3.1 Commissioning Video

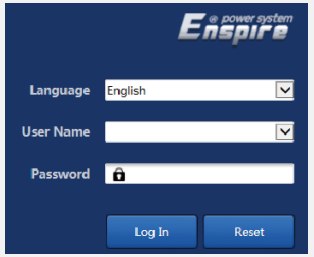
FusionSolar

FusionSolar App
(Local & Remote)

Website:

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

QR code:



WebUI

Website:
https://support.huawei.com/enterprise/en/doc/EDOC1100127590

QR code:

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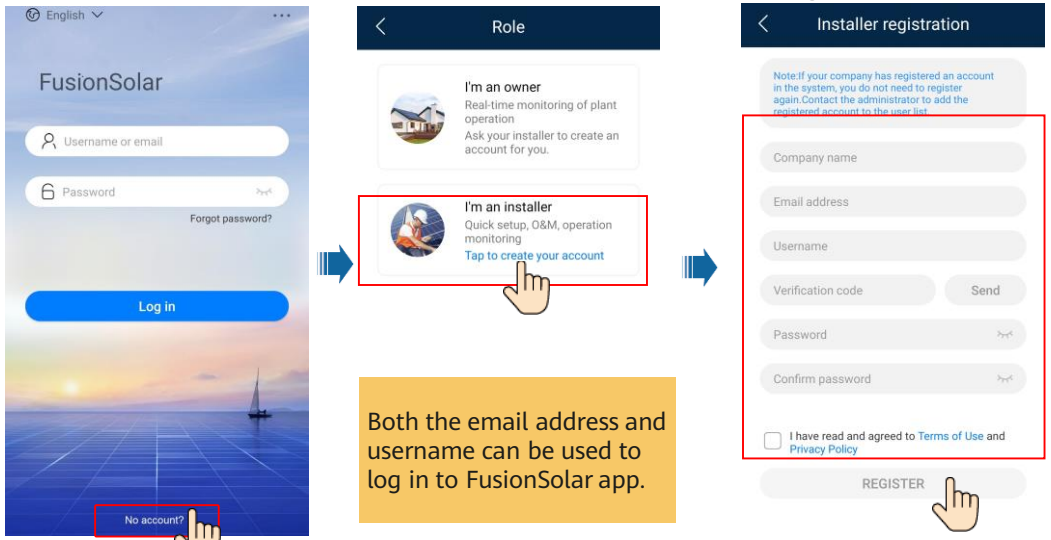
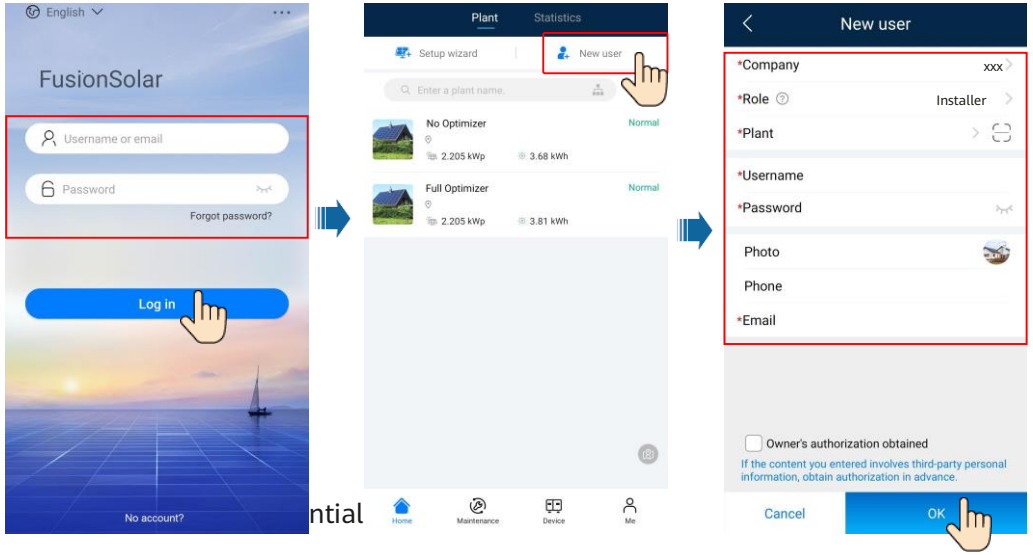
3.2 Installer Account Registering

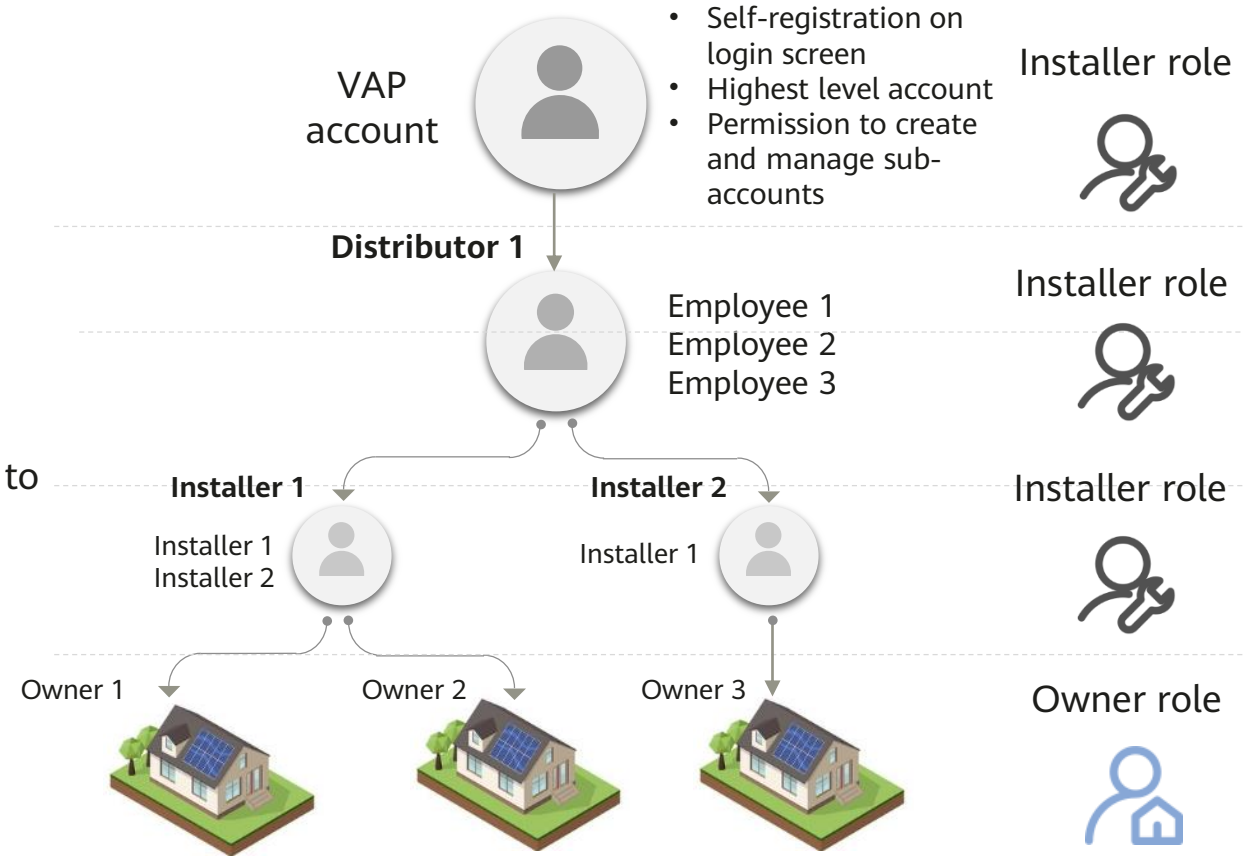
- Create the first installer account. This will also generate a domain that is named after the company name.



Both the email address and username can be used to log in to FusionSolar app.

- To create multiple installer accounts for the same company, log in to the FusionSolar app and tap **New User**.





Installer role: PV plant home page, PV plant view, device management, report management, smart operation and maintenance, system settings

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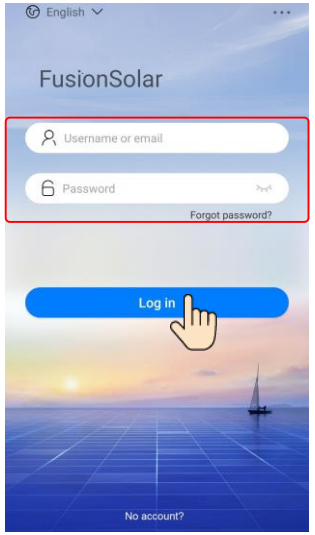
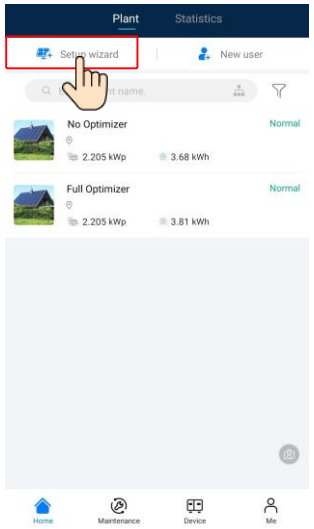
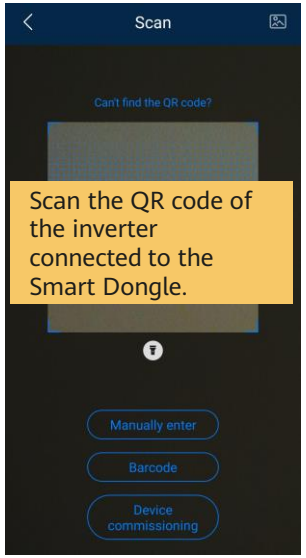
3.3 Smart Dongle Commissioning

Local commissioning: Built-in WLAN

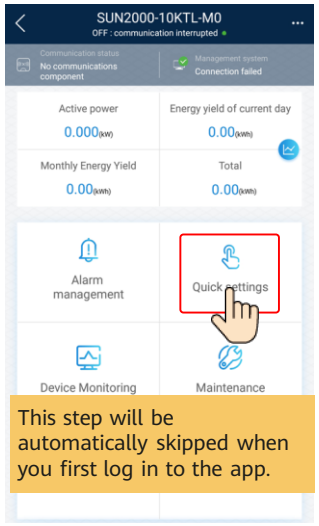




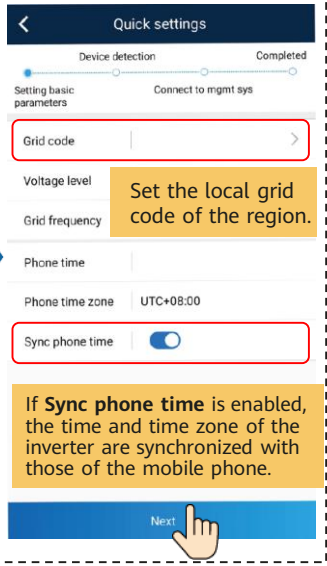


Scan the QR code of the inverter connected to the Smart Dongle.

The initial password is **00000a**.



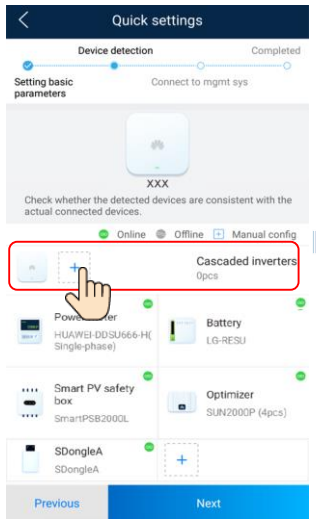
This step will be automatically skipped when you first log in to the app.

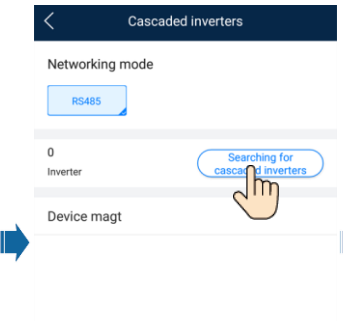


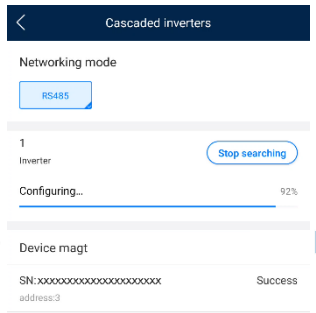
Set the local grid code of the region.

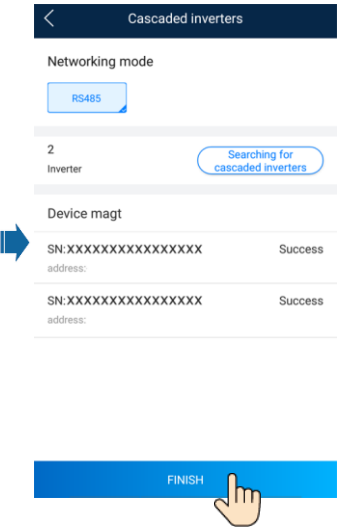
If **Sync phone time** is enabled, the time and time zone of the inverter are synchronized with those of the mobile phone.

In a non-cascading scenario, the step of **searching for cascaded inverters** is not involved.

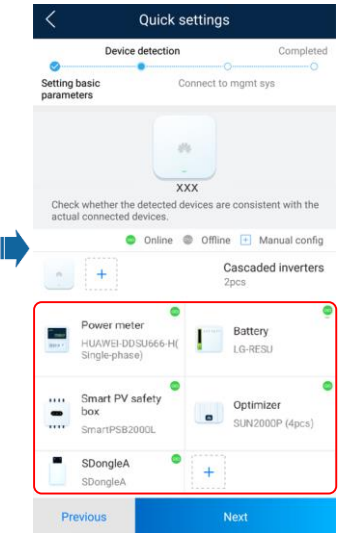








Cascading of multiple inverters with the SUN2000-(3KTL-20KTL)-M0 as the master inverter



Ensure that the devices in the device list are consistent with the actually connected devices.

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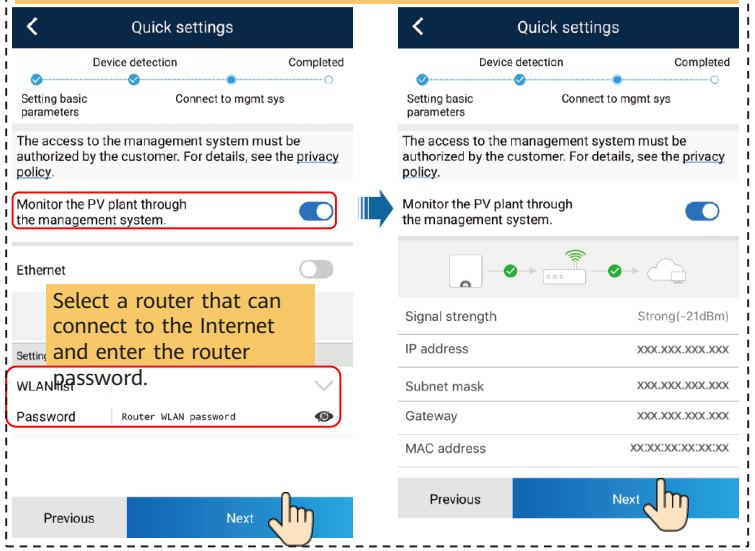
Select the corresponding communication settings based on the Smart Dongle.

