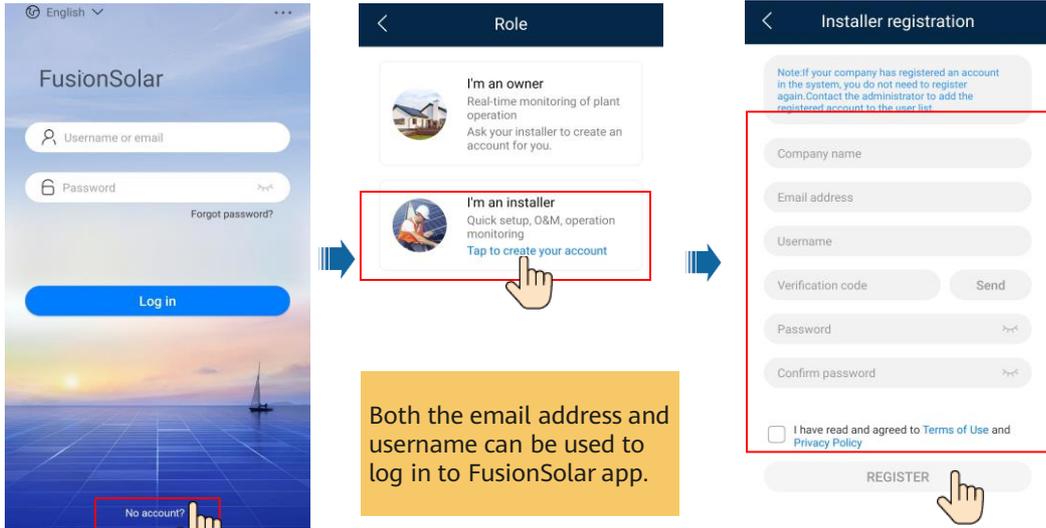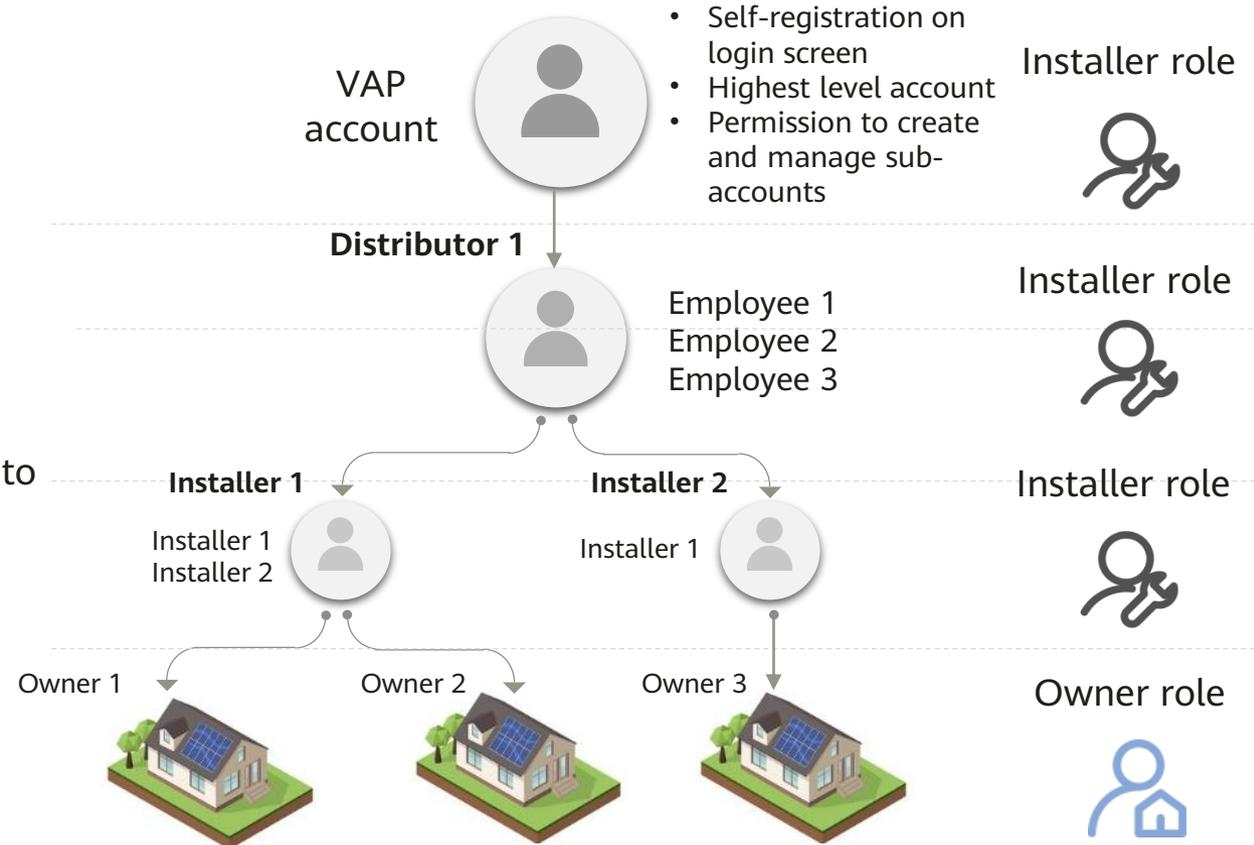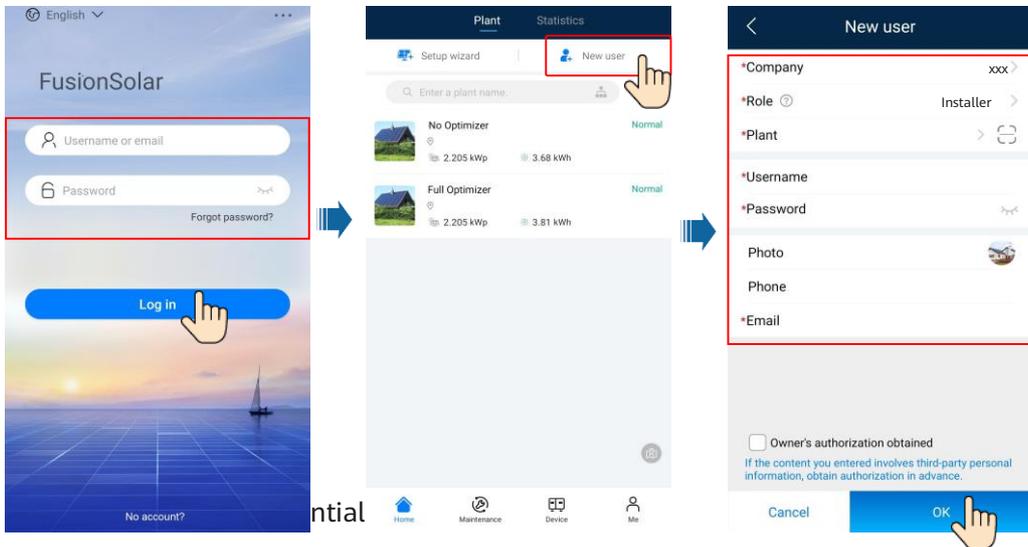# 3.2 Installer Account Registering
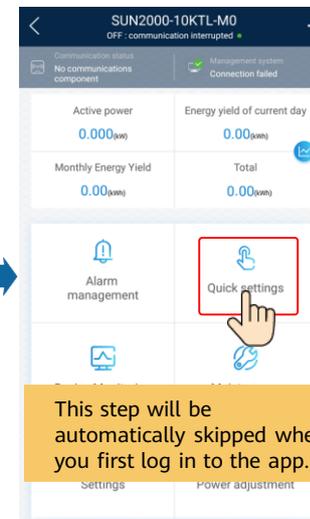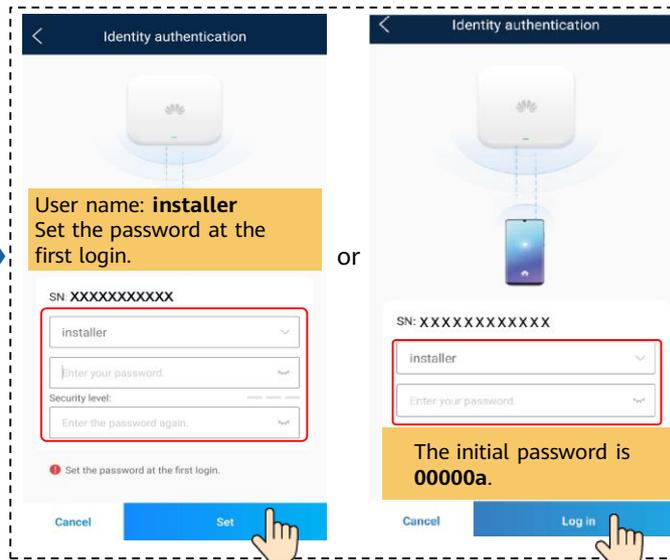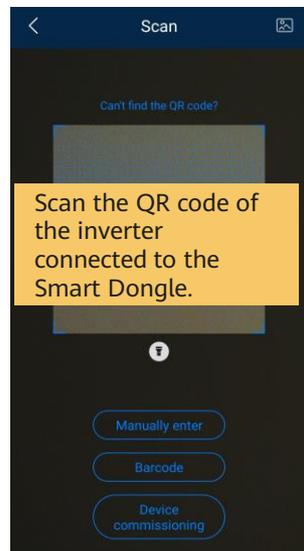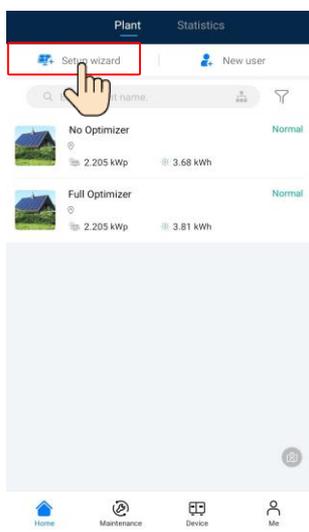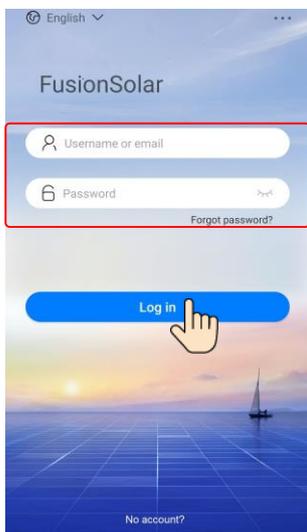
- Create the first installer account. This will also generate a domain that is named after the company name.

