USER'S MANUAL

LiFePO4 Battery Module

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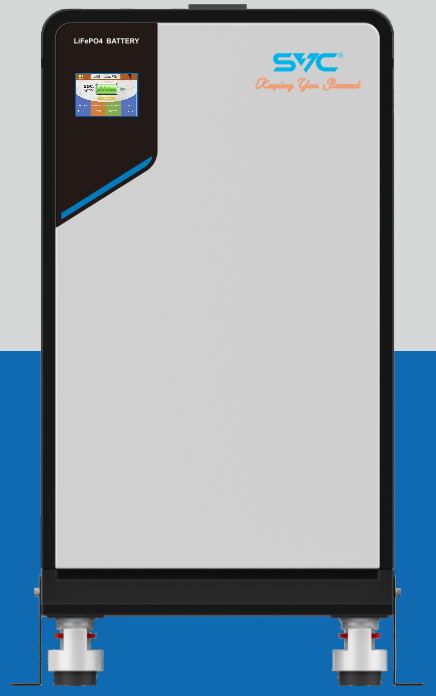
BMF51230 Series



PREFACE

Thank you for choosing Residential Battery Module BMF Series(hereinafter “BMF Series).

This user manual presents a detailed description with respect to product features, structural characteristics, functions, installation, parameter settings, troubleshooting, commissioning and daily maintenance, etc. Be sure to carefully read through the safety precautions before and keep it properly at a place for easy access.

The inverter must only be installed by professional technicians. The professional technician is required to meet requirements as follows:

· Know electronic, electrical wiring and mechanical expertise, and be familiar with electrical and mechanical schematics.

· Be familiar with local standards and relevant safety regulations of electrical systems.

· Have received professional training related to the electrical equipment installation and commissioning.

· Be able to quickly respond to hazards or emergencies that occur during installation and commissioning.

The right to modify the frame dimensions, functionality, technical date, parameters, standards without prior notice are reserved. The data in this manual are reviewed regularly and any necessary corrections are included in subsequent editions. Suggestions for improvement from readers are appreciated.

Contents

BMS-TOOL APP user manual

1.Safety precautions

DO NOT FORGET!There is always risk of electrocution inside the equipment,even after disconnecting the Unit from mains,because the internal circuitry and the battery bank remain connected,thus generating Dangerous voltage levels.Therefore,don't open the case if you aren't qualified.

Reminding

(1) Before installing or using the battery, it is important and necessary to read the user manual carefully. Failure to do so or to follow any instructions or warnings in this document may result in electric shock, serious injury or death, or may damage the battery, potentially rendering it inoperable .

(2) If the battery is stored for long time, it is required to charge them every six months, and the SOC should be no less than 90% .

(3) The battery needs to be charged within 12 hours, after full discharge .

(4) Do not install the product in an outdoor environment, or an environment beyond the operating temperature or humidity range listed in the manual .

(5) Do not expose the cable to the outside.

(6) Do not connect power terminal reversely.

(7) All battery terminals must be disconnected for maintenance .

(8) Please contact the supplier within 24 hours if there is something abnormal .

(9) Do not use detergent to clean the battery.

(10) Do not expose batteries to flammable or harsh chemicals or vapors .

(11) Do not paint any part of the battery, including any internal or external components .

(12) Do not connect battery with PV solar wiring directly.

(13) The warranty claims are excluded for direct or indirect damage due to items above .

(14) Any foreign object is prohibited to insert into any part of battery.

Warning

1.1. Before connecting

(1) After unpacking, please check the product and packing list first, if the product is damaged or missing parts, please contact your local dealer seller contact.

(2) Before installation, be sure to cut off the grid power and make sure the battery is in the turned-off mode .

(3) Wiring must be correct, do not mistake the positive and negative cables, and ensure no short circuit with the external device.

(4) It is forbidden to directly connect the battery and AC power.

(5) The battery embedded BMS is designed for single battery voltage, please do not connect the battery in series.

(6) The battery must be grounded and the resistance must be less than 0.1Ω .

(7) Please ensure that the electrical parameters of the battery system are compatible with related equipment.

(8) Keep the battery away from water and fire.

1.2.In using

(1) If you need to move or repair the battery system, you must cut off the power supply and turn offthe battery completely.

(2) It is forbidden to connect the battery with different types of batteries .

(3) It is forbidden to connect the battery with a faulty or incompatible inverter.

(4) It is forbidden to disassemble the battery (the QC label falls off or is damaged) .

(5) In the event of a fire, only dry powder fire extinguishers can be used, and liquid fire extinguishers are prohibited .

(6) Please do not open, repair or disassemble the battery except staffs from agency or authorized by agency. We do not undertake any consequences or related responsibility which because of violation of safety operation or violating of design, production and equipment safety standards .

2. Introduction

The LFP51314-S Series has a built-in BMS battery management system, which can manage and monitor battery voltage, current, temperature and other information .

2.1.Product features

(1) Built-in soft start function, when the inverter needs to start from the battery, it can reduce the current impact .

(2) Double active protection at BMS level .

(3) They can be put in parallel,you must select the ID of each one.

(4) Support wake-up via 5~ 12V signal of RJ45 port .

(5) Support the host controller to upgrade the battery module through CAN or RS485 communication .

(6) Enable 95% depth of discharge, which can be used for inverters operating in full compliance with its protocol .

(7) The module is non-toxic, non-polluting and environmentally friendly.

(8) The cathode material is lithium iron phosphate, which has good safety performance and long cycle life .

(9) The battery management system (BMS) has protection functions such as over-discharge, over-charge, over-current, high and low temperature, etc .

(10) The system can automatically manage the charging and discharging status and balance the voltage of each cell .

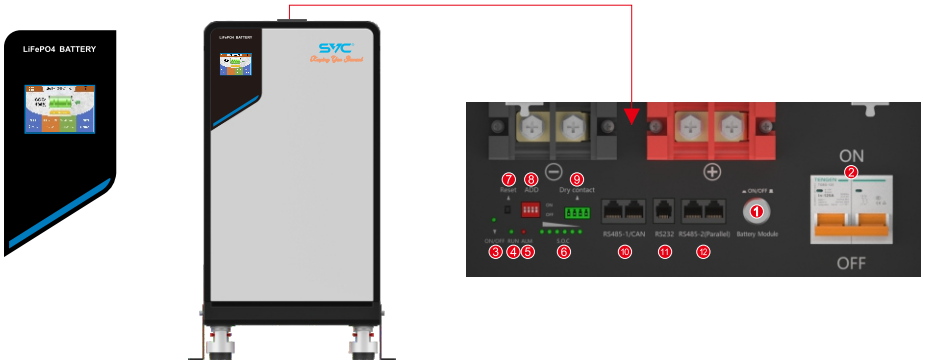
(11) Flexible configuration, multiple battery modules can be connected in parallel to expand capacity and power.

(12) Adopt self-cooling method to quickly reduce the overall noise of the system .

(13) The module has less self-discharge, and can be put on the shelf for up to 6 months without charging . There is no memory effect, and the shallow charge and discharge performance is excellent .

(14) Small size, light weight, easy installation and maintenance .

2.2.Equipment interface instruction



① Function Switch
(1)ON:Starting
(2)OFF:Power off for storage or transportation
② Battery Switch
③ ON/OFF (Status indicator)
④ RUN (Status indicator)
⑤ ALM (Fault indicator)
⑥ S.O.C (Current capacity of the battery)
⑦ RST Reset key (Long press for 5S to reset)
⑧ ADD (DIP switch setting instructions)

ON

OFF

DIP switch diagram(SW1 connector)

Address	DIP switch position			
	#1	#2	#3	#4
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

- (1)Single battery set using dial code:

Single battery set using dial code:

- (2)Multiple sets of batteries in parallel use the DIP settings:

Multiple sets of batteries in parallel use the DIP

First Battery Second Battery Third Battery Fourth Battery Fifth Battery

Sixth Battery Seventh Battery Eighth Battery Ninth Battery Tenth Battery
AND SO ON

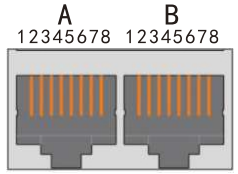
⑨ **Dry contact output description:**

1 2 3 4

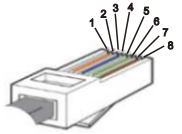
(1)Dry contact 1-PIN1 to PIN2:normally open,low battery closed
(2)Dry contact 2-PIN3 to PIN4:normally open,closed during fault protection

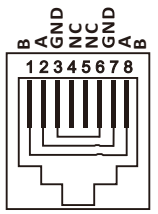
⑩ **RS485-1/CAN: Usage to conecting with inverter or master battery pack**

(1)RS485-1Communication port definition:

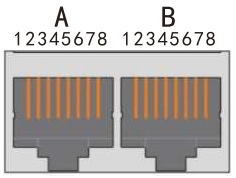


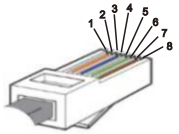
RS485-1 CAN

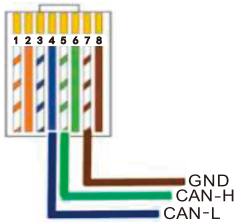




(2)CAN Communication port difinition:



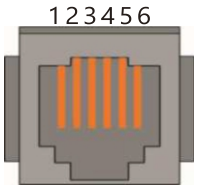




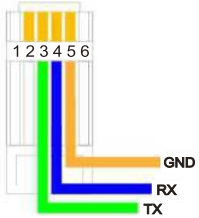
Port		Difinition
CAN Communication Port Definition	PIN 1	NC(Empty)
	PIN 2	NC(Empty)
	PIN 3	NC(Empty)
	PIN 4	CAN-L
	PIN 5	CAN-L
	PIN 6	NC(Empty)
	PIN 7	GND
	PIN 8	NC(Empty)

⑪ RS232(Adjusting): RS232 Connecting with upper computer to let manufacturer or process adjusting service

(1)RS232 Communication port definition:



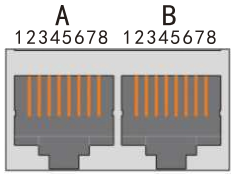
(RJ11)Terminal



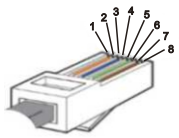
Port		Clarifying
RS232 Communication Port Definition	PIN 1	NC(Empty)
	PIN 2	NC(Empty)
	PIN 3	TX protection board sending data(PC receiving data)
	PIN 4	RX protection board sending data(PC sending data)
	PIN 5	GND
	PIN 6	NC(Empty)

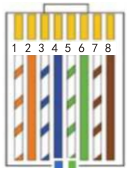
⑫ RS485-2:For connecting with the slave battery

(1)RS485-2 Communication port definition:



(Double RJ45)Port





Port		Definition			Definition	
RS485 Communication Port Definition	A Part RS-485-2 Port	PIN 1	RS485-B2	B Part RS-485-2 Port	PIN 1	RS485-B2
		PIN 2	RS485-A2		PIN 2	RS485-A2
		PIN 3	RS485-GND		PIN 3	RS485-GND
		PIN 4	NC(Empty)		PIN 4	NC(Empty)
		PIN 5	NC(Empty)		PIN 5	NC(Empty)
		PIN 6	RS485-GND		PIN 6	RS485-GND
		PIN 7	RS485-A2		PIN 7	RS485-A2
		PIN 8	RS485-B2		PIN 8	RS485-B2

(2)RS485-2 Battery pack parallel function:

1.Under parallel status, communication address 0001 is master battery pack, rest communication position are slave battery . and slave battery could communication with master battery pack through RS458 port . master battery pack will collect all slave battery data .

2.When parallel status, only master battery pack communicate with PC upper computer as remote monitoring, uploading datas, displaying status & any other info of all battery packs .

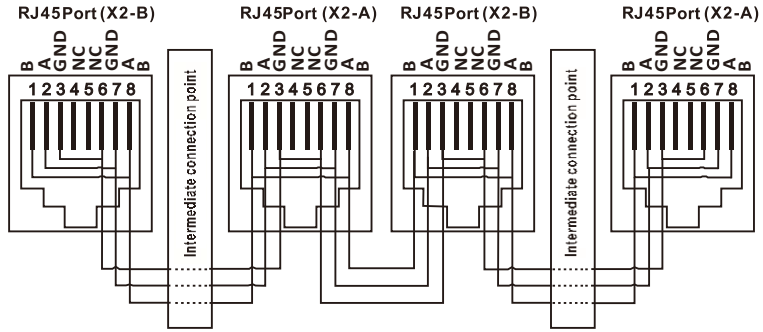
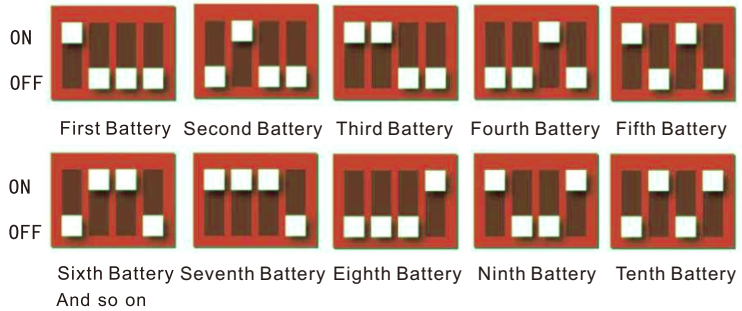


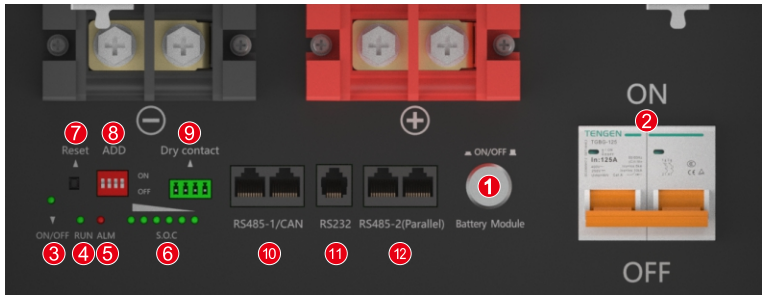
Diagram RS485 Parallel Cables Connection

Processing several pack parallel communication,need to set the single pack DIP firstly,and take BCD format as follows.

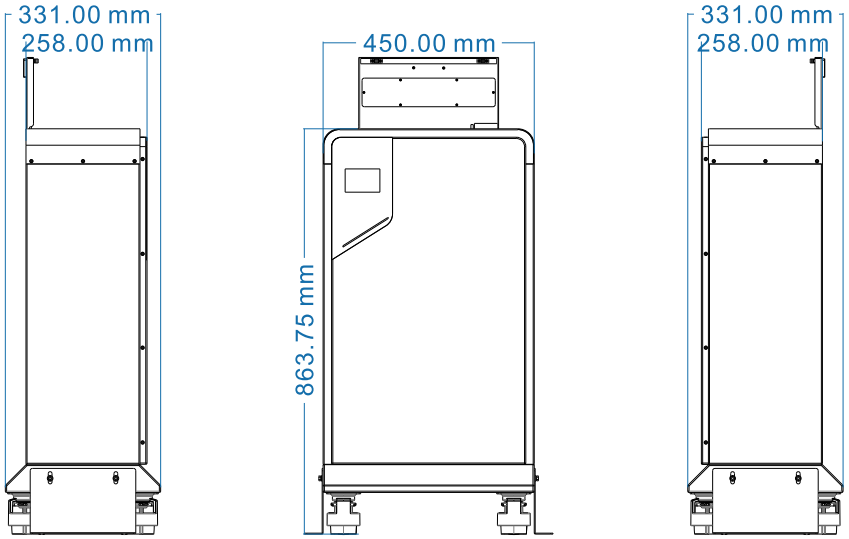
Multiple sets of batteries in parallel use the DIP



2.3.Battery cables terminal



2.4.The smart series outlook is shown as figure:



2.5.LED status showing

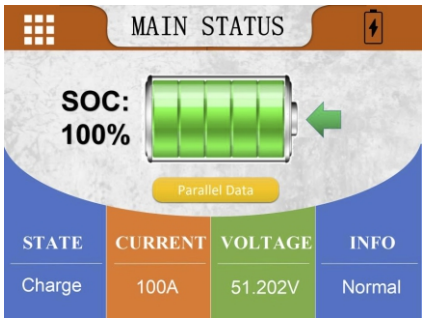
State	Normal Alarm Protection	ON/OFF	RUN	ALM	Battery Indicator LED L6	L5	L4	L3	L2	L1	Explain
		●	●	●	●	●	●	●	●	●	
Shutdown	Dormancy	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Total extinction
Standby	Normal	ON	Flash 1	OFF	According to the power indicator						Position In r eadiness
	Alarm	ON	Flash 1	Flash 3							Module low voltage
Charging	Normal	ON	ON	OFF	According To The Power Indicator (the Highest Battery Indicator LED Flashes 2)						The maximum battery level flashes twice, and the overcharge alarm ALM does not flash
	Alarm	ON	ON	Flash 3							
	Overcharge protection	ON	ON	OFF	ON	ON	ON	ON	ON	ON	No mains power to standby mode
	Abnormal fail safe	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging
Discharge	Normal	ON	Flash 3	OFF	According To The Power Indicator						
	Alarm	ON	Flash 3	Flash 3							
	Undervoltage Protection	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
	Abnormal fail safe	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
Invalid		OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging and

