APstorage Sea Family
ELS Series PCS
Installation & User Manual

(For North America)

Rev1.3 2024-12-17

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1. Important Safety Instructions

This manual contains important instructions to be followed during installation and maintenance of the APstorage PCS. To reduce the risk of electrical shock and ensure the safe installation and operation of the APstorage PCS, the following symbols appear throughout this document to indicate dangerous conditions and important safety instructions.

DANGER:
This indicates a hazardous situation, which if not avoided, will result in death or serious injury.

WARNING:
This indicates a situation where failure to follow instructions may be a safety hazard or cause equipment malfunction. Use extreme caution and follow instructions carefully.

NOTE:
This indicates information that is very important for optimal system operation. Follow instructions closely.

1.1 Safety Instructions

IMPORTANT SAFETY INSTRUCTIONS. SAVE THESE INSTRUCTIONS. This guide contains important instructions that you must follow during installation and maintenance of the PCS. Failing to follow any of these instructions may void the warranty. Follow all of the instructions in this manual. These instructions are key to the installation and maintenance of the APstorage PCS. These instructions are not meant to be a complete explanation of how to design and install APstorage PCSs. All installations must comply with national and local electrical codes and standards.

DANGER:
- Only qualified professionals should install and/or replace the APstorage PCS.
- Perform all electrical installations in accordance with local codes.
- To reduce risk of burns, do not touch the body of the PCS.

WARNING:
- Do **NOT** attempt to repair the APstorage PCS. If it shows abnormal performance, Contact APsystems Customer Support to obtain adequate support. Damaging or opening the APstorage PCS will void the warranty.
- These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that specified in the operating instructions".

1.2 Radio Interference Statement

This equipment could radiate radio frequency energy which might cause interference to radio communications if you do not follow the instructions when installing and using the equipment. But there is no guarantee that interference will not occur in a particular installation. If this equipment causes interference to radio or television reception, the following measures might resolve the issues:

A) Relocate the receiving antenna and keep it well away from the equipment.
B) Consult the dealer or an experienced radio / TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.

1.3 Communication Disclaimer

The EMA system provides a friendly interface to monitor the working status of the whole energy storage system. At the same time, it can also help to locate problems during system maintenance. If communication has been lost for more than 24 hours, please contact the technical support of APsystems.

1.4 Symbols replace words

APstorage	Trademark.
	**Caution**, risk of electric shock.
	**Caution**, hot surface.
	**NOTICE**, danger! This device directly connected with electricity generators and public grid.
Qualified personnel	Person adequately advised or supervised by an electrically skilled person to enable him or her to perceive risks and to avoid hazards which electricity can create. For the purpose of the safety information of this manual, a "qualified person" is someone who is familiar with requirements for safety, electrical system and EMC and is authorized to energize, ground, and tag equipment, systems, and circuits in accordance with established safety procedures. The inverter and storage system may only be commissioned and operated by qualified personnel.

2. Product Introduction

ELS series PCS is APstorage's Sea family product and the PCS is a battery Power Conversion System. APstorage PCS, together with a compatible battery (not offered by APstorage), becomes a complete and independent AC coupling storage solution for residential PV installations. It can be used with any new or already installed PV systems without changing equipment in place.

One PCS can be connected up to 40kWh compatible battery (see battery compatibility list). When multiple battery packs are connected, they need to be connected in parallel. (see connection diagram in the Battery User Manual)

APstorage will help home-owners to optimize their utility bill, offering full flexibility to manage their Electrical consumption. Several modes are available. (Backup power supply mode, Self-consumption mode, peak valley time mode and peak shaving mode)

2.1 Features

Safety

- Ingress protection IP65
- 48V low battery voltage input
- Intelligent charging technology, protecting battery life
- High and low voltage isolation topologies, ensuring personal safety

Flexible

- Compatible with multiple battery brands
- Provide dedicated interface for connecting generator
- AC-Coupled solution for new or existing installations
- Supports 120/240V split-phase output, no need to connect external transformer
- Provides dry contacts for controlling generator or load

Intelligent

- Support split-phase unbalanced output
- UPS-level switching time <10ms
- Innovative multiple energy control modes: Backup power supply, Self-consumption, Peak and valley, and Peak shaving
- 24-hour intelligent energy management system
- Intelligent operation and maintenance platform with EMA

Performance

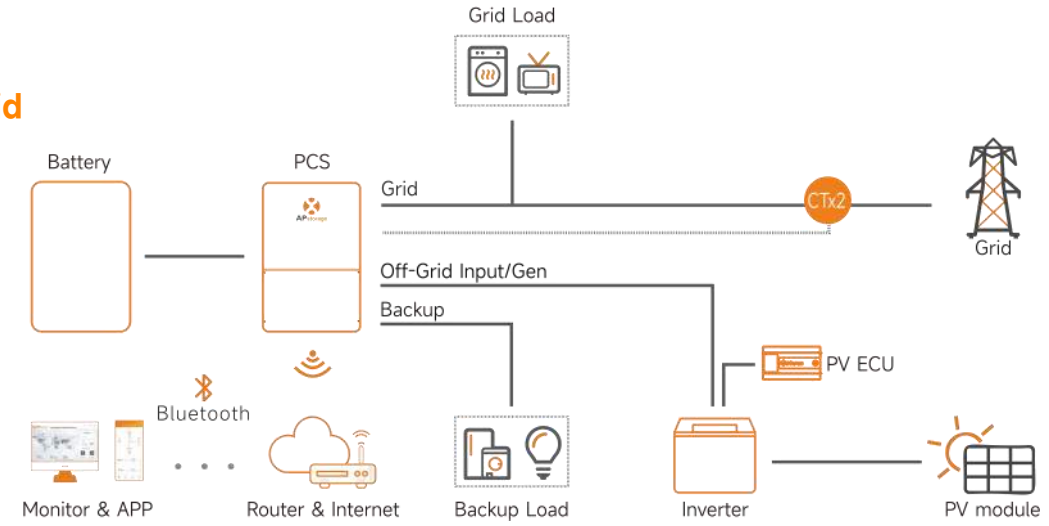
- Nominal power rating up to 11400VA
- Peak backup power up to 17100VA
- Max efficiency up to 95.6%

2.2 Basic System Architecture

A typical APstorage system includes two main elements:

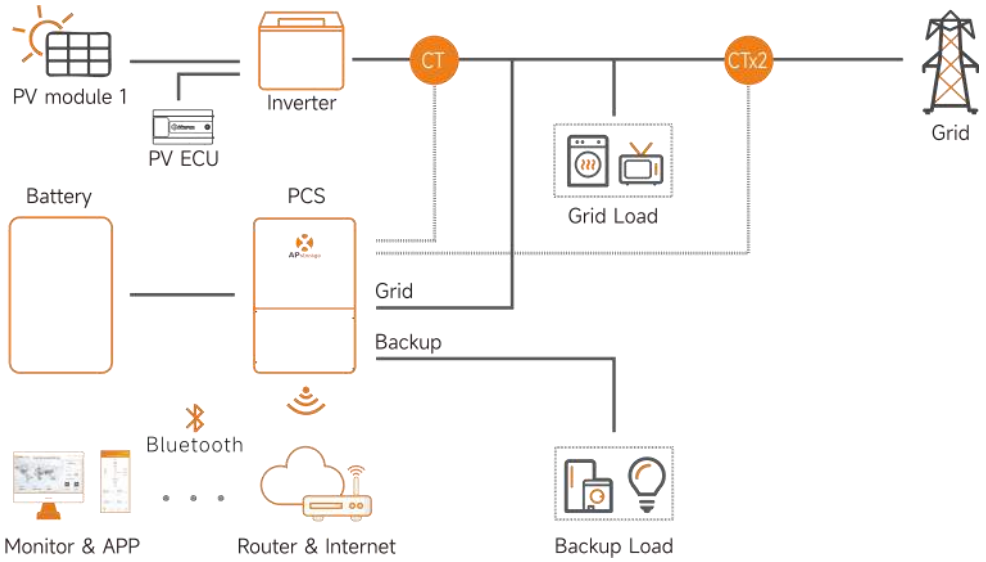
- **APstorage PCS, which is a smart battery Power Conversion System.**
- **A compatible Battery pack (see battery compatibility list)**

Option 1 :
PV system
working off-grid



In option 1, Off grid function only compatible with APsystems DS3&DS3D microinverters(fully compatible).

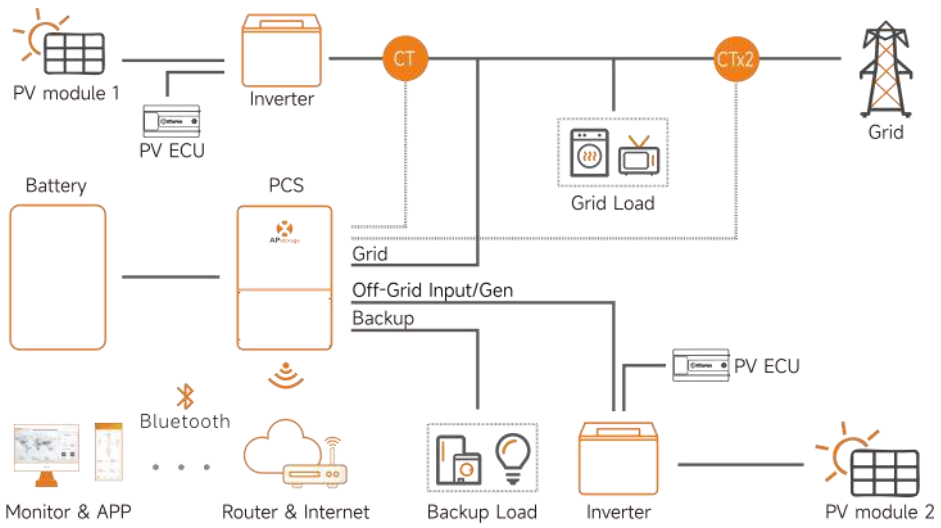
Option 2 :
PV system
working grid



NOTE:

If the wireless signal in the area where the PCS is weak, it is necessary to add a Wi-Fi signal booster at a suitable place between the router and the PCS.

Option 3 :
mix of option 1 and 2 following the conditions above



NOTE:

If you need to connect a generator, you will need to purchase an additional generator-related function CT ring.

