

KJ LFP48-100 Operating Manual

V1.0



KIJO BATTERY (AUSTRALIA) PTY.LTD.

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1 Preface

This product is a lithium iron phosphate battery (including BMS). It is composed of lithium iron phosphate battery cells, and the battery cell configuration adopts intelligent sorting, which is accurate and reliable; BMS uses a professional protection board testing system to conduct comprehensive testing before going online, ensuring that BMS provides comprehensive and effective protection for the battery pack during use. Thank you very much for choosing our company's energy storage system. In order to better use and maintain this product, please read this user manual carefully before use.

2 Precautions for use

Install	a. Installation work must be carried out by engineering personnel with professional qualifications, and general knowledge must be used to operate electrical components at all times
	b. Please stay away from water, steam, and other liquid substances, as well as flammable and explosive substances when installing
	c. Please be careful not to place the product near or on the heating element, heater, air conditioner, or exhaust duct
	d. The weight and volume of the product are relatively large, so avoid falling and colliding during transportation.
Distribution	a. Wiring operations must be carried out by engineering personnel with professional qualifications, otherwise there is a risk of electric shock.

	<p>b. The main circuit terminal must be firmly connected to the wire nose, and attention should be paid to the input and output terminals of the system when connecting cables</p>
	<p>c. The grounding terminal of the battery cabinet must be reliably grounded, otherwise there is a risk of electric shock.</p>
Operate	<p>a. The battery cabinet is a live equipment, and any operator must strictly follow the operating procedures when operating it.</p>
	<p>b. After the installation of the equipment, reasonable parameter settings have been made, and system parameters cannot be modified or set without the manufacturer's permission.</p>
	<p>c. Untrained duty personnel are not allowed to operate on the touch screen.</p>
	<p>d. Please do not overload the system to avoid equipment damage or reduce its service life.</p>
Maintenance	<p>a. Please regularly recharge the battery to avoid damage to the battery system caused by long-term failure to recharge</p>
	<p>b. Do not disassemble this product at will. When maintenance is needed, please seek qualified professional assistance</p>

	c. Personnel unrelated to maintenance should maintain a safe distance when operating the site
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3 System parameter

The main product specifications and parameters of the KJ LFP48-100 energy storage system are as follows:

Table 1 System Performance Indicators

NO	Items	Parameter	Notes
1、 System			
1	Nominal Capacity	100Ah	
2	Nominal voltage	51.2VDC	
3	Maximum continuous charging current	100A (1C)	
4	Maximum continuous discharge current	100A (1C)	
5	Voltage range	40-58.4V	
3、 BMS protection board			
1	Total power consumption during operation	$\leq 20\text{mA}$	
2	Voltage acquisition accuracy	$\leq \pm 10\text{mV}$	
3	Current acquisition accuracy	$\leq \pm 2\%$	
4	Temperature acquisition accuracy	$\pm 2^{\circ}\text{C}$	

NO.	Items	Parameter	Notes
5	Is there a balanced current	Possess	
6	Two SOC measurement errors	≤5%	
7	Protection and alarm	Including: individual overvoltage, undervoltage, overall overvoltage, undervoltage, overcurrent, overtemperature, short circuit protection, etc., and the protection settings can be set	
8	Communication	RS485/RS232/CAN	

4 System structure and operating instructions

4.1 System structure

4.1.1 Outline structure

The appearance of the energy storage battery box is shown in Figure 1, with a chassis width of 442mm, a height of 135mm, and a depth of 430mm (excluding the handle).



