FusionSolar App

User Manual

Issue	02
Date	2025-03-14

HUAWEI

HUAWEI DIGITAL POWER TECHNOLOGIES CO., LTD.

Trademarks and Permissions


and other Huawei trademarks are the property of Huawei Technologies Co., Ltd.
All other trademarks and trade names mentioned in this document are the property of their respective holders.

Notice

The purchased products, services and features are stipulated by the contract made between Huawei Digital Power Technologies Co., Ltd. and the customer. All or part of the products, services and features described in this document may not be within the purchase scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied. The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

Huawei Digital Power Technologies Co., Ltd.

Address: Huawei Digital Power Antuoshan Headquarters

Futian, Shenzhen 518043

People's Republic of China

Website: https://digitalpower.huawei.com

Contents

1 Downloading and Installing the App 1
2 Registering the Company's First Installer Account 3
3 Registering an Owner Account or Another Installer Account 5
4 Logging In to or Logging Out of FusionSolar App 7
5 Creating an Owner Account or Installer Account (in Japan, and Australia) 9
6 Federated Enterprise Login (Okta) 11
6.1 Inviting an Okta User to Use the FusionSolar SmartPVMS 11
6.2 Logging In to the FusionSolar App Using an Okta Account 12
7 I'm an Installer 14
7.1 Setup Wizard 14
7.1.1 Device Commissioning (EMMA) 14
7.1.1.1 Setting Router Parameters of the Charger 14
7.1.1.2 Quick Settings 15
7.1.2 Device Commissioning (Charger) 23
7.1.2.1 Charging-only 23
7.1.2.1.1 Charger FE Port Directly Connected to a Meter 25
7.1.2.1.2 Charger FE Port Directly Connected to a Router 27
7.1.2.1.3 Charger Connected to a Router Through WLAN 30
7.1.2.2 PV+ESS+Charger (Smart Dongle/Inverter WLAN Direct Connection Scenario) 33
7.1.2.3 PV+ESS+Charger/ Charging-only (EMMA Scenario) 34
7.1.3 Device Commissioning (PV+ESS) 35
7.1.4 Connecting to a Plant 35
7.1.4.1 Connecting to a New Plant 36
7.1.4.2 Connecting to an Existing Plant 37
7.1.4.3 Connecting Devices to a Plant with Multiple Installers 37
7.1.5 Adding a Device 40
7.1.6 Setting the String Capacity 41
7.1.7 Set Electricity Prices 41
7.1.7.1 Purpose 41
7.1.7.2 Configuring the Feed-in Tariff 43
7.1.7.2.1 Configuring the Feed-in Tariff (Fixed Configuration) 43

7.1.7.2.2 Configuring the Feed-in Tariff (Electricity Market) 43
7.1.7.3 Configuring the Purchase Price 44
7.1.7.3.1 Configuring the Purchase Price (Simple Price) 44
7.1.7.3.2 Configuring the Purchase Price (Compound Price) 45
7.1.7.3.3 Configuring the Purchase Price (Electricity Market) 48
7.1.7.3.4 Example of Configuring a Compound Price 51
7.1.7.3.5 Example of Configuring a Purchase Price (Electricity Market) 58
7.1.7.4 Adding a Purchase Price Template (Only Installers Allowed) 62
7.1.7.5 Enabling Negative Rate Optimization 62
7.1.7.6 More Operations 63
7.1.7.6.1 Applying the Purchase Price to Other Plants 63
7.1.7.6.2 Editing the Currency of the Plant 63
7.1.7.6.3 Setting Purchase Prices for Holidays (Only Installers Allowed) 64
7.1.8 Creating a Physical Location Layout 64
7.1.8.1 Automatically Generating a Physical Layout 64
7.1.8.2 Manually Creating a Physical Layout 67
7.1.8.3 Binding Optimizers or Inverters 71
7.1.8.4 Viewing a Physical Layout 73
7.1.8.5 Viewing the PV Module Diagnosis Report 74
7.2 Plant Overview 74
7.2.1 Viewing Status of a Charging-only Plant 75
7.2.2 Viewing Status of a PV+ESS+Charger Plant 78
7.2.3 Viewing the Revenue after EMMA Is Enabled, Energy Forecast, and Energy Saving Analysis 80
7.2.4 Optimizer Disconnection Detection 80
7.3 O&M Management 81
7.3.1 Monitoring Alarm Information 81
7.3.2 Mobile O&M 82
7.3.2.1 Defect Elimination 82
7.3.2.2 Inspection Management 85
7.4 Device Management 88
7.5 Permission Management 89
7.6 Log Export 90
7.7 Services 91
8 I'm an Owner 93
8.1 Viewing Plant Details (Residential Plant) 93
8.1.1 Plant Overview 93
8.1.2 Real-Time Refresh 95
8.1.3 Viewing Statistics 96
8.1.4 Viewing the Battery Running Status 96
8.1.5 Enabling EMMA 97
8.1.6 Intelligent Load Shedding 99
8.1.7 Viewing a Physical Layout 101

8.2 Viewing Plant Details (C&I Plant) 102
8.2.1 Plant Overview 103
8.2.2 Viewing Statistics 104
8.2.3 Enabling SmartEMO 105
8.2.4 Viewing a Physical Layout 106
8.3 Using a Charger 107
8.3.1 Starting and Stopping Charging on the App 107
8.3.2 Start Charging Through Authentication via Bluetooth 108
8.3.3 Starting and Stopping Charging Using an RFID Card 109
8.3.4 Plug-and-Play Charging 109
8.3.5 Scheduled Charging 110
8.3.6 Charging for the Next Trip 111
8.3.7 Sharing the Charger 113
8.3.8 Viewing Charging Records 113
8.3.9 Load Priority 114
8.3.10 Settings 115
8.4 Using a Shared Charger 117
8.4.1 Registering a Shared Account 117
8.4.2 Starting and Stopping Charging on the App 118
8.4.3 Setting the Charging Connector Locking Mode 119
8.4.4 Logout 119
8.5 Smart Appliance 119
8.5.1 Quick Guide to Smart Appliances 119
8.5.2 Smart Switch Commissioning 120
8.5.3 Enabling PV Power Preferred Mode 122
8.5.4 Power Consumption Schedule 123
8.5.5 Setting PV Power Parameters 124
8.5.6 Setting the Load Priority 125
8.5.7 More Settings 125
8.5.7.1 Parameter Settings 126
8.5.7.2 Setting Communication Parameters for Smart Appliances 126
8.6 Intelligent Power Backup 127
8.6.1 Generator Control 128
8.6.2 Generator Uptime Control 129
8.6.3 Switching to On/Off-Grid State 130
8.6.4 Off-Grid Load Control 131
8.6.5 Viewing Power Backup History 131
8.7 Managing Plants 131
8.8 Device Management 133
8.8.1 Set the Battery Working Mode 133
8.8.2 Peak Shaving 134
8.8.3 Setting Third-Party Management System Parameters (Connecting to Two Management Systems) 136

8.8.4 Adding Devices 137
8.8.5 Unbinding or Deleting Devices 137
8.8.6 Replacing Devices 138
8.8.7 ESS Working Modes (Residential Scenario) 139
8.8.8 ESS Working Modes (C&I Scenario) 140
8.9 Electricity Price Settings 143
8.9.1 Purpose 143
8.9.2 Configuring the Feed-in Tariff 145
8.9.2.1 Configuring the Feed-in Tariff (Fixed Configuration) 145
8.9.2.2 Configuring the Feed-in Tariff (Electricity Market) 145
8.9.3 Configuring the Purchase Price 146
8.9.3.1 Configuring the Purchase Price (Simple Price) 146
8.9.3.2 Configuring the Purchase Price (Compound Price) 146
8.9.3.3 Configuring the Purchase Price (Electricity Market) 149
8.9.3.4 Example of Configuring a Compound Price 153
8.9.3.4.1 Example of Configuring a Purchase Price (Residential Scenario 1) 153
8.9.3.4.2 Example of Configuring a Purchase Price (Residential Scenario 2) 154
8.9.3.4.3 Example of Configuring a Purchase Price (C&I Scenario 1) 156
8.9.3.4.4 Example of Configuring a Purchase Price (C&I Scenario 2) 157
8.9.3.5 Example of Configuring a Purchase Price (Electricity Market) 159
8.9.3.5.1 Example of Configuring a Purchase Price by Quick Creation 160
8.9.3.5.2 Example of Configuring a Purchase Price by a Template 161
8.9.4 Adding a Purchase Price Template (Only Installers Allowed) 163
8.9.5 Enabling Negative Rate Optimization 163
8.9.6 More Operations 164
8.9.6.1 Applying the Purchase Price to Other Plants 164
8.9.6.2 Editing the Currency of the Plant 164
8.9.6.3 Setting Purchase Prices for Holidays (Only Installers Allowed) 165
8.10 Permission Management 165
8.11 Log Export 166
8.12 Message Center 167
8.12.1 Viewing Announcements 167
8.12.2 Handling To-Do Tasks 168
8.12.3 Handling a Device Update Task 169
8.12.4 Viewing an Event Notice 169
8.12.5 Managing Notifications 169
8.13 Services 170
9 Device Commissioning 172
10 Account Security Settings 173
10.1 Verifying an Email Address 173
10.2 Changing Personal Passwords 174
10.3 Modifying Personal Information 175

10.4 Deregistering an Account....177
10.5 Password Retrieval....177
11 User Management....179
11.1 Resetting the Password....179
11.2 Disabling or Enabling a User Account....180
12 FAQs....182
12.1 Handling a Network Exception When a User Logs In to App....182
12.2 What Do I Do If the Message "The User Does Not Exist or the Password Is Incorrect" Is Displayed During Login?....182
12.3 Troubleshooting the No Data Fault After a User Logs In to App....183
12.4 What Can I Do If I Cannot Receive the Verification Code?....184
12.5 What Can I Do If the Update Fails After a New Version Is Detected on an Android Phone?....184
12.6 How Do I Reset the Default Password of a Charger Using an RFID Card When I Forgot the Password?....185
12.7 What Should I Do If an Offline or Faulty Charger Is Displayed in the Plant After the Charger Is Replaced?....186
12.8 Why Is the Charger Displayed as Offline in the Management System after Factory Settings Are Restored?....187
12.9 Why Is the Pairing Request Displayed Twice During Bluetooth Pairing?....188
12.10 How Do I Obtain a Registration Code?....188
12.11 How Do I Navigate to the Device Local Commissioning Screen?....189
12.12 What Should I Do If My Android Phone Fails to Connect to the WLAN After I Scan the QR Code?....190
12.13 What Should I Do If My iOS Phone Fails to Connect to the WLAN After I Scan the QR Code?....191
12.14 What Can I Do If the System Prompts Me to Reconnect to the Charger's WLAN Hotspot During Quick Settings?....191
12.15 What Should I Do If the Device Is Disconnected from the App When I Switch the Local Commissioning Screen to the Background?....192
12.16 How Can I Delete the Offline Legacy Devices in the FusionSolar SmartPVMS After I Use a New SmartGuard?....192
12.17 What Can I Do If the Password Is Incorrect When I Connect to the Charger WLAN?....193
12.18 How Do I Add or Delete an RFID Card?....193
12.19 How Do I Connect to a Charger When I Cannot Log In to the FusionSolar App Due to Poor Network Connection?....195
12.20 What Should I Do If the App Cannot Identity the Charger?....195
12.21 How Does an Owner View the Energy Yield Data?....196
12.22 What Can I Do If the Network Connection Is Abnormal?....196
12.23 Upgrading the Charger Software Version....197
12.24 What Should I Do If the Upgrade Package Obtained from an iPhone Cannot Be Selected on the Upgrade Screen?....198
12.25 How Do I Download Optimizer Logs from the SmartLogger?....199
12.26 What Can I Do If the Upgrade Package Fails to Be Imported?....202
12.27 Why Is the Display of Some Screens Incomplete or Abnormal After I Enlarge the Font Size on My Phone?....203

12.28 What Should I Do If the Charging Connector Cannot Be Removed From the Charger?.....203
12.29 What Is the Configuration of Time Segments in a Day?.....204
12.30 What Is Tiered Pricing?.....204
12.31 What Is the Difference Between Electricity Price Coefficient and Amount-based Surcharge?.....204
13 Related Information.....206
13.1 PV Power Generation Offsetting Carbon Emissions.....207
13.2 Domain Name List of Management Systems.....210
13.3 Public URLs.....211

1 Downloading and Installing the App

NOTICE

- Mobile phone operating system: Android 8.0, iOS 18.0, or later versions (The iOS operating system does not support local commissioning of iSitePower-M. Use an Android operating system instead.)
- To ensure the stability of each function, you are advised to use mobile phones running Android 8.0, iOS 18.0, or later versions. (For the mobile phones running iOS, iPhone 6 and later versions are supported, but iPhone SE series are 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.

NOTE

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

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

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

2 Registering the Company's First Installer Account

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

Intended Audience

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

Owners who commission chargers by themselves.

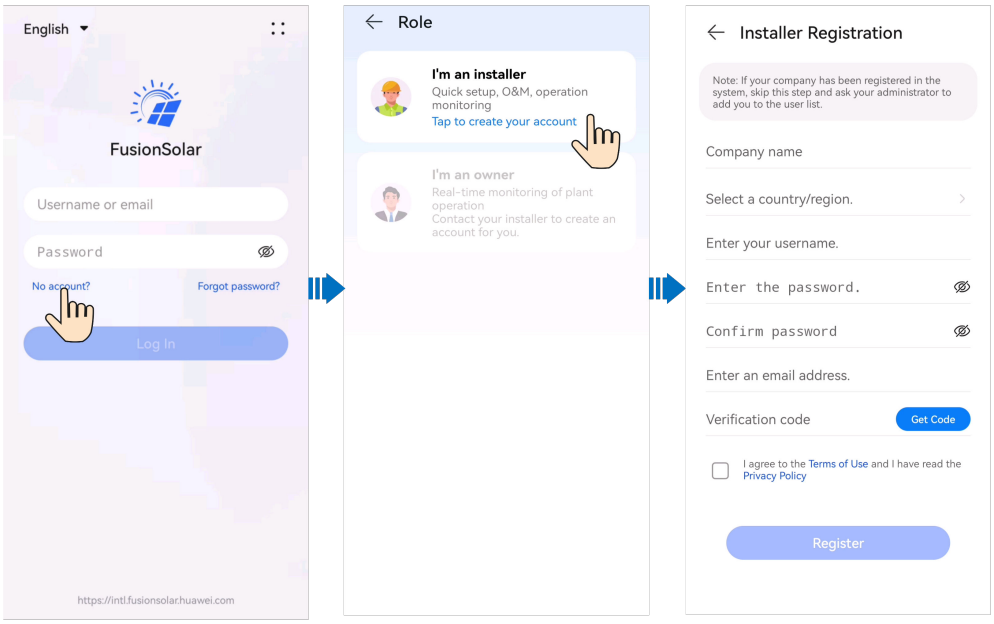
NOTE

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

Procedure

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

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



3 Registering an Owner Account or Another Installer Account

This section applies to markets except China, Japan, and Australia. An installer initiates a **registration invitation**. After receiving the invitation email from the installer, a user accesses the registration page to **register an account** as prompted.

NOTE

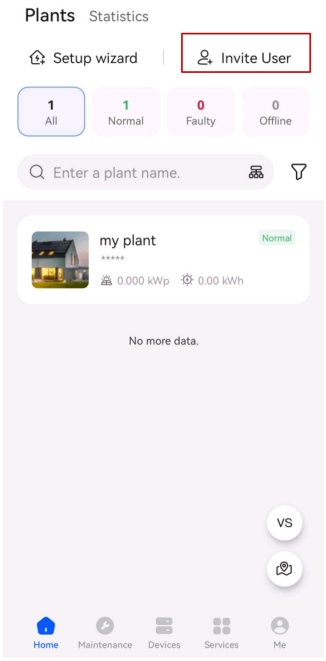
If you are in Japan, or Australia, see **5 Creating an Owner Account or Installer Account (in Japan, and Australia)**.

NOTICE

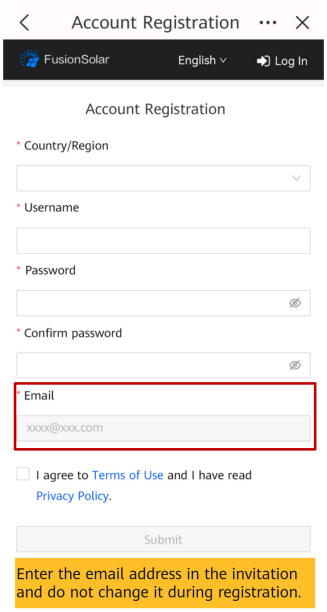
Before inviting a user, ensure that a plant is available. If your company has not created a plant, create one and then invite the user. For details, see **7.1.4 Connecting to a Plant**.

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

1. Invite a user.



2. Register an account.

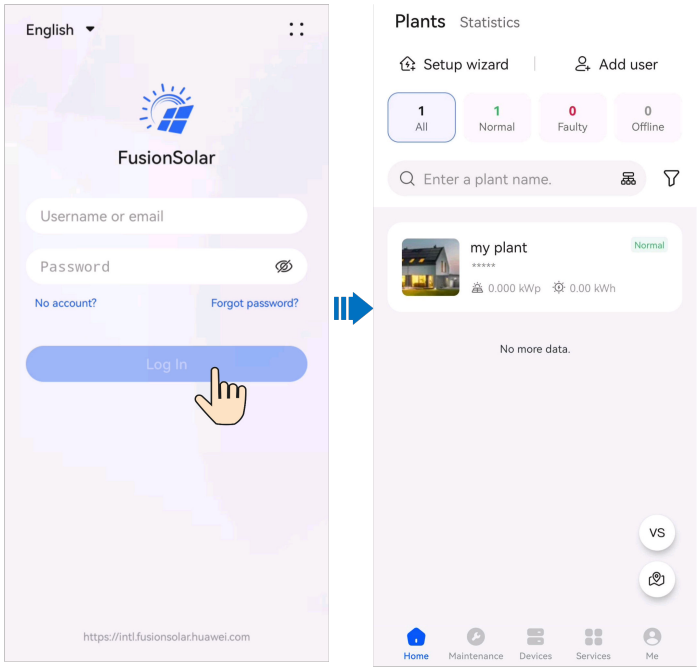


4 Logging In to or Logging Out of FusionSolar App

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

Logging In to the App

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



NOTE

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

5 Creating an Owner Account or Installer Account (in Japan, and Australia)

When creating a user, ensure that the plant to be associated with 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 **7.1.4 Connecting to a Plant**.

Creating an Owner User

1. Choose **Home** > **Plants**, tap **Add user** and create a user account as prompted.

NOTE

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

Creating an Installer User

1. Choose **Home** > **Plants**, tap **Add user** and create a user account as prompted.

NOTE

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

6 Federated Enterprise Login (Okta)

The FusionSolar SmartPVMS can interconnect with the Okta system. The company administrator needs to configure interconnection parameters such as the Okta enterprise ID on the FusionSolar SmartPVMS. After the interconnection is successful, Okta users can be invited to access and use the FusionSolar SmartPVMS.

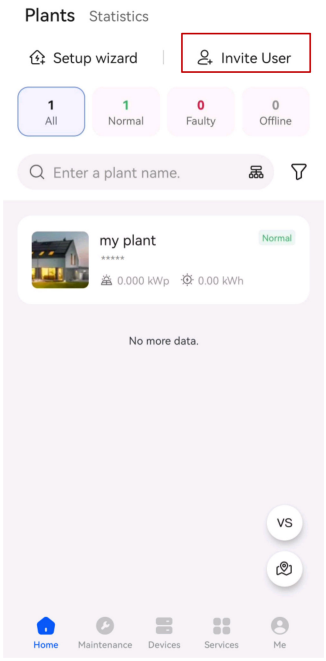
6.1 Inviting an Okta User to Use the FusionSolar SmartPVMS

The installer initiates an **invitation**. After receiving the invitation email from the installer, the user clicks the link in the email to activate the account.

NOTICE

- During the invitation, the email address must have been registered on the Okta.
- After the invitation is successful, notify the user to activate the account within 15 days. Otherwise, the invitation will automatically expire and the invitation process needs to be initiated again.

1. Log in to the app as an installer and tap **Invite User** on the home screen.



2. After receiving the invitation email, the user needs to click the link in the email to activate the account.

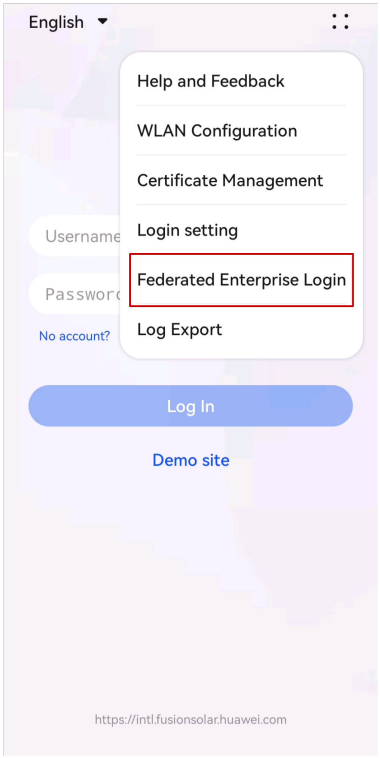
   After the activation, the user can log in to the FusionSolar SmartPVMS or FusionSolar app using an Okta account in **Federated Enterprise Login** mode.

6.2 Logging In to the FusionSolar App Using an Okta Account

NOTICE

Obtain the enterprise ID from the invitation email.

1. On the mobile device, tap the app icon to access the login screen.
2. On the app login screen, choose **::** > **Federated Enterprise Login** in the upper right corner.



3. Enter the enterprise ID and click **Log In**. Wait until the Okta login screen is displayed. Complete the login verification as prompted.

7 I'm an Installer

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

7.1 Setup Wizard

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

7.1.1 Device Commissioning (EMMA)

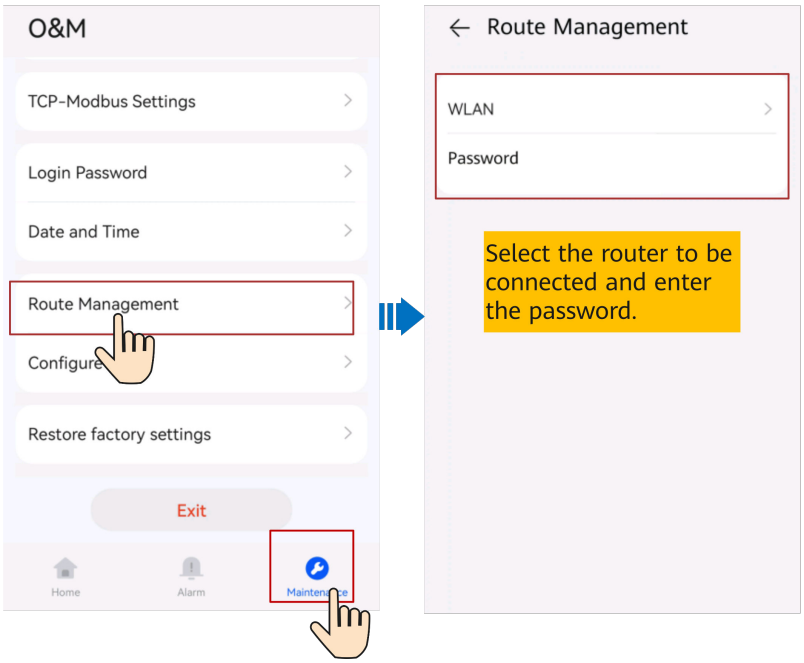
7.1.1.1 Setting Router Parameters of the Charger

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.

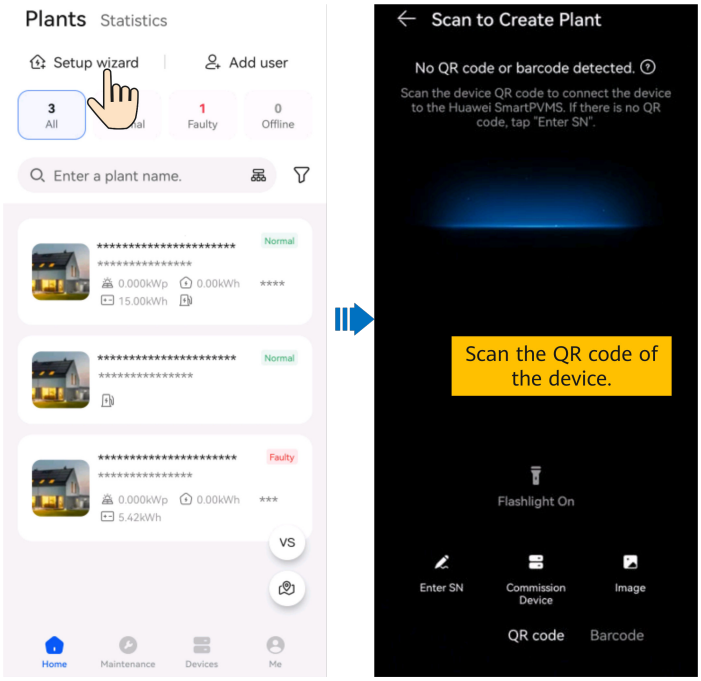
1. Connect to the local commissioning screen of the charger. For details, see **Connect to the charger**.
2. Tap **O&M** > **Route Management** and select **WLAN**.



7.1.1.2 Quick Settings

The charger must be upgraded to the FusionCharge V100R023C10 to match the EMMA networking. Otherwise, the EMMA cannot detect the charger. **Connect to the charger** as an installer. For details about the upgrade operations, see **Upgrading the Charger Software Version**.

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.

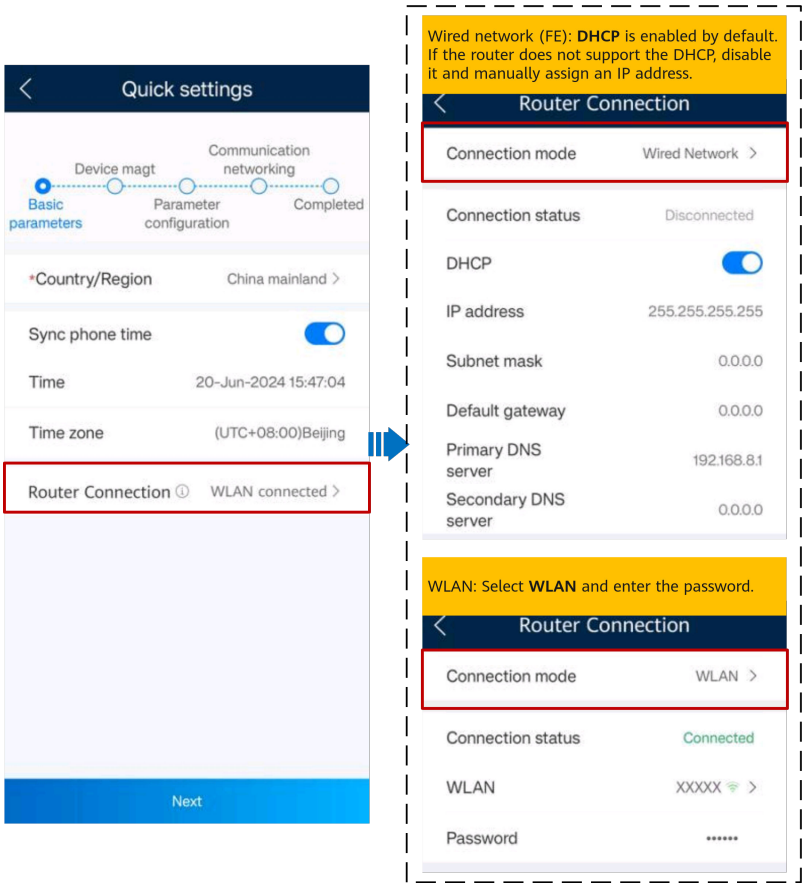
2. Log in to the app as **Installer** and commission the device according to the wizard.

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.



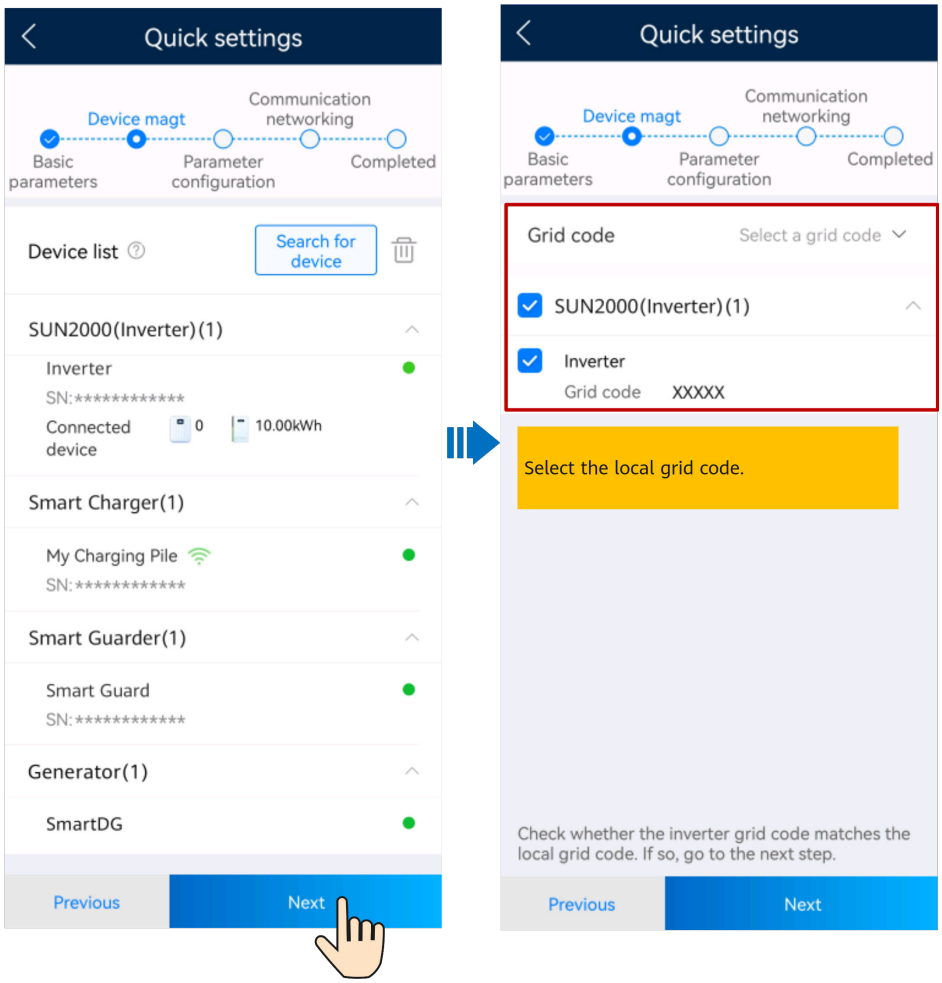
NOTE

- 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 detected.

– **Device Management**

NOTICE

- If some loads are connected to the three-phase SmartGuard, an external meter is required. Tap **+** to add an external meter to the device list and set the meter type to **Bi-directional meter**.
- In the third-party inverter networking scenario, an external meter is required to measure the AC output of the third-party inverter (the meter is not involved in the power control of the grid connection point). Tap **+** to add the external meter to the device list and set the meter type to **Third-party production meter**.



– **Parameter configuration**

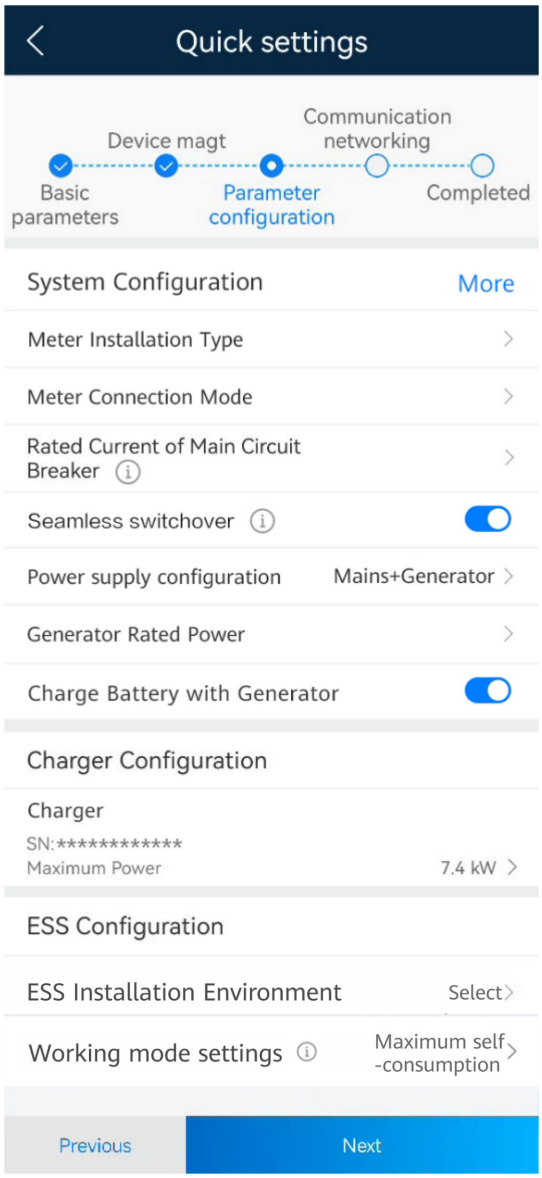


Table 7-1 Parameter description

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 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. • In third-party scheduling mode, the ESS charge power and discharge power are not limited by this parameter.
	Meter Installation Type	• **Built-in** • **External** **NOTE** If all loads are connected to the SmartGuard and the EMMA is used to measure the total grid connection point power, set this parameter to **Built-in**. If some loads are connected to the SmartGuard and an external meter is used to measure the total grid connection point power, set this parameter to **External**.
	Meter Connection Mode	Configure this parameter based on the actual cable connection mode of the meter. **NOTICE** Select a correct cable connection mode for the meter based on the actual scenario. Otherwise, some functions related to the meter may be abnormal.
	Seamless switchover	**Enabled**: When the power grid fails, the system switches to the off-grid state 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.
	Power supply configuration	• **Mains** • **Generator** • **Mains+Generator**

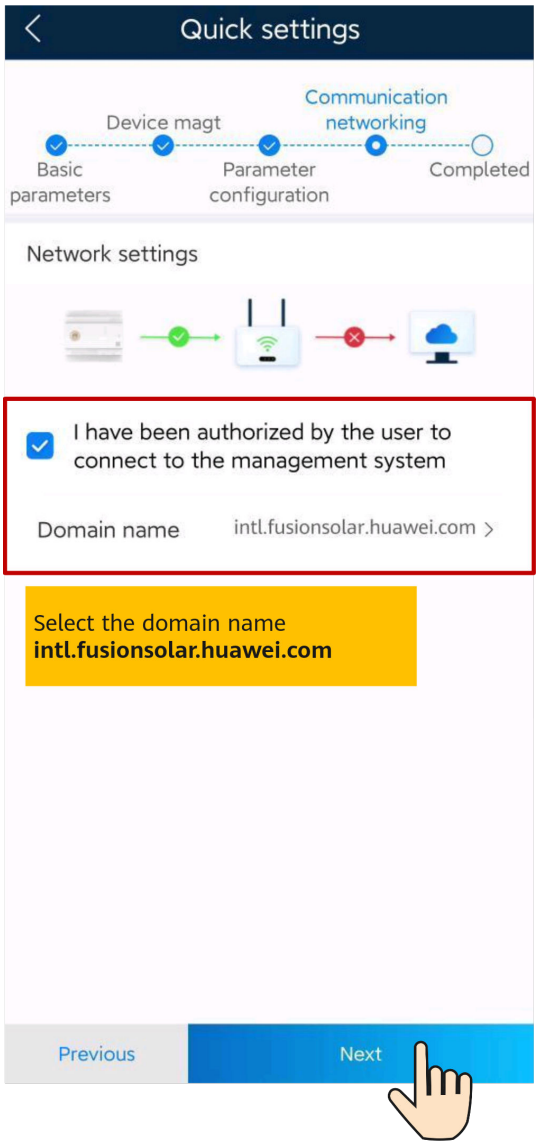
Device	Parameter	Description
		Set this parameter when the power is supplied by the generator or mains+generator. • **Rated power**: rated output power of the generator • **Charge Battery with Generator**: If this function is enabled, the generator is allowed to charge the ESS.
Charger	**Maximum Power**	Maximum charge power of the charger (less than or equal to the rated power of the charger).
ESS	**ESS Installation Environment**	• **Outdoor** (**Recommended**) • **Garage** • **None of the above** **CAUTION** **It is advisable to install ESS products outdoors. Do not install the equipment in places that are enclosed, unventilated, without proper fire fighting facilities, or difficult for firefighters to access. Ensure that ESS products are out of the reach of children and away from daily working or living areas.**
	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.

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.
		Third-party dispatch: • Only a third-party platform controls battery charge and discharge. • During charging, the PV energy is preferentially used for charging batteries. • During discharging, batteries are preferentially discharged, and surplus PV energy is discarded.

Tap **More** to set the meter parameters.

Parameter	Description
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 set to **Meter measurement mode** connection, the external CT ratio needs to be configured.
Balanced Measurement	• **Unbalanced Measurement** • **Balanced Measurement** For details about the parameters, see (Optional) Setting the Energy Measurement Mode.

– **Communications Networking**



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 **7.1.4 Connecting to a Plant**.

7.1.2 Device Commissioning (Charger)

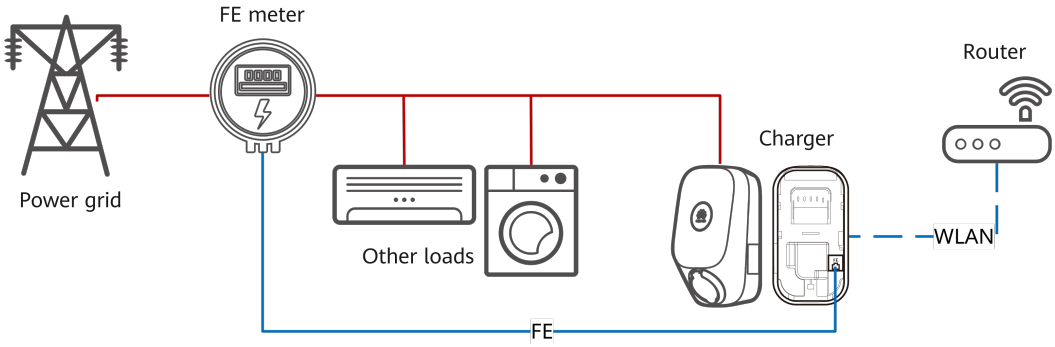
7.1.2.1 Charging-only

NOTE

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

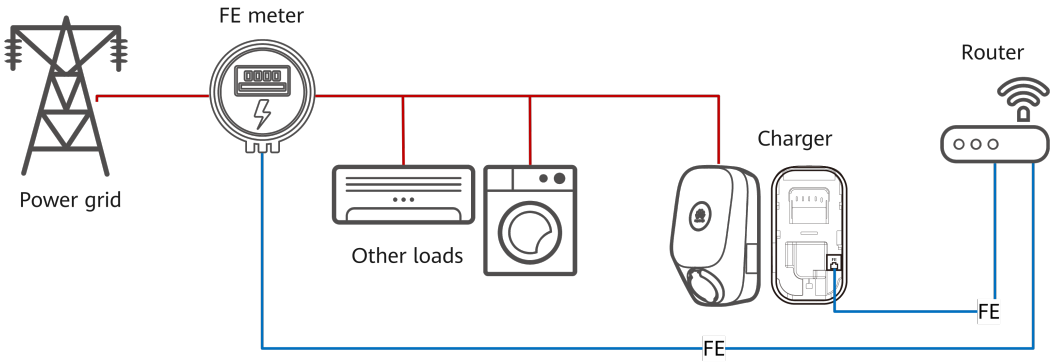
The chargers can implement dynamic power by connecting to the DTSU666-FE meter or the WLAN/FE Smart Dongle in the PV system through virtual meter networking to obtain RS485 meter detection data. Perform commissioning based on the actual networking scenarios of chargers, meters, and routers.

Figure 7-1 Charger FE port directly connected to a meter



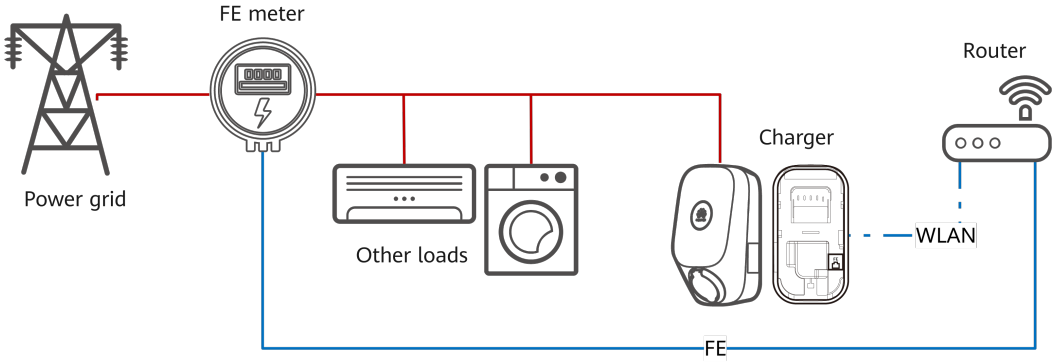
For details about the commissioning procedure, see **7.1.2.1.1 Charger FE Port Directly Connected to a Meter**.

Figure 7-2 Charger FE port directly connected to a router



For details about the commissioning procedure, see **7.1.2.1.2 Charger FE Port Directly Connected to a Router**.

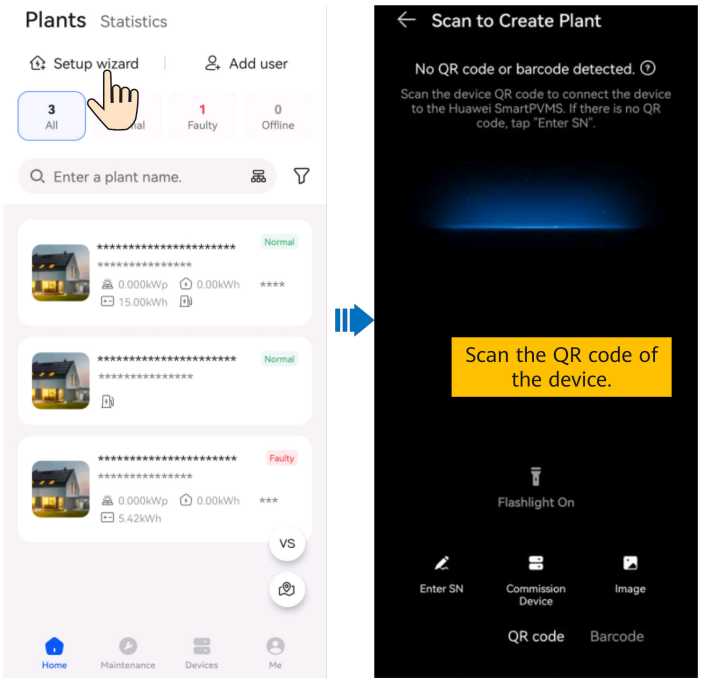
Figure 7-3 Charger connected to a router through WLAN



For details about the commissioning procedure, see **7.1.2.1.3 Charger Connected to a Router Through WLAN**.

7.1.2.1.1 Charger FE Port Directly Connected to a Meter

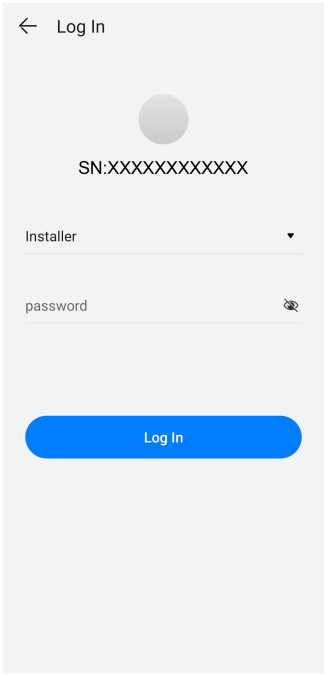
1. Log in to the FusionSolar app as an installer, tap **Setup wizard** on the **Home** screen, scan the QR code of the device, and follow the instructions to connect to the WLAN.



NOTE

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

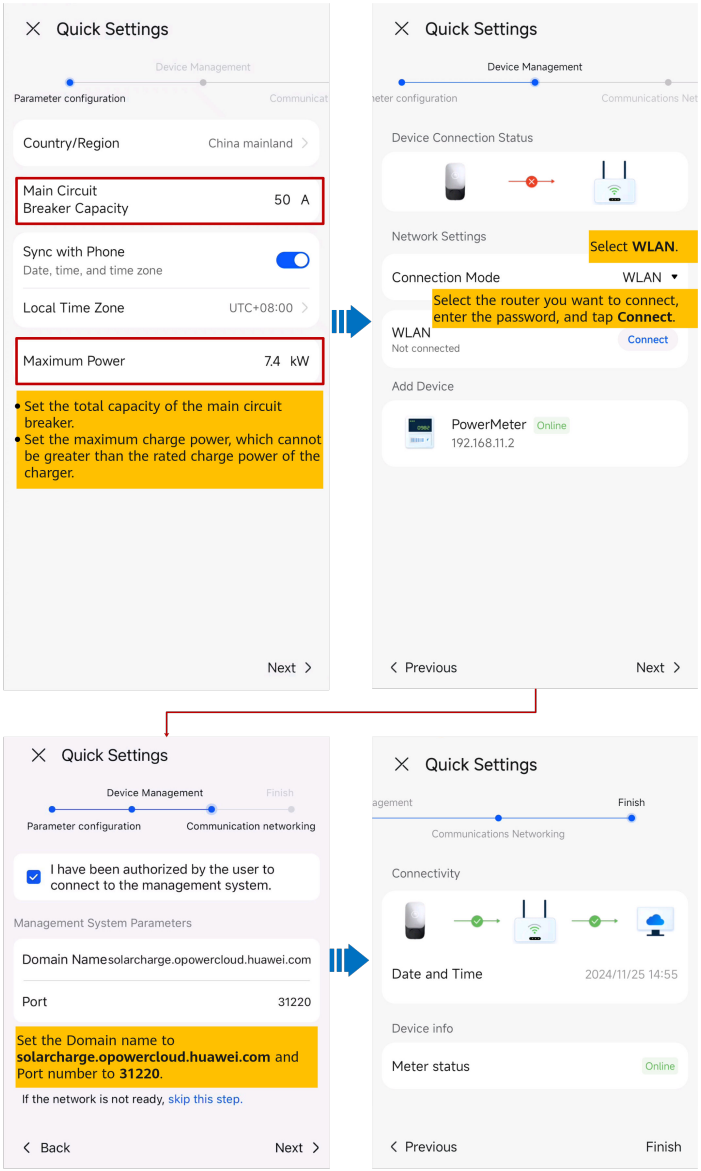
2. Log in to the app as an **Installer**.



NOTE

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

3. Commission the device according to the wizard procedure.



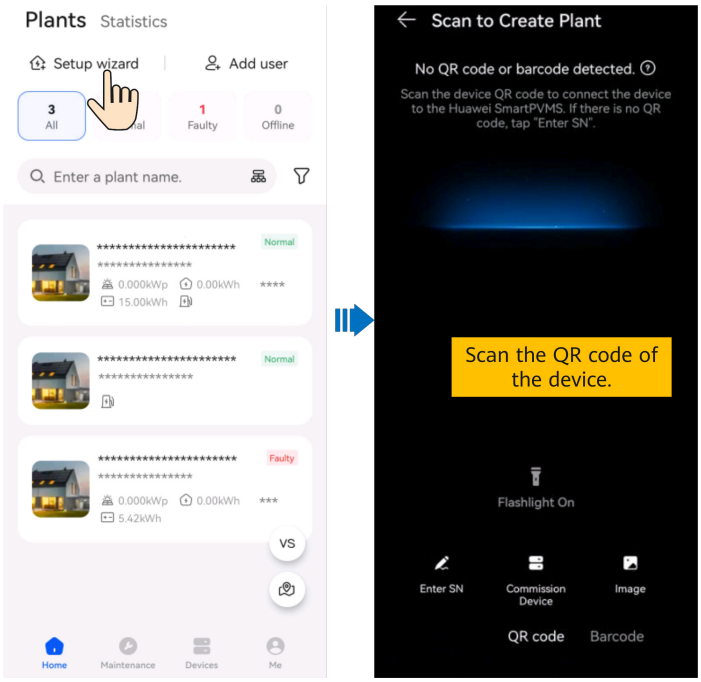
NOTE

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

4. Tap **Finish** and connect devices to a plant as prompted. For details, see **7.1.4 Connecting to a Plant**.

7.1.2.1.2 Charger FE Port Directly Connected to a Router

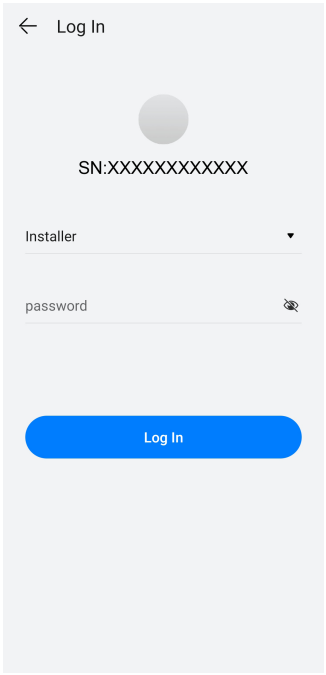
1. Log in to the FusionSolar app as an installer, tap **Setup wizard** on the **Home** screen, scan the QR code of the device, and follow the instructions to connect to the WLAN.



