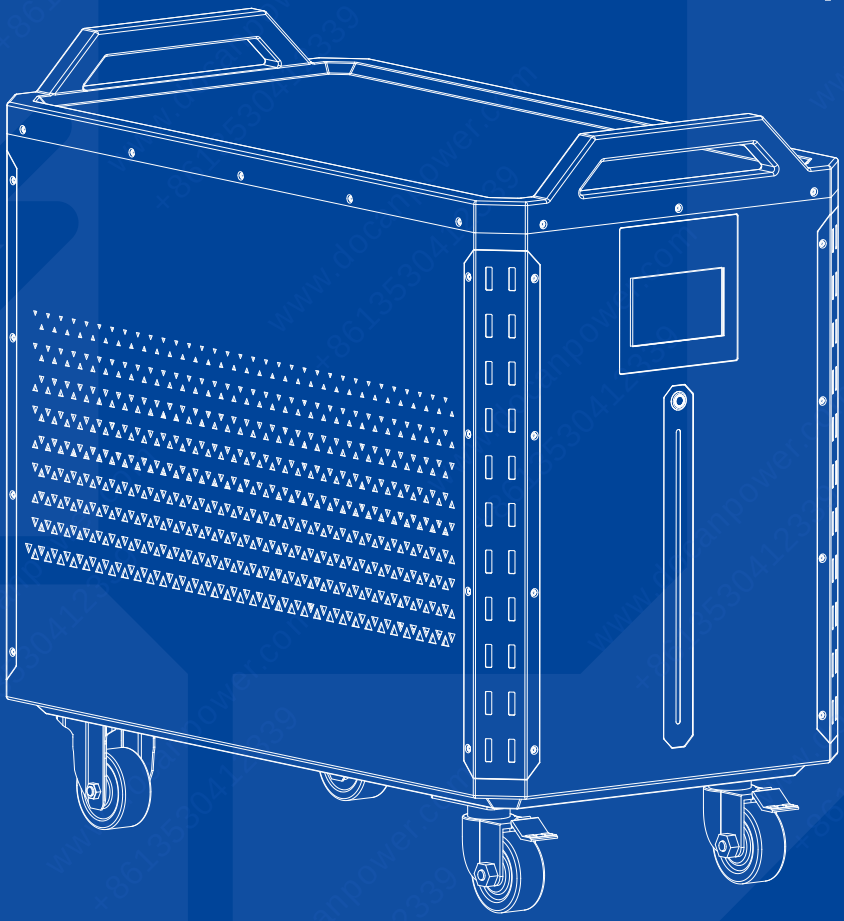
DOCAN ENERGY

VERTICAL 600Ah LITHIUM BATTERY PACK

PANDA



QUICK-START GUIDE

HIGH EFFICIENCY BATTERY PACK

Version	Change content	Date of Revision	Reviewed by	Calibration
PD1.0	Newest	2025-07-20	Maolong Shi	Zhenpeng Guo

Product acceptance and introduction

Proper use and maintenance of the product ensures long-term reliable and stable operation of your battery (or battery system) ,After receiving the product, please check whether the packaging is intact. If the packaging is damaged, the product may be damaged. If there is any damage, please contact our after- sales or sales staff within seven working days.

Anyone who fails to use or maintain it according to the provisions of this manual will be deemed to have waived the warranty right. We and its service station have the right not to provide warranty, and will not compensate for all losses arising therefrom, but can provide corresponding paid services according to the situation.