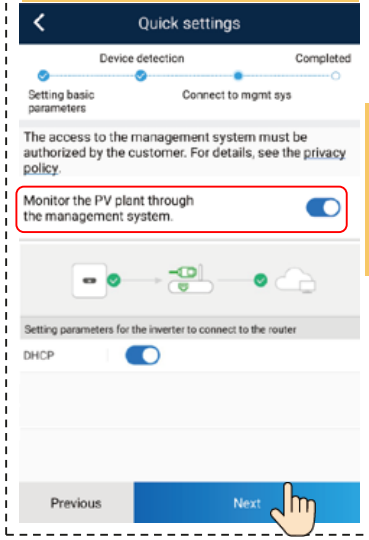
WLAN communication



Select a router that can connect to the Internet and enter the router password.

or

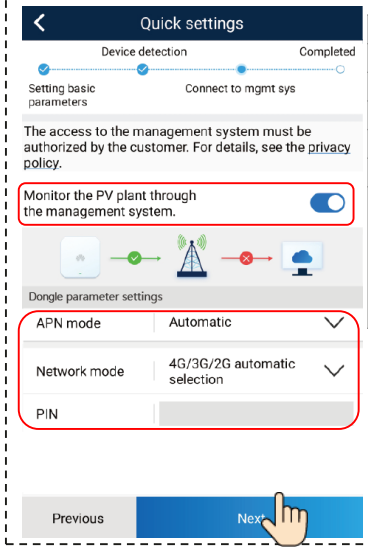
FE communication



If **Ethernet** is displayed, the network cable is not connected. Reconnect the network cable.

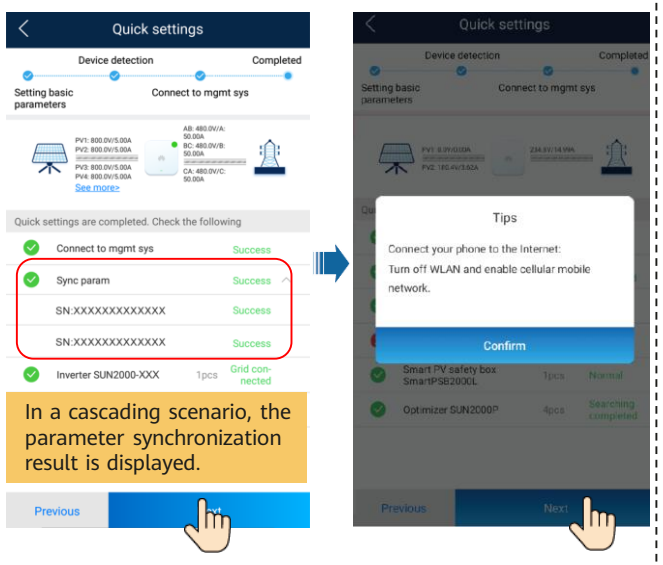
or

4G communication



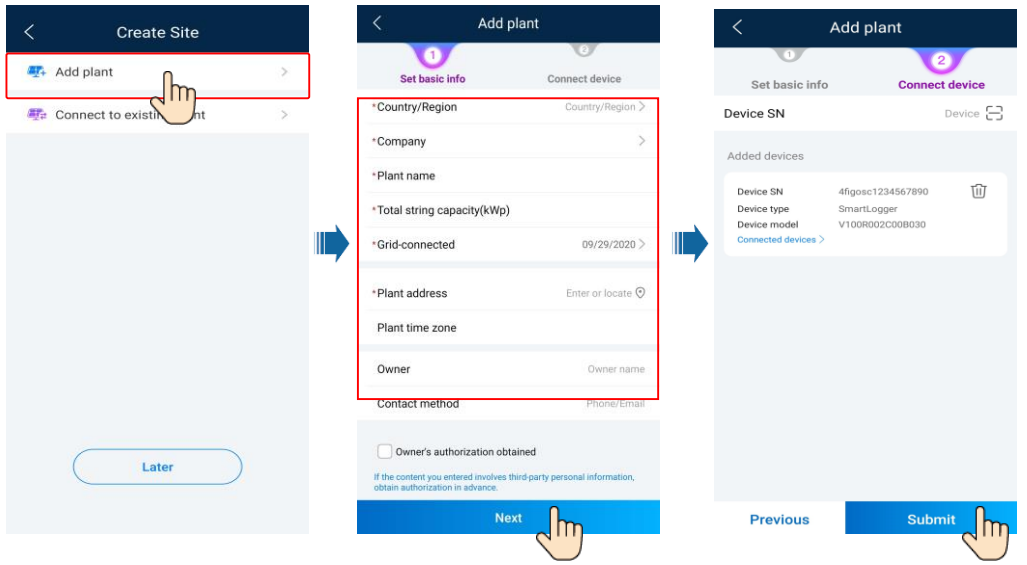
Parameter	Description
APN mode	• Set SIM card parameters. Obtain the parameters from the SIM card carrier. • When **APN mode** is set to **Automatic**, **APN**, **APN dialup number**, **APN user name**, and **APN user password** are not displayed. When **APN mode** is set to **Manual**, APN-related parameters are displayed. You can set the parameters.
APN	
APN dialup number	
APN user name	
APN user password	
PIN	

- The PIN code is usually at the back of a SIM card.
- If the automatic dialing is successful, 4G parameters are not displayed.

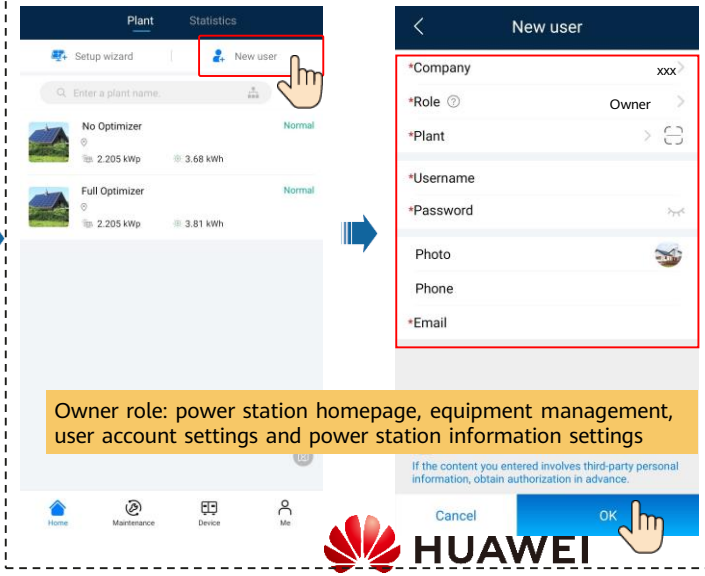


In a cascading scenario, the parameter synchronization result is displayed.

Add a plant.

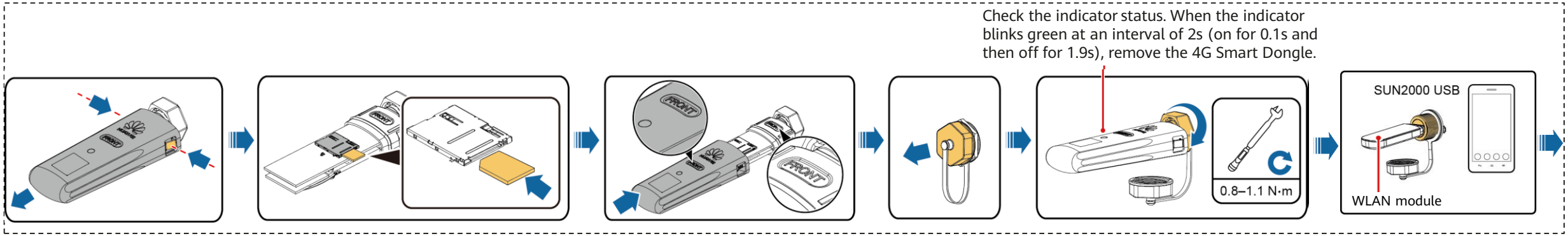


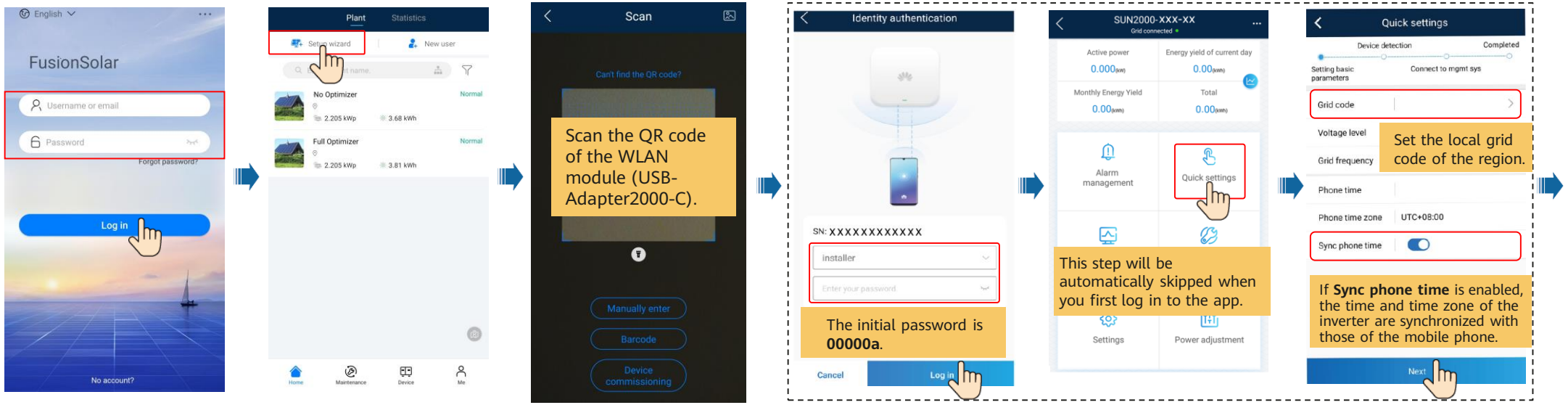
Create an owner account.



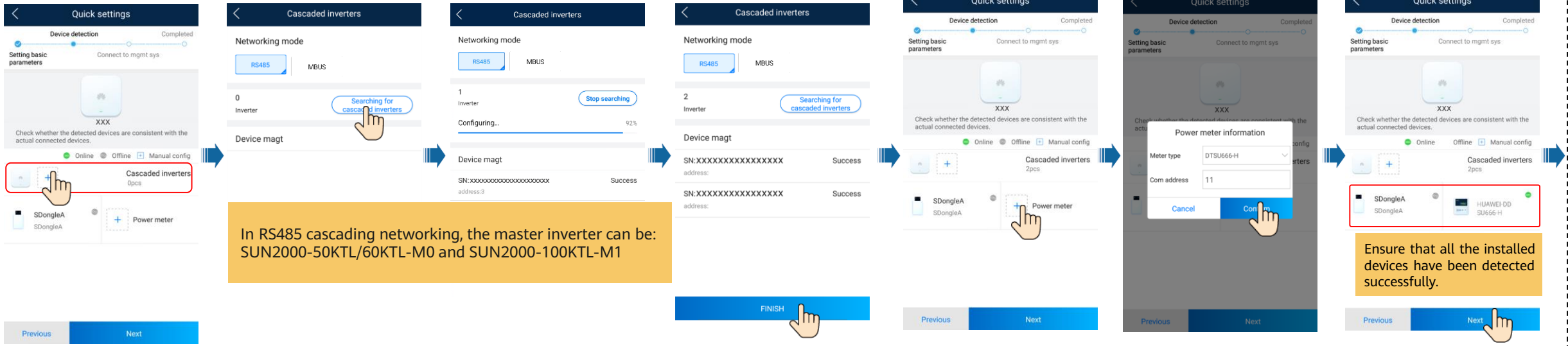
Owner role: power station homepage, equipment management, user account settings and power station information settings

Local commissioning: WLAN module



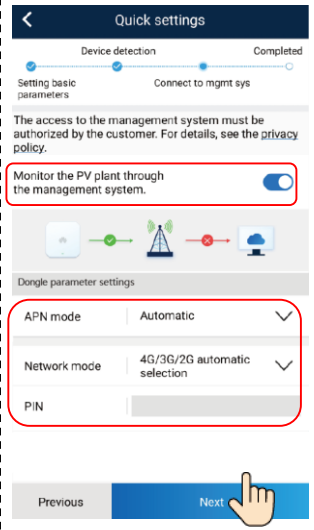


In a non-cascading scenario, the step of **searching for cascaded inverters** is not involved.



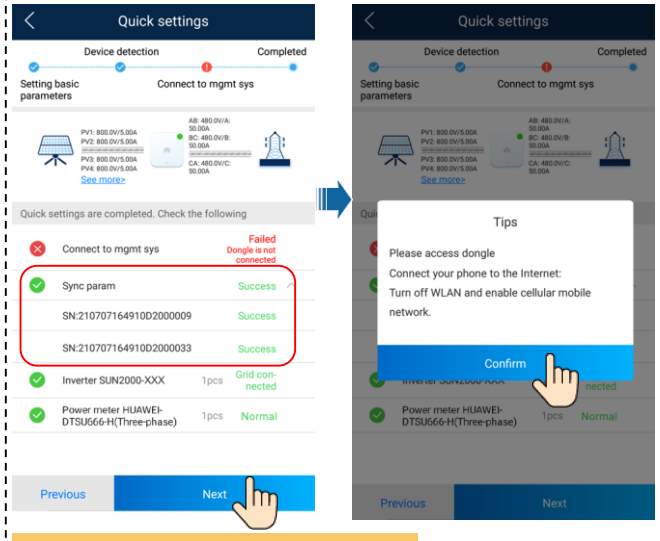
In RS485 cascading networking, the master inverter can be: SUN2000-50KTL/60KTL-M0 and SUN2000-100KTL-M1

Ensure that all the installed devices have been detected successfully.



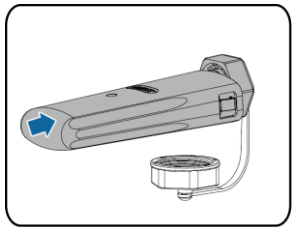
Parameter	Description
APN mode APN APN dialup number APN user name APN user password PIN	• Set SIM card parameters. Obtain the parameters from the SIM card carrier. • When **APN mode** is set to **Automatic**, **APN**, **APN dialup number**, **APN user name**, and **APN user password** are not displayed. When **APN mode** is set to **Manual**, APN-related parameters are displayed. You can set the parameters

- The PIN code is usually at the back of a SIM card.
- If the automatic dialing is successful, 4G parameters are not displayed.

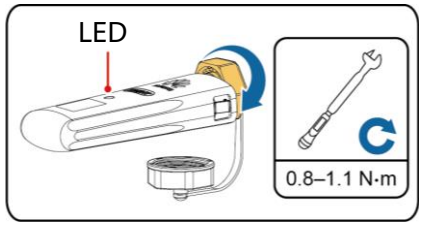


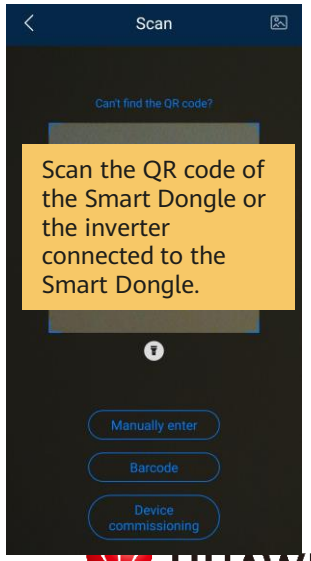
In a cascading scenario, the parameter synchronization result is displayed.

Connect to the management system.



After the green indicator is steady on or blinks quickly (on for 0.2s and off for 0.2s) , add a PV plant.





Scan the QR code of the Smart Dongle or the inverter connected to the Smart Dongle.

