# User Manual

## SNG10.24kWh-1

# Content

## 1. Modified List

**Product Modified Record List**

| Revision | Date | Mark | Modified content | Reviser By |
|---|---|---|---|---|
| A00 | 2024-06-18 | | First Issue | Jack Li |
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## 2. Preface

• All information in this document is the property of the battery manufacturer. No part of this document may be reproduced in any commercial manner. Allow internal use.

• The battery manufacturer makes no express or implied warranties or guarantees, including but not limited to any implied warranties of utility, commercialization, or suitability for any specific purpose, regarding this document or any devices or software that may be described in this document. Explicitly deny all such statements or warranties. Under no circumstances shall the equipment manufacturer or its distributors or distributors be liable for indirect, incidental or consequential losses.

• According to certain regulations, the exclusion of implied warranties may not apply, therefore the above exclusion may not apply.

• The specifications in this document are subject to change without prior notice. We have made every effort to make this document complete, accurate, and up-to-date. However, device manufacturers may need to make some improvements in certain situations without prior notice. The equipment manufacturer shall not be liable for any losses caused by this document, including but not limited to omissions, printing errors, arithmetic errors, or errors listed in this document.

## 3. Limitation of Liability

• The equipment manufacturer shall not be liable for any direct or indirect liability for battery system damage or property damage caused by the following circumstances.

• Without authorization from the device manufacturer, the battery system has been modified, modified, or replaced with components.

• Non-equipment manufacturer technicians can change or clear the battery system serial number.

• The design and installation of the system composed of other devices do not comply with standards, safety regulations, and other related requirements.

• Battery damage caused by failure to comply with the requirements of the battery system user manual.

• Battery damage caused by improper or misuse of the battery system.

• Battery damage caused by insufficient ventilation in the battery system.

• The maintenance procedures for the battery system did not follow acceptable standards.
Battery damage caused by force majeure, such as earthquakes, storms, lightning, overvoltage, fires, etc.

• Battery damage is caused by any external factors.

## 4. Cautions

To prevent the possibility of the power from leaking、heating、firing or exploding, Please be sure to follow the following rules:

- Do not disassemble or alter the outside structure of the power.
- Do not short-circuit the pack by directly connecting the positive and negative terminal with metal object such as wire.
- Do not transport and store the battery together with metal objects such as necklaces, hairpins etc.
- Do not strike or throw the pack.
- Do not strike at pack with any sharp edge parts, and pierce the pack with a nail or other sharp object.
- Do not immerse the power in water and seawater.
- Do not use and leave the power near a heat source as fire, heater, for example, at strong direct sunlight or a vehicle in extremely hot conditions etc.
- Do not use it in a location where static electricity is great, otherwise, the safety devices in the pack may be damaged, which will cause hidden trouble of safety.
- In case of a short circuit, impact or fall of the battery, the battery shall be immediately marked and isolated, and the continued use of the battery shall be prohibited, Even if the battery appears to function normally.
- If the power takes off an odor, generates heat, becomes discolored or deformed, or in any way appears abnormal during use, recharging or storage, immediately remove it from the device or battery charge and stop using it.
- If the power leaks and the electrolyte gets into the eyes, do not rub eyes, instead, rinse the eyes, with clean running water, and immediately seek medical attention. Otherwise, eye injury can result.

## 5. Others

- Please read and follow the handling instructions for the battery before use. Improper use of the battery may cause heat, fire, rupture, damage or capacity deterioration of the battery.
- The customer is requested to contact Our company in advance, if and when the customer needs other applications or operating conditions than those described in this document. Additional experimentation may be required to verify performance and safety under such conditions.
- Our company will take no responsibility for any accident when the battery is used under other conditions than those described in this Document.
- Our company will inform, in a written form, the customer of improvements regarding proper use and handling of the battery, if it is deemed necessary.
- Any matters that this specification does not cover should be conferred between the customer and Our company.

