Floor-standing battery energy storage system

TR8500WX-Pro

User Manual

Contents

1. Introduction

1.1. Introduction

The TR8500WX-Pro lithium iron phosphate battery system is a standard floor-standing battery system unit. Customers can choose a certain number of battery packs to be connected in parallel as needed to form battery packs with larger capacity, meeting the long-term power supply demands of users. This product is particularly suitable for applications with high working temperatures, limited installation space and long service life.

1.2. Product Features

The TR8500WX-Pro battery system uses lithium iron phosphate as the battery anode material and is equipped with a high-performance BMS to effectively manage the battery cells. The system has the following characteristics:

- Meet European RoHS regulations, pass SGS certification, use the best non-toxic and pollution-free battery;
- The battery anode is made of lithium iron phosphate (LiFePO4) material, which has good safety performance and long cycle life;
- Adopt high-performance BMS battery management mode, with over-charge/discharge/current/temperature and other protection functions;
- With charge and discharge automatic management and single cell balance function;
- Fully intelligent design, equipped with a centralized monitoring module, with three remote(telemetry, remote signaling and remote control) functions;
- Flexible configuration, multiple system units connected in parallel can extend the power supply time of the system;
- Self-cooling method, the whole system has extremely low noise;
- The battery has less self-discharge, and it can be recharged for up to 10 months during storage; no memory effect, shallow charging and discharging;
- Wide temperature working range，-20℃ ~+ 60℃, good cycle life and discharge performance at normal temperature;
- Small battery size and light weight.

1.3. Product Identification Definition

 Voltage of battery is higher than safety voltage, it's dangerous to touch.	 Read manual before operation.	 Please recycle the battery after serving.
 Operate carefully.	 Default battery can't be thrown to trash can.	CE CE standards are met.

2. Specifications

2.1. Model number

Items	TR8500WX-Pro
Rated Voltage (V)	51.2
Nominal capacity (Ah)	314
Energy (kWh)	16.07
Weight(Kg)	132.5±1
Size(mm) W*H*T	500*750*250mm（±2.5mm）

2.2. Performance parameter

Table 2-2: Performance parameter table

No.	Item	Detail	Parameter	remarks
1	Single overcharge protection 1	Unit overcharge alarm voltage	3.60±0.05V	
		Single overcharge protection voltage1	3.65±0.05V	
		Cell overcharge protection 1 delay	1.0S±20mS	
	Single overcharge protection 2	Single overcharge protection 2 voltage	3.70±0.05V	
		Cell overcharge protection 2 delay	1.0S±20mS	
	Monomer over voltage protection is removed	Cell overcharge protection release voltage	3.34±0.05V	
		Capacity deactivation	SOC＜96%	
		Discharge cancellation	Discharge current > 2A	
2	Monomer over discharge	Single discharge alarm	2.95±0.05V	
		Single over discharge protection voltage 1	2.8±0.05V	

	protection	Monomer over discharge protection 1 delay	1.0S±20mS	
		Single over discharge protection voltage 2	2.6±0.05V	
		Monomer over discharge protection 2 delay	1.0S±20mS	
	Release of monomer over release protection	Cell over discharge protection release voltage	3.0±0.05V	If the device cannot recover after 30 seconds of overcharge protection, the device enters the low-power mode
		Discharges when there is a charge	The charging current is greater than 2A	
3	Overall overcharge protection	Overall overcharge alarm voltage	57.6±0.1V	
		Overall overcharge protection voltage	58.4±0.1V	
		Overall overcharge protection delay	1.0S±20mS	
	Overall over voltage protection is removed	Overall overcharge protection release voltage	53.44±0.1V	
		Capacity deactivation	SOC＜96%	
		Discharge cancellation	Discharge current > 2A	
4	Overall over release protection	Overall over discharge alarm voltage	47.2±0.1V	If the device still fails to recover after

		Overall over discharge protection voltage	44.8±0.1V	30 seconds of over discharge protection, the device enters the low-power mode
		Overall over discharge protection delay	2.0S±20mS	
	Overall over release protection is removed	Overall over discharge protection release voltage	48±0.1V	
		Discharges when there is a charge	The charging current is greater than 2A	
5	Charge over current protection	Charging over current alarm current	162±3%A	If the status is locked for 10 consecutive times, it cannot be automatically unlocked
		Charge over current 1 Protect the current	167±3%A	
		Charging over current 1 Protection delay	1.0S±20mS	
	Charge over current release	Automatic Cancellation Charter	Automatically disconnects after 1 minute	
		Discharge cancellation	Discharge current > 1A	
6	Discharge over current level 1 protection	Discharge Over current 1 Alarm current	205±3%A	If the status is locked for 10 consecutive times, it cannot be automatically unlocked
		Discharge over current Level 1 protection current	210±3%A	
		Over current level 1 protection delay	1S±20mS	
	Discharge over current 1.2 level protection	Discharge over current Level 2 protection current	300±3%A	
		Discharge over current 2 protection delay	160±20mS	

	Discharge over current protection is removed	Automatic Cancellation Charter	Automatically disconnects after 1 minute	
		Charge release	Charging current > 1A	
7	short-circuit protection	Short-circuit protection	Discharge current > 600A	If the status is locked for 10 consecutive times, it cannot be automatically unlocked
		Short-circuit delay	100uS	
		Short-circuit release	When there is charging, the short circuit protection is removed	
			After the load is removed, it is automatically removed	
8	High-temperature protection for charging and discharging MOS	MOS Over temperature Indicates the alarm temperature	90±5℃	
		MOS Over temperature protection temperature	110±2℃	
		MOS protection release temperature	85±2℃	
9	Environmental high-temperature protection	High-temperature alarm temperature	70±5℃	
		High-temperature protection 1 temperature	80±5℃	
		High-temperature protection restores 1 temperature	70±5℃	
10	Environmental low-temperature protection	Low-temperature alarm temperature	-15±5℃	
		Low-temperature protection 1 temperature	-30±5℃	
		Low-temperature	-20±5℃	

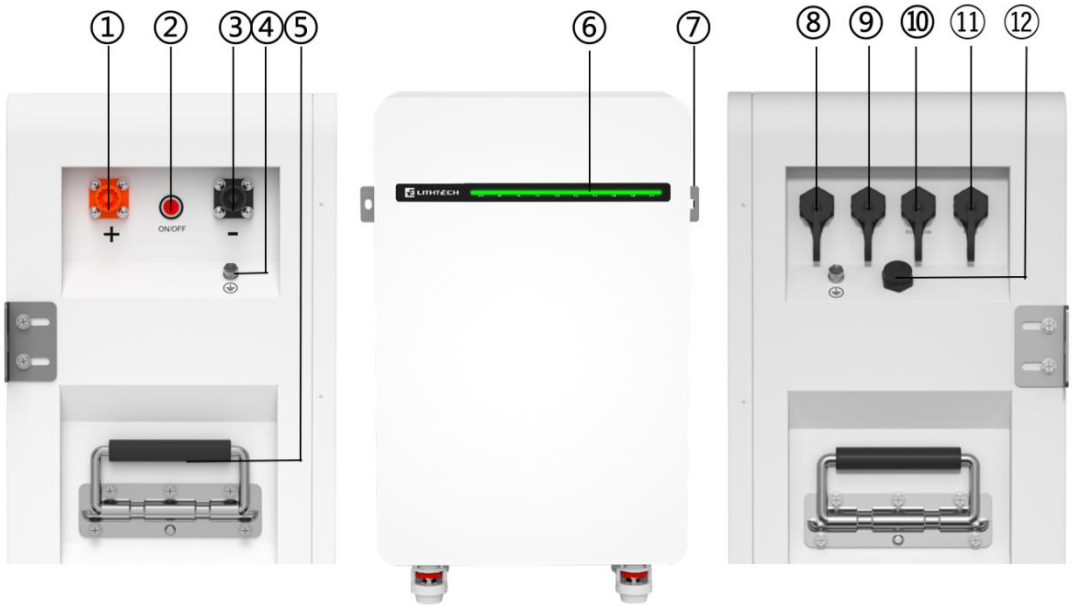
		protection restores 1 temperature		
11	Cell temperature protection	Charging low temperature Indicates the alarm temperature	3±2℃	
		Charging low temperature protection temperature	0±2℃	
		Charge low temperature protection release temperature	5±2℃	
		Charging over temperature Indicates the alarm temperature	50±2℃	
		Charging high temperature protection temperature	55±2℃	
		Charging high temperature protection release temperature	50±2℃	
		Discharge low-temperature alarm temperature	-15±2℃	
		Discharge low temperature protection temperature	-20±2℃	
		Discharge low temperature protection release temperature	-10±2℃	
		Discharge over	55±2℃	

