



Single-phase AC coupled Battery Inverter (PCS)

Quick Installation Guide

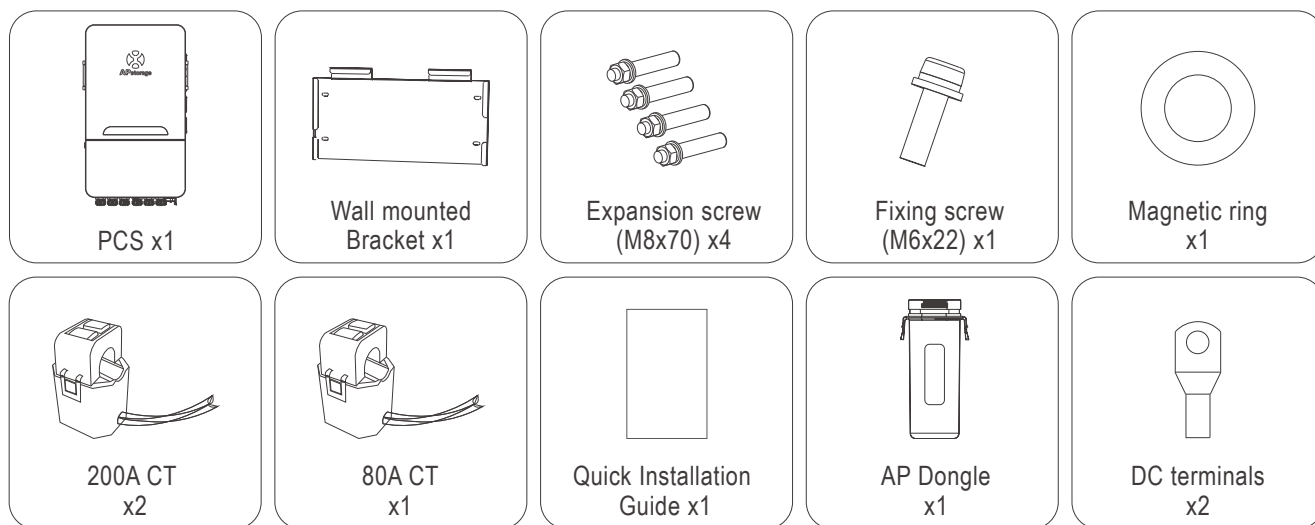
ELS-11.4

1 Declaration

1. The contents of this quick installation guide may change due to product updates and other reasons.
2. Unless otherwise stated, this guide does not replace the safety precautions in the data sheet or user manual; the contents are for reference only.
3. Please read this guide and the user manual carefully before installation to understand the relevant information and precautions regarding the product.
4. Please check that the model of the delivered product is correct, that all accessories are complete, and that there is no damage to the appearance. If any damage or missing accessories are found, please contact the manufacturer.
5. Only qualified professionals should install or replace the APstorage PCS, and all electrical installations must comply with local regulations. When performing installations and other operations, please wear personal protective equipment, use insulated tools, and wear anti-static equipment to prevent static damage to the PCS. The manufacturer is not responsible for any damage to the PCS caused by improper handling resulting in static electricity.
6. All operations must strictly follow the instructions in the user manual and this guide. The manufacturer is not responsible for any damage caused by improper usage.
7. All wiring must use copper cables.

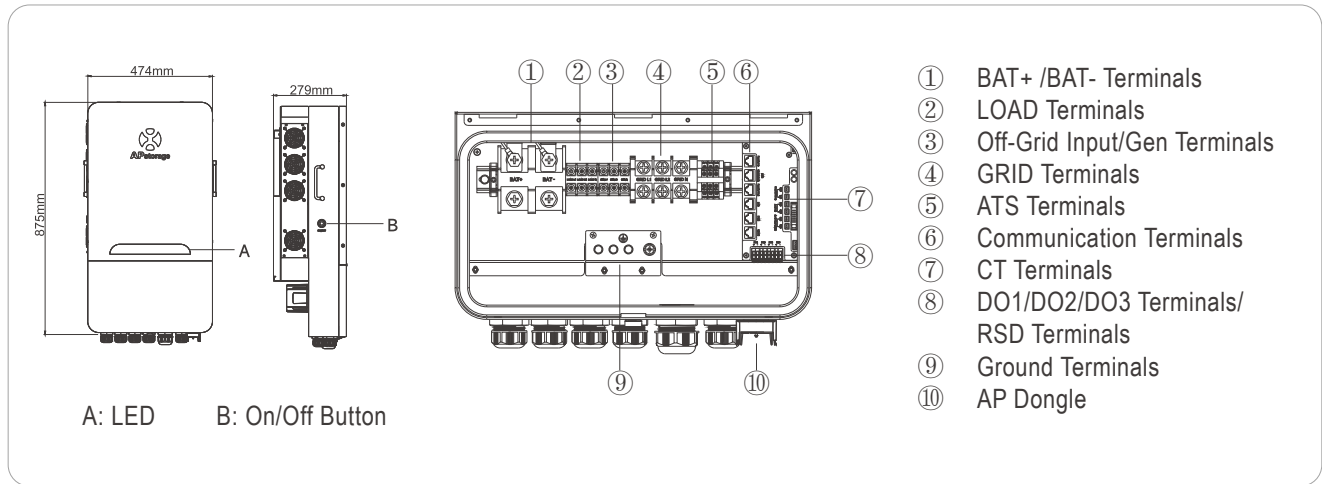
2 Pack List

Inspect the equipment before installation. Please ensure that the packaging is not damaged. The package should contain the items shown in the image below:



NOTE: The customer needs to purchase a junction box for battery parallel connection. Requirements for the junction box: the rated current of each connection point must be $\geq 240A$.

3 Product Introduction

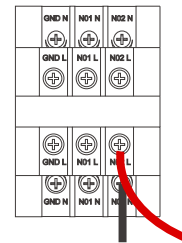


COM/DO/ATS Introduction

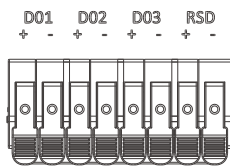
ATS Connection

GND (Reserved, no wiring needed), NO1 is the ATS external contactor interface (for use with generators), and NO2 is the ATS external contactor interface (for use with off-grid PV). All interfaces must be connected to external contactors to enable functionality.

NOTE: The functionality of the NO1 interface is not yet available.



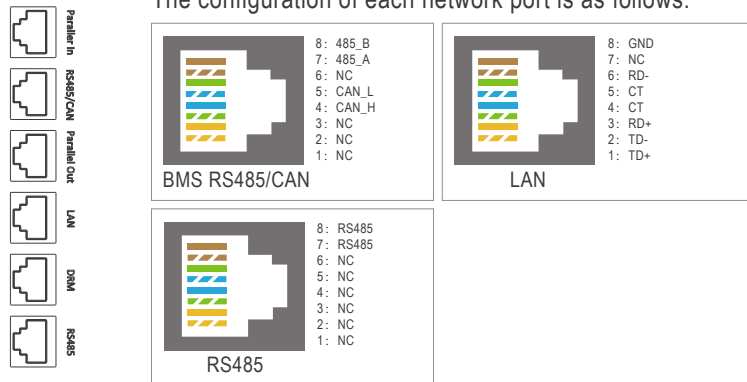
DO Connection



DO1/DO2/DO3: Reserve;
 RSD: When PCS is working, a 12V voltage is provided between "+" and "-", which can be connected to an external switch. Close the switch to quickly shut down PCS and protect the equipment.

