FusionSolar App

Quick Guide (EMMA)

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1 Downloading and Installing the App

NOTICE

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

Procedure

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

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

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

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NOTE

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

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

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

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2 Registering the Company's First Installer Account

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

NOTE

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

Procedure

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

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

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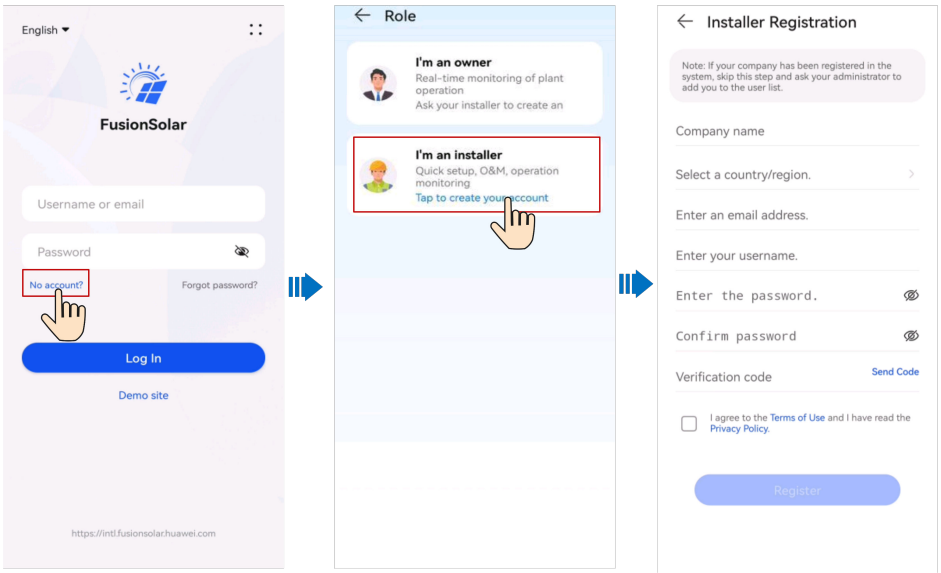
English
FusionSolar
Username or email
Password
No account?
Forgot password?
Log In
Demo site
https://intl.fusionsolar.huawei.com
Role
I'm an owner
Real-time monitoring of plant operation
Ask your installer to create an
I'm an installer
Quick setup, O&M, operation monitoring
Tap to create your account
Installer Registration
Note: If your company has been registered in the system, skip this step and ask your administrator to add you to the user list.
Company name
Select a country/region.
Enter an email address.
Enter your username.
Enter the password.
Confirm password
Verification code
Send Code
I agree to the Terms of Use and I have read the Privacy Policy.
Register

3 Registering an Owner Account or Another Installer Account

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

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

1. Invite a user.

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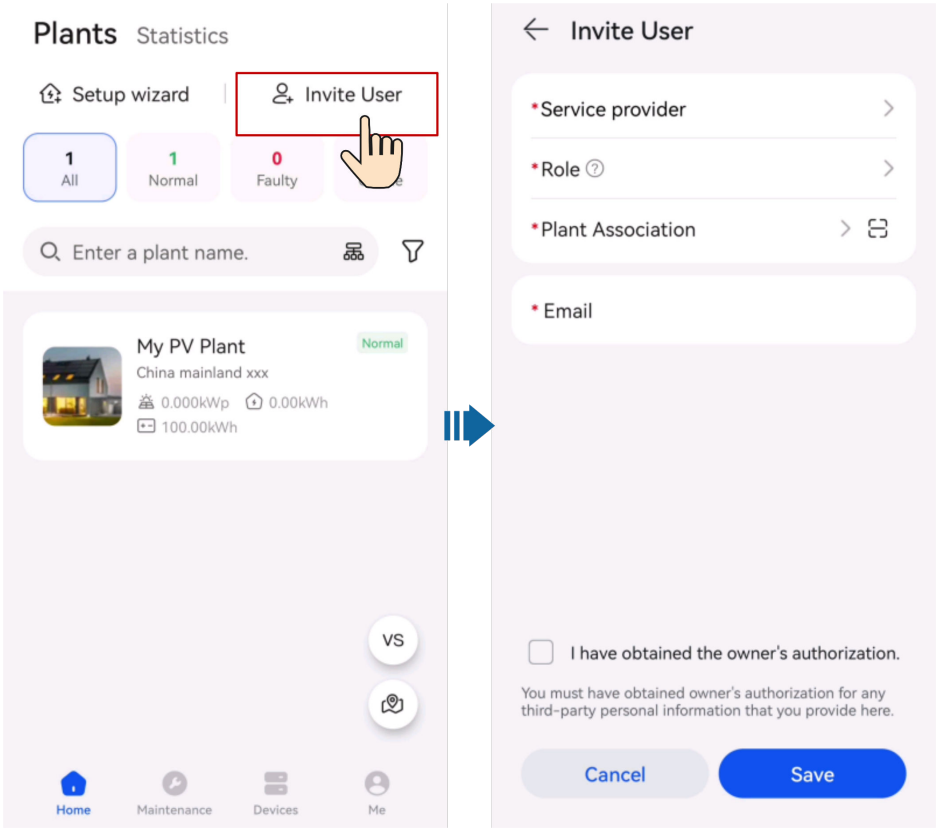
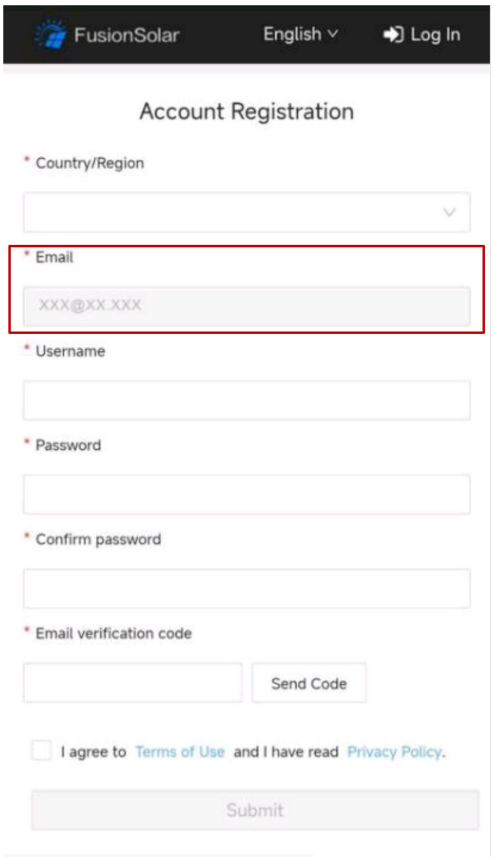


2. Register an account.



The email address should be the same as that in the invitation and cannot be changed during registration.

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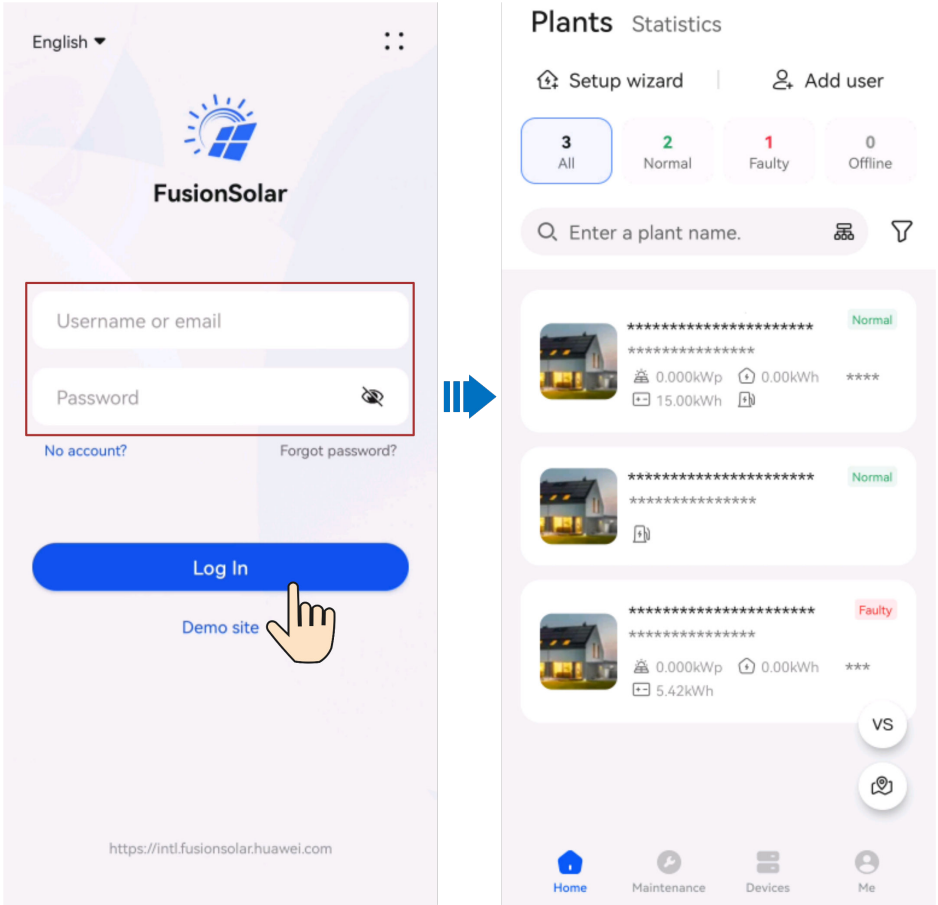
4 Logging In to or Logging Out of FusionSolar App