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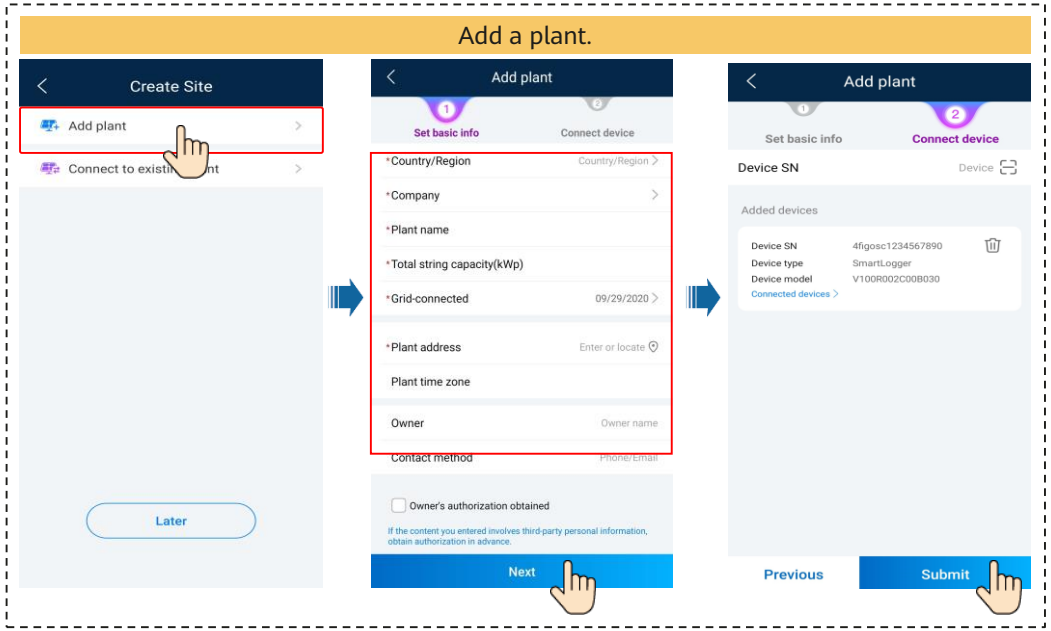
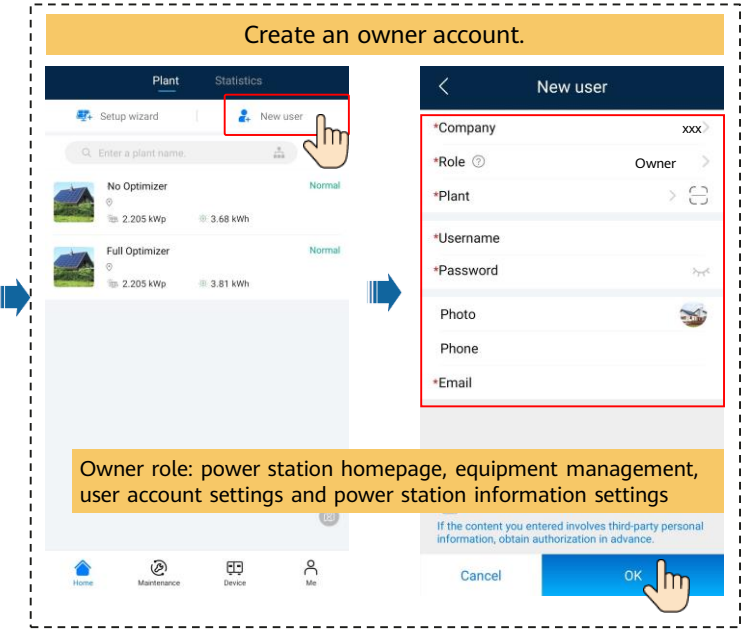
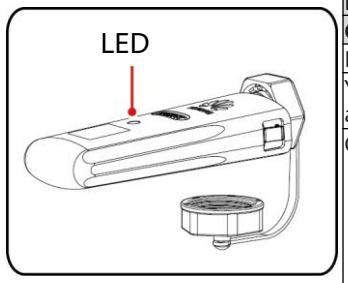






LED		Remarks	Description
Color	**Status**		
N/A	Off	Normal	The Dongle is not secured or is not powered on.
Yellow (blinking green and red simultaneously)	Steady on		The Dongle is secured and powered on.
Green	Blinking in a 2-second cycle (on for 0.1s and then off for 1.9s)	Normal	Dialing (duration < 1 min)
		Abnormal	If the duration is longer than 1 min, the 4G parameter settings are incorrect. Reset the parameters.
	Blinking at long intervals (on for 1s and then off for 1s)	Normal	The dial-up connection is set up successfully (duration < 30s).
		Abnormal	If the duration is longer than 30s, the settings of the management system parameters are incorrect. Reset the parameters.
	Steady on	Normal	Successfully connected to the management system.
	Blinking at short intervals (on for 0.2s and then off for 0.2s)		The inverter is communicating with the management system through the Dongle.
Red	Steady on	Abnormal	The Dongle is faulty. Replace Dongle.
	Blinking at short intervals (on for 0.2s and then off for 0.2s)		The Dongle has no SIM card or the SIM card is in poor contact. Check whether the SIM card has been installed or is in good contact. If not, install the SIM card or remove and insert the SIM card.
	Blinking at long intervals (on for 1s and then off for 1s)		The Dongle fails to connect to the management system because it has no signals, weak signal, or no traffic. If the Dongle is reliably connected, check the SIM card signal through the APP. If no signal is received or the signal strength is weak, contact the carrier. Check whether the tariff and traffic of the SIM card are normal. If not, recharge the SIM card or buy traffic.
Blinking red and green alternatively	Blinking at long intervals (red for 1s and green for 1s)		No communication with the inverter • Remove and insert the Dongle. • Check whether inverters match the Dongle. • Connect the Dongle to other inverters. Check whether the Dongle or the USB port of the inverter is faulty.
	Blinking at short intervals (red for 0.2s and green for 0.2s)	Normal	The Dongle is being upgraded locally.

3.4 SmartLogger Commissioning

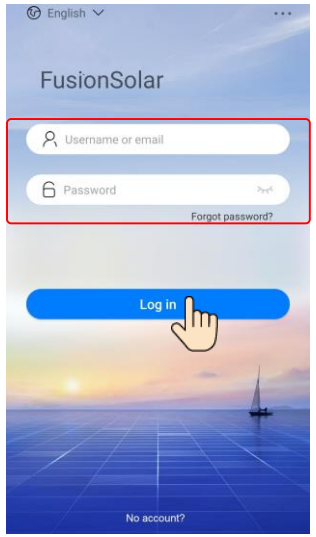
Method 1: FusionSolar App

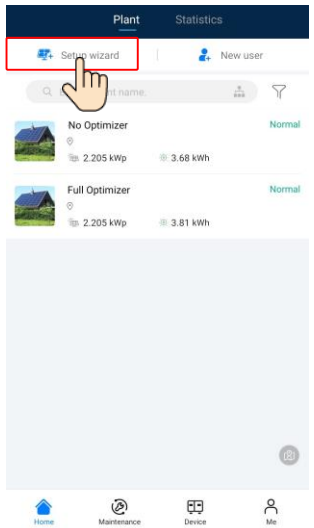
1. Before connecting to the app, ensure that the WLAN function has been enabled on the SmartLogger. By default, the WLAN function is available within 4 hours after the SmartLogger is powered on. In other cases, hold down the RST button (for 1s to 3s) to enable the WLAN function.

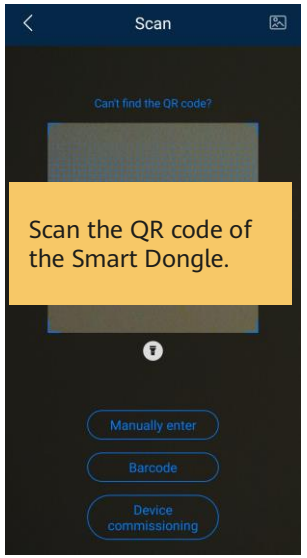
RST Operation	Function
Hold down the button for 1s to 3s.	When **WLAN** is set to **OFF in idle state**, hold down the RST button for 1s to 3s to power on the WLAN module. The alarm/maintenance indicator (ALM) then blinks green fast for 2 minutes (other indicators are off) and the SmartLogger waits for connecting to the app. If the app fails to be connected, the WLAN module is automatically powered off after it is powered on for 4 hours.
Hold down the button for more than 60s.	Within 3 minutes after the SmartLogger is powered on and restarted, hold down the RST button for more than 60s to restart the SmartLogger and restore factory settings.

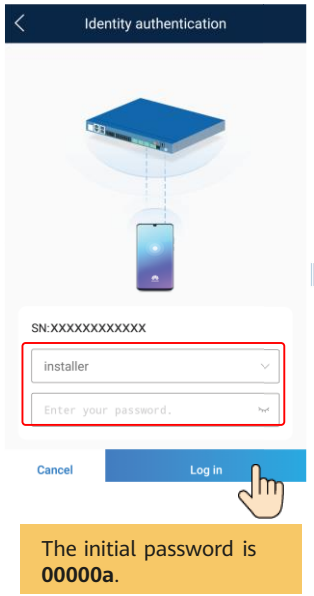
Indicator	Status	Meaning
ALM	Blinking green slowly (on for 1s and then off for 1s)	Local maintenance is in progress.
	Blinking green fast (on for 0.125s and then off for 0.125s)	Local maintenance fails or the connection to the app is to be set up.
	Steady green	Local maintenance succeeded.

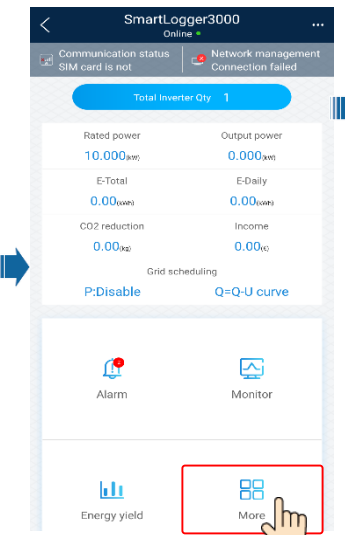
2. Set **Date&Time** and **Power Meter** for the SmartLogger.

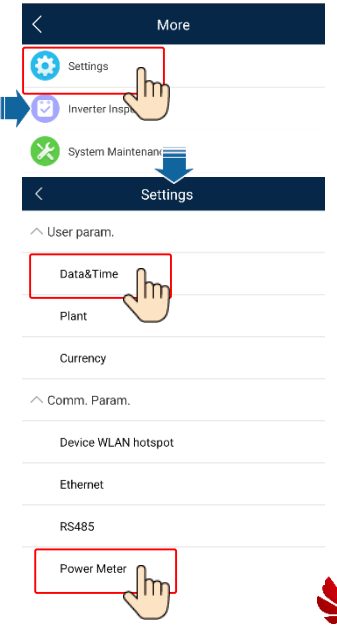


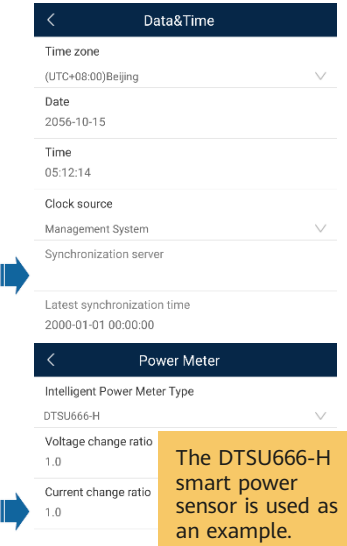












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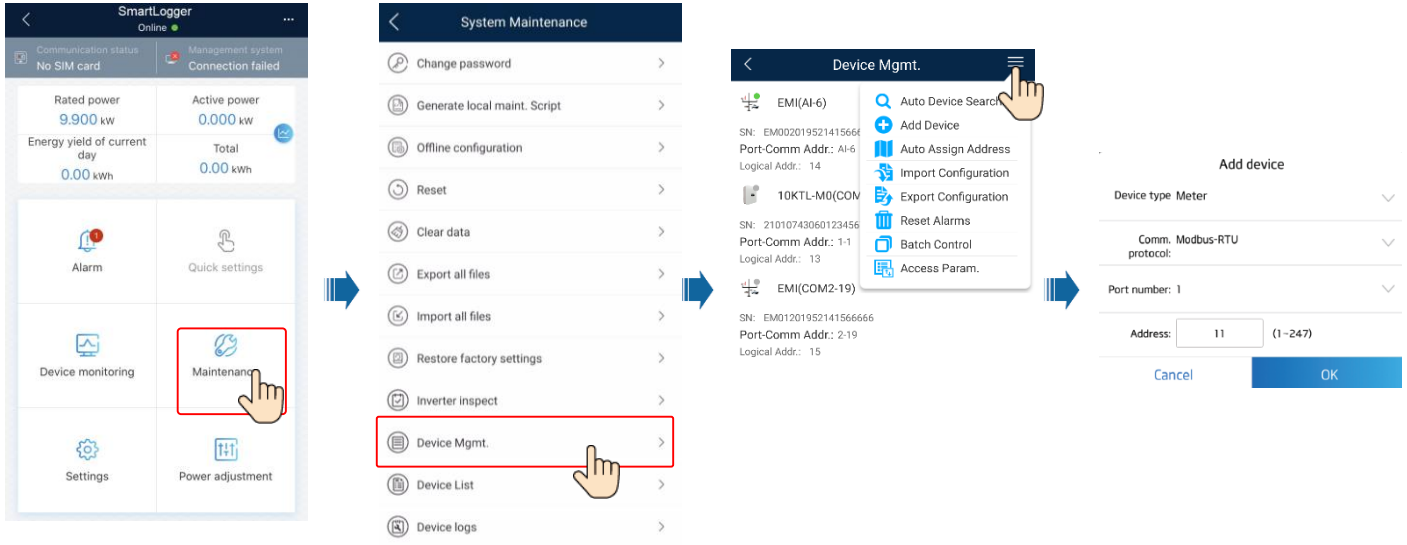
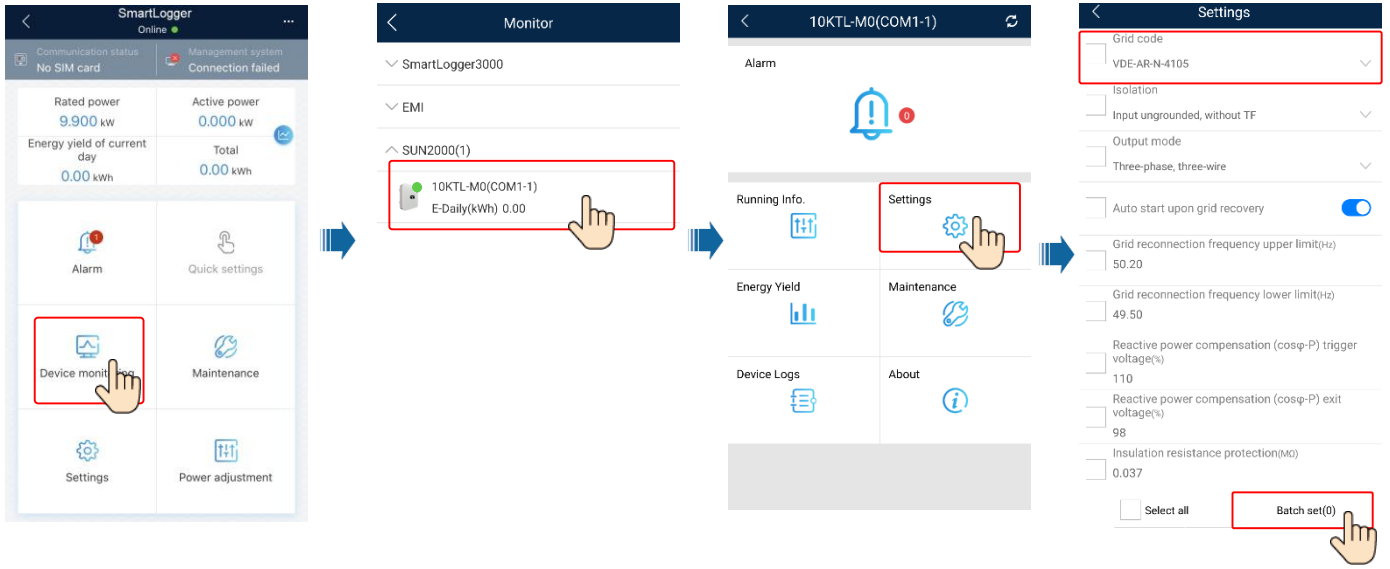
Method 1: FusionSolar App

3. Add communications devices connected to the SmartLogger.
   - Tap **Auto Device Search** to add inverters.
   - If not all devices are detected due to duplicate communications addresses, tap **Auto Assign Address** to assign and adjust the addresses.
   - Tap **Add device** to add a smart power sensor. The DTSU666-H smart power sensor is used as an example. Set **Device Type** to **Power Meter**, **Port number** to the ID of the SmartLogger COM port connected to the smart power sensor, and **Address** to **11**, and then tap **OK**.



