



Battery Pack Product Specifications

Model	51.2V628AH
Nominal voltage	51.2V
Capacity	628Ah
Type	Lithium iron phosphate
Date	

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Specification Version Notes

Version	Change Notice	Author	Date	Remark

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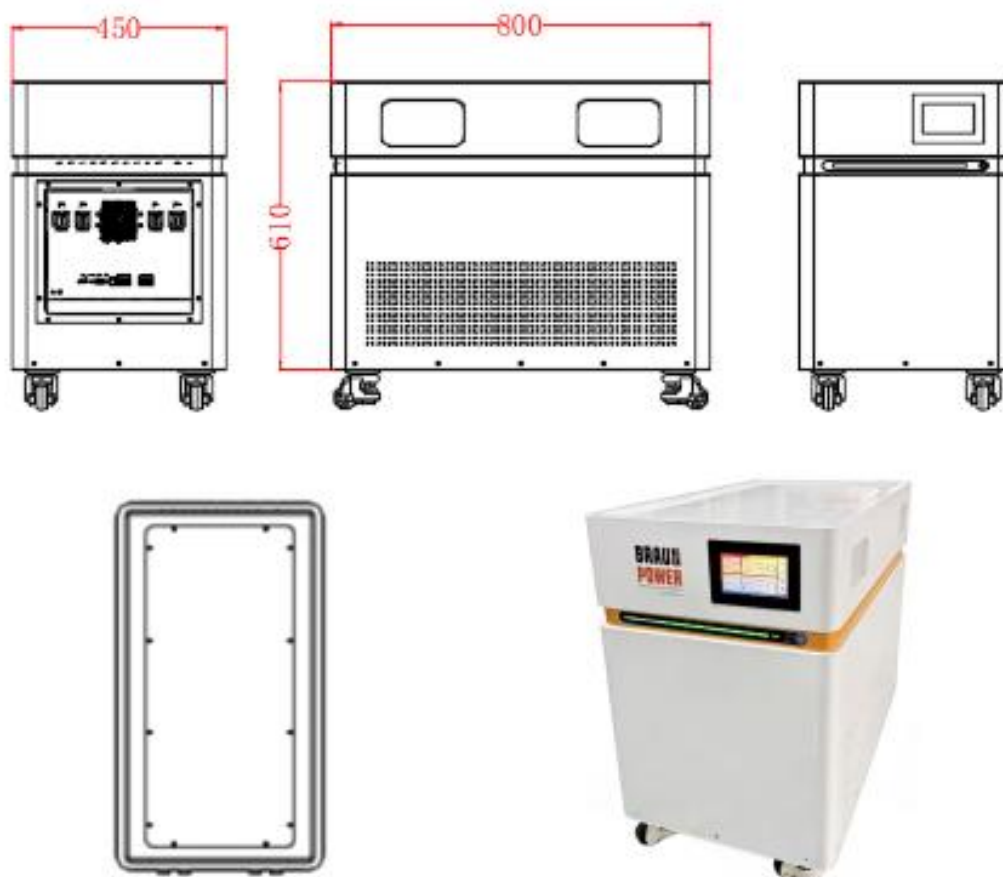
1. Product Overview

This product is a lithium iron phosphate battery pack (including BMS) consisting of 16 cells in series . This product is suitable for load devices with an operating current in the range of 200A.

2. Product Technical Specifications

This product is a 48V 628Ah battery pack, composed of 16S1P cells, with a maximum continuous charge and discharge current of 200A. It features WIFI and Bluetooth functions, passive current limiting, communication functions (dual RS485), and 500 data entries. The chassis is white.