# 6. Product Introduction

## 6.1 Description

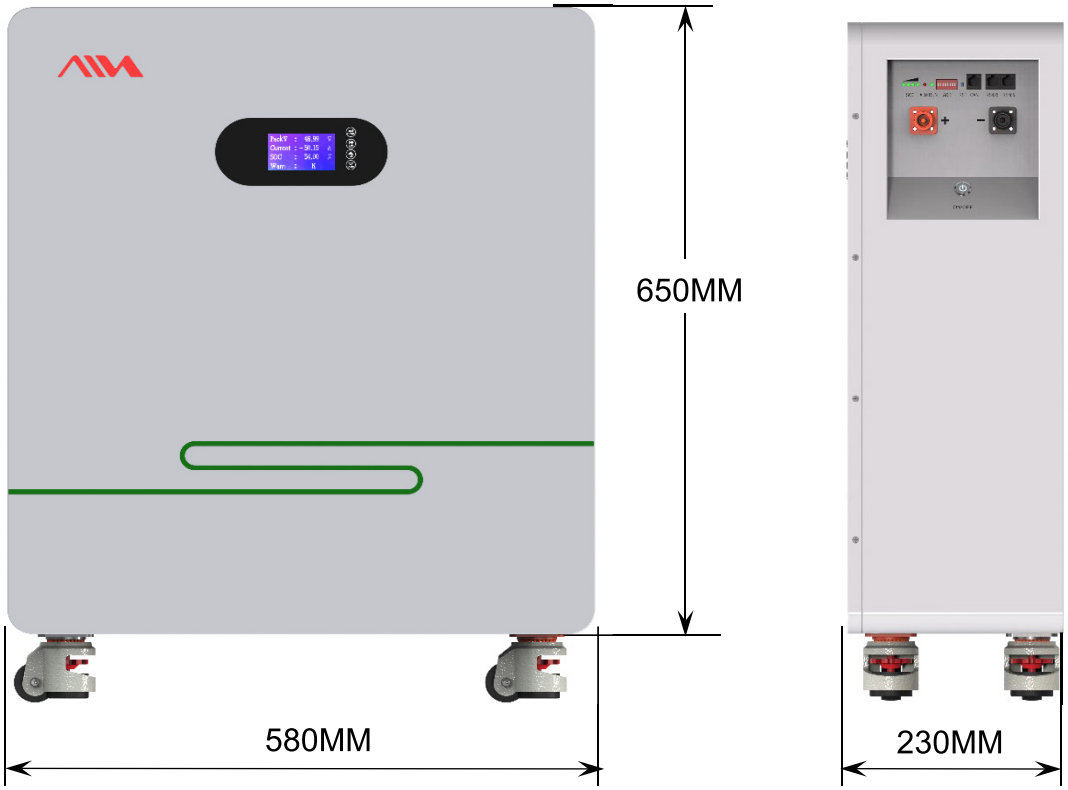
This product is made of high-quality lithium battery as the main energy storage, high cycle life and uses the spray of cold rolled steel sheet as the enclosure, the built-in battery intelligent management system, higher reliability, to provide comprehensive communication function, is compatible with all kinds of mainstream brands in the market inverter. The product is widely used in various energy storage scenarios and fields.

