Product Specification

Product name: BMS Battery Management System

Product number: LX5011

Product model: 16S200A-10A-5A

Customer Model:

First release :

Document version: V1.0

authorized strength	examine and verify	ratify
Zeng Huifang On December 12,2024	Chao Zhang On December 12,2024	YTD

configuration table

Configuration function	Functional information	Configuration function	Parameter information
String number	16S	Cell type	lithium iron phosphate
Continuous charging current	200A	Continuous discharge current	200A
Charge and discharge interface	The same mouth	memory function	And 10,000 bars
Active equilibrium	Maximum 3A active equilibrium current;		
Charging limit	10A Charging and current limit Definition: the charging current 210A opens 10A current limit, enters the current limit until the end of charging, and the charging current interruption logic re-detection and judgment.		
lamp panel	6 SOC (green) power display 1 ALM (red light) is shown 1 RUN (green) is shown 1 weak current switch ON / OFF (green) is displayed.		
display screen	Reserve the display screen interface and the function.		
4G Bluetooth (default deletion)	Reserve the 4G Bluetooth interface and functions.		
Dry contacts (default deletion)	Passive dry connection Dry contact point 1-PIN1 to PIN2: often open, closed when fault and protection; Dry contact point 2-PIN3 to PIN4: often open, close when the low power alarm;		
Secondary protection (default deletion)	With secondary protection function, with external secondary protection button device control output interface and button state detection function. Stripping logic: the charge and discharge MOS fault is triggered (the corresponding charging or discharge protection should be disconnected from the corresponding charging and discharge MOS, such as the MOS cannot be disconnected and the current is detected), the current limiting plate fault (when the current limiting protection is triggered), and the tripping protection should be triggered.		
Anti-theft function (default deletion)	Optional function.		
Hardware watchdog function (default deletion)	With the external hardware watchdog reset function, the hardware watchdog is initiated. When the BMS timeout 1.6S does not feed the dog, the hardware watchdog will produce a reset signal to reset MCU.		
Heated film (default deletion)	Definition: Start heating when the minimum temperature of the cell is lower than 5 °C, and stop heating when the minimum temperature of the cell is higher than 15 ° C.		
Weak current switch	Ship-type self-locking switch, corresponding to the ON / OFF indicator lamp.		
Buzzer switch (default deletion)	By default (BMS factory is closed by default, and can be enabled by the upper computer).		
Dial switch	Four		
Cell capacity	200AH		
Pre-filling capacity	The pre-charging road meets the maximum capacitive load of 60000 uF.		
Communication 1	RS485-1	Communication 2	RS485-2
Communication 3	CAN	Communication 4	RS232 (upgrade interface)
UPS RS485 Agreement	1,PYLON low voltage Protocol RS485-V3.5(2019-08-07)		
	2. Victron The Victor protocol		
	3. Growatt BMS RS485 Protocol for 1xSxxP ESS-V2.01 (2019-02-13)		
	4. PACE BMS Modbus Protocol for RS485-V1.3 (2017-06-27) Pei Agreement		
	1,CAN-Bus-protocol-PYLON-low-voltage-V1.3-20190301		

UPS CAN Agreement	2. Growatt BMS CAN-Bus-protocol-low-voltage- -V1.09 (2020-10-22)		
	3, the Victron energy canbus _ bms _ protocol Victor protocol		
	4. GoodWe Low-voltage BMS Protocol CAN-V1.7 (2020-02-28) Goodway Agreement		
	5. Shenzhen Magrange technology hybrid inverter _ 5 K _ BMS protocol V1.01 Magrange protocol		
Temperature monitoring	6 (1 environment, 1 MOS, 4 cell)	Sampling seat	2.5 Spacing vertical belt buckle (9 + 10)

Accessories schedule

order number	name	model	quantity
1	fender apron	16S200A-20A-V1.0	1 block
2	keysets	TR1001-V1.0	1 block
3	Active equilibrium module	ARM01605F	1 block
3	Voltage sampling line 1	#1-500mm-18AWG -10P-2.5S-tin -1.0	1 Article
4	Voltage sampling line 2	#2-500mm-18AWG-9P-2.5S-tin-1 .0	1 Article
5	Temperature sampling line	4P-500mm-2.0S-ntc-1.0	1 Article
6	tieline	6P-300mm-6P-2.5X-1.0	1 Article
7	tieline	10P(2.0S)-300mm-10P(2.5X)-1.0	1 Article
8	Color line	10Px2-300mm-10Px2-2.5S-1.0	1 Article
9	Weak current switch line	420mm-2P-2.5S-R19A-1.0	1 Article
10	screw	M5 * 10 screws	Four

Product revision resume

date	edition	revision note	person liable	auditor
2025-01-23	1.0	Based on the 3082-V2.0, the passive equilibrium was changed to the active equilibrium	Chris	Karin

catalogue

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1. Application scope

This product is suitable for 8 string-16 lithium battery management, using integrated design, collection, management, communication and other functions integrated. The lithium battery pack can be provided with overcharge, overdischarge, overcurrent, overtemperature, undertemperature and short circuit protection functions, and voltage balancing function during the charging process, discharge voltage and current information can be stored through the communication port, and parameter configuration and data monitoring can be conducted through the upper computer software. Can be widely used in indoor and outdoor base stations, energy storage and other fields.

2. Functional characteristics

2.1 Voltage detection and protection function

It has single voltage, overall voltage detection, overvoltage, undervoltage alarm and protection functions.