COM Connection

The configuration of each network port is as follows:



NOTE: The Parallel In/Parallel Out/DRM feature is temporarily unavailable.

4 Wiring Diagram

Diagram for Australia, New Zealand, South Africa, etc.

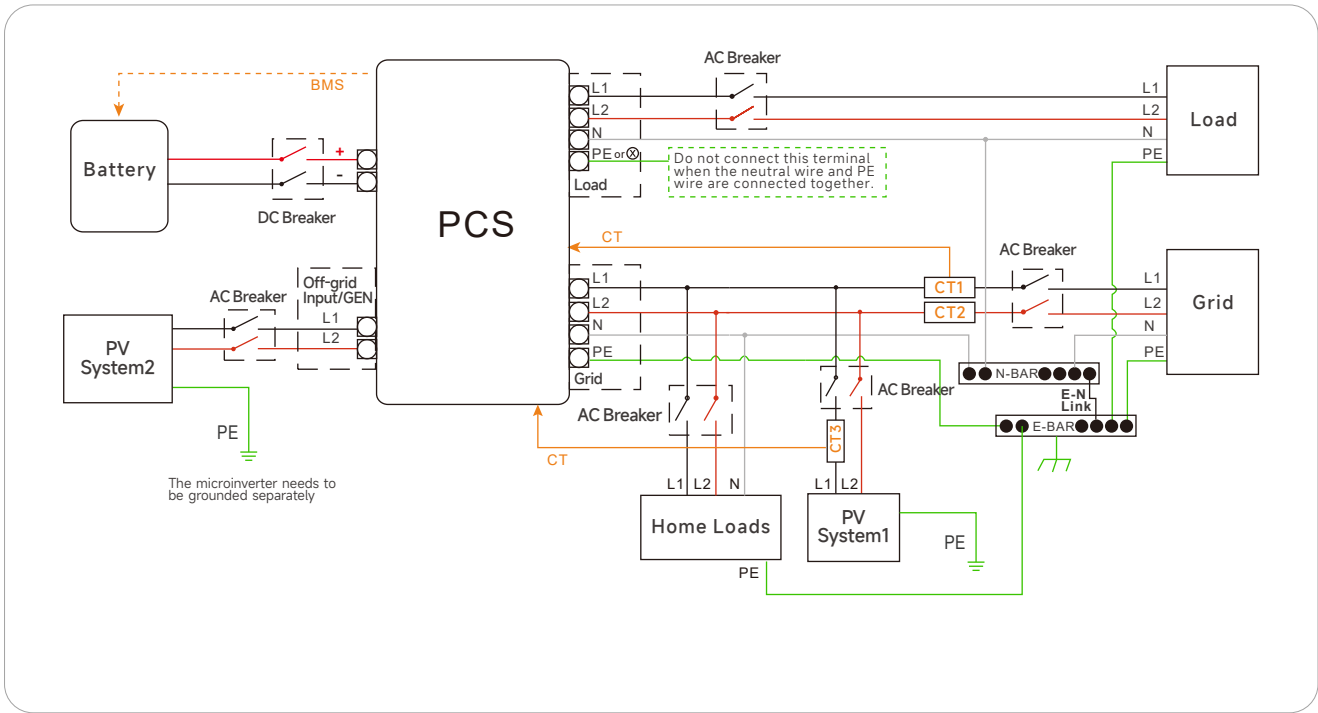
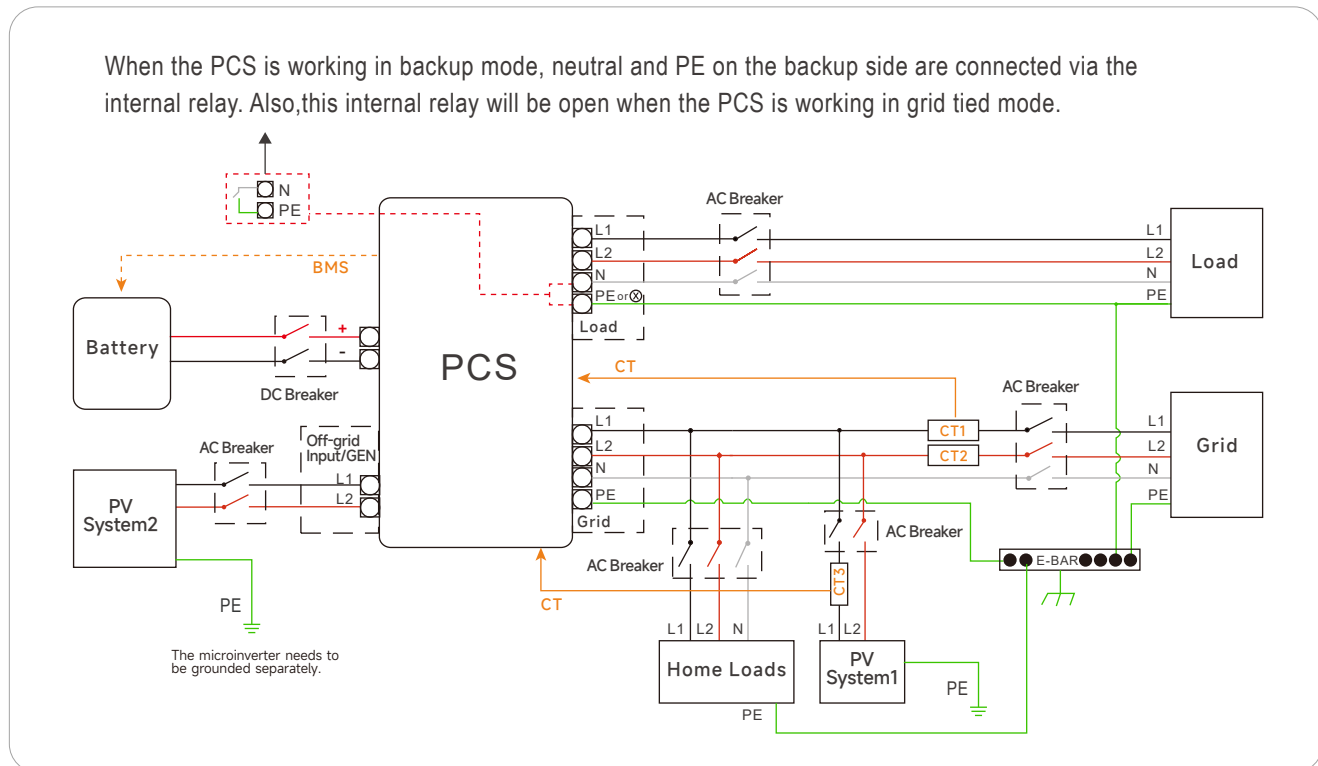
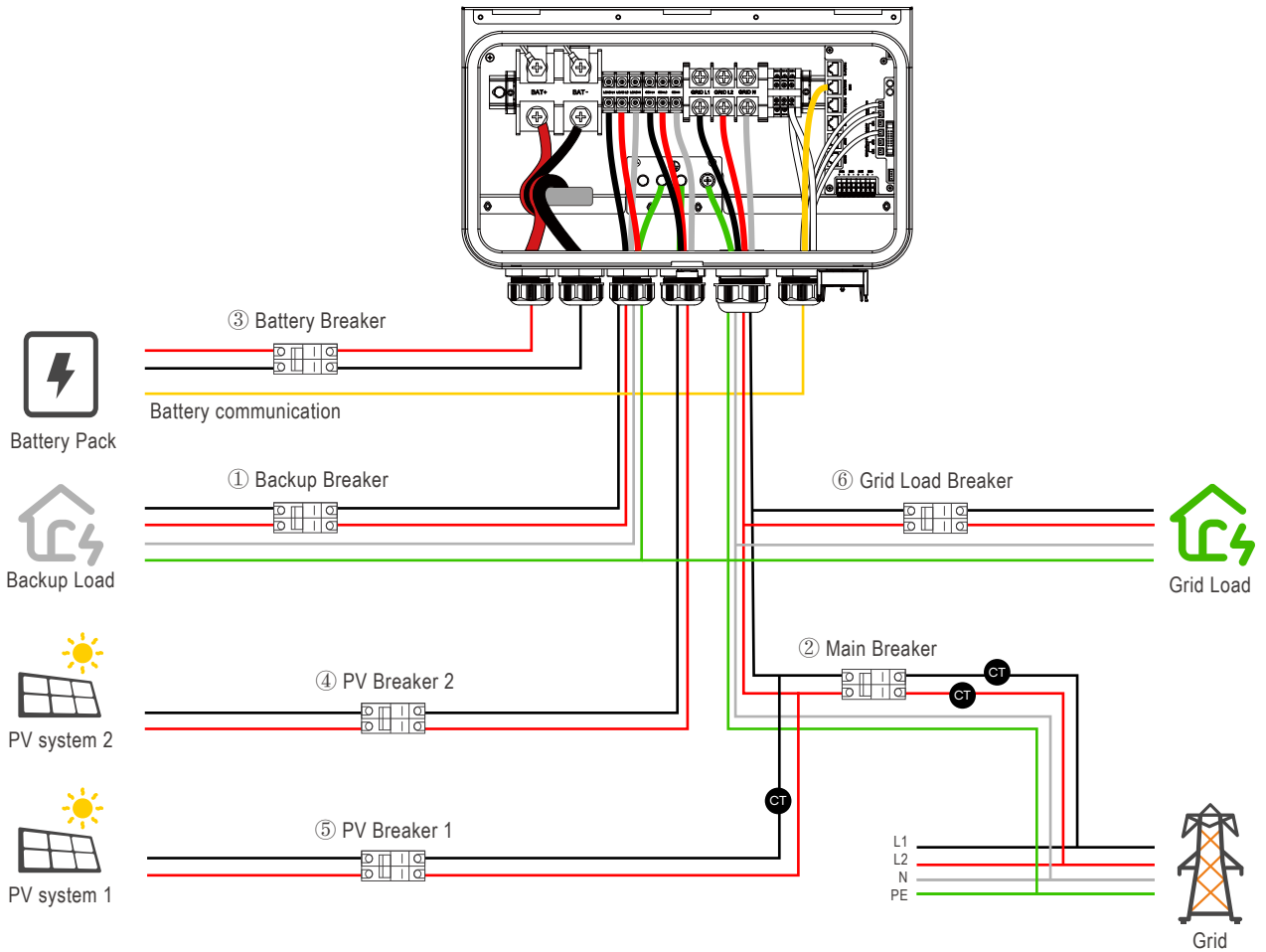