2.1 Battery Pack Product Structure Diagram



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2.2 Battery System Technical Parameters

Project	Specification	Remark
Product Model	51.2V628Ah	51.2 V / 628 AH
Nominal capacity	628 A H	16 strings in parallel (16 S 1 P)
Nominal voltage	51.2 V	3.2* 16
Rated energy (Wh) $\pm 5\%$	32153	
Display screen	5-inch touchscreen	
Charging method	CC-CV (Constant Current, Constant Voltage)	
Discharge method	Constant current discharge	
Charge/discharge port (common port or separate port)	Talk in common	
Communication port	RS485 /CAN	
Cooling method	Natural cooling	
Operating temperature	-20 °C ~ 70 °C	
Storage humidity	10 %~ 85 %	
Protection level	IP 55	
Active Equilibrium	With active equalization function	
Battery box dimensions (length * width * height) (mm)	800 * 610 * 450 mm	

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Battery weight tolerance ± 2 kg		236 KG	
Charge	Maximum continuous current	200A	CC&CV 200A
	Cut-off voltage	58.4 V	
	Standard mode	Under ambient temperature (25 ± 2) °C, the charging voltage is constant at 58.4 V and the current is constant at 100 A.	
Discharge	Maximum continuous current	200 A	
	Overcurrent protection	205 A	
	Cut-off voltage	43.2 V	
	Standard mode	Under ambient temperature (25 ± 2) °C, the battery was discharged at a constant current of 100A until the voltage of a single cell reached 2.7V (or the total voltage reached 43.2V) and then stopped.	
Matching inverter		CAN: Goodway, Victron, SMA, Pengcheng Shouhang, Growatt, etc.	
		RS485: Riyueyuan, Shuori, Pylon, etc.	

3. Battery Management System (BMS)

3.1 Overview of BMS System Functions

3.1.1 Cell and battery voltage detection.

3.1.2 Battery charging and discharging current detection.

3.1.3 Cell, ambient and power temperature detection .

3.1.4 Battery capacity calculation and cycle count function.

3.1.5 Charge/discharge MOSFET switching function.

3.1.6 Battery charging equalization function .

3.1.7 Button switch function .

3.1.8 RS485 and CAN communication functions.

3.1.9 Host computer control function.

3.1.10 Historical data storage function.

3.1.11 Charging current limiting function.

3.1.12 Secondary protection function.

3.1.13 Heating function (optional).

3.1.14 WiFi Function

3.2 BMS System Parameter Settings

Project Name	Indicator Items	Standard values
Single cell overcharge protection	Overcharge protection value	$3.65 \pm 0.02V$
	Overcharge alarm value	$3.55 \pm 0.02V$
	Overcharge recovery value	$3.45 \pm 0.02V$
Single cell over-discharge protection	Over-discharge protection value	$2.7 \pm 0.02V$
	Over-release alarm value	$2.9 \pm 0.02V$
	Over-discharge recovery value	$3.0 \pm 0.02V$
Battery pack overcharge protection	Overcharge protection value	$58.4 \pm 0.02V$
	Overcharge alarm value	$56.8 \pm 0.02V$
	Overcharge recovery value	$55.2 \pm 0.02V$
	Over-discharge protection	$43.2 \pm 0.02V$

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Battery pack over-discharge protection	value	
	Over-release alarm value	$46.4 \pm 0.02V$
Overcurrent protection during charging	Over-discharge recovery value	$48 \pm 0.02V$
	Overcurrent protection during charging	$220A \pm 2A$
	Overcurrent during charging delay	10000mS
	Overcurrent protection during charging	$240A \pm 2A$
Discharge overcurrent protection	Overcurrent during charging delay 2	500mS
	Discharge overcurrent protection 1	$220A \pm 2A$
	Discharge overcurrent delay 1	10000mS
	Discharge overcurrent protection 2	$240A \pm 2A$
Short circuit protection	Discharge overcurrent 2- delay	500mS
	Short circuit protection current	$400A \pm 100A$
	Short circuit protection delay	$450 \mu S \pm 100 \mu S$
	Short circuit protection deactivated	1、Valid charging current detected 2、Re-detect every 1 minute, lock after 3 consecutive attempts.