2.2 Current detection and protection function

It has the functions of charging and discharging current detection, alarm and protection. The charging current is displayed as positive current, and the discharge current is displayed as negative current.

2.3 Temperature detection and protection function

With the cell, environment, PCB temperature detection function, and can alarm and protect at high and low temperature charge and discharge.

2.4 Short-circuit protection function

With the output short circuit detection and protection function.

2.5 Reverse connection protection function (optional)

With the charger reverse connection detection and protection function.

2.6 Activate the wake-up function

It has a variety of activation and wake-up functions: charger activation, 232 communication activation, and reset button activation;

2.7 Buzzer alarm function

With the buzzer alarm function; (optional)

2.8 Dry contact point (optional)

With two dry contact: can control the output two switch signal.

2.9 Function of heating film (optional)

With heating film function, support less than 5A current heating film output, and has secondary protection of short circuit and heating film MOS failure protection function.

2.10 Secondary protection function (optional)

With secondary protection function, with external secondary protection button device control output interface and button state detection function.

2.11 Anti-theft function (optional)

With the acceleration and anti-theft function.

2.12 Hardware watchdog (optional)

With the external hardware watchdog reset function.

2.13 Charging and current limiting function

Can support 10A charging flow limiting function;

2.14 Battery pack capacity calculation function

The SOC of the battery pack can be accurately calculated by integrating the current and time. The battery pack is full capacity and current capacity

To set up through the upper machine, the capacity can be automatically updated after a complete charge and discharge cycle.

With the function of calculating charge and discharge cycle times, when the cumulative discharge capacity of the battery pack reaches 80% of the set full capacity, the cycle times increases

Add a.

2.15 Charging balancing function of battery cell

An active equilibrium of no less than 3A can be performed, and the larger the pressure difference, the greater the equilibrium current. The maximum pressure difference is greater than the equilibrium pressure difference, and the single cell that meets the conditions opens the equilibrium function.

The balanced opening voltage and balanced voltage difference can be set by the upper position machine.

2.16 LED indication function

There are 9 LED indicators, of which 6 green lights are used to indicate the current battery pack SOC, 1 red light is a fault indicator for alarm and protection, and 1 green running light is used to indicate the standby, charging and discharge status of the battery pack.1 green indicator light shows the electric switch off state;

2.17 History record storage function

With the history record storage function, the storage capacity is not less than 10,000 records. The storage period and time interval can be set. The storage content adopts the first in first out principle. The storage content can be read through the upper machine and stored as excel documents.

2.18 Communication and parallel functions

With RS485 communication function, RS232 communication function, CAN communication function can realize the use of battery packs, communication with external inverter, real-time monitoring of the status of BMS and battery pack. Battery pack parallel machine address is compatible with automatic and manual setting;

2.19 Control function of the upper computer

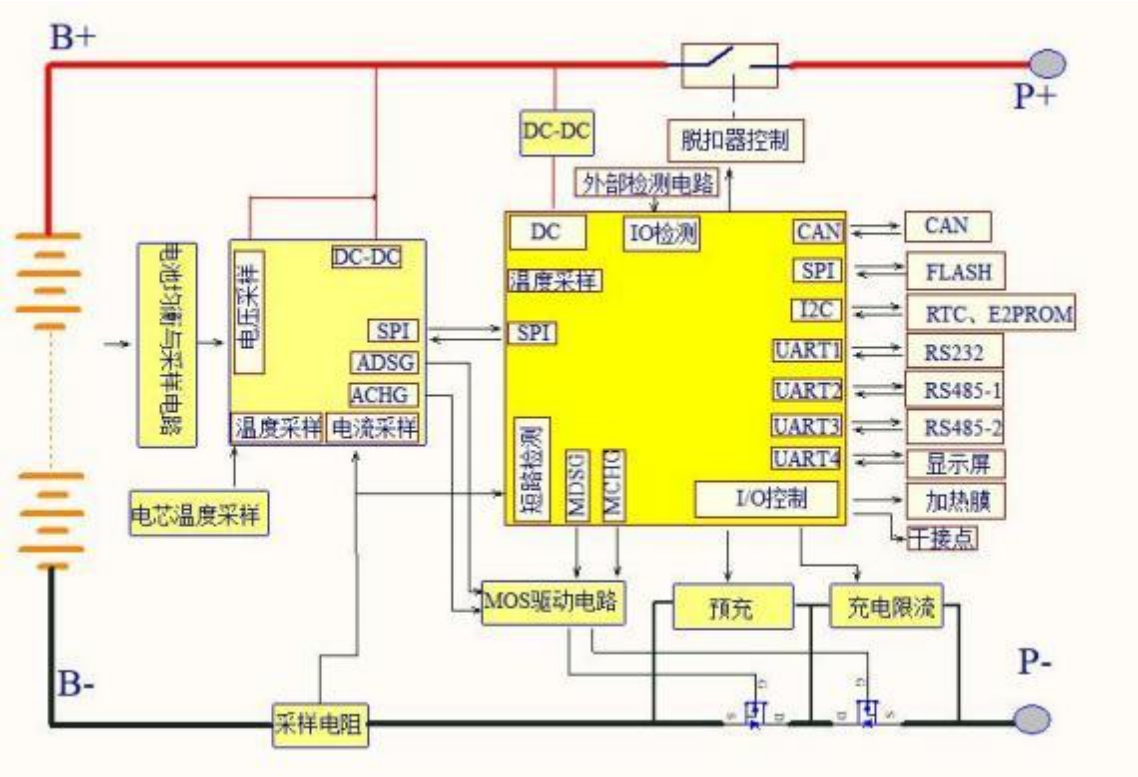
With a friendly upper machine interface, it can be easily used to handle overvoltage, undervoltage, overcurrent, overtemperature, undertemperature, short circuit through the upper machine

Set the protection parameters, balance, dormancy, capacity, storage and all kinds of alarm parameters.