Diagram for Other Countries.



4 Wiring Diagram



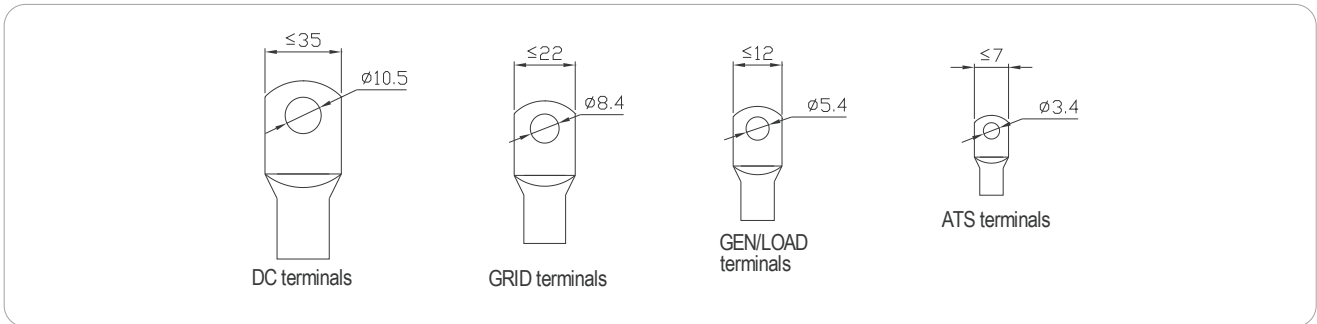
- DC +
- DC -
- wire L1
- wire L2
- wire N
- wire PE

- ① Backup Breaker: 63A AC Breaker
- ② Main Breaker : 200A AC Breaker
- ③ Battery Breaker: 300A DC Breaker
- ④ PV Breaker 2: Depends on PV system 2
- ⑤ PV Breaker 1: Depends on PV system 1
- ⑥ Grid Load Breaker: Depends on Grid Load

5 Installation instructions

Wiring Terminals and Cables Requirements Description

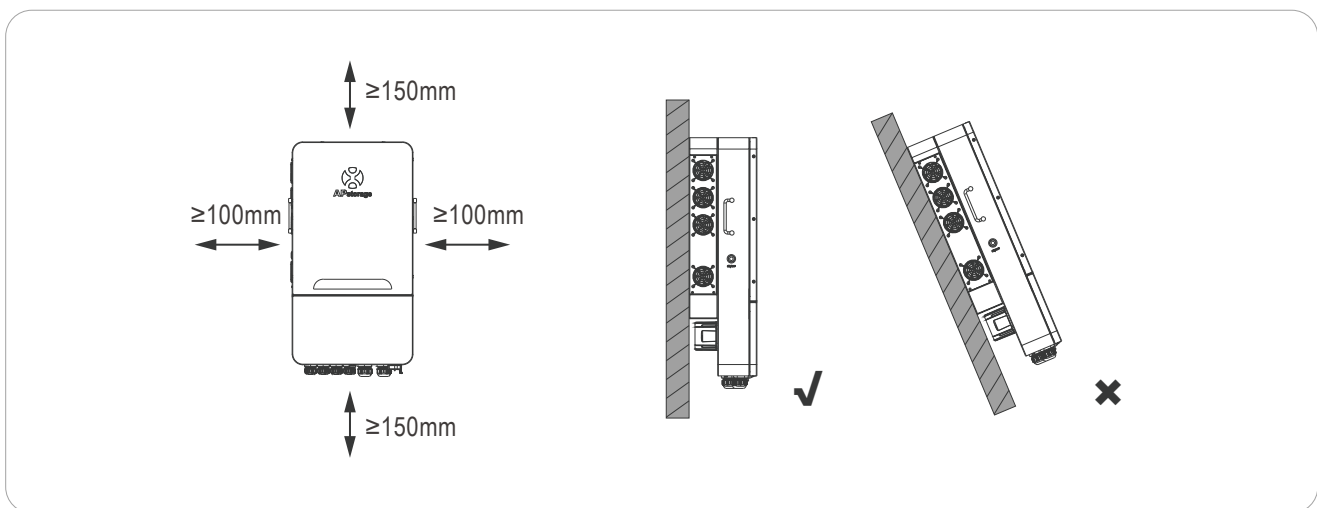
When wiring, please use the following specifications for wiring terminals and cables (the DC side wiring terminals are included in the accessories).



