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USER MANUAL

STORE L5

Please carefully read the instrucion manual before use
Any updates or revisions will not be notified separately

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1. About User Manual

Appreciate for choosing household energy storage system developed and produced by ECOBSS. We sincerely believe that our products can satisfy your requirements as well as looking forward to your feedback on the performance of the product during use, so that we can further improve the quality of the product.

◆ 1.1. Description

• This User Manual is applicable to the installation and use of the product of low voltage series-rack mounted type with communication.

• Please read and understand all the contents of this Manual carefully before installation and operation of the product. Any loss caused by ignoring the contents of this Manual may void the warranty of the product.

• The drawings provided in this Manual are for explanation of the relevant concepts of the product, including product information, installation guide, instructions for use, safety information, frequently asked questions and maintenance etc.

• This Manual and other product-related documents are an integral part of the product and need to be properly kept for the on-site installation personnel and relevant technical personnel to look up further.

• The content of this Manual will be updated and amended continuously. Users will refer to the physical products purchased. For more information, please obtain the latest user manual through sales channels.

◆ 1.2. Introduction

This Manual contains the product information, installation guide, instructions for use, safety information, frequently asked questions and maintenance, etc.of the product.

2. Product Features

The product has the features as below:

• Rack mounted type with communication is a kind of low voltage lithium ion battery energy storage system for household application.

• Integrated with high-capacity and high-safety lithium iron phosphate cell.

• Built-in BMS to monitor and collect the voltage and temperature in the module in real time, realizing the intelligent temperature control at the electrical core level and the intelligent balance function of the battery.

• Improving cycle life,inside the battery pack,which is filled with shock-proof structure inside the cold-rolled sheet metal shell to meet the requirements of high safety and high reliability.

• The pack is designed with high stability and high disturbance resistance to ensure the safe and reliable operation of the battery system.

3. Safety

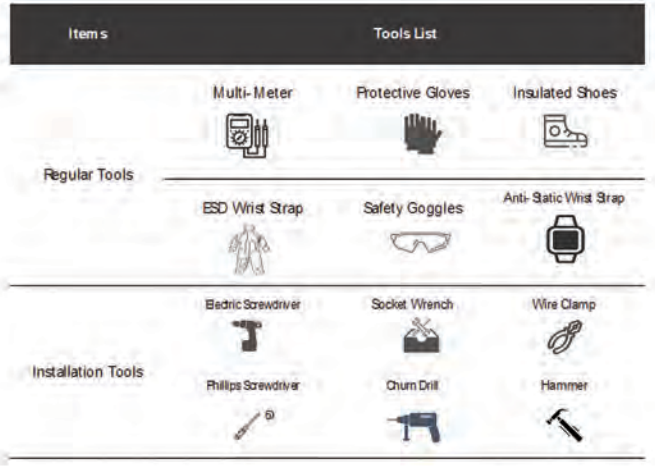
Before formally installing and operating this product, please read this part carefully and strictly implement its contents. During installation and use of this product, in order to prevent the personal injury and property loss and ensure the long-term usage of the product, the installation personnel and user shall abide by the articles and regulations of the relevant local laws and comply with all safety provisions and usage specifications of this Manual.

◆ 3.1. Symbols

	Danger:Risk of electric shock!
	Danger of high voltages:Danger to life due to high voltages in the battery
	It indicates that the PE is protected and must be firmly grounded to ensure the safety of operators

◆ 3.2. Installation Preparation

Tools as below are prepared before installation：Tools as below are prepared before installation：



◆ 3.3. Nameplate

• Nameplate contains important information for the safe operation of the product. It is strictly forbidden to tear or damage!
• Nameplate contains important parameter information related to the product. It is strictly forbidden to tear or damage!

3. Safety

◆ 3.4. Safety Requirements for Installation

• The safety protective equipment used in the process of installation shall meet the regulations on use of protective equipment.
• Any unclear safety symbols and warning messages on the product shall be replaced immediately.
• The transportation, installation and commissioning of the product must be carried out under the specified conditions.
• The installation and commissioning personnel of the product shall obtain the local electrician qualification.
• The installation and commissioning personnel of the product shall receive the corresponding training and obtain the qualification for installation and commissioning of the product.
• The installation and commissioning personnel of the product shall have the ability to evaluate the potential risks.
• Before commencement of installation, the installation personnel shall identify all safety risks at the site and implement the necessary safety risk controls.
• Please read and understand the safety information in this Manual carefully before commencing the installation.

