LOSUN


# LS-BTN0-P0548100

WALL-MOUNT RESIDENTIAL ESS

# CONTENTS

# 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.

Note:

This manual is applicable to LifePo4 residential energy storage products which under LOSUN brand.

Introduction:

All specifications and instructions contained in this document have been verified to be accurate at the time of printing, and LOSUN reserve the right to make product modifications.

The images included in this document are intended for illustrative purposes only. Please note that each product version may feature distinct design details.

**DANGER / LOW DC VOTLAGE INSIDE**

- Do not disconnect or disassemble by non-professional personnel.

- Do not install this product in the place exposed to the direct sunlight.

- Do not place near open flame or incinerate. it may lead to fire or explosion.Keep this product away from moisture or liquid.

- Do not attempt to break open this product. The product is only serviceable by certified personnel.

- Do not touch or use if liquids was spilled on it.

- Do not sit or put heavy things on the product.

- Single person lift could cause injury. Use assistance when moving or lifting.

- Follow the product manual to make wiring connection.

- Keep out of reach of children or animals.

- If leaking, fire, wet or damaged, switch off the breaker on DC side and stay away from the product.

- Contact your supplier within 24 hours if anything failure happens.

# 01

## TECHNICAL DATA

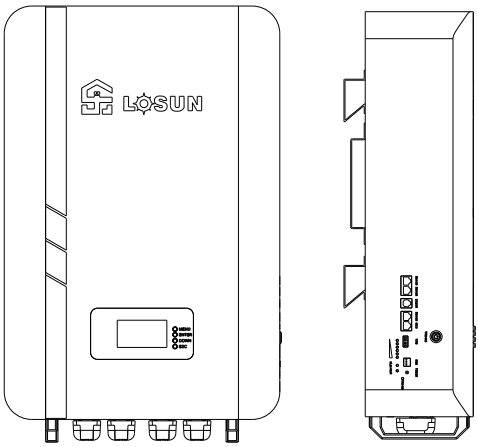
Operating current derating according to Cell voltage and battery temperature.

| Performance | |
|---|---|
| **Nominal Voltage** | 51.2 Vdc |
| **Nominal Capacity** | 100 Ah |
| **Battery Energy** | 5120 wh |
| **Charge Voltage** | 44.0 ~ 58.4V |
| **Discharge Voltage** | 45.6 ~ 58.4V |
| **Nominal Charge/Discharge Current** | 100 A |
| **Nominal Charge/Discharge Power** | 5000W |
| **Max Charge/Discharge Current** | 110 A |
| **Short Circuit Current** | 500 A |
| **Communication Mode** | |
| **Display** | SOC Status indicator |
| **Communication** | RS232, RS485,CAN |
| **General Specification** | |
| **Dimension(W*D*H mm)** | 443 x 228 x 663mm |
| **Weight (Kg)** | 90kg |
| **Installation** | Wall Mounted |
| **Working Temperature** | - 20°C~60°C |
| **Storage Temperature** | ≤25℃, 12months |
| **Operating / Storage /Humidity** | ≤90%RH |
| **IP Rating** | IP 20 |
| **Cell Technology** | LifePO4 |
| **Cycle life** | 6000cls @ 100% DOD / 0.25C / 25℃ |
| **Scalability** | Max 15 batteries in parallel |
| **Safety certification** | UN38.3、MSDS、IEC62619 |

# 02

# PRODUCT OVERVIEW

## 2.1 Brief Introduction

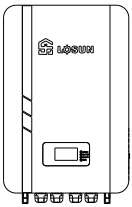



This lithium battery model operates within the voltage range of 44.0 ~ 58.4V and is specifically engineered for residential energy storage applications. It seamlessly integrates with a 48V battery hybrid inverter. However, it is not intended for use with life-sustaining medical devices.

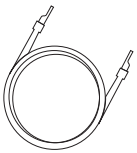
Equipped with a built-in Battery Management System (BMS), this model effectively monitors cell information such as voltage, current, and temperature. Additionally, the BMS facilitates cell balancing during charging to enhance cycle life. Its protective features encompass safeguards against over-discharge, over-charge, over-current, and extreme temperatures. The system autonomously manages charge, discharge, and balance states.

For scalability, multiple units can be connected in parallel to expand both capacity and power, with a maximum of 15 units operating in parallel.

