



# USER MANUAL

## SVE 16.6 PRO

**05**

year warranty

**32**

Units Parallel

**8000**

Cycles

**IP65**

Protection



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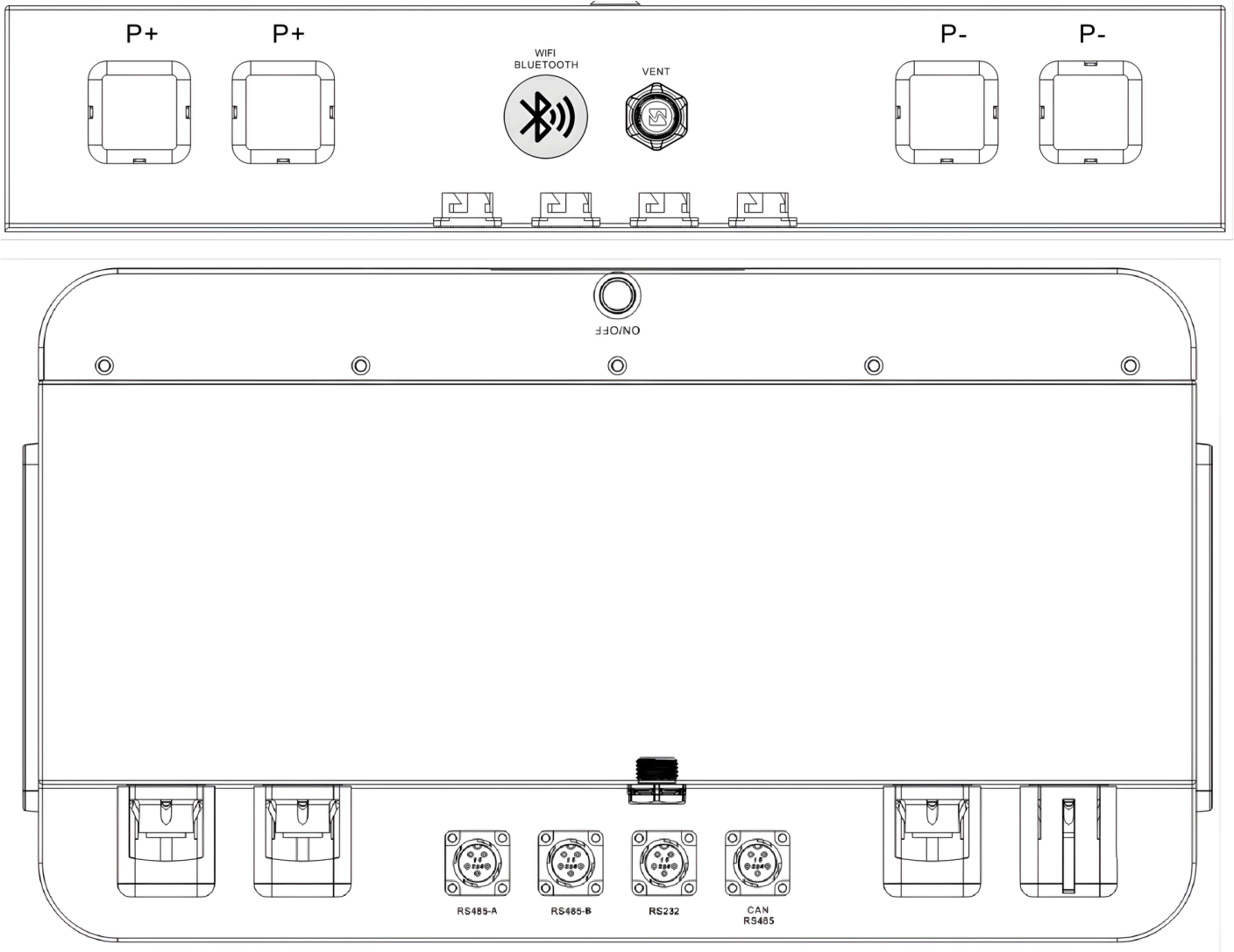
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# 1. PRODUCT OVERVIEW

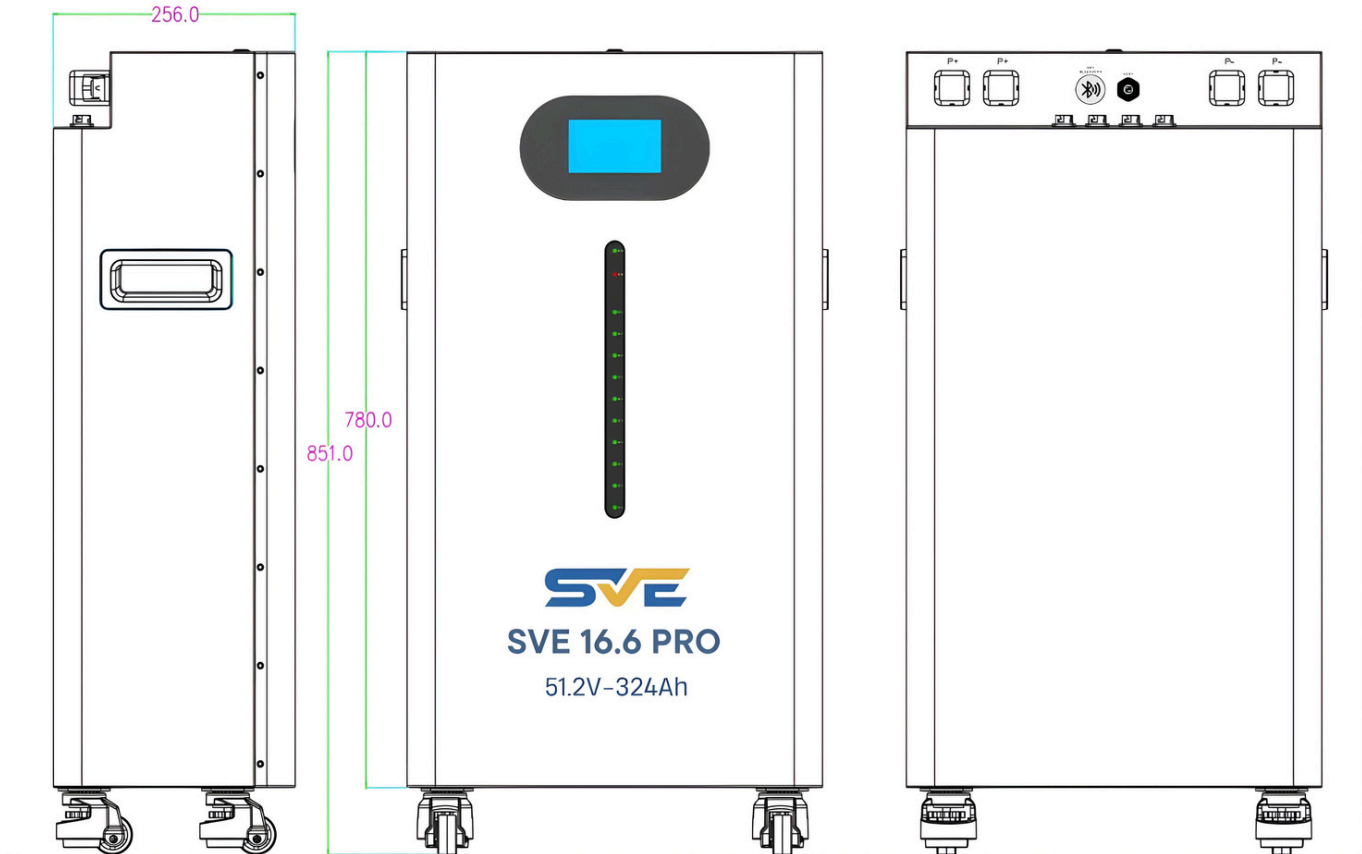
This product is a household energy storage system that meets various electricity needs in daily household life. Through reasonable charging and discharging strategies, it reduces electricity costs while ensuring the stability and reliability of electricity use.