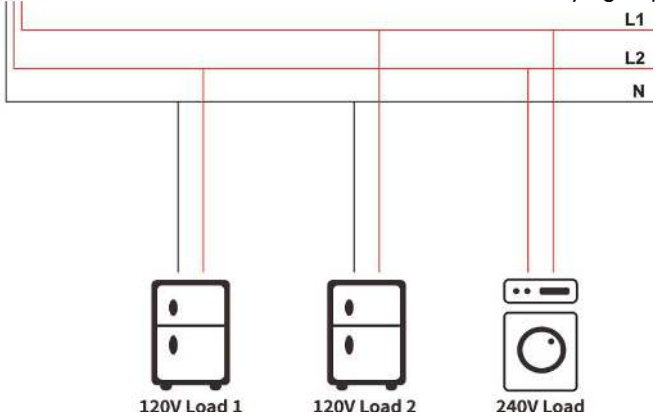
NOTE:

In a Storage System with APstorage PCS, the battery is one of the key components. Therefore, it is necessary to keep the installation environment well ventilated, please refer to Battery user manual.

2.3 Back-up Load Configuration

Case1. If there is no 240V load, 120V load1 or load2 total Max power ≤5.7kVA.
Case2. If there is 240V load and power is P1, P1 ≤11.4kVA, 120V load1 or load2 total Max power ≤(11.4-P1)/2 kVA

L1 or L2 Max continuous current carrying capacity ≤ 47.5A



Backup Port

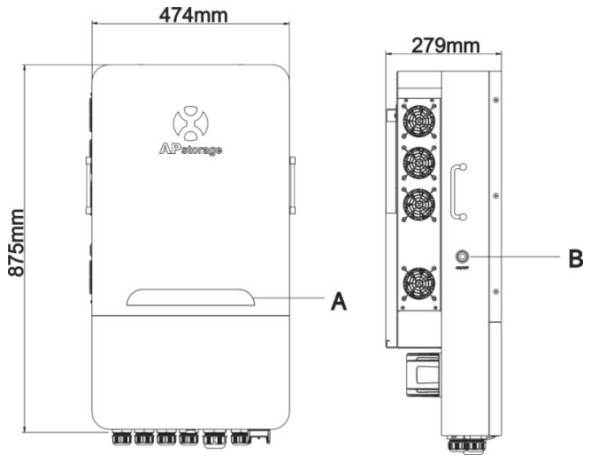
NOTE:

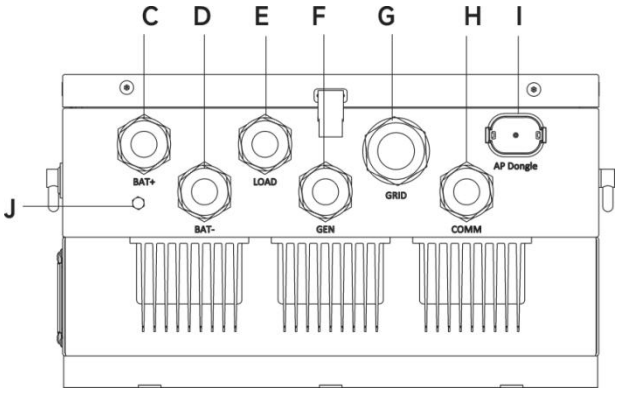
The 120V and 240V load configuration of auto-transformer should meet the below requirements. It is stipulated that the 120V load received by L1N and L2N do not exceed 5.7kW respectively. If there is 240V load, 240V load power needs to be subtracted and distributed equally. For example, 240V load power is P1, then (11.4kw-P1) / 2 is the remaining 120V power of the assemble able L1N and L2N. The imbalance load cannot exceed the new power distribution.

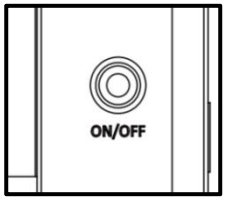
L1N: voltage between L1 and Neutral line

L2N: voltage between L2 and Neutral line

2.4 Casing Introduction







Once the PCS has been properly installed and the batteries are connected well, simply Press On/Off button (located on the left side of the case) to turn on the PCS and press On/Off button(ON/OFF button is switched off) to turn off the PCS.

* The image shown here is for reference only. The actual product received may differ.

Object	Name	Description
A	LED	LED indicators
B	On/Off Button	Turn on/off the PCS
C	BAT+	Battery positive cable inlet
D	BAT-	Battery negative cable inlet
E	LOAD	Backup Load cables inlet
F	GEN	Generator cables inlet
G	GRID	AC Grid cables inlet
H	COMM	Communication cables inlet
I	AP Dongle	AP Dongle insertion port
J	Exhaust valve	-

2.5 LED

There are eight LED indicators on the PCS unit, indicating the working state of the PCS.

LED	Condition	Description
SYSTEM		The system is operating
		The system is starting up
		The system shutdown
GRID		The grid exists and is connected
		The grid exists but is not connected
		The grid does not exist
BACK UP		The backup system is operating
		The backup is off
ENERGY		Buy energy from grid
		Zero output
		Supplying energy to grid
		The grid is not connected or system is not operating
BATTERY		The battery is charging
		The battery is discharging
		The battery SOC is low
		The battery is disconnected
WI-FI		The WiFi is connected to the router
		The WiFi is not connected to the router
		The WiFi function is closed
COM		The battery and the internet communication are normal
		The battery communication is normal,
		The battery communication is abnormal,
		The battery and the internet communication are abnormal
FAULT		Fault has occurred
		Back up output overload
		No fault

: Light on

: Light off

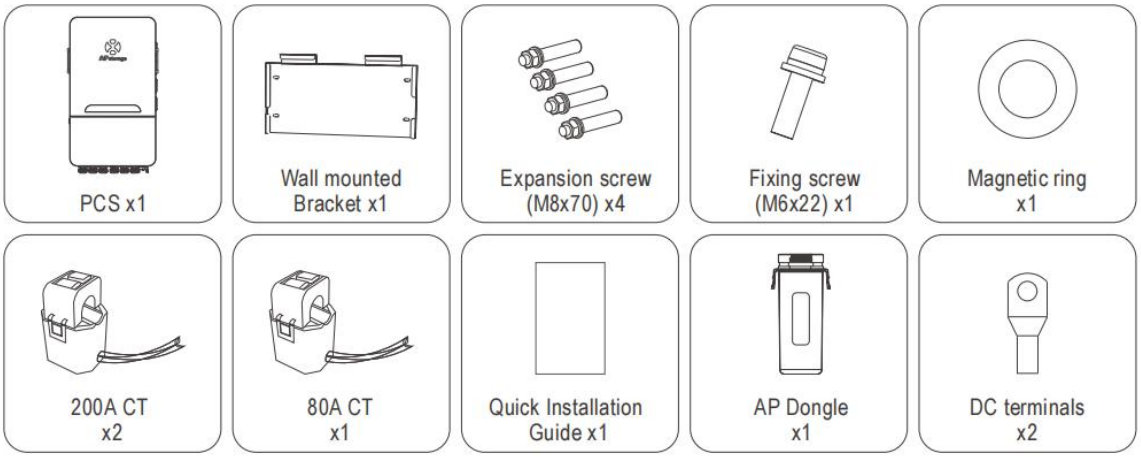
: Every 5 seconds light on for 1 second.

: Every 2 seconds light on for 1 second.

3. Installation

3.1 Packing List

Check the equipment before installation. Please make sure nothing is damaged in the package. You should have received the items in the following package:



NOTE:

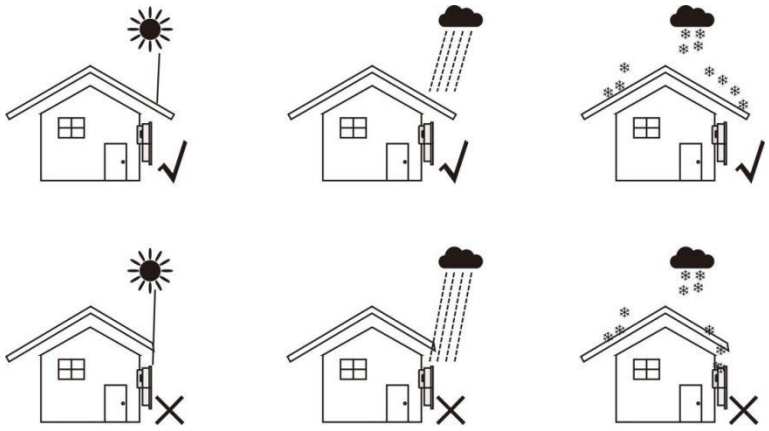
The expansion screws are applicable only to cement concrete walls. For other types of walls, install expansion screws based on the wall type.

NOTE:

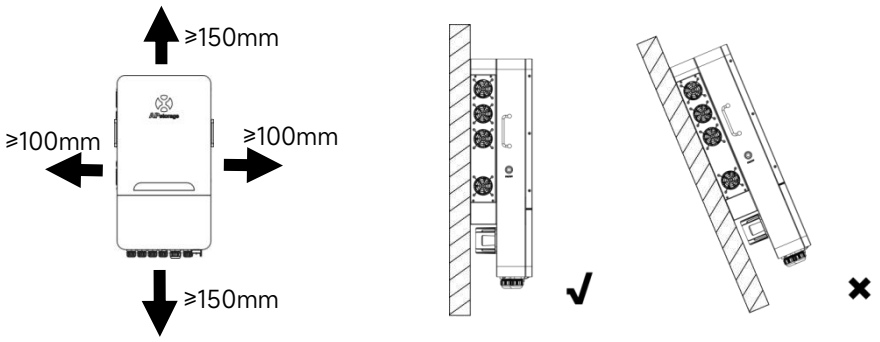
The customer will need to purchase a combiner box for parallel connection of the batteries. Combiner box requirements: rated current of each connector≧240A.

3.2 Select Mounting Location

1. PCS should be installed on a solid surface, where is suitable for PCS's dimensions and weight.
2. Do not install PCS in a confined space with no ventilation.
3. If the PCS is installed outside, it should be protected under shelter from direct sunlight or bad weather conditions (like snow, rain, lightning, etc). Fully shielded installation locations are preferred.



4. Install the APstorage vertically on the wall.
5. Make sure that the PCS is mounted "face-up": Product logo is visible after installation.
6. Leave enough space around APstorage. The specific requirements are as follows:



WARNING:

APstorage PCS cannot be installed near flammable, explosive or strong electro-magnetic equipment.

3.3 PCS installed on the wall

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").

