

PRODUCT MANUAL

High-Voltage Cascaded BMS

Applicable to high-voltage cascaded BMS products

Relay current control

	Product Overview	3
	Product Display	4
2.1	(Dimension drawing)	4
	Working Principle Block Diagram	5
	(Core Selling Points of the Product)	5
4.1	Core Features	5
4.2	Hardware	6
4.3	Software/APP	6
	Main Product Features	7
	Operation Modes	7
	Basic Functions	7
7.1	Main Board Support	7
7.2	Slave Support	8
	Protection Functions	9
8.1	Overcurrent Charging Protection	9
8.2	Overcurrent Discharge Protection	9
8.3	Overvoltage Charging Protection	9
8.4	Undervoltage Discharge Protection	9
8.5	Overload Protection and Temperature Protection	10
8.6	Short Circuit Protection	10
	customize Features	10
8.1 CAN	CAN Communication	10
8.2 RS485	RS485 Communication	10
8.3 TTL	TTL Communication	11
8.4	External Inverter Communication Box	11
	Overview of the Product's Core Functions	11
	Technical parameters)	14
	Interface Pin Description	17
12.1	MC1 Main Control MC1	17
12.2	MC2 Main Control MC2	17
12.3	MC3 Main Control MC3	18
12.4	MC4 Main Control MC4	19
12.5	MC5 Main Control MC5	19
12.6	SC1 Slave Control SC1	20
12.7	SC2/SC3 Slave Control SC2/SC3	20
	Wiring Instructions	21
13.1	Split-port connection method (distinguishing charging and discharging relays)	21
13.2	Common-port connection method (uses a single interface for both charging and discharging)	23
13.3	5-16S Connection method for the battery cables of Host and Slave Units 5 16S ...	25
	Usage Notes	27
	Common Faults and Resolution Methods	28

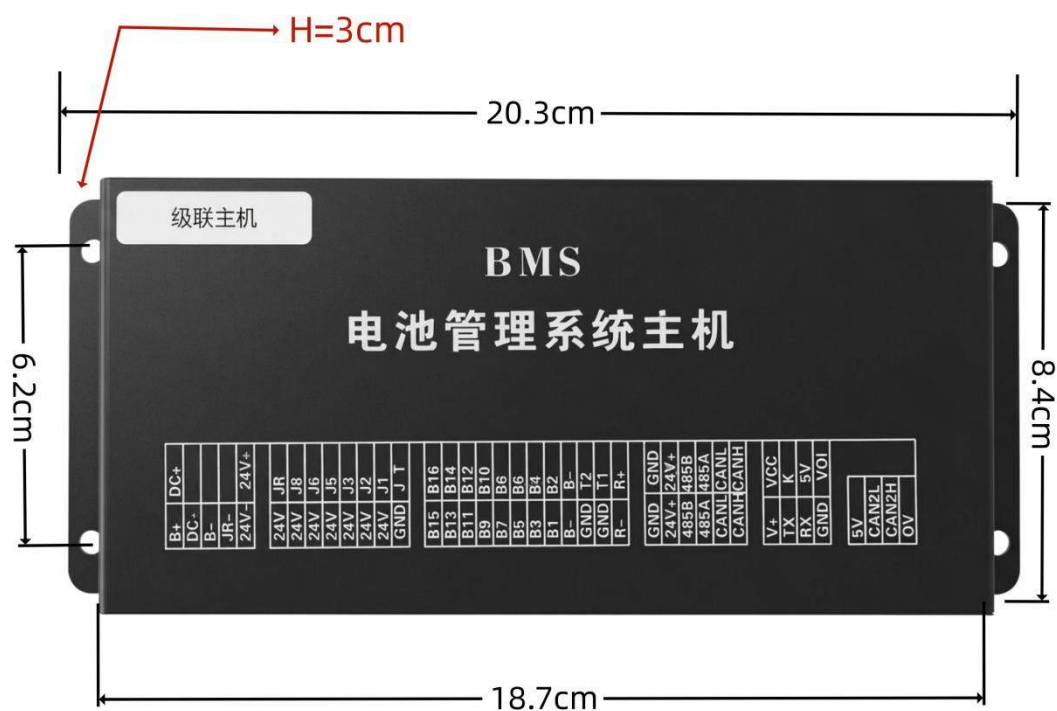
Product Overview

Our company specializes in the research, development, and sales of intelligent Battery Management Systems (BMS). This product features a modular architecture that integrates a master controller (MC) with slave controllers (SC), supporting a wide range of lithium battery packs with 5 to 256 cells. It is specifically designed for applications requiring separate data acquisition and control, including high-voltage energy storage, residential energy storage, commercial/industrial energy storage systems, and electric vehicle Energy Storage Systems (ESS).

