JKBMS Smart Active Balance BMS

JK-PB1A16S10P
JK-PB1A16S15P / JK-PB2A16S15P
JK-PB1A16S20P / JK-PB2A16S20P

Specification and operation manual

SPECIFICATION

Model	JK-PB2A16S-15P			
Version	V14.03			
Date	2023-9-13			
Parts list	No	Name	Model	Num
	1	BMS	JK-PB2A16S-15P	1
	2	LCD	LCD-3.2-RS485-V1.0	1
	3	Interface Board	JK-CN-Link-V1.0	1
	4	B+Cable	GB+-3.5mm-25cm-16AWG	1
	5	Screws	M6*10	4
	6	adapter cable	HY2.0-XH2.54-22AWG-30CM	1
	7	adapter cable	2XH2.54-22AWG-30CM	1
	8	adapter cable	IDC2.54mm-20P-30cm	1
	9	Trunk interface	WJ15EDGK-3.81-4P	1
	10	RJ45 Cable	CAT5E-8P-40cm	1
	11	Sampling cable	HY2.0-7P-22AWG-90CM	2
	12	Sampling cable	HY2.0-6P-22AWG-90CM	2
	13	LCD Adapter	GH1.25-6P-40CM	1
	14	Heating Adapter cable	HY2.0-5P-24AWG-15CM	1
JKBMS				
formulate：			examination：	
approval：			approval：	

功能 Function	Log storage	☑storage_ 10000___strip
	Charging current limited	10A
		Definition: Open when the charging current is greater than the charging protection current
	Balance current	☐0.4A ☐0.6A ☐1A ☑ 2A
	Max current	☐40A ☐60A ☐100A ☑ 150A☐ 200A
	LCD Choice	2.5Inch color LCD 3.5Inch color LCD 4.5Inch color LCD
	Dry contact	☐ No ☑ Yes
		Definition: Dry contact 1-PIN1 to PIN2: Normally open, closed in case of failure and protection; Dry contact 2-PIN3 to PIN4: Normally open, low power alarm closed
	Heating Function	Definition: when charging, start heating when the temperature of electric core is lower than-20°C and heating to-10°C Stop heating. (Temperature configurable)。
	Reverse connect protection	☑ No ☐ Yes
	Weak current switch	☐ No ☑ Yes
	Buzzer	☐ No ☑ Yes
	Positioning	☑ No □ Yes (Can be customized)
	Sampling socket	vertical
	Dial switch	4 Bit,For RS485 communication address selection
	LED light	☐ No ☑ALM ☑RUN ☑ON/OFF ☑ SOC6 pcs
	Current detection resistor	10pcs
	Cell Capacity	Configurable

	bar code	QR Code
communication	communication interface	☑ RS232 ☑ RS485 ☑ RS485 parallel ☑ CANBUS
	Upgrade method	☑RS232 ☑RS485
	Bluetooth	Through APP connect
通信协议 Communication protocol		RS485 Protocol （1）000 - 4G-GPS Remote module protocol V4.2 （2）001 -JK BMS RS485 Modbus V1.0 （3）002 - NIU U SERIES （4）003 -China tower shared battery cabinet V1.1 （5）004 - PACE_RS485 Modbus V1.3 （6）005 - PYLON low voltage Protocol RS485 V3.3 （7）006 - Growatt BMS RS485 Protocol 1xSxxP_ESS Rev2.01 (8) 007 - Voltronic Inverter and BMS 485 communication protocol 20200325 （9）008 – china tower shared battery cabinet V2.0 （10）009 -SRNE_LOW_Voltage_Protocol_RS485_V3.3 （11）010 - Protocol 10 CANBUS Protocol （1）000 - JK BMS CAN Protocol V2.0 （2）001 Deye Low-voltage hybrid inverter CAN communication protocol V1.0 （3）002 - PYLON-low-voltage-V1.2 （4）003 - Growatt BMS CAN-Bus-protocol -low-voltage Rev 05 （5）004 - Victron CANbus BMS protocol 20170717 （6）005 - SEPLOS BMS CAN Protocoll V1.0 （7）006 - Protocol 6 （8）007 – INVT BMS CANBUS Protocl V1.02 （9）008 - Protocol 8 （10）009 - Protocol 9 （11）010 - Protocol 10