Schedule: Display Accuracy Requirements (25℃)

voltage	The charge and discharge voltage error of the single battery above 50% range is 10 mV.
current	Charge and discharge current error above 50% range is 2%.
capacity	The battery pack capacity error above 50% range is 5%.
temperature	The temperature display error above 50% range shall be 2℃

3. Function schematic block diagram



4. Environmental requirements

project	parameter	unit
working temperature	- 20 ~ 75	℃
storage temperature	- 40 ~ 75	℃
Working humidity	≤95 (45℃ ±2℃)	%RH
Storage humidity	≤95 (45℃ ±2℃)	%RH
temperature measurement	-40 ~ 125	℃
atmospheric pressure	70~106	kPa

5. Basic parameter setting

(Note: The following parameters are tested at 25℃ ring temperature unless otherwise indicated)

order number	Function name	item information	Set the value		remarks
1	Single high pressure	Single-unit high-voltage alarm voltage	3600mV	Can set	
		Single-body high-voltage protection voltage	3700mV	Can set	
		Single-body high-voltage protection delay	1.0S	Can set	
2	Single-body high-pressure protection relief condition	Single-body high-voltage protection and relief voltage	3380mV	Can set	
		Discharge discharge	Discharge current of> 1A		
3	Single low pressure	Single-unit low-voltage alarm voltage	2800mV	Can set	Over protection for 30 seconds
		Single-unit low-voltage protection voltage	2700mV	Can set	After that, it still can not recover
		Single-unit low-pressure protection delay	1.0S	Can set	When, will enter the low power Consumption mode
4	Single-body low-pressure protection is lifted	Single body overdischarge protection and release voltage	2950mV	Can set	
		Discharge when charged	Access charger can be activated		
5	Overall overcharge protection	Overall overcharge alarm voltage	57.6 V	Can set	
		Overall overcharge protection voltage	59.2V	Can set	
		Overall overcharge protection delay	1.0S	Can set	
		Overall overcharge protection relief voltage	54V	Can set	

6	Overall overpressure protection lifted	Discharge discharge	Discharge current of> 1A		
7	Overall low pressure	Overall LV alarm voltage	44.8V	Can set	
		Overall LV protection voltage	43.2 V	Can set	
		Overall overrelease protection delay	1.0S	Can set	
8	Overall low-pressure protection is lifted	Overall overdischarge protection release voltage	47.2V	Can set	
		Discharge when charged	Access charger can be activated		
9	active current	Effective charging current	>1 A		
		Effective discharge current	>1 A		
10	Charging over-current protection	Charge the overcurrent alarm current	205A	Can set	

		Charge the overcurrent protection current	210A	Can set	
		Charge overcurrent protection delay	1.0S	Can set	
11	Charging overcharge protection is removed	Automatic lifting	Automatic automatically after 1min		Lock lock 10 consecutive times The status is no longer determined Automatic lifting
		Discharge discharge	Discharge current of> 1A		
12	Discharge overcurrent 1 protection	Discharge overcurrent 1 alarm current	205A	Can set	
		Discharge current 1 protection current	210A	Can set	
		Overcurrent discharge 1 protection delay	3 S	Can set	
13	Discharge overflow 1 protection is relieved	Automatic lifting	Automatic automatically after 1min		Lock lock 10 consecutive times The status is no longer determined Automatic lifting
		Charging to remove	Charging current is> 1A		
14	Discharge over current 2	Discharge overcurrent protection current 2	≥250A	Can set	
		Discharge overcurrent 2 protection delay	2S	Can set	
15	Discharge overcurrent 2 protection is removed	Automatic lifting	Automatic automatically after 1min		Lock lock 10 consecutive times The status is no longer determined Automatic lifting
		Charging to remove	Charging current is> 1A		
16	short-circuit protection	Short circuit protection current	have		
		Short circuit protection delay	Less than 300 μ S		
		Short circuit protection lifted	The short-circuit protection is lifted when an effective charging current is detected		
			When the load is removed		
17	The MOS high-temperature protection	MOS overtemperature alarm temperature	100℃	Can set	
		The MOS over-temperature protection temperature	115℃	Can set	

		MOS protection release temperature	90℃	Can set	
18	Cell charging low temperature	Charging the low-temperature alarm temperature	-0℃	Can set	
		Charging for the low-temperature protection temperature	-5℃	Can set	
		Charging with low temperature protection to release the temperature	-0℃	Can set	
19	Battery charging high temperature	Charging high temperature alarm temperature	60℃	Can set	
		Charging with high temperature protection temperature	65℃	Can set	
		Charging with high temperature protection to release the temperature	55℃	Can set	
20	The cell discharge is low temperature	Discharge low-temperature alarm temperature	-15℃	Can set	
		Discharge at a low-temperature protection temperature	-20℃	Can set	

