

User manual

LiFePO₄ Battery

(TLN512/100)

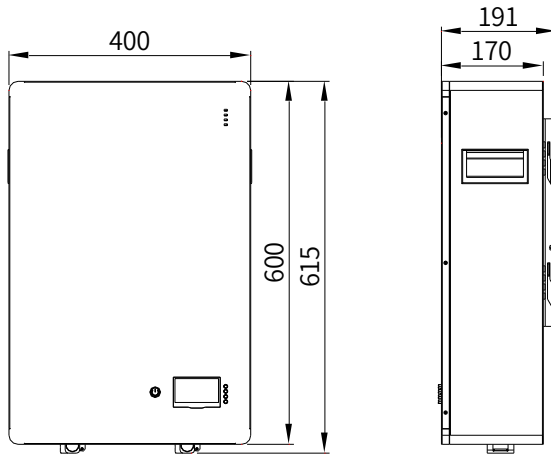


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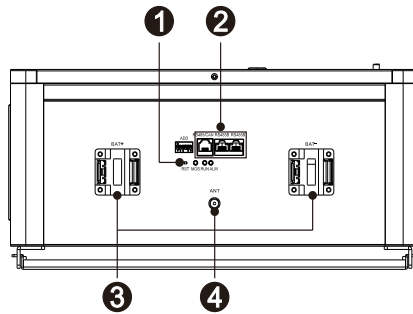
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1. Size

(Unit: mm) (Error range: $\pm 2\text{mm}$)



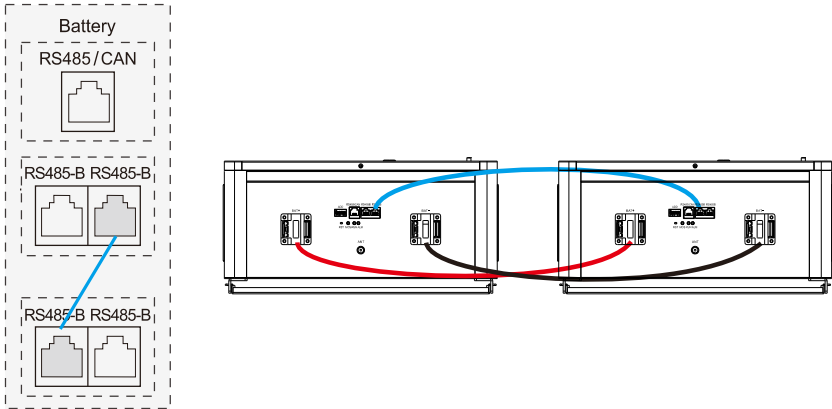
2. Appearance is introduced



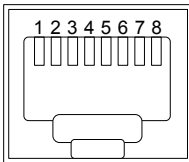
- ❶ Reset Switch
- ❷ Communication Interface
- ❸ Battery Interface
- ❹ Antenna

Connecting Signal Line

The parallel wiring of multiple lithium batteries is shown as follows:

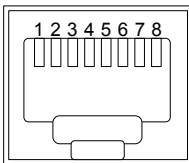


● Battery BMS RS485 interface definition



Pin number	RS485 Port
1、8	RS485-B
2、7	RS485-A
3、6	GND
4、5	NC

● Battery BMS CAN interface definition



Pin number	CAN Port
9、10、11、14、16	NC
12	CANL
13	CANH
15	GND

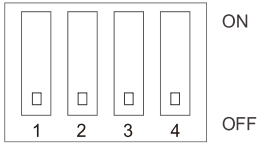
3. Technical Specifications

Cell type	Prismatic lithium iron phosphate
Rated capacity	5.12kWh
Nominal voltage	51.2V
Discharge voltage range	43.2-57.6V
Standard charging current	0.5C@25°C
Max. charging current	1C@25°C
Max. discharge current	1C@25°C
Depth of discharge DOD	0.8
Cycles	6000 cycles 80%DOD.@25°C
Working Temp. Range	Charge: 0°C~45°C Discharge: -10°C~50°C
Storage temperature(°C)	20°C~30°C
Net weight (±1kg)	45kg
Size (±2mm)	400*170*600mm

Recommendation: Charge and discharge the battery every 3 months.