## 1.1 Appearance

### 1.1.1 Output and communication terminals



## 1.1.2 Installation dimensions



## 2. Display and port functions

### 2.1 Dial code, Button, TFT touch screen, LED indicator and communication port

#### 2.1.1 Automatic parallel encoding

2.1.1.1. Turn off the battery first and then connect the positive and negative parallel wires of the battery → Connect the battery pack communication parallel wires (the first RS485-A port is connected to the second RS485-B port, and so on, the last one is the host) → After connecting the wires, start the machines one by one starting from the last host.

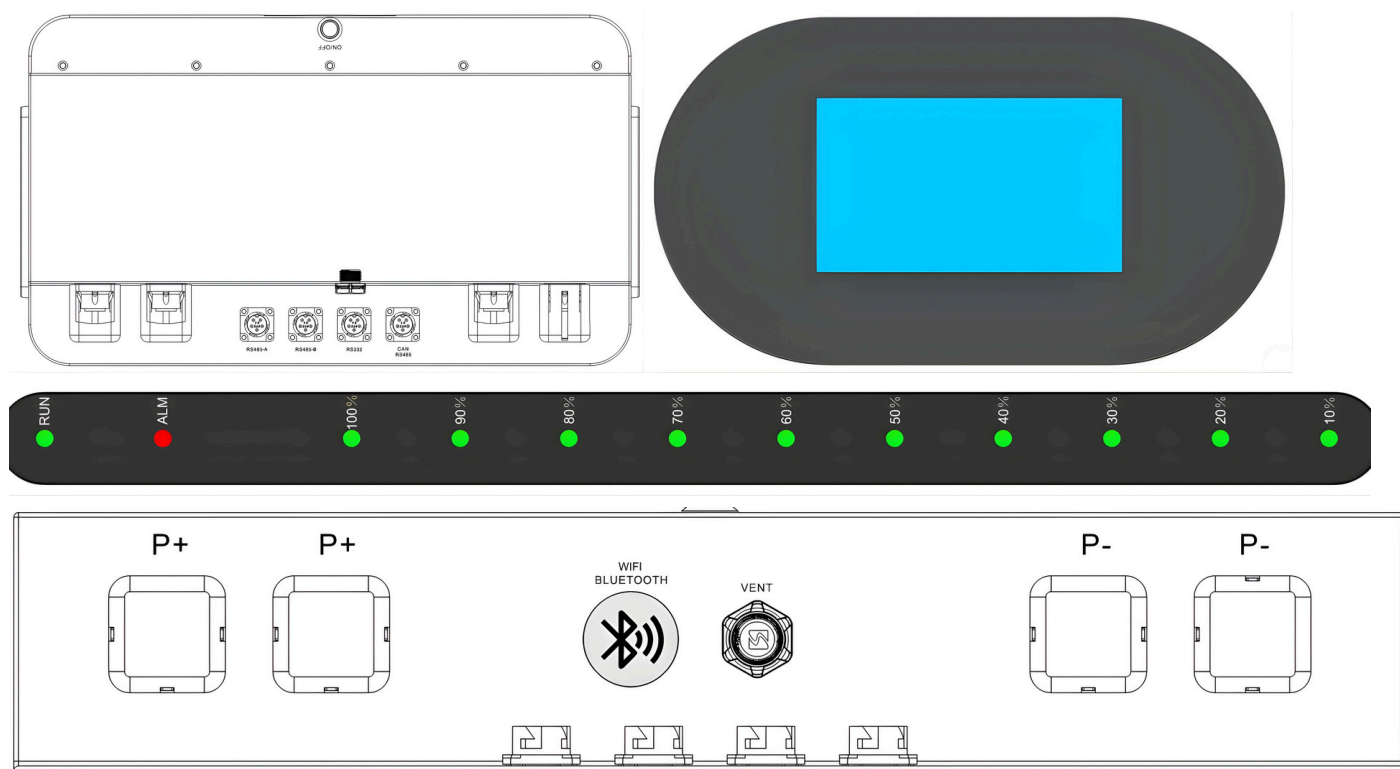
2.1.1.2. After the communication parallel line is connected, the system host will automatically encode after it is turned on (it does not matter what the order of starting the master and slave units is, the host will automatically encode after it is turned on).

If it fails, all the indicators of the corresponding single unit will flash together. A maximum of 32 units can be connected in parallel.

## 2.1.2 Button Functions

### 2.1.2.1 Turning on output

The ON/OFF button in Function Diagram 1 turns on the battery output. If multiple units are connected in parallel, connect the communication parallel cables and then press the button to turn on the battery output.



Functiondiagram 1

### 2.1.2.2 Turning off output

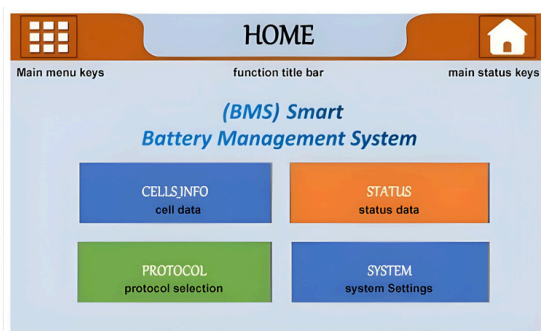
In the power-on state, press all the parallel ON/OFF buttons to pop out, turn off the display and battery output, and disconnect the P+ output.

## 2.1.3 TFT touch screen

When powered on, the TFT touch screen in Function Figure 1 can display various status information such as battery SOC, temperature, voltage, current, etc.

### 2.1.3.1 Icon Description

	Click the main menu icon to enter the HOME interface of the main menu
	The Main status icon. Click to enter the Main State interface
	System Settings/Language selection



## 2.1.3.2 Permission Description

### 2.1.3.2.1 There are three levels of permissions

- ① **No permission:** Can browse the welcome interface and main status interface; restricted from browsing other battery cell details and fault alarm details;
- ② **Operator permissions:** can browse all interfaces and select language options, but cannot set or modify protocols;
- ③ **Administrator privileges:** can browse all interfaces, select language options, and set and modify protocols;
- ④ **Protocol authority security:** To re-enter the protocol setting interface, you need to re-enter the administrator password. When you exit the protocol interface, the password you have entered will be cleared.

**Password: Administrator password: 82993060; Operator password: 87654321**

## 2.1.4 LED indicators and communication ports

### 2.1.4.1 LED indicators

In the power-on state, the LED indicators of function diagram 1, RUN is the green normal operation indicator, ALM is the red alarm indicator, and the 10 SOC green indicators indicate the battery power.

#### Function: System self-check upon startup

Perform a self-check of all the LED lights (red, blue, green) in a cascading light sequence. When the system is powered on, all the LED lights will perform a self-check and display the results as follows:

- ① **Red flashing lights:** The red display starts from the battery level indicator Led-01 and increases sequentially. Eventually, all lights turn on and then off, before moving on to the next round.
- ② **Blue water flow lights:** the yellow display starts increasing from the battery level indicator Led-01, then turns on completely, then turns off completely, and then enters the next round.

The green flowing light shows a gradual increase from the battery level indicator Led-01, until it is fully illuminated and then enters the working mode.