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

Logging In to the App

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



NOTE

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

5 Device Commissioning (EMMA)

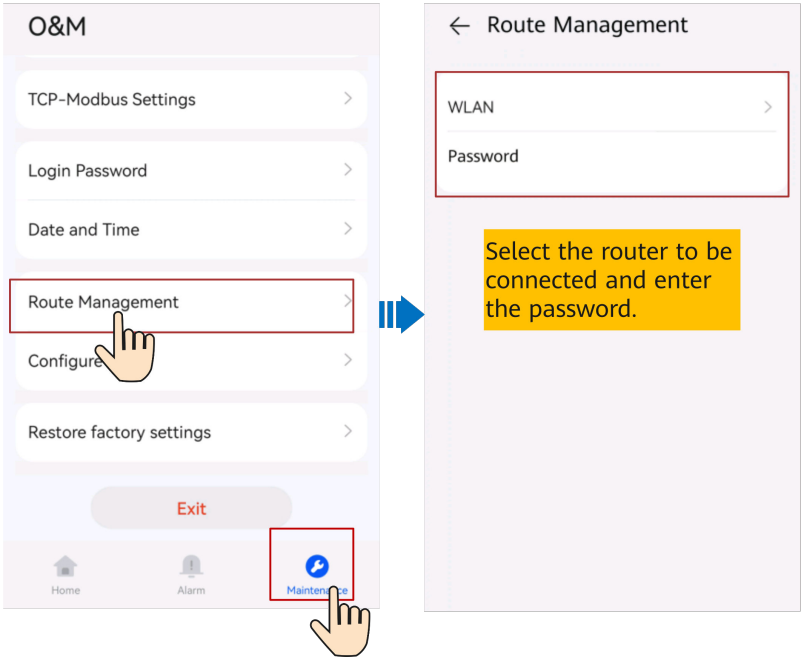
5.1 Setting Router Parameters of the Charger

When the charger is connected to the router over WLAN, you need to set the route parameters of the charger so that the charger and EMMA are connected to the same router. Otherwise, the EMMA cannot identify the charger in the network.

NOTE

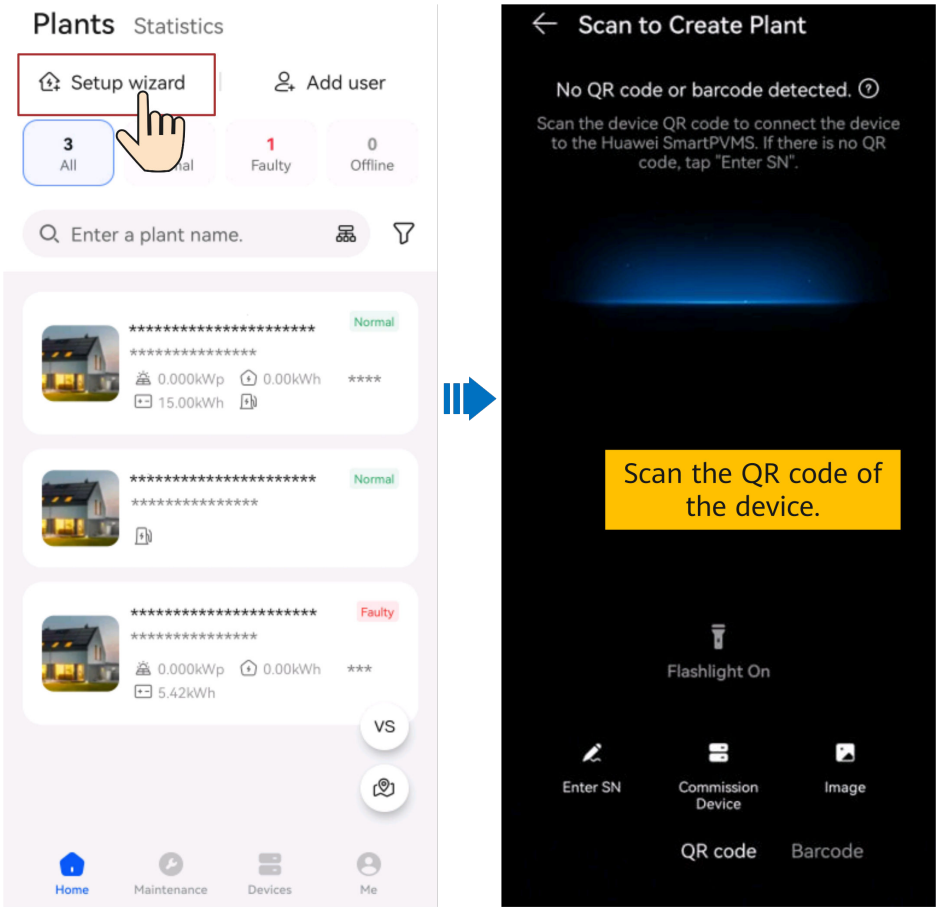
Skip this section if no charger is available or the charger is directly connected to the router through the FE port.

1. Connect to the local commissioning screen of the charger. For details, see **9.1 How Do I Connect to the Local Commissioning Screen of the Charger?**.
2. Tap **O&M** > **Route Management** and select **WLAN**.



5.2 Quick Settings

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



NOTE

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

2. Log in to the app as **installer** and commission the device according to the wizard.

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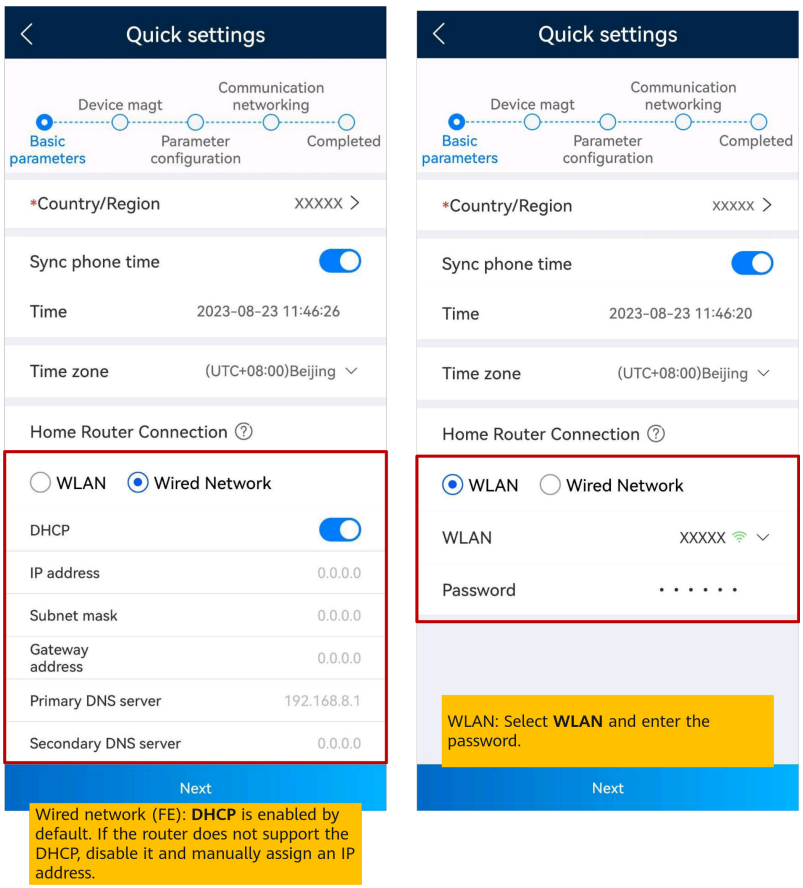
NOTE

Change the initial password as prompted at the first login. Ensure account security by changing the password periodically.

- Setting router parameters

  Connect the EMMA to the home router to ensure that the charger in the network can be detected.



NOTE

- Ensure that the router supports 2.4 GHz WLAN and the WLAN signal reaches the device.
- If a charger is used, ensure that the charger and EMMA are connected to the same router. Otherwise, the charger cannot be connected.

- Device management

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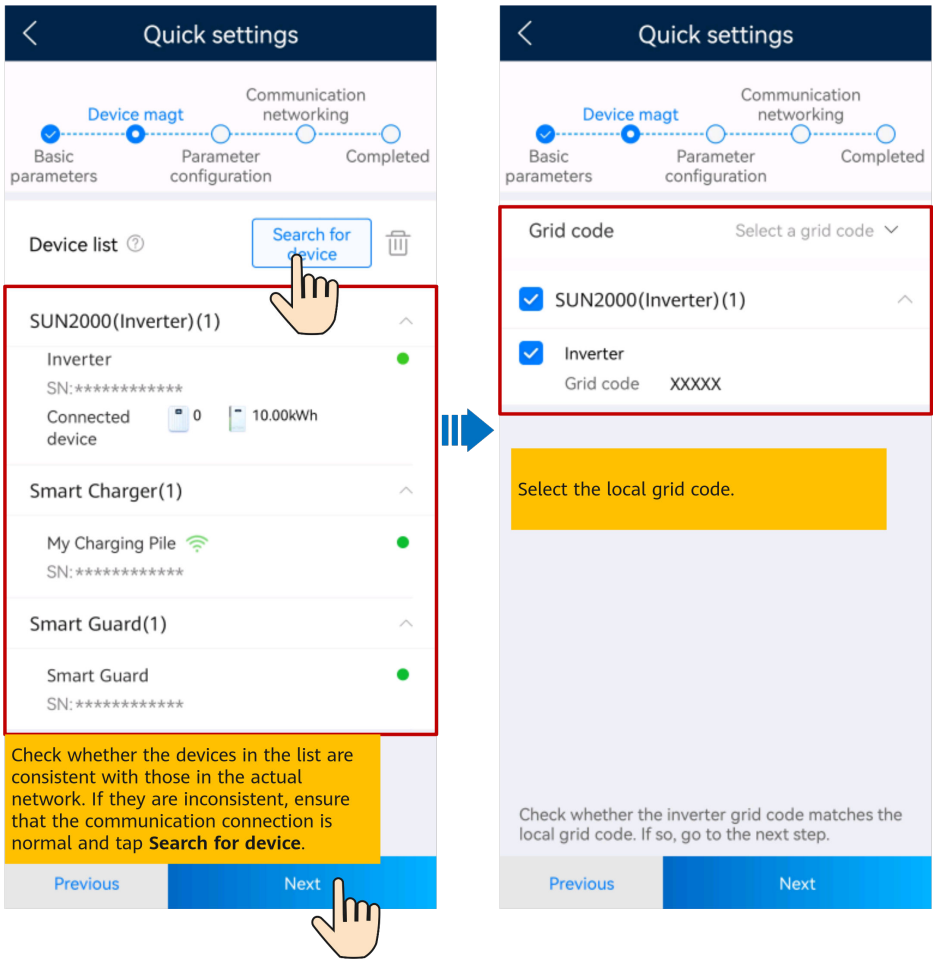