	Model	Wire Size	Torque value
DC Cable	ELS-11.4	2/0 AWG	10Nm
Grid Cable	ELS-11.4	4 AWG	2.5Nm
GEN/LOAD Cable	ELS-11.4	8 AWG	1.2Nm
ATS Cable	ELS-11.4	16 AWG	1.2Nm

- Battery Inputs: "Use No. 90°C Copper Wire only";
- AC Outputs: "Use No. 90°C Copper Wire only";
- DC Ground: "Use No. 90°C Copper Wire only";
- AC Ground: "Use No. 90°C Copper Wire only".

5.1 PCS installed on the wall



5 Installation instructions

STEP 1

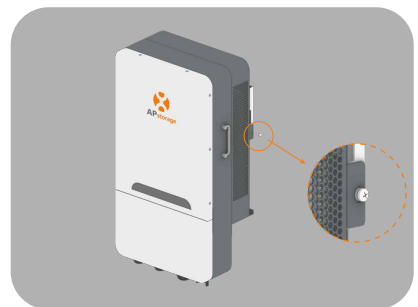
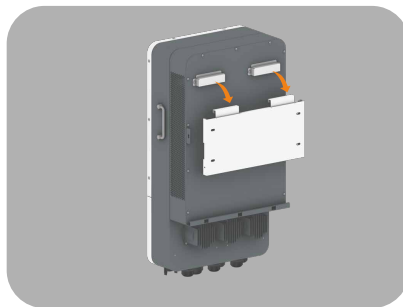
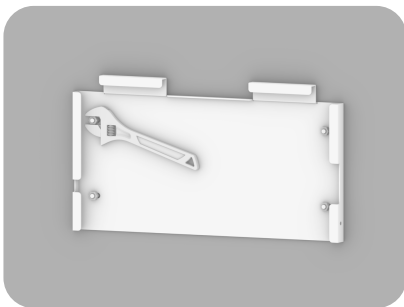
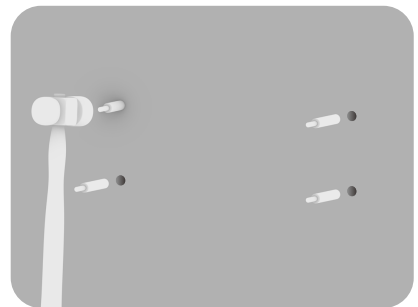
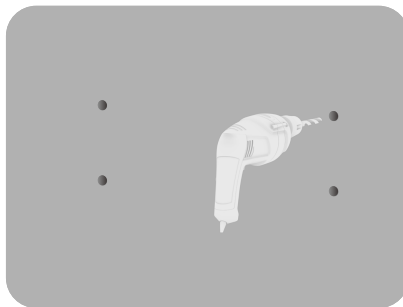
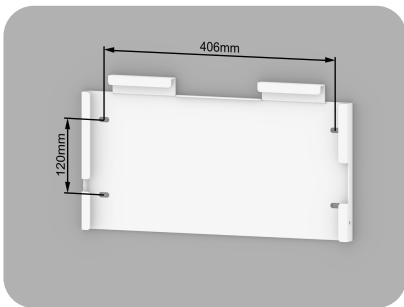
Mark the holes position on the wall and drill holes according to wall type and expansion screws type. The Configured expansion screw is drilled with a diameter of 12mm(0.5") and a depth of 50-55mm(1.9-2.2").

STEP 2

Put the expansion screws into the holes on the wall. Use a wrench to tighten the hex nuts, so that the expansion screws sleeve are fully expanded. Then remove the hex nuts. Hang the wall mounting bracket into the expansion screws, and use the hex nuts to fix it firmly. Make sure that the wall mounting bracket is horizontal after installation.

STEP 3

Lift the PCS to hang it into the wall mounting bracket, and fix the PCS on wall mounting bracket with the M6×22mm screw.



WARNING:

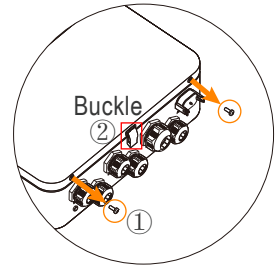
Do not drill holes in the casing at any location, otherwise we will not provide warranty.

5 Installation instructions

5.2 Electrical Wiring

STEP 1 Remove the bottom cover

Before connecting the wires, please unscrew the screws on the bottom cover, then open the buckle on the bottom cover, and remove the bottom cover.

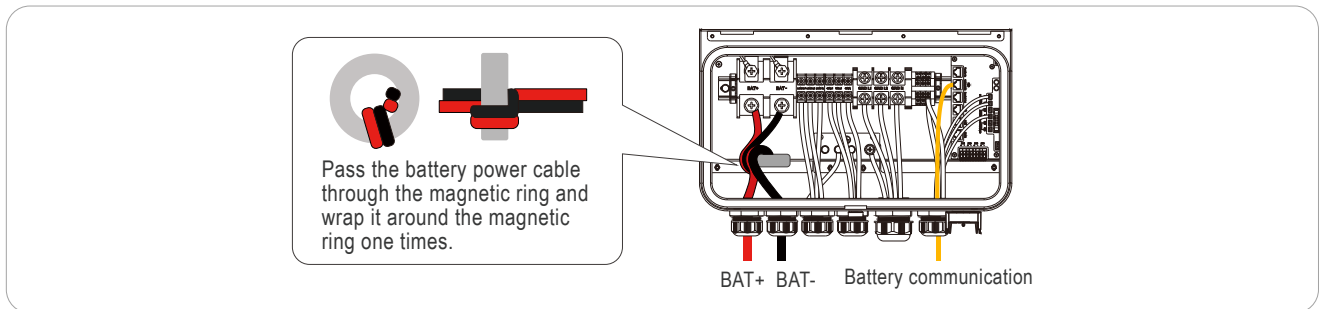


STEP 2 Battery Wiring

For battery wiring BAT+, please use red or orange cables, and for BAT -, please use black cables. As shown in the diagram, wrap them once on the magnetic ring and thread them out from the corresponding cable connector below the casing.

Please use a Phillips screwdriver with a suitable torque of 10Nm.

Please insert the appropriate network cable into the battery communication port and BMS RS485/CAN interface on the PCS according to the battery configuration, and thread the network cable out of the COMM cable connector below.



NOTE: Ensure that the polarity of the battery and PCS are correctly connected, otherwise PCS may be damaged.

NOTE: APstorage ELS/ELT series PCS are DC/AC isolated, so the battery ground should not be connected to AC ground.

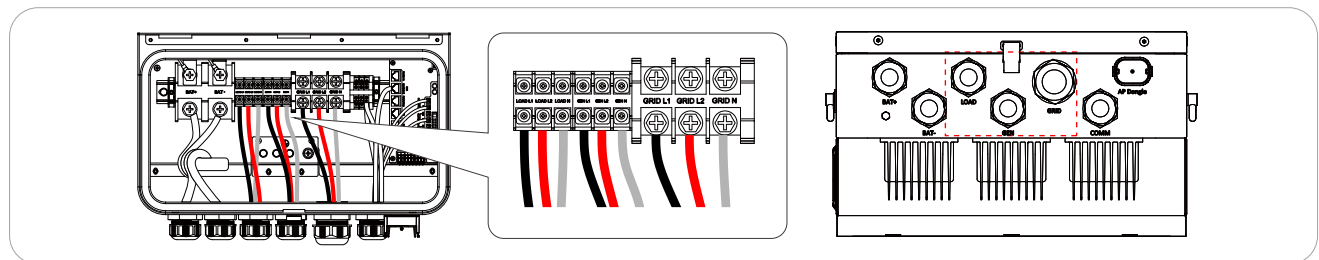
Leave battery ground point floating could ensure the system working safely and stably.