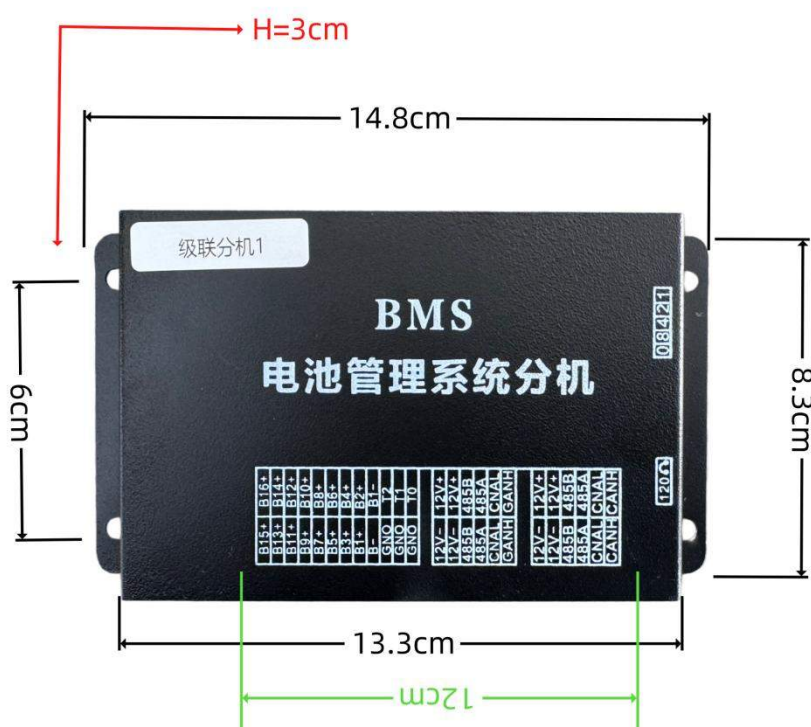
The MC (Main Control) unit integrates core functions including DC/AC detection, high-voltage monitoring, inverter protocol integration, multi-protocol communication (CAN/485/TTL), electric heating, relay control, Bluetooth app interaction, and sleep/wake functionality; the slave unit specializes in high-precision individual voltage and temperature measurement as well as battery balancing management.

Product Display

2.1 (Dimension drawing)

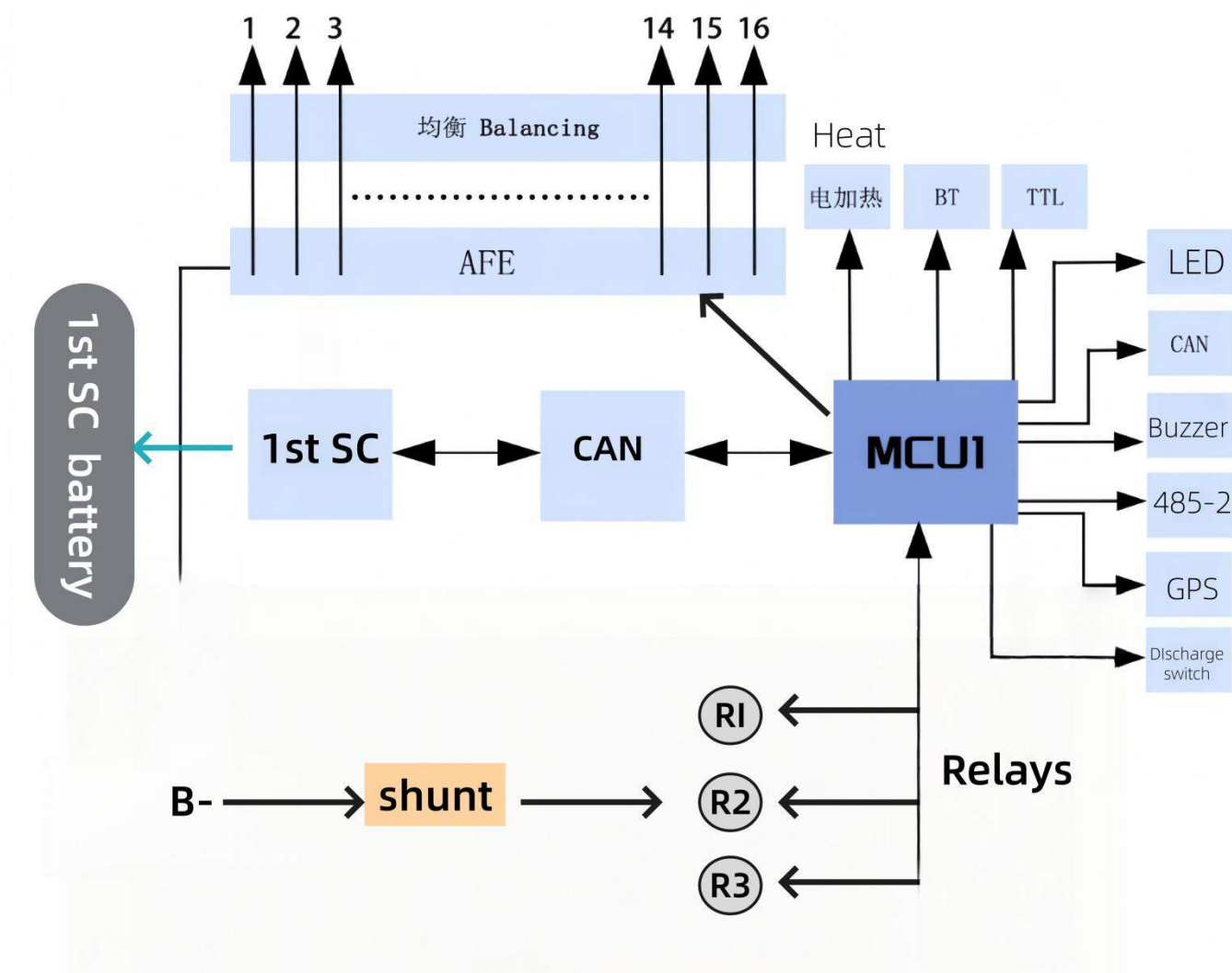


Physical dimensions of the main unit



Physical dimensions of the Slave unit

Working Principle Block Diagram



(Core Selling Points of the Product)

4.1 Core Features

NO.			Content
1	BMS		A stable, efficient, and meticulously crafted benchmark BMS system
2	1000V	900A	Supports extensive detection across a wide range of voltages up to approximately 1000 V and currents up to 900 A
3			With a customize LED, users can monitor battery status, configure battery settings, and manage basic charge/discharge functions
4			Can be paired with an inverter communication box

	(compatible with Pylontech and Growatt)
5	Comprehensive remote technical support is available