## 2.2 Packing List



**Battery**



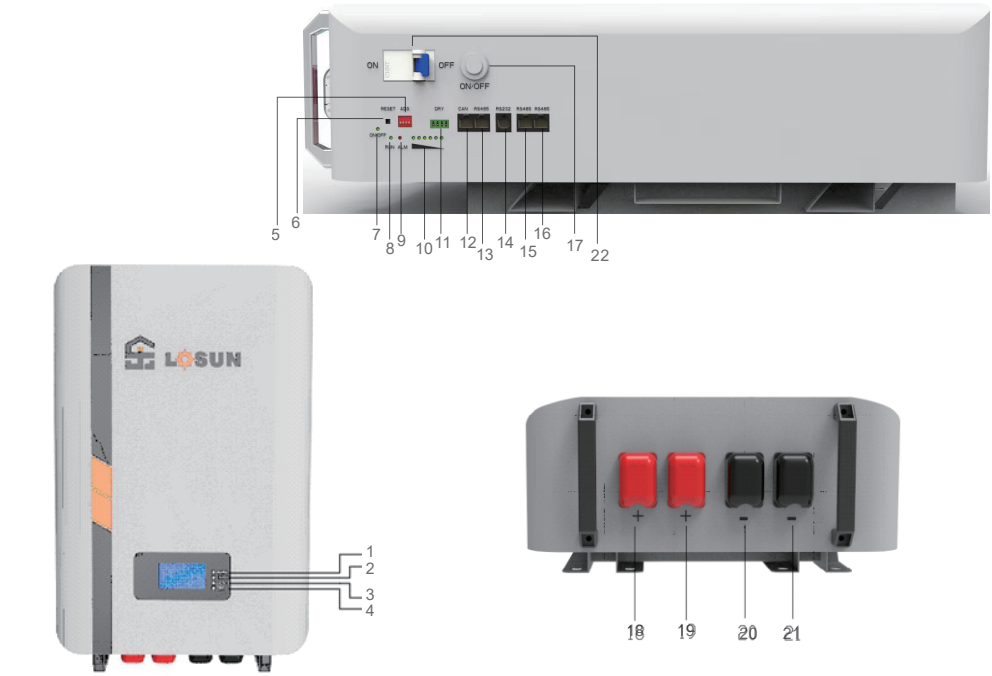
**2*Power Cable**

**1*Com Cable**

**User Manual**

| Serial No | Item | Description |
|---|---|---|
| 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 |

## 2.3 Interface Introduction




## 2.3-1 Indicator Definition

| No | Description |
|---|---|
| 1 | Menu |
| 2 | Positive terminal, Enter Button |
| 3 | DOWN Button |
| 4 | ESC Button |

| | |
|---|---|
| 5 | DIP switch |
| 6 | Reset switch |
| 7 | BMS OFF/ON Light |
| 8 | Running |
| 9 | Warning BMS |
| 10 | SOC Display light |
| 11 | Dry contact |
| 12 | Can port |
| 13 | RS485 Host port |
| 14 | RS232 Port |
| 15 | Parallel Port RS485A |
| 16 | Parallel Port RS485B |
| 17 | Weak Switch |
| 18 | Positive terminal |
| 19 | Positive terminal |
| 20 | Negative terminal |
| 21 | Negative terminal |
| 22 | Breaker |

## 2.3-2 Switch ON/OFF

**1) Switch ON**

When the BMS is in sleep mode, long press the button for 3~6 seconds, the battery pack is activated, and the LED indicator lights sequentially from 'RUN,' each for 0.5 seconds.

**2) Switch OFF**

Press start button of Master PACK more than 3s and then release the button, the master pack will shut down after all slave packs shut down (Sleep mode).
For single battery, switch OFF rocker switch (near positive/ negative connector). For multiple batteries in parallel, switch OFF rocker switch of all slave batteries first. Then switch OFF rocker switch of MASTER battery.

## 2.3-3 Sleep Mode/Wake up

**Sleep Mode:**
When any of the following conditions are met, the system enters low-power mode:

1) Over-discharge protection for a single cell or the entire pack remains unresolved for 30 seconds.

2) Pressing and releasing the button (3~6 seconds).

3) The lowest single cell voltage is below the sleep voltage, and the duration reaches the sleep delay time (simultaneously meeting no communication, no protection, no balancing, and no current).

4) Standby time exceeds 24 hours (no communication, no charging/discharging, no grid power).