STEP 3 AC Wiring

Please use L1-Black, L2-Red and N-White for AC wiring.

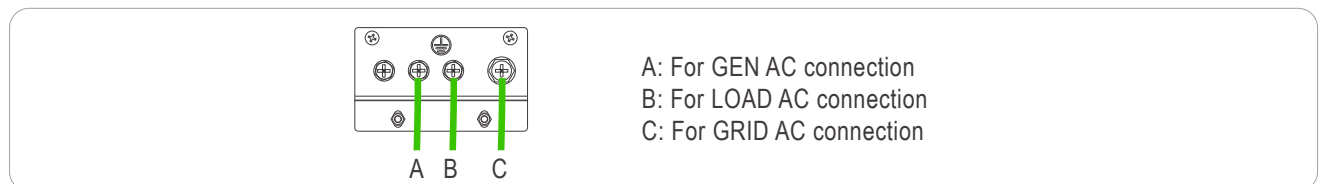
The LOAD/GEN terminal uses a cross screwdriver with a suitable torque of 1.2Nm; The GRID terminal uses a cross screwdriver with a suitable torque of 2.5Nm.

Please thread the cables of LOAD/GEN/GRID separately through the cable connectors marked with LOAD/GEN/GRID below.



NOTE: Please ensure that the N and L wires are connected accurately.

STEP 4 Grounding Wiring

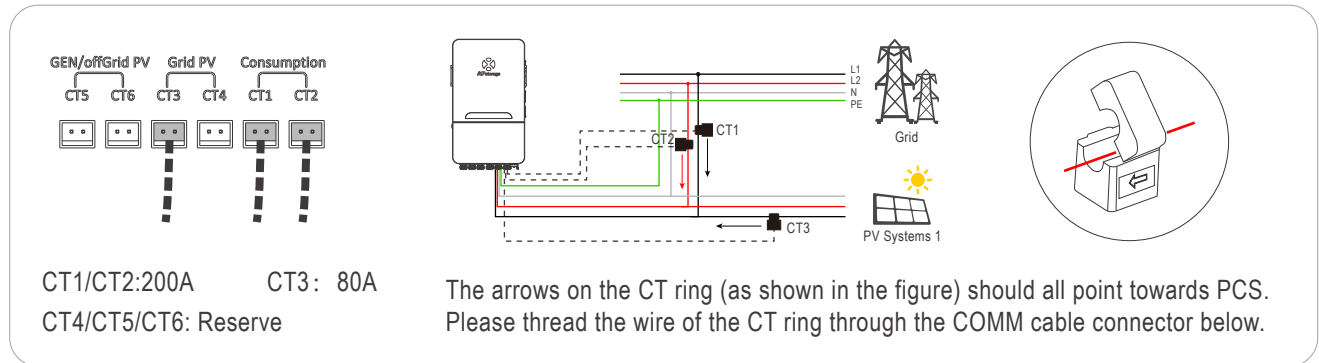


NOTE: A/B torque is 1.2Nm; The torque of C is 2.5Nm.

5 Installation instructions

STEP 5 CT Wiring

The CT ring wiring is shown in the following figure, where CT1/CT2 corresponds to grid L1/L2 and CT3 corresponds to L of GRID-PV.



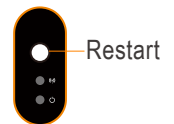
STEP 6 AP Dongle Installation

- ① Pull out the USB interface protective cover;
- ② Insert the AP Dongle into the USB interface, and the buckle will make a sound when tightened;
- ③ After PCS power supply, the operating status can be observed through LED display.



NOTE: When the AP Dongle is powered on normally, the green light remains on. When connected to WIFI, both the green and blue lights will remain on.

NOTE: If Bluetooth is not connected for 5 consecutive minutes, it will automatically turn off. To reactivate the Bluetooth function, please press the corresponding button or plug and unplug to restart.

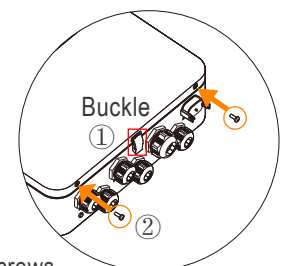


STEP 7 Network port wiring

Please use the appropriate network cables for the COM Connection based on your needs, as referenced in Chapter 3. All network cables should be routed out from the COMM cable connector at the bottom.

STEP 8 Lower cover installation

After completing all cable connections, please tighten the nuts of all cable connectors.



After completing all the above steps, please fasten the lower cover buckle first, and then tighten the screws.

After PCS installation is completed, enter the PCS initialization.

6 PCS Initialization

6.1 Start the PCS

6.1.1 Pre-check

Check all Below Steps Before Starting PCS :

- ① Make sure the PCS is properly mounted to the wall.
- ② Make sure all the DC wirings and AC wirings are completed.
- ③ Make sure the CT is connected properly.
- ④ Make sure the battery is connected properly.
- ⑤ Make sure all grounded busbar are connected property.
- ⑥ Make sure the PV system is connected properly.
- ⑦ Make sure the loads and critical loads are connected property, and the critical loads rating is within nominal rating range.

6.1.2 First Power-On

When the PCS is properly installed and the battery is firmly connected,

- ① Turn on the DC circuit breaker;
- ② Press the on/off button;
- ③ Turn the battery switch to ON to provide power supply to the system ;
- ④ Wait for the On/Off Button on the side of PCS to light up, and then the indicator lights will illuminate.

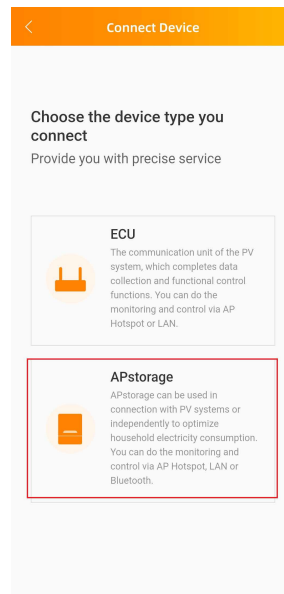
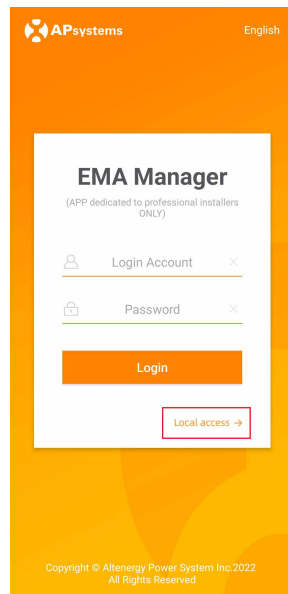
After the PCS is powered on, the SYSTEM indicator lights become steady ON, the BATTERY, WI-FI and COM indicator light flashes every 5 seconds, and the AP Dongle indicator light turns green.

