

User Manual



A WARNING: Please read the complete documentation before installing or using the battery pack.

If you do not do this or do not follow any instructions or warnings in this document, you may be seriously injured or killed by electric shock, or the battery pack may be damaged.

Product Manual

This manual is applicable to lithium iron phosphate family energy storage products manufactured by our company.

All specifications and instructions contained in this document have been verified to be accurate at the time of printing. However, since continuous improvement is our goal, we reserve the right to make product modifications at any time.

The images provided in this document are for demonstration purposes only. The details may vary slightly depending on the product version.

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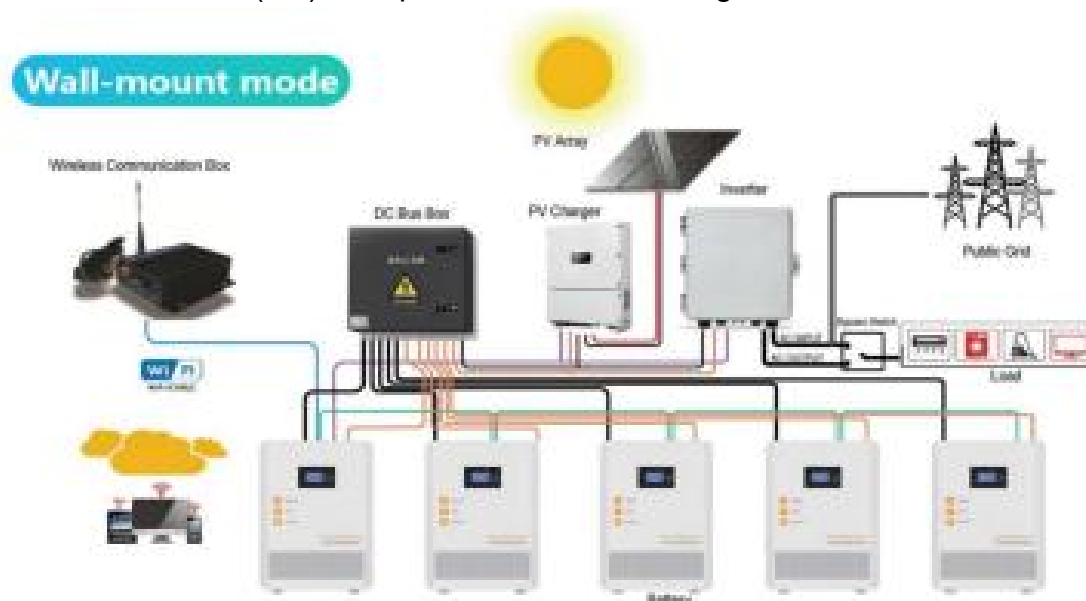
This material cannot be modified or copied; Additional information may be a request to provide.

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1.About Battery Pack Applications:

This product is mainly combined with inverter, photovoltaic (PV) and related accessories to build residential energy storage system. The system is used to store the power generated by photovoltaic power generation into the connected battery, convert the DC generated by photovoltaic power generation, connect the battery to the transaction current (AC), and provide it to the home grid.



(Note: the actual residential ESS can also include electrical equipment such as power distribution box and meter)

The battery pack is a lithium ion battery, which can store electric energy and output DC current. The battery pack is only electrically connected to the inverter. The electric energy generated by photovoltaic is converted into DC by the inverter and stored in the connected power box. When the power box is needed, the electric energy of the power box is converted into AC through the inverter DC, and transmitted to the home grid to supply power for household appliances.

The main function of the home energy storage system depends on the inverter, and the lithium battery pack is a device that stores electrical energy.

2.Features and functions of household energy storage system:

●Self production and sales of electric energy

Use solar and lithium battery packs to reduce dependence on the grid and difficulty in storing electric energy. Electric energy can be stored during the day and used at night.

●Emergency power supply

When the power grid is cut off, it can be seamlessly switched to the lithium battery pack for power supply.

●Sales of electric energy

The electricity generated by photovoltaic arrays can be stored in a connected battery pack or sold to energy supply companies.