NOTE

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

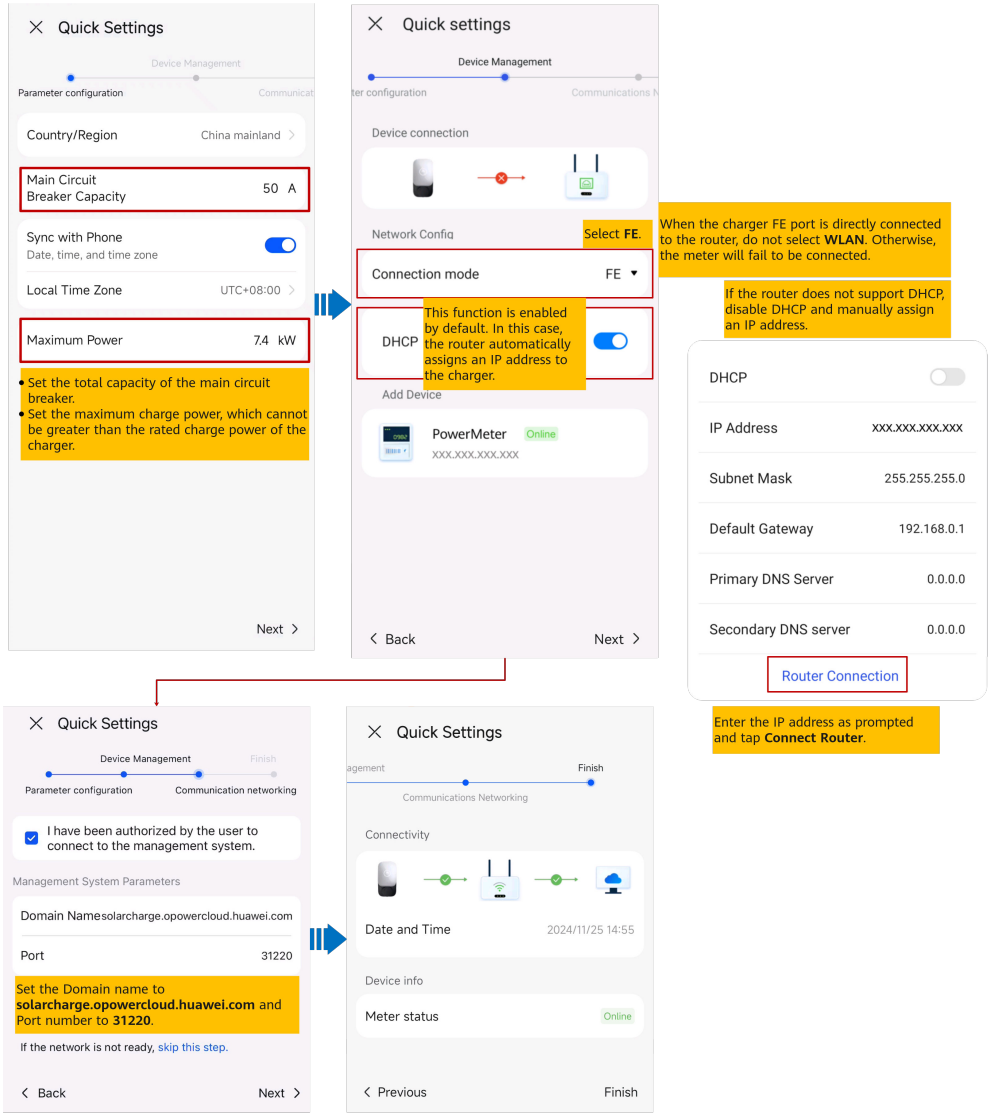
2. Log in to the app as an **Installer**.



NOTE

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

3. Commission the device according to the wizard procedure.



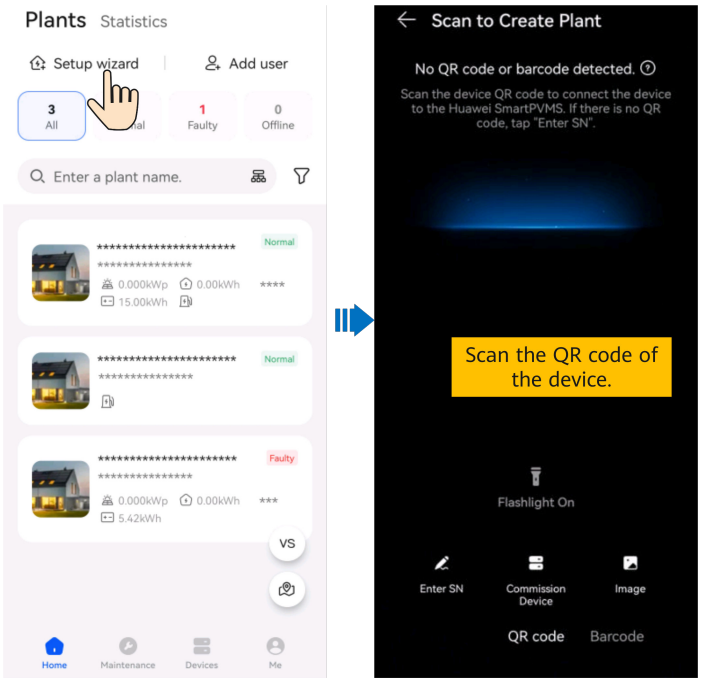
NOTE

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

4. Tap **Finish** and connect devices to a plant as prompted. For details, see **7.1.4 Connecting to a Plant**.

7.1.2.1.3 Charger Connected to a Router Through WLAN

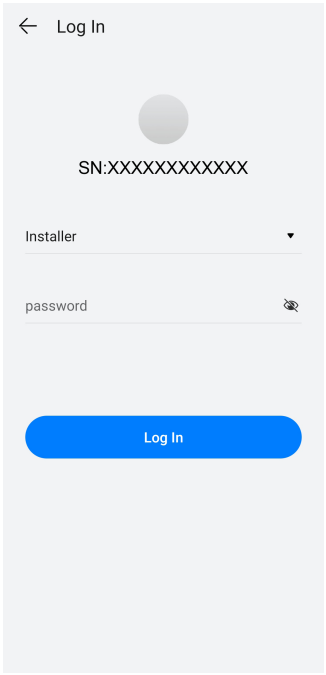
1. Log in to the FusionSolar app as an installer, tap **Setup wizard** on the **Home** screen, scan the QR code of the device, and follow the instructions to connect to the WLAN.



NOTE

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

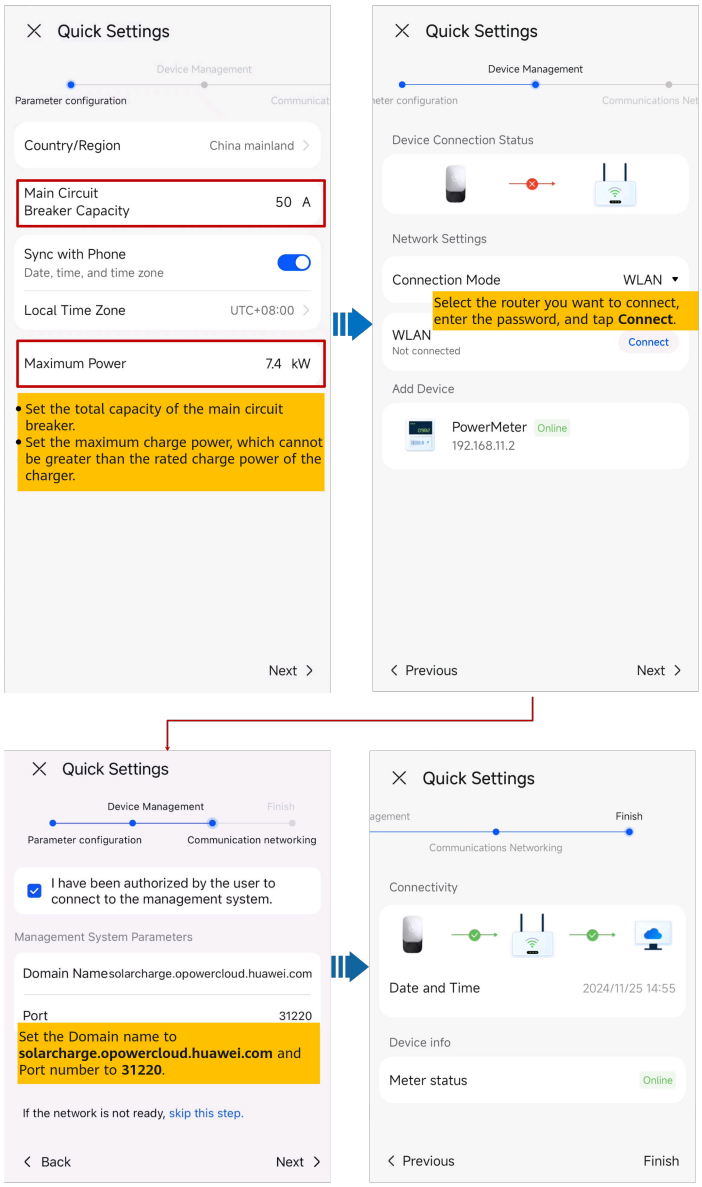
2. Log in to the app as an **Installer**.



NOTE

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

3. Commission the device according to the wizard procedure.



NOTE

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

4. Tap **Finish** and connect devices to a plant as prompted. For details, see **7.1.4 Connecting to a Plant**.

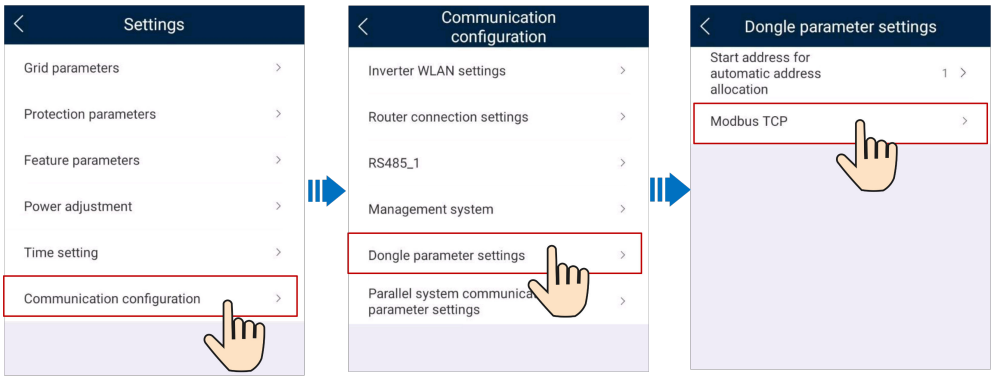
7.1.2.2 PV+ESS+Charger (Smart Dongle/Inverter WLAN Direct Connection Scenario)

The charger can implement dynamic power by connecting to the DTSU666-FE meter or the WLAN/FE Smart Dongle in the PV system through virtual meter networking to obtain RS485 meter detection data.

1. For details about PV+ESS device deployment and commissioning, see **FusionSolar App Quick Guide**, or scan the QR code to obtain the corresponding quick guide.

NOTE

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



2. Commission the charger by referring to **7.1.2.1 Charging-only**.
3. Connect the charger to the created PV plant by referring to Connecting to a Plant.

7.1.2.3 PV+ESS+Charger/ Charging-only (EMMA Scenario)

The charger can be connected to the same router as the EMMA over WLAN or FE. As one of the home loads, the charger is managed and controlled by the EMMA. After the deployment and commissioning on the EMMA side are complete, the charger can be connected to the management system. You do not need to perform deployment and commissioning on the charger separately.

For details about EMMA deployment and commissioning, see **FusionSolar App Quick Guide (EMMA)**, or scan the QR code to obtain the corresponding quick guide.

NOTE

- If there is only one charger, it can be directly connected to the EMMA through the FE port or connected to the router through the FE or WLAN port.
- If there are two chargers, connect the FE ports of the two chargers to the router. Do not connect one charger to the router over wired network (FE) and the other charger over WLAN.

7.1.3 Device Commissioning (PV+ESS)

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

Obtaining the Commissioning Video

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

https://support.huawei.com/enterprise/en/doc/EDOC1100388636

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

Obtaining the Quick Guide

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

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

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

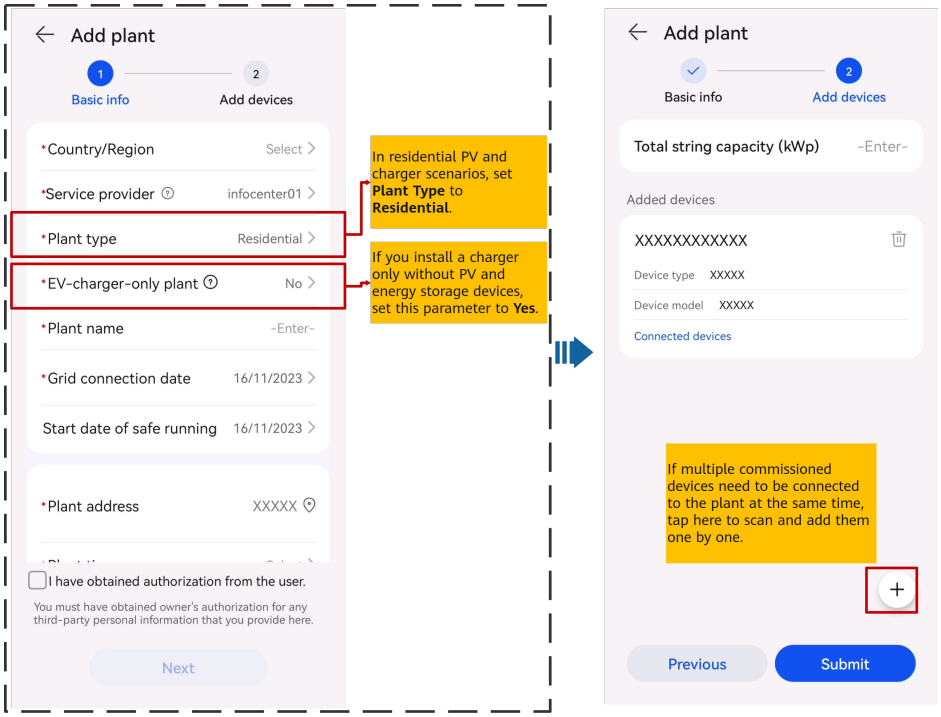
7.1.4 Connecting to a Plant

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

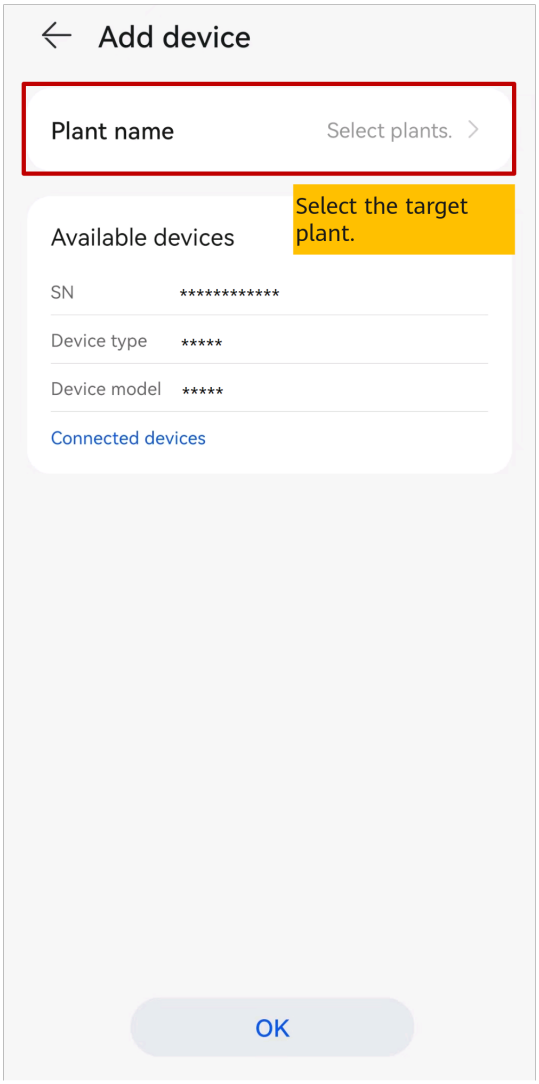
- If the owner does not have a plant on FusionSolar SmartPVMS or FusionSolar app, see **7.1.4.1 Connecting to a New Plant** to connect the devices to a new plant.

- If the owner has a plant on FusionSolar SmartPVMS or FusionSolar app, see **7.1.4.2 Connecting to an Existing Plant** to connect the devices to an existing plant.
- If PV and energy storage devices and chargers are not provided by the same installer, see **7.1.4.3 Connecting Devices to a Plant with Multiple Installers** to connect them to a plant.

7.1.4.1 Connecting to a New Plant



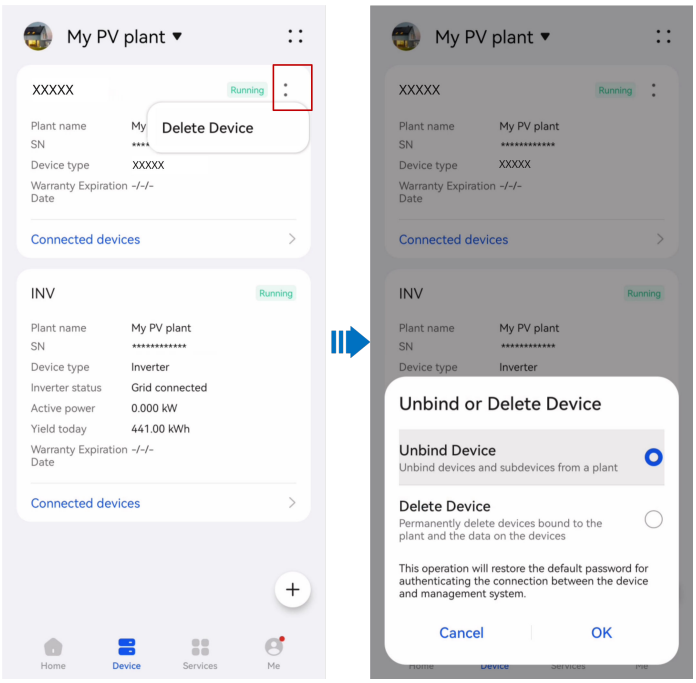
7.1.4.2 Connecting to an Existing Plant



7.1.4.3 Connecting Devices to a Plant with Multiple Installers

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

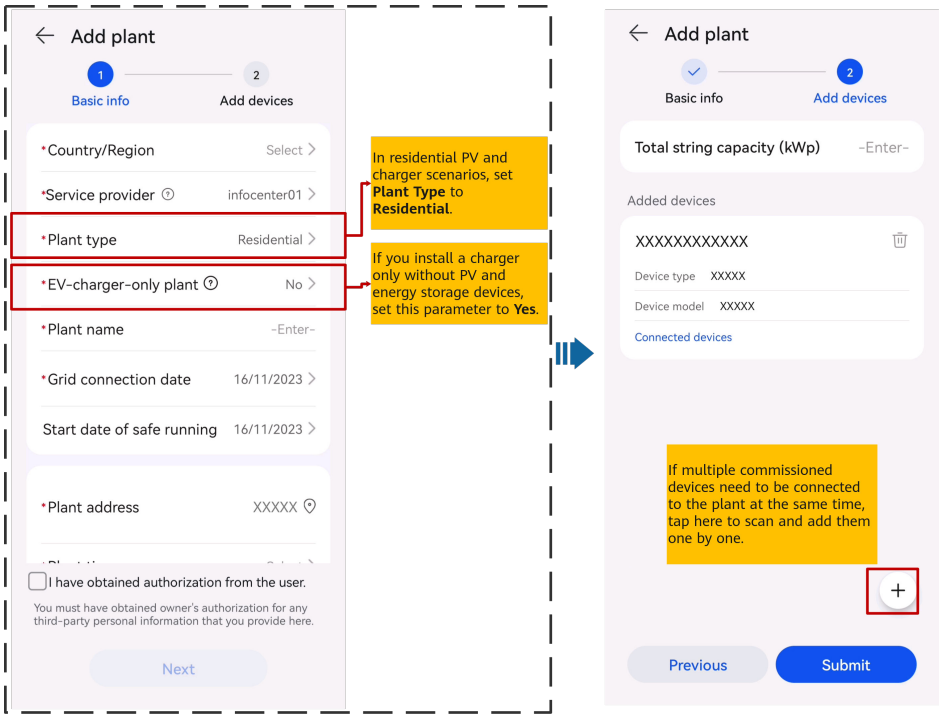
1. The owner logs in to the FusionSolar app and unbinds the charger from the plant created by installer A.
   a. On the home screen of the app, select the target plant.
   b. On the **Device** screen, choose **:** > **Delete Device** in the upper right corner of the target device card.
   c. Tap **Unbind Device** or **Delete Device** as required.



NOTE

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

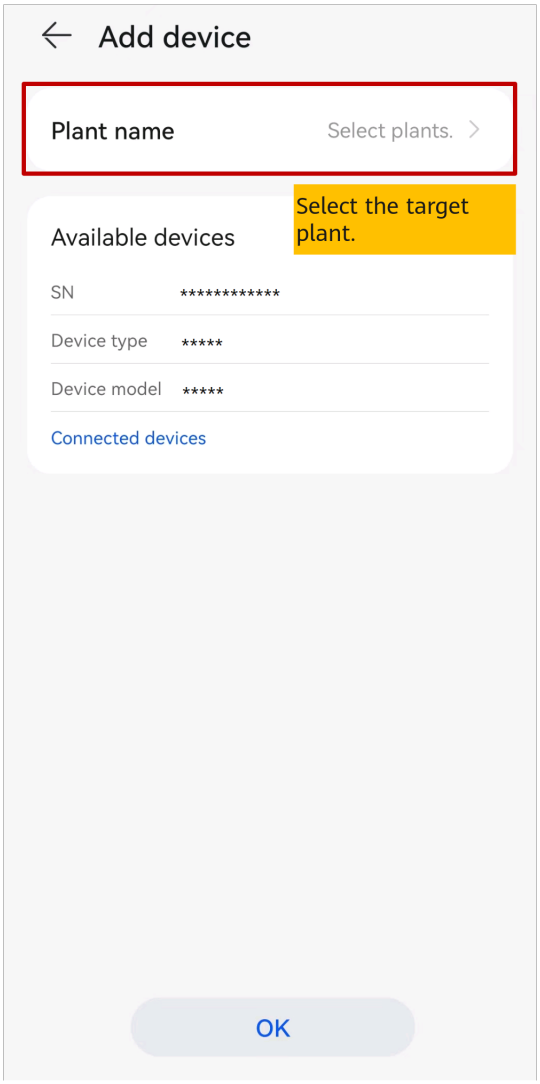
2. Installer B connects the commissioned PV devices and charger to a new PV plant.



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

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

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



7.1.5 Adding a Device

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

Prerequisites

- You have commissioned devices and set management system parameters using the local commissioning tool.
- If devices are connected to the management system through the SmartLogger or Smart Dongle, you need to enter the registration code of the SmartLogger or Smart Dongle when binding a plant. For details about how to obtain the registration code, see **12.10 How Do I Obtain a Registration Code?**.

Procedure

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

b. Scan the QR code of the device to be connected.
c. On the plant creation screen, tap **Connect to existing plant**.
d. Select the plant to be connected.
e. Tap **Confirm**.

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

----End

7.1.6 Setting the String Capacity

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

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

   NOTE

   You can select inverters of the same model or string capacity and set the string capacity.
4. Set the PV string capacity as prompted.

7.1.7 Set Electricity Prices

7.1.7.1 Purpose

The FusionSolar Smart PV Management System (SmartPVMS) calculates plant benefits based on the feed-in tariff and electricity purchase price that you define.

Feed-in Tariff

This is the unit price of the energy that the plant feeds into the grid.

Purchase Price

This is the unit price of electricity purchased from the power grid. The purchase price can be calculated as a compound price that combines multiple calculation schemes or as the simple time-of-use (TOU) price.

- Compound price: The purchase price calculation scheme varies by country/region. To help users accurately calculate the PV benefits, the FusionSolar SmartPVMS comprehensively manages electricity costs, including tiered prices, capacity/demand charges, TOU prices, weekend/holiday electricity prices, and surcharges.

  Installers can create different purchase price templates for plant owners based on the electric power company's purchase price calculation schemes. This enables plant owners to quickly configure purchase prices.
- Simple price: The calculation of a simple price does not require an electricity price template. You can set a fixed price or TOU price.

Electricity Market

The FusionSolar SmartPVMS can connect to the European electricity price markets to obtain the daily dynamic electricity prices as the input for the calculation of PV benefits and electricity purchase cost. Users can also adjust the electricity prices based on the actual contract.

You can configure electricity prices by quick creation or using a template.

- **Quick creation**: You can configure electricity market information, fixed surcharge, electricity price coefficient, minimum contractual fee, and amount-based surcharge.
- **Using a template**: In addition to the information in quick creation, you can also configure the TOU surcharge and demand charge. In this case, the installer shall configure a price template in advance.

Only some European countries and regions support the electricity prices in the electricity markets.

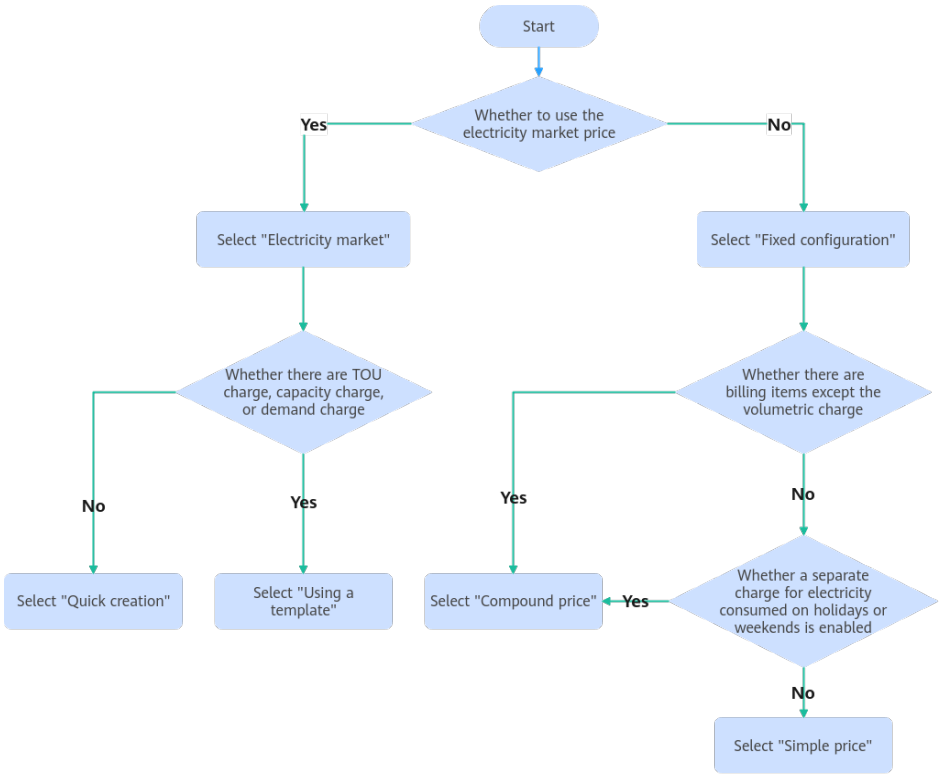
Electricity Market	Country/Region
Nord Pool	Sweden, Denmark, Finland, Norway, Lithuania, Estonia, Latvia, Netherlands, Poland, Belgium, Germany, and Luxembourg

How Do I Select the Electricity Purchase Price Configuration Mode?

1. Is the volumetric charge rate in your electricity purchase contract set to the electricity market price?
   - If yes, go to **Step 2**.
   - If not, go to **Step 3**.
2. Does your contract contain billing items based on TOU, capacity, or demand?
   - If yes, choose **Electricity market** > **Using a template**.
   - If not, choose **Electricity market** > **Quick creation**.
3. Does your contract contain billing items (such as contract fees, additional fees charged based on the electricity consumption, and taxes) in addition to the volumetric charge?
   - If yes, choose **Fixed configuration** > **Compound price**.

- If not, go to **Step 4**.

4. Does your contract stipulate that the purchase price on holidays and weekends is different from that on working days?
   - If yes, choose **Fixed configuration** > **Compound price**.
   - If not, choose **Fixed configuration** > **Simple price**.



7.1.7.2 Configuring the Feed-in Tariff

7.1.7.2.1 Configuring the Feed-in Tariff (Fixed Configuration)

1. On the home screen of the app, select the target plant and choose **::** > **Plant Settings** in the upper right corner.
2. On the **Plant Settings** screen, choose **Set Electricity Prices** > **Feed-in tariff**.

   If the country or region where your plant is located supports dynamic purchase prices, the **Electricity market** option is displayed. In this case, set the price source to **Fixed configuration**.
3. Set the time segment and enter the feed-in tariff in the time segment.

   If the feed-in tariff varies based on time segments or date periods, you can tap **Add Time Segment** and **Add date period** to set multiple time segments and date periods.

7.1.7.2.2 Configuring the Feed-in Tariff (Electricity Market)

1. On the home screen of the app, select the target plant and choose **::** > **Plant Settings** in the upper right corner.
2. On the **Plant Settings** screen, choose **Set Electricity Prices** > **Feed-in tariff**.

3. Select **Electricity market** and tap **Next**.

   If **Electricity market** is not displayed, check whether the country or region set for the plant supports the electricity market and whether the plant type is **Residential** or **C&I**.

4. Select an area, set parameters such as **Fixed Surcharge**, and tap **Submit**.

Charge Category	Description
Fixed Surcharge	You can set this parameter to **Expenditure** or **Subsidy**. **Expenditure**: fees such as commissions charged by the electric power company by kilowatt-hour when surplus PV power is sold to the electric power company. **Subsidy**: extra revenue earned by kilowatt-hour when the surplus PV power is sold to the electric power company, in addition to the feed-in tariff in the electricity market.
Electricity Price Coefficient	In some areas, residents need to pay a percentage of the electricity sales revenue (such as taxes). The actual electricity sales revenue needs to deduct the charges. For example, if the tax rate is 25%, the electricity price coefficient is 0.75. If no tax is involved, the electricity price coefficient is 1.

7.1.7.3 Configuring the Purchase Price

7.1.7.3.1 Configuring the Purchase Price (Simple Price)

1. On the home screen of the app, select the target plant and choose **::** > **Plant Settings** in the upper right corner.
2. On the **Plant Settings** screen, choose **Set Electricity Prices** > **Purchase Price**.
3. Select **Simple Price** and tap **Next**.

   If the country or region where your plant is located supports dynamic purchase prices, the **Electricity market** option is displayed. In this case, set the price source to **Fixed configuration**, and then select **Simple Price** to configure parameters.

4. Set the time segment and enter the purchase price in the time segment.

   If the purchase price varies based on time segments or date periods, you can tap **Add Time Segment** and **Add date period** to set multiple time segments and date periods.

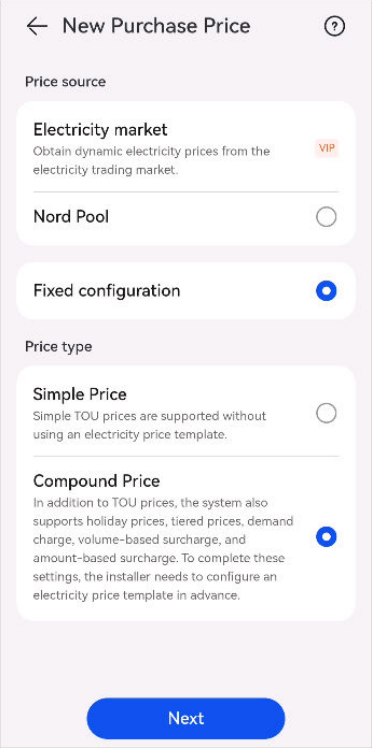
7.1.7.3.2 Configuring the Purchase Price (Compound Price)

NOTICE

Before configuration, set the correct country/region where the plant is located and the correct plant type. Otherwise, the system cannot push the electricity price template of the target country/region.

1. On the home screen of the app, select the target plant and choose **::** > **Plant Settings** in the upper right corner.
2. On the **Plant Settings** screen, choose **Set Electricity Prices** > **Purchase price**.
3. Select **Compound Price** and tap **Next**.

   If the country or region where your plant is located supports dynamic purchase prices, the **Electricity market** option is displayed. In this case, set the price source to **Fixed configuration**, and then select **Compound Price** to configure parameters.



4. Select the price template and configure electricity prices based on the electricity price information signed in the purchase contract.

   For more details about configuration, see **7.1.7.3.4 Example of Configuring a Compound Price**.

   NOTE

   - Select an appropriate electricity price template based on the electricity fee calculation method in the purchase contract signed with the electric power company.
   - If the electricity price calculation method in the available electricity price template is different from that in the purchase contract, contact the installer to add a template.

Parameter Description

Table 7-2 Volumetric charge rate description

Charge Category	Description
Price source	**Electricity market**: The volumetric charge rate is decided by the dynamic purchase price in the electricity market. **Fixed configuration**: In the contract period, the volumetric charge rate is a fixed price (consisting of the tiered price and time-of-use price).
Time segments in a day or not	**Yes**: A day is divided into several time segments. The purchase price varies based on time segments.
	No: The same purchase price applies in all time segments in a day.
Time segment	**Specified period**: The purchase price is valid only within a specified period of time and not repeated periodically.
	By month: The purchase price varies by month. Within the validity period, the purchase price is charged by month.
	By season: The purchase price varies by season. Within the validity period, the purchase price is charged by season.
Separate charging on weekends	Electricity is charged at a different rate on weekends or holidays.
Separate charging on holidays	
Tiered pricing or not	The purchase price varies based on tiers of electricity consumption. Once the limit for a tier is exhausted, the consumed electricity is billed at the next tier's rate. **Based on TOU consumption**: The TOU consumption in a time segment is charged in a specified statistical period. **Based on total consumption**: The total consumption in all the time segments is charged in a specified statistical period.

Table 7-3 Demand charge rate description

Charge Category	Description
Not applicable	No demand charge rate is applicable.
Fixed amount	The demand charge rate is fixed and does not change with the demand or capacity.
By demand	Charge based on the actual demand.
By device/transformer capacity	Charge based on the device or transformer capacity.
By contractual demand	Charge based on the demand specified in the purchase contract. **Non-TOU**: In a billing period, the demands of all time segments are the same. **TOU**: In a billing period, the demand varies based on time segments.

NOTE

Residential plants support only **Fixed amount**.

C&I plants support **By demand**, **By device/transformer capacity**, and **By contractual demand**.

Table 7-4 Description of other fees

Charge Category	Description
Fixed fee	Refers to a fixed amount of fee incurred in the billing period, which does not include the minimum contractual fee. **NOTE** The fee is not relevant to the volumetric charge or demand charge.
Volume-based surcharge	In addition to the volumetric charge rates, an extra fee needs to be paid for each kilowatt-hour of electricity purchased in the billing period. The fee does not change with the increase in the total electricity consumed.
Amount-based surcharge	Refers to an additional amount of fee charged by a certain percentage based on the total electricity fee in a billing period.
Min. contractual fee	If the total electricity fee generated in the billing period is lower than the minimum contractual fee, the minimum contractual fee is charged.

NOTE

C&I plants do not support **Min. contractual fee**.

7.1.7.3.3 Configuring the Purchase Price (Electricity Market)

NOTICE

Before configuration, set the correct country/region where the plant is located and the correct plant type. Otherwise, the system cannot push the electricity price template of the target country/region.

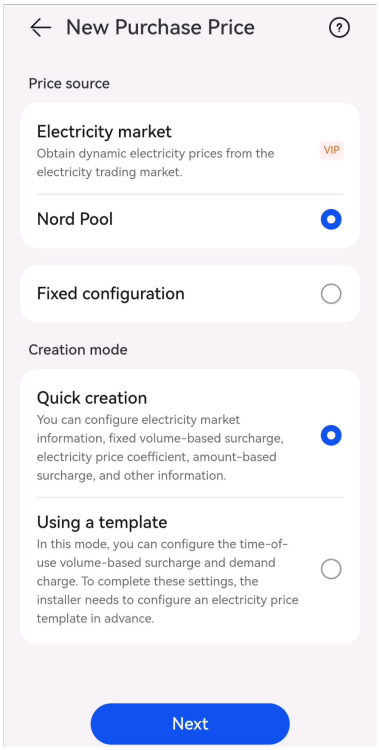
1. On the home screen of the app, select the target plant and choose **::** > **Plant Settings** in the upper right corner.
2. On the **Plant Settings** screen, choose **Set Electricity Prices** > **Purchase price**.
3. Set **Price source** to **Electricity market**.

   NOTE

   - If you select **Fixed configuration**, set purchase prices by referring to **7.1.7.3.1 Configuring the Purchase Price (Simple Price)** or **7.1.7.3.2 Configuring the Purchase Price (Compound Price)**.
   - If **Electricity market** is not displayed, check whether the country or region set for the plant supports the electricity market and whether the plant type is **Residential** or **C&I**.
4. Select an electricity price configuration mode as required.
   - **Quick creation** supports only fixed surcharges. If TOU surcharges are specified in the electricity purchase contract, select **Using a template**.
   - **Using a template** supports TOU surcharges and allows you to configure electricity prices using a template configured by your installer.

   NOTE

   - If **Using a template** is selected, choose an appropriate electricity price template based on the electricity fee calculation method in the purchase contract signed with the electric power company.
   - If the electricity price calculation method in the available electricity price template is different from that in the purchase contract, contact the installer to add a template.



5. Configure electricity prices based on the electricity price information signed in the electricity purchase contract.

Parameter Description

Table 7-5 Volumetric charge rate description

Charge Category	Description
Price source	**Electricity market**: The volumetric charge rate is decided by the dynamic purchase price in the electricity market. **Fixed configuration**: In the contract period, the volumetric charge rate is a fixed price (consisting of the tiered price and time-of-use price).
Fixed Surcharge	You can set this parameter to **Expenditure** or **Subsidy**. **Expenditure**: An extra fixed fee specified in the contract for each kWh of purchased electricity in addition to the fee charged based on the prices in the electricity market **Subsidy**: A subsidy paid by the electric power company to a user for each kWh of purchased electricity to encourage grid electricity consumption.

Charge Category	Description
TOU Surcharge	An extra TOU fee specified in the contract for each kWh of electricity purchased from the electric power company in addition to the fee charged based on the prices in the electricity market
Time segments in a day	**Yes**: A day is divided into several time segments. The purchase price varies based on time segments.
	No: The same purchase price applies in all time segments in a day.
Electricity Price Coefficient	In some regions, the electricity market price, fixed surcharge, and TOU surcharge refer to pretax unit prices. Users need to pay taxes based on a specified tax rate. For example, if the tax rate is 25%, the electricity price coefficient is 1.25. If no tax is involved, the electricity price coefficient is 1.
Separate charging on weekends	Electricity is charged at a different rate on weekends or holidays. If this item is not involved, select **No**.
Separate charging on holidays	

Table 7-6 Demand charge rate description

Charge Category	Description
Not applicable	No demand charge rate is applicable.
Fixed amount	The demand charge rate is fixed and does not change with the demand or capacity.
By demand	Charge based on the actual demand.
By device/transformer capacity	Charge based on the device or transformer capacity.
By contractual demand	Charge based on the demand specified in the purchase contract. **Non-TOU**: In a billing period, the demands of all time segments are the same. **TOU**: In a billing period, the demand varies based on time segments.

NOTE

Residential plants support only **Fixed amount**.

C&I plants support **By demand**, **By device/transformer capacity**, and **By contractual demand**.

Table 7-7 Description of other fees

Charge Category	Description
Fixed fee	Refers to a fixed amount of fee incurred in the billing period, which does not include the minimum contractual fee. **NOTE** The fee is not relevant to the volumetric charge or demand charge.
Volume-based surcharge	In addition to the volumetric charge rates, an extra fee needs to be paid for each kilowatt-hour of electricity purchased in the billing period. The fee does not change with the increase in the total electricity consumed.
Amount-based surcharge	Refers to an additional amount of fee charged by a certain percentage based on the total electricity fee in a billing period.
Min. contractual fee	If the total electricity fee generated in the billing period is lower than the minimum contractual fee, the minimum contractual fee is charged.

NOTE

C&I plants do not support **Min. contractual fee**.

7.1.7.3.4 Example of Configuring a Compound Price

The examples in this document are for reference only.

Example of Configuring a Purchase Price (Residential Scenario 1)

Keywords: TOU pricing, tiered pricing

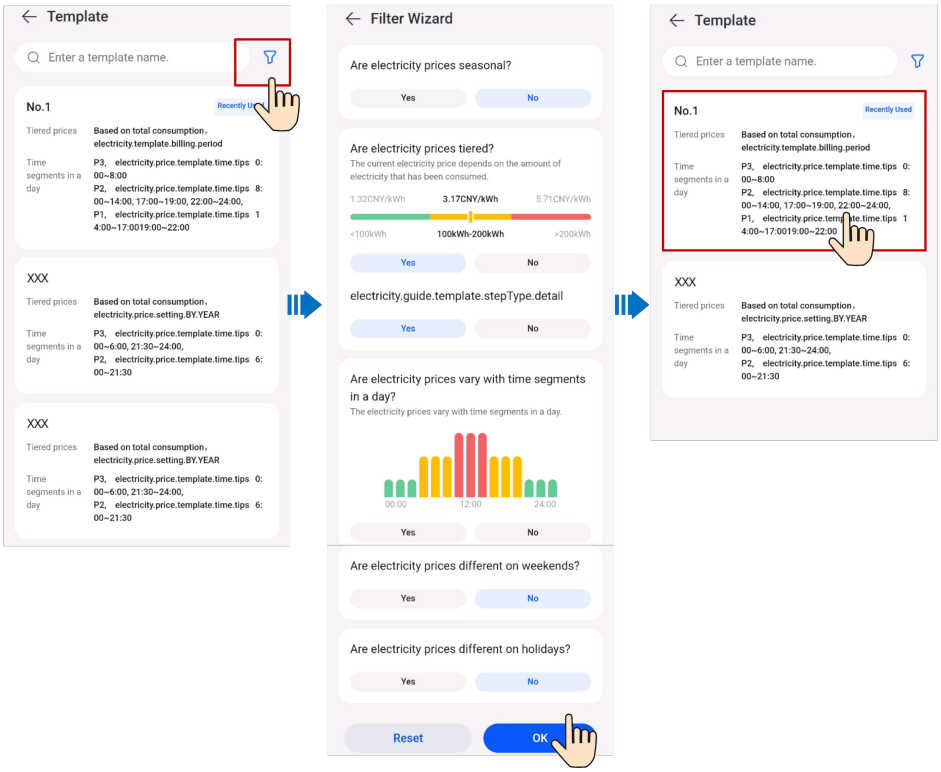
1. Table 7-8 is used as an example to obtain the following information by analyzing the purchase price scheme:
   - The purchase price changes with the time segments in a day.
   - The current purchase price depends on the volume of electricity consumption. Tiered pricing is adopted for all the time segments in a day.

Table 7-8 Residential electricity price list of XX electric power company in China

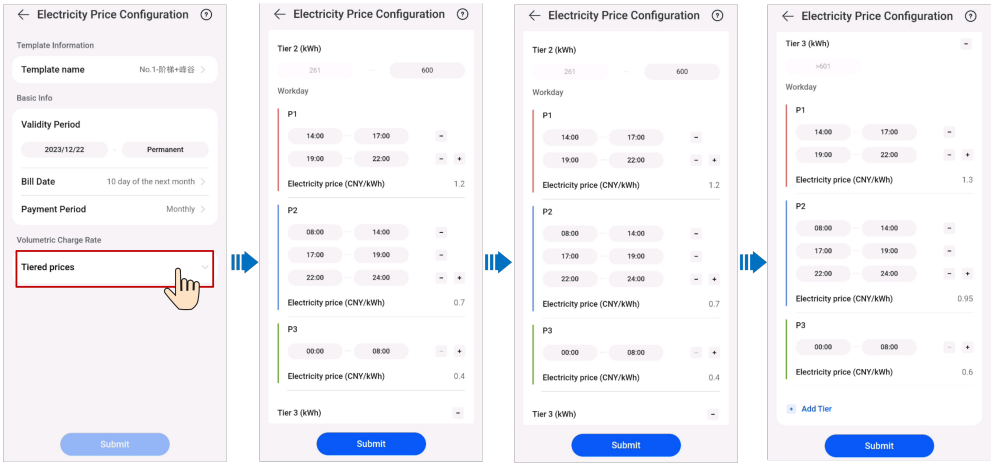
Price Type	Unit Price (CNY/kWh)

Tier 1 (0–260 kWh)	Peak hours	1
	Shoulder hours	0.65
	Off-peak hours	0.35
Tier 2 (261–600 kWh)	Peak hours	1.2
	Shoulder hours	0.7
	Off-peak hours	0.4
Tier 3 (≥ 601 kWh)	Peak hours	1.3
	Shoulder hours	0.95
	Off-peak hours	0.6
Note: • Peak hours (14:00–17:00; 19:00–22:00) • Shoulder hours (8:00–14:00; 17:00–19:00; 22:00–24:00) • Off-peak hours (00:00–8:00) • For tiered pricing, the total volume of electricity consumption will be reset monthly. The data of one month will not be carried over to the next month.		

2. Select the price template based on the analysis result in **Step 1**.



3. After the template is selected, fill in the electricity price information according to the contract.



NOTE

If the time segment and tier set in the template are inconsistent with the actual situation, you can reset them as required.

Example of Configuring a Purchase Price (Residential Scenario 2)

Keywords: pricing by season, tiered pricing, extra fee based on volumetric charge, min. contract fee

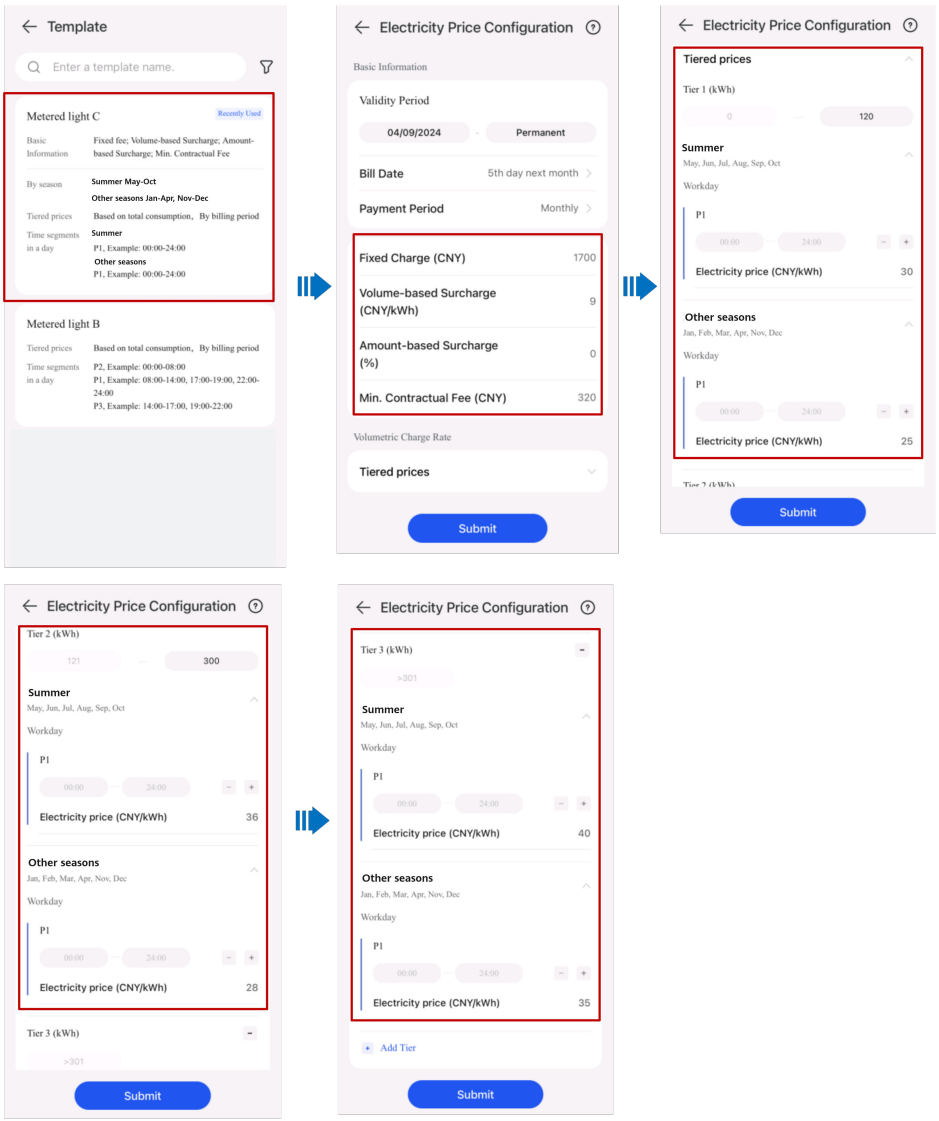
1. Table 7-9 is used as an example to obtain the following information by analyzing the purchase price scheme:
   - The purchase price varies with seasons.
   - The purchase price varies based on tiers of electricity consumption. Once the limit for a tier is exhausted, the consumed electricity is billed at the next tier's rate.