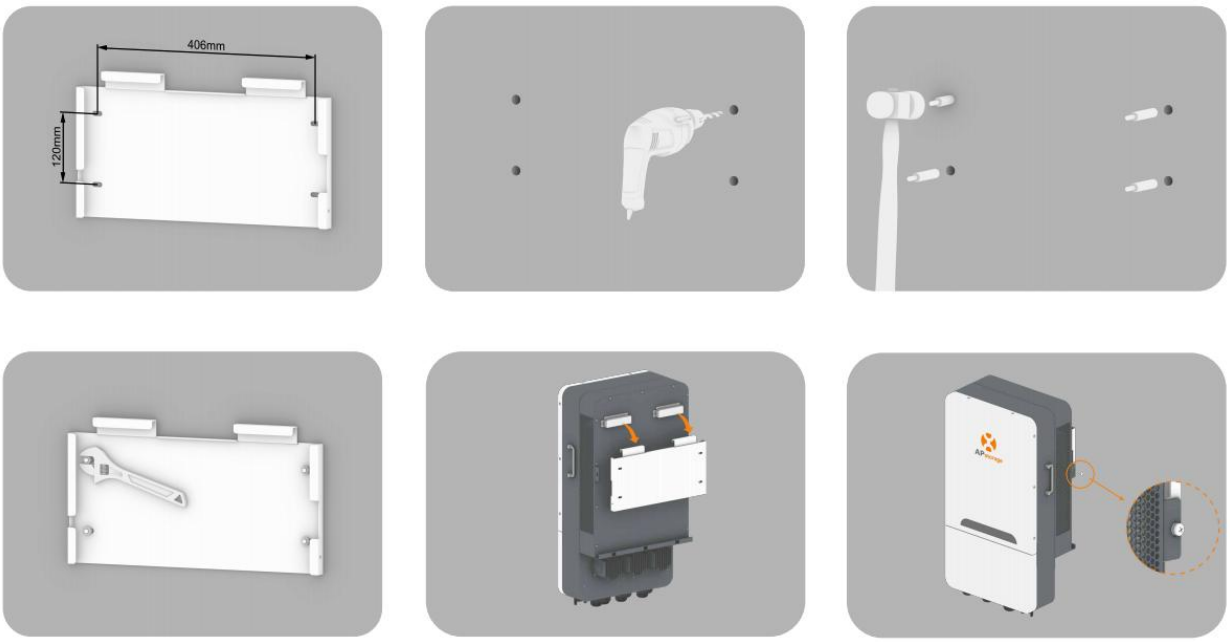
STEP 2

1. 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

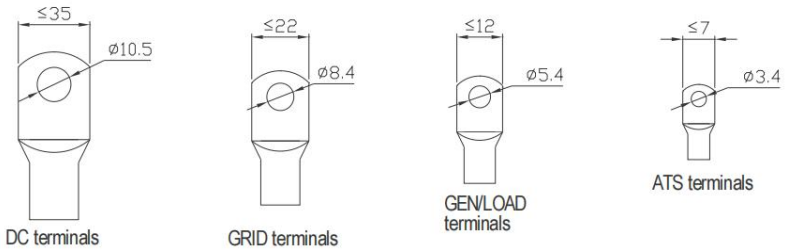
Lift the PCS to hang it into the wall mounting bracket, and fix the PCS on wall mounting bracket with the M6×22mm screw.



3.4 Terminals and Cables Introduction

When wiring, you need to crimp appropriate terminals on the cable (as shown for dimensions). The cables and terminals need to be prepared by yourself. (The DC terminal is a standard configuration, No need to purchase extra.)

Please choose the appropriate terminal for the cable diameter:



DC cable:

Model	Wire Size	Torque value
ELS-11.4	2/0 AWG	10 N·m

Grid cable:

Model	Wire Size	Torque value
ELS-11.4	3 AWG	2.5 N·m

ATS cable:

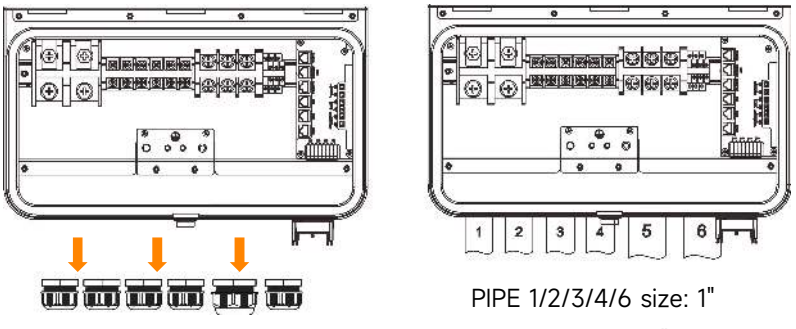
Model	Wire Size	Torque value
ELS-11.4	16 AWG	1.2 N·m

GEN/LOAD cable:

Model	Wire Size	Torque value
ELS-11.4	8 AWG	1.2 N·m

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";

PCS has been installed with cable glands before delivery. If connection is required through pipe **(prepare Pipe yourself)**, remove cable glands on the casing first. The pipe must be waterproof.



PIPE 1/2/3/4/6 size: 1"
PIPE 5 size: 1 1/2"

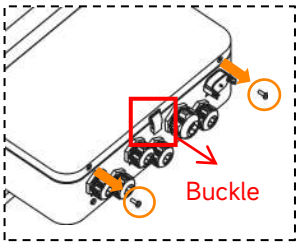
WARNING:

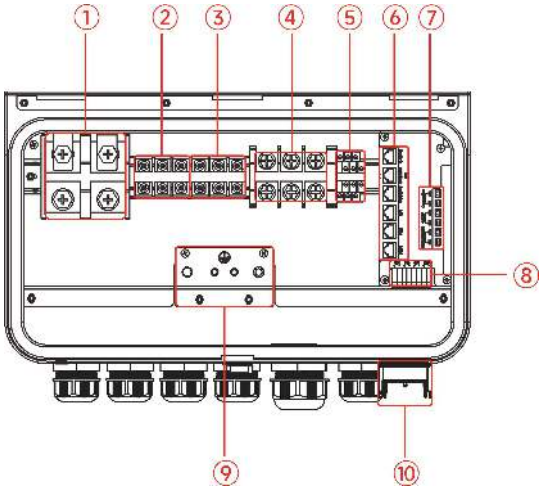
Do not drill holes in the casing at any location, otherwise we will not provide warranty.

3.5 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.

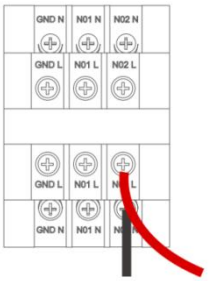




① BAT+ /BAT- Terminals
② LOAD Terminals
③ Off-Grid Input/Gen Terminals
④ GRID Terminals
⑤ ATS Terminals
⑥ Communication Terminals
⑦ CT Terminals
⑧ DO1/DO2/DO3 Terminals/RSD Terminals
⑨ Ground Terminals
⑩ AP Dongle

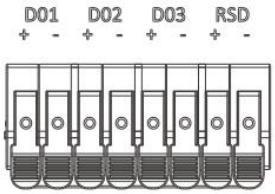
ATS Connection

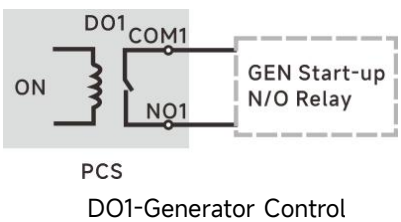
GND (Reserved, no wiring needed), NO1 is the ATS external contactor interface (for use with generators), and NO2 is the ATS external contactor interface (for use with off-grid PV). All interfaces must be connected to external contactors to enable functionality.



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

DO Connection





DO1-Generator Control

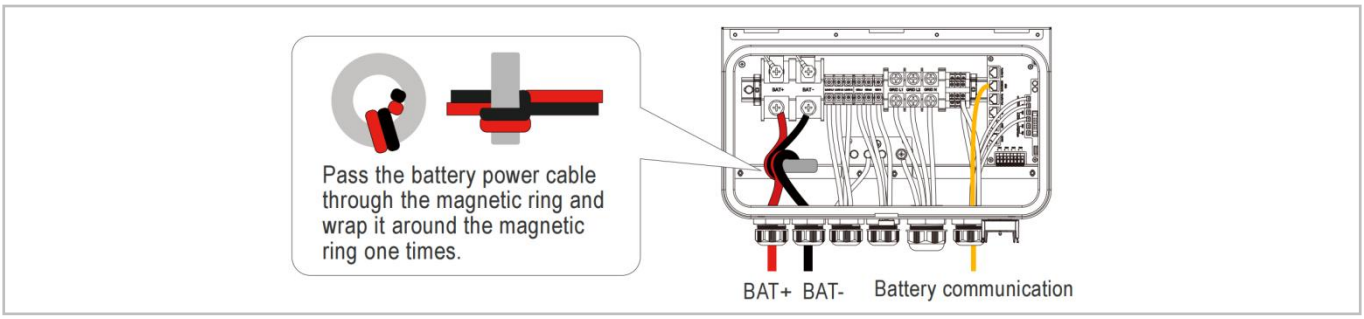
DO2/DO3: Reserve;

RSD: When PCS is working, a 12V voltage is provided between "+" and "-", which can be connected to an external RS485 switch. Close the switch to quickly shut down PCS and protect the equipment.

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:

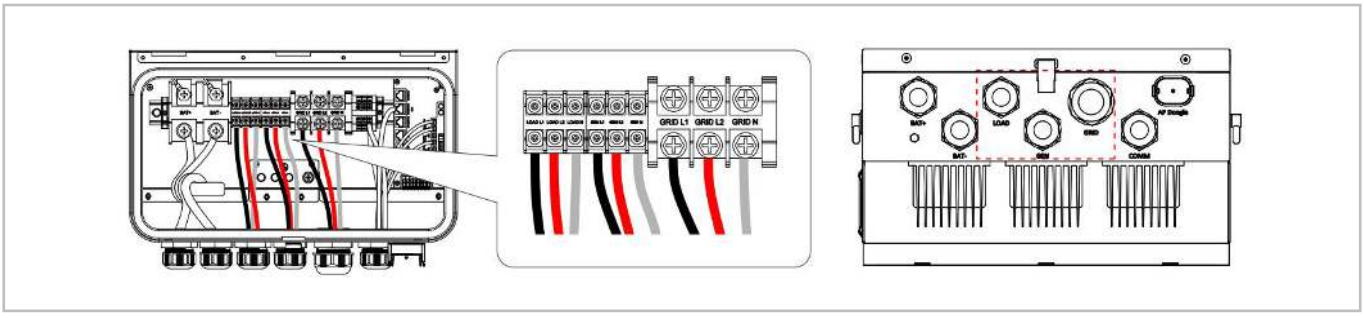
1. Ensure that the polarity of the battery and PCS are correctly connected, otherwise PCS may be damaged.
2. APstorage ELS/ELT series PCS are DC/AC isolated, so the battery ground should not be connected to AC ground. Leave battery ground point floating could ensure the system working safely and stably.

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.



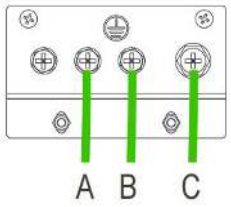
NOTE: Please ensure that the N and L wires are connected accurately.