6.2 Initialize the PCS

QR code for downloading the app :

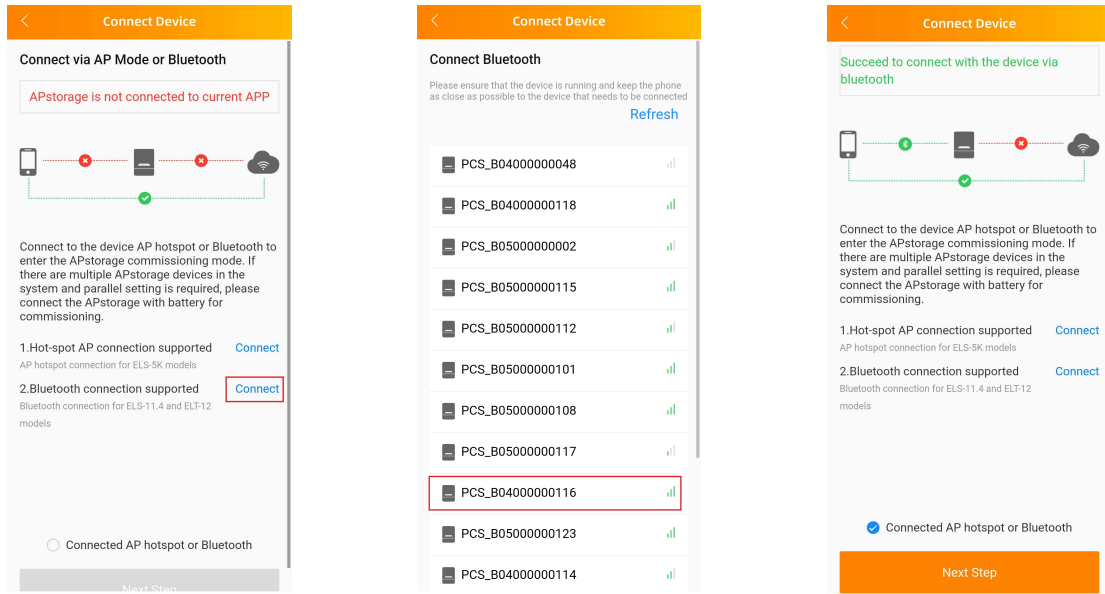
6.2.1 Scan the QR code to download and install the EMA Manager app.

6.2.2 Log in to the app and tap Local access. Select APstorage to start the initialization process.



6.2.3 Connect the PCS

Tap **Connect** next to Bluetooth connection supported based on the device model. On the page that appears, select the UID of the PCS. After the PCS is successfully connected, the message "Succeed to connect with the device via bluetooth" is displayed. After that, the SYSTEM indicator light turns OFF and the FAULT indicator light becomes steady red.



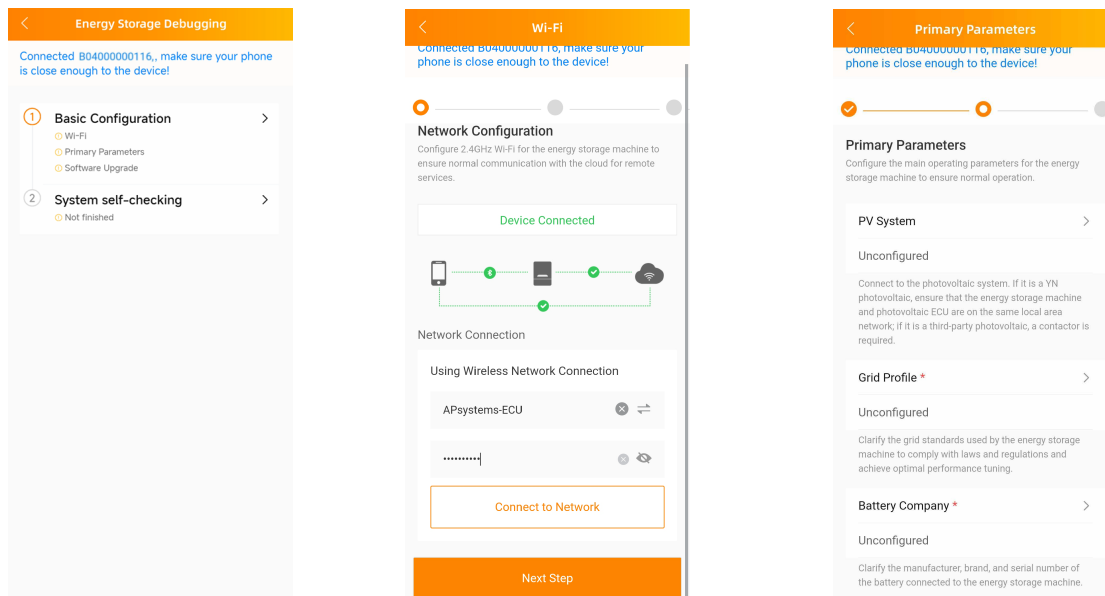
Tap **Next Step**.

6.2.4 Basic Configurations

Tap **Basic Configuration**. On the page that appears, perform the network configuration. In the **Network Connection** field, select the Wi-Fi that you want to connect to, enter the password, and tap **Connect to Network**. After successful connection, the icon between the PCS and the cloud changes from **x** in red to **✓** in green. The AP Dongle indicator light turns blue.

Tap **Next Step** to perform the PV, grid, and battery configurations.

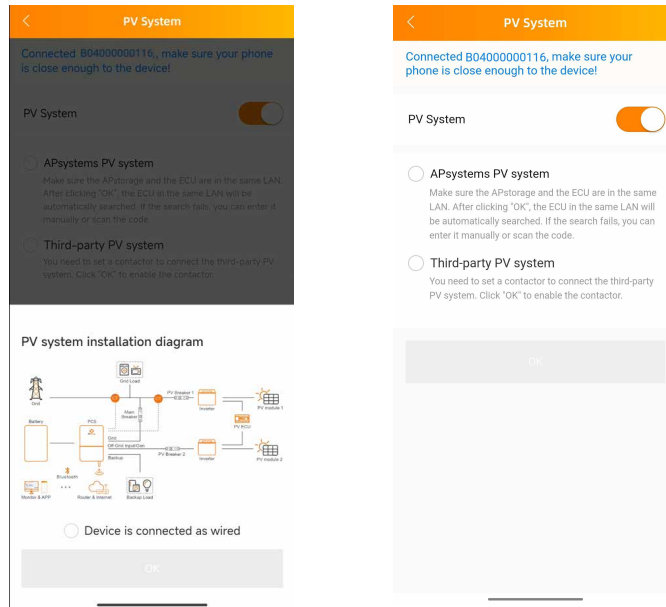
Select the parameters to be configured. The **PV System** parameter is optional, and the **Grid Profile** and **Battery Company** parameters are required.



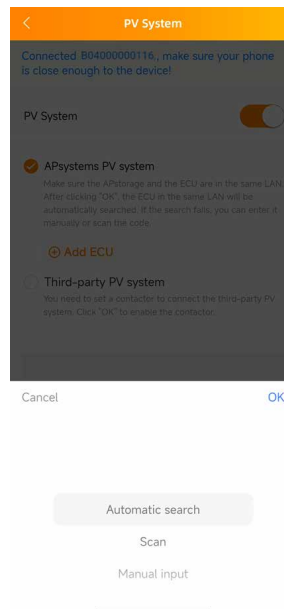
(Optional) Perform the PV configuration.

Tap **PV System**.

Confirm that the wires are properly connected and tap **OK**. Turn on the **PV System** switch and configure the parameters based on the PV system that you use.