5) Forced shutdown through upper computer software.

Before entering sleep mode, ensure that no external voltage is applied to the input terminal, or else low-power mode cannot be initiated.

After a BMS reset, parameters and functions set through the upper computer are retained. If a restoration to default parameters is needed, it can be achieved through the upper computer's 'Restore Default Values' function. Operational records and stored data (such as capacity, cycle count, protection records, etc.) remain unchanged.

**Wake-up:**
When the system is in low-power mode, it exits this mode and enters normal operation when any of the following conditions are met:

1) Charger is connected, and the charger output voltage is greater than 48V.

2) Pressing and releasing the button (3~6 seconds).

3) Activating through the RS232 port.

Note: After entering low-power mode due to over-discharge protection, the system wakes up every 4 hours, activating the charge/discharge MOS. If charging is possible, it exits sleep mode and enters normal charging. If it fails to charge after 10 consecutive automatic wake-ups, it will no longer wake up automatically.

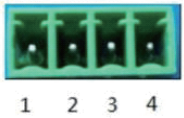
When the system is defined as charging complete, if it remains in standby for 2 days (standby time set value) without reaching the recovery voltage, it forcefully resumes charging until charging is complete again.

## 2.4 DIP Switch

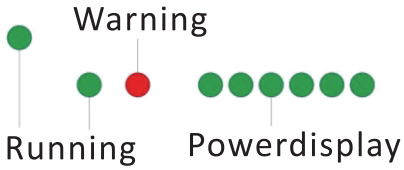
When using batteries in parallel, different batteries can be distinguished by setting the address via the dip switch on the BMS. It is important to avoid setting the same address. The definitions for the BMS dip switch are outlined in the following table:


| Geology | Dial Switch Position | | | |
|---|---|---|---|---|
| | #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 |

Dry Contact:




## 2.5 LED Indicator Definition




**Note:**

**flash 1 - 0.25s light / 3.75s off**

**flash 2 - 0.5s light / 0.5s off**

**flash 3 – 0.5s light / 1.5s off**

## LED Indicators Instructions

| | | RUN | ALM | Battery Level Indicator | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Status | | L8 | L7 | L6 | L5 | L4 | L3 | L2 | L1 | Description |
| | |  |  |  |  |  |  |  |  | |
| Shut down | | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | All OFF |
| Standby | | OFF | OFF | According to the battery level | | | | | | Indicates Standby |
| Charging | Normal | OFF | OFF | According to the battery level | | | | | | The highest capacityindicator LED flashes (flash 2),others lighting |
| | Full Charged | Light | OFF | Light | Light | Light | Light | Light | Light | Turn to standby status shen charger off |
| | Protection | OFF | Light | OFF | OFF | OFF | OFF | OFF | OFF | Stop charging |
| Discharging | Normal | Flash | Light | According to the battery level | | | | | | |
| | UVP | Light | Light | OFF | OFF | OFF | OFF | OFF | OFF | Stop Discharging |
| | Protection | OFF | Light | OFF | OFF | OFF | OFF | OFF | OFF | Stop Charging |
| Fault | | OFF | Light | OFF | OFF | OFF | OFF | OFF | OFF | Stop Charging and Discharging |

## Charging Battery Level Indications Instructions

| Status | | Charging | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Capacity Indicator | | L8 | L7 | L6 | L5 | L4 | L3 | L2 | L1 |
| | |  |  |  |  |  |  |  |  |
| Power (%) | 0~17% | OFF | OFF | OFF | OFF | OFF | OFF | OFF | Flash |
| | 18~33% | OFF | OFF | OFF | | | | | |
| | 34~50% | OFF | OFF | OFF | | | | | |
| | 51~66% | OFF | OFF | OFF | | | | | |
| | 67~83% | OFF | OFF | OFF | | | | | |
| | 84~100% | Flash | Light | Light | Light | Light | Light | Light | Light |
| | Full Charged | Light | Light | Light | Light | Light | Light | Light | Light |

