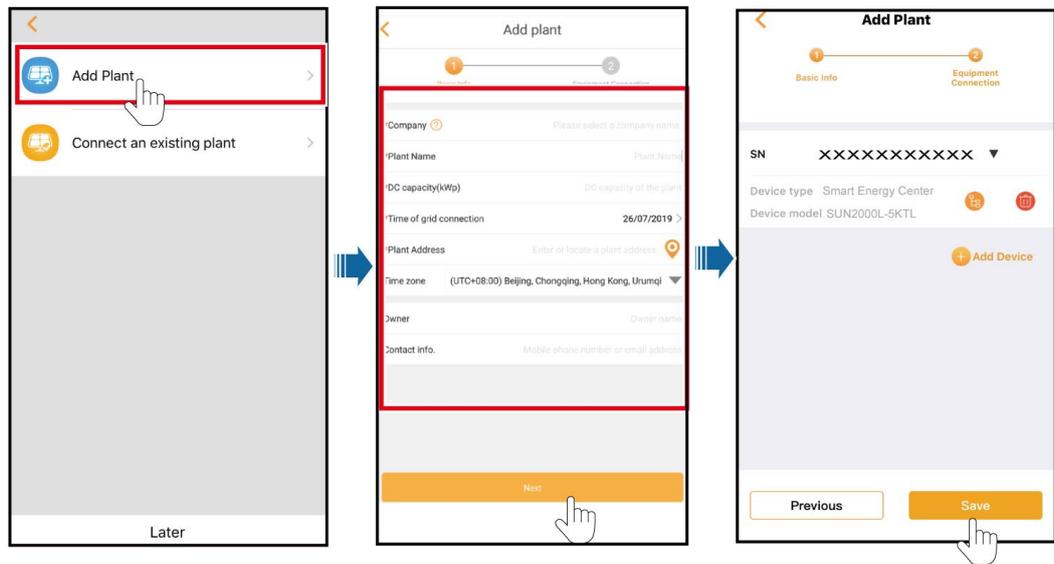


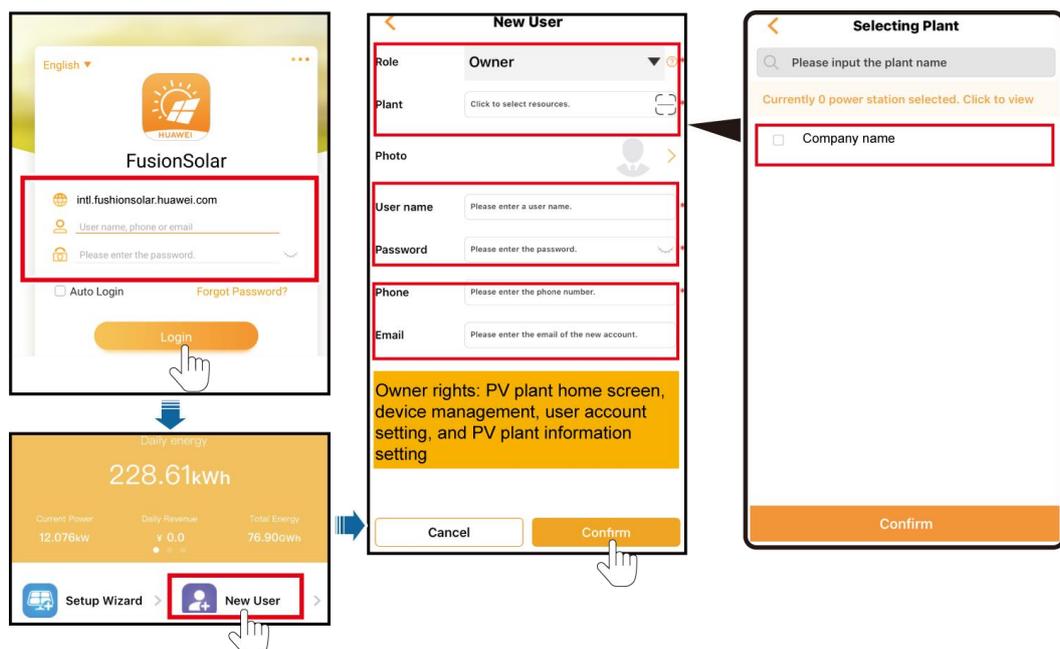
Figure 3-8 Add Plant



NOTE

- Use the initial password upon first power-on and change it immediately after login. To ensure account security, change the password periodically and keep the new password in mind. Not changing the initial password may cause password disclosure. A password left unchanged for a long period of time may be stolen or cracked. If a password is lost, devices cannot be accessed. In these cases, the user is liable for any loss caused to the PV plant.
- SUN2000-(3KTL-20KTL)-M0 supports the cascaded inverter synchronization function. In the cascaded scenario, the cascaded inverter parameters are synchronized, the grid standard code, the output mode, the time zone, and the time information are fed to the cascade inverter.

3.2 Adding an Owner Account



4 Viewing the Home Screen

Log in to the FusionSolar app and go to the home screen to learn about the PV plant overview.

Permission

- After you log in to the app, you have the following permissions: **Home, O&M, Device, and My**. If a user is not assigned with a certain permission, the user cannot perform corresponding operations after logging in to the app.
- After you create an account and log in to the app for the first time, read the privacy policy and tap **OK**. After a dialog box is displayed, change the login password to ensure account security.
- When the app is in use, the location function works, which will increase the power consumption.
- Before using the app on a mobile phone, ensure that the phone has the following permissions. Otherwise, the app cannot be used properly.
 - a. Permission to access a WLAN or 2G/3G/4G carrier network. This permission is required when you are using the app.
 - b. Permission to obtain user location information.
 - After a mobile O&M engineer logs in to the app, the system reports the location information.
 - When a mobile inspection task is started, the location information is reported before the task is stopped.
 - When you add or modify a PV plant, the system obtains the current location information by default when you enter the PV plant location information.
 - c. Permission to use the camera. You must have this permission if you want to take photos using the camera or upload photos from the photo album to the app.
 - d. Permission to read, modify, or delete SD card content. You must have this permission to record logs of exceptions.

UI Description

After you log in to the app, the following screen is displayed. [Table 4-1](#) describes the screen. [Table 4-2](#) describes the icons on the home screen.

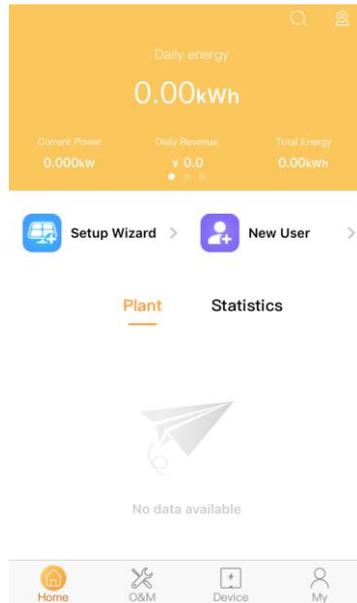


Table 4-1 UI description

Function	Description
Home	<p>On the Plant screen, tap a PV plant name to view its real-time information and the PV plant view.</p> <p>The Statistics screen displays the energy yield, revenue statistics, PV plant ranking on the current day, and social contribution.</p> <p>The PV plant KPI data, PV plant status, and real-time alarms are displayed in sequence in the upper part of the screen.</p>
O&M	The O&M screen displays the PV plant status, device alarms, diagnosis warning, online diagnosis, I-V curve, and mobile O&M.
Device	The Device screen displays the device information, and is used to set device parameters and replace devices.
My	The My screen displays the user information, messages, local commissioning tool, PV plant management, owner management, company information, and personal settings.

Table 4-2 Icons on the home screen

Icon	Description
	Tap  to create a PV plant.
	Tap  to add a user.

Icon	Description
	Tap  to view the PV plant distribution on a map.
	Tap  to search for PV plants.
	Tap  to filter the PV plants to be displayed.

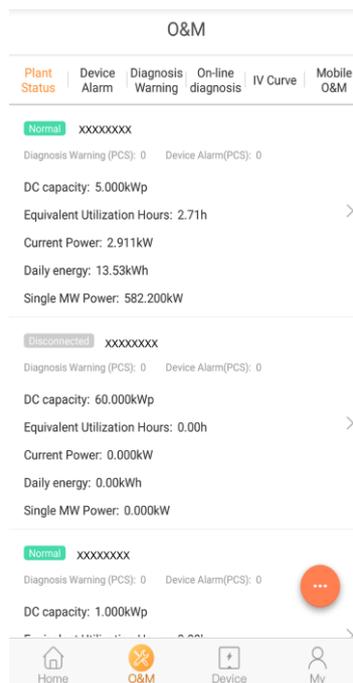
5 O&M Management

The O&M management app intelligently manages PV plants.

This chapter describes only the operations related to **Plant Status**, **Device Alarms**, **Diagnosis Warning**, **On-line diagnosis**, and **IV curve**.

Viewing PV Plant Status

1. Tap **O&M** in the lower part of the home screen. In the displayed O&M screen, the **Plant Status** tab is displayed by default.



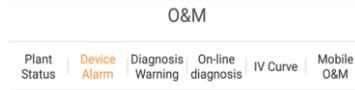
2. Perform one of the following operations as required:

- Choose  > , set the filter criteria, and view the PV plant status.
- Choose  > , select the PV plant, and compare **Single MW Power** and **Equivalent Utilization Hour** of the PV plants.