Role

I'm an owner
Real-time monitoring of plant operation
Ask your installer to create an account for you.

I'm an installer
Quick setup, O&M, operation monitoring
Tap to create your account

Installer registration

Note:If your company has registered an account in the system, you do not need to register again.Contact the administrator to add the registered account to the user list.

Company name

Email address

Username

Verification code   Send

Password

Confirm password

☐ I have read and agreed to Terms of Use and Privacy Policy

REGISTER

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**.

New user

*Company   xxx
*Role ⑦   Installer
*Plant
*Username
*Password
Photo
Phone
*Email

☐ Owner's authorization obtained
If the content you entered involves third-party personal information, obtain authorization in advance.

Cancel   OK

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

VAP account

- Self-registration on login screen
- Highest level account
- Permission to create and manage sub-accounts

Installer role

Distributor 1

Employee 1
Employee 2
Employee 3

Installer role

Installer 1   **Installer 2**

Installer 1
Installer 2

Installer 1

Installer role

Owner 1   Owner 2   Owner 3

Owner role

3.2 Setup Wizard

Login screen (FusionSolar): Username or email / Password / Log in / Forgot password? / No account?

Plant / Statistics screen: Setup wizard / New user / No Optimizer — Normal — 2.205 kWp — 3.68 kWh / Full Optimizer — Normal — 2.205 kWp — 3.81 kWh

Scan screen: Scan / Can't find the QR code? / Manually enter / Barcode / Device commissioning

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

Identity authentication screen: SN: XXXXXXXXXXX / installer / Enter your password. / Security level: / Enter the password again. / Set the password at the first login. / Cancel / Set

User name: **installer**
Set the password at the first login.

or

Identity authentication screen 2: SN: XXXXXXXXXXX / installer / Enter your password. / Cancel / Log in

The initial password is **00000a**.

SUN2000-10KTL-M0 screen: OFF : communication interrupted / Active power 0.000(kw) / Energy yield of current day 0.00(kwh) / Monthly Energy Yield 0.00(kwh) / Total 0.00(kwh) / Alarm management / Quick settings / Settings / Power adjustment

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

Quick settings screen: Device detection — Completed / Setting basic parameters — Connect to mgmt sys / Grid code / Voltage level / Grid frequency / Phone time / Phone time zone — UTC+08:00 / Sync phone time / Next

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.

Tips screen: SUN2000P-375W / SUN2000-450W-P

Device mapping table

Optimizer model	Smart PV safety box model	Inverter model
SUN2000P-375W	SmartPSB2000	SUN2000X-2/3/3.68/4/4.6/5KTL
SUN2000-450W-P	NA	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1
SUN2000-450W-P	NA	SUN2000-3/4/4.5/6/8/10KTL-M1
SUN2000-450W-P	NA	SUN2000-8/10/12/15/17/20KTL-M2

Note: Use devices strictly according to the preceding table. Do not mix up the devices.

Causes of missing optimizers

1. The DC switch is OFF.
2. Some PV strings are not connected to the inverter.
3. The inputs of some optimizers are not connected to PV modules.
4. The outputs of some optimizers are not connected to PV strings.
5. The input and output of some optimizers are reversely connected.

Warning

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 entire system, 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.

Previous / Next / Confirm

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

Quick settings screen: Device detection — Completed / Setting basic parameters — Connect to mgmt sys / XXX / Check whether the detected devices are consistent with the actual connected devices. / Online / Offline / Manual config / Cascaded inverters 0pcs / Power meter / Battery / SDongleA / Optimizer SUN2000P (4pcs) / Previous / Next

Cascaded inverters screen: Networking mode / RS485 / 0 Inverter / Searching for cascaded inverters / Device magt

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

Cascaded inverters screen 2: Networking mode / RS485 / 1 Inverter / Stop searching / Configuring... 92% / Device magt / SN:xxxxxxxxxxxxxxxxxxxxx address:3

Cascaded inverters screen 3: Networking mode / RS485 / 2 Inverter / Searching for cascaded inverters / Device magt / SN:XXXXXXXXXXXXXXXX Success address: / SN:XXXXXXXXXXXXXXXX Success address: / FINISH

Quick settings screen 2: Device detection — Completed / Setting basic parameters — Connect to mgmt sys / XXX / Check whether the detected devices are consistent with the actual connected devices. / Online / Offline / Manual config / Cascaded inverters 2pcs / Power meter HUAWEI-DDSU666-H(Single-phase) / Battery LG-RESU / Smart PV safety box SmartPSB2000L / Optimizer SUN2000P (4pcs) / SDongleA / Previous / Next

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

HUAWEI

Select the corresponding communication settings based on the Smart Dongle.

WLAN communication

Quick settings

The access to the management system must be authorized by the customer. For details, see the privacy policy.

Monitor the PV plant through the management system.

Ethernet

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

WLAN list
Password   Router WLAN password

Previous   Next

Quick settings

The access to the management system must be authorized by the customer. For details, see the privacy policy.

Monitor the PV plant through the management system.

Signal strength   Strong(-21dBm)
IP address   XXX.XXX.XXX.XXX
Subnet mask   XXX.XXX.XXX.XXX
Gateway   XXX.XXX.XXX.XXX
MAC address   XX:XX:XX:XX:XX:XX

Previous   Next

or

FE communication

Quick settings

The access to the management system must be authorized by the customer. For details, see the privacy policy.

Monitor the PV plant through the management system.

Setting parameters for the inverter to connect to the router

DHCP

Previous   Next

Ethernet

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

or

4G communication

Quick settings

The access to the management system must be authorized by the customer. For details, see the privacy policy.

Monitor the PV plant through the management system.

Dongle parameter settings

APN mode   Automatic
Network mode   4G/3G/2G automatic selection
PIN

Previous   Next

Parameter	Description
APN mode	• Set SIM card parameters. Obtain the parameters from the SIM card carrier.
APN	
APN dialup number	• 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 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.

PIN
XXXX

Quick settings

PV1: 800.0V/5.00A   AB: 480.0V/A:50.00A
PV2: 800.0V/5.00A   BC: 480.0V/B:50.00A
PV3: 800.0V/5.00A   CA: 480.0V/C:50.00A
PV4: 800.0V/5.00A   50.00A
See more>

Quick settings are completed. Check the following

Connect to mgmt sys   Success
Sync param   Success
SN:XXXXXXXXXXXX   Success
SN:XXXXXXXXXXXX   Success
Inverter SUN2000-XXX   1pcs   Grid connected

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

Previous   Next

Tips

Connect your phone to the Internet:
Turn off WLAN and enable cellular mobile network.

Confirm

Smart PV safety box SmartPSB2000L   1pcs   Normal
Optimizer SUN2000P   4pcs   Searching completed

Previous   Next

Add a plant.

Create Site

Add plant

Connect to existing plant

Later

Add plant

① Set basic info   ② Connect device

*Country/Region   Country/Region
*Company
*Plant name
*Total string capacity(kWp)
*Grid-connected   09/29/2020
*Plant address   Enter or locate
Plant time zone
Owner   Owner name
Contact method   Phone/Email

Owner's authorization obtained

If the content you entered involves third-party personal information, obtain authorization in advance.

Next

Add plant

① Set basic info   ② Connect device

Device SN   Device

Added devices

Device SN   4figosc1234567890
Device type   SmartLogger
Device model   V100R002C00B030
Connected devices

Previous   Submit

Create an owner account.

Plant   Statistics

Setup wizard   New user

Enter a plant name.

No Optimizer   Normal
2.205 kWp   3.68 kWh

Full Optimizer   Normal
2.205 kWp   3.81 kWh

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

Home   Maintenance   Device   Me

New user

*Company   xxx
*Role   Owner
*Plant
*Username
*Password
Photo
Phone
*Email

If the content you entered involves third-party personal information, obtain authorization in advance.

