Technical Index	Product Specifications				
	JK-PB1A16S10P	JK-PB1A16S15P	JK-PB2A16S15P	JK-PB1A16S20P	JK-PB2A16S20P
Number of Battery Strings (Li-ion)	7~16				
Number of Battery Strings (Lifepo4)	8~16				
Number of Battery Strings (LTO)	14				
Balance Method	Active Balance				
Balance Current	1A		2A	1A	2A
Conductive Resistance in Main Circuit	1.00mΩ	0.65mΩ		0.47mΩ	
Continuous Discharge Current	100A	150A		200A	
Maximum Discharge Current(MAX 2min)	200A	300A		350A	
Over Charge Protection Current(ADJ)	10A-100A (Adjustable)	10A-150A (Adjustable)		10A-200A (Adjustable)	
Other Interfaces (Default)	RS232/RS485/CAN				
Display interface	YES				
Wiring Method	Common				
Individual voltage range	1-5V				
Voltage acquisition accuracy	±5mV				
Overcharge protection voltage	1.2V~4.35V (Adjustable)				
Overcharge release voltage	1.2V~4.35V (Adjustable)				
Overcurrent release time	2~120S (Adjustable)				
Overdischarge protection voltage	1.2V~4.35V (Adjustable)				
Overdischarge recovery voltage	1.2V~4.35V (Adjustable)				
Number of battery temperature probes	4个				
Temperature protection	YES				
Short circuit protection	YES				
Coulometer	YES				
UPGRADE	YES				
Operation, alarm, and power indication	YES				
Bluetooth function	Supports Android, Apple, Harmony				
Parallel charging current limiting	10A				
Address dial switch	4 digits				
DRY CONTACT	2 groups				