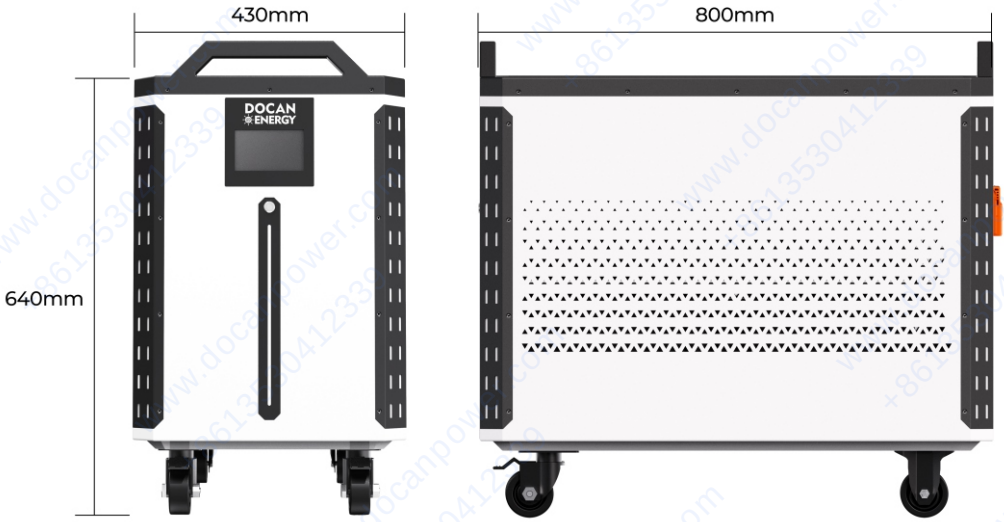
Please reply within seven working days after your company receives the product and product manual. If there is no reply within seven working days, our company will treat the customer as acknowledging that this product and product manual meet your requirements.

01.Product indicators

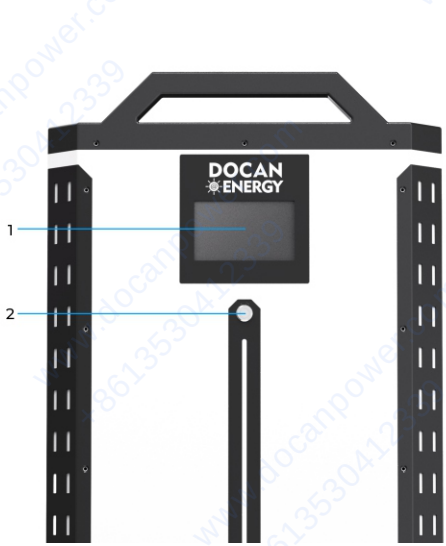
1.1 Product Overview

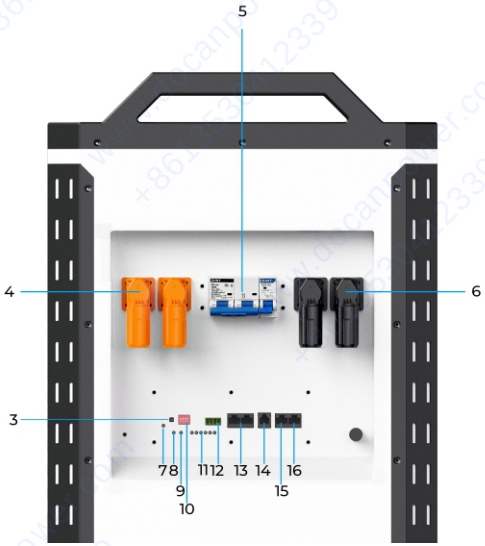
This product is a lithium iron battery pack. The battery pack consists of 32pcs 3.2V 314Ah lithium iron phosphate cells through 16 series and 2 parallel modes Combined. The battery pack adopts scientific internal structure design and advanced battery production technology. It has the characteristics of high specific energy and long life, safety and reliability, and wide operating temperature range. It is a green energy storage power supply product.

1.2 Pictures



1. Touch screen	5. AIR breaker	9. ALM	13. RS485A/CAN
2. Power Swith	6. Negative terminal(-)	10. ADD	14. RS232
3. RST	7. ON/OFF	11. SOC	15. RS485B
4. Positive terminal(+)	8. RUN	12. DRY	16. RS485C