– Parameter configuration

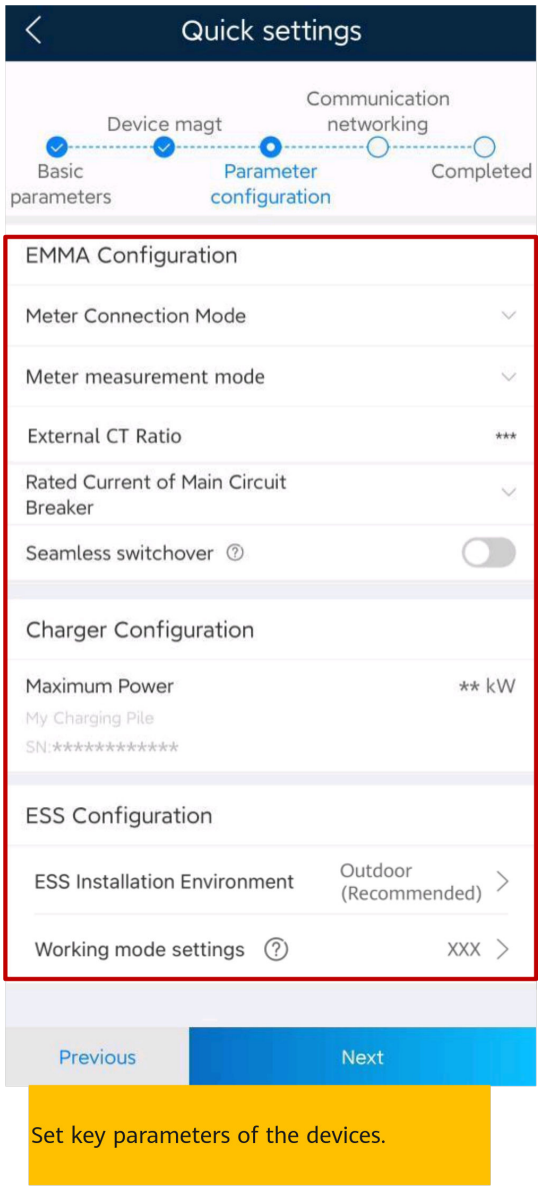

Table 5-1 Parameter description

Device	Parameter	Description
EMMA	**Main Circuit Breaker Capacity**	Used for home appliance overload protection. Set the rated current of the main circuit breaker based on the site requirements. When the EMMA detects that the actual current exceeds the preset value, it limits the power purchased from the grid and shuts down loads by power consumption priority in ascending order until the actual current is lower than the preset value. **NOTE** The feed-in power is not limited by this parameter.

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Device	Parameter	Description
	Meter Connection Mode	Based on the actual cable connection mode of the power meter.
	Meter measurement mode	Measures the home current. The internal CT can collect a maximum of 63 A current. When the home current is greater than 63 A, an external CT is required.
	External CT Ratio	When **Meter measurement mode** is selected as **External CT** connection, the external CT ratio needs to be configured.
	Seamless switchover	**Enabled**: When the power grid fails, the system switches to the off-grid state within 20 ms to ensure that loads are not powered off. **Disabled**: Loads will be powered off temporarily during the on/off-grid switchover. **NOTE** This parameter needs to be configured only in the SmartGuard scenario.
Charger	**Maximum Power**	Maximum charge power of the charger (less than or equal to the rated power of the charger).
ESS	**Working mode**	**Maximum self-consumption** PV energy is preferentially supplied to loads, and then the surplus PV energy is charged to the ESS. If the ESS is fully charged or is being charged at full power, the surplus PV energy is fed to the power grid. When PV energy is insufficient or no PV energy can be generated at night, the ESS discharges energy to loads. This improves the self-consumption rate and energy self-sufficiency rate, and reduces electricity costs. The grid cannot charge the ESS.
		Fully fed to grid: This mode maximizes the PV energy fed to the grid. When the generated PV energy in the daytime is greater than the maximum output capability of the inverter, the surplus energy is used to charge the ESS. When the generated PV energy is less than the maximum output capability of the inverter, the ESS discharges energy to the inverter to maximize the energy fed from the inverter to the grid. The grid cannot charge the ESS. Note: The grid cannot charge the ESS.

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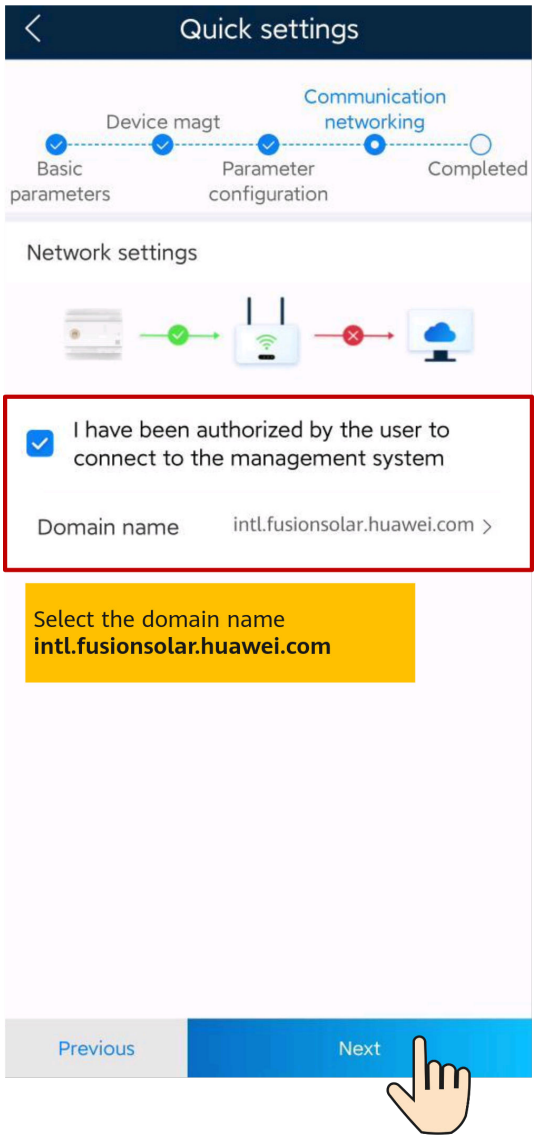
Device	Parameter	Description
		TOU: Charge and discharge time segments are manually set. During the charge period, the grid can charge the ESS. During the discharge period, the ESS can supply power to the loads. In other time segments, the ESS does not discharge power. The PV system and grid supply power to loads, and the PV system can charge the ESS. (In on/off-grid mode, if the grid fails, the ESS can discharge power at any time.) Note: In some countries, the grid is not allowed to charge the ESS. In this case, do not use this mode.

- Communication networking



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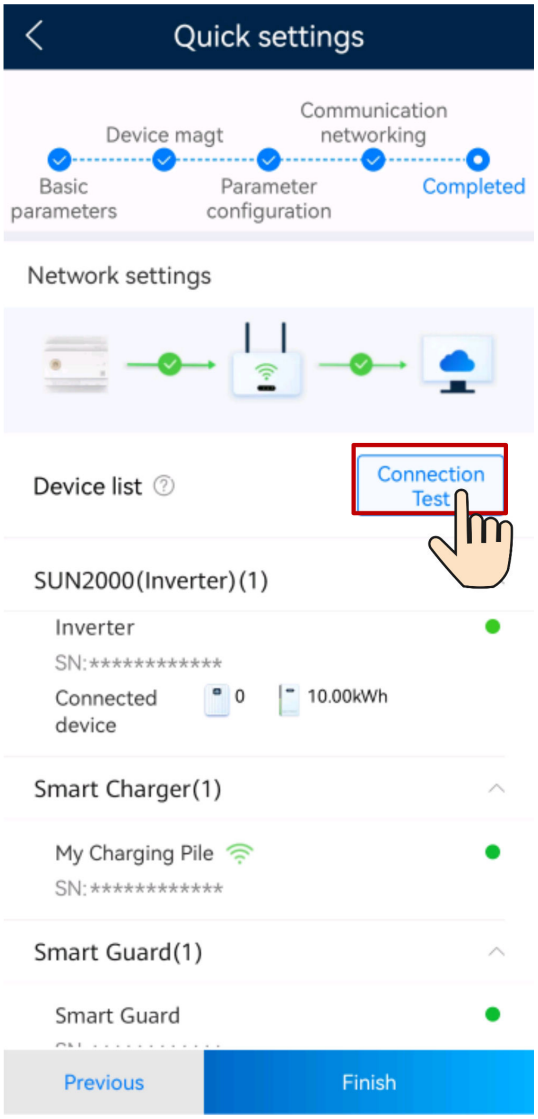
3. Tap **Connection Test** to check the communication status between devices and the WLAN signal strength of devices to identify possible faults. You can identify and rectify faults by viewing rectification suggestions to ensure that the system runs properly.