●Off grid power supply

Off grid power supply The system can be connected to the diesel generator to ensure uninterrupted power supply.

Provide supply in areas without urban power, such as islands and remote mountain areas.

(Note: the system electric energy dispatching management depends on the inverter, and the lithium battery pack is valid for all compatible inverters. The inverter you use does not necessarily include all the above functions)

BMS monitoring system of lithium battery pack:

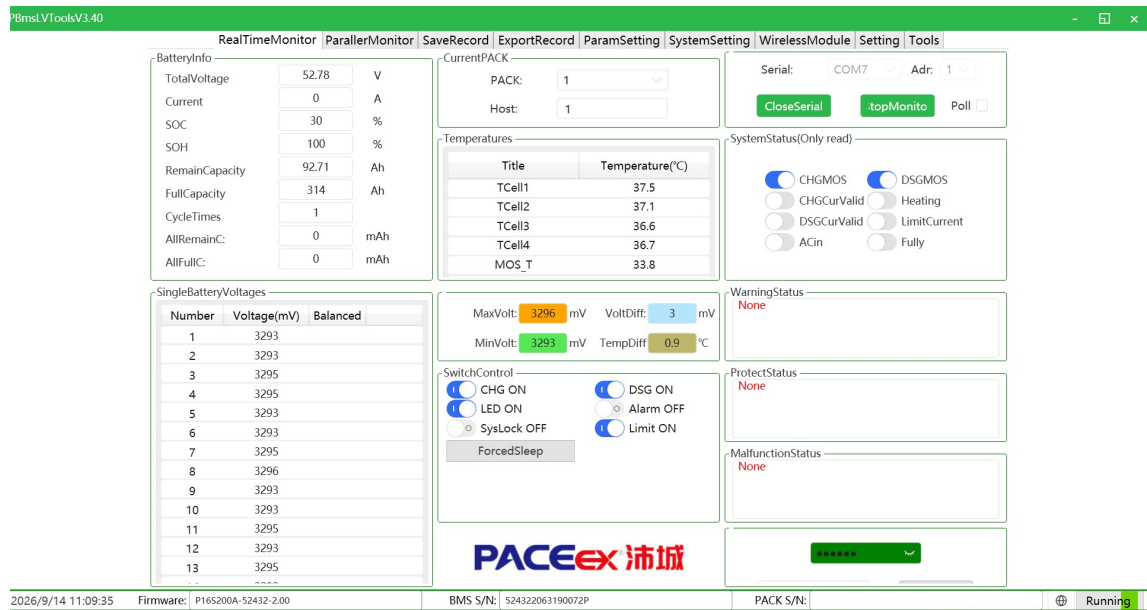
With this application, you can monitor system operations from your mobile device, including the following.

Real time current, voltage and capacity usage.

Obtain energy consumption data and alarm status record of lithium battery pack.

Modify the functional parameters of lithium battery pack.

Lithium iron phosphate family energy storage series



BMS monitoring system

Bluetooth monitoring system:

Download the mobile APP of this product and operate it through the monitoring system on the mobile device, including the following:

Real time current, voltage and capacity usage.

Obtain energy consumption data and alarm status record of lithium battery pack.

Modify the functional parameters of lithium battery pack.

Please contact our company or local distributors for the above applications and APPs.

(Due to different shipping models, the lithium battery pack you purchased may not have all the above functions)

(Note: For the parameter modification of BMS and Bluetooth monitoring, we must obtain the modification authority from our company or local dealers and arrange relevant personnel for technical support. If any parameter modification is carried out without authorization and results in inability to function or damage, or impacts performance, the warranty claim will be invalid.)