## 6.2 Symbol Description

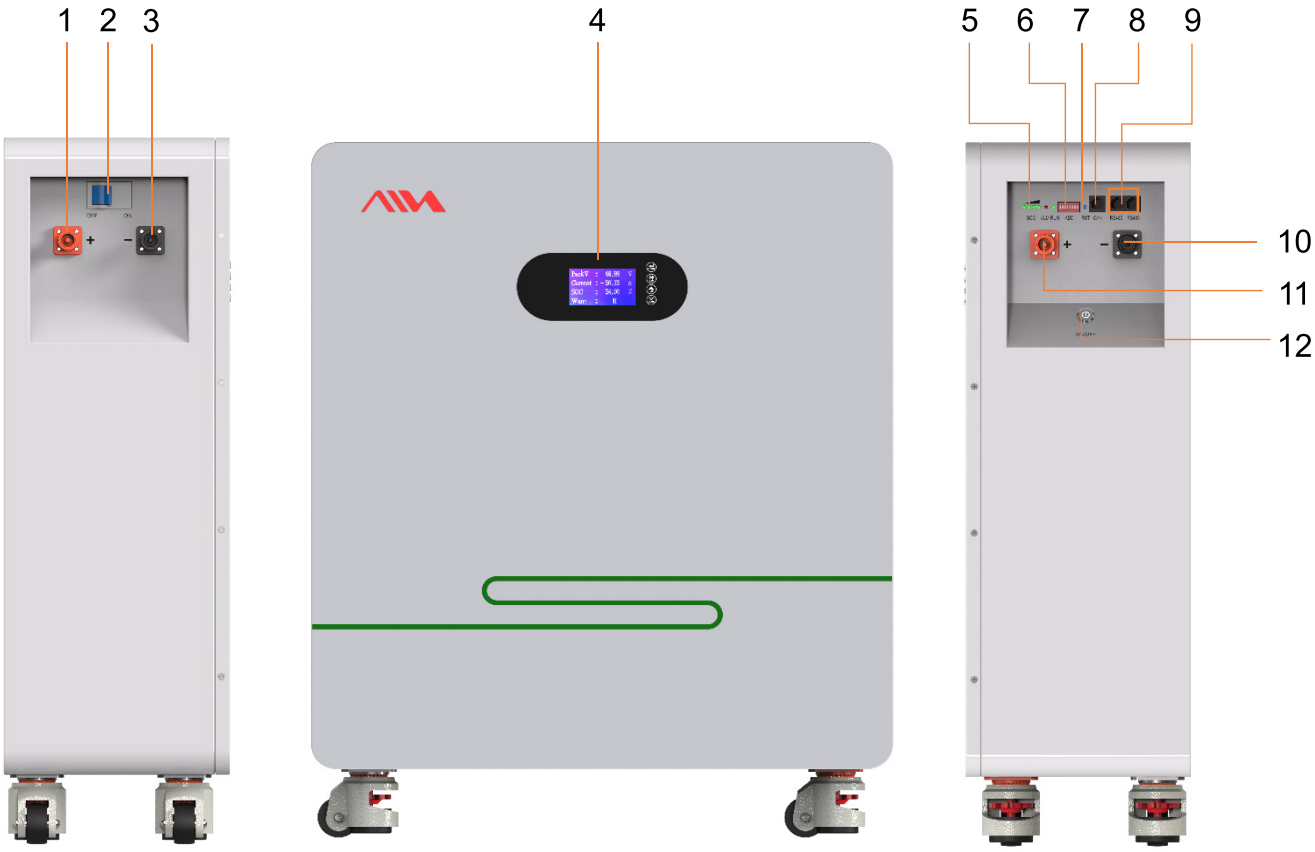
| Symbol | Describe |
|---|---|
|  | There is a potential danger after the equipment is running. Please take protective measures when operating the equipment. |
|  | There is high voltage during the operation of the equipment. When operating the equipment, please ensure that it has been powered off. |
|  | Please use the equipment reasonably. In extreme cases, there is a risk of explosion. |
|  | The equipment contains corrosive electrolyte. Please avoid contact with leaked electrolyte or volatile gases. |
|  | Before operating the equipment, please read the product manual carefully. |
|  | Pay attention to personal protection during installation, operation, and maintenance. |
|  | Equipment should be kept away from open flames or ignition sources. |
|  | The equipment should be kept away from areas accessible to children. |
|  | At the end of the device's lifespan, do not dispose of it together with household waste. |
|  | The equipment should be placed in the correct place and recycled in accordance with local environmental regulations. |
|  | CE certification mark. |
|  | RCM certification mark. |
|  | Protective grounding sign, used to indicate the connection position of the protective grounding wire. |

## 7. Battery Introduction

### 7.1 Product size



### 7.2 Battery panel function diagram




| | | | |
|---|---|---|---|
| 1 | Battery Positive Pole | 7 | Reset Switch |
| 2 | DC Breaker（some models have been upgraded） | 8 | CAN Communication Port |
| 3 | Battery Negative Electrode | 9 | RS485 Parallel Communication Port |
| 4 | LCD Display Screen | 10 | Battery Negative Electrode |
| 5 | Power indicator | 11 | Battery Positive Pole |
| 6 | DIP Switch（Some models have been cancelled） | 12 | Battery Switch |

### 7.3 Technical specifications

| No. | Item | | Specification | Remark |
|---|---|---|---|---|
| 1 | Boundary dimension | | L580*W230*H650mm | Excluding caster |
| 2 | Serial-Parallel Mode | | 16S1P | |
| 3 | Basic parameter | Nominal voltage | 51.2 V | |
| | | Typical capacity | 200 Ah（10240 Wh） | At 0.2C |
| | | Inner resistance | ≤60 mΩ | AC 1kHz |
| | | Working voltage range | 43.2~58.4 V | |
| 4 | Charging input | Charge method | CC&CV | |
| | | Charge voltage | 58.4 V | |
| | | Standard charge current | 100 A | |
| | | Max. continuous charge current | 150 A @30S | |
| 5 | Discharging output | Discharge cut-off voltage | 43.2 V | |
| | | Standard discharge current | 100 A | |
| | | Max. continuous discharge current | 150 A @30S | |
| 6 | Main shell material | | SPCC | |
| 7 | IP class | | IP43 | |
| 8 | Cooling method | | Air cooling | |
| 9 | Net weight | | Approx 98kg | |
| 10 | Environmental requirement | Operation temperature range | Charge：0℃~45℃<br>Discharge：-20℃~55℃ | |
| | | Storage temperature range | 15℃~25℃：≤12 Months<br>0℃~35℃：≤3 Months<br>-20℃~45℃：≤1 Months | |
| | | Storage humidity | 15%-85%RH | |

## 8. Battery installation

### 8.1 Installation precautions

Before installing and using energy storage batteries, it is necessary to carefully read the product technical manual and installation instructions, and strictly follow the requirements for installation operations. During installation, special attention should be paid to the following points:

1) The installation plan should be designed according to the location, area, and surrounding environment, such as wall load, ventilation environment, and sunlight exposure. For batteries placed outdoors, special attention should be paid to objective factors such as waterproofing, sun protection, and dust prevention.

Attention: The installation position of the battery should avoid direct sunlight, avoid being close to heat sources, and avoid using it in humid or high-temperature environments. The battery is most suitable for use in an ambient temperature range of 20 ° C to 25 ° C, otherwise it will affect the battery's service life.

2) Before installation, inspect the appearance of the battery to see if there is any leakage, if the casing is damaged, and if the open circuit voltage is normal. When handling batteries, be careful not to bump them and take protective measures.

3) The battery is shipped in a charged state and must be handled with care to avoid short circuits. Insulated tools and gloves should be worn during installation to prevent electric shock.

4) When installing the wall bracket and battery bracket, the screws must be tightened to prevent the risk of loosening and falling off.

5) At the end of installation, the positive and negative voltage of the battery should be checked again to ensure that it is not damaged during installation.

6) After installation, clean the battery case, cover, panel, and connecting wires with a clean, dry, and soft cloth. Do not use organic solvents to clean to avoid corrosion of the battery case cover and other components. At the same time, clean the installation site and take away any waste generated during the installation process, paying attention to ventilation, dust prevention, and waterproofing.

### 8.2 Product and accessory list

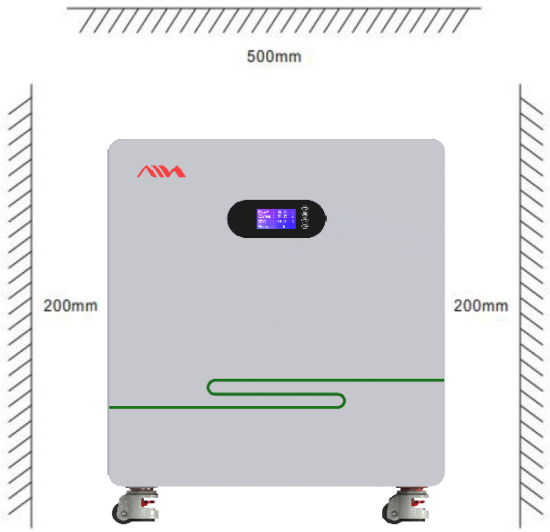




### 8.3 Installation steps

1）Selection of installation location

According to the principle listed in the first point of "Precautions", choose a suitable place to install this product and ensure that the battery has at least 200MM of heat dissipation space.




**Note:** This product is very heavy and must be installed on a flat and sturdy ground.

2）Open the battery packaging box

please take all the components out of the package and place them in appropriate places.

⚠ Remember that this component is heavy! Please be careful when lifting out from the package.

3）Install the battery in the appropriate position according to the requirements of the first point and lock the casters to prevent the battery from moving.

4）Adjusting the battery

After installation, the positive and negative voltage of the battery should be checked again to ensure that the battery has not been damaged during the installation process. Then connect the inverter according to the relevant operation instructions and observe if the inverter is working properly.

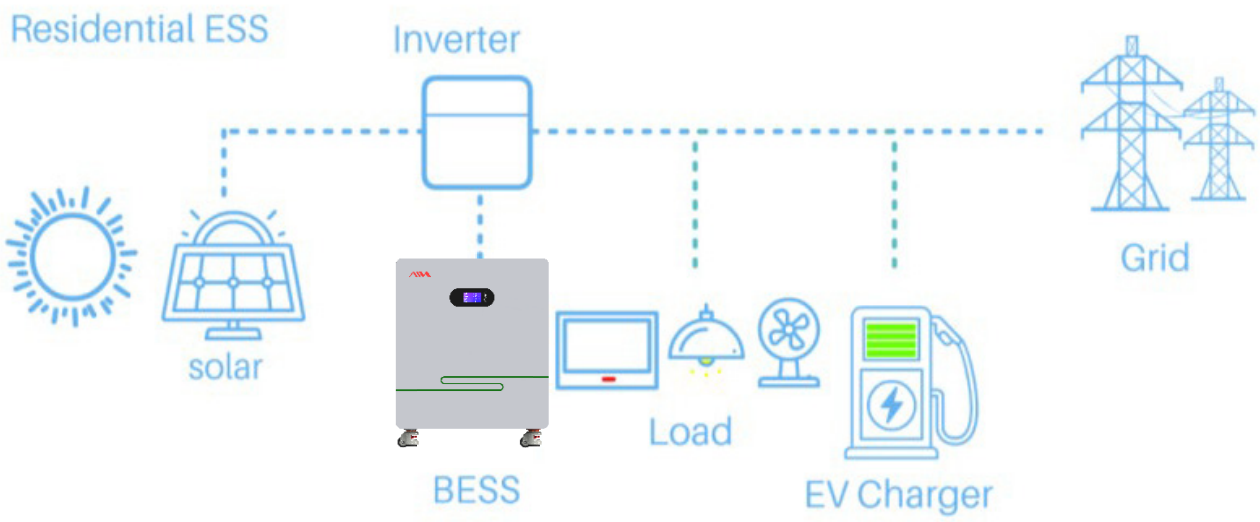
**Note:** Please use the inverter compatible with this product for debugging. For specific compatible models, please refer to the corresponding product manual.

5) Clean installation site

After installation, clean the battery case, cover, panel, and connecting wires with a clean, dry, and soft cloth. Do not use organic solvents to clean to avoid corrosion of the battery case cover and other components. At the same time, clean the installation site and take away any waste generated during the installation process.

## 9. System wiring

### 9.1 System diagram




### 9.2 Ground wire connection

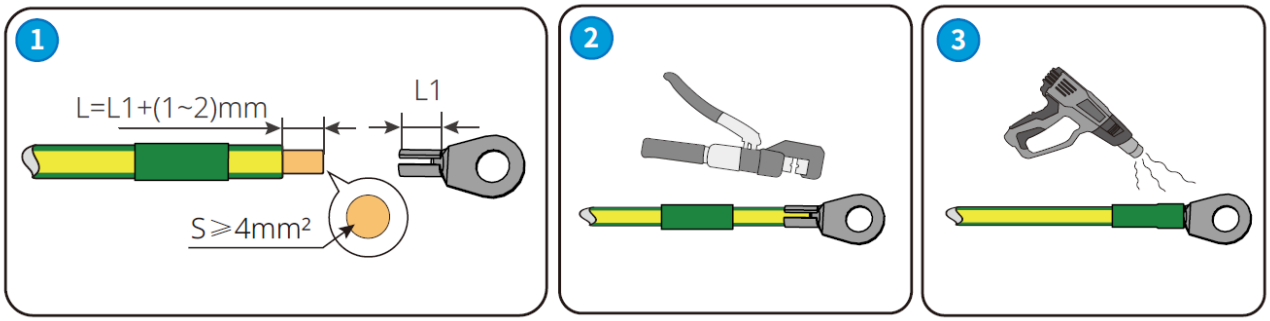
⚠ **Note:** When installing equipment, the protective ground wire must be installed first; When dismantling equipment, the protective ground wire must be removed last.

⚠ **Note:** The pulling force after crimping should be greater than 400N.

⚠ **Note:** Connect one of the two ground wires and reserve the other.

⚠ **Note:** Cross section area of protective ground wire conductor: 5mm$^2$. The wire must comply with outdoor usage standards.

1) Crimp grounding terminal



2) Connect the ground wire to the battery

### 9.3 Power wire connection

⚠ Wire Size：4AWG

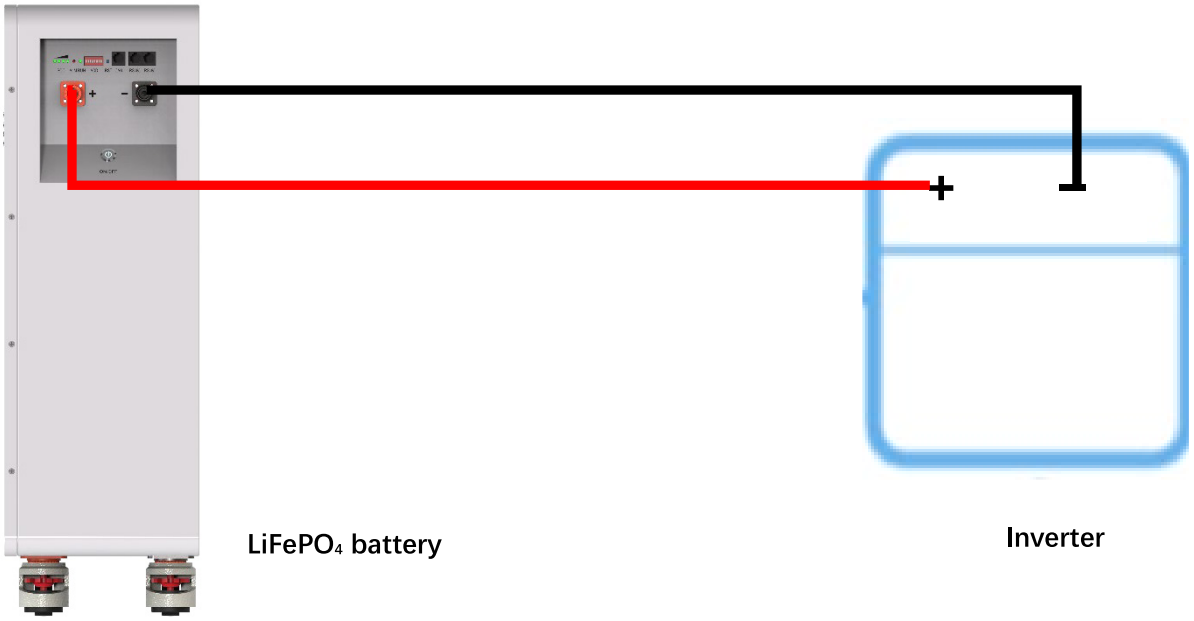
⚠ All wiring must be performed by a professional person.

⚠ All battery pack switches must be disconnected during installation.

⚠ Use a suitable screwdriver to unscrew the bolts and fit the battery connectors in, then fasten the bolt by the screwdriver, making sure the bolts are tightened with a torque of 24.5 N.M in the clockwise direction.

⚠ Before making the final DC connection or closing DC breaker/disconnect, be sure positive (+) must be connected to positive (+) and negative (-) must be connected to negative (-). A reverse polarity connection on the battery will damage the inverter.

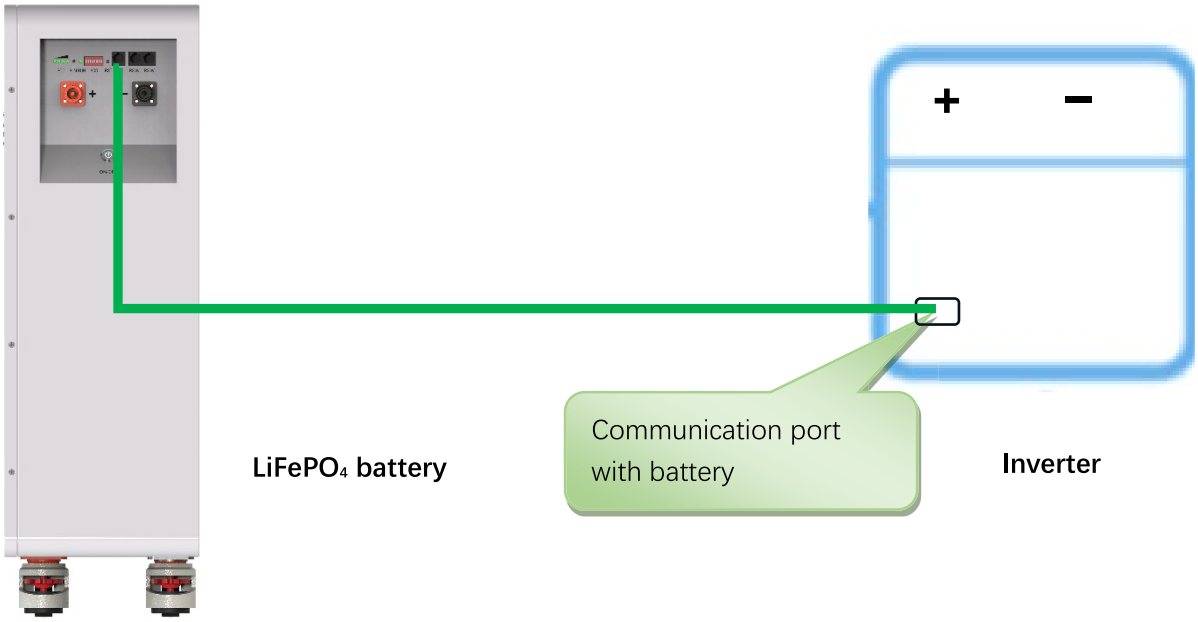
| | |
|---|---|
| Please use Inverter connection power wires to connect the battery to the inverter, as shown in the figure below. |  |



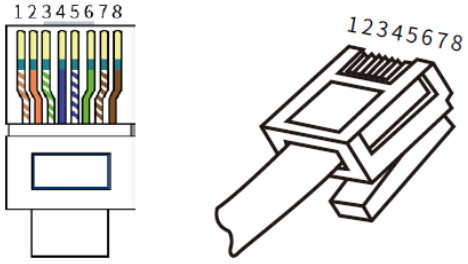
### 9.4 Communication connection

| | |
|---|---|
| Please use the communication wires we provide for the communication connection, as shown in the figure below. |  |

**Note:** Please refer to the instruction manual of the relevant brand inverter for the communication interface between the inverter and the battery.




**RJ45 Registered Jack**