Table 7-9 Residential electricity price list of XX electric power company in Japan

Price Type		Unit Price
Basic fee	60 (A)	JPY1700/month
Volumetric charge rate (summer)	Tier 1 (0–120 kWh)	JPY30/kWh
	Tier 2 (121–300 kWh)	JPY36/kWh
	Tier 3 (> 301 kWh)	JPY40/kWh
Volumetric charge rate (other seasons)	Tier 1 (0–120 kWh)	JPY25/kWh
	Tier 2 (121–300 kWh)	JPY28/kWh
	Tier 3 (> 301 kWh)	JPY35/kWh
Minimum monthly fee	JPY320	
Fuel cost adjustment	-	JPY6/kWh
Renewable energy regulation	-	JPY3/kWh

Price Type	Unit Price
Note: • Summer: May to October • Other seasons: January to April, November, and December • For tiered pricing, the total volume of electricity consumption will be reset monthly. The data of one month will not be carried over to the next month.	

2. After selecting a template based on the analysis result in **Step 1**, fill in the electricity price information based on the contract.



NOTE

- The fixed fee that is irrelevant to the electricity consumption amount and demand and charged by month are included in **Fixed amount**.
- The fee for fuel cost adjustment and fee for renewable energy regulation are calculated based on the volumetric charge and are included in **Volume-based surcharge**.
- If no electricity is consumed in the current month, **Min. contractual fee** is charged.

NOTE

If the time segment and tier set in the template are inconsistent with the actual situation, you can reset them as required.

Example of Configuring a Purchase Price (C&I Scenario 1)

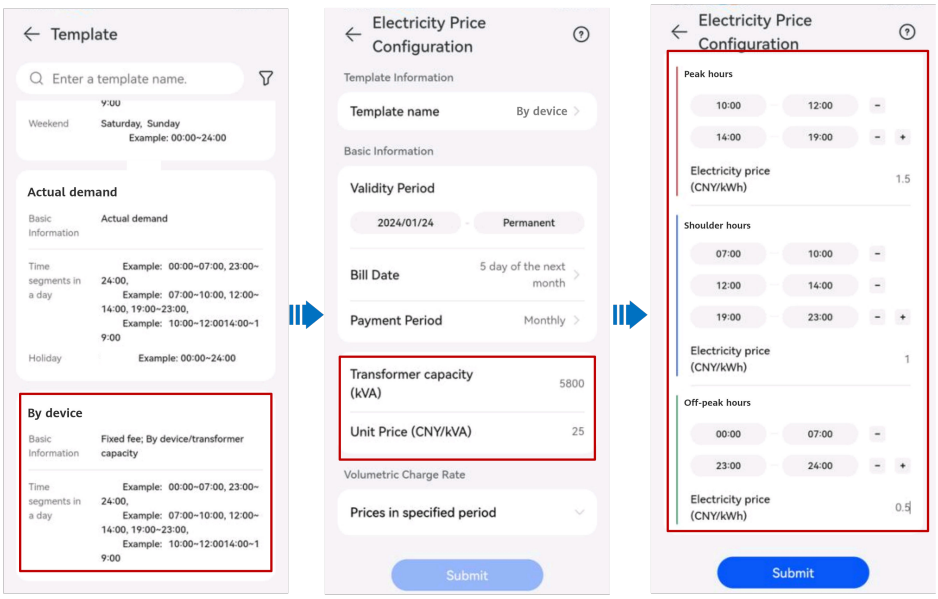
Keywords: TOU pricing, device capacity, transformer capacity

1. **Table 7-10** is used as an example to obtain the following information by analyzing the purchase price scheme:
   - The purchase price changes with the time segments in a day.
   - The demand charge rate is calculated based on the device capacity or transformer capacity.

Table 7-10 C&I electricity price list of XX electric power company in China

Demand Charge Rate			
Validity Period of the Contract	January 1, 2024 to December 31, 2025	**Billing Mode**	By transformer capacity
Running Capacity	5800 kVA	**Unit Price**	CNY25/kVA
Volumetric Charge Rate			
Peak hours	10:00–12:00, 14:00–19:00		CNY1.5/kWh
Shoulder hours	07:00–10:00, 12:00–14:00, 19:00–23:00		CNY1/kWh
Off-peak hours	23:00 to 07:00 (next day)		CNY0.8/kWh

2. Select the price template based on the analysis result in **Step 1**. Fill in the electricity price information based on the contract.



NOTE

If a time segment spans two days, divide it into two time segments. In this example, the off-peak time segment (23:00 to 07:00 of the next day) shall be divided into 00:00 to 07:00 and 23:00 to 24:00.

If the time segment and tier set in the template are inconsistent with the actual situation, you can reset them as required.

Example of Configuring a Purchase Price (C&I Scenario 2)

Keywords: TOU pricing, pricing on weekend, contractual demand, fixed payment, charge by percentage of total electricity bill

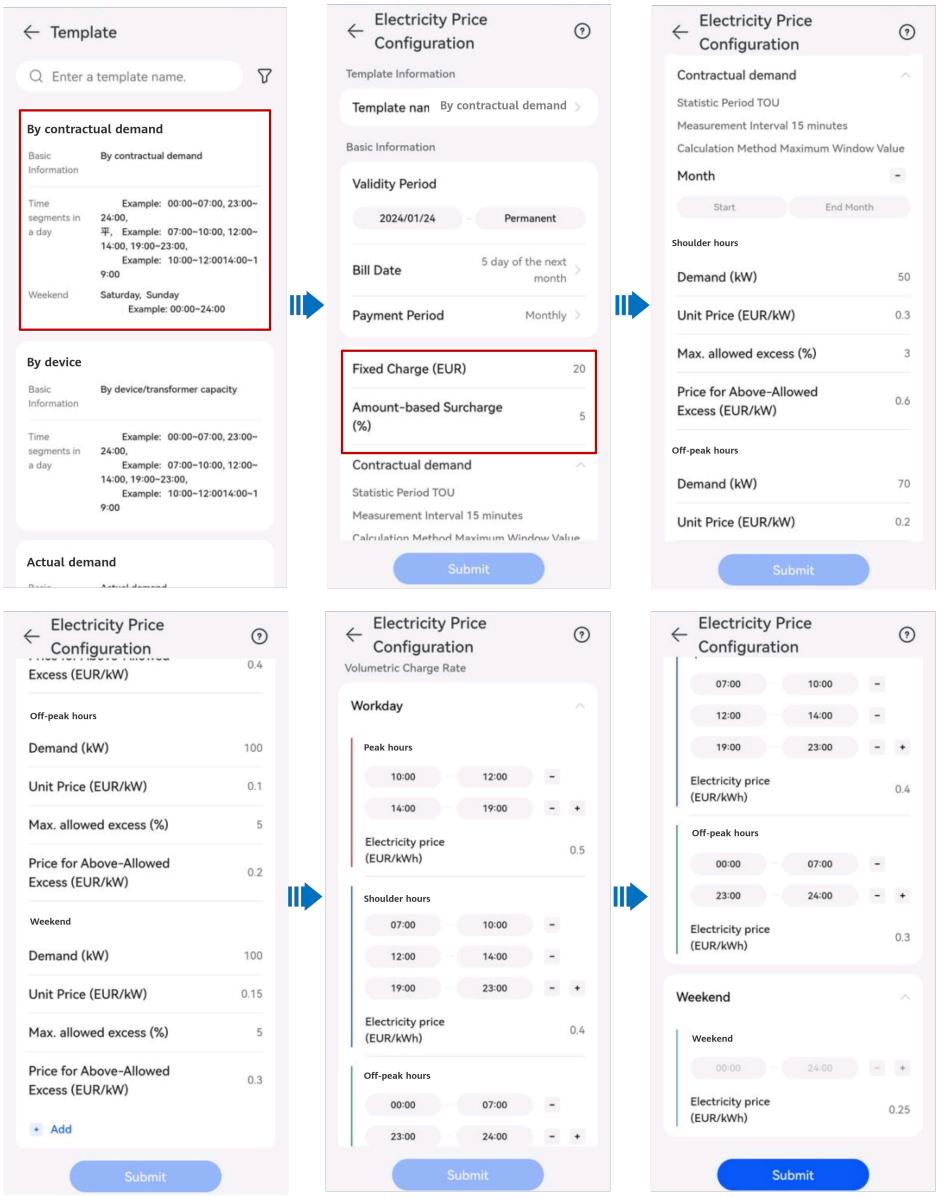
1. Table 7-11 is used as an example to obtain the following information by analyzing the purchase price scheme:
   - The purchase price on working days changes with the time segments.
   - The purchase price on weekends is different from that on working days.
   - The demand charge rate is calculated based on the demand specified in the contract and varies with time in a day.

Table 7-11 C&I electricity price list of XX electric power company in Spain

Validity Period of the Contract	January 1, 2024 to December 31, 2025	**Billing Mode**	By contractual demand
Demand Charge Rate			
Time Segment		**Demand (kW)**	**Unit Price (CNY/kW)**
P1	10:00–12:00, 14:00–19:00	50	0.3

P2	07:00–10:00, 12:00–14:00, 19:00–23:00	70	0.2
P3	00:00–07:00, 23:00–24:00	100	0.1
Saturday and Sunday	All day	100	0.15
Volumetric Charge Rate			
Monday to Friday			
Time Segment			**Unit Price (CNY/kWh)**
P1	10:00–12:00, 14:00–19:00		0.5
P2	07:00–10:00, 12:00–14:00, 19:00–23:00		0.4
P3	00:00–07:00, 23:00–24:00		0.3
Saturday and Sunday	All day		0.25
Note: • Electricity consumption tax: 5% • Meter rental fee: 2 euros/month • If the actual highest demand does not exceed 105% of the contractual demand, the demand charge rate is equal to the contractual rate. If the actual highest demand exceeds 105% of the contractual demand, the additional demand is charged by the doubled contractual rate.			

2. After selecting a template based on the analysis result in **Step 1**, fill in the electricity price information based on the contract.



NOTE

- The electricity consumption tax is charged based on the percentage of the total electricity bill and included in **Amount-based surcharge**.
- The meter rental fee is charged every month and included in **Fixed amount**.

NOTE

If the time segment and tier set in the template are inconsistent with the actual situation, you can reset them as required.

7.1.7.3.5 Example of Configuring a Purchase Price (Electricity Market)

The examples in this document are for reference only.

Example of Configuring a Purchase Price by Quick Creation

Keywords: Nord Pool, dynamic electricity price, electricity price coefficient

1. Table 7-12 shows an example.

   Table 7-12 Electricity prices of xx electric power company in Denmark

Item	Price	Remarks
Volumetric charge rate	Hourly spot electricity price listed in the electricity exchange	Excluding the value-added tax (VAT)
Grid consumption fee	SEK0.3/kWh	The VAT of 25% is included.
Energy tax	SEK0.5/kWh	
VAT: 25%		

   NOTICE

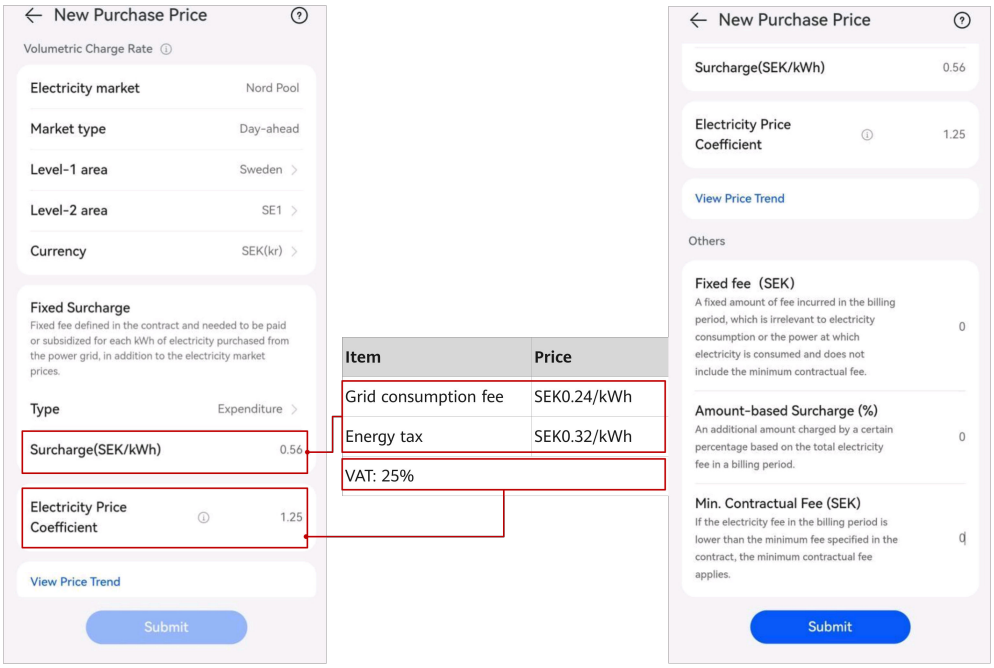
   In the electricity purchase contract, the volumetric charge rate does not include the VAT. Therefore, when configuring the rate, you need to remove the VAT and then enter the VAT separately.

2. Convert the VAT-inclusive charge rate in the contract to the VAT-exclusive charge rate. The converted charge rate is as follows.

   Table 7-13 Electricity prices of xx electric power company in Denmark (VAT-exclusive)

Item	Price	Remarks
Volumetric charge rate	Hourly spot electricity price listed in the electricity exchange	Excluding the VAT
Grid consumption fee	SEK0.24/kWh	
Energy tax	SEK0.32/kWh	
VAT: 25%		

3. Enter the electricity price information based on the calculation result in **Step 2**.
   - The grid consumption fee and energy tax are calculated by multiplying the energy consumption by the unit price. Enter the sum of the grid consumption fee and energy tax in **Fixed Surcharge** of **Volumetric Charge Rate**, and set the type to **Expenditure**.
   - If no fee in the **Others** module is involved, enter 0.



NOTE

In this case, you can include the VAT in the surcharge.

Learn More

12.31 What Is the Difference Between Electricity Price Coefficient and Amount-based Surcharge?

Example of Configuring a Purchase Price by a Template

Keywords: Nord Pool, dynamic electricity price

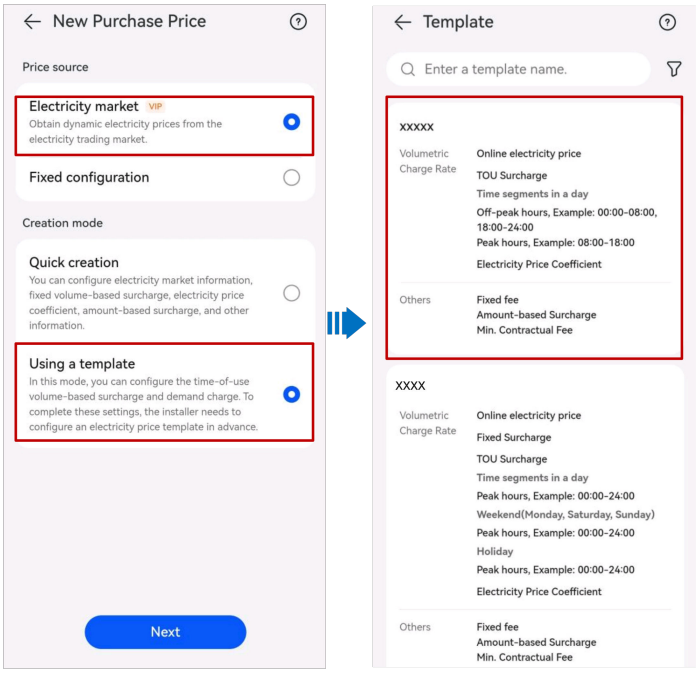
1. Table 7-14 shows an example.

   According to the contract, the electricity transmission charge rate is a TOU charge rate. Because TOU pricing is not supported in the quick creation mode, you need to select the creation mode of using a template in this case.

Table 7-14 Electricity prices of xx electric power company in Finland

Item	Price	Remarks
Volumetric charge rate	Hourly spot electricity price listed in the electricity exchange	Excluding the VAT
Electricity transmission charge rate	Peak hours (08:00–18:00): EUR0.07/kWh Off-peak hours (18:00–08:00 of the next day): EUR0.04/kWh	
Contractual fee	EUR5/month	
VAT: 25%		

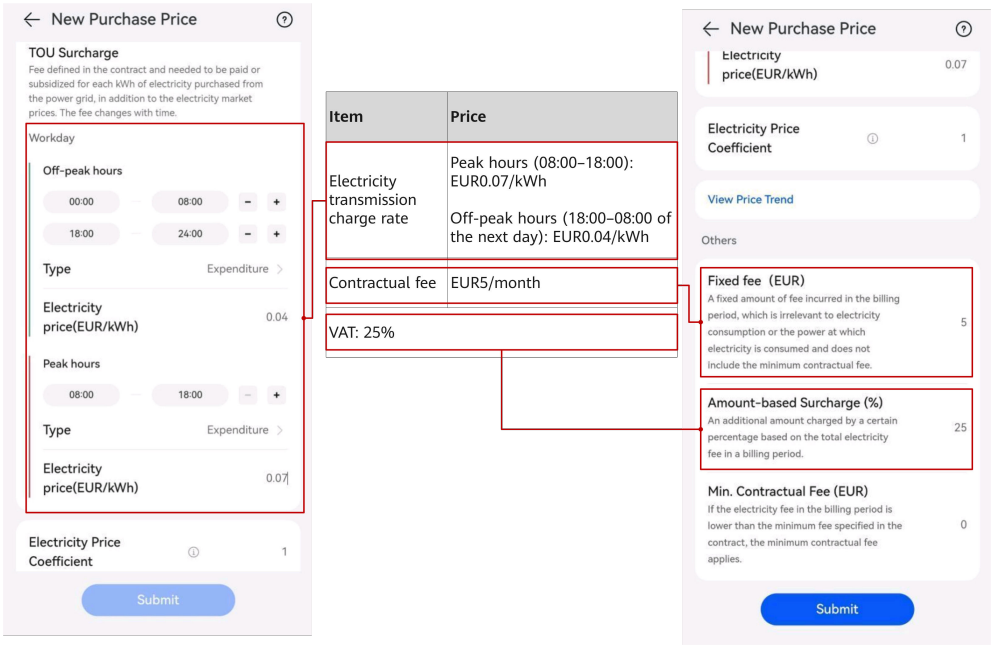
2. Select the price template that includes **TOU Surcharge** based on the analysis result in **Step 1**.



NOTE

If the price template does not match the contract information or no price template is available, contact the installer to add a template.

3. After the template is selected, fill in the electricity price information according to the contract.
   - Enter the electricity transmission charge rates by TOU in **TOU Surcharge** and set the type to **Expenditure**.
   - Enter the monthly fixed amount of charge in **Fixed amount**.
   - In this example, all billing items are VAT-exclusive. You need to include the VAT rate in **Amount-based surcharge**. Do not include the VAT rate in **Electricity Price Coefficient**. Otherwise, the contractual fee will not be taxed.



NOTE

If a time segment spans two days, divide it into two time segments. In this example, the off-peak time segment (23:00 to 08:00 of the next day) shall be divided into 00:00 to 08:00 and 23:00 to 24:00.

If the time segments set in the template are inconsistent with the actual situation, you can reset them as required.

Learn More

12.31 What Is the Difference Between Electricity Price Coefficient and Amount-based Surcharge?

7.1.7.4 Adding a Purchase Price Template (Only Installers Allowed)

- Only an installer can configure a purchase price template on the FusionSolar SmartPVMS.
- The FusionSolar app does not support the configuration of purchase price templates.
- If an owner needs to add a purchase price template, contact the installer.

7.1.7.5 Enabling Negative Rate Optimization

In an electricity market, a negative feed-in tariff or electricity purchase price sometimes occurs. When the feed-in tariff is a negative value, users can stop feeding surplus PV power into the grid. When the electricity purchase price is a negative value, users can purchase electricity from the grid to satisfy the demands of loads and charge batteries as much as possible to obtain more benefits.

NOTICE

- Currently, negative rate optimization is available only in countries that support market electricity prices.
- Negative rate optimization is supported only when the ESS working mode is **TOU** or **Max. self-consumption**.

1. On the home screen of the app, select the target plant and choose **::** > **Plant Settings** in the upper right corner.
2. On the **Plant Settings** screen, enable **Negative Rate Optimization**.

7.1.7.6 More Operations

7.1.7.6.1 Applying the Purchase Price to Other Plants

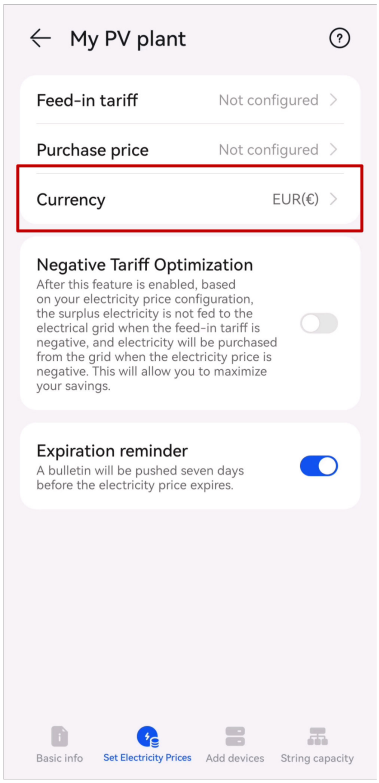
If multiple plants use the same electricity price calculation scheme, you can apply the configured prices to other plants.

1. Choose **Me** > **Plant management** on the home screen of the app and tap the target plant in the plant list.
2. Choose **Set Electricity Prices** > **Purchase price**.
3. Select the target purchase price and choose **:** > **Apply to Other Plants**.
4. Select the target plant and apply the price configuration to the plant as prompted.

7.1.7.6.2 Editing the Currency of the Plant

If the currency displayed in the plant revenue is inconsistent with the actual one, correct it.

1. Choose **Me** > **Plant management** on the home screen of the app and tap the target plant in the plant list.
2. Modify the currency information on the **Set Electricity Prices** screen.



NOTE

Only the currency of the plant revenue is changed. The actual revenue data does not change with the currency.

7.1.7.6.3 Setting Purchase Prices for Holidays (Only Installers Allowed)

For some countries/regions where electricity are charged separately on holidays, you can configure the specific dates and apply the templates of separate charging on holidays to these dates. When configuring the purchase prices, you can select a template that supports separate charging on holidays to set the purchase prices for holidays.

- Only an installer can configure a template of separate charging on holidays through the FusionSolar SmartPVMS.
- The FusionSolar app does not support the configuration of separate charging on holidays.
- If an owner needs to add separate charging on holidays, contact the installer.

7.1.8 Creating a Physical Location Layout

7.1.8.1 Automatically Generating a Physical Layout

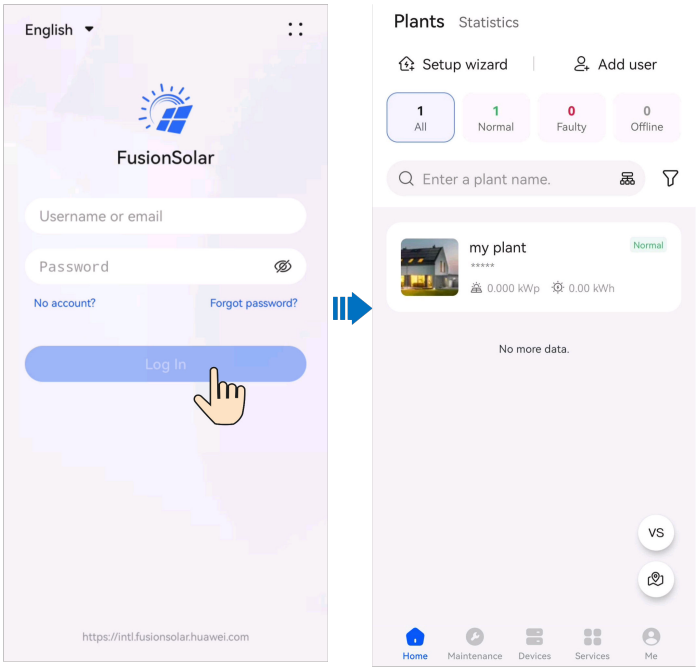
After an optimizer is installed, you can attach the optimizer SN label to the physical layout template and use the image recognition to quickly create a physical layout.

NOTE

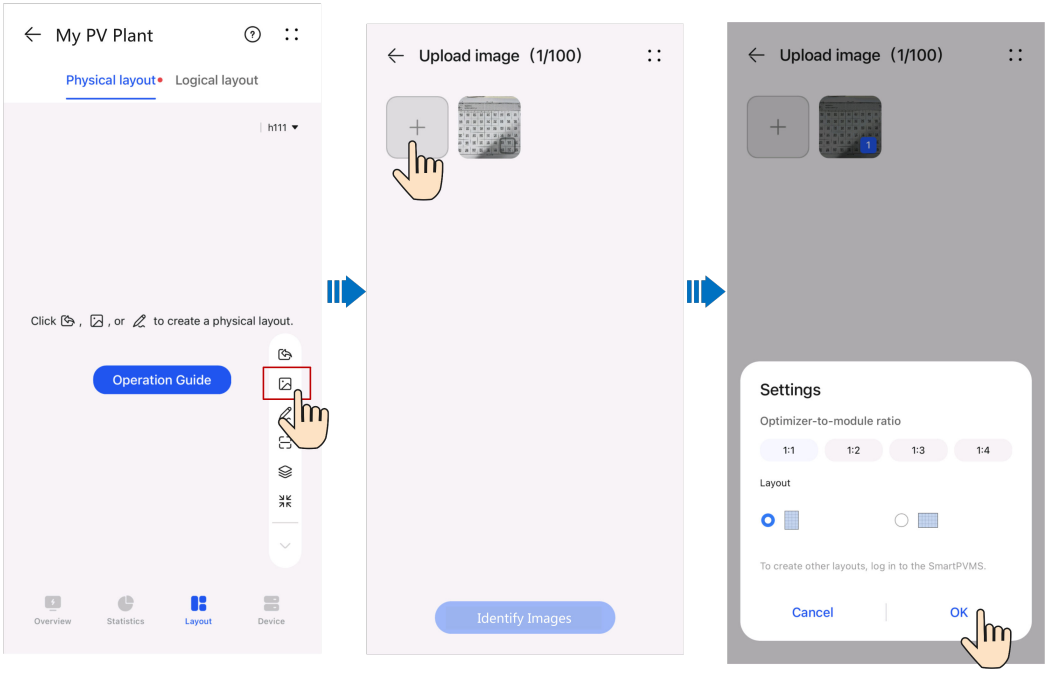
- A maximum of 100 template photos can be added to **Physical Layout**.
- A maximum of 50 tabs can be added for a residential plant, and each tab supports a maximum of 3000 PV modules.
- A maximum of 20 buildings can be added to a C&I plant, and a maximum of 50 areas can be added to each building. A maximum of 1000 areas can be added in total, and each area supports a maximum of 3000 PV modules. **Area** in the C&I plant scenario has the same functions as **Tab** in the residential plant scenario.

Procedure

1. On the app login screen, enter the installer account and password and tap **Log In**.



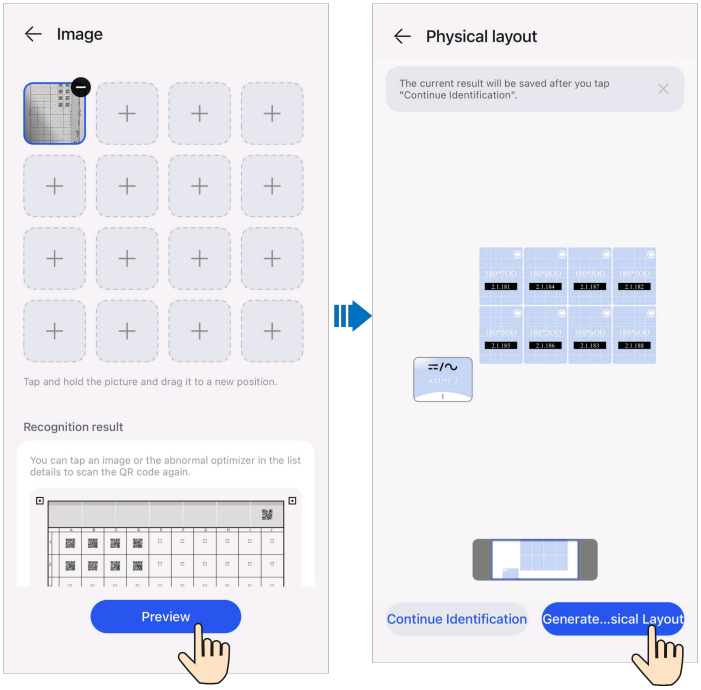
2. Choose **Home** > **Plants**. Tap the plant that has been connected with the optimizers.
3. Choose **Layout** > **Physical Layout**, tap , and upload the physical layout template photos as prompted.



NOTE

For the first identification, select **Optimizer-to-module ratio** and **Layout** based on the actual situation.

4. After all template photos are uploaded, tap **Preview** to generate the physical layout, and confirm the identification result.



5. Tap **Generate Physical Layout** to save the physical layout.

NOTE

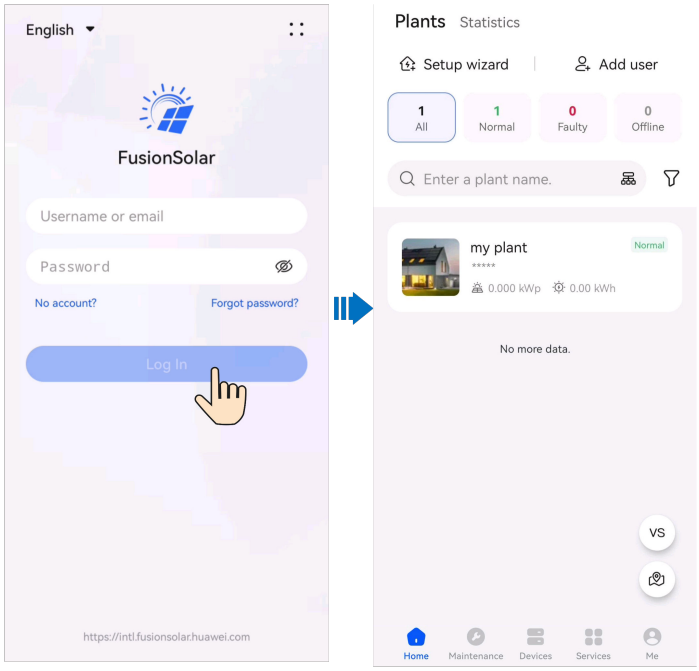
- If some QR codes cannot be identified, manually bind optimizers and inverters by referring to **Binding Optimizers or Inverters**.
- After a physical layout is generated, you can view the physical location, status, and energy yield of each optimizer. For details, see **7.1.8.4 Viewing a Physical Layout**.

7.1.8.2 Manually Creating a Physical Layout

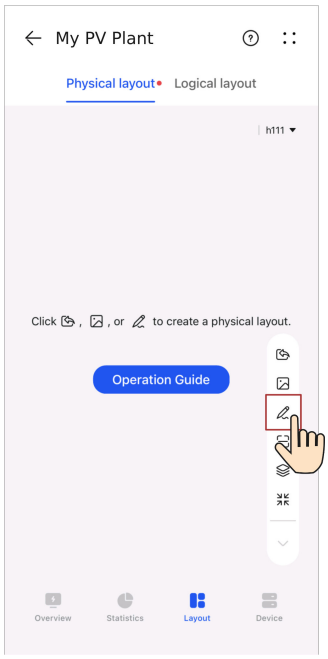
You can manually create a physical layout by adding inverters and PV modules and binding PV modules to optimizers.

Adding Inverters and PV Modules

1. On the app login screen, enter the account and password and tap **Log In**.



2. Choose **Home** > **Plants**. Tap the plant that has been connected to the optimizers.
3. Choose **Layout** > **Physical layout**.
4. Add inverters and PV modules.
   - Method 1: Manually adding inverters and PV modules
     i. Tap .

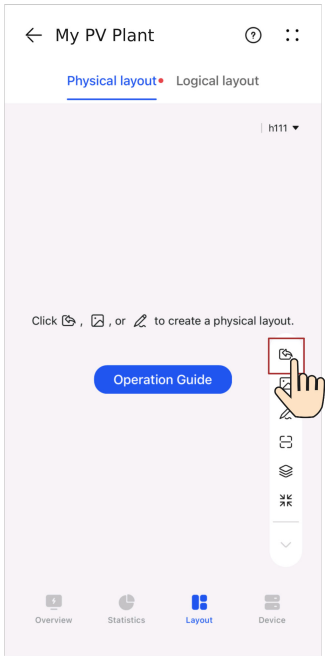


ii. Tap the blank area to add inverters and PV modules.

iii. Tap to save the settings.

– Method 2: Importing a layout from the SmartDesign (A layout has been created on the SmartDesign.)

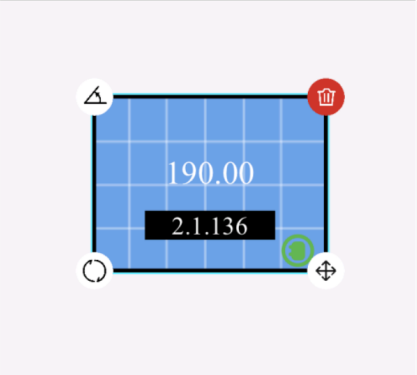
i. Tap .

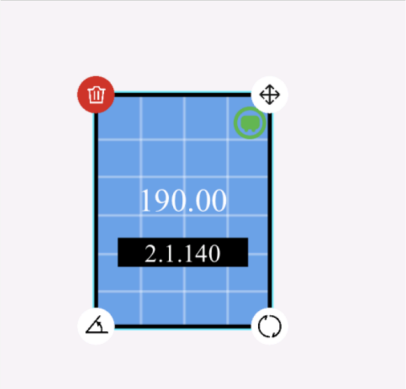


ii. Select the target layout from the SmartDesign.

Adjusting the Position and Angle of an Inverter or PV Module

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

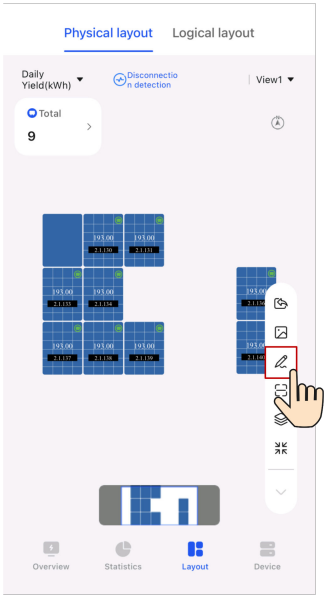




Function	Operation
Adjusting the position	Press and hold to move an inverter or PV module to an appropriate position.
Adjusting the azimuth	Press and hold to move or tap to enter the azimuth.
Adjusting the tilt angle	Tap and enter the tilt angle of a PV module.
Deleting an inverter or PV module	Tap to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

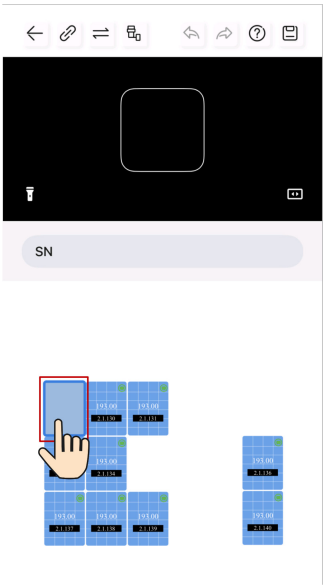
Binding Optimizers or Inverters

1. Tap a plant that has been connected to optimizers, choose **Layout** > **Physical Layout**, and tap .



2. Tap to scan the SN label of an optimizer or inverter, or manually select the target optimizer or inverter to be bound.
   - Method 1: Scan the SN labels of the optimizer or inverter.

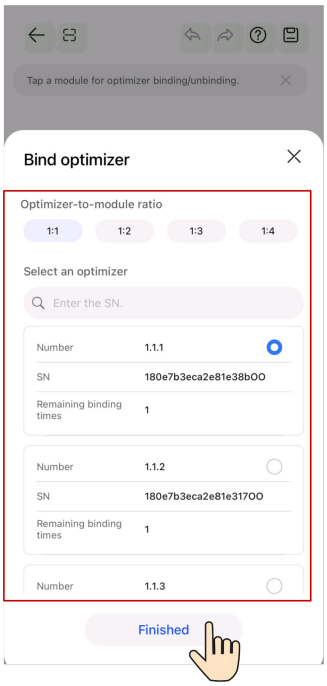
     Tap a PV module, scan the SN label of an optimizer to bind them together; or tap an inverter, scan the SN label of another inverter to bind them together.

     NOTE

     indicates the 1-to-1 scenario where one optimizer is bound to one PV module. indicates the 1-to-2 scenario where one optimizer is bound to two PV modules and you need to tap two PV modules before scanning the SN label of an optimizer.
   - Method 2: Manually select an optimizer or inverter.

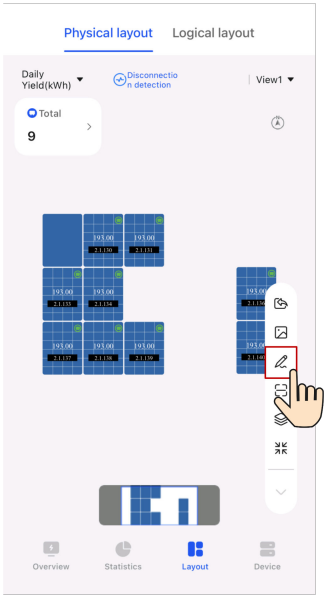
     Tap and then tap a PV module to bind it to an optimizer; or tap an inverter to bind it to another inverter.



3. Tap  to save the settings.

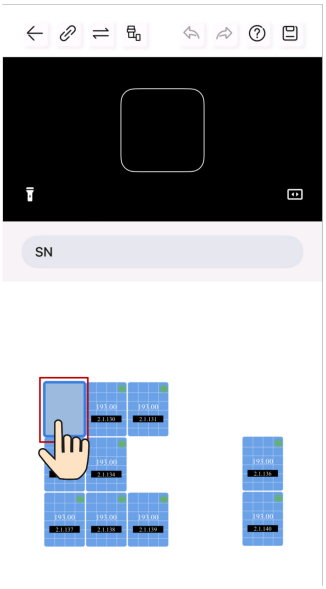
7.1.8.3 Binding Optimizers or Inverters

1. Tap a plant that has been connected to optimizers, choose **Layout** > **Physical Layout**, and tap  .



2. Tap  to scan the SN label of an optimizer or inverter, or manually select the target optimizer or inverter to be bound.
   - Method 1: Scan the SN labels of the optimizer or inverter.

     Tap a PV module, scan the SN label of an optimizer to bind them together; or tap an inverter, scan the SN label of another inverter to bind them together.

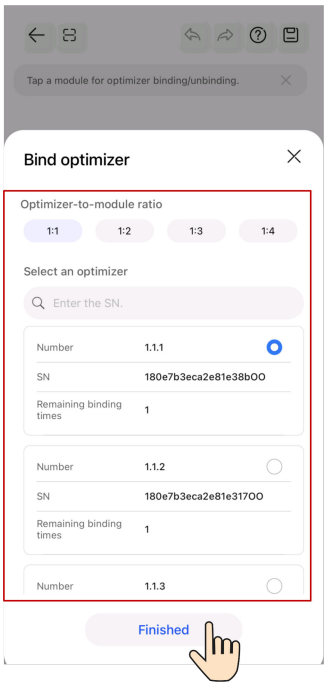


NOTE

indicates the 1-to-1 scenario where one optimizer is bound to one PV module. indicates the 1-to-2 scenario where one optimizer is bound to two PV modules and you need to tap two PV modules before scanning the SN label of an optimizer.

– Method 2: Manually select an optimizer or inverter.

Tap and then tap a PV module to bind it to an optimizer; or tap an inverter to bind it to another inverter.



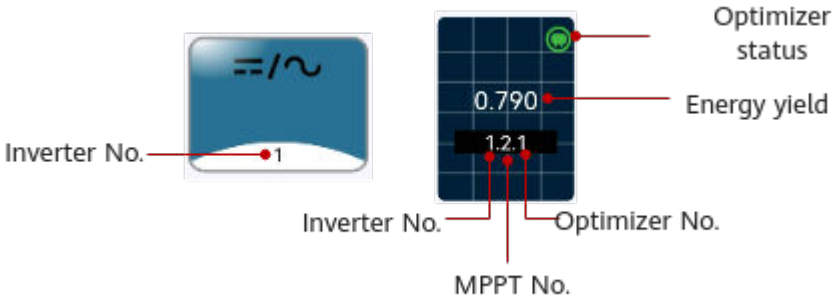
3. Tap to save the settings.

7.1.8.4 Viewing a Physical Layout

Viewing a Physical Layout

1. Choose **Home** > **Plants**, and tap the target plant.
2. Tap **Layout**.
3. On the **Physical Layout** screen, view related information.
   - Figure 7-4 shows the screen description.

     Figure 7-4 Screen description

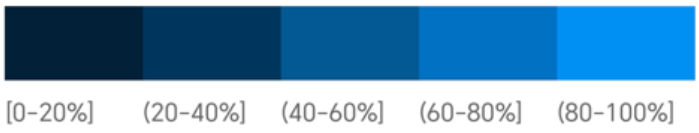
     

   - Optimizer status

Icon					
Status	Normal	Faulty	Offline	Disconnected	Not networked

   - PV module color

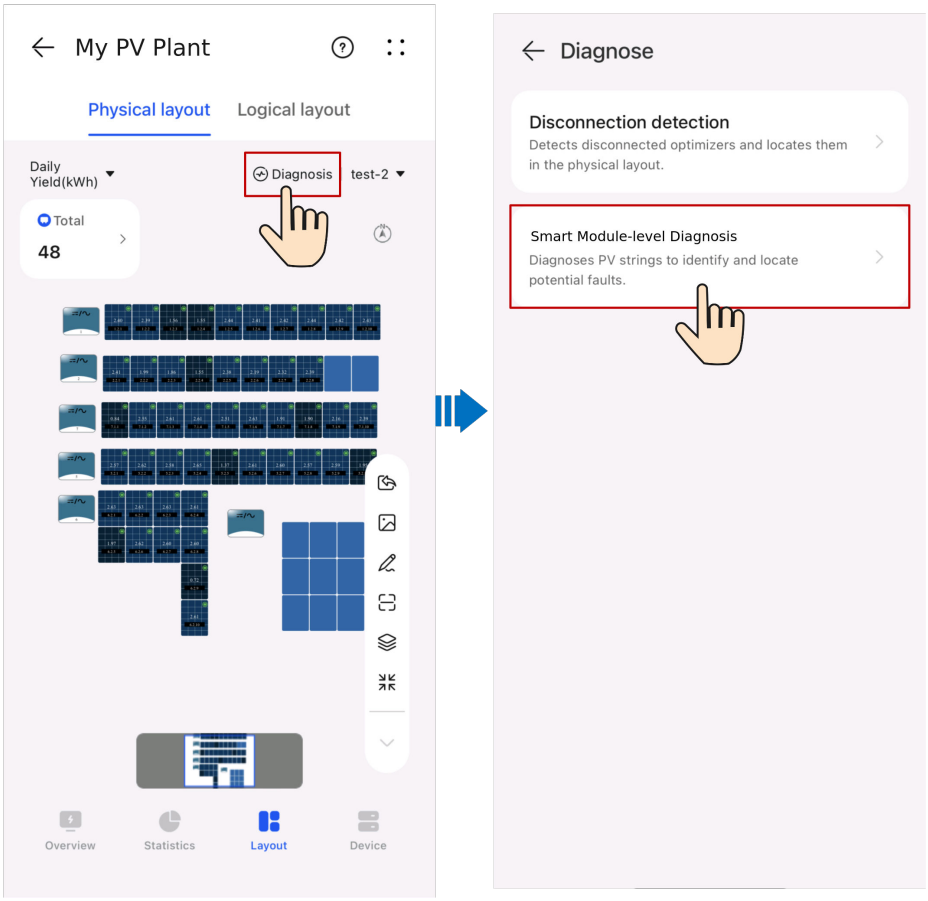
     The color of a PV module indicates the ratio of the optimizer output power to the optimizer rated power. The following figure shows the mapping.

   - Viewing details: Tap an optimizer to view information such as the energy yield, output power, and output voltage.
   - Displaying energy yield in different dimensions: Tap Daily Yield(kWh) in the upper left corner to display the energy yield of the current day, current month, or current year, or accumulated energy yield.
   - Zooming in, zooming out, or restoring the view: Press and hold the screen with two fingers to zoom in or zoom out the view. Tap to restore the view to the normal size.

7.1.8.5 Viewing the PV Module Diagnosis Report

1. Log in to the FusionSolar App using an installer account.
2. Choose **Home** > **Plants**, and tap the target plant.
3. Tap **Layout**.
4. Choose **Diagnosis** > **Smart Module Diagnosis**, select the target report, and click **View Report**.

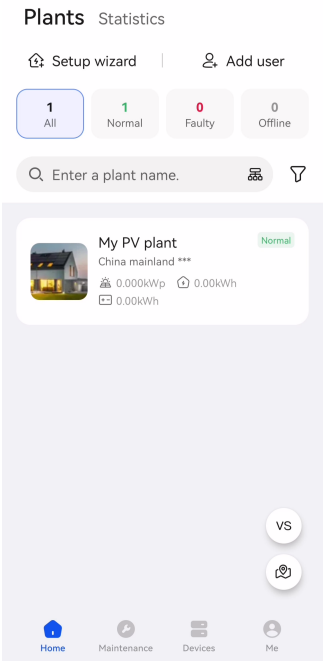


5. Quickly locate the faulty PV module based on the physical layout and rectify the fault based on the rectification suggestions.
6. After the fault is rectified, log in to the FusionSolar SmartPVMS and re-run the module diagnosis to ensure that the fault is rectified.

7.2 Plant Overview

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

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



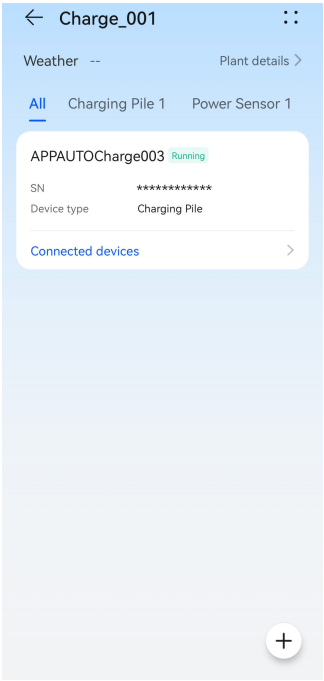
- Tap VS to compare plants in the same environment to evaluate their energy yield efficiency.
- Tap to switch to the map view and display the geographical distribution and alarm statistics of the plant.
- Tap the target plant to view the plant overview.

7.2.1 Viewing Status of a Charging-only Plant

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

Viewing Plant Overview

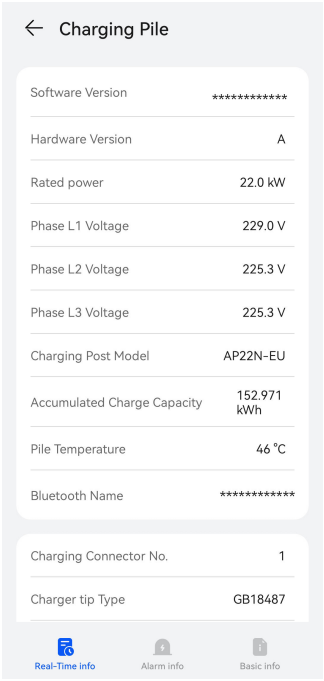
Log in to the app, choose **Home** > **Plants**, and tap a charging-only plant to view the charger status.