4.2 Hardware

NO.		Content
1		High-Reliability Connectors
2	0.3A	Efficient Balancing Control with a large balanced current (0.3 A)
3		High Sensitivity Short-Circuit Protection
4		High-Precision Single-Cell Voltage Detection
5		Balancing and Sampling Time Division
6		Comprehensive Support for Preventing Overcharging
7		With a wide range of models and diverse functions, it is suitable for various scenarios.
8		System downtime does not affect the battery pack's normal input and output
9	GPS/4G	Compatible with GPS/4G Modules for Remote Communication

4.3 Software/APP

NO.		Content
1	- DO DI	Customization Support for Special Requirements - DO and DI Customization
2	485 CAN TTL	Customization of 485, CAN, and TTL Communication Protocols
3		The advanced standby and deep sleep modes effectively prevent battery over-discharge

Main Product Features

NO.	Content		
1	5-16		Each management module supports voltage acquisition for 5 to 16 series-connected battery cells. Serial battery cell voltage acquisition
2	LED	APP & Windows	Centralized monitoring via host computer (via Bluetooth app, Windows-based host system, and LED display modification& management system)

Operation Modes

NO.	Modes	Remarks
1	Operating Mode	BMS All BMS functions are enabled and operating normally.
2	Standby Mode	MCU At this point, all functions of the MCU except for normal data acquisition and equalization are disabled
3	Shutdown State	BMS BMS shuts down, and all functions become unavailable

Basic Functions

7.1 Main Board Support

NO.	Modes	Remarks
1	Bluetooth Function	APP Allows viewing parameters via the app, setting different cell types, battery series, battery capacity, and displaying protection information, fault records, etc.
2	RS485/LED	RS485 4.3 LED Through RS485 signals, key battery information can be displayed on a 4.3-inch LED screen, while enabling basic management functions such as charging and discharging.
3		MOS

	Temperature Sampling	Samples surface temperature of cells, ambient temperature, MOSFET temperature, and balance circuit temperature.
4	SOC SOC Calculation	Calculates remaining battery capacity information, providing a more intuitive view of the battery pack's operational status.
5	CAN CAN Communication Collection	CAN 15 The slave devices transmit data in real-time to the master device via CAN, uploading status information such as battery capacity, and can support up to 15 slave devices.
6	Total Voltage Detection	Can detect if pre-charging is complete and monitor the battery's total voltage.
7	Buzzer warning	The system emits an alarm when detecting abnormal signals (e.g., low capacity, wiring errors).
8	Electric Heating Function	BMS The BMS utilizes its electric heating function to enable the battery to rapidly return to its normal state under low-temperature conditions.
9	/ / Charging/Discharging Relay Control	BMS / / The BMS manages the battery charging/discharging process through charging/dischARGE relays, preventing overcharging or overdischarging and ensuring scientific control of both the battery and the load.
10	Relay Control and Detection	From closing to opening the discharge switch, a pre-charging control and detection process is first performed. The pre-charging of the protection board is achieved by controlling a rapid switch.
11	Battery Balancing	300 mA/channel Passive resistance-based energy balancing effectively maintains battery performance and improves consistency. Active balancing can be triggered when specified conditions are met by configuring parameters. The balancing current is adjustable, up to 300 mA per channel.
12	High Voltage Detection	Measure the output voltage of the power battery to determine its operating status.

7.2 Slave Support

NO.	Modes	Remarks
2	Temperature Collection	2 Sample the surface temperature of the battery cell, ambient temperature, and balance circuit temperature. Each slave device can connect to two temperature sensors.

3	Single Cell Voltage Collection	15	5-16	Supports real-time voltage sampling for 15 slave battery groups (each group containing 5–16 strings of individual cells).
4	Battery Balancing	mA/channel	300	Passive resistance-based energy balancing effectively maintains battery performance and improves consistency. Active balancing can be triggered when specified conditions are met by configuring parameters. The balancing current is adjustable, up to 300 mA per channel.

Protection Functions

8.1 Overcurrent Charging Protection

When the charging current exceeds the set maximum value, turn off the corresponding charging relay to provide protection.

8.2 Overcurrent Discharge Protection

During discharge, when the current exceeds the preset maximum discharge current value, close the corresponding discharge relay and precharge relay to achieve protection.

8.3 Overvoltage Charging Protection

When the total voltage or individual cell voltage exceeds the set maximum value, close the corresponding charging relay to provide protection.

8.4 Undervoltage Discharge Protection

When the total voltage or individual cell voltage falls below the preset minimum value, close the corresponding discharge relay to provide protection.

8.5 Overload Protection and Temperature Protection

/

When the temperature of components such as the battery pack or relay falls below or exceeds the preset range, the corresponding charging/discharging relay is activated to interrupt charging and discharging operations for protection purposes.

8.6 Short Circuit Protection

BMS

During discharge, if a short circuit occurs, the BMS will trip the discharge relay to provide protection.

customize Features

8.1 CAN CAN Communication

CAN2.0A/B / / /

CAN2.0A/B communication, used for communication with external devices such as vehicle controllers, motor controllers, instruments, and chargers.

8.2 RS485 RS485 Communication

RS485 2500V 19200

Supports RS485 communication with 2500V isolation. Standard baud rate is 19200, and it supports customizing the baud rate. The protocol can be customized by the customer.

8.3 TTL TTL Communication

TTL	2500V	19200
(485/TTL	CAN	485
		)

Supports TTL communication with 2500V isolation. Standard baud rate is 19200, and the protocol can be customized by the customer. External power supply is required, and it provides isolation power supply. (485/TTL can only be chosen one; CAN and 485 share the same isolation power supply)

8.4 External Inverter Communication Box

GPS	485	/USB	CAN
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It can be paired with our external communication box module (capable of expanding interfaces such as GPS, 485 display/USB, or CAN interfaces for Pylontech and Growatt inverters), enabling remote monitoring, real-time battery pack status tracking, parameter adjustment, and firmware upgrades.