Cancel   OK

3.3 Checking the Device Status

- **Checking the Device Status Using Device Commissioning**

Mobile phone connected to the Internet

Mobile phone not connected to the Internet

Note: If the mobile phone connected to the Internet, tap the screen does not display **Device commissioning**.

Check the device status using device commissioning.

Connect to the inverter WLAN.

Log in as **Advanced User**.

- **Checking the Device Status Remotely.**

HUAWEI

3.4 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
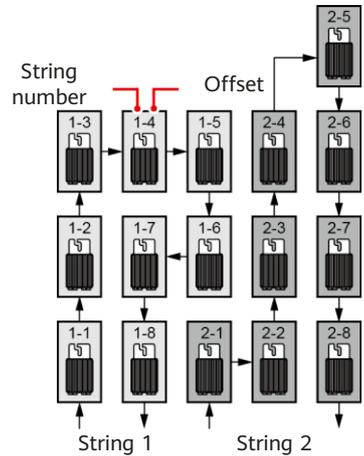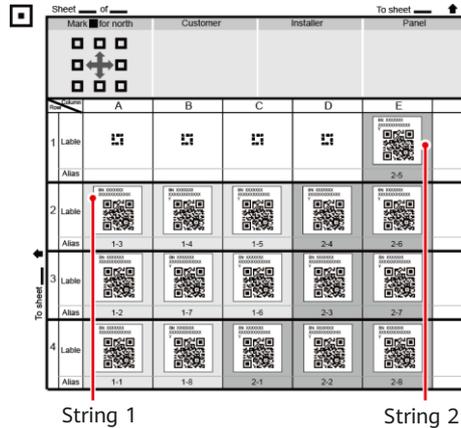
Template Photographing Requirements

- 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.
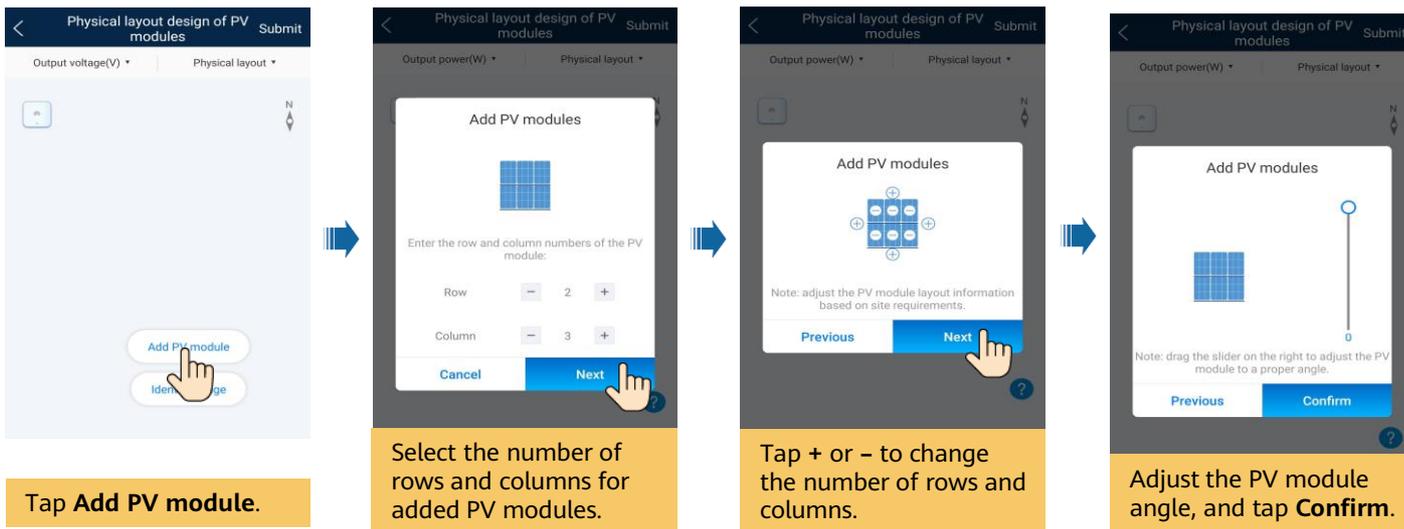- If the QR code cannot be identified, you can manually bind the SN.

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.
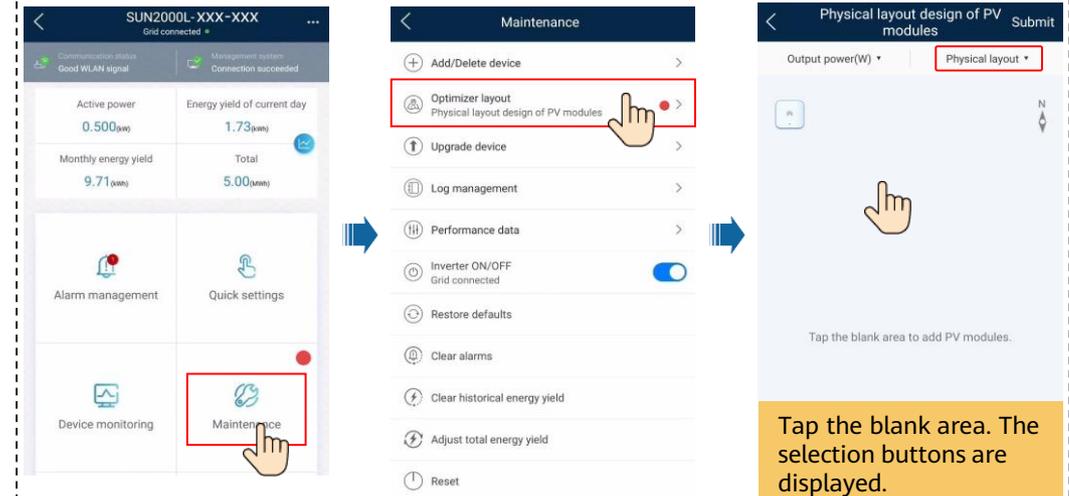
method 1: Tap Identify image for automatic layout.

Tap **Identify image**.

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

Upload template for identification.

Recognition result

Optimizer	16pcs	
PV module without optimizer	0 pcs	
Abnormal optimizer	0 pcs	

Abnormal optimizer cause:
1. Duplicated SN
2. Pairing failure

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**.

Add PV modules

Enter the row and column numbers of the PV module:

| Row | — | 2 | + |
| Column | — | 3 | + |

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

Add PV modules

Note: adjust the PV module layout information based on site requirements.

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

Add PV modules

Note: drag the slider on the right to adjust the PV module to a proper angle.

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

| Step 4. Bind Smart PV Optimizers | | | Step 5. Check the Smart PV Optimizer status. | | | |

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.
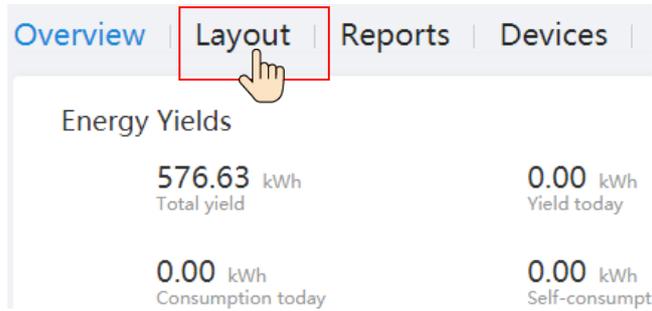
HUAWEI

3.5 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.
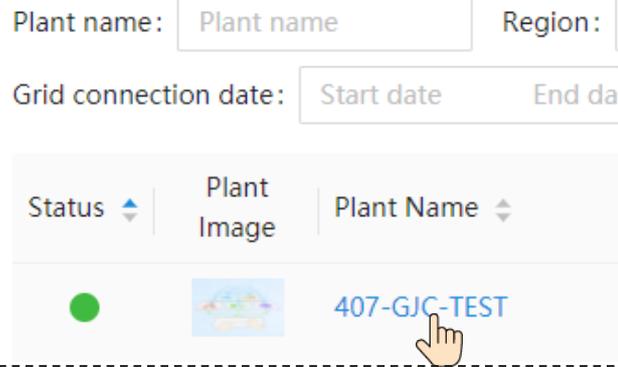
2. Click **Layout**.