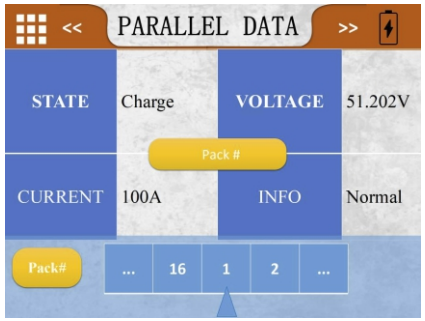
2.6.BMS basic function

Protection and alarm	Management and monitor
Charge/Discharge End	Cells Balance
Charge Over Voltage	Intelligent Charge Model
Discharge Under Voltage	Charge/Discharge Current Limit
Charge/Discharge Over Current	Capacity Retention Calculate
High/Low Temperature(cell/BMS)	Administrator Monitor
Short Circuit	Operation Record
	Power Cable Reverse
	Soft Start Of Inverter

2. 7.Liquid Crystal Display Operation Guide

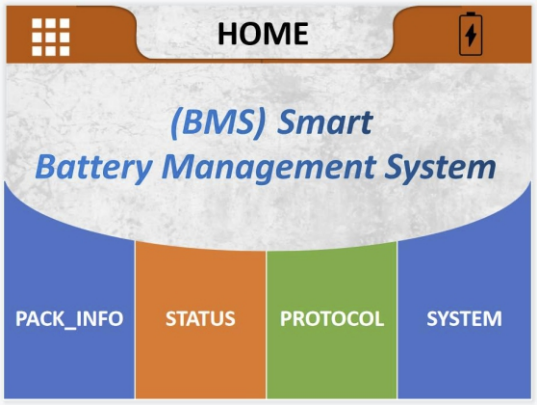
- Introduction to BMS Touch Color Display Screen Function Operation
- Interface Introduction





	Main menu icon, click to enter the main menu HOME interface
	Click on the main state icon to enter the main state interface
	Click on the parallel data icon to enter the parallel data Parral data interface

- HOME page



- Menu structure
- Menu

1.Min state page(main status interface) {1.1 SOC(Total) 1.2 Current 1.3 Voltage
1.4 BMS INFO 1.5 Warranty
1.6 Parral data }
1.6.1 soc(each pack)
1.6.2 Current
1.6.3 Voltage
1.6.4 BMS Info

- Home (homepage)
- PACK Info(pack Cell data)

2.Voltage { 2.1 Cell01 voltage 2.2 Cell02 voltage ····· 2.3 Ce1116 voltage }
3.Temperature { 3.1 NT1 3.2 NT2 3.3 NT3 3.4 NT4 3.5 Mos_T 3.6 ENT_T }

- BMS Status

4.Warning 5.Protect 6.Fault 7.Record

- PROTOCOL(Protocol selection)

8.CAN
8.1 GOOD WE PROTOCOL
8.2 LV BMS Protocol(CAN) for Solar Inverter Family EN_V 1.5
8.3 PYLON PROTOCOL 2.0
8.4 Pylon CAN bus protocol V 2.0.420211122
8.5 SMA PROTOCOL
8.6 SMAF SS-Connecting Bat-TI-en-20W
8.7 GROW ATT_PROTOCOL
8.8 Growatt BMS CAN-Bus-protocol-low-voltage
·····
9.RS485
9.1 USER_485_VOLTRON
9.2 Voltronic Inverter and BMS 485 communication protocol 20200325(1)
9.3 PYLON
9.4 RS 485-protocol-pylon-low-voltag
9.5 Luxpowertek Battery Protocol RS 485_V 01
·····

- SYSTEM

10.Language select(English,Chinese, Arabic) 11.Pack sn 12.Bluetooth sn

Note: The protocol list is read from the BMS motherboard. The following is an example, based on the built-in list of each BMS motherboard. To change the protocol, you need to enter the permission password for the first time. The initial password is 123456. Exit the protocol interface and the permission will take effect. To modify the protocol again, you need to verify the permission again

- Sleep/Shutdown

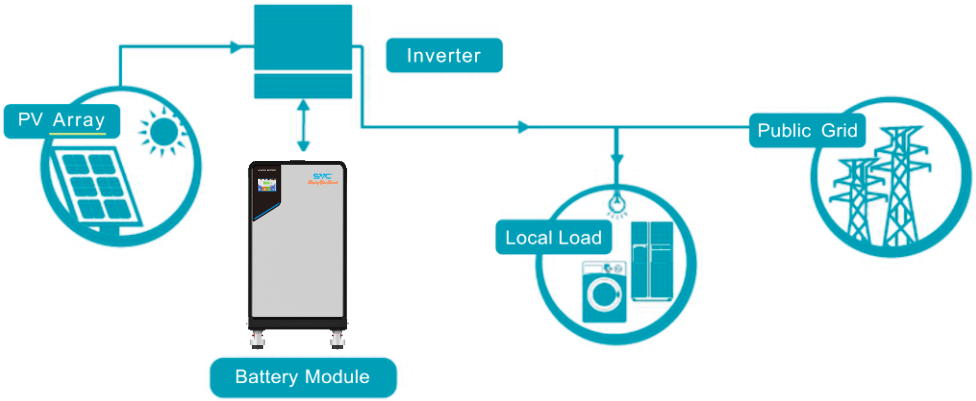
After 3 minutes of no button operation in normal operation, the system will enter sleep/shutdown mode. When in shutdown/sleep mode, clicking on any position on the color screen will activate the display screen and enter the state interface before turning off the screen. the protocol again, you need to verify the permission again

- Install and use

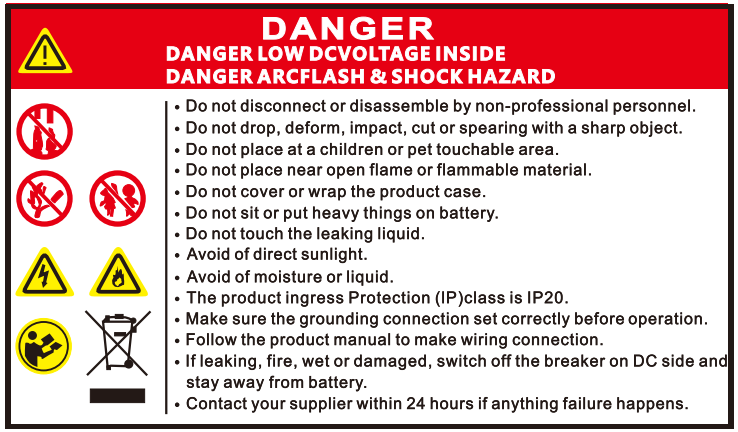
Please connect the display screen to the main control board through a dedicated cable!

3.Safe handling guide of lithium battery

3.1.Schematic diagram of solution



3.2.Danger label



3.3.Tools

Wire cutter

Crimping modular plier

Screwdriver

NOTE

Use properly insulated tools to prevent accidental electric shock or short circuits.If insulated tools are not available,cover the entire exposed metal surfaces of the available tools,except their tips,with electrical tape.

3.4.Safety gear

It is recommended to wear the following safety gear when dealing with the battery pack

Insulated gloves

Safety goggles

Safety shoes

4.Installation and operation

4.1.Package Items

Unpack and check the packing list

1.One set of complete host x1

2.User manual x1

3.INV-BAT Normal-2 meters x1

4.INV-BAT Other-2 meters x1

5.50 square 1.5 meter red battery cable x1

6.50 square 1.5 meter black battery cable x1

4.2.Installation location

Make sure that the installation location meets the following conditions:

（1）The area is completely water proof.
（2）The floor is flat and level.
（3）There are no flammable or explosive materials.
（4）The ambient temperature is within the range from 0°C to 50°C.
（5）The temperature and humidity is maintained at a constant level.
（6）There is minimal dust and dirt in the area.
（7）The distance from heat source is more than 2 meters
（8）The distance from air outlet of inverter is more than 0.5 meters.
（9）The installation area shall avoid of direct sunlight.
（10）There is no m andatory ventilation requirements for battery module, but please avoid of installation in confined area.The aeration shall avoid of high salinity, humidity or temperature.

Caution

If the ambient temperature is outside the operating range, the battery pack stops operating to protect itself. The optimal temperature range for the battery pack to operate is 0°C to 50°C. Frequent exposure to harsh temperatures may deteriorate the performance and life of the battery pack.

4.3.Grounding

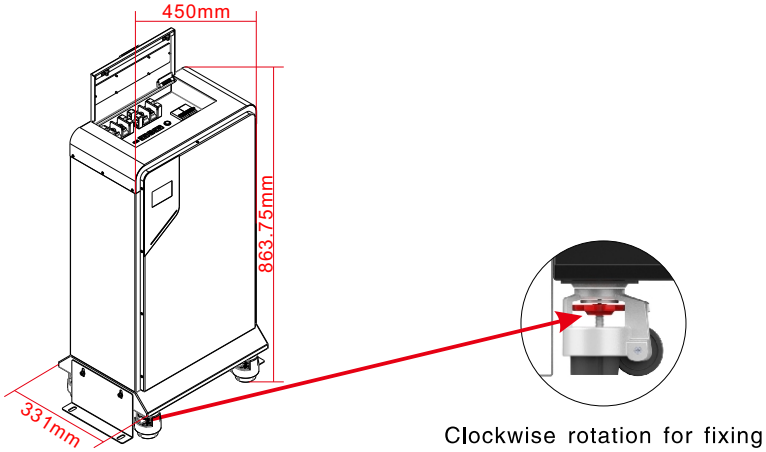
Grounding cables shall be 10AWG or higher yellow-green cables . after connection, the resistance from battery grounding point ⑬ to ground connection point of room or installed place shall smaller than 0.1Ω.

