Specification For Approval
Product Acknowledgment Letter

customer name	
product model	KS48300-Ho23 (16S 300A 300AH) -Split AC Unit + Active Equalization + Wi-Fi + LED Strip
Customer model	
edition	A1
date	2025/11/21

join in marriage piece unmixed Shan

order number	name	model	quantity
1	BMS motherboard	KS-48300-Ho23_V1 Split-type model with heating function, no dry contact, 20A current limit, 2-channel 485 interface, and 1-channel CAN interface.	1 block
2	B+ line	UL1015; 16#; Red; 3.5 Banana Mother Head OT8, Rubber; ROHS L=200mm ±10mm	1
3	Single voltage acquisition line Customers purchase it themselves	XHB-17P buckle; UL1430:22#; OT4 terminal; red and black; adhesive; ROHS L=800mm±10mm	1
4	temperature acquisition line	PHS-8P; 24#; NTC; 10K, B value 3950; adhesive; ROHS: L=900mm±10mm	1
5	Self-locking switch with wiring harness with socket	JJPB16-AP1SEB03N Self-locking switch with 16mm blue light indicator, 3V-16mm flat metal button switch L=900mm ±10mm	1
6	screw	3-piece screw M6*15	4
7	keysets	KS-PB18 V3 (Welded Dry Contact Terminal with 6 Additional SOC Indicators)	1 block
8	18-pin jumper board harness	Terminal wire: 2.54mm 18P (FC18P crimping tool, double-ended reverse UL2651 26AWG, red edge gray strip), butterfly clip L=600mm ±10mm	1
9	16-pin jumper board harness	Terminal wire 2.54mm 16P (FC16P crimping tool, double-ended reverse UL2651 26AWG, red edge gray terminal block) butterfly clip L=600mm ±10mm	1
10	wifi module	BT	1 block
11	WiFi module power supply line	Bluetooth line-PHS-4P; UL1430; 24#; white; adhesive; ROHS L=600mm ±10mm	1
12	Light strip & harness	LED8-V2 – 32 LEDs L=600mm ±10mm	1 set
13	heater wire	JST-VH3.96-2P Red and white UL3135 18AWG 120mm stripping 5s1mm glue ROHS L=900mm ±10mm	1
14	Secondary protection wiring harness 601-000502	2510-P 2P UL1430 22# Twisted wire tin 3.5±0.5mm Red black glue ROHS L=900mm ±10mm	1
15	active balancing module	KS-16S-AE_V3 The customer purchases the sampling line for the balanced module on their own.	1 block
16	active balancing control line	PHS-2P; 24#; glue; ROHS: L=900mm ±10mm	1
17			

Koson BMS		**Customer confirmation**	
lay down：	Lee wave	**Backdate:**	
approval：	Guo Jing		

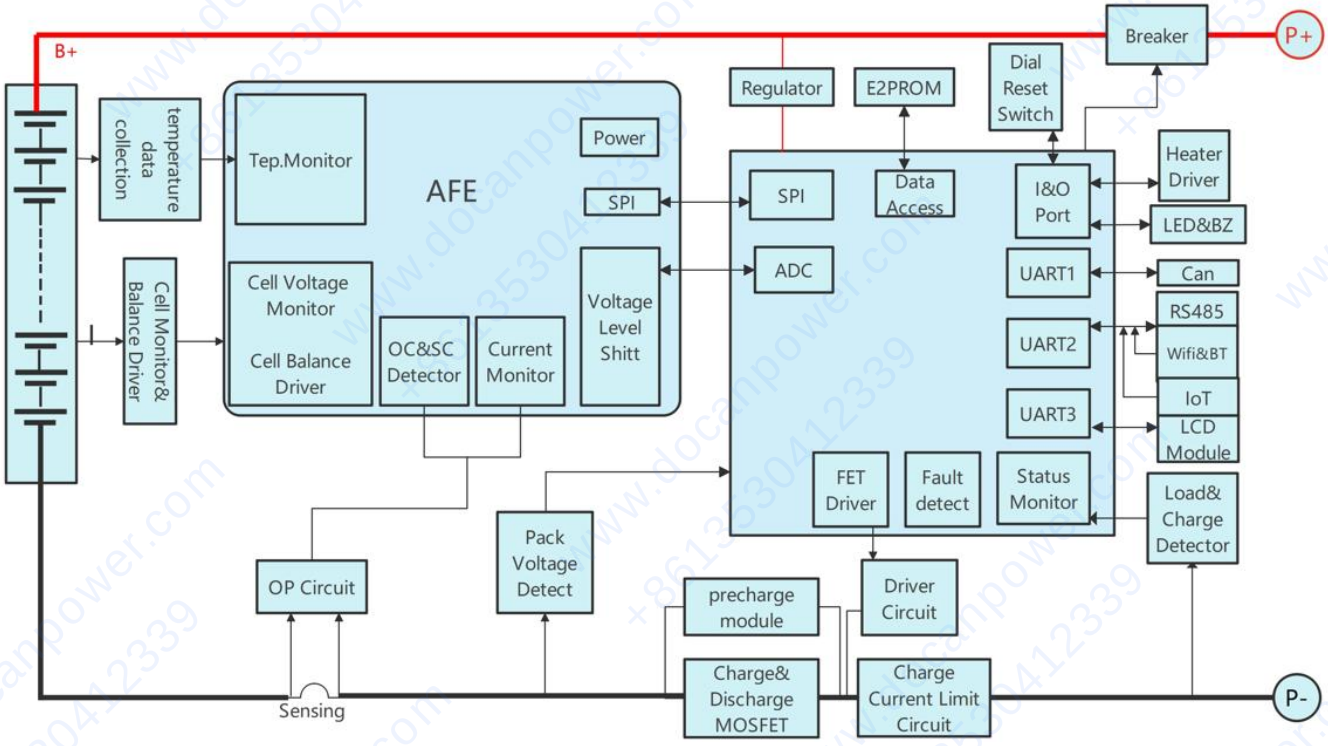
This product complies with environmental protection standards: ■ROHS □REACH □Halogen-free