## Discharging Battery Level Indications Instructions

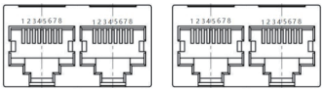
| Status | | Discharge | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Capacity Indicator | | L8 | L7 | L6 | L5 | L4 | L3 | L2 | L1 |
| | |  |  |  |  |  |  |  |  |
| Power (%) | 0~17% | Light | Light | OFF | OFF | OFF | OFF | OFF | Light |
| | 18~33% | | | OFF | OFF | OFF | OFF | Light | Light |
| | 34~50% | | | OFF | OFF | OFF | Light | Light | Light |
| | 51~66% | | | OFF | OFF | Light | Light | Light | Light |
| | 67~83% | | | OFF | Light | Light | Light | Light | Light |
| | 84~100% | | | Light | Light | Light | Light | Light | Light |

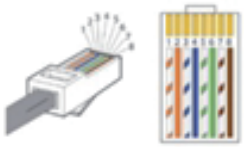
## 2.6 Communication Instructions

### 2.6-1 RS485/CAN Port

RS485 Port
This model is equipped with dual RS485 interfaces for viewing battery pack information, with a default baud rate of 9600bps. If communication with monitoring equipment is required via RS485, where the monitoring equipment acts as the host and polls data based on addresses, the address setting range is 2~15.

CAN Port
CAN communication, baud rate 500K.



### PIN Definition

| RS485 - - 8P8C vertical RJ45 socket | | CAN - - 8P8C vertical RJ45 socket | |
|---|---|---|---|
| RJ45 Pin | Definition | RJ45 Pin | Definition |
| 1、8 | RS485-B1 | 9、10、11、14、16 | NC |
| 2、7 | RS485-A1 | 12 | CANL |
| 3、6 | GND | 13 | CAMH |
| 4、5 | NC | 15 | GND |

### RS485 Parallel Communication Pin Definition

| RS485 - - 8P8C vertical RJ45 socket | | RS485 - - 8P8C vertical RJ45 socket | |
|---|---|---|---|
| RJ45 Pin | Definition | RJ45 Pin | Definition |
| 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 |

## 2.6-2 RS2232 Port

RS232 Port

The battery pack can communicate with an upper computer through the RS232 interface, allowing monitoring of various battery information such as voltage, current, temperature, status, and production details. The default baud rate is 9600bps.

| RS232 - - 6P6C vertical RJ11 socket | |
|---|---|
| RJ11 Pin | Definition |
| 2 | NC |
| 3 | TX (Single Board) |
| 4 | RX(Single Board) |
| 5 | GND |

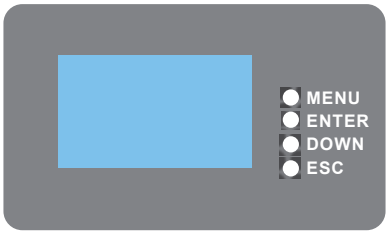
Mark: The CAN and RS485 interfaces are both responsible for communication with the inverter, and this is determined based on the adaptable inverter. Please refer to the CAN/RS485 Interface Definition Table for details.

## 2.6-3 Weak Current Switch

POWER

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

## 2.7 Display Operating Instructions




1) SW1----MENU，SW2----ENTER，SW4----DOWN，SW5----ESC.

2) Each item begins with '» ' or '--,' where '» ' indicates the current cursor position. Pressing the DOWN key moves the cursor downward. Items ending with '» ' signify that there is additional content not displayed. Press ENTER to access the corresponding page

3) Press ESC to return to the previous directory; At any position, press the MENU key to return to the main menu page.

4) In sleep mode, pressing any key activates the display screen.

## 2.8 Electrode Specification


| | |
|---|---|
| 1 | Battery pack positive |
| 2 | Negative pole of battery pack |

# 03

# INSTALLATION GUIDE

## 3.1 Installatio Requirements

### 3.1-1 Installation Environment Requirements

Ÿ Install the battery in the indoor environment.
Ÿ Place battery in secure location away from children and animals.
Ÿ Do not place the battery near any heat sources and avoid sparks.
Ÿ Do not expose the battery to moisture or liquids.
Ÿ Do not expose the battery to direct sunlight.