3. Tap a PV plant name to go to the device management screen and view the PV plant device details.

Managing Device Alarms

1. Tap **O&M** in the lower part of the home screen. In the displayed O&M screen, the **Plant Status** tab is displayed by default.
2. Tap the **Device Alarm** tab. The alarm list is displayed.



3. Perform one of the following operations as required:
 - Choose  > , set filter criteria, and view device alarms.
 - Choose  > , select alarms, and confirm, clear, or recover alarms in batches.
 - Tap  to clear the filter criteria.
4. Tap the alarm name to view the details. Confirm, clear, or recover the alarm.

Diagnosis Warning

1. Tap **O&M** in the lower part of the home screen. In the displayed O&M screen, the **Plant Status** tab is displayed by default.
2. Tap the **Diagnosis Warning** tab. The alarm list is displayed.



3. Perform one of the following operations as required:

- Choose  > , set filter criteria, and view device alarms.
- Choose  > , select alarms, and confirm, clear, or recover alarms in batches.
- Tap  to clear the filter criteria.

4. Tap the alarm name to view the details. Confirm, clear, or recover the alarm.

Online Diagnosis

1. Tap **O&M** in the lower part of the home screen. In the displayed O&M screen, the **Plant Status** tab is displayed by default.
2. Tap the **On-line diagnosis** tab. The PV string discreteness bar chart and report are displayed.



3. Tap  in the upper right corner and select the PV plant, discreteness type, and time. The system displays the PV string discreteness rate and report that meet the filter criteria.
4. Tap any position in the bar chart or the discreteness range to view the report for the selected range.
5. Tap a device name to view the average voltage and current of the PV string.

I-V Curve

1. Tap **O&M** in the lower part of the home screen. In the displayed O&M screen, the **Plant Status** tab is displayed by default.
2. Tap the **IV Curve** tab. The I-V curve diagnosis task list is displayed.



3. Optional: Set the search criteria, and then tap **Search**. The list of tasks that meet the search criteria is displayed.

NOTE

Tap **Reset** to clear the search criteria.

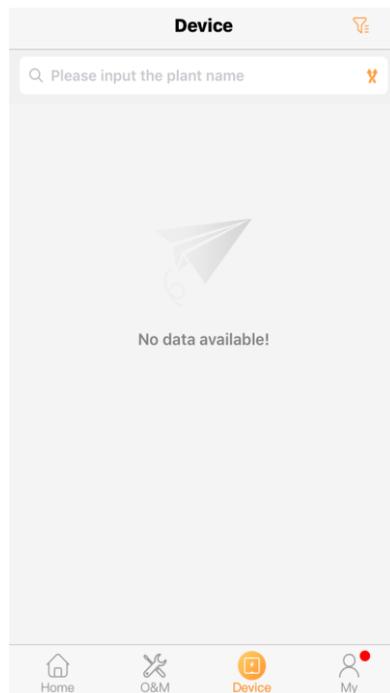
4. Perform one of the following operations as required:
 - Create an I-V diagnosis task.
 - i. Tap **Add** to go to the **Add IV Curve Scanning Task** screen.
 - ii. Optional: Tap  in the upper right corner to view the I-V curve diagnosis requirements and suggestions.
 - iii. Set the task name, PV module cleaning status, device, scanning mode, and environment parameters.
 - iv. Tap **Start Scanning**. The task is added successfully and the scanning starts.
 - View diagnosis details. Tap **Scanning for Details** to view details about the scanned object.
 - View the diagnosis report.
 - Tap **Report** to go to the **Fault List** screen. By default, the diagnosis report is displayed.
 - Tap **Handling suggestions** to view the alarm type, alarm name, and handling suggestion of the corresponding PV string.
 - View the diagnosis report of each PV plant.
 - Tap **Report** to go to the **Fault List** screen. By default, the diagnosis report is displayed.
 - Select a PV plant name from the drop-down list. The PV string fault list of the PV plant is displayed.
 - Perform one of the following operations as required:
 - Tap **View** to view the basic information and I-V curve of the PV string.

- Tap **Collect Abnormality Statistics** to view the fault summary pie chart and list.
- Tap **IV Curve Comparison**, select the PV strings to be compared, and tap **Start Comparison** to view the I-V curve of the corresponding PV string.

6 Managing Devices

Manage devices on the FusionSolar app.

1. On the home screen, tap **Device**. The **Device** screen is displayed, showing the device list. For a single device, the device details screen is displayed.



2. Tap  in the upper right corner and set the filter criteria. The devices that meet the filter criteria are displayed.
3. Perform one of the following operations as required:
 - i. View device details.
 - ii. Tap a device name to go to the details screen of the device.
 - iii. View the real-time device information, device details, alarms, and historical information.

NOTE

Tap the device icon to view the device information.

- Set device parameters (only distributed solar inverters support this function).

- i. Tap a device name to go to the details screen of the device.
- ii. Tap the settings icon in the upper right corner.
- iii. Tap **Parameter Settings** to go to the **Parameter Settings** screen.
- iv. Set the power grid, protection, feature, or power adjustment parameters.

 **NOTE**

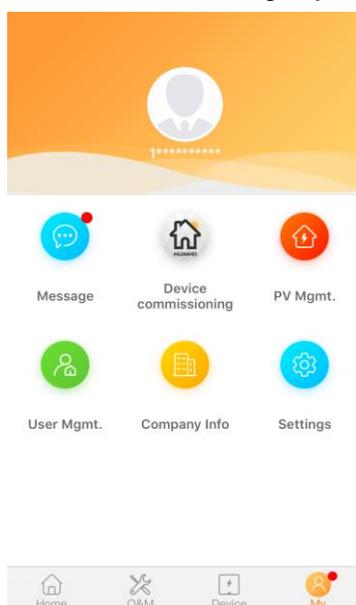
Tap **Default Settings** to restore to default values.

- v. Tap  to finish setting.
- Replace a device (only distributed solar inverters support this function).
- i. Tap a device name to go to the details screen of the device.
 - ii. Tap  in the upper right corner.
 - iii. Tap **Replace Device** to go to the **Replace Device** screen.
 - iv. Enter or scan the SN of the target device.
 - v. Confirm the information about the target device and tap **Replaced device**.
 - vi. The device replacement is complete.

7 Managing Personal Information

View to-do tasks and manage personal information on the FusionSolar app.

1. On the home screen, tap **My** to go to the personal information management screen.



2. Perform one of the following operations as required:

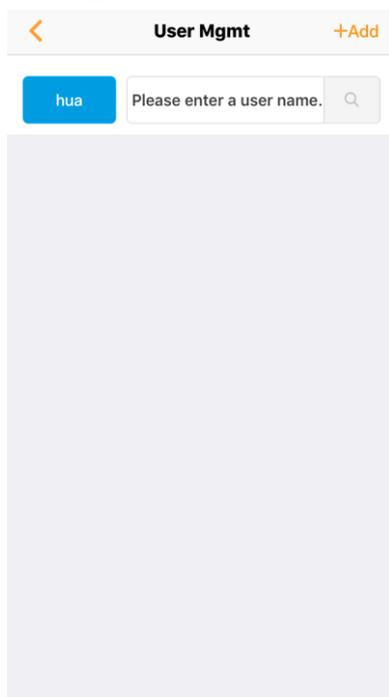
Function	Description
User avatar	Tap the user avatar to go to the Personal Details screen. Tap Modify to change the avatar, user name, name, email address, and phone number of the current login user.
Message	Tap Message to view bulletins and to-do tasks.
Device commissioning	Tap Device commissioning to go to the local commissioning tool screen.
PV Mgmt.	Tap PV Mgmt. to view, add, and modify PV plant information. For details, see chapter "Managing PV Plants."
User Mgmt.	Tap User Mgmt. to view, add, and modify user information. For details, see chapter "Managing Users."
Company Info	Tap Company Info to view the company name, contact information, address, and official website.

Function	Description
Settings	<ul style="list-style-type: none"> • Choose Setting > Account security > Password change to change the password of the current login user. • Choose Setting > Account security > Recent login history to view the latest five login authentication records of the current account. • Choose Setting > Account security > O&M permission management, and select from Close, Open, and Notification to decide whether to report the location of mobile O&M personnel by the app. By default, Notification is selected. <p>NOTE If this parameter is set during the current login, the setting takes effect upon the next login.</p> <ul style="list-style-type: none"> • Choose Setting > Help > Common operations to view the help document. • Choose Setting > Help > FAQs to view the FAQs. • Choose Setting > Help > Installation and operation video to view related videos. • Choose Setting > About to view the version information, privacy policy, and terms of use. • Choose Setting > Logout to log out of the current account.

8 Managing Users

View, modify, and add users on the FusionSolar app.

1. On the home screen, choose **My > User Mgmt**. The **User Mgmt** screen is displayed, showing the user list.



2. Optional: Select a domain, enter a user name, and tap the search icon. Users meeting the search criteria are displayed.
3. Tap the user name to view the user information.
4. Perform one of the following operations as required:
 - Add a user.
 - Tap **Add** in the upper right corner of the screen to go to the **New User** screen.
 - You can also tap  on the home screen to add a user.
 - Enter user information.