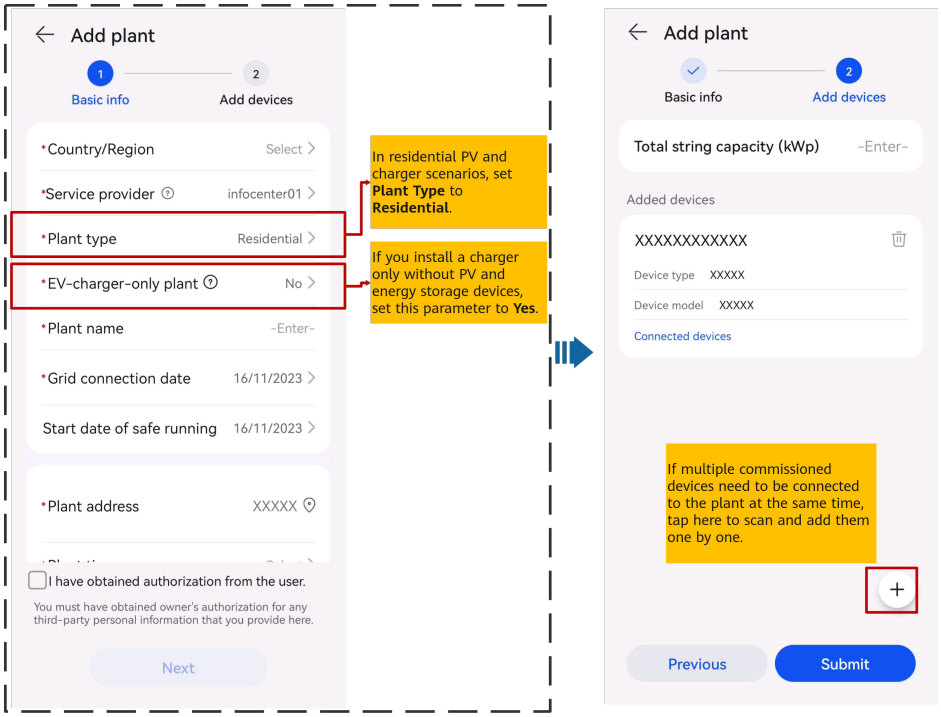


4. Tap **Finish** and connect devices to a plant as prompted. For details, see **6 Connecting to a Plant**.

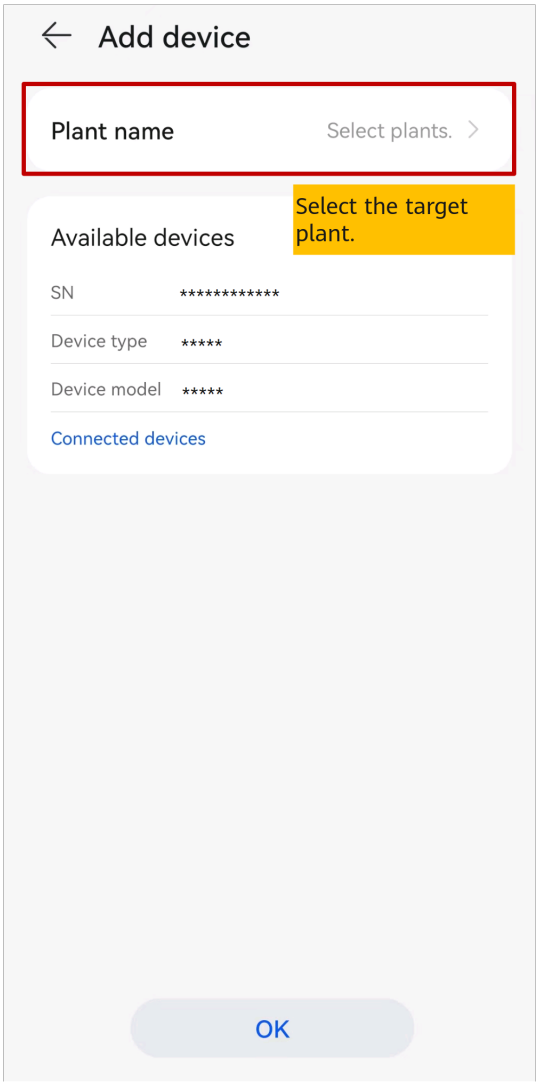
6 Connecting to a Plant

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

6.1 Connecting to a New Plant



6.2 Connecting to an Existing Plant



7 Creating a User

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

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

Creating an Owner User

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

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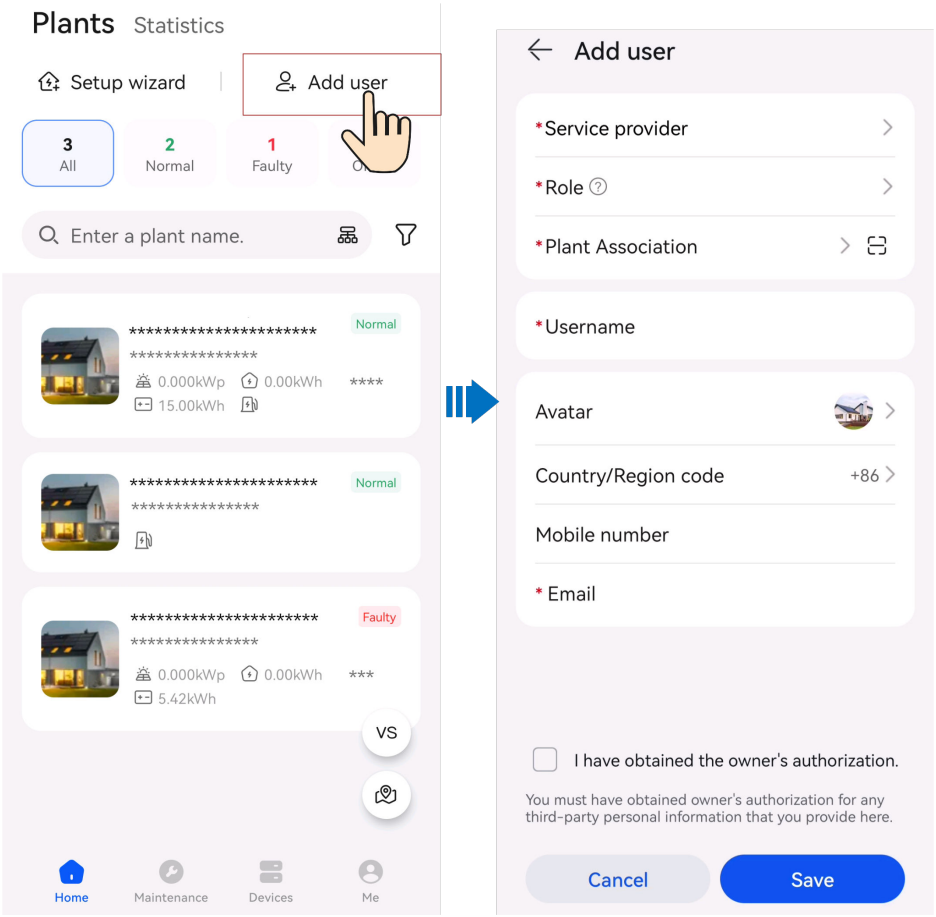

NOTE

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 SmartPVMS or FusionSolar app.

Creating an Installer User

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

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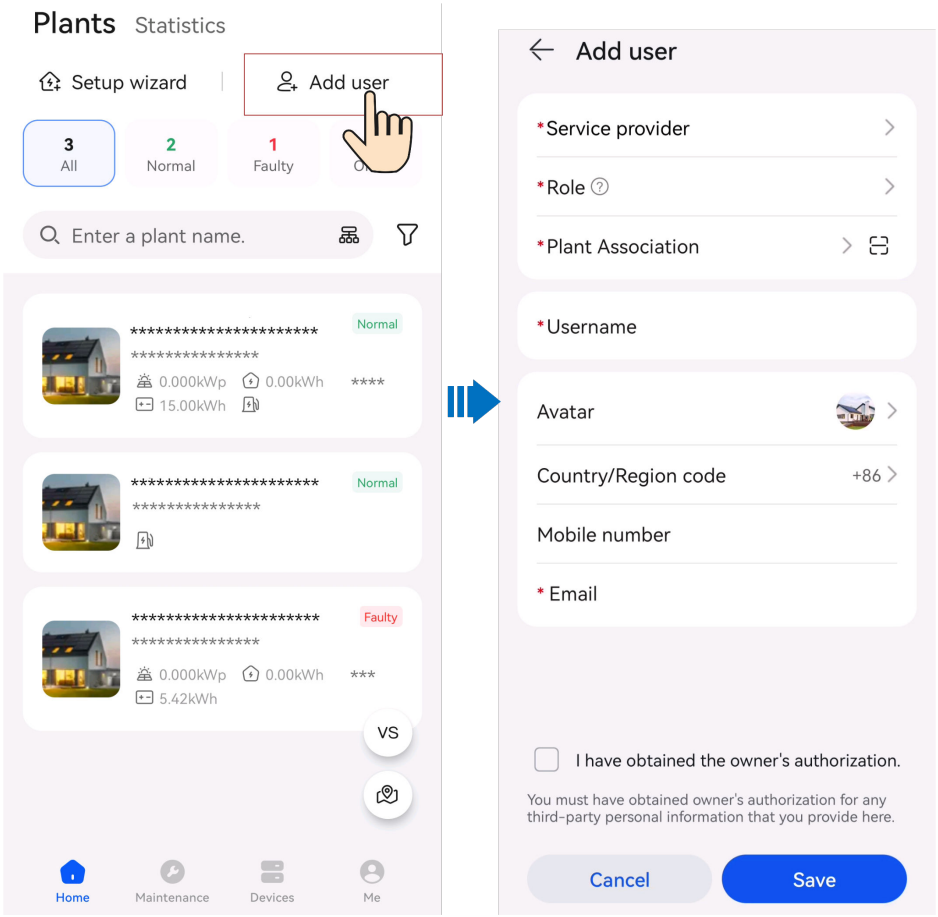

NOTE

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

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8 Commissioning Functions

8.1 Adding a Smart Appliance (Owner)

You can add a smart appliance to the FusionSolar app for management.