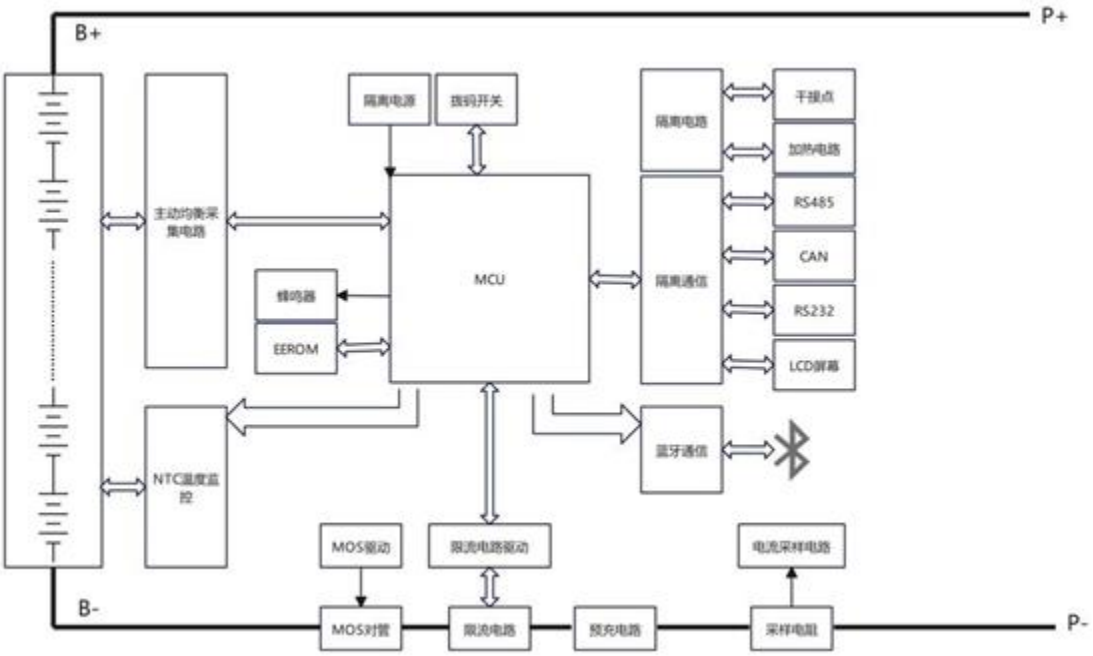
1、Overview

With the rapid growth of the renewable energy storage market, the demand for battery management systems is increasing. This product is an intelligent lithium battery protection board designed for energy storage applications. It adopts precise detection technology to realize protection against overcharge, over-discharge, over-current and other conditions of the energy storage batteries, ensuring safe and reliable operation of the energy storage system. It also integrates advanced active voltage balancing to monitor the voltage of each battery cell in real-time and improve battery life through active balancing management. The product provides intelligent battery protection solutions for a wide range of energy storage applications.

2、Features

- Active Balancing　　LED Status indicators
- APP remote operation Overvoltage/current protection
- PC host computer operation　　Information screen display
- Support RS485\CAN\RS232 communication
- High-precision voltage sampling　　capacity estimation
- High precision current sampling　　Precise time log recording
- Isolated power supply circuit　　Short circuit protection
- 4-channel temperature detection and protection　　MOS temperature detection and protection

3、Function Block Diagram



4、Operating Conditions

Test Item	Parameter	Unit
Operating Temperature	-30~70	°C
Storage Temperature	-30~70	°C
Operating Humidity	10~80	%RH
Storage Humidity	10~85	%RH
Supply Voltage	20~70	V
Operating Power Consumption	19mA@58V	
Standby Power Consumption	200uA@58V	

5、Specification

No.	Item		Default Parameters	Configurable	Remarks
1	Cell Number	Support Battery Type	Iron Lithium, Ternary Lithium, Lithium Titanate	Configurable	All parameters are for iron lithium
		Supported Cell Number	16	Configurable	
		Balancing Trigger Voltage Difference	10mV	Configurable	
2	Cell Overcharge Protection	Overcharge Protection Voltage	3600mV	Configurable	
		Overcharge Recovery Voltage	3550mV	Configurable	
3	Cell Undervoltage Protection	Undervoltage Protection Voltage	2600mV	Configurable	
		Undervoltage Recovery Voltage	2650mV	Configurable	
		Auto-Shutdown Undervoltage	2500mV	Configurable	
4	Active Balancing	Balancing Trigger Voltage Difference	10mV	Configurable	
		Balancing Start Voltage	3000mV	Configurable	
		Max Balancing Current	1A	Configurable	
		Max Charge Current	25A	Configurable	

5	Total Overcharge Protection	Charge Overcurrent Delay	2s	Configurable	
		Charge Overcurrent Release	60s	Configurable	
		Charge Overcurrent Limit	10A	Not Configurable	
6	Total Over-discharge Protection	Max Discharge Current	150A	Configurable	
		Discharge Overcurrent Delay	300s	Configurable	
		Discharge Overcurrent Release	60s	Configurable	
7	Short Circuit Protection	Short Circuit Protection Current	550A	Not Configurable	
		Short Circuit Protection Delay	30us	Configurable	
		Short Circuit Protection Release	60s	Configurable	
8	Temperature Protection	Charge Over Temperature Protection	70°C	Configurable	
		Charge Over Temperature Recovery	60°C	Configurable	
		Discharge Over Temperature Protection	70°C	Configurable	
		Discharge Over Temperature Recovery	60°C	Configurable	
		Charge Low Temperature Protection	-20°C	Configurable	

		Charge Low-Temperature Recovery	-10°C	Configurable	
		MOS Over Temperature Protection	100°C	Configurable	
		MOS Over Temperature Recovery	80°C	Configurable	
		Battery Warning Temperature	60°C	Configurable	
		Battery Warning Recovery	50°C	Configurable	