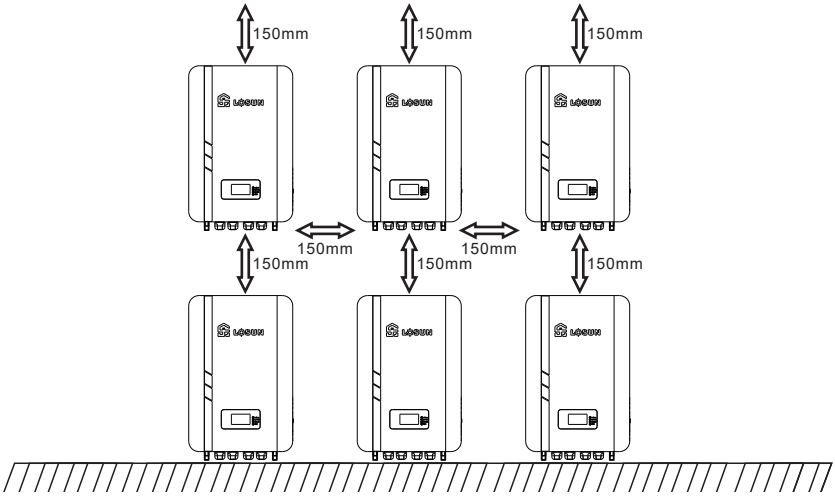
### 3.1-2 Installation Carrier Requirements

Ÿ Only mount battery on fire resistant building. Do not install batteries on flammable buildings.
Ÿ Battery is quite heavy, make sure the wall/ground can meet the load bearing requirements.

## 3.2 Installation Procedure

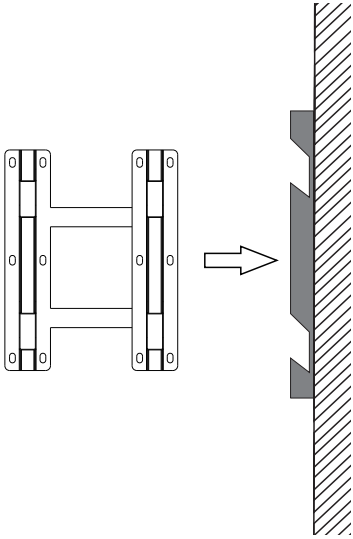
### 3.2-1 Installation Instructions

Minimum mounting distance between battery pack and equipment no less than 150mm.

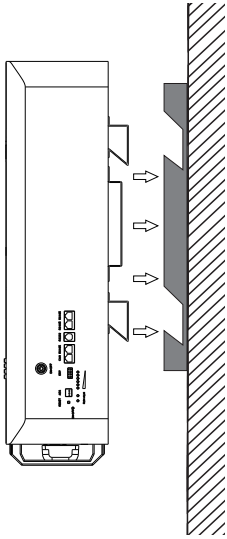


### 3.2-2 Installation Steps

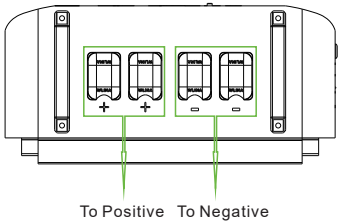
Step 1
Fix the wall bracket to the wall



Step 2
Hang the battery on the wall bracket.



Step 3
Connect power cable.




Installation personnel can directly connect to the positive and negative terminals of the product while wearing protective gloves.
Power cable connection notes:

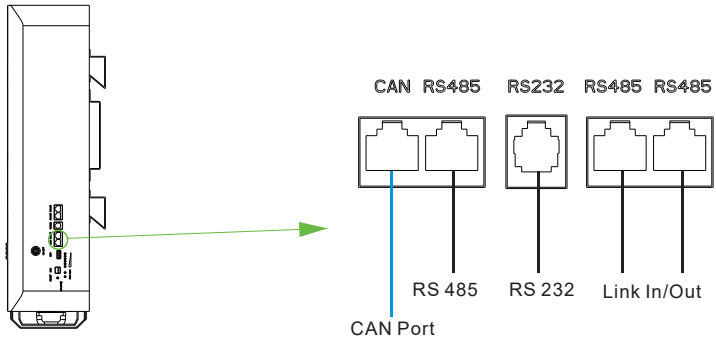
①Confirm that the inverter mains line is open and the PV line is open. Confirm that Power Box is shut down.

②The ring terminal of the wiring cable is connected to the positive and negative poles of the inverter DC terminal.

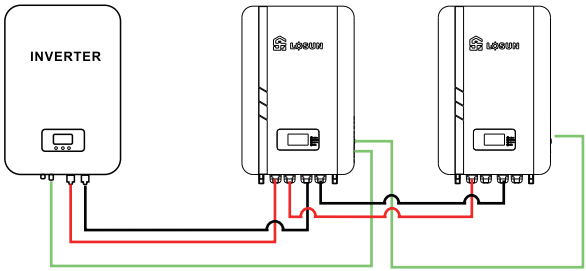
③The negative ring terminal at the other end is quickly connected to the negative port of the power box.