STEP 4 Grounding Wiring

A: For GEN AC connection

B: For LOAD AC connection

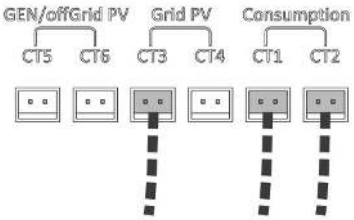
C: For GRID AC connection



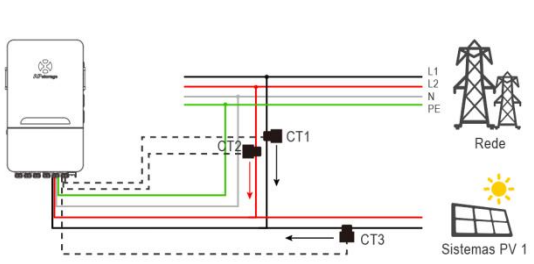
NOTE: A/B torque is 1.2Nm; The torque of C is 2.5Nm.

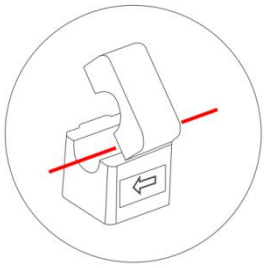
STEP 5 CT Wiring

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.



CT1/CT2: 200A CT3: 80A
CT5: 80A
CT4/CT6: Reserve





The arrows on the CT ring (as shown in the figure) should all point towards PCS. Please thread the wire of the CT ring through the COMM cable connector below.

NOTE:
CT5: If you need to connect a generator, you will need to purchase an additional generator-related function CT ring.

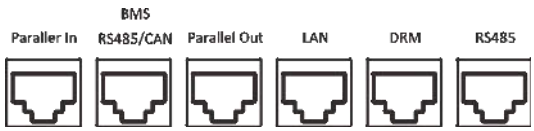
STEP 6 AP Dongle Installation

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.

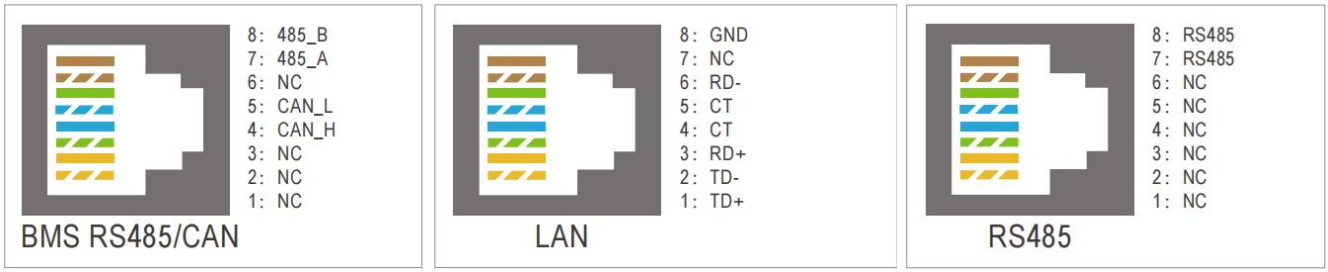
NOTE:
If Bluetooth is not connected for 5 consecutive minutes, it will automatically turn off. To reactivate the Bluetooth function, please press the corresponding button or plug and unplug to restart.

STEP 7 Network port wiring



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

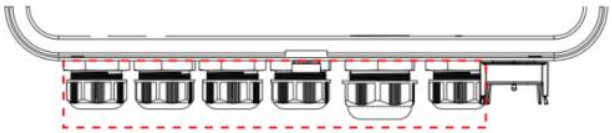
The configuration of each network port is as follows:



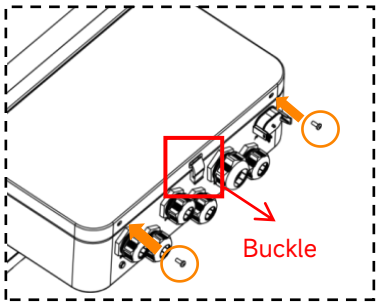
All network cables should be routed out from the COMM cable connector at the bottom.

STEP 8 Lower cover installation

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



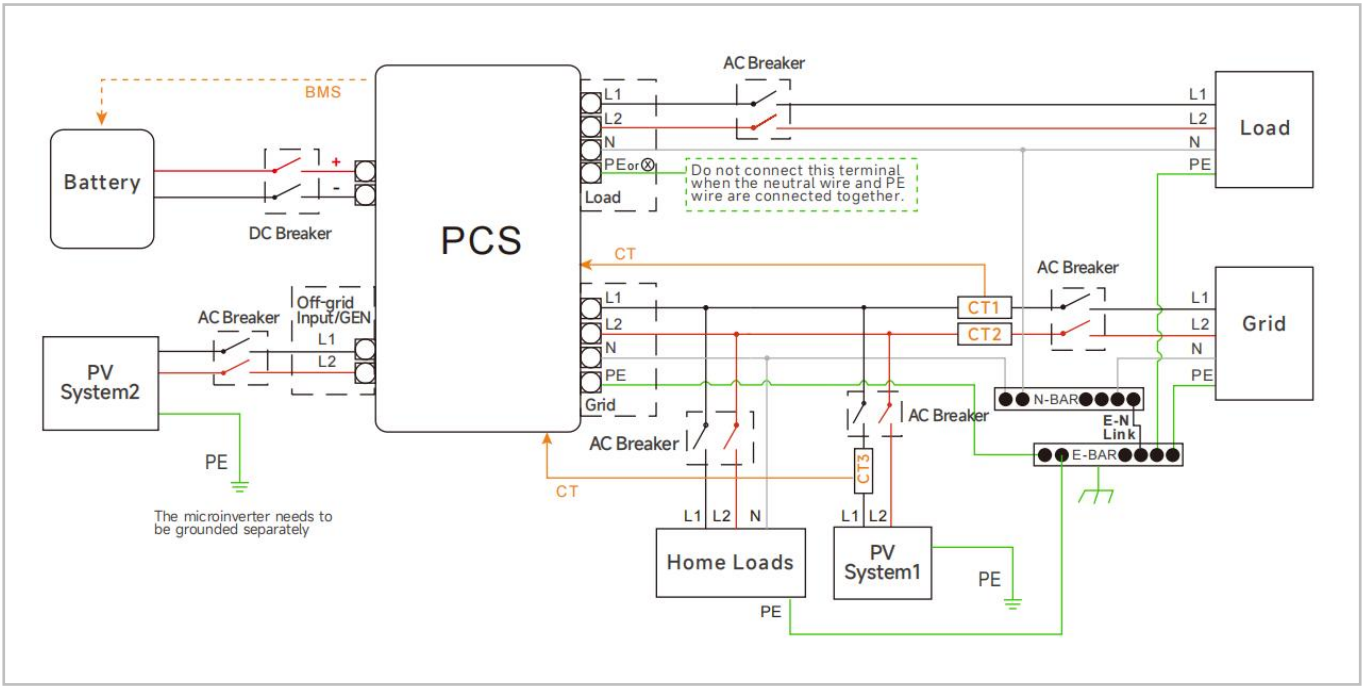
After completing all the above steps, please fasten the lower cover buckle first, and then tighten the screws.