Summary of File Changes

日期 Date	版本号 No	修订说明/Revision Description	制定人 Prepared by	核准人 Approved by

Catalog

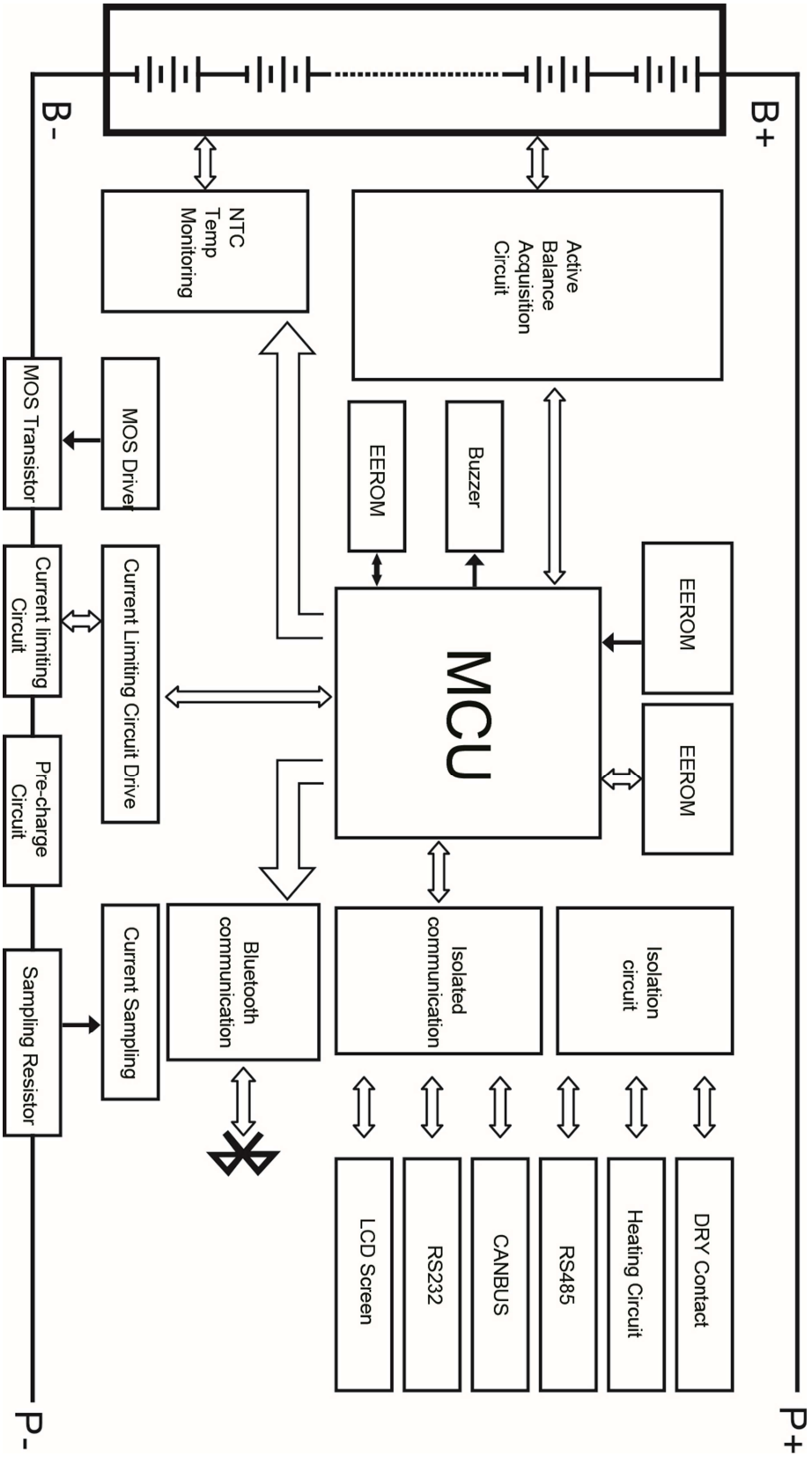
1、Overview

With the rapid growth of the renewable energy storage market, there is a growing demand for battery management systems. This product is a smart BMS for energy storage applications. It uses sophisticated detection techniques to achieve protection against overcharging, over discharge, and over current of the energy storage battery, ensuring safe and reliable operation of the energy storage system. At the same time, advanced active voltage equalisation is integrated, allowing the voltage of each battery cell to be monitored in real time, improving battery life through active balance management. This product provides an intelligent battery protection solution for a wide range of energy storage applications.