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

Viewing Real-Time Information

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



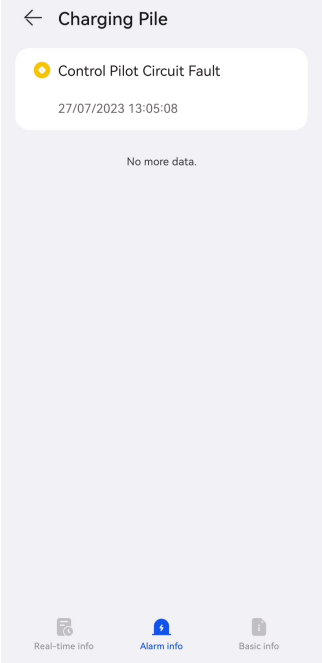
NOTE

The displayed parameters vary with the software version.

Viewing Alarm Information

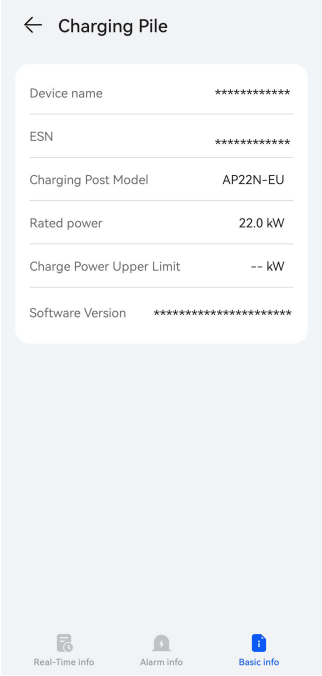
On the **Alarm info** screen, view the active alarms of the plant. Tap an alarm to view its details.

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



Viewing Device Information

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



NOTE

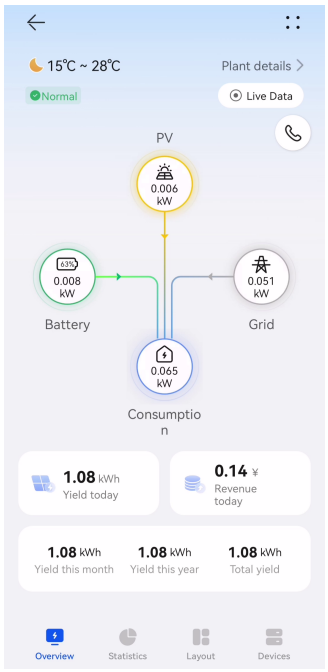
The displayed parameters vary with the software version.

7.2.2 Viewing Status of a PV+ESS+Charger Plant

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

Viewing Plant Overview

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



- Weather information: Displays the weather information of the place where the plant is located on the current day. You can tap **Plant details** to view the detailed plant information.
- Energy yield and revenue statistics: Displays the energy yield and revenue of the plant.
- Real-time running status: Allows you to check whether the current running status of the plant is normal.
- Energy flow diagram: Displays the current power supply direction of the plant.
- You can click **Live Data** to update the real-time data of the PV power, grid power, load power, and ESS power.

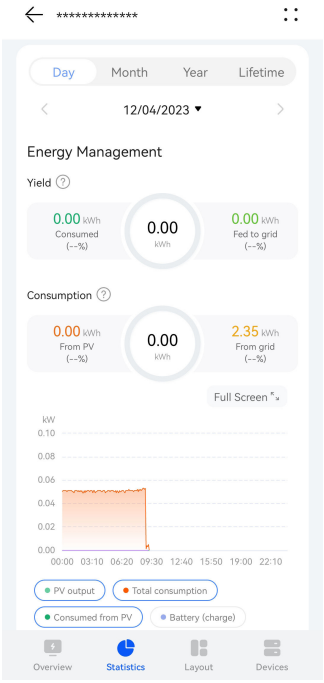
NOTE

- By default, the function is enabled for 1 minute each time. The function can be enabled for a maximum of 300 times (total times on the WebUI and app) per plant per day.
- After the function is enabled in the 4G networking scenario, a maximum of 3 MB traffic data will be consumed each month (assuming that the function is enabled 10 times per day).

If a plant has active alarms, the latest alarm information is displayed above the energy flow diagram. You can tap > on the right of the alarm information to view and handle all active alarms of the plant.

Viewing Plant Statistics

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



- Energy management: Displays the energy yield, energy consumption, and self-consumption of a plant in different time dimensions, helping you analyze and optimize energy consumption. When an ESS is available, it stores and discharges energy, improving the self-consumption rate.
- Revenue statistics: Calculate the sum of feed-in revenue of a PV plant (feed-in electricity x feed-in tariff) and savings in electricity bills (self-consumed electricity x purchase price) to display the benefits created by the PV plant.
- Environmental benefits: Unlike thermal power plants, PV power plants generate electricity without CO_2 emissions, which is equivalent to planting trees. For details, see **13.1 PV Power Generation Offsetting Carbon Emissions**.

7.2.3 Viewing the Revenue after EMMA Is Enabled, Energy Forecast, and Energy Saving Analysis

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

Prerequisites

The owner has enabled the EMMA function for the plant.

Viewing the Revenue after EMMA Is Enabled, Energy Forecast, and Energy Saving Analysis

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

7.2.4 Optimizer Disconnection Detection

Perform disconnection detection on optimizers and locate the disconnected optimizers.

Procedure

Step 1 On the **Home** screen, tap **Plants** and tap the desired plant.

Step 2 Tap **Layout**. If no physical layout diagram is created for the plant, the logical layout screen is displayed.

Step 3 On the logical layout screen, tap **Disconnection detection**.

- If multiple inverters are installed in the plant and all of them are equipped with optimizers, select the inverter to be detected in the dialog box that is displayed and tap **OK**.
- If only one inverter in the plant is equipped with an optimizer, the detection task is directly executed after you tap **Disconnection detection**.

Step 4 If a disconnected optimizer is detected, you can quickly locate the optimizer in the physical layout diagram and rectify the fault based on the repair suggestions.

----End

Follow-up Procedure

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

7.3 O&M Management

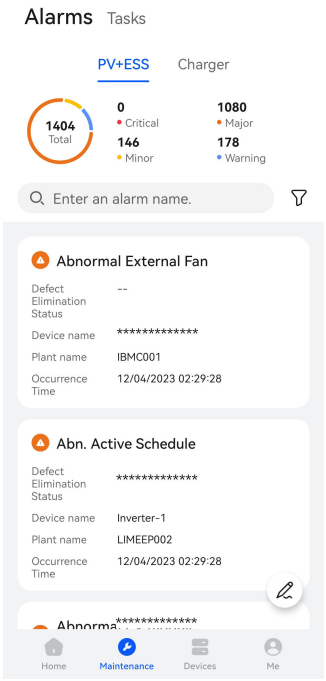
You can learn about the running status, location distribution, and alarm information of plants, and quickly track and handle plant faults.

7.3.1 Monitoring Alarm Information

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

Viewing Alarm Information

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



Handling Alarms

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

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

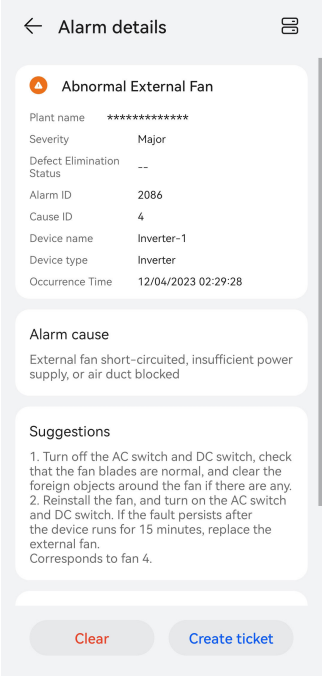


Table 7-15 Alarm handling

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

NOTE

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

7.3.2 Mobile O&M

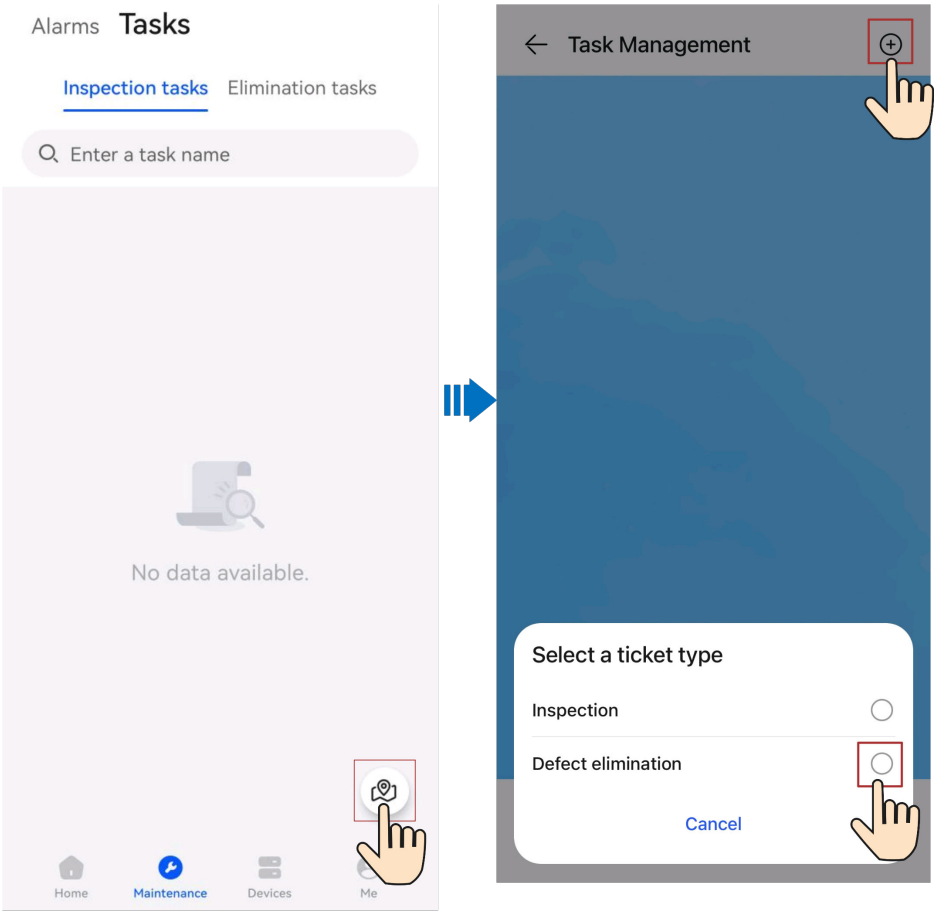
Create tasks to perform routine inspection on plant equipment, identify risks, and track and monitor faults or defects that have occurred.

7.3.2.1 Defect Elimination

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

Creating a Defect Elimination Task

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



Processing a Defect Elimination Task

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

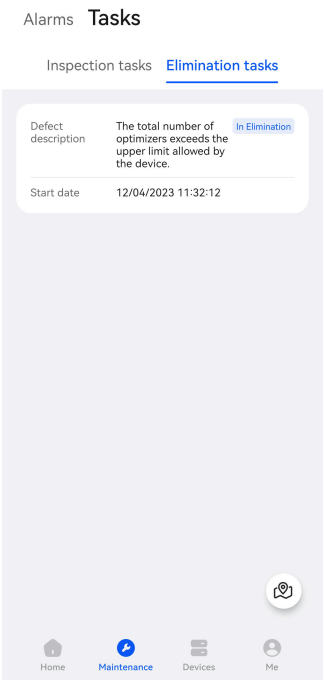
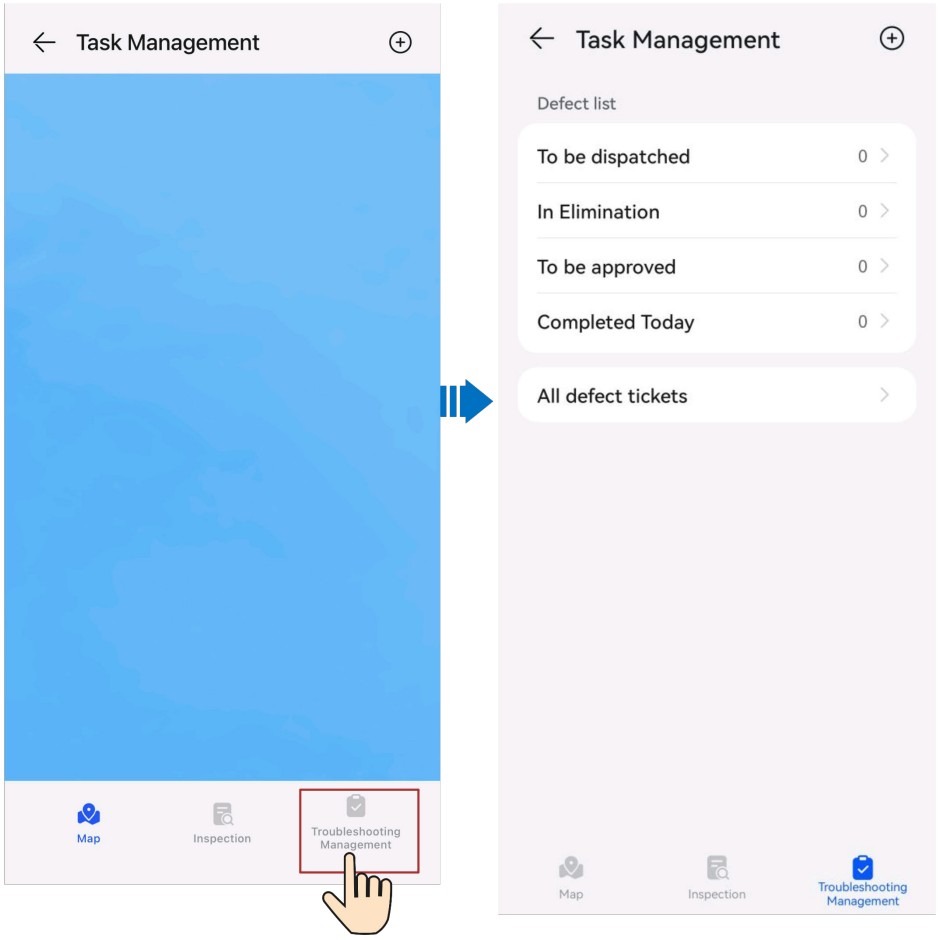


Table 7-16 Defect elimination task status description

Task Status	Description
To be dispatched	After the current handler returns a task in the **In Elimination** state to the creator, the task enters the **To be dispatched** state. The creator can re-assign or cancel a task.
In Elimination	Submit the defect handling description and handling result. Alternatively, you can return the task to the upper-level handler for re-assigning the task.
To be approved	Accept the completed defect elimination task to ensure that the defects are completely eliminated.

Managing Defect Elimination Tasks

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



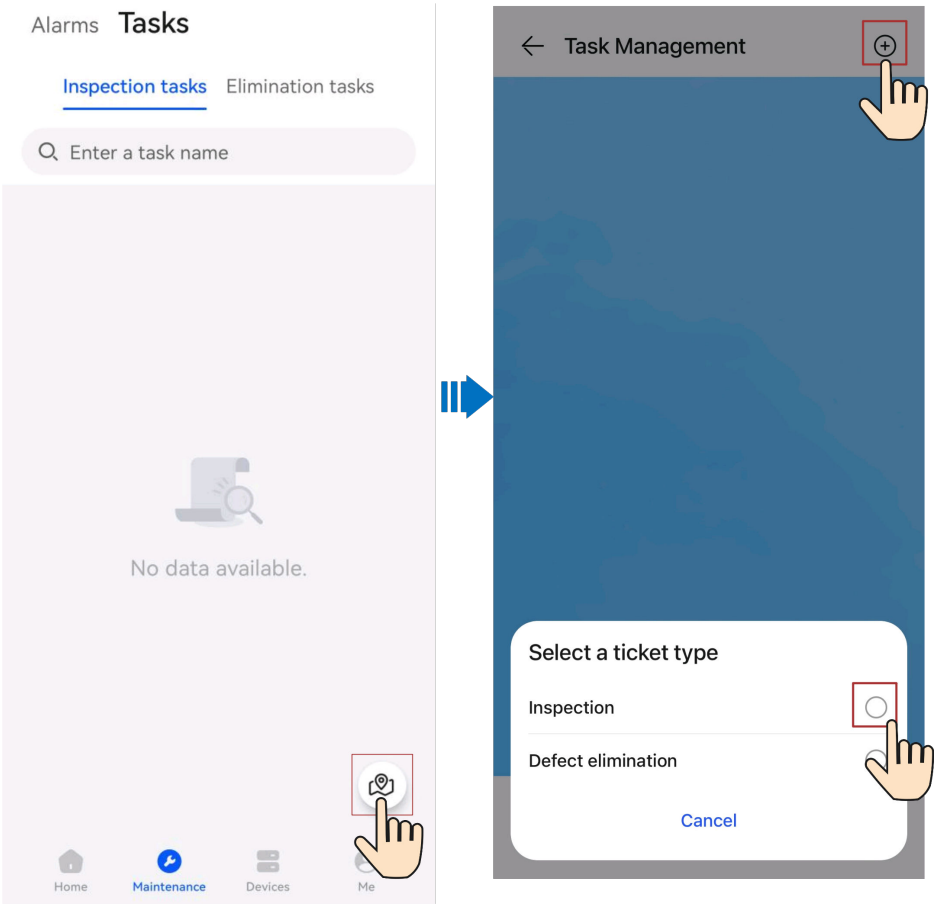
7.3.2.2 Inspection Management

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

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

Creating an Inspection Task

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



Processing an Inspection Task

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

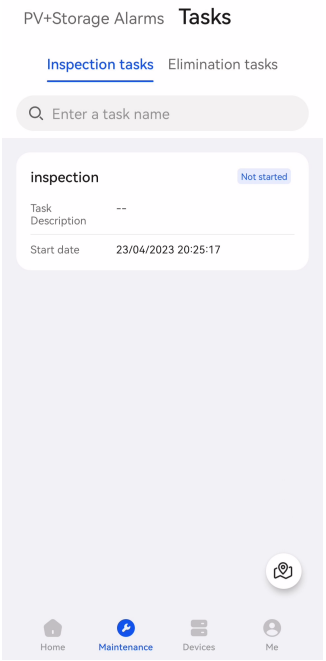


Table 7-17 Inspection task status description

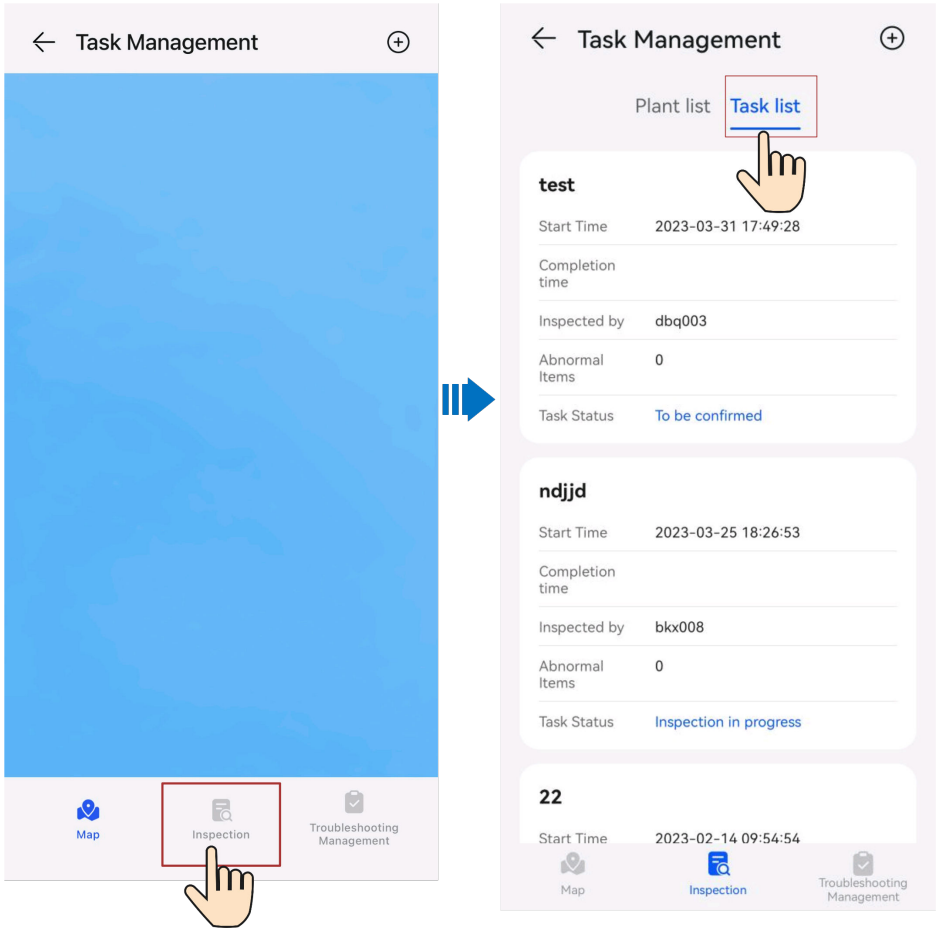
Task Status	Description
Not started	After receiving a task, the inspection personnel can tap the task to be inspected to start it. 1. Tap a task in the **Not started** state. The **Task Details** screen is displayed. 2. Tap **Start Inspection** to start the inspection task.
Inspection in progress	The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

Managing Inspection Tasks

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

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

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



7.4 Device Management

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

Setting Device Parameters

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

NOTE

The parameters that can be set vary with the device model. For details about parameter settings, see the user manual of the device.

To obtain the manuals: Visit **https://support.huawei.com/enterprise/en/category/fusion-solar-pv-pid-1600073963553** and enter the desired device model to search for the corresponding user manual.

Changing a Device Name

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

Replacing a Device

NOTICE

Ensure that the following conditions are met for device replacement:

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

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

O&M Authorization

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

Setting Third-Party Management System Parameters

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

7.5 Permission Management

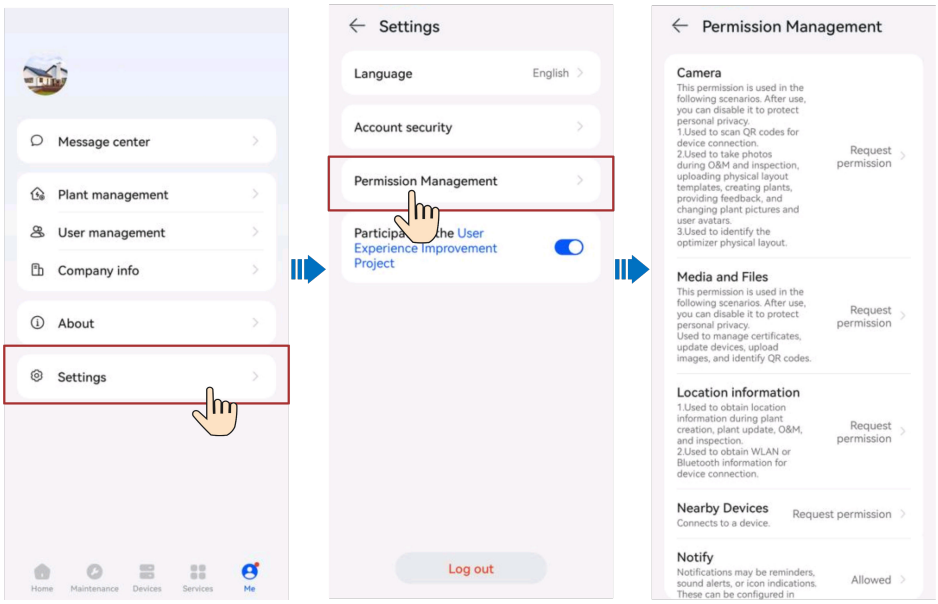
View and manage the system permissions and status required by the FusionSolar app.

NOTICE

To protect your information security, disable the permissions after using them.

Procedure

1. Tap **Me** > **Settings** > **Permission Management** on the home screen.
   - On the **Permission Management** screen, you can view and manage the system permissions and status required by the FusionSolar app.
   - Enable or disable authorization: Touch the target permission and configure it as prompted.

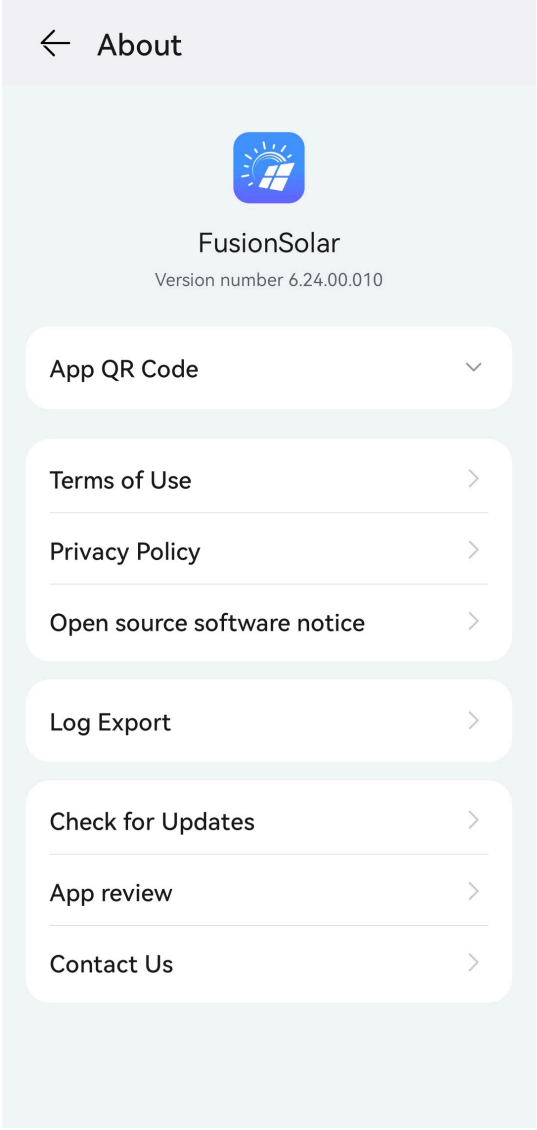


NOTE

- System permissions may vary based on Android or iOS.
- System permissions may vary based on roles.
- For details about required permissions, see **Me** > **About** > **Privacy Policy**.

7.6 Log Export

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



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

7.7 Services

Most Visited

Device Commissioning: navigates to the device commissioning screen to perform operations such as deployment and commissioning, and local O&M.

Document Center

Video tutorial: provides video tutorials for device installation, commissioning, site deployment, user registration, and O&M.

After-Sales Docs: provides quick operation guide on app functions and other product documentation as required.

Help and Feedback

- **Feedback**: provides a feedback channel for users to help us improve user experience.
- **Customer Service Chatbot**: helps users quickly solve problems through the one-to-one online customer service.
- **Contact Us**: provides our contact information for users in case they have any questions about Huawei FusionSolar products.

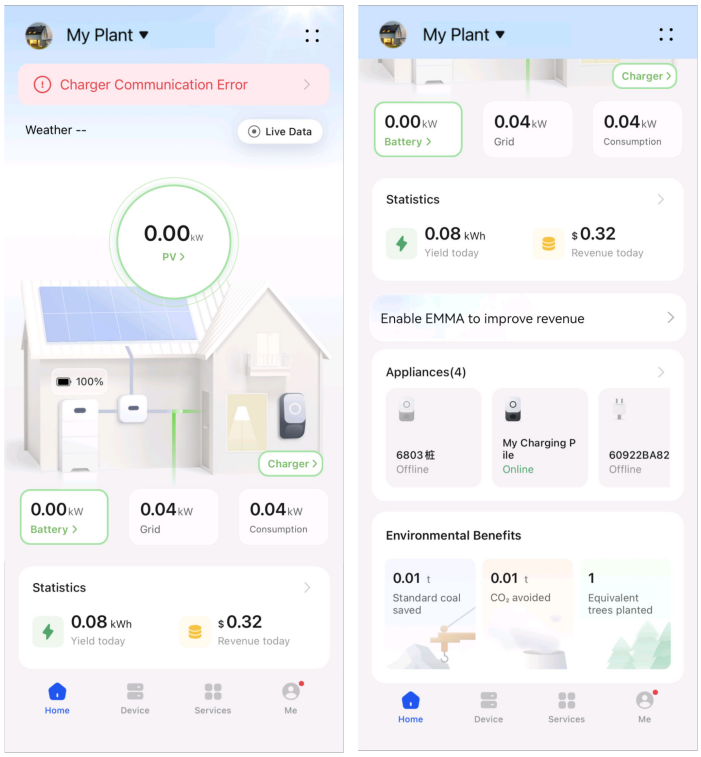
8 I'm an Owner

After you log in to the app, the displayed content may vary based on the user role and plant type.

8.1 Viewing Plant Details (Residential Plant)

8.1.1 Plant Overview

After logging in to the app, you can view the current power supply direction, energy yield, revenue, and environmental benefits of the plant on the home screen.



- Alarm: If a plant has active alarms, the latest alarm is displayed in the upper part of the home screen. You can tap the alarm to view the details.

- Real-time refresh: You can tap **Live Data** to refresh the data of the PV power, grid power, load power, and ESS power in real time.

  NOTE

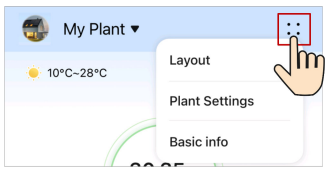
  - By default, the function is enabled for 1 minute each time. The function can be enabled for a maximum of 300 times (total times on the WebUI and app) per plant per month.
  - After the function is enabled in the 4G networking scenario, a maximum of 3 MB of extra data will be consumed each month (assuming that the function is enabled 10 times per day).
- EMMA: You can tap the EMMA card to enable the EMMA function and view the benefits of the EMMA and energy forecast and analysis. For details, see **8.1.5 Enabling EMMA**.
- Statistics: displays the energy yield and benefits of the current day. You can tap the statistics card to view the energy yields, energy output and consumption, and benefits in details. For details, see **8.1.3 Viewing Statistics**.
- Appliances: After smart appliances are connected to the plant, you can flexibly manage your home power consumption through functions such as load priority, power consumption schedule, and PV power settings on the app. For details, see **8.5 Smart Appliance**.
- You can tap **PV**, **Battery**, or **Charger** to view the running status and details of the corresponding device. For details, see **8.1.3 Viewing Statistics**, **8.1.4 Viewing the Battery Running Status**, or **8.3 Using a Charger**.
- Environmental benefits: Unlike thermal power plants, PV power plants generate electricity without CO_2 emissions, which is equivalent to planting trees. For details, see **13.1 PV Power Generation Offsetting Carbon Emissions**.

NOTE

In charger-only scenarios, only the charger screen is displayed. For details, see **8.3 Using a Charger**.

Quick Entry

You can tap **::** to view the plant layout (with optimizers). You can also set the electricity price, load priority, and maximum mains power, and modify basic plant information.



Layout: After you tap **Layout**, the logical layout and physical layout are displayed. You can view the physical locations and status of optimizers. For details, see **8.1.7 Viewing a Physical Layout**.

Plant Settings:

- Electricity price setting: You can set the feed-in tariff and purchase price for the plant. The system calculates the PV benefits based on the configured electricity purchase and sales information. For details, see **8.9 Electricity Price Settings**.

- After smart appliances are connected to the plant, you can set **Load Priority** and **Maximum Mains Power** for these appliances. For details, see **8.5 Smart Appliance**.
- Load priority: You can set the load priority to specify the smart appliance that is preferentially powered when the PV power is low. For details, see **8.3.9 Load Priority**.
- Maximum mains power: You can set the maximum power at which a home draws electricity from the grid. For details, see **Maximum Mains Power**.

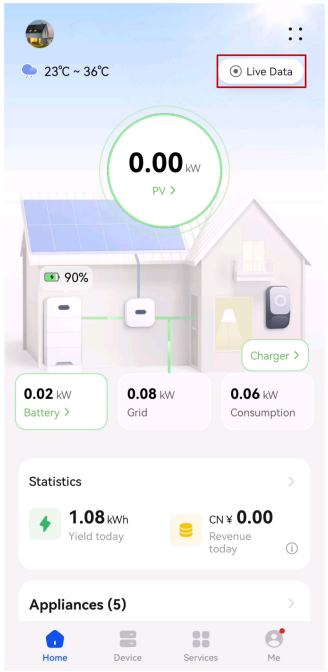
Basic plant information: You can modify the address, time zone, and other information about the plant. For details, see **Modifying Basic Plant Information**.

8.1.2 Real-Time Refresh

NOTICE

To use the real-time refresh function, you need to update the device to the latest version. If the **Live Data** button is not displayed, contact the installer to update the device software version.

After logging in to the app, tap **Live Data** on the **Home** screen to refresh the real-time PV power, grid power, load power, and battery power in the energy flow diagram.



NOTE

- By default, the function is enabled for 1 minute each time. The function can be enabled for a maximum of 300 times (total times on the WebUI and app) per plant per month.
- After the function is enabled in the 4G networking scenario, a maximum of 3 MB of extra data will be consumed each month (assuming that the function is enabled 10 times per day).

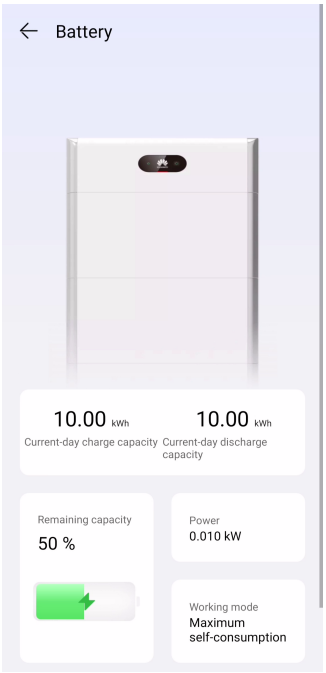
8.1.3 Viewing Statistics

After logging in to the app, tap the **PV** or **Statistics** card on the **Home** screen to view the PV yield, load consumption, and benefits in real time.

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

8.1.4 Viewing the Battery Running Status

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

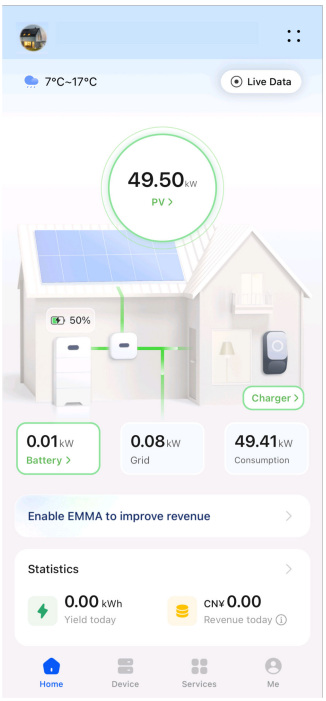


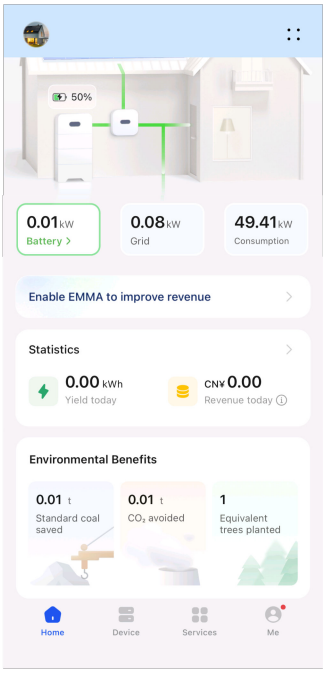
8.1.5 Enabling EMMA

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

Procedure

After the owner logs in to the app, if the system determines that the plant meets the conditions for enabling the EMMA function, **Enable EMMA to improve revenue** is displayed below the energy flow diagram. Tap it to enable the EMMA function.





NOTE

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

Viewing the Revenue after EMMA Is Enabled, Energy Forecast, and Energy Saving Analysis

1. Tap the EMMA card on the home screen of the app to view the revenue information, revenue comparison, energy forecast, and energy saving analysis.

- Viewing the revenue comparison: In the **Revenue Comparison** area, you can view the comparison between the revenues when EMMA is enabled and disabled.
- Viewing energy forecast: In the **Energy Forecast** area, you can view details about the energy yield, power consumption, and battery charge and discharge in the past 24 hours, and energy forecast in the next 24 hours.
- Viewing energy saving analysis: In the **Energy Saving Analysis** area, you can view the power details and SOC details in the past 24 hours and energy saving forecast in the next 24 hours.

Disabling EMMA

1. In the upper right corner of the EMMA screen, choose **::** > **Settings** > **Disable** and disable the EMMA function as prompted.

NOTE

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

8.1.6 Intelligent Load Shedding

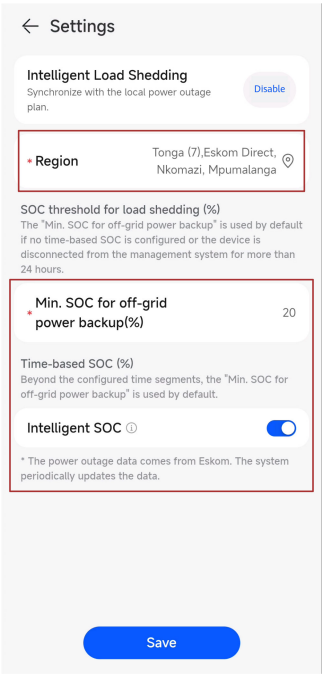
Considering the dynamic and plan-based load shedding for power grids in South Africa, Huawei FusionSolar Smart PV Management System (SmartPVMS) associates with the local power outage plans and enables users to formulate power backup plans on the FusionSolar app based on the power supply or outage duration, ensuring sufficient battery energy for loads during power outage.

NOTICE

- Load shedding is supported only in the SmartGuard networking scenarios.
- Load shedding is supported only for plants in South Africa. Set the country/region and address of the plant correctly. Otherwise, no outage plan can be obtained.
- **Off-grid mode** of the inverter must be enabled. If inverters are connected in parallel, set **Off-grid mode** for each inverter.

Enabling the Intelligent Load Shedding Service

1. On the app home screen, choose **: :** > **Intelligent Load Shedding**.
2. Tap **Enable Now**.
3. On the settings screen of intelligent load shedding, tap **Region** and select the target region to obtain the local outage plan.
4. Set the power backup plan as prompted. The system will charge the batteries to the specified SOC value before the load shedding starts.



If your plant has **enabled the EMMA service**, you can enable **Intelligent SOC**. The system will predict the time-based SOC for power backup according to your energy consumption habits. In this case, you do not need to manually set the time-based SOC for power backup.

NOTICE

If **Intelligent SOC** does not take effect in some special scenarios (for example, no valid electricity price is configured on the current date or the electricity price has expired), the system backs up power based on the configured backup power SOC.

Viewing Outage Plans

After **Intelligent Load Shedding** is enabled, the **Intelligent Load Shedding** card on the home screen of the app displays the outage plan for the next two days. Tap the card to view the area, outage level, and outage plan.

- Area: indicates where the plant is located.
- Outage level: Below the area, the latest outage level (for example, **Eskom: Stage3**) released by the electric power company is displayed. You can tap it to view the outage level in each recent time segment.
- Outage plan: displays the outage plan for the next week released by the electric power company.

NOTE

- If the outage level of an area in a certain time segment is lower than or equal to the outage level released by the electric power company, the area will experience power outage in this time segment. For example, if an electric power company releases the outage level of an area on November 16 to be **Eskom: Stage3**, power outage will occur in the area during the time segments when the outage level is **Stage1**, **Stage2**, or **Stage3** on the day.
- The outage plan is for reference only. The actual outage duration may vary.

Table 8-1 Outage plan description

Legend	Description
	Gray block: indicates the time segment for the historical outage plan.
	Red block: indicates the time segment for the ongoing outage plan.
	Amber block: indicates the time segment for the future outage plan.
	Black block: indicates the current time. **NOTE** Ensure that the time zone of the mobile phone is the same as that of the plant. Otherwise, the black block may not display the current time.
	Green dot: indicates that there is no outage plan for the time segment and the time segment is not affected by load shedding.

- On the **Intelligent Load Shedding** screen, choose **: :** > **Settings** to modify parameters such as the area and off-grid power backup SOC.

Disabling the Intelligent Load Shedding

On the **Intelligent Load Shedding** screen, choose **: :** > **Settings** and tap **Disable**.

NOTE

The intelligent load shedding can be enabled again after it is disabled.

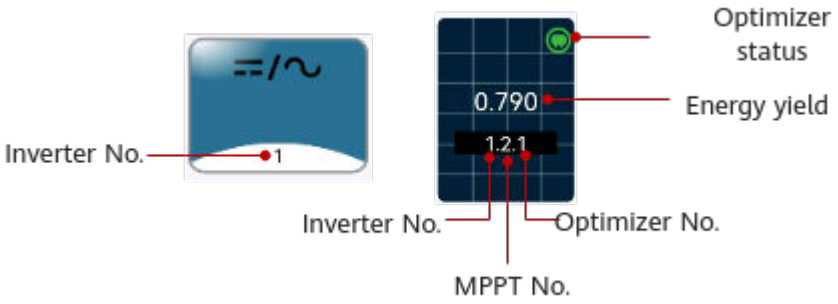
8.1.7 Viewing a Physical Layout

Viewing a Physical Layout

1. Choose **Home** > **Plants**, and tap the target plant.
2. Tap **Layout**.

3. On the **Physical Layout** screen, view related information.
   - **Figure 8-1** shows the screen description.

     Figure 8-1 Screen description

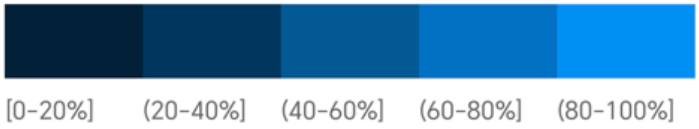


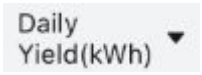
   - Optimizer status

Icon					
Status	Normal	Faulty	Offline	Disconnected	Not networked

   - PV module color

     The color of a PV module indicates the ratio of the optimizer output power to the optimizer rated power. The following figure shows the mapping.



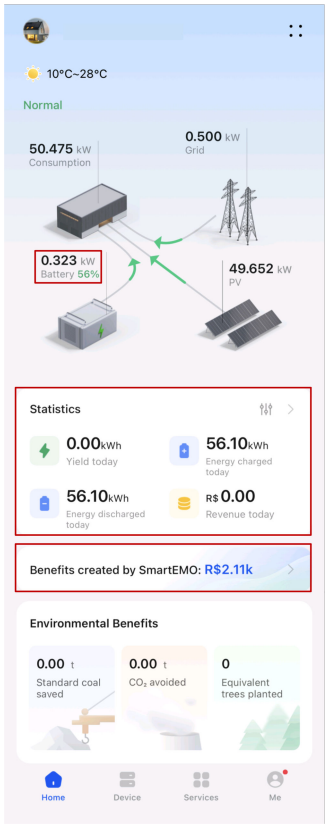
   - Viewing details: Tap an optimizer to view information such as the energy yield, output power, and output voltage.
   - Displaying energy yield in different dimensions: Tap 

in the upper left corner to display the energy yield of the current day, current month, or current year, or accumulated energy yield.
   - Zooming in, zooming out, or restoring the view: Press and hold the screen with two fingers to zoom in or zoom out the view. Tap to restore the view to the normal size.

8.2 Viewing Plant Details (C&I Plant)

8.2.1 Plant Overview

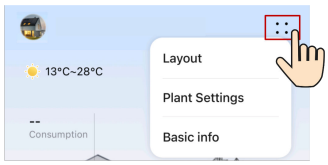
After logging in to the app, you can view the current power supply direction, energy yield, revenue, and environmental benefits of the plant on the home screen.



- Alarm: If a plant has active alarms, the latest alarm is displayed in the upper part of the home screen. You can tap the alarm to view the details.
- ESS: You can tap **Battery** to view the ESS SOC, working mode, and energy charged and discharged of the current day in real time.
- Enabling the SmartEMO: After the operations engineer enables the SmartEMO in **Energy Management** on the **FusionSolar SmartPVMS**, the SmartEMO card is displayed on the home screen of the app. You can tap the card to enable the function. For details, see **8.2.3 Enabling SmartEMO**.
- Statistics: displays the energy yield and benefits of the current day. You can tap the statistics card to view the real-time energy yields, energy output and consumption, and benefits in details. You can tap to customize the data to be displayed. For details, see **8.2.2 Viewing Statistics**.
- Environmental benefits: This card is not displayed for ESS-only plants. Unlike thermal power plants, PV power plants generate electricity without CO_2 emissions, which is equivalent to planting trees. For details, see **13.1 PV Power Generation Offsetting Carbon Emissions**.

Quick Entry

You can tap **: :** to view the plant layout (with optimizers). You can also set the electricity price and modify the basic plant information.



Layout: After you tap **Layout**, the logical layout and physical layout are displayed. You can view the physical locations and status of optimizers. For details, see **8.1.7 Viewing a Physical Layout**.

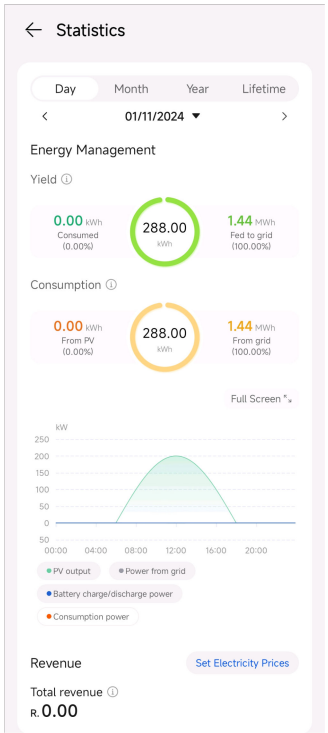
Plant Settings:

Electricity price setting: You can set the feed-in tariff and purchase price for the plant. The system calculates the PV benefits based on the configured electricity purchase and sales information. For details, see **8.9 Electricity Price Settings**.

Basic plant information: You can modify the address, time zone, and other information about the plant. For details, see **Modifying Basic Plant Information**.

8.2.2 Viewing Statistics

After logging in to the app, tap the **Statistics** card on the **Home** screen to view the PV energy yield, consumption, and benefits in real time.



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

8.2.3 Enabling SmartEMO

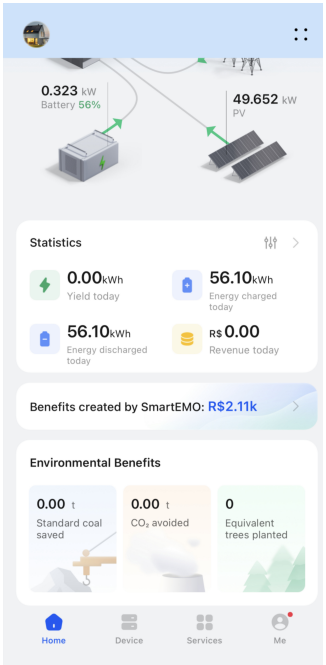
SmartEMO provides intelligent energy scheduling and management functions. Based on big data analysis, it accurately predicts the power generation and consumption curves of C&I plants for users to implement intelligent electricity storage, purchase, and sales, achieve optimal system performance, improve the utilization rate of PV power, and maximize financial benefits.

NOTE

- To enable the SmartEMO function, contact the operations engineer to log in to the **FusionSolar SmartPVMS** and apply for the permission in **Energy Management**.
- Currently, this function is a VIP function. VIP functions are advanced FusionSolar functions and are now free of charge. The Company reserves the right to charge VIP functions in the future.

Enabling SmartEMO

After the operations engineer enables the SmartEMO function in **Energy Management** on the **FusionSolar SmartPVMS**, the plant owner logs in to the app. The **Benefits created by SmartEMO** card is displayed under the energy flow diagram on the home screen. Click it to enable the SmartEMO function.



Viewing SmartEMO Energy Scheduling

Tap the SmartEMO card on the home screen of the app to view the accumulated benefits and energy scheduling of the SmartEMO function.

Table 8-2 Description of each area on the SmartEMO screen

Area	Description
Benefit Overview	Displays the number of days since SmartEMO is enabled and the total benefit.
Revenue Comparison	Displays the comparison before (default policy) and after SmartEMO is enabled in different time granularities.
Energy Forecast	Displays the power generation details, power consumption details, battery charge and discharge details, and energy forecast in the next 24 hours.
Energy Saving Analysis	Displays the changes in the relationship between the electricity price, mains power, and PV power, and the relationship between the electricity price and SOC after the SmartEMO is enabled.