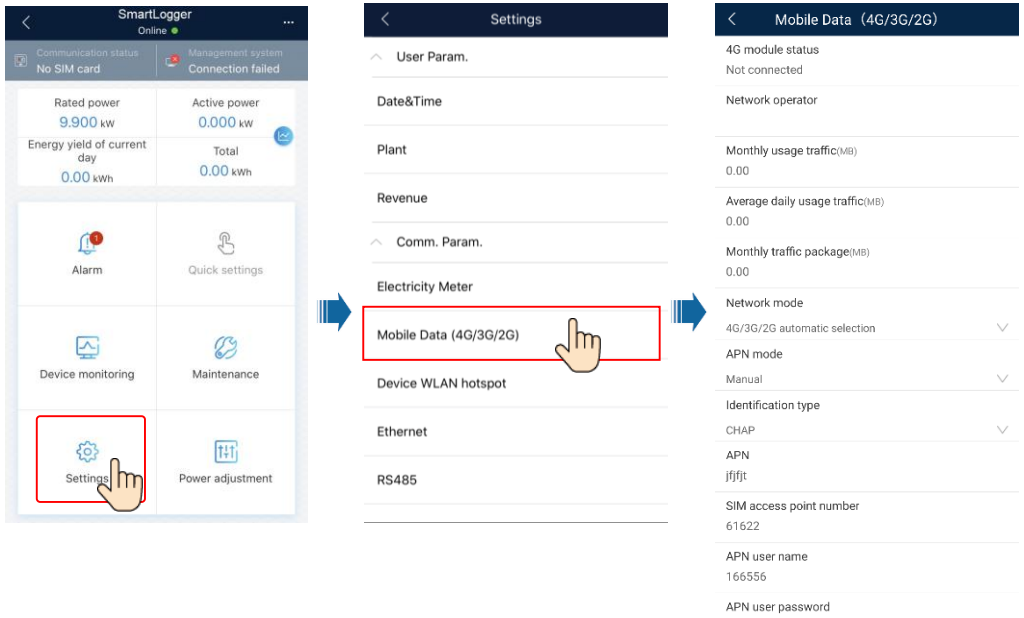
4. Set **Grid code** for the inverters.
   - Select **Grid code** and tap **Batch set** to synchronize the grid code setting to the inverters in batches.
   - The power grid code varies depending on the inverter. For details, see the corresponding user manual.



Method 1: FusionSolar App

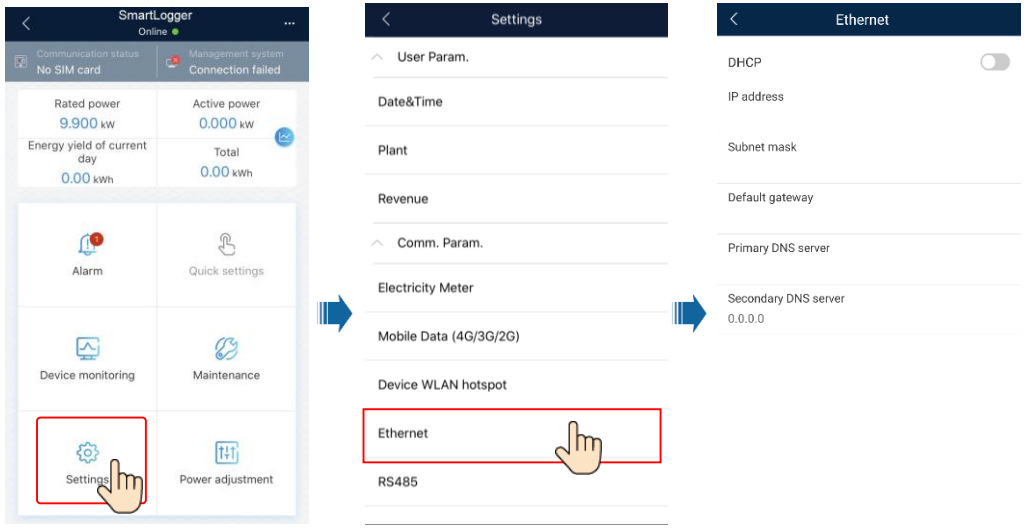
5. Set the network parameters of the SmartLogger.

- Method 1: When the SmartLogger connects to the Huawei Hosting Cloud over the wireless network, set **Monthly traffic package** and **Network mode**.



- Set **Monthly traffic package** and **Network mode** based on the SIM card information.
- By default, **APN mode** is set to **Automatic**. When this mode cannot be used to access the Internet, set the parameter to **Manual**. In this case, set the parameters related to the SIM card with the information obtained from the carrier.
- Perform operations based on **4G module status**. When **4G module status** is **Connected**, SmartLogger dial-up is successful.

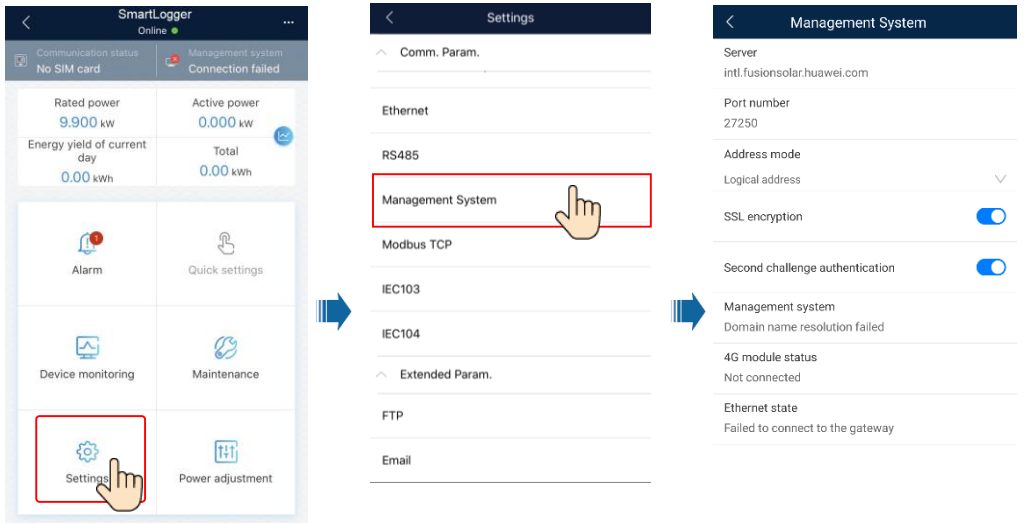
- Method 2: When the SmartLogger connects to the Huawei Hosting Cloud over a wired network, set Ethernet parameters.



- When DHCP is set to , Ethernet parameters of the SmartLogger are automatically allocated.
- When DHCP is set to , you can manually set Ethernet parameters. Set **IP address** and **Subnet mask** for the SmartLogger according to the network plan. Ensure that the SmartLogger and the router are on the same network segment and that the SmartLogger has a different IP address from other devices on the LAN. Set **Default gateway** and **Primary DNS server** to the IP address of the LAN router.
- If **Primary DNS server** cannot resolve the domain name, use **Secondary DNS server**.

Method 1: FusionSolar App

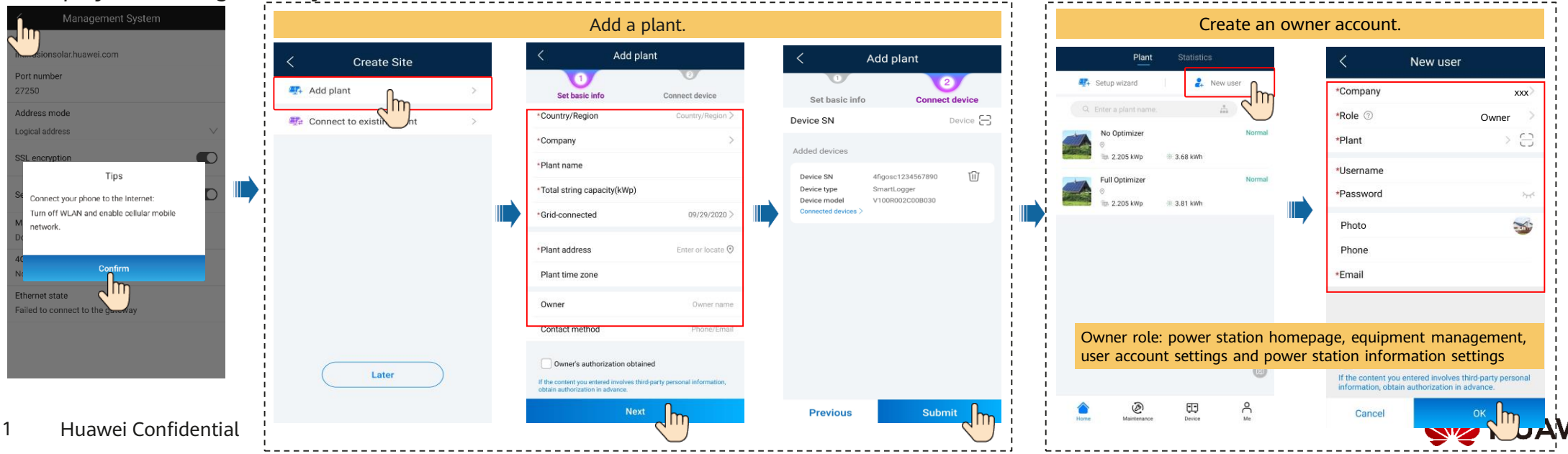
6. Set parameters for connecting the SmartLogger to the Huawei Hosting Cloud.



Parameter	Description
Server	Set to **intl.fusionsolar.huawei.com**.
Port number	Set to **27250**.
Address mode	Set to **Logical address**.
SSL encryption	Set to  .
Secondary challenge authentication	Set to  .

If the status of **Management system** is **Connected**, the SmartLogger is properly connected to the Huawei Hosting Cloud.

7. Deploy the management system.



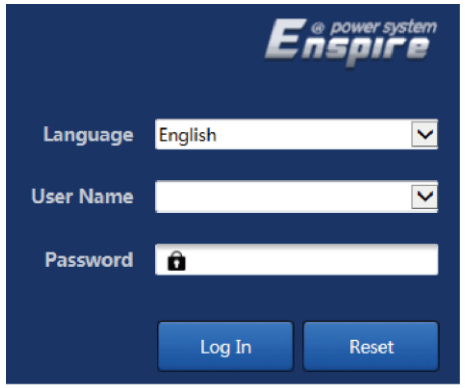
Method 2: WebUI

1. Set the IP address for the PC on the same network segment as the SmartLogger IP address.

- When the IP address of the WAN port is on the 192.168.8.1–192.168.8.255 network segment, the IP address of the LAN port is automatically switched to 192.168.3.10, and the default gateway is 192.168.3.1. If the connection port is a LAN port, adjust the network configuration of the PC accordingly.
- It is recommended that the PC be connected to the LAN port.

Port	IP Settings	SmartLogger Default Value	PC Setting Example
LAN port	IP address	192.168.8.10	192.168.8.11
	Subnet mask	255.255.255.0	255.255.255.0
	Default gateway	192.168.8.1	192.168.8.1
WAN port	IP address	192.168.0.10	192.168.0.11
	Subnet mask	255.255.255.0	255.255.255.0
	Default gateway	192.168.0.1	192.168.0.1

2. Enter **https://*XX.XX.XX.XX*** (*XX.XX.XX.XX* is the IP address of the SmartLogger) in the address box of a browser. If you log in to the WebUI for the first time, a security risk warning is displayed. Click **Continue to this website**.
3. Log in to the WebUI.

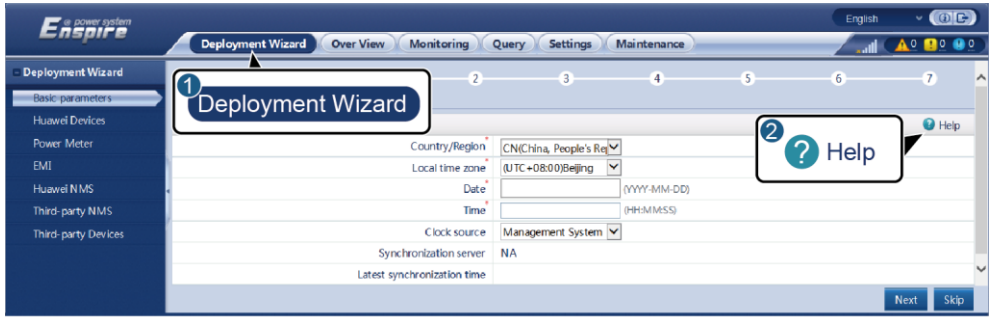


IL03J00002

Parameter	Description
Language	Set this parameter as required.
User Name	Select **admin**.
Password	• The initial password is **Changeme**. • Use the initial password upon first power-on and change it immediately after login. • If you enter incorrect passwords for five consecutive times in 5 minutes, your account will be locked out. Try again 10 minutes later.

4. On the **Deployment Wizard** page, set parameters as prompted. For details, see **Help** on the page.

   During parameter setting, click **Previous**, **Next**, or **Skip** as required.