3.Product Warning:



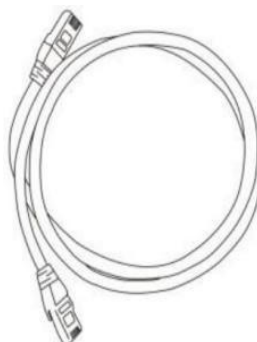
4. Good List



Battery



Power cord*2



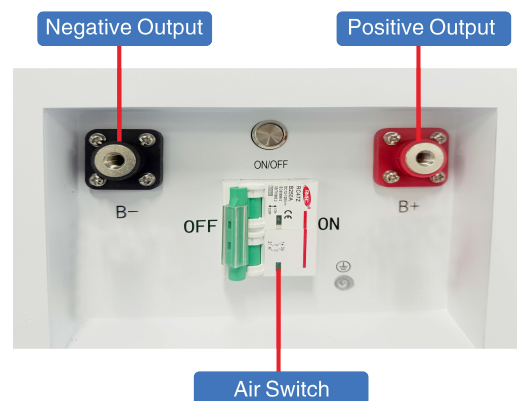
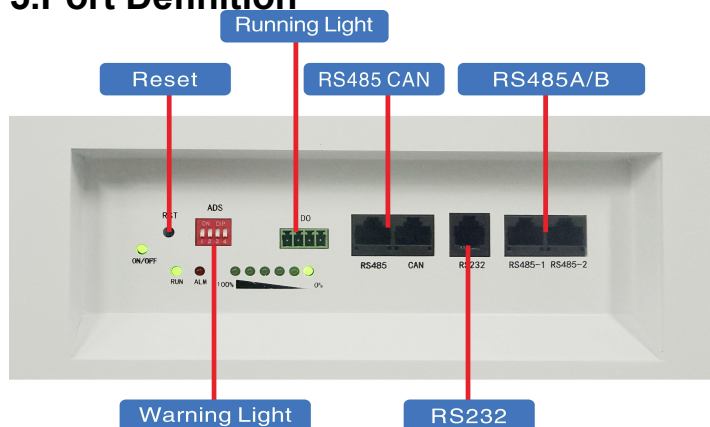
COM cable*1



User Manual

Serial No	project	explain
1	Battery	Lithium iron phosphate battery pack
2	power cord	Connecting line between battery pack and inverter
3	COM Cable	Communication serial port connecting line between battery pack and inverter
4	User manual	User Manual

5. Port Definition



6.Description of Reset Switch:

- 1) When the BMS is in sleep state, press the button and release it. The protection board is activated, and the LED indicator turns on for 0.5 seconds from "RUN".
- 2) When the BMS is in the active state, press the button (3~6S) and release it, the protection board will be hibernated, and the LED indicator will turn on for 0.5 seconds from the lowest power indicator.
- 3) When the BMS is in the active state, press the key (6-10s) and release it, the protection board is reset, and all the LED lights are extinguished at the same time.
- 4) When the BMS is in the active state, press the button three times within 5s, and the BMS can be automatically coded again.

7.Battery Pack Sleep and Wake up:

Dormancy

When any of the following conditions is met, the system enters the low power consumption mode:

- 1)The single or overall over discharge protection has not been removed within 30 seconds. Press the key and release it.
- 2)The minimum monomer voltage is lower than the sleep voltage, and the duration reaches the sleep delay time (no communication, no protection, no balance, no current).
- 3)The standby time exceeds 24 hours (no communication, no charge and discharge, no mains power).
- 4) Forced shutdown through the upper computer software.

Before entering the sleep mode, make sure that the input terminal is not connected to the external voltage, otherwise it will be unable to enter the low power consumption mode.

After the BMS is reset, it still retains the parameters and functions set by the upper computer. If it needs to restore to the initial parameters, it can be achieved through the "restore default value" of the upper computer, but the relevant operation records and stored data remain unchanged (such as electricity, cycle times, protection records, etc.).

Awaken

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

- 1)When connected to the charger, the output voltage of the charger shall be greater than 48V.
- 2)Press the key and release it.
- 3)Activated via RS485 port.

Note: After the single or overall over discharge protection, it enters the low power consumption mode, wakes up regularly every 4 hours, and starts the charging and discharging MOS. If it can be charged, it will exit the sleep state and enter into normal charging; If automatic wake-up fails to charge for 10 consecutive times, it will not automatically wake up again.