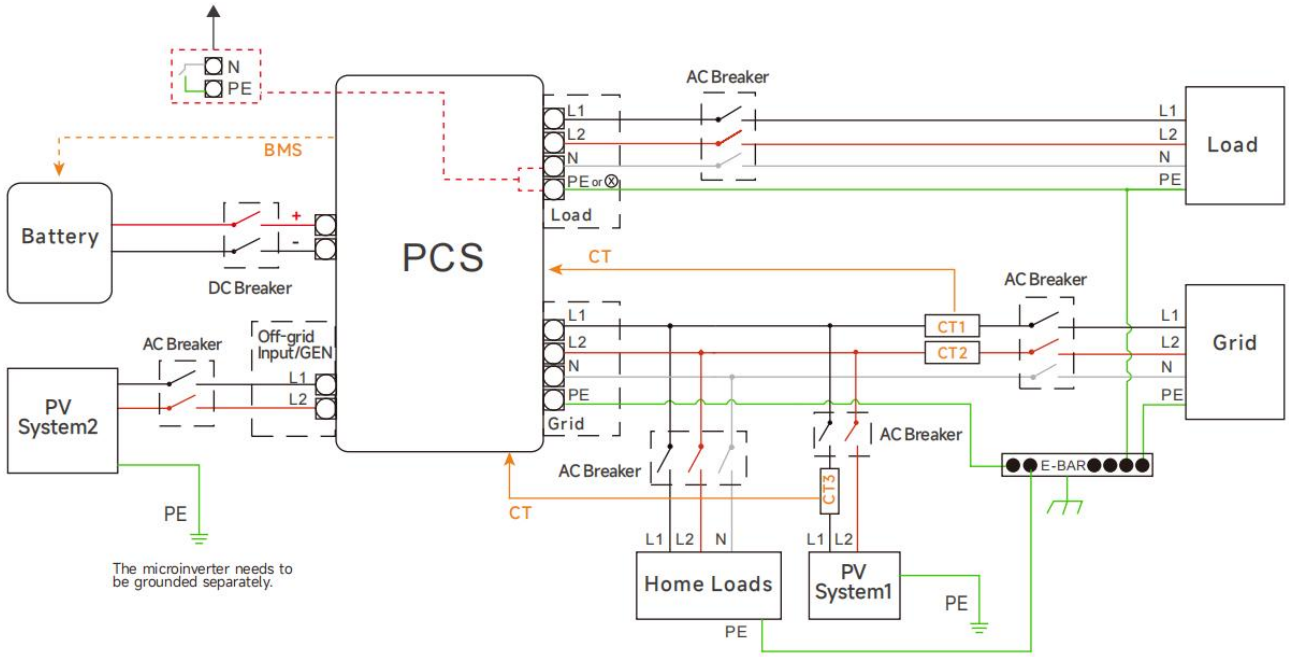
3.6 Wiring System for PCS

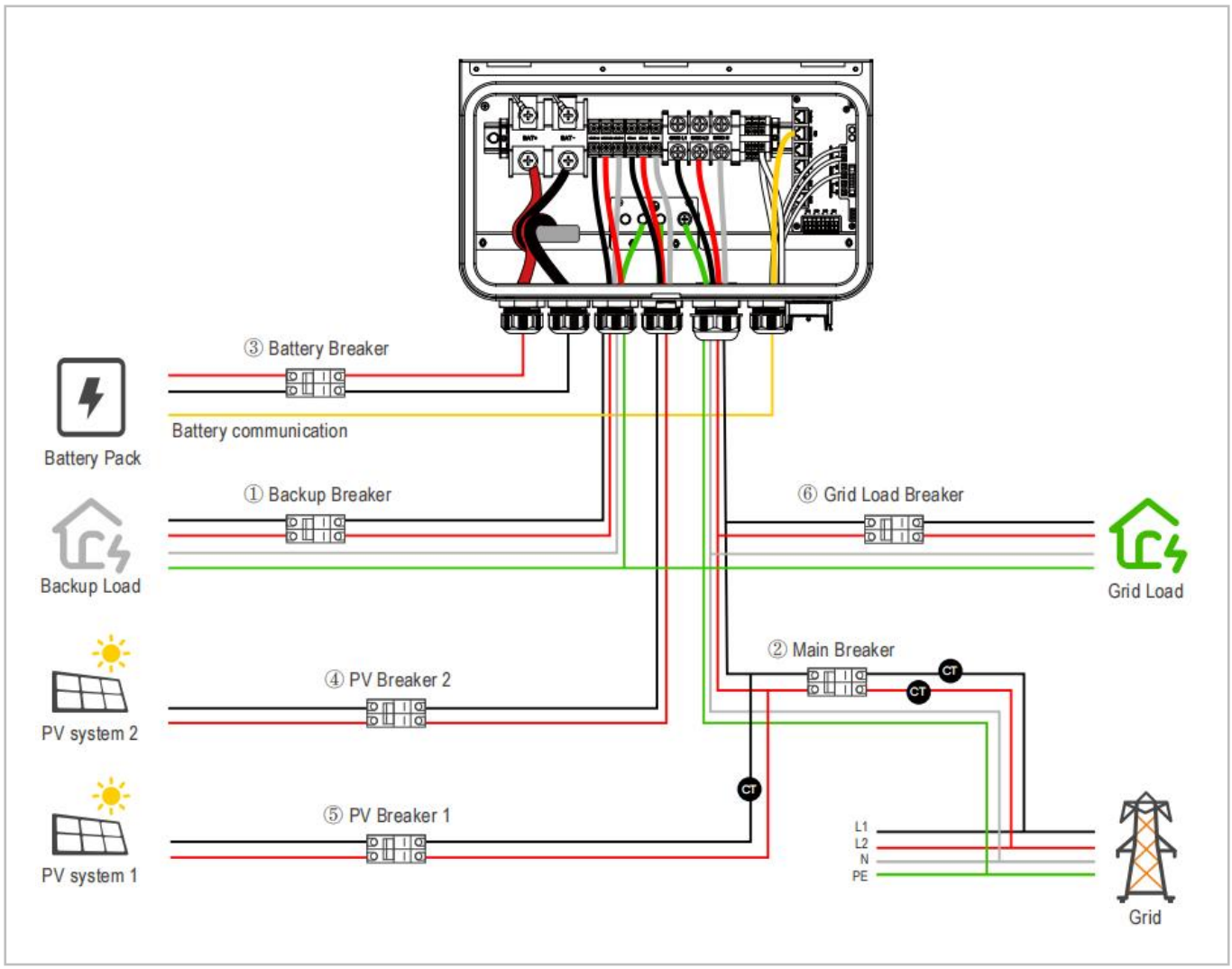
This diagram is an example for an application that neutral connects with the PE in a distribution box.

For countries such as Australia, New Zealand, South Africa, etc., please follow local wiring regulations!



When the inverter is working in backup mode, neutral and PE on the backup side are connected via the internal relay. Also, this internal relay will be open when the inverter is working in grid tied mode.





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

3.7 PCS Operation Procedures

3.7.1 Check all Below Steps Before Starting PCS

① Make sure the PCS is properly mounted to the wall.
③ Make sure all the DC wirings and AC wirings are completed.
④ Make sure the CT is connected properly.
⑤ Make sure the battery is connected properly.
⑥ Make sure all grounded busbar are connected property.
⑦ Make sure the PV system is connected properly.
⑧ Make sure the loads and critical loads are connected property, and the critical loads rating is within nominal rating range.

3.7.2 Power ON

Once the unit has been properly installed and the batteries are connected well, turn on the Battery DC Breaker, Grid AC Breaker, PV AC Breaker and Load AC Breaker, then turn on the batteries and press the on/ off button to power the system.

3.7.3 Check the system

Please refer to chapter 5.3.1 to check the system.

3.7.4 Power Off

Press the on/off button, turn off the Battery DC Breaker, Grid AC Breaker, PV AC Breaker and Load AC Breaker to shut down the system, then turn off the batteries.

WARNING: Installation must be performed with care. Before making the final DC connection or closing DC breaker/ disconnect, be sure positive(+) must be connect to positive(+) and negative(-) must be connected to negative(-). Reverse polarity connection on battery will damage the inverter.
WARNING: The installer is responsible for providing overcurrent protection.To reduce the risk of fire, install a circuit breaker or overcurrent device on both positive(+) and negative(-) conductors to protect the system.

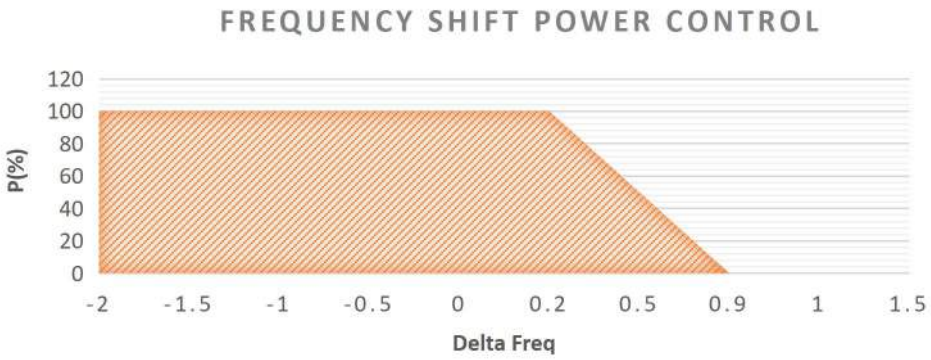
4. Off-Grid AC Coupling Installation

4.1 Frequency Shift Power Control

Functional Overview

If the PV inverter is connected to the off-grid side of the PCS in the system, the PCS must be able to limit its output power. This limitation is necessary when the battery of the PCS is fully charged and the available power of the photovoltaic system exceeds the power demand of the connected load. In order to prevent the battery from overcharging, the PCS uses the measured the photovoltaic power and the requested charging power from battery to adjust the frequency of the microgrid, and the photovoltaic inverter adjusts the output power by detecting the change of the frequency of the microgrid.

The Frequency Shift Power Control function needs to be enabled the off-grid charging function on the EMA App. At the same time, it is necessary to ensure that the PV module 2 is correctly connected to the Production CTs, the PV inverter function is enabled, and is set according to the APstorage over-frequency load reduction parameter setting table.



Example PV Inverter Function showing Power vs Delta Frequency

In the graph above, the horizontal axis is variation of the frequency, 0 is the rated frequency. The vertical axis represents the percentage of the current power to the rated power. The photovoltaic power changes with the microgrid frequency controlled by the PCS.

NOTE: The frequency change curve shown in above figure is only for display purposes. The specific parameters of the photovoltaic inverter and PCS are set according to the local certification standards and APstorage over-frequency load reduction parameter setting table.

4.2 PV System Switch

Functional Overview

If the PV inverter cannot control its the power through Frequency Shift Power Control, we propose the PV System Switch solution. Through the PV System Switch, we can disable the photovoltaic inverter to prevent the battery from being fully charged and the photovoltaic Situations where power cannot be stopped.We can control off-grid energy storage photovoltaic systems by opening and closing GEN relays:

A) Backup contactor: when the Battery SOC is lower than the lower limit of Backup SOC protection, the PCS stops supplying power to the load to ensure that the battery does not enter a state of power loss. When there is enough solar power to meet the starting conditions of PV module 2, PV module 2 charges the battery through the PCS.

B) When the battery SOC is greater than Backup SOC limit, Backup Loads can be enabled.

C) PV contactor: when the battery SOC is greater than the upper limit of off-grid charging SOC, PCS will disconnect the photovoltaic inverter to prevent battery overcharging and ensure the normal operation of Backup Load.

D) When the battery SOC is lower than the upper limit of off-grid charging SOC recovery, PCS will wake up PV module 2 which will supply power to the energy storage system.

4.3 PV System to APstorage Pairing

1. Determine the maximum single load power rating (kW) to be backed up and select the absolute minimum number of PCS units required to meet the requirements of 2017 NEC 690.10->710.15(A).

2. Calculate the required energy storage capacity (kWh) based on the backup load estimate for the user-defined time period, capacity and the minimum number of batteries required.

3. Calculate the maximum power (PV module 2) of the photovoltaic system connected to the PCS in Table 1. Note the number is different if the PV inverter has Frequency Curtailment and/or not.

If the total power of the photovoltaic system is greater than the maximum power, the excess power (PV System1) is connected to the grid side.

Table 1: The maximum power of the photovoltaic system for storage system backup

ELS-11.4 units (1unit per 11.4kWac)	Battery power (kWac)	Max PV system power in System 2 with Frequency Shifting (kWac)
1	≤14.24	Battery power
1	≥14.24	14.24

ELS-11.4 units (1unit per 11.4kWac)	Battery power (kWac)	Max PV system power in System 2 without Frequency Shifting (kWac)
1	≤11.4	Battery power
1	≥11.4	11.4

Two calculation examples are given below for reference:

Step 1: Figure out Battery Max Charge Power.

Step 2: Figure out PCS Charge Power.

Step 3: Take the smaller number.

Step 4: Multiply by 1.25 (If using Frequency Power Control).