3. Upload the physical layout.
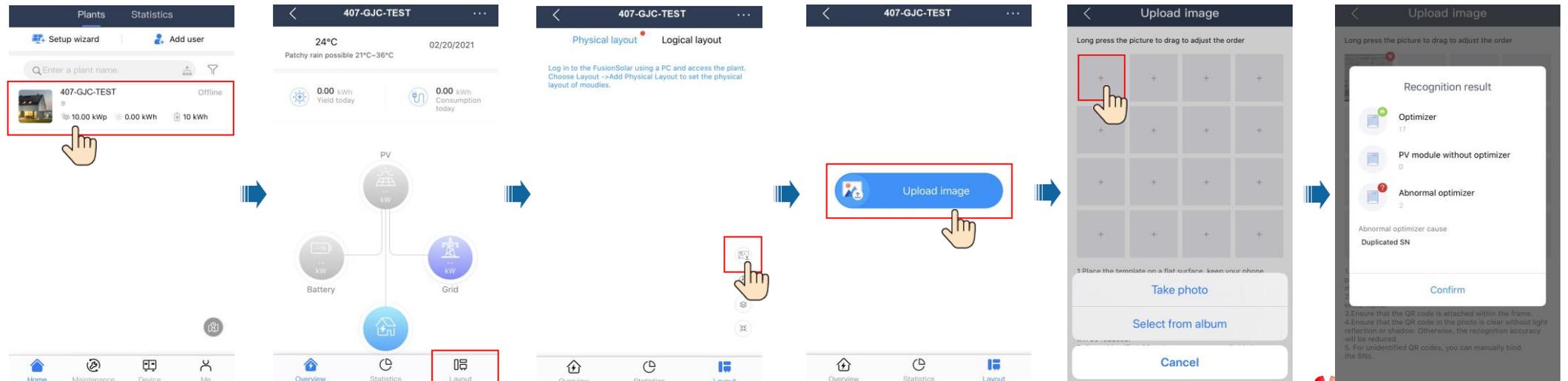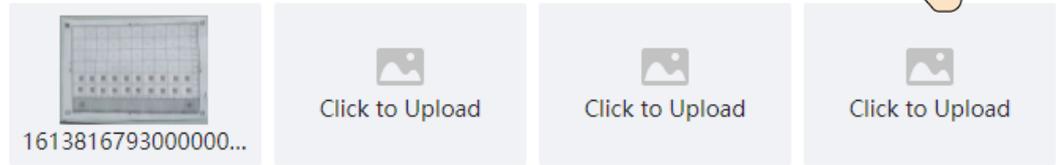
Method1: through the WebUI.

Upload the Huawei physical layout template for reference.
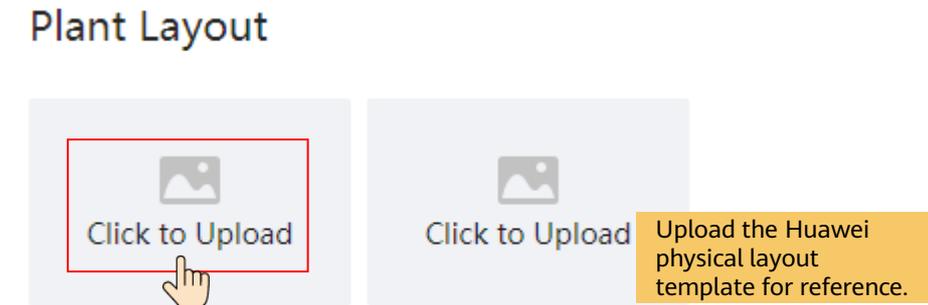
Method2: through the app.

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

← Back

Plant Layout

Move Drawing | Generate Layout

1613816793000000...

Click to Upload | Click to Upload | Click to Upload

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

Result ✕

| | BT2***585 | 210***130 | 210***154 | 210***081 | 210***082 | 210***113 | 210***088 | BT2***719 |
| | 1.1.10 | 1.1.9 | 1.1.4 | 1.1.7 | 1.1.8 | 1.1.6 | 1.1.3 | 1.1.1 |

== /∿
HV2***861
1

| 210***039 | BT2***683 | BT2***624 | BT2***745 | 210***047 | BT2***622 | BT2***720 | 210***034 | 210***083 |
| 1.1.11 | 1.1.12 | 1.1.13 | 1.1.14 | 1.1.15 | 1.1.16 | 1.1.17 | 1.1.5 | 1.1.2 |

Cancel | Save

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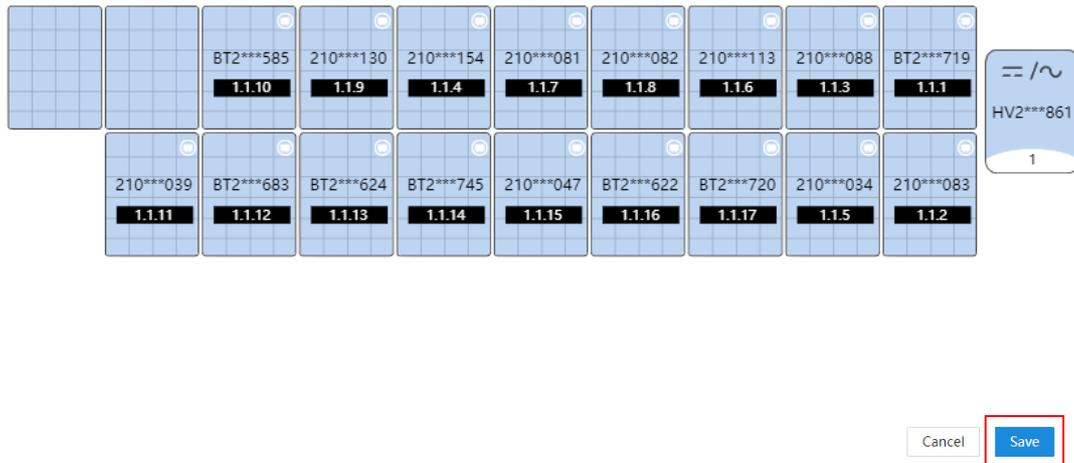
6. If some QR codes are not recognized, manually bind the optimizers.

Physical Layout

⊗

a. Click the saved layout diagram.

c. Click 💾 on the toolbar to save the settings.

← Layout Configuration

Configuration

Select Device

=/∿

Device List

⊟ 🖥 HV20B0031861(HV20B003
  ⊟ ▦ PV1
    🔲 2102312LFHBTK49(
    🔲 BT2049046704(BT2
    🔲 BT2049046725(BT2
    🔲 BT2049046724(BT2
    🔲 2102312LFHBTK39(
    🔲 BT2049046607(BT2
    🔲 2102312LFHBTK49(
    🔲 2102312LFHBTK49(

Plant Drawings

Angle: ° | Snap Align ☐ | 💾 | Inverters: 1/1 | Optimizers: 17/47 | Modules: 19

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

| | BT2***585 | 210***130 | 210***154 | 210***081 | 210***082 | 210***113 | 210***088 | BT2***719 |
| | 1.1.10 | 1.1.9 | 1.1.4 | 1.1.7 | 1.1.8 | 1.1.6 | 1.1.3 | 1.1.1 |

== /∿
HV2***861
1

| 210***039 | BT2***683 | BT2***624 | BT2***745 | 210***047 | BT2***622 | BT2***720 | 210***034 | 210***083 |
| 1.1.11 | 1.1.12 | 1.1.13 | 1.1.14 | 1.1.15 | 1.1.16 | 1.1.17 | 1.1.5 | 1.1.2 |

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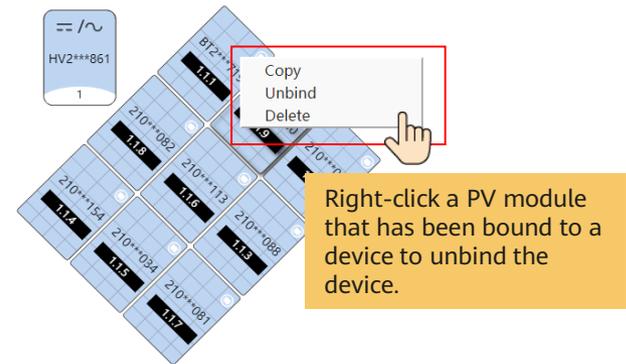**(Optional) Manual configuration of physical layout diagram.**