Temperature protection	High temperature protection during charging	$55 \pm 3 \text{ }^{\circ}\text{C}$
	High-temperature recovery during charging	$50 \pm 3 \text{ }^{\circ}\text{C}$
	Low temperature protection during charging	$-5 \pm 3 \text{ }^{\circ}\text{C}$
	Low temperature protection recovery during charging	$0 \pm 3 \text{ }^{\circ}\text{C}$
	High-temperature discharge protection	$60 \pm 3 \text{ }^{\circ}\text{C}$
	High-temperature discharge recovery	$55 \pm 3 \text{ }^{\circ}\text{C}$
	Discharge low temperature protection	$-20 \pm 3 \text{ }^{\circ}\text{C}$
	Discharge low temperature protection recovery	$-15 \pm 3 \text{ }^{\circ}\text{C}$
Equalization function	Equalizing turn-on voltage	2.8V
	Equal opening pressure difference	20mv

3.3 LED Indicator Light Description

It has 12 RGB tri-color indicator lights: 10 battery remaining capacity indicator lights, 1 running indicator light, and 1 alarm protection status indicator light.



3.3.1 Instructions (Definitions for scrolling lights and traffic lights)

① Power-on self-test: The LED lights sequentially increment from RUN to SOC100, indicating that the system has entered working mode.

② RUN-LED operating status:

1. Normal state: Solid green light

2. Discharge state: Constantly lit

3. Charging status: Always on

③ Alarm-LED BMS alarm/protection/failure status:

1. Normal state: The light is off when there are no alarms or protection mechanisms in place;

2. Alarm status or low battery: Yellow flashing (overvoltage alarm does not indicate, undervoltage alarm only does not show in idle state)

3. Protection status: Red flashing (overvoltage and undervoltage protection do not indicate)

4. Failure/Troubleshooting: Solid red light

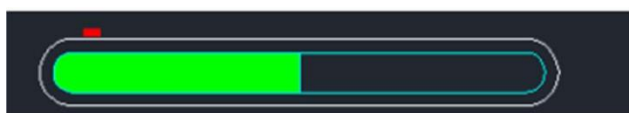
④ During charging: Increment according to SOC



⑤ During discharge, it decreases according to SOC.



⑥ When the battery is in standby mode (neither charging nor discharging), the corresponding length will be displayed according to the actual SOC (e.g., as shown in the figure below when it is 50%).



3.4 Reset Button Instructions

When the BMS is in sleep mode, press and hold the button for 1 second and then release it to activate the protection board. The LED indicator lights will light up sequentially for 0.5 seconds, starting from "RUN".

When the BMS is in operation, press and hold the button for ≥ 6 seconds and then release it to reset the protection board. The LED indicator will then display the current battery level.

When the BMS is in operation, press and hold the button for 3-6 seconds, then release it. The protection board will enter sleep mode, and the LED indicator lights will sequentially illuminate starting from the lowest battery level.

Light up for 0.5 seconds

3.5 Sleep and Wake-up Functions

3.5.1 Hibernation

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

① If the individual undervoltage protection or overall undervoltage protection is not released within 15 minutes

② Press and hold the button for 3 seconds, then release it.

③ The lowest unit voltage is lower than the sleep setting voltage (default 3300mV), and the duration reaches the sleep delay time (default 1440mV). (Minutes) (simultaneously satisfying no communication and no charging/discharging current).

④ Force shutdown via host computer software.

Before entering sleep mode, ensure that no external voltage is connected to the P-terminal; otherwise, it will be unable to enter low-power mode.

⑤ If the lowest unit voltage is below the undervoltage protection value of -500mV, force entry into deep sleep mode after a 10-minute delay.