◆ 3.5. Safety Requirements for Use

• Do not touch the battery module with the wet hands, in order to avoid the electric shock.
• Do not squeeze, impact or puncture the battery, in order to avoid the unnecessary damage and loss.
• Store and use the battery according to the instructions in this Manual, and comply with the relevant local laws and regulations and relevant safety standards.
• Before installation, replacement, repair and maintenance, remove all metal objects that may cause a short circuit.
• This product shall be repaired, replaced and maintained by the authorized personnel with electrician qualification.
• It‘s forbidden to reverse the polarity of the battery.
• The electrolyte of the battery will harm the skin and eyes; do not damage or disassemble the battery.
• Disconnect the battery with the grid/load before installation and maintenance, and then disconnect the battery supply.
• In the process of transporting, handling and storing the product, do not stack the unpacked products, in order to avoid the irreversible damage.
• The packaged battery modules shall not be connected in parallel and in series in excess of the specified quantity.

◆ 3.6. Personnel qualification

The installer of the product shall have the local electrician qualification, have received the safety and technical training, obtain the qualification authorized for the installation of the product, possess the experience in installation and use of electrical equipment, and the following capabilities, including but not limited to:
• Setting, activation, shutdown, grounding, short circuit and repair of electrical equipment
• Standard maintenance and use of protective devices for electrical equipment.
• Provision of emergency rescue for the injured.
• Compliance with local laws, regulations, standards and instructions.

3. Safety

◆ 3.7. Power-On Measurement

DANGEROUS

After the product is installed, there is high voltage. Accidental touching of the positive and negative poles may cause electric shock. Therefore, when powering on for measurement, please pay attention to:

- Be prepared for insulation protection (such as wearing insulating gloves, etc.).
- Must be accompanied by someone to ensure personal safety

◆ 3.8. Measurement Instruments

WARNING

When performing electrical connections, test runs etc., in order to ensure that the electrical parameters meet the requirements, it is necessary to use relevant electrical measurement equipment, such as multi-meters, power meters, etc. Please perform as below :

Use measuring equipment with appropriate range and in line with on-site working conditions.

- Ensure that the electrical connections of the instrument are correct and standardized to avoid dangers such as arcing.

◆ 3.9. Maintenance & Repair

WARNING

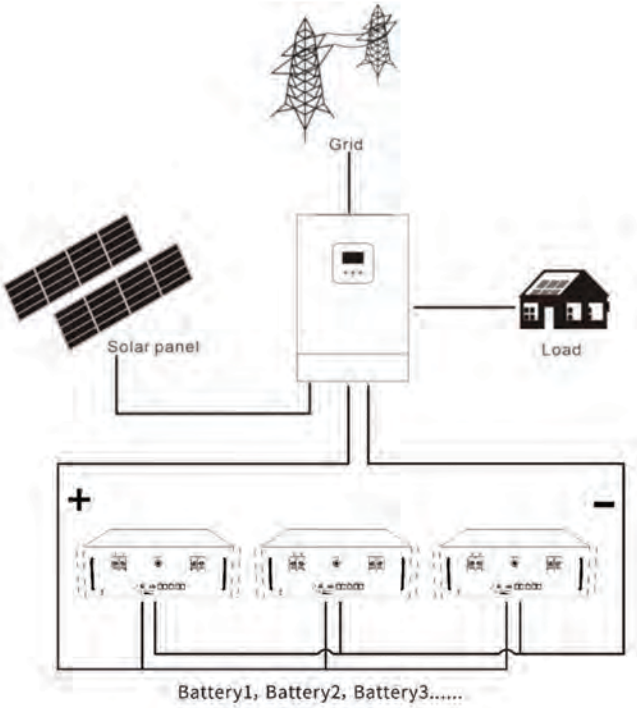
After the battery and inverter are disconnected, be sure to confirm that they are disconnected before performing maintenance or inspection on battery, please perform as below:

- Ensure that the battery cannot be accidentally re-energized.
- Use a multi-meter to make sure the battery is fully powered down.
- Parts near the operating part, use insulating materials to insulate and cover them , and conduct necessary grounding .
- It is strictly prohibited to perform maintenance or inspection operations while the equipment is powered on! When performing maintenance or inspection on the battery, at least two personnel must be on site. Maintenance operations cannot be performed until the device has been safely powered off, charged or discharged.