Smart appliances include smart switches (smart relays, sockets, and circuit breakers), heat pumps, and chargers.

- The EMMA controls the SG Ready heat pump directly or through an external relay.
- A smart relay, socket, or circuit breaker can connect to the same router as the EMMA over WiFi or FE.
- A charger can connect to the same router as the EMMA over WiFi or FE; or the FE port of the charger is directly connected to the LAN port of the EMMA. A charger can be automatically discovered during the deployment commissioning of the EMMA, no need to manually add it as a smart appliance.

Appliance Settings

NOTE

- The smart switches can work properly only when there are stable WLAN signals. If the signals are unstable, the switches may fail to connect to WLAN or frequently go offline. Different brands of smart switches may have different WLAN requirements. For details, see the product manuals or contact your supplier.
- Before the installation, ensure that the home router can cover the position of the smart switches with stable network connection, and perform the commissioning and verification.

1. Connect a smart switch to the same router as the EMMA. For details, see the quick guide delivered with the smart switch.

2. Open the FusionSolar app, choose **Devices** > **Appliances**, add the smart switch, and set the parameters such as the PV power parameters and power consumption priorities.

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NOTE

In the SmartGuard networking scenario, **Off-grid Load Control** does not take effect for smart appliances connected to non-backup power ports.

Connecting to Multiple Smart Switches

To avoid confusion when multiple smart switches are powered on at the same time, power on and commission them one by one.

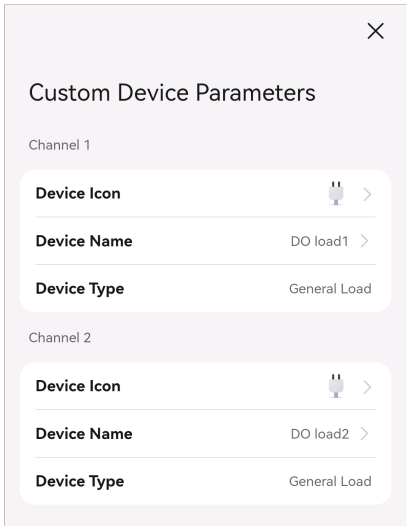
For example, if two smart circuit breakers (Shelly Pro 2PM) are installed in the living room, perform the following steps:

1. When installing the smart circuit breakers, record their positions by taking photos and notes, and number them.

Table 8-1 Recording the names of the smart switches

Shelly Pro 2PM	Shelly Pro 2PM
Living room 1	Living room 2

2. Power on the smart circuit breaker "Living room 1," search for it in the Shelly app, and connect it to the router.
3. Log in to the FusionSolar app as an owner, search for it, and change its name. Bind it to the corresponding load based on the actual cable connection.



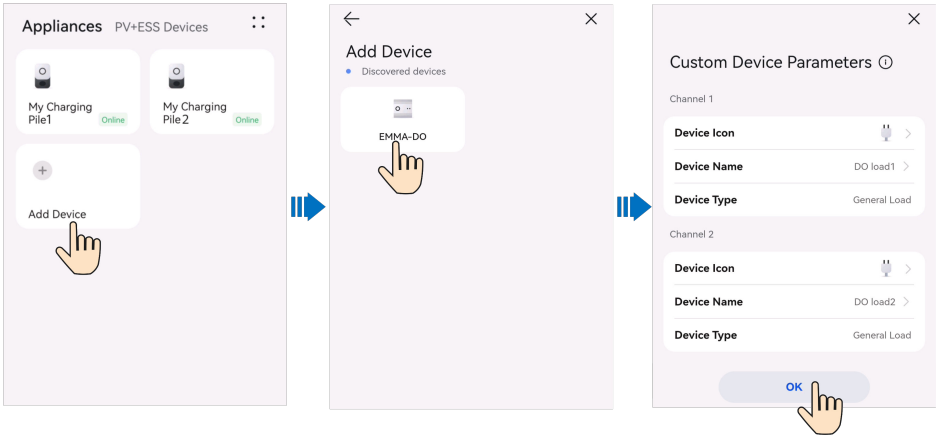
4. Repeat steps 2 and 3 to power on and commission the smart circuit breaker "Living room 2."

NOTE

If multiple smart switches have been powered on without records in advance, you can power them on or off on the Shelly app to distinguish them.

Adding Appliances on the FusionSolar App

1. Log in to the FusionSolar app as the owner.
2. Choose **Devices** > **Appliances**, and tap **Add Device**.
3. Tap a discovered appliance and it will be automatically connected to the app.



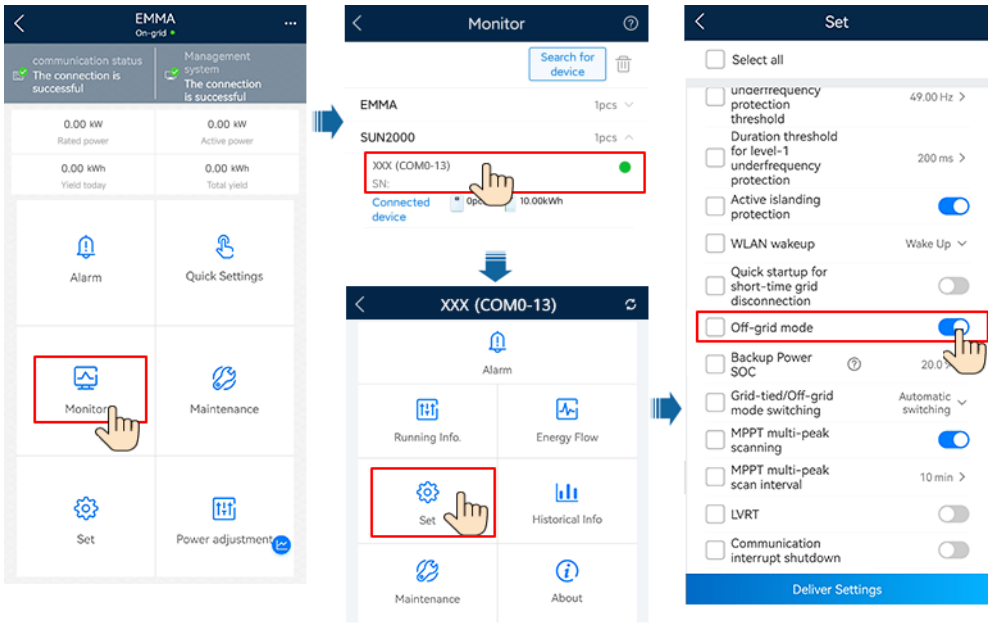
8.2 Setting Off-Grid Mode for the Inverter

After the off-grid mode is set, the inverter supports off-grid operation.

Method 1: Setting Off-Grid Mode for the Inverter Using the SmartGuard

Connect to the EMMA by referring to **Connecting the EMMA on the App**, choose **Monitor > SUN2000**, tap **Set**, and enable **Off-grid mode**.

Figure 8-1 Setting off-grid mode



Method 2: Directly Setting Off-Grid Mode for the Inverter

Connect to the inverter by referring to **Connecting the Inverter on the App**. On the home screen, choose **Set** > **Feature parameters** and enable **Off-grid mode**.

Figure 8-2 Setting off-grid mode

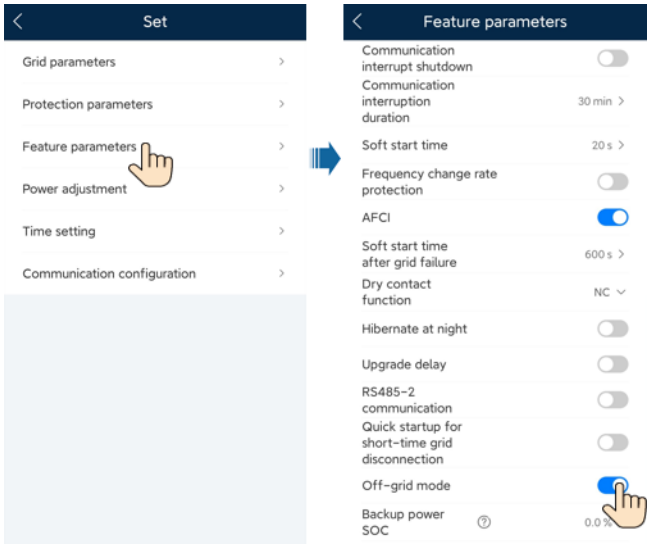


Table 8-2 On/Off-grid parameter settings

Parameter	Description	Value Range
Off-grid mode	If this parameter is enabled, the inverter switches to off-grid mode through the SmartGuard when the grid fails.	• Enabled • Disabled
Backup power SOC	Set the backup power SOC. In on-grid mode, the ESS does not discharge when it is discharged to the backup power SOC. When the grid fails, loads are powered in backup mode.	[0, 50%]

8.3 (Optional) Setting Limited Feed-in Parameters

Function Description

If surplus PV energy is fed to the grid, the limited feed-in parameters can be set to ensure that the feed-in power is within the range specified by the grid company.

NOTE

When the functions of the limited feed-in and scheduling via the DI port are enabled at the same time, the system calculates the output power thresholds for both functions respectively, and then sends the smaller value to the inverter.