Configuration Table		
function	**Serial number**	■16 strings □15 strings □14 strings □13 strings □8 strings
	charge current limiting	□ None □ 10A ■ 20A □ ___A ■ Passive current limiting □ Active current limiting
	reverse protection	No □ Yes
	low voltage switch	□ None ■ Yes
	buzzer	□ None ■ Yes
	memory	□ None □ 500 items □ 1000 items
	heating film interface	□ None ■ Yes
	secondary protection interface	□ None ■ Yes
	Preload	□No ■Yes The pre-charging circuit can handle a maximum capacitive load of 30,000μF, with the exact value determined by system testing.
	dry contact	No □ Yes (2 channels) □ Function
	display screen	■ None □ English Smart □ White Keycap □ Keycap Film □ 5-inch Touch Screen
	dial switch	□ None ■ 4 digits □ 6 digits
	LED lamp	□ None ■ RUN ■ ALARM □ SOC 4 ■ Long strip light
	sampling socket	■Vertical □Horizontal ■17+8 □6+7+6+7
	WIFI	□ None ■ Yes
	PDA	□ None ■ Yes
communication	**CI**	RS232, RS485, dual RS485 parallel, CAN
	Upgrade method	■RS485
	matched inverter	CAN: Paine, Deyi, Goodwe, Gurewatt, Jinlang, Victron, Shouhang, SMA, and others RS485: Sun Moon Yuan, Shuo Ri, Pylon, etc.
	protocol	Pylon-CAN-V1.2-180408-lowVoltage Growatt BMS CAN-Bus-protocol-low-voltage-V1.05 Victron-Victor-CAN-V1.00-220910 Voltronic-485-V1.0.3-200325 WOW-protocol-Shuori-V1.3 Kosun-BMS_Protocol_V1_0_0

File Change Summary

date	version number	revision note	Formulator	authorizer
2025-11-21	A1	Drafting The customer purchases the individual sampling line. Add a secondary protection harness Active balance update to V3 The design capacity must support 900AH write operation.	Lee wave	Guo Jing

1. Product topology diagram:



2. scope of application

This product is designed for 16-cell lithium battery management systems, providing comprehensive protection and recovery functions against overvoltage, undervoltage, overcurrent, high/low temperatures, and short circuits. It enables precise SOC measurement and SOH health monitoring during charging and discharging, while maintaining voltage balance during charging. The PC software supports human-machine interaction for displaying and configuring alarm parameters (voltage, current, temperature), as well as storing and displaying real-time and historical battery operation data. It features multiple sleep/wake modes and RS485-based parallel communication. Data exchange is supported via RS485, CAN, and PC interfaces, with parameter configuration and data monitoring accessible through the PC software. The product is widely applicable in household energy storage inverters and indoor/outdoor base stations.

3. functional description

3. 1. Cell and battery voltage detection

3.2. The voltage of the series cell is monitored in real time to realize the overvoltage, undervoltage alarm and protection.

3.3. The value of the transducer is ± 10mV at 0～45℃ and ± 20mV at-20～70℃.

3.4. The alarm and protection parameters can be changed by the host computer.

3.5. Battery charge and discharge current detection

3.6. The system can detect the overcurrent alarm and protection of the battery pack, and the output short circuit protection of the battery pack. The real-time monitoring of the battery pack charge and discharge current is carried out. The continuous charge and discharge current is 300A, the temperature rise is less than 50℃, and the accuracy is better than ± 1%.

3.7. The alarm and protection parameters can be changed by the host computer.

3.8. Cell, Environment and Power Temperature Detection

3.9. 4 channels of cell temperature detection, 1 channel of ambient temperature detection and 1 channel of MOS temperature detection, which can realize high temperature and low temperature alarm and protection. The temperature detection accuracy is ± 2℃. The cell temperature sensor uses 10K, B value 3950.

3.10. Battery capacity calculation and cycle count function

The real-time calculation of battery remaining capacity and the learning of total charge-discharge capacity in one go achieve SOC estimation accuracy better than ±5%.

It has the function of calculating the number of charge and discharge cycles. When the cumulative discharge capacity of the battery pack reaches 80% of the set full capacity, the cycle number is increased by 1.

Ansys Integration enables precise battery SOC calculation, supporting both open-circuit voltage static calibration and charge/discharge dynamic calibration for SOC correction.

3.11. charge and discharge MOSFET switching function

Low resistance and high current, the optimization design of the capacitive load for backup power supply application, zero switching, high charging voltage.

3.12. Battery charging equalization function

The charging equalization strategy can be flexibly configured (including activation voltage and equalization voltage), which effectively extends the battery's operational time and cycle life.

3.13. LED status indicator

It has 6 LED indicators, 4 battery remaining capacity indicators, 1 running indicator and 1 alarm protection status indicator.

3.14. Button key function

Self-locking switch: Featuring an intelligent one-button design, it allows manual system startup when powered off and shutdown in any state.

Sleep and reset function: Press and hold the button for 3-6 seconds in no standby mode to sleep, or 1-3 seconds in idle mode to wake up.

3.15. RS485 and CAN communication capabilities

PCs or FSUs can perform battery data monitoring, control, and parameter settings through RS485 commands for telemetry, remote signaling, remote adjustment, and remote control.

Monitor BMS and Pack status in real time.

The inverter or terminal can obtain the battery state data and adjust its own output through CAN or RS485 communication.

3.16. upper computer control function

The system supports configuration of various battery management parameters, including individual cell over/under-voltage, total cell voltage over/under-voltage, charging and discharging overcurrent, cell/ambient temperature extremes, balancing strategy, cell series count, and battery capacity. It also enables control of discharge/charge MOSFETs, current limiting switches, buzzer alarms, forced sleep mode, and online system software upgrades.

3.17. Hardware voltage detection function

The BMS is equipped with a unique hardware detection and protection circuit, ensuring safe and reliable long-term operation under abnormal conditions.

3.18. Historical data storage feature

It has the function of storing historical records with a storage capacity of no less than 500 records, which is convenient for monitoring, analysis and maintenance of the system.

3. 19. 3. Parallel communication function

The RS485 interface enables parallel communication, and the dial switch is used to set the address during parallel communication.

3. 20. charge current limiting function

It has a 20A current limiting function with passive and active modes, with passive mode as the default. Current limiting is activated when the charging current exceeds 215A.

3. 21. Dry contact function (optional)

Dry contact definition: (Default is normally open)

①When protection is activated, the dry contact 1 closes.