4. Product Introduction

◆ 4.1. Connection Structure

The connection diagram of Lifepo4 Battery Energy Storage System is shown in Figure 1 below:



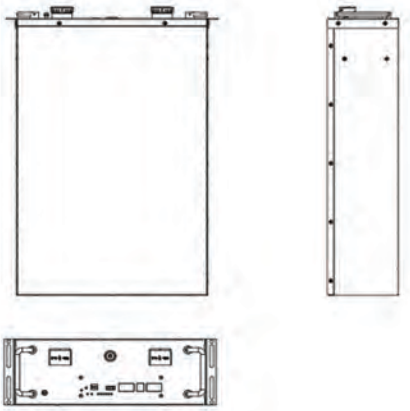
4. Product Introduction

◆ 4.2. Parts List

No.	Image	Items	Qty(pcs)
1	/	LiFePO4 Battery Energy Storage System	1
2		Certificate	1

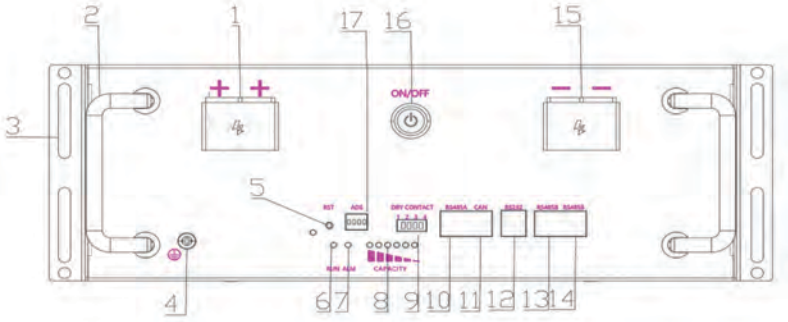
5. Product Function

◆ 5.1. Product Structure



Note: The picture is for reference only, the specific appearance is subject to the actual one!

◆ 5.2. Product Control Panel Introduction



5. Product Function

No.	Item	Function	Remark
1	Positive terminal (+)	Battery external positive output port	
2	Case Handle	Easy to carry, move and install	
3	Hanging Ears	For mounted and fixed	
4	GND Label	Battery grounding	
5	RESET Button	Battery Reset	When the battery fails, it can be gently touched 2-4s and released, and the BMS can reset by factory program
6	RUN Lighting	LED indication (green light) during normal operation	Always on when Product is running
7	ALM Lighting	Alarm indication, alarm indication when the system is abnormal	
8	SOC Display Lighting	Battery capacity display	
9	Dry Contact	Signal output of battery status	Dry contact 1-PIN1 to PIN2: open normally and close during fault protection. Dry contact 2-PIN3 to PIN4: On normally. The low battery alarm is closed.
10	RS485A	Communication port	Connected with 485 port of the inverter
11	CAN	Communication port	Connected with CAN port of the inverter
12	RS232	1. Monitor battery and parameter changes 2. Upgrade the software	
13/14	RS485B	Communication port	Connected with 485 port of the inverter
15	Negative terminal (-)	Battery external negative output port	

6. Installation

◆ 6.1. Tools Preparation

Tools prepared:Electric screwdriver,multi-meter,insulating gloves, battery rack,network cable, power

6. Installation

◆ 6.2. Safety Regulations

The installation, operation and maintenance of LiFePO4 Battery Energy Storage System should only be carried out by trained and qualified professionals. Before installation and use, please read the safety precautions and related operating procedures of this product carefully. The installation process must strictly abide by the following safety regulations and local safety regulations, otherwise it may cause personal injury or product damage.

• Please ensure that the inverter connected to the battery is a qualified power system;
• When installing the battery, please ensure that the power system is turned off and the battery pack is turned off;
• All power-saving cables must have corresponding insulation measures, and it is strictly forbidden to expose the power cord;
• Ensure that the battery and the power system are reliably grounded during installation.