Table 2: Examples Calculation of Off-grid Solar

Examples Calculation of Off-grid Solar	
1 ELS-11.4+3 APbattery-48V/5.76kWh	1 ELS-11.4+HomeGrid 4 Stack
1. Battery Power = 7.5kW 2. ELS Power =11.4kW 3. 7.5kW is smaller 4. 7.5kW*1.25= 9.375kW of Off-grid PV	1. Battery Power = 14.4kW 2. ELS Power = 11.4kW 3. 11.4kW is smaller 4. 11.4kW*1.25= 14.25kW of Off-grid PV

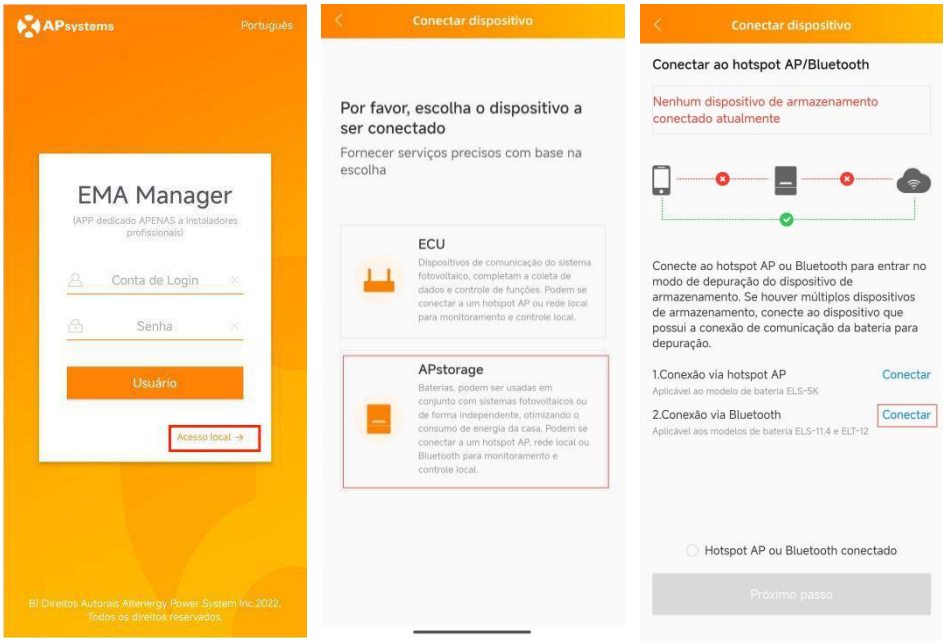
5. APstorage User Interface

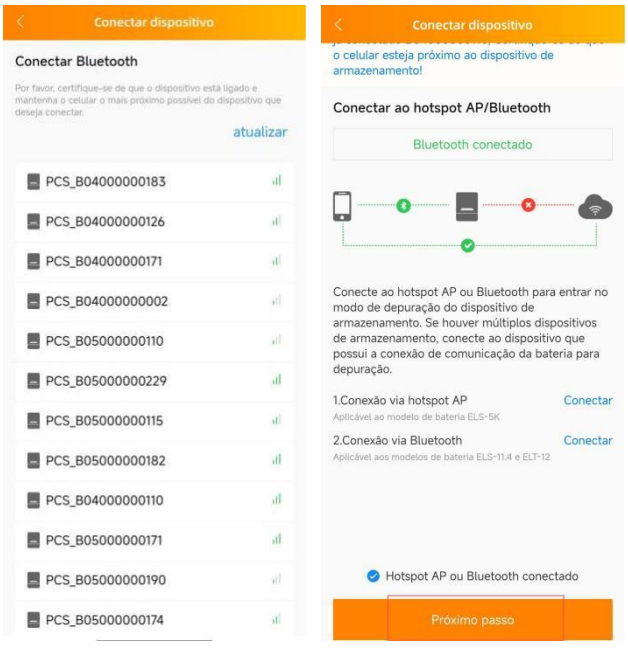
Professional and certified Installer can commission, monitor and maintain the APstorage solution and performance via the EMA Manager APP. Please search for the APP in APP Store or Google Play, or use mobile browser to scan the QR codes to download the APP. (EMA App is for end-users, EMA Manager is for installers). You can also click on the link below to download the APP: http://q-r.to/1OrC

For information related to initializing PCS, please refer to the **quick installation guide**.

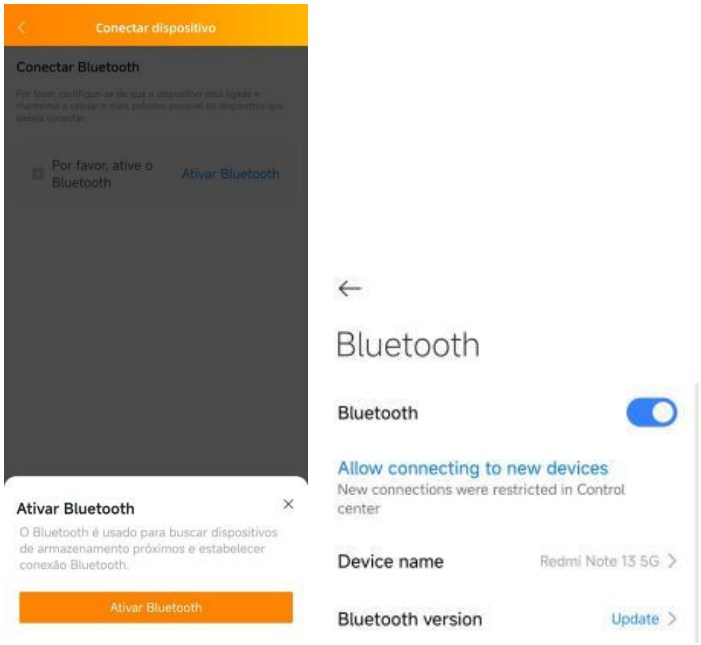
5.1 Configure APstorage with EMA Manager

Click the "Local Access" to navigate to the device selection interface. Opt for "APstorage" to reach the Bluetooth/Hotspot connection screen. Within this section, choose the Bluetooth connection option to initiate a search for your device. Identify and select the device by its unique UID, then return to the previous screen.The icon between the PCS and the smartphone changes from × in red to ✔ in green , click "Next" to access the Home Page.





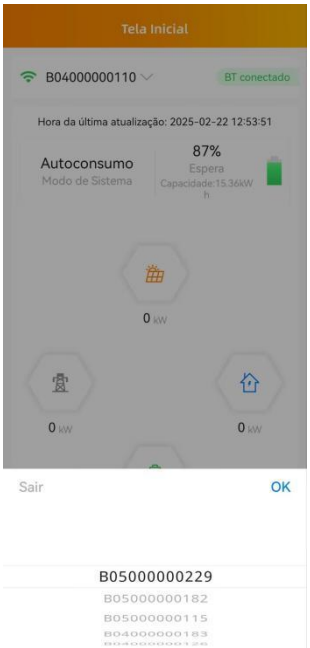
If selecting "Bluetooth Connection" when Bluetooth is not turned on, a prompt will pop up to guide you to enable Bluetooth. After returning to the app, it will continue to search for devices.



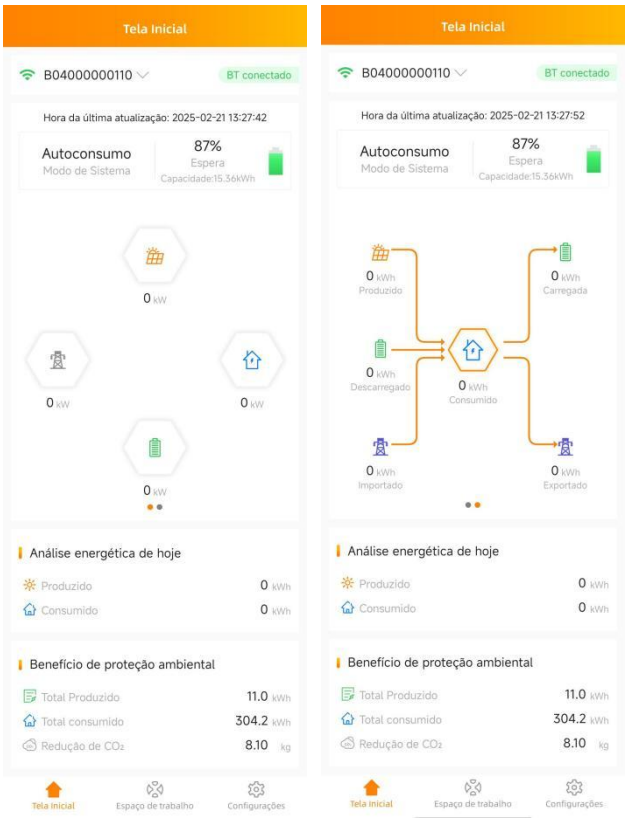
If the initialization process is entered at this point, please refer to the Quick Installation Guide for further instructions.

5.2 Home Page

5.2.1 After selecting the ID of APstorage PCS, you can access the homepage. If you have multiple APstorage PCS(ELS-11.4), you can switch by clicking on the dropdown menu.



5.2.2 You can view the system ID, charge and discharge status, real-time power, SOC, battery capacity,today's charged energy, total charged energy since installed, and CO_2 reduction.

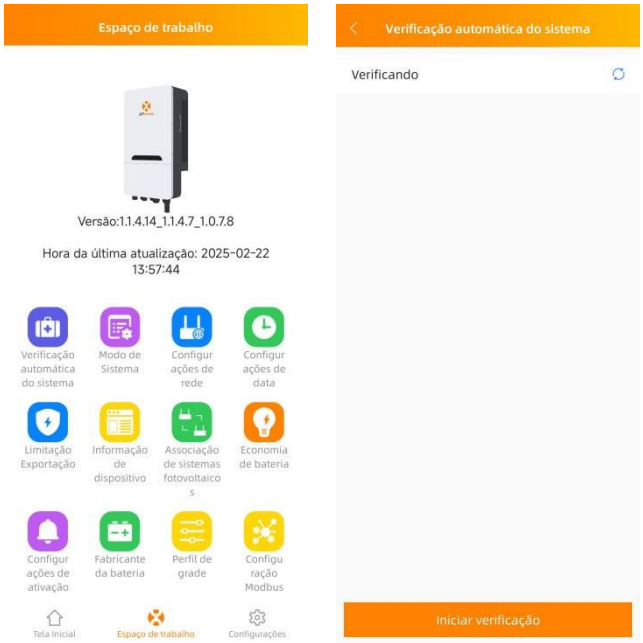


5.3 Workbench

The workbench displays the latest communication time, software version and currently supported function catalog. Click the corresponding button to enter the function page.

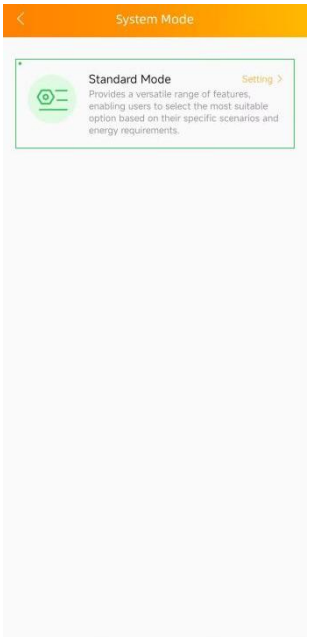
5.3.1 Automatic System Check

Enter the Automatic System Check interface, you can check the APstorage information. If there is an alarm, you can click to view the detailed information.



5.3.2 System Mode

Click the button "System Mode," on the next page select "Standard Mode," and you will be directed to the function selection page.