Overview of the Product's Core Functions

items		Explanation		
Voltage Protection Instructions				
overcharge protection	overcharge protection voltage	4.25V/ Ternary	3.65V/ Lithium iron phosphate	2.8V Lithium titanate 2.8V
	Overcharge delay time	1.0S	Software control, configurable	
	Overcharge release voltage	4.15V/ Ternary	3.5V/ Lithium iron phosphate	2.7V Lithium titanate 2.7V
	Overcharge protection is disabled	The voltage of the single unit drops to the recovery point and		

items			Explanation		
automatically recovers					
discharge protection	over discharge	discharge voltage	over protection	2.75V/ Ternary 2.75V / Lithium	2.3V/ iron phosphate 2.3V / Lithium titanate 1.6V
		Overcharge delay time	protection	1.0S	configurable
		discharge release voltage	over protection	3.0V/ NMC-3.0V/2.9V	2.9V/ LiFePO4 / 1.8V LiTiO2
		Overcharge recovery method	protection	connect to charger	
	It can be set that after over-discharge protection, the voltage of the cell will enter low power mode when the voltage is lower than the discharge failure pressure.				
/ overcharge /over-discharge protection/Released	overcharge	overcharge voltage	overall protection	*	charge series*overcharge protection voltage
		Total Protection	Overcharge Release Voltage	* release voltage	Serial number * Overcharge protection
	Overall protection is lifted.		overcharge recovery point and automatically recovers	The total voltage drops to the	
Overall over-discharge protection/released	over discharge	over discharge voltage	overall protection	*	Number of series * Over-discharge protection
		over discharge release voltage	protection	* release voltage	Series number * Over-discharge protection
	Release charge		connect to charger		
Current Protection Instructions					
overcurrent protection			current value		recovery delay
			duration		
			100-900A	5S	5S

items		Explanation	
protection released..	Discharge overcurrent	Auto-unlock, auto-recover after delay	
	overcurrent protection	value	current duration recovery delay
overcurrent protection	100A-900A	120S	10S
peak overcurrent protection	Setting the current size and duration based on the relay current specifications		
Discharge overcurrent protection released	Auto-unlock, auto-recover after delay		
Short-circuit protection instructions			
delay time	Short-circuit protection	200/600/800μS	
short circuit protection release mode	Disconnect the load. Given the short-circuit current exceeding 1,000A, customers are advised against performing short-circuit tests to avoid hazards.		
Temperature Protection Instructions			
Relay high-temperature protection	MOS temperature	MOS high temperature protection	/ / / Go to Software>
	MOS release temperature	MOS high temperature protection	
Cell temperature protection	Charging low-temperature protection		-39 C configurable
	for charging	Thermal protection release temperature	-35 C configurable
	Charging high-temperature protection		65 C configurable
	for charging	Thermal protection release temperature	55 C configurable
	Discharge low-temperature protection		-39°C configurable
	Thermal protection release temperature		-35°C configurable

items		Explanation	
for charging			
Discharge high-temperature protection		65°C	configurable
Discharge high-temperature protection		55°C	configurable
Equilibrium Function Description			
equilibrium function	turn-on voltage	balanced 3.9V/ 3.3V Ternary 3.9V / Lithium iron phosphate 3.3V,	
	differential opening	balanced pressure Settings> Equalization Settings to adjust the software settings	Go to Software>
	current	equalizing configurable30-300mA	
	internal resistance explanation	internal resistance of discharge circuit	<40 m Ω
Other features			
battery warning	Low SOC 10% alarm during charging	SOC <10% (adjustable), no software	Set via
capacity setting	Full	Set according to the actual battery capacity	Set via software

Technical parameters)

NO.	Function	Content	Remarks
1	Built-in Bluetooth	Supports Android devices	BMS Connects via Bluetooth to view parameters and configure BMS settings
2	Connect your own host computer	Supports Chinese & English desktop computers	RS485/USB BMS , Can connect to RS485/USB to view parameters, set BMS parameters, and upgrade firmware.
3	Detectable Cell Count	5-16 *16	/APP/LED Modify the number of battery strings on both the master and slave units using a host computer, app, or LED display.
4	Supported Cell Types	Lithium-ion, lithium iron phosphate, lithium titanium	Connects via Bluetooth to configure the number of cells
5	Power Supply	The motherboard is powered by a	80-400V DC /200-1200V DC Input range: 80–400 V DC or 200–1200 V DC; automatically switches to