		Discharge is a low-temperature protection device to release the temperature	-15℃	Can set	
21	The battery discharge is high temperature	Discharge high temperature alarm temperature	65℃	Can set	
		Discharge at a high-temperature protection temperature	70℃	Can set	
		Discharge high temperature protection release temperature	60℃	Can set	
22	Low temperature environment	Environmental low-temperature alarm temperature	-15℃	Can set	
		Environmental low-temperature protection temperature	-20℃	Can set	
		Environmental low temperature protection to release the temperature	-15℃	Can set	
23	High temperature environment	Ambient high temperature alarm temperature	65℃	Can set	
		Environmental high-temperature protection temperature	75℃	Can set	
		Environmental high temperature protection to release the temperature	65℃	Can set	
24	Consumption of current	Self-consuming current at operation	50 mA (with display screen)		
			45 mA (without a display screen)		
		Low-power consumption mode current	≤200μA		
25	Balanced function	Balanced turn on voltage	2700mV	Can set	Active equilibrium current maximum of 3A
		Turn on the pressure difference	30mV	Can set	
26	Capacity default settings	Low power alarm	SOC < 5%	Can set	No alarm when charging
		Full capacity setting	200AH	Can set	
27	Flow restriction function	Charging limit current	10A		
28	Sleep function	The dormant voltage	3150mV	Can set	
		delay time	30min	Can set	
29	Power cell failure protection	Single pressure difference	Pressure difference> 1V	Do not set	

30	Full charge judgment	Full charge voltage	More than 56V	Can set	At the same time to meet the rear stop Stop the charging, and update The SOC was 100%
		cutoff current	Less than 2A	Can set	

6. LED instructions

Table 1: LED working status indication

state	Normal / warning, alarm / protection	ON/OFF	RUN	ALM	Power quantity indicates the LED						explain
		●	●	●	●	●	●	●	●	●	
shut down	dormancy	go out	go out	go out	go out	go out	go out	go out	go out	go out	All out
await the opportune moment	normal	Often bright	Flash 1	go out	According to the electricity instruction						stand by
	report an emergency	Often bright	Flash 1	Flash 3							Module low pressure
charge	normal	Often bright	Often bright	go out	According to the electricity instruction (Power indicates maximum LED flash 2)						Maximum power LED flash (flash 2) Overcharge alarm ALM without flashing
	report an emergency	Often bright	Often bright	Flash 3							
	Overcharge protection	Often bright	Often bright	go out	Often bright	Often bright	Often bright	Often bright	Often bright	Often bright	If no is s, the indicator is on standby
	Temperature, overcurrent, and failure protection	Often bright	go out	Often bright	go out	go out	go out	go out	go out	go out	Stop charging
discharge	normal	Often bright	Flash 3	go out	According to the electricity instruction						
	report an emergency	Often bright	Flash 3	Flash 3							
	undervoltage protection	Often bright	go out	go out	go out	go out	go out	go out	go out	go out	Stop discharge
	Temperature, overcurrent, short circuit, reverse connection, failure protection	Often bright	go out	Often bright	go out	go out	go out	go out	go out	go out	Stop discharge
lose efficacy		Often bright	go out	Often bright	go out	go out	go out	go out	go out	go out	Stop charging and discharging

Table 2. Capacity indication description

state		charge						discharge					
Capacity indicator light		L6 ●	L5 ●	L4 ●	L3 ●	L2 ●	L1 ●	L6 ●	L5 ●	L4 ●	L3 ●	L2 ●	L1 ●
quantity of electricity (%)	0 ~ 16.7%	go out	go out	go out	go out	go out	Flash 2	go out	go out	go out	go out	go out	Often bright
	16.7 ~ 33.3%	go out	go out	go out	go out	Flash 2	Often bright	go out	go out	go out	go out	Often bright	Often bright
	33.3 ~ 50%	go out	go out	go out	Flash 2	Often bright	Often bright	go out	go out	go out	Often bright	Often bright	Often bright
	50 ~ 66.7%	go out	go out	Flash 2	Often bright	Often bright	Often bright	go out	go out	Often bright	Often bright	Often bright	Often bright
	66.7 ~ 83.4%	go out	Flash 2	Often bright	Often bright	Often bright	Often bright	go out	Often bright	Often bright	Often bright	Often bright	Often bright
	83.4 ~ 100%	Flash 2	Often bright	Often bright	Often bright	Often bright	Often bright	Often bright	Often bright	Often bright	Often bright	Often bright	Often bright
Run the indicator light ●		Often bright						Fllink (flash 3)					

Table 3.

Description of the LED flashing

Flash mode	bright	go out
Flash1	0.25S	3.75S
Flash2	0.5S	0.5S
Flash3	0.5S	1.5S

remarks:

Can be enabled through the upper machine or prohibit LED indicator light alarm, factory default is enabled.

6.2 Description of the buzzer action

Upon a fault, the buzzer sounds for 0.25 seconds every 1 second;

During protection, the buzzer sounds for 0.25 seconds every 2 seconds (excluding overvoltage protection);

During an alarm, the buzzer sounds for 0.25 seconds every 3 seconds (excluding overvoltage alarm);

The buzzer function can be enabled or disabled via the upper computer, with the default setting being disabled at the factory.

6.3 Key description

When the BMS is dormant, press the button (3~6S) to release, the protection plate is activated, and the LED indicator light starts from "RUN" for 0.5 seconds.

When the BMS is active, press the button (3~6S) to release, the protection plate is dormant, and the LED indicator starts from the lowest power light for 0.5 seconds. When the BMS is active, press the button (6~10S) and release it, the protection plate is reset, and the LED lights are all lit for 1.5 seconds.