 **NOTE**

The rules for setting the user name and password are as follows:

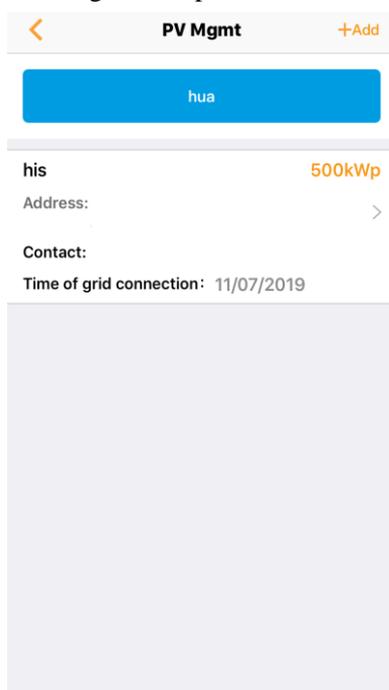
- The user name contains 6 to 32 characters and the password contains 8 to 32 characters.
- The password must contain at least two types of the following characters: uppercase letters, lowercase letters, digits, and special characters.
- The special characters `_-` are allowed in the user name, and `~!@#$$%^&*()-_+=\|{}];:","<.>/?` are allowed in the password.
- The user name and password must be different.
 - Tap **Confirm** to finish adding a user.
 - View the new user in the user list.
- Modify user information.
 - Tap a user name to go to the **Detailed User Information** screen.
 - Tap **Modify** in the upper right corner to modify the user information.
 - Tap **Confirm** to finish modifying the user information.

9 Managing PV Plants

Add and modify PV plant information on the FusionSolar app.

Adding a PV Plant

1. On the home screen, choose **My > PV Mgmt.** The **PV Mgmt** screen is displayed, showing the PV plant list.



2. Optional: Tap the region where the PV plant is located and select a PV plant or enter the PV plant name to filter PV plants. The PV plants that meet the search criteria are displayed.
3. Tap a PV plant to view its information.
4. Perform one of the following operations as required:
 - Add a PV plant.
 - Tap **Add** in the upper right corner to go to the **Add New Plant** screen. You can also tap  on the home screen of the app to create a PV plant.
 - Set basic information for the PV plant.

- Tap **Next** to connect the device.
- Tap **Add Device** and enter the device SN or scan the QR code or bar code on the device.

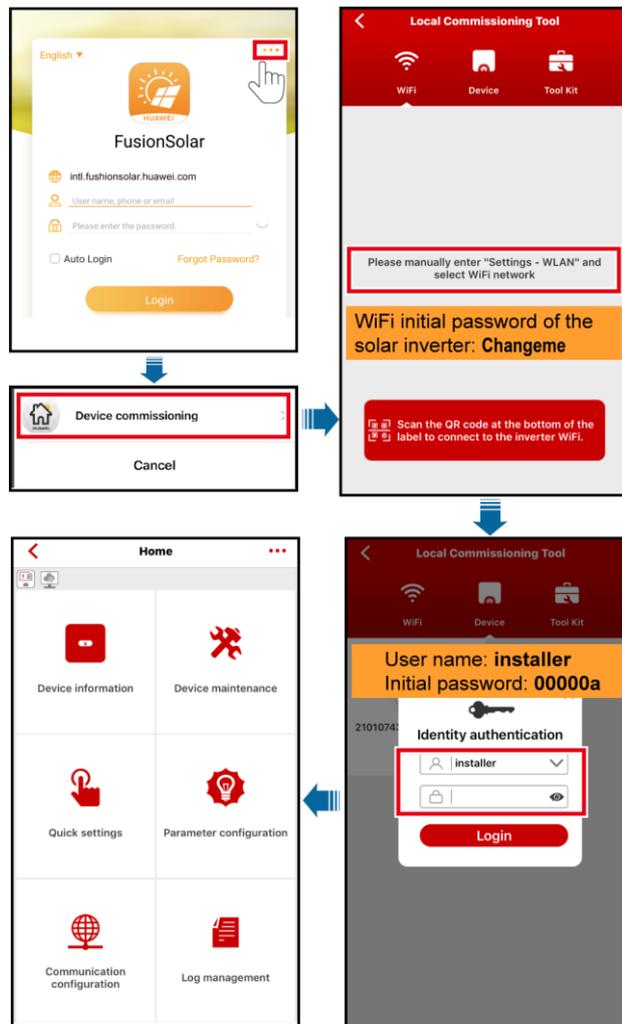
 **NOTE**

- The system automatically displays the device name and type of the new solar inverter.
- The system automatically displays the device name, type, and connected solar inverters of the new SmartLogger.
 - Repeat the previous step to add more devices.
 - Tap **Save** to finish adding devices.
- Modify PV plant information.
 - Tap a PV plant name to go to the **Plant Information** screen.
 - Tap **Modify** in the upper right corner to modify the PV plant information.
 - Tap **Save**. A dialog box is displayed.
 - Tap **Confirm** to finish modifying the PV plant information.

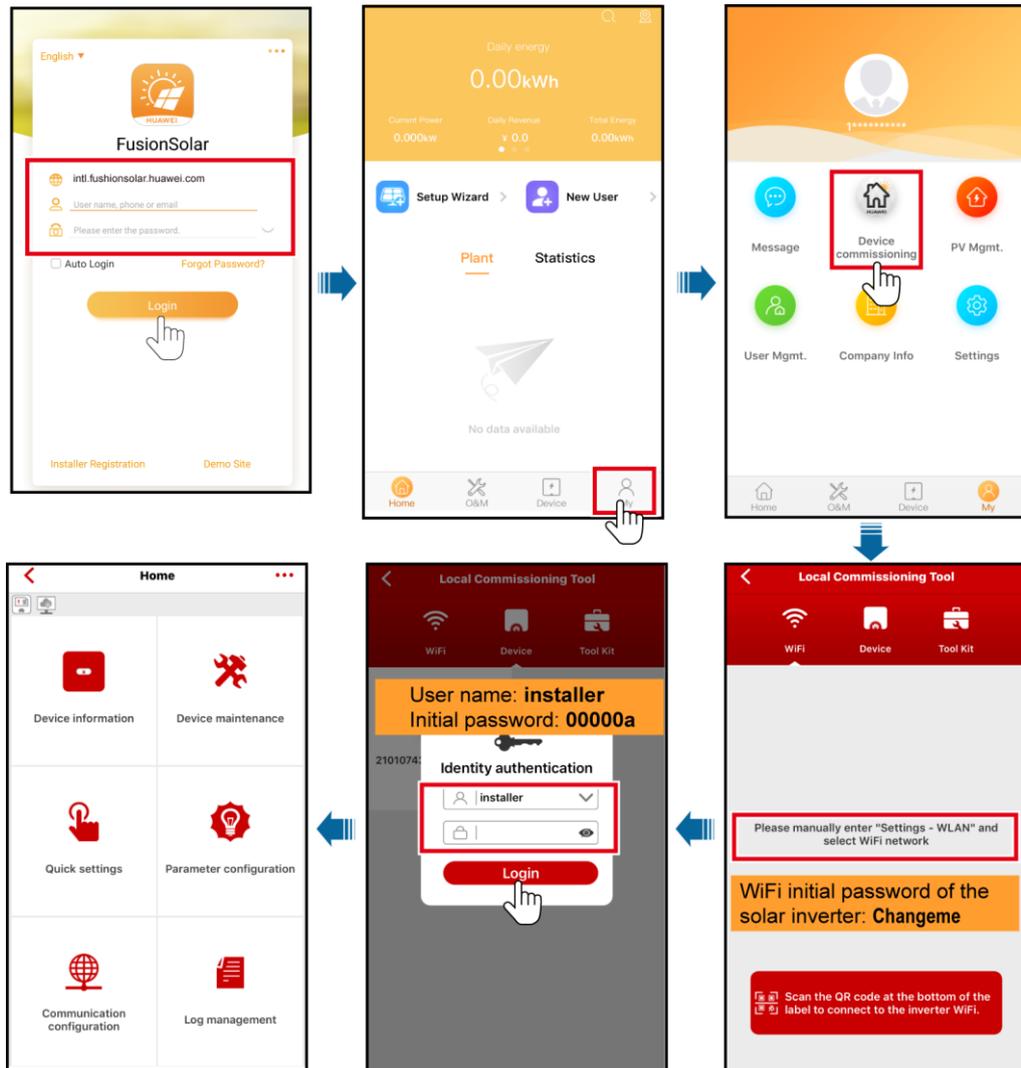
10 Commissioning Devices

10.1 Connecting Devices

Method 1: Before Login



Method 2: After Login



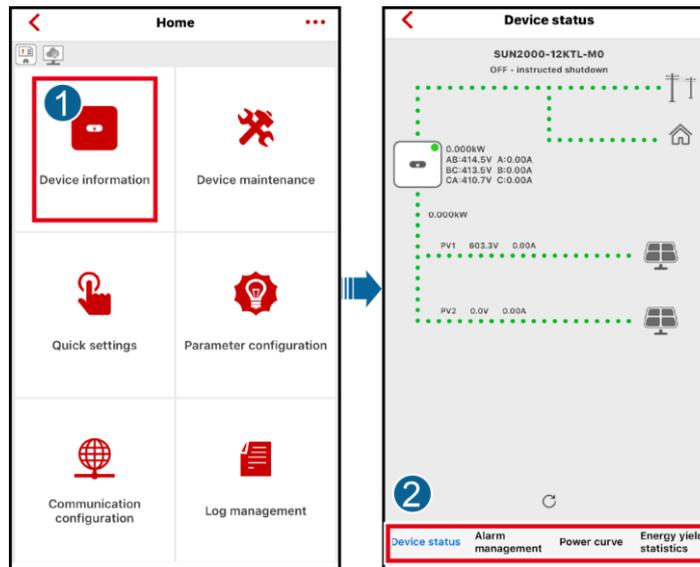
NOTE

- Use the initial password upon first power-on and change it immediately after login. To ensure account security, change the password periodically and keep the new password in mind. Not changing the initial password may cause password disclosure. A password left unchanged for a long period of time may be stolen or cracked. If a password is lost, devices cannot be accessed. In these cases, the user is liable for any loss caused to the PV plant.
- The WiFi password of the solar inverter can be changed through **Communication configuration**. For details, see [10.6 Setting Communications Parameters](#). To change the app login password, tap **...** in the upper right corner of the home screen.
- If you enter wrong login passwords for **installer** for five consecutive times within two minutes, your account will be locked. Log in to the app again after 5 minutes.