4. Hardware Function Description

4.1 Dip switch



When PACK is used in parallel, the manual DIP address function is enabled when all DIP switches are dialed to OFF. Otherwise, use the default automatic addressing function. Use the DIP switch on the BMS to set the address to distinguish different packs.

Address bit (binary)	4	3	2	1	Explain
0001(1)	OFF	OFF	OFF	ON	Set PACK 1 to be used by a host
0010(2)	OFF	OFF	ON	OFF	Set PACK 2
0011(3)	OFF	OFF	ON	ON	Set PACK 3
0100(4)	OFF	ON	OFF	OFF	Set PACK 4
0101(5)	OFF	ON	OFF	ON	Set PACK 5
0110(6)	OFF	ON	ON	OFF	Set PACK 6
0111(7)	OFF	ON	ON	ON	Set PACK 7
1000(8)	ON	OFF	OFF	OFF	Set PACK 8
1001(9)	ON	OFF	OFF	ON	Set PACK 9
1010(10)	ON	OFF	ON	OFF	Set PACK 10
1011(11)	ON	OFF	ON	ON	Set PACK 11
1100(12)	ON	ON	OFF	OFF	Set PACK 12
1101(13)	ON	ON	OFF	ON	Set PACK 13
1110(14)	ON	ON	ON	OFF	Set PACK 14
1111(15)	ON	ON	ON	ON	Set PACK 15

4.2 Display function

Table 4-2-1 LED display description

State of system	Event	ON (LED9)	Run (LED8)	Alarm (LED7)	SOC(LED4~1)				explain			
		●	●	●	LED4	LED3	LED2	LED1				
Power off	Sleep	OFF	OFF	OFF	OFF	OFF	OFF	OFF	All LEDs turn off			
static state	Normal	ON	Flash1	OFF	Refer to table(4-2-2)				/			
	Alarm	ON	Flash1	Flash3					/			
Charging	Normal	ON	ON	OFF					/			
	Alarm	ON	ON	Flash3					The over-voltage alarm does not flash			
	OV protect	ON	ON	OFF					ON	ON	ON	ON
	Temperature, Over-current, fail-safe	ON	OFF	ON					OFF	OFF	OFF	OFF
Discharging	Normal	ON	Flash 3	OFF	Refer to table(4-2-2)							
	Alarm	ON	Flash 3	Flash 3								
	UV protect	ON	Flash2	OFF	OFF	OFF	OFF	OFF	/			
	Over-current, short circuit, temperature, fail-safe	ON	OFF	ON	OFF	OFF	OFF	OFF	/			

Table 4-2-2 SOC display description

State		Charging				Discharging			
LED		LED4	LED3	LED2	LED1	LED4	LED3	LED2	LED1
SOC(%)	0~25%	OFF	OFF	OFF	Flash2	OFF	OFF	OFF	ON
	25~50%	OFF	OFF	Flash2	ON	OFF	OFF	ON	ON
	50~75%	OFF	Flash2	ON	ON	OFF	ON	ON	ON
	75~100%	Flash2	ON	ON	ON	ON	ON	ON	ON
RUN LED●		ON				Flash 3			

Table 4-2-3 LED flash description

Flash Mode	ON	OFF
Flash1	0.25S	3.75S
Flash2	0.5S	0.5S
Flash3	0.5S	1.5S

4.3 Reset key switch description

When the BMS is in hibernation state, press the key (1S) and release it, the protection board is activated, and the LED indicator lights up successively from "LED1" for 0.5 seconds.

When the BMS is active, press the button (3 to 6S), and the LED indicator will turn on for 0.5 seconds from the lowest power indicator. When released, the system will go to sleep.