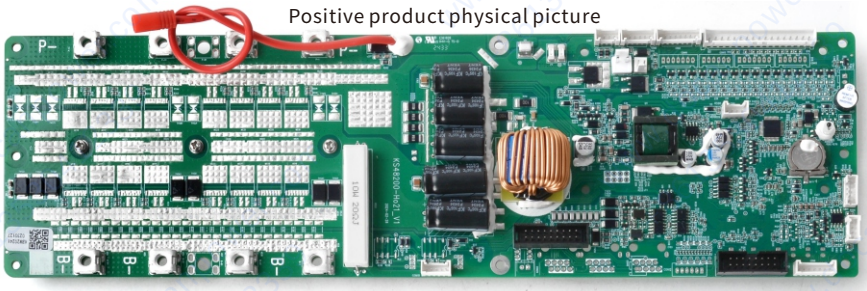


1.3 Parameter

Project	Parameter
Model	32kWh-51.2V-PD
Combination method	16 series 2 parallel
Cells	32pcs 3.2V 314Ah LifePo4
Nominal voltage (V)	51.2V
Nominal Capacity (Ah)	628Ah
Nominal Power (Wh)	32153Wh
Charging method	CC-CV (Constant Current-Constant Voltage)
Discharging method	Constant current discharge
Charge cut-off voltage (V)	58.4V
Discharge cutoff voltage (V)	40V
Discharge current (A)	200A (max)
	100A (standard)
Charging current(A)	200A (max)
	100A (standard)
Display screen	5-inch touchscreen
Communication port	RS485/CAN
Charge suitable for temperature	0°C ~45°C
Discharge suitable temperature	-20°C~60°C
Storage Temperature Range	0°C ~40°C
Storage Ambient Humidity (RH)	＜75%
Protection class	IP20
Battery pack size	800*430*640mm
Net weight of battery pack	238kg
Balancing method	Active
Balancing current	2A(max)
Other functions	WIFi and Bluetooth APP real-time monitoring
Cycles	Cycle life not less than 8000 times, capacity retention rate ⩾70%. Under the condition of ambient temperature (25±2)°C, constant voltage charging is 58.4V, discharging is 40V, and constant current is 100A.
Compatible inverters	CAN: Pylontech, DEYE, Growatt, Goodwe,Victron, SMA, Sofar, Solis, Luxpower, etc...
	RS485: SRNE, Pylon, Voltronic, etc...

02.BMS

Positive product physical picture



Positive product physical picture

Switch communication board physical positive and negative picture

2.1 Functions

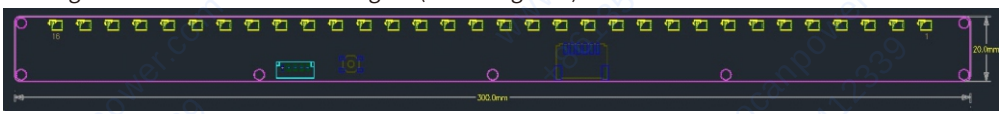
- Detection of cell and battery voltage.
- Detection of battery charge and discharge current.
- Detection of cell, ambient and power temperature.
- Functions of battery capacity calculation and cycle count.
- Charge and discharge MOSFET switching function.
- Battery charge balancing function.
- Key switch function.
- RS485 and CAN communication functions.
- Upper computer control function.
- Historical data storage function.
- Charging current limiting function.
- Secondary protection function.
- Heating function (optional).

2.2 BMS system parameter settings

Project name	Index item	Standard value
Cell overcharge protection	Overcharge protection value	3.65±0.05V
	Overcharge alarm value	3.6±0.05V
	Overcharge recovery value	3.38±0.05V
Cell over-discharge protection	Over-discharge protection value	2.5±0.05V
	Over-discharge alarm value	2.7±0.05V
	Over-discharge recovery value	3.0±0.05V
Battery pack overcharge protection	Overcharge protection value	58.4±0.05V
	Overcharge alarm value	57±0.05V
	Overcharge recovery value	54.4±0.05V
Battery pack Cell over-discharge protection	Over-discharge protection value	40±0.05V
	Over-discharge alarm value	44±0.05V
	Over-discharge recovery value	48±0.05V
Charging overcurrent protection	Charging overcurrent 1 protection	215A
	Charging overcurrent 1 delay	3000mS
	Charging overcurrent 2 protection	250A
	Charging overcurrent 2 delay	500mS
Discharging overcurrent protection	Discharging overcurrent 1 protection	215A
	Discharging overcurrent 1 delay	3000mS
	Discharging overcurrent 2 protection	250A
	Discharging overcurrent 2 delay	500mS
Short-circuit protection	Short-circuit protection current	380A
	Short-circuit protection delay	300uS
	Short-circuit protection release	Short-circuit protection is released during charging.
		After the load is removed, it will be automatically released.
Temperature protection	Charging high-temperature protection	60±2℃
	Charging high-temperature recovery	50±2℃
	Charging low-temperature protection	-5±2℃
	Charging low-temperature protection recovery	0±2℃
	Discharging high-temperature protection	65±2℃
	Discharging high-temperature recovery	50±2℃
	Discharging low-temperature protection	-10±2℃
	Discharging low-temperature protection recovery	0±2℃
Balancing function	Balancing activation voltage	3.5V
	Balancing activation voltage difference	65mA