10.2 Viewing Device Information

On the home screen, tap **Device information**. Then tap a tab in the lower part of the screen as required to view related information.

Figure 10-1 Device information



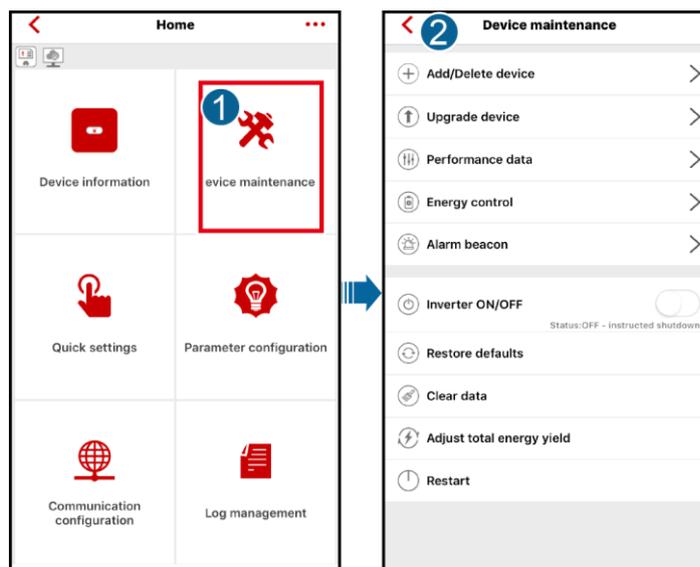
10.3 Maintaining Devices

On the home screen, tap **Device maintenance** to set device parameters.

NOTE

The parameter list provided in this document includes all configurable parameters. Configurable parameters vary with the device model and grid code. The actual screen prevails.

Figure 10-2 Maintaining devices



Parameter	Description	Parameter	Description
Add/Delete device	Adds power meters, batteries, optimizers, or safety shutdown boxes as required.	IPS test	Performs IPS self-check and generates a self-check report.
Physical layout design of PV modules	Specifies the physical location of the optimizer.	Inverter ON/OFF	Sends a command to start or shut down the solar inverter based on its current startup or shutdown status.
Upgrade device	Upgrades the software version of devices such as the solar inverter as required. You can download the upgrade package using Tool Kit . For details, see 10.8 Tool Kit .	Restore defaults	Restores the solar inverter parameters to factory settings.
Performance data	Views the performance data of devices such as power meters and batteries.	Clear data	Clears historical performance data of the solar inverter.
Alarm beacon	If this parameter is set to  , the alarm beacon produces audible and visual signals when the solar inverter generates an alarm.	Adjust total energy yield	Specifies the initial energy yield of the solar inverter. This parameter is used in solar inverter replacement scenarios. Set the initial energy yield of the new solar inverter to the total energy yield of the old solar inverter to ensure continuous statistics of cumulative energy yield.
AFCI self-test	Performs the AFCI self-test.	Restart	Restarts the solar inverter.

Table 10-1 Energy Management

Item	Parameter			Description
Grid-tied point control	Active power	Unlimited	-	If this parameter is set to Unlimited , the inverter output power is not limited. The inverter can export its rated power to the power grid.
		Grid connected with zero power	Closed-loop controller	<ul style="list-style-type: none"> Set this parameter to SDongle/SmartLogger when the SmartLogger1000A is connected. If multiple inverters are cascaded, set this parameter to SDongle/SmartLogger. If there is only one inverter, set this parameter to Inverter.
			Limitation mode	<ul style="list-style-type: none"> If this parameter is set to Total power, it indicates that no backfeeding occurs for the three phases. If this parameter is set to Single-phase power, it indicates that no backfeeding occurs for the phase with the maximum power.

Item	Parameter		Description
			Power lowering adjustment period Specifies the shortest interval for a single anti-backfeeding adjustment.
			Maximum protection time Specifies the time for detecting meter data. If the Dongle does not detect any meter data within the preset time, the Dongle delivers the preset value of the Active power output limit for fail-safe to the inverter for protection.
			Power raising threshold Specifies the threshold for raising the inverter output power.
			Communication disconnection fail-safe In the inverter anti-backfeeding scenario, if this parameter is set to Enable , the inverter will derate according to the active power derating percentage when the communication between the inverter and the Dongle is disconnected for a period longer than Communication disconnection detection time .
			Communication disconnection detection time Specifies the time for determining the communication disconnection between the solar inverter and the Dongle.
			Active power output limit for fail-safe Specifies the derating value of the inverter active power by percentage. If the Dongle does not detect any meter data or the communication between the Dongle and the inverter is disconnected, the Dongle delivers the derating value of the inverter active power by percentage.
		Power-limited grid connected (kW)	Closed-loop controller <ul style="list-style-type: none"> • Set this parameter to SDongle/SmartLogger when the SmartLogger1000A is connected. • If multiple inverters are cascaded, set this parameter to SDongle/SmartLogger. • If there is only one inverter, set this parameter to Inverter.
			Limitation mode <ul style="list-style-type: none"> • If this parameter is set to Total power, it indicates that no backfeeding occurs for the three phases. • If this parameter is set to Single-phase power, it indicates that no backfeeding occurs for the phase with the maximum power.
			PV plant capacity Specifies the total maximum active power in the inverter cascading scenario.
			Maximum grid feed-in power (kW) Specifies the maximum active power transmitted from the grid-tied point to the power grid.

Item	Parameter		Description
		Power lowering adjustment period	Specifies the shortest interval for a single anti-backfeeding adjustment.
		Maximum protection time	Specifies the time for detecting meter data. If the Dongle does not detect any meter data within the preset time, the Dongle delivers the preset value of the Active power output limit for fail-safe to the inverter for protection.
		Power raising threshold	Specifies the threshold for raising the inverter output power.
		Communication disconnection fail-safe	In the inverter anti-backfeeding scenario, if this parameter is set to Enable , the inverter will derate according to the active power derating percentage when the communication between the inverter and the Dongle is disconnected for a period longer than Communication disconnection detection time .
		Communication disconnection detection time	Specifies the time for determining the communication disconnection between the solar inverter and the Dongle.
		Active power output limit for fail-safe	Specifies the derating value of the inverter active power by percentage. If the Dongle does not detect any meter data or the communication between the Dongle and the inverter is disconnected, the Dongle delivers the derating value of the inverter active power by percentage.
	Power-limited grid connected (%)	Closed-loop controller	<ul style="list-style-type: none"> • Set this parameter to SDongle/SmartLogger when the SmartLogger1000A is connected. • If multiple inverters are cascaded, set this parameter to SDongle/SmartLogger. • If there is only one inverter, set this parameter to Inverter.
	Limitation mode		<ul style="list-style-type: none"> • If this parameter is set to Total power, it indicates that no backfeeding occurs for the three phases. • If this parameter is set to Single-phase power, it indicates that no backfeeding occurs for the phase with the maximum power.
	PV plant capacity		Specifies the total maximum active power in the inverter cascading scenario.
	Maximum grid feed-in power (%)		Specifies the percentage of the maximum active power of the grid-tied point to the PV plant capacity.

Item	Parameter		Description
			Power lowering adjustment period Specifies the shortest interval for a single anti-backfeeding adjustment.
			Maximum protection time Specifies the time for detecting meter data. If the Dongle does not detect any meter data within the preset time, the Dongle delivers the preset value of the Active power output limit for fail-safe to the inverter for protection.
			Power raising threshold Specifies the threshold for raising the inverter output power.
			Communication disconnection fail-safe In the inverter anti-backfeeding scenario, if this parameter is set to Enable , the inverter will derate according to the active power derating percentage when the communication between the inverter and the Dongle is disconnected for a period longer than Communication disconnection detection time .
			Communication disconnection detection time Specifies the time for determining the communication disconnection between the solar inverter and the Dongle.
			Active power output limit for fail-safe Specifies the derating value of the inverter active power by percentage. If the Dongle does not detect any meter data or the communication between the Dongle and the inverter is disconnected, the Dongle delivers the derating value of the inverter active power by percentage.
	Reactive power	Power factor closed-loop control	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 .