After the BMS is reset, the parameters and functions set by the upper computer are retained. If you need to recover to the initial parameters, it can be achieved by the "recovery default value" of the upper computer, but the relevant running records and stored data remain unchanged (such as power, cycle number, protection record, etc.).

7. Dormant and wake-up

7.1 Sleep

The system enters a low-power mode when any of the following conditions is met:

1) The monomer or overall overrelease protection is not removed within 30 seconds.

2) Release the button after pressing it for 3 seconds.

3) The lowest unit voltage is lower than the dormancy voltage, and the duration reaches the dormancy delay time (at the same time, meet the no communication, no protection, no equilibrium, no current).4) The standby time is more than 24 hours (no communication, no charge and discharge, no city power).

5) Force the shutdown through the upper computer software.

6) Disconnect the weak current switch to control dormancy.

Before entering hibernation, ensure that the input is not connected with external voltage, otherwise it cannot enter the low power mode.

7.2 Wake up

When the system is in the low power consumption mode and any one of the following conditions are met, the system will exit the low power consumption mode and enter the normal operation mode: 1) Access to the charger, and the output voltage of the charger should be greater than 48V.

2) Press the button 3S and release the button.

3) Access the communication line and open the upper computer software (enter the dormant state due to overrelease protection, this method cannot wake up the protection board).

Note: After the single or overall overdischarge protection, enter the low power consumption mode, wake up regularly every 4 hours, and turn on the charge and discharge MOS. If it can be charged, it will exit the dormant state and enter normal charging; if 10 consecutive times, it will not wake up automatically.

When the system is defined as the end of charging, the recovery voltage is not reached after 2 days of standby / 48h (standby time setting value), and the charging is forced to the end of recharging.

8. Communication instructions

8.1 RS232 communication

BMS can communicate with the upper computer computer through the RS232 interface to monitor various battery information at the upper computer terminal, including battery voltage, current, temperature, state, SOC, SOH and battery production information. The default port rate is 9600bps.

8.2 RS485 communication

There are two RS485 interfaces, and the main Pack can communicate with the secondary Pack through the RS485 interface, so that all Pack information can be viewed through the main Pack RS232. The RS485 interface cannot set parameters and can be controlled accordingly.

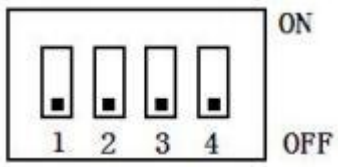
One way can be connected to the upper computer or external equipment.

8.3 CAN communication

With CAN communication interface, can be used as a battery pack for parallel use, can also be connected with external equipment, interaction related information;

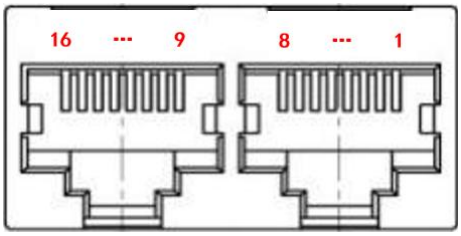
8.4 Code dial switch setting

When the battery pack is used in parallel, different PACK can be distinguished by the hardware address, and the hardware address of each PACK in the whole battery stack is unique. The hardware address can be set in turn through the dial switch on the board, and the definition of the switch refers to the following table.

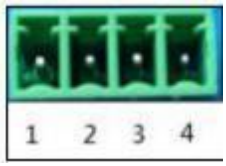


address	Dial switch position				explain
	#1	#2	#3	#4	
0	OFF	OFF	OFF	OFF	Uncascade, single machine use
1	ON	OFF	OFF	OFF	Set to Pack 1 (Master)
2	OFF	ON	OFF	OFF	Set it to Pack 2
3	ON	ON	OFF	OFF	Set it to Pack 3
4	OFF	OFF	ON	OFF	Set it to Pack 4
5	ON	OFF	ON	OFF	Set it to Pack 5
6	OFF	ON	ON	OFF	Set it to Pack 6
7	ON	ON	ON	OFF	Set it to Pack 7
8	OFF	OFF	OFF	ON	Set it to Pack 8
9	ON	OFF	OFF	ON	Set it to Pack 9
10	OFF	ON	OFF	ON	Set to Pack10
11	ON	ON	OFF	ON	Set to Pack11
12	OFF	OFF	ON	ON	Set to Pack12
13	ON	OFF	ON	ON	Set to Pack13
14	OFF	ON	ON	ON	Set to Pack14
15	ON	ON	ON	ON	Set to Pack15

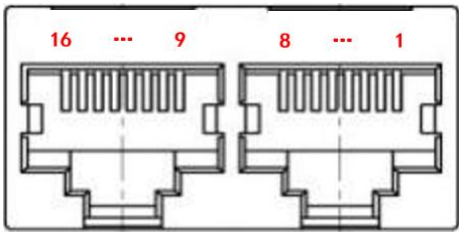
8.5 Communication interface diagram



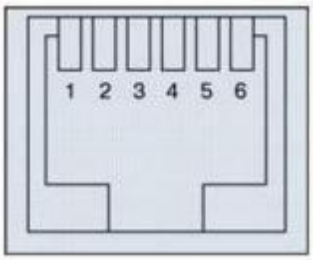
The CAN interfaces with the RS485



Dry contact point



RS485 In-parallel machine interface



RS232

RS232 Communication interface

RS232- -6P6C vertical RJ 11 socket (RJ 1)	
The RJ 11 pins	defined declaration
1、2、6	NC
3	TX(veneer)
4	RX(veneer)
5	GND