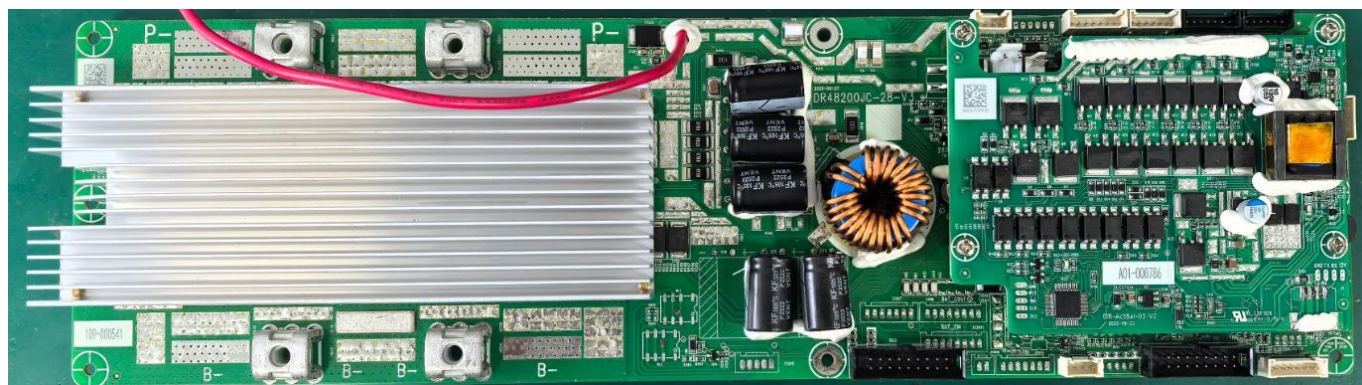
3.5.2 Wake-up

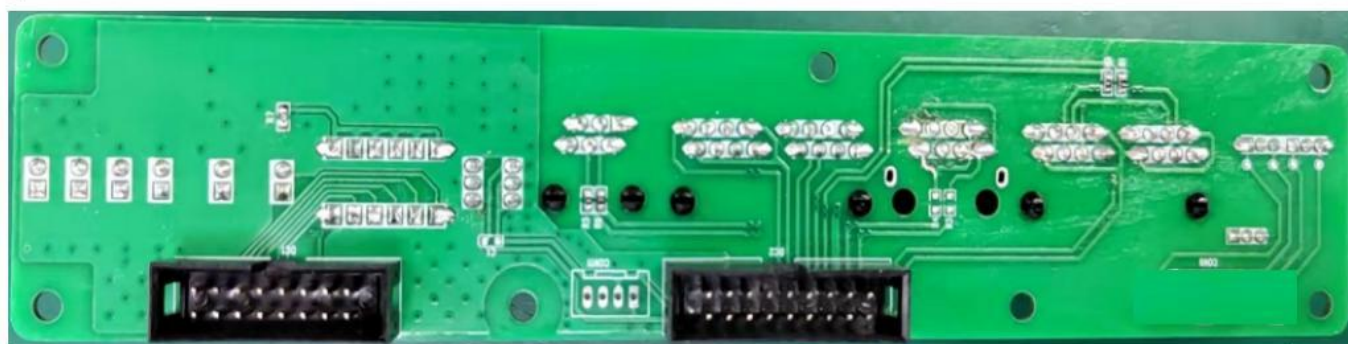
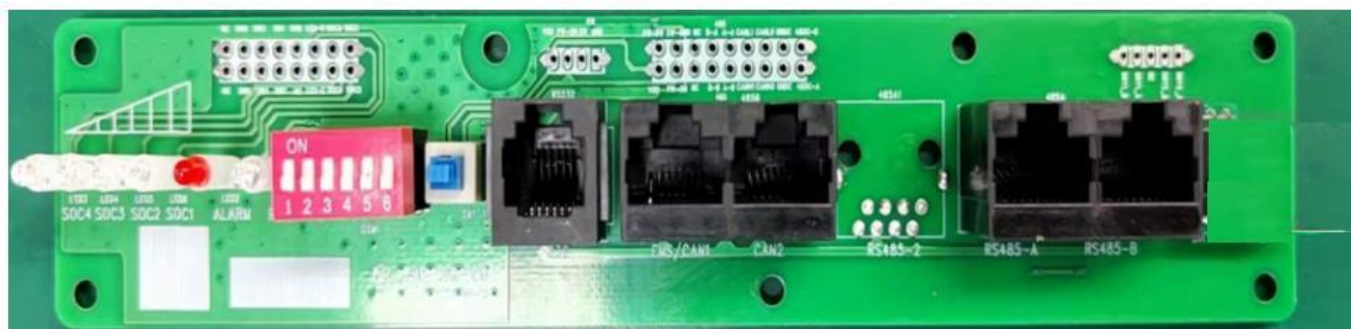
When the system is in low-power mode, it will exit low-power mode and enter normal operation mode if any of the following conditions are met:

① Connect the charger. The charger's output voltage must be greater than or equal to 48V.

② Press the button for 1 second, then release the button.

3.6 Actual dimensions of the protective plate

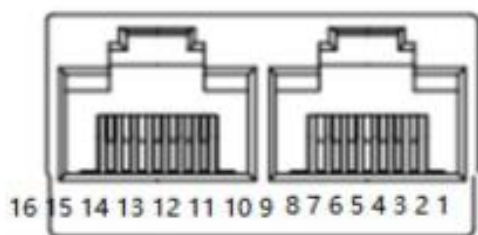




4. Communication

The BMS can communicate with the host computer via an RS485 communication interface . Parallel communication via the RS485 interface allows for multi-machine parallel communication . It also has RS485 and CAN interfaces for communication with inverters or terminals.

4.1 Communication Interface Definition



RS485 CAN
RS485 和 CAN 接口

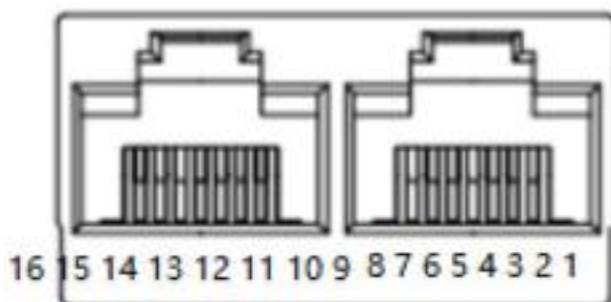
RS485—采用 8P8C 立式 RJ45 插座 RS485—Use 8P8C vertical RJ45 socket	
RJ45 引脚 RJ45 pin	定义说明 defined declaration
9、16	RS485A-B
10、15	RS485A-A
11、14	GND
12、13	NC

CAN—采用 8P8C 立式 RJ45 插座 CAN—Use 8P8C vertical RJ45 socket	
RJ45 引脚 RJ45 pin	定义说明 defined declaration
4	CANH
5	CANL
3、6	GND
1、2、7、8	NC

4.2 Parallel Interface

The BMS battery packs communicate in parallel via an RS485 bus and can also communicate with devices equipped with an RS485 bus. The CAN interface enables communication with a PC or other devices.

It enables intelligent terminal communication and human-machine interaction via RS485 bus, connecting any battery pack in parallel. The multi-machine parallel bus interface is shown in the figure below .



RS485A RS485B
并机通信接口

并机通信端口（只用来并机） Parallel communication port (for parallel only)			
RS485-A—采用 8P8C 立式 RJ45 插座 RS485-A—Use 8P8C vertical RJ45 socket		RS485-B—采用 8P8C 立式 RJ45 插座 RS485-B—Use 8P8C vertical RJ45 socket	
RJ45 引脚 RJ45 pin	定义说明 defined declaration	RJ45 引脚 RJ45 pin	定义说明 defined declaration
9、16	RS485B-B	1、8	RS485B-B
10、15	RS485B-A	2、7	RS485B-A
11、14	GND	3、6	GND
12、13	NC	4、5	NC

4.3 Address DIP Switch

4.3.1 DIP switch settings

When packs are used in parallel, different pack addresses are distinguished by hardware DIP switches, and the address of each pack in the entire battery pack is unique. The hardware address is set by DIP switches as shown in the table below.