When the system defines that the recovery voltage is not reached after 2 days of standby (set value of standby time) after the end of charging, the charging is forced to resume until the end of recharging.

8.Description of DIP :

When the battery packs are used in parallel, the addresses of different battery packs will be set and distributed automatically.

9.Communication Description:

RS485

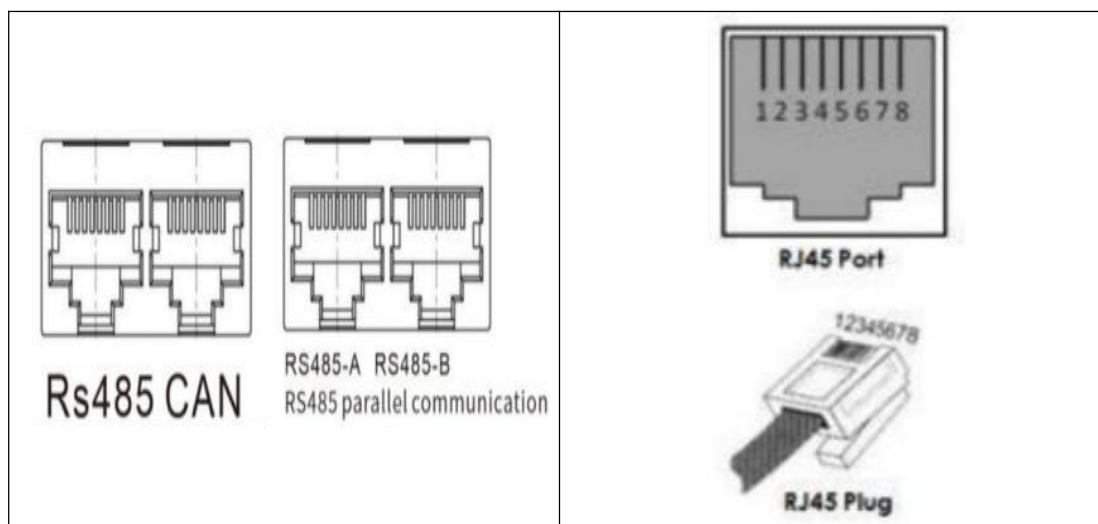
RS485 communication

With dual RS485 interfaces, you can view the battery pack information. The default baud rate is 9600bps.If it is necessary to communicate with the monitoring equipment through RS485, the monitoring equipment, as the host, polls data according to the address, and the address setting range is 2~15.

CAN

CAN Communication

CAN Communication, baud rate 500K



RS485 -- 8P8C vertical RJ45 socket		RS485 -- 8P8C vertical RJ45 socket	
RJ45 Pin	Definition description	RJ45 Pin	Definition description
1、 8	RS485-B1	1、 8	RS485-B1
2、 7	RS485-A1	2、 7	RS485-A1
3、 6	GND	3、 6	GND
4、 5	NC	4、 5	NC

Rs485 parallel communication pin definition

Both CAN and RS485 interfaces are responsible for communication with the inverter, which is determined according to the adaptive inverter. See CAN/RS485 interface definition table.

10.Weak Current Switch:



ON/OFF

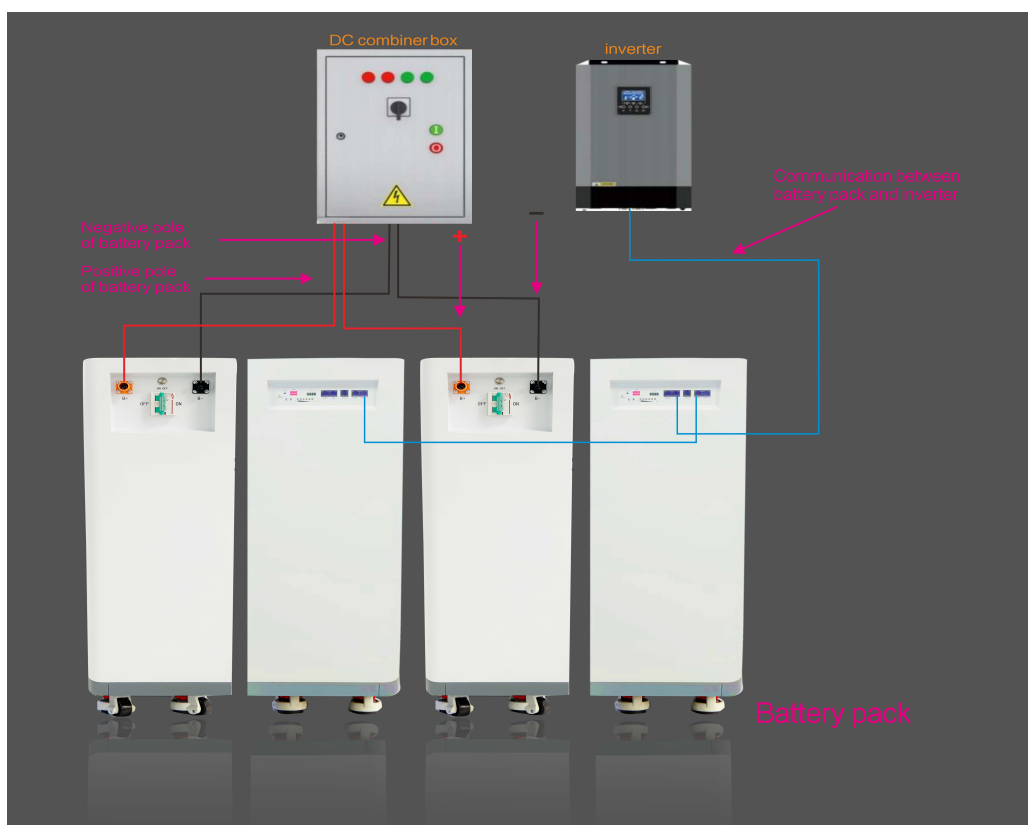
When the switch is pressed,the battery pack has voltage output,the switch is reset, and the battery pack has no voltage output

12.Installation Steps

1) Select a flat ground and place the battery pack with the gimbal wheel on the ground .



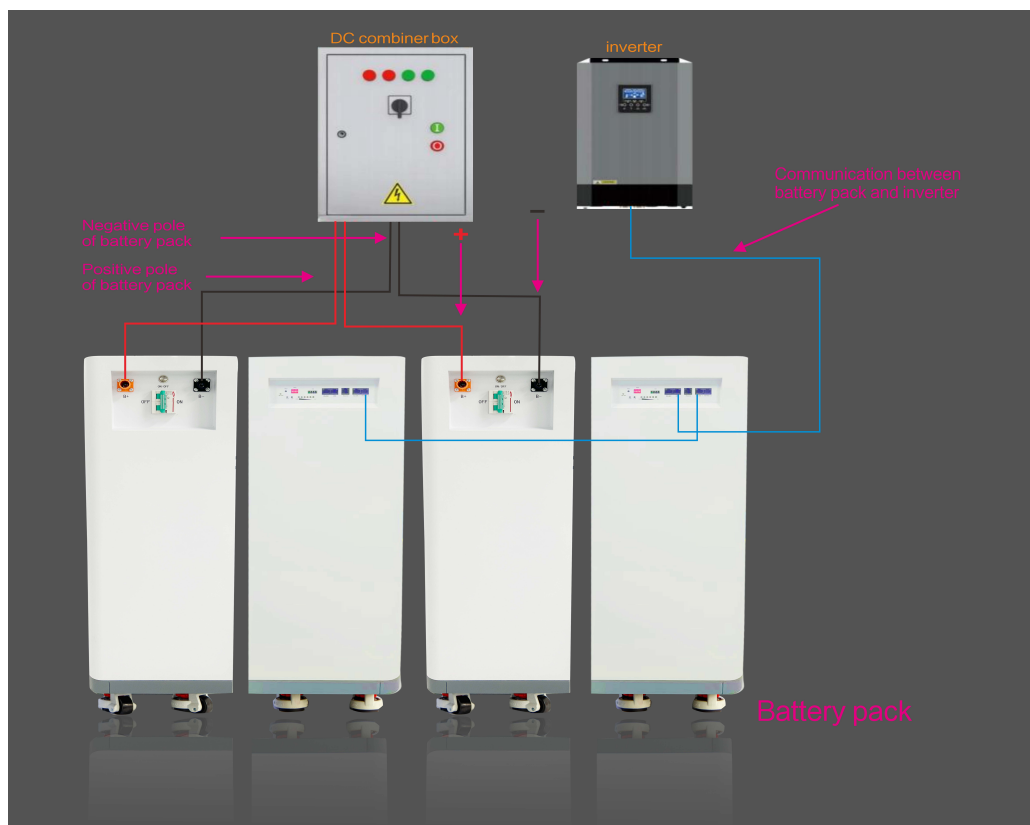
2) Connect the power cord according to the sequence of the wiring diagram .