2、Function Characteristics

- Active Balance Function
- App Remote Operation
- Support PC Program
- Screen Display
- High Precision Voltage Acquisition(≤20mV)
- High Precision Current Acquisition(≤2%@FS)
- Isolated power circuit
- 4 NTC detection protection
- LED status indication
- OVP and OCP
- Low Power Consumption
- Support RS485\CAN\RS232
- Battery Capacity Estimation
- Precise Time Log Record
- Short circuit protection
- MOS Temperature Detection Protection

3、 Functional Block Diagram



4、Service Environmental Conditions

Test Project	Parameter	Unit
Work-temperature	-30~70	°C
Storage temperature	-30~70	°C
Work-humidity	10~80	%RH
Storage humidity	10~85	%RH
Power Supply	20~70	V
Working consumption	19mA@58V	
standby consumption	200uA@58V	

5 .Specification parameters

NO	Index items		Default Parameters	Whether settable	Note
1	Strings	Support Battery	Lifepo4/Li-ion/LTO	YES	All Parameters are Lifepo4 parameters
		Support Strings	16	YES	
2	OVP	Unit overcharge protection voltage	3600mV	YES	
		Unit overcharge protection recovery voltage	3550mV	YES	
3	OVDP	Unit under voltage protection voltage	2600mV	YES	
		Unit under voltage protection recovery voltage	2650mV	YES	
		unit under voltage automatic shutdown voltage	2500mV	YES	
4	Active Balance	Balance trigger differential voltage	10mV	YES	
		Balance starting working voltage	3000mV	YES	
		Max Balance Current	1A	YES	
5	Overall Overcharge Protection	Max Charging Current	150A	YES	
		Charging over current delay	2s	YES	
		Charging over current alarm cleared	60s	YES	
		Charging over current limiting current	10A	NO	
6	Overall over Discharge Protection	Max Discharging Current	150A	YES	
		Discharge over current delay	300s	YES	
		Discharge over current alarm cleared	60s	YES	
7	Short circuit protection	Short circuit protection current	550A	NO	
		Short circuit protection delay	30us	YES	
		Short circuit protection released	60s	YES	
8	Temperature Protection	Charging over temperature protection	70°C	YES	
		Charging over temperature recovery	60°C	YES	
		Discharge over temperature protection	70°C	YES	
		Discharge over temperature recovery	60°C	YES	
		Low temperature protection during charging	-20°C	YES	
		Low temperature recovery during charging	-10°C	YES	
		MOS Over Temperature Protection	100°C	YES	
		MOS over temperature recovery	80°C	YES	
		Battery alarm temperature	60°C	YES	
		Battery alarm recovery	50°C	YES	

6、 LED instruction

Led working status indication

Status	Normal/Alarm/Protect	ON/OFF	RUN	ALM	Battery indicator LED	Instructions
OFF	Normal	OFF	OFF	OFF	OFF OFF OFF OFF OFF OFF	
Balance	Normal	ON	ON	OFF	Based on battery level display	
Charge	Normal	ON	ON	OFF	Based on battery level display	
	Over current, over temperature, over voltage, charging failure	ON	ON	Blink	Based on battery level display	
Discharge	Normal	ON	ON	OFF	Based on battery level display	
	Over current, over temperature, over voltage, charging failure	ON	ON	Blink	Based on battery level display	
Other Alarms	Password Not Modified Short Circuited Temperature Abnormal	ON	ON	Blink	Based on battery level display	

Capacity indication

Status		Charging						Discharging					
Capacity indicator light		L6	L5	L4	L3	L2	L1	L6	L5	L4	L3	L2	L1
SOC(%)	0~16.6%	Off	Off	Off	Off	Off	On	Off	Off	Off	Off	Off	On
	16.6~33.2%	Off	Off	Off	Off	On	On	Off	Off	Off	Off	On	On
	33.2~49.8%	Off	Off	Off	On	On	On	Off	Off	Off	On	On	On
	49.8~66.4%	Off	Off	On	On	On	On	Off	Off	On	On	On	On
	66.4~83.0%	Off	On	On	On	On	On	Off	On	On	On	On	On
	83.0~100%	On	On	On	On	On	On	On	On	On	On	On	On

7、On-off instruction

It can be switched on or off by pressing the button. In the shutdown state, press the button to turn on the device. When turned on, press and hold the button for more than 3 seconds to turn off the device.