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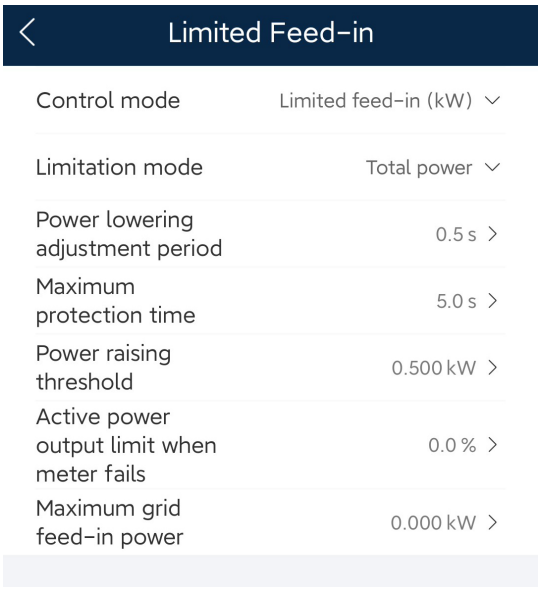
Procedure

1. Log in to the local commissioning screen of the EMMA. For details, see **9.2 How Do I Connect to the Local Commissioning Screen of PV Products?**.
2. Tap **Power adjustment** > **Limited Feed-in** and set related parameters as prompted.



Parameter	Description
Control mode	Sets the power control mode at the grid connection point. **Disabled**: The inverter output power is not limited, and the inverter runs at full load. **Grid connected with zero power**: The inverter output power is limited, with zero feed-in power at the grid connection point. • **Limited feed-in (kW)**: The inverter output power is limited, with the specified maximum active output power at the grid connection point. • **Power-limited grid connected (%)**: The inverter output power is limited based on the plant capacity percentage at the grid connection point.
Limitation mode	Sets the export limitation mode at the grid connection point. • **Total power**: indicates export limitation of the total power at the grid connection point. • **Single phase power**: indicates export limitation of the power in each phase at the grid connection point. (This mode can be used only for a three-phase four-wire system.)
Power lowering adjustment interval	Specifies the shortest interval for a single export limitation adjustment.

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Parameter	Description
Maximum protection time	Specifies the time for detecting power meter data. If the EMMA does not detect the power meter data within the preset time, the EMMA sends the value of **Active power output limit when meter fails** to the inverter for protection.
Power raising threshold	Specifies the deadband for adjusting the inverter output power. If the power fluctuates within the power raising threshold, the power is not adjusted. You are advised to set this parameter to 1%–2% of the total rated output power of the inverter.
Active power output limit when meter fails	Specifies the derating value of the inverter active power by percentage. The active power percentage derating value is sent to the inverter when no power meter data is detected.
Maximum grid feed-in power (kW)	Sets the maximum active feed-in power at the grid connection point. This parameter is valid when the control mode is set to **Limited feed-in (kW)**.
Maximum grid feed-in power (%)	Sets the percentage of the maximum active power at the grid connection point to the plant capacity. This parameter is valid when control mode is set to **Power-limited grid connected (%)**.

8.4 (Optional) Setting Scheduling via DI Port Parameters

Function Description

This function applies to scenarios where the grid company performs remote scheduling through dedicated ripple control receivers. The grid company remotely sends a scheduling command (%) to the plant with a wireless transmitting apparatus. Then, the wireless receiving apparatus receives the scheduling command and converts it into a DI signal. The plant monitoring device controls the inverter to output the corresponding power.

Ensure that the inverter is correctly connected to the ripple control receiver when setting this function. (In Germany and some other European areas, the ripple control receiver is used to convert a power grid scheduling signal to a dry contact signal, in which a dry contact is needed.)

NOTE

When the functions of the limited feed-in and scheduling via the DI port are enabled at the same time, the system calculates the output power thresholds for both functions respectively, and then sends the smaller value to the inverter.

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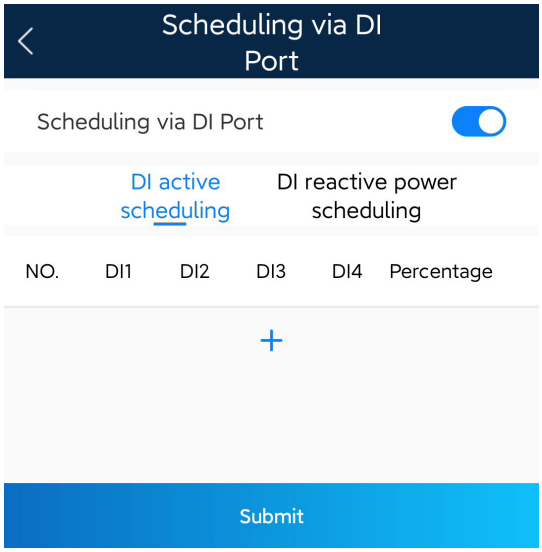
Procedure

1. Log in to the local commissioning screen of the EMMA. For details, see **9.2 How Do I Connect to the Local Commissioning Screen of PV Products?**.
2. Tap **Power adjustment** > **Scheduling via DI Port** and set related parameters as prompted.



Parameter	Description
Scheduling via DI Port	Enables or disables the scheduling via DI port function for a plant.
DI active scheduling	Sets the DI scheduling signals and the corresponding active output power percentage levels.
DI reactive power scheduling	Sets the DI scheduling signal and the corresponding reactive output power percentage.

NOTE

- The two scheduling modes support 16 levels of percentages. The percentage levels of DI1–DI4 must differ from each other. Otherwise, an exception will occur during command parsing.
- If the actual input DI signal is inconsistent with the setting, the EMMA generates an **Abnormal DI Instruction** alarm.

8.5 (Optional) Setting Peak Shaving Parameters

Function Description

This function applies to areas that have peak demand charges. The demand limit function allows you to lower the peak power drawn from grid in maximum self-consumption or TOU mode during peak hours, reducing electricity fees.

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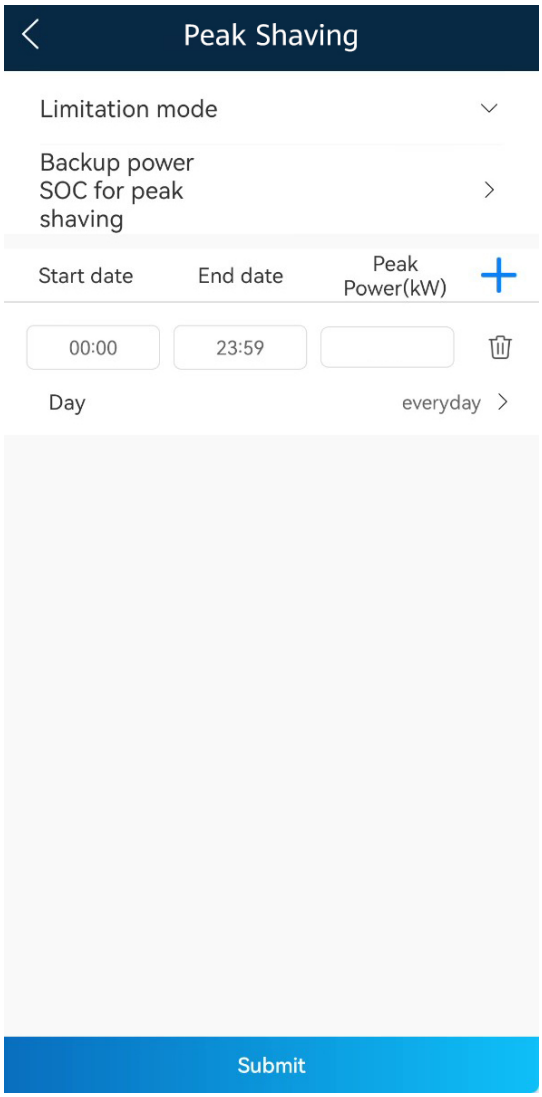
NOTE

- If the ESS working mode is **Fully fed to grid**, the demand limit function is unavailable.
- Before enabling **Peak Shaving**, enable **Charge from AC**.

Procedure

1. Log in to the local commissioning screen of the EMMA. For details, see **9.2 How Do I Connect to the Local Commissioning Screen of PV Products?**.
2. Tap **Power adjustment** > **Peak Shaving** to set the demand limit working mode.



Parameter	Description
Peak Shaving	• **No control** • **Active power limit** • **Apparent power limit**

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Parameter	Description
Backup power SOC for peak shaving	The value of this parameter affects the peak shaving capability. A larger value indicates stronger peak shaving capability. **Backup power SOC for peak shaving** > **Backup power SOC** (when **Off-grid mode** is enabled) > **End-of-discharge SOC**
Start Time	• Set the peak power range based on the start time and end time. The peak power is configured based on electricity prices in different time segments. You are advised to set the peak power to a low value when the electricity price is high. • A maximum of 14 time segments can be set.
End Time	
Peak Power (kW)	

8.6 (Optional) Setting WLAN Antenna Parameters

By default, the EMMA has a built-in WLAN antenna. If the signal quality is poor, install an external antenna to enhance WLAN signals. If an external antenna is used, set the antenna in the built-in WLAN parameters to an external antenna.

Procedure

1. Log in to the local commissioning screen of the EMMA. For details, see **9.2 How Do I Connect to the Local Commissioning Screen of PV Products?**.
2. Tap **Settings** > **Communication settings** > **Inverter WLAN settings** and set **Selected antenna** to **External**.