R

RS485 And CAN communication interface

CAN- -8P8C vertical RJ 45 socket (RJ 3)		RS485- -Use 8P8C vertical RJ 45 socket (number RJ 3)	
The RJ 45 pins	defined declaration	The RJ 45 pins	defined declaration
1、8	RS485-B1	9、16	RS485-B1
2、7	RS485-A1	10、15	RS485-A1
3、6	GND	11、14	GND
4	CANL	12	CANL
5	CANH	13	CANH

485 Parallel communication interface

RS485- -Use 8P8C vertical RJ 45 socket (number RJ 2)		RS485- -Use 8P8C vertical RJ 45 socket (number RJ 2)	
The RJ 45 pins	defined declaration	The RJ 45 pins	defined declaration
1、8	RS485-B	9、16	RS485-B
2、7	RS485-A	10、15	RS485-A
3、6	GND	11、14、	GND
4	Automatic dial code higher-level input IN _ DP +	12	Autodial subordinate output ON _ DP +
5	Automatic dial code by the superior input IN_DP-	13	Auto dial subordinate output ON _ DP-

9. Main board interface description

joggle	explain
B+	Cell, PACK cathode, used to power the BMS; power cathode P + directly connected to the cell cathode
B-	Battery negative electrode;
P-	Battery PACK negative, which is both the charging negative and discharge negative (charge and discharge)
JP1 (cell voltage)	Pin 1: connected to the first string of battery negative Pin 2: connected to the first string battery Pin 3: connect to the second string of battery positive Pin 4: connected to the third string battery Pin 5: connected to the fourth string battery Pin 6: connected to the fifth string battery Pin 7: connected to the sixth string battery Pin 8: connected to the 7th string battery Pin 9: connected to the 8th string battery
JP2 (cell voltage)	Pin 1: connected to the 9th string battery Pin 2: connected to the 10th string battery Pin 3: connected to the 11th string battery Pin 4: connect to the 12th string battery positive Pin 5: connected to the 13th string battery Pin 6: connect to the 14th string battery positive Pin 7: connect to the 15th string battery positive Pin 8: connected to the 16th battery Pin 9: connect to B + Pin 10: connected to B +
JP3 (electric cell temperature)	Pin1： GND Pin2： NTC3+ Pin3： GND Pin4： NTC4+
JP4 (electric cell temperature)	Pin1： GND Pin2： NTC1+ Pin3： GND Pin4： NTC2+
JP6 (weak current switch)	Pin1： PW_OFF Pin2： GND
JP19 (tripping)	Pin 1: POS _ REV Repper feedback end Pin 2: negative power terminal of tripping Pin 3: Positive power end of tripping
JP5 (display screen)	Pin 1: display screen TX Pin 2: Display screen RX Pin 3: Display screen VCC Pin 4: Display screen GND Pin5： NC
JP21 (Heating film)	Pin 1: heat up the negative end of the membrane Pin 2: heat the membrane plus end

JP16 (dry contact, indicated Light, dial code): transfer board JP1	Pin 1: CON 1 dry contact 1 Pin 2: CON 1 dry contact 1 Pin 3: CON 2 dry contact 2 Pin 4: CON 2 dry contact 2 Pin 5: LED7 indicator lamp Pin 6: LED8 indicator lamp Pin 7: LED9 indicator lamp Pin 8: K5 dial code Pin 9: K6 dial code Pin10:GND
JP18(RS485, RS232): transfer Plate JP3	Pin 1:485_B parallel machine 485 B Pin 2:485_A and machine 485 A Pin 3: RS232_RX 232 communication receiving end Pin 4: RS232_TX 232 communication sender Pin 5: ISO _ GND isolation site Pin 6: ISO _ GND isolation site
JP17(CAN,485-1, Indicator, dial code): JP2 of the transfer board	Pin 1: CAN _ L CAN communication Pin 2: CAN _ H CAN communication Pin 3: CAN _ GND isolation site Pin 4: CAN _ GND isolation site Pin 5:485_B1 external 485 communication Pin 6:485_A1 external 485 communication Pin 7: GND systematically Pin 8: GND systematically Pin 9: K1 dial code Pin 10: LED6 indicator lamp Pin 11: K2 dial code Pin 12: LED5 indicator lamp Pin 13: K3 dial code Pin 14: LED4 indicator lamp Pin 15: K4 dial code Pin 16: LED3 indicator lamp Pin 17: PW _ OFF weak current switch Pin 18: LED2 indicator lamp Pin 19: RESET reset button Pin 20: LED1 indicator lamp
JP25 (automatic dial code): JP7 of the transfer board	Pin 1: DN _ OP-negative dial negative output Pin 2: DN _ OP + automatic dial subordinate output is positive Pin 3: UP _ IN + automatic dial sublevel input positive Pin 4: UP _ IN-Auto-dial junior input negative
JP20 (GPS or Bluetooth)	Pin 1: GPS or Bluetooth TX Pin 2: GPS or Bluetooth RX Pin 3: GPS or Bluetooth 13V Pin 4: GPS or Bluetooth GND Pin5： NC
JP24 (secondary current sampling)	Pin 1: positive current sampling Pin 2: negative current sampling
J3 (light strip)	Pin 1: GND systematically Pin 2: DOUT lamp strip control Pin 2:5V power supply

Note: The weak current switch interface of the main board is reserved, and it is generally not connected. The supporting weak current switch needs to be connected to the transfer board JP4.