SOC	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	ALM	RUN
$0 < S \leq 10\%$	Green	--	--	--	--	--	--	--	--	--	--	Green
$10\% < S \leq 20\%$	Green	Green	--	--	--	--	--	--	--	--	--	Green
$20\% < S \leq 30\%$	Green	Green	Green	--	--	--	--	--	--	--	--	Green
$30\% < S \leq 40\%$	Green	Green	Green	Green	--	--	--	--	--	--	--	Green
$40\% < S \leq 50\%$	Green	Green	Green	Green	Green	--	--	--	--	--	--	Green
$50\% < S \leq 60\%$	Green	Green	Green	Green	Green	Green	--	--	--	--	--	Green
$60\% < S \leq 70\%$	Green	Green	Green	Green	Green	Green	Green	--	--	--	--	Green
$70\% < S \leq 80\%$	Green	Green	Green	Green	Green	Green	Green	Green	--	--	--	Green
$80\% < S \leq 90\%$	Green	Green	Green	Green	Green	Green	Green	Green	Green	--	--	Green
$90\% < S \leq 100\%$	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	--	Green

### **2.1.4.2 Communication Ports:**

1. The 2 M19 interfaces RS485 and CAN are arranged in parallel on the left side of functional diagram 1. These two are the communication interfaces between the battery and the photovoltaic inverter. When the battery is the host, it can aggregate the data of the slaves and communicate with the inverter. The baud rate of RS485 communication is 9600 bps by default, and the frequency of CAN communication is 500K by default.
2. On the right side of the functional diagram 1, there are two M19 interfaces, namely RS485-A and RS485-B, which are arranged side by side. These two are the parallel RS485 communication interfaces for the battery. The default baud rate is 9600 bps.
3. The M19 interface in the middle of Function Diagram 1 is the RS232 communication terminal of the battery BMS. BMS can communicate with the PC via upper software through the RS232 interface, so that the PC can monitor various information of the battery, including battery voltage, current, temperature, status, etc. The default baud rate is 9600 bps.

### **2.1.5 Battery output terminal**

In functional diagram 1, P+ and P- are the positive and negative outputs of the battery PACK, which are used as high-power output and high-power charging input.

The positive and negative terminals support 200A continuous current: M8 screw / 200A / red is positive / black is negative.

## **2.2 Bluetooth / WIFI function**

### **2.2.1 Reset Bluetooth and add new Bluetooth devices**

Press the RESET button in function diagram 2 for 10-13 seconds. After all the SOC lights are on, only RUN light is on. Release the RESET button (except the ON/OFF light). Wait for 8 seconds and then can see the new device in the APP Add Devices section.

### **2.2.2 WiFi Function**

#### **2.2.2.1 WiFi communication**

Press the RESET button in function diagram 2 for 10-13 seconds. After all the SOC lights are on, only RUN light is on. Release the RESET button (except the ON/OFF light). Wait for 8 seconds and then can see the new device in the APP Add Devices section.

### 2.2.2.2 Download APP

Select the download link according to your phone system:

- ① **Android entrance:** Mobile phones that support GMS can download PACEEX App through Google Play Store, and Android phones that do not support GMS can install APK directly

**LINK:** <https://play.google.com/store/apps/details?id=com.paicheng.bms>

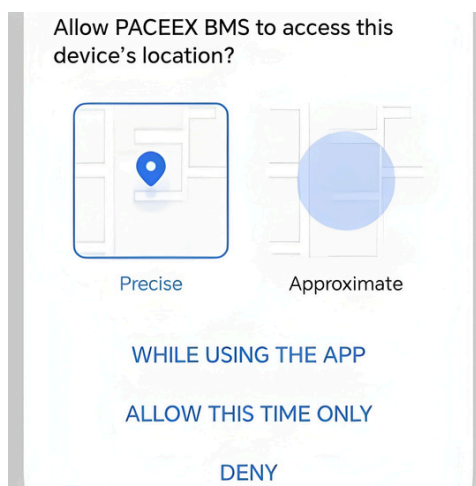
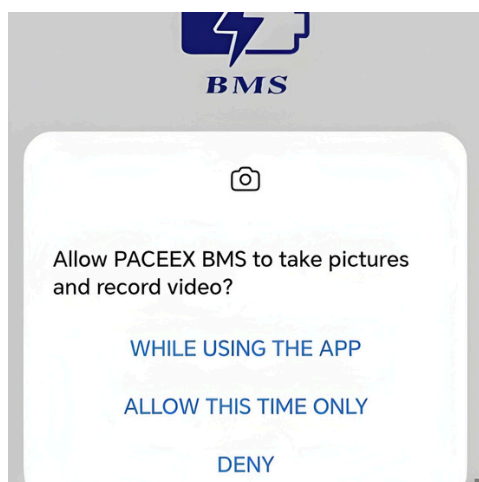
- ② **iOS entrance:** Search for PACEEX downloads in the App Store

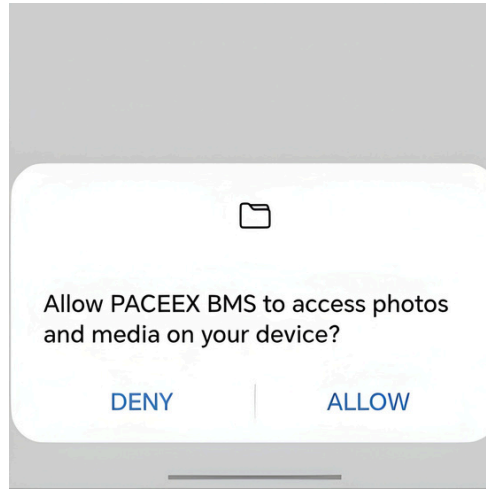
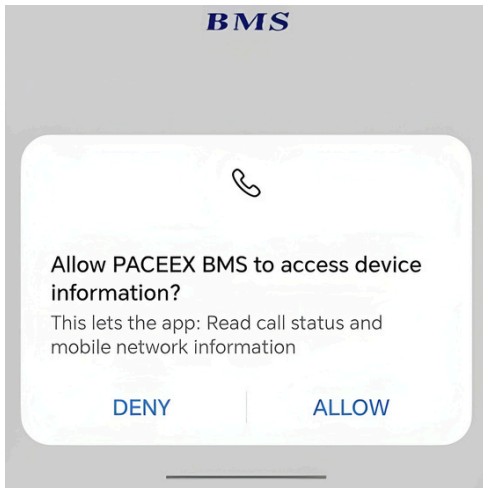
**LINK:** <https://apps.apple.com/cn/app/6461723294>

### 2.2.2.3 APP dynamic permission

For the first start, you will request the user to confirm and authorize the following authority:

- ① Camera permission: Add WIFI devices in the remote control
- ② Location permission: search for nearby Bluetooth devices in local control and identify current network information in the remote control
- ③ Equipment status information: to detect the operation status of the equipment
- ④ Photos and audio: The code scanning interface in the remote control system can directly identify the local photo album





### 2.2.2.3 Control method (Refer to Diagram 1)

- ① Local control: BLE Bluetooth communication, directly search for the nearby Bluetooth signal, a pair of continuous connections, control devices, no account login, do not do binding records, that is, ready to use.
- ② Remote control: WiFi communication, which realizes the purpose of controlling the device rather than in the same geographical location. It requires account registration and login, records the binding between the account and the device, and requires the distribution network operation.



(Diagram 1)



(Diagram 2)

### 2.2.2.4 Local control (Refer to Diagram 2)

When the device is in the distribution network state, click the local control button to search the device on the local control page, and click the device to enter the device control page.

### 2.2.2.5 Account registration and login

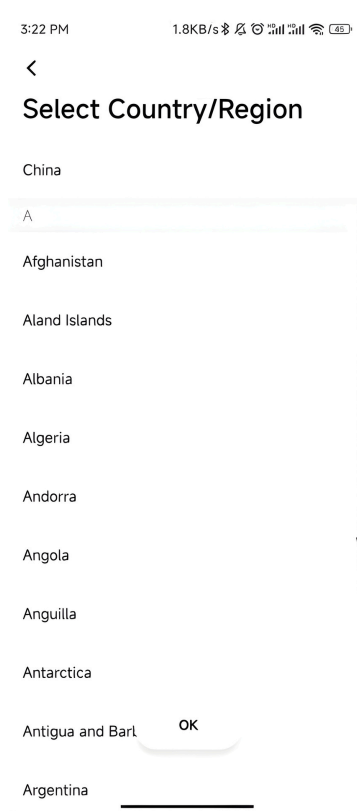
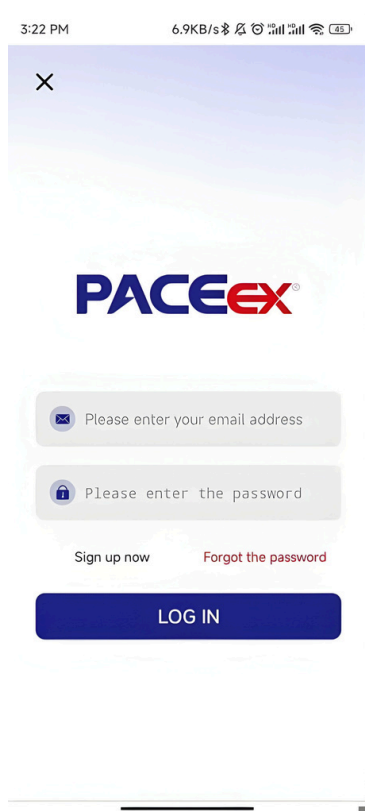
① Registration: Create the new account by means of email account, password and verification code.