		temperature Indicates the alarm temperature		
		Discharge high temperature protection temperature	60±2℃	
		Discharge high temperature protection release temperature	50±2℃	
12	current consumption	Operating self-consuming electrical current	≤25mA	
		Low power current	≤100±20uA	
13	Balancing function	Equalizing opening voltage	3400mV	
		bypass opening pressure differential	30mV	
14	Low battery alarm	The power supply is low for the alarm threshold	SOC＜5%	No alarm is generated during charging
15	dormancy	Dormancy voltage	3150mV	
		delay time	30min	
16	Cell failure protection	Failure high voltage	4900mV	Charging and discharging are not allowed
		Failure low voltage	1000mV	
17	Full charge judgment	Full charge voltage	＞56V	At the same time, stop charging and update the SOC to 100%
		cutoff current	＜2A	
18	SOC strong charging Settings	Start strong charging	0%	
		Remove forced charging	5%	
		Lift the ban on	5%	

		setting off fireworks		
	Heating parameters	Start-up temperature	0℃	If there is a heating film, the temperature can be set
19		Release temperature	3℃	
20	Current charging setting parameters	Starting current of the current-limiting plate	210A	System parameters

2.3. Interface Definition

Panel interface Configuration and Functions This section describes the functions of the interfaces on the front panel of the TR8500WX-Pro.



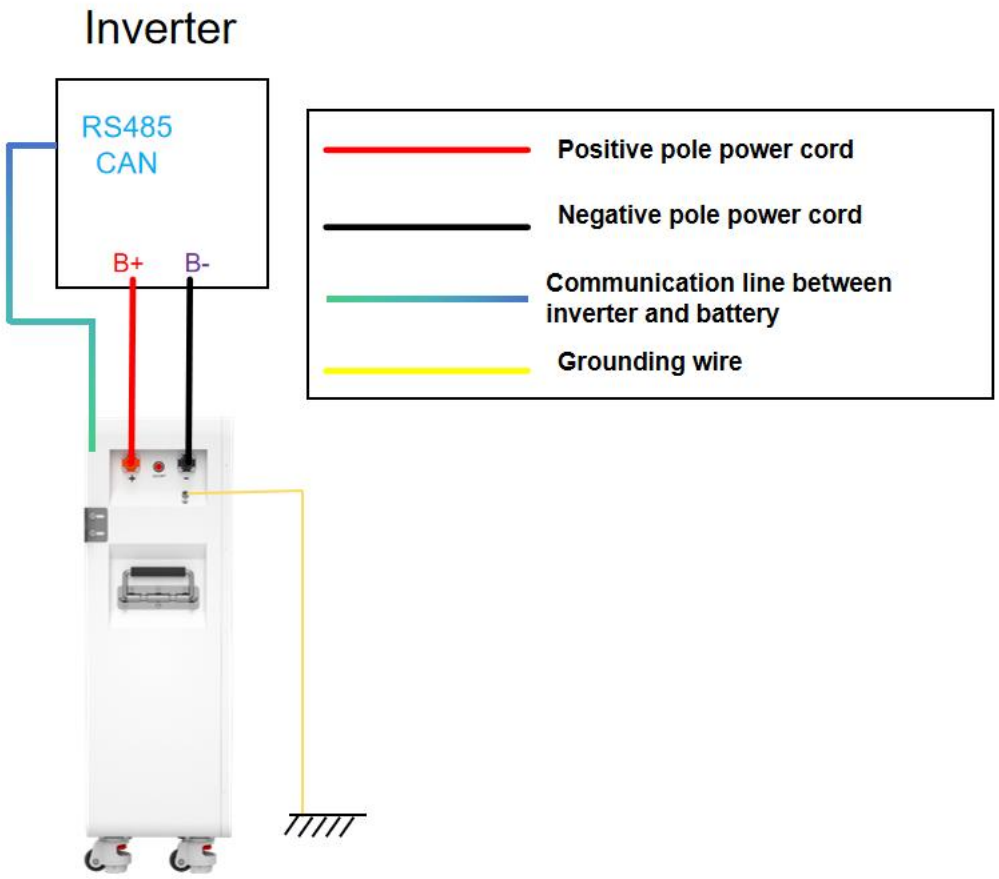
Interface definition diagram

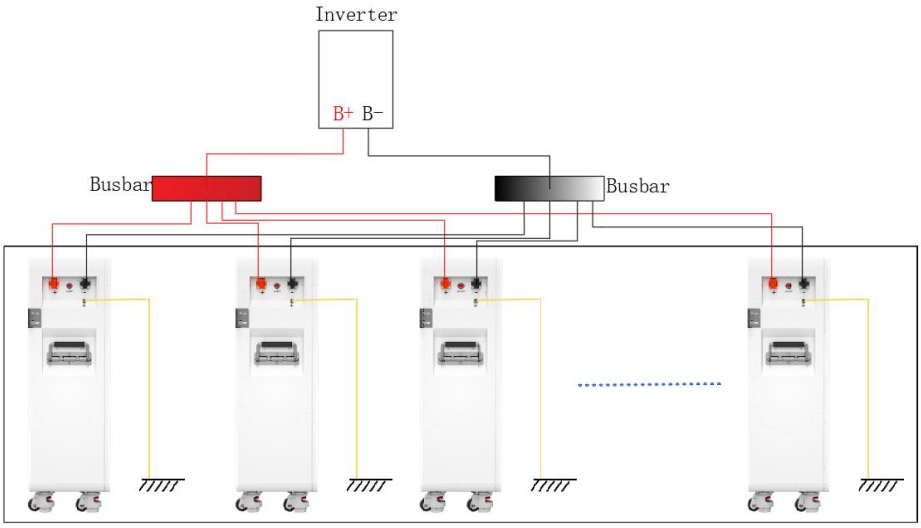
No.	Name	Definition
1	Positive pole	Battery input/output positive
2	ON/OFF Switch	OFF/ON，Must be "ON" when used
3	Negative pole	Battery input/output negative
4	grounding	⏚

5	Handle	Transport the battery box
6	SOC Indicator	Refer to 2.3.2 Indicator Light Definition Description
7	Fixed hanging ear	Fixed battery box
8	COM1	Slave internal parallel communication port, support RS485 communication_Input
9	COM0	Slave internal parallel communication port, support RS485 communication_Output
40	RS485/CAN	The external communication interface of the host supports 485/CAN communication
11	RS232 COM	Test
12	Pressure relief valve	Release the internal pressure of the battery box

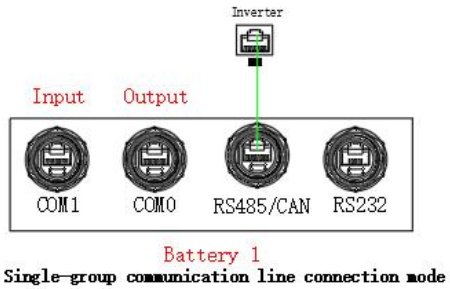
2.3.1. Easy &Fast Guideline for Installation Steps

Schematic diagram of battery and inverter connection:

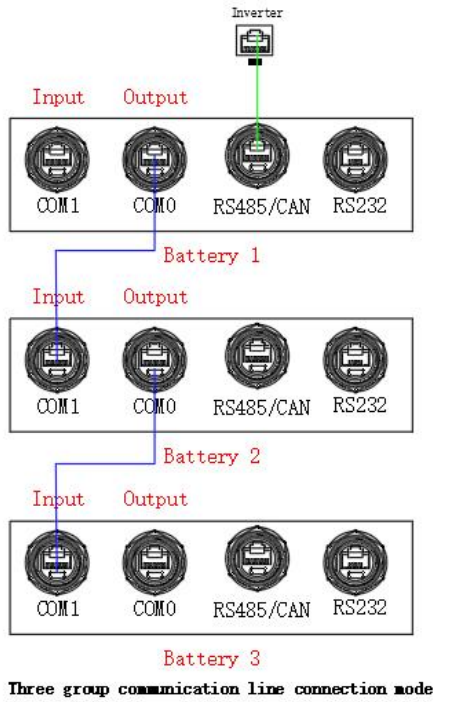




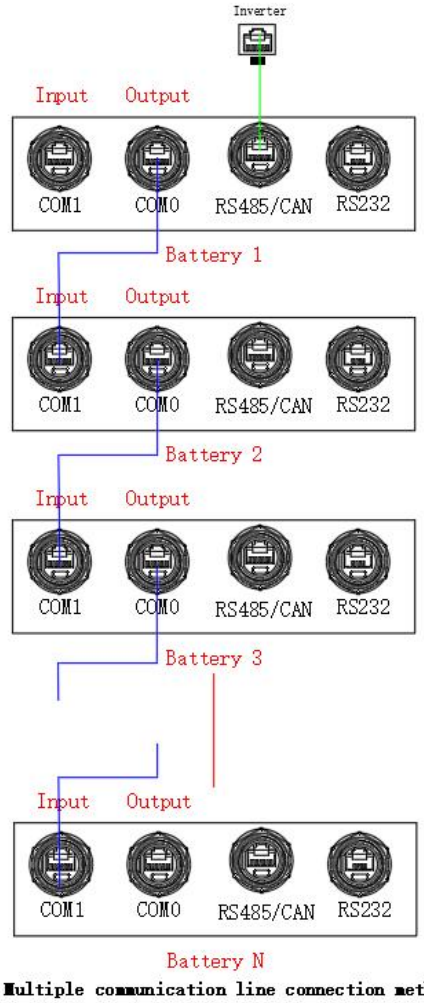
The connection method of parallel power lines for two or more groups of batteries (including two groups)