(1) Based on metal directly touch between the module's surface and rack's surface . If using painted rack, the corresponding place shall remove the painting .

(2)Install a grounding cable to the grounding point of the modules .

4.4.Put into cabinet or wall

Accessories: with pulley base (optional)



Clockwise rotation for fixing

（1）Put the battery into the cabinet
（2）The floor is flat and level.
（3）There are no flammable or explosive materials.
（4）The ambient temperature is within the range from 0°C to 50°C.

NOTE

After installation, do not forget to register online for full warranty.

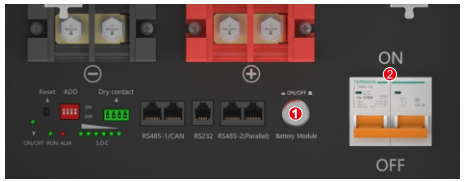
Caution

（1）A suitable breaker between battery system and inverter is required.
（2）All the installation and operation must follow local electric standard.

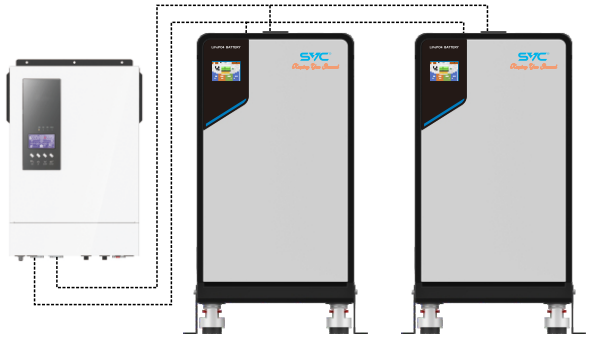
4.5.Power on

Double check all the power cable and communication cable.

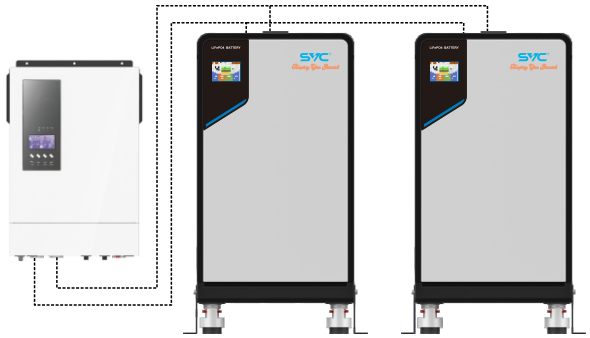
(1) turn on the breaker ②, on all the battery modules:



(2)The one with empty RS485-2 Port is the Master Battery Module, others are slaves (1 master battery configure with maximum 15 slave batteries):



(3) Press the Switch ① of all the battery module to power on, all the battery LED light will be on one by one begining from the Master battery:



NOTE:

(1) After the battery module powered on, the soft-start function takes 3sec to active. After soft-starts battery ready to output high power.
(2) During capacity expansion or replacement, when parallel different SOC/voltage of module together, please keep the system idle for more than 15 minutes or until the soc led changes to a similar state (positive or negative less than 1%)

4.6.Power off

(1) Turn external power source off.
(2) Press switch ① of master battery. Then all batteries will off.
(3) Turn off the power switch .

4.7.Multi-group mode

Connect power cable first:
(1) Each pair of cable hold max 100A constant current. Connect enough pairs of cable based on calculation of system current.
(2)Suitable protection breaker between battery system and inverter is required.
(3) Make sure the dip switches of all the groups have the correct ID, now you can turn ON each battery, the communication speed of each module is 9600 bps, all the battery modules must have the same speed.
(4) After all the batteries in the group are working and the master module sounds 3 beeps, it means that everyone is online.
The interruption of each RS485 command shall at least≥1s.

5.Trouble shooting

Problem determination based on
(1) Whether the battery can be turned on or not.
(2) If battery is turned on, check the red light is off, flashing or lighting.
(3) If the red light is off, check whether the battery can be charged/discharged or not.

Please note: The voltage values described below are only for 48V systems, and the relevant voltage values for 24V systems need to be divided by 2.

Possible conditions:

(1) Turn DC switch on, and press the metal SW.the lights are all on lighting or flashing.
(1.1) Capacity too low, or module over discharged.
Solution: Use a charge or inverter to provide 57.6-58.4V voltage. If battery can start, then keep charge the module and use monitor tools to check the battery log.
If battery terminal voltage is ≤45Vdc, please use ≤0.05C to slowly charge the module to avoid affect to SOH.
If battery terminal voltage is >45Vdc, it can use ≤0.5C to charge.
If battery cannot start, turn off battery and repair.

(2)The battery can turn on, but red light is lighting, and cannot charge or discharge. If the red light is lighting, that means system is abnormal, please check values as following.
(2.1)Temperature: Above 60℃or under -10℃, the battery could not work.
Solution: to move battery to the normal operating temperature range between 0℃ and 50℃.

(2.2)Current: If current exceeds 90A, battery protection will turn on.
Solution: Check whether current is too large or not, if it is, change the settings on power supply side.
(2.3)High Voltage: If charging voltage above 58. 4V, battery protection will turn on. Solution: Check whether voltage is too high or not, if it is, to change the settings on power supply side. And discharge the module.
(2.4) Low Voltage: When the battery discharges to 40 V or less, battery protection will turn on.
Solution: Charge the battery till the red light turns off.
(2.5) Cell voltage high. The module voltage is lower than 40V, SOC LED does not all on. When discharge the module protection disappear.
Solution:Keep charge the module by 57.6-58.4V or keep the system cycle. The BMS can balance the cell during cycling.

(3) Unable to charge and discharge with red LED on. Check if the temperature is between 0~50 degree. Use charger to charge if possible or use a load to discharge.
(3.1) Under permanent protection. The single cell voltage has been higher than3.8 or lower than 2.0 or temperature higher than 80 degree.
Solution: Switch off the module and contact your local distributor for repair.

(4) Unable to charge and discharge without red LED on. The temperature is 0~50 degree. Use charger to charge, not possible. Use load to discharge, not possible.

Caution
Buzzers indicate high risk faulty condition

(5) Buzzer rings.
(5.1) Reverse connection of cables.
Solution: Power off all battery and inverters. Disconnect breaker. Check the cable connection and disconnect all power cables. Check the power port damaged or not.then try turn on the single module, without any cable connected. If no alarm, then it is reverse connection of cables. Switch off the module and contact your local distributor.
(5.2) MOSFAIL.
Solution: Power off all battery and inverters. Disconnect breaker. Check the cable connection and disconnect all power cables. Check the power port damaged or not.
then try turn on the single module, without any cable connected. If still buzzer rings. Then it is mosfail. Switch off the module and contact your local distributor.

(6) After switch On, the module turns on directly
(6.1) BMS failure. Solution : Switch off the module and contact your local distributor.

Excluding the points above, if the faulty is still cannot be located, turn off battery and repair.

6.Emergency situations

(1) Leaking Batteries
If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If one is exposed to the leaked substance, immediately perform the actions described below.
(1.1) Inhalation: Evacuate the contaminated area and seek medical attention.
(1.2) Contact with eyes: Rinse eyes with flowing water for 15 minutes and seek medical attention.
(1.3) Contact with skin: Wash the affected area thoroughly with soap and water and seek medical attention.
Ingestion: Induce vomiting and seek medical attention.

(2) Fire
NO WATER! Only dry powder fire or carbon dioxide extinguisher can be used; if possible, move the battery pack to a safe area before it catches fire.

(3) Wet Batteries
If the battery pack is wet or submerged in water, please cut of all power switches of the inverter and battery pack, and then contact the agent or authorized dealer for technical support.

(4) Damaged Batteries
Damaged batteries are dangerous and must be handled with the most care. They are not fit for use and may pose a danger to people or property. If the battery pack seems to be damaged, pack it in its original container, and then return it to agency or an authorized dealer.

Caution

Damaged batteries may leak electrolyte or produce flammable gas.

7.Remarks

Recycle and disposal

In case a battery (normal condition or damaged) needs disposal or needs recycling, it shall follow the local recycling regulation (i.e. Regulation (EC) N° 1013/2006 among European Union) to process, and using the best available techniques to achieve a relevant recycling efficiency.