②When a fault occurs (NTC fault, MOS fault, or cell sampling fault), contact 2 activates.

3. 22. Heating function

The battery has a low-temperature heating function. When the cell temperature is below 0°C during charging, the low-temperature protection is triggered, and heating is activated. When the cell temperature exceeds 15°C, heating is deactivated.

3. 23. secondary protection function

The battery management system (BMS) can trigger a trip unit or controlled fuse to open the external output circuit when a charge/discharge MOS fault occurs or when the voltage of a single cell is excessively high or low, thereby providing secondary protection.

Control policy: Execute action when any condition is met

- Trigger a MOS fault, and if the MOS temperature exceeds 100°C or the MOS NTC fault alarm persists for 5 seconds, the fuse will report 'secondary protection'.
- The maximum individual voltage exceeds the overvoltage protection threshold by 300mV, and the system remains in charging mode for 5 seconds, triggering the fuse to report 'secondary protection'.
- The minimum cell voltage drops below the undervoltage protection threshold by 300mV, and the system remains in discharge mode for 5 seconds, triggering the fuse to report 'secondary protection'.

Appendix: Reliability parameters

order number	project	Specifications/Conditions
1	Detection accuracy	Current accuracy: ±2% Voltage accuracy: ±20mV Temperature accuracy: ±3℃ Average SOC accuracy: ≤±5%
2	current threshold	Charging current: 0.6A Discharging current: 0.6A
3	Failure type	1、 1. The charge-discharge MOS transistor fails; 2. The current detection fails. 3. Temperature detection failure 4. Voltage detection failure (charging prohibited when voltage drops below 1.0V)
4	The data exists	Store at least 500 historical data entries, including current total voltage, current, temperature, SOC, SOH, cycle count, and operating status.
5	CI	1、 The inverter supports CAN communication. 2、 Supports RS485 communication (program upgrade via communication port)
6	starting up	In shutdown mode, turn on the low-voltage switch to power on the device, and the LED corresponding to the real-time SOC will light up simultaneously.
7	shut down	In startup mode, disconnect the low-voltage switch for 3 to 6 seconds until all six LEDs turn off sequentially.
8	short	The internal resistance of the battery pack and short-circuit loop must be no less than 40mΩ, with a short-circuit current not exceeding 1000A. The air switch must withstand 50 short-circuit attempts.

4. electrical character

4. 1. electrical property

project	minimum	maximum	convention	unit
working voltage	38	60	51.2	V

charging voltage	48	60	57.6	V
operating temperature range	-25	60	25	℃
Working humidity range	10	85	/	%
continuous charge and discharge current		300		A
discharge output internal resistance	<10			mΩ
normal operating power consumption	≤30 (without display)			mA
	≤80 (with display)			mA
dormant power consumption		200	100	uA

4. 2. Basic parameter settings

Alarm value					
Function name	Feature Settings	Enable	Indicator items	出厂默认值	remarks
single voltage alarm	open	Settable	overvoltage alarm	3600mV	±20mV
		Settable	over roll delay	3000mS	1000-5000mS
		Settable	overvoltage recovery	3380mV	±20mV
		Settable	undervoltage alarm	2700mV	±20mV
		Settable	under-voltage delay	3000mS	1000-5000mS
		Settable	undervoltage recovery	3000mV	±20mV
Total Voltage Alarm	open	Settable	overvoltage alarm	57.6V	±50mV
		Settable	over roll delay	3000mS	1000-5000mS
		Settable	overvoltage recovery	56.0V	±50mV
		Settable	undervoltage alarm	44.0V	±50mV
		Settable	under-voltage delay	3000mS	1000-5000mS
		Settable	undervoltage recovery	48.0V	±50mV
Cell temperature warning: Charging is prohibited.	open	Settable	high temperature alarm	50℃	±2℃
		Settable	high temperature delay	5000ms	1000-5000mS
		Settable	heat recovery	45℃	±2℃

		Settable	low temperature alarm	3℃	±2℃
		Settable	low temperature delay	5000ms	1000-5000mS
		Settable	recovery from low temperature	5℃	±3℃
Cell temperature warning	open	Settable	high temperature alarm	55℃	±3℃
		Settable	high temperature delay	5000ms	1000-5000mS
		Settable	heat recovery	50℃	±3℃
		Settable	low temperature alarm	-15℃	±3℃
		Settable	low temperature delay	5000ms	1000-5000mS
		Settable	recovery from low temperature	-5℃	±3℃
ambient temperature alarm	open	Settable	High ambient temperature alarm	55℃	±3℃
		Settable	environmental high temperature delay	5000ms	1000-5000mS
		Settable	environmental high temperature recovery	50℃	±3℃
		Settable	ambient low temperature alarm	-15℃	±3℃
		Settable	ambient temperature delay	5000ms	1000-5000mS
		Settable	environmental low temperature recovery	-5℃	±3℃
Overcurrent alarm	open	Settable	Overcurrent alarm	300A	±2A
		Settable	overcharge delay	5000ms	1000-4000mS
		Settable	overcurrent recovery	295A	±2A
overcurrent alarm	open	Settable	discharge alarm current	300A	±2A
		Settable	discharge overcurrent delay	5000ms	1000-4000mS
		Settable	recovery current	295A	±2A

MOS high temperature alarm	open	Settable	MOS high temperature alarm	90℃	±3℃
		Settable	MOS high temperature delay	3000ms	1000-5000mS
		Settable	MOS high temperature recovery alarm	80℃	±3℃
pressure differential alarm	open	Settable	Pressure differential alarm	500mV	±50mV
		Settable	Pressure differential alarm restored	300mV	±50mV
SOC report an emergency	open	Settable	SOC low alarm	10%	
		Settable	SOC low alarm recovery	15%	
Protection value					
Function name	Feature Settings	Enable	Indicator items	出厂默认值	remarks
monomer protection	open	Settable	single unit overvoltage protection	3650mV	±20mV
		Settable	Monomer overpressure delay	2000ms	±2000mS
		Settable	monomer overvoltage recovery	3380mV	±20mV
		Settable	single unit under-voltage protection	2500mV	±20mV
		Settable	Monomer under-voltage delay	3000ms	±2000mS
		Settable	monomer under-voltage recovery	3000mV	±20mV
general protection	open	Settable	overall overvoltage protection	58.4V	±50mV
		Settable	Overall overvoltage delay	3S	±2000mS
		Settable	overall overvoltage recovery	54.4V	±50mV
		Settable	overall undervoltage protection	40V	±50mV
		Settable	Overall under-voltage delay	3S	±2000mS
		Settable	overall undervoltage recovery	48.0V	±50mV