◆ 6.3. Installation Notes

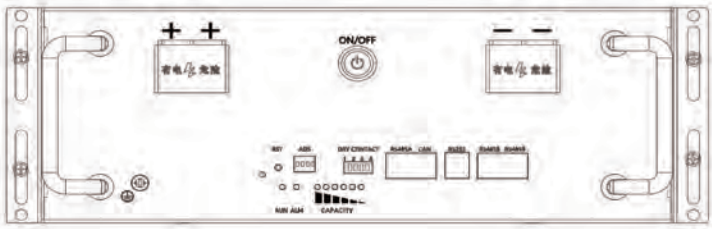
• When begin to install the battery system, you should pay attention to the following matters:
• Installation space and load bearing. Make sure that there are sufficient fixed components to install the battery system, and to ensure that the battery mounting bracket or the cabinet be strong enough to bear the weight.
• Cable specifications. To ensure that the use of the connection of the power supply line can meet the maximum current requirements of equipment operation.
• Project layout. Ensure the whole construction process of power equipment, batteries and other reasonable layout.
• Wiring layout. Ensure that the wiring reasonable, orderly; and consider the moisture-proof, corrosion prevention.
• The whole installation process should wear anti-static wristband.
• The installation site should be at least two or more peoples to operate.
• Please ensure the installation site safe before installation.

6. Installation

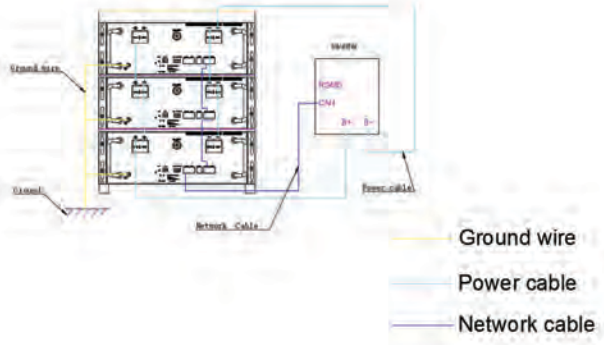
◆ 6.4. Installation Steps

Step 1: Take the batteries out of the packaging box, check whether the batteries are intact, and check whether the accessories are complete. For details, see the accessories list

Step 2: Place the battery on the rack, and use a Phillips screwdriver to secure the battery and the rack, as shown below:



Step 3: If multiple batteries are connected in parallel, manually press the weak current switch (ON/OFF) and use a multi-meter to check whether the voltages of each battery are consistent. If they are consistent, shut down the battery and connect the wiring harness. The diagram is as follows (three batteries in parallel are used as an example) :



Step 4: Connect the positive terminal (+) of the battery with a power cable, and then connect the negative terminal (-) of the battery with a power cable.

Step 5: Connect the RS485B communication port of the adjacent battery with the network cable (RS485B battery parallel port has the same function, do not distinguish).

Step 6: Connect all batteries to the ground line. There is a ground line mark at the lower left corner of the battery. Lock the ground terminal in this place.

6. Installation

Step 7: With the distribution of Class 6 network cable, one end is connected to the battery RS485A (or CAN) communication interface, the other end is connected to the inverter RS485(or CAN) interface (note that the definition of the inverter communication pin needs to correspond to the battery pin).

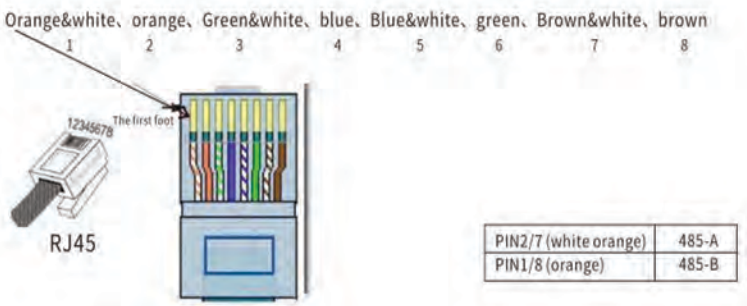
Step 8: Using a power cable to connect the negative electrode of the first battery (-) to the negative battery interface of the inverter, and then use a power cable to connect the positive electrode of the last battery (+) to the positive battery interface of the inverter (the remaining two positive terminals after the battery is connected have the same function, do not distinguish; The 2 negative terminals are also).

NOTE	• Define the battery at the top of the rack as the first and the battery at the bottom as the last. • The battery that communicates with the inverter through a network cable is defined as the host. The DIP switch of the host is 1, and the battery must be dialed before it is started. • Other battery DIP switches can be defined by referring to 2 to 15. Do not dial 1 repeatedly.

7. Debugging

◆ 7.1. Communication Pins Definition

1) Definition of RS485A port (default baud rate 9600bps) for communication between the battery and the inverter.