Authorizing Installers to View the SmartEMO

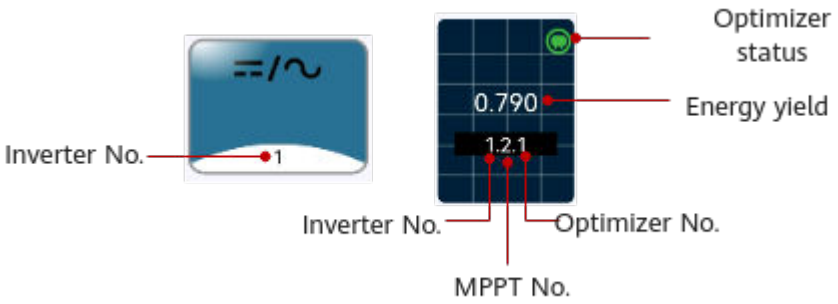
1. Tap the SmartEMO card on the home screen of the app.
2. In the upper right corner of the SmartEMO screen, tap **::** and enable **Installer SmartEMO Configuration**.

8.2.4 Viewing a Physical Layout

Viewing a Physical Layout

1. Choose **Home** > **Plants**, and tap the target plant.
2. Tap **Layout**.
3. On the **Physical Layout** screen, view related information.
   - Figure 8-2 shows the screen description.

     Figure 8-2 Screen description

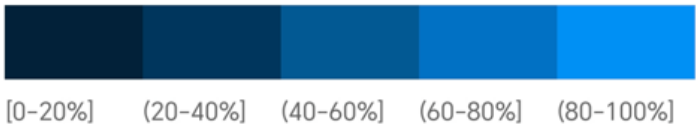
   - Optimizer status

Icon					

Status	Normal	Faulty	Offline	Disconnected	Not networked

- PV module color

  The color of a PV module indicates the ratio of the optimizer output power to the optimizer rated power. The following figure shows the mapping.

- Viewing details: Tap an optimizer to view information such as the energy yield, output power, and output voltage.
- Displaying energy yield in different dimensions: Tap Daily Yield(kWh) in the upper left corner to display the energy yield of the current day, current month, or current year, or accumulated energy yield.
- Zooming in, zooming out, or restoring the view: Press and hold the screen with two fingers to zoom in or zoom out the view. Tap to restore the view to the normal size.

8.3 Using a Charger

8.3.1 Starting and Stopping Charging on the App

Precautions

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

Starting Charging

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

Stopping Charging

After the vehicle is fully charged, the charger automatically stops charging. In this case, the indicator is steady blue. You can also press and hold on the app to stop charging.

8.3.2 Start Charging Through Authentication via Bluetooth

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

Precautions

Before charging, enable the **Authentication via Bluetooth** function.

Starting Charging

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

Stopping Charging

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

8.3.3 Starting and Stopping Charging Using an RFID Card

Precautions

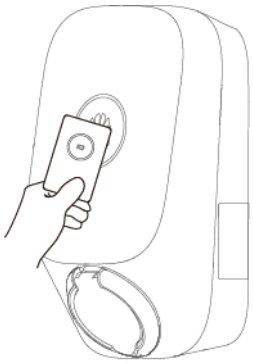
- Before charging, ensure that you **add an RFID card** to the system.
- Before charging, you need to completely insert the charging connector into the charger and vehicle. If the indicator on the charger turns blue on and off cyclically (on for 4s and off for 1s), the charger is successfully connected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

Starting Charging

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

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

Figure 8-3 Charging by card swiping



Stopping Charging

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

8.3.4 Plug-and-Play Charging

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

Precautions

To use plug-and-play charging, disable the **Identity Authentication** function. However, unauthorized charging may occur.

Starting Charging

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

Stopping Charging

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

8.3.5 Scheduled Charging

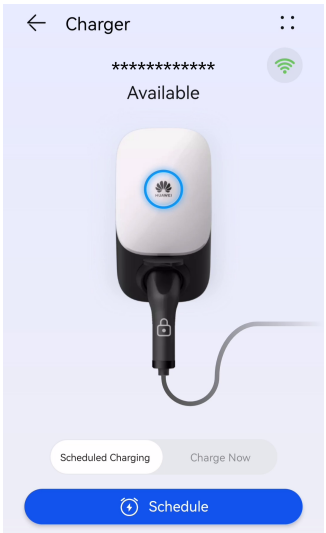
You can use the scheduled charging function to charge your car during off-peak hours to save electricity fees.

Precautions

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

Charging Procedure

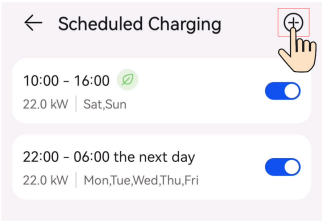
1. On the charger screen, tap **Scheduled Charging**.
2. Tap **Schedule**. If the indicator on the charger turns blue on and off cyclically (on for 4s and off for 1s), the charger is in the scheduled charging waiting state.



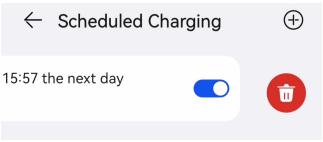
Setting the Scheduled Charging Time

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

- Tap  to set the charging start time and end time.
- Tap a scheduled charging plan to edit it.



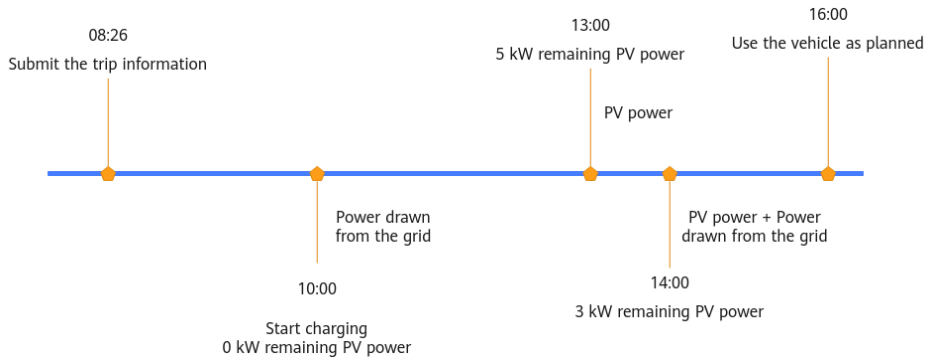
- Select a plan you want to delete, press and swipe left, and tap  to delete the scheduled plan.



8.3.6 Charging for the Next Trip

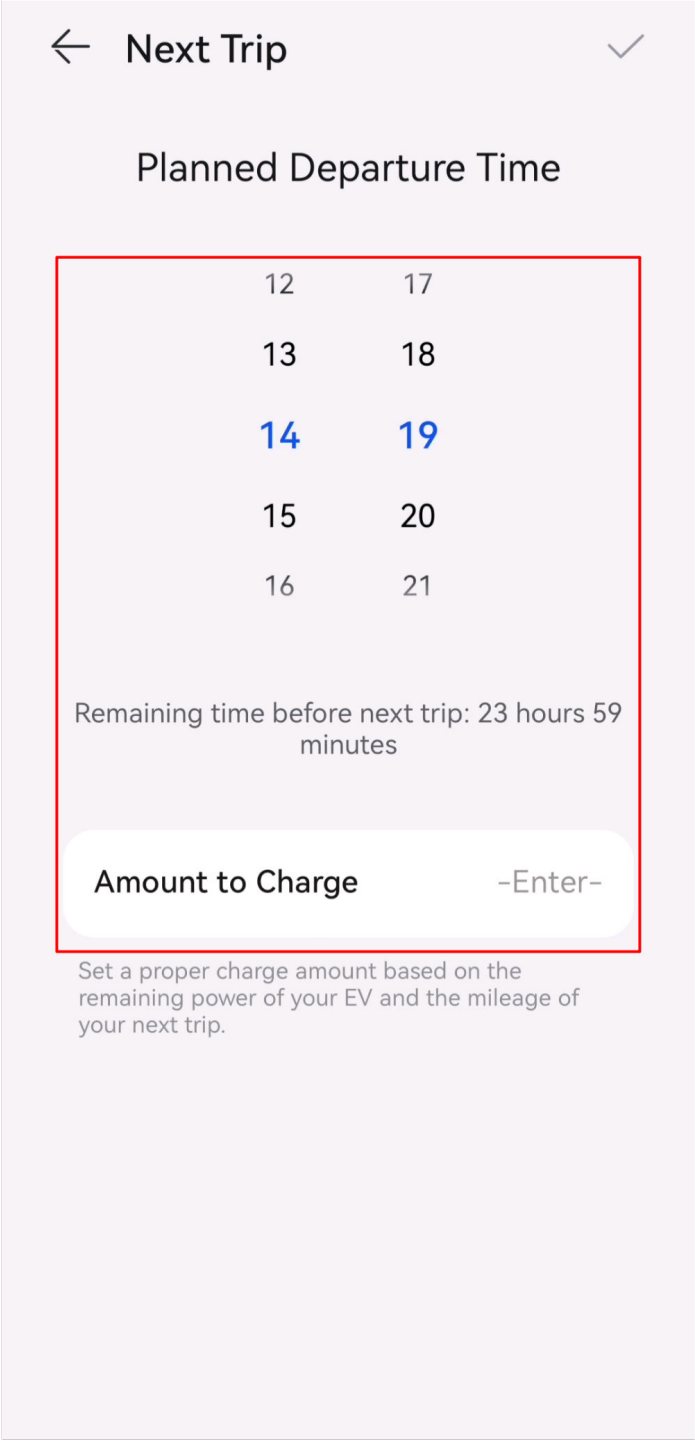
Set the time of the next trip and required electricity. The EMMA flexibly adjusts the PV power and power drawn from grid based on the scheduled time and remaining PV power to meet requirements of your trip and maximize the PV power utilization.

Assume that you plan to set off for a beach campsite at 16:00 on Saturday and the trip will require 30 kWh electricity. You can submit the trip information on the app at 8:00 on Saturday and set the maximum charge power of your charger to 5 kW. The EMMA predicts that it will take about 6 hours to add a charge of 30 kWh. The charger enters the waiting state and automatically starts charging at 10:00.



Setting Trip Information

After connecting the charger to the vehicle, tap **Next Trip** on the charger screen and set the trip information as prompted.



Starting Charging

After the trip information is set, the EMMA automatically starts the system to charge the vehicle based on the scheduled time and required electricity.

Stopping Charging

- When the battery level reaches the required electricity set for this trip, if you do not use the vehicle as planned and there is remaining PV power, the

charger will continue charging using PV power until the vehicle is fully charged.

- Press and hold  on the app to stop charging.

8.3.7 Sharing the Charger

When the electric vehicles owned by other family members need to be charged, the owner can share the charger. The recipient can register a FusionSolar app account after receiving the shared email, and use the charger to charge the vehicles on the app.

NOTE

When the charger is connected through the EMMA, the **Shared devices** function is supported.

Adding a Recipient

1. On the charger screen, choose **::** > **Settings** > **Shared devices**.
2. Tap **Share via mobile number**, enter the email address of a recipient, and tap **OK**.

   NOTE

   - You cannot share the charger with an email address that has been used to register a FusionSolar app account.
   - After the sharing is successful, the system sends the shared email to the recipient.

Sharing Management

You can view information about users and accounts that have been shared with your charger on the sharing management screen.

Canceling Sharing

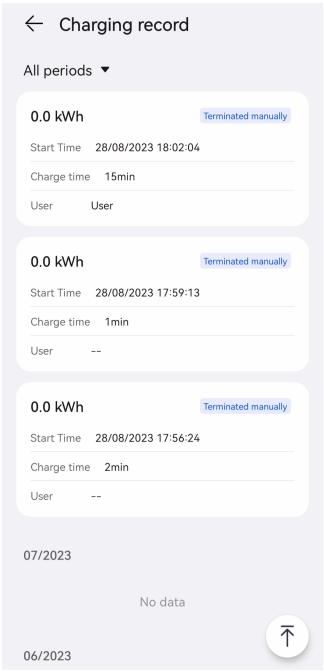
1. On the charger screen, choose **::** > **Settings** > **Shared devices**.
2. Tap **Sharing Management**, select the user you want to cancel sharing, and then press and swipe left.
3. Tap  to cancel sharing.

   NOTE

   After the sharing is canceled, the system automatically deregisters the sharing account.

8.3.8 Viewing Charging Records

On the charger screen, tap **Charging Record** to view the charging records of the past six months.



8.3.9 Load Priority

For a plant equipped with two chargers, if the sum of whose **Maximum Dynamic Power** is greater than the available power for all loads, you need to set the priority of the chargers to allocate the available power.

Preferentially Charging the ESS

After this function is enabled, the ESS is preferentially charged by the surplus PV power. If the surplus PV power is sufficient for more loads, the loads will be charged by priority.

Starting Loads by Priority

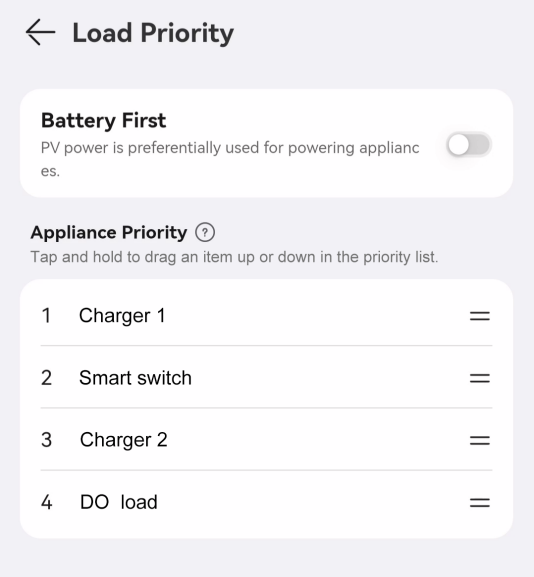
When the surplus PV power is greater than the surplus PV power threshold for power-on, the load at the highest priority is started first. Then, if the surplus PV power is sufficient for more loads, the loads are started by priority in descending order.

Shutting Down Loads by Priority

When the surplus PV power or grid power is insufficient to support all loads, the loads are shut down by priority in ascending order.

Procedure

1. On the charger screen, tap **::** > **Settings** > **Load Priority**.
2. Touch and hold an appliance card and drag it to adjust the priority.



8.3.10 Settings

Changing a Device Name

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

Maximum Dynamic Power (Maximum Charging Power)

Set the maximum charging power for the charger.

1. On the charger screen, choose **::** > **Settings** > **Maximum Dynamic Power**.
2. Enter the charge power value.

   NOTE

   The actual screen may vary. For some charger versions, **Maximum Charging Power**, but not **Maximum Dynamic Power**, is displayed.

Dynamic Charging Power

A meter must be configured for the dynamic charging power function. After this function is enabled, the system dynamically controls the charging power of the charger based on the home load power data collected by the meter. When detecting that the meter is disconnected, the charger switches to the minimum current mode to prevent the main circuit breaker from tripping.

1. On the charger screen, choose **::** > **Settings**.
2. Enable **Dynamic Charging Power**.

   NOTE

   Dynamic Charging Power is not displayed in EMMA scenarios.

Configuring PV Power Parameters

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

On the charger screen, choose **::** > **Settings** > **Advanced Settings** > **PV Power Configuration**.

- **Max Charging Power from Grid**: This means the maximum power that the charger can draw from the power grid during charging in PV power mode.
- **Surplus Power to Start Charging**: In PV power mode, when the PV feed-in power is greater than this set value, the charger starts to charge the vehicle.
- **Switch Between Single- and Three-Phase Power**: You are advised to enable this function in PV scenarios to increase the PV energy utilization.

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

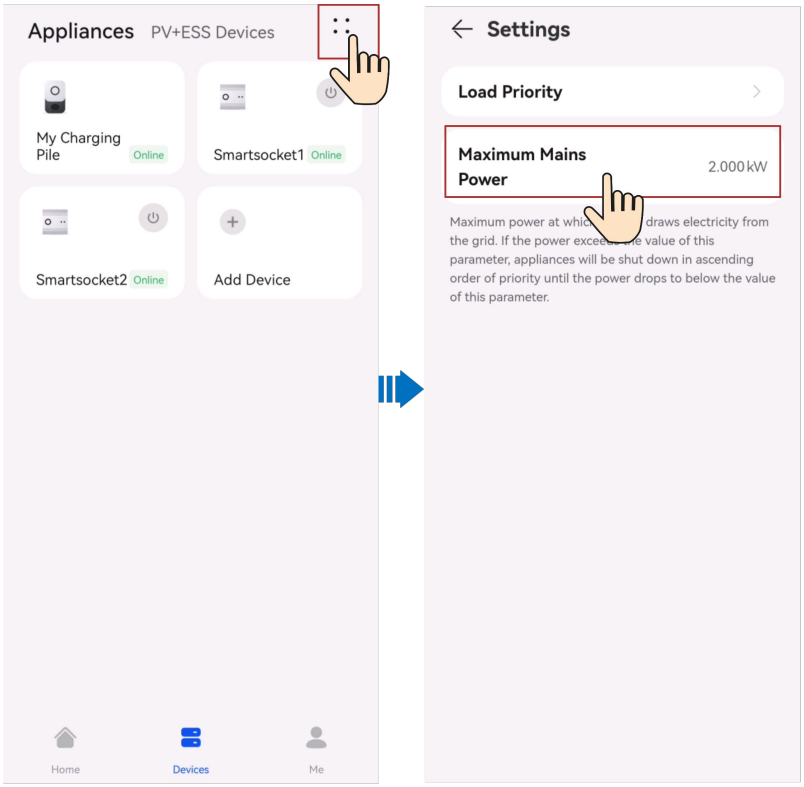
  The temporary interruption of charging caused by switching between single- and three-phase power will not cause damage to the vehicle.

NOTE

- **PV Power Configuration** is displayed only in PV scenarios.
- **PV Power Configuration** is not displayed in EMMA scenarios.

Maximum Mains Power

1. Choose **Devices** > **Appliances** and tap **::** > **Plant Settings**.



NOTE

Maximum Total Purchase Power of Devices in PV Power Preferred Mode needs to be set in EMMA scenarios.

Authentication via Bluetooth

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

Identity Authentication

NOTICE

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

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

1. On the charger screen, choose **::** > **Settings** > **Advanced Settings**.
2. Enable or disable **Identity Authentication**.

Charging Connector Locking Mode

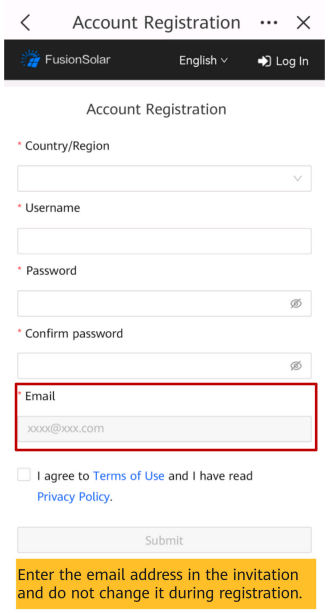
Set **Charging Connector Locking Mode** to lock the charging connector on the charger.

1. On the charger screen, choose **::** > **Settings**.
2. Tap **Charging Connector Locking Mode** to set the charging connector locking mode.

8.4 Using a Shared Charger

8.4.1 Registering a Shared Account

After receiving an invitation email from the charger owner, follow the instructions in the email to register an account. After the registration is complete, you can log in to the FusionSolar app to use the charger.



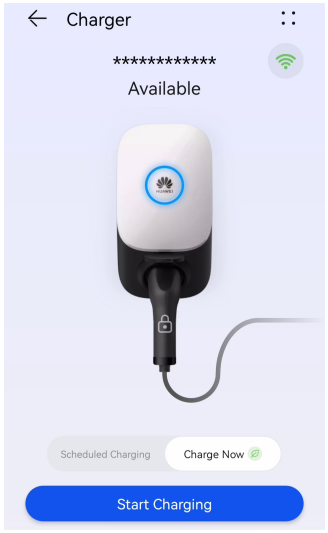
8.4.2 Starting and Stopping Charging on the App

Precautions

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

Starting Charging

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



Stopping Charging

After the vehicle is fully charged, the charger automatically stops charging. In this case, the indicator is steady blue. You can also press and hold  on the app to stop charging.

8.4.3 Setting the Charging Connector Locking Mode

Charging Connector Locking Mode

Set **Charging Connector Locking Mode** to lock the charging connector on the charger.

1. On the charger screen, choose **::** > **Settings**.
2. Tap **Charging Connector Locking Mode** to set the charging connector locking mode.

8.4.4 Logout

1. On the charger screen, tap **::** > **Me**.
2. Tap **Settings** > **Log out** to confirm and log out.

8.5 Smart Appliance

8.5.1 Quick Guide to Smart Appliances

To meet the increasing electricity demand, homes are installing photovoltaic (PV) systems to generate green electricity with solar power. However, the traditional appliance management relies on manual control, with inefficient green power utilization and dumb power consumption scheduling.

The FusionSolar Smart Power Consumption Solution uses the EMMA as the brain of the home energy management system, together with the energy storage system (ESS), PV system, charger, and other home appliances to achieve smart management on home power consumption, improve the PV power self-consumption rate, and reduce power consumption costs. You can flexibly manage your home power consumption through functions such as load priority, power consumption schedule, and PV power settings on the app.

Setting the Load Priority by Importance

You can set the power consumption priority for different loads to specify which one is preferentially powered when the PV power is low.

Flexible Power Consumption Schedule for Load Startup/Shutdown

Loads can be flexibly started or shut down according to the peak-valley price difference and surplus PV power to slash electricity costs.

PV Power Preferred

You can set the parameters for the PV power preferred mode to supply surplus PV power to loads safely and cost-effectively.

User-defined Load Information for Real-Time Monitoring

You can flexibly modify the load name and customize the load icon to clearly view the load status.

8.5.2 Smart Switch Commissioning

NOTE

If functions related to PV power control, such as PV power preferred, are involved, you are advised to configure smart appliances with the rated power greater than 100 W.

NOTE

EMMA V100R023C10 (V100R023C10SPCXX) supports only the Shelly versions listed in the following table. To check the Shelly version, perform the following steps:

1. Power on Shelly and connect to the WLAN of Shelly.

2. Enter the IP address for connecting to Shelly in the address box of the browser to check the firmware version of Shelly. For details, see the Shelly user manual.

Table 8-3 Supported Shelly versions

Type	Model	Version
Smart socket	Shelly Plus Plug S	0.12.99-plugsprod1, 0.14.4, 1.0.8, 1.1.0-beta3
Smart relay	Shelly Plus 2PM	0.10.2-beta4, 1.0.8, 1.1.0-beta3
Smart circuit breaker	Shelly Pro 2PM	0.10.2-beta1, 1.0.3, 1.0.8, 1.1.0-beta3

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 **Device** > **Appliances**, add the smart switch, and set the parameters such as the PV power parameters and power consumption priorities.

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.

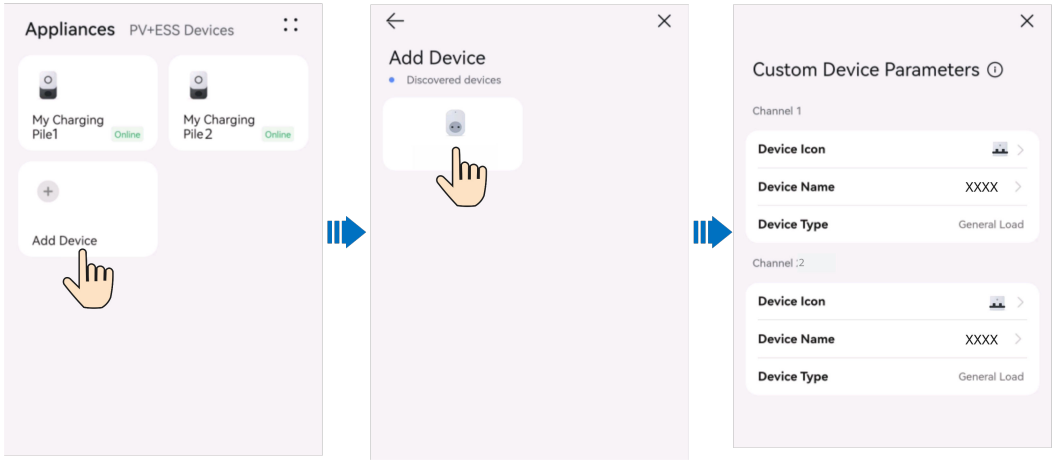
For example, if two smart circuit breakers (Shelly Pro 2PM) are installed in the living room, perform the following steps:

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

Table 8-4 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."

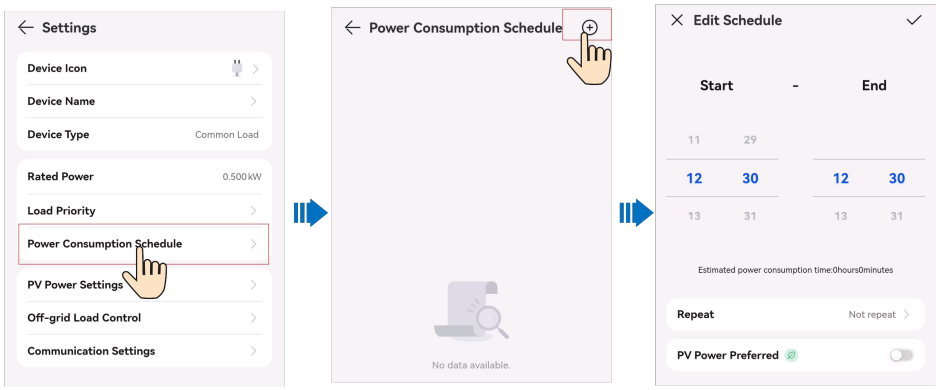
NOTE

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.

8.5.3 Enabling PV Power Preferred Mode

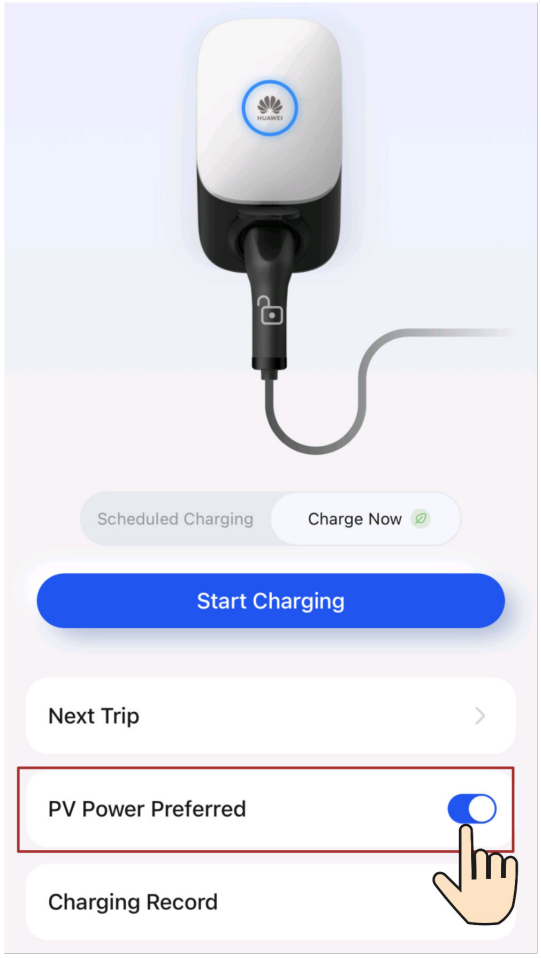
Smart Appliance

You can enable **PV Power Preferred** for a smart appliance when setting the power consumption schedule.

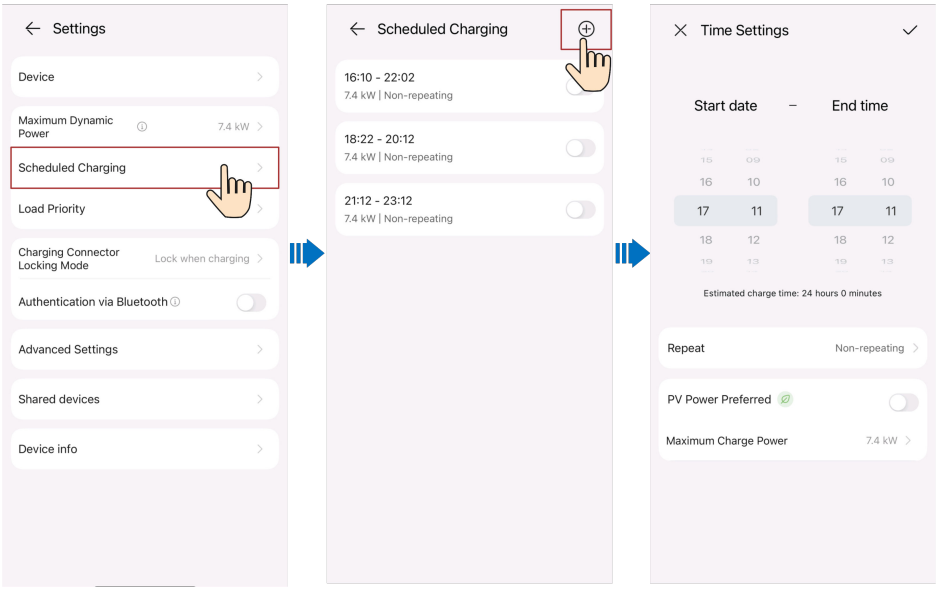


Charger

In the **Charge Now** scenario, you can enable **PV Power Preferred** on the charger screen.



In the **Scheduled Charging** scenario, you can enable **PV Power Preferred** when setting the scheduled time.

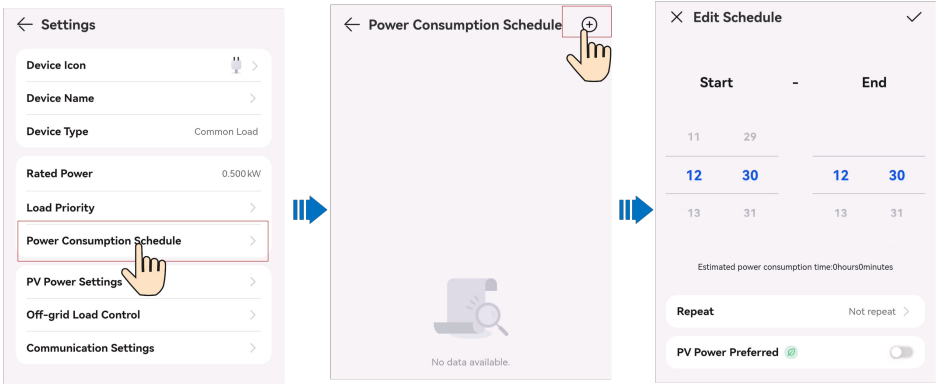


8.5.4 Power Consumption Schedule

You can schedule to start or shut down smart appliances at the specified time.

Procedure

1. On the load details screen, tap **::** > **Power Consumption Schedule**.
2. Tap **+** in the upper right corner to set the startup and shutdown time for the load.



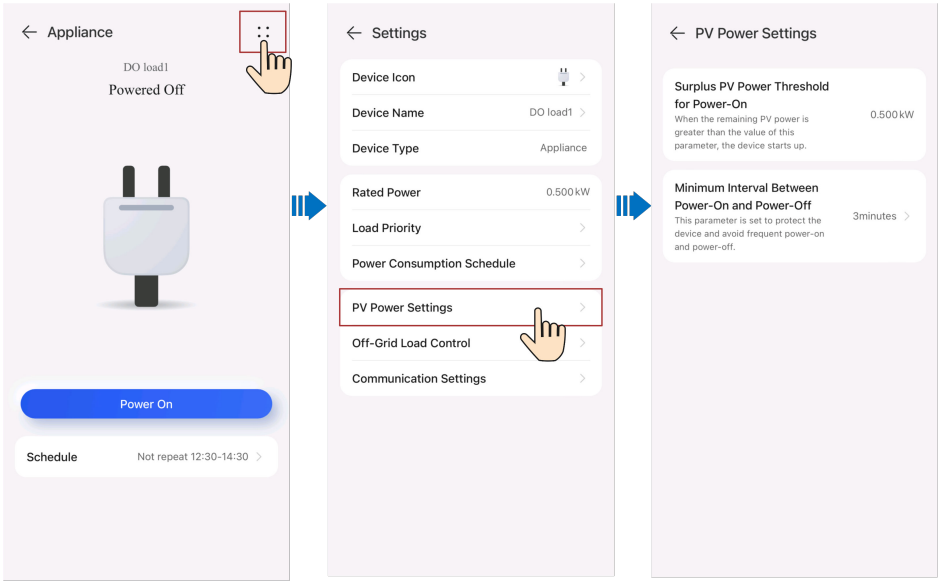
NOTE

If the **PV Power Preferred** mode is enabled but the PV power is less than the surplus PV power threshold for power-on when the scheduled time arrives, the load is not started temporarily.

8.5.5 Setting PV Power Parameters

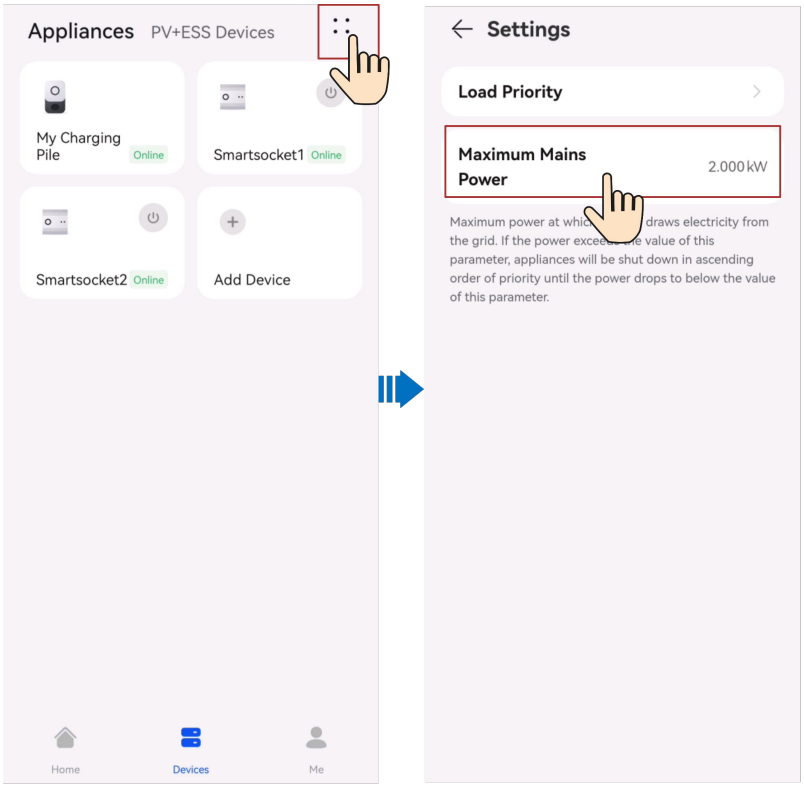
Surplus PV Power Threshold for Power-On

1. Choose **Devices** > **Appliances** and tap the target load.
2. Tap **::** > **Settings** > **PV Power Settings**.



Maximum Mains Power

1. Choose **Devices** > **Appliances** and tap **::** > **Plant Settings**.



8.5.6 Setting the Load Priority

You can set the power consumption priority to specify the load that is preferentially powered when the PV power is low.

Preferentially Charging the ESS

After this function is enabled, the ESS is preferentially charged by the surplus PV power. If the surplus PV power is sufficient for more loads, the loads will be charged by priority.

Starting Loads by Priority

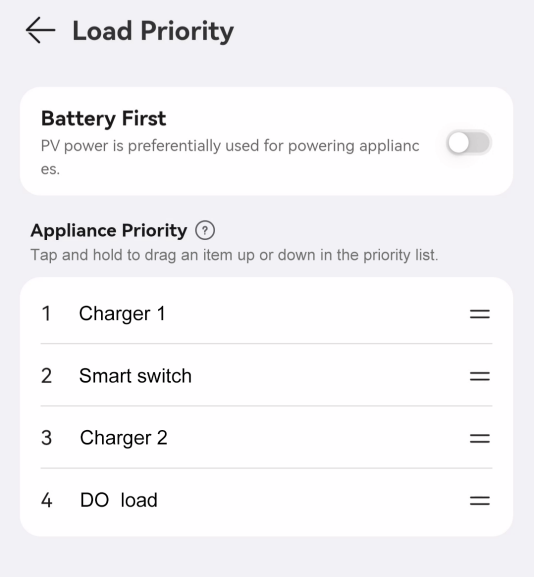
When the surplus PV power is greater than the surplus PV power threshold for power-on, the load at the highest priority is started first. Then, if the surplus PV power is sufficient for more loads, the loads are started by priority in descending order.

Shutting Down Loads by Priority

When the surplus PV power or grid power is insufficient to support all loads, the loads are shut down by priority in ascending order.

Procedure

1. Choose **Devices** > **Appliances** and tap the target load.
2. Tap **::** > **Plant Settings** > **Load Priority**.
3. Touch and hold an appliance card and drag it to adjust the priority.



8.5.7 More Settings

8.5.7.1 Parameter Settings

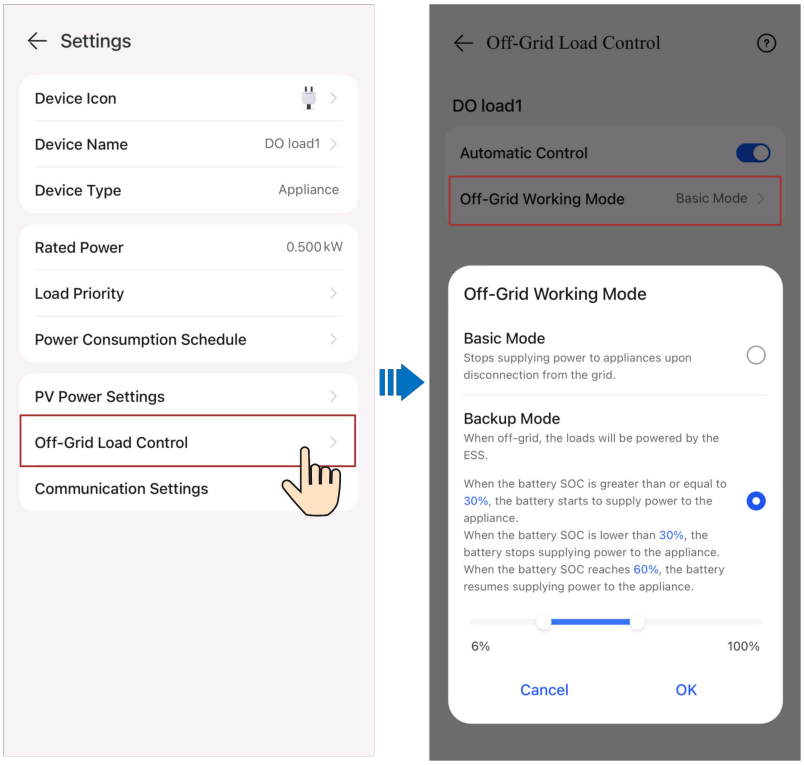
User-defined Load Name

1. On the load management screen, tap a target load.
2. Tap :: > **Settings** > **Device name**.

Off-grid Load Control

In the whole-house power backup networking, you can set **Off-grid Load Control** to determine whether to continue supplying power to loads connected to the backup power ports in off-grid mode. After **Automatic Control** is enabled, you can set the power supply mode for loads in off-grid mode.

1. On the load management screen, tap a target load.
2. Tap :: > **Settings** > **Off-grid Load Control**.



Minimum Interval Between Power-On and Power-Off

After the surplus PV power threshold for power-on is set, if the PV power output is unstable, loads will be frequently powered on and off. To ensure safe operations of loads, you can set a minimum interval for loads to stay in the current status after the loads are powered on or off.

Tap :: > **Settings** > **PV Power Settings** on the load management screen.

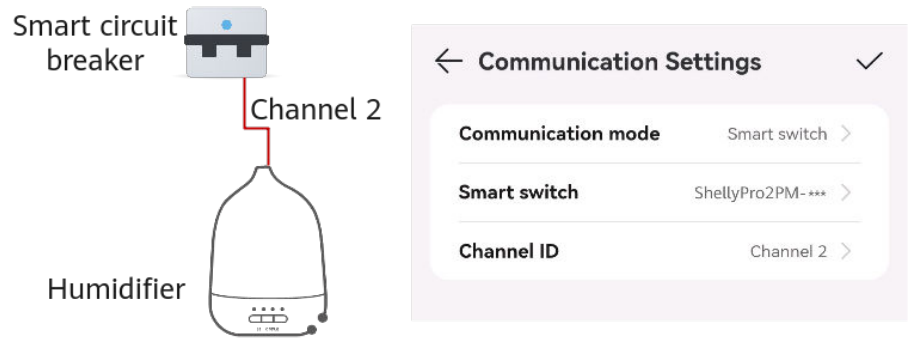
8.5.7.2 Setting Communication Parameters for Smart Appliances

Communication parameters indicate the access mode of your smart appliances. When the access mode of an appliance changes (for example, a smart circuit

breaker is replaced or adjusted), you can modify the communication parameters of the appliance without adding it to the app again.

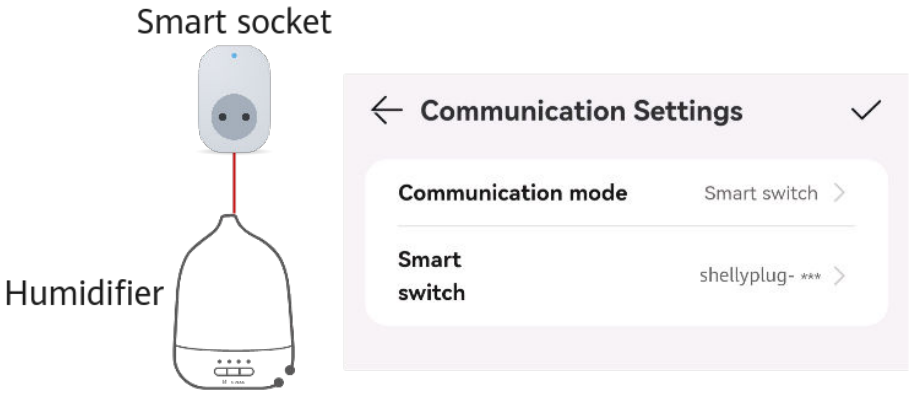
Assume that you install a humidifier in the living room and control the startup or shutdown of the humidifier through a smart circuit breaker.

Figure 8-4 Living room scenario



After using the humidifier for a period of time, you want to move the humidifier to the bedroom and use a smart socket to control the humidifier. You need to modify the communication parameters of the smart circuit breaker corresponding to the humidifier. Otherwise, you cannot start or shut down the humidifier through the app.

Figure 8-5 Bedroom scenario



Procedure

1. On the load management screen, tap a target load.
2. Tap **::** > **Settings** > **Nastavení komunikace**.

8.6 Intelligent Power Backup

In the SmartGuard networking scenario, if a generator is deployed and **Power supply configuration** is set to the **Generator** or **Mains+Generator** scenario, you need to set generator scheduling and control parameters based on the actual application scenario. Huawei Smart PV Management System (SmartPVMS)

schedules the generator to supply power to loads based on the mains and battery status in the off-grid scenario.

NOTICE

The power supply configuration is set by the installer in quick settings during site deployment.

8.6.1 Generator Control

Manual

The generator can be manually started and shut down on the app.

Auto

- To enable the auto mode, you need to set **ESS SOC to Start/Stop Generator**. When the system runs in off-grid state, the generator is automatically started or shut down based on the ESS SOC.
- In automatic control mode, a standby generator cannot be started during a quiet period to prevent noise caused by irregular startup of the generator. An operating generator will stop running even if the minimum uptime is not reached.

NOTE

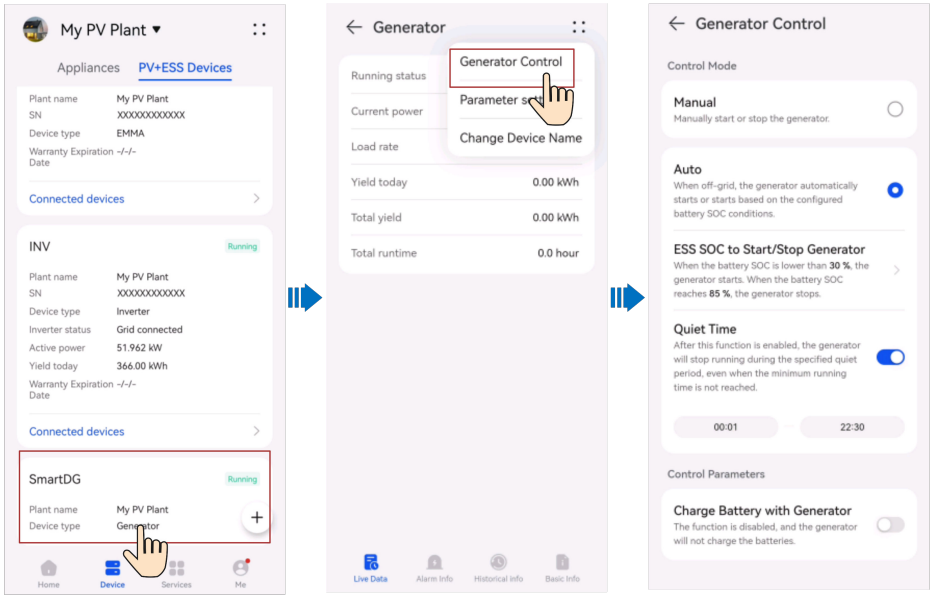
In automatic control mode, set the **generator uptime**.

Charge Battery with Generator

After the function is enabled, the generator is allowed to charge the battery during operation.

Procedure

1. Tap the generator on the **Device** screen.
2. Choose **::** > **Generator Control**.



8.6.2 Generator Uptime Control

Minimum Uptime

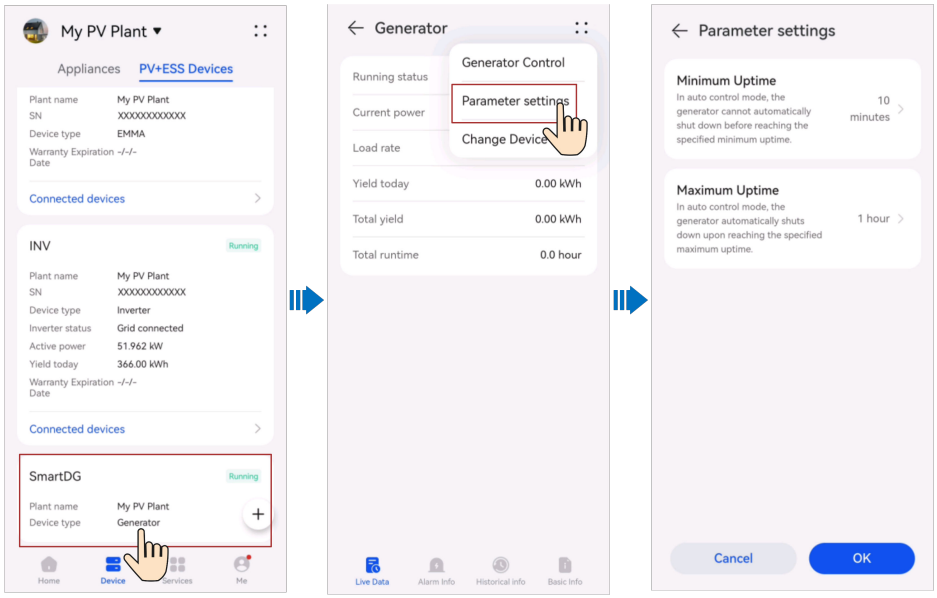
After the generator is started, to prevent repeated startup and shutdown in a short period of time, the generator will not stop until the uptime reaches the minimum value even if the mains recovers.

Maximum Uptime

After the generator starts, it will automatically stop when its uptime reaches the maximum value to prevent the generator damage after long-time running.

Procedure

1. Tap the generator on the **Device** screen.
2. Choose **::** > **Parameter settings**.



8.6.3 Switching to On/Off-Grid State

In the SmartGuard scenario, the system can automatically switch to the on/off-grid state based on the grid status.