		separate wiring connection.		low-power mode	
6	Single Cell Voltage Detection	0-5V 0-5V,		< 20mV error within the entire working range < 20mV, typical error < 10mV 1mV;Resolution: 1mV	<10mV
7	Single Cell Voltage Dropout Detection	Supported			Supports single-unit voltage dropout detection and total series count detection for individual management units
8	Balancing Function	300mA Maximum 300mA balancing	passive	Active balancing can be achieved by setting parameters based on conditions	
9	Temperature Detection	-40 ~ 125 °C MOS 1 built-in MOS channel and one built-in equalization channel, with support for two external battery channels and two relay temperature detection channels.	1	2	2 The host unit features one
10	Total Voltage Detection	0-1000V Detection range 0-1000V		100V	A single management unit supports voltage detection up to 100 V.
11	Current Detection	250 ms, Sampling frequency less than 250 ms accuracy of 5%	5%	-300A ~ 300A-75MV	Shunt is standard,-300A to 300A at 75 MV The remaining specifications of the diverters can be customized individually.
12	SOC Estimation Accuracy	SOC < 5% Error < 5% (operational conditions)			Bluetooth connectivity for setting cell type (adaptive change in single-cell protection voltage)
13	AH Total Cycle AH	Accumulated value, half of the charging and discharging values			
14	Short Circuit Protection	Supported (adjustable)		Can be configured	
15	Fault Records	400 Supported (400 cycle records)		APP View system logs via Bluetooth APP& PC Host	
16	Operating Power Consumption	< 100uA <100 μA (no communication, in sleep mode)		< 20mA <20 mA (in standby mode)	
17	Operating Temperature	-20-70°C		Operating Humidity	5% ~ 90%RH
18	Storage Temperature	-40-85°C		Storage Humidity	0-90%RH
19	1Weight-1	< 400g		< 400g	
20	2Weight-2	< 400g		< 400g	
21	485 *1 485 Interface	standard configuration	1	/	1 channel Supports host-based management/screen display
22	CAN CAN Interface	standard configuration	1	/	1 channel, Use of master-slave communication
23	TTL TTL Interface	standard configuration	1	GPS/	1 channel, Supports GPS/inverter communication box
24	relay control	/ /	1A		The precharge/discharge/charge relay can control a current of 1 A.
26	Accessory Package	1 Complete wiring kit	/		The communication lines between the master and slave devices are configured based on the number of slave

				boards.				
27	4.3	LED	standard configuration	Monitor				
	4.3-inch	LED		battery details, modify serial numbers, and enable/disable charging/discharging				
	touchscreen							

Interface Pin Description

12.1 MC1 Main Control MC1

		Pin		
mold	Interface Name	Pin Foot	ID label	Defined declaration
Main Control	MC1			
		1	12V-	12V Negative terminal of the 12V DC power supply
		2	12V+	12V Positive terminal of the 12V DC power supply
		3	The remaining needle angles have no connecting wires.	

12.2 MC2 Main Control MC2

		Pin			
mold	Interface Name	Pin Foot	ID label	Defined declaration	
Main Control	MC2				
		1	GND	12V	Positive terminal of the 12V DC power supply
		2	JT	12V	Negative terminal of the 12V DC power supply
		3	12V	Discharge relay coil signal wire	
		4	J1		
		5	12V	Precharge relay coil signal wire	
		6	J2		
		7	12V	Charge relay coil signal wire	

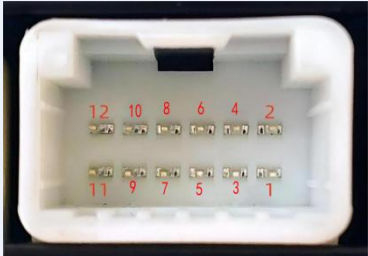
8	J3	
9	12V	Secondary protection relay coil signal line
10	J4	
11	12V	
12	J5	/
13	12V	/
14	J6	/
15	12V	Custom Heating Function
16	JR	

12.3 MC3 Main Control MC3

		Pin			
mold	Interface Name	Pin Foot	ID label	Defined declaration	
Main Control	MC3				
		1	R-	Shunt signal input (near the negative terminal of the battery)	
		2	R+	Shunt signal input (The end that is relatively far from the negative electrode of the battery)	
		3	GND	1	Temperature Monitoring Cable for Battery No.1
		4	T1		
		5	GND	2	Temperature Monitoring Cable for Battery No.2
		6	T2		
		7	B-	1	Shunt signal input Parallel to the wiring of Pin 1 (near the negative terminal of the battery)
		8	B-	5-16S	Total negative electrode of the battery pack (5-16S) managed by the Main Control
		9-24	BX+	5-16S	Positive terminals of the cells connected in series within the battery pack (5-16S) managed by the Main Control For the detailed wiring diagram, refer to the battery wiring table.

12.4 MC4 Main Control MC4

mold	Interface Name	Pin			Defined declaration
		Pin Foot	ID label		

Main Control	MC4	1/3/5/7	/	NO lines	
		2	CANH	/	Main/Slave Control CAN Communication H-Wire
		4	CANL	/	Main/Slave Control CAN Communication L-Wire
		6	485A	RS485	LED
		8	485B	RS485 communication lines A/B, connecting to the LED screen or other external devices	
		10	12V+	Power supply cable for the Slave Control	
		12	GND		

12.5 MC5 Main Control MC5

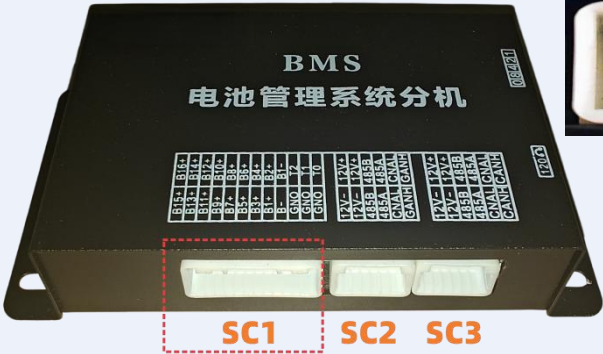
mold	Interface Name	Pin			Defined declaration
		Pin Foot	ID label		



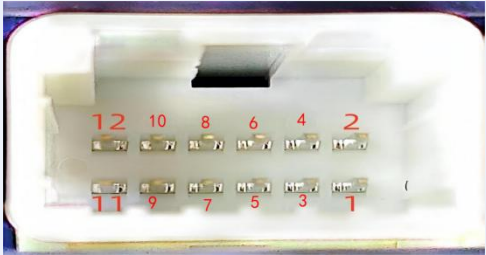

Main Control	MC5	1	GND	LED / / / It can be customized according to requirements, such as LED display, barcode reader, or interface for inverter communication boxes Pylontech and Growatt Inverters The buzzer is pre-connected upon factory delivery	
		2	RX		
		3	TX		
		4	V+		
		5	VOI		
		6	5V		