6、LED indicators

Led status indicators

Status	Normal/Warning/Protection	**ON/OFF**	**RUN**	**ALM**	SOC Indicators **LED**						Indicators
Power Off	Normal	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
Balancing	Normal	ON	ON	OFF	Per SOC Per SOC						
Charging	Normal	ON	ON	OFF	Per SOC Per SOC						
	Overcurrent/Over Temp/ Overvoltage/charge Fail	ON	ON	Blinking	Per SOC Per SOC						
Discharging	Normal	ON	ON	OFF	Per SOC Per SOC						
	Overcurrent/Over Temp/ Overvoltage/discharge Fail	ON	ON	Blinking	Per SOC Per SOC						

Other Warnings	Unmodified Password/Short Circuit/Abnormal Temp	ON	ON	Blinking	Per SOC Per SOC						

SOC indicators

Status		Charging						Discharging					
SOC LED		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、Power On/Off

Press the button to turn on/off. Press the button when powered off to turn on. Press and hold the button for 3s when powered on to turn off.

8、Communication

、RS232 communication

The BMS can communicate with host computer via RS232 interface to monitor battery information including voltage, current, temperature, status and production info. Default baud rate is 9600bps。

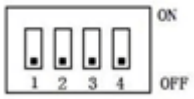
、CAN communication

Default CAN communication baud rate is 250k

、RS485 communication

There are two RS485 communication interfaces. One is paralleled out to two interfaces for monitoring battery group info. Default baud rate is 115200. The communication address can be set via DIP switch with address range 0~15 to poll data from all battery packs.

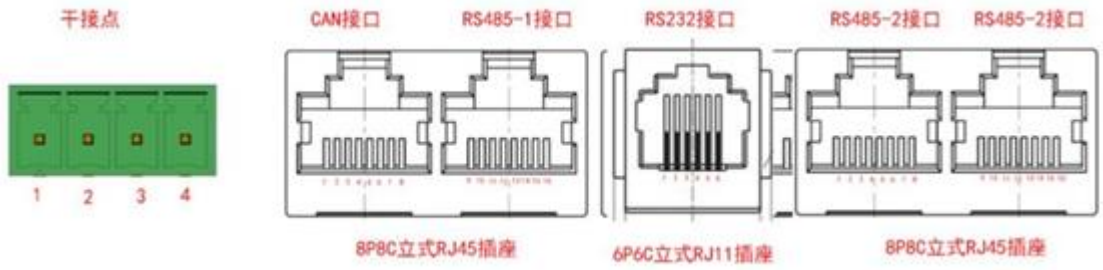
8、4 DIP Switch Setting



When multiple battery packs are connected in parallel, the address of each pack needs to be set differently via DIP switch for proper operation. The DIP switch address table is shown below.

Address	DIP Switch Positions			
	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



Dry Contact Interface

Pin No.	Pin Definition	Notes
1	COM1	Closed between S1 and COM1 for alarms
2	S1	
3	COM2	Closed between S2 and COM2 for low voltage alarm
4	S2	

CAN and RS485-1 interface

RS485- RJ45 Connector		CAN- RJ45 Connector	
Pin No.	Pin Definition	Pin No.	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

RS232- RJ11 Connector		
Pin No.	Pin Definition	Notes
1、2、6	NC	
3	RS232_TX	
4	RS232_RX	
5	GND	

RS485-2 parallel interface

RS485- RJ45 Connector		RS485- RJ45 Connector	
Pin No.	Pin Definition	Pin No.	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