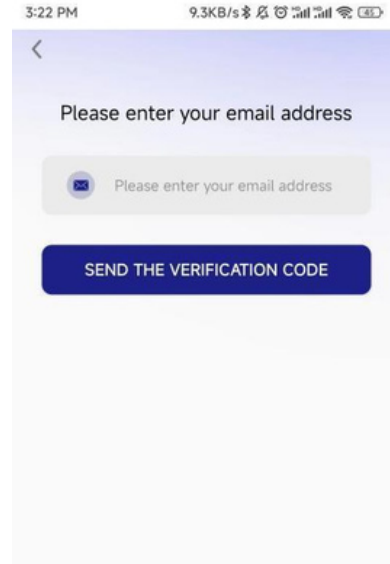
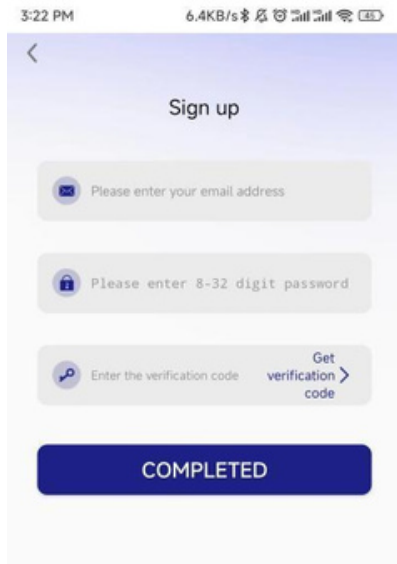
Note: Please select the real country and region according to the actual situation. This is very important.

Once selected and created successfully, the devices added through the account distribution network will automatically connect to the server node with the same account

② Login: Log in with the registered account number and password

③ Forget your password: You can reset your password through your email number





## 2.2.2.6 Equipment added

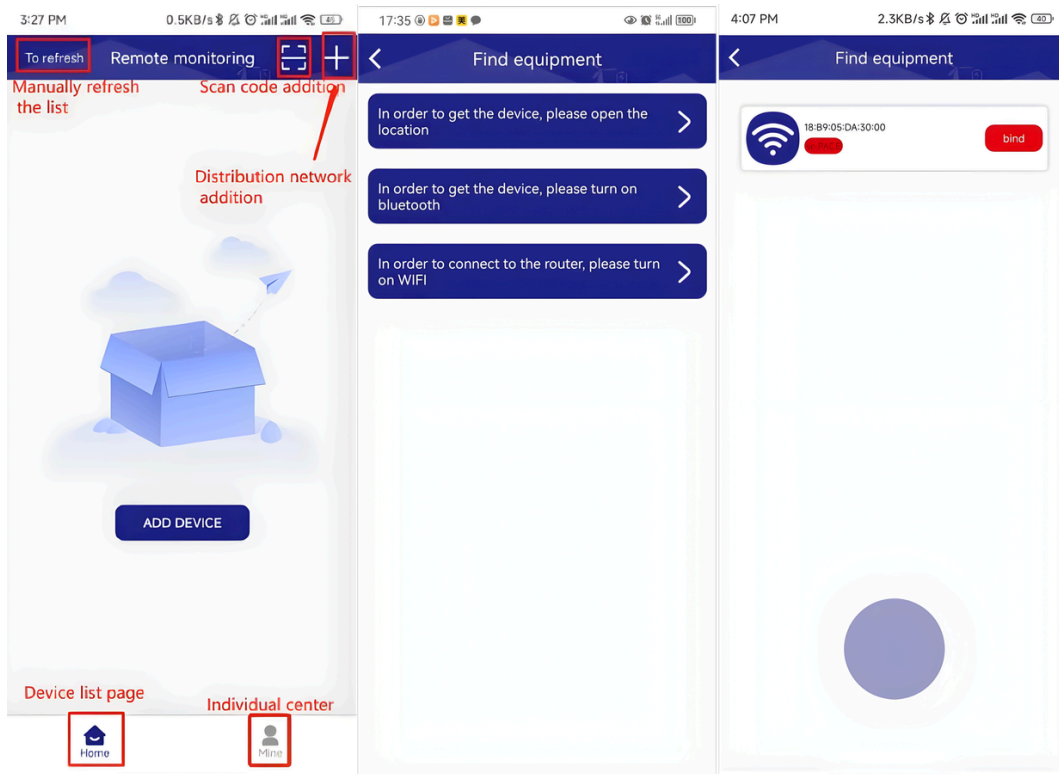
### 2.2.2.6.1 The WiFi module is put back in the factory settings

The WiFi module restores the factory settings so that the device is in a discoverable state:

Long press the reset button 10-13S, the specific operation of the LED indicators is shown as: Press and hold the button to make the running lights run once, and release the button when all the lights are on for 5 seconds and then turn off.

### 2.2.2.6.2 Click "Add" and "+" to enter the search page and search for the device

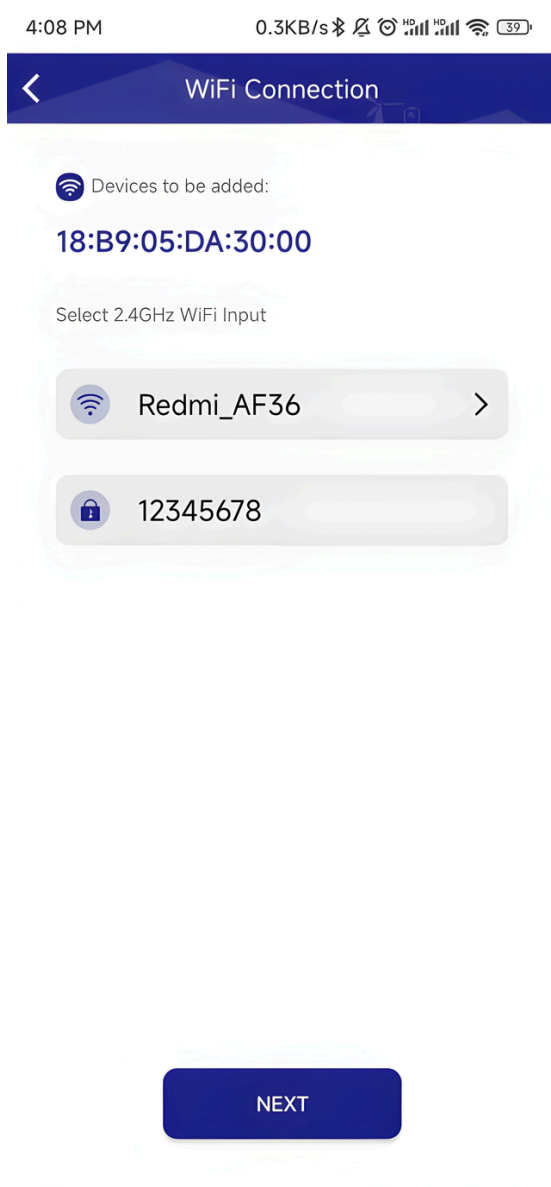
Note: This step requires the phone to open the "Bluetooth", "Positioning" and "WiFi" functions, otherwise, the search and subsequent distribution network operation cannot be completed.