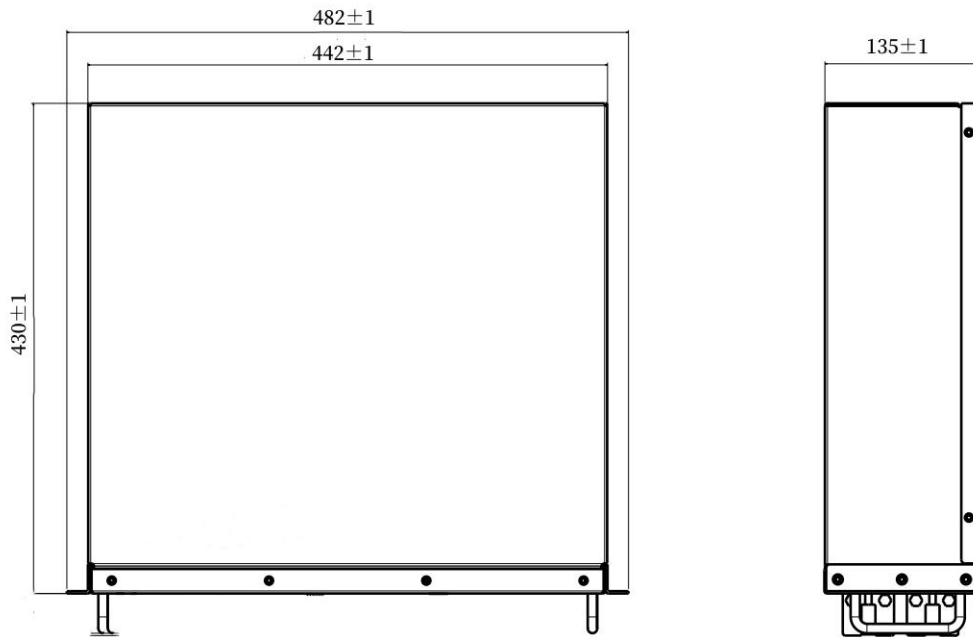


Figure 1 External View of Energy Storage Battery Box

4.1.2 Installation

Select the installation method according to the actual situation on site, the common installation method is rack mounting, first place the battery pack correctly on the rack laminate, then use screws to fasten the battery pack to the rack through the lugs. According to the power configuration of the Users, connect multiple battery packs in parallel in order, if there is a sink, all single battery positive and negative terminals will be sinked to the positive and negative terminals of the sink respectively. Determine the positive and negative inputs of the load equipment or Inverter, connect the positive and negative terminals of the battery pack to the corresponding positive and negative inputs of the load equipment or Inverter, confirm again that the positive and negative terminals are correctly connected, and then turn on the battery switch.

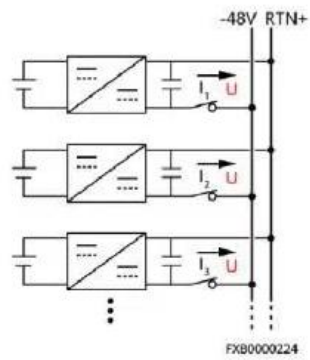
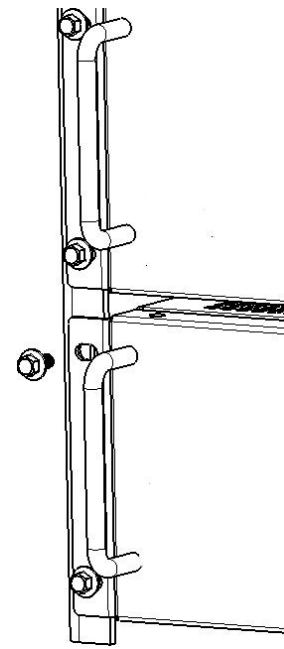
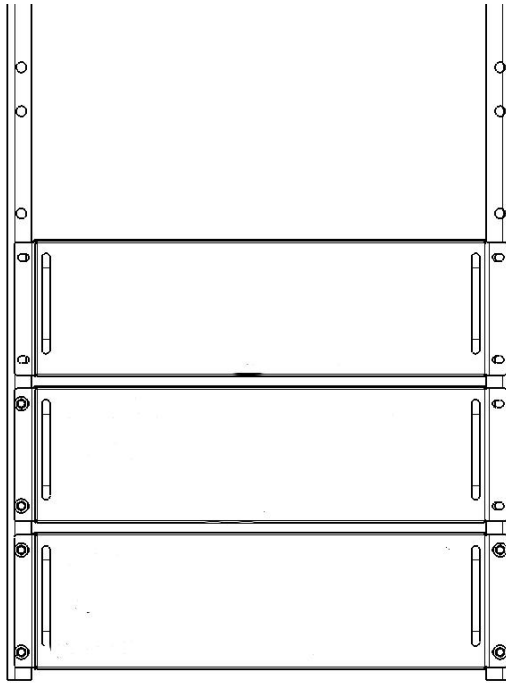