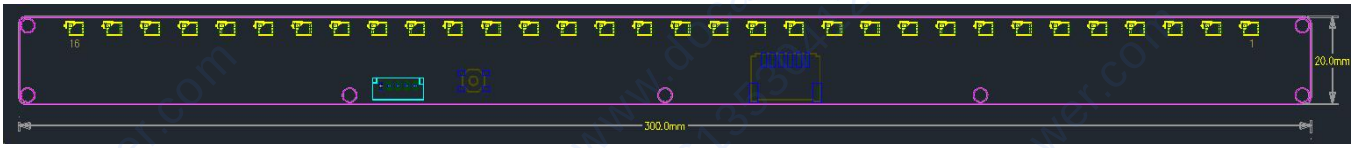
Do not charge the battery cell when its temperature exceeds the safe limit.	open	Settable	high temperature protection during charging	55℃	±3℃
		Settable	charging high temperature delay	3000mS	±1000mS
		Settable	recovery of charging temperature	50 ℃	±3℃
		Settable	cooling low temperature protection	-1℃	±3℃
		Settable	cooling delay	3000mS	±1000mS
		Settable	recovery of low temperature after charging	5℃	±3℃
The temperature of the battery cell is prohibited from being released.	open	Settable	Discharge high-temperature protection	60℃	±3℃
		Settable	discharge high temperature delay	3000mS	±1000mS
		Settable	high temperature recovery of discharge	55℃	±3℃
		Settable	discharge low temperature protection	-20℃	±3℃
		Settable	discharge low temperature delay	3000mS	±1000mS
		Settable	low temperature recovery of discharge	-15℃	±3℃
Environmental temperature protection	open	Settable	environmental low temperature protection	-25℃	±3℃
		Settable	environmental temperature release	-15℃	±3℃
		Settable	Environmental temperature protection	65℃	±3℃
		Settable	environmental heat release	55℃	±3℃
MOS transistor high temperature protection	open	Settable	MOS high temperature protection	110℃	±3℃
		Settable	MOS high temperature delay	3000mS	±1000mS
		Settable	MOS high temperature recovery	80℃	±3℃
pressure differential protection	open	Settable	overpressure protection	800mV	±50mV

		Settable	excessive differential pressure recovery	500mV	±50mV
overcurrent protection	open	Settable	Overcurrent 1 protection	315A	±2A
		Settable	Overcharge delay 1	3000mS	1000-6000mS
		Settable	Overcurrent 2 protection	350A	±2.0A
		Settable	overcharge delay 2	500mS	100-2000mS
		Cannot set	automatic recovery of overcurrent	10min	Automatically attempts recovery for 10 minutes. After 3 failed attempts, you can restore manually or by discharge.
overcurrent protection	open	Settable	Overcurrent protection 1	315A	±2A
		Settable	Discharge overcurrent delay 1	3000mS	1000-6000mS
		Settable	Overcurrent protection 2	350A	±5.0A
		Settable	2-second delay for overcurrent discharge	500mS	100-2000mS
		Cannot set	automatic recovery of discharge over current	1min	The system will automatically attempt recovery for 1 minute. If it fails three times, the device will lock. You can restore it manually or by charging.
short-circuit protection	open	Cannot set	short circuit protection current	480A±100A	Upgrade the program to change it
		Cannot set	short circuit protection delay	300uS±100uS	Upgrade the program to change it
		short circuit protection protective release	1、 Valid charging current detected 2、 Recheck every minute. Lock after three consecutive attempts		
Basic parameter settings					
Function name	Feature Settings	Enable	Indicator items	出厂默认值	remarks
Cell balancing function	open	Settable	cell charging balance	Static or charging (high-temperature alarm not triggered)	
		Settable	balanced turn-on voltage	3450mV	±20mV
		Settable	balanced differential pressure opening	30mV	±10mV

		Cannot set	equalizing current	65mA	50-100mA
Battery capacity settings	open	Settable	Battery rated capacity	300AH	
		Settable	battery remaining capacity	300AH	
BMS power management	open	Settable	hibernation voltage	3.35V	±50mV
		Settable	dormancy delay	1440min±10min	No charge/discharge current, no communication, and no external charging voltage (<48V)
Full charge setting	open	Settable	constant pressure value	56.0±0.5V	When the total voltage exceeds the constant voltage threshold and the current falls below the constant current level, the Battery Management System (BMS) determines the battery is fully charged, triggering the self-learning process.
		Settable	constant current value	1.5A±0.5A	
		Cannot set	delayed	10S±2S	

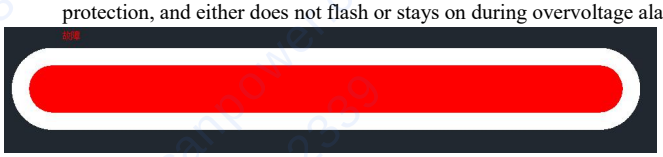
4.3 Definition of LED indicator lights

RGB lights: 16-channel dual-color lights (red and green).