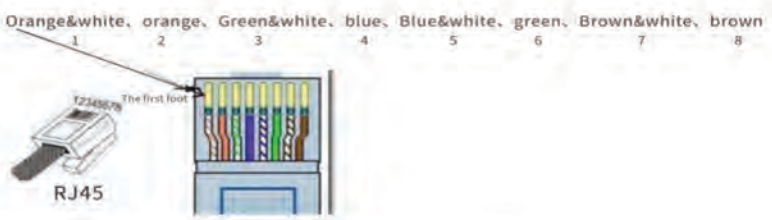
PIN2/7 (white orange)	485-A
PIN1/8 (orange)	485-B

7. Debugging

PIN2/7 (white & orange)	485- A
PIN1/8 (orange)	485-B

NOTE	• The default RS485 protocol for the battery is set to Pylontech RS485 (V3.5) protocol. If compatibility with other inverters is needed, it is necessary to communicate through RS232 with the host computer to change the default protocol.

2) Definition of CAN port (default baud rate is 500K) for communication between the battery and the inverter.



PIN 4 (blue)	CANH
PIN5 (blue & white)	CANL

NOTE	• The battery is factory-set with the default CAN protocol, defaulting to Pylontech CAN (V1.3) protocol. If compatibility with other inverters is required, it is necessary to communicate through RS232 with the upper computer to change the default protocol.

TIP	• For battery and inverter communication, choose either RS485 or CAN.

7. Debugging

◆ 7.2. ADS DIP Switch Definitions

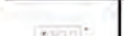
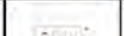
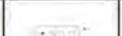
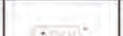
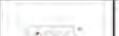
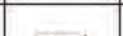
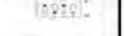
Address	DIP Switch Position				Illustration
	#1	#2	#3	#4	
0	OFF	OFF	OFF	OFF	
1	ON	OFF	OFF	OFF	
2	OFF	ON	OFF	OFF	
3	ON	ON	OFF	OFF	
4	OFF	OFF	ON	OFF	
5	ON	OFF	ON	OFF	
6	OFF	ON	ON	OFF	
7	ON	ON	ON	OFF	
8	OFF	OFF	OFF	ON	
9	ON	OFF	OFF	ON	
10	OFF	ON	OFF	ON	
11	ON	ON	OFF	ON	
12	OFF	OFF	ON	ON	
13	ON	OFF	ON	ON	
14	OFF	ON	ON	ON	
15	ON	ON	ON	ON	

7. Debugging

◆ 7.3. Battery Parallel Connection DIP Switch Diagram

1 Battery	2 Battery	3 Battery	4 Battery	5 Battery	6 Battery	7 Battery	8 Battery

7. Debugging

9 Battery	10 Battery	11 Battery	12 Battery	13 Battery	14 Battery	15 Battery	16 Battery
							
							
							

7. Debugging

◆ 7.4. Power-On Sequence

After the completion of the connections between the inverter, battery, and mains power, start each battery one by one. Then, turn on the inverter. After the battery startup, check if the communication between the inverter and the battery is normal. If the battery data is successfully uploaded to the inverter, it indicates successful communication between the inverter and the battery.

8. Faults & Troubleshooting

No.	Fault Symptoms	Cause Analysis	Solutions
1	No DC Output	Battery Voltage Too Low, Protection Activated	Startup after Charging Activation
2	Short Power Supply Time	Insufficient Battery Capacity or Failure to Reach Full Charge	Confirm Maintenance or Replace Battery
3	Battery Cannot Reach Full Charge	DC Voltage Output from Power System Lower than Minimum Charging Voltage	Adjust Device's DC Output Voltage to Suitable Charging Voltage for Battery
4	Unstable Battery Output Voltage with Significant Fluctuations	Interference with Management System Operation	Restart the System
5	Temperature Monitoring Too Low	Damage to Temperature-Sensing Crystal Head	Replace the Collection Line with a Temperature-Sensing Crystal Head
6	Unable to Charge	Single Cell Protection Activated upon Full Battery Charge	Discharge Protection Removal
7	MOS temperature abnormal	MOS tube damaged	Replace BMS
8	Discharge over-current protection	Inverter power exceeds limit	Match the number of batteries according to the inverter power value

9. Compatible Inverter List

The battery is compatible with all low-voltage inverters available on the market that support the Pylontech communication protocol.