Backup power supply mode:

Emergency power supply (EPS) mode, the system charge when grid connected and discharge when off grid.

Self-Consumption mode:

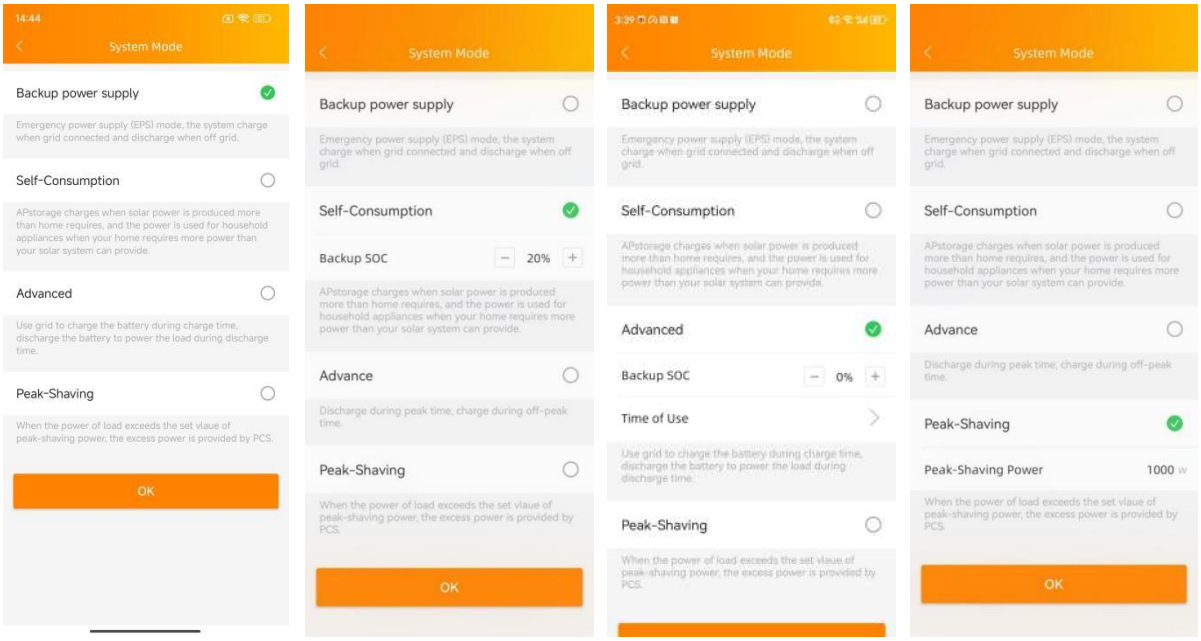
APstorage charges when solar power is produced more than home requires, and the power is used for household appliances when your home requires more power than your solar system can provide.

Advanced mode:

Discharge during peak time, charge during off-peak time.

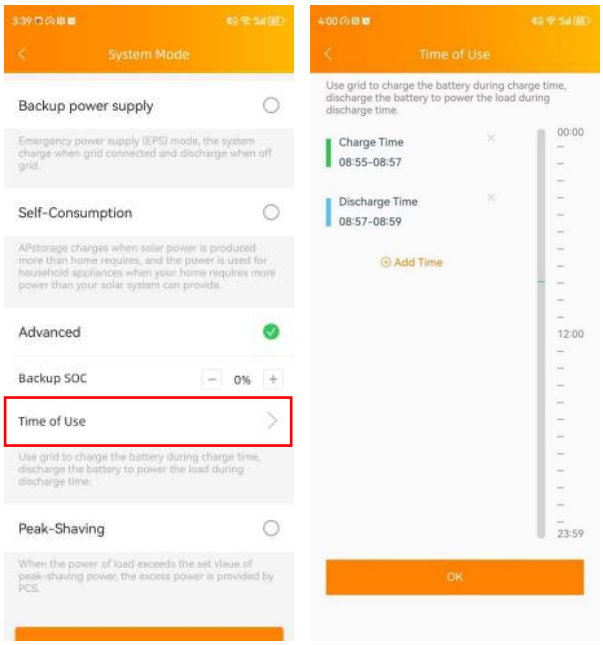
Peak-Shaving mode:

Input peak-shaving power,when the power of load exceeds the set value of peak-shaving power, the excess power is provided by PCS.



5.3.2.1 Time of Use

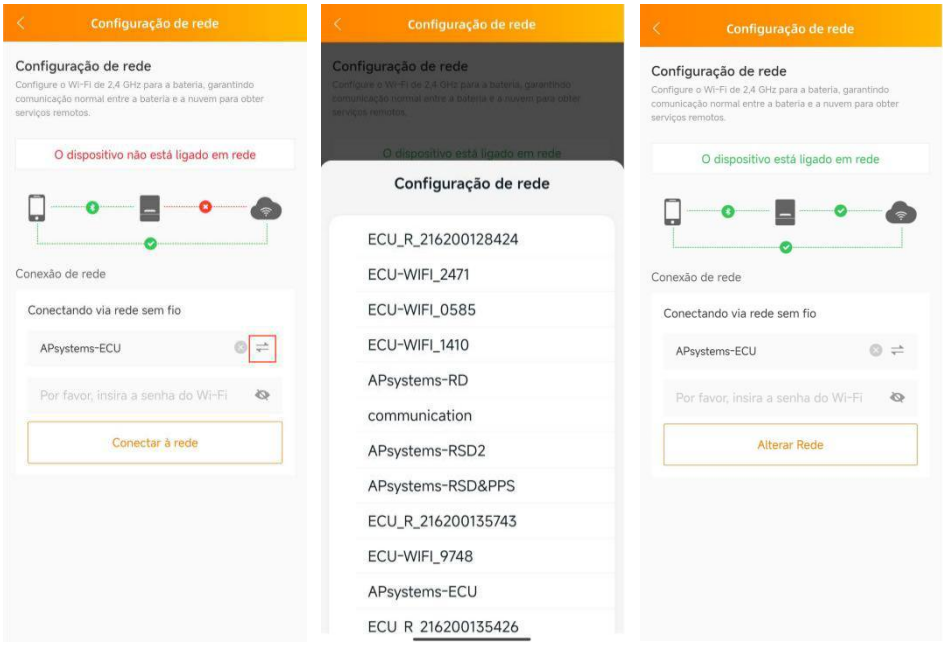
Click “Time of Use”, you can view the list of charge time and discharge time currently set. You can edit the time ranges by clicking on it. Click on the "Add Time" button to select the charge time or discharge time to be added.



5.3.3 Network Setting

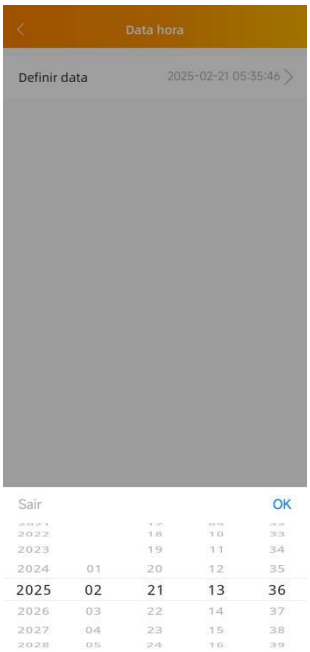
Click the button”Network Setting” to enter the WLAN Settings page.

Click the icon highlighted in the image below to search for nearby Wi-Fi networks. , 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 × in red to ✔ in green. The AP Dongle indicator light turns blue.



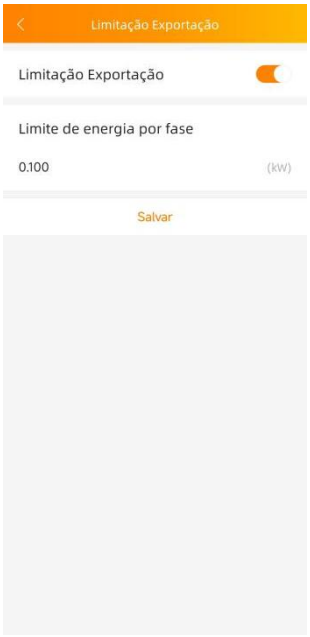
5.3.4 Data Settings

After entering this page, the time will be displayed on the right. Click on the date, time to modify.



5.3.5 Zero Export

Click the button "Zero Export", you will be directed to this page. After enable the function, the configurable information is displayed as shown, allowing you to set the desired power limit.

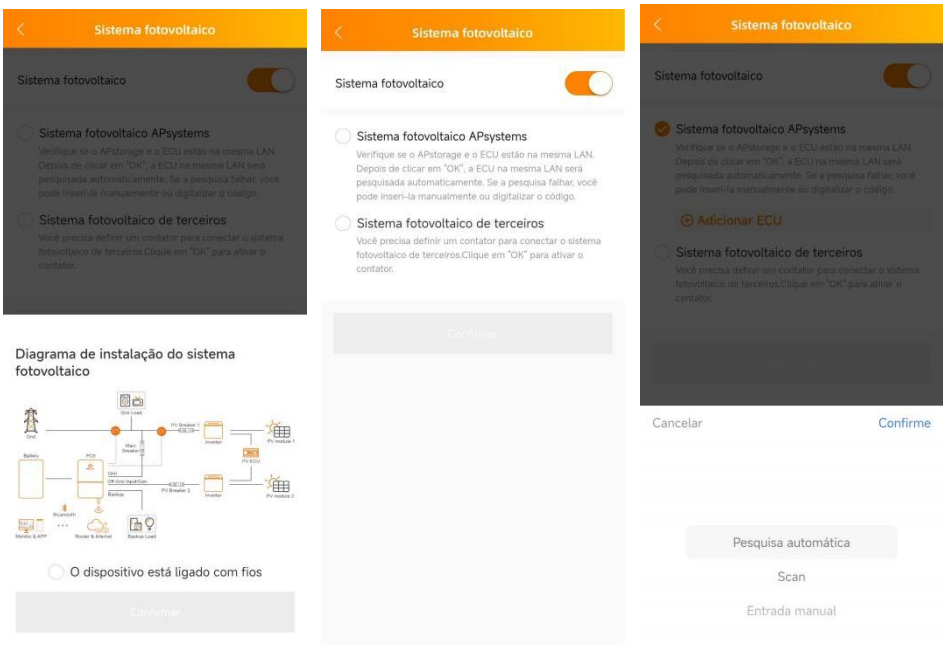


5.3.6 Device Information

After entering this page,you can view the relevant information of the device.

5.3.7 PV systems association

Click the button"PV systems association" to enter the PV systems association Settings page.When this feature is enabled ,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.