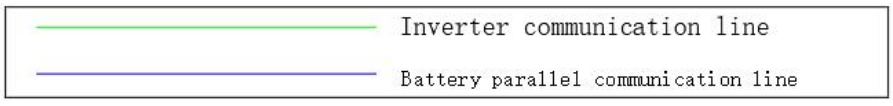
Single-group communication line connection mode



Three group communication line connection mode



Multiple communication line connection methods



Remarks:
1. The communication parallel lines are connected according to the order of COM0 output and COM1 input, and the system host automatically codes after starting up. The main BMS with COM1 left blank and the rest as secondary BMS are in the sequence of 2.3.4.5.6…… ··
2. When two or more batteries are connected in parallel, please select the parallel bus bar for the parallel operation, and the lengths of the parallel power lines must be equal.

Note:

- Communication interfaces must be one-to-one. For the definition of battery 485 and CAN communication interfaces, see 2.3.7.
- For details about the inverter 485 and CAN communication ports, see the inverter operation manual. If the communication interfaces are inconsistent, the communication failed.
- Photovoltaic and AC input, load output wiring should comply with local safety regulations.

2.3.2. LED Indicator definition and description

Table 2-4: LED function definition

Feature Definition	Light color	Light status
Standby	Blue	Status 3
Discharge state	Orange	Status 1
Charging state	Green	Status 2
Low power (SOC≤20%) _ Discharge	Orange	Flashing(1S/Per time)
Low power (SOC≤20%) _ Charging	Green	Flashing(1S/Per time)
0% < SOC < 5%_ Standby	Yellow	Flashing (0.5S/Per time)
0%<SOC<5%_ Discharge	Yellow + red	Alternating flashing (0.5S/ Per time)
0%<SOC<5%_ Charging	Green	Flashing(0.5S/Per time)
Alarm status	Yellow	Yellow light flashing（0.5S/ Per time）
Fault state	Red	Red light flashing（0.5S/Per time）
Full condition	Green	Status 4
Dormancy	OFF	OFF

Table 2-5 LED working status indication

Charging status:

SOC	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

0 ＜ S ≤ 10%	State2	---	---	---	---	---	---	---	---	---
10% ＜ S ≤ 20%	State2	State2	---	---	---	---	---	---	---	---
20% ＜ S ≤ 30%	State2	State2	State2	---	---	---	---	---	---	---
30% ＜ S ≤ 40%	State2	State2	State2	State2	---	---	---	---	---	---
40% ＜ S ≤ 50%	State2	State2	State2	State2	State2	---	---	---	---	---
50% ＜ S ≤ 60%	State2	State2	State2	State2	State2	State2	---	---	---	---
60% ＜ S ≤ 70%	State2	State2	State2	State2	State2	State2	State2	---	---	---
70% ＜ S ≤ 80%	State2	State2	State2	State2	State2	State2	State2	State2	---	---
80% ＜ S ≤ 90%	State2	State2	State2	State2	State2	State2	State2	State2	State2	---
90% ＜ S ≤ 100%	State2	State2	State2	State2	State2	State2	State2	State2	State2	State2

Discharge status:

SOC	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0 ＜ S ≤ 10%	State1	---	---	---	---	---	---	---	---	---
10% ＜ S ≤ 20%	State1	State1	---	---	---	---	---	---	---	---
20% ＜ S ≤ 30%	State1	State1	State1	---	---	---	---	---	---	---
30% ＜ S ≤ 40%	State1	State1	State1	State1	---	---	---	---	---	---
40% ＜ S ≤ 50%	State1	State1	State1	State1	State1	---	---	---	---	---
50% ＜ S ≤ 60%	State1	State1	State1	State1	State1	State1	---	---	---	---
60% ＜ S ≤ 70%	State1	State1	State1	State1	State1	State1	State1	---	---	---
70% ＜ S ≤ 80%	State1	State1	State1	State1	State1	State1	State1	State1	---	---
80% ＜ S ≤ 90%	State1	State1	State1	State1	State1	State1	State1	State1	State1	---
90% ＜ S ≤ 100%	State1	State1	State1	State1	State1	State1	State1	State1	State1	State1

Standby mode:

SOC	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0 ＜ S ≤ 10%	State3	---	---	---	---	---	---	---	---	---
10% ＜ S ≤ 20%	State3	State3	---	---	---	---	---	---	---	---
20% ＜ S ≤ 30%	State3	State3	State3	---	---	---	---	---	---	---
30% ＜ S ≤ 40%	State3	State3	State3	State3	---	---	---	---	---	---
40% ＜ S ≤ 50%	State3	State3	State3	State3	State3	---	---	---	---	---
50% ＜ S ≤ 60%	State3	State3	State3	State3	State3	State3	---	---	---	---
60% ＜ S ≤ 70%	State3	State3	State3	State3	State3	State3	State3	---	---	---
70% ＜ S ≤ 80%	State3	State3	State3	State3	State3	State3	State3	State3	---	---
80% ＜ S ≤ 90%	State3	State3	State3	State3	State3	State3	State3	State3	State3	---
90% ＜ S ≤ 100%	State3	State3	State3	State3	State3	State3	State3	State3	State3	State3

Dormancy mode:

SOC	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0 ＜ S≤100%	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Remark:
State 1: breathing display, gradually change from off to on (that is, the brightness gradually increases from 0-100), maintain 2S when the brightness reaches 100, and then the light gradually darkens, repeating this action; The complete breathing cycle is 3-5 seconds, and the range of light beads represents the current SOC value;

State 2: breathing display, gradually brightening from off to bright (that is, the brightness gradually increases from 0-100), keep 2S when the brightness reaches 100, and then the light gradually darkens, repeating this action; The complete breathing cycle is 3-5 seconds, and the lamp bead lighting interval is synchronized with the current SOC value;

Status 3: Steady blue

Status 4: Steady green (green when the battery is fully charged) Enter the standby, the color is standby priority display blue)

2.3.3. Buzzer action description

When the fault occurs, every 1S will beep 0. 25S;When protecting, every 2S will beep 0.25S (except for over voltage protection):When the alarm occurs, every 3S will beep 0.25S (except for over voltage alarm);The buzzer function can be enabled or disabled by the host computer, The factory default is disabled.

2.3.4. Sleep and wake

2.3.4.1. Sleep

When any of the following conditions are met, the system enters low-power mode:

(1) Single or overall over-discharge protection has not been released within 30 seconds

(2) The minimum cell voltage is lower than the sleep voltage, and the duration reaches the sleep delay time (at the same time, no communication, no protection, no balance, no current).

(3) Standby time exceeds 24 hours (no communication, no charge and discharge, no mains).

(4) Force shutdown by PC software.

(5) Set the ON/OFF switch to OFF

Before entering hibernation, make sure that the input terminal is not connected to external voltage, otherwise it will not be able to enter the low power consumption mode.

2.3.4.2. Wake

When the system is in the low power consumption mode and if meets any of the following conditions, the system will exit the low power consumption mode and enter the normal operation mode:

(1) Connect the charger, the output voltage of the charger must be greater than 48V.

(2) External devices communicate with the BMS to wake up the BMS.