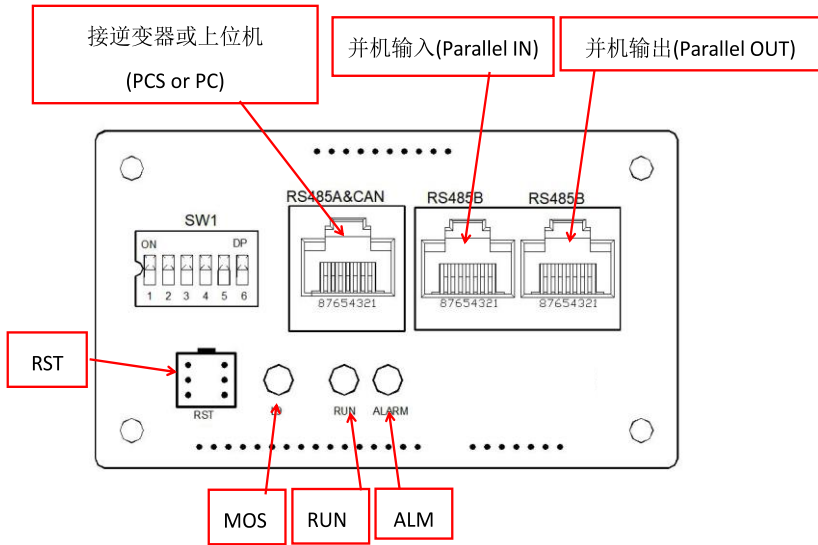
When the BMS is in the active state, press the button (6-10s) and release it, the protection board is reset, and the LED indicator is displayed according to the current power.

4.4 Description of the self-locking switch

When the BMS is in hibernation state, after closing the self-lock, the protection board is powered on, and the LED indicator lights up successively from "LED1" for 0.5 seconds.

When the BMS is active, turn off the self-locking switch and wait for 1S~3S before the system enters the power-off state.

4.5 Icon with RS232 interface (optional):



Definition of communication interface						
Interface	RS485A&CAN		RS485B		RS485B	
Function Definition	Connected to upper computer or inverter		Parallel communication (left)		Parallel communication (right)	
Pin description	PIN	Definition	PIN	Definition	PIN	Definition
	1、8	RS485-B1	1、8	RS485-B2	1、8	RS485-B2
	2、7	RS485-A1	2、7	RS485-A2	2、7	RS485-A2
	4	CANH	4、5	NC	4、5	NC
	5	CANL	3	IN	3	OUT
	3、6	GND	6	GND	6	GND

5. Software Function Description

(The current software is a test version and may be updated later.)

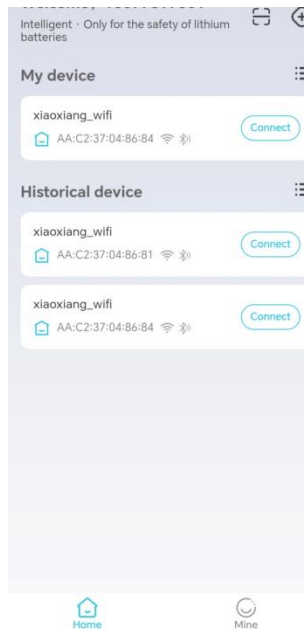
5.1 BLE Bluetooth function

5.1.1 Introduction to Bluetooth Function:

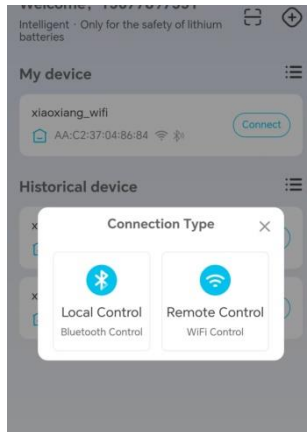
The communication module connects to the protection board through the UART interface. Use the mobile phone APP to connect to the corresponding Bluetooth broadcast of the communication module. After the Bluetooth connection is successful, the real-time information of the protection board can be viewed, configured, and related OTA operations can be performed.