Item	Parameter		Description
		Communication disconnection detection time (s)	Specifies the protection duration to determine whether the communication between the SDongle/SmartLogger and the solar inverter is interrupted.
	No Output	-	If this parameter is set to No Output , no parameter is available.
Energy storage control	Forcible charge/discharge	Charge/discharge power	Specifies the forced charge/discharge manually.
		Forced charge/discharge power (kW)	Specifies the forced charge/discharge power.
		Forced charge/discharge period (mins)	Specifies the forced charge/discharge duration.
		Remaining charge/discharge time (mins)	Displays the remaining charge and discharge time, which cannot be set.
	Control mode		<ul style="list-style-type: none"> If this parameter is set to Fixed charge/discharge, you can charge or discharge the battery in the specified period. A maximum of 10 time periods can be added. If this parameter is set to Maximise self consumption and the solar inverter connects to a power meter, the solar inverter provides output power for local loads before feeding the remaining power to the power grid. If this parameter is set to Time-of-use price, batteries discharge when the electricity price is high and charge when the electricity price is low. A maximum of 10 time periods can be added.
	Feed power into grid		<p>If this parameter is set to Enable, the batteries can be charged with the power supply from the power grid.</p> <p>If this parameter is set to Disable before delivery, you must comply with the local regulations on charging the batteries with the power supply from the power grid.</p>

 **NOTE**

The duration for export limitation control is as follows:

- For a single solar inverter, set Closed-loop controller to Inverter or SDongle/SmartLogger.
- When Closed-loop controller is set to Inverter, the duration is less than 2s.
- When Closed-loop controller is set to SDongle/SmartLogger, the duration is less than 5s if the controller is the SDongle. The duration is less than 2s if the controller is the SmartLogger.
- For multiple solar inverters, Closed-loop controller can only be set to SDongle/SmartLogger.
- The duration is less than 5s if the controller is the SDongle.
- The duration is less than 2s if the controller is the SmartLogger.

10.4 Quick Settings

On the home screen, tap **Quick settings**, and follow the instructions to set basic parameters.

Scenario 1: 4G Dongle Communication

Figure 10-3 Quick Settings 1

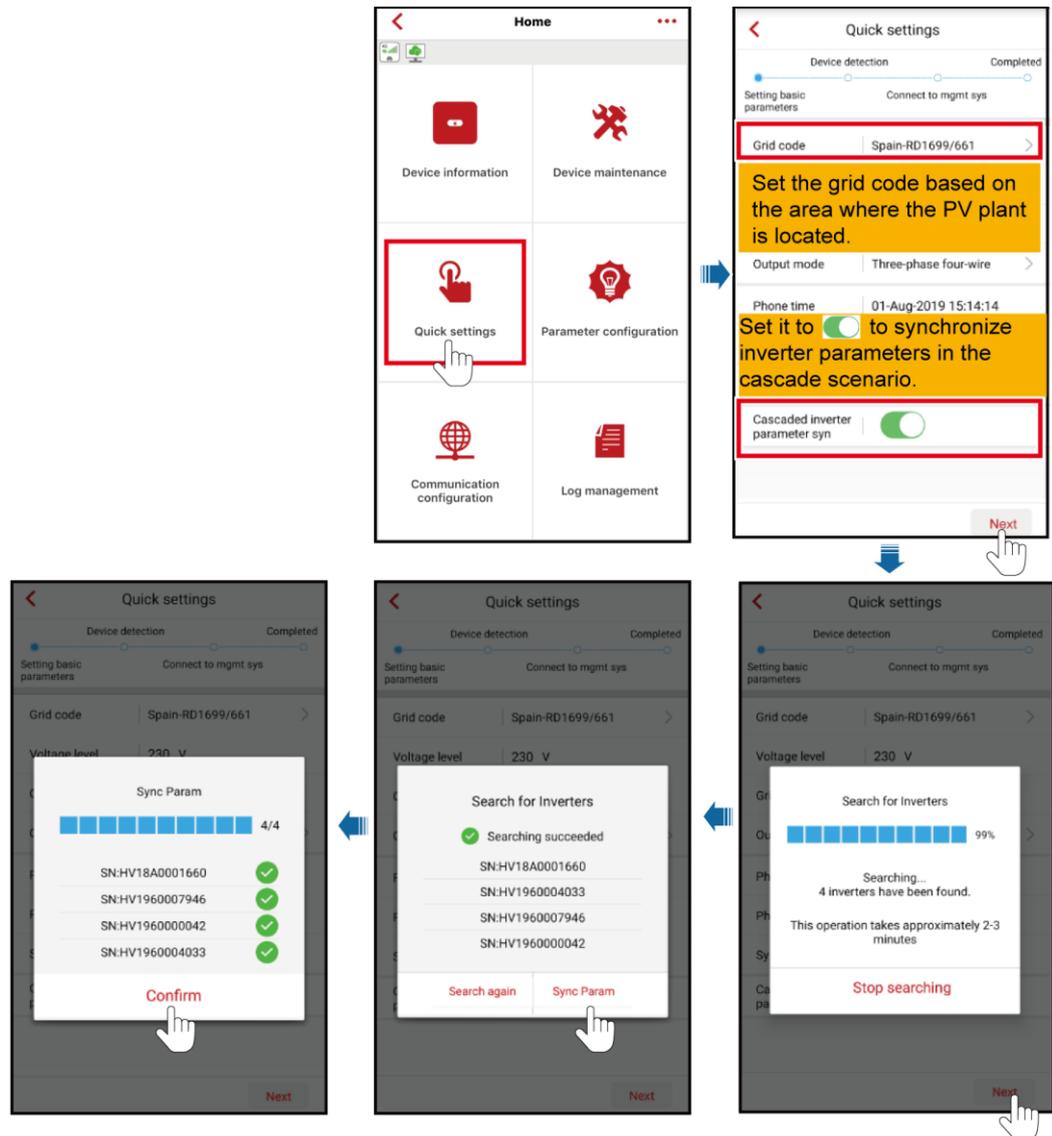
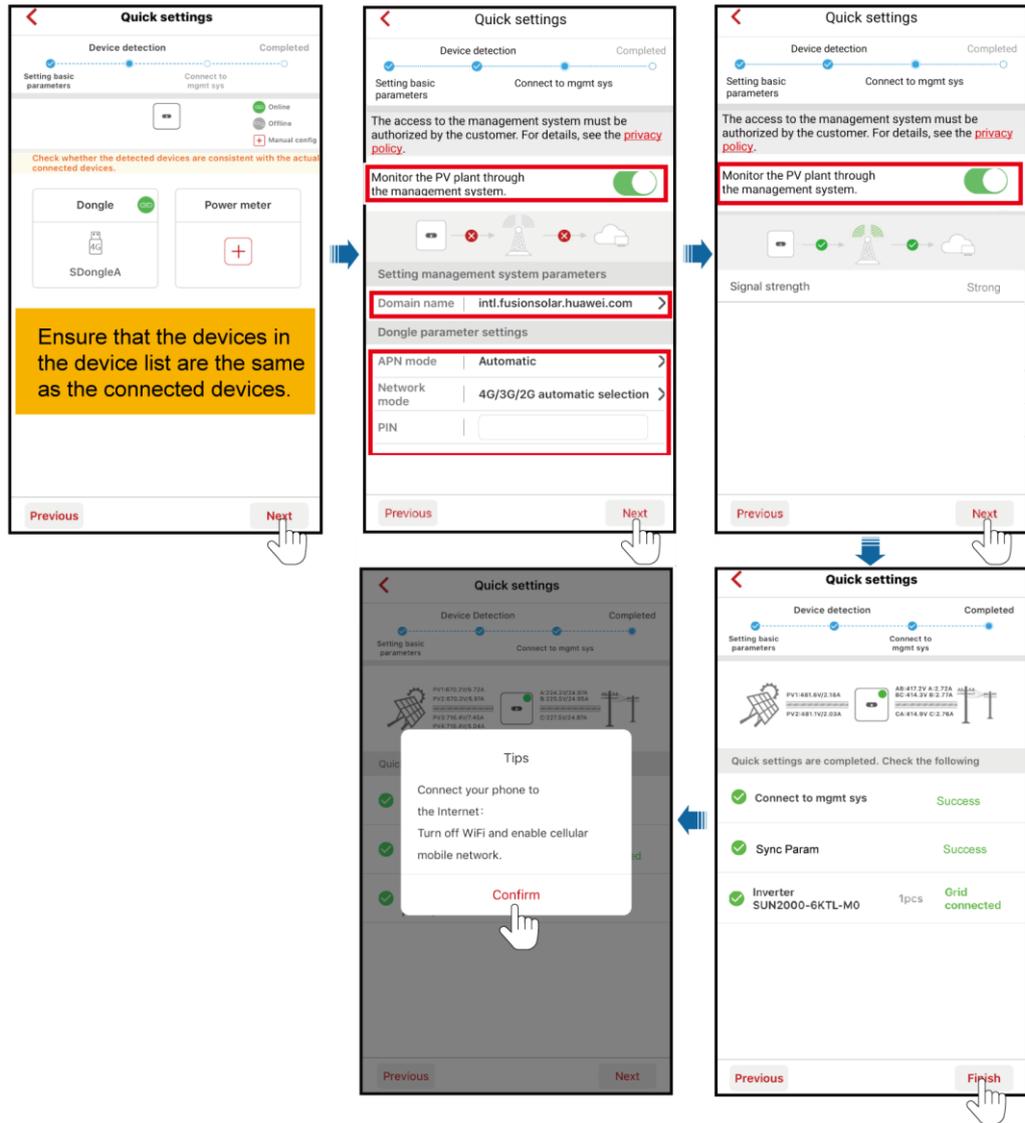