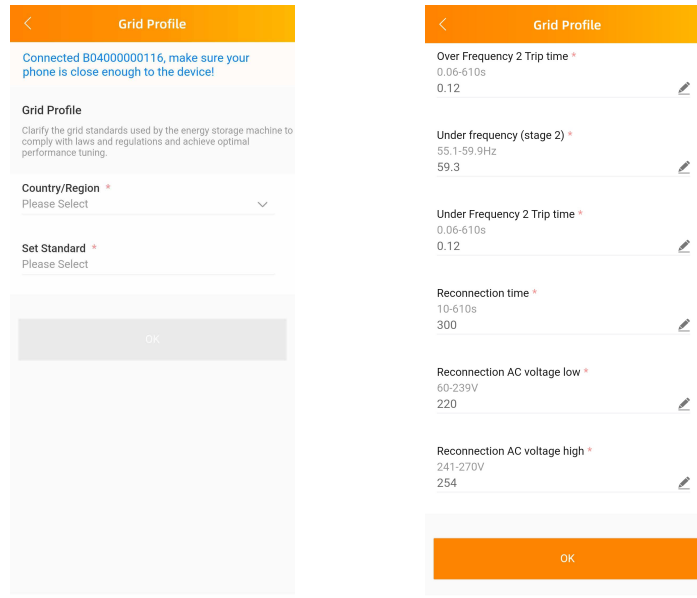
Select **APsystems PV system**. The app automatically searches for nearby ECUs. If an ECU is found, tap the ECU to record its information directly. If no ECU is found, manually record the device information or scan the ECU ID.



Select **Third-party PV system** and tap **OK**. The contactor is turned on. After the PV configuration is complete, you are go back to the **Primary Parameters** page.

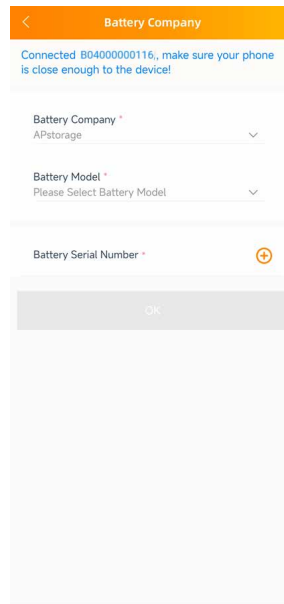
Perform the grid configuration.

Tap **Grid Profile**. Configure the **Country/Region** and **Set Standard** parameters based on your country or region and the grid standard. Parameters are displayed based on your settings. Retain the default values or change the values based on actual needs. After the grid configuration is complete, tap **OK** and go back to the **Primary Parameters** page.



Perform the battery configuration.

Tap **Battery Company**. Select the battery company and battery model for the **Battery Company** and **Battery Model** parameters. The battery company is automatically displayed for some connected batteries. Then, scan or manually enter the battery serial number. After the battery configuration is complete, tap **OK** and go back to the **Primary Parameters** page.

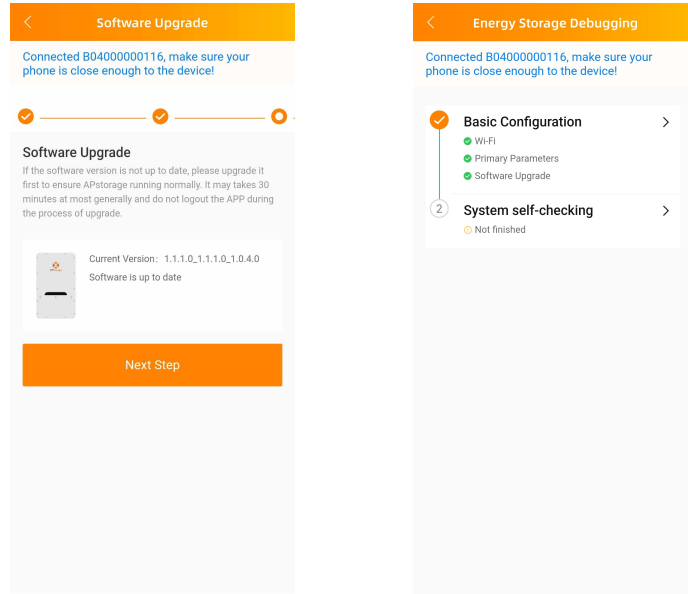


Tap Next Step.

6.2.5 System Upgrade

After you tap **OK**, you proceed to the **Software Upgrade** step. In this step, the app detects the software version of the PCS. If the software version is already the latest, tap **Next Step**. If the latest version is available, tap **Upgrade**. The upgrade progress is displayed during the upgrade process. After the upgrade is complete, refresh the page. The button at the bottom of the page changes to **Next Step**. Tap **Next Step**.

On the page that appears, tap **System self-checking**.

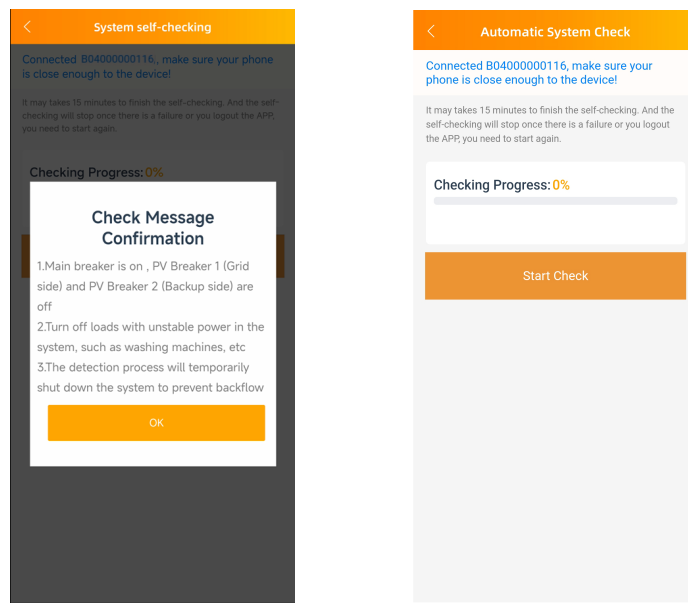


6.2.6 System Self-Check

The app enters system self-check, the following dialog box is displayed. Check the connection status of the breakers on the grid, grid-PV, off-grid-PV, and load sides.

Tap Start Check.

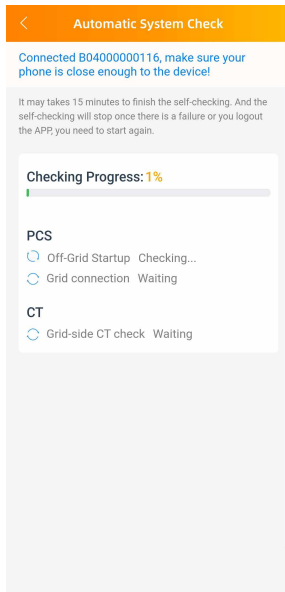
You can find that the SYSTEM indicator light flashes and the FAULT indicator light changes from red to OFF. After the grid-side breaker is turned off, the GRID indicator light flashes.



The app can perform system self-check on the following three systems: pure energy storage system, APsystems PV system, and third-party PV system. The app performs system self-check based on the preceding settings in this section.

6.2.6.1 Pure Energy Storage System

If no PV device is configured in the previous stage, the following pages are displayed. Wait for about 15 minutes until initialization is automatically complete.