5.1.2 Bluetooth usage configuration method

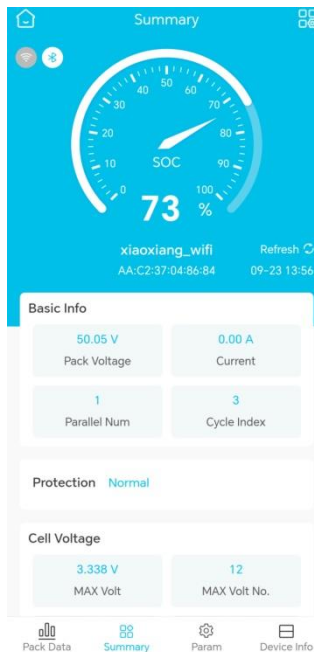
Turn on the mobile phone `bms_cloud_client` app, Click "Add" at the top right corner of the homepage:



5.1.3 From the device list, find the Bluetooth broadcast corresponding to the protection board SN, click and select the Bluetooth control mode:



5.1.4 The connection is successful. You can view the basic parameters and Settings of the protection board in real time through the page:



5.2 WIFI function

5.2.1.WIFI Function Introduction:

The communication module is connected to the protection board through the UART interface, and the WIFI account and password information of the communication module is configured. The module is connected to the local WIFI wireless network. Through this function, the information of the protection board can be viewed, configured, monitored in real time and OTA operations can be performed on the Jiabaida web management platform and mobile APP.

5.2.2 WIFI usage method:

1、 Open bms_cloud_client app, Click "Add Device", select "WIFI Connection" as the connection method, enter the account and password for the 2.4G Hz WIFI network, and click "Connect".

Note: The communication module only supports 2.4g frequency band WIFI.

2、 When the WIFI account and password are configured correctly, log in to the Web Xiaoxiang Lithium Battery Management Platform, click on Device Management - Device List in the left sidebar, find the mac address of your device on the page, and click on the device to enter the detail page to query and configure relevant information.



6. Safety and precautions

- 1)The battery module must be used in conjunction with BMS, and the mixed use of batteries from different manufacturers is strictly prohibited.
- 2)Check the battery module voltage for damage; if there is any abnormality, please stop using it.

- 3) It is strictly forbidden to stack the whole trailer battery with fork plate during transportation and storage, and it is forbidden to stack battery modules when installing and transporting batteries. There are positive and negative lead terminals or sampling line lead ends, and it is strictly forbidden to squeeze, stack and place them down.
- 4) Parallel matching requirements for battery modules: (Notes before picking and installation)
 - (1) Two identical models and same capacity, The battery modules of the same voltage are connected in parallel to 51.2V.
 - (2) Serial use is strictly prohibited.
- 5) Parallel wires are included in the battery module packing box, and the parallel wires correspond to the battery modules. Mixed insertion is strictly prohibited.
- 6) It is forbidden to use or leave the battery module near high temperature and high heat sources, away from fire and water sources.
- 7) It is forbidden to disassemble the battery module, knock, throw or step on the battery module, and dismantle the BMS and dismantle the yellow tamper-evident sticker without authorization.
- 8) Before installing the battery module, check whether the open circuit voltage of the battery is within the normal range. The "positive" and "negative" signs are printed on the module, and the electrical properties should be correctly determined. It is strictly forbidden to reverse or short-circuit the battery.
- 9) Insulation tools and gloves should be used during installation and transportation, and metal-containing conductors such as watches, bracelets (bracelets) and rings should be removed from the wrist to prevent electric shock and short-circuit the positive and negative electrodes. During installation, the battery module poles need to be insulated and protected. If the poles are close to the battery rack and other conductors, the battery poles or battery racks need to be insulated and protected.
- 10) The recommended transportation method is for two people to carry it at the same time. The transportation tool is a safety rope or a load-bearing net bag. The battery box must be carried to the site. Violent construction is strictly prohibited to damage the product.
- 11) Please read this installation manual carefully before installation. If you have any questions, please contact your supplier.