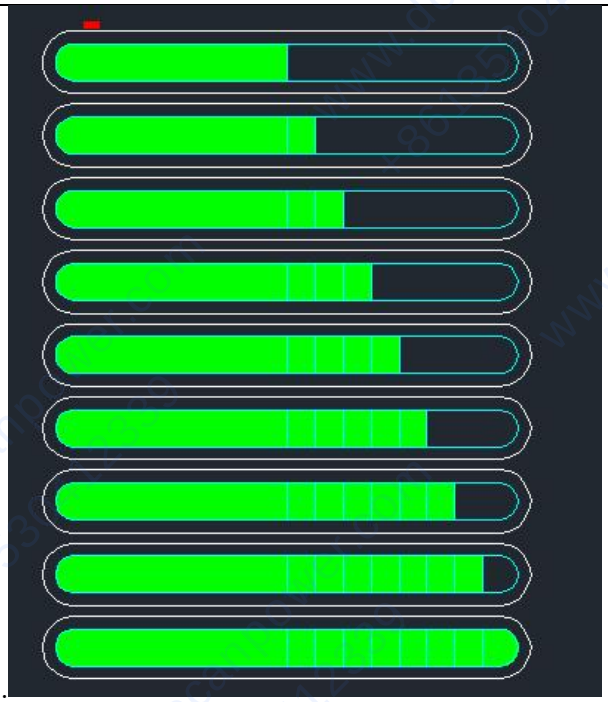


4.3.1 Instructions (Definitions of scrolling text and signal lights)

- Power-on self-test: The green light runs from low to high, illuminating from light 1 to light 16 at 300mS frequency. After completion, the system returns to normal display mode.
- BMS communication with the light board is interrupted for 30 seconds, with the yellow light flashing (on for 1 second, off for 1 second).
- The red light stays on during faults or protection, and flashes (0.5 seconds) when an alarm occurs. It turns off completely during undervoltage protection, and either does not flash or stays on during overvoltage alarms or overvoltage protection.



- During charging, the green light flashes in a loop (for example, when the SOC was 50%, the maximum SOC indicator flashed).



- During discharge, the SOC decreases accordingly.

- Overcharge protection. The system enters sleep mode and shuts down completely.

- When the battery is in standby mode (neither charging nor discharging), the system displays the corresponding duration based on the actual SOC level (e.g., 50% as shown in the figure below).

5. Working Mode

5.1 Basic Mode

5.1.1 Charging Mode

When the battery management system (BMS) detects an external charging voltage and the cell voltage and temperature are within the rechargeable range, it activates the charging MOSFET to initiate charging. Upon reaching the effective charging current threshold, the system enters charging mode, where both charging and discharging MOSFETs remain active.

5.1.2 Discharge Mode

When the BMS detects a load connection and the cell voltage and temperature are within the discharge range, it enters discharge mode once the discharge current reaches the effective discharge current. During this mode, both charging and discharging MOSFETs remain conductive.

5.1.3 Hibernation and Wake-up Modes

The system enters sleep mode when the following conditions are met:

① The monomer under-voltage protection or the overall under-voltage protection has not been released within 30 minutes;

②Press the button for 3 seconds and then release it;

③ The minimum unit voltage falls below the default sleep threshold (3350mV) and remains at this level for the preset duration (1440 minutes), with no communication or charge/discharge current detected;

④The computer software is used to force the shutdown.

Before entering sleep mode, ensure the P-terminal is not connected to external voltage, otherwise the low-power mode cannot be activated.

- If the minimum cell voltage drops below the undervoltage protection threshold of-500mV, the system will automatically enter deep sleep mode with a 10-minute delay.

Conditions for awakening from hibernation mode:

1) Connect the charger, which must have an input voltage exceeding 48V;

2) The device will wake up after pressing and holding button 1 for 1 second.

5.2 Shutdown Mode

When the low-voltage switch is disconnected, the BMS enters shutdown mode and can only be powered on by closing the switch.

5.3 Button Description (Optional)

When the BMS is in sleep mode, pressing and releasing button 1S activates the system, with the LED sequentially lighting up from 'RUN' for 0.5 seconds.

When the BMS is operational, press and hold button 3S-6S to put the BMS into sleep mode. The LED lights will then sequentially illuminate for 0.5 seconds, starting from the lowest power level indicator.

When the BMS is operational, pressing and holding the button for ≥10 seconds will trigger a hardware reset, with the LED indicator displaying the current battery level.

5. communication

6.1 RS485 Communication

The battery management system (BMS) can communicate with the host computer via the RS485 communication interface.

It features an RS485 parallel interface, supporting up to 16 battery packs in parallel with a default baud rate of 9600bps.

The inverter features an RS485 communication interface with a default baud rate of 9600bps.

6.2 CAN Communication

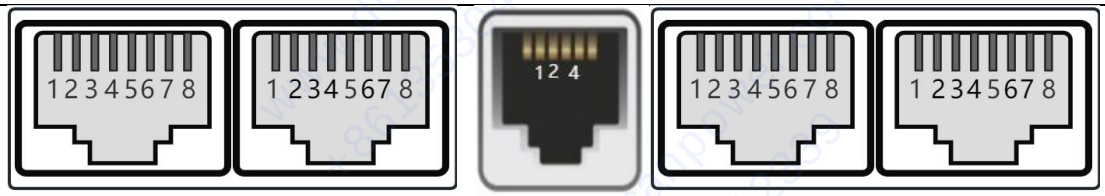
The Battery Management System (BMS) communicates with the inverter via CAN interface, transmitting battery parameters including voltage, current, temperature, State of Charge (SOC), State of Health (SOH), and operational status. The default baud rate is 500Kbps.

CAN interface communication protocol selection for inverters:

The BMS can only communicate with the inverter in host mode CAN, with protocol switching implemented via DIP5 and DIP6.

6.3 Communication Interface Definition:

6.3.1 Interface diagram:



RS485/Can RS485C RS485B parallel operation RS485/Can RS485C RS485B parallel operation RS485/Can RS485C RS485B parallel operation

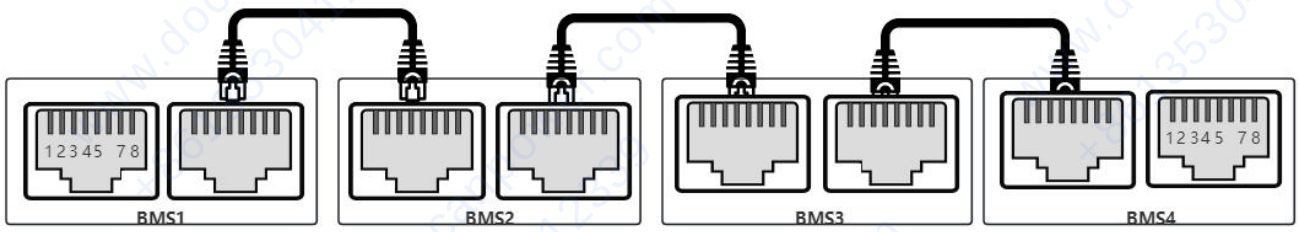
6.3.2 Definition of Communication Interfaces