Figure 10-4 Quick Settings 2



Scenario 2: Non-4G Dongle Communication

Figure 10-5 Quick Settings 1

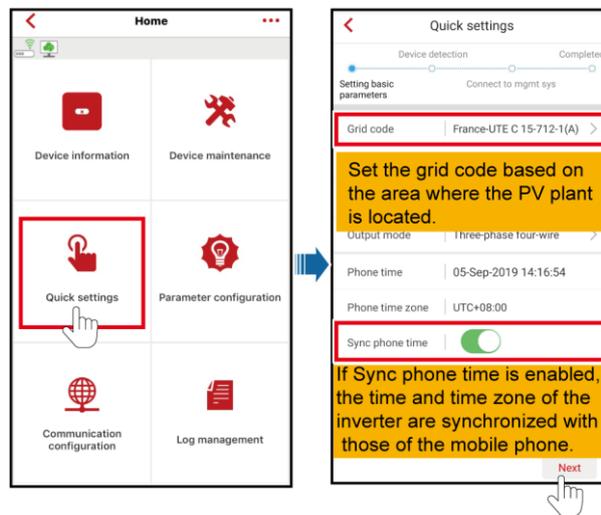
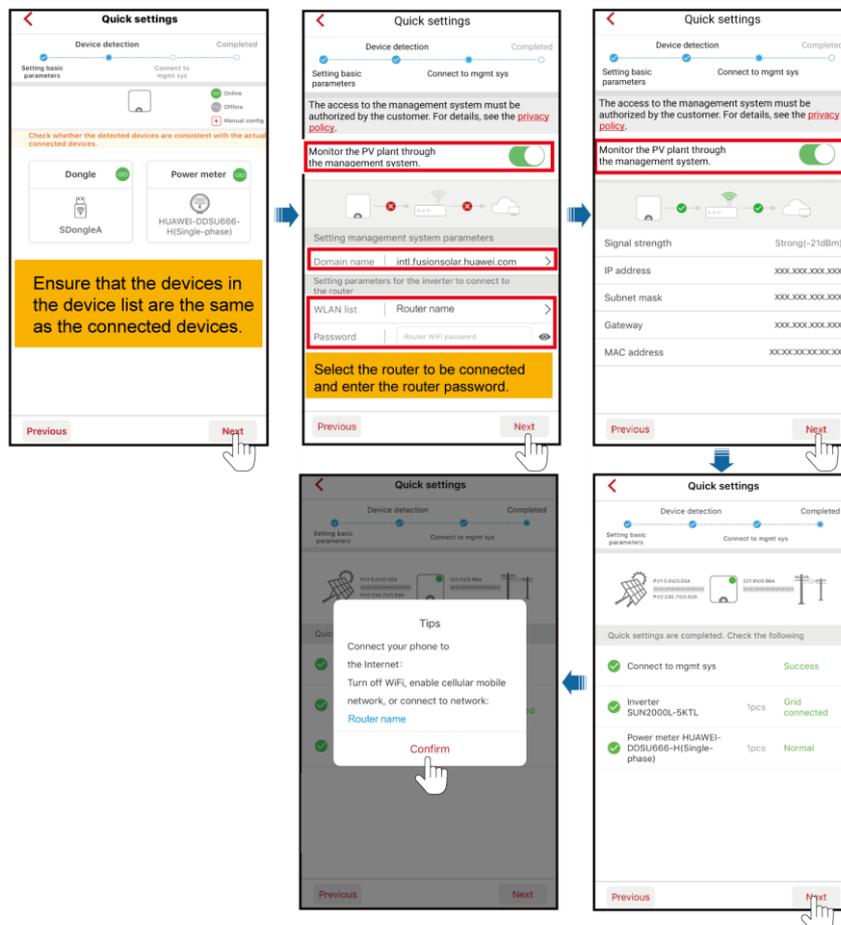


Figure 10-6 Quick Settings 2



NOTE

SUN2000-(3KTL-20KTL)-M0 supports the cascaded inverter synchronization function. In the cascaded scenario, the cascaded inverter parameters are synchronized, the grid standard code, the output mode, the time zone, and the time information are fed to the cascade inverter.

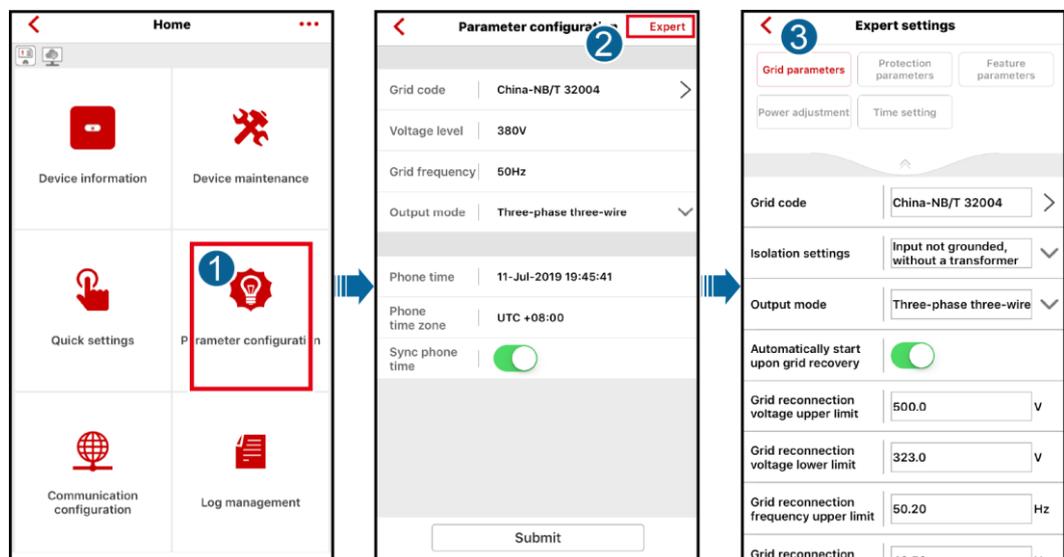
10.5 Setting Parameters

On the home screen, choose **Parameter configuration > Expert** to set the solar inverter parameters.

NOTE

The parameter list provided in this document includes all configurable parameters. Configurable parameters vary with the device model and grid code. The actual screen prevails.

Figure 10-7 Setting parameters



Grid Parameters

Parameter	Description
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.
Isolation settings	Set the working mode of the inverter based on the grounding status at DC side and the connection to the power grid.
Output mode	Specifies whether the inverter output has a neutral wire based on the application scenario.
Automatically start upon grid recovery	Specifies whether to allow the inverter to automatically start after the power grid recovers.
Grid connected recovery time from grid faults (s)	Specifies the time after which the inverter begins connecting after the power grid recovers.

Parameter	Description
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.
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.
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.
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.
Reactive power compensation (cosφ-P) trigger voltage (%)	Specifies the voltage threshold for triggering reactive power compensation based on the cosφ-P curve.
Reactive power compensation (cosφ-P) exit voltage (%)	Specifies the voltage threshold for exiting reactive power compensation based on the cosφ-P curve.

Protection Parameters

Parameter	Description
Insulation resistance protection (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.
Voltage unbalance protection threshold (%)	Specifies the inverter protection threshold when the power grid voltage is unbalanced.
Phase protection point (°)	The Japanese standard requires that during passive islanding detection, protection should be triggered if an abrupt voltage phase change is detected.
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.
10-min overvoltage protection threshold (V)	Specifies the 10-minute overvoltage protection threshold.
10-min overvoltage protection duration (ms)	Specifies the 10-minute overvoltage protection duration.
Level-1 overvoltage protection threshold (V)	Specifies the level-1 overvoltage protection threshold.

Parameter	Description
Level-1 overvoltage protection duration (ms)	Specifies the level-1 overvoltage protection duration.
Level-2 overvoltage protection threshold (V)	Specifies the level-2 overvoltage protection threshold.
Level-2 overvoltage protection duration (ms)	Specifies the level-2 overvoltage protection duration.
Level-3 overvoltage protection threshold (V)	Specifies the level-3 overvoltage protection threshold.
Level-3 overvoltage protection duration (ms)	Specifies the level-3 overvoltage protection duration.
Level-4 overvoltage protection threshold (V)	Specifies the level-4 overvoltage protection threshold.
Level-4 overvoltage protection duration (ms)	Specifies the level-4 overvoltage protection duration.
Level-5 overvoltage protection threshold (V)	Specifies the level-5 overvoltage protection threshold.
Level-5 overvoltage protection duration (ms)	Specifies the level-5 overvoltage protection duration.
Level-6 overvoltage protection threshold (V)	Specifies the level-6 overvoltage protection threshold.
Level-6 overvoltage protection duration (ms)	Specifies the level-6 overvoltage protection duration.
Level-1 undervoltage protection threshold (V)	Specifies the level-1 undervoltage protection threshold.
Level-1 undervoltage protection duration (ms)	Specifies the level-1 undervoltage protection duration.
Level-2 undervoltage protection threshold (V)	Specifies the level-2 undervoltage protection threshold.
Level-2 undervoltage protection duration (ms)	Specifies the level-2 undervoltage protection duration.
Level-3 undervoltage protection threshold (V)	Specifies the level-3 undervoltage protection threshold.
Level-3 undervoltage protection duration (ms)	Specifies the level-3 undervoltage protection duration.
Level-4 undervoltage protection threshold (V)	Specifies the level-4 undervoltage protection threshold.
Level-4 undervoltage protection duration (ms)	Specifies the level-4 undervoltage protection duration.
Level-5 undervoltage protection	Specifies the level-5 undervoltage protection threshold.