Maintenance

(1) It is required to charge the battery at least once every 6 months, for this charge maintenance make sure the SOC is charged to higher than 90%
(2) Every year after installation. The connection of power connector, grounding point, power cable and screw are suggested to be checked. Make sure there is no loose, no broken, no corrosion at connection point. Check the installation environment such as dust, water, insect etc. make sure it is suitable for IP20 battery system.
(3) If the battery is stored for long time, it is required to charge them every six months, and the SOC should be less than 90%

8.Technical parameter ▼

Model	BMF51230
Specifications	
Battery Type	LiFePO4
Rated capacity	230AH
Nominal Voltage	51.2Vdc
Available electricity	11.78kWh
Adjustable working voltage(Vdc)	20.8V-29.2Vdc
Max.Continuous discharge current(A)	200A(10℃~30℃);100A(40℃~55℃)
Max.pulse discharge current(A)	300A(1 sec) configurable
Max.Continuous charge current(A)	200A(10℃~30℃);100A(30℃~45℃)
Cycle life(+25℃ 0.2C 80% DOD)	>4000 Cycles
Cell Equalizer Current(A)	⩾70mA
Terminal	M8
Storage duration	6 months at 25℃
Safety standard	IEC62619,UN38.3,MSDS
Maximun parallel connection	16pcs
Ingress protection	IP21
Communication function	RS485/CAN/RS232 (standard),SNMP/ifi/Bluetooth/Dry contact (optional)
Communicate with mainstream inverter	PYLON/GrowattNoltronic/GoodWe/Luxpowertek/Sorotec/GINLONG/ Schneider/SMA/Senergy/MUST/TBB/STUDER/OW/Deye/SVC etc.
Protection	
Protection	Overcharge protection/Overdischarge protection/Overcurrent protection/ Shortcircuit protection/Overtemperature protection
Ambient	
Noise(dB)	<40dB(1 meter)
Working temperature	–20℃~+55℃(according to above charge and discharge specifications)
Humidity	0~95%(no condensation)
Altitude(m)	<3000
Dimension	
L*W*H(product size)mm	L450*331*864
L*W*H(package size)mm	L562*W365*H1034
Net Weight(Kg):	102.8kg
Gross Weight(Kg):	113.2kg

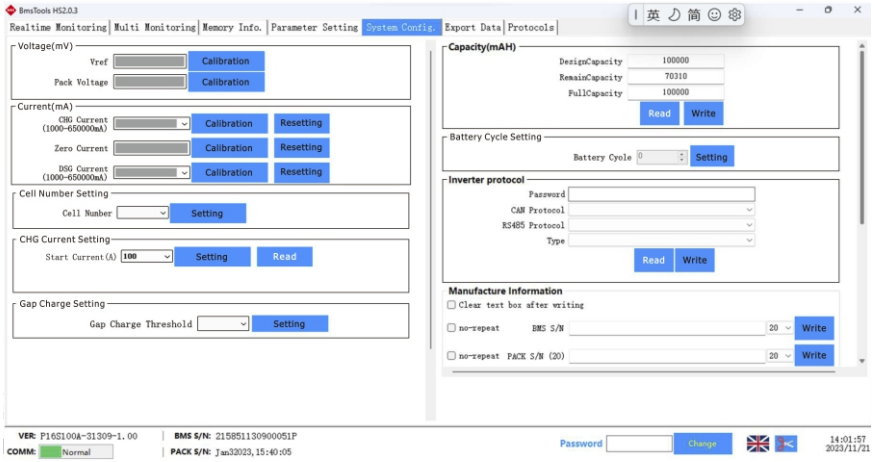
Additional Features (optional feature) LCD Display
Due to different communication protocol versions, it is necessary to confirm clearly before shipment

LFP Battery Communication Setting Instruction

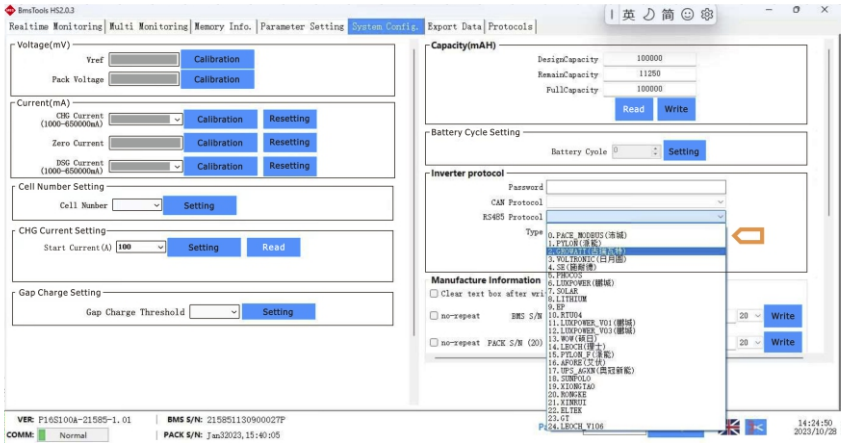
To be prepared:

Connect the LFP battery to COMPUTER through cable RJ11-RS232-USB cable	
Click open the "BmsTools" software in computer	Bms Tools

1. **Setting the inverters in BmsTools platform. (need password)**



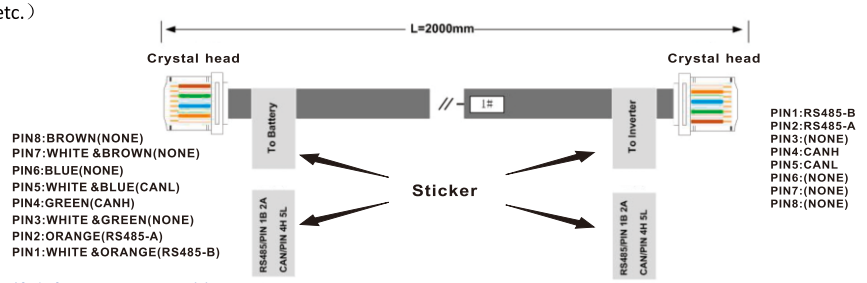
2. **Choose the inverter from the list either CAN or RS485 protocol.**



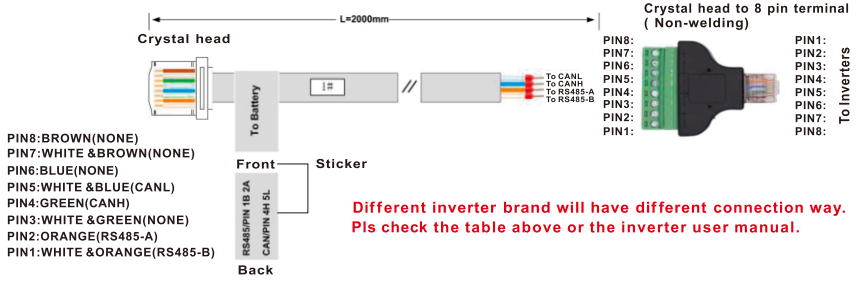
(If you can't find your inverter brand in the list or the selected brand protocol not working, then try with PYLON option, PYLON is the most compatible protocol so far. If still no communication, then try the protocol list one by one.)

3. After selection then click "Write", then the BMS setting for inverter is done.
4. Choose the right RS485 communication cable . Then connect the crystal head with battery, connect the other side with inverter. Then the inverter can communicate with the battery and read the battery information.

- Standard RS485 communicationcable:（Can be compatible with the inverter brand SVC/ Growatt/Pylon/DEYE etc.）



- Self-definition RS485 cable:



Different inverter brand will have different connection way. Pls check the table above or the inverter user manual.

Please get the RJ45/CAN cable wire assignment from the inverter manual. Here are some references

	Battery		Inverters						
	Communication		Standard RS485 cable			Self-definition RS485 cable			
PIN	SVC BATTERY		SVC	Growatt		Voltronic	DEYE		GOODWE
	RS485 port	CAN port	BOTH	RS485 port	CAN port	BOTH	RS485 port	CAN port	BOTH
1	RS485B	--	- RS485B -	RS485B	--	--	RS485B	--	RS485A
2	RS485A	--	RS485A --	RS485A	--	--	RS485A	GND	--
3	GND	--	--	--	--	RS485B	GND	--	RS485B
4	--	CANH	- CANL -	--	CANH	--	--	CANH	CANH
5	--	CANL	CANH	--	CANL	RS485A	--	CANL	CANL
6	GND			--	--	CANH	GND	--	--
7	RS485A	GND		--	--	CANL	RS485A	--	--
8	RS485B			--	--	GND	RS485B	--	--

GUARANTEE CERTIFICATE

SVC
Keeping You Powered

Serial No.: _____

Customer`s Name				Contact Person	
Address				Telephone No.	
Product/Model:		Post Code		Fax No.	
Date of purchase			Expire Date		
Dealer Signature			Customer Signature		

BMS-TOOL APP user manual

Manual

1.Download and install

According to the mobile phone system, select the download link: Android entrance : Mobile phones that support GMS can download BMS-TOOL App through Google Play Store, and Android phones that do not support GMS can install APK directly.