3) After connecting the wiring harness, check the harness and conduct a power on test to confirm that the function is normal; Push the battery to a suitable position away from the wall (note: the side of the wiring is against the wall; it is recommended to be 50mm away from the wall), and then tighten the red gear of the casters at the bottom of the battery case clockwise.

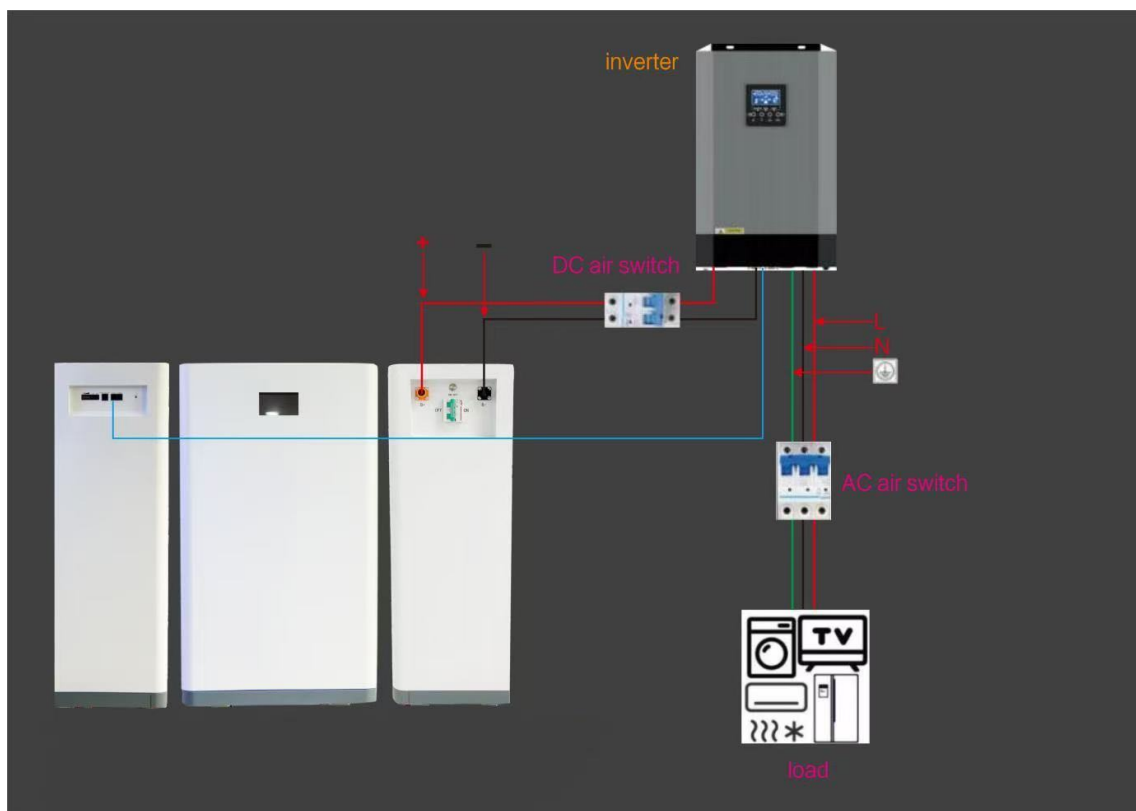


12.Example of Parallel Conection:



When there are more than four parallel units, it is recommended to add a DC combiner box on the output power supply line to ensure the stability and safety of the current when the battery pack is outputting highpower.