1. Drag the PV module to the physical layout area, increase the number of widgets, and adjust the angle based on the site requirements.
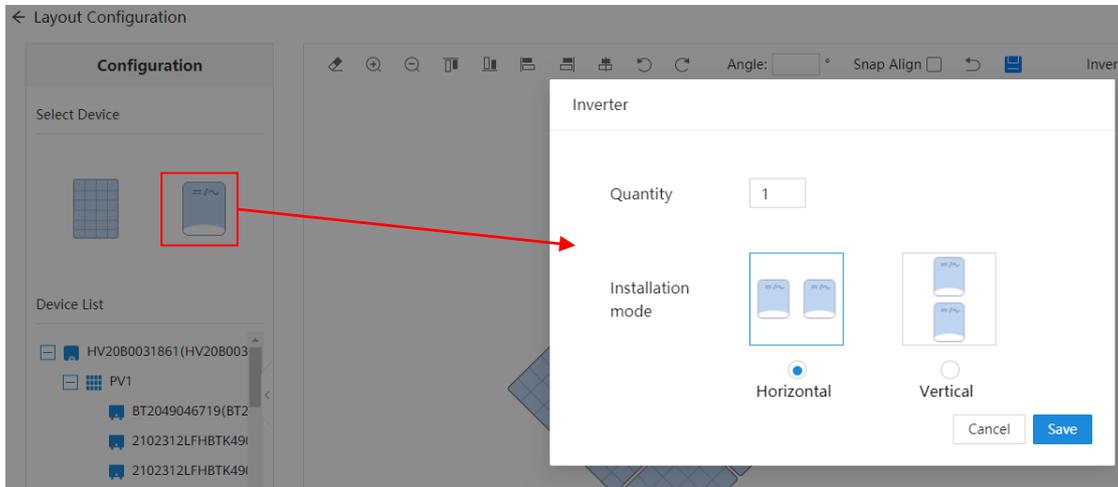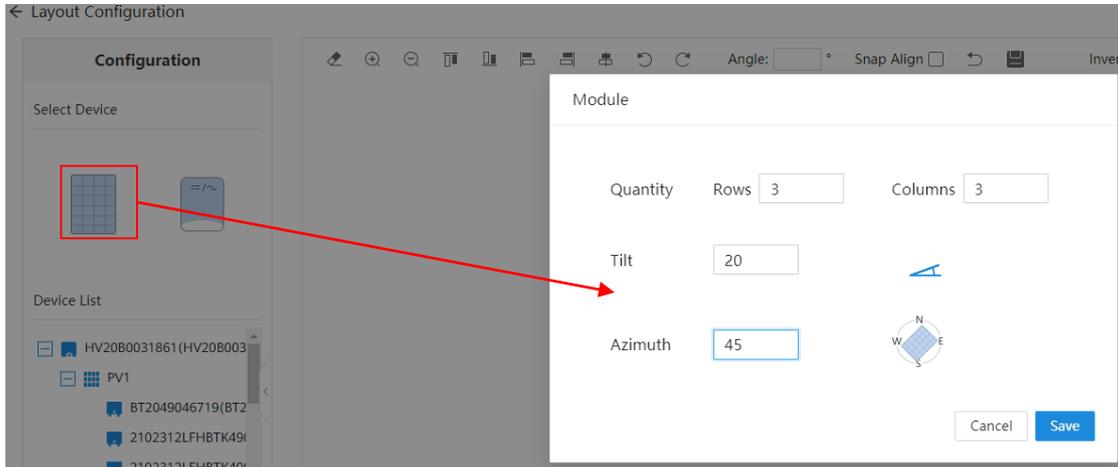
2. Select a device in the device list, and drag it to the corresponding icon position to bind the device to the icon.
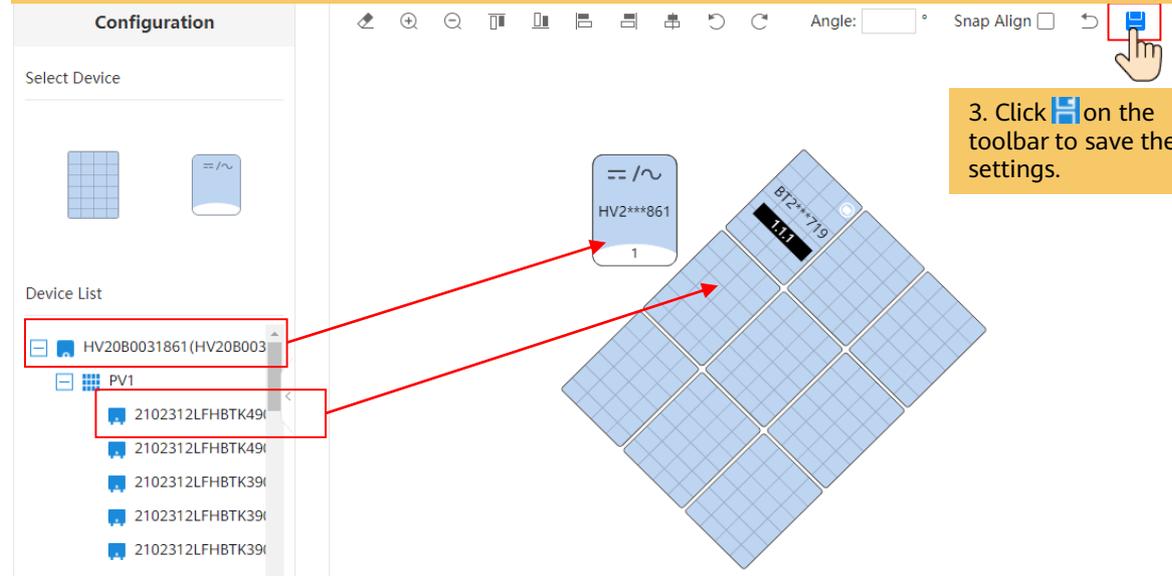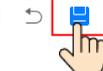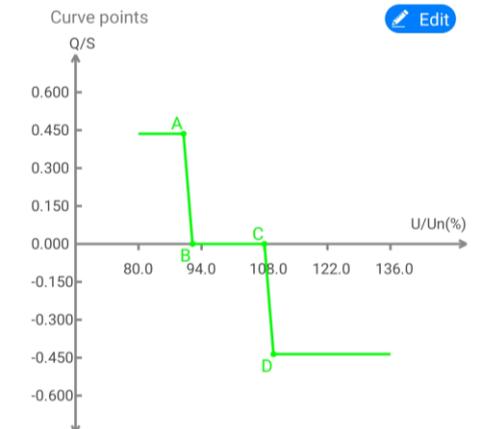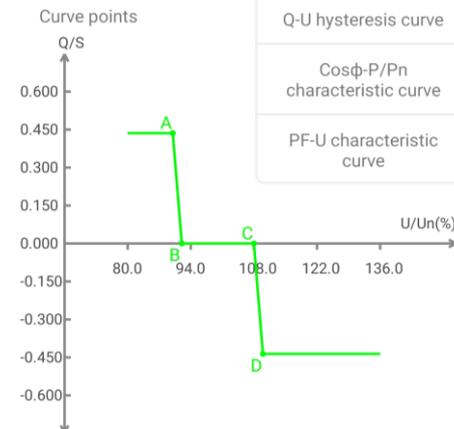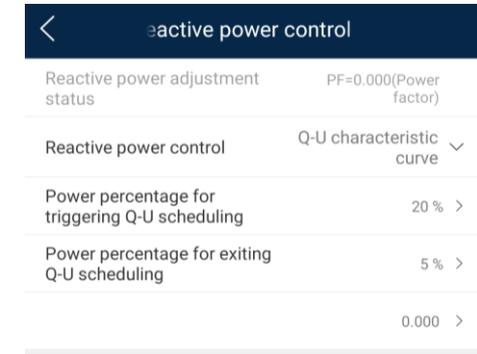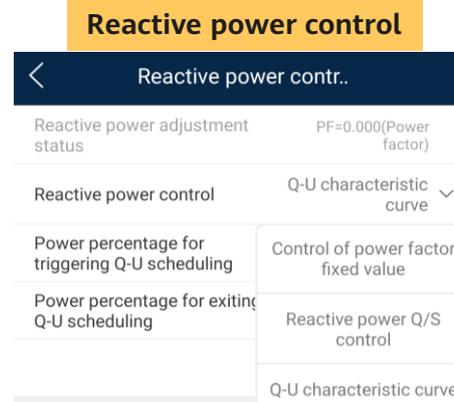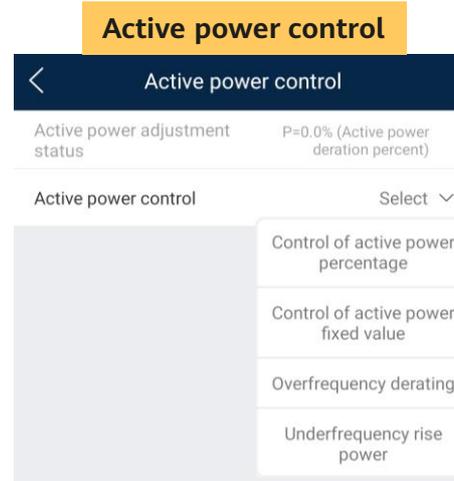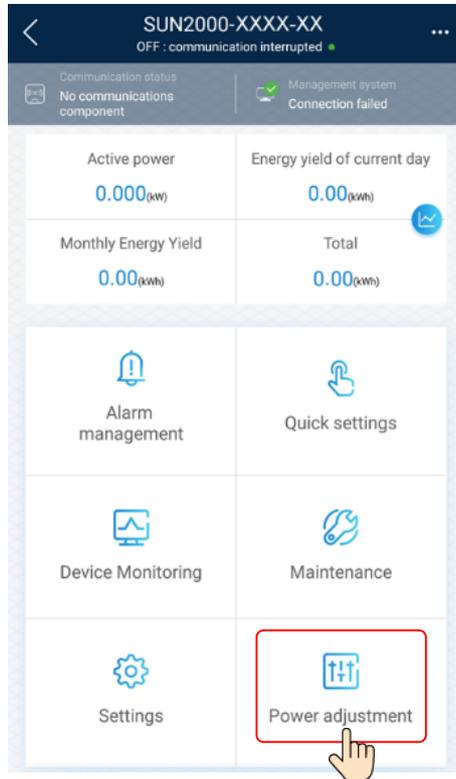

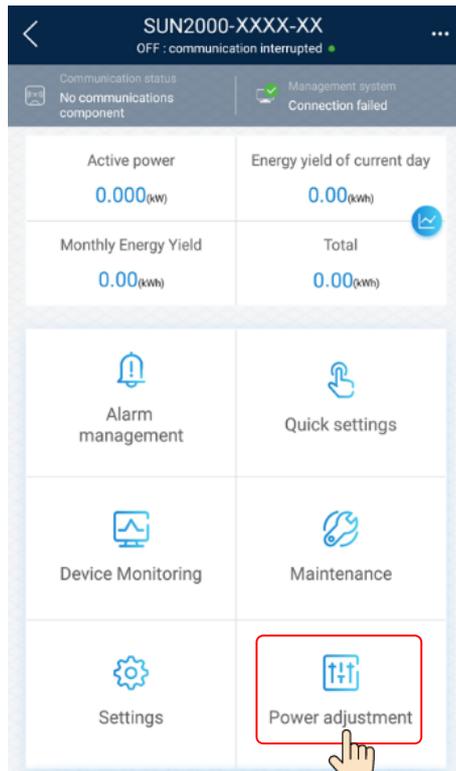**3.** Click 💾 on the toolbar to save the settings.