8、Communication specification

8.1、RS232

Bms can communicate with the upper computer through the RS232 interface, thereby monitoring various battery information, including battery voltage, current, temperature, status, and battery production information, with a default baud rate of 9600bps.

8.2、CANBUS

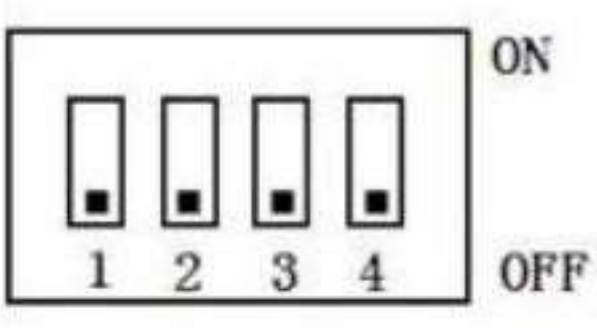
The default communication speed for CAN communication is 250k.

8.3、RS485

There are two RS485 communication interfaces, one of which outputs two interfaces in parallel for viewing battery pack information, with a default baud rate of 115200. By setting the dial switch to set the communication address, it is possible to poll and query the data of all battery packs, with an address setting range of 0-15.

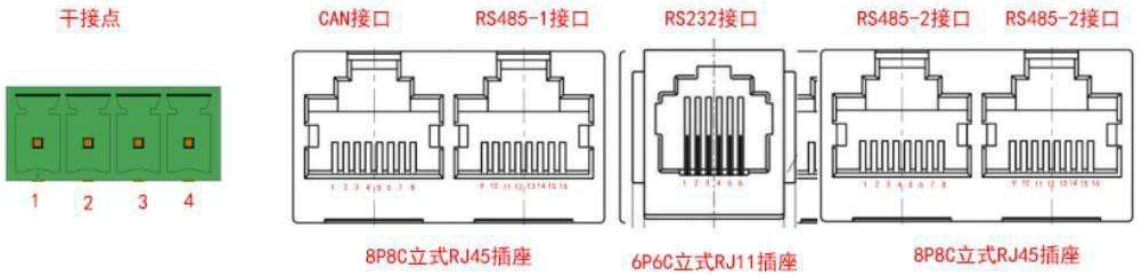
8.4、Dial switch settings

When multiple battery packs are used in parallel, the battery packs need to be set to different addresses through a dial switch for normal use. The following dial switch address table.



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

9、Interface definition



Definition of dry contact interface

Pin Num	Pin Definition	Num
1	COM1	S1 and COM1 conduct under alarm conditions
2	S1	
3	COM2	S2 and COM2 conduct under low battery conditions
4	S2	

CAN and RS485-1 Interface definition

RS485- adopts 8P8C vertical RJ45 socket		CANBUS- adopts 8P8C vertical RJ45 socket	
Pin Num	Pin Definition	Pin Num	Pin Definition
1、8	RS485- B1	9、10、11、14、16	NC
2、7	RS485-A1	12	CANL
3、6	GND	13	CANH
4、5	NC	15	GND

RS232 Interface definition

RS232 adopts 6P6C vertical RJ11 socket		
Pin Number	Pin Definition	Note
1、2、6	NC	
3	RS232_TX	
4	RS232_RX	
5	GND	

