User's manual

CHA5KLV–INV–M1–A01

All–in–one Energy Storage

48100 User manual

Dear user：

Thank you very much for choosing our products! Before using this product, please read this manual carefully. It contains important information and suggestions on installation, use, troubleshooting, etc., and keep it safe! Specifications are subject to upgrade without prior notice.

catalogue

1.Manual basic information

1.1Range of application

This manual is applicable to 51.2V/100AH series of wall–mounted power supplies for home energy storage applications

1.2target groups

This manual is intended for professionals and end users. Operations can be handled by the end user without any specific qualifications. Professionals must have the following skills：

1）Understand the operation of battery products；

2）Have training and know how to deal with the risks and risks arising from the installation and use of electrical equipment and fixtures；

3）After training, know how to install and debug battery products；

4）Understand and follow this manual and all safety knowledge。

1.3 Safety regulations

To ensure safety, it is the responsibility of the installation personnel to familiarize themselves with the contents of this manual and all warnings prior to installation.

Warning

1）environmental requirement：

- Do not expose batteries to temperatures higher than 60 ° C；
- Do not place the battery near any heat source；
- Do not expose the battery to moisture or liquid；
- Do not expose batteries to corrosive gases or liquids;
- Do not expose the battery to direct sunlight for a long time；
- Keep batteries in a safe location away from children and animals;
- If the battery is heavy, at least two people are required to carry and install the battery to avoid battery drops and injuries；
- Do not place objects on the battery；

2）Operation cautions：

- This product is low voltage product, it is forbidden to use this product in series；
- Do not remove the battery without permission；
- Do not touch battery terminals with conductors；
- Do not touch the battery pack with wet hands；
- Do not squeeze, drop, or puncture the battery；
- Handle products according to local safety regulations；
- Store batteries as described in this user manual；
- Ensure reliable grounding；
- Do not short circuit batteries. Remove all jewelry that may short circuit batteries before installation and transport；
- Do not use damaged or deformed batteries；
- Disconnect the battery from the power/load before installation and maintenance, and then turn off the battery power；

- Do not stack batteries when storing or transporting them；
- The battery has self-discharge phenomenon. If it is not used for a long time, it should be replenished regularly for 3 months；
- The maximum charge-discharge power cannot exceed 5KW; otherwise, the product may be damaged。

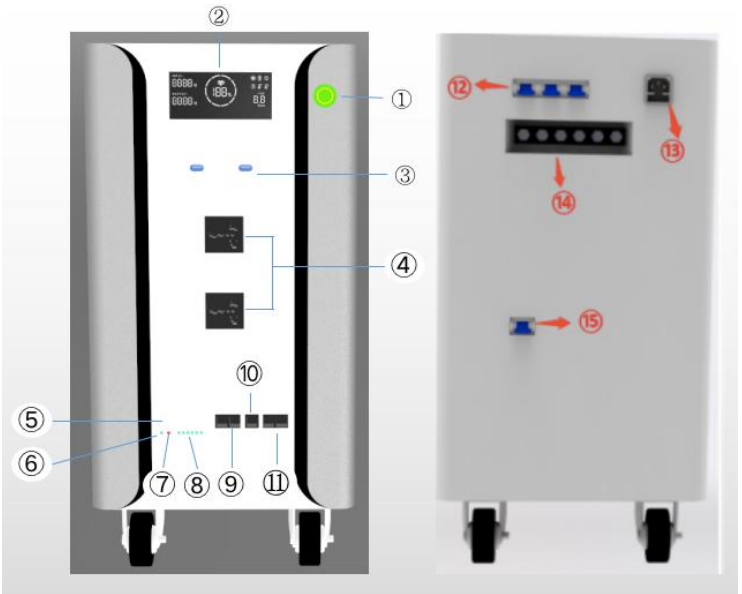
2 .product presentation

This product is a 51.2V DC battery system, applied in the field of home energy storage, with inverter and other equipment to form a complete system, to meet the household daily demand for electricity. This product supports the expansion of up to 16 parallel machines to extend the power consumption time.

2.1Functional characteristics

- Lithium iron phosphate battery with high safety performance is used；
- The equipment has perfect protection function；
- Multiple machines can be used in parallel for easy expansion；
- With high precision voltage and current sampling and SOC estimation ability；

2.2Product overview



① ON/OFF
② LCD
③ USBA interface
④ AC output interface
⑤ Reset key
⑥ Run indicator
⑦ Alarm Indicator
⑧ Capacity Indicator
⑨ Communication interface with inverter
⑩ RS232 Set port
⑪ Battery parallel communication port
⑫ Fuse Switch
⑬ AC input interface
⑭ PV interface
⑮ Emergency with

3 Installation and storage instructions

3.1 Unpacking inspection

1) Open the package of the equipment, please check the product accessories: a host, communication line, power line.

2) Check whether the equipment is damaged during transportation. If damaged or missing parts are found, do not turn on the equipment and inform the carrier and distributor.

3.2 Installation and storage precautions

1) Installation of equipment should be operated by professionals or assisted by local dealers;

2) The battery should be mounted on a solid wall;

3) When transporting equipment, appropriate protective measures shall be taken; If the device is moved from a low–temperature environment to a high–temperature environment, water may appear. Dry the device completely before use to ensure safety;

4) Do not expose the equipment to damp, flammable and explosive, or a large amount of dust accumulation and other harsh environment; Do not cover and block the vent, reserve more than 10CM air flow gap around the equipment; In order to have good heat dissipation;

5) When the device is not in use for a long time, all switches on the side panel must be turned off;

3.3Connection to inverter

Note: For operational safety and regulatory compliance, a separate DC overload protector or disconnect device is required between the battery and the inverter.

Warning! All wiring must be performed by professionals. Using proper cables to connect batteries is important for safe and efficient system operation. To reduce the risk, please use the cable provided by us or the cable specifications recommended by us.

Maximum discharge current	Suggested cable specifications
100A	25mm2/1*4AWG（not lower than）

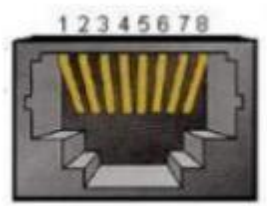
1) Power line connection

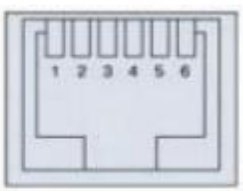
⚠	**notice！** Do not place anything on the battery's positive and negative output terminals, otherwise it may cause short circuit or heat;
	notice！ Ensure that the positive and negative connectors are properly installed; otherwise, battery overheating may occur; **notice！** Before connecting, make sure that the circuit breaker or isolator between the inverter and the battery is turned off and that the positive battery (+) must be connected to the positive inverter (+) and the negative battery (–) must be connected to the negative inverter (–).

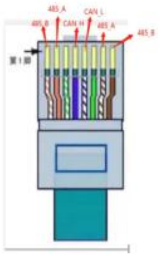
Use the orange and black cable that comes with the machine or the recommended cable to connect the P+,P– of the battery to the battery input of the inverter.

2) Connected inverter

A、interface definition





RJ45port	serial number	RS485- 1	CAN	RS232	RS485-2	RS485-2
	1	B ： DATA -	NC	NC	B ： DATA -	B ： DATA -
	2	A：DATA+	NC	NC	A ： DATA+	A：DATA+
	3	NC	NC	TX	NC	NC
	4	CAN-H	CAN-H	RX	NC	NC
	5	CAN-L	CAN-L	GND	NC	NC
	6	NC	NC	NC	NC	NC
	7	A：DATA+	GND		A ： DATA+	A：DATA+
	8	B ： DATA -	NC		B ： DATA -	B ： DATA -
remark	The RS485-1 and CAN ports are connected to the inverter					

3)Instructions for parallel wiring

A、Communication connection method

Connect the CAN/RS485 battery to the inverter in parallel with the communication cable

Connect battery in parallel with the communication cable

1) BMS Parallel module The BMS can connect communications in parallel with a maximum of 16 batteries.Support host computer address allocation, automatic allocation of master and slave devices, monitoring module and other functions. This is an internal communication bus for parallel automatic control of battery modules.

2) “ ”The yellow line is used to communicate with the inverter without identifying the host and connecting to the inverter. The advantage of this connection is that there is no need for dip switches to specify the primary and secondary addresses, which can be automatically assigned by the system software. The master and slave computers can display the PACK QR code of the master and slave computers through the upper computer.

3) Instructions for parallel wiring：“ ” Blue cable RS485 The host and slave are connected in parallel using common network cables, which are generally used in parallel. When the system is connected in parallel, RS485 serial port communication is used for data transmission. The parallel Pack system uses RS485 for internal communication.

B、operational approach：

1) Connect the blue cable first；

2) And connect the yellow cable；

3) Then connect the black inverter communication cable；

4) Then connect the inverter with the PAR CAN& RS485 port communication line;

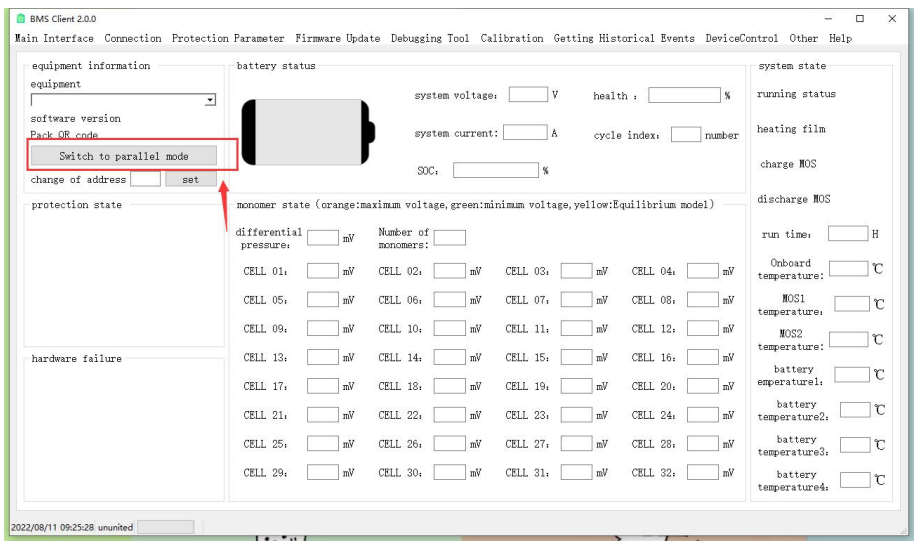
5) When the communication line is connected, the BMS system automatically identifies the master and slave machines without manual

debugging.

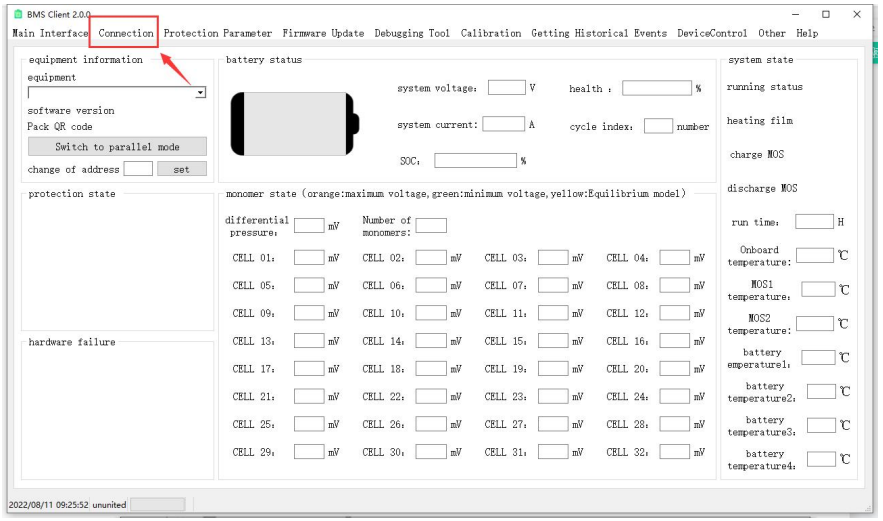
4.Operation instructions for parallel upper computer