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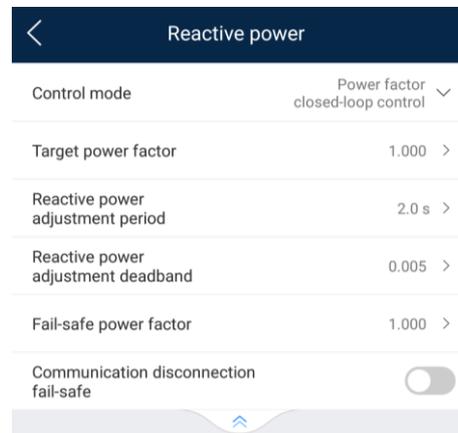
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3.6 Power Adjustment

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3.7 Grid-tied Point Control

SUN2000-XXXX-XX
OFF : communication interrupted

Communication status	Management system
No communications component	Connection failed

Active power	Energy yield of current day
0.000(kW)	0.00(kWh)

Monthly Energy Yield	Total
0.00(kWh)	0.00(kWh)

Alarm management · Quick settings

Device Monitoring · Maintenance

Settings · **Power adjustment**

Power adjustment
- Active power control >
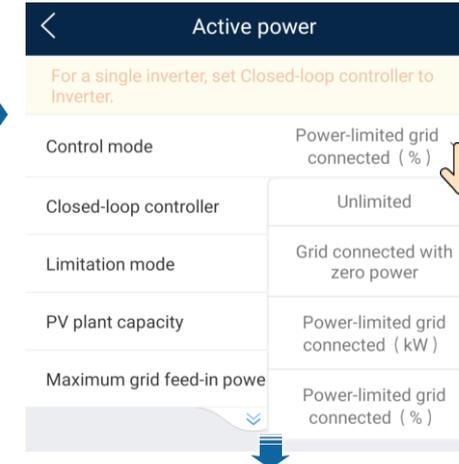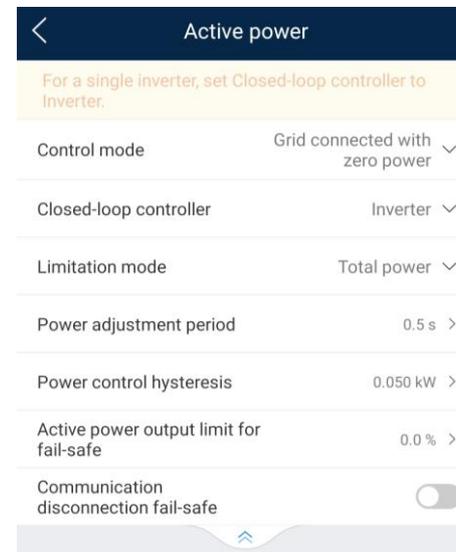- Reactive power control >
- **Grid-tied point control** >
- Energy storage control >

Limit or reduce the output power of the PV power system to ensure that the output power is within the specified range.

Grid-tied point control
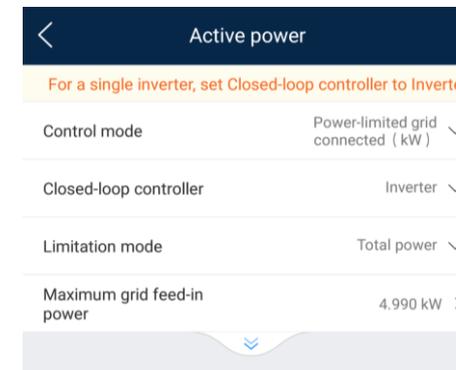- Active power >
- Reactive power >

Active power
For a single inverter, set Closed-loop controller to Inverter.

Control mode	Power-limited grid connected (%)
Closed-loop controller	Unlimited
Limitation mode	Grid connected with zero power
PV plant capacity	Power-limited grid connected (kW)
Maximum grid feed-in power	Power-limited grid connected (%)

Power factor closed-loop control

Reactive power
Control mode	Power factor closed-loop control
Target power factor	1.000 >
Reactive power adjustment period	2.0 s >
Reactive power adjustment deadband	0.005 >
Fail-safe power factor	1.000 >
Communication disconnection fail-safe	(off)

Grid connection with zero power

Active power
For a single inverter, set Closed-loop controller to Inverter.

Control mode	Grid connected with zero power
Closed-loop controller	Inverter
Limitation mode	Total power
Power adjustment period	0.5 s >
Power control hysteresis	0.050 kW >
Active power output limit for fail-safe	0.0 % >
Communication disconnection fail-safe	(off)

Export limitation

Active power
For a single inverter, set Closed-loop controller to Inverter.

Control mode	Power-limited grid connected (kW)
Closed-loop controller	Inverter
Limitation mode	Total power
Maximum grid feed-in power	4.990 kW >

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Grid connection with zero power (single-phase)

Active power

For a single inverter, set Closed-loop controller to Inverter.

| Control mode	Grid connected with zero power
Closed-loop controller	SDongle/ SmartLogger
Limitation mode	Total power
Power adjustment period	1.0 s
Maximum protection time	5.0 s
Power control hysteresis	0.100 kW
Active power output limit for fail-safe	0.0 %
Communication disconnection fail-safe	

Collapse

RS485

3 kW

3 kW ← 0 kW

RS485

5 kW

6 kW ← 1 kW
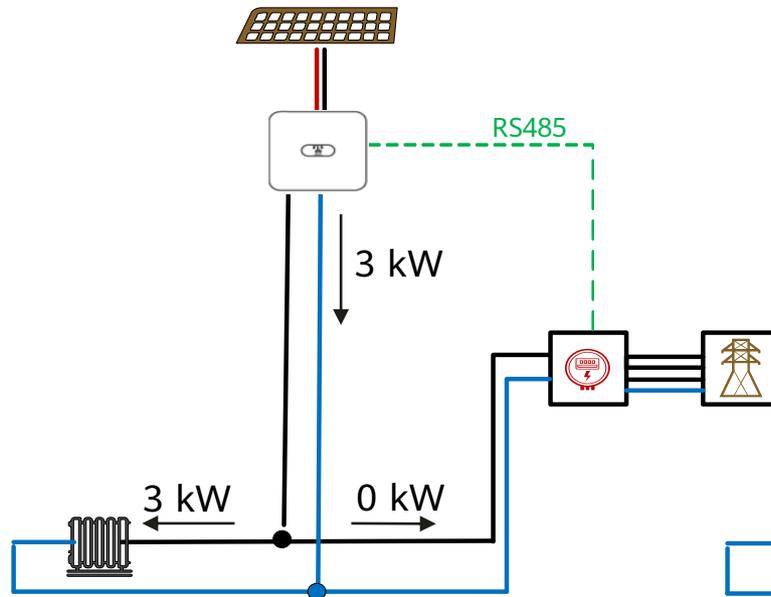
Inverter output	3 kW
Load consumption	3 kW
Output	0
Input	0
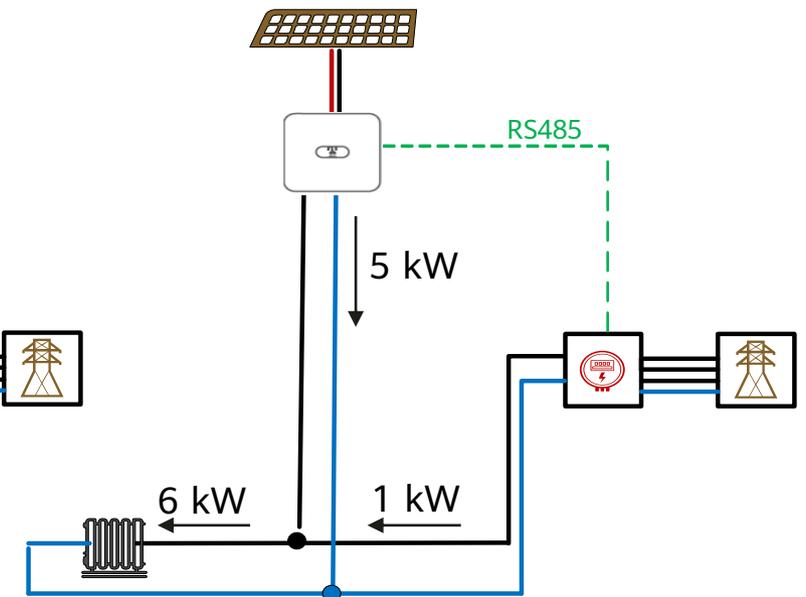
Inverter output	5 kW
Load consumption	6 kW
Output	0
Input	1 kW

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Limitation mode – Total power

Active power

For a single inverter, set Closed-loop controller to Inverter.