IL03J00003

5. After the parameters are configured, click **Finish**.

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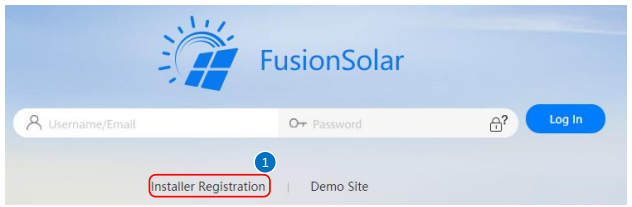
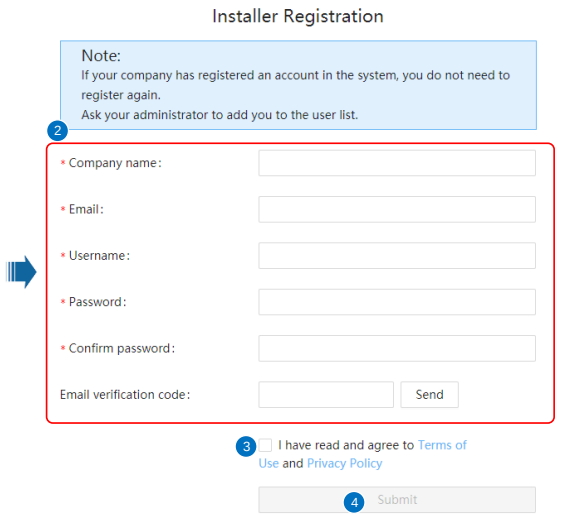
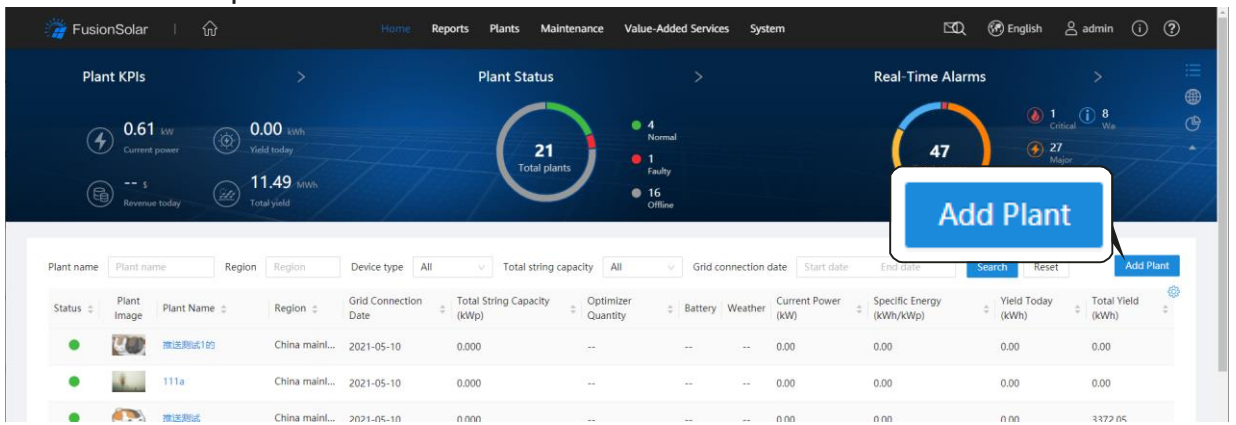
Method 2: WebUI

6. Enter the Huawei Hosting Cloud address **https://intl.fusionsolar.huawei.com** in the address box of a browser. Log in to the Huawei Hosting Cloud. If no account or password is available, create an account.

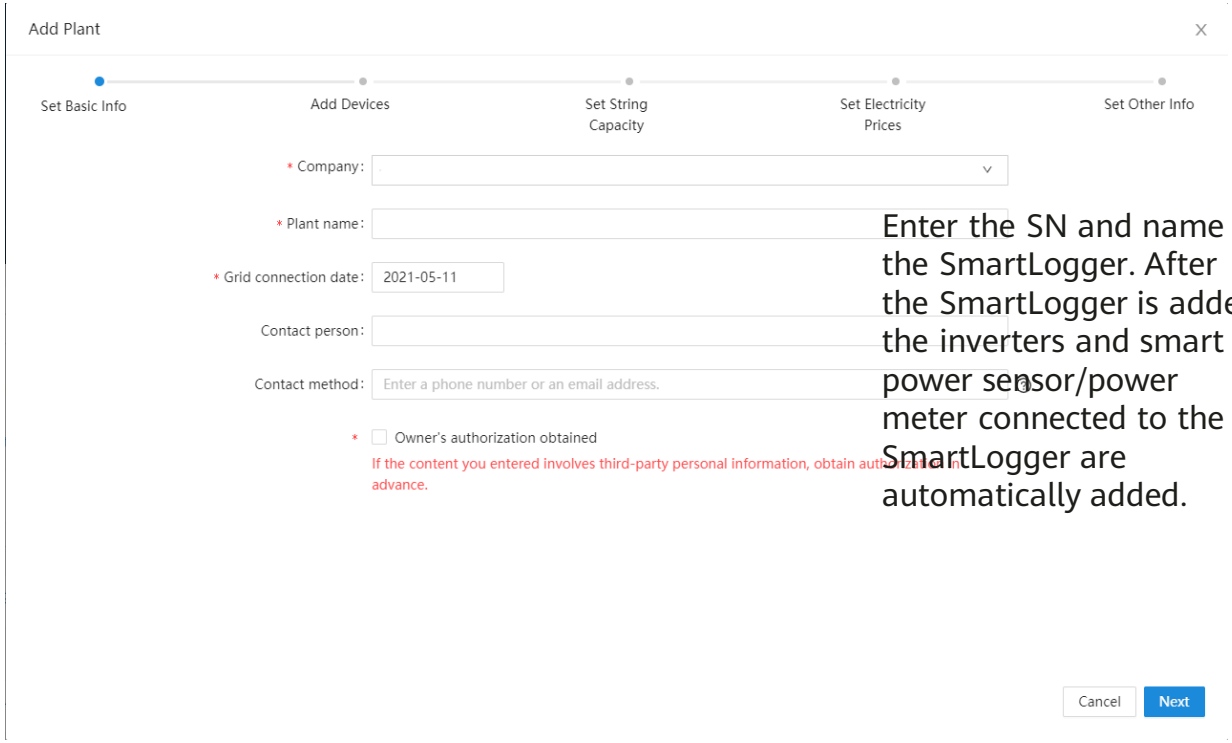




7. Create a PV plant.



8. Enter the basic information, access device, string configuration, and electricity price configuration based on the site requirements. Click **Save**. The PV plant is successfully created.

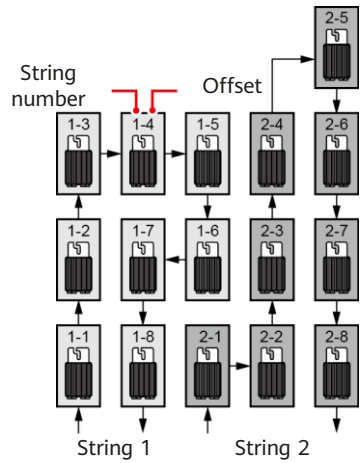


Enter the SN and name of the SmartLogger. After the SmartLogger is added, the inverters and smart power sensor/power meter connected to the SmartLogger are automatically added.

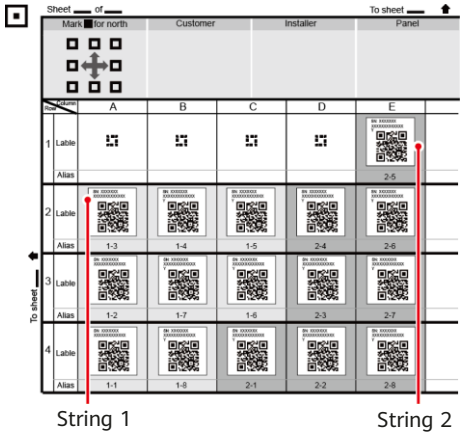
3.5 Physical Layout Design on the FusionSolar App (Optional, for Scenarios with Optimizers)

Step 1. Check that the SN labels of the Smart PV Optimizers have been attached to the Huawei physical layout template.

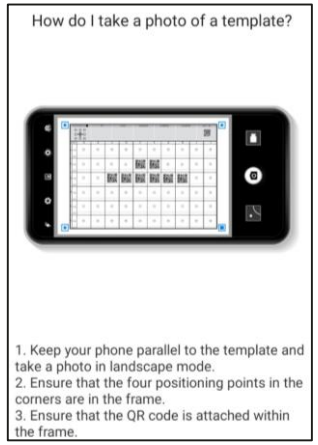
Installation positions of PV modules and optimizers



Huawei Physical Layout Template



Template shooting

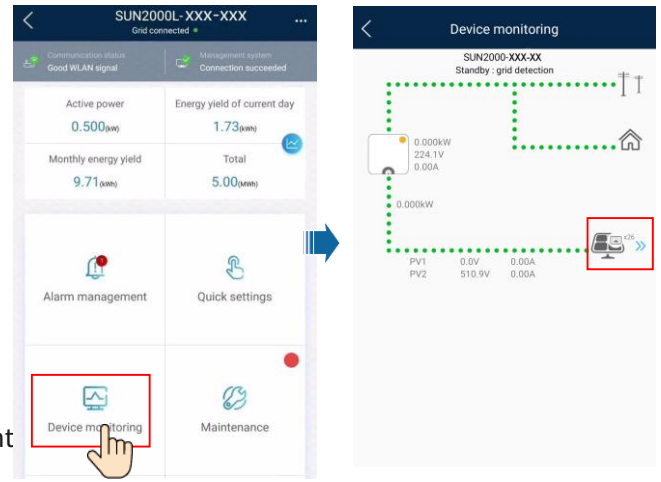


Template Photographing Requirements

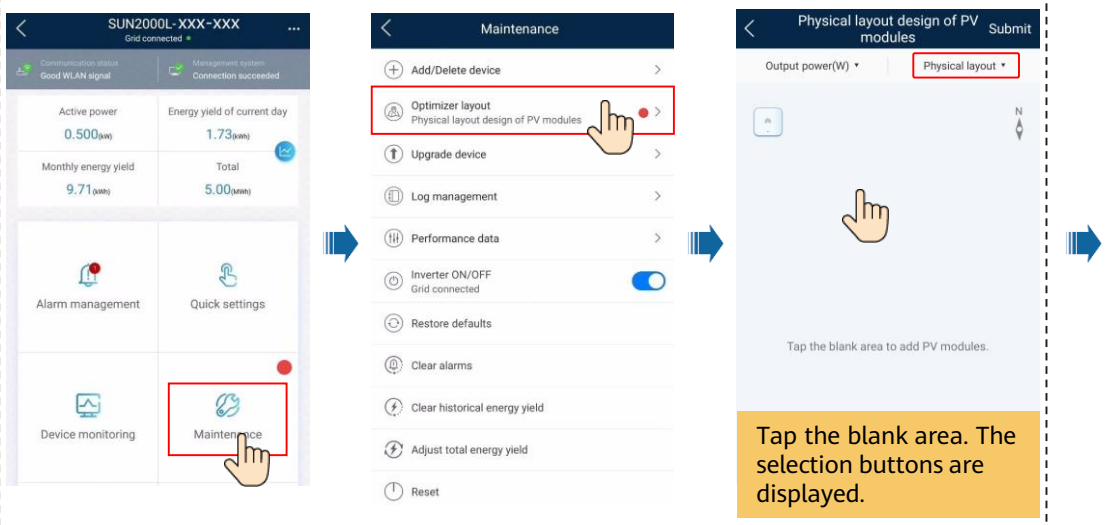
- Place the template on a flat surface and take a photo horizontally.
- Ensure that the four positioning points are within the range shown in the picture.
- Ensure that the QR code is attached in the box and does not exceed the frame.
- Ensure that the QR code is clear without reflection or shadow. Otherwise, the recognition accuracy will decrease.
- If the QR code cannot be identified, you can manually bind the SN.

Step 2. Check that the Smart PV Optimizers are successfully searched.

1. Open the **FusionSolar** app, log in to intl.fusionsolar.huawei.com using the installer account, choose **My** > **Device commissioning**, and connect to the WLAN hotspot of the solar inverter.
2. Select **installer** and enter the login password.

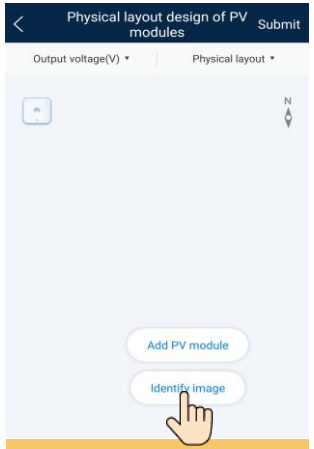


Step 3. Set optimizer physical layout

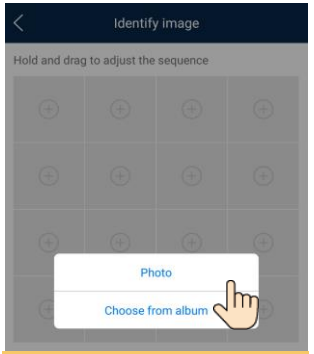


Tap the blank area. The selection buttons are displayed.

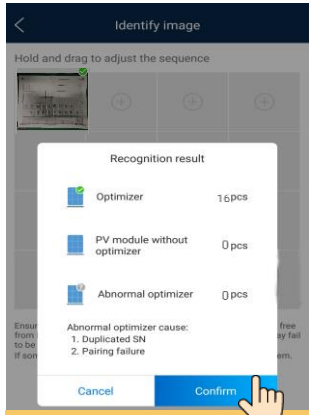
method 1: Tap **Identify image** for automatic layout.



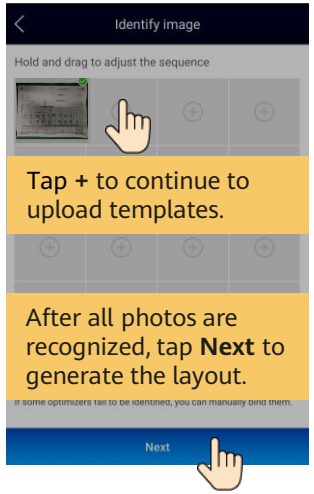
Tap **Identify image**.



Choose **Photo** or **Choose from album** to upload a physical layout template.

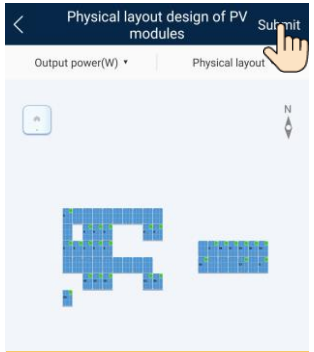


Upload template for identification.



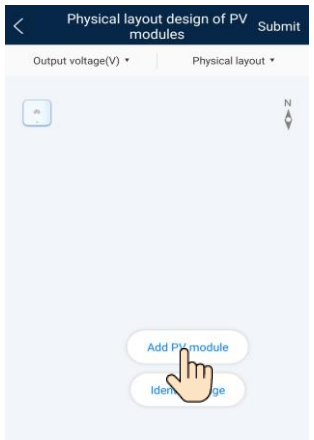
Tap + to continue to upload templates.

After all photos are recognized, tap **Next** to generate the layout.

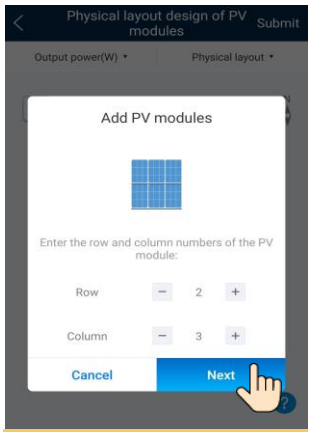


Tap **Submit**. (If the template is unidentified, Bind optimizers by referring to step 4.)

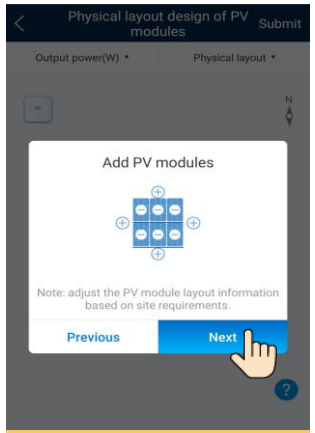
method 2: Tap **Add PV modules** for manual layout.



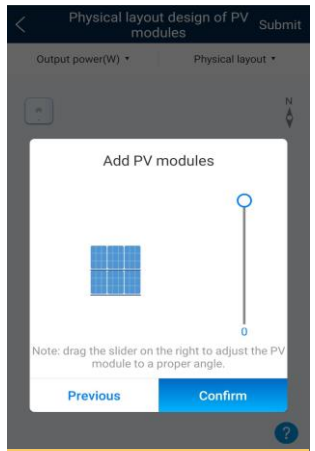
Tap **Add PV module**.