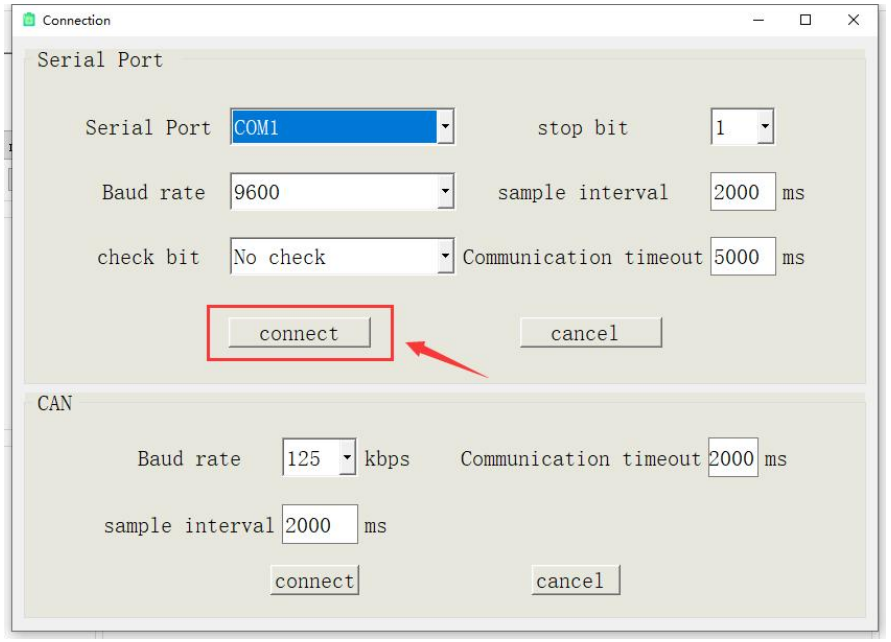
4.1Connect to the upper computer

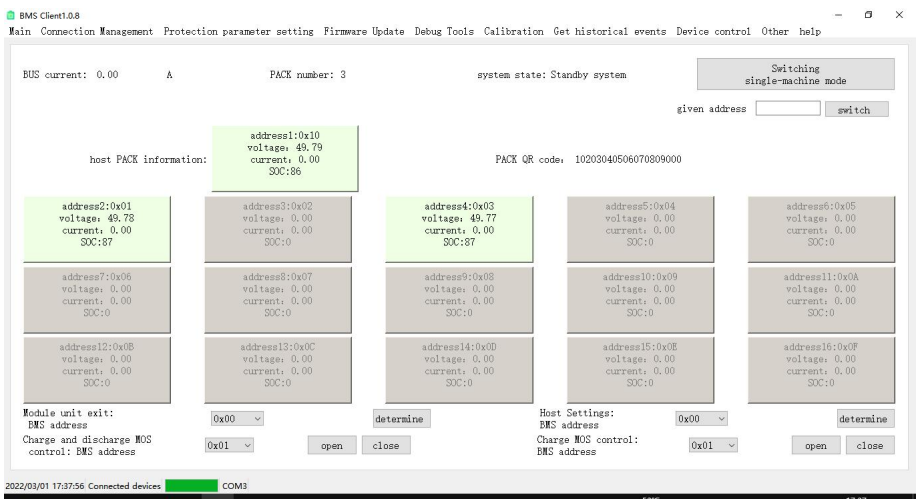
1) Switch to the module monitoring interface first: click the button "Switch to parallel mode"



2) First link: Open the upper computer software of "BMS", click the menu "Connection Management" –> "Device Communication Settings", select the serial port number of the link, and click the device link. After the connection is successful, the voltage, current, and other information will be displayed.







3) Non–first link: Open the upper computer software of "BMS" and click the menu "Connection Management" –> "Connect Device" to connect the device. After successful connection, voltage, current and other information will be displayed.

4.2 BMS communication parameter setting：

1) When the upper computer is connected to the communication module, the serial port communication parameters of the BMS board can be set through the upper computer.

2) Click the menu "Connection Management" –> "Device Communication Settings" and set the serial port communication parameters in the popup window. After the communication parameters are successfully set, the upper computer may not be connected.

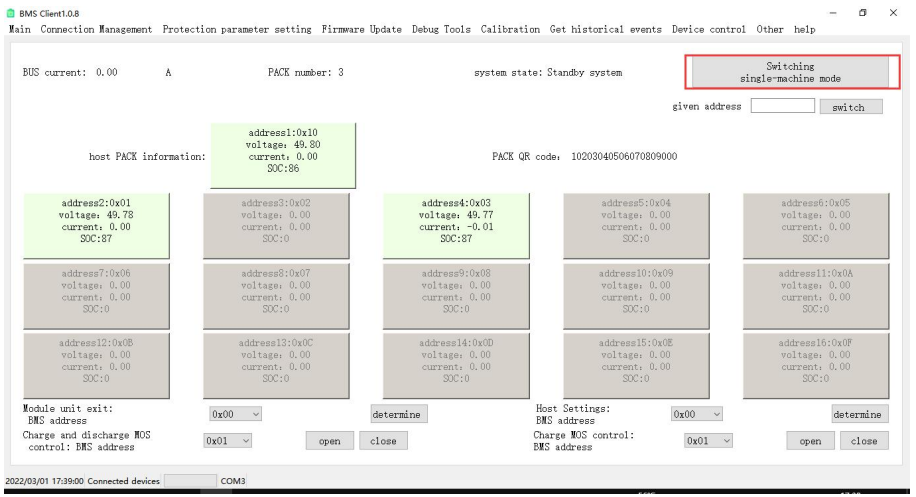
4.3 Module control

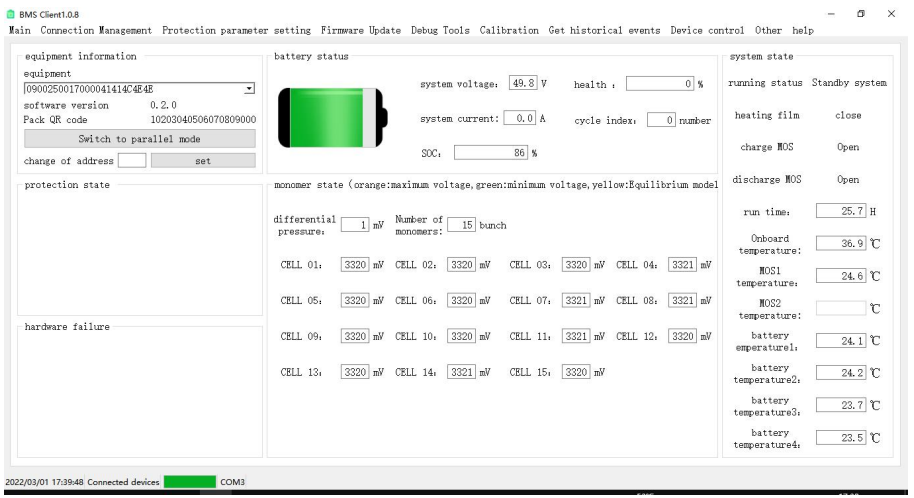
1) First select the BMS address that you want to control

2) "Module unit exit control" and "host setting" control need to click "determine " button, charge and discharge MOS control need to click "open" or "close" button to control charge and discharge MOS open and close

4.4 Switch to the single–machine monitoring interface

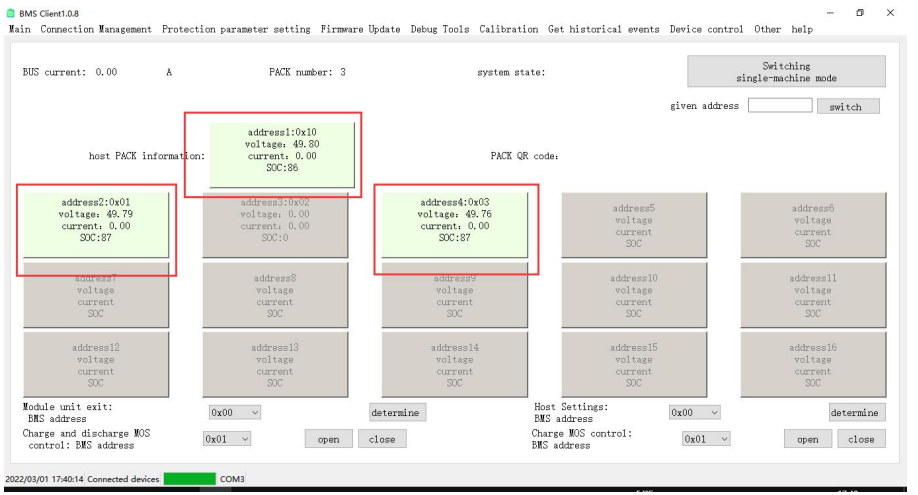
1)Click the "Switch single–machine mode" button， The single–node monitoring page is displayed.

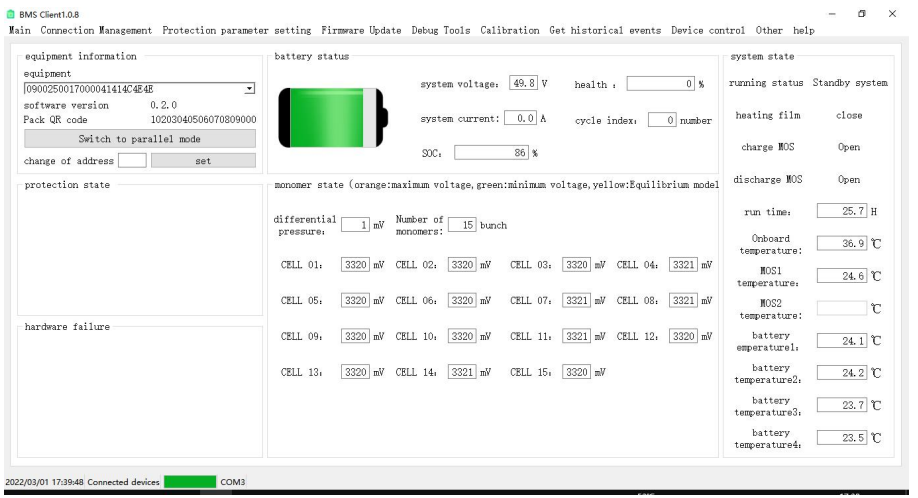




4.5 Switch to the module unit monitoring interface

1) Click the green button that displays information for merging module units，The monitoring page for the corresponding IP address is displayed.

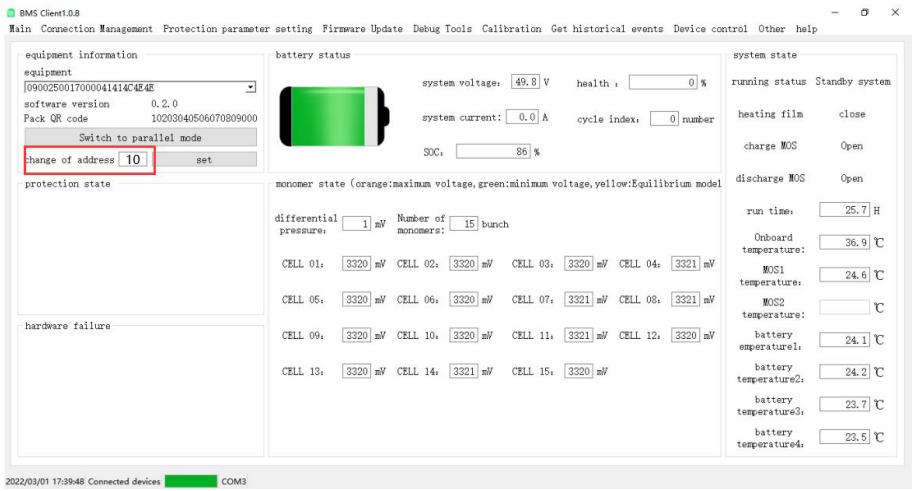




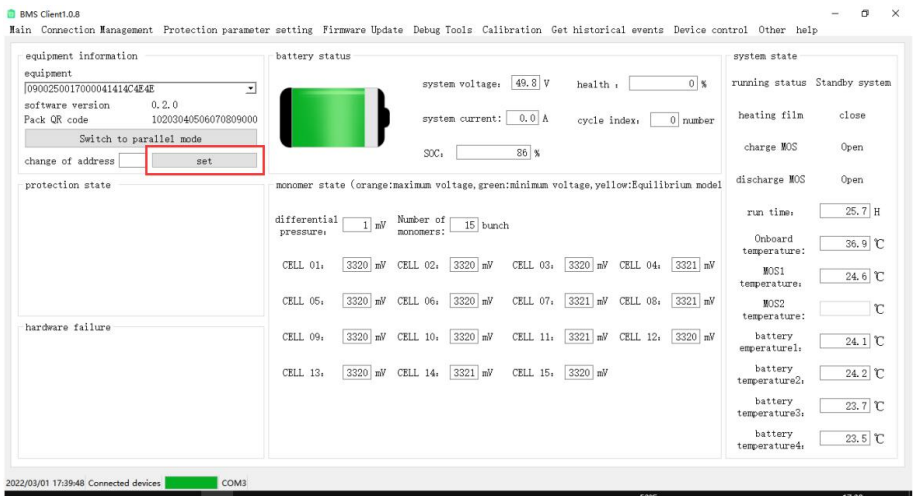
2) After entering the module monitoring interface, refer to the Operation Instructions for Upper Computer in the single machine section for setting parameters.