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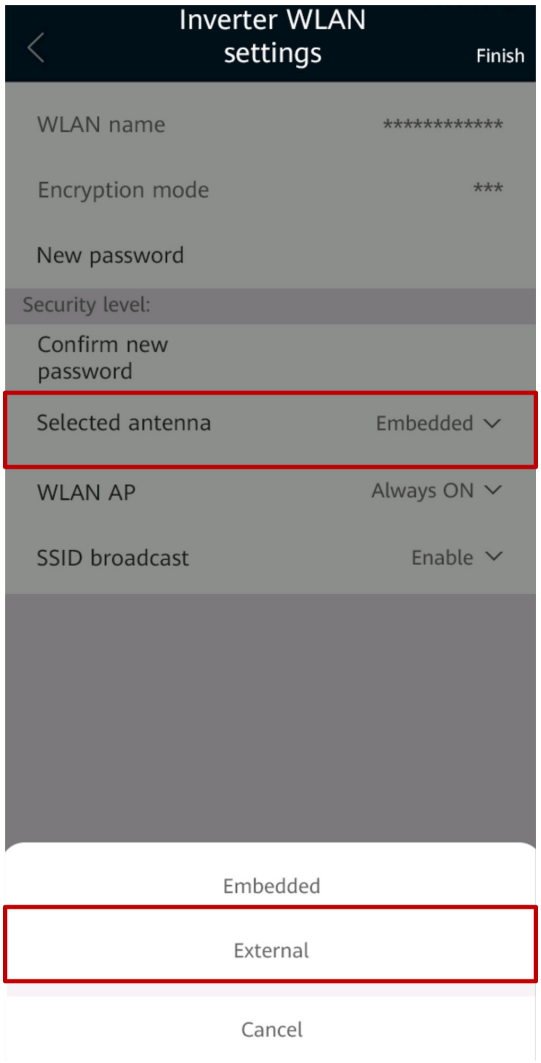
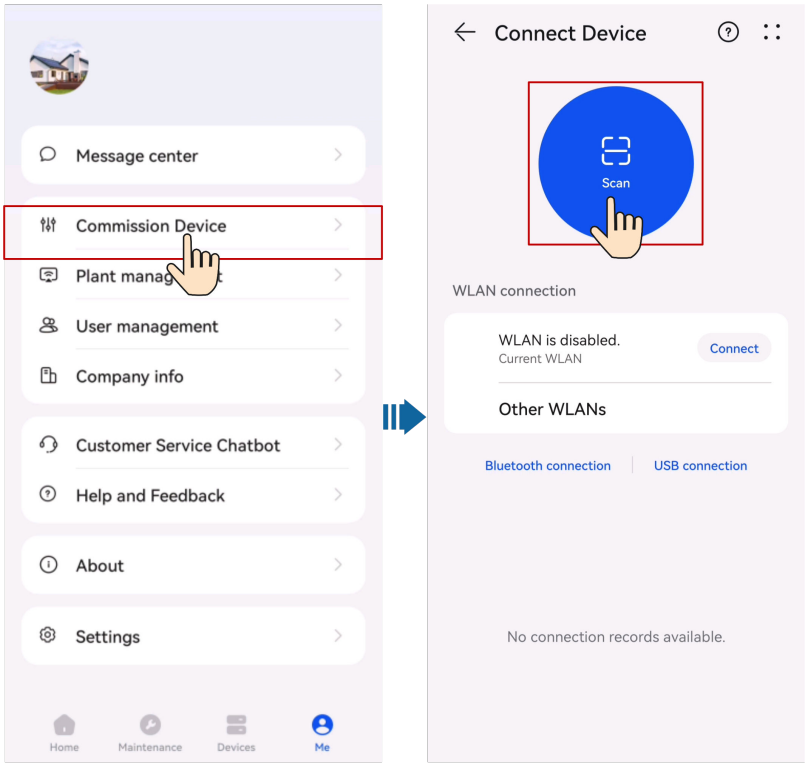

Inverter WLAN settings
Finish
WLAN name
****
Encryption mode
***
New password
Security level:
Confirm new password
Selected antenna
Embedded
WLAN AP
Always ON
SSID broadcast
Enable
Embedded
External
Cancel

9 FAQ

9.1 How Do I Connect to the Local Commissioning Screen of the Charger?

1. Log in to the FusionSolar app and choose **Me** > **Commission Device**.
2. Connect to the WLAN of the charger as prompted.



NOTE

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

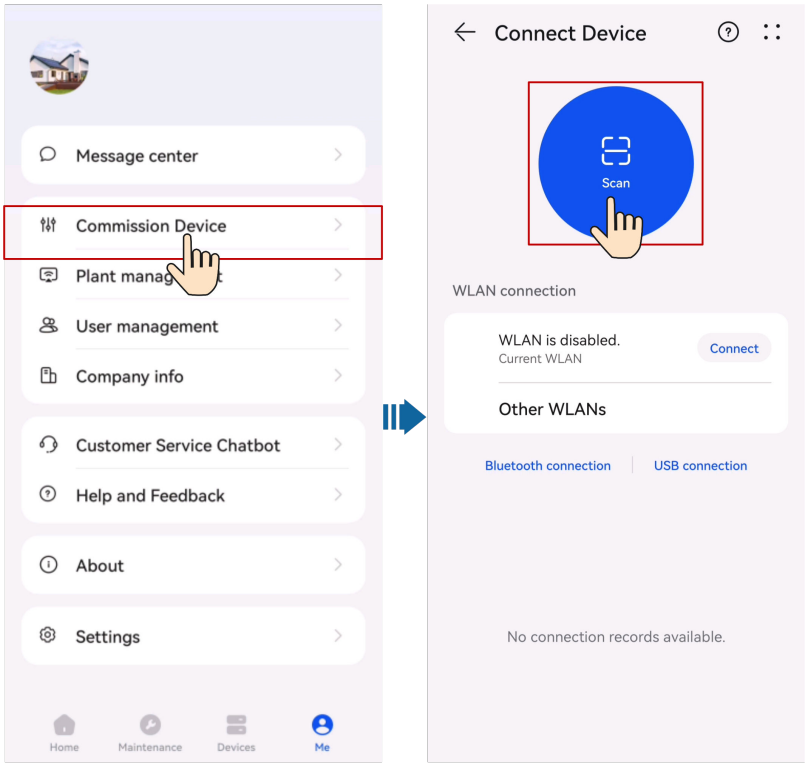
3. Select a login user and enter the password.

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.

9.2 How Do I Connect to the Local Commissioning Screen of PV Products?

1. Log in to the FusionSolar app and choose **Me** > **Commission Device**.
2. Select the target device and connect to the WLAN of the device as prompted.



NOTE

- The last six digits of the product WLAN name are the same as the last six digits of the product SN.
- Use the initial password to log in for the first time and change the password as prompted.
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- If the login screen is not displayed after you scan the QR code, check whether the device is correctly connected to the WLAN network. If not, manually select and connect to the WLAN network.
- If the **This WLAN network has no Internet access. Connect anyway?** message is displayed when you connect to the device WLAN, tap **CONNECT**. Otherwise, you cannot log in to the system. The actual UI and messages may vary with mobile phones.

3. Select a login user and enter the password.

NOTE

If the system prompts you to set a password upon the first power-on, set the password and then log in. If not, use the initial password **00000a** to log in.

9.3 Upgrading the Charger Software Version

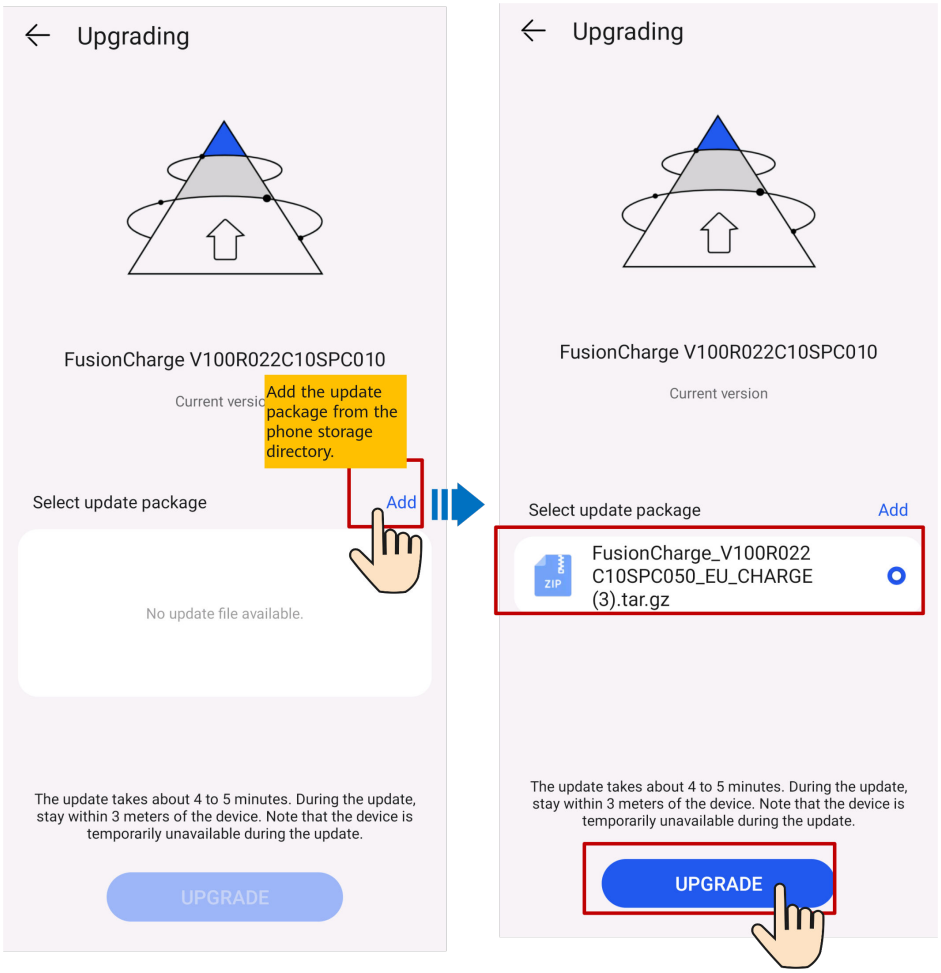
9.3.1 Upgrading the Charger Software Version