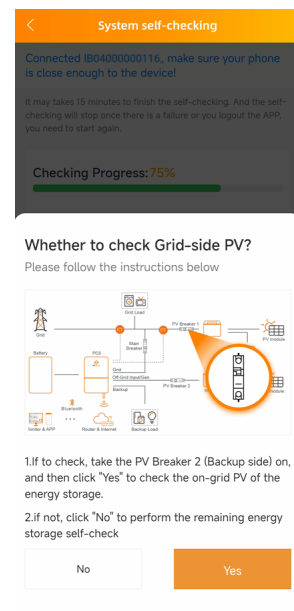
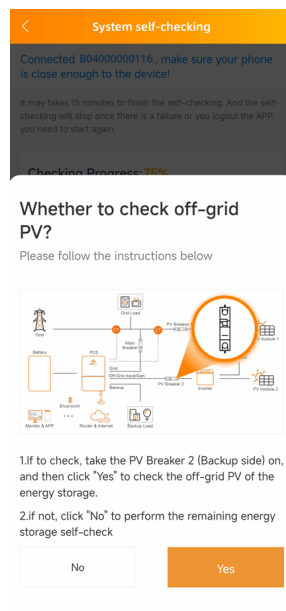
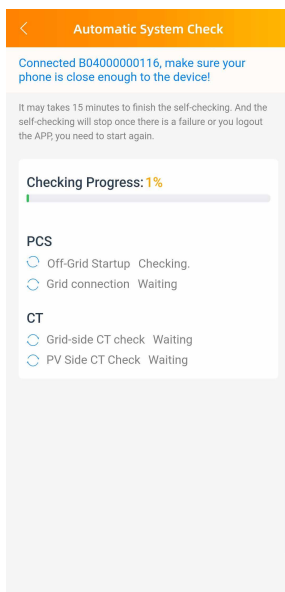
During the self-check process, the front LED indicator light of PCS is as follows:

	Off-grid startup		Grid-connected startup/Grid-side CT check
SYSTEM		SYSTEM	
WI-FI		WI-FI	
COM		COM	
GRID		GRID	
BATTERY		BATTERY	
ENERGY		ENERGY	

After self-check is complete, tap **Go to the home page** in the dialog box displayed to complete the initialization process.

6.2.6.2 APsystems PV System

If the APsystems PV system is configured in the previous stage, the following pages are displayed. After check on off-grid startup, grid-connected startup, and grid-side CT is complete, the **Whether to check off-grid PV?** and **Whether to check Grid-side PV?** dialog boxes are displayed. Turn off the breaker based on the requirements and tap Yes.



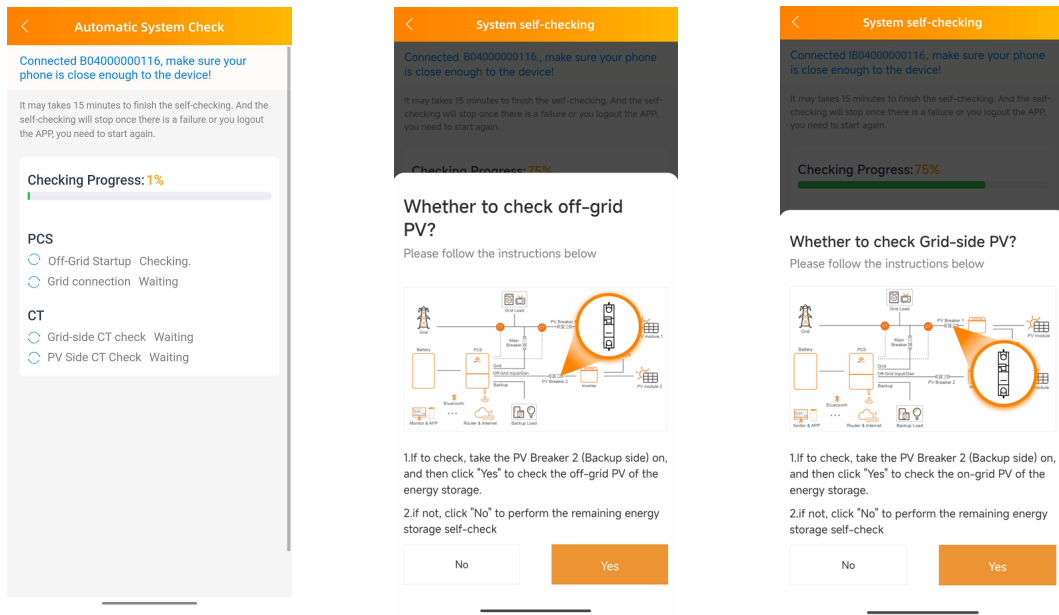
During the self-check process, the front LED indicator light of PCS is as follows:

Off-grid startup		Grid-connected startup/Grid-side CT check		PV-side CT check	
SYSTEM	██████████	SYSTEM	██████████	SYSTEM	██████████
WI-FI	██████████	WI-FI	██████████	WI-FI	██████████
COM	██████████	COM	██████████	COM	██████████
GRID	■ ■ ■ ■	GRID	██████████	GRID	██████████
BATTERY	■ ■ ■ ■	BATTERY	██████████	BATTERY	██████████
ENERGY	————	ENERGY	██████████	ENERGY	————

After self-check is complete, tap **Go to the home page** in the dialog box displayed to complete the initialization process.

6.2.6.3 Third-Party PV System

If the third-party PV system is configured in the previous stage, the following pages are displayed. After check on off-grid startup, grid-connected startup, and grid-side CT is complete, the **Whether to check off-grid PV?** and **Whether to check Grid-side PV?** dialog boxes are displayed. Turn off the breaker based on the requirements and tap **Yes**.



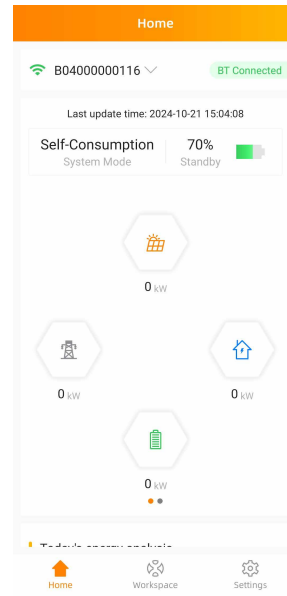
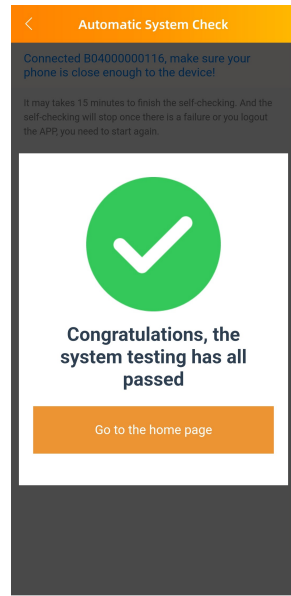
During the self-check process, the front LED indicator light of PCS is as follows:

Off-grid startup		Grid-connected startup/Grid-side CT check		PV-side CT check	
SYSTEM	██████████	SYSTEM	██████████	SYSTEM	██████████
WI-FI	██████████	WI-FI	██████████	WI-FI	██████████
COM	██████████	COM	██████████	COM	██████████
GRID	■ ■ ■ ■	GRID	██████████	GRID	██████████
BATTERY	■ ■ ■ ■	BATTERY	██████████	BATTERY	██████████
ENERGY	————	ENERGY	██████████	ENERGY	————

After self-check is complete, tap **Go to the home page** in the dialog box displayed to complete the initialization process.

6.2.7 Initialization Completed

After self-check is complete, tap **Go to the home page** in the dialog box displayed to complete the initialization process.





Please scan the QR code to install the APP
and get the User Manual.

APsystems America

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