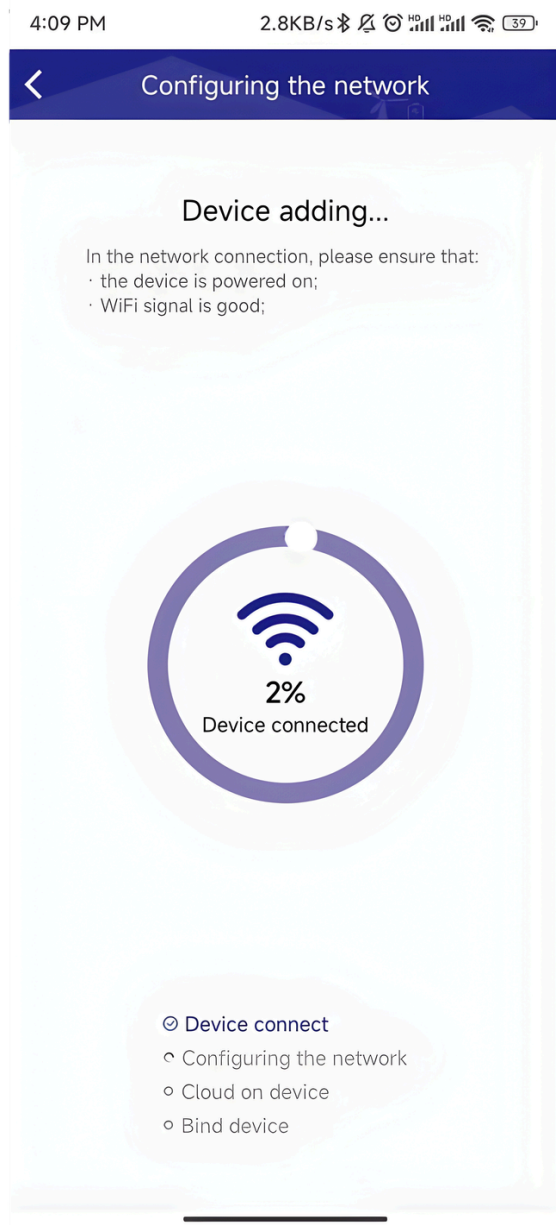
### 2.2.2.6.3 Fill in the network configuration information (Refer to the following Diagram 1)

Click the device found in 2.2.2.6.2, jump to the configuration network information page, fill in the WiFi account and password of the device to be connected, or change the WiFi. After confirming that the password is correct, click "Next" to enter the network configuration waiting page.

**Note:** The mobile phone should be connected to the WiFi first, and the module only supports 2.4G WiFi, please identify it



(Diagram 1)



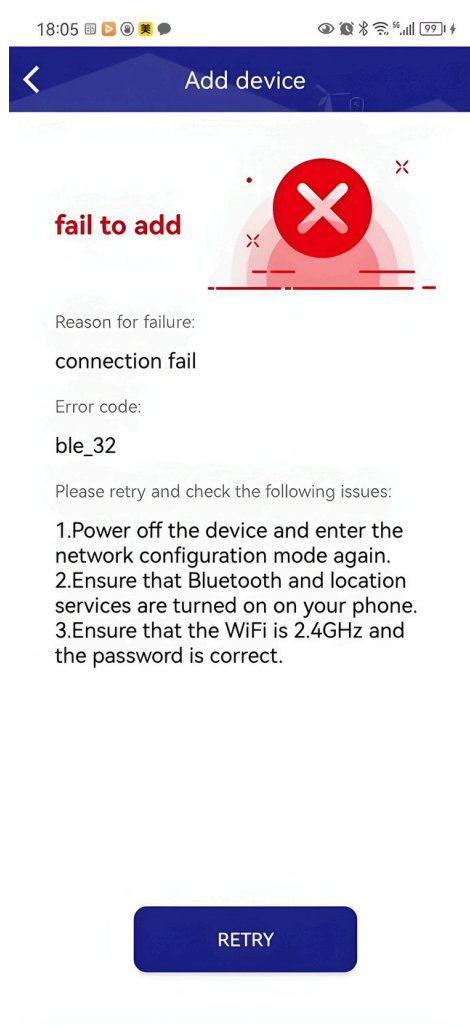
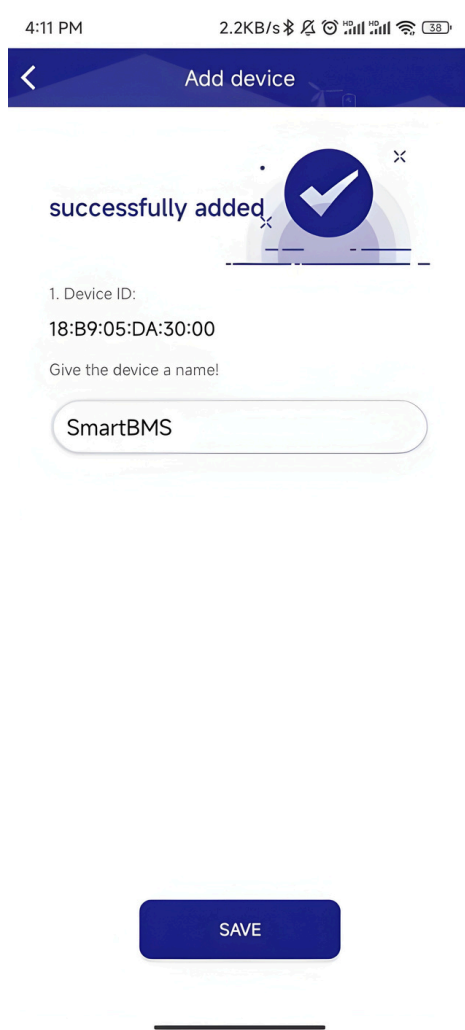
(Diagram 2)

#### 2.2.2.6.4 Execute network configuration operation (Refer to the above Diagram 2)

APP and device will automatically perform "Connect device", "Configure network", "device cloud" and "bind device" operations. Please wait patiently.

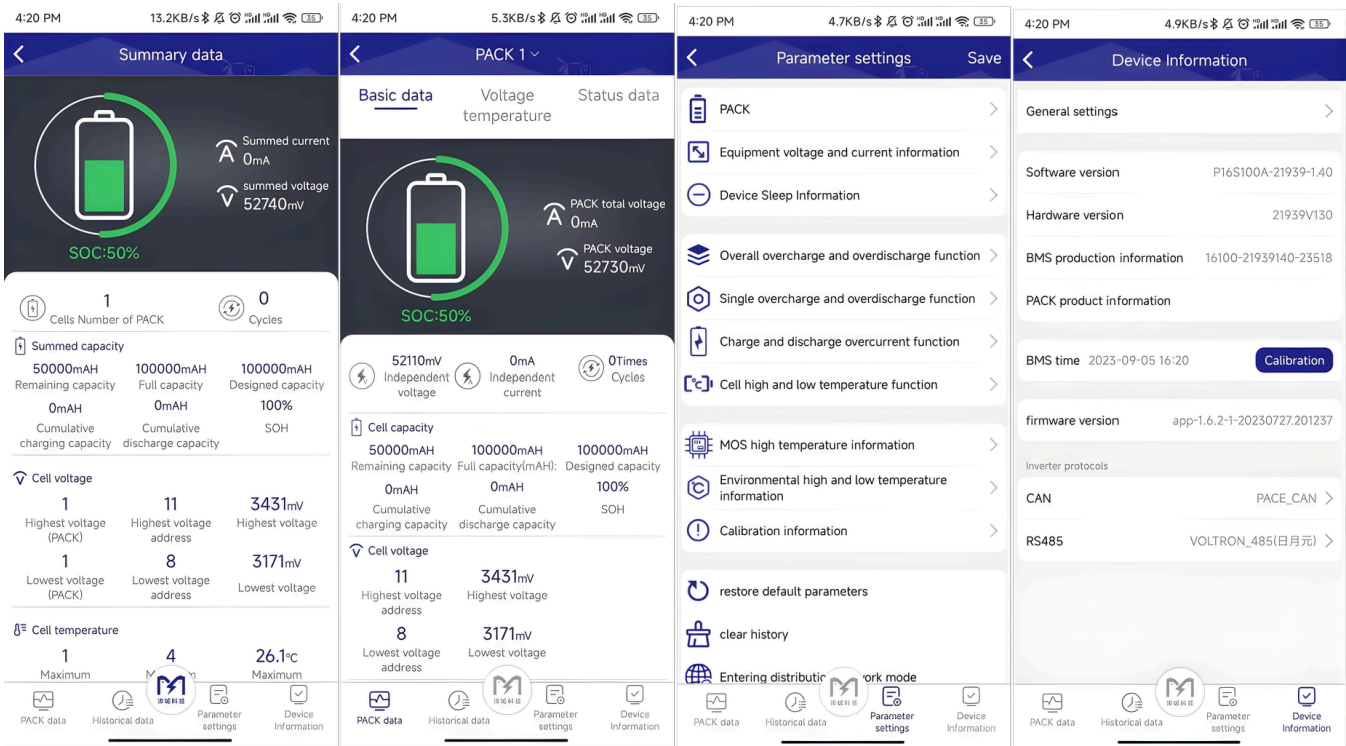
#### 2.2.2.6.5 network configuration results