4.6 Set the address of the current single machine or module unit

1) Enter the hexadecimal address in the box to the right of the single–node address

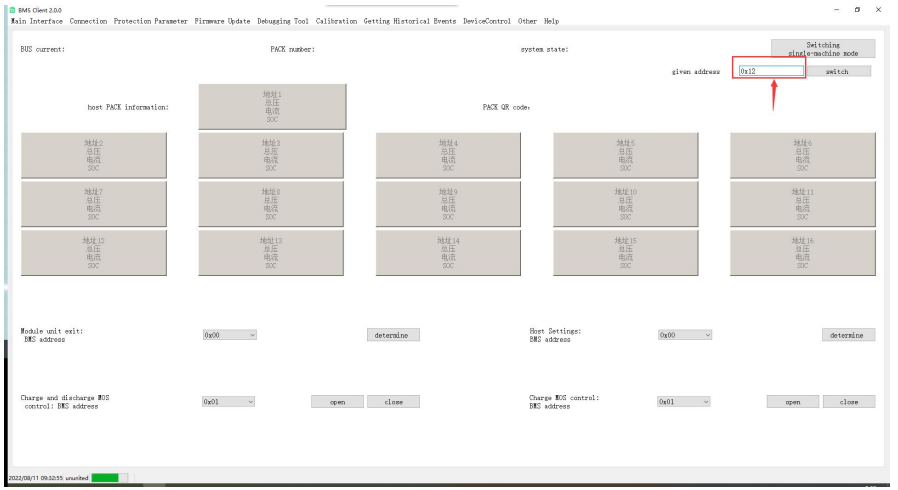


2) Click the "Settings" button on the right

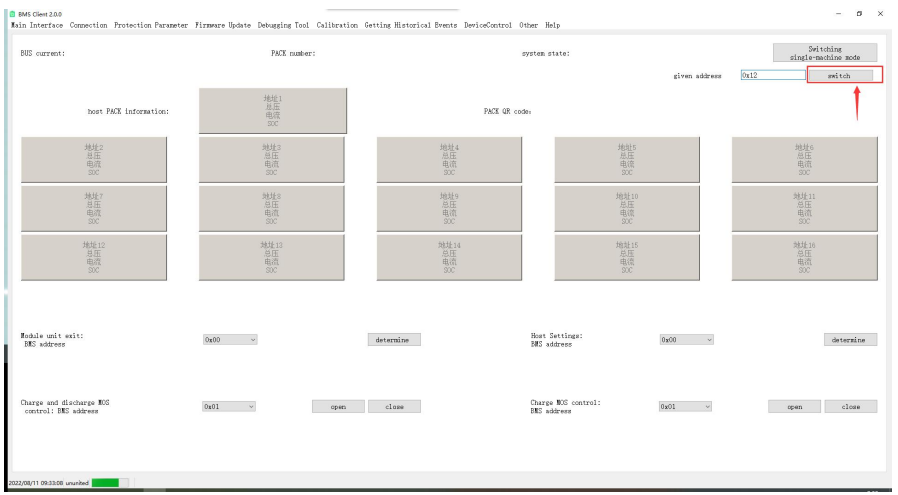


4.7The monitoring page of the specified address is displayed

1) Enter a hexadecimal address in the box to the right of the single-node address, for example, 0x10. Enter 10 in the box.



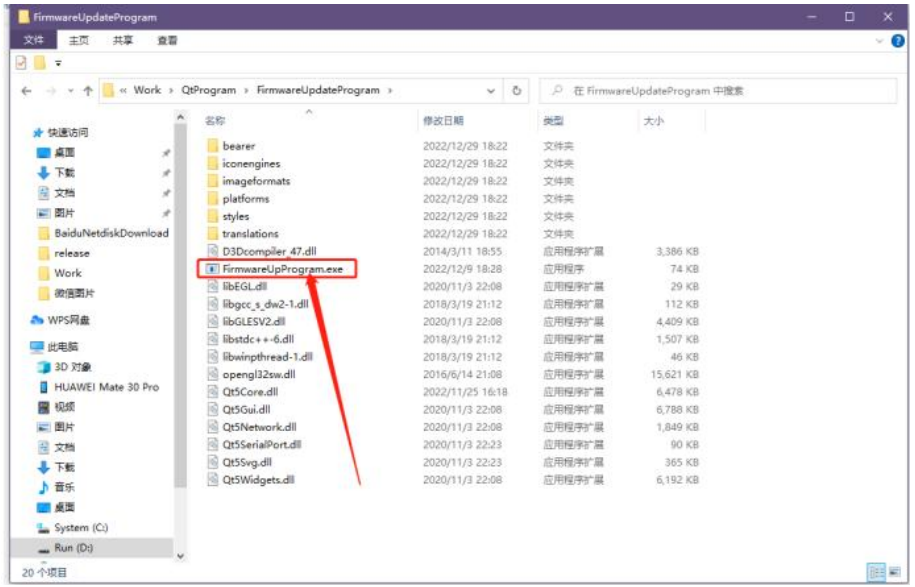
2) Click the "Switch" button on the right



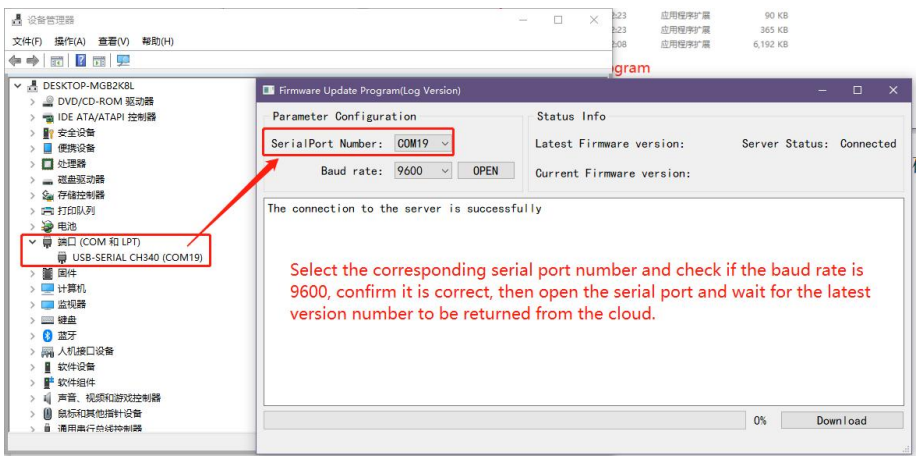
4.8 Description of firmware updates

1) Connect the BMS and open the firmware update program.

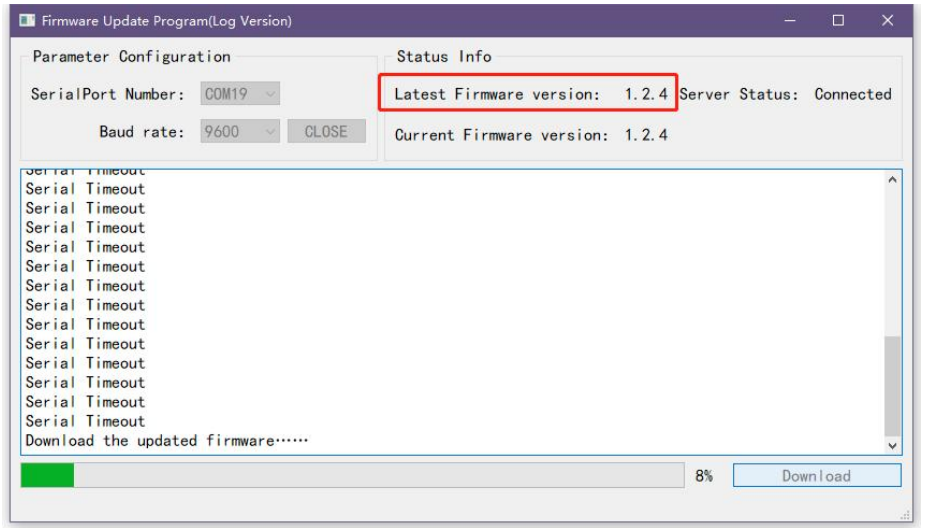
Connect the BMS to the computer using the BMS communication cable, and then open the firmware update program.



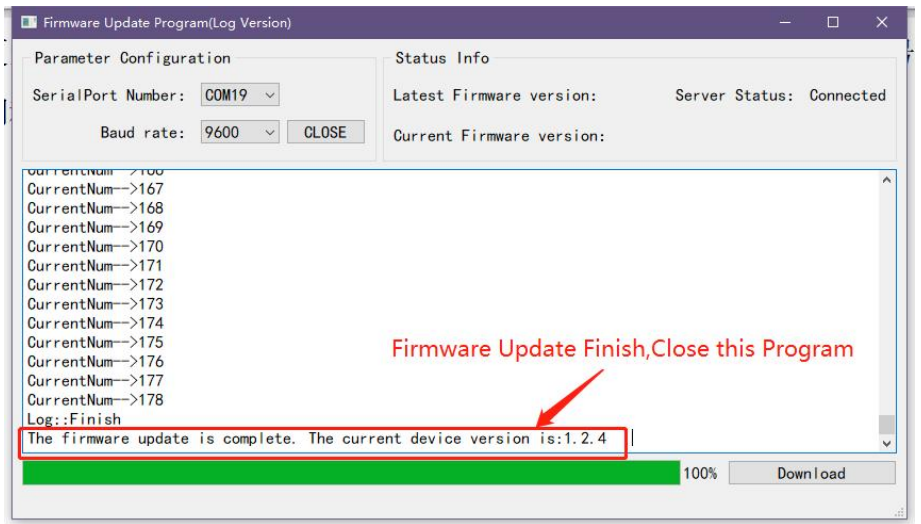
2) Check whether the serial port device number and baud rate are correct. Select the corresponding serial port number and confirm whether the baud rate is 9600. Then open the serial port and wait for the cloud center to return the latest version.



3) When the latest version number appears, confirm version and start updating.



4) After the update is complete, connect to the BMS using monitoring software



After the update is complete, the update software will prompt the completion of firmware update and display the current version number of BMS. At this time, close the program and press the switch button on the front panel to start the system.

5) After connecting to the BMS, restore default parameters. After starting

the system, start the monitoring software and connect to the BMS.

6) After the connection is successful, the protection parameter setting page is displayed to restore default Settings.

7) After entering the screen for setting protection parameters, click Restore default parameters and wait for the BMS response. After the restoration is successful, a dialog box is displayed indicating that the restoration is successful.

※ notice1： If the progress bar restarts during the update, it may be because the network is unstable. You need to wait for a while or use a new network connection.

※ notice2： Do not close the serial port or exit the application when the firmware is being updated.