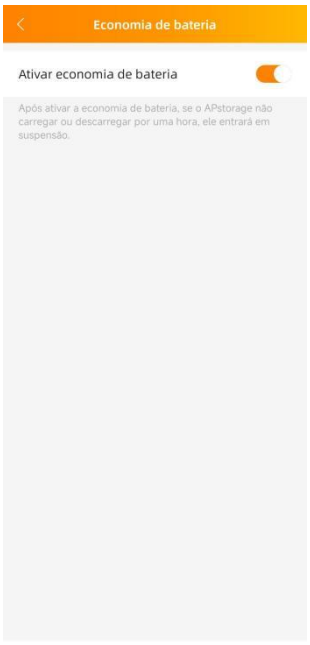
Select the APsystems PV system and click the icon "Add ECU." There are three available options. If you choose "Automatic search," the app will automatically search for nearby ECUs. If an ECU is found, tap on the ECU to record its information directly. If no ECU is found, please select one of the other two options: manually record the device information or scan the ECU ID.

After the ECU is successfully associated, you will see a green link indicator in front of the ECU ID on the page. If the indicator is gray, it means the ECU has not been successfully associated, and you should attempt the association process again.

Select Third-party PV system and tap OK. The contactor is turned on.

5.3.8 Battery saver

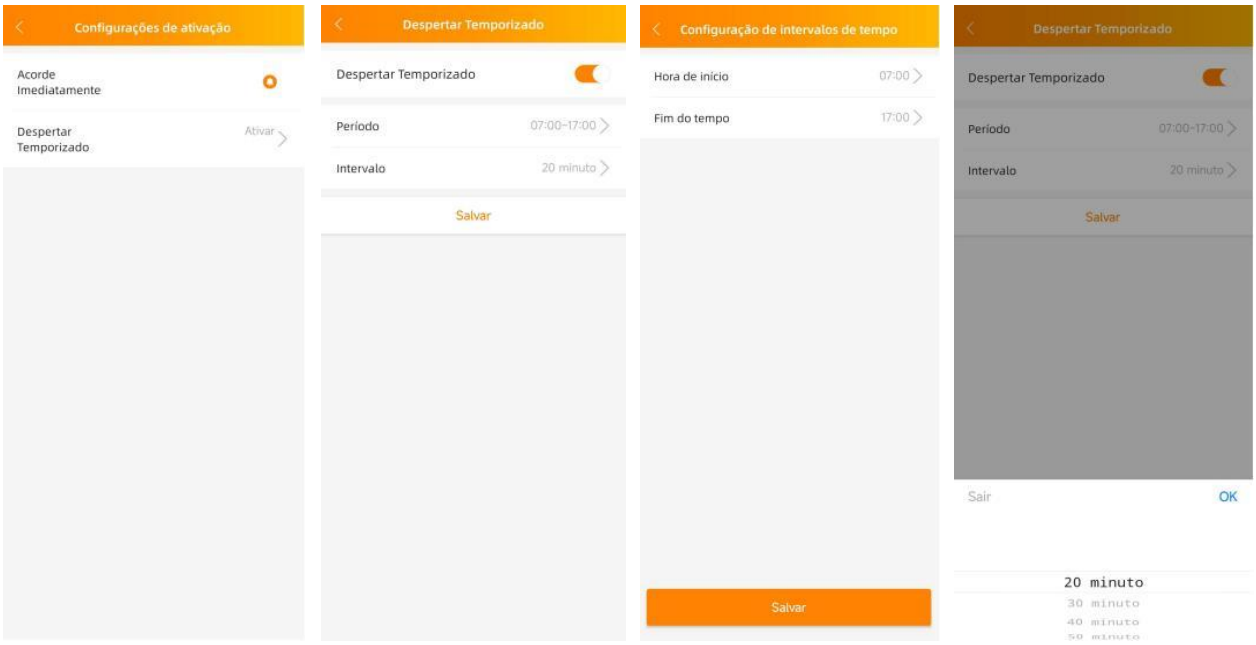
Entering this page, you can enable the "battery saver" function. After enabling the "battery saver" function, if APstorage doesn't charge or discharge for an hour, it will go to sleep.



5.3.9 Wake up Settings

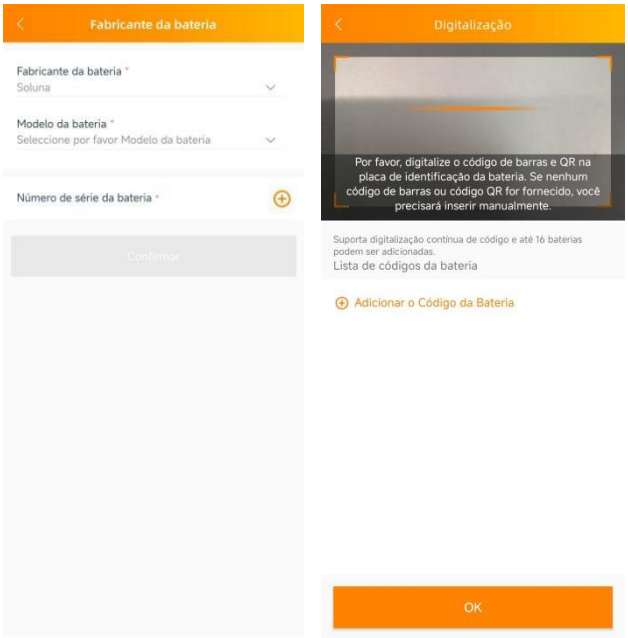
When system enters into sleeping mode, you can click the button”Wake up Setting” to enter this page and wake it up by clicking on "Wake Up Immediately" .

By clicking on "Timed Wake-up," you can enable the feature and set the wake-up time period and the interval between wake-ups.



5.3.10 Battery Company

Entering this page,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 .



5.3.11 Grid profile

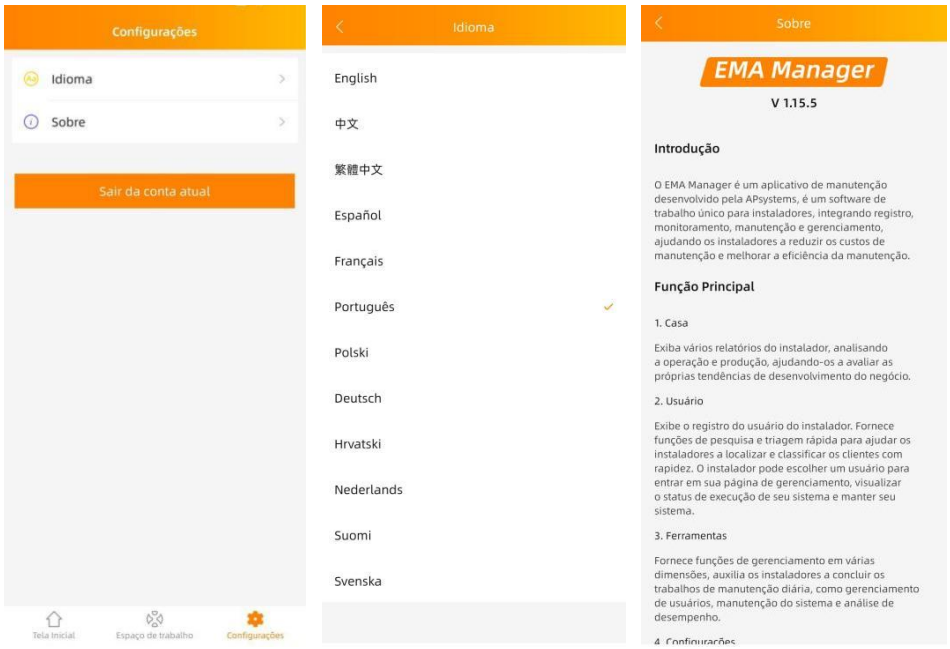
Enter this page,configure the Country/Region and Set Standard parameters based on your country or region and the grid standard. Parameters are displayed based on your settings. Retain the default values or change the values based on actual needs. After the grid configuration is complete, tap OK .

5.3.12 Modbus Configuration

Enter this page, and after enabling the function, you can configure the communication method, baud rate, and communication address.

5.4 Settings

Select "Language" to set the APP language, and "About" to view the APP introduction.



6. Technical Data

Model	ELS-11.4
Region	**NA**
General Specifications	
Dimensions W/H/D	875×474×279mm (34.4"x18.7"x11")
Weight	49.5kg (109lbs)
Maximum Efficiency	95.6%
Operating Ambient Temperature Range	-25°C-65°C (-13°F-149°F), >45°C derating
Storage temperature Range	-40°C-85°C (-40°F-185°F)
Ingress Protection	IP65
Relative Humidity	10%-90%
Ventilation	Smart cooling
Communication Ports	Ethernet/RS485/CAN
Warranty	10 Years
Grid Regulation	UL1741; CSA C22.2 No. 107.1-16; CA Rule21; UL1741 CRD
Safety and EMC Compliance	UL1741SB; IEEE1547; SRD-V2.OSRD-V2.O; FCC part15; ICES-003
Battery Input /Output Data	
DC Battery Input Voltage	40.0-60.0VDC
Charging Strategy for Li-Ion Battery	Self-adaption to BMS
Charging Curve	3 Stages / Equalization
Max Continuous Charge Current	240A
Max Continuous Discharge Current	240A
AC Input/Output Data (On-grid)	
Max. Continuous Output Power(1)	11400VA, 10000VA
Max. Continuous Output Current	47.5A/48A
Max. Continuous Input Power(1)	22800VA, 20000VA
Max. AC Current From Utility Grid	95.0A/96A
Nominal Output Voltage (L1-L2/L-N, L-N)	240VAC/120VAC , 208VAC
Adjustable Output Voltage Range	211-264V,183-228V(2)
Nominal Output Frequency/Range	60Hz/58.8-61.2Hz(2)
Output Power Factor	>0.99(Adjustable from 0.8 leading to 0.8 lagging)
THD	< 3%
Grid Connection	Single-phase
AC Output Data (Backup)	
Max. Output Apparent Power(1)	11400VA, 10000VA
Peak Output Apparent Power(1)	17100VA, 15000VA(10s)
Max. Output Current	47.5A/48A
Nominal Output Voltage (L1-L2/L-N, L-N)	240VAC/120VAC,208VAC
Nominal Output Frequency	60Hz
AC Input Data (Off-Grid Input/Gen)	
Max. Input Apparent Power(1)	11400VA, 10000VA
Peak Input Apparent Power(1)	17100VA, 15000VA(10s)
Max. Input Current	47.5A/48A
Nominal Input Voltage (L1-L2/L-N, L-N)	240VAC/120VAC,208VAC
Nominal Input Frequency	60Hz

(1) xxVA@240VAC/120VAC, xxVA@208VAC
(2) Voltage/frequency range can be adjusted if required by local utility

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