2.3 LED Indicator Description

RGB lights: 16 channels of 2 color lights (red and green)



2.3.1 Indication Explanation (Definition of running lights and signal lights)

① Power-on self-test: Green lights run from low to high, with light 1 staying on all the way to light 16 at a frequency of 300ms. After the self-test is completed, it enters the normal display state.

② If the communication between BMS and the light board is interrupted for 30 seconds continuously, the yellow light flashes (on for 1s and off for 1s).

③ In case of faults or protection, the red light stays on; in case of alarm, the red light flashes (with a 0.5-second flash interval). (All lights go off during undervoltage protection; the red light should neither flash nor stay on during overvoltage alarm or overvoltage protection.)

④ During charging, the green light flashes cyclically (for example, if the SOC is 50% at that time, lights 1 and 8 stay on, and the running light starts from light 6 with a 300ms interval).

⑤ During discharging, the display decreases according to the SOC.

⑥ In case of over-discharge protection, the system enters hibernation mode, and all lights go off.

⑦ When the battery is on standby (neither charging nor discharging), the corresponding length is displayed according to the actual SOC (as shown in the figure below when the SOC is 50%).

2.4 Reset Button Description

When the BMS is in hibernation mode, press and hold the button for 1 second then release it; the protection board will be activated, and the LED indicators will light up sequentially from "L4" for 0.5 seconds each.

When the BMS is in active mode, press and hold the button for 3 seconds then release it; the protection board will enter hibernation, and the LED indicators will light up sequentially from "RUN" for 0.5 seconds each.

2.5 Hibernation and Wake-up Functions

2.5.1 Hibernation

The system enters low-power mode when any of the following conditions is met:

① The cell undervoltage protection or total undervoltage protection remains unrelieved within 30 minutes.

② The button is pressed for 3 seconds and then released.

③ The minimum cell voltage is lower than the preset hibernation voltage (default value: 3350mV), and this state lasts for the hibernation delay time (default value: 1440 minutes) (with no communication and no charge/discharge current at the same time).

④ Forced shutdown via upper computer software.

Before entering hibernation, ensure that no external voltage is connected to the P- terminal; otherwise, the system cannot enter low-power mode.

⑤ The minimum cell voltage is 500mV lower than the undervoltage protection value, and the system will be forced into deep hibernation after a 10-minute delay.

2.5.2 Wake-up

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

① A charger is connected, and the output voltage of the charger is ⩾ 48V.

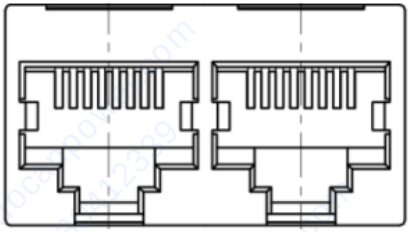
② The button is pressed for 1 second and then released.

③ An RS485 communication cable is connected, and the upper computer software is started.