5.System Watcher

5.1 APP monitor

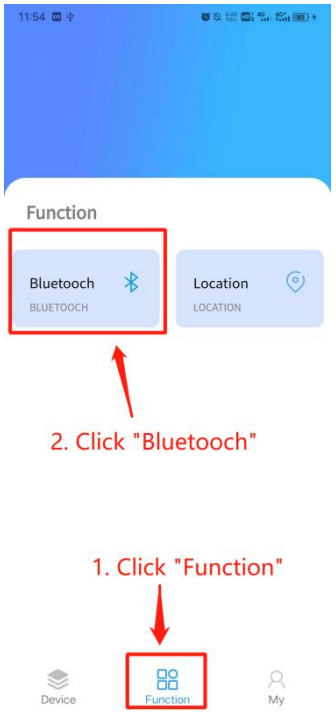
1) Number Of Logon

All the functions of the APP need to be logged in before they can be used

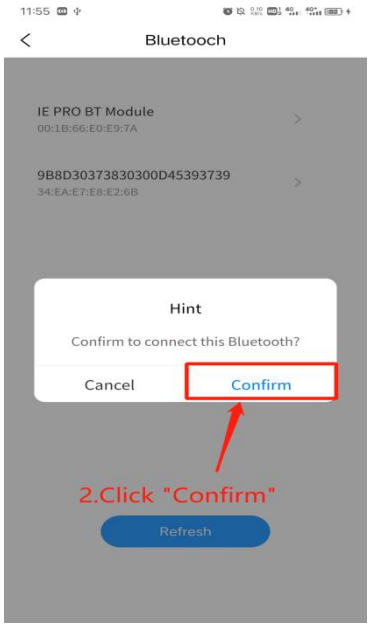
5.2 Bluetooth passthrough

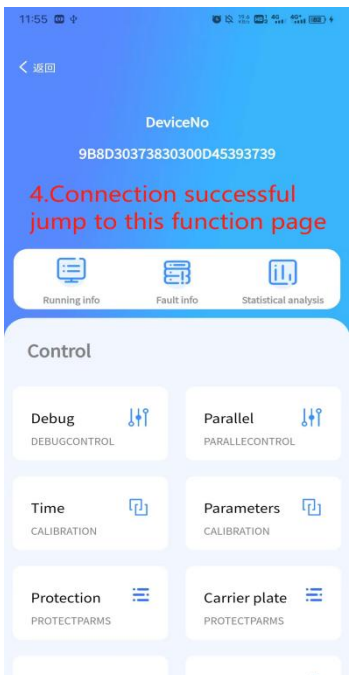
1) Connecting device

A、The search page for Bluetooth devices is displayed



B、Select the device to connect to



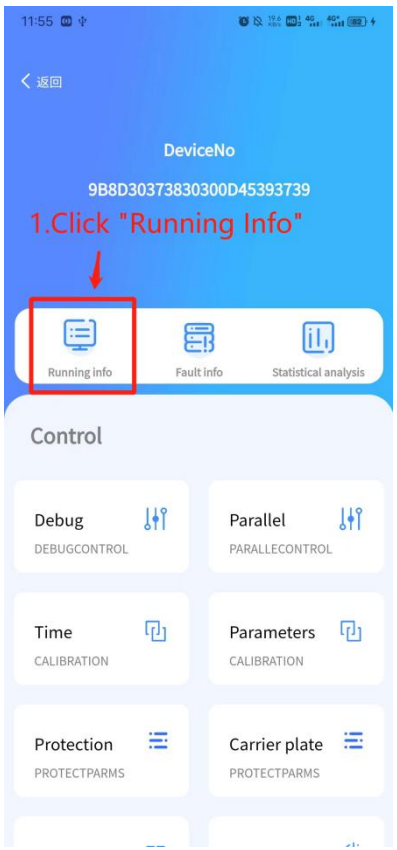


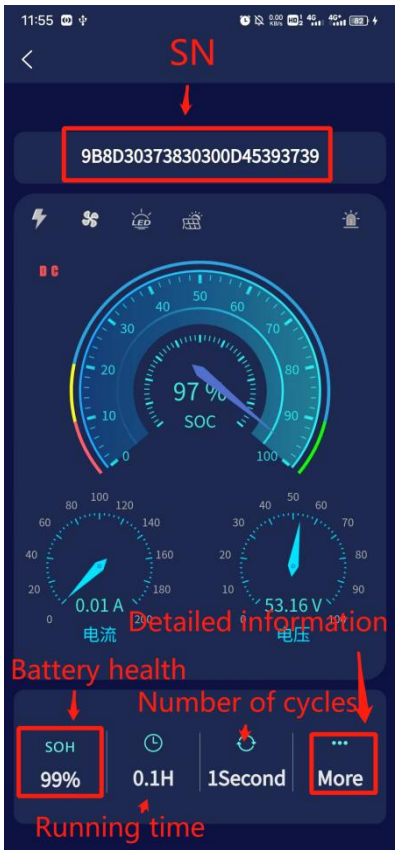
Note: If listening fails or the device does not respond, you need to refresh

and try to connect again

2.2 Monitoring instruction

1) Monitor main page

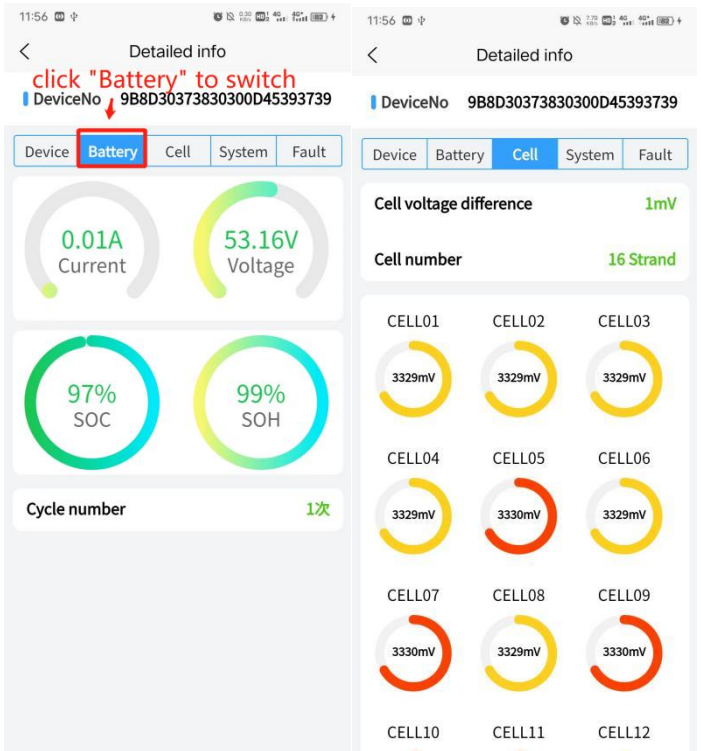




2) Detailed monitoring page

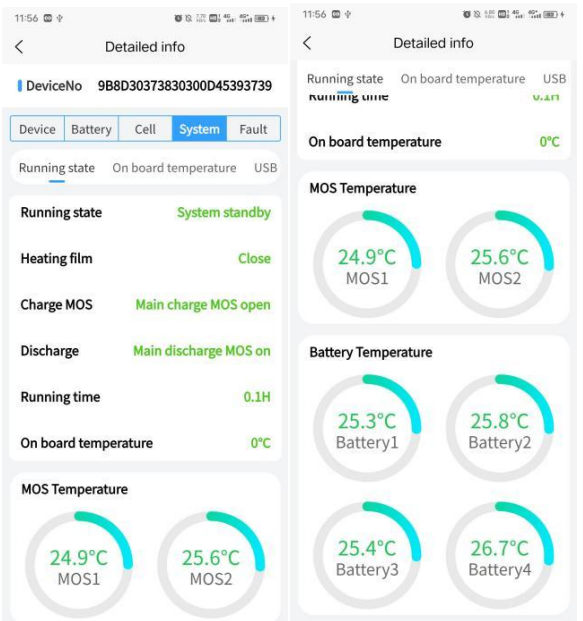
A 、 Basic information of the device (left) and detailed battery status interface (right)

B、Monomer state (green is the default color, yellow is the lowest voltage of the monomer, and red is the highest voltage of the monomer)



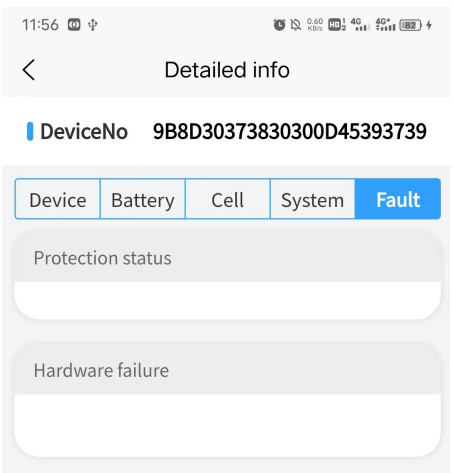
C、system state

The running state is divided into "system standby", "charging mode", "discharge mode" and "debugging mode".



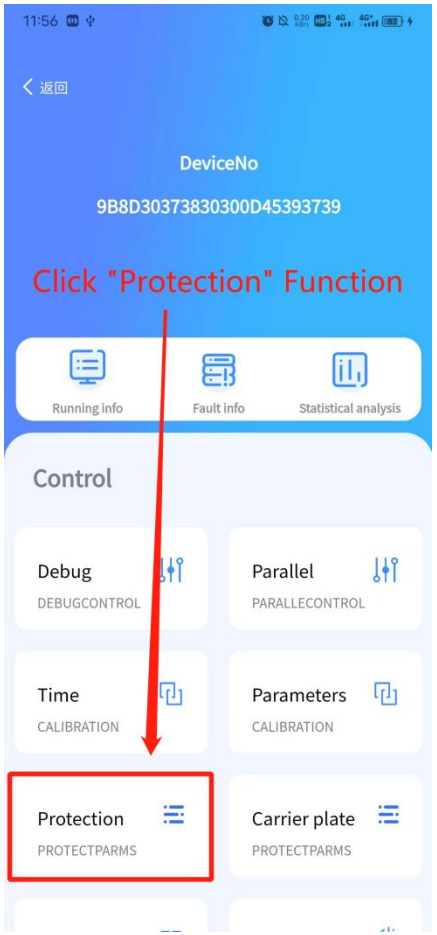
D、Fault message

A device fault is reported to the fault information



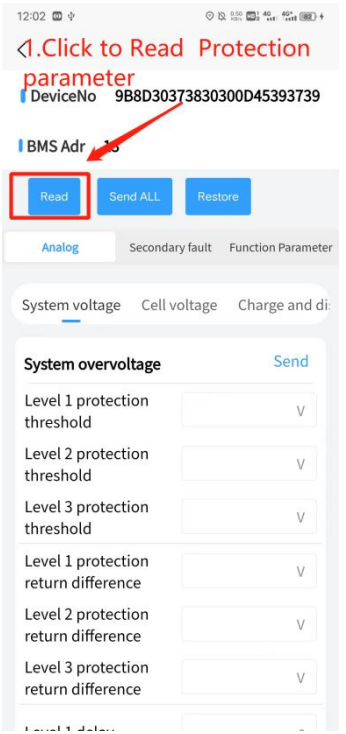
2.3 parameter configuration

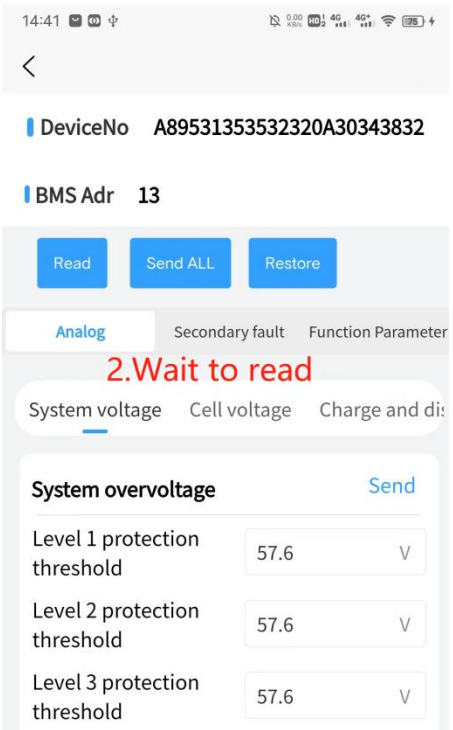
1 ）The protection parameter function is displayed



2 ）Read protection parameter

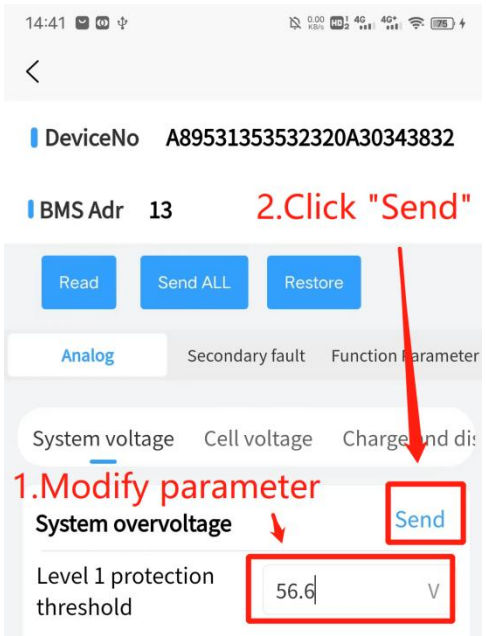
If "Read Failed" appears, click Read protection parameters again





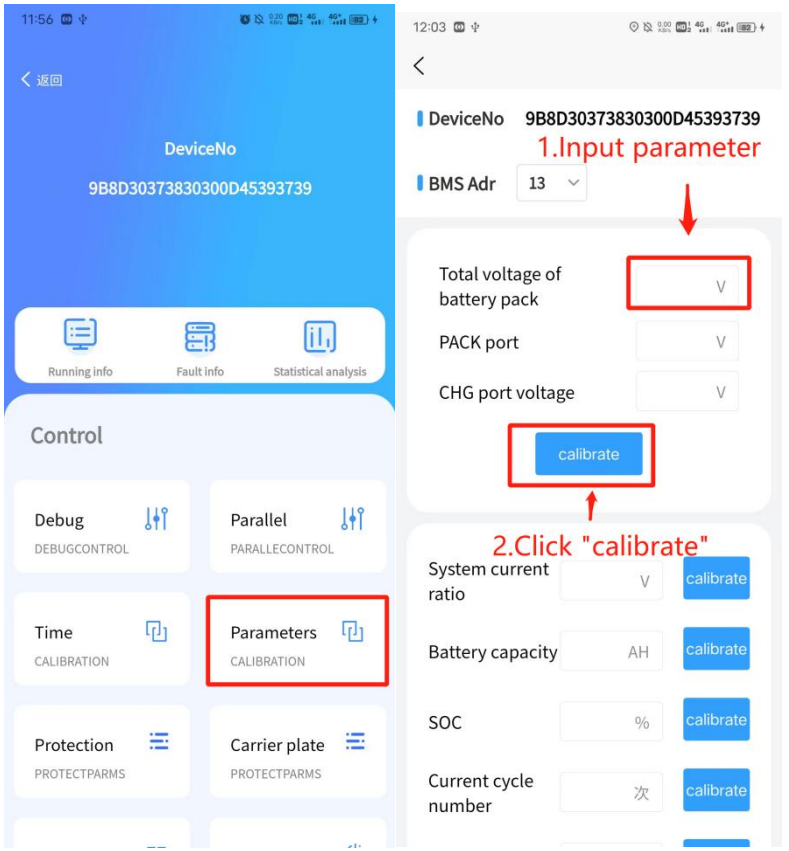
3 ）Setting protection parameters

After the parameters are read successfully, select the protection parameters that you want to change and click Send.