Select the number of rows and columns for added PV modules.



Tap + or – to change the number of rows and columns.



Adjust the PV module angle, and tap **Confirm**.

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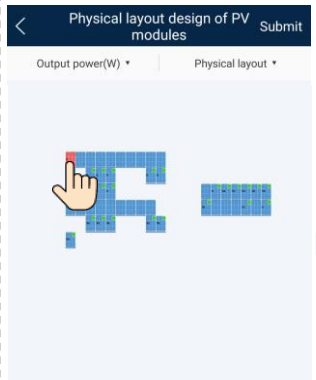
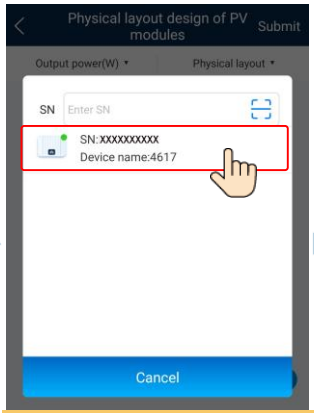
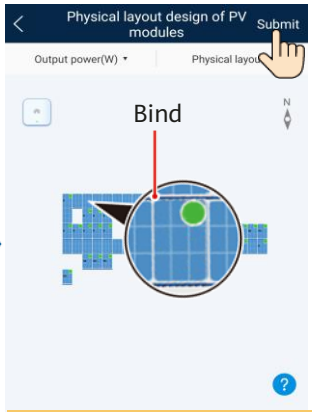
Step 4. Bind Smart PV Optimizers



Select a PV module to be bound to the optimizer.

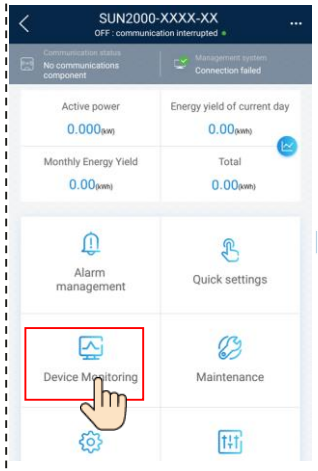


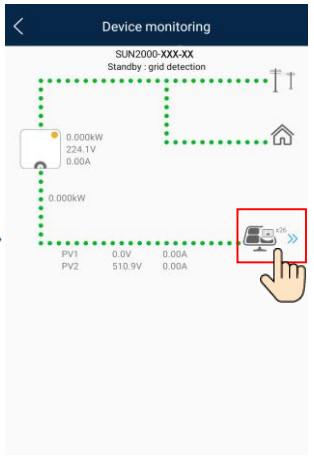
Select the corresponding optimizer.



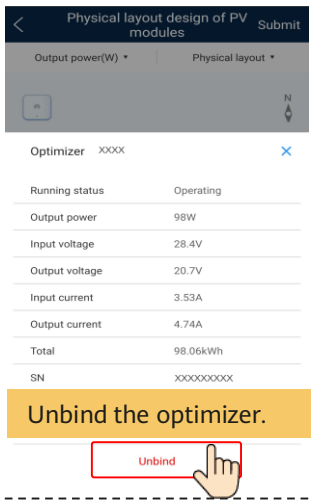
After the layout is complete, tap **Submit**.

Step 5. Check the Smart PV Optimizer status.





Tap a corresponding PV string and check the optimizer status.



Unbind the optimizer.

Physical Layout FAQs

Scenario	Suggestion
Before the physical layout is generated, the Identification result contains an abnormal optimizer.	Check whether the networking is successful.
Before the physical layout is generated, the number of optimizers in the Identification result is incorrect.	1. Take photos again as required. 2. If some QR codes fail to be identified, manually bind QR codes after the layout diagram is generated.
Before the physical layout is generated, the number of pure PV module in the Identification result is incorrect.	1. Check whether the dotted box in the corresponding box is painted black as required. 2. Take photos again as required. 3. If some pure components fail to be identified, manually repaint them after the layout diagram is generated.
The physical layout has been generated, but some QR codes fail to be identified. The QR codes that are not identified are incorrectly identified as pure PV module.	Manually select unidentified QR code and bind it to PV module
The physical layout has been generated. Most QR codes fail to be identified. The QR code is incorrectly identified as a pure PV module.	Delete the generated physical layout and take a photo as required.
The physical layout has been generated, but the pure PV module is not identified.	Manually add pure PV module.
The physical layout has been generated, but some templates are not identified.	In the generated physical layout, click image identification to identify the missing templates.

If the system requires a change, for example, adding, deleting, or replacing an optimizer, adjusting the physical position of an optimizer, or adjusting PV strings, power off the inverter, wait for 5 minutes, and then perform the change operation. After the system is changed, you must perform the quick settings or optimizer search again and update the physical layout diagram. Otherwise, problems such as missing optimizers, failure to locate optimizer faults, or system faults may occur.

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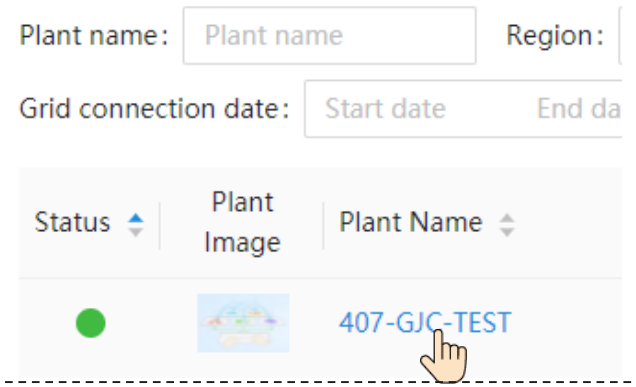
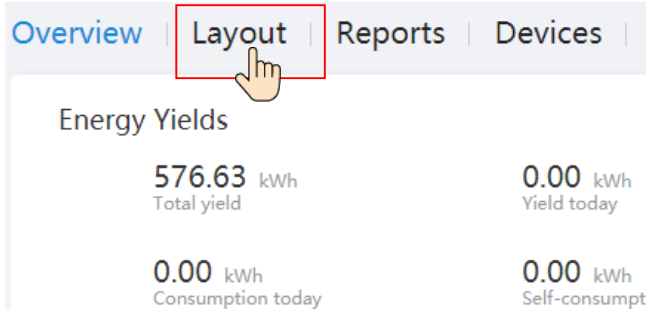
3.6 Physical Layout Design on the FusionSolar WebUI (Optional, for Scenarios with Optimizers)

Log in to the https://intl.fusionsolar.huawei.com as **installer** user.

1. On the **Homepage**, click a PV plant to enter the **Single Power Plant** page.

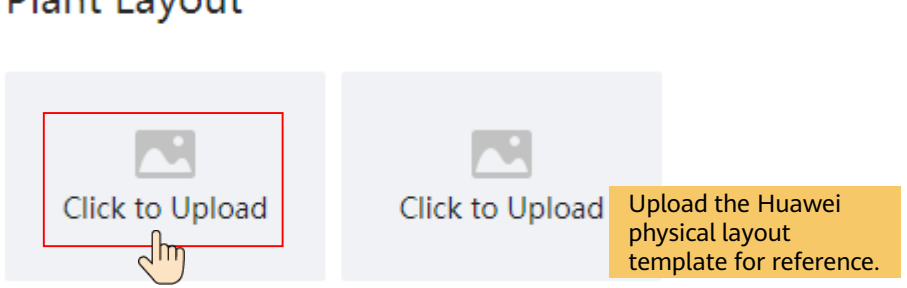


2. Click **Layout**.



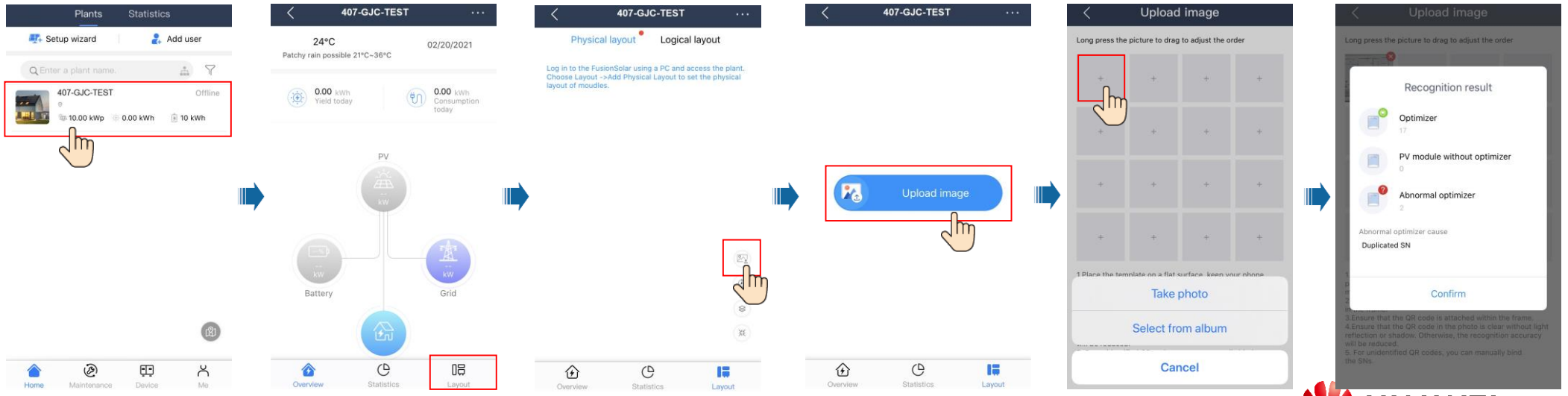
3. Upload the physical layout.

Method1: through the WebUI.



Upload the Huawei physical layout template for reference.

Method2: through the app.



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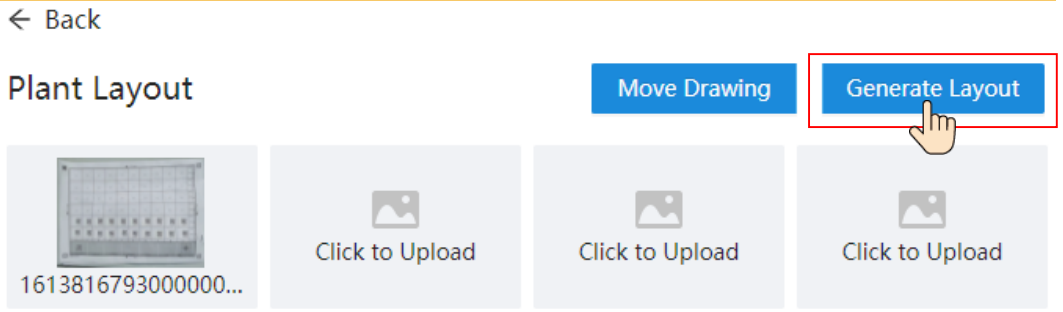
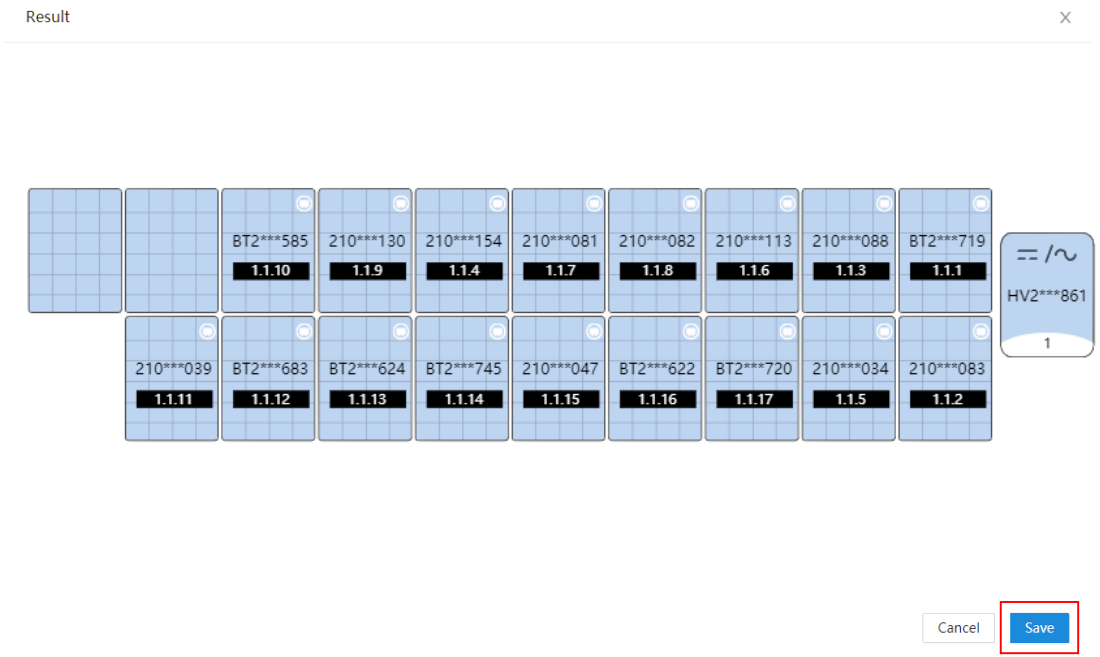
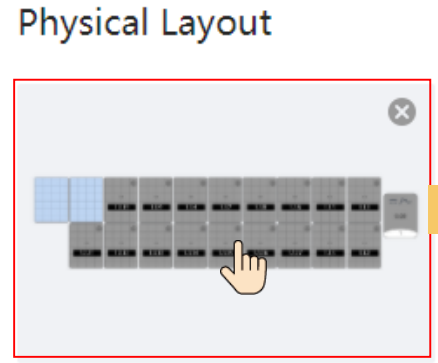
4. Click **Generate Layout** to generate a physical layout diagram.



5. Click **Save** to save the generated physical layout diagram.

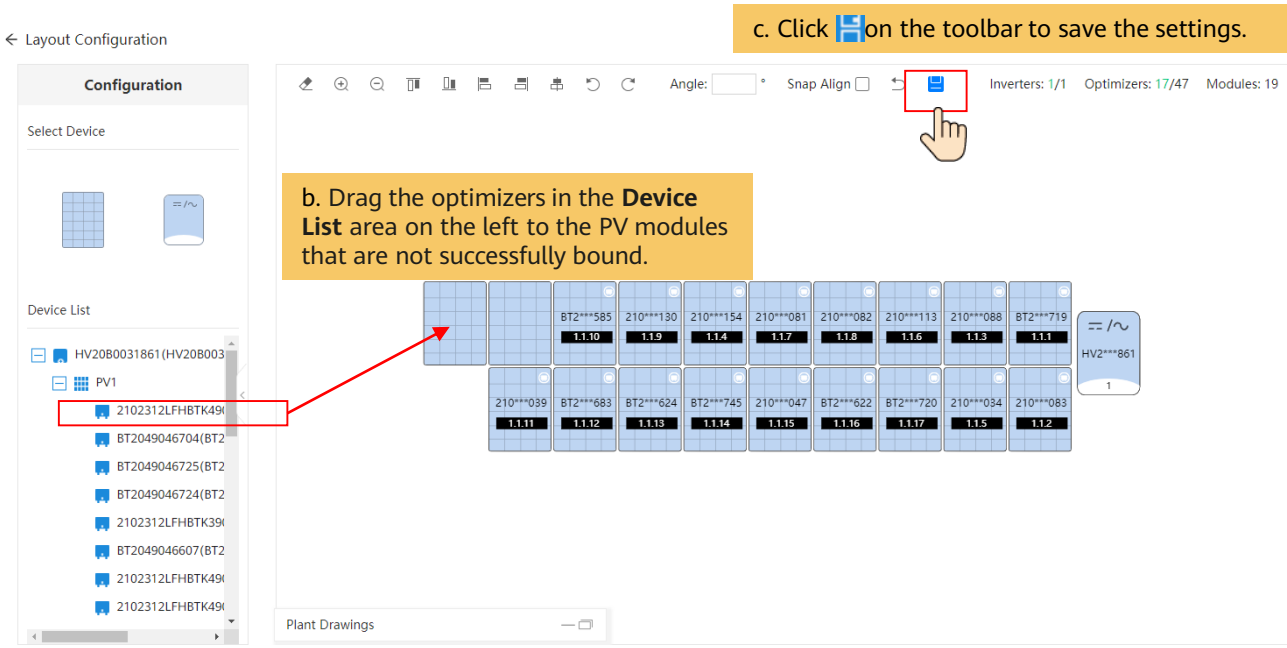


6. If some QR codes are not recognized, manually bind the optimizers.



a. Click the saved layout diagram.

c. Click on the toolbar to save the settings.



b. Drag the optimizers in the **Device List** area on the left to the PV modules that are not successfully bound.

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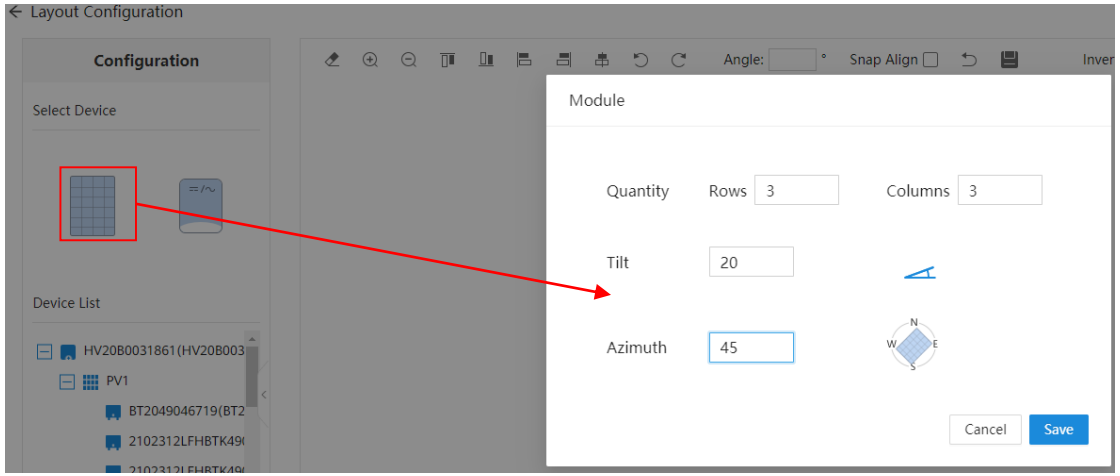
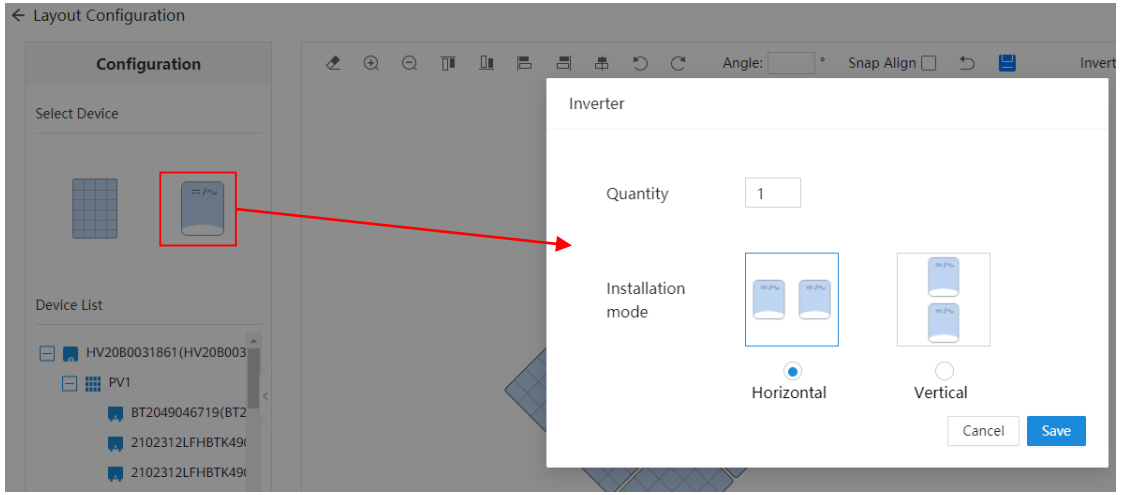
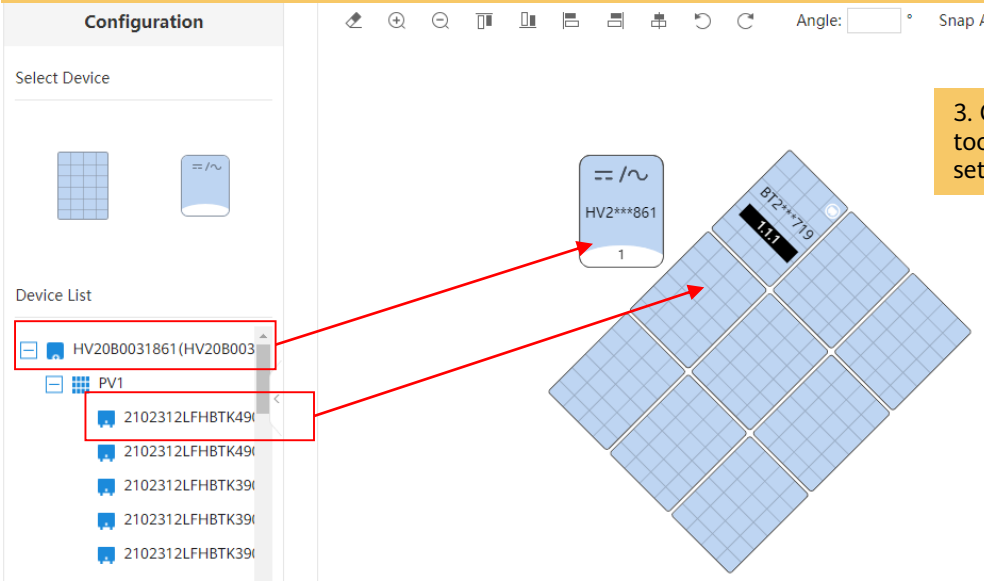
(Optional) Manual configuration of physical layout diagram.

1. Drag the PV module to the physical layout area, increase the number of widgets, and adjust the angle based on the site requirements.

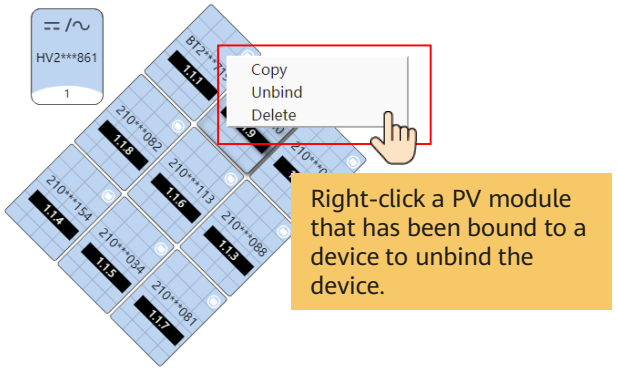




2. Select a device in the device list, and drag it to the corresponding icon position to bind the device to the icon.



3. Click on the toolbar to save the settings.



Right-click a PV module that has been bound to a device to unbind the device.

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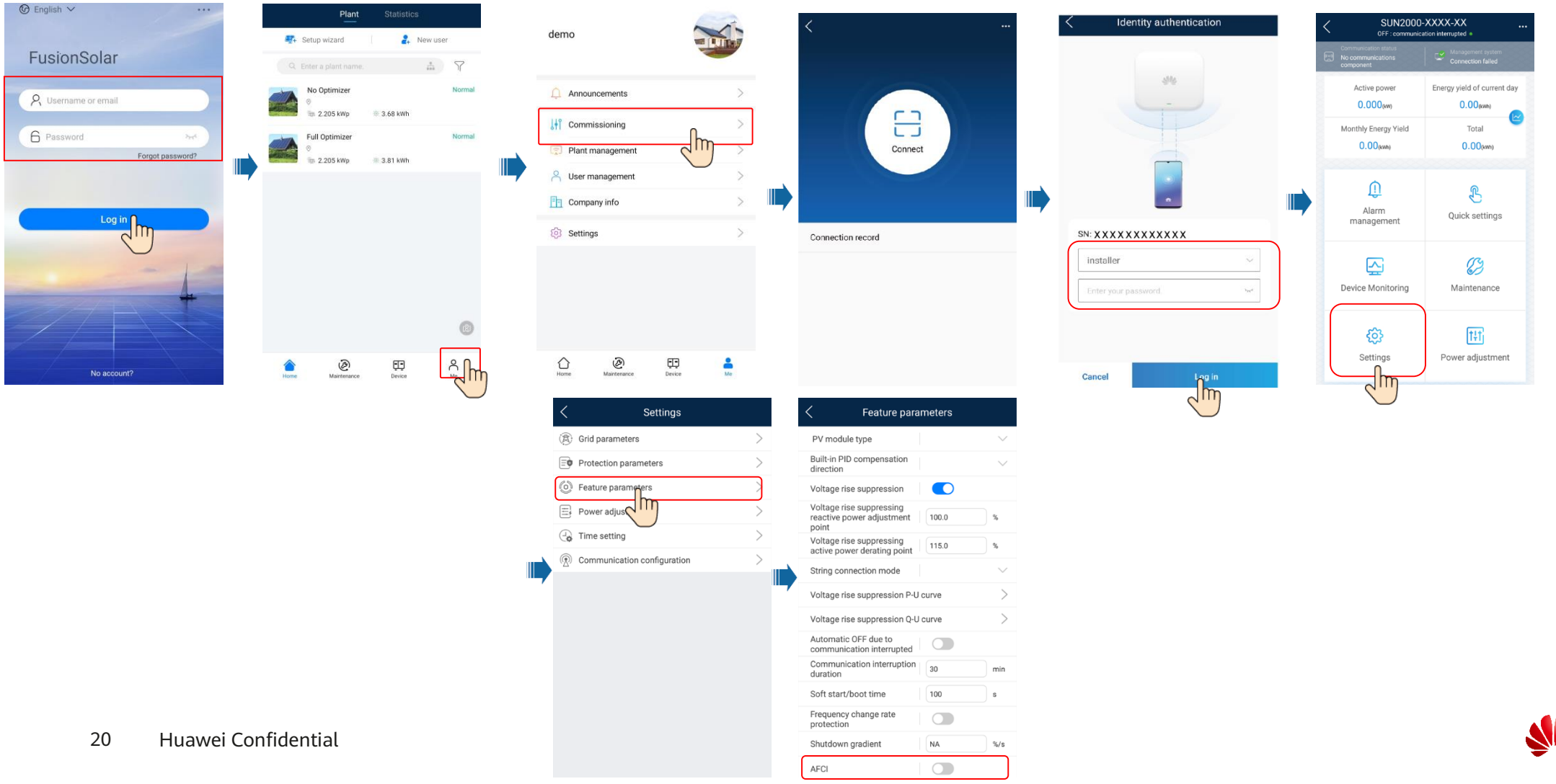
3.6 AFCI Setting

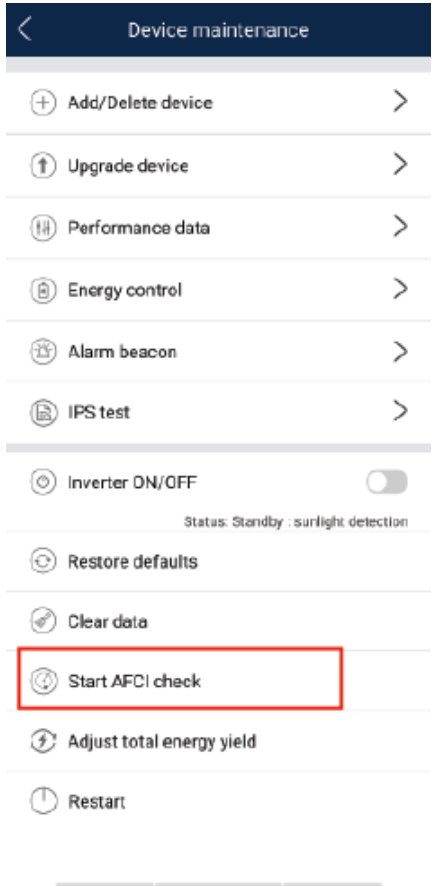
Function description: If PV modules or cables are incorrectly connected or damaged, electric arcs may be generated, which may cause fire. Huawei inverters provide arc detection to ensure the safety of users' lives and property.

This function is enabled by default. To disable this function, go to the **Device commissioning** screen from the FusionSolar app, log in as **installer** or **Advanced User**, and choose **Settings** > **Feature parameters**, and disable **AFCI**.



Starting the AFCI Self-Check

Log in to the FusionSolar app as **installer** or **Advanced User**. On the **Device commissioning** screen, choose **Maintenance**, and tap **Start AFCI check**. In the displayed dialog box, tap **Confirm**.

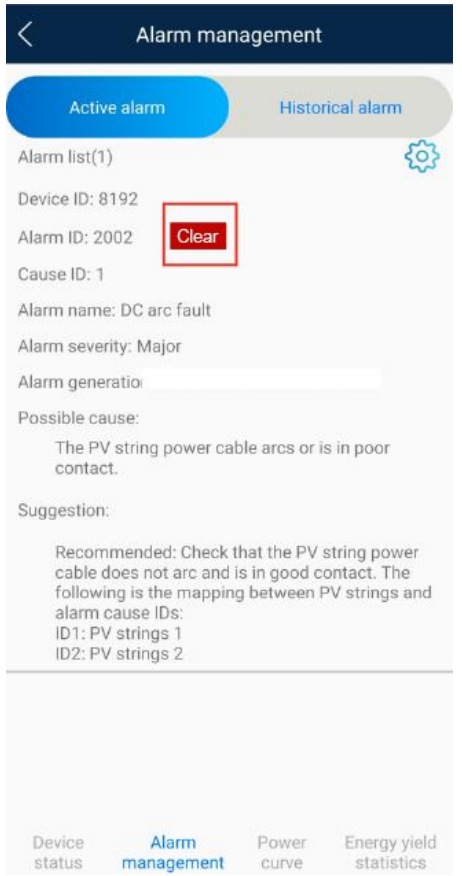


Clearing Alarms

The AFCI function may cause **DC arc fault**, which can be cleared in the following way:

- FusionSolar app local commissioning tool

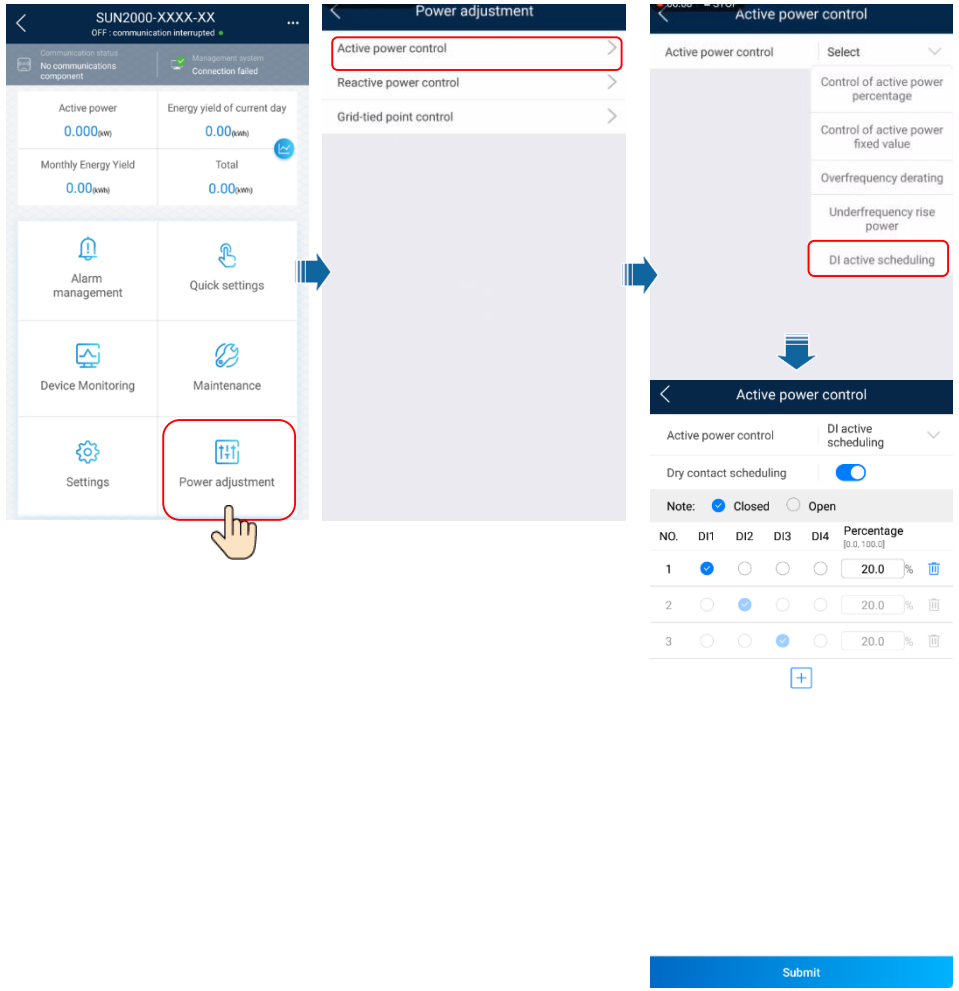
  On the **Device commissioning** screen, choose **Alarm management**, and tap **Delete** for the alarm.



3.7 Dry Contact Scheduling Parameter Setting

Scenario 1: Smart Dongle Networking

FusionSolar app local commissioning tool



Scenario 2: SmartLogger Networking

SmartLogger WebUI

Before setting this function, ensure that the DI port is not occupied. Otherwise, the setting fails. Before setting this function, ensure that the SmartLogger is correctly connected to a ripple control receiver.

Parameter	Description
Active power control mode	Set this parameter to **DI active scheduling**.
DI **NOTE** DI parameters include **DI1**, **DI2**, **DI3**, **DI4**, and **Percentage (%)** .	• Sixteen levels are supported for the active power derating percentage. • "√" indicates a low level. When the four DI ports of the SmartLogger are connected, the ports are low-level ports. When not connected, the ports are high-level ports. • The percentage levels of DI1–DI4 should differ from each other. Otherwise, an abnormal command will be generated. • If the actual input DI signal is inconsistent with that configured on the WebUI, the SmartLogger controls the inverter to work at full load and the Abnormal Active Schedule alarm is raised.

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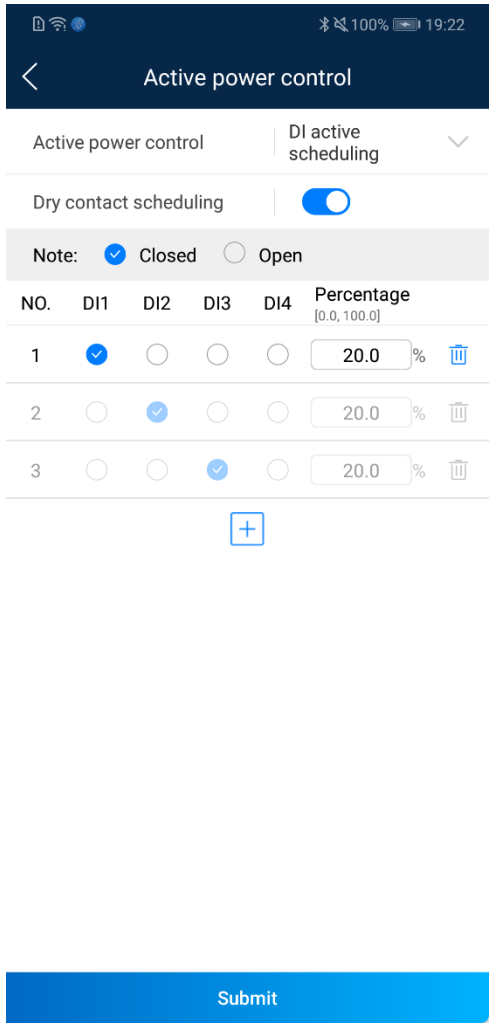
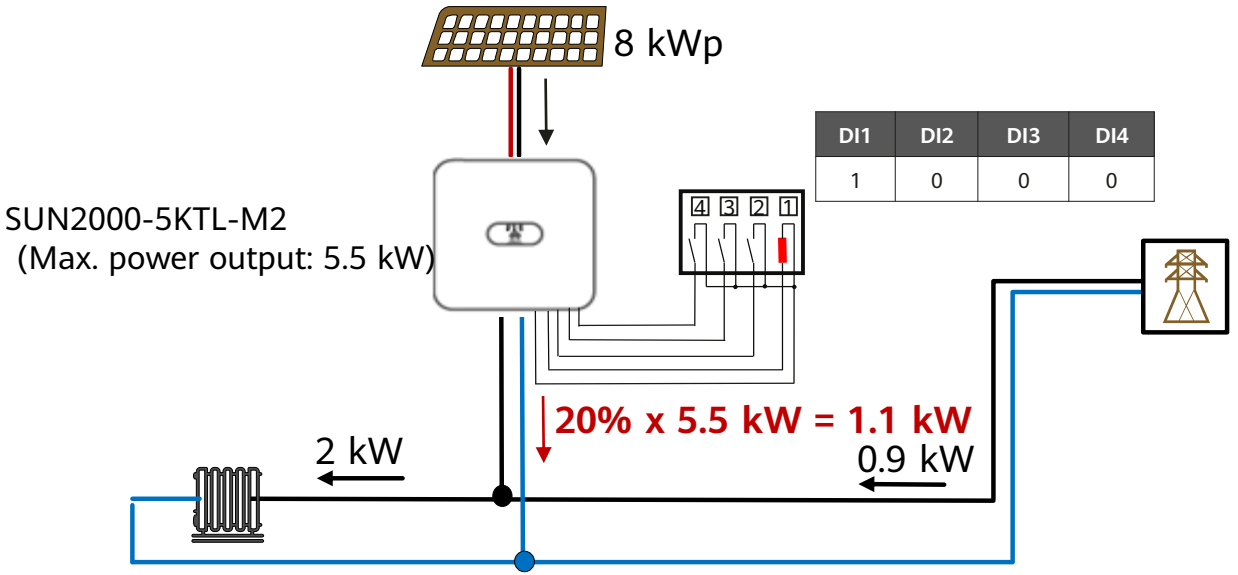
Ripple Power Control Setting Example in FusionSolar App



The inverter can be preconfigured to the following RRCR power levels. When the state is set to 0 for all four DIs, the active power output is 100%.

DI1	DI2	DI3	DI4	Active Power	Power Factor
1	0	0	0	20%	1
0	1	0	0	30%	1
0	0	1	0	50%	1
0	0	0	0	100%	1



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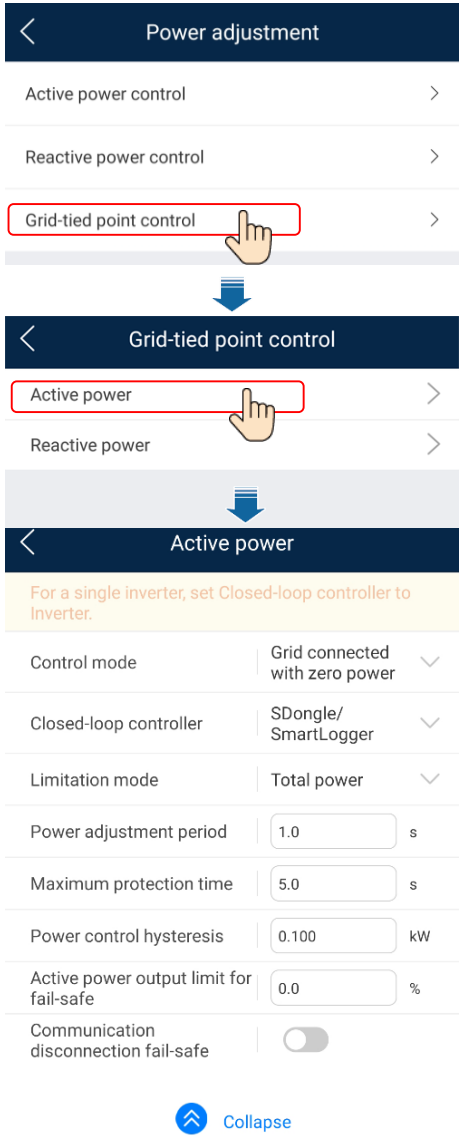
3.8 Export Limitation Setting

Smart Dongle Networking

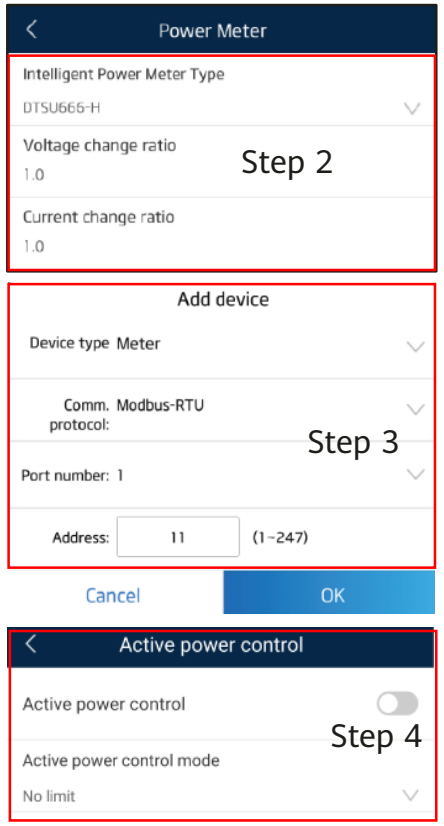
1. Search for **FusionSolar** in Google Play (Android) to download and install the app. Then, log in to the app.
2. Log in to **Device Commissioning**, tap **Quick Settings**, and go to the **Device detection** screen. Tap **Power meter** to check whether **Meter type** is **HUAWEI-DTSU666-H(Three-phase)**, whether **Comm. address** is **11**, and whether the DTSU666-H is correctly connected in the wiring diagram.
3. Return to the home screen, and choose **Power adjustment** > **Grid-tied Point Control** > **Active power** to set export limitation parameters.
   - For a single inverter, set **Closed-loop controller** to **Inverter**. The duration of export limitation is less than 2s.
   - For multiple inverters, **Closed-loop controller** can only be set to **SDongle/SmartLogger**. The duration of export limitation is less than 5s.



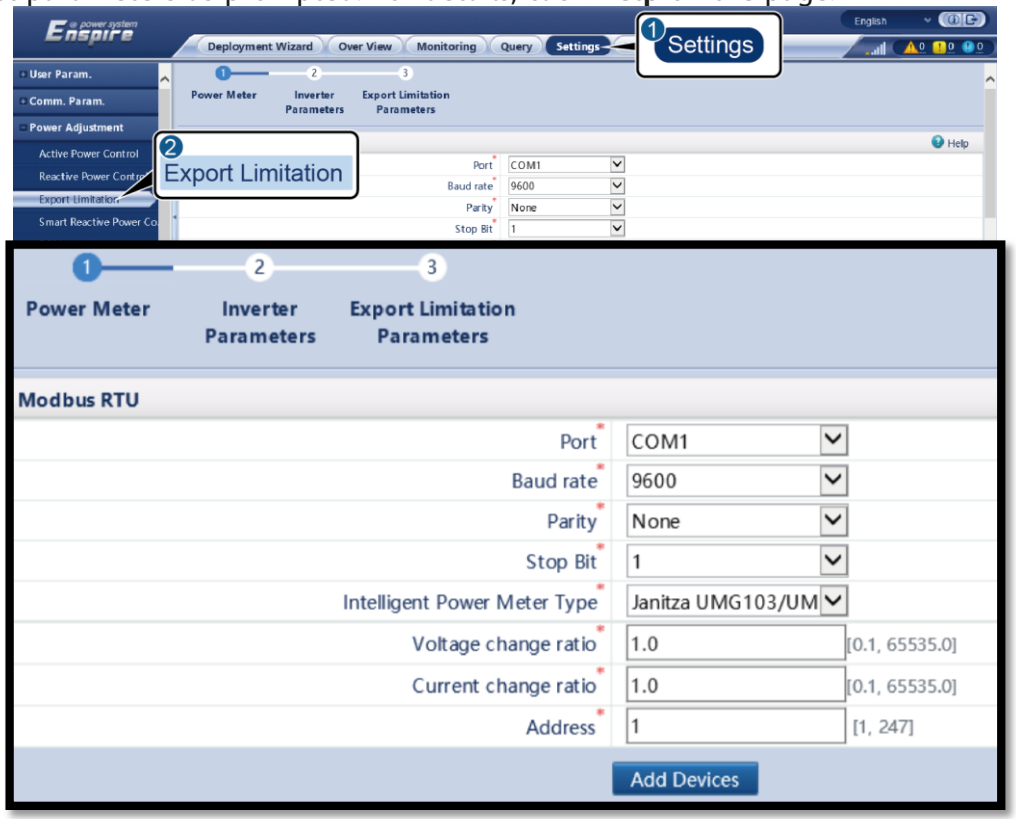
SmartLogger Networking

When the DTSU666-H 250 A/50 mA meter is connected to the SmartLogger, the RS485 cable of the power meter needs to be connected to the COM port of the SmartLogger. In the SmartLogger networking scenario, the duration of export limitation is less than 2s. You can commission in either of the following ways:

- **FusionSolar app**
  1. Search for **FusionSolar** in Google Play (Android) to download and install the app.
  2. Log in to the SmartLogger, choose **More** > **Settings** > **Comm. Param.** > **Power Meter**, set **Intelligent Power Meter Type** to **DTSU666-H**, and set **Voltage change ratio** and **Current change ratio** to **1.0**.
  3. Return to the home screen, choose **More** > **Device Mgmt.**, tap the drop-down list in the upper-right corner of the **Device Mgmt.** screen. Tap **Add device**, set **Device type** to **Meter**, **Comm. protocol** to **Modbus-RTU**, **Port number** to the ID of the SmartLogger COM port connected to the smart power sensor, and **Address** to **11**.
  4. Return to the home screen, choose **More** > **Settings** > **Active Power Control**, enable **Active power control**, and set export limitation parameters.



- **SmartLogger WebUI**
  1. Enter **https://*XX.XX.XX.XX*** in the address box of a browser, and log in to the WebUI.
     XX.XX.XX.XX represents the SmartLogger IP address, which is 192.168.0.10 (WAN) or 192.168.8.10 (LAN) by default.
  2. Set parameters as prompted. For details, click **Help** on the page.



3.9 Setting Voltage Rise Suppression Curve

1.Log in to the FusionSolar app as **installer** or **Special User**.
2.Choose **Settings** > **Feature parameters** to set voltage rise suppression curves.