RS485-1 interface (for communication with host computer or inverter) Supports Shuo Ri, Ri Yue Yuan, and Pylon protocols—switches between them via the host computer.		CAN-1 communication interface (inverter communication) Supports Victron, Pylon, and Growatt protocols — switch protocols via the host computer	
RS485—uses 8P8C vertical RJ45 socket		CAN—uses 8P8C vertical RJ45 socket	
RJ45 pin	defined declaration	RJ45 pin	defined declaration
1、8	RS485A-B	4	CAN1-H
2、7	RS485A-A	5	CAN1-L
6	GND	6	GND

EMS Communication Port (Non-functional)	
RS232—uses vertical RJ11 socket	
RJ45 pin	defined declaration
3	RS485C
4	RS485C
5	GND

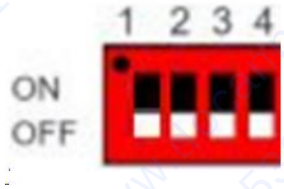
Parallel communication port (for parallel operation only)			
RS485-2—uses vertical RJ45 socket		RS485-2—Using 8P8C Vertical RJ45 Socket	
RJ45 pin	defined declaration	RJ45 pin	defined declaration
1	RS485C-B	1	RS485C-B
2	RS485C-A	2	RS485C-A
6	GND	6	GND
7	RS485B-A (Parallel)	7	RS485B-A (Parallel)
8	RS485B-B (Parallel)	8	RS485B-B (Parallel)

6.2.3 Parallel Connection Method of BMS Board

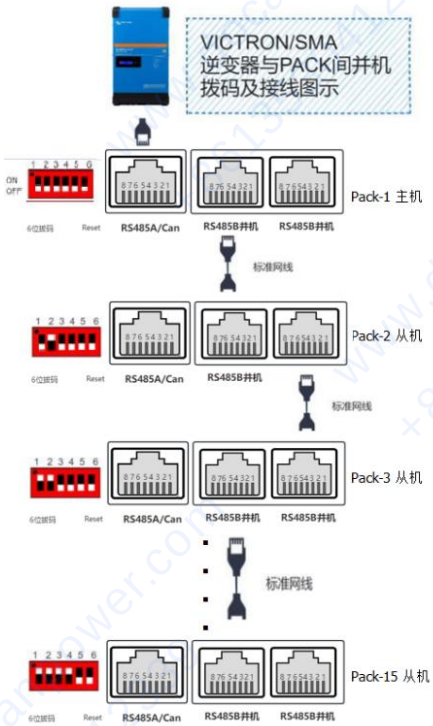


6.3 Code Switch Settings (Supports Parallel Operation and Protocol Selection)

When using multiple PACKs in parallel, hardware dialing addresses are used to distinguish different PACK addresses, with each PACK in the battery pack having a unique address. The hardware addresses are set via the dialing switch, as shown in the table below.



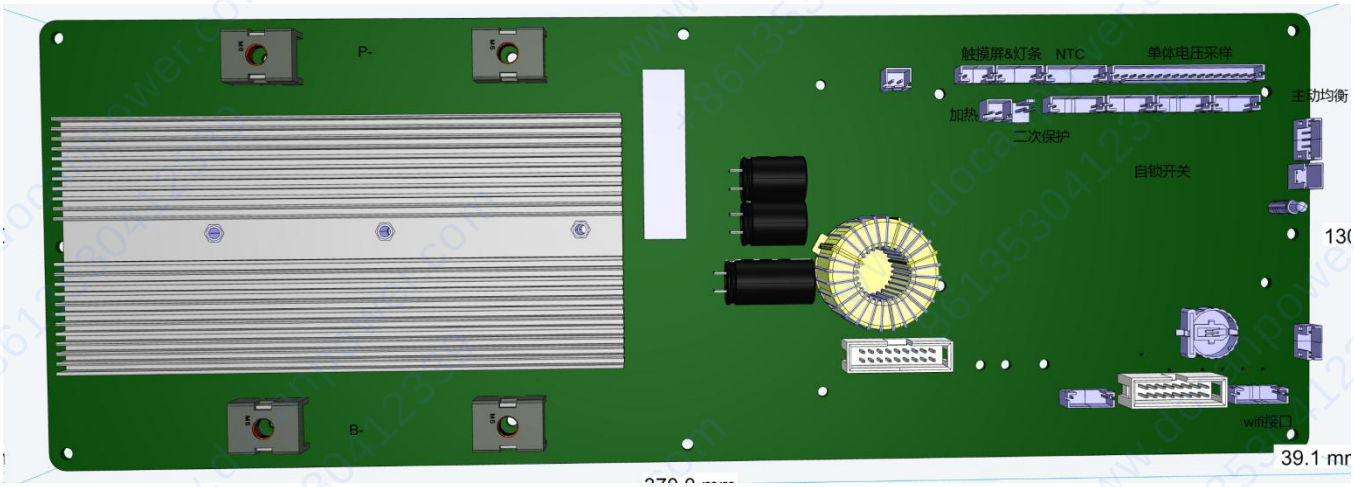
address	position of the rotary switch				obligate	main engine	explain
	#1	#2	#3	#4	#5	#6	
0	OFF	OFF	OFF	OFF	OFF	OFF	**(main engine)**
1	ON	OFF	OFF	OFF	OFF	OFF	Slave Pack1
2	OFF	ON	OFF	OFF	OFF	OFF	Slave Pack2
3	ON	ON	OFF	OFF	OFF	OFF	Slave Pack3
4	OFF	OFF	ON	OFF	OFF	OFF	Slave Pack4
5	ON	OFF	ON	OFF	OFF	OFF	Slave Pack5
6	OFF	ON	ON	OFF	OFF	OFF	Slave Pack6
7	ON	ON	ON	OFF	OFF	OFF	Slave Pack7
8	OFF	OFF	OFF	ON	OFF	OFF	Slave Pack8
9	ON	OFF	OFF	ON	OFF	OFF	Slave Pack9
10	OFF	ON	OFF	ON	OFF	OFF	Slave) Pack10
11	ON	ON	OFF	ON	OFF	OFF	Slave Pack11
12	OFF	OFF	ON	ON	OFF	OFF	Slave Pack12
13	ON	OFF	ON	ON	OFF	OFF	Slave) Pack13
14	OFF	ON	ON	ON	OFF	OFF	Slave) Pack14
15	ON	ON	ON	ON	OFF	OFF	Slave) Pack15