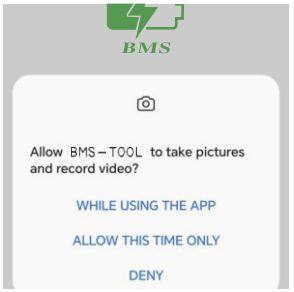
https://play.google.com/store/apps/details

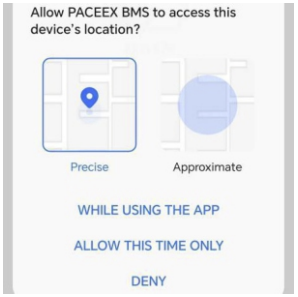
IOS entrance :Search for BMS-TOOL downloads in the App Store

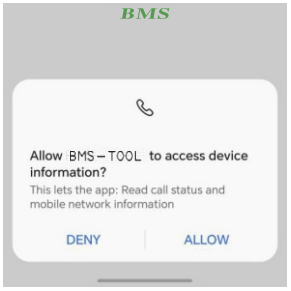
https://apps.apple.com/cn/app

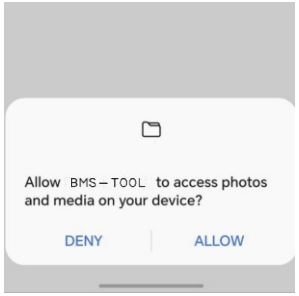
2.APP dynamic permission

Install the APP, click the start button and start smoothly. For the first start, you will request the user to confirm and authorize the following authority: Camera permission: Add wifi devices in remote control Location permission:search for nearby Bluetooth devices in local control and identify current network information in remote control Equipment status information: to detect the operation status of the equipment Photos and audio: The code scanning interface in the remote control system can directly identify the local photo album.



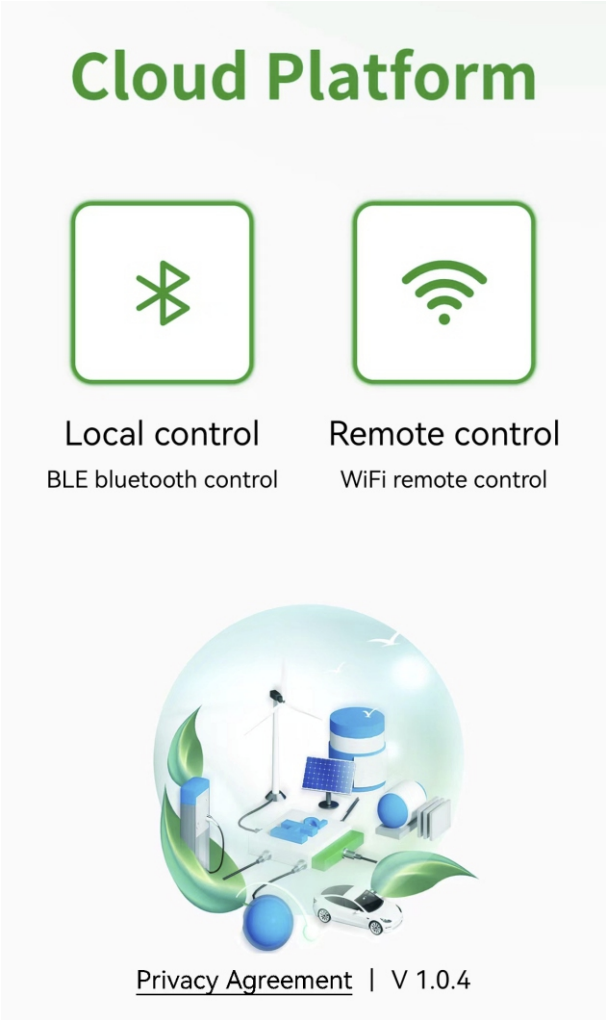






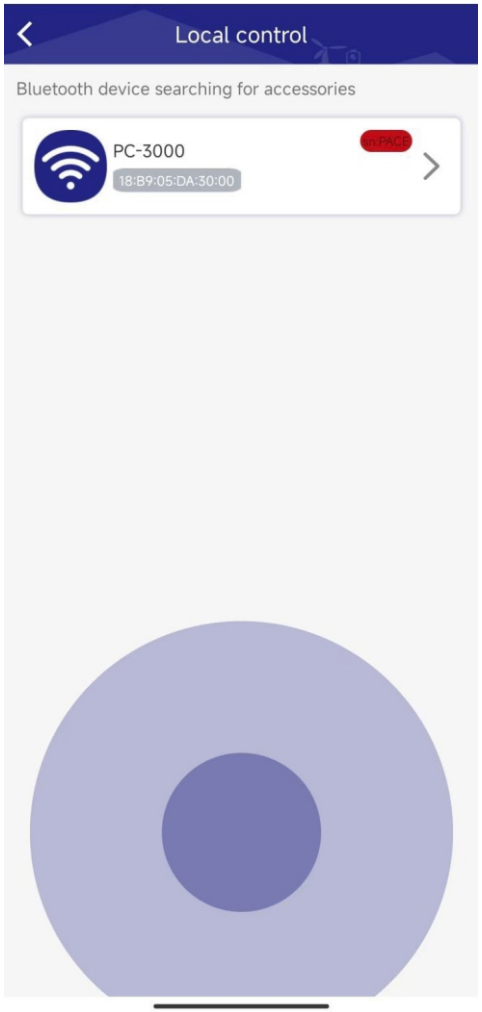
3.Control method

Local control:BLE Bluetooth comunication, directly search for the nearby Bluetooth signal, a pair of continuous connection, control devices,no account login, do not do binding records, that is, ready to use 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 distribution network operation.



4.Local Control (BLE)

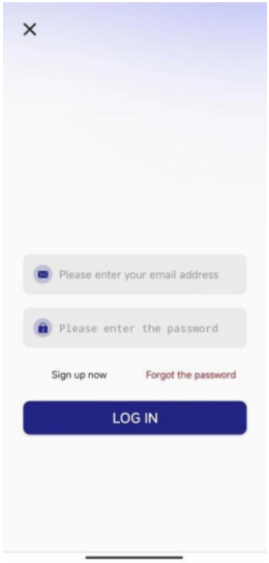
When the device is in the distribution network state, click the local control button to search the device on the local control page, and click the device to enter the device control page.

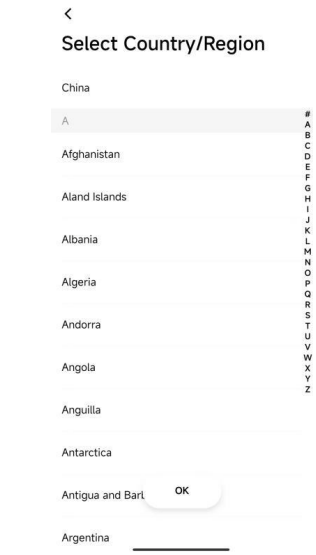


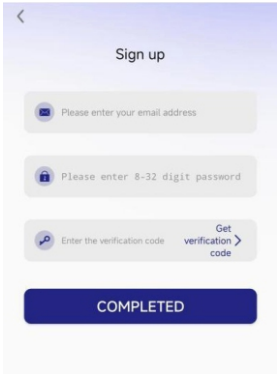
5.Telecontrol

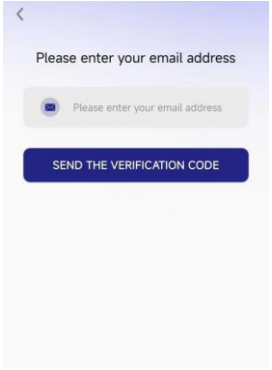
5.1,Account registration and login

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 Login: Log in with the registered account number and password Forget your password: You can reset your password through your email number.