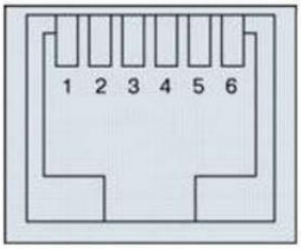
Note:

After single or overall, over-discharge protection, it enters low power consumption mode and wakes up at regular intervals every 4 hours to turn on charge and discharge mode. Can be charged, it will exit hibernation and enter normal charging; if it cannot be charged after 10consecutive automatic wake up, it will no longer to wake up.

When the system is defined as the end of charging, the recovery voltage is not reached after 2 days of standby (standby time set value), and the charging is forcibly resumed until the end of recharging.

2.3.5. RS232 communication

The BMS can communicate with the host computer through the RS232 interface, so that it can monitor various battery information, including battery voltage, current, temperature, status, and battery production information, The default baud rate is 9600bps.



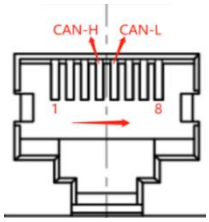
RS232- with 6P6C vertical RJ11 socket	
RJ11 PIN	**Definition specification**
1、2、6	NC
3	TX
4	RX
5	GND

2.3.6. RS485 And CAN Interface Definition

485 Communication: The default baud rate is 9600bps. This interface is used to communicate with the inverter. When the battery is the master, it can summarize the slave data and communicate with the inverter.

The default baud rate of the CAN communication interface is 500K. Function

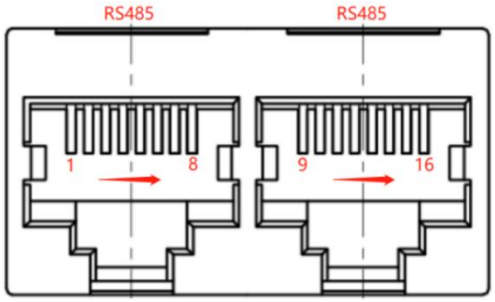
This interface is used to communicate with inverters. When the battery is the main, the slave data can be summarized to communicate with the inverter.



CAN-- Using 8P8C vertical RJ45 socket		RS485- 8P8C vertical RJ45 socket	
RJ45PIN	Definition specification	RJ45 PIN	Definition specification
4	CANH	1、8	RS485-B1
5	CANL	2、7	RS485-A1
3、6	GND		

2.3.7. Definition of two RS485 parallel communication ports

You can view the PACK information. The default baud rate is 9600bps. If the monitoring device functions as a host and needs to communicate with the monitoring device over the RS485 port, set the address range to 2 to 15 based on the address polling data.



COM0- 8P8C vertical RJ45 socket		COM2- 8P8C vertical RJ45 socket	
RJ45 PIN	Definition specification	RJ45 PIN	Definition specification
1、8	RS485-B	9、16、	RS485-B
2、7	RS485-A	10、15	RS485-A
3、6	GND	11、14	GND
4	ADR_OUT	12	ADR_IN
5.13	ISO_5V+		

2.4. Battery Management System (BMS)

2.4.1. Low Voltage Protection

Discharge low voltage protection:
When discharging, the voltage of any single cell is lower than the protection value, the over discharge protection will be triggered, the battery buzzer alarm, When the voltage of all cells is recovered to the range of released limit, the protection will be removed.

Charging Over Voltage Protection:
During charging, when the total voltage of battery pack or the voltage of any single cell reaches the protection limit, the system stops charging. When the total voltage and the single voltage return to the released limit range, the protection will be released.
Note: The buzzer alarm setting can be manually closed on the computer, and it is off by default.

2.4.2. Current Protection

Charging Over Current Protection:
When the charging current is more than the protection value, the battery buzzer will alarm and the system will stop charging. The protection will release after the system delays the rated time.

Discharging Over Current Protection:
When the discharge current is more than the protection value, the battery buzzer will alarm and the system will stop discharging. The protection will release after the system delays the rated time.

Note: The buzzer alarm setting can be manually closed on the computer, and it is off by default.

2.4.3. Temperature Protection

Charge low/high temperature protection:
During charging, when the battery temperature exceeds the range of 0℃~+55℃,the system would trigger the charging temperature protection, stops charging, recovering to the rated return value and then the protection is released.

Discharge low/high temperature protection:
During discharging, when the battery temperature exceeds the range of -20℃~+60℃, the system would trigger the discharging temperature protection, stops discharging, recovering to the rated return value and then the protection is released.

2.4.4. Other Protection

Short circuit protection:
When the battery system detects any external short circuit, the BMS short circuit

protection will be triggered.

Release of Short Circuit Protection

When any of below conditions achieved, the protection will be released:

(1) When charging starts;
(2) When load has been removed.
(3) The short-circuit protection time of the BMS exceeds 60 seconds

Note:

1. The max discharge current should be bigger than max load working current
2. If the short-circuit protection exceeds 10 times, the BMS system will no longer automatically wake up. Please turn OFF the battery ON/OFF weak current switch, check the external devices, eliminate the short circuit, and then set the ON/OFF switch to ON to restart the battery system. If the system is still in the alarm state after restarting, please disconnect the battery system from the device and start it independently to rule out the problem of the battery system itself.

3. Installation and configuration

3.1. Installation&Preparation

Safety Regulation

Only the personnel who have received the electrical system training and fully mastered the electrical knowledge can install this system, Always follow the safety regulations listed below and local safety regulations during installation.

- All circuits with external voltage less than 48V connected to the power system must meet SELV requirements defined in lEC60950.
- If operating inside the cabinet, make sure that the power system is not active, the battery shall also be shut down.
- The cables shall be arranged reasonably and protected to avoid touching these cables when operating the power equipment.
- It is recommended to wear the following safety gear when dealing with the battery pack.

Insulated glove

Safety shoes

Safety goggles

3.1.1. Environment Requirement

Working Temperature:-20℃~+60℃
Storage Temperature:-10℃~+35℃
Relative Humidity:5%~85%RH
Altitude:<4000m

Working environment: there is no conductive dust and corrosive gas, and the following conditions are met:

- The installation site shall be far away from the sea to avoid salt water and high humidity environment.
- The ground is flat and level.
- There are no in flammables and explosives in the accessories of the installation point.
- The ideal ambient temperature is 15°C~30°C .
- Keep away from dust and dirty areas.

3.1.2. Tools

The tools and meters that may be used in Table 3- 1:

Table 3-1 Tools

Name (Left Column)	Name (Right Column)
Screwdriver/Slotted screwdriver/Phillips screwdriver	Multimeter
Torque wrench	Clamp meter
Diagonal pliers	Insulation tape
Needle-nose pliers	thermometer
Wire cutter	Anti-static bracelet
Wire stripping pliers	Tie
Electric drill	Tape measure
Lift forklift (for battery lifting)	

3.1.3. Technical preparations

Electrical interface check Devices connected directly to the battery can be user equipment, power supplies, or other power devices.

- Confirming whether the user's photovoltaic power generation equipment, power supply or other power supply equipment has a direct current output interface, and measuring whether the output voltage of the direct current interface meets the voltage range requirements in 2.2 performance parameter table.
- Confirming that the maximum discharge current capacity of the DC interface of the user's photovoltaic power generation equipment, power supply or other power equipment should be greater than the maximum charging current of the product used in the performance parameter table, For the maximum charging current of the product used, the DC interface of the user's photovoltaic power generation equipment should have a current limiting function to ensure the normal operation of the user equipment first.
- Make sure that the maximum operating current of the battery-powered user equipment (inverter DC input) should be less than 2.2 The maximum discharge current of the product used in the performance parameter table.

3.1.4. Security check

It is strictly prohibited to place flammable, explosive and other dangerous materials next to the battery, Fire equipment should be available near the equipment, such as portable dry powder fire extinguishers, Where necessary, an automatic fire protection system should be provided.

3.1.5. Unpacking inspection

- When the equipment arrives at the installation site, it must be loaded and unloaded in accordance with regulations to prevent sunlight and rain, Before unpacking, check the total number of pieces according to the shipping list attached to each packing box, and check whether the appearance of the packing box is intact.