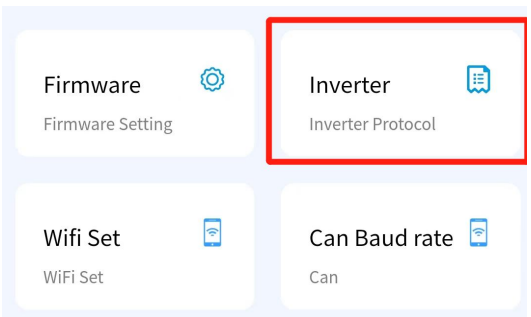
2.4 calibration parameter

1 ）Enter the calibration parameter page, enter the parameter and click calibration. If "Calibration succeeded" is displayed, parameter correction is complete

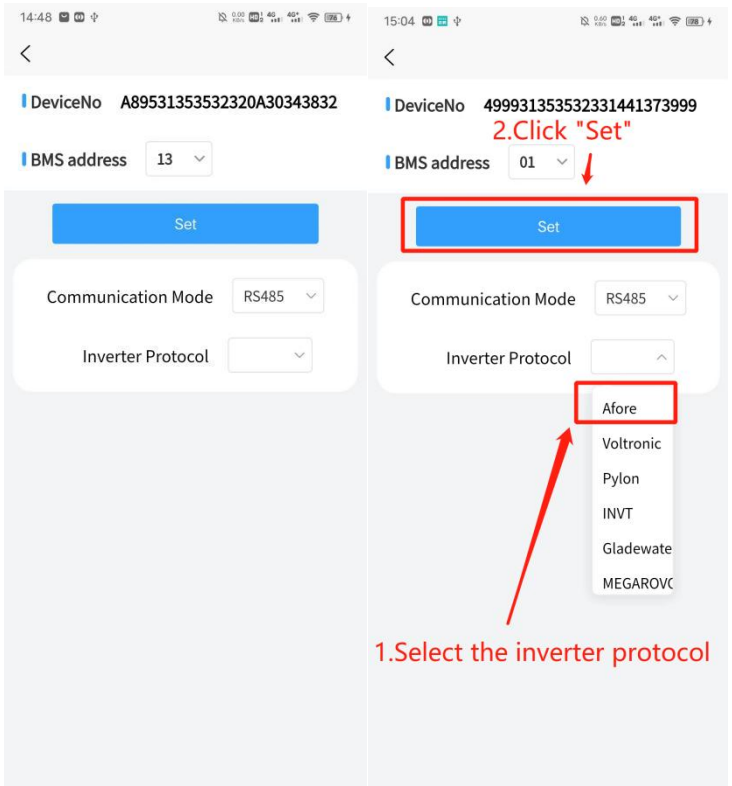


2.5 Inverter protocol

1 ）The page for setting the inverter protocol is displayed



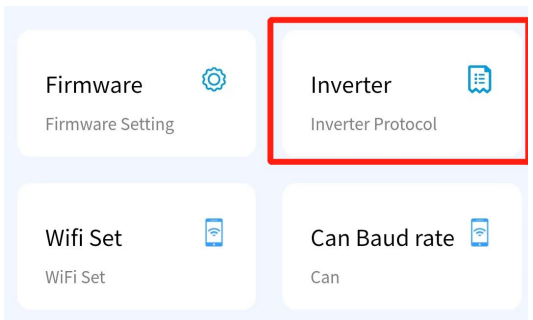
2 ）Select the inverter communication mode first, then select the inverter protocol



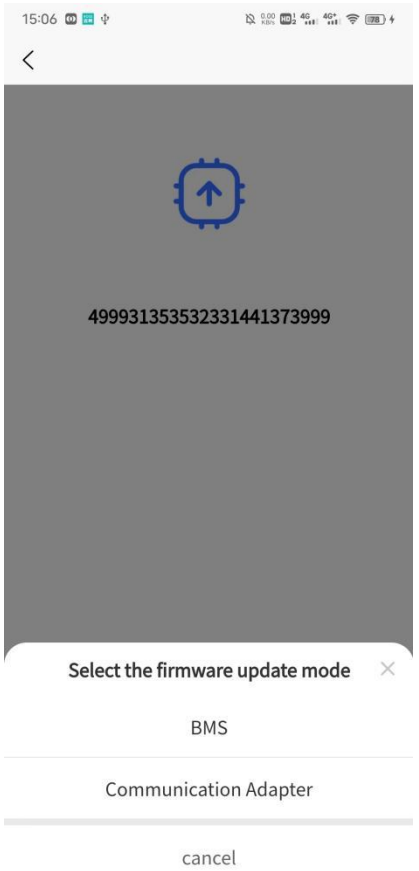
2.6 Firmware Update

1 ） The firmware update page is displayed

The firmware update page is displayed



2 ）Select update device type



3 ）Download the firmware package from the server

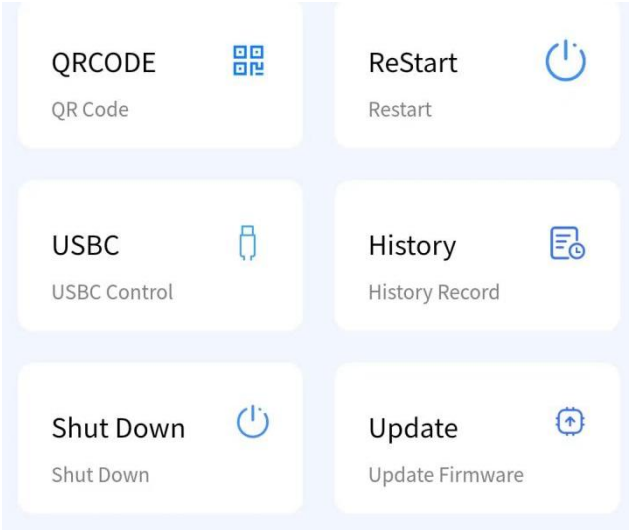
4 ） Firmware Update

5 ）Firmware update completed

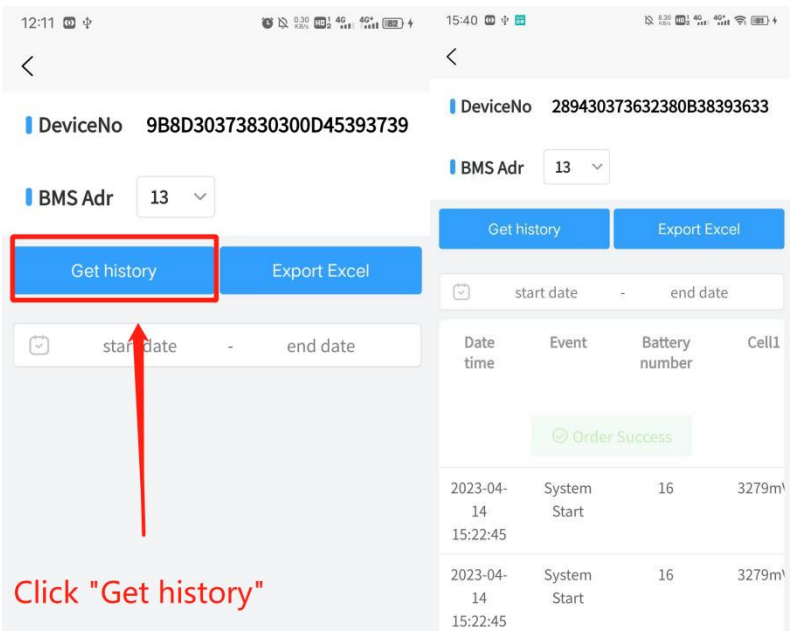
2.7 Fault diagnosis

1 ） Read history data

A、Enter the history page, slide down the function selection page, and click the history function function

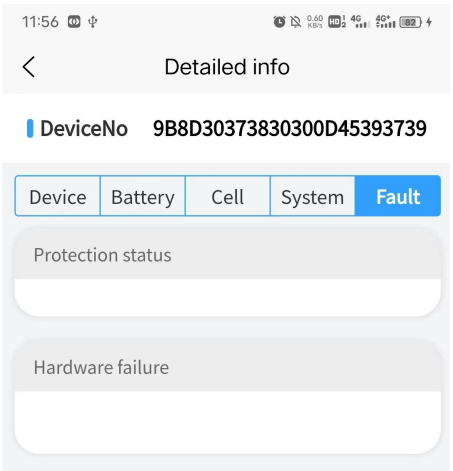


B、Obtain the historical record. After the historical record is read, you can analyze the fault based on the date and time type



2） Monitor interface fault alarms

You can analyze the fault based on the alarm information reported in the protection status and hardware fault



3） Monomer equalization

You can view the monomer status on the Detailed Monitoring page.