	7	K	K/VCC	
	8	VCC	Low-voltage switch MOS;For first-time use, short the K/VCC lines to activate the discharge MOS.	

12.6 SC1 Slave Control SC1

		Pin		
mold	Interface Name	Pin Foot	ID label	Defined declaration
 				
Main Control	SC1	1/2	/	No lines
		3	T1	
		4	GND	2
		5	T2	Two-channel temperature monitoring is generally set up.
		6	GND	
		7	B-	The total negative electrode of the battery in the Slave control unit
		8	B1-	
		9-24	BX+	Connect the positive terminals of each cell in the battery pack of the sub-control unit in sequence.

12.7 SC2/SC3 Slave Control SC2/SC3

		Pin		
mold	Interface Name	Pin Foot	ID label	Defined declaration
 				
Main Control	SC2/3	1/3/5/7/9/11	/	No lines

2	CANH	/	CAN	H/L	Main/Slave Control CAN Communication H/L Wire
4	CANL				
6/8	/	No lines			
10	12V+	Power supply cable for the Slave Control			
12	12V-				

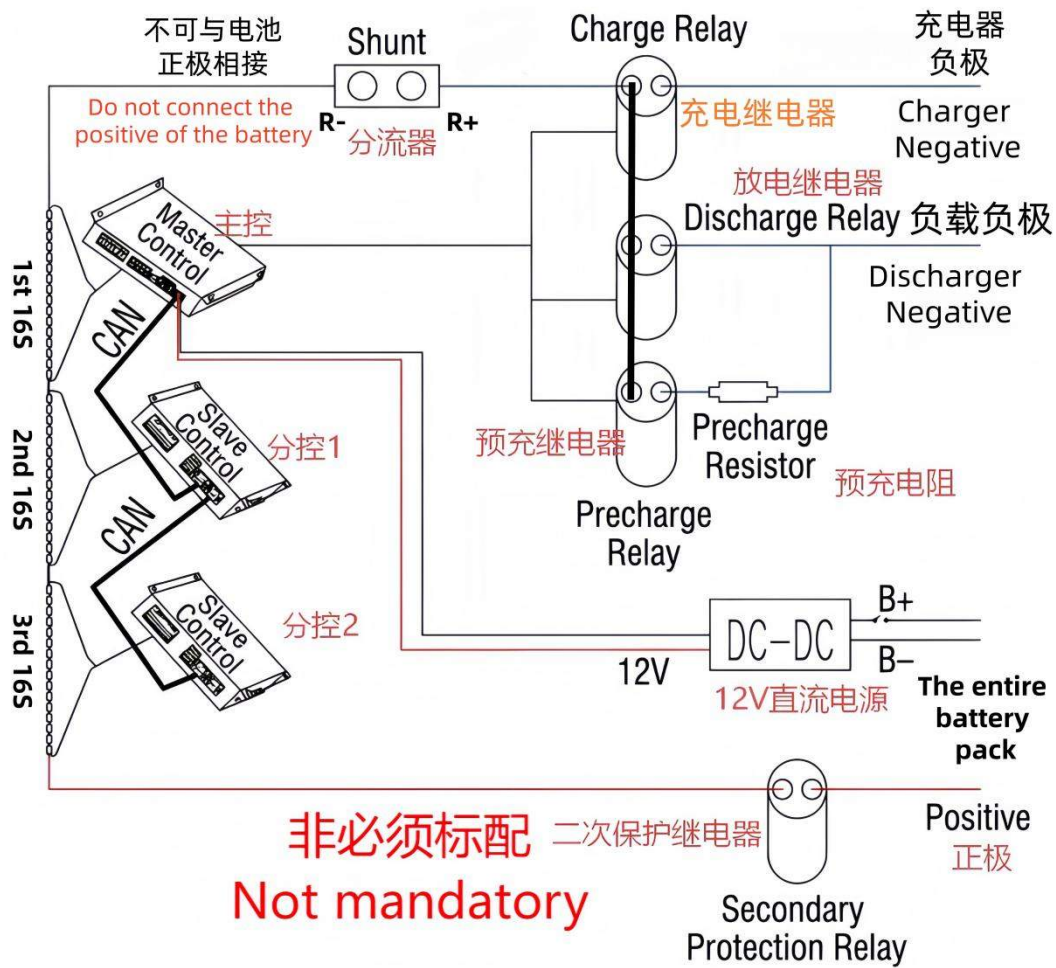
Wiring Instructions

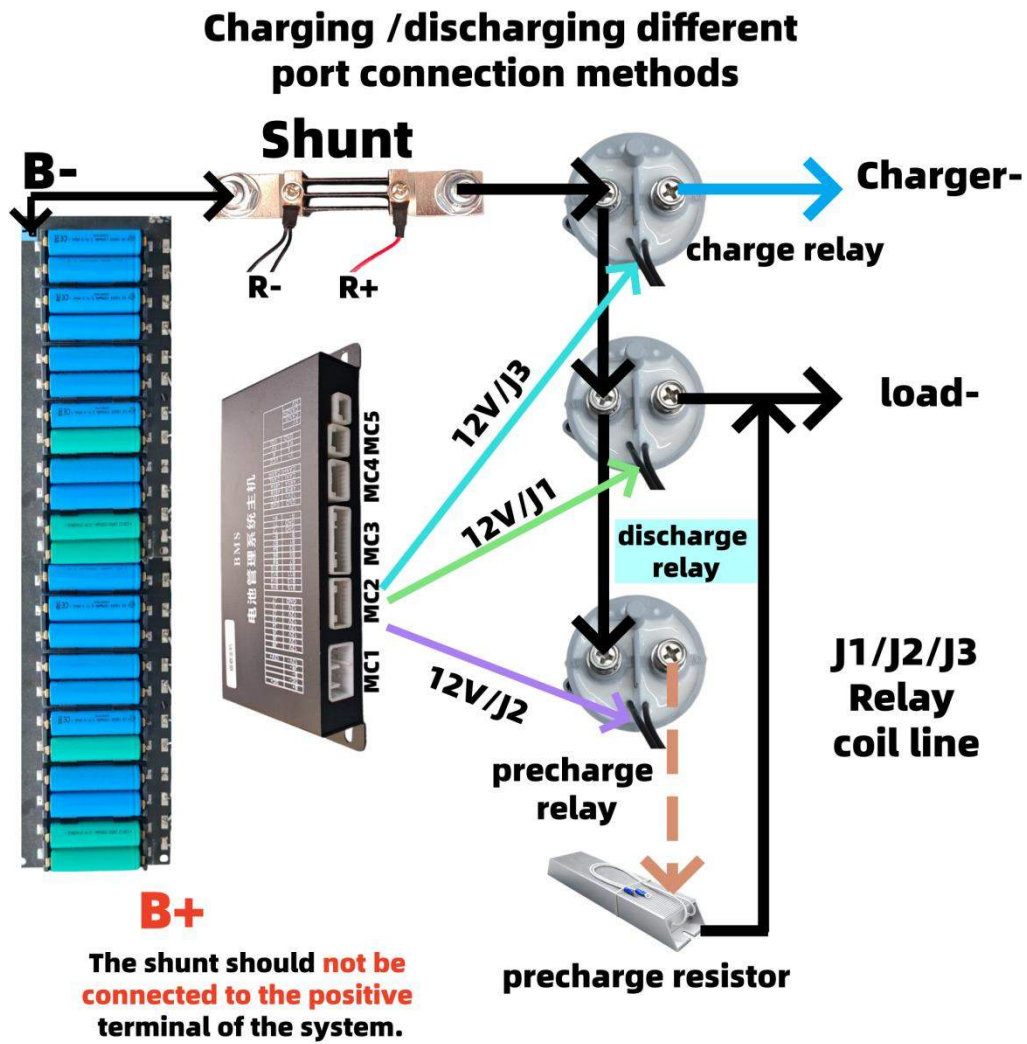
BMS

The BMS control unit must adopt the appropriate wiring configuration based on the specific application scenario. Prior to formal operation, thorough verification with technical personnel is mandatory; improper operation may damage the protection board or battery pack, and could even lead to safety incidents.

13.1
 Split-port connection method (distinguishing charging and discharging relays)

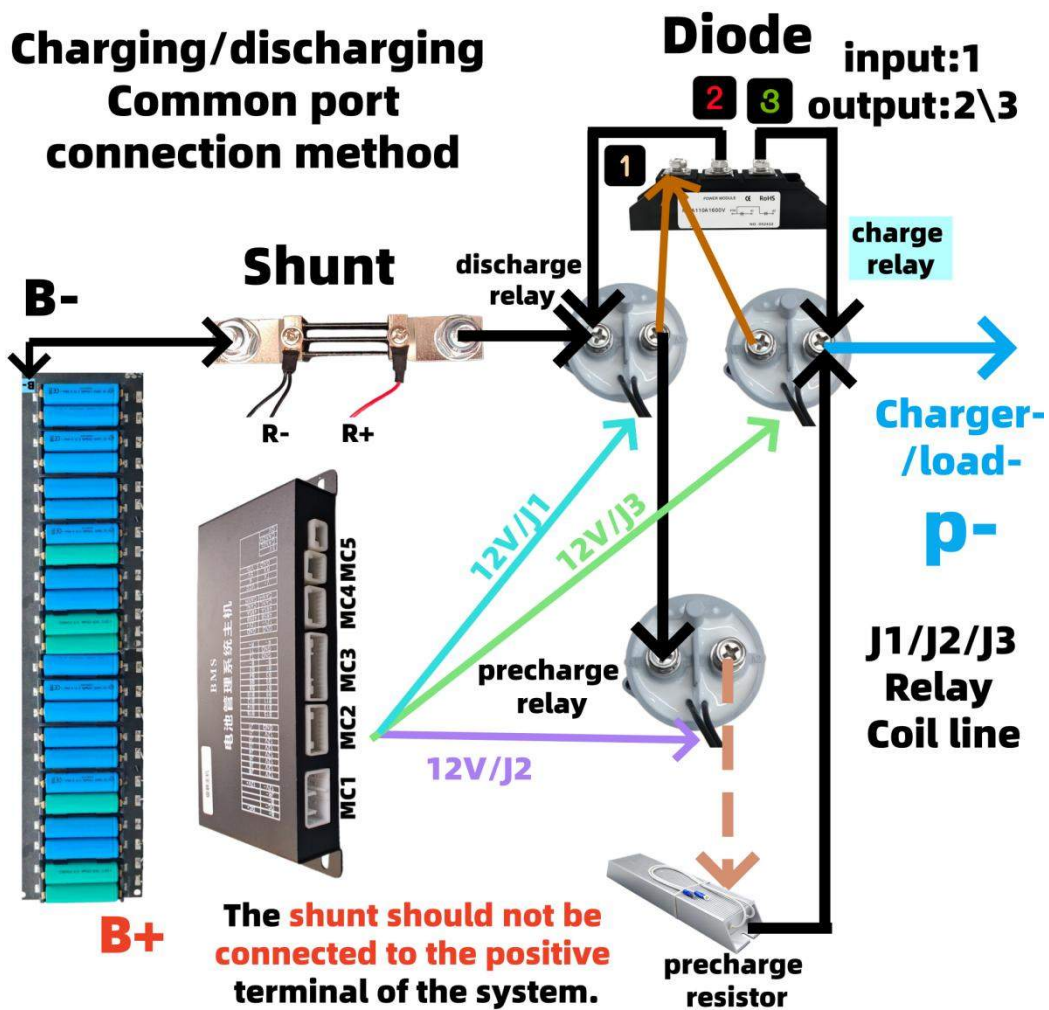
The split-port method is used for charging and discharging relays to control a positive output respectively, which is usually applied to the vehicle battery, but the charging port cannot be used for discharging, and the discharging port cannot be used for charging.