When the network configuration is over, it will jump to the page, click "Save" to successfully add and automatically jump back to the device list page; If the network fails, please follow the prompts of the APP, and start from step 2.2.2.6.1 after inspection. If the network still fails many times, please save the error page and contact the after-sales personnel!



#### 2.2.2.7 Device control

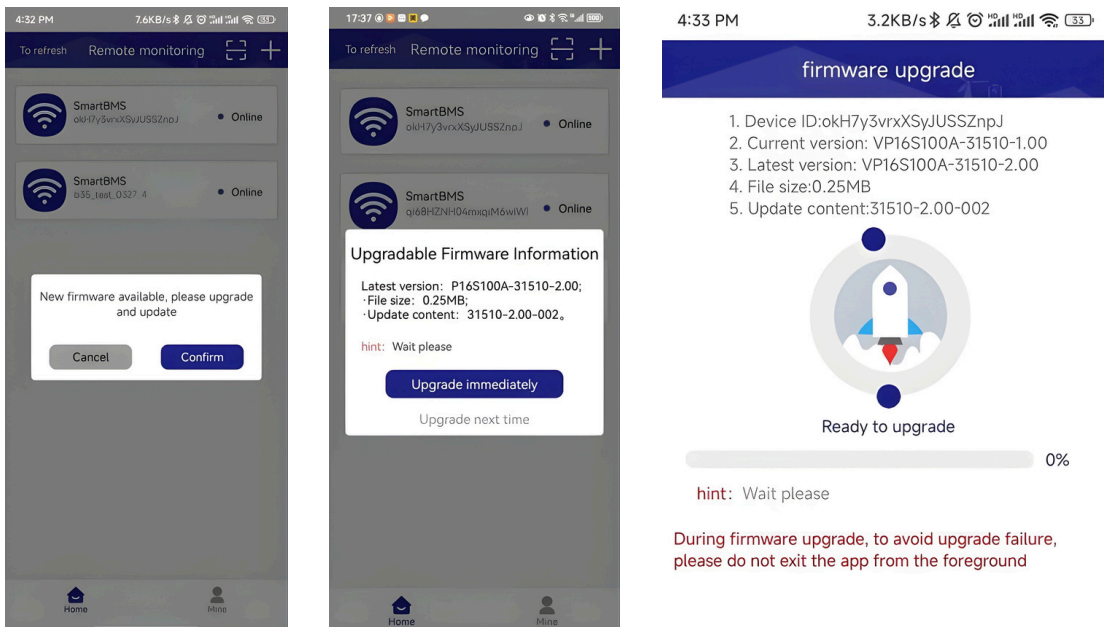
According to the functions supported by serial port protocol 0.0.9, except for the protocol itself, the summary interface, basic data, voltage and temperature, state data, historical data, parameter setting, equipment information, general setting, etc



### 2.2.2.8 OTA upgrade

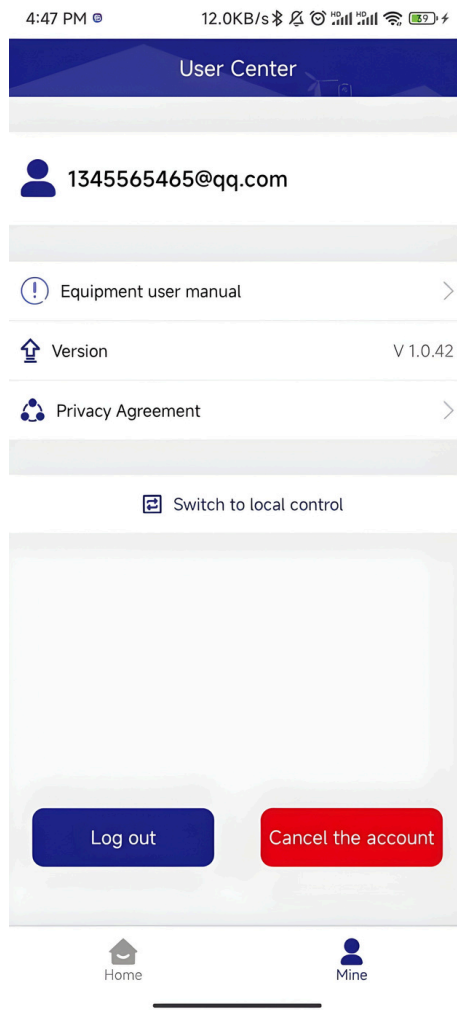
When there is an updated version of firmware in the background, clicks on any item of the APP to pop up the upgrade pop up,click “upgrade immediately”, and the firmware will be upgraded.

Click the “upgrade next time” to enter the device parameters display, settings and other pages.



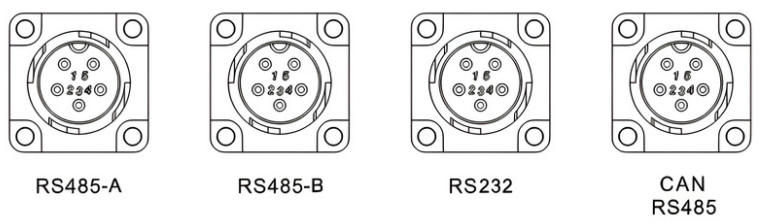
### 2.2.2.9 Account exit and logout

- ① Account exit: after exit, you can switch to other accounts for login.
- ② Account cancellation: Once canceled, all the information and binding relationship of the account will be cleared, and you need to be re-registered next time.