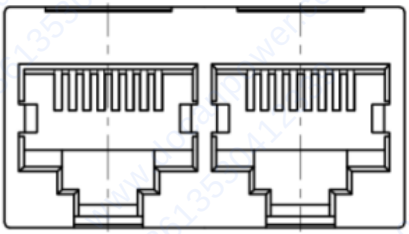
03. Communication

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

3.1 Definition of Communication Interfaces



CAN/RS485 interface

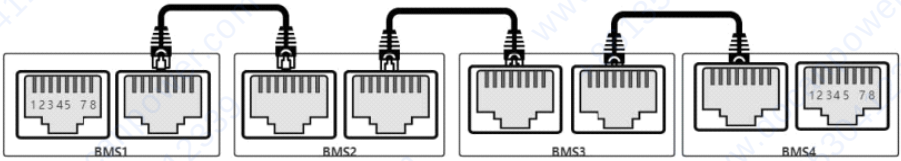


RS485B(in parallel) interface

Rs485 interface		CAN communication interface	
(communication with host computer or inverter) Support for SRNE、Voltronic and Geowatt inverter protocol--Select different addresses using DIP switches		（only inverter communication) Support for Victron、Pylon and Geowatt inverter protocol--Use DIP switches to select different protocols	
RS485—Use 8P8C vertical RJ45 socket		CAN—Use 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

3.2 Parallel Interface

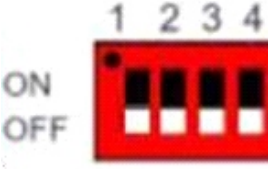
BMS battery packs communicate in parallel via the RS485 bus, and can also communicate with devices with an RS485 bus. The CAN interface is used to communicate with PCs or other intelligent terminals. The human-machine interaction RS485 bus can access information from any parallel-connected battery pack. For the multi-machine parallel bus interface, please refer to the figure below.



3.3 Address DIP Switch

3.3.1 DIP Switch Settings

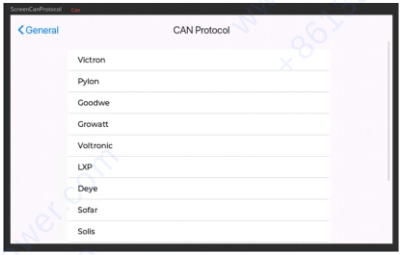
When packs are used in parallel, different PACK addresses are distinguished by hardware DIP switch addresses, and each PACK in the entire battery pack has a unique address. The hardware address is set via the DIP switch as shown in the following table.



Address	Dip switch position						Declaration
	#1	#2	#3	#4	#5	#6	
0	OFF	OFF	OFF	OFF	OFF	OFF	Pack1(main unit)
1	ON	OFF	OFF	OFF	OFF	OFF	Pack2(slave unit)
2	OFF	ON	OFF	OFF	OFF	OFF	Pack3(slave unit)
3	ON	ON	OFF	OFF	OFF	OFF	Pack4(slave unit)
4	OFF	OFF	ON	OFF	OFF	OFF	Pack5(slave unit)
5	ON	OFF	ON	OFF	OFF	OFF	Pack6(slave unit)
6	OFF	ON	ON	OFF	OFF	OFF	Pack7(slave unit)
7	ON	ON	ON	OFF	OFF	OFF	Pack8(slave unit)
8	OFF	OFF	OFF	ON	OFF	OFF	Pack9(slave unit)
9	ON	OFF	OFF	ON	OFF	OFF	Pack10(slave unit)
10	OFF	ON	OFF	ON	OFF	OFF	Pack11(slave unit)
11	ON	ON	OFF	ON	OFF	OFF	Pack12(slave unit)
12	OFF	OFF	ON	ON	OFF	OFF	Pack13(slave unit)
13	ON	OFF	ON	ON	OFF	OFF	Pack14(slave unit)
14	OFF	ON	ON	ON	OFF	OFF	Pack15(slave unit)
15	ON	ON	ON	ON	OFF	OFF	Pack16(slave unit)

04. Display

4.1 Display Interface



4.2 Display functions

5-inch touchable display screen shows data such as total battery voltage, total current, SOC, SOH, operating status, maximum & minimum temperatures, maximum & minimum cell voltages, etc. It allows switching to view the individual information of each Pack after parallel connection, selecting and switching languages, and choosing communication protocols of different inverters, among other functions.

05. APP

You can view the voltage of each cell, total battery voltage, current, SOC, SOH, cell temperature, battery status, battery warning and other information. Click the battery icon or PACK information bar to jump to the device details interface.