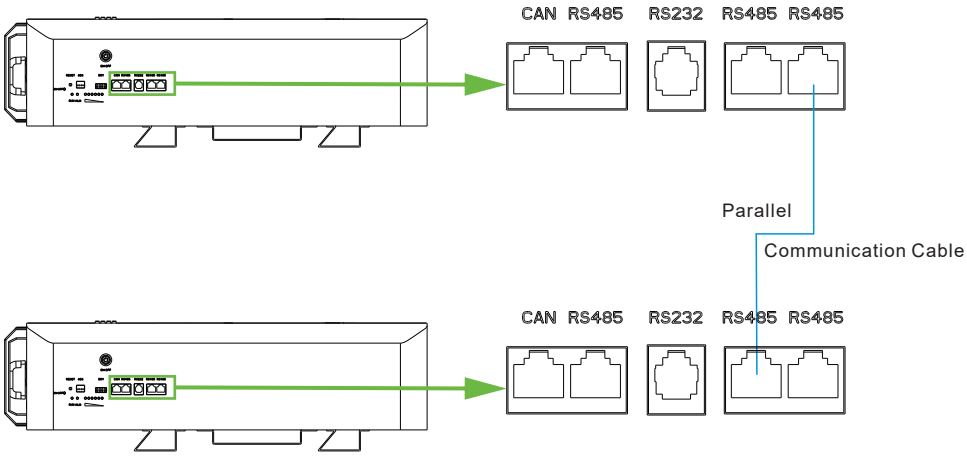
④The positive ring terminal at the other end is quickly connected to the positive port of the power box.

Step 4
Connect communication cable.



Step 5
When multiple batteries are connected in parallel, follow below wiring mode.



# Installation Safety Warning

Warning: The power box and inverter must be turned off before installing the power cable.

Procedure for disconnecting the power cable:

①Make sure the mains line is open, and the PV line is open.

②Turn off the inverter switch.

③Press the power button to turn off the battery pack.

④Remove the ring terminal of the negative power cord.

⑤Remove the ring terminal of the positive power cord.

⑥Remove the connecting ring terminal of the power cable.

Warning: Follow these steps strictly and ensure a good interface contact.

Warning: The installation and disconnection of wiring cables must be performed by qualified installers. Users should not attempt to operate them privately.

Warning: Power cables may transmit high currents. Ensure that children cannot touch the power cable..

Warning: The power-on and power-off actions of the POWER button are not emergency operations for security incidents. If there is a safety problem in the home energy storage system, please disconnect the leakage switch and isolation switch (in the distribution box) promptly.

# 04

## SYSTEM OPERATION GUIDE

During normal operation, the battery pack is controlled by the inverter, and the power button of the battery pack shall be kept open.

Warning:
- Ÿ Do not attempt to use third-party tools and diagnostic tools to communicate between the power box and the inverter.
- Ÿ The battery pack and inverter cannot be repaired by users, but must be repaired by certified installers.

### Troubleshooting:

If the system is not working correctly, follow these steps:

1. Check if the battery pack is on and has voltage output.

2. Check if the battery pack operation indicator is normal.

3. Turn off 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 the matching.

### Technical Support:

For further assistance, contact our company's service team through the support telephone in your region. Provide your name, contact information, battery pack specifications, and a brief overview of the problem.

### Emergency Handling:

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.

3. Cut off all input and output circuit breakers in the distribution box.

4. Make sure there is no electrical connection to the power box.

5. Protect the system by finding and stopping the water source and pumping the water away.

6. Please contact our technical support or our authorized dealer for help.

## 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 the product is closed or not used, please note:

| Environment Temperature | Relative Humidity of Storage Environment | Storage Period | SOC |
|---|---|---|---|
| Below -10℃ | / | Prohibit | / |
| -10℃~25℃ | 5%~70% | ≤ 12months | 30%≤ SOC≤ 60% |
| 250℃~35℃ | 5%~70% | ≤ 6months | 30%≤ SOC≤ 60% |
| 35℃~45℃ | 5%~70% | ≤ 3months | 30%≤ SOC≤ 60% |
| Above 45℃ | / | Prohibit | / |

**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.**

## 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.

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