Install connection instructions

There are strict sequence requirements on the protection board. First weld B-, P-, B +, P +, and plug in the battery sampling line connector in order from low to high. After power on, charge or button activation. Load or charger can be added after all cables are installed.

When removing, unplug the charger or load, remove the battery sampling line connector in order from high to low, and finally remove B +, P +, B-and P-

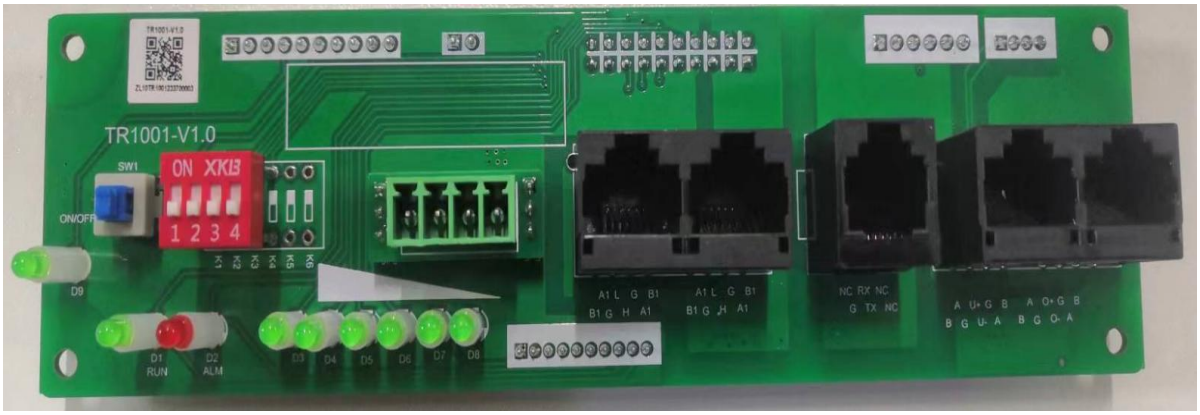
10. Physical drawings and size drawings

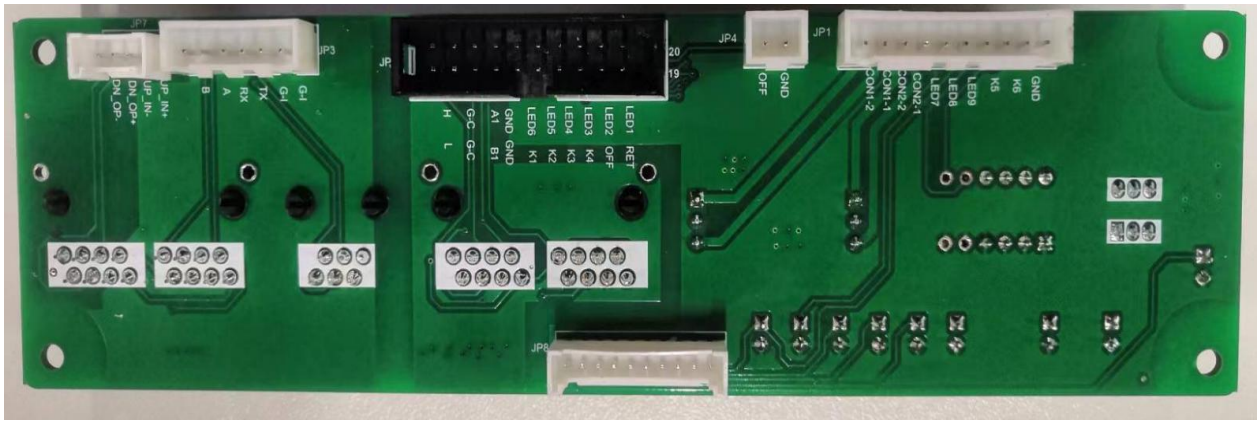
Reference physical drawing: 300mm * 100mm * 38mm

motherboard:

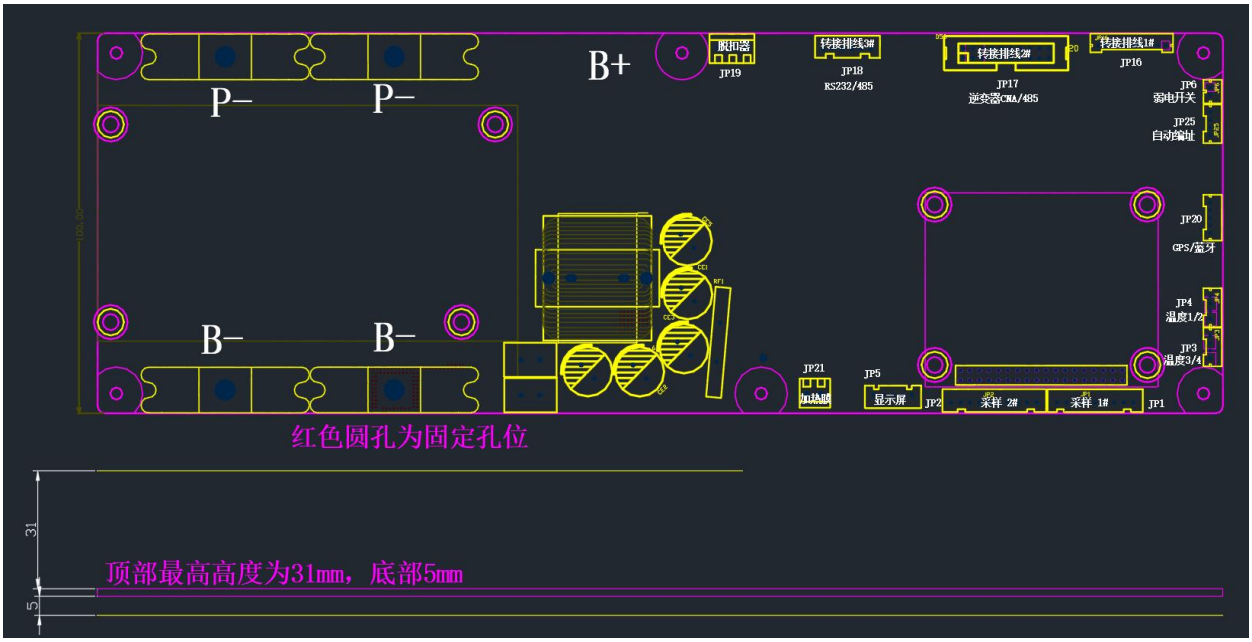


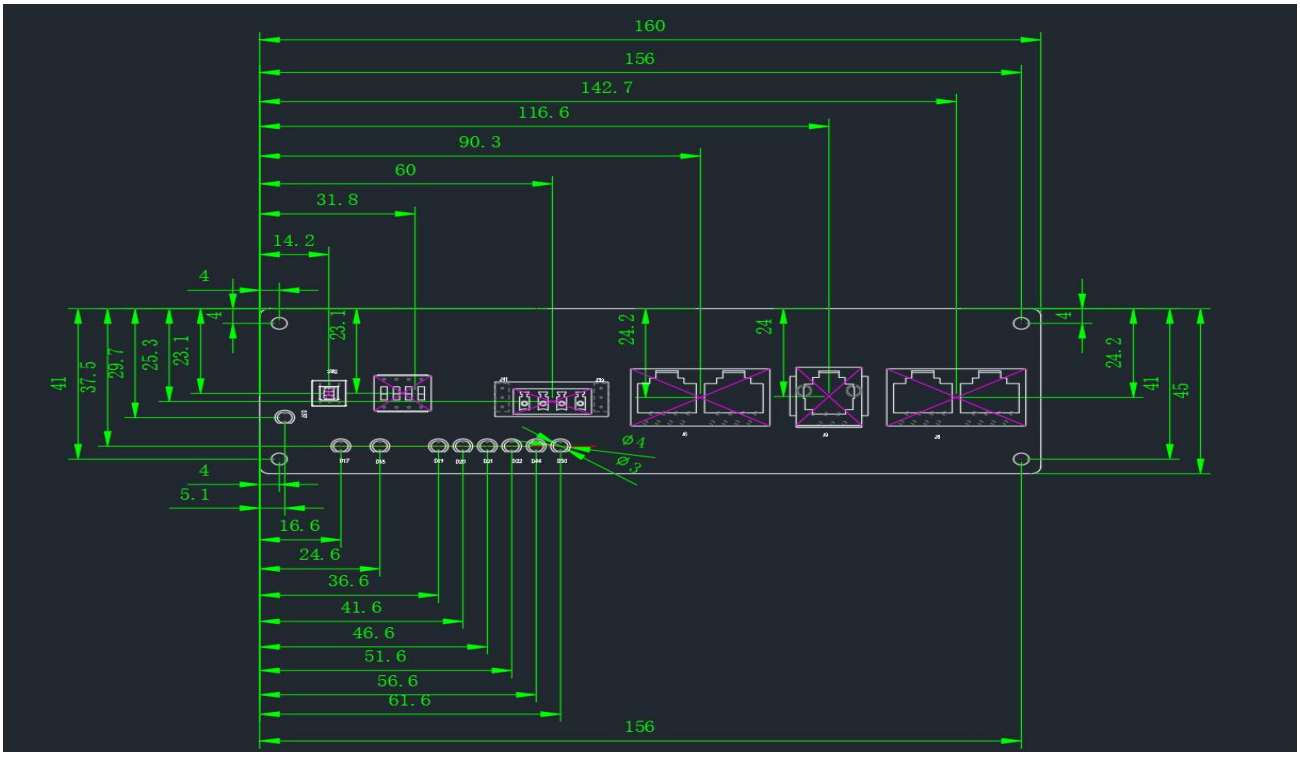
keysets:





Note: There may be some differences between the actual product and the above reference physical drawings, and the pictures are for reference only





11. Use of the precautions

● Please communicate with the supplier whether it is applicable; otherwise, damage to the battery and the circuit board.

● This circuit board cannot be used in series.

● When welding the battery lead, there must be no error or reverse connection. If it is indeed wrong, the board may be damaged and needs to be re-tested before use.

● When assembling, the protective plate should not directly contact the surface of the cell to avoid damage to the cell. The assembly shall be firm and reliable.

● Pay attention to the lead head, soldering iron, solder and other components do not touch the components on the circuit board, otherwise it may damage the circuit board.

● The use process should pay attention to anti-static, moisture-proof, waterproof, etc.

● Please follow the design parameters and use conditions during the use process, and shall not exceed the value in this specification, otherwise the protective plate may be damaged.

● After combining the battery pack and the protection panel, if there is no voltage output or no charging for the first time, please check whether the wiring is correct.

● When the total internal resistance value of the battery pack short circuit circuit is less than 40m Ω, the capacity of the battery pack exceeds 20%, the short circuit current exceeds 1500A, the inductance of the short circuit circuit is very large or the total length of the short circuit is very long, please test to determine whether this BMS can be used.