13.2 Common-port connection method (uses a single interface for both charging and discharging)

The common-terminal connection method involves connecting the charging relay and discharge relay in series on the same circuit, with only a single external interface provided. This configuration is suitable for applications such as energy storage inverters where shared interfaces are required for both charging and discharging operations.



13.3 5-16S Connection method for the battery cables of Host and Slave Units

5 16S

MC3 -1
Connection table for the MC3 -1

Strings	PIN Number/Panel Label-MC3																
	"/" =NOT Connected																
5S	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B1+	B2+	B3+	B3+	B4+	B5+	/	/	/	/	/	/	/	/	/	B5+
6S	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B1+	B2+	B3+	B4+	B5+	B6+	/	/	/	/	/	/	/	/	/	B6+
7S	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	/	/	/	/	/	/	/	/	B7+
8S	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	/	/	/	/	/	/	/	B8+

Connection table for the MC3 -1

9S	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	/	/	/	/	/	/	B9+
10S	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	/	/	/	/	/	B10+
11S	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	/	/	/	/	B11+
12S	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	/	/	/	B12+
13S	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	/	/	B13+
14S	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	/	B14+
15S	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B15+
16S	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+

Connection table for the SC1 -1

Strings	PIN Number/Panel Label-SC1																	
	"/" =NOT Connected																	
5S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B-	B1+	B2+	B3+	B3+	B4+	B5+	/	/	/	/	/	/	/	/	/	B5+
6S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	/	/	/	/	/	/	/	/	/	B6+
7S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	/	/	/	/	/	/	/	/	B7+
8S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	/	/	/	/	/	/	/	B8+
9S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	/	/	/	/	/	/	B9+
10S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	/	/	/	/	/	B10+

Connection table for the SC1 -2

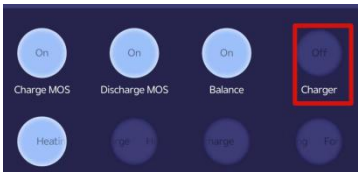
11S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	/	/	/	/	B11+
12S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	/	/	/	B12+
13S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	/	/	B13+
14S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	/	B14+
15S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B15+
16S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+
	B-	B-	B1+	B2+	B3+	B4+	B5+	B6+	B7+	B8+	B9+	B10+	B11+	B12+	B13+	B14+	B15+	B16+

Usage Notes

NO.	Step	Content	Remarks
1	Before Installation	Check the consistency of the battery cells	0.05V 5mΩ 30mAh The voltage difference of a single cell should not exceed 0.05 V, the internal resistance difference should not exceed 5 mΩ, and the capacity difference should not exceed 30 mAh.
2		Check the cell voltage	2.8V 3.4V 3V 4V The voltage of lithium iron phosphate batteries should be between 2.8 V and 3.4 V, while that of polymer batteries should be between 3 V and 4 V.
3	Wiring cable welding	Determine the wiring method for the cable layout	1 Contact customer service or refer to Attachment 1 to determine the wiring method for each management unit.
4		Check if the wire order is correct	0.05V After the wiring is completed, do not insert the plug directly . Instead, test the voltage between every two adjacent metal terminals on the back of the plug, and confirm that the voltage difference between each battery string does not exceed 0.05V.
5	System-wide Connection	BMS Connection	KEY MC-1\MC-2\MC-3\MC-4\MC-5 Main control unit: sequentially connect the MC-1/MC-2/MC-3/MC-4/MC-5 interfaces;
			2 SC-1\SC-2\SC-3 The Slave controller is inserted into the SC-1/SC-2/SC-3 interface in sequence.
6	Steps to disconnect the BMS		1 Disconnect the load or charger;
			2 P- Disconnect the P-wire from the negative output load terminal;
			3 B Disconnect the B-connector from the battery pack's

		negative terminal; 4 Remove the battery pack's sampling wires in descending order of the slave unit numbers , then the last is Main unit Special note: During this process, special attention must be paid to electrostatic protection, particularly to potential leakage issues in production-grade soldering irons.
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Common Faults and Resolution Methods

APP			
NO.	problem	Check APP Parameters	Check Items
1	Abnormal cell voltage		Check the settings for the main control serial number, sub-control serial number, and total serial number; also verify their correspondence with the management unit wiring diagram.
2	MOS Charging/Discharging MOS Off		
3	Cell overvoltage		Select the appropriate battery type; check the voltage settings in charge/discharge configuration
4	Battery offline Alert		500mv, 1500mv
5	mos No abnormalities are observed except for the discharge MOS being turned off.		MC5 7/8 Check whether lines 7 and 8 (weak switch lines) of MC5 remain short-circuited; only under this condition can discharge occur.
6	mos Charging is on, but charging cannot proceed		Check if the dedicated charger switch is turned on
7	Cannot use the aging cabinet for discharge/charging		Check whether the fire prevention switch is turned on. Turn it off first before using the aging cabinet for charging and discharging tests.