6.remote control

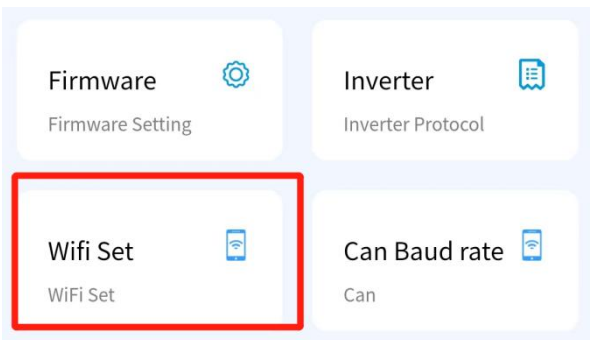
6.1 Equipment distribution network

1 ）Bluetooth connected device

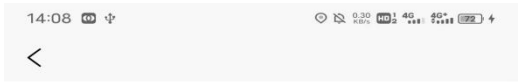
For details, see Connecting Devices

2 ）The wifi Settings page is displayed

Function selection page slide, click wifi setting function

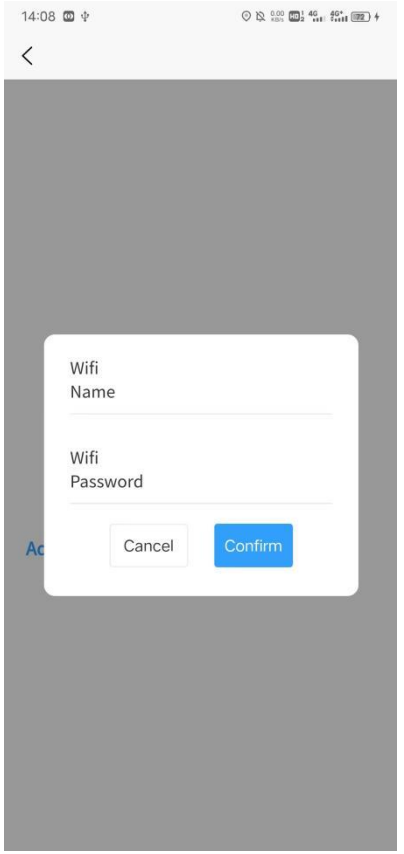


3 ）Click Add Network



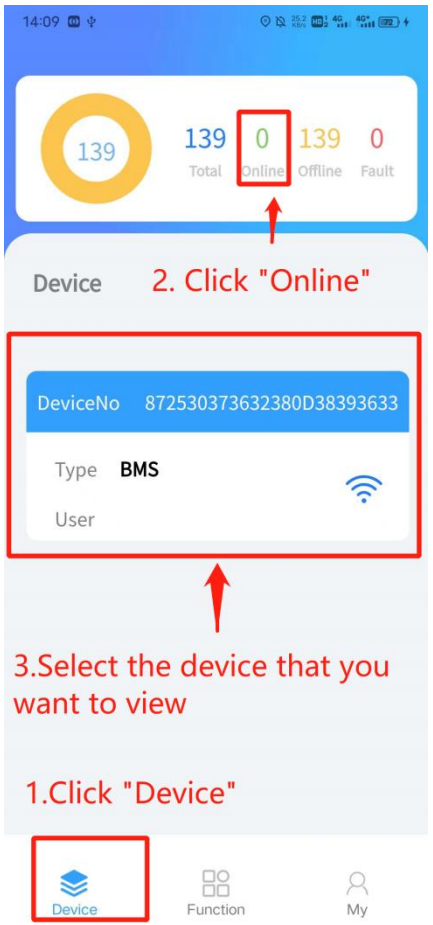
4 ）Input Wifi information

Bluetooth will be automatically disconnected after Wifi setting is successful



6.2 remote connection

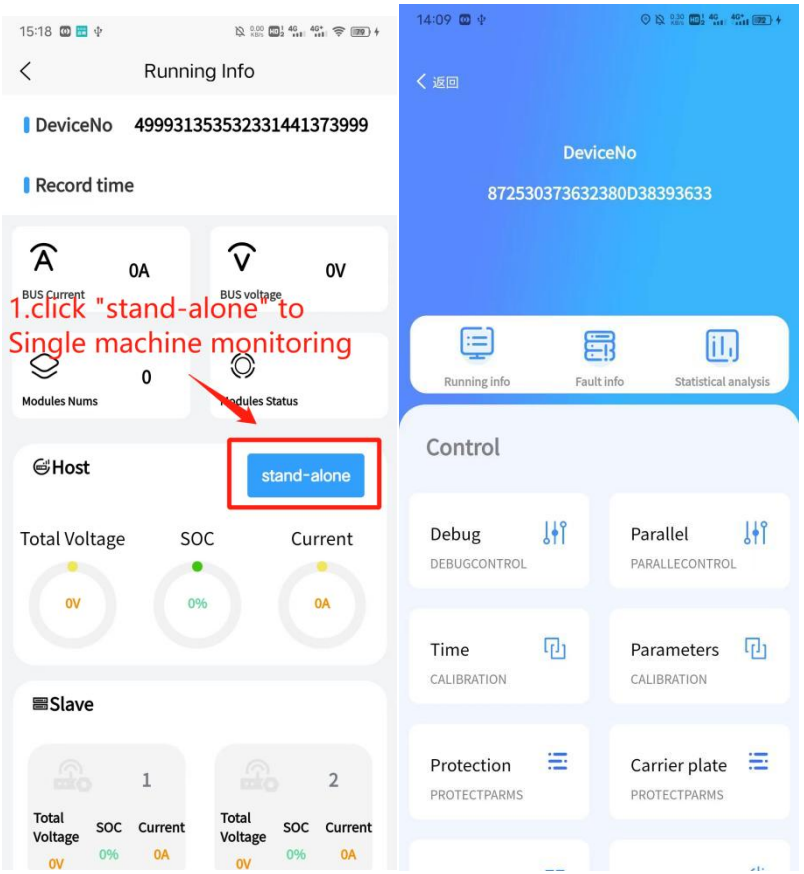
1 ）Viewing online devices



2 ）Enter parallel monitoring

If the device is in the parallel state and is a master, real–time parallel information is displayed

3 ）Enter standalone monitor



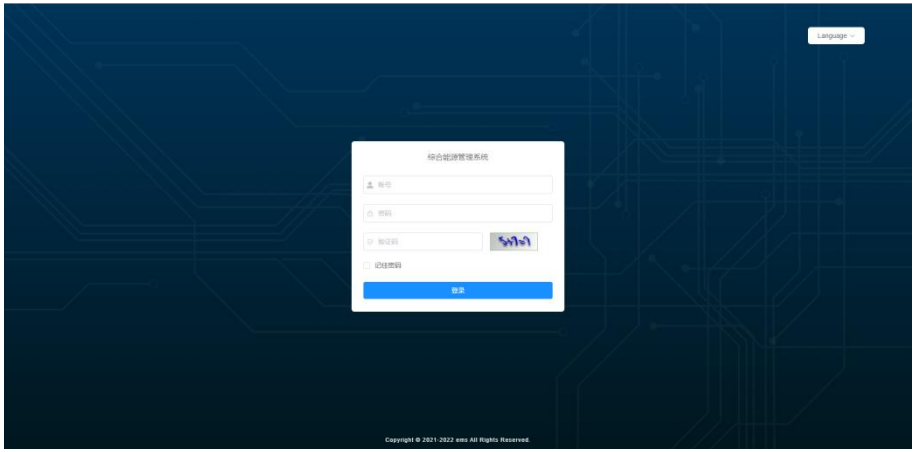
4 ）Enter the single device function page (same as Bluetooth)

7.web client

7.1Number Of Logon

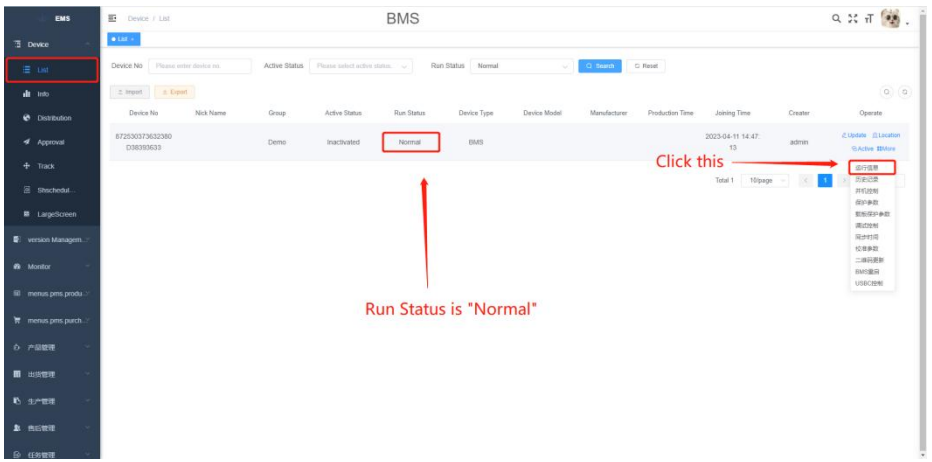
System website：http://ems.scc–tech.com/

Enter the account number, password and graphic verification code, and click login