Table 3-1 Power derating coefficients for parallel connection

Number of Parallel ESMs	2	3	4	5	6	7	8	9	16
Derating Coefficient	0.70	0.60	0.55	0.50	0.50	0.45	0.40	0.40	0.40

Installation and wiring diagram of energy storage battery box

4.2 BMS Management System Performance

4.2.1 Basic parameters of BMS management system

NO.	Items	Specifications	Notes
1	Voltage sampling	16 sections	
2	Temperature sampling	4-way	4-way battery temperature acquisition
3	Single body voltage collection range	0~5V	
4	Individual voltage acquisition accuracy	$\pm 10\text{mV}$ $\pm 20\text{mV}$	0~45℃ -20~0℃/45~70℃
5	Temperature sampling range	-40~125℃	According to NTC specifications
6	Temperature acquisition accuracy	$\pm 3\text{℃}$	
7	Current detection accuracy	2%	
8	SOC calculation accuracy	<5%	
9	External communication methods	RS485/CAN	
10	Balanced management	Passive balanced	
		Equalization opening pressure difference: 30mV	
		Balanced opening voltage: 3400 mV	Can be set
11	System management	Real time battery information collection and upload	

		Alarm and protection (overvoltage, undervoltage, high temperature, low temperature, charging and discharging) Electrical overcurrent, short circuit)	
		Fault logging	
12	Normal operating power consumption	$\leq 45\text{mA}$	
13	Static total power consumption	$\leq 200\mu\text{A}$	

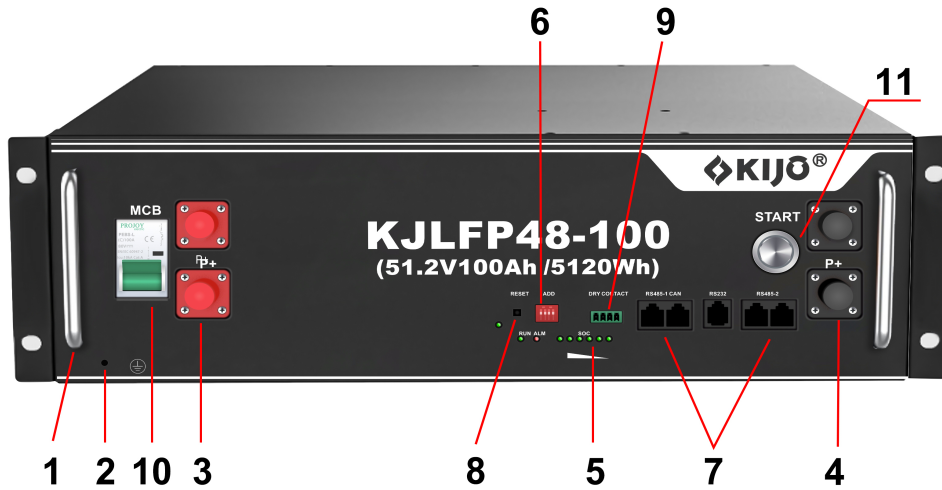
4.2.2 BMS management system protection parameters

NO.	Title	Items	Price	Unit	Notes
1	Overcharging parameter	Single overcharge alarm	3.6	V	Can be set
		Individual overcharging protection	3.65	V	Can be set
		Battery pack overcharge alarm	57.6	V	Can be set
		Battery pack overcharge protection	58.4	V	Can be set
2	Over discharge parameters	Individual over discharge alarm	2.6	V	Can be set
		Individual over discharge protection	2.5	V	Can be set
		Battery pack over discharge alarm	41.6	V	Can be set
		Battery pack over discharge protection	40	V	Can be set