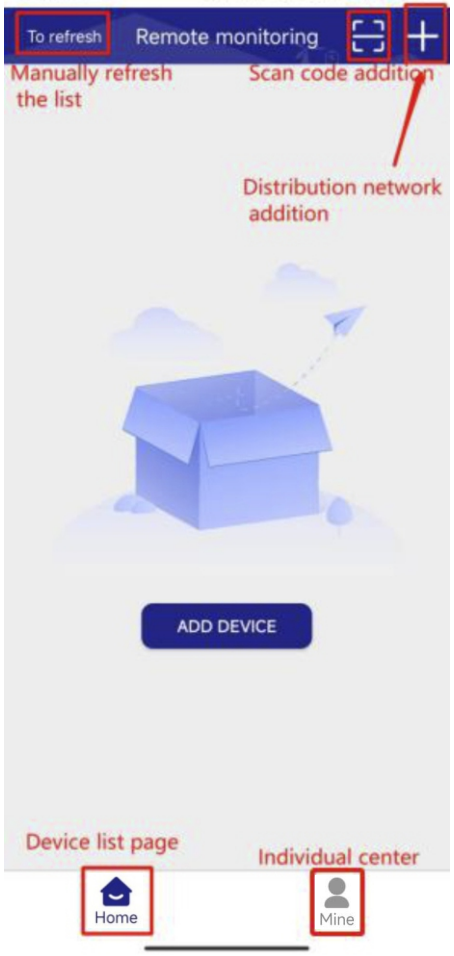




5.2,List of equipment

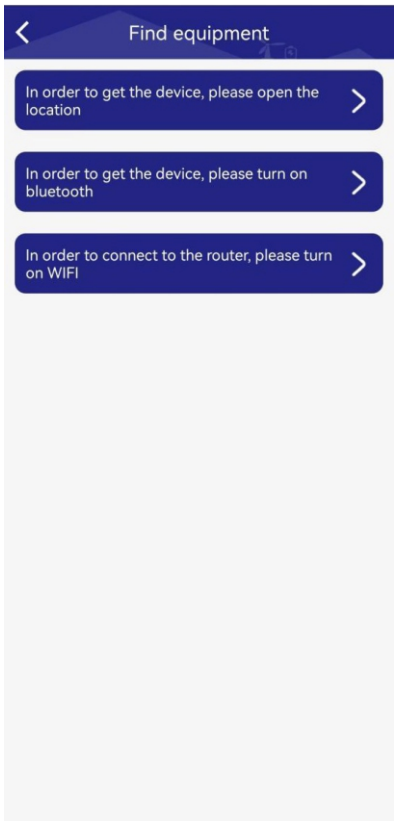
5.3,Equipment added

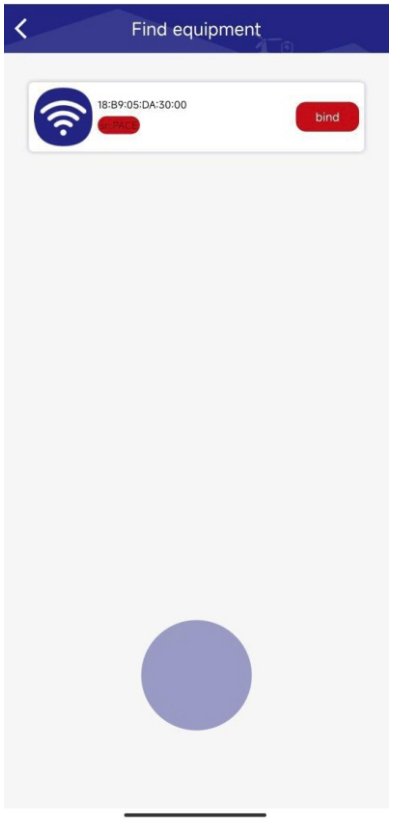
5.3.1 The wifi module is put back in the factory
The wifi module restores the factory so that the device is in a discoverable state :
Long press the reset button 10-13 s, the specific operation of the LED lamp is shown as : long press the button to make the water lamp run one.



5.3.2: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.

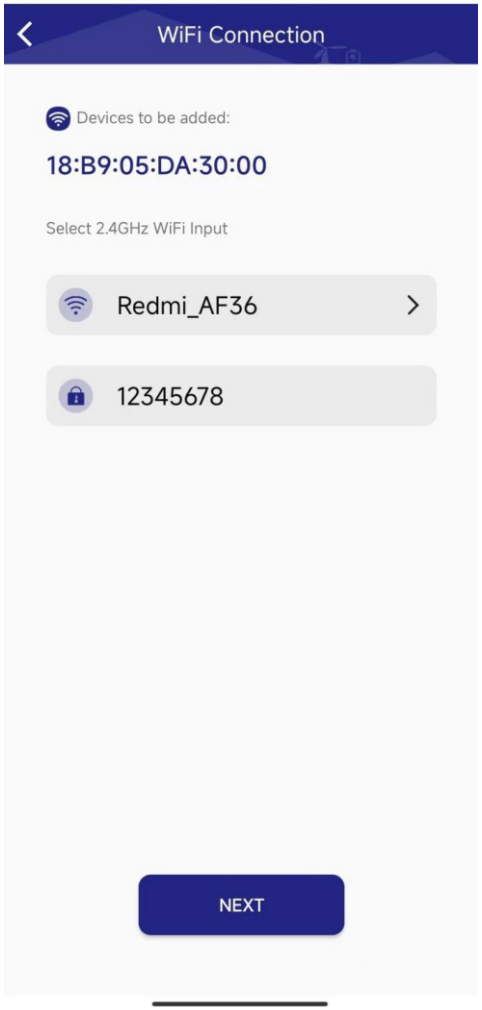




5.3.3:Fill in the distribution network information

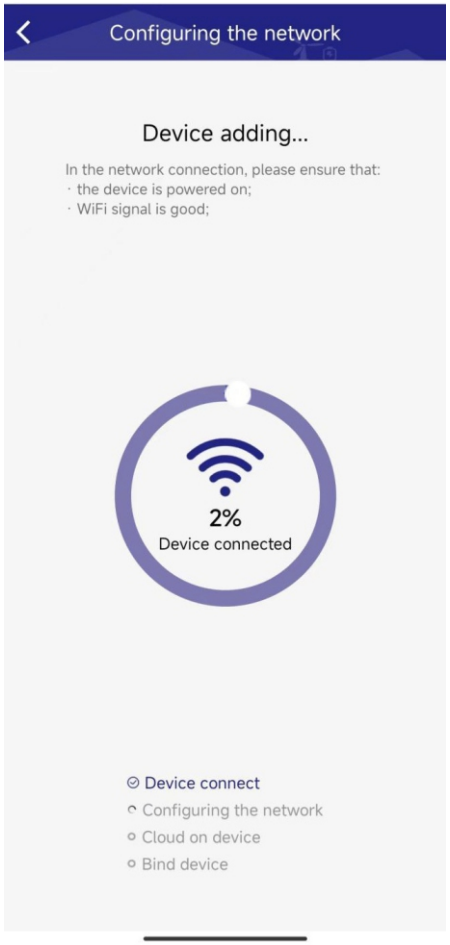
Click the device found in5.3.2,jump to the distribution network information page, fill in the WiFi account and password of the device to be connected, or change the WiFi. After confirming that the password is correct, click "Next" to enter the distribution network waiting page.

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



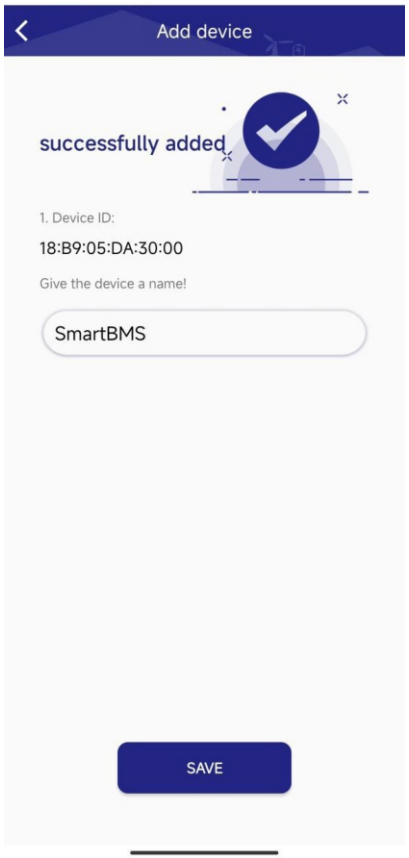
5.3.4:Execute distribution network operation

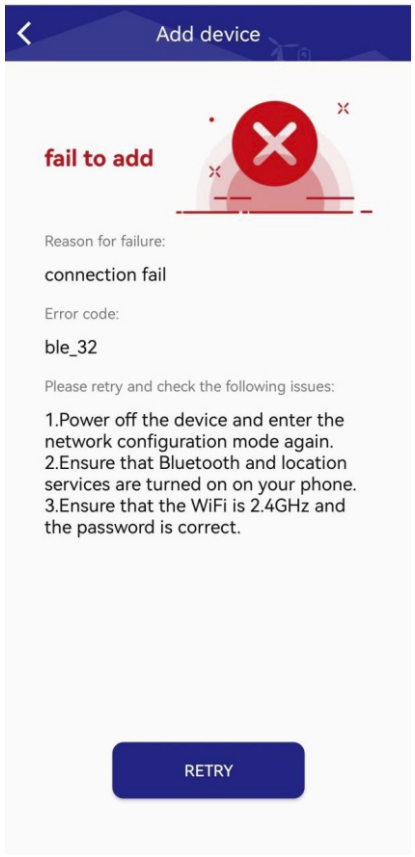
APP and device will automatically perform "Connect device", "Configure network","device cloud" and "bind device" operations. Please wait patiently.