Example of single parallel machine



It is recommended to add DC circuit breaker on the line connecting battery and inverter.

13. System Operation

The inverter provides control and monitoring functions through application programs. During normal operation, the battery pack is controlled by the inverter, and the power button of the battery pack shall be kept open.



Warning: Do not try to use third-party tools and diagnostic tools to communicate with Power Box between Power Box and the inverter.

Troubleshooting

If the system is not working properly, please perform the following steps:



Warning: The battery pack and inverter cannot be repaired by users, but must be repaired by certified installers.



Warning: If the failure of the battery pack causes the shutdown and cannot be solved in time, please report to KH or its authorized service partner in time. If it is not reported to KH or its authorized service partner within 2 weeks after the failure, the warranty is invalid.

● If the connection between the battery pack and the inverter does not respond

1. Check whether the battery pack is powered on and whether there is voltage output at the output terminal.
2. Whether the battery pack operation indicator is normal. If there is an alarm, refer to the LED operation table to check the alarm type.
3. Close all input and output circuit breakers of the battery pack and inverter.
4. Cut off all input and output circuit breakers in the distribution box.
5. Reboot matching.



(Note: If the communication between the battery pack and the inverter does

not match, please contact our company or our authorized dealer for technical assistance)

14.technical Support:

If you need further help,please contact our service team through the support telephone in your region.

Please provide the following information when contacting our company.

- Customer Name
- Your effective way (phone, mobile phone or email) can let us contact.
- Specification and model of battery pack
- A brief overview of the problem

15.How to deal with emergencies:

If your health or safety is threatened,please start from the following two steps before handling the following other suggestions:

1.Please contact the fire department or other emergency teams immediately.

2.Notify all people who may be affected to ensure that they can evacuate the area.



The following recommended actions can only be performed under safe conditions.

In case of fire:

- 1.Turn off the inverter.
- 2.Press the power button to turn off the battery pack.
- 3.Cut off all input and output circuit breakers in the distribution box.
- 4.Acceptable types of extinguishers include:water,carbon dioxide and ABC extinguishers.



Avoid using Type D (flammable metal) extinguishers.

In case of flood:

- 1.If any part of the battery, inverter or electric wire is immersed in water, please keep away from water.
- 2.Turn off the inverter.
- 3.Press the power button to turn off the battery pack.
- 4.Cut off all input and output circuit breakers in the distribution box.
- 5.Make sure there is no electrical connection to the power box.
- 6.If possible, protect the system by finding and stopping the water source and pumping the water away.
- 7.Please contact our technical support or our authorized dealer for help.

16.When the battery pack is not in use:

The battery pack is a lithium ion battery product and should not be stored for a long time.No matter why the product is closed or not used,please note:

See the table below for storage requirements of power box.

Storage temperature	Short term storage less than 1 month
	Long term storage shall not exceed 3 months



Before the expiration of product storage, the battery shall be fully charged and discharged,and the final charging SOC shall be kept at about 50%.

If the battery is stored for a long time, it is recommended to charge it every three months to prevent over discharge of the battery.

17.Handling of Cells

Prohibition of cells immersion into liquid such as water

The cells shall never be soaked with liquids such as water, seawater, drinks such as soft drinks,juices, coffee or others.

Prohibition of use of damaged cells

The cells might be damaged during shipping by shock. If any abnormal features of the cells are found such as damages in a plastic envelop of the cell, deformation of the cell package, smelling of an electrolyte,an electrolyte leakage and others, the cells shall never be used any more.

The Cells with a smell of the electrolyte or a leakage shall be placed away from fire to avoid firing or explosion.

It is forbidden to short circuit the positive and negative poles of the battery, otherwise it will cause short circuit inside the battery pack and damage the battery pack.