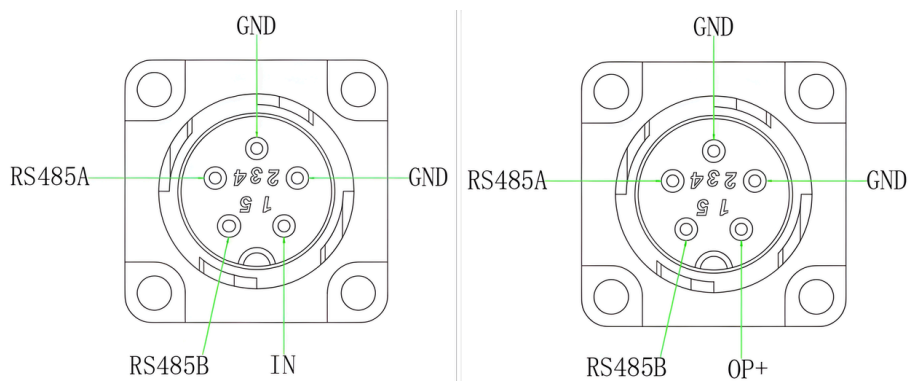


## 2.3 Communication port definition

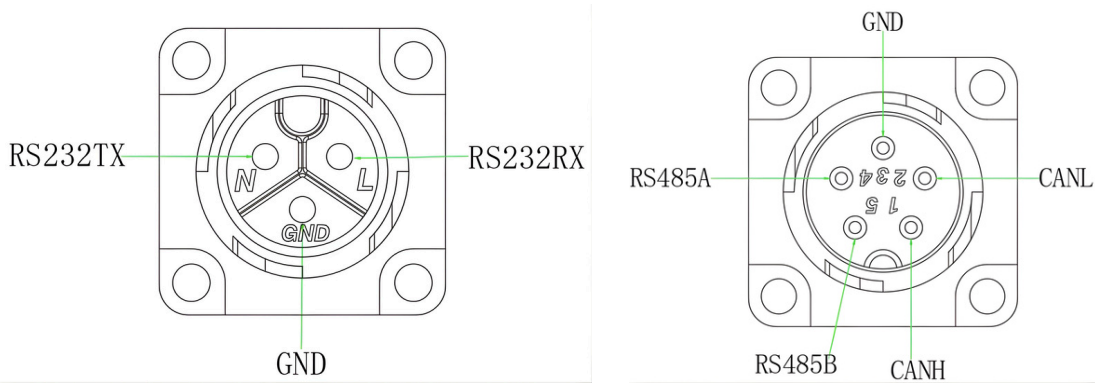
### 2.3.1 RS485-A/RS485-B/RS232/CAN/RS485 and inverter (PCS) interface



### 2.3.2 RS485-A/RS485-B battery PACK parallel communication interface

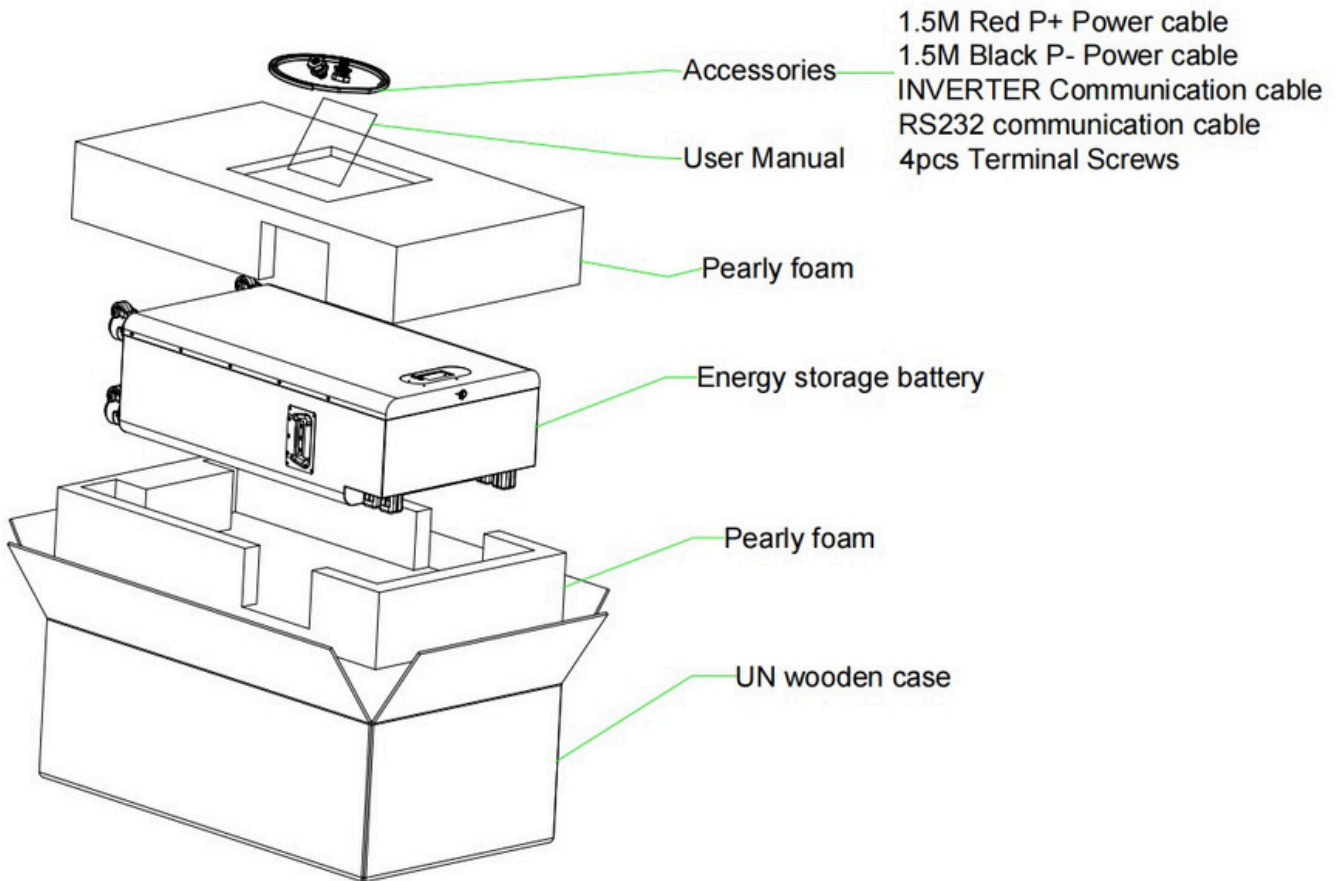










### 2.3.3 RS232/RS485/CAN battery pack and inverter (PCS) communication interface









## 3. Installation Guide

### 3.1 Check the product and install the accessories



No	PICS	QTY	Describe
1		1	Battery pack
2		1	Communication cable
3		1	Parallel communication cable
4		1	RS232 upper software communication cable
5		1	Red P+ Power cable
6		1	Black P- Power cable
7		4	Terminal Screws
8		1	User manual

### 3.2 Installation tools and protective equipment

Installation Tools	 Tape measure	 socket spanner	 cross screwdriver
Protective equipment	 Electrostatic protection gloves	 Goggles	 Safety shoes

### 3.3 Installation Instructions

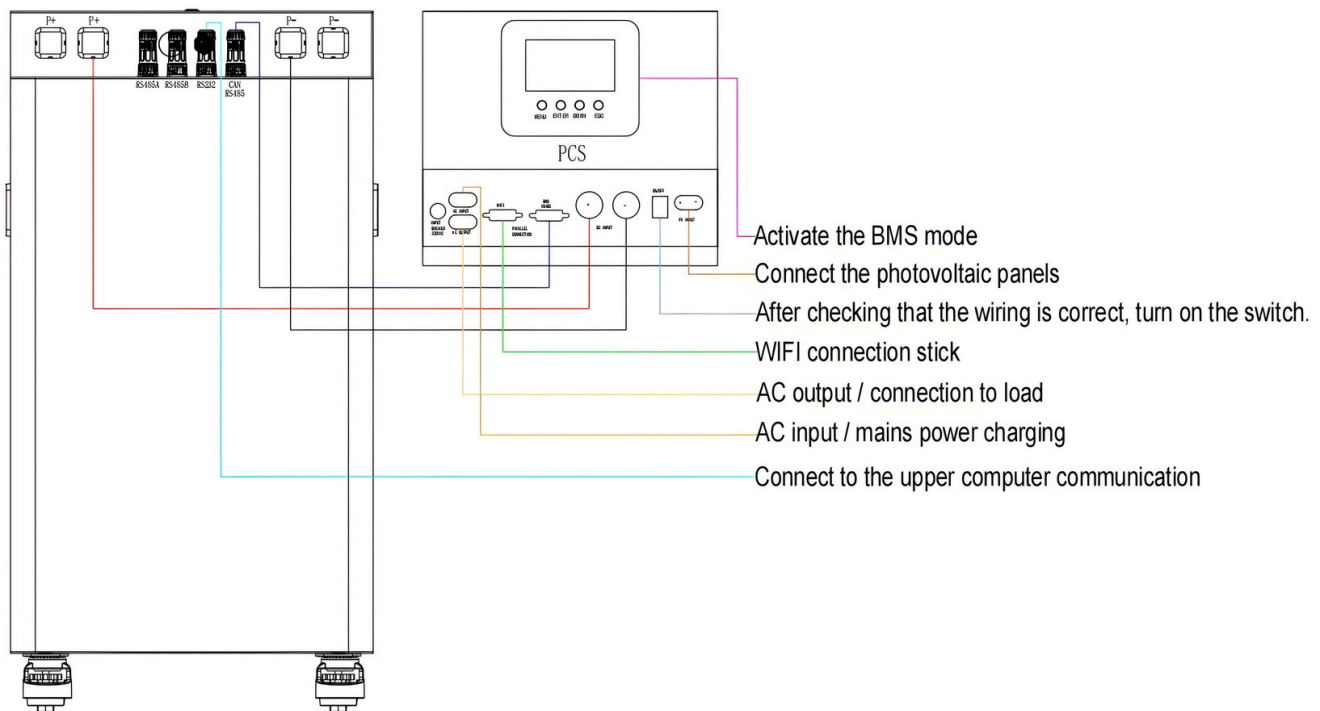
Minimum installation distance requirement: (Against the wall)