5.3.5:Distribution network results

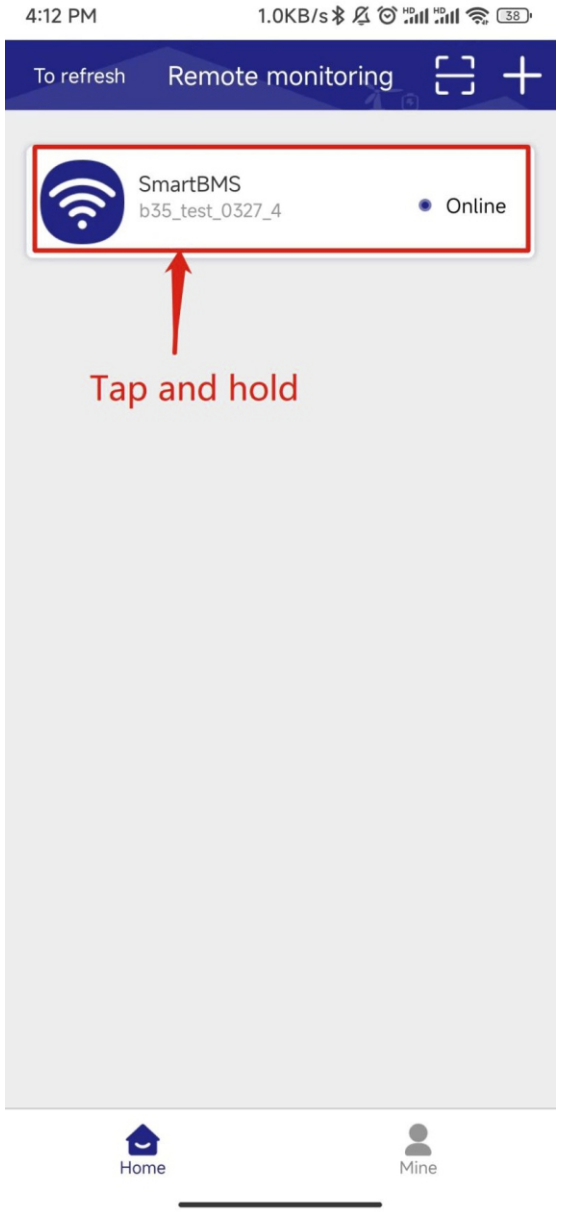
When the distribution network is over, it will jump to the page, click Save to successfully add and automatically jump back to the device list page; If the network fails, please follow the prompts of the APP, and start from step 5.3.1 after inspection. If the network still fails for many times,please save the error page and contact the after-sales personnel!





5.4,Device editor

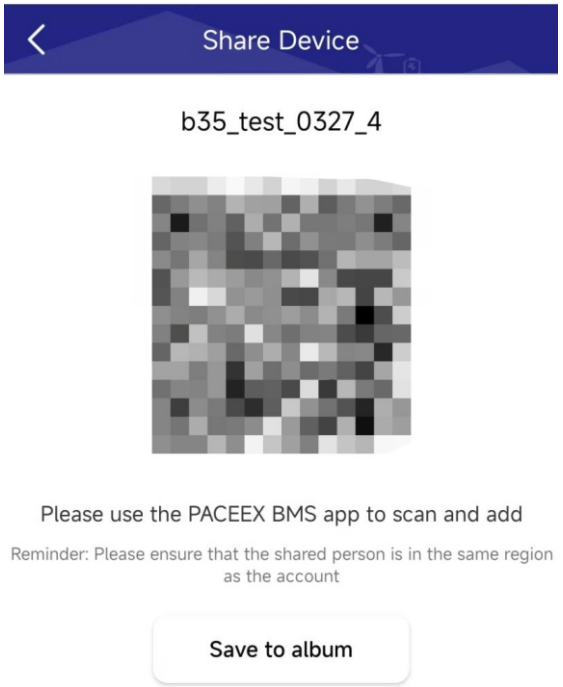
Long press the device item, and the edit menu will pop up at the bottom Rename: Modify device nickname to use Delete: unbinding with the device,the next use need to scan the code or add the network.



5.5,Device sharing

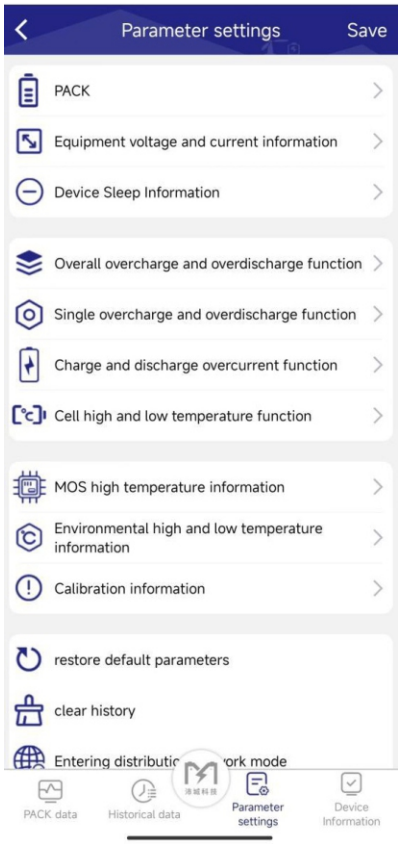
Long press the device item, when you are the device administrator (the first account bound to the first distribution network), the device can generate a QR code for other users to scan the code to add.

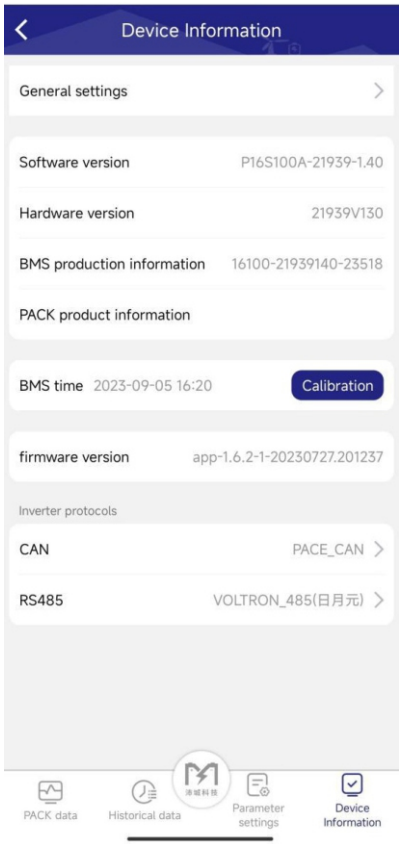
Note: Non-adinistrators cannot share twice, The QR code generated each time can only be scanned once, and the time of scanning the code is limited(30 minutes).



5.6,Device control

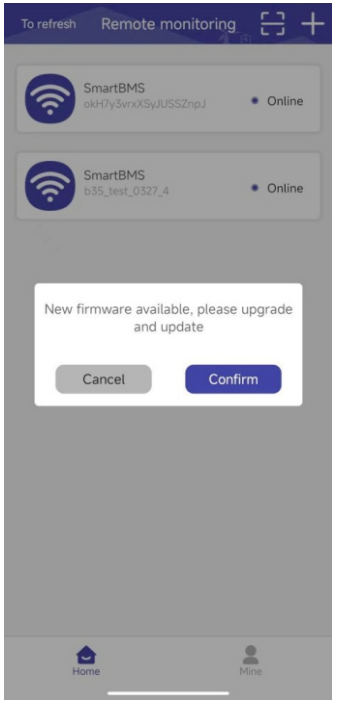
According to the functions supported by serial port protocol 0.0. 9, except for the protocol itself, the summary interface, basic data, voltage and temperature, state data,historical data, parameter setting, equipment information, general setting,etc.

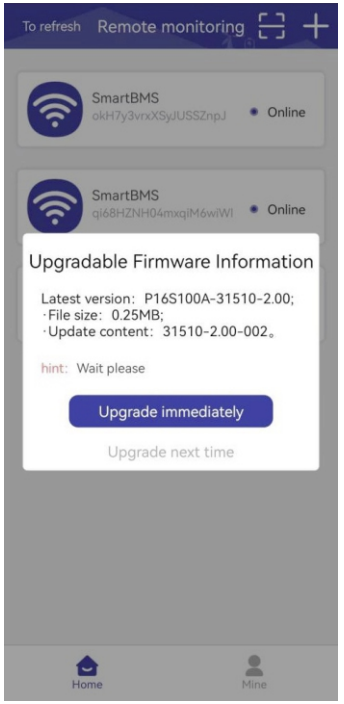


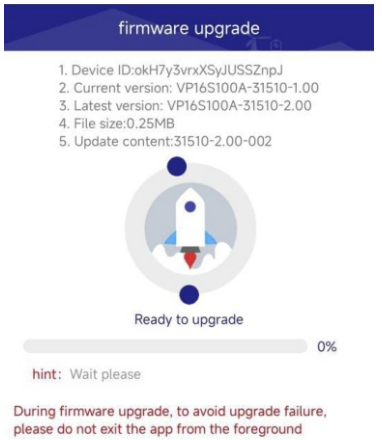


5.7,OTA upgrade

When there is an updated version of firmware in the background, the APP clicks on a device to pop up the upgrade popup, click upgrade immediately,and the firmware will be upgraded, Click the next time to enter the device parameters display, Settings and other pages.







5.8,Account exit and logout

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