On-Grid State

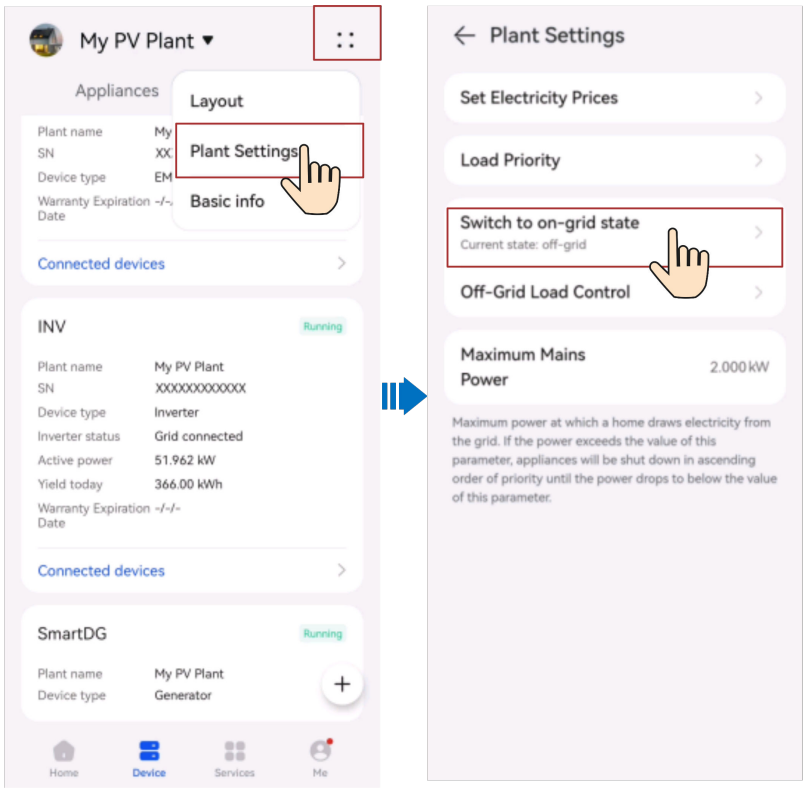
When the grid is available, the system runs in on-grid state. The PV power and grid power are supplied to backup loads and non-backup loads.

Off-Grid State

- When the grid fails, the system quickly switches to off-grid state. The PV power is supplied to backup loads only. After the grid recovers, the system automatically switches to on-grid state.
- If a plant is equipped with a generator, the system can start or shut down the generator based on the ESS SOC because the generator is in **auto** mode. When the ESS SOC is lower than the SOC threshold for starting the generator, the generator starts to supply power to backup loads and non-backup loads. In addition, the surplus power generated by the generator can be used to charge the ESS. When the ESS SOC reaches the SOC threshold for stopping the generator, the generator shuts down and the ESS supplies power to backup loads.

Procedure

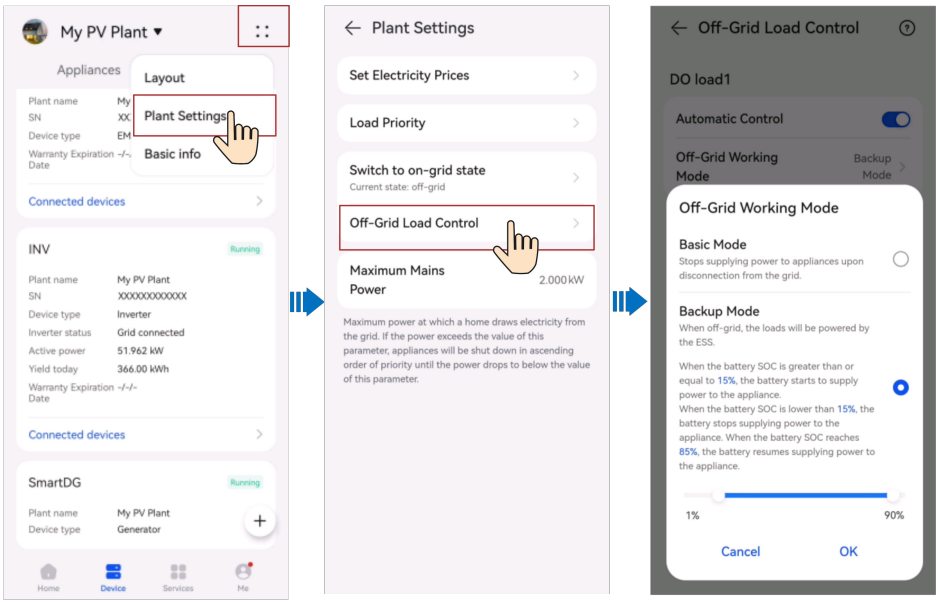
1. Choose **::** > **Plant Settings** on the **Device** screen.
2. Tap **Switch to off-grid state** or **Switch to on-grid state** to manually switch to the on/off-grid state.



8.6.4 Off-Grid Load Control

In the SmartGuard networking scenario, you can set the off-grid working mode for smart appliances that are connected to the backup load port by setting **Off-grid Load Control**.

1. Choose **::** > **Plant Settings** on the **Device** screen.
2. Tap **Off-grid Load Control** to set the off-grid working mode of smart appliances.



8.6.5 Viewing Power Backup History

1. Log in to the app and tap **PV** on the **Home** screen.
2. Drag down to the bottom of the statistics screen and tap **Power Backup History** to view historical power backup data.

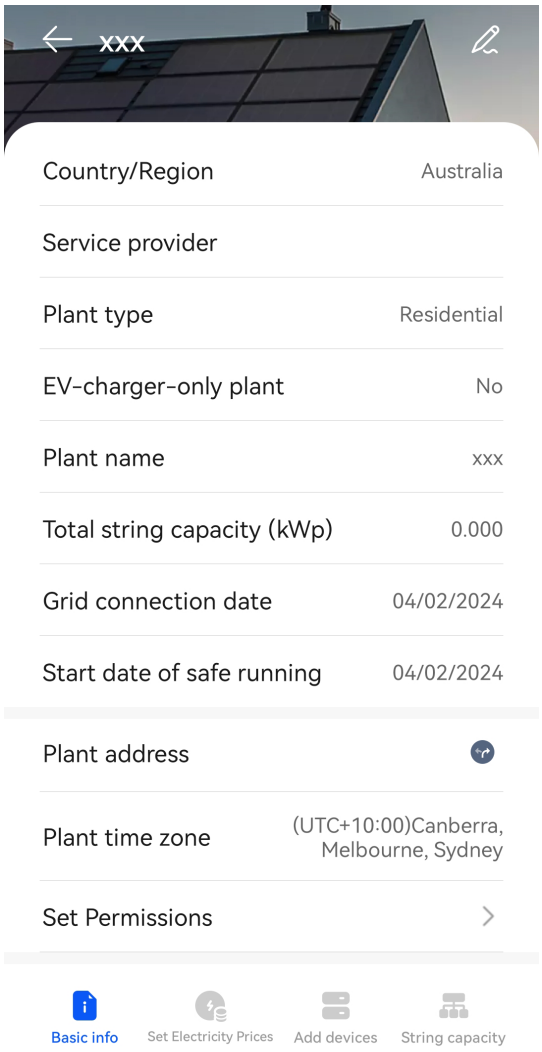
8.7 Managing Plants

In plant management, you can view and modify basic plant information, change service providers, and authorize installers to remotely maintain plants and devices.

Modifying Basic Plant Information

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

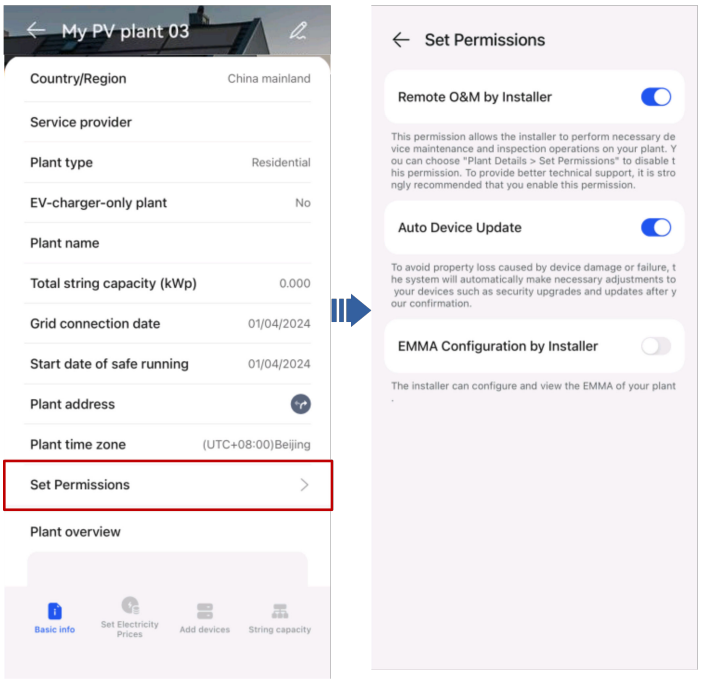
1. Choose **Me** > **Plant management** and tap the target plant.
2. On the **Basic info** tab, tap in the upper right corner.
3. Modify related information as required and tap **Save**.



Plant Permission Settings

When devices in the plant need to be remotely maintained, the owner can enable or disable the plant operation permission for the installer in **Set Permissions**.

1. Log in to the as an **Owner**.
2. Choose **Me** > **Plant management** and tap the target plant.
3. In the lower part of **Basic info**, tap **Set Permissions**.
4. Enable or disable the plant operation permission as required.



8.8 Device Management

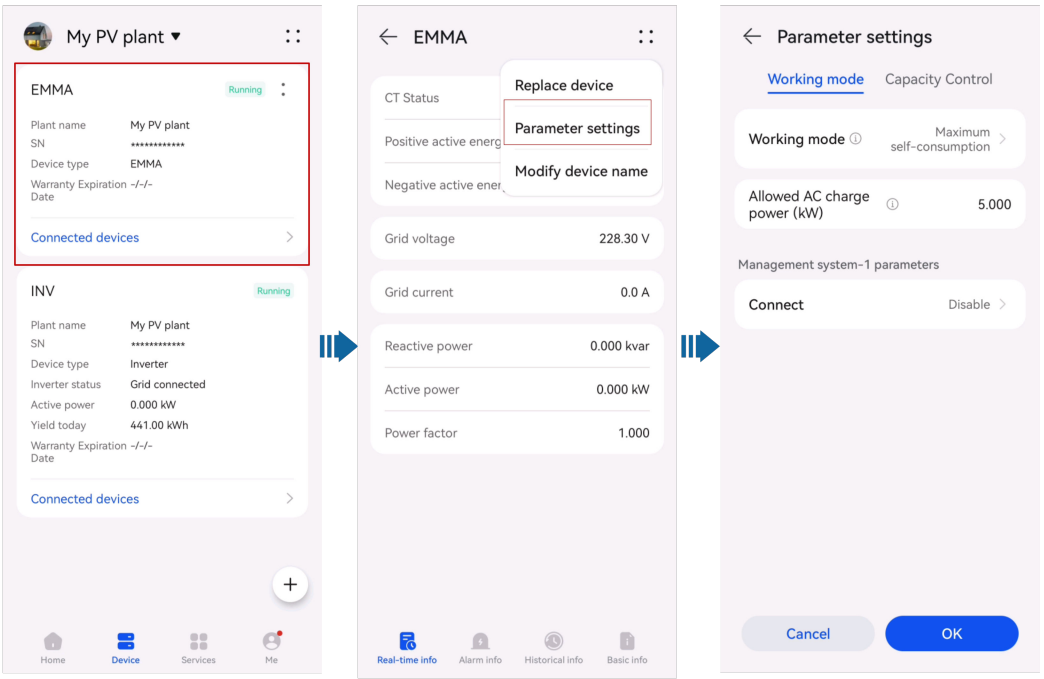
8.8.1 Set the Battery Working Mode

EMMA networking: Tap the EMMA device card to access the **Parameter settings** screen.

SmartLogger networking: Tap the SmartLogger device card to access the **Parameter settings** screen.

Smart Dongle networking: Tap the Smart Dongle device card to access the **Parameter settings** screen.

Inverter direct connection: Tap **Connected devices** under the inverter device card, and then tap the battery device card to access the **Parameter settings** screen.



Note: This figure use the EMMA as an example.

More

[8.8.7 ESS Working Modes (Residential Scenario)]

[8.8.8 ESS Working Modes (C&I Scenario)]

8.8.2 Peak Shaving

In some areas, electricity fees consist of both volumetric charge and demand charge. The peak shaving function allows you to lower the peak power drawn from grid in maximum self-consumption or TOU mode during peak hours, reducing electricity fees.

Here is an example of how to calculate electricity fees:

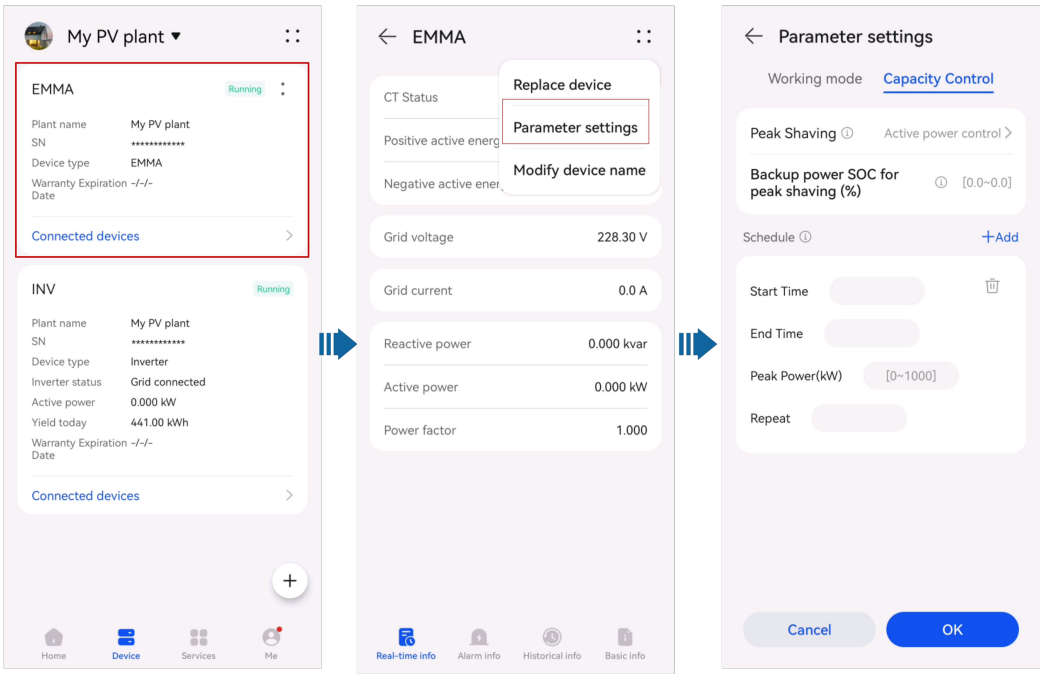
Total electricity fees = Peak demand charge* + Electricity usage charge + Other fees (such as taxes)

The peak demand charge mainly depends on the peak power drawn from the grid. Therefore, reducing the peak power drawn from the grid will help save on your electricity bills.

* Peak demand charge: For details, contact your utility company.

Procedure

1. On the home screen of the app, select the target plant.
2. On the **Device** screen, tap the Smart Dongle/EMMA device card.
3. Choose **::** > **Parameter settings** in the upper right corner and set related parameters on the **Capacity Control** tab.



Note: This figure use the EMMA as an example.

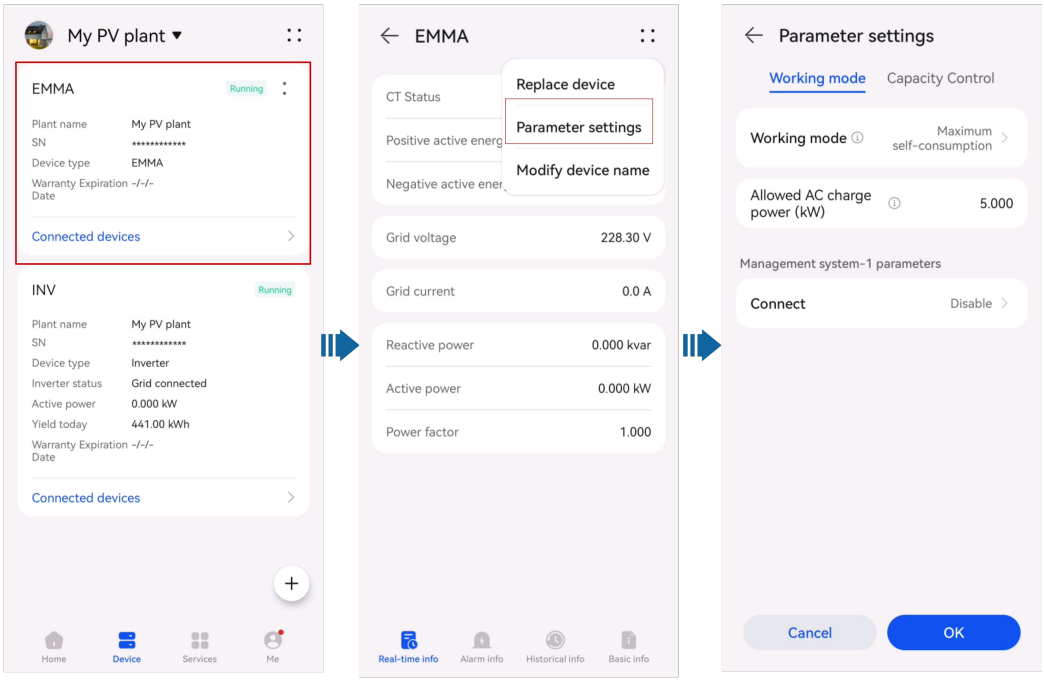
Parameter	Description
Peak shaving	• **Disabled**: The peak shaving function is disabled. • **Active power control**: The active power purchased from the grid cannot exceed the preset capacity limit. • **Apparent power limit**: The reactive power purchased from the grid cannot exceed the preset capacity limit.
Backup power SOC for peak shaving (%)	The value of this parameter affects the peak shaving capability. A larger SOC value indicates the stronger peak shaving capability.
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	

8.8.3 Setting Third-Party Management System Parameters (Connecting to Two Management Systems)

NOTICE

- If the inverter connects to a third-party management system, you also need to connect the inverter to Huawei's management system to facilitate inverter O&M.
- Only the EMMA and Smart Dongles (SDongleB-06 and SDongleA-05) can connect to a third-party management system.

1. On the home screen of the app, select the target plant.
2. On the **Device** screen, tap the Smart Dongle/EMMA device card.
3. Choose **::** > **Parameter settings** in the upper right corner. On the **Working mode** tab, set parameters related to the third-party management system.



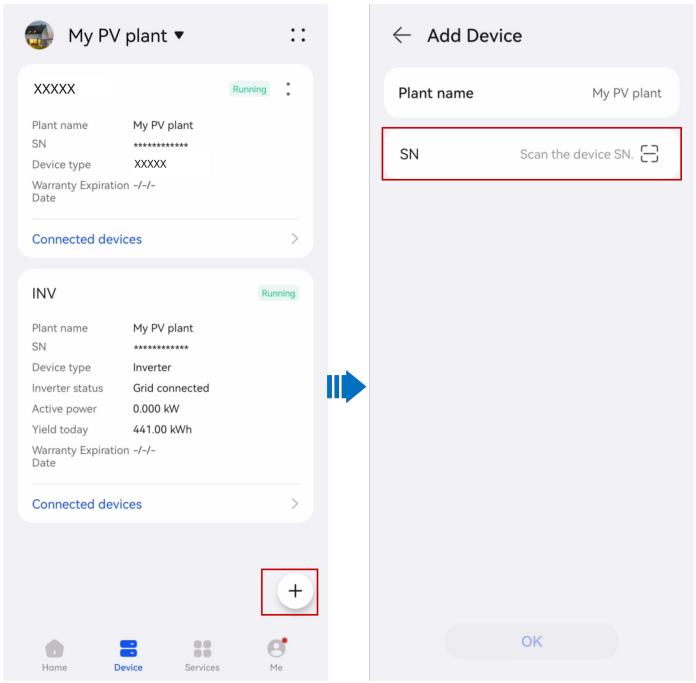
Note: This figure use the EMMA as an example.

Parameter	Description
Connect	• The default value is **Disable**, meaning that a third-party management system cannot be connected. • When this parameter is set to **Enable**, a third-party management system can be connected.
Server	Domain name or IP address.
Port	Server port.

Parameter	Description
TLS encryption	• If the third-party management system uses the TLS encryption protocol, set this parameter to **Enable**. • If the third-party management system does not use the TLS encryption protocol, set this parameter to **Disable**.

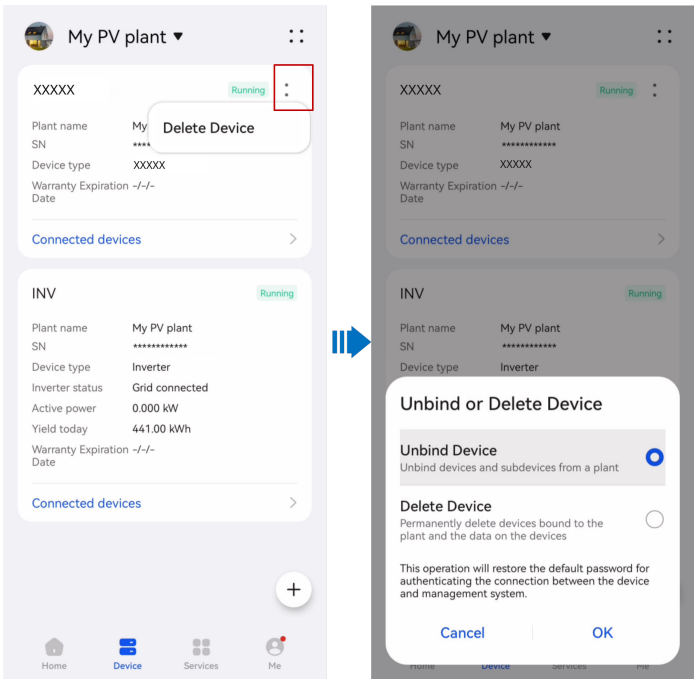
8.8.4 Adding Devices

1. On the home screen of the app, select the target plant.
2. Tap **+** on the **Device** screen.
3. Tap to scan the QR code of the target device or enter the device SN.



8.8.5 Unbinding or Deleting Devices

1. On the home screen of the app, select the target plant.
2. On the **Device** screen, choose **:** > **Delete Device** in the upper right corner of the target device card.
3. Tap **Unbind Device** or **Delete Device** as required.



NOTE

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

8.8.6 Replacing Devices

NOTICE

The following types of devices can be replaced: inverter, SmartLogger, optimizer, and communications module.

Ensure that the following conditions are met for device replacement:

- The current device is disconnected from the management system.
- The target device has been replaced and commissioned.
- To replace an inverter which is directly connected to the plant, the new inverter must be added to the plant where the old inverter belongs. For details, see **8.8.4 Adding Devices**.
- For details about device replacement, see *FusionSolar Smart PV Solution-Device Replacement Commissioning Guide* at **https://support.huawei.com/enterprise/en/doc/EDOC1100197498?idPath=258788303|258788491|258789989|23205712|21608721**.

1. On the home screen of the app, select the target plant.
2. On the **Device** screen, tap the device to be replaced.
3. Choose **::** > **Replace device** in the upper right corner.
4. On the **Replace device** screen, tap  to scan the QR code of the new device or enter its SN.
5. Tap **Replace**.

NOTE

When replacing an optimizer, tap **Connected devices** under the inverter card, select the target **Optimizer No.**, and then replace the optimizer.

8.8.7 ESS Working Modes (Residential Scenario)

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.
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.
Third-party dispatch	• Only a third-party platform controls battery charge and discharge. • During charging, the PV energy is preferentially used for charging batteries. • During discharging, batteries are preferentially discharged, and surplus PV energy is discarded.

NOTE

To implement third-party dispatch on the ESS, the inverter shall connect to the third-party management system. For details, see **8.8.3 Setting Third-Party Management System Parameters (Connecting to Two Management Systems)**.

8.8.8 ESS Working Modes (C&I Scenario)

Table 8-5 Battery control working modes

Working Mode	Mode Description
No control	The SmartLogger directly delivers the external scheduling power limit. No other power scheduling control is performed. The power is automatically controlled by the device.
Maximum self-consumption	• This mode applies to areas where the electricity price is high, or areas where the FIT subsidy is low or unavailable. The PV+ESS system generates sufficient PV power for loads and uses the surplus PV power to charge the ESS (if the PV power is insufficient for loads, the TOU mode is recommended). • PV power is preferentially supplied to loads, and the surplus power is used to charge the ESS. If the ESS is fully charged or is being charged at full power, the surplus power is fed to the grid. When PV power is insufficient or no PV power can be generated at night, the ESS discharges power to loads. This improves the self-consumption rate and energy self-sufficiency rate, and reduces electricity costs. The grid cannot charge the ESS but can supply power to loads. • The SmartLogger performs ESS scheduling based on the external scheduling power limit and the preceding policies.
Fully fed to grid	The **Fully fed to grid** working mode is not supported in C&I or utility-scale scenarios.

Working Mode	Mode Description
TOU	• It is applicable to the PV+ESS system and ESS-only system where peak to valley electricity prices are different and power meters are available. • You can manually set the charge and discharge time segments. For example, if you set the low electricity price period at night as the charge time, the system charges the batteries at the maximum power during the charge time. If you set the high electricity price period as the discharge time, batteries can discharge only during the discharge time based on the actual load power, reducing electricity costs. • Click **Add** to set the charge and discharge time segments. A maximum of 14 time segments can be set. During the charge time, the grid can charge the batteries. During the discharge time, the batteries can supply power to the loads. In other time segments, the batteries do not discharge. The PV system and grid supply power to loads, and the PV system can charge the batteries. • In some countries, the grid is not allowed to charge batteries. In such case, this mode cannot be used. • The SmartLogger performs ESS scheduling based on the external scheduling power limit and the preceding policies.

Working Mode	Mode Description
TOU (fixed power)	• It is applicable to the PV+ESS system and ESS-only system where peak to valley electricity prices are different and power meters are unavailable. • You can manually set the charge and discharge time segments. For example, if you set the low electricity price period at night as the charge time, the system charges the batteries at the fixed power during the charge time. If you set the high electricity price period as the discharge time, batteries can discharge only during the discharge time at the fixed power, reducing electricity costs. • Click **Add** to set the charge and discharge time segments. A maximum of 14 time segments can be set. During the charge time, the grid can charge the batteries. During the discharge time, the batteries can supply power to the loads. In other time segments, the batteries do not discharge and are not charged. • In some countries, the grid is not allowed to charge batteries. In such case, this mode cannot be used. • The SmartLogger performs ESS scheduling based on the external scheduling power limit and the preceding policies.
Charge/Discharge based on grid dispatch	• This mode applies to utility-scale plant scheduling scenarios where the northbound controller delivers active power scheduling commands. • The purpose of scheduled discharge is to meet the active power scheduling target value at the grid access point. PV energy is preferred. If the generated PV energy is insufficient, the batteries discharge and the energy is fed to the grid based on the active power scheduling target value. If the generated PV energy is sufficient, the energy is fed to the grid based on the active power scheduling target value, and the surplus PV energy is used to charge the batteries. • The purpose of scheduled charge is to meet the active power scheduling target value at the grid access point. If the battery charge power is insufficient or the Smart PCS limits the power, the grid charges the batteries with the maximum capability. If the batteries are not fully charged when the scheduling target value is met, the PV power is used to charge the batteries.

8.9 Electricity Price Settings

8.9.1 Purpose

The FusionSolar Smart PV Management System (SmartPVMS) calculates plant benefits based on the feed-in tariff and electricity purchase price that you define.

Feed-in Tariff

This is the unit price of the energy that the plant feeds into the grid.

Purchase Price

This is the unit price of electricity purchased from the power grid. The purchase price can be calculated as a compound price that combines multiple calculation schemes or as the simple time-of-use (TOU) price.

- Compound price: The purchase price calculation scheme varies by country/region. To help users accurately calculate the PV benefits, the FusionSolar SmartPVMS comprehensively manages electricity costs, including tiered prices, capacity/demand charges, TOU prices, weekend/holiday electricity prices, and surcharges.

  Installers can create different purchase price templates for plant owners based on the electric power company's purchase price calculation schemes. This enables plant owners to quickly configure purchase prices.
- Simple price: The calculation of a simple price does not require an electricity price template. You can set a fixed price or TOU price.

Electricity Market

The FusionSolar SmartPVMS can connect to the European electricity price markets to obtain the daily dynamic electricity prices as the input for the calculation of PV benefits and electricity purchase cost. Users can also adjust the electricity prices based on the actual contract.

You can configure electricity prices by quick creation or using a template.

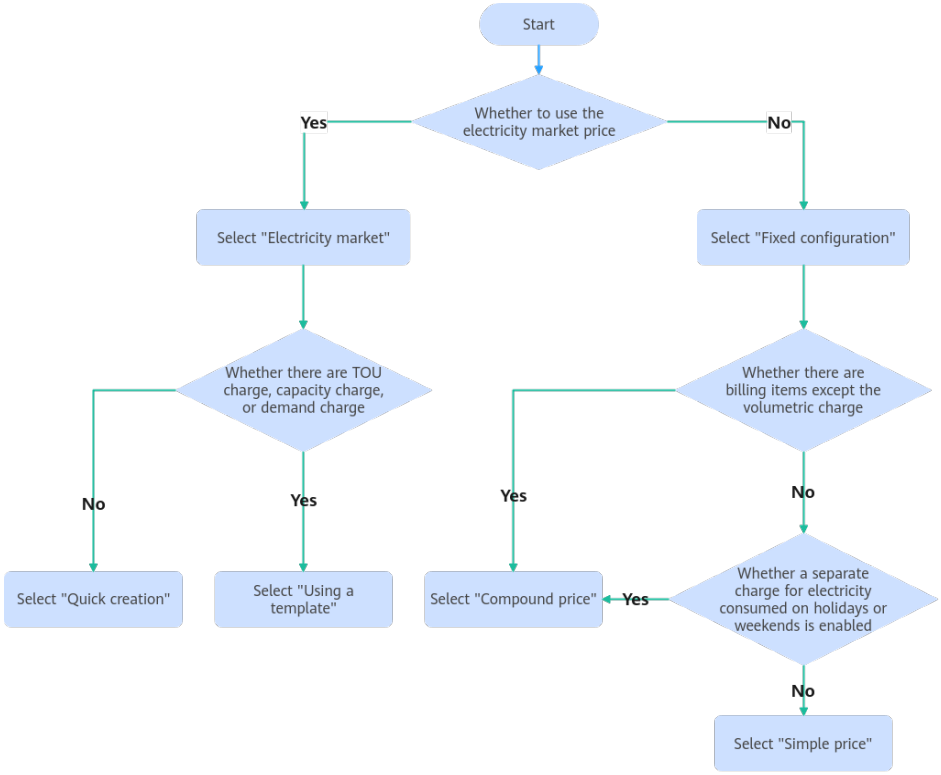
- **Quick creation**: You can configure electricity market information, fixed surcharge, electricity price coefficient, minimum contractual fee, and amount-based surcharge.
- **Using a template**: In addition to the information in quick creation, you can also configure the TOU surcharge and demand charge. In this case, the installer shall configure a price template in advance.

Only some European countries and regions support the electricity prices in the electricity markets.

Electricity Market	Country/Region
Nord Pool	Sweden, Denmark, Finland, Norway, Lithuania, Estonia, Latvia, Netherlands, Poland, Belgium, Germany, and Luxembourg

How Do I Select the Electricity Purchase Price Configuration Mode?

1. Is the volumetric charge rate in your electricity purchase contract set to the electricity market price?
   - If yes, go to **Step 2**.
   - If not, go to **Step 3**.
2. Does your contract contain billing items based on TOU, capacity, or demand?
   - If yes, choose **Electricity market** > **Using a template**.
   - If not, choose **Electricity market** > **Quick creation**.
3. Does your contract contain billing items (such as contract fees, additional fees charged based on the electricity consumption, and taxes) in addition to the volumetric charge?
   - If yes, choose **Fixed configuration** > **Compound price**.
   - If not, go to **Step 4**.
4. Does your contract stipulate that the purchase price on holidays and weekends is different from that on working days?
   - If yes, choose **Fixed configuration** > **Compound price**.
   - If not, choose **Fixed configuration** > **Simple price**.



8.9.2 Configuring the Feed-in Tariff

8.9.2.1 Configuring the Feed-in Tariff (Fixed Configuration)

1. On the home screen of the app, select the target plant and choose **::** > **Plant Settings** in the upper right corner.
2. On the **Plant Settings** screen, choose **Set Electricity Prices** > **Feed-in tariff**.

   If the country or region where your plant is located supports dynamic purchase prices, the **Electricity market** option is displayed. In this case, set the price source to **Fixed configuration**.
3. Set the time segment and enter the feed-in tariff in the time segment.

   If the feed-in tariff varies based on time segments or date periods, you can tap **Add Time Segment** and **Add date period** to set multiple time segments and date periods.

8.9.2.2 Configuring the Feed-in Tariff (Electricity Market)

1. On the home screen of the app, select the target plant and choose **::** > **Plant Settings** in the upper right corner.
2. On the **Plant Settings** screen, choose **Set Electricity Prices** > **Feed-in tariff**.
3. Select **Electricity market** and tap **Next**.

   If **Electricity market** is not displayed, check whether the country or region set for the plant supports the electricity market and whether the plant type is **Residential** or **C&I**.
4. Select an area, set parameters such as **Fixed Surcharge**, and tap **Submit**.

Charge Category	Description
Fixed Surcharge	You can set this parameter to **Expenditure** or **Subsidy**. **Expenditure**: fees such as commissions charged by the electric power company by kilowatt-hour when surplus PV power is sold to the electric power company. **Subsidy**: extra revenue earned by kilowatt-hour when the surplus PV power is sold to the electric power company, in addition to the feed-in tariff in the electricity market.
Electricity Price Coefficient	In some areas, residents need to pay a percentage of the electricity sales revenue (such as taxes). The actual electricity sales revenue needs to deduct the charges. For example, if the tax rate is 25%, the electricity price coefficient is 0.75. If no tax is involved, the electricity price coefficient is 1.

8.9.3 Configuring the Purchase Price

8.9.3.1 Configuring the Purchase Price (Simple Price)

1. On the home screen of the app, select the target plant and choose **::** > **Plant Settings** in the upper right corner.
2. On the **Plant Settings** screen, choose **Set Electricity Prices** > **Purchase Price**.
3. Select **Simple Price** and tap **Next**.

   If the country or region where your plant is located supports dynamic purchase prices, the **Electricity market** option is displayed. In this case, set the price source to **Fixed configuration**, and then select **Simple Price** to configure parameters.
4. Set the time segment and enter the purchase price in the time segment.

   If the purchase price varies based on time segments or date periods, you can tap **Add Time Segment** and **Add date period** to set multiple time segments and date periods.

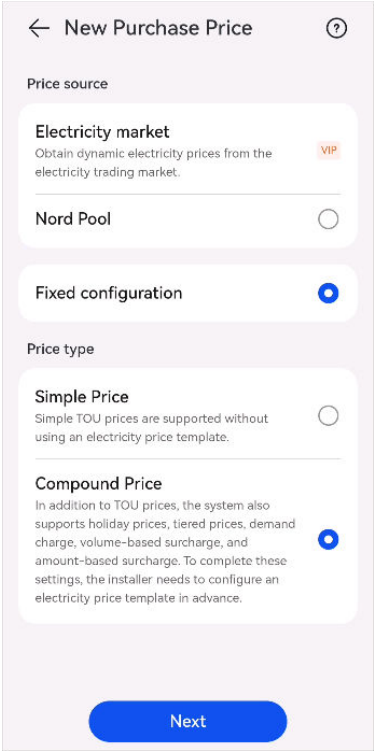
8.9.3.2 Configuring the Purchase Price (Compound Price)

NOTICE

Before configuration, set the correct country/region where the plant is located and the correct plant type. Otherwise, the system cannot push the electricity price template of the target country/region.

1. On the home screen of the app, select the target plant and choose **::** > **Plant Settings** in the upper right corner.
2. On the **Plant Settings** screen, choose **Set Electricity Prices** > **Purchase price**.
3. Select **Compound Price** and tap **Next**.

   If the country or region where your plant is located supports dynamic purchase prices, the **Electricity market** option is displayed. In this case, set the price source to **Fixed configuration**, and then select **Compound Price** to configure parameters.



4. Select the price template and configure electricity prices based on the electricity price information signed in the purchase contract.

   For more details about configuration, see **8.9.3.4 Example of Configuring a Compound Price**.

   NOTE

   - Select an appropriate electricity price template based on the electricity fee calculation method in the purchase contract signed with the electric power company.
   - If the electricity price calculation method in the available electricity price template is different from that in the purchase contract, contact the installer to add a template.

Parameter Description

Table 8-6 Volumetric charge rate description

Charge Category	Description
Price source	**Electricity market**: The volumetric charge rate is decided by the dynamic purchase price in the electricity market. **Fixed configuration**: In the contract period, the volumetric charge rate is a fixed price (consisting of the tiered price and time-of-use price).
Time segments in a day or not	**Yes**: A day is divided into several time segments. The purchase price varies based on time segments.

Charge Category	Description
	No: The same purchase price applies in all time segments in a day.
Time segment	**Specified period**: The purchase price is valid only within a specified period of time and not repeated periodically.
	By month: The purchase price varies by month. Within the validity period, the purchase price is charged by month.
	By season: The purchase price varies by season. Within the validity period, the purchase price is charged by season.
Separate charging on weekends	Electricity is charged at a different rate on weekends or holidays.
Separate charging on holidays	
Tiered pricing or not	The purchase price varies based on tiers of electricity consumption. Once the limit for a tier is exhausted, the consumed electricity is billed at the next tier's rate. **Based on TOU consumption**: The TOU consumption in a time segment is charged in a specified statistical period. **Based on total consumption**: The total consumption in all the time segments is charged in a specified statistical period.

Table 8-7 Demand charge rate description

Charge Category	Description
Not applicable	No demand charge rate is applicable.
Fixed amount	The demand charge rate is fixed and does not change with the demand or capacity.
By demand	Charge based on the actual demand.
By device/transformer capacity	Charge based on the device or transformer capacity.

Charge Category	Description
By contractual demand	Charge based on the demand specified in the purchase contract. **Non-TOU**: In a billing period, the demands of all time segments are the same. **TOU**: In a billing period, the demand varies based on time segments.

NOTE

Residential plants support only **Fixed amount**.

C&I plants support **By demand**, **By device/transformer capacity**, and **By contractual demand**.

Table 8-8 Description of other fees

Charge Category	Description
Fixed fee	Refers to a fixed amount of fee incurred in the billing period, which does not include the minimum contractual fee. **NOTE** The fee is not relevant to the volumetric charge or demand charge.
Volume-based surcharge	In addition to the volumetric charge rates, an extra fee needs to be paid for each kilowatt-hour of electricity purchased in the billing period. The fee does not change with the increase in the total electricity consumed.
Amount-based surcharge	Refers to an additional amount of fee charged by a certain percentage based on the total electricity fee in a billing period.
Min. contractual fee	If the total electricity fee generated in the billing period is lower than the minimum contractual fee, the minimum contractual fee is charged.

NOTE

C&I plants do not support **Min. contractual fee**.

8.9.3.3 Configuring the Purchase Price (Electricity Market)

NOTICE

Before configuration, set the correct country/region where the plant is located and the correct plant type. Otherwise, the system cannot push the electricity price template of the target country/region.

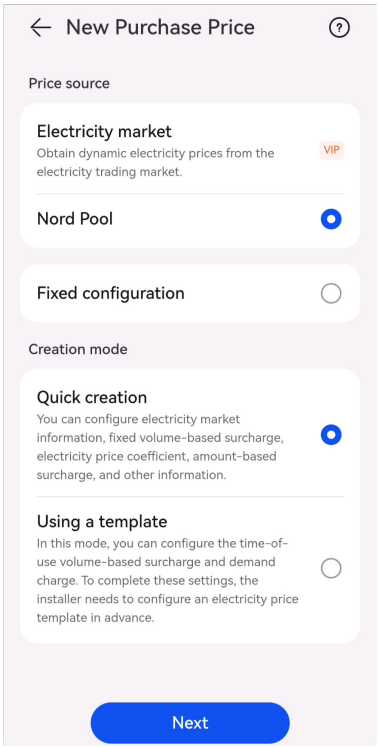
1. On the home screen of the app, select the target plant and choose **::** > **Plant Settings** in the upper right corner.
2. On the **Plant Settings** screen, choose **Set Electricity Prices** > **Purchase price**.
3. Set **Price source** to **Electricity market**.

   NOTE

   - If you select **Fixed configuration**, set purchase prices by referring to **8.9.3.1 Configuring the Purchase Price (Simple Price)** or **8.9.3.2 Configuring the Purchase Price (Compound Price)**.
   - If **Electricity market** is not displayed, check whether the country or region set for the plant supports the electricity market and whether the plant type is **Residential** or **C&I**.
4. Select an electricity price configuration mode as required.
   - **Quick creation** supports only fixed surcharges. If TOU surcharges are specified in the electricity purchase contract, select **Using a template**.
   - **Using a template** supports TOU surcharges and allows you to configure electricity prices using a template configured by your installer.

   NOTE

   - If **Using a template** is selected, choose an appropriate electricity price template based on the electricity fee calculation method in the purchase contract signed with the electric power company.
   - If the electricity price calculation method in the available electricity price template is different from that in the purchase contract, contact the installer to add a template.



5. Configure electricity prices based on the electricity price information signed in the electricity purchase contract.

Parameter Description

Table 8-9 Volumetric charge rate description

Charge Category	Description
Price source	**Electricity market**: The volumetric charge rate is decided by the dynamic purchase price in the electricity market. **Fixed configuration**: In the contract period, the volumetric charge rate is a fixed price (consisting of the tiered price and time-of-use price).
Fixed Surcharge	You can set this parameter to **Expenditure** or **Subsidy**. **Expenditure**: An extra fixed fee specified in the contract for each kWh of purchased electricity in addition to the fee charged based on the prices in the electricity market **Subsidy**: A subsidy paid by the electric power company to a user for each kWh of purchased electricity to encourage grid electricity consumption.
TOU Surcharge	An extra TOU fee specified in the contract for each kWh of electricity purchased from the electric power company in addition to the fee charged based on the prices in the electricity market
Time segments in a day	**Yes**: A day is divided into several time segments. The purchase price varies based on time segments.
	No: The same purchase price applies in all time segments in a day.
Electricity Price Coefficient	In some regions, the electricity market price, fixed surcharge, and TOU surcharge refer to pretax unit prices. Users need to pay taxes based on a specified tax rate. For example, if the tax rate is 25%, the electricity price coefficient is 1.25. If no tax is involved, the electricity price coefficient is 1.
Separate charging on weekends	Electricity is charged at a different rate on weekends or holidays. If this item is not involved, select **No**.
Separate charging on holidays	

Table 8-10 Demand charge rate description

Charge Category	Description
Not applicable	No demand charge rate is applicable.
Fixed amount	The demand charge rate is fixed and does not change with the demand or capacity.
By demand	Charge based on the actual demand.
By device/transformer capacity	Charge based on the device or transformer capacity.
By contractual demand	Charge based on the demand specified in the purchase contract. **Non-TOU**: In a billing period, the demands of all time segments are the same. **TOU**: In a billing period, the demand varies based on time segments.

NOTE

Residential plants support only **Fixed amount**.

C&I plants support **By demand**, **By device/transformer capacity**, and **By contractual demand**.

Table 8-11 Description of other fees

Charge Category	Description
Fixed fee	Refers to a fixed amount of fee incurred in the billing period, which does not include the minimum contractual fee. **NOTE** The fee is not relevant to the volumetric charge or demand charge.
Volume-based surcharge	In addition to the volumetric charge rates, an extra fee needs to be paid for each kilowatt-hour of electricity purchased in the billing period. The fee does not change with the increase in the total electricity consumed.
Amount-based surcharge	Refers to an additional amount of fee charged by a certain percentage based on the total electricity fee in a billing period.
Min. contractual fee	If the total electricity fee generated in the billing period is lower than the minimum contractual fee, the minimum contractual fee is charged.

NOTE

C&I plants do not support **Min. contractual fee**.

8.9.3.4 Example of Configuring a Compound Price

The examples in this document are for reference only.

8.9.3.4.1 Example of Configuring a Purchase Price (Residential Scenario 1)

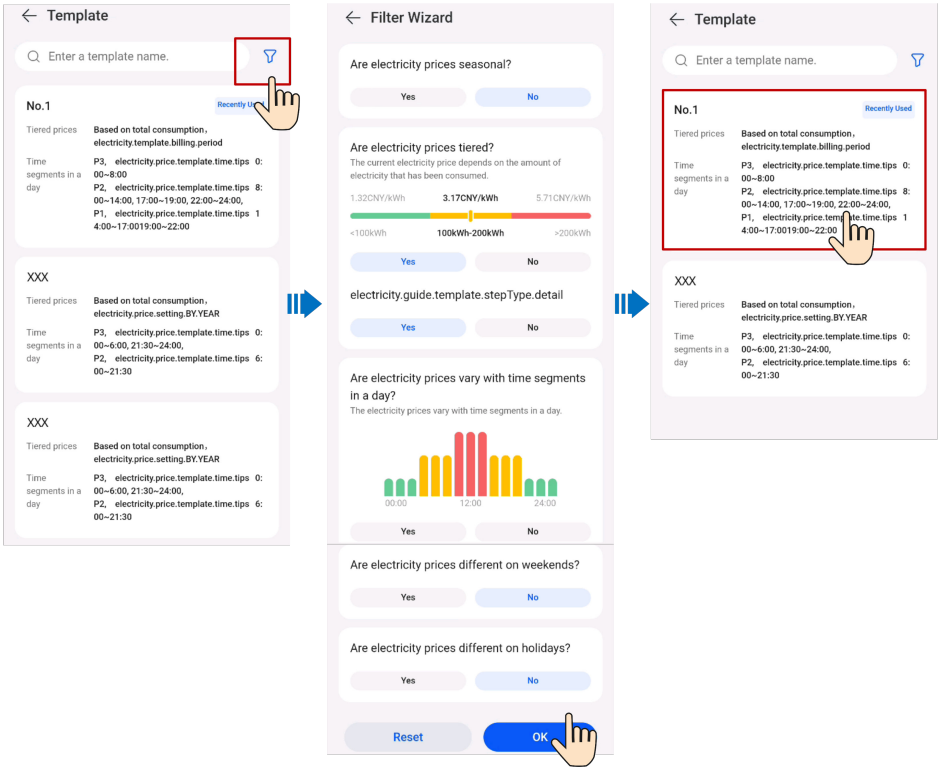
Keywords: TOU pricing, tiered pricing

1. **Table 8-12** is used as an example to obtain the following information by analyzing the purchase price scheme:
   - The purchase price changes with the time segments in a day.
   - The current purchase price depends on the volume of electricity consumption. Tiered pricing is adopted for all the time segments in a day.

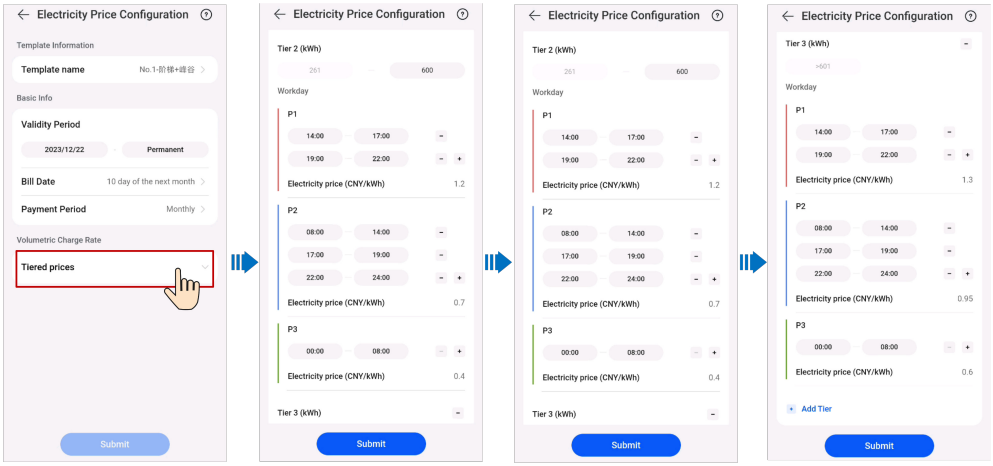
   Table 8-12 Residential electricity price list of XX electric power company in China

Price Type		Unit Price (CNY/kWh)
Tier 1 (0–260 kWh)	Peak hours	1
	Shoulder hours	0.65
	Off-peak hours	0.35
Tier 2 (261–600 kWh)	Peak hours	1.2
	Shoulder hours	0.7
	Off-peak hours	0.4
Tier 3 (≥ 601 kWh)	Peak hours	1.3
	Shoulder hours	0.95
	Off-peak hours	0.6
Note: • Peak hours (14:00–17:00; 19:00–22:00) • Shoulder hours (8:00–14:00; 17:00–19:00; 22:00–24:00) • Off-peak hours (00:00–8:00) • For tiered pricing, the total volume of electricity consumption will be reset monthly. The data of one month will not be carried over to the next month.		

2. Select the price template based on the analysis result in **Step 1**.



3. After the template is selected, fill in the electricity price information according to the contract.



NOTE

If the time segment and tier set in the template are inconsistent with the actual situation, you can reset them as required.