3	Charging over-current parameters		Charging over-current alarm	105	A	Can be set
			Charging over-current protection	110	A	Can be set
4	Discharge over-current parameters		Discharge over-current alarm	105	A	Can be set
			Primary discharge over-current protection	110	A	Can be set
			Secondary discharge over-current protection	≥ 150 (100mS)	A	Can be set
5	temperature protection	charge temperature	Charging high temperature alarm	55	°C	Can be set
			Charging low temperature alarm	2	°C	Can be set
			High temperature protection during charging	60	°C	Can be set
			Low temperature protection during charging	0	°C	Can be set
	discharge temperature	Discharge high temperature alarm	60	°C	Can be set	
		Low temperature discharge alarm	-15	°C	Can be set	
		High temperature protection during	65	°C	Can be set	

			discharge			
			Low temperature protection during discharge	-20	°C	Can be set

4.2.3 Operation panel definition



NO.	Illustrate	Function	Notes
1	Handle	Battery box handle	
2	Grounding screw hole	Grounding	
3	Output Port (+)	Input and output power interface	
4	Output Port (-)	Input and output power interface	
5	Status	Power and operating status indication	
6	ADD	Address setting switch	
7	RS485 / CAN	RS485/RS232/CAN communication interface	Interface type RJ45
8	RESET	RESET	
9	Dry contact	Alarm and fault protection	

10	MCB	Overload protection	
11	switch	Connecting and disconnecting circuits	

4.2.4 Capacity indication

State		Charge						Discharge					
Capacity indicator light		L6	L5	L4	L3	L2	L1	L6	L5	L4	L3	L2	L1
Electricity consumption (%)	0 ~ 16.6%	Off	Off	Off	Off	Off	Flash 2	Off	Off	Off	Off	Off	ON
	16.6 ~ 33.2%	Off	Off	Off	Off	2flicker	ON	Off	Off	Off	Off	ON	ON
	33.2 ~ 49.8%	Off	Off	Off	2flicker	ON	ON	Off	Off	Off	ON	ON	ON
	49.8 ~ 66.4%	Off	Off	2flicker	ON	ON	ON	Off	Off	ON	ON	ON	ON
	66.4 ~ 83.0%	Off	2flicker	ON	ON	ON	ON	Off	ON	ON	ON	ON	ON
	83.0 ~ 100%	2flicker	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Operation indicator ●		All ON						3 Flicker					

4.2.5 Status indicator

system state	running state	ON/OFF	RUN	ALM	LED			Power LED			Illustrate
		●	●	●	●	●	●	●	●		
Shutdown	sleep	Off	Off	Off	Off	Off	Off	Off	Off	Off	All off
Standby	Normal	ON	1fli	Off	According to power						Standby

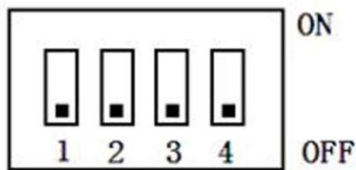
			cker		Indication	Status
			1fli cker	3fli cker		
Charge	Alarm	ON	1fli cker	3fli cker	According to power Indication	Maximum LED 2flicker
	Normal	ON	ON	Off		
	Give an alarm	ON	ON	3fli cker		
	Temperature and overcurrent protection	ON	Off	ON	Off	
	Overvoltage protection	ON	ON	Off	ON	Note: It remains on only when there is mains power. If there is no mains power, the indicator light should return to standby mode
Discharge	Normal	ON	3fli cker	Off	According to power Indication	
	Alarm	ON	3fli cker	3fli cker		
	Temperature Protection, Over-current	ON	Off	ON	Off	Stop discharging

	Protection					
	Under-voltage Protection	Off	2flicker	Off	Off	Stop discharging
	Failure Protection	Off	Off	ON	Off	Stop charging and discharging