Parameter	Description
threshold (V)	
Level-5 undervoltage protection duration (ms)	Specifies the level-5 undervoltage protection duration.
Level-6 undervoltage protection threshold (V)	Specifies the level-6 undervoltage protection threshold.
Level-6 undervoltage protection duration (ms)	Specifies the level-6 undervoltage protection duration.
Level-1 overfrequency protection threshold (Hz)	Specifies the level-1 overfrequency protection threshold.
Level-1 overfrequency protection duration (ms)	Specifies the level-1 overfrequency protection duration.
Level-2 overfrequency protection threshold (Hz)	Specifies the level-2 overfrequency protection threshold.
Level-2 overfrequency protection duration (ms)	Specifies the level-2 overfrequency protection duration.
Level-3 overfrequency protection threshold (Hz)	Specifies the level-3 overfrequency protection threshold.
Level-3 overfrequency protection duration (ms)	Specifies the level-3 overfrequency protection duration.
Level-4 overfrequency protection threshold (Hz)	Specifies the level-4 overfrequency protection threshold.
Level-4 overfrequency protection duration (ms)	Specifies the level-4 overfrequency protection duration.
Level-5 overfrequency protection threshold (Hz)	Specifies the level-5 overfrequency protection threshold.
Level-5 overfrequency protection duration (ms)	Specifies the level-5 overfrequency protection duration.
Level-6 overfrequency protection threshold (Hz)	Specifies the level-6 overfrequency protection threshold.
Level-6 overfrequency protection duration (ms)	Specifies the level-6 overfrequency protection duration.
Level-1 underfrequency protection threshold (Hz)	Specifies the level-1 underfrequency protection threshold.
Level-1 underfrequency protection duration (ms)	Specifies the level-1 underfrequency protection duration.
Level-2 underfrequency protection threshold (Hz)	Specifies the level-2 underfrequency protection threshold.
Level-2 underfrequency protection duration (ms)	Specifies the level-2 underfrequency protection duration.

Parameter	Description
Level-3 underfrequency protection threshold (Hz)	Specifies the level-3 underfrequency protection threshold.
Level-3 underfrequency protection duration (ms)	Specifies the level-3 underfrequency protection duration.
Level-4 underfrequency protection threshold (Hz)	Specifies the level-4 underfrequency protection threshold.
Level-4 underfrequency protection duration (ms)	Specifies the level-4 underfrequency protection duration.
Level-5 underfrequency protection threshold (Hz)	Specifies the level-5 underfrequency protection threshold.
Level-5 underfrequency protection duration (ms)	Specifies the level-5 underfrequency protection duration.
Level-6 underfrequency protection threshold (Hz)	Specifies the level-6 underfrequency protection threshold.
Level-6 underfrequency protection duration (ms)	Specifies the level-6 underfrequency protection duration.

Feature Parameters

Parameter	Description	Remarks
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.	N/A
MPPT multi-peak scan interval (min)	Specifies the MPPT scanning interval.	This parameter is displayed when MPPT multi-peak scan interval is set to Enable .
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.
Communication interruption duration (min)	Specifies the duration for determining communication interruption. Used for automatic shutdown for protection in case of communication interruption.	N/A
Automatic ON due to communication	If this parameter is set to Enable , the inverter automatically starts after communication	This parameter is displayed when Automatic OFF due to

Parameter	Description	Remarks
resume	recovers. If this parameter is set to Disable , the inverter needs to be started manually after communication recovers.	communication interrupted is set to Enable .
Soft start/boot time (s)	Specifies the duration for the power to gradually increase when the inverter starts.	N/A
AFCI	The North American standard requires that the inverter should have DC arc detection function.	N/A
OFF due to abnormal ground	This function is used to check whether the solar inverter is properly grounded before the solar inverter starts, or check whether the solar inverter ground cable is disconnected when the solar inverter is running. By default, this parameter is set to Enable . If the solar inverter cannot be grounded properly, it shuts down.	For certain power grid types, if the output side of the solar inverter is connected to an isolation transformer, grounding detection is not required. Ensure that the solar inverter is properly grounded and set the parameter to Disable to enable the solar inverter to run properly. If you are not sure whether the solar inverter is connected to such a type of power grid, contact your dealer or Huawei technical support for confirmation.
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.
Unlock optimizer	When replacing the optimizer, you need to disable the binding relationship between the optimizer and the MBUS master solar inverter. Set this parameter to Enable .	N/A
Heartbeat period at application layer (min)	Specifies the timeout period for the solar inverter to connect to the management system.	N/A
TCP frame length	Specifies the maximum length of the TCP frame sent by the northbound device to the solar inverter.	N/A
TCP heartbeat interval (s)	Specifies the timeout period for the solar inverter to connect to the management system.	N/A
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.	N/A
Threshold for	Specifies the threshold for triggering LVRT.	This parameter is displayed when

Parameter	Description	Remarks
triggering LVRT (V)	The threshold settings should meet the local grid standard.	LVRT is set to Enable .
LVRT reactive power compensation power factor	During LVRT, the inverter needs to generate reactive power to support the power grid. This parameter is used to set the reactive power generated by the inverter.	<ul style="list-style-type: none"> This parameter is displayed when LVRT is set to Enable. For example, if this parameter is set to 2, the reactive power generated by the inverter is 20% of the rated power when the AC voltage drops by 10% during LVRT.
LVRT characteristic curve	Specifies the low voltage ride through curve.	N/A
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.	N/A
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 .
Grid voltage protection shield during VRT	Specifies whether to apply voltage protective shielding to the power grid when HVRT or LVRT is enabled.	This parameter is displayed when LVRT is set to Enable or HVRT is set to Enable .
Anti-islanding protection	Specifies whether to enable the active islanding protection function.	N/A
Passive islanding	Specifies whether to enable the passive islanding protection function.	This parameter is displayed if the Japanese grid code is selected.
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.	N/A
Voltage rise suppression reactive adjustment point (%)	The standards of certain countries and regions require that the inverter generate a certain amount of reactive power when the output voltage exceeds a certain value.	<ul style="list-style-type: none"> This parameter is displayed when Voltage rise suppression is set to Enable. The value of Voltage rise suppression active derating point must be greater than that of Voltage rise suppression reactive adjustment point.
Voltage rise suppression active 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.	
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 .
Voltage rise	The standards of certain countries and regions	

Parameter	Description	Remarks
suppression Q-U curve	require that the Q-U curve be set.	
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.	N/A
Built-in PID running mode	Specifies the operation mode of the inverter built-in PID.	N/A
PID nighttime off-grid repair	Specifies whether to enable the PID nighttime off-grid repair.	This parameter is displayed when PID running mode is set to Repair .
Closed-loop controller	<ul style="list-style-type: none"> Set this parameter to SDongle/SmartLogger when the SmartLogger1000A is connected. If multiple inverters are cascaded, set this parameter to SDongle/SmartLogger. If there is only one inverter, set this parameter to Inverter. 	N/A
Active power output limit for fail-safe (%)	When the communication between the SDongle/SmartLogger, power meter, and solar inverter is interrupted, the solar inverter output is limited.	N/A

Power Adjustment

Parameter	Description	Remarks
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.	N/A
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.
Apparent power baseline (kVA)	Adjust the apparent output baseline of the inverter.	N/A
Active power baseline (kW)	Adjusts the active output baseline of the inverter.	N/A
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.	N/A
Maximum active power (kW)	Specifies the output upper threshold for the maximum active power to adapt to different market requirements.	N/A

Parameter	Description	Remarks
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.	N/A
Active power change gradient (%/s)	Specifies the change speed of the inverter active power.	N/A
Derated by fixed active power (kW)	Adjusts the active power output of the inverter by fixed value.	N/A
Derated by active power %(0.1%)	Adjusts the active power output of the inverter by percentage.	If this parameter is set to 100 , the solar inverter generates power based on the maximum output power.
Reactive power change gradient (%/s)	Specifies the change speed of the inverter reactive power.	N/A
Reactive power compensation (Q/S)	Specifies the reactive power output by the inverter.	N/A
Power factor	Specifies the power factor of the inverter.	N/A
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.	N/A
Frequency for triggering overfrequency derating (Hz)	The standards of certain countries and regions require that the output active power of inverters be derated when the power grid frequency exceeds a certain value.	<ul style="list-style-type: none"> This parameter is displayed when Overfrequency derating is set to Enable. When setting this parameter, ensure that the following condition is met: Frequency for exiting overfrequency derating \leq Trigger frequency of overfrequency derating $<$ Cutoff frequency of overfrequency derating.
Frequency for exiting overfrequency derating (Hz)	Specifies the frequency threshold for exiting overfrequency derating.	
Cutoff frequency of overfrequency derating (Hz)	Specifies the frequency threshold for cutting off overfrequency derating.	
Cutoff power of overfrequency derating (%)	Specifies the power threshold for cutting off overfrequency derating.	
Power recovery gradient of overfrequency derating (%/min)	Specifies the recovery rate of the overfrequency derating power.	
Dry contact scheduling	The standards of some countries and regions require that this parameter be set to Enable when power scheduling through dry contacts is required.	N/A
Dry contact scheduling	Specifies the dry contact power scheduling	This parameter is displayed when Dry contact

Parameter	Description	Remarks
settings	parameters.	scheduling is set to Enable .
cosφ-P/Pn characteristic curve	After this parameter is set, the solar inverter can adjust the power factor cosφ in real time based on the P/Pn.	N/A
Q-U characteristic curve	Specifies the voltage reactive power scheduling curve.	N/A
Q-U characteristic curve	Specifies the voltage reactive power scheduling hysteresis curve.	N/A
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 .	N/A
Frequency for triggering of underfrequency rise power (Hz)	Specifies the frequency threshold of Underfrequency rise power .	N/A
Power recovery gradient of underfrequency rise (%/min)	Specifies the recovery rate of Underfrequency rise power .	N/A
Cutoff frequency of underfrequency rise power (Hz)	Specifies the cutoff frequency of Underfrequency rise power .	N/A
Cutoff power of underfrequency rise power (%)	Specifies the cutoff power of Underfrequency rise power .	N/A
Frequency for exiting of underfrequency rise power (Hz)	Specifies the exit frequency of Underfrequency rise power .	N/A