7 Definition of electrical interfaces

7.1 BMS Board Interface Definitions

mainboard interface definition



7.2 Wiring Definitions

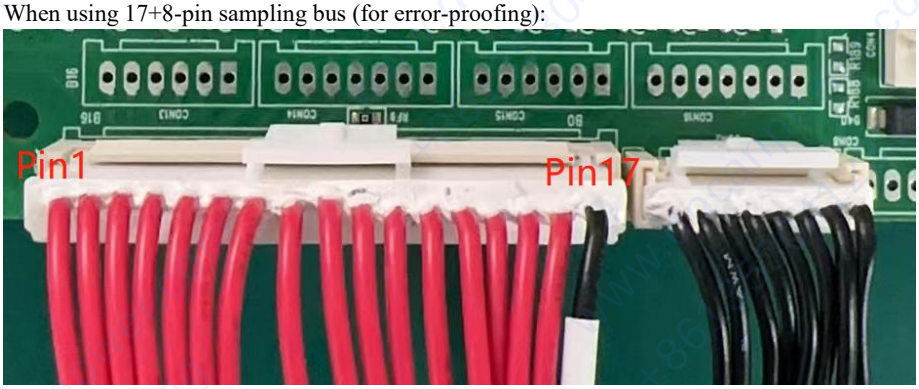
B+: The positive terminal of the battery PACK, used to power the BMS, with the power positive terminal P+ directly connected to the battery's positive terminal.

B-: Battery PACK negative electrode (using M5 terminal)

P-: Battery PACK anode, functioning as both charging and discharging anode (same port for both operations)

Note: B-P uses M5 terminal blocks

When using 17+8-pin sampling bus (for error-proofing):



CON2:(PHS-2.0-8PIN From PIN1 to PIN8: NTC1+, NTC1-, NTC2+, NTC2-, NTC3+, NTC3-, NTC4+, NTC4-

CIN3: (XHB-2.5-17PIN) From PIN1 to PIN17: CELL16 B+, CELL15, CELL14, CELL13, CELL12, CELL11, CELL10, CELL9, CELL8, CELL7, CELL6, CELL5, CELL4, CELL3, CELL2, CELL1, CELL0 B-

remarks：

CELL0—Pin17 is the B-terminal of the Pack, and CELL16—Pin1 is the B+ terminal of the Pack.

NTC model: NTC Tadpole, B value 3950,10K±1% at 25℃

lime light：

To switch to 15S, connect CELL15 and CELL16 to the B+ terminal cell, or notify the BMS manufacturer in advance to add short-circuit resistors for CELL13, CELL14, CELL15, and CELL16, then update the software. This shipment includes 16 strings.

7.4 BMS Power Supply Line Description:

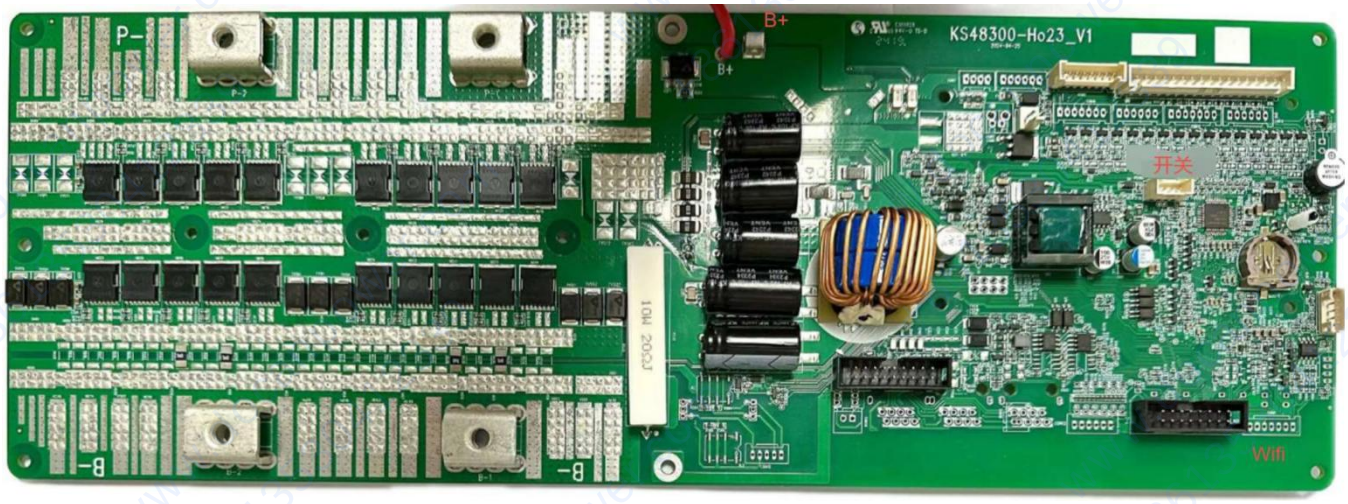
The B+ power line of the BMS must be connected separately to the battery's positive terminal, not to the circuit breaker switch (air switch) or the B+ power line. Otherwise, it may interfere with the BMS's normal operation. The PACK wiring must strictly comply with these requirements.