Control mode	Grid connected with zero power
Closed-loop controller	SDongle/ SmartLogger
Limitation mode	Total power
Power adjustment period	1.0 s
Maximum protection time	5.0 s
Power control hysteresis	0.100 kW
Active power output limit for fail-safe	0.0 %
Communication disconnection fail-safe	

Collapse

Limitation mode – Single-phase power

RS485

6 kW

1 kW   1 kW

2 kW   0 kW
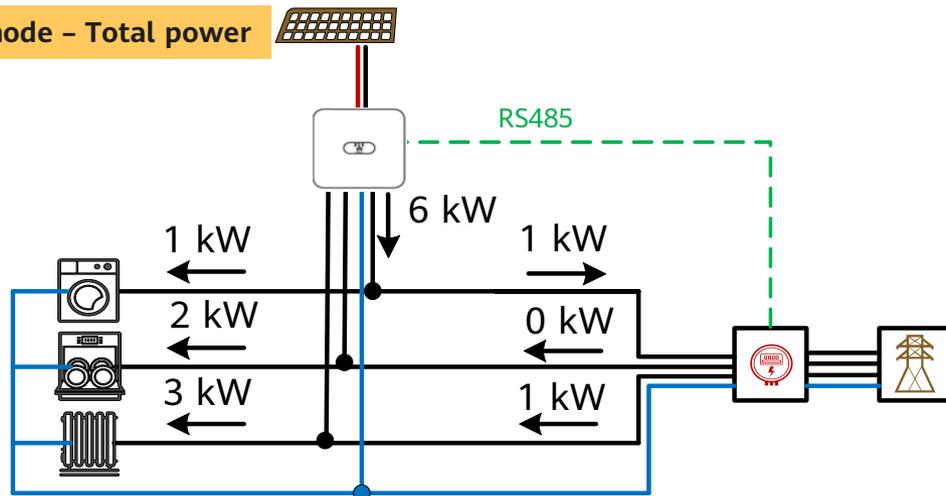
3 kW   1 kW

Example: export limitation power value is 0. Σ P = 0

	Phase 1	Phase 2	Phase 3	Total
Production	2 kW	2 kW	2 kW	6 kW
Consumption	1 kW	2 kW	3 kW	6 kW
Export	1 kW	0	0	1 kW
Import	0	0	1 kW	1 kW
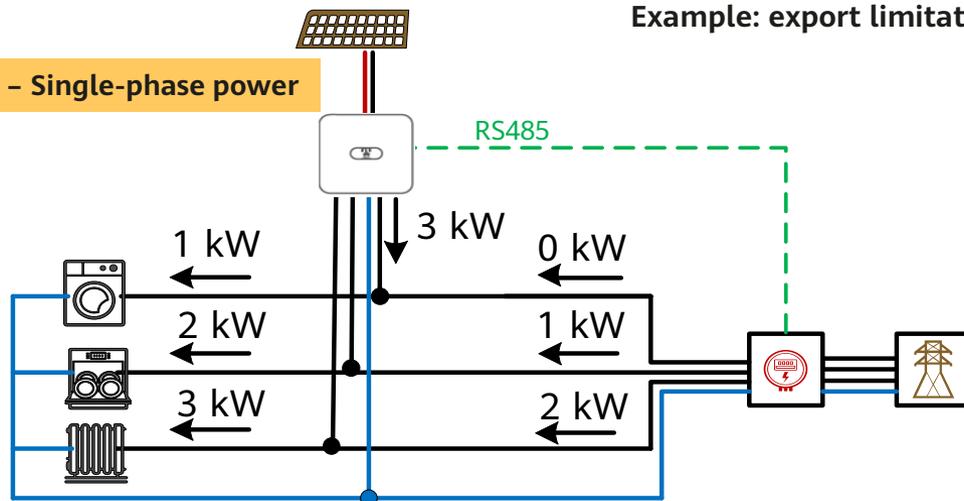
Example: export limitation power value is 0. Each phase exported power < 0

RS485

3 kW

1 kW   0 kW

2 kW   1 kW

3 kW   2 kW

	Phase 1	Phase 2	Phase 3	Total
Production	1 kW	1 kW	1 kW	3 kW
Consumption	1 kW	2 kW	3 kW	6 kW
Export	0	0	0	0 kW
Import	0	1 kW	2 kW	3 kW

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3.8 Energy Storage Control (L1 inverter + LG battery)

Battery parameters

You can choose **Maintenance** > **Add/Remove device** > **Battery** on the home screen to set the full discharging capacity.
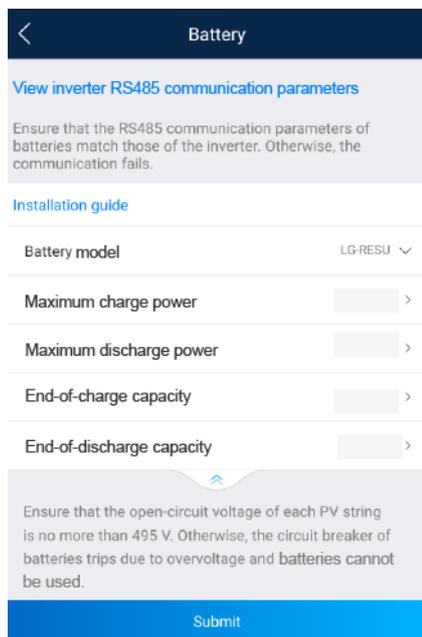
Control mode

Choose **Power adjustment** > **Energy storage control** > **Control mode** and perform operations as required.

- If this parameter is set to **Fixed charge/discharge**, the battery is charging or discharging during the configured period. A maximum of 10 time periods can be added.
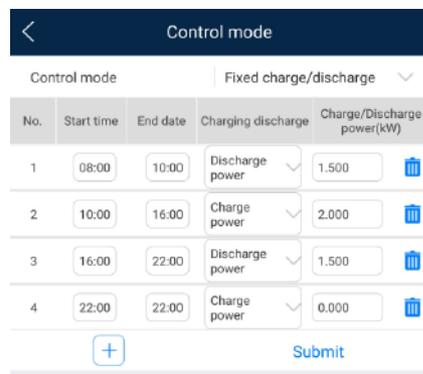
- If this parameter is set to **Maximum self-consumption** and the inverter is connected to a power meter, the inverter provides output power for local loads before feeding the remaining power to the power grid.

- If this parameter is set to **Time-of-use**, the battery is discharged when the electricity price is high and charged when the electricity price is low. A maximum of 10 time periods can be added.
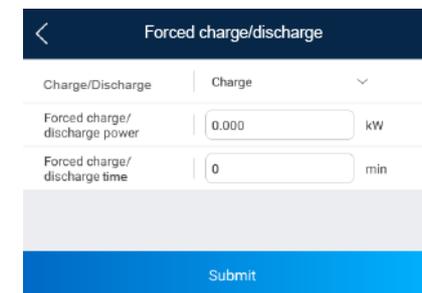

Charge from grid

Choose **Power adjustment** > **Energy storage control** > **Charge from grid**. After **Charge from grid** is enabled:

– When the battery capacity is 2% lower than the **End-of-discharge capacity**, the system forcibly charges batteries from the power grid. The charging power is limited to 1 kW. When the battery capacity is 2% higher than **End-of-discharge capacity**, the system stops charging batteries from the power grid.