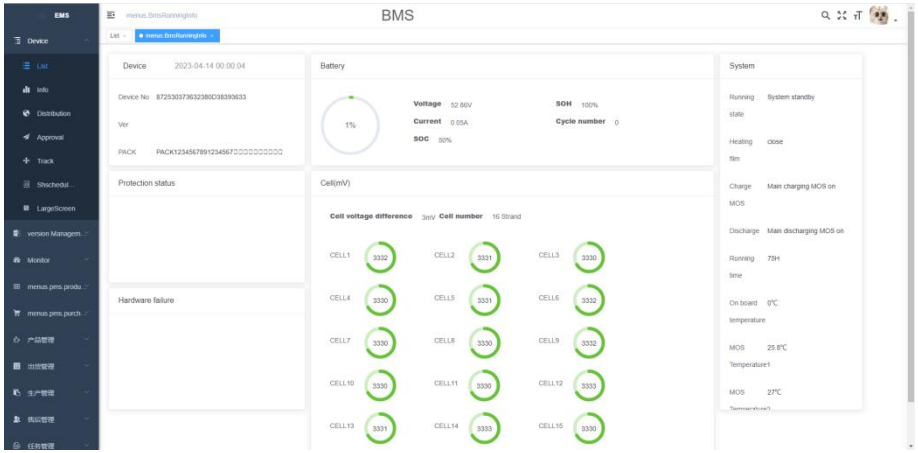


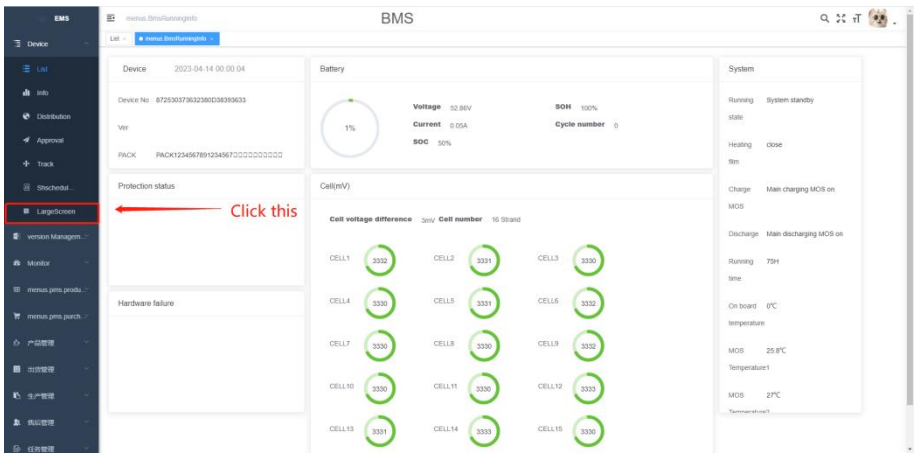
7.2Monitoring instruction

1) Detailed information display

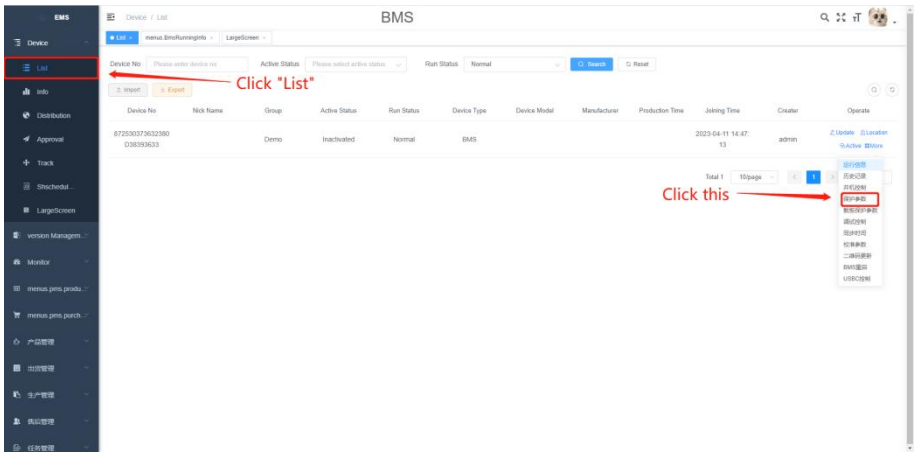


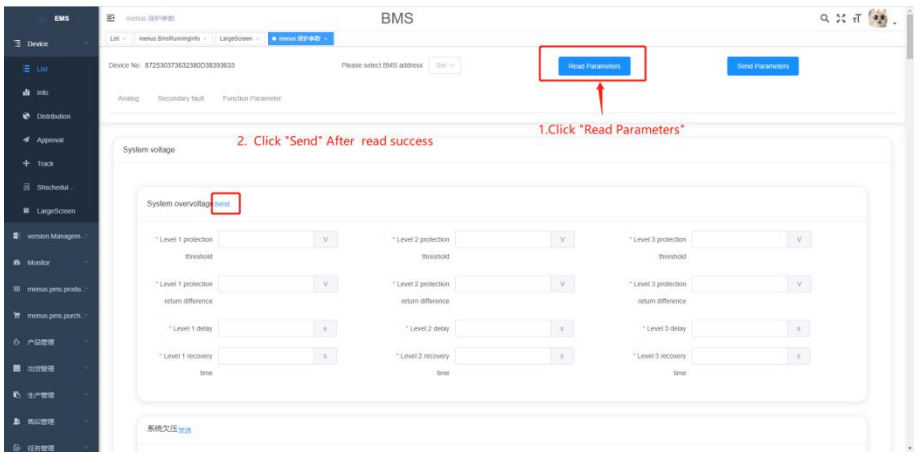
2) Large screen monitoring



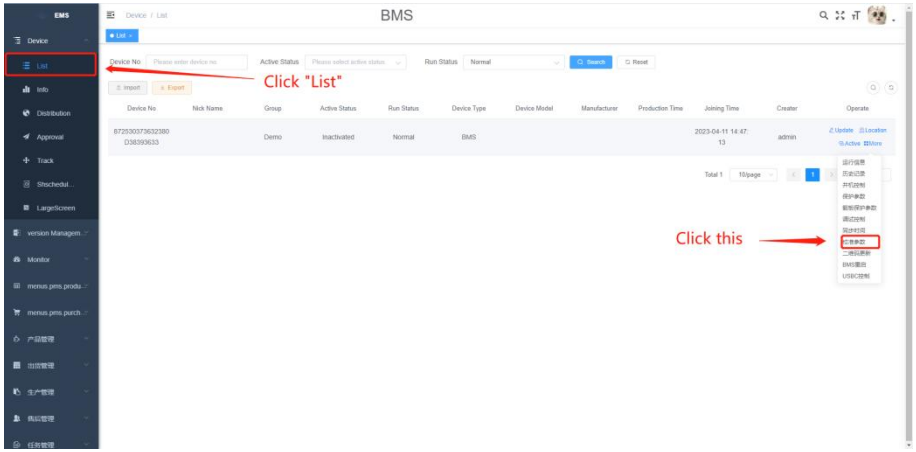


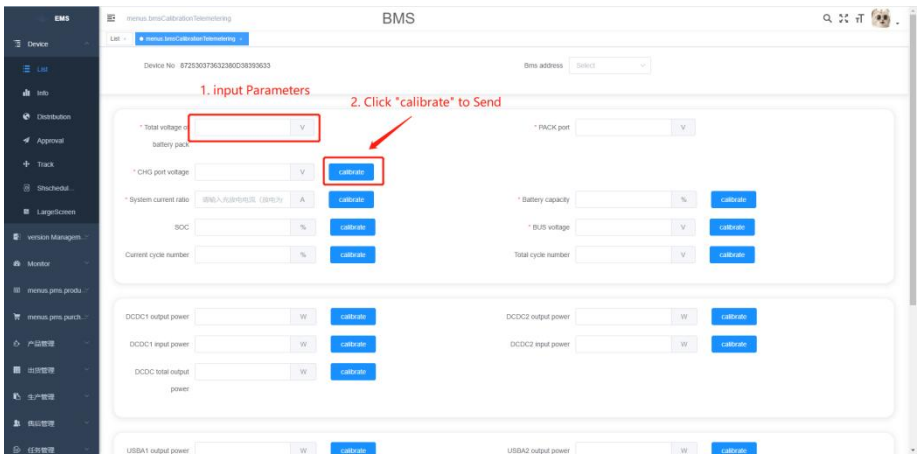
3）Parameter configuration





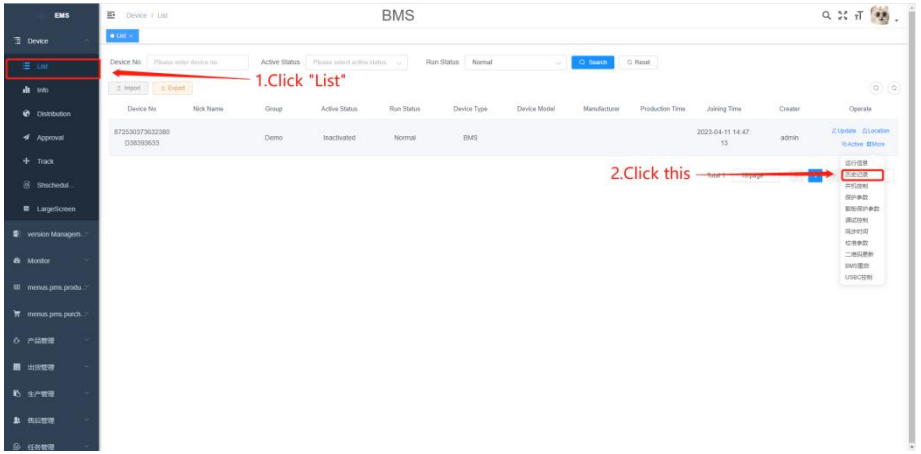
4）Calibration parameter

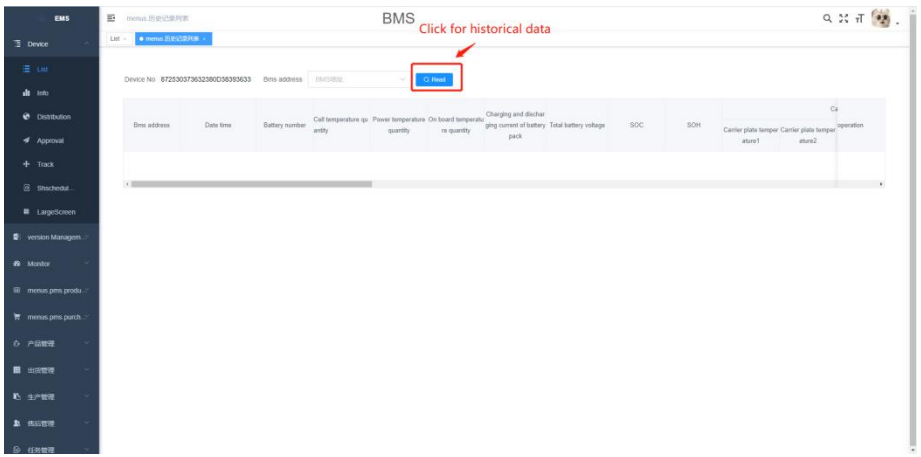




7.3Fault diagnosis

1) Read history





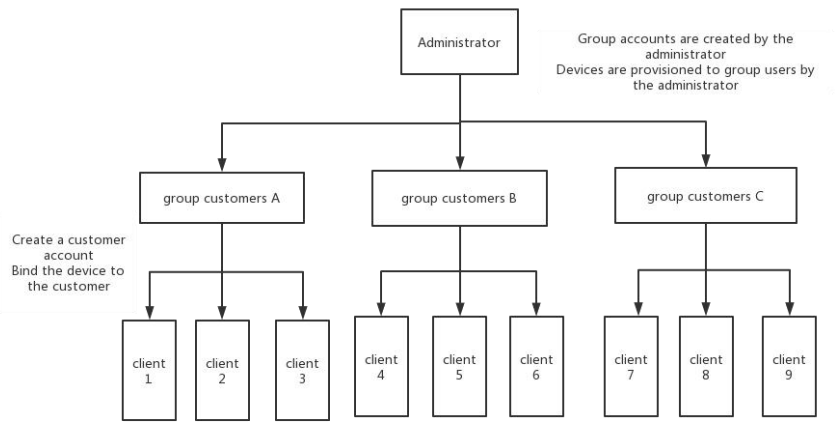
2)Monitoring page fault alarm

You can analyze the fault based on the alarm information reported in the protection status and hardware fault

7.4Monomer equalization

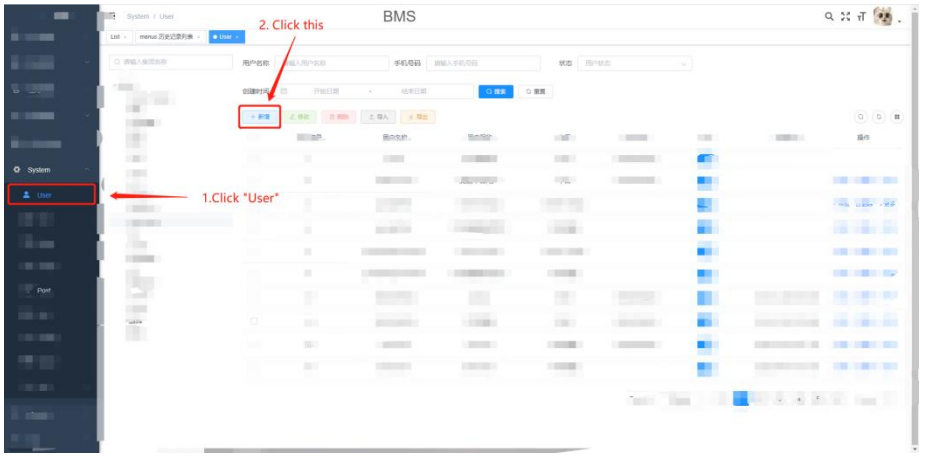
You can view the Monomer status on the Monitoring page in details, as shown in 7.1.

7.5Hierarchical account management

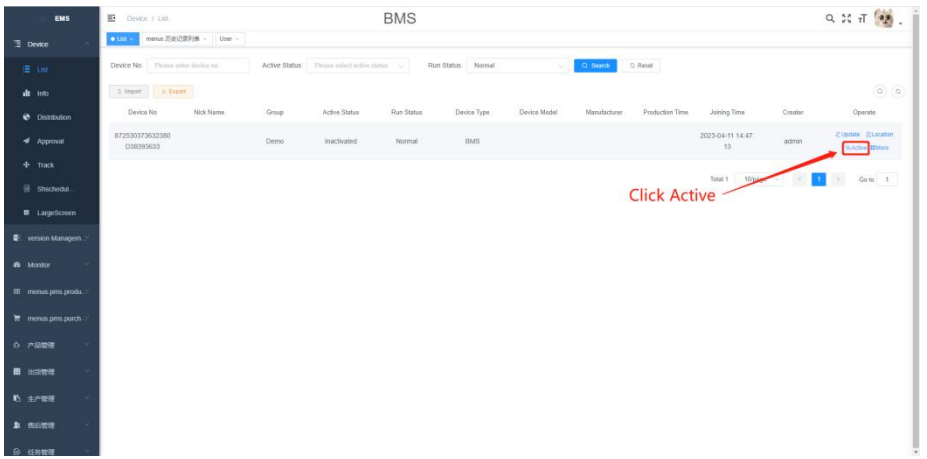


1)Process for group users to add customer accounts

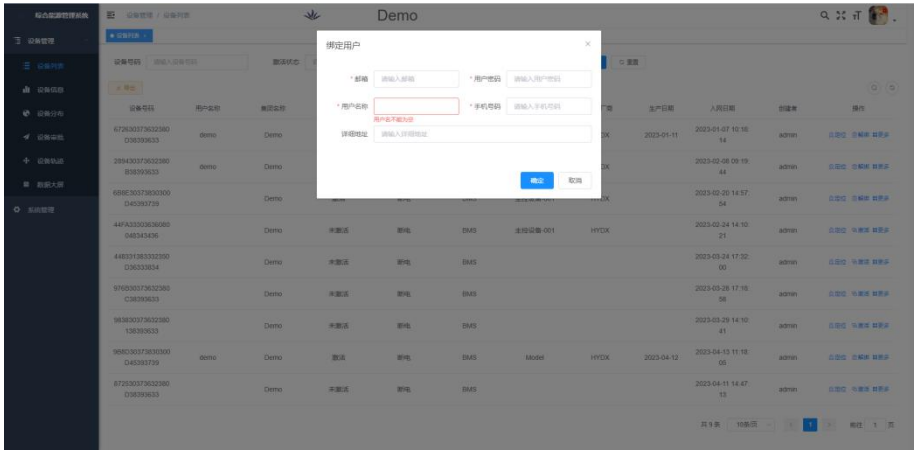
The user management page is displayed, and a user is added. The user name is the login account of the user.



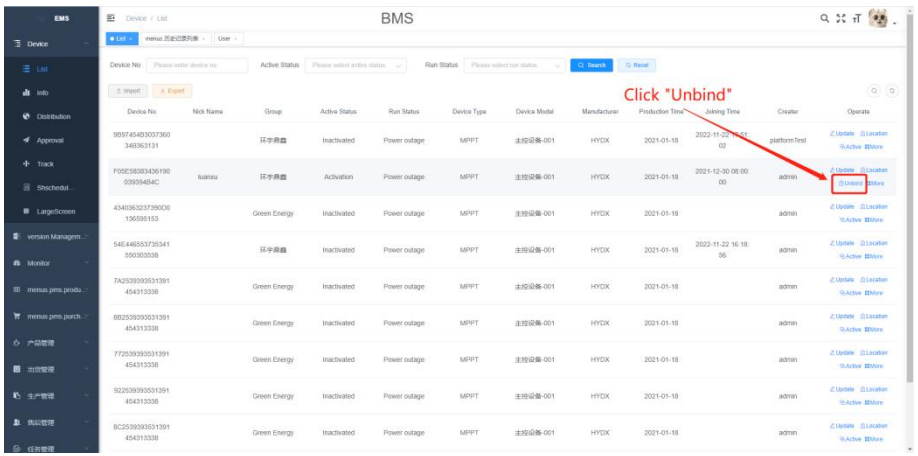
2) Process for group users to bind devices to customer accounts.