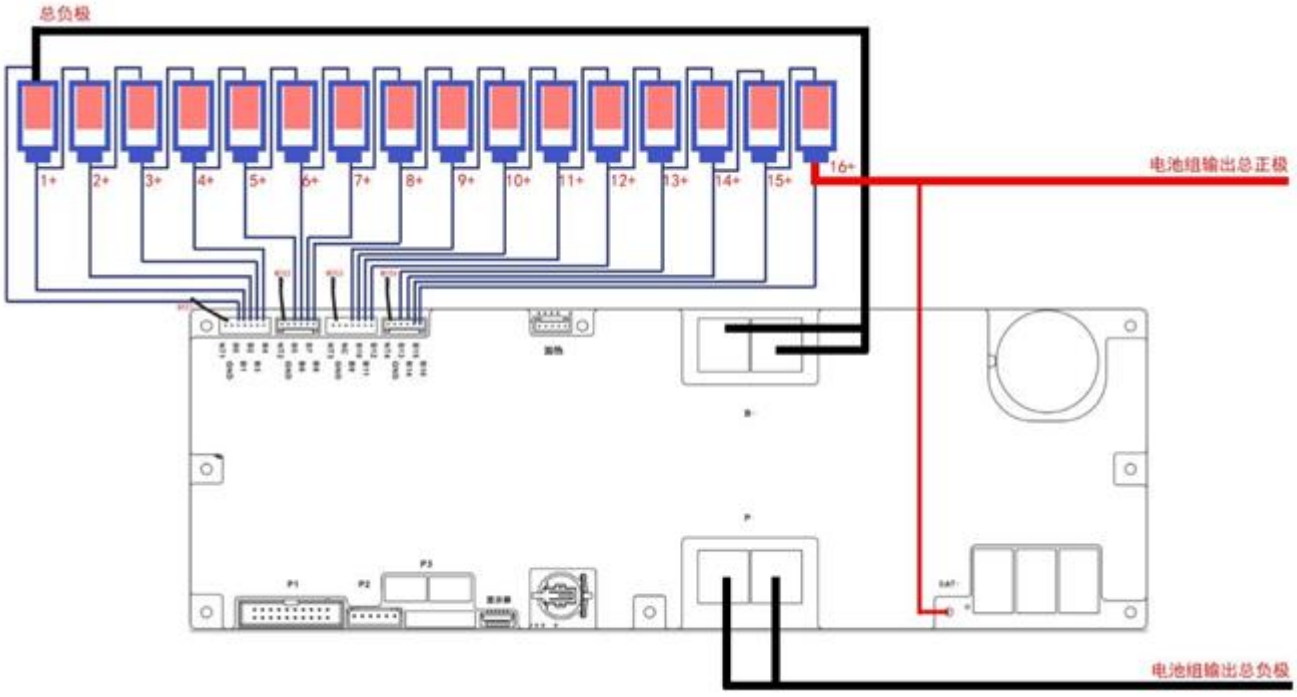
Battery interface

Interface	Notes			
BAT+	Connects to total positive of battery pack, power supply to BMS			
B-	Connects to total negative of battery pack			
P-	Battery pack negative, also charge/discharge negative, combined charge/discharge port			
Cell and Temperature	NT1	Connect to NTC1 temperature sensor	NT3	Connect to NTC3 temperature sensor
	GND	Connect to NTC1 temperature sensor	GND	Connect to NTC3 temperature sensor
	B0	Cell 1 negative	NC	NC
	B1	Cell 1 positive	B9	Cell 9 positive
	B2	Cell 2 positive	B10	Cell 10 positive
	B3	Cell 3 positive	B11	Cell 11 positive
	B4	Cell 4 positive	B12	Cell 12 positive
	NTC2	Connect to NTC2	B13	Cell 13 positive

		temperature sensor		
	GND	Connect to NTC2 temperature sensor	B14	Cell 14 positive
	B5	Cell 5 positive	B15	Cell 15 positive
	B6	Cell 6 positive	B16	Cell 16 positive
	B7	Cell 7 positive		
	B8	Cell 8 positive		

Wiring Diagram

The protection board has strict power-on sequence requirements. Connect in order from low to high: B-, P-, B+, P+. After powering up, press button to activate. Connect all wires before connecting load or charger. To disconnect, first remove load and charger. Then disconnect cell sampling connectors in order from high to low, and finally remove B+, P+, B-, and P-.



100
89.60
5.10
5.10
117.90
139
300
150.80
171.90
89.60
8-Ø3.30

18