RS485-2 Parallel interface definition

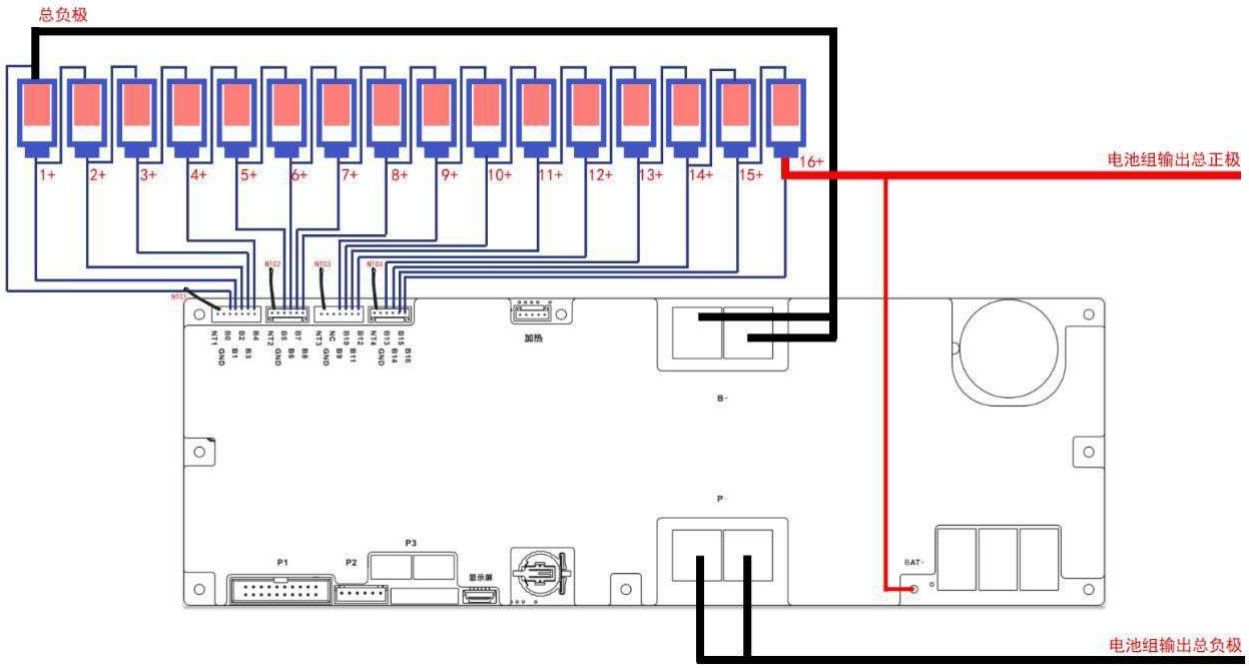
RS485- adopts 8P8C vertical RJ45 socket		RS485- adopts 8P8C vertical RJ45 socket	
Pin Num	Pin Definition	Pin Num	Pin Definition
1、8	RS485- B2	9、16	RS485-B2
2、7	RS485-A2	10、15	RS485-A2
3、6	GND	11、14	GND
4、5	NC	12、13	NC