8.9.3.4.2 Example of Configuring a Purchase Price (Residential Scenario 2)

Keywords: pricing by season, tiered pricing, extra fee based on volumetric charge, min. contract fee

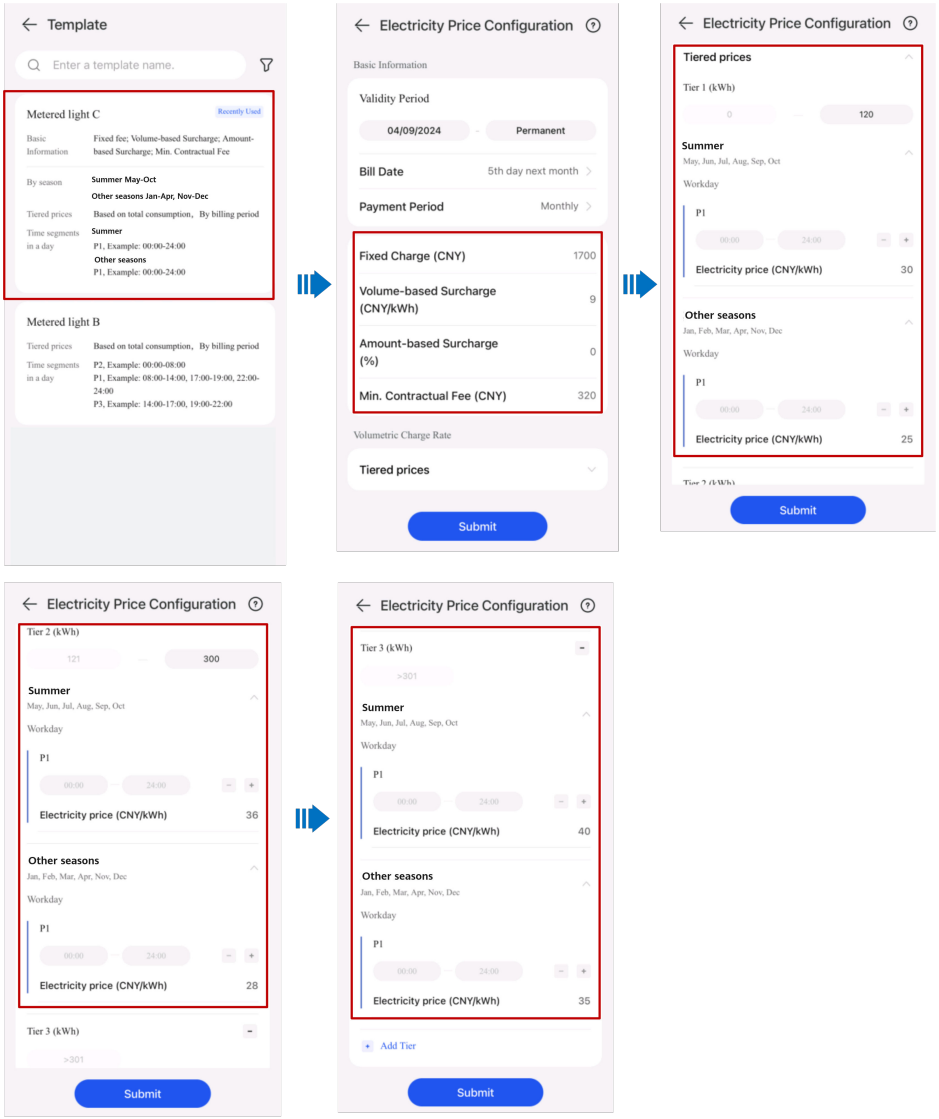
1. **Table 8-13** is used as an example to obtain the following information by analyzing the purchase price scheme:
   - The purchase price varies with seasons.

– The purchase price varies based on tiers of electricity consumption. Once the limit for a tier is exhausted, the consumed electricity is billed at the next tier's rate.

Table 8-13 Residential electricity price list of XX electric power company in Japan

Price Type		Unit Price
Basic fee	60 (A)	JPY1700/month
Volumetric charge rate (summer)	Tier 1 (0–120 kWh)	JPY30/kWh
	Tier 2 (121–300 kWh)	JPY36/kWh
	Tier 3 (> 301 kWh)	JPY40/kWh
Volumetric charge rate (other seasons)	Tier 1 (0–120 kWh)	JPY25/kWh
	Tier 2 (121–300 kWh)	JPY28/kWh
	Tier 3 (> 301 kWh)	JPY35/kWh
Minimum monthly fee	JPY320	
Fuel cost adjustment	-	JPY6/kWh
Renewable energy regulation	-	JPY3/kWh
Note: • Summer: May to October • Other seasons: January to April, November, and December • For tiered pricing, the total volume of electricity consumption will be reset monthly. The data of one month will not be carried over to the next month.		

2. After selecting a template based on the analysis result in **Step 1**, fill in the electricity price information based on the contract.



NOTE

- The fixed fee that is irrelevant to the electricity consumption amount and demand and charged by month are included in **Fixed amount**.
- The fee for fuel cost adjustment and fee for renewable energy regulation are calculated based on the volumetric charge and are included in **Volume-based surcharge**.
- If no electricity is consumed in the current month, **Min. contractual fee** is charged.

NOTE

If the time segment and tier set in the template are inconsistent with the actual situation, you can reset them as required.

8.9.3.4.3 Example of Configuring a Purchase Price (C&I Scenario 1)

Keywords: TOU pricing, device capacity, transformer capacity

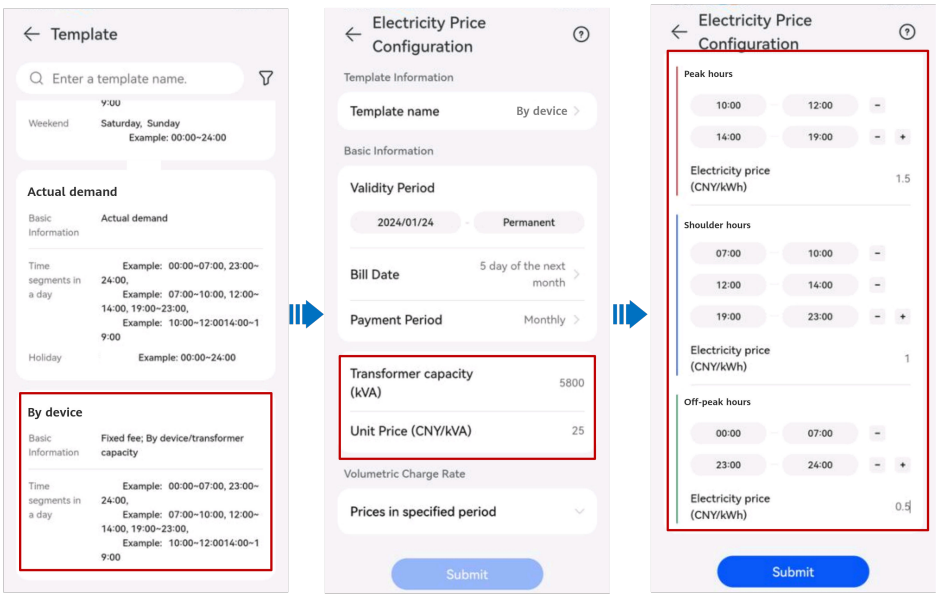
1. **Table 8-14** is used as an example to obtain the following information by analyzing the purchase price scheme:
   - The purchase price changes with the time segments in a day.

– The demand charge rate is calculated based on the device capacity or transformer capacity.

Table 8-14 C&I electricity price list of XX electric power company in China

Demand Charge Rate			
Validity Period of the Contract	January 1, 2024 to December 31, 2025	**Billing Mode**	By transformer capacity
Running Capacity	5800 kVA	**Unit Price**	CNY25/kVA
Volumetric Charge Rate			
Peak hours	10:00–12:00, 14:00–19:00		CNY1.5/kWh
Shoulder hours	07:00–10:00, 12:00–14:00, 19:00–23:00		CNY1/kWh
Off-peak hours	23:00 to 07:00 (next day)		CNY0.8/kWh

2. Select the price template based on the analysis result in **Step 1**. Fill in the electricity price information based on the contract.



NOTE

If a time segment spans two days, divide it into two time segments. In this example, the off-peak time segment (23:00 to 07:00 of the next day) shall be divided into 00:00 to 07:00 and 23:00 to 24:00.

If the time segment and tier set in the template are inconsistent with the actual situation, you can reset them as required.

8.9.3.4.4 Example of Configuring a Purchase Price (C&I Scenario 2)

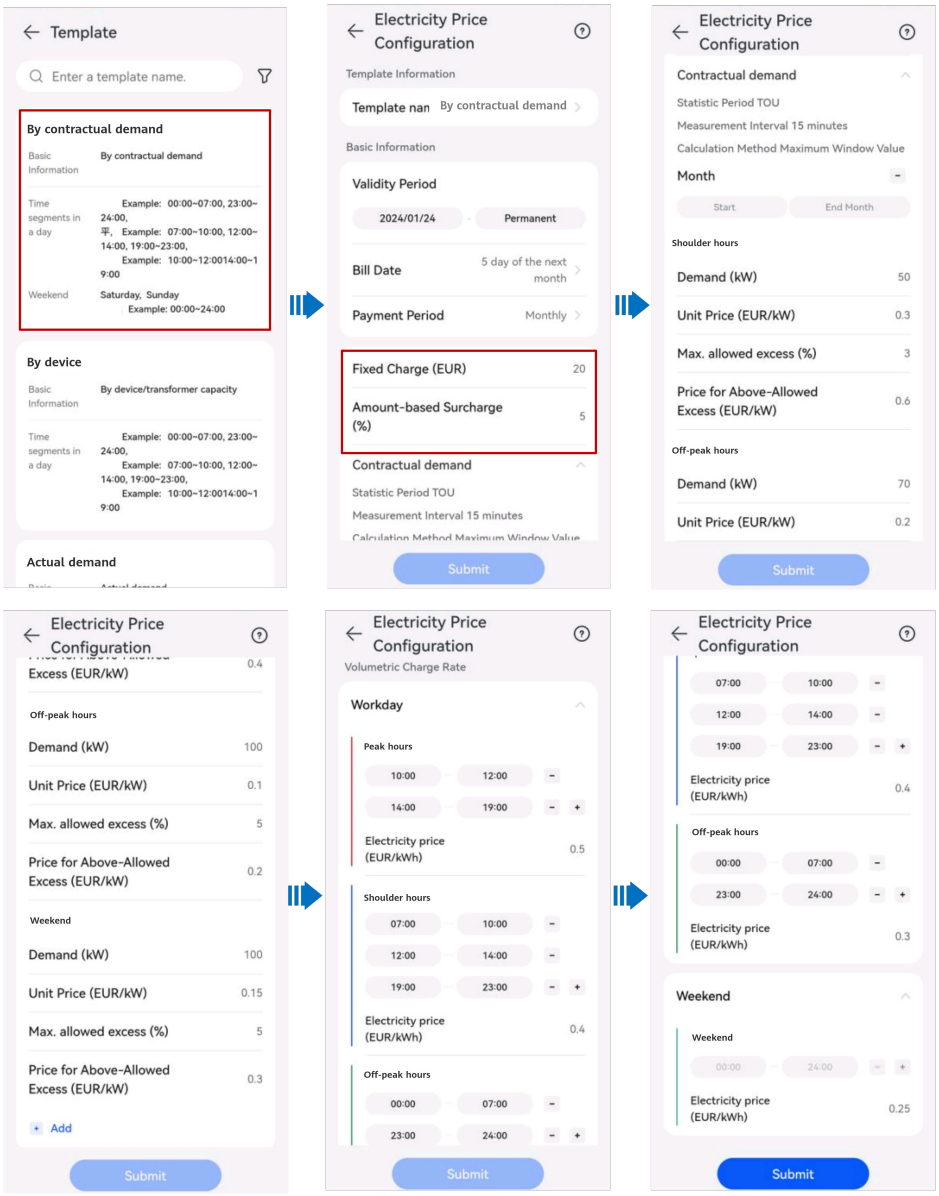
Keywords: TOU pricing, pricing on weekend, contractual demand, fixed payment, charge by percentage of total electricity bill

1. **Table 8-15** is used as an example to obtain the following information by analyzing the purchase price scheme:
   - The purchase price on working days changes with the time segments.
   - The purchase price on weekends is different from that on working days.
   - The demand charge rate is calculated based on the demand specified in the contract and varies with time in a day.

Table 8-15 C&I electricity price list of XX electric power company in Spain

Validity Period of the Contract	January 1, 2024 to December 31, 2025	**Billing Mode**	By contractual demand
Demand Charge Rate			
Time Segment		**Demand (kW)**	**Unit Price (CNY/kW)**
P1	10:00–12:00, 14:00–19:00	50	0.3
P2	07:00–10:00, 12:00–14:00, 19:00–23:00	70	0.2
P3	00:00–07:00, 23:00–24:00	100	0.1
Saturday and Sunday	All day	100	0.15
Volumetric Charge Rate			
Monday to Friday			
Time Segment			**Unit Price (CNY/kWh)**
P1	10:00–12:00, 14:00–19:00		0.5
P2	07:00–10:00, 12:00–14:00, 19:00–23:00		0.4
P3	00:00–07:00, 23:00–24:00		0.3
Saturday and Sunday	All day		0.25
Note: • Electricity consumption tax: 5% • Meter rental fee: 2 euros/month • If the actual highest demand does not exceed 105% of the contractual demand, the demand charge rate is equal to the contractual rate. If the actual highest demand exceeds 105% of the contractual demand, the additional demand is charged by the doubled contractual rate.			

2. After selecting a template based on the analysis result in **Step 1**, fill in the electricity price information based on the contract.



NOTE

- The electricity consumption tax is charged based on the percentage of the total electricity bill and included in **Amount-based surcharge**.
- The meter rental fee is charged every month and included in **Fixed amount**.

NOTE

If the time segment and tier set in the template are inconsistent with the actual situation, you can reset them as required.

8.9.3.5 Example of Configuring a Purchase Price (Electricity Market)

The examples in this document are for reference only.

8.9.3.5.1 Example of Configuring a Purchase Price by Quick Creation

Keywords: Nord Pool, dynamic electricity price, electricity price coefficient

1. Table 8-16 shows an example.

   Table 8-16 Electricity prices of xx electric power company in Denmark

Item	Price	Remarks
Volumetric charge rate	Hourly spot electricity price listed in the electricity exchange	Excluding the value-added tax (VAT)
Grid consumption fee	SEK0.3/kWh	The VAT of 25% is included.
Energy tax	SEK0.5/kWh	
VAT: 25%		

   NOTICE

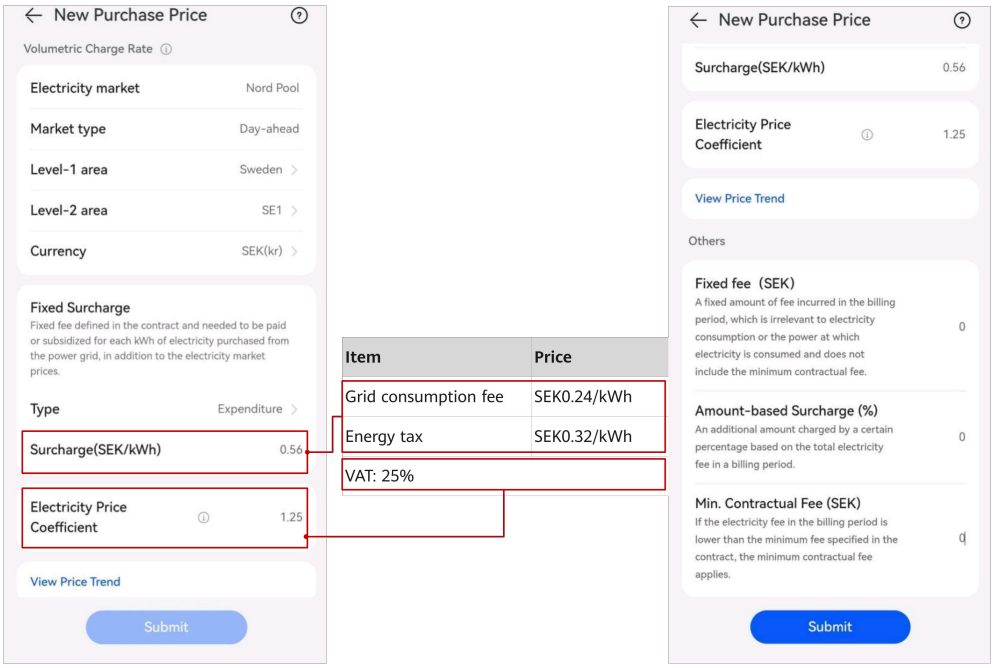
   In the electricity purchase contract, the volumetric charge rate does not include the VAT. Therefore, when configuring the rate, you need to remove the VAT and then enter the VAT separately.

2. Convert the VAT-inclusive charge rate in the contract to the VAT-exclusive charge rate. The converted charge rate is as follows.

   Table 8-17 Electricity prices of xx electric power company in Denmark (VAT-exclusive)

Item	Price	Remarks
Volumetric charge rate	Hourly spot electricity price listed in the electricity exchange	Excluding the VAT
Grid consumption fee	SEK0.24/kWh	
Energy tax	SEK0.32/kWh	
VAT: 25%		

3. Enter the electricity price information based on the calculation result in **Step 2**.
   - The grid consumption fee and energy tax are calculated by multiplying the energy consumption by the unit price. Enter the sum of the grid consumption fee and energy tax in **Fixed Surcharge** of **Volumetric Charge Rate**, and set the type to **Expenditure**.
   - If no fee in the **Others** module is involved, enter 0.



NOTE

In this case, you can include the VAT in the surcharge.

Learn More

12.31 What Is the Difference Between Electricity Price Coefficient and Amount-based Surcharge?

8.9.3.5.2 Example of Configuring a Purchase Price by a Template

Keywords: Nord Pool, dynamic electricity price

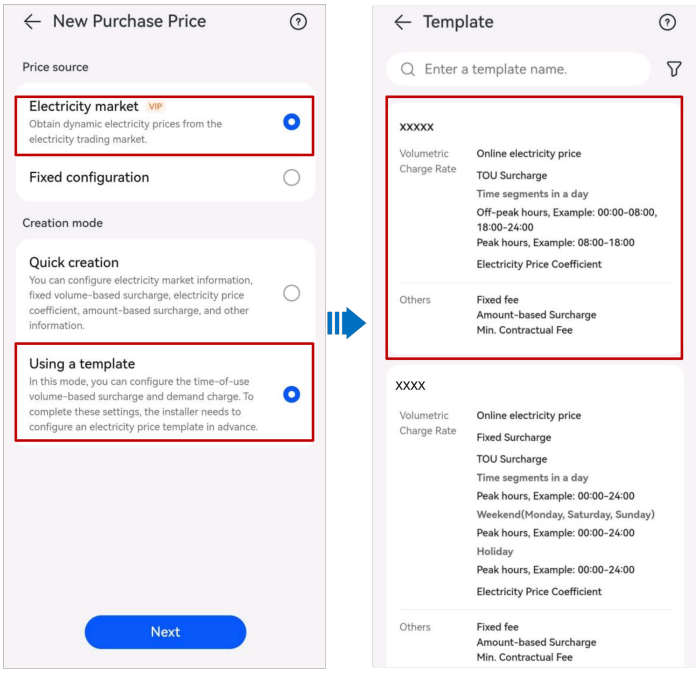
1. Table 8-18 shows an example.

   According to the contract, the electricity transmission charge rate is a TOU charge rate. Because TOU pricing is not supported in the quick creation mode, you need to select the creation mode of using a template in this case.

Table 8-18 Electricity prices of xx electric power company in Finland

Item	Price	Remarks
Volumetric charge rate	Hourly spot electricity price listed in the electricity exchange	Excluding the VAT
Electricity transmission charge rate	Peak hours (08:00–18:00): EUR0.07/kWh Off-peak hours (18:00–08:00 of the next day): EUR0.04/kWh	
Contractual fee	EUR5/month	
VAT: 25%		

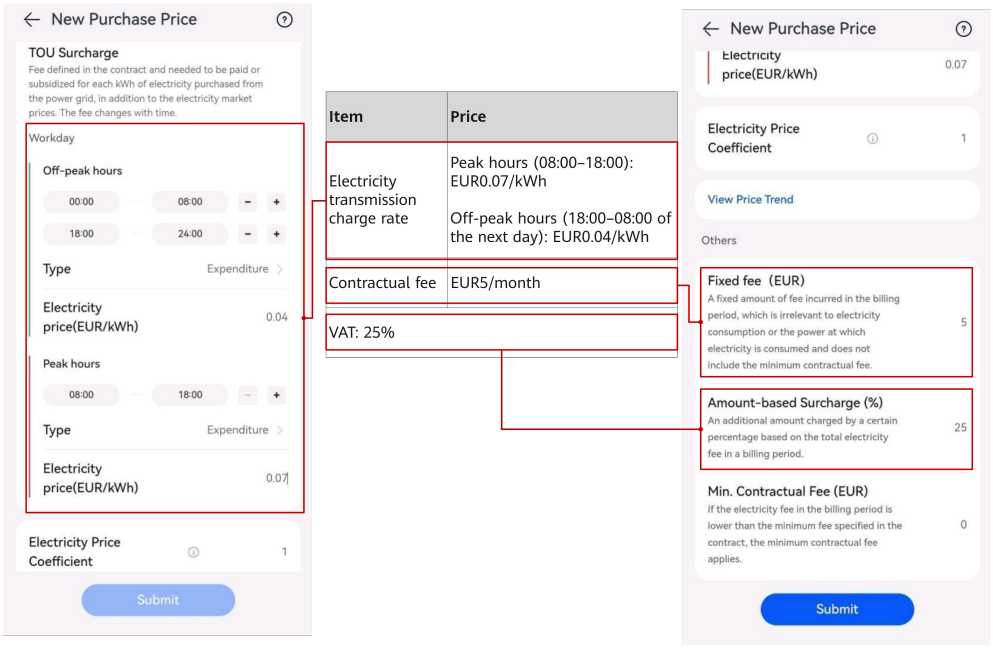
2. Select the price template that includes **TOU Surcharge** based on the analysis result in **Step 1**.



NOTE

If the price template does not match the contract information or no price template is available, contact the installer to add a template.

3. After the template is selected, fill in the electricity price information according to the contract.
   - Enter the electricity transmission charge rates by TOU in **TOU Surcharge** and set the type to **Expenditure**.
   - Enter the monthly fixed amount of charge in **Fixed amount**.
   - In this example, all billing items are VAT-exclusive. You need to include the VAT rate in **Amount-based surcharge**. Do not include the VAT rate in **Electricity Price Coefficient**. Otherwise, the contractual fee will not be taxed.



NOTE

If a time segment spans two days, divide it into two time segments. In this example, the off-peak time segment (23:00 to 08:00 of the next day) shall be divided into 00:00 to 08:00 and 23:00 to 24:00.

If the time segments set in the template are inconsistent with the actual situation, you can reset them as required.

Learn More

12.31 What Is the Difference Between Electricity Price Coefficient and Amount-based Surcharge?

8.9.4 Adding a Purchase Price Template (Only Installers Allowed)

- Only an installer can configure a purchase price template on the FusionSolar SmartPVMS.
- The FusionSolar app does not support the configuration of purchase price templates.
- If an owner needs to add a purchase price template, contact the installer.

8.9.5 Enabling Negative Rate Optimization

In an electricity market, a negative feed-in tariff or electricity purchase price sometimes occurs. When the feed-in tariff is a negative value, users can stop feeding surplus PV power into the grid. When the electricity purchase price is a negative value, users can purchase electricity from the grid to satisfy the demands of loads and charge batteries as much as possible to obtain more benefits.

NOTICE

- Currently, negative rate optimization is available only in countries that support market electricity prices.
- Negative rate optimization is supported only when the ESS working mode is **TOU** or **Max. self-consumption**.

1. On the home screen of the app, select the target plant and choose **::** > **Plant Settings** in the upper right corner.
2. On the **Plant Settings** screen, enable **Negative Rate Optimization**.

8.9.6 More Operations

8.9.6.1 Applying the Purchase Price to Other Plants

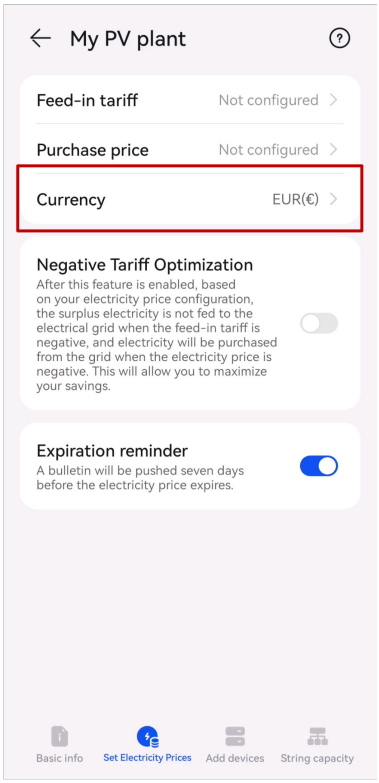
If multiple plants use the same electricity price calculation scheme, you can apply the configured prices to other plants.

1. Choose **Me** > **Plant management** on the home screen of the app and tap the target plant in the plant list.
2. Choose **Set Electricity Prices** > **Purchase price**.
3. Select the target purchase price and choose **:** > **Apply to Other Plants**.
4. Select the target plant and apply the price configuration to the plant as prompted.

8.9.6.2 Editing the Currency of the Plant

If the currency displayed in the plant revenue is inconsistent with the actual one, correct it.

1. Choose **Me** > **Plant management** on the home screen of the app and tap the target plant in the plant list.
2. Modify the currency information on the **Set Electricity Prices** screen.



NOTE

Only the currency of the plant revenue is changed. The actual revenue data does not change with the currency.

8.9.6.3 Setting Purchase Prices for Holidays (Only Installers Allowed)

For some countries/regions where electricity are charged separately on holidays, you can configure the specific dates and apply the templates of separate charging on holidays to these dates. When configuring the purchase prices, you can select a template that supports separate charging on holidays to set the purchase prices for holidays.

- Only an installer can configure a template of separate charging on holidays through the FusionSolar SmartPVMS.
- The FusionSolar app does not support the configuration of separate charging on holidays.
- If an owner needs to add separate charging on holidays, contact the installer.

8.10 Permission Management

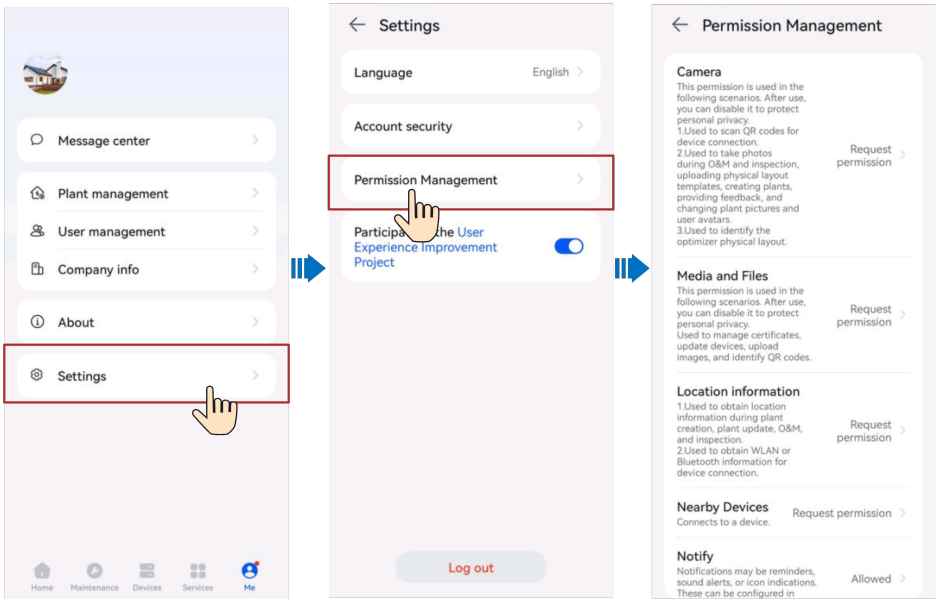
View and manage the system permissions and status required by the FusionSolar app.

NOTICE

To protect your information security, disable the permissions after using them.

Procedure

1. Tap **Me** > **Settings** > **Permission Management** on the home screen.
   - On the **Permission Management** screen, you can view and manage the system permissions and status required by the FusionSolar app.
   - Enable or disable authorization: Touch the target permission and configure it as prompted.

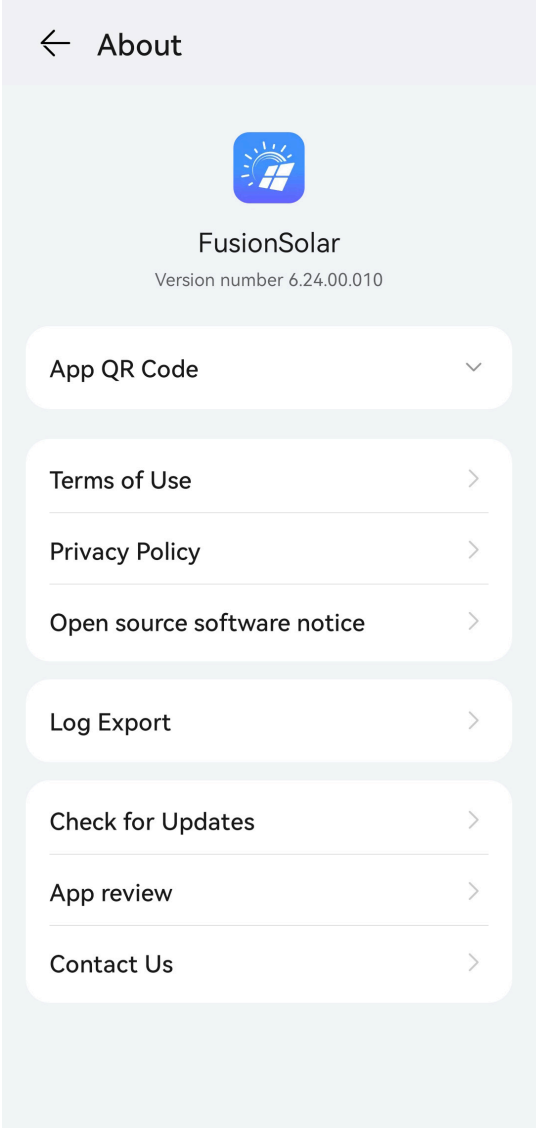


NOTE

- System permissions may vary based on Android or iOS.
- System permissions may vary based on roles.
- For details about required permissions, see **Me** > **About** > **Privacy Policy**.

8.11 Log Export

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



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

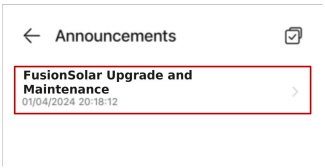
8.12 Message Center

Choose **Me** > **Message center** on the home screen of the app to view messages, handle to-do tasks, and update device software.

8.12.1 Viewing Announcements

You can view the received **Announcements** to learn about the details.

1. Tap **Announcements**.
2. Tap the topic name to view the details about **Announcements**.



8.12.2 Handling To-Do Tasks

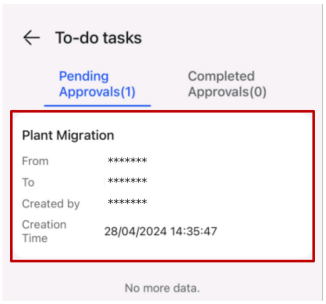
Handling a Plant Migration Task

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

1. Tap **To-do tasks**.
2. In the **Pending approval** task list, tap the plant migration task to be handled, and then tap **Process**.
   - If you agree to migrate the plant, tap **Approve** to start the migration.
   - If you do not agree to migrate the plant, tap **Reject**.

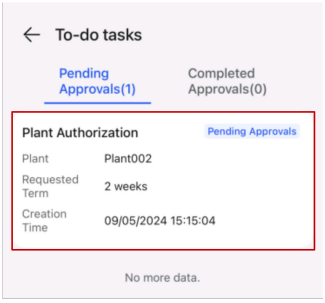
NOTE

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



Handling a Plant Authorization Task

To ensure safe and stable operation of devices, a plant owner can submit a remote O&M request to the Huawei FusionSolar O&M engineer. After the O&M engineer submits a plant O&M authorization request on the **FusionSolar SmartPVMS**, the plant owner can log in to the app to approve the authorization.



NOTE

After the authorization is approved, the O&M engineer can perform O&M operations on devices within the authorized time range. When the authorization expires, the permission is automatically terminated. The plant owner can also log in to the **FusionSolar SmartPVMS** and choose **Plants** > **Plant Authorization** to terminate the authorization.

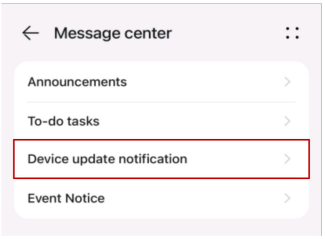
8.12.3 Handling a Device Update Task

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

1. Tap **Device update notification**.
2. Tap the update task to be handled to view the update details.
   - If you agree to update the device, tap **Upgrade** to start the update.
   - If you do not agree to update the device, tap **Discarded** to cancel the update task.

NOTE

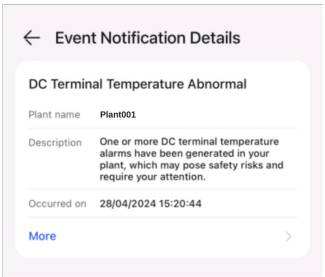
A discarded task cannot be restarted. If the device still needs to be updated, contact the installer to create an update task again.



8.12.4 Viewing an Event Notice

You can view the received **Event Notice** to learn about the details.

1. Tap **Event Notice**.
2. Tap the topic name to view the details about **Event Notice**.



8.12.5 Managing Notifications

New Notifications

After **System Notifications** is enabled, the app pushes new notifications to the notification window of your phone to remind you of important notifications.

Activities

After **Activities** is enabled, the app pushes new activities to the notification window of your phone to remind you of the activity information.

NOTE

The app pushes activities to the notification window of your phone only when **System Notifications** and **Activities** are enabled.

Event Notice

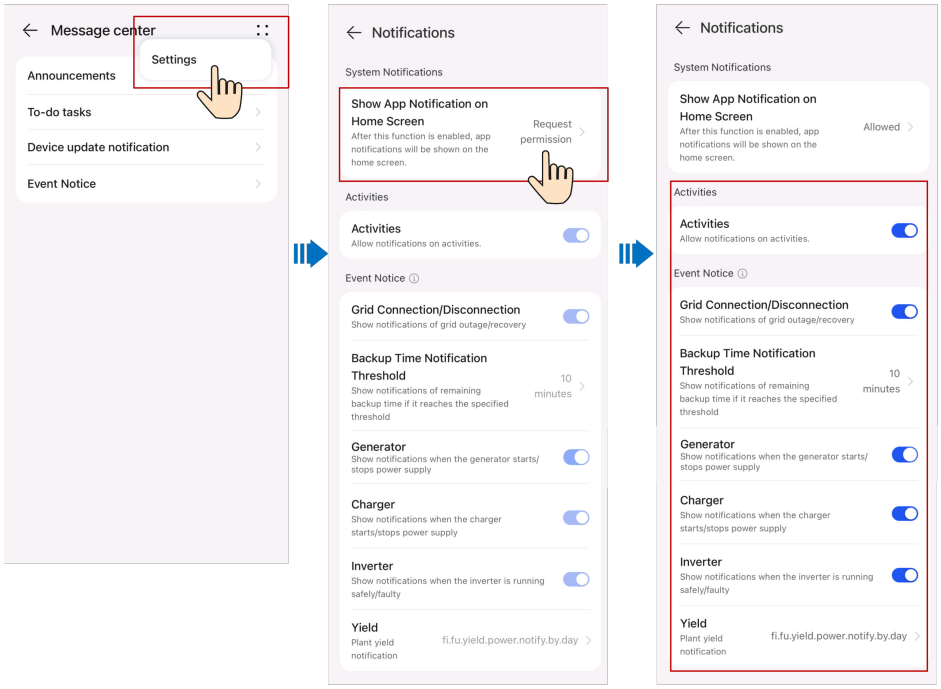
After **Event Notice** is enabled, the **Event Notice** is pushed to **Message center** when important events occur on some devices.

NOTE

When **System Notifications** is disabled, the event status/parameters in **Event Notice** cannot be modified. To modify the event status/parameters, enable **System Notifications** first.

Procedure

Choose **::** > **Settings**, and set the notification mode, **Activities**, and **Event Notice** as required.



8.13 Services

Most Visited

Device Commissioning: navigates to the device commissioning screen to perform operations such as deployment and commissioning, and local O&M.

WLAN Configuration: sets the parameters of the home router connected to the device.

Document Center

User Guide: provides quick operation guide on app functions as required.

Help and Feedback

- **Feedback**: provides a feedback channel for users to help us improve user experience.
- **Customer Service Chatbot**: helps users quickly solve problems through the one-to-one online customer service.
- **Contact Us**: provides our contact information for users in case they have any questions about Huawei FusionSolar products.

9 Device Commissioning

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

Obtaining the Device Commissioning Manual

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

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

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

10 Account Security Settings

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

10.1 Verifying an Email Address

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

Procedure

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

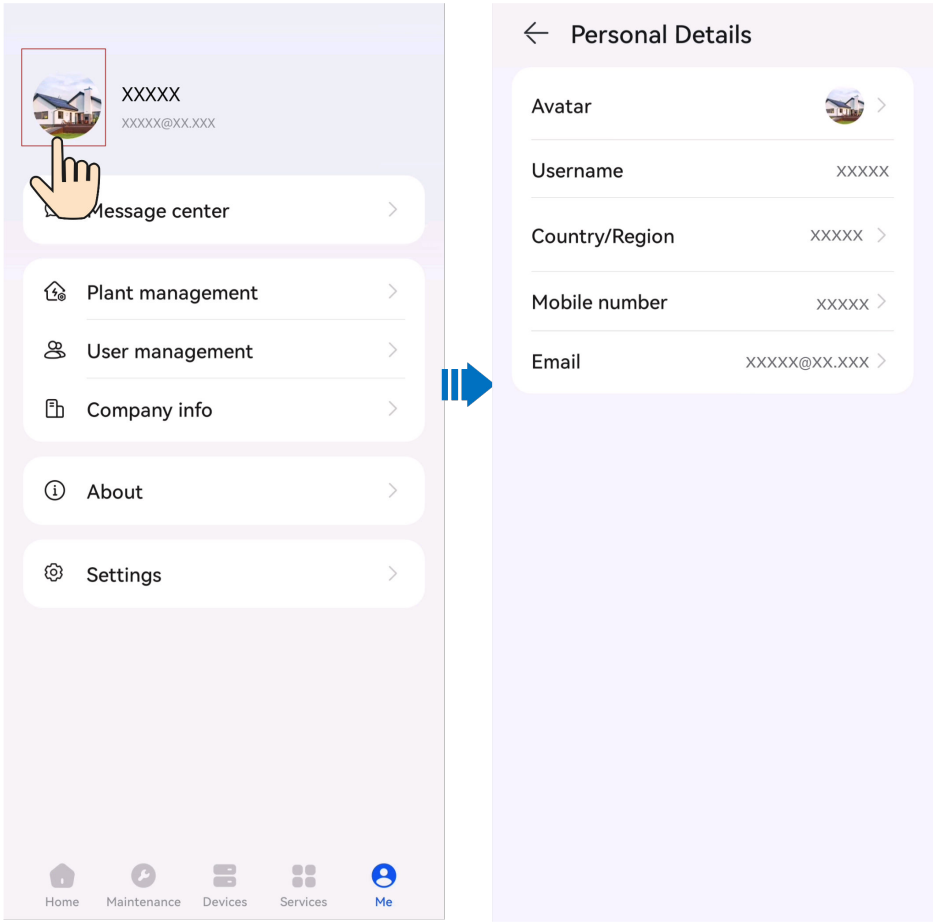
1. Enter the password for logging in to the FusionSolar app and tap **Next**.
2. After confirming that the email address is correct, tap **Get Code** and enter the verification code to verify the email address.
3. Tap **Confirm**.

   NOTE

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

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

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



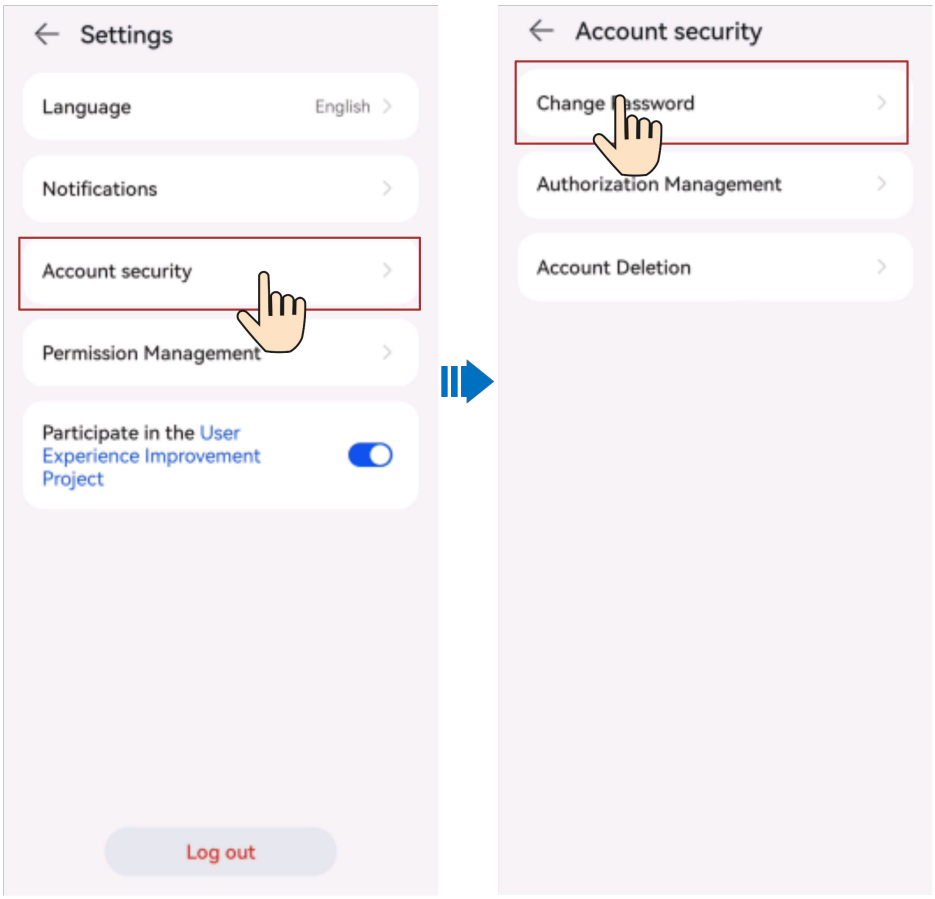
3. Enter the password for logging in to the FusionSolar app and tap **Next**.
4. After confirming that the email address is correct, tap **Get Code** and enter the verification code to verify the email address.
5. Tap **Confirm**.

NOTICE

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

10.2 Changing Personal Passwords

1. Choose **Me** > **Settings** > **Account security**.
2. Tap **Change Password**.



NOTE

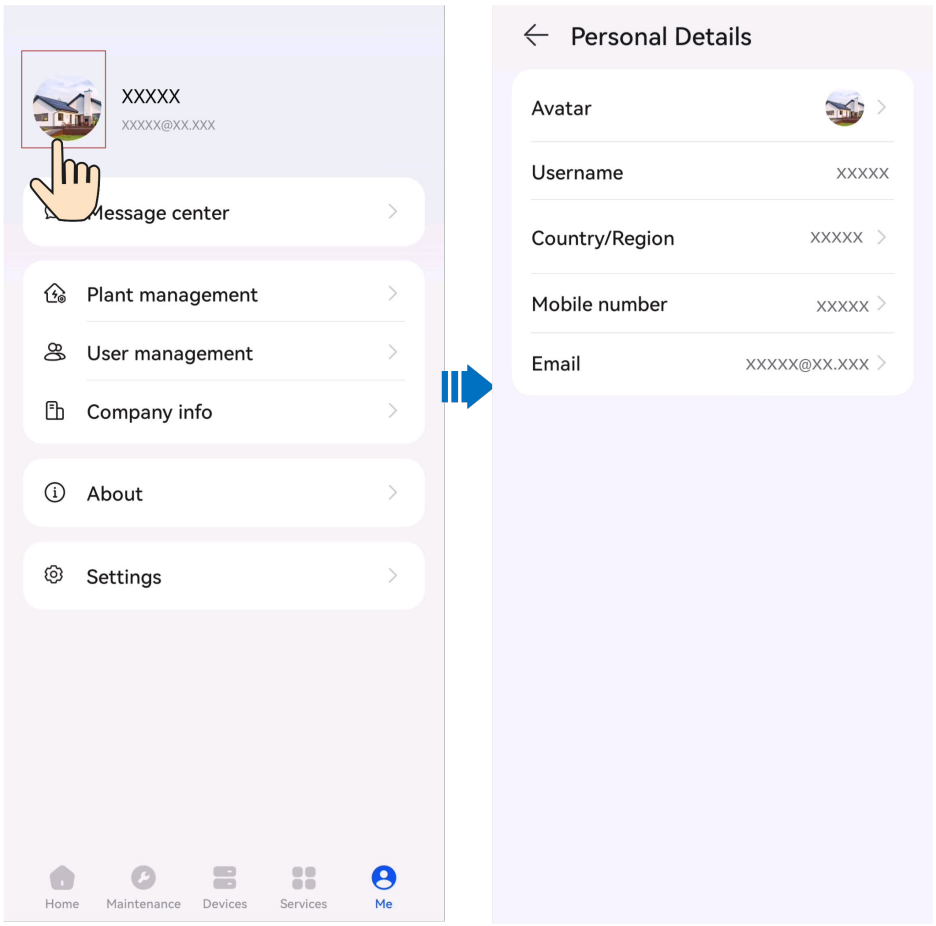
- For security purposes, you are advised to change the password periodically (for example, every three months).
- If you cannot change your password, contact the administrator.

10.3 Modifying Personal Information

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

Procedure

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



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

NOTICE

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

10.4 Deregistering an Account

NOTICE

Your account **cannot be restored once deleted. Exercise caution when performing this operation**.

1. Choose **Me** > **Settings** > **Account security**.
2. Tap **Account Deletion**.

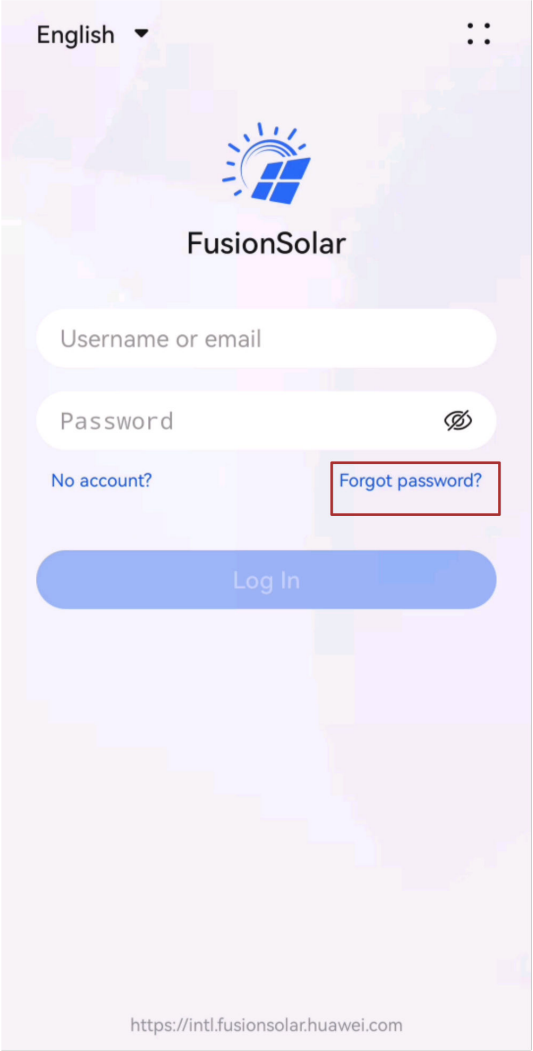
10.5 Password Retrieval

NOTICE

A verification code is required to reset your password. Ensure that the email address associated with your account can be used properly.

Procedure

1. On the app login screen, tap **Forgot password?**.
   - If the contact information has been verified, reset the password as prompted.
   - If the contact information is not verified, verify the account and contact information as prompted. After the verification is successful, reset the password.



NOTE

- If the username does not match the contact information, the verification code cannot be obtained. Therefore, ensure that the username is correct.
- If you enter incorrect usernames for five consecutive times, the contact information will be locked for 30 minutes.

More Operations

- What should I do if I cannot receive a verification code because my email address is no longer in use?

  Contact your installer to log in to the app to reset the email address.