5.1 Download APP

Download and install the “锂电WiFi” APP: Scan the QR code below to download and install the Android version of the Li-ion WiFi APP.
For the iOS version, please go to the App Store and search for "锂电WiFi" to install it.

5.2 Bluetooth

After installing the APP, you can connect to the battery via Bluetooth. Entering the parameter setting interface allows you to set some configurable parameters of the BMS and control BMS actions. A password is required to enter the setting interface: 888888.

5.3 WIFi

Enter the WiFi settings interface, where you can configure the module to connect to a WiFi hotspot with internet access and connect to the network via WiFi. This enables the BMS data to be reported to the server platform, allowing for remote viewing and control of the BMS through the platform.

5.4 BMS system upgrade

On the BMS upgrade interface, after importing the BMS upgrade file, the upgrade file can be transmitted from the APP to the communication module via Bluetooth data transmission, and then the module upgrades the BMS through the serial port.

5.5 Monitoring interface(PC):

Connect the RJ45 port to RJ45-2 or RJ45-3, connect the USB to the computer, enable the monitoring software, open the communication serial port of the corresponding RS485 device, select the correct baud rate (9600) and dial address (the baud rate and address number shall be subject to the actual BMS product specification, generally the single-machine address is selected: 0), and finally click Open Serial Port to communicate normally with the BMS and obtain basic parameters. When the communication is normal, the parsing success value will increase.

06. Test Conditions

Except for special cases, all test conditions shall be based on the standard test conditions:

- Ambient temperature: 25±5°C;
- Ambient humidity: 40%-80% RH

"Standard charging" refers to charging at a constant current of 0.2C to 58.4V under the ambient temperature of 25°C±5°C, then continuing charging at a constant voltage of 58.4V until the current drops below 0.02C.

"Standard discharging" refers to discharging at a constant current of 0.2C to 40V under the ambient temperature of 25°C±5°C.

07. Electrical Performance and Safety Performance Tests

7.1 Electrical Performance test

Test Items	Test Standards	Technical Requirements
25°C normal temperature discharge capacity	After the battery pack is fully charged at a current of 0.2C under standard test conditions, it is discharged at a current of 0.2C, and the discharge capacity of the battery pack is recorded.	⩾100% of the nominal capacity
10°C low temperature discharge capacity	After the battery pack is fully charged at a current of 0.2C under standard test conditions, it is stored in a low-temperature environment of -10°C for 10 hours, then discharged at a current of 0.2C to the cut-off voltage, and the discharge capacity of the battery pack is recorded.	⩾75% of the nominal capacity

Test Items	Test Standards	Technical Requirements
55°C high temperature discharge capacity	After the battery pack is fully charged at a current of 0.2C under standard test conditions, it is stored in a high-temperature environment of 55°C for 5 hours, then discharged at a current of 0.2C to the cut-off voltage, and the discharge capacity of the battery pack is recorded.	⩾95% of the nominal capacity
Charge retention capability and capacity recovery capability	After the battery pack is charged and discharged at a current of 0.2C under standard test conditions, the initial capacity is recorded. It is then fully charged under standard test conditions, left unused for 30 days in an environment with a temperature of 25±5°C, discharged at a current of 0.2C to the cut-off voltage to test the retention capacity, charged again at 0.2C, and discharged at 0.2C for 3 cycles. The capacity from the third cycle is recorded as the recovery capacity.	Charge retention rate ⩾95%; Capacity recovery rate ⩾95%
25°C normal temperature cycle life	After the battery pack is fully charged at a current of 0.2C under standard test conditions, it is discharged at a current of 0.2C. Continuous charge-discharge tests are conducted in an environment with a temperature of 25±5°C. The cycle life test is terminated when the discharge capacity is ⩽70% of the initial capacity.	⩾8000
55°C high temperature cycle life	After the battery pack is fully charged at a current of 0.2C under standard test conditions, it is discharged at a current of 0.2C. Continuous charge-discharge tests are conducted in an environment with a temperature of 55±5°C. The cycle life test is terminated when the discharge capacity is ⩽70% of the initial capacity.	⩾4000
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 the positive and negative electrodes outside the battery pack are short-circuited with a wire with an internal resistance of less than 100mΩ. During the test, the surface temperature of the battery is recorded, and the short circuit lasts for 10 minutes to complete the test.	No fire, no explosion
Overcharge test	After the battery pack is charged under standard test conditions, a constant current and constant voltage source is used to charge a single cell of the battery pack at 0.2C. The constant current charging is performed until the voltage reaches 5V, then it is switched to constant voltage charging until the cut-off current reaches 0A, and the test is ended.	No fire, no explosion
Over-discharge test	After the battery pack is charged under standard test conditions, a load device is used to continuously discharge the battery pack at 0.5C until the voltage of a single cell reaches 0~0.5V, and the test is ended.	No fire, no explosion