Brand	Logo	Type	Pins-Inverter	Pins- Battery	Remark
SMA	SMA	CAN	PIN4:CANH PIN5:CANL	PIN4:CANH PIN5:CANL	Battery Change Protocol
Victron	victron energy	CAN	PIN 7 : CANH PIN8:CANL	PIN4:CANH PIN5:CANL	1. Battery Change Protocol 2. Customized Network Cable
Growatt	Growatt	RS485	PIN7:RS485A PIN8:RS485B	PIN 2/7 :RS485A PIN1/8:RS485B	1.Default Battery Protocol Matching 2.Inverter Protocol Setting Option 2
Goodwe	固德威 GOODWE	CAN	PIN 4 : CANH PIN5:CANL	PIN 4 : CANH PIN5:CANL	Default Battery Protocol Matching
Pylontech	PYLONTECH	RS485	PIN7:RS485A PIN8:RS485B	PIN 2/7 :RS485A PIN1/8:RS485B	Default Battery Protocol Matching
Luxpower	LUXPOWER	RS485	PIN 2 :RS485A PIN1:RS485B	PIN 2/7 :RS485A PIN1/8:RS485B	Battery Protocol Change Customized Network Cable
Voltronic Power	Voltronic Power	RS485	PIN 5 :RS485A PIN3:RS485B	PIN 2/7 :RS485A PIN1/8:RS485B	Default Battery Protocol Matching Customized Network Cable
Sofar	SOFAR SOLAR	CAN	PIN 1 : CANH PIN2:CANL	PIN 4 : CANH PIN5:CANL	Battery Protocol Change Customized Network Cable
SRNE	srne	RS485	PIN7:RS485A PIN8:RS485B	PIN 2/7 :RS485A PIN1/8:RS485B	Default Battery Protocol Matching Inverter Protocol Setting PYL
Deye	Deye	RS485 CAN	PIN4:CANH PIN5:CANL	PIN 4 : CANH PIN5:CANL	Default Battery Protocol Matching
Megarevo	MEGAREVO	CAN	PIN4:CANH PIN5:CANL	PIN 4 : CANH PIN5:CANL	Default Battery Protocol Matching
MUST	MUST美世乐	CAN	PIN 6 : CANH PIN5:CANL	PIN 4 : CANH PIN5:CANL	Battery Protocol Change Customized Network Cable

10. Product Parameter

Items	51.2V Series	Remark
Equalizing Voltage(V)	57.6	1. If the battery does not communicate, it is recommended to set the inverter parameters according to the recommended values. 2. When the battery modules are connected in parallel with more than 4 pieces, it is recommended to use the bus bar as the parallel gathering point
Floating Charge Voltage/V	56	
Max.Discharging Cut-Off Voltage(V)	43.2	
Recommended Discharging Cut-Off Voltage (V)	48	
Maximum Charging Current (A)	100	
Recommended Charging Current (A)	20	
Maximum Discharge Current (A)	100	
Recommended Discharge Current (A)	50	
Parallel Connections (pieces)	16	

11. Attentions & Maintenance

• Do not immerse the battery in water. When it is not in use, it should be placed in a cool and dry environment.
• Do not put the battery into fire or heat it from outside to avoid explosion or other dangers.
• Do not use the battery with reversed pole terminal & short-circuit, do not connect the battery directly to the power socket.
• Do not mix batteries from different manufacturers or different types as well as old and new batteries.
• Do not put hot, bulging, deformed or leaking batteries into the device for charging or discharging.
• Do not pierce the battery with nails or other sharp objects, and it is prohibited to throw, step on, knock, or hit the battery.
• Do not disassemble and disassemble batteries and components. Our company will not be responsible for any damage caused by unauthorized disassembly or repair.
• The battery has been strictly inspected before leaving the factory. If the customer finds that the purchased battery is hot, bulging or has a peculiar smell, please do not use it and return it to the factory immediately.
• When stored for a long time, in order to ensure the best performance of the battery, charge and discharge the battery every three months, and ensure that it is stored with 40%~60% of the power.
• Please use the battery within the temperature range specified in the specification sheet .
• The battery and inverter starting methods need to be executed in accordance with the power-on sequence .
• It is recommended that the battery load power does not exceed the maximum continuous discharge current of the battery (100 A).
• The battery is left aside for more than 3 months , it needs to be properly recharged manually to prevent it from running out of power.

Note: please contact technical personnel in time for any special technical problems not mentioned as above.

WARRANTY CONDITIONS

The warranty conditions for ECOBSS energy storage systems are avaiable for download at ecobss.com.

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