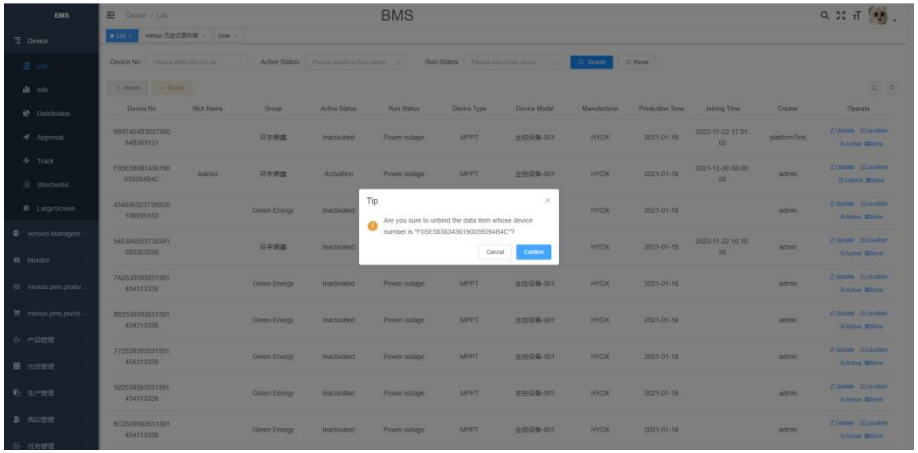
Enter the customer information to bind the device to the customer account.



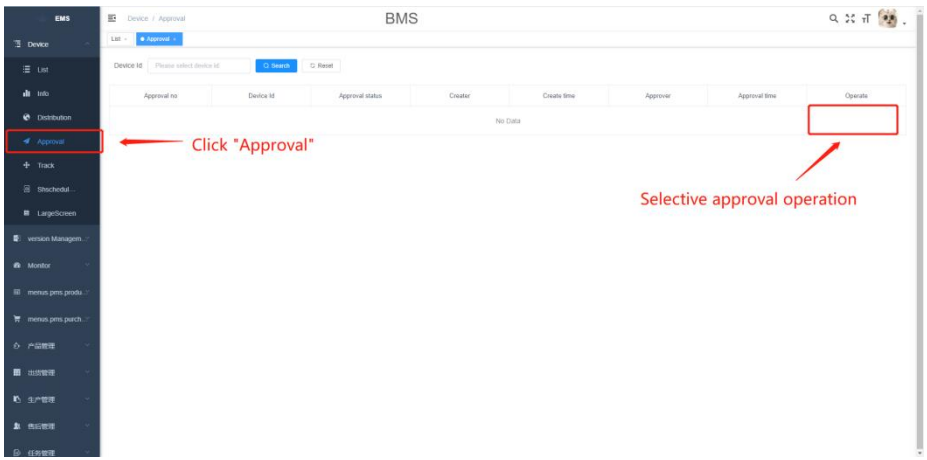
3) Group user unbind equipment process.



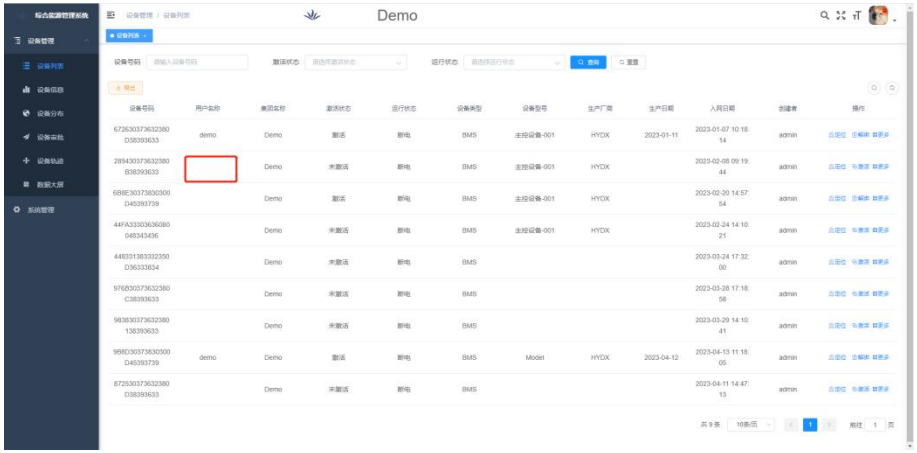
A、Click OK to submit for approval.



B、Group users for approval.



C、After the approval, the device is unbound successfully.



8.Firmware update change plate brick processing method

8.1Remove the battery case to expose the BMS protection plate

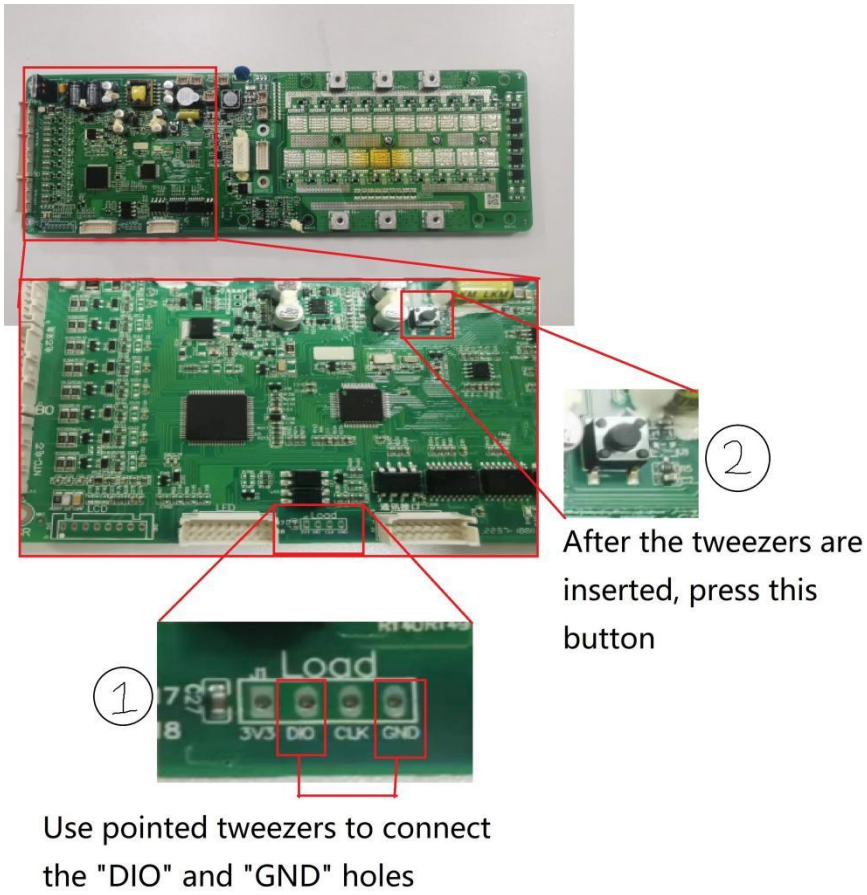
1) First, place the upper battery cover face up and lay it flat. Then, remove the fastening screws on both sides of the chassis to remove the upper cover.

2)After removing the upper cover, remove the screws securing the battery front panel to facilitate operation of the BMS protection plate.

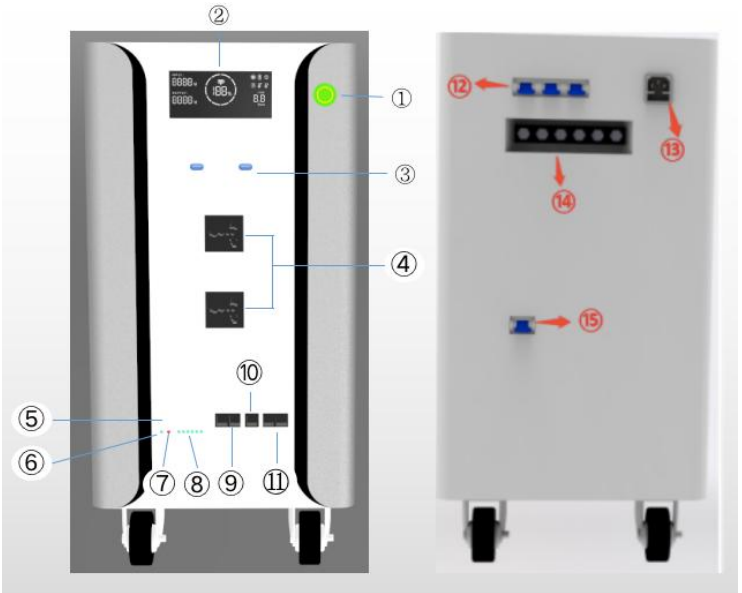
3) After removing the front panel holding screws, prepare a hard rod and a pair of needle–tipped tweezers.

8.2The firmware update mode is forcibly entered

1) After the first step, insert tweezers into the hole at position 1 below to connect it, and then press the button at position 2 below to put the BMS into firmware update mode.



2) After the operation is successful, the BMS enters the firmware update mode, and indicator 6 on the front panel blinks.



3) After confirming that the BMS is in firmware update mode, connect the BMS using the communication cable, open the firmware update program, and follow the steps in 4.8 to update the firmware.

9.Product Parameter

NO.		Item	General Parameter
1	Battery	Battery type	LiFePO4 Battery
2		Standard capacity (0.5C)	100Ah
3		Rated voltage	51.2V
4		Rate Power	5120Wh
5		Internal Impedance	⩽60mΩ
6		Max.Charge voltage	58.4V
7		Cut–off voltage	45V
8		Standard charge current	20A
9		Standard discharge current	100A
10		Continuous discharge current	100A
11		Battery dimension	L580 ± 3 × W300 ± 3 × H520 ± 3mm
12		Total weight (Approx.)	Approximately 60kg
13	AC Output	Rated output voltage	230Vac ± 5%
14		Surge power	10kVA

15		Efficiency	93%	
16		Output waveform	Sine wave	
17	AC Input	Rated input voltage	230Vac	
18		Rated frequency	50Hz/60Hz(self–adaption)	
19	PV input	MPPT voltage range	120Vdc ~ 450Vdc	
20		Maximum photovoltaic array power	5kW	
13		Charge method (CC/CV)	Standard	0℃ ~ 45℃
			Discharge	–20℃ ~ 55℃
			Storage	–20℃ ~ 45℃
14		Capacity @ shipment	50%–60%	

10.Boundary dimension

Front view and side view

11.Storage and packaging

11.1storage environment

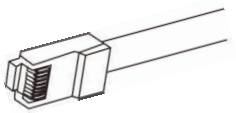
1) If the device is not installed immediately, ensure that the storage environment meets the following conditions.

- The device is packed in a packing case. Place desiccant in the packing case and seal the packing case.
- once opened within 3 days if not to install, recommended to save equipment in packaging box.
- Storage SOC: 25~50%SOC, charge and discharge cycle once every 3 months.
- Storage temperature range: –20 ° C to 40 ° C for a maximum of one month. Not more than 1 year at 0–35 ° C.

- Humidity range: 0 to 95% No condensation. Do not install the battery port if it is wet and dewy.
- Equipment should be stored in shady and cool place and avoid direct sunlight.
- equipment storage should be away from the goods such as inflammable, explosive, prone to corrosion.
- Equipment prohibited the rain.

11.2packing list

- before open cell outer packing, please check if the outer packing was damaged, and check the battery model. If there is any abnormality, do not open the packing case, and contact the after–sales service center as soon as possible.
- After unpacking the battery, check whether the product delivery is complete according to the packaging information. If there is any anomaly, please contact the after–sales service center as soon as possible.

 Battery x1	 RS485 communication cable x2	

12.maintain

System O&M Project	maintenance period
If the battery is not in use, fully charge the battery and reduce the capacity to 25–50%.	Once every 3 months
Check whether the wall hanger is loose. If yes, tighten it to the corresponding position.	Once every 6 months
Check whether the shell is damaged. If so, please repaint or contact the after–sales service center.	Once every 6 months
Check whether the exposed wire is worn. If so, replace the corresponding cable or contact the post–sale service center	Once every 6 months
Check whether debris accumulates around the battery. If so, clean it up to avoid affecting the heat dissipation of the battery.	Once every 6 months

⚠warning

• If you find any problem that may affect the battery or the battery and energy storage inverter system, please contact the after–sales personnel。

• If the copper wire inside the conductive wire is exposed, do not touch it. High pressure is dangerous. Please contact the after–sales staff and do not disassemble it without permission。

• In case of other emergencies, please contact the after–sales personnel in the first time and operate under the guidance of the after–sales personnel, or wait for the on–site operation。