  If you are an installer, contact the installer who created your account or invited you to register your account, or contact the company administrator (the installer who registered your account using the **Installer Registration** function on the login screen) to reset the email address.

  For details, see **11.1 Resetting the Password**.
- What can I do if I cannot receive a verification code?

  Check whether the email has been identified as spam in the trash box of the mailbox.

11 User Management

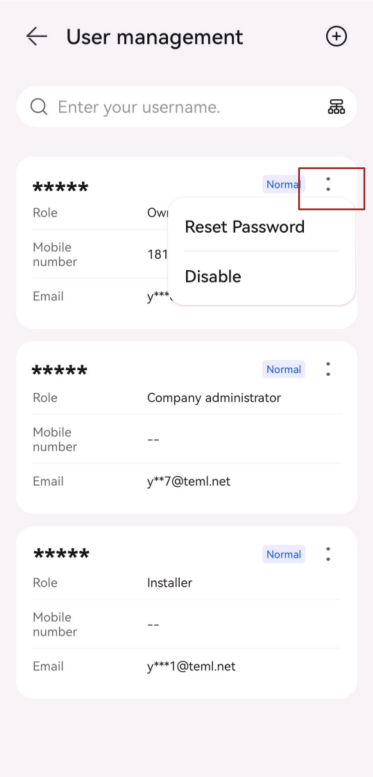
11.1 Resetting the Password

When you cannot reset a password by tapping **Forgot password?**, you can authorize the installer to log in to the app to reset the password.

If you are an installer, contact the installer who created your account or invited you to register your account, or contact the company administrator (the installer who registered your account using the **Installer Registration** function on the login screen) to reset the email address.

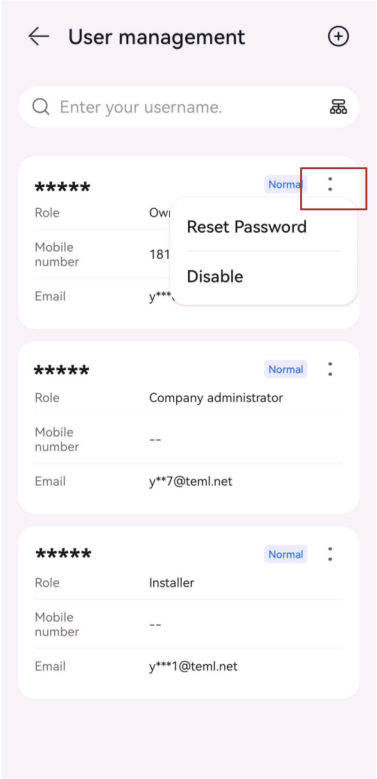
Procedure

1. Log in to the FusionSolar app using an installer account.
2. Choose **Me** > **User management**.
3. Choose **:** > **Reset Password** from the upper right corner of the target user card.



11.2 Disabling or Enabling a User Account

1. Log in to the FusionSolar app using an installer account.
2. Choose **Me** > **User management**.
3. Tap **:** in the upper right corner of the target user card to **Enable**/**Disable** the user account.



12 FAQs

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

Solution

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

12.2 What Do I Do If the Message "The User Does Not Exist or the Password Is Incorrect" Is Displayed During Login?

Symptom

The message **The user does not exist or the password is incorrect.** is displayed during login.

Solutions

1. Check whether your account is correct.
2. Check whether your password is correct.

   NOTE

   If you forgot the password, you can enter the mobile number in **Forgot password?** on the login screen to retrieve the password.

3. Contact your installer to check whether the account has been disabled.
   a. Log in to the FusionSolar app as an installer and choose **Me** > **User management**.
   b. Check whether the user account is in the **Disabled** state.
4. If the account is disabled, choose **:** > **Enable** on the right of the user card.

   NOTE

   If you are an installer, contact the installer who creates an account for you or invites you to register an account, or contact the company administrator (the installer registered using the **Installer Registration** function on the login screen) to enable the account.

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

Cause

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

Procedure

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

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

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

NOTE

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

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

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

12.4 What Can I Do If I Cannot Receive the Verification Code?

Check whether the email has been identified as spam in the trash box of the mailbox.

12.5 What Can I Do If the Update Fails After a New Version Is Detected on an Android Phone?

Symptom

After I choose **About** > **Check for Updates** and then a new app version is detected, I tap **Update Now**. After the update package is downloaded, the package is not automatically installed on the app. The app version number is not changed, and the red dot indicator for app update does not disappear.

Solution

Method 1:

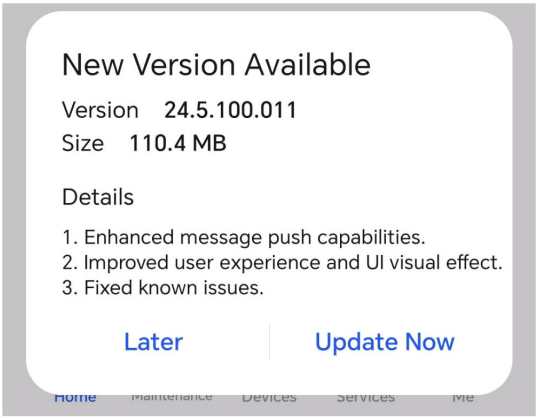
Search for **FusionSolar** in Huawei AppGallery and then download and install the app.

Method 2:

Scan the QR code below to download and install the app.

Method 3:

Ignore the update notification in **About**. When a new update notification is displayed on the app screen three days later, tap **Update Now** to install the latest version.



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

Precautions

- This operation will reset both the WLAN password and login password. The charger login password will be reset to Changeme. The WLAN connection password will be reset to the initial password.
- Before resetting the password, ensure that the charger is in the **No Car Connected**, **Faulty**, or **Alarms** state.

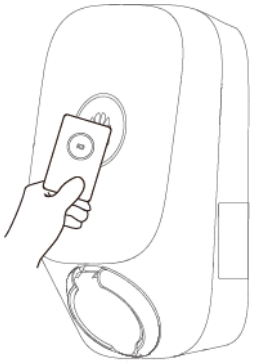
Procedure

1. Swipe the card for five consecutive times (wait until the indicator flashes blue before you swipe the card again). Then, the indicator on the charger is steady white for 3s and the charger enters the swipe protection state. Stop swiping the card now.

   NOTE

   - When swiping the card consecutively, keep the intervals within 5s.
   - If you swipe your card in the swipe protection state, the swipe protection time will start again.

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



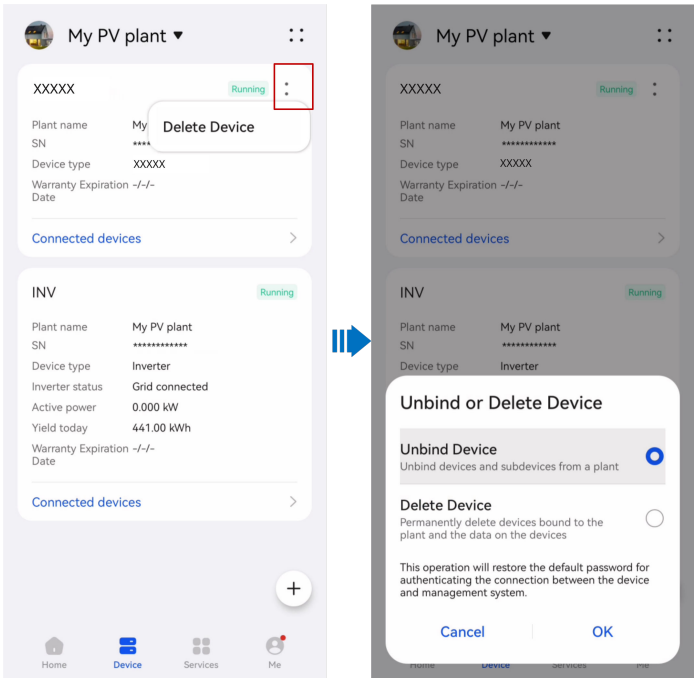
12.7 What Should I Do If an Offline or Faulty Charger Is Displayed in the Plant After the Charger Is Replaced?

Cause

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

Procedure

1. On the home screen of the app, select the target plant.
2. On the **Device** screen, choose **:** > **Delete Device** in the upper right corner of the target device card.
3. Tap **Unbind Device** or **Delete Device** as required.



NOTE

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

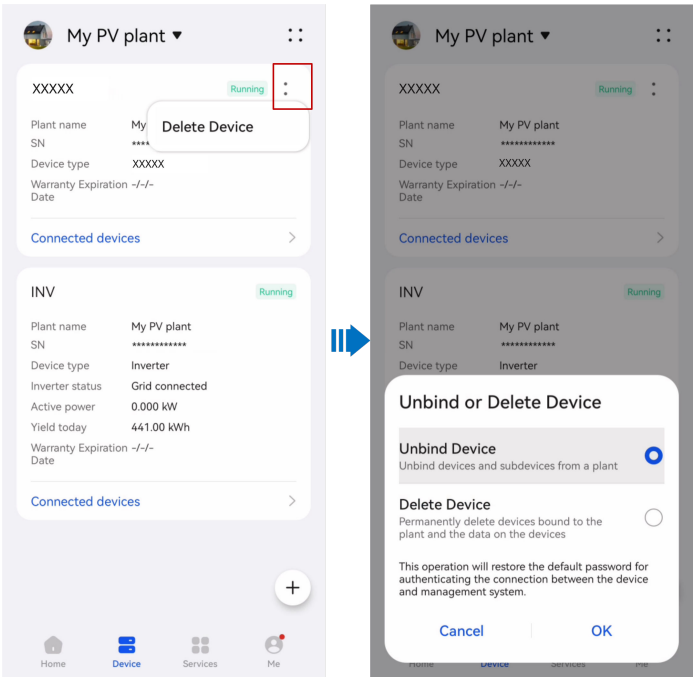
12.8 Why Is the Charger Displayed as Offline in the Management System after Factory Settings Are Restored?

Cause

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

Procedure

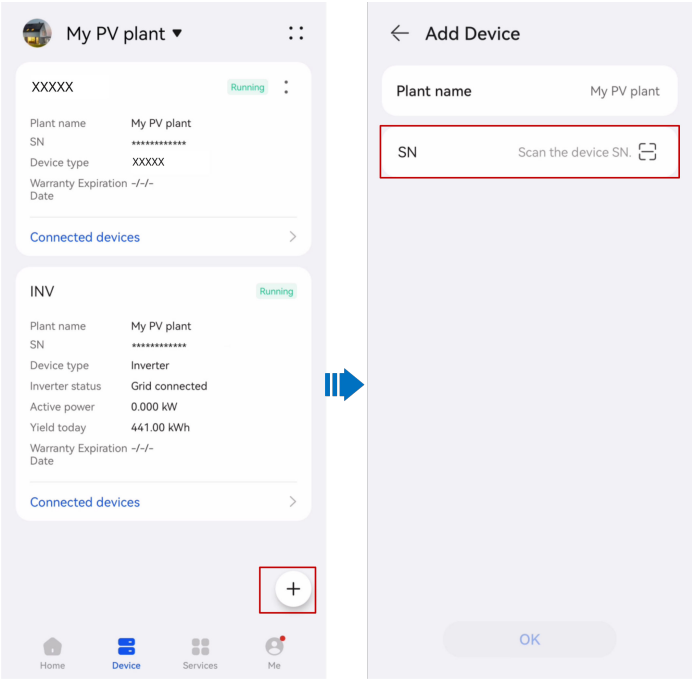
- Unbind a charger.
  a. On the home screen of the app, select the target plant.
  b. On the **Device** screen, choose **:** > **Delete Device** in the upper right corner of the target device card.
  c. Tap **Unbind Device** or **Delete Device** as required.



NOTE

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

- Bind a charger.
  a. On the home screen of the app, select the target plant.
  b. Tap **+** on the **Device** screen.
  c. Tap to scan the QR code of the target device or enter the device SN.



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

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

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

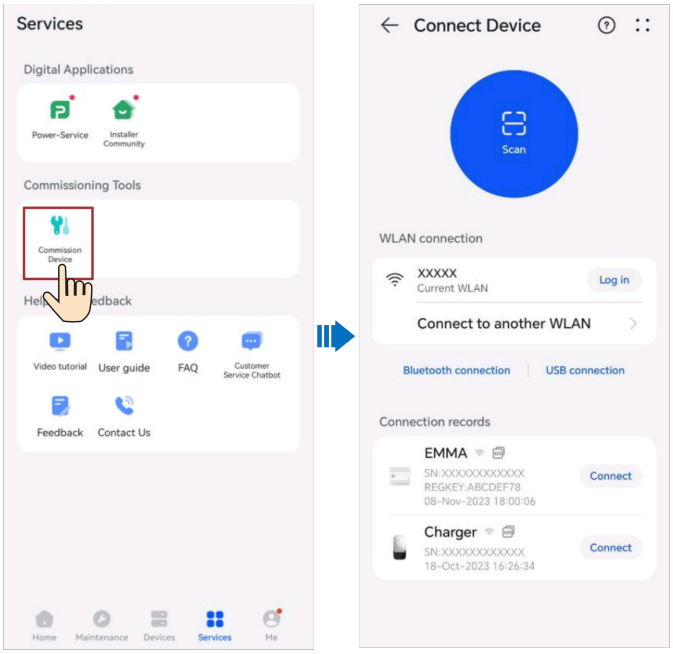
12.10 How Do I Obtain a Registration Code?

Context

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

Procedure

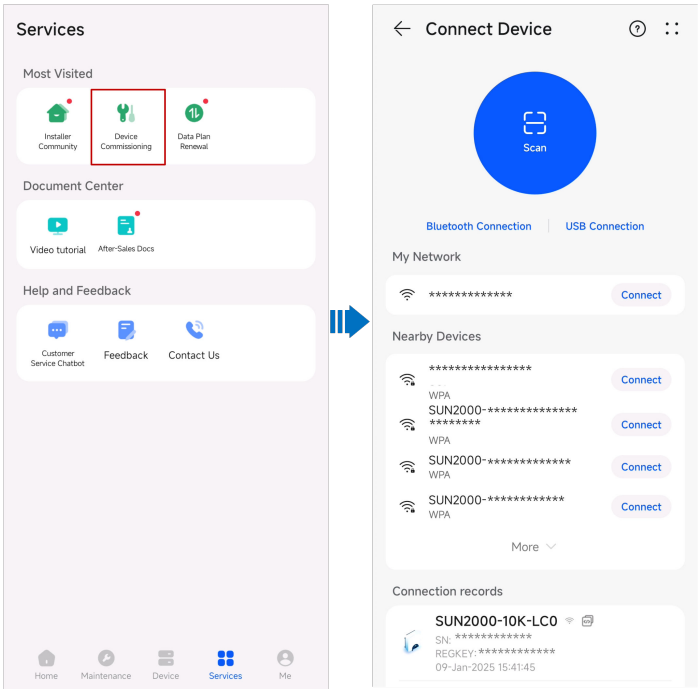
1. Log in to the FusionSolar app and choose **Services** > **Device Commissioning** > .



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

12.11 How Do I Navigate to the Device Local Commissioning Screen?

1. Log in to the FusionSolar app and choose **Services** > **Device Commissioning**.
2. Connect to the device WLAN as prompted.



NOTE

- The last six digits of the device WLAN name are the same as the last six digits of the device SN.
- For the first connection, log in with the initial password. You can obtain the initial WLAN password from the label on the device.
- Ensure account security by changing the password periodically. Your password might be stolen or cracked if it is left unchanged for extended periods. If a password is lost, the device 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 your phone is correctly connected to the device WLAN. If not, manually select and connect to the WLAN.
- If the message **This WLAN network has no Internet access. Connect anyway?** is displayed when you connect to the built-in WLAN, tap **CONNECT**. Otherwise, you cannot log in to the system. The actual UI and messages may vary with mobile phones.

3. Select a login user and enter the password.

NOTE

- Change the initial password as prompted at the first login.
  - The initial password for a charger is **Changeme**.
- Ensure account security by changing the password periodically.Your password might be stolen or cracked if it is left unchanged for extended periods. If a password is lost, the device cannot be accessed. In these cases, the Company shall not be liable for any loss.

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

Symptom

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

Solution

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

NOTE

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

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

Symptom

After I scan the QR code using my iOS phone, I cannot log in to the device local commissioning screen and the message **The WLAN connection has changed. Try to connect to the system WLAN** is displayed.

Solutions

Solution 1: Restart your phone and scan the QR code for connection again.

Solution 2: On the home screen of your phone, choose **Settings** > **WLAN** and manually connect to the device WLAN.

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

Cause

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

Solution

Reconnect to the charger's WLAN hotspot as prompted.

NOTE

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

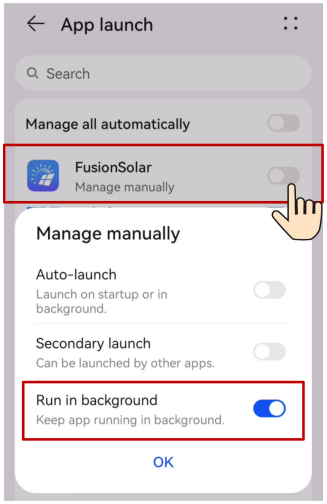
12.15 What Should I Do If the Device Is Disconnected from the App When I Switch the Local Commissioning Screen to the Background?

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.



NOTE

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

12.16 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.
4. Select the legacy devices to be deleted from the device list and click **Delete**.

12.17 What Can I Do If the Password Is Incorrect When I Connect to the Charger WLAN?

Solutions

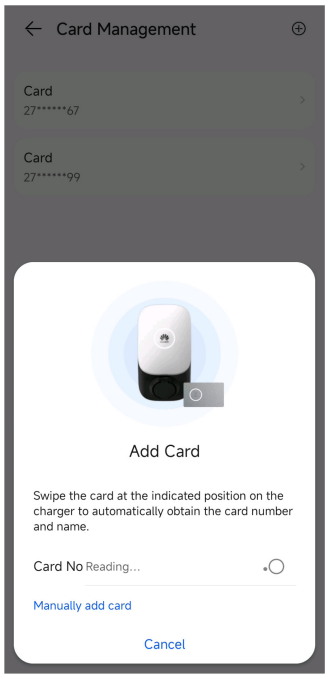
- Check whether the initial password has been changed.
- Check whether the eight-character initial password that you entered is correct. Identify the initial password on the device nameplate and enter the password again.
- You are advised to scan the QR code to connect to the charger.

12.18 How Do I Add or Delete an RFID Card?

Adding an RFID Card

1. Connect to the charger on the app and log in to the charger local commissioning screen as **User**.
2. On the charger screen, choose **: :** > **Set** > **Card Management**.
3. In the upper right corner of the **Card Management** screen, tap  and select a mode to add a card.
   - Swiping to add a card
     i. After the indicator blinks white fast twice, place the ring pattern on the RFID card in the swiping area. If the indicator is steady white for 5s, the card is successfully swiped.
     ii. Enter the user-defined card name and tap **OK**.

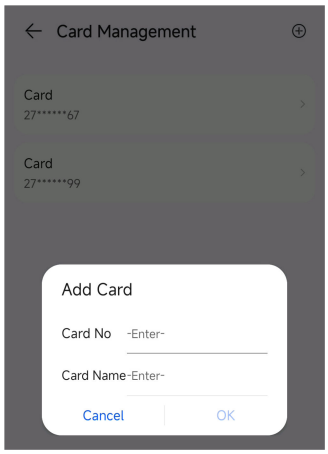
Figure 12-1 Swiping to add a card



- Manually adding a card

  Enter the card number and user-defined name of the RFID card, and tap **OK**.

  Figure 12-2 Manually adding a card



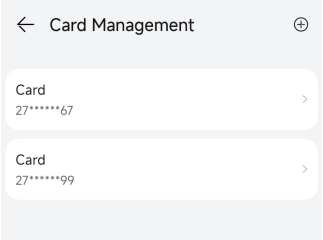
NOTE

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

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

Deleting an RFID Card

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



NOTE

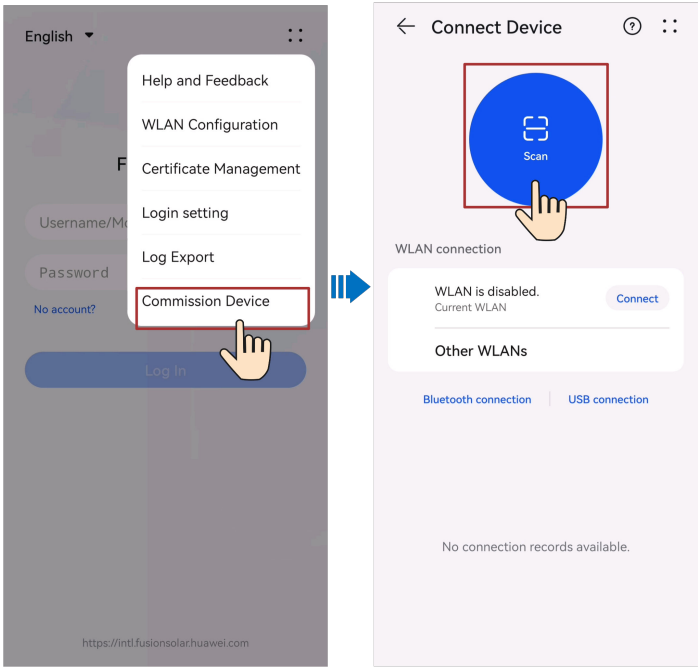
You cannot delete all RFID cards. At least two RFID cards must be retained.

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

NOTE

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

1. On the app login screen, tap **::** > **Commission Device**.
2. Connect to the WLAN of the charger as prompted.



12.20 What Should I Do If the App Cannot Identity the Charger?

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

12.21 How Does an Owner View the Energy Yield Data?

1. Tap **PV** on the home screen of the app to view the PV energy yield data.
2. Tap **Day**, **Month**, **Year**, or **Lifetime** to view the time-specific energy yield, energy consumption, and PV benefit data.

12.22 What Can I Do If the Network Connection Is Abnormal?

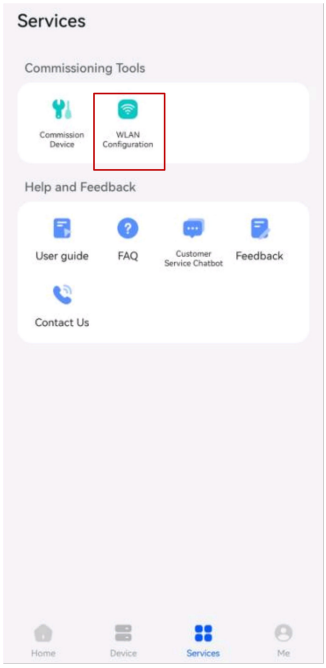
Symptom

The device cannot be connected to the management system because the home router or its WLAN name or password is changed.

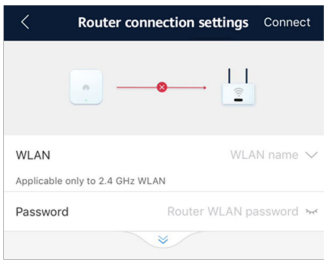
Solution

Navigate to the device local commissioning screen and reconfigure the router connection parameters.

1. Log in to the FusionSolar app and tap **WLAN Configuration** on the **Services** tab.

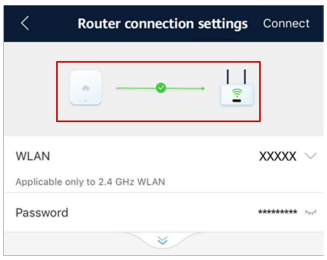


2. Scan the QR code on the device and connect to its WLAN.
3. Select **User** to log in to the local commissioning screen of the device.
4. After the login is successful, the system automatically redirects to the router setting screen.
5. Select the desired WLAN and enter the password.



6. Tap **Connect** to connect to the router again.

   When the connection status turns green, the router is successfully connected.



NOTE

* The preceding procedure for setting an inverter is used as an example. The actual display may vary with devices.

More Operations

If you are not redirected to the route setting screen after you log in to the local commissioning screen, perform the following operations:

Inverter: **...** > **Set** > **Router connection settings**.

EMMA: **Settings** > **Communication configuration** > **Router Configuration**.

Charger: **::** > **Advanced Settings** > **Route Management**.

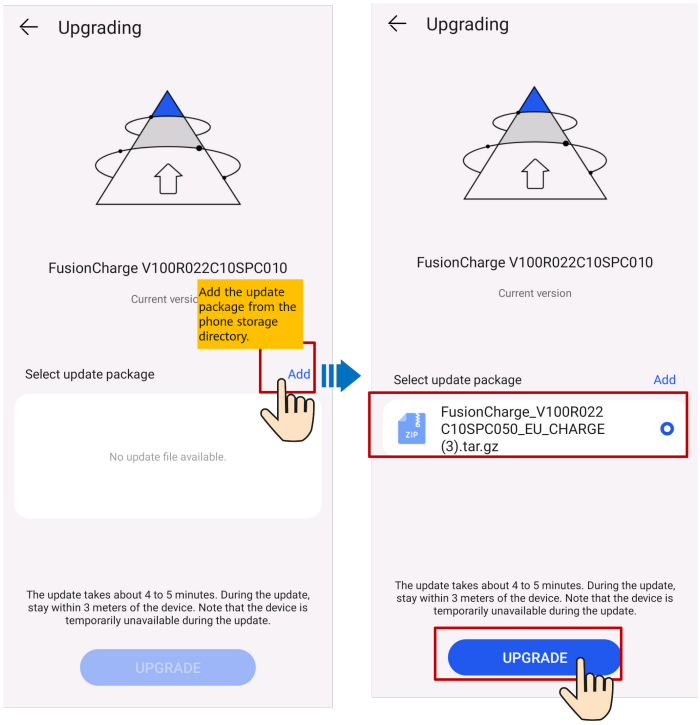
12.23 Upgrading the Charger Software Version

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**.



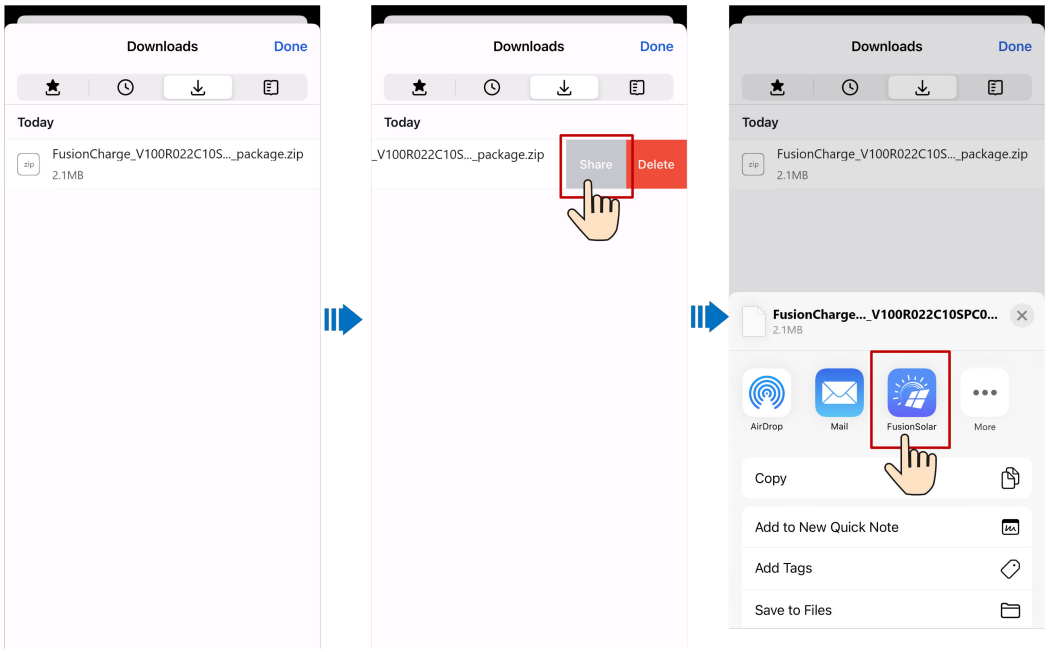
12.24 What Should I Do If the Upgrade Package Obtained from an iPhone Cannot Be Selected on the Upgrade Screen?

Cause

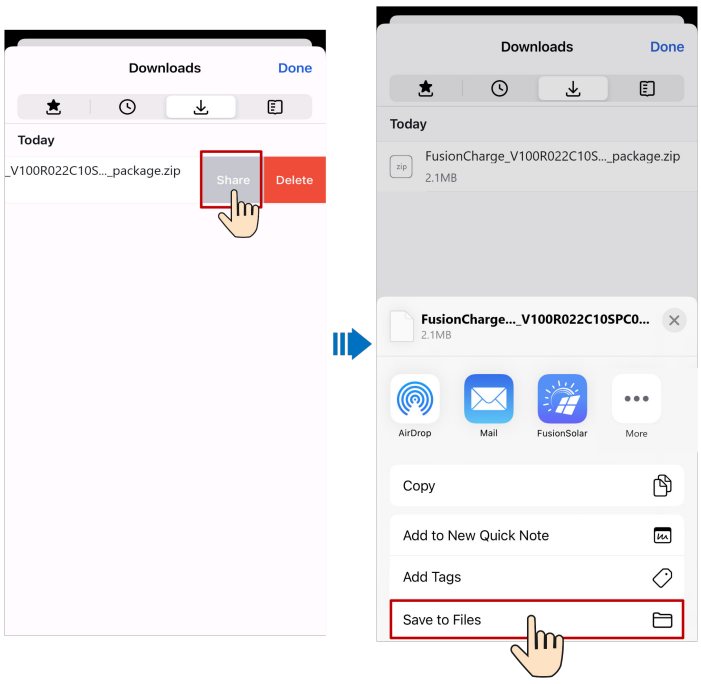
In the iOS system, the upgrade package can be selected only from the software installation path. If the upgrade package is not in the software installation path, the upgrade cannot be performed. You need to place the upgrade package in the installation path before the upgrade.

Procedure

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

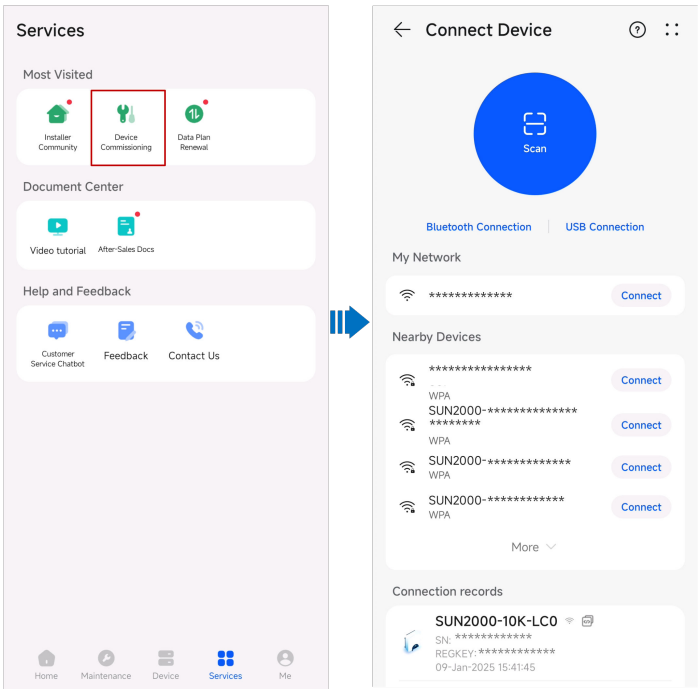


Method 2: Save the upgrade package to the specified path (FusionSolar/SolarMate/upGradePatch) of the FusionSolar app.



12.25 How Do I Download Optimizer Logs from the SmartLogger?

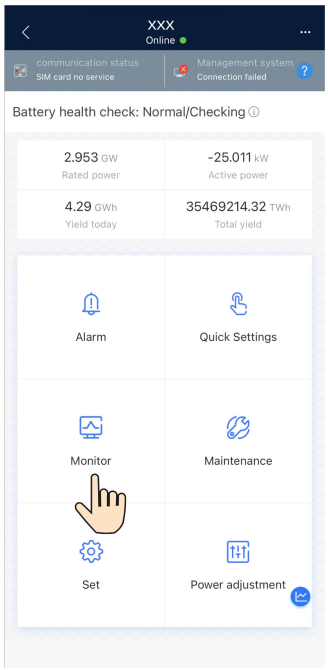
1. Tap **Device Commissioning** on the **Services** screen, scan the QR code on the SmartLogger, and connect to the WLAN as prompted.



NOTE

- The last six digits of the device WLAN name are the same as the last six digits of the device SN.
- For the first connection, log in with the initial password. You can obtain the initial WLAN password from the label on the device.
- Ensure account security by changing the password periodically. Your password might be stolen or cracked if it is left unchanged for extended periods. If a password is lost, the device 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 your phone is correctly connected to the device WLAN. If not, manually select and connect to the WLAN.
- If the message **This WLAN network has no Internet access. Connect anyway?** is displayed when you connect to the built-in WLAN, tap **CONNECT**. Otherwise, you cannot log in to the system. The actual UI and messages may vary with mobile phones.

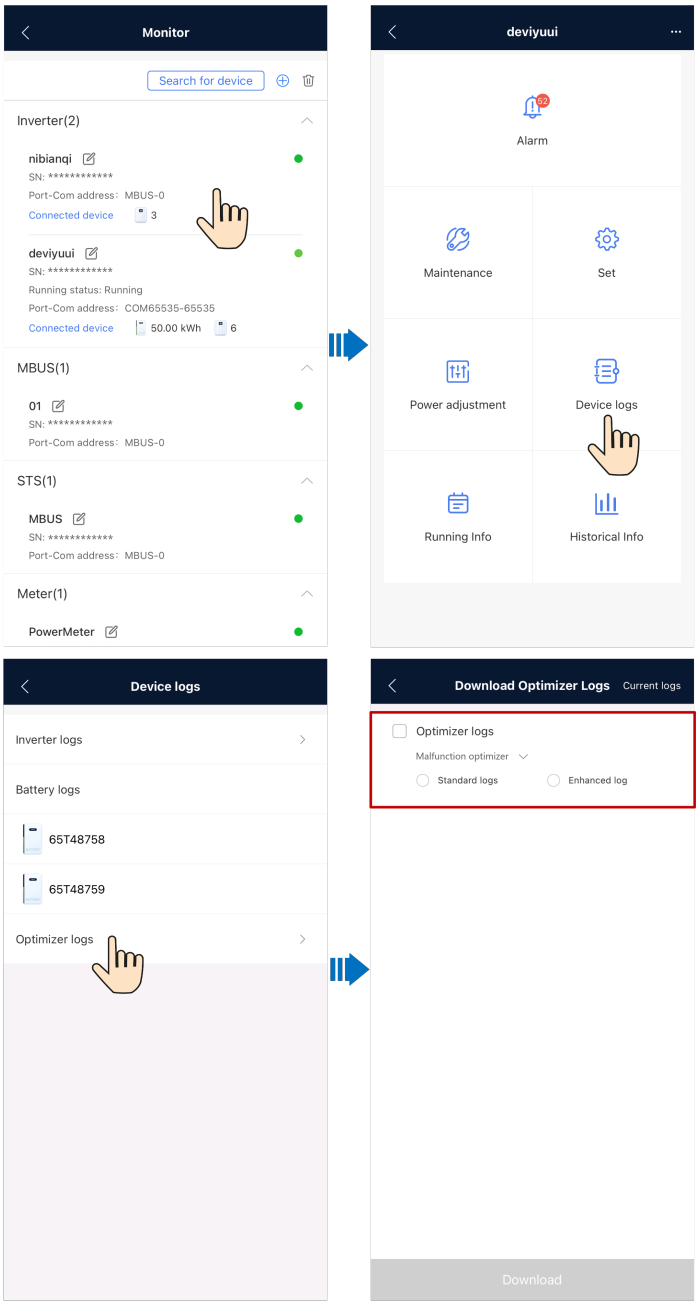
2. Log in to the app as the **Installer** user and tap **Device monitoring** on the home screen.



NOTE

- The last six digits of the device WLAN name are the same as the last six digits of the device SN.
- For the first connection, log in with the initial password. You can obtain the initial WLAN password from the label on the device.
- Ensure account security by changing the password periodically. Your password might be stolen or cracked if it is left unchanged for extended periods. If a password is lost, the device 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 your phone is correctly connected to the device WLAN. If not, manually select and connect to the WLAN.
- If the message **This WLAN network has no Internet access. Connect anyway?** is displayed when you connect to the built-in WLAN, tap **CONNECT**. Otherwise, you cannot log in to the system. The actual UI and messages may vary with mobile phones.

3. Select the target inverter, tap **Device Logs** > **Optimizer logs**, and download optimizer logs as required.



12.26 What Can I Do If the Upgrade Package Fails to Be Imported?

Symptom

The upgrade package downloaded to the storage directory of the mobile phone cannot be imported for upgrading the device software on the local commissioning screen, or the imported upgraded package is not displayed on the screen.

Possible Cause

During the import, a third-party file management app is used to query and select the upgrade package.

Solution

Use the pre-installed file management app in the mobile phone to query and select the upgrade package.

12.27 Why Is the Display of Some Screens Incomplete or Abnormal After I Enlarge the Font Size on My Phone?

Possible Causes

Some screens are not compatible with font adjustment. After the font size is set to a large value, the screen layout is abnormal.

Solutions

Adjust the font of your phone to the standard or default font before browsing.

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

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

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

Scenario 2: Charging Connector Locked

Solution:

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

12.29 What Is the Configuration of Time Segments in a Day?

A day is divided into several time segments of electricity consumption. The purchase price varies based on time segments.

12.30 What Is Tiered Pricing?

The electricity pricing is divided into different tiers based on the volume of consumed electricity. The volumetric charge increases as the volume of consumed electricity increases.

You can configure tiered pricing by the volume of consumed electricity and set bills period on electricity price templates on the FusionSolar SmartPVMS. In countries/regions that adopt the TOU pricing, the tiered pricing can be used only for a specified time segment. For example, in a region that adopts TOU pricing, the electricity price during off-peak hours is fixed at CNY2; while during peak hours, the electricity price is CNY3 for 0–100 kW of power and CNY4 for power over 100 kW.

12.31 What Is the Difference Between Electricity Price Coefficient and Amount-based Surcharge?

Table 12-1 Difference between electricity price coefficient and amount-based surcharge

Parameter	Description
Electricity Price Coefficient	Calculate the percentage of the total fee in the **Volumetric Charge Rate** module.
Amount-based surcharge	Calculate the percentage of the total fees of **Volumetric Charge Rate**, **Demand Charge Rate** (capacity/demand charge), and **Others**.

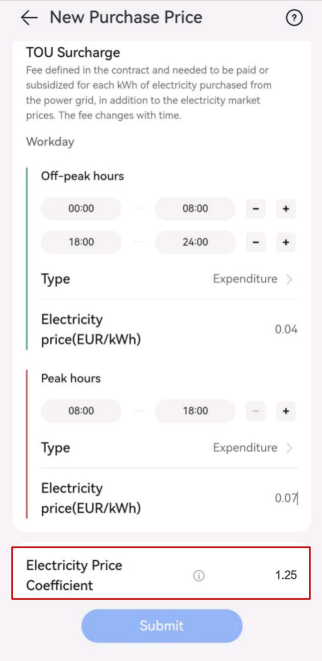
Table 12-2 shows an example.

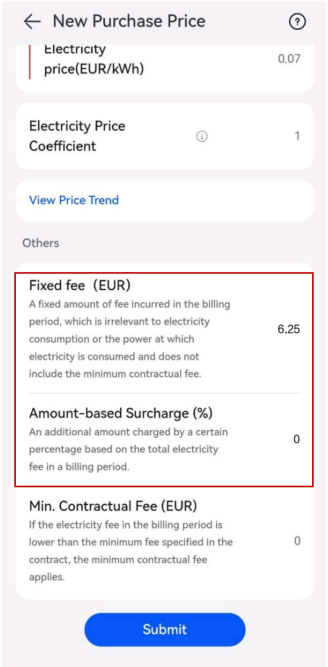
Table 12-2 Electricity prices of xx electric power company in Finland

Item	Price	Remarks
Volumetric charge rate	Hourly spot electricity price listed in the electricity exchange	Excluding the VAT

Item	Price	Remarks
Electricity transmission charge rate	Peak hours (08:00–18:00): EUR0.07/kWh Off-peak hours (18:00–08:00 of the next day): EUR0.04/kWh	
Contractual fee	EUR5/month	
VAT: 25%		

- If the VAT rate is included in the electricity price coefficient, the contractual fee needs to be converted into a VAT-inclusive fee. Otherwise, the VAT rate of the contractual fee is not included in the revenue calculation of the plant.

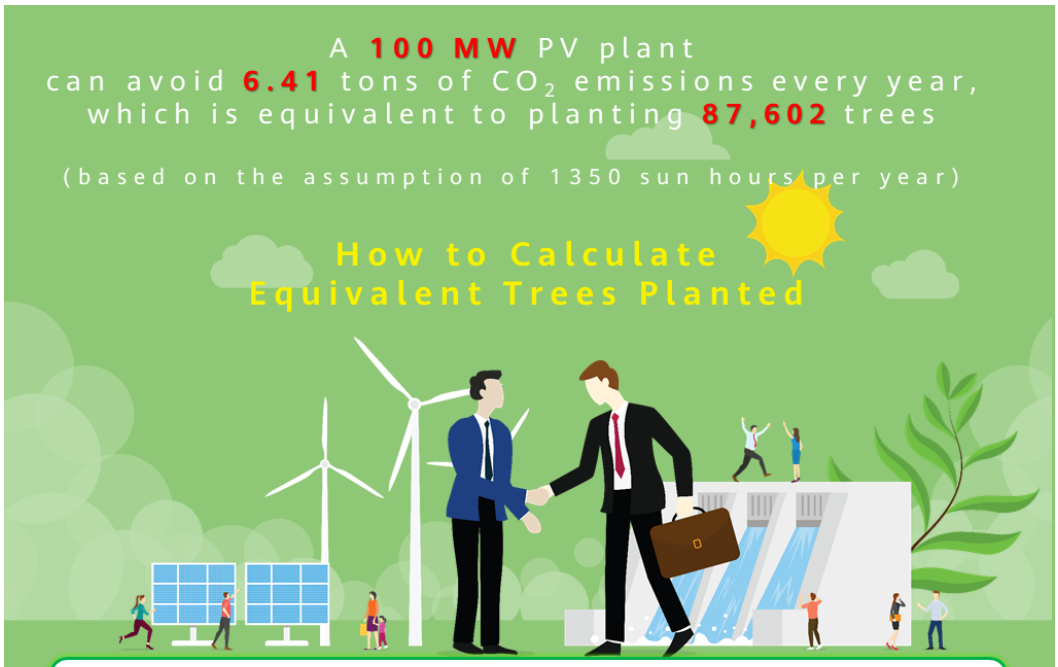




- If the VAT rate is included in the electricity price coefficient and amount-based surcharge, the VAT rate will be repeatedly calculated in the volumetric charge rate and TOU surcharge. As a result, the calculated plant revenue will be inaccurate.

13 Related Information

13.1 PV Power Generation Offsetting Carbon Emissions



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

Unlike thermal power plants, PV power plants generate electricity without CO_2 emissions, which is equivalent to planting trees.

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

Fossil fuels saved and CO_2 emissions avoided *

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

Formula:

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

Equivalent trees planted

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

Formula:

- CO_2 emissions avoided/Coefficient of equivalent trees planted (18.3)/40 = Equivalent trees planted

Example:

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

Equivalent CO_2 emissions avoided ≈ 351.31 tons

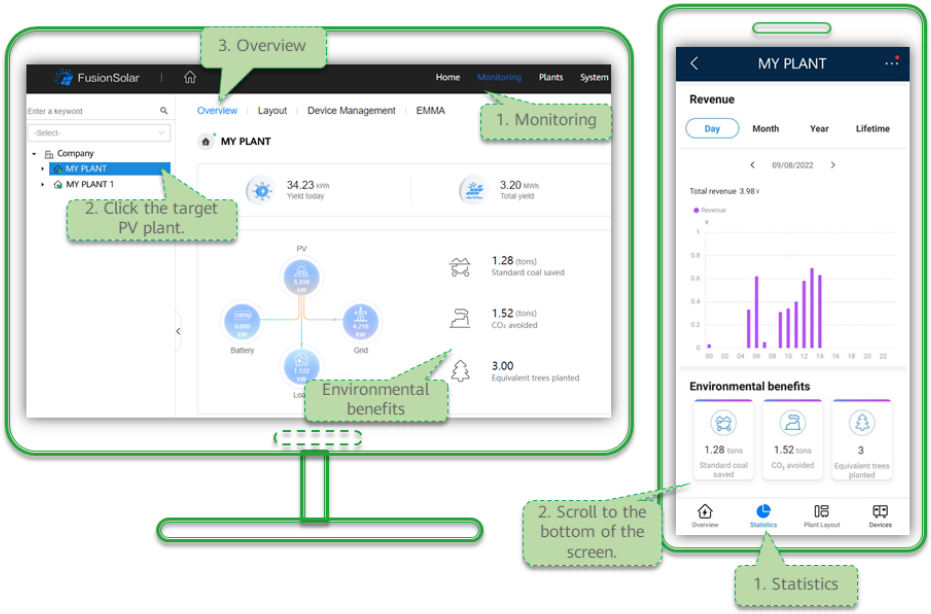
739600 kWh x 0.475 = 351310 kg

Equivalent trees planted ≈ **480**

351310 kg/18.3/40 ≈ 480

How do I view the CO_2 emissions avoided and equivalent trees planted of a PV plant?

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



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

13.2 Domain Name List of Management Systems

NOTE

The list is subject to change.

Table 13-1 Domain names of management systems

Domain Name	Data Type	Scenario
intl.fusionsolar.huawei.com	Public IP address	Global domain name of FusionSolar SmartPVMS **NOTE** Compatible with the original domain name **cn.fusionsolar.huawei.com** in Chinese mainland
au7.fusionsolar.huawei.com	Public IP address	Domain name of Australia single-node server
eu5.fusionsolar.huawei.com	Public IP address	Domain name of FusionSolar SmartPVMS in Europe
intlobt.fusionsolar.huawei.com	Public IP address	Domain name of FusionSolar SmartPVMS in Europe
jp5.fusionsolar.huawei.com	Public IP address	Domain name of FusionSolar SmartPVMS in Japan
la5.fusionsolar.huawei.com	Public IP address	Domain name of FusionSolar SmartPVMS in Latin America
sg5.fusionsolar.huawei.com	Public IP address	Domain name of FusionSolar SmartPVMS in Asia Pacific and Australia **NOTE** Compatible with the original domain name **kr5.fusionsolar.huawei.com** in South Korea
region01eu5.fusionsolar.huawei.com	Public IP address	Server domain name of FusionSolar SmartPVMS in European cluster 1
region02eu5.fusionsolar.huawei.com	Public IP address	Server domain name of FusionSolar SmartPVMS in European cluster 2
region03eu5.fusionsolar.huawei.com	Public IP address	Server domain name of FusionSolar SmartPVMS in European cluster 3
region04eu5.fusionsolar.huawei.com	Public IP address	Server domain name of FusionSolar SmartPVMS in European cluster 4
region05eu5.fusionsolar.huawei.com	Public IP address	Server domain name of FusionSolar SmartPVMS in European cluster 5

Domain Name	Data Type	Scenario
neteco.alsoenergy.com	Public IP address	Domain name of partner's management system
re-ene.kyuden.co.jp	Public IP address	Domain name of the remote output control server of Kyushu Electric Power Company
re-ene.yonden.co.jp	Public IP address	Domain name of the remote output control server of Shikoku Electric Power Company
au1.fusionsolar.huawei.com	Public IP address	Domain name of FusionSolar SmartPVMS in Australia
br1.fusionsolar.huawei.com	Public IP address	Domain name of FusionSolar SmartPVMS in Brazil
pvms01cn.fusionsolar.huawei.com pvmspro01cn.fusionsolar.huawei.com	Public IP address	Domain names for whole-county rollout projects in Chinese mainland

13.3 Public URLs

Table 13-2 Public URLs of the SUN2000 app

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

Table 13-3 Public URLs of the FusionSolar app

URL	Description
https://support.huawei.com/enterprise/	View the app guide.
https://info.support.huawei.com/	View the app guide.
digitalpower.huawei.com	Access digital services.
forum.huawei.com	Access other services in the intelligent customer service.
*.apple.com	Official website of Apple. The iOS version of the FusionSolar app needs to connect to this website for upgrade.
*.pinnettech.com	Official website of Pinnet Technologies. The FusionSolar app needs to connect to this website for upgrade.
https://solar.huawei.com	FusionSolar official website
eu_inverter_support@huawei.com	FusionSolar service email
baidumap://map/marker	Baidu Maps
androidamap://viewMap	Amap
http://maps.google.com	Google Maps
qqmap://map/marker	Tencent Maps
https://community.solar.huawei.com/	Visit the installer community.