4.2.6 LED flashing instructions LED

Flicker mode	ON	Off
1flicker	0.25S	3.75S
2flicker	0.5S	0.5S
3flicker	0.5S	1.5S

4.2.7 Dipswitch Settings



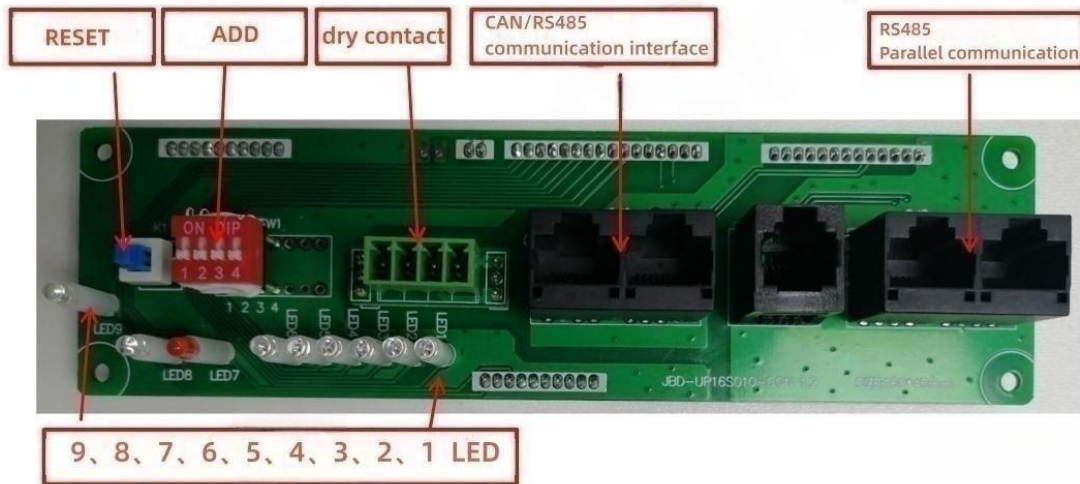
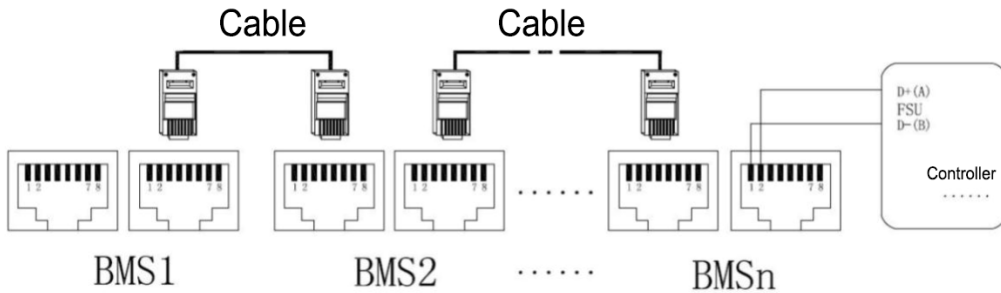
For parallel communication operation of multiple machines, you need to configure the dial code address of each PACK first. The dial codes are in BCD code format, and other addresses are shown in the following table.

BinaryAddress	Status				Description
0	OFF	OFF	OFF	OFF	No cascade, single machine use
1	ON	OFF	OFF	OFF	Set as main pack
2	OFF	ON	OFF	OFF	Set from Pack1
3	ON	ON	OFF	OFF	Set from Pack2
4	OFF	OFF	ON	OFF	Set from Pack3
5	ON	OFF	ON	OFF	Set from Pack4
6	OFF	ON	ON	OFF	Set from Pack5
7	ON	ON	ON	OFF	Set from Pack6
8	OFF	OFF	OFF	ON	Set from Pack7
9	ON	OFF	OFF	ON	Set from Pack8
10	OFF	ON	OFF	ON	Set from Pack9