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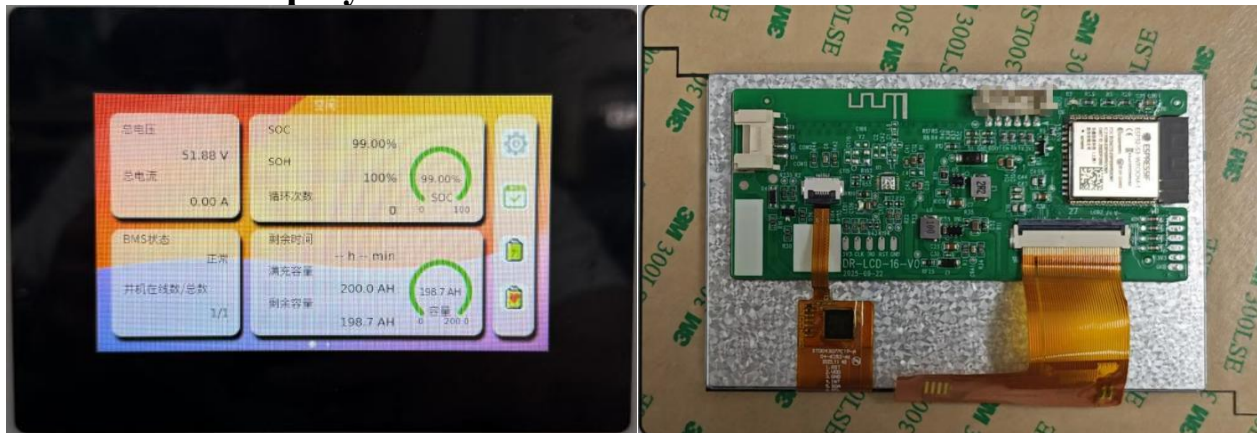
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	#1	#2	#3	#4	#5	#6	
0	OFF	OFF	OFF	OFF	OFF	OFF	(主机) Pack1
1	ON	OFF	OFF	OFF	OFF	OFF	(从机) Pack2
2	OFF	ON	OFF	OFF	OFF	OFF	(从机) Pack3
3	ON	ON	OFF	OFF	OFF	OFF	(从机) Pack4
4	OFF	OFF	ON	OFF	OFF	OFF	(从机) Pack5
5	ON	OFF	ON	OFF	OFF	OFF	(从机) Pack6
6	OFF	ON	ON	OFF	OFF	OFF	(从机) Pack7
7	ON	ON	ON	OFF	OFF	OFF	(从机) Pack8
8	OFF	OFF	OFF	ON	OFF	OFF	(从机) Pack9
9	ON	OFF	OFF	ON	OFF	OFF	(从机) Pack10
10	OFF	ON	OFF	ON	OFF	OFF	(从机) Pack11
11	ON	ON	OFF	ON	OFF	OFF	(从机) Pack12
12	OFF	OFF	ON	ON	OFF	OFF	(从机) Pack13
13	ON	OFF	ON	ON	OFF	OFF	(从机) Pack14
14	OFF	ON	ON	ON	OFF	OFF	(从机) Pack15
15	ON	ON	ON	ON	OFF	OFF	(从机) Pack16
逆变器通信协议选择 CAN 通信(在主机模式下通过拨码 5 和 6 选择)							
Inverter communication protocol Select CAN communication (select by DIP 5 and 6 in host mode)							
1	OFF	OFF	OFF	OFF	OFF	OFF	支持上位机/显示屏 对逆变器协议选择 Supports host computer/display Select the inverter protocol
17	OFF	OFF	OFF	OFF	ON	OFF	维克特 Viktron
33	OFF	OFF	OFF	OFF	OFF	ON	派能 Pylon
49	OFF	OFF	OFF	OFF	ON	ON	古瑞瓦特 Geowatt
逆变器通信协议选择 RS485 通信(在主机模式下通过拨码 5 和 6 选择)							
Inverter communication protocol RS485 communication (Select DIP 5 and 6 in host mode)							
1	OFF	OFF	OFF	OFF	OFF	OFF	支持上位机/显示屏 对逆变器协议选择 Supports host computer/display Select the inverter protocol
17	OFF	OFF	OFF	OFF	ON	OFF	硕日 SRNE
33	OFF	OFF	OFF	OFF	OFF	ON	日月元 Voltronic
49	OFF	OFF	OFF	OFF	ON	ON	古瑞瓦特 Geowatt