7.5 Up and down power sequence

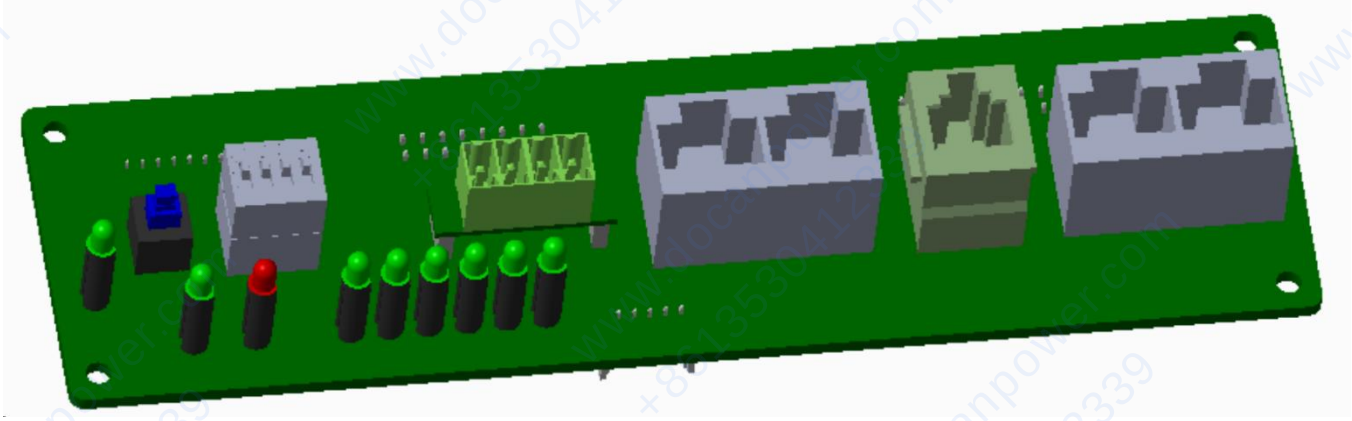
Connect the power supply in the following order: first connect the motherboard B-, then the sampling line, then B+, and finally P-and P+ to the negative terminal.
charger or charger.
The reverse order applies: disconnect the charger and load first, then the B+ terminal, followed by the port sampling line, and finally the B-.

6. Product physical images and structural dimension diagrams

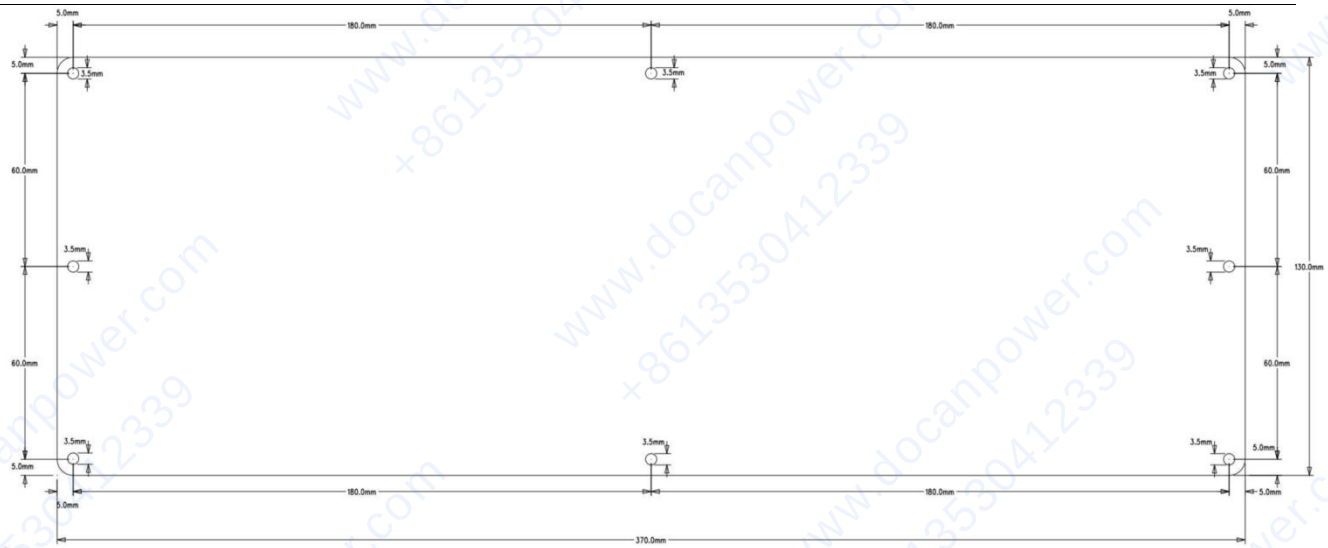
8. 1. Frontal view of the actual product



8. 2. Negative physical image



8. 3. Mainboard dimensions:



8. 4. Actual image of the display screen

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Note: The image is for reference only. The actual product is subject to the actual product.

9. List of main components

class	model	brand	dosage (pcs)
master control IC	R7FA6M2AF3CFP	Renesas	1
gather IC	SH367309U/048UR	intermediate	1
MOS Guan	JBL101N 1001P	Jiejie Jiejie	50 50
485 IC	TP8485E-SR	sireum	2
Can transceiver	TPT1051V-SO1R	sireum	1

10. Assembly and Usage Notes

This software is used on PC with Windows platform.

Before use, verify that the USB cable supports data transmission and that the communication tool is properly connected between the protection board's communication port and the PC's USB interface. Launch the dedicated PC client software and configure the BMS's communication mode. Upon successful connection, the' Communication: Connected 'status will appear in the lower-left corner of the host computer's main interface. If the connection fails, check the communication mode settings and ensure proper wiring.

The host computer supports switching between Chinese and English voice. Go to Help in the left column of the home page to switch languages.

The screenshots of the following parameters are for reference only. Please refer to the actual parameters of the BMS.

10.1 Real-time monitoring interface:

10.2 Basic Parameters 1

1. Assembly and usage instructions

1. Power connection and disconnection must follow the sequence of power-on and power-off.

2. When connecting the battery pack, avoid incorrect or reversed connections. If the device fails to connect to the host computer or if the main chip on the circuit board shows excessive heat, immediately power it down. The circuit board may be defective and requires replacement or repair.

3. During assembly, avoid contact between wire ends, solder, or similar materials and PCB components, as accidental contact may damage circuitry and cause malfunctions.

4. Strictly adhere to the design parameters specified in the specification document; otherwise, it may damage the circuit board.

5. During use, ensure moisture-proof, waterproof, and anti-static properties.

6. When conducting charge-discharge tests on the battery pack with the management system installed, do not use the battery aging cabinet to measure the voltage of individual cells.

Perform the measurement carefully to avoid damaging the management system and battery.

7. After assembly into a battery pack, complete charge and discharge cycles should be performed to activate overcharge and overdischarge protection, allowing the circuit board to learn the battery's initial capacity.

8. The management system lacks a 0V battery charging function. When the battery reaches 0V, its performance will severely degrade and may even be damaged. To prevent battery damage, users should recharge it periodically when not in use for extended periods (over 3 months). During use,

After discharge, recharge the battery within 12 hours to prevent it from depleting to 0V due to self-discharge.