Time Settings

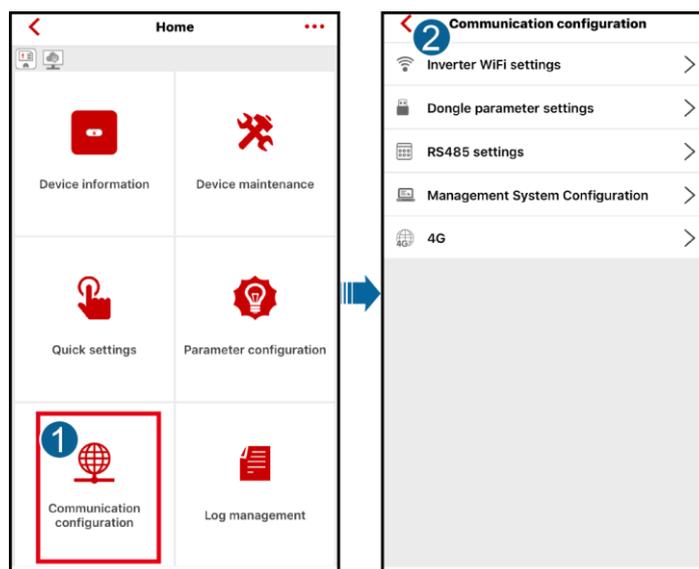
Parameter	Description
Time zone	Specifies the time zone.
Time setting	Specifies the time.
Daylight saving time	Specifies whether to enable daylight saving time (DST).
Offset time	Specifies the DST offset.
Start date	Specifies the DST offset start date.
Start time	Specifies the DST offset start time.

Parameter	Description
End date	Specifies the DST offset end date.
End date	Specifies the DST offset end time.
NTP time synchronization	Specifies whether to enable NTP time synchronization.
NTP server address	Specifies the NTP server IP address or domain name.
NTP server port	Specifies the server port.
NTP time synchronization interval	Specifies the NTP time synchronization interval.

10.6 Setting Communications Parameters

On the home screen, tap **Communication configuration** to set communications parameters.

Figure 10-8 Setting communications parameters



NOTE

The communications parameters that can be set for the solar inverter vary with the networking scenario.

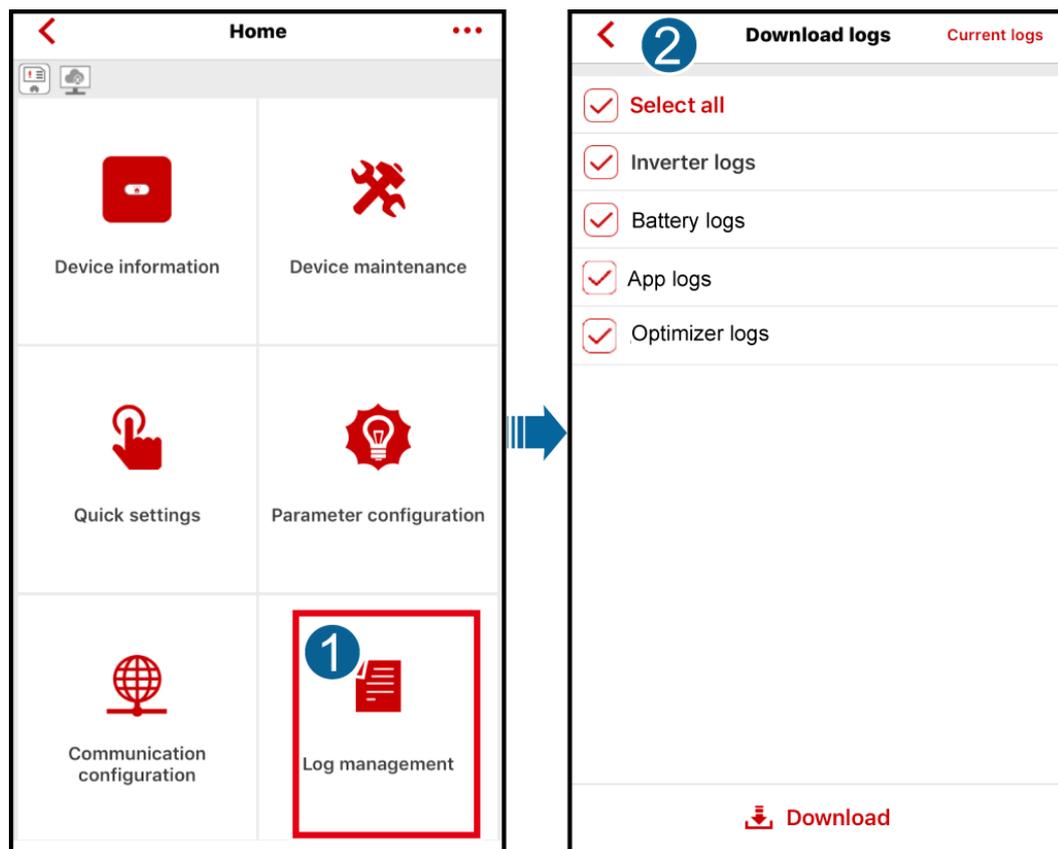
Parameter	Description	Parameter	Description
Inverter WiFi settings	Specifies the WiFi name and password for the solar inverter.	Router connection settings	When using WLAN for communication, enter the information about the connected router.
Dongle parameter	If the solar inverter is configured with a Dongle and this parameter is	4G	When using a 4G Dongle, enter the SIM card information.

Parameter	Description	Parameter	Description
settings	 set to  , the Dongle can assign communication addresses to the solar inverter.		
RS485 settings	Specifies the RS485 communications parameters of the solar inverter.	Management System Configuration	Enter information about the management system to which the solar inverter connects.

10.7 Managing Logs

On the home screen, tap **Log management** to download the logs of the solar inverter, Battery, Optimizer or the FusionSolar app.

Figure 10-9 Managing logs



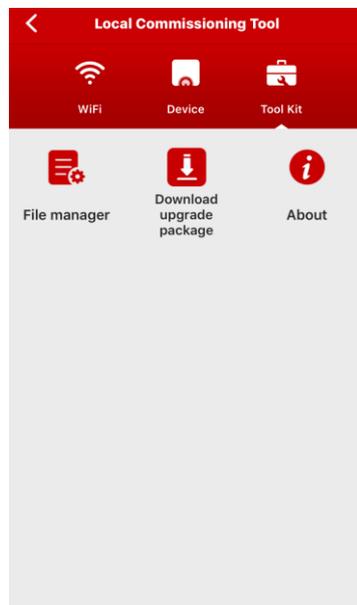
NOTE

Tap **Current logs** to delete or share the logs that have been downloaded.

10.8 Tool Kit

On the **Local Commissioning Tool** screen, tap **Tool Kit** to manage files.

Figure 10-10 Tool Kit



Parameter	Description
File manager	Manages log or reports.
Download upgrade package	Downloads the software package of the latest version for devices such as the solar inverter.
About	Views the version of the local commissioning tool and quick guides.

11 Troubleshooting

Table 11-1 Common faults and troubleshooting measures

Fault Description	Possible Cause	Solution	Remarks
The FusionSolar app fails to be installed on an Android mobile phone.	<ul style="list-style-type: none">The version of the mobile phone operating system is earlier than the required version.Install apps from external sources is not selected.The original FusionSolar app version is not deleted.	<ul style="list-style-type: none">Upgrade the version of the mobile phone operating system.Choose Security & privacy, and select Install apps from external sources.	N/A
Communication failure	The mobile phone or router is more than 5 meters away from the solar inverter, so the WiFi connection is disconnected.	Keep the mobile phone or router within 5 meters of the solar inverter and reconnect the WiFi connection.	N/A
The message Failed to connect to the inverter. Please reconnect it. is displayed.	The mobile phone or router is more than 5 meters away from the solar inverter, or the WiFi signal is weak.	Ensure that the WiFi network is connected. Log out of the app and then log in again.	N/A
All data fails to be obtained during operations.	Connection to the solar inverter is disconnected.	Connect to the solar inverter again.	N/A

Fault Description	Possible Cause	Solution	Remarks
The solar inverter cannot be obtained.	An error occurs in the WiFi connection to the app.	<ul style="list-style-type: none"> • If the solar inverter still cannot be obtained after several attempts, log out and try again. • Check whether the WiFi connection is correct. 	N/A
No upgrade package is available for the upgrade.	No upgrade package is downloaded in the mobile phone.	Download the upgrade package in the mobile phone.	N/A
When you set parameters on the local commissioning tool and go to the Add Plant screen by following Setup Wizard , a message is displayed indicating that the network is abnormal.	<ol style="list-style-type: none"> 1. When you go to the Add Plant screen, the mobile phone is connected to the solar inverter WiFi but not to an available network. 2. When you go to the Add Plant screen, the mobile phone is not connected to any network. 	Connect your phone to an available network.	N/A
The user fails to locate the position on the map.	<ol style="list-style-type: none"> 1. The GPS or network signal of the mobile phone is poor. 2. The GPS function is not enabled on the phone. 	<ol style="list-style-type: none"> 1. You need to locate the position at a place with good network quality or with strong GPS signals. 2. Enable the GPS function on the phone. 	N/A