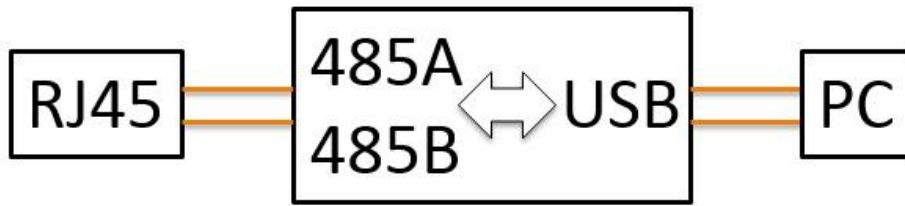
11	ON	ON	OFF	ON	Set from Pack10
12	OFF	OFF	ON	ON	Set from Pack11
13	ON	OFF	ON	ON	Set from Pack12
14	OFF	ON	ON	ON	Set from Pack13
15	ON	ON	ON	ON	Set from Pack14

4.2.8 Communication RS485 RS485

Monitoring and management of battery cascade is realized through RS485. Master PACK uploads the collected data from the slave PACKs to the upper computer for display in a unified manner and supports multi-unit cascade communication.

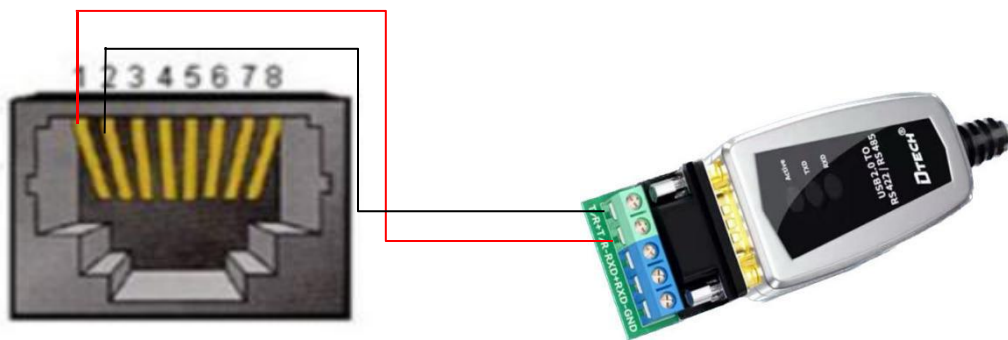


PIN /RJ45	Definition	
1 , 8	RS485B	NC
2 , 7	RS485A	CAN L
3 , 6	GND	CAN H
4 , 5	NC	GND



485-USB converter signal pin allocation:

Terminal	Output signal	RS485 half duplex wiring
1	T/R+	RS-485 (A+)
2	T/R-	RS-485 (B-)
3	GND	Ground wire



•RJ45 interface

•485-USB Converter

RS485 wiring diagram



485-USB connection cable

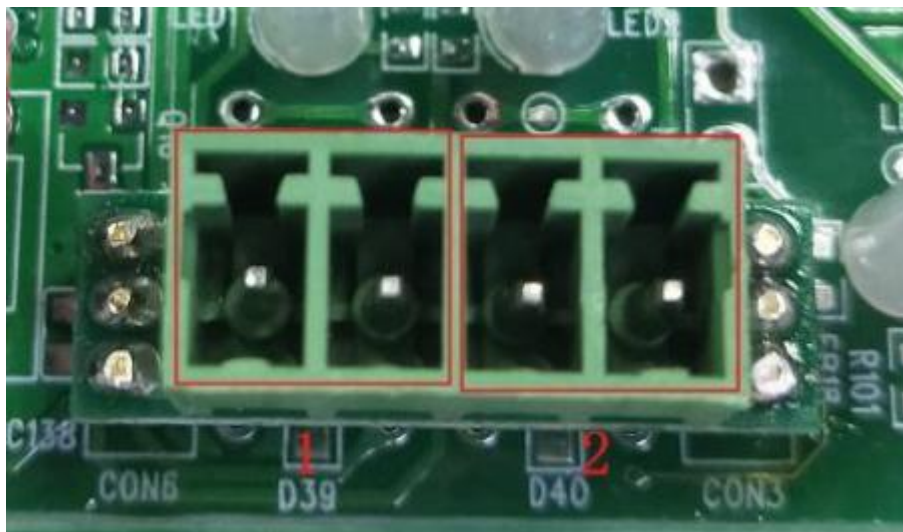
4.2.9 Sleep and Wake Up Instructions

Power on/activation: BMS is in a sleep state. After pressing the button for 3~6 seconds, the BMS is activated, and the LED indicator lights are turned on in sequence before entering normal working state;