3.1.6. Manual for Energy Storage

- Handle with care during unpacking to protect the surface coating of objects;
- When open the packaging box, the installer should first read the technical documents and check the list, and check whether the items are complete and intact according to the configuration table and packing list, If the internal package is damaged, it must be checked and recorded. The packing list is as follows:

Table 3-2 List

NO.	Product Name	SPEC.	QTY.	Remarks
1	EXT-COMM Cable	Crimp RJ45 connectors at one end _ Leave one end blank _ Cable length 1500mm_ Deliver RJ45 connectors	1	The battery communicates with the inverter
2	Parallel communication line	2*RJ45_CAT5E_L=1000mm_BLACK	1	Parallel/optional
3	Positive Cable	EV-50mm² - Press SC35-8 at one end and RCL23X-200-50- RCL200A straight plug - X key position - orange	1	
4	Negative Cable	EV-50mm² - Press SC35-8 at one end and RCL23 at the other end. Y-200-50- RCL200A straight plug - Y key position - black	1	
5	screw	GB9074.13_M5* 14mm_Stainless steel 304_8.8 grade _ Outer hexagon cross combination screws	6	Ground screw
6	Hanging ears	Battery box fixed hanging lugs	2	Lock wall L-shaped bracket

7	warranty card	TR8500WX-PRO_300g_coated paper	1	
8	specification	TR8500WX_157g_coated paper	1	
9	Certificate	English Version_L40*W40mm	1	
10	Adapter	Waterproof adapter - Four-piece set for full teeth - Black - Waterproof grade - IP67 - Complies with UL94-V0 - Material: Nylon PA66	4	RJ45, RJ11 waterproof adapters

3.1.7. Engineering coordination

Note the following before construction:

- Installation space and load bearing

Make sure that there are sufficient fixed components to install the battery system,and to ensure that the battery mounting bracket or the cabinet be strong enough to bear the weight.

- Project layout.

Ensure the whole construction process of power equipment, batteries and other reasonable layout.

- Wiring layout.

Ensure that the wiring reasonable, orderly; and consider the moisture-proof, corrosion prevention

- The whole installation process should wear anti-static wristband.
- The installation site should be at least two or more peoples to operate
- Equipment and tools ready for installation.
- Please use a forklift for installation when necessary

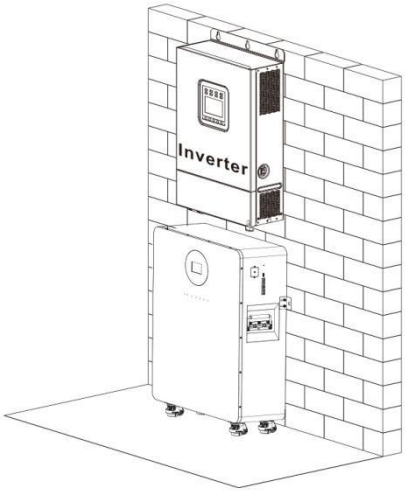
CAUTONS: Please ensure the installation site safe before installation.

3.1.8. Installation Steps

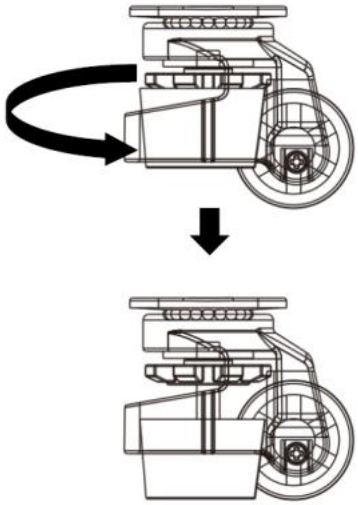
TR8500WX-Pro Floor-standing battery system installation steps are shown in below:

- Place the battery near the wall.
- Use fixing bolts to lock the battery to the wall.
- Lock the battery wheel.

If two or more sets of batteries are installed simultaneously, please add busbars at the positive and negative ends and reserve sufficient space for installing power lines and communication lines.



(1)



Step No.	Name	Definition
1	Turn off power supply	The system should be powered off, to ensure that there is no electric in installation process
2	Mechanical installation	1. Install the battery bracket 2. Install the fixed battery
3	Electrical installation	1. Grounding cable 2. Power cable installation 3. Connecting equipment installation 4. Communication cable installation

4	Electrical debug	Power system debug

Step 1. Interruption Of Power Supply

Before installation, please ensure the battery is powered off, at the same time, shutdown the equipment which need to connect to the battery.

Step 2. Machinery Installation

According to the installation height, use an electric drill to drill holes in the wall and fix the battery bracket to the wall.

Fix the battery to the bracket and make sure it is firmly installed without any looseness.

Step 3. Electrical installation

Grounding cable:

The grounding cable end with screw press-fit fixation in the chassis rear grounding hole, the other end is connected to the frame (or cabinet) grounding copper bar. To ensure the stable connection.

Power cord installation:

If a single battery is used, the battery terminal is directly connected to the terminal of the device or the switching power supply.

If multiple batteries are connected in parallel, use a bus bar to connect the battery power cables in parallel. The length of the power cables from the parallel battery power cables to the bus bar must be the same.

Use the special chargers in the recommended charging method to charge the batteries.

Note:Parallel communication line connection:

see 2.3.1 cable connection

Step 4. Electrical debug

When these steps are completed, turn on switch to start the battery one by one, then boot on the whole power system complete the installation.

※Communication inspection and fault handling between BMS and inverter:

- **Inspection method for communication between BMS and inverter**

After the inverter is debugged, disconnect the communication line between the BMS and the inverter. Wait for about 1 minute and then determine whether the inverter reports a "BMS communication fault". If it reports a fault, after connecting the communication line, the inverter communication fault disappears, indicating that the communication between the BMS and the inverter is normal.

If the communication line between the BMS and the inverter is disconnected and the inverter does not alarm, it indicates that the BMS and the inverter cannot

communicate normally. Check the parameter Settings of the inverter.

- **The handling method for the inverter reporting "BMS communication error"**

If the inverter keeps reporting a BMS communication failure, check whether the inverter's communication interface definition matches the interface definition of the BMS communication line and whether the BMS communication protocol Settings match the inverter.

Treatment method:

1. 1. Rework the inverter and BMS interface definitions to match the communication lines.
2. Set the communication protocol using the BMS APP

 **Cautions:** If you have any question about the installation, please stop and contact Lithtech technical support immediately. If the battery does not start or control panel ALM lights, please disconnect the power line inspection and reinstall the start, if still cannot solve, please contact Lithtech, avoid damage to equipment or cause accidents.

4. Using maintenance and troubleshooting

4.1. battery system use and operation instructions

After completing the electrical installation, turn on the battery system as follows:
1. Make preparations before starting the battery pack and then turn the ON/OFF switch to "ON", run light and SOC light will be on after self inspection.

 **Pay attention:** After turn the switch "ON". If it is found that the battery status indicator on the front panel is on red continuously; please check 4.2 alarm description, If the fault cannot be eliminated, please contact the dealer in time.

2. Use a voltmeter to measure whether the two voltages at the battery access end of the circuit breaker are over 45V, and check whether the voltage polarity is consistent with the inverter input polarity,; if the voltage output at the battery access end of the circuit breaker is over 45V, then the battery has started to work normally;
3. After confirming that the output voltage and polarity of the battery are correct, turn on the inverter, turn off the Circuit breaker switch.
4. Check the status of the indicator light (communication indicator light and battery access status indicator light) between the inverter and the battery, if it is normal, the connection between the battery and the inverter is completed, if the indicator light is always different, please refer to the inverter manual to find out the reason or contact the dealer.

4.2. Alarm Description and Solution

When a protection action or fault occurs in the system, an alarm signal will be issued through the working status indicator light on the front panel, and the specific alarm category can be queried through the BMS upper computer system (or APP). If there are any abnormal faults that affect the output, such as over voltage, over current during charging, under voltage protection, temperature protection, etc., please handle them according to Table 4-2.

Table 4-2 Main alarm and protection

State	Alarm category	Alarm indication	Solution
Charging state	Cell over voltage	ALM Red light is always on	Stop charging
	Charge over current	ALM Red light is always on/	Stop charging and find out the cause of the fault
	Charging temperature alarm	ALM Red light is always on	Stop charging
Discharging state	Discharge over current alarm	ALM Red light is always on	Stop discharging and find out the cause of the fault
	Discharging temperature alarm	ALM Red light is always on	Stop discharging
	Total voltage under voltage alarm	ALM Red light is always on 亮	Charge
	Cell Voltage Under-voltage alarm	ALM Red light is always on	Charge

4.3. Analysis and solution of common faults

Common faults and solutions are shown in table 4-3:

Table 4-3 Common faults and solutions

No.	Fault	Causal analysis	Solutions
1	When the ON/OFF switch is set to ON, the indicator light does not respond	1. Power switch is broken 2. Over-discharge of the battery 3. BMS is damaged.	1. Replace the power switch/ 2. Charge 3. Replace the BMS

2	When the "ON/OFF" switch is set to ON, there is no DC output and the ALM light flashes	Battery data status is abnormal	Connect the mobile phone APP to the BMS Bluetooth or WIFI, read the fault and battery information, and select the corresponding solution through the BMS fault
3	DC power supply time is too short	1. Battery capacity attenuation 2. The consistency of the charge capacity carried by individual battery cells varies too much	Replace a battery
4	Battery cannot be fully charged	Charging voltage is too low	Adjust charging voltage to 57.6V
5	The moment the battery is connected to an external device and starts up, the ALM light of the battery flashes	1. Short circuit in power supply wiring 2. The starting current of the external device is too large	1. Turn off the battery, check the cause of the short circuit and solve it 2. Disconnect the device connection, start the battery alone, and confirm the battery status. If the battery status is normal, the external device is damaged 3. Use the device to charge the battery or wait for about one minute to make sure the alarm light returns to normal

In case of special technical difficulties or questions, please contact the seller in time.