备注：通过上位机或者显示屏进行选择协议拨码地址 5 和 6 必须为 OFF

5. Actual display screen



6. Test conditions

Except in special circumstances, all test conditions shall be based on standard test conditions:

Ambient temperature: $25 \pm 5^{\circ}\text{C}$; Ambient humidity: 40%-80%RH

"Standard charging" means charging to 58.4 V with a constant current of 0.2 C under ambient temperature conditions of $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$, and then charging with a constant voltage of 58.4 V.

The current is less than 0.02 C.

"Standard discharge" means discharging to 43.2 V with a constant current of 0.2 C under ambient temperature conditions of $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$.

7. Electrical performance and safety performance testing

7.1 Electrical performance testing

Test Project	Test Standards	Technical Requirements
25°C room temperature discharge capacity	The battery pack was first fully charged at a current of 0.2C under standard test conditions, and then discharged at a current of 0.2C. The discharge capacity of the battery pack was recorded.	$\geq 100\%$ nominal capacity
	The battery pack was first fully charged at	

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-10 °C low temperature discharge capacity	a current of 0.2C under standard test conditions, then stored at a low temperature of -10 °C for 10 hours, and discharged at a current of 0.2C until the termination voltage. The discharge capacity of the battery pack was recorded.	≥ 75% of nominal capacity
55 °C High Temperature Discharge Capacity	The battery pack was first fully charged at a current of 0.2C under standard test conditions, then stored at a high temperature of 55 °C for 5 hours, and discharged at a current of 0.2C until the termination voltage. The discharge capacity of the battery pack was recorded.	≥ 95% of nominal capacity
Charge retention and capacity recovery capabilities	The battery pack was first charged and discharged at a current of 0.2C under standard test conditions, and the initial capacity was recorded. It was then fully charged under standard test conditions, stored at an ambient temperature of $25^{\circ} \pm 5^{\circ} \text{C}$ for 30 days, and discharged at a current of 0.2C until the termination voltage was tested to maintain capacity. It was then charged at 0.2C, and then discharged again at 0.2C, repeated three times. The third cycle was for capacity recovery.	Charge retention rate ≥ 95%; Capacity recovery rate ≥ 95%
25°C ambient temperature cycle	The battery pack was first fully charged at a 0.2C current under standard test conditions, then discharged at a 0.2C	≥ 8000 times

life	current, and continuously charged and discharged at an ambient temperature of $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$. The cycle life test was terminated when the discharge capacity was $\leq 80\%$ of the initial capacity.	
5.5 $^{\circ}\text{C}$ high temperature cycle life	The battery pack was first fully charged at a 0.2C current under standard test conditions, then discharged at a 0.2C current, and continuously charged and discharged at an ambient temperature of $55^{\circ}\text{C} \pm 5^{\circ}\text{C}$. The cycle life test was terminated when the discharge capacity was $\leq 80\%$ of the initial capacity.	≥ 4000 times