Prerequisites

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

Procedure

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



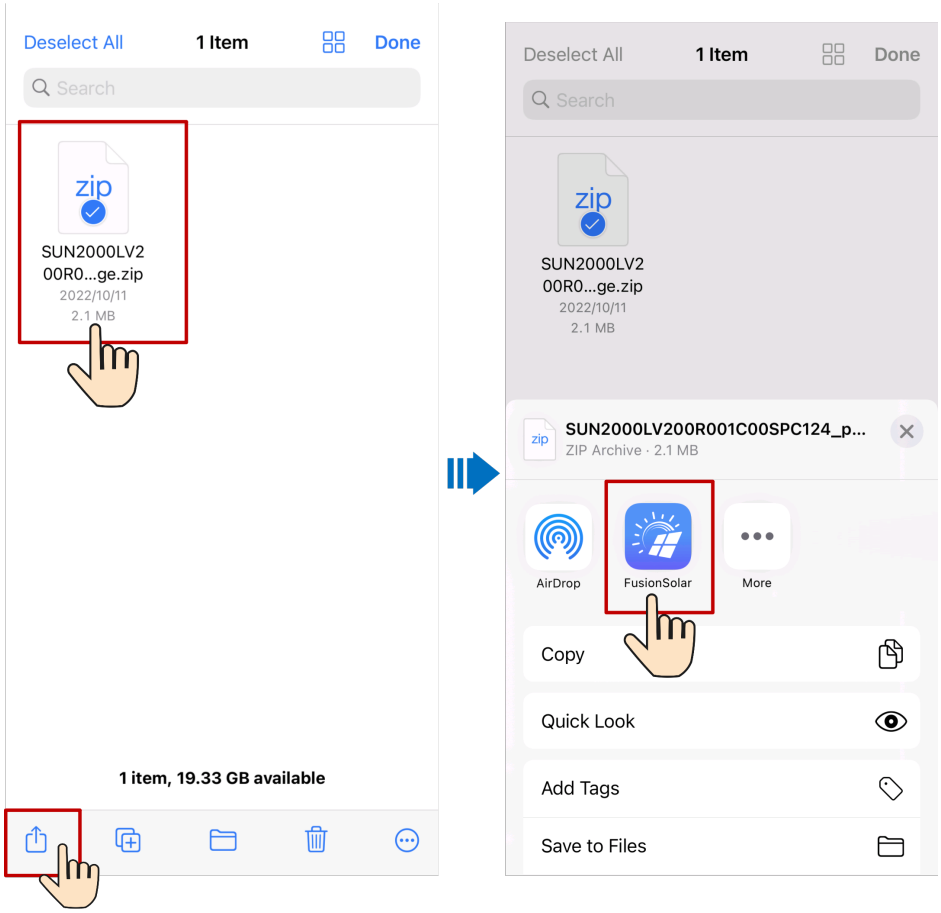
9.3.2 What Should I Do If the Upgrade Package Obtained from an iPhone Cannot Be Selected on the Upgrade Screen?

Cause

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

Procedure

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



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

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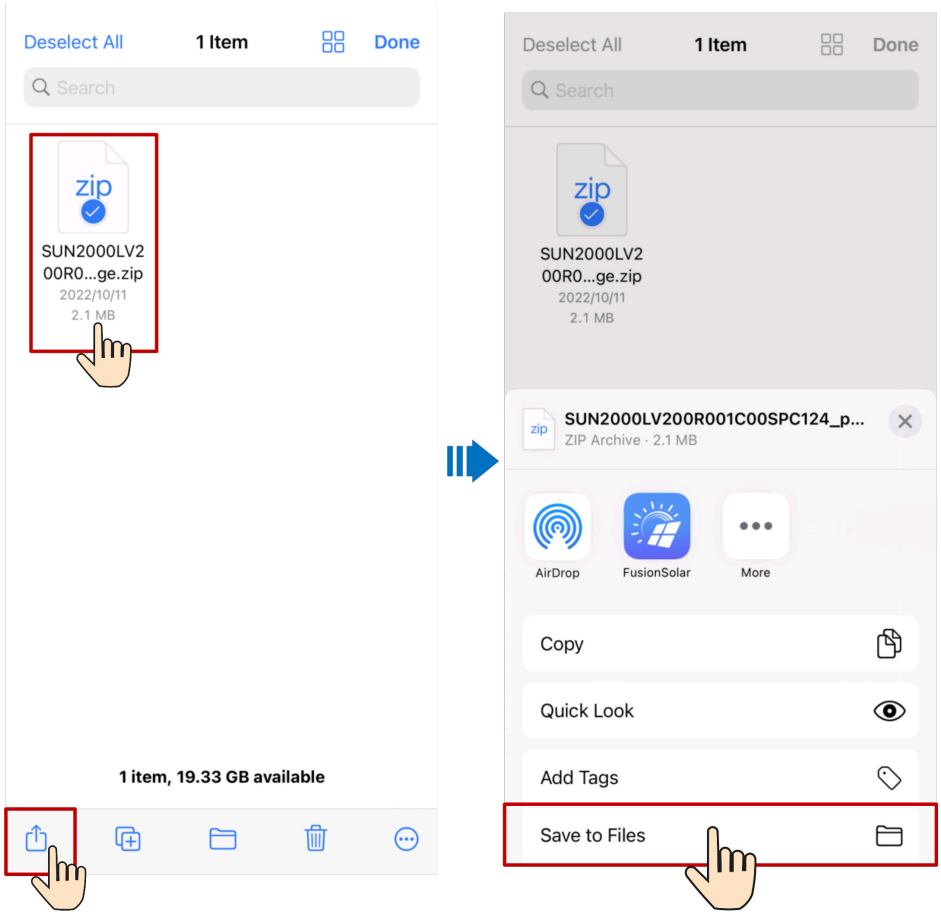

9.4 What Should I Do If the Device Is Disconnected from the App When I Switch the Local Commissioning Screen to the Background?

Symptom

During local commissioning, you may need to switch the app to the background (for example, uploading an upgrade package, uploading a photo, or scanning a QR code for WLAN connection). When you switch back to the app screen, a message is displayed, indicating that the device is disconnected from the app and you need to log in again.

Solution

1. Tap **Settings** > **Apps & services**, and choose **App launch**.
2. Tap **Manage manually** > **Run in background** for the FusionSolar app.

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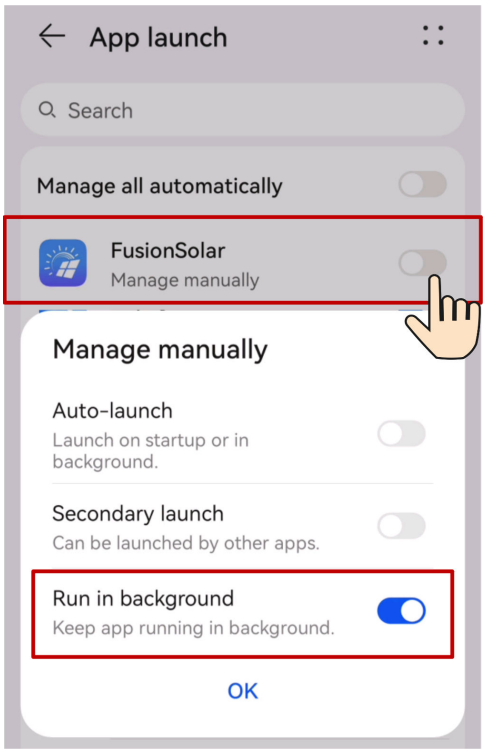

NOTE

The menu name may vary according to the mobile phone brand.

9.5 How Can I Change the WLAN Password of a Device?

1. Access the FusionSolar app and tap **::** > **WLAN Configuration** on the login screen.
2. In **PV Products**, select the target device and connect to the WLAN of the device as prompted.
3. After the login is successful, the screen for resetting the WLAN password is displayed.

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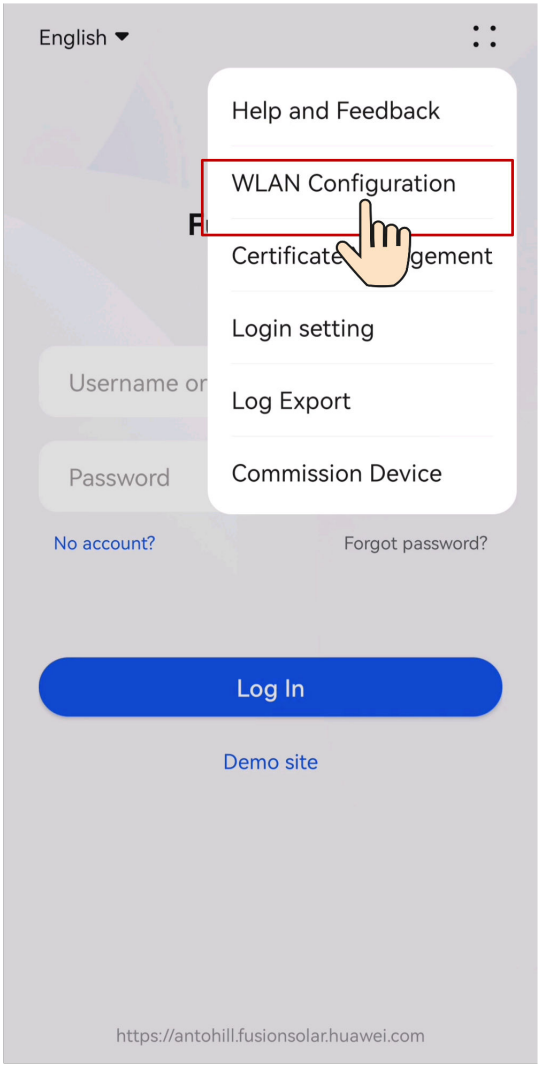

9.6 How Can I Delete the Offline Legacy Devices in the FusionSolar SmartPVMS After I Use a New SmartGuard?

Cause

After a new SmartGuard is used and a new EMMA is connected to the plant, the new EMMA automatically inherits the legacy devices of the old EMMA. In this case, you need to log in to the FusionSolar SmartPVMS to delete the offline legacy devices.

Solution

1. Log in to the FusionSolar SmartPVMS as an owner.
2. Choose **Monitoring** > **Monitoring** from the main menu.
3. In the navigation pane, select a company or plant, and click the **Device Management** tab page.

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4. Select the legacy devices to be deleted from the device list and click **Delete**.