APP User Manual

5. Download and install

According to the mobile phone system, scan the QR code for APP download of the corresponding system through the browser to download the APP

Scan the QR code with a browser to download the APP

Android

SmartBMSHub

iOS

Note：

If the iOS system is unable to scan the QR code, you can search for "NewE BMS" in the APP store and download the app.

6. Registration and login

Registration：

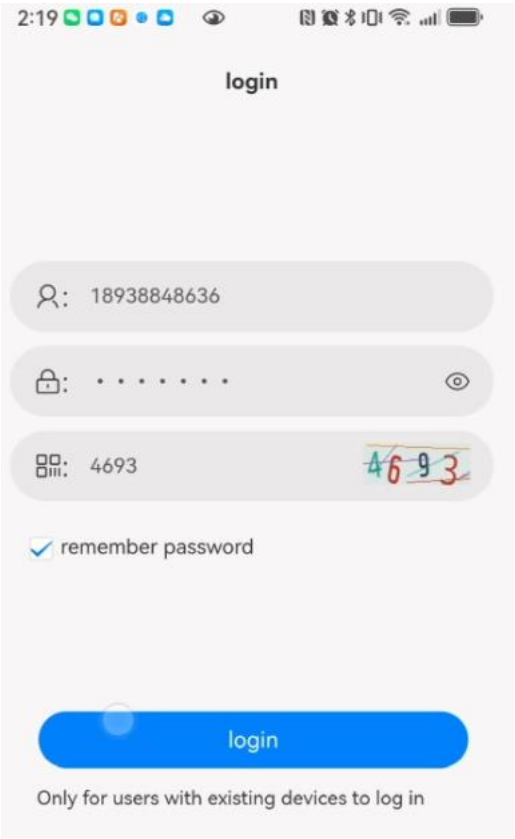
Create the new account by means of email account, password and verification code.

Login：

Log in with the registered account number and password

Forget your password:

You can reset your password through your email number.



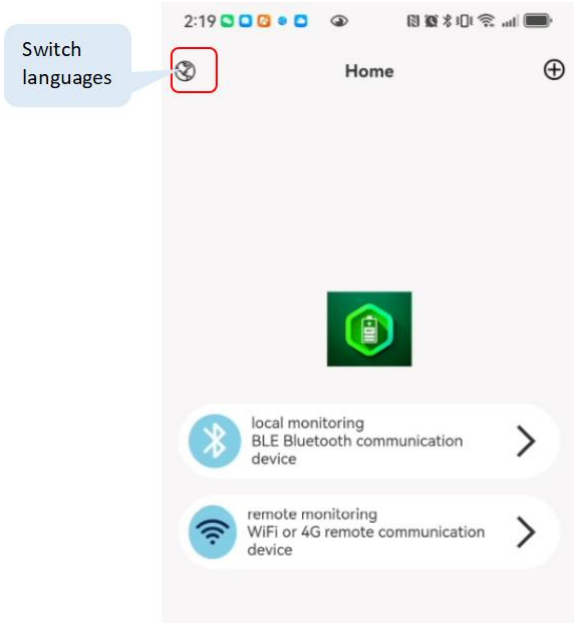
Note:

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 .

7. Control method

Local control: BLE Bluetooth communication, directly search for the nearby Bluetooth signal, a pair of continuous connection, control devices,no account login, do not do binding records.

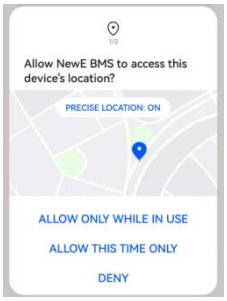
Remote control: WiFi communication to achieve the purpose of controlling devices instead of being in the same geographical location. Account registration and login are required. Record the binding of the account to the device. Network distribution operations are also needed.

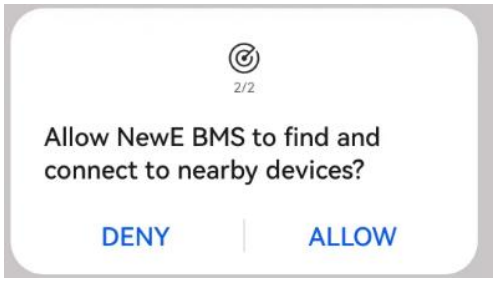


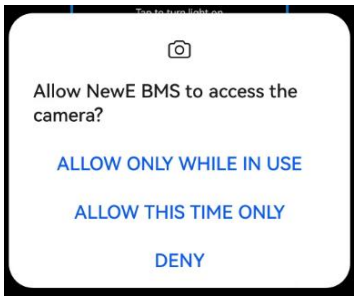
7.1. APP dynamic permission

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：

- Allow the NewE BMS to access the device location permission；
- Allow NewE BMS to find and connect to the permissions of nearby devices;
- Camera permission:；

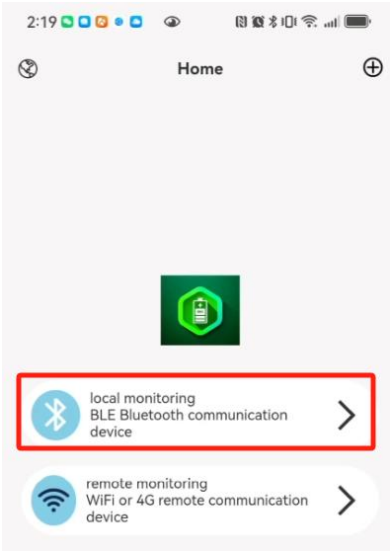




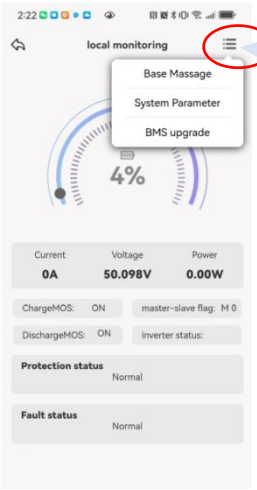


7.1.1. Local Control(BLE)

When the device is in the distribution network state, click the Local control button, search for the device on the local control page, click Search for the device, and click Connect to enter the BMS data page, view the BMS information and modify parameters



Select the Bluetooth signal that has been searched



Parameter modification menu

7.1.1.1. Base Massage

By sliding the display screen up and down, you can view information such as the PACK current, total voltage, capacity, cycle times, SOC, SOH, detailed voltage of individual cells, temperature, and software version.

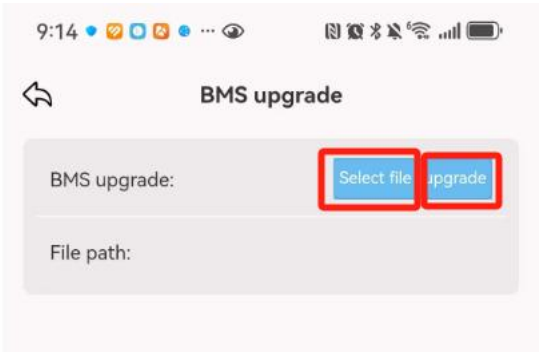
7.1.1.2. System Parameter

The relevant parameters of BMS can be set

7.1.1.3. BMS program upgrade

Through this interface, the BMS program upgrade can be achieved.