7.2 Security performance test

Test Project	Test Standards	Technical Requirements
External short circuit test	The battery pack is charged under standard test conditions . The fully charged battery pack is placed in an explosion-proof box, and a wire with an internal resistance of less than $100\text{m}\Omega$ is used to short-circuit the positive and negative terminals of the battery pack. The surface temperature of the battery is recorded during the test. The short-circuit duration is 10 minutes , and the test is completed .	No fire, no explosion
Overcharge test	After the battery pack is charged under standard test conditions , a single cell of	No fire, no

	the battery pack is charged at 0.2C using a constant current and constant voltage source. The constant current charging is continued until 5V, then the constant voltage charging is switched to continue until the cutoff current reaches 0A , at which point the test ends.	explosion
Over-discharge test	After the battery pack is charged under standard test conditions , it is continuously discharged at 0.5C using a load device until the voltage of a single cell reaches 0~0.5V , at which point the test ends .	No fire, no explosion

8. Product Packaging Requirements

8.1 The battery box should be in good condition, without any defects such as paint peeling, scratches, deformation, or breakage.

8.2 Before packaging, the battery must be in a power-off sleep state.

8.3 Batteries must pass an appearance inspection before they can be packaged.

8.4 The outer packaging shall be a wooden crate. The information on the crate shall be clear. The crate shall be nailed on all four sides to increase its strength and rigidity and ensure safety during transportation.

8.5 Protective packaging material should be added inside the wooden crate to ensure that the battery box is not scratched during transportation.

8.6 A packing list is included inside the wooden crate.

9. Product storage and transportation

9.1 Product Storage

When the product is not in use for a long period of time, it should be stored in a dry, clean and well-ventilated warehouse at 10 °C ~ 35 °C , away from flammable and explosive materials; the battery pack should be charged and maintained every three months to ensure that the battery is in the best performance condition.

9.2 Product Transportation

Battery packs should be transported only after being externally packaged. During transportation, they should be protected from severe shocks, impacts, or squeezing, and should be protected from sun and rain.

10. Battery usage warnings and precautions

To prevent potential battery leakage, overheating, or explosion , please take the following precautions.

warn !

- ① Do not immerse the batteries in seawater or water. When not in use, store them in a cool, dry environment.
- ② It is strictly forbidden to use the battery with the positive and negative terminals reversed;
- ③ Do not use metal to directly short-circuit the positive and negative terminals of the battery;
- ④ Batteries must not be transported or stored together with metals, such as hairpins or necklaces.
- ⑤ Do not strike, throw, or step on the batteries.
- ⑥ Direct welding of batteries and puncturing batteries with nails or other sharp objects are prohibited.

Notice !

- ① Do not use or store the battery in high temperatures (such as under scorching sunlight or in a very hot car), as this may cause the battery to overheat, catch fire, malfunction, or have a shortened lifespan. The recommended optimal storage

temperature for the battery for long-term use is 10-45°C.

② Batteries must not be thrown into fire or heaters to prevent fire, explosion and environmental pollution; used batteries should be returned to the supplier or battery recycling point for disposal .

③ Do not use in areas with strong static electricity or strong magnetic fields, as this may damage the battery's safety protection devices and create potential safety hazards.

④ If the battery leaks and electrolyte gets into your eyes, do not rub them.

Immediately rinse your eyes with clean water and seek medical attention immediately, otherwise it may damage your eyes. If the battery emits an unusual odor , becomes hot, discolored, deformed, or exhibits any abnormalities during use, storage, or charging , immediately remove the battery from the device or charger and stop using it.

⑤ Do not plug the positive and negative terminals of the battery directly into the power outlet; a dedicated lithium-ion battery charger must be used.

⑥ Before installation, check the battery voltage and connections. It can only be used after everything is normal.

⑦ If the battery is stored at half charge and has not been used for three months, it needs to be recharged once.

⑧ If the electrodes get dirty, wipe them clean with a dry cloth before use; otherwise, poor contact or malfunction may occur .