08.Warnings

(1) Do not use the battery if it has been impacted or if there is noticeable deformation.

(2) Do not stack or assemble the batteries improperly. Please pay attention to the battery polarity and the connection terminals.

(3) Insulate equipment properly and use tools and instruments correctly.

(4) The battery installation area should be kept away from fire sources or any combustible materials. Ensure adequate ventilation and that the area is dry.

(5) Plugging in kits while the product is operating is strictly prohibited.

(6) Do not support series connection. Series connection will cause irreversible damage to the batteries.

(7) Please fully charge the battery with the specified charger before using new batteries or after long periods of storage.

(8) Do not disassemble, open, squeeze, bend, deform, pierce, or damage the product.

(9) Do not attempt to modify or insert any external objects into the product. Avoid exposing the product to liquids such as saltwater, freshwater, or beverages (e.g., coffee, juice, etc.). Keep it away from fire sources, explosive materials, or other hazards.

(10) Do not shortcircuit the battery. Ensure the battery terminals do not come into contact with metal or other conductive materials.

(11) Do not drop the battery. If this occurs (especially if it hits a hard surface), please contact the service center immediately.

(12) If there is any electrolyte leakage, avoid contact with skin or eyes. If contact occurs, rinse the affected area thoroughly with clean water and seek medical attention.

(13) Do not disassemble the cell battery under any circumstances. This may cause an internal short circuit, fire, or other hazards.

(14) Do not burn or expose the battery to fire under any circumstances. Doing so may cause the battery to catch fire.

(15) When connecting multiple battery packs in parallel, if your load exceeds 200A, use multiple terminals for parallel output. The chassis terminals cannot withstand currents exceeding 200A. Prolonged use of high current is not recommended, as it may cause the cables and terminals to overheat.

09. Other technical indicators

For any matters not covered in this manual and other related parameters, please contact our sales or technical staff if you need assistance. We will provide as much information as possible. Thank you for your understanding. You are welcome to visit our company website or call our customer service hotline at any time for more product information.

10. Special Statement (Users Need to Know)

Before purchasing and using the product, users should be aware of the special nature of lithium battery products and the risks associated with improper use. It is essential to read this product manual carefully and to have individuals with the necessary technical skills and knowledge operate the product. The technical performance, safety performance, and quality standards indicated for this product apply only when users meet the technical, environmental, and skill requirements and follow the correct operating procedures.

Improper use, including incorrect methods, faulty connections, inappropriate power adapters, or load parameters that do not comply with the performance specifications indicated in this manual, may cause damage to the product and jeopardize the safety of users and their property. Any product damage or other losses resulting from improper use by the user do not fall under product quality issues, and the company will not assume any related responsibilities. Our R&D center will continuously improve and upgrade the product in terms of technology, performance, and operation. Users are encouraged to regularly check our company website or contact our sales engineers for the latest product information.

This product must comply with the following management standards and conditions (not limited to) for usage, storage, and application:

This product is strictly prohibited from being used for any purpose that violates the laws and regulations of the local country.

This product is strictly prohibited from being used in areas that violate the environmental and location requirements for lithium batteries.

This product must not be used, charged, or stored in residential buildings or crowded areas that are fire safety risk zones.

This product must not be used, charged, or stored beyond the prescribed technical standards.

This product must not be disassembled, modified, or integrated in any unauthorized manner.

This product should not be stored together with any flammable or explosive materials or other similar products in violation of regulations.

CONTACT US