1. Click "Select file" to add the program file.
2. Click "upgrade" to upgrade.



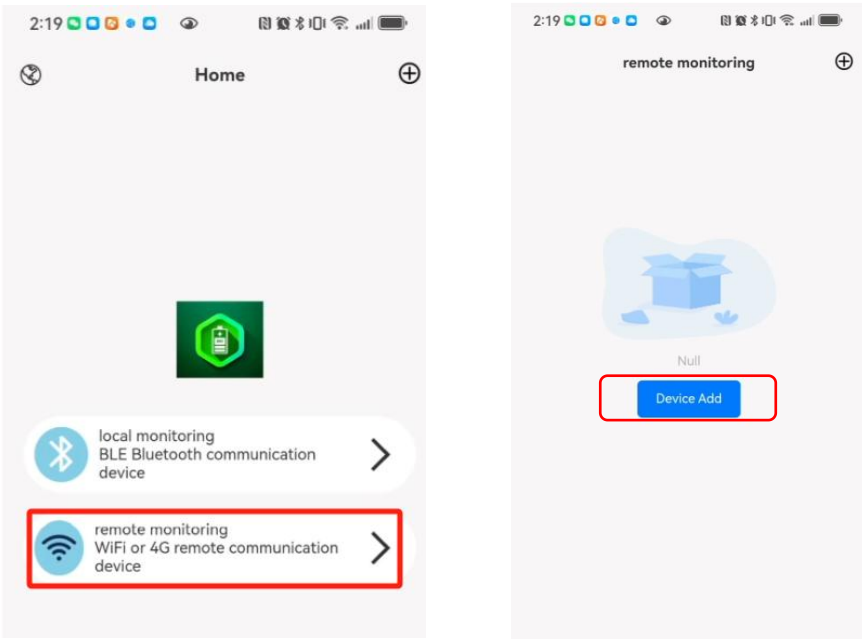
Note:

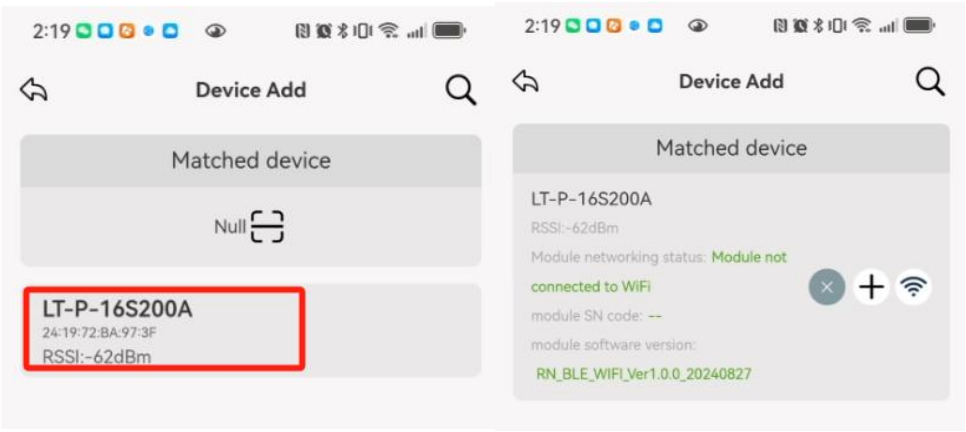
1. Upgrading the BMS program is prohibited without the BMS program file.

8. Remote monitoring

8.1. WIFI signal search

Click "Remote Monitoring", enter the signal search interface, click "Device Add", search for the WIFI signal, click to search for the signal, and enter the distribution network.

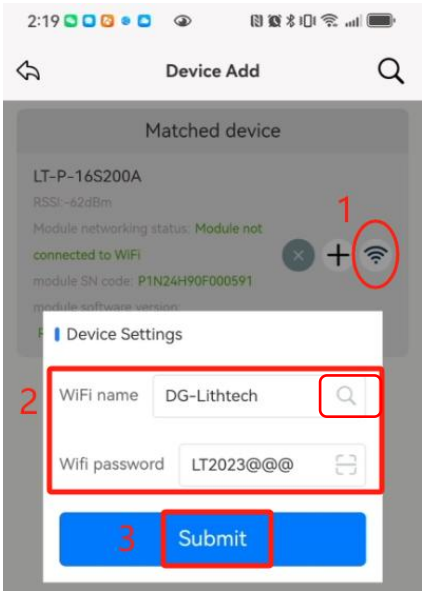




8.2. Remote distribution network

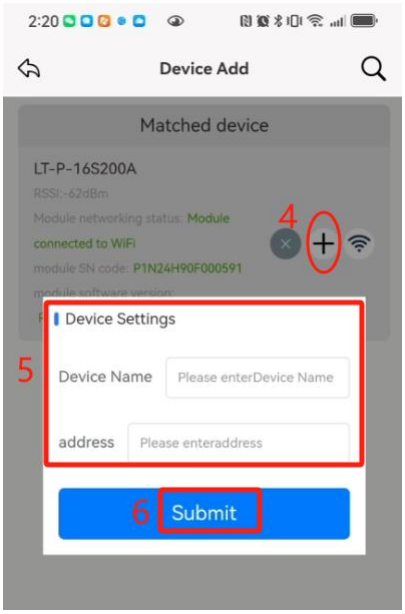
8.2.1. WIFI

Click "1 WIFI Icon", click "Magnifying Glass Icon", search for "WIFI Signal", enter "WIFI Password", and click "3 Submit".



8.2.2. Setting of power station name and address

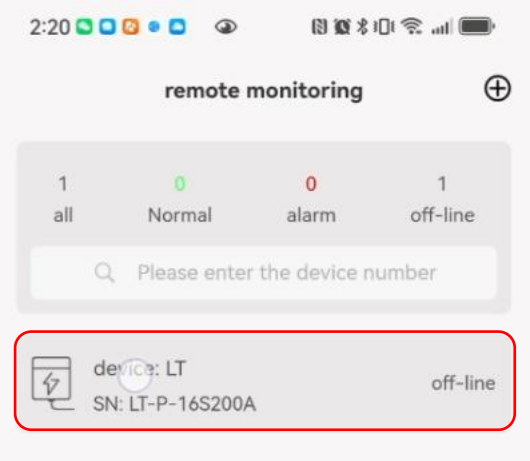
Click the "+", enter the device name and device address, and click "Submit"



Note:

When distributing the network, the name and address of the power station, as well as the name and password of the WIFI, all need to be set; otherwise, the distribution will not be successful.

8.2.3. The distribution network was successful.

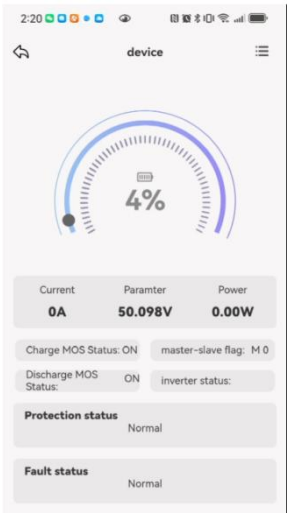


Note:

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

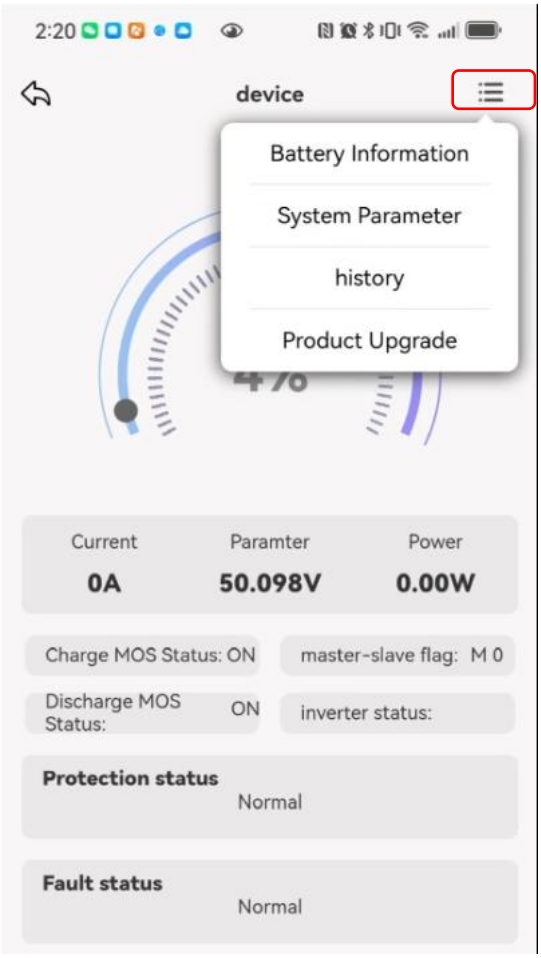
8.2.4. Enter the Settings interface

On this interface, you can view the voltage, current, SOC, MOSFET status, protection status and alarm status of the battery pack



8.2.5. Parameter setting

Click the icon in the upper right corner to enter different parameter items, query battery information, system parameters, historical information, etc.