Shutdown/Sleep: When the BMS is in standby or working mode, pressing the button for 3~6 seconds will cause the BMS to sleep, and the LED indicators will light up one by one before entering sleep mode;

Reset: The BMS is in standby mode, and after pressing the button for 6~10 seconds, the BMS is reset. (Reset the LED light to enter the running light)

4.2.10 Dry contact



Support 2-way dry contact output. Under normal working conditions, the two dry contacts are in a disconnected state, and when an abnormality occurs, the corresponding dry contacts are closed;

Dry contact 1: High temperature

Dry contact 2: Battery failure

5 Shipping requirements

Serial Number	Project	Specifications	Notes
1	Capacity	$\geq 100\text{Ah}$	0.5C
2	Nominal voltage	51.2V	Battery pack nominal voltage
3	Insulation impedance	$\geq 2\text{M}\Omega / 500\text{V}$	Between output terminal and outer box
4	Self consumption	$\leq 2\%$ per month	Self-discharge rate of battery pack at 25 °C (%/month)
5	Shipping capacity requirements	$30\% \pm 5\% \text{SOC}$	Can be agreed based on customer specific needs

6 Packaging And Transportation

6.1 Package

- a. Each battery pack should be individually packaged, with a complete and undamaged outer packaging box, and should be accompanied by product instructions, certificates of conformity, packing lists, etc.
- b. Packaging and filling materials (such as foam, plastic bags, etc.) are clean and free of dirt, and isolation materials can prevent direct extrusion between controllers.
- c. The packaging should be moisture-proof and vibration proof, and comply with the provisions of GB/T 3873.
- d. Packaged products should be placed in dry, dustproof, and moisture-proof packaging boxes.
- e. The packaging box should be labeled with the product name, model, quantity, gross weight, manufacturer, and date of production. Necessary signs such as "Handle with Care", "Keep Wet", "Keep Up", and "Keep Fire Away" should be displayed. The packaging, storage, and transportation icons should comply with the requirements of GB/T 191.
- f. The packaging of export products complies with SN0449.2-1995 Specification for the Inspection of Packaging of Dangerous Goods for Maritime Exports Performance Inspection.

6.2 Transport

The battery pack should be packaged in boxes for transportation, and during transportation, it should be protected from severe vibration, impact, or compression, as well as from sunlight and rain. Vehicles such as cars, trains, ships, and airplanes can be used for transportation.

6.3 Other prohibited matters

1. It is strictly prohibited to immerse the battery in seawater or water. When not in use, it should be placed in a cool and dry environment.
2. It is prohibited to use, leave or dispose of batteries near hot and high-temperature sources (such as fires or heaters).
3. It is strictly prohibited to use the battery by reversing the positive and negative poles.
4. It is prohibited to directly connect the positive and negative poles of the battery with metal for short circuit;
5. It is prohibited to strike or throw, or step on the battery.
6. It is prohibited to directly weld the battery and puncture the battery with nails or other sharp tools.
7. The replacement of battery components should be completed by the battery supplier, and users are not allowed to replace them on their own.
8. The conductive components must be insulated or meet the electrical gap when in contact with the positive and negative poles of the battery.
9. If the battery leaks and the electrolyte enters the eyes, please do not rub it. Rinse the eyes with clean water and seek medical treatment immediately.
10. If the battery emits odor, heat, discoloration, deformation, or any abnormal phenomenon occurs during use, storage, or charging, immediately remove the battery from the device or charger and stop using it.
11. If the battery is dirty, it should be wiped clean with a dry cloth before use, otherwise it may cause poor contact and functional failure.
12. Discarded batteries should be wrapped in insulating paper around the electrodes to prevent fire and explosion.

Note: according to different customer requirements will be adjusted to the actual