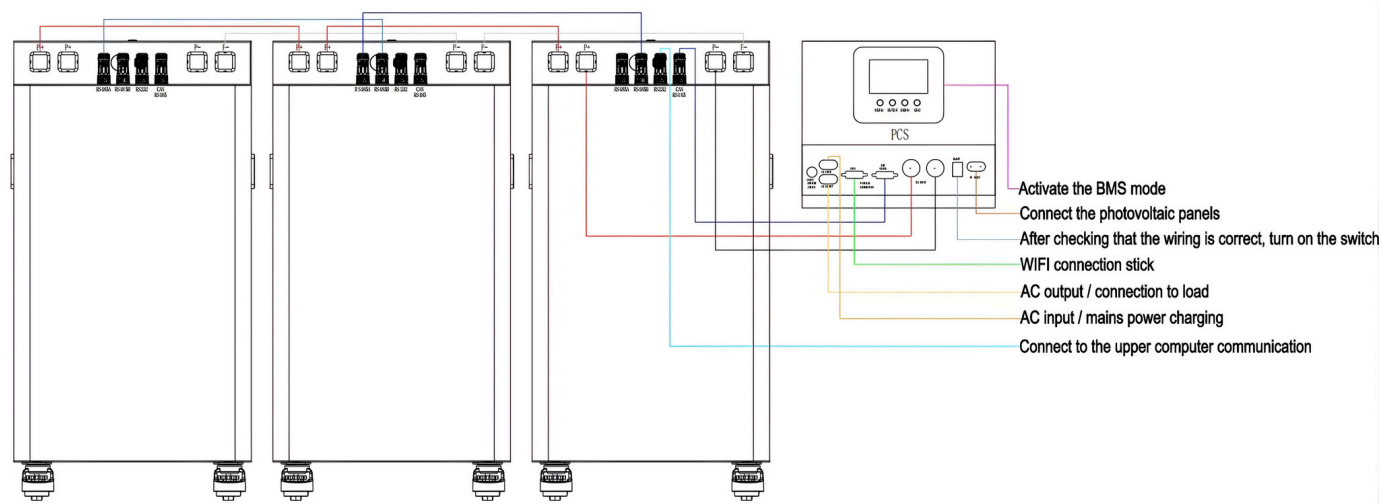
### 3.4 Installation Steps

3.4.1 First move the energy storage battery to an open and suitable place, then turn off the ON/OFF button, disconnect the battery output and then install it.

3.4.2 The battery P+ is connected to the negative pole of the inverter, the P+ is connected to the positive pole of the inverter, and the RS485/CAN is connected to the inverter communication, as shown in the following installation diagram:



### 3.4.3 Multiple units parallel installation, as shown below:



## 4. Inverter Protocol Catalog List

### 4.1 Inverter protocol for battery pack

RS485	012-LuxPower RS485 Inverter V0.3-2020.07.06(Luxpower)
	001-PYLON RS485 LV V3.5-2019.12.23--9600
	002-Growatt RS485 V2.02-2019.07.24
	003-Voltronic RS485 Inverter V1.5-2022.01.18
	000-PACE_RS485_Modbus_UN
	036-SRNE WOW RS485 Modbus V1.3-2017.06.27
	015-Schneider V2.0
CAN	012-LuxPower CAN V1.0-2020.02.11
	002-Growatt CAN LV V1.05-2019.08.28
	010-Victron CAN 2021.01.07
	015-Schneider CAN V2.0
	001-PYLON CAN Inverter EMS
	013-Sorotec CAN Inverter V1.0
	017-SMA CAN V2.0
	007-GoodWe CAN Inverter LV V1.7-2020.02.28
	035-STUDER CAN V1.02-2018.06.14
	030-MUST CAN PV1800F
	014-SOLIS GINLONG CAN LV V1.0-2019.12.28
	028-Senergy CAN V1.1-2022.05.10
	033-TBB CAN V1.05-2021.04.20
	031-MEGAREVO CAN Inverter LV V1.1

## 5. Technical Specifications

Basic Projects	Parameter
Battery Type	LFP
Nominal voltage	51.2V
Nominal capacity	324 Ah
Nominal energy	16.6 KWh
Charging voltage	57.6V $\pm$ 0.025V
Charging Current	Standard (0.5C) 162A , maximum 200A
Discharge voltage range	43.2V ~ 57.6V
Discharge current	Standard (0.5C) 162A , maximum 200A
Cycle Life	8000 cycles
Communication Mode	CAN/RS485/RS232
Operating temperature	Charging 0~45°C, discharging -20~55°C
Storage temperature and temperature	65%RH (non-condensing), -10~45°C
Product size	851*452*256MM
Net weight	125 kg
IP protection rating	IP65

## 6. Battery Maintenance

### 6.1 Supplementary power requirements during storage

The battery should be stored in a temperature range of -20~+45°C and charged regularly at 0.2C (20A) according to the following table. After long-term storage, the battery should be recharged to 50% capacity.

Storage temperature	Storage relative humidity RH	Storage time	SOC power
Below -10 °C		Not allowed	
-10~0°C	5%~65%	≤ 1 month	30% ≤SOC≤60%
0~25 °C	5%~65%	≤ 1 2 months	30% ≤SOC≤60%
20~35 °C	5%~65%	≤ 6 months	30% ≤SOC≤60%
35~45°C	5%~65%	≤ 1 month	30% ≤SOC≤60%
Above 45 °C		Not allowed	

## 6.2 Over discharge supplementary power requirements

Please charge the over-discharged (90% DOD) battery according to the following table, otherwise the over-discharged battery will be damaged.

Storage temperature	Storage time	Precautions
-1 0~ 25°C	≤ 15 days	Battery disconnect inverter
25 ~45°C	≤ 7 days	
-10 ~45°C	≤ 12 hours	Battery connect with inverter

## 6.3 Disposal of batteries should comply with local regulations

### 6.4 Notes

#### 6.4.1 Warranty

The Manufacturer will be responsible for replacing the battery pack against defects or poor workmanship for 5 years from the date of shipping. Any other problems caused by malfunction of the equipment or misuse of the battery is not covered under this warranty.

#### 6.4.2 For Safety

- a. Do not disassemble packs.
- b. Do not use pack when something abnormal found such as smells, deformation, discoloration, and so on.
- c. Do not re-use LiFePO<sub>4</sub> cells or other parts after removing from the packs.
- d. When the electrolyte leakage occurs, do not touch the liquid.
- e. Once watered, packs may have potential malfunctions. Do not use those packs.
- f. Do not have packs in the hot-temperature (60°C or more).
- g. Do not put packs into fire.
- h. Do not crush/nail pack.
- i. Do not apply solder directly to packs.