8.2.5.1. Battery information

Through this interface, you CAN view the current CAN communication protocol, RS485 communication protocol, battery cycle times, voltage, current, capacity, SOC, SOH, detailed individual cell voltage, temperature, BMS version number, program version number and other information of the BMS.

8.2.5.2. System parameters

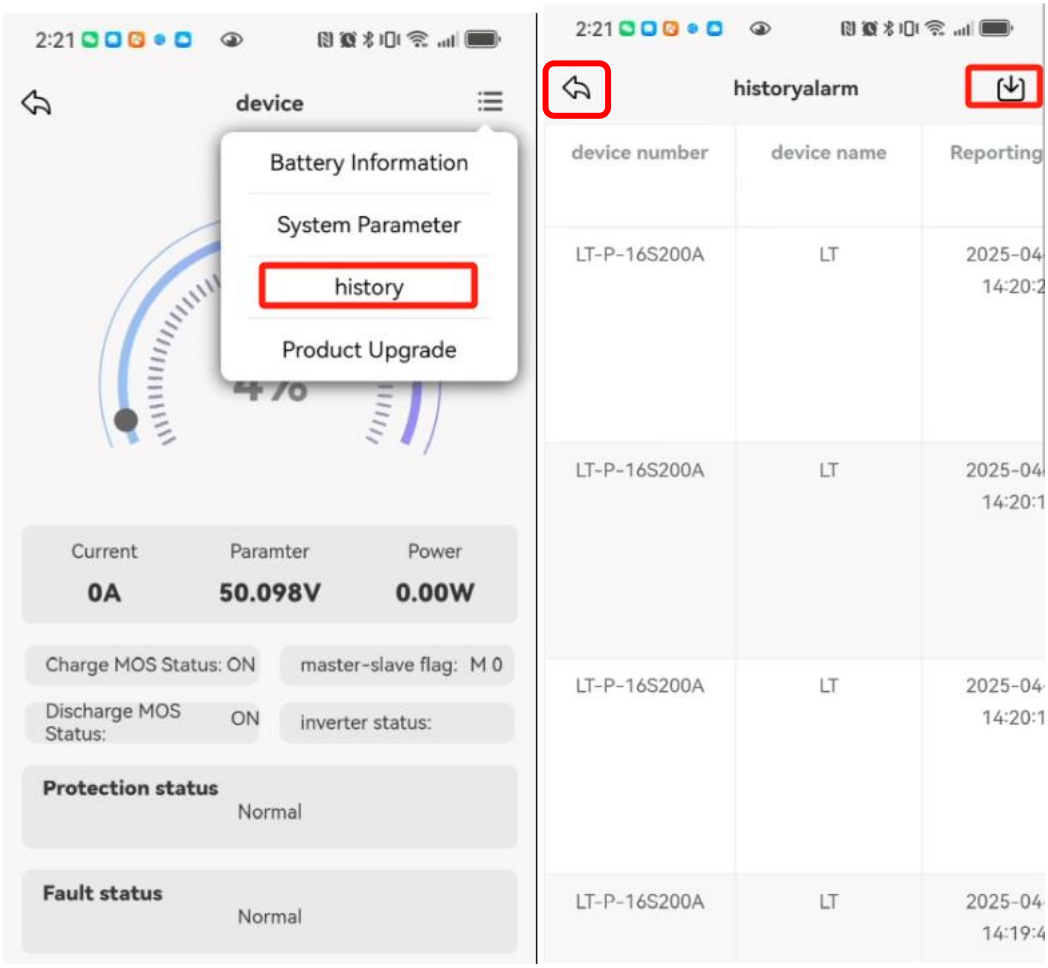
Through this interface, the alarm parameters and protection parameters of the BMS can be modified.

Note：

The BMS-related parameters of the battery have been set before leaving the factory. If you need to modify the parameters, please communicate and confirm with LITHTECH.

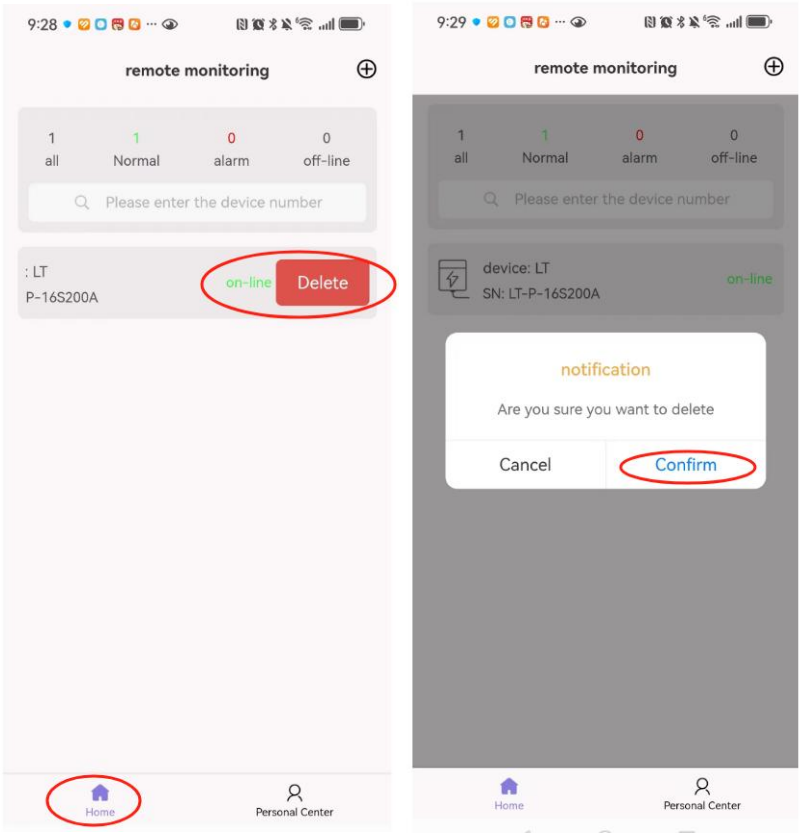
8.2.5.3. History

Through this interface, you can query the historical alarm information of BMS, which can be downloaded and saved to your mobile phone for battery fault analysis.



8.2.5.4. Distribution network disconnection

Return to the WIFI main interface, find the power station you need to Delete, follow the screen, swipe left, click "Delete", and then click "Confirm".

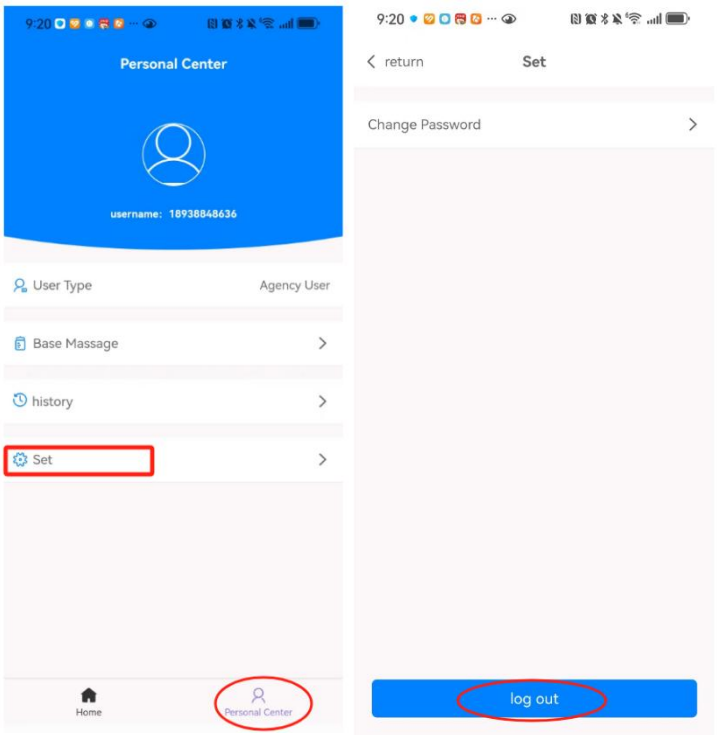


Note：

1. The WIFI of BMS can only be bound to one account. If you need to bind another account, please delete the binding of the previous account first.
2. If BMSAPP fails to search for BMS's WIFI signal, the possible reason might be that an account is bound to WIFI. Please contact LETHTECH for unbinding.

8.3. Account exit and logout

Account logout: After exiting, you can switch to logging in with another account or modify the account login password through this interface.


9:20
Personal Center
username: 18938848636
User Type
Agency User
Base Massage
history
Set
Home
Personal Center
9:20
return
Set
Change Password
log out