Battery interface definition

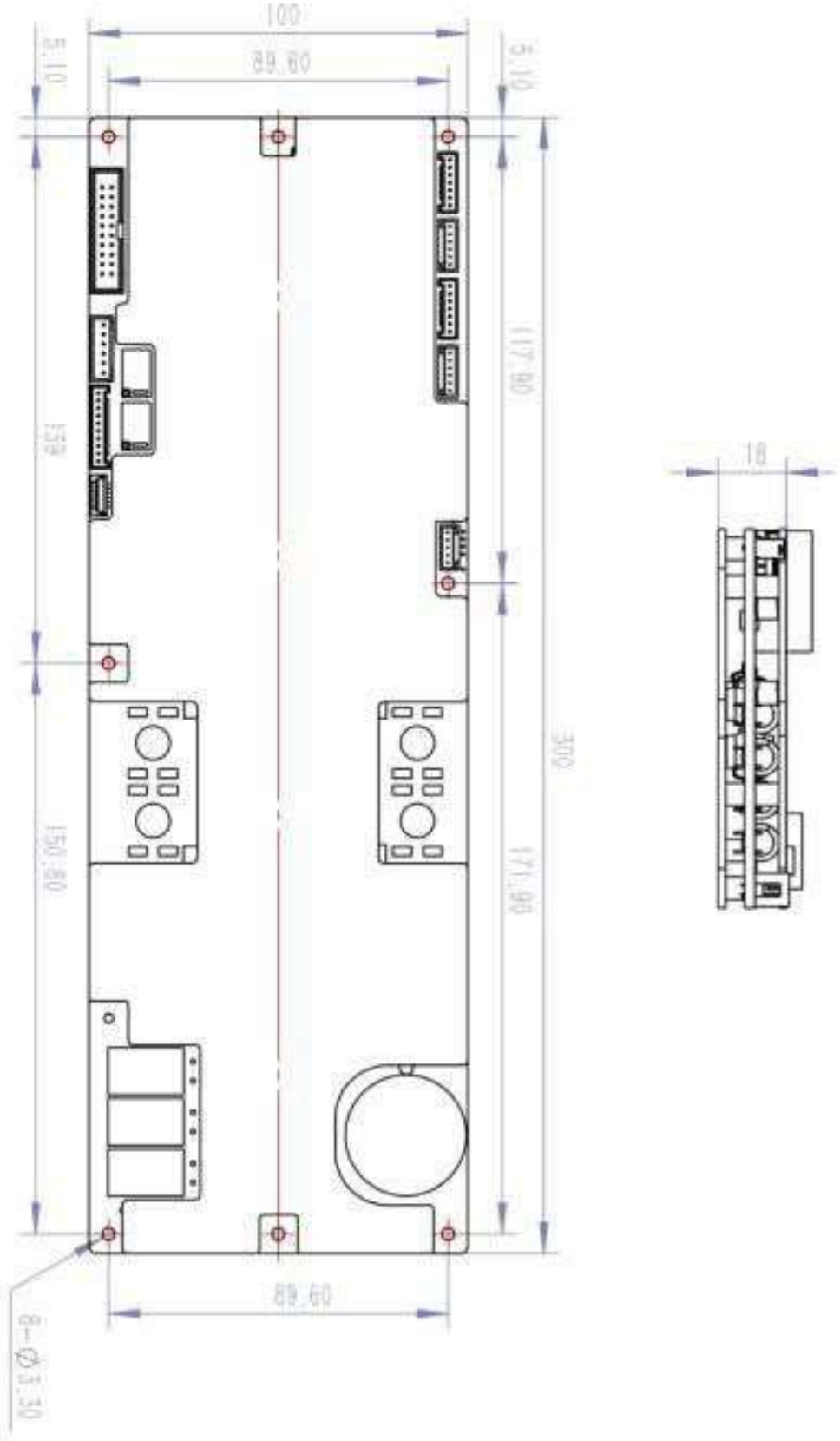
Interface	Definition Description			
BAT+	It is connected to the total positive pole of the battery cells PACK to supply power to the BMS board.			
B-	Connect to battery cells PACK total negative pole			
P-	The battery PACK negative, and it is also the charge and discharge negative, charging and discharging are the same port			
Battery cells and temperature	NT1	Connect NTC1 Temperature probe	NT3	Connect NTC3 Temperature probe
	GND	Connect NTC1 Temperature probe	GND	Connect NTC3 Temperature probe
	B0	Battery cells first negative pole	NC	NC
	B1	Battery cells first positive pole	B9	Battery cells ninth positive pole
	B2	Battery cells second positive pole	B10	Battery cells tenth positive pole
	B3	Battery cells third positive pole	B11	Battery cells eleventh positive pole
	B4	Battery cells fourth positive pole	B12	Battery cells twelfth positive pole
	NTC2	Connect NTC2 Temp probe	B13	Battery cells thirteenth positive pole
	GND	Connect NTC2 Temp probe	B14	Battery cells fourteenth positive pole
	B5	Battery cells fifth positive pole	B15	Battery cells fifteenth positive pole
	B6	Battery cells sixth positive pole	B16	Battery cells sixteenth positive pole
	B7	Battery cells seventh positive pole		
	B8	Battery cells eighth positive pole		

10、**Wiring diagram**

There are strict sequence requirements for the power-on of the protection plate. First weld B- , P-,B +, P +, and sequentially plug in the battery sampling line connector from low to high. After power-on, press the key to activate it. Load or charger can only be added after all connecting wires are installed. When removing, unplug the charger or load First, remove the battery sampling line connector in sequence from high to low, and finally remove B +, P +,B-, P-



11、size/mm



12.Others