– Except the **Maximum self-consumption** control mode, if the PV power is less than the preset charge power, the system charges batteries from the power grid. The charge power is limited to 2 kW. When the battery capacity is higher than **Grid charge cutoff SOC**, the system stops charging batteries from the power grid.
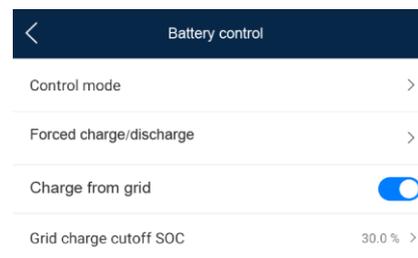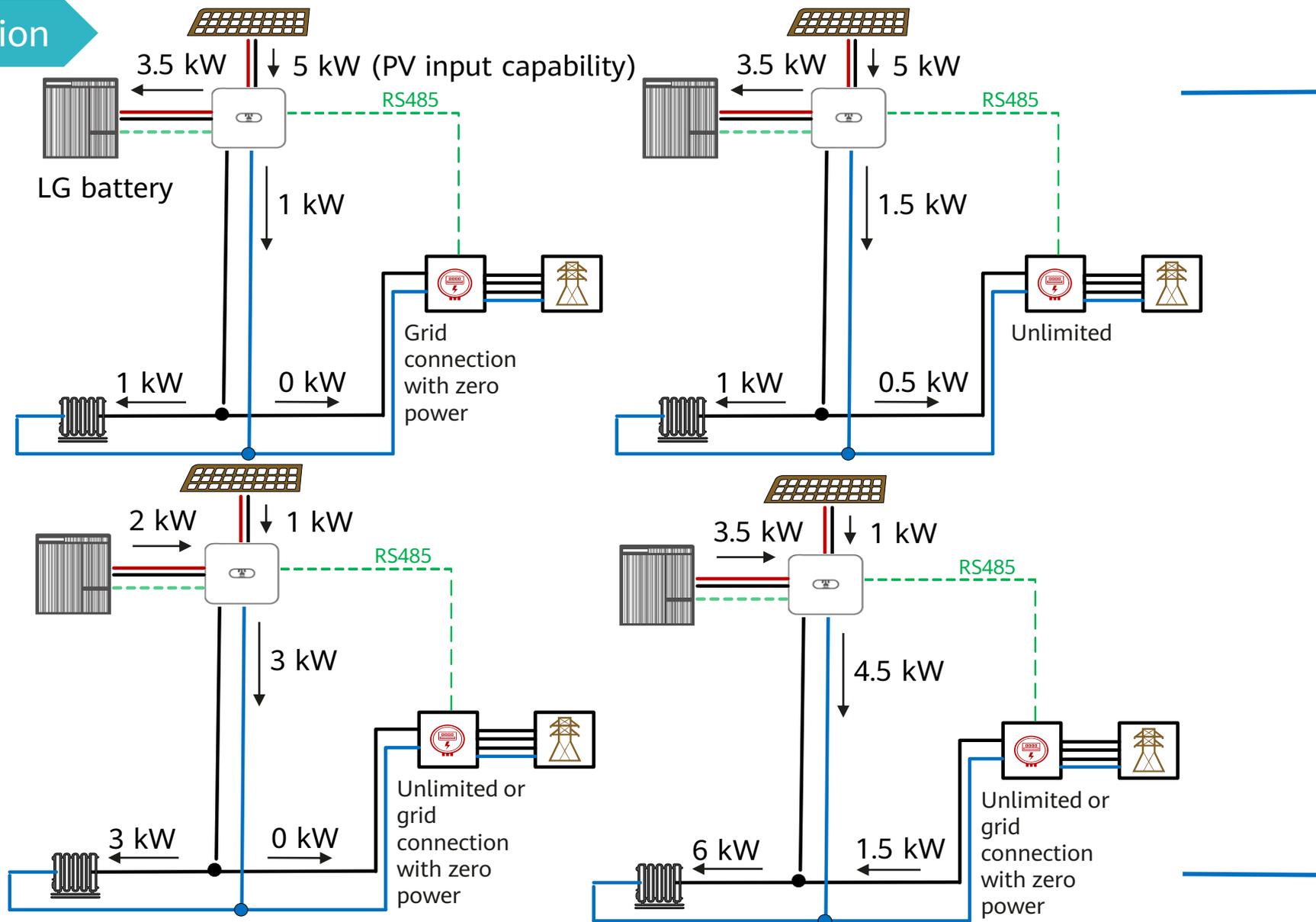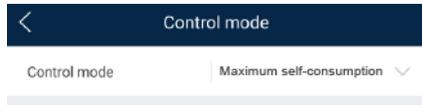

Forced charge/discharge

Choose **Power adjustment** > **Energy storage control** > **Forced charge/discharge**.

Control mode

Control mode	Maximum self-consumption ∨

3.5 kW ↓ 5 kW (PV input capability)

RS485

LG battery

1 kW

1 kW   0 kW

Grid connection with zero power

3.5 kW ↓ 5 kW

RS485

1.5 kW

1 kW   0.5 kW

Unlimited

2 kW → ↓ 1 kW

RS485

3 kW

3 kW   0 kW

Unlimited or grid connection with zero power

3.5 kW → ↓ 1 kW

RS485

4.5 kW

6 kW   1.5 kW

Unlimited or grid connection with zero power

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3.9 AFCI

Description

If PV modules or cables are incorrectly connected or damaged, electric arcs may be generated, which may cause fire. Huawei inverters provide unique arc detection in compliance with UL1699B-2018 to ensure the safety of users' lives and property. This function is enabled by default. The inverter automatically detects arc faults. To disable this function, log in to the FusionSolar app, enter the **Device commissioning** screen, choose **Settings** > **Feature parameters**, and disable **AFCI**.
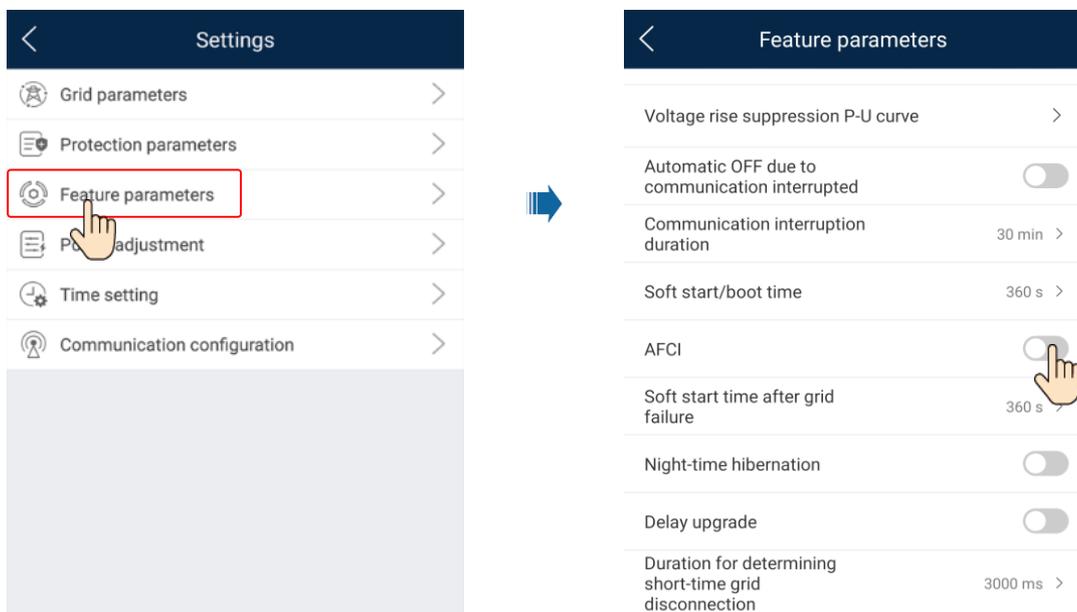
Clearing alarms

The AFCI function involves the DC arc fault alarm.

The inverter has the AFCI alarm automatic clearance mechanism. If an alarm is triggered for less than five times within 24 hours, the inverter automatically clears the alarm. If the alarm is triggered for more than five times within 24 hours, the inverter locks for protection. You need to manually clear the alarm on the inverter so that it can work properly. Log in to the FusionSolar app and choose **My** > **Device commissioning**. On the **Device commissioning** screen, connect and log in to the inverter that generates the AFCI alarm, tap **Alarm management**, and tap **Clear** on the right of the DC arc fault alarm to clear the alarm.
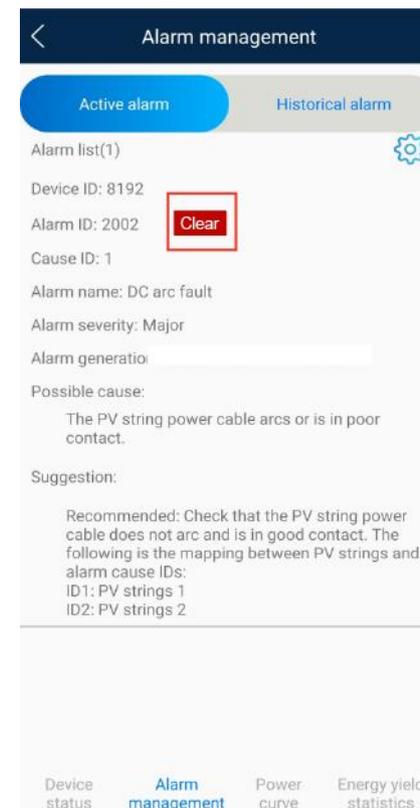
3.10 DRM (Australia AS4777)

According to Australia AS4777.2-2015, the inverter must meet the requirements of the Demand Response Mode (DRM) function, where DRM0 is mandatory.
This function is disabled by default.

The Demand Response Enabling Device (DRED) is a power grid dispatching device.
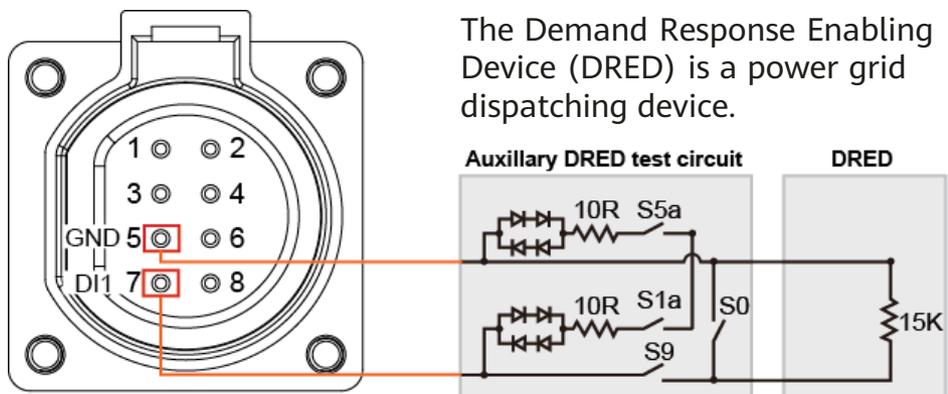
Mode	Port on the Inverter	Required Or Not
DRM0	DI1 and GND of the COM port	• When S0 and S9 are switched on, the inverter should be shut down. • When S0 is switched off and S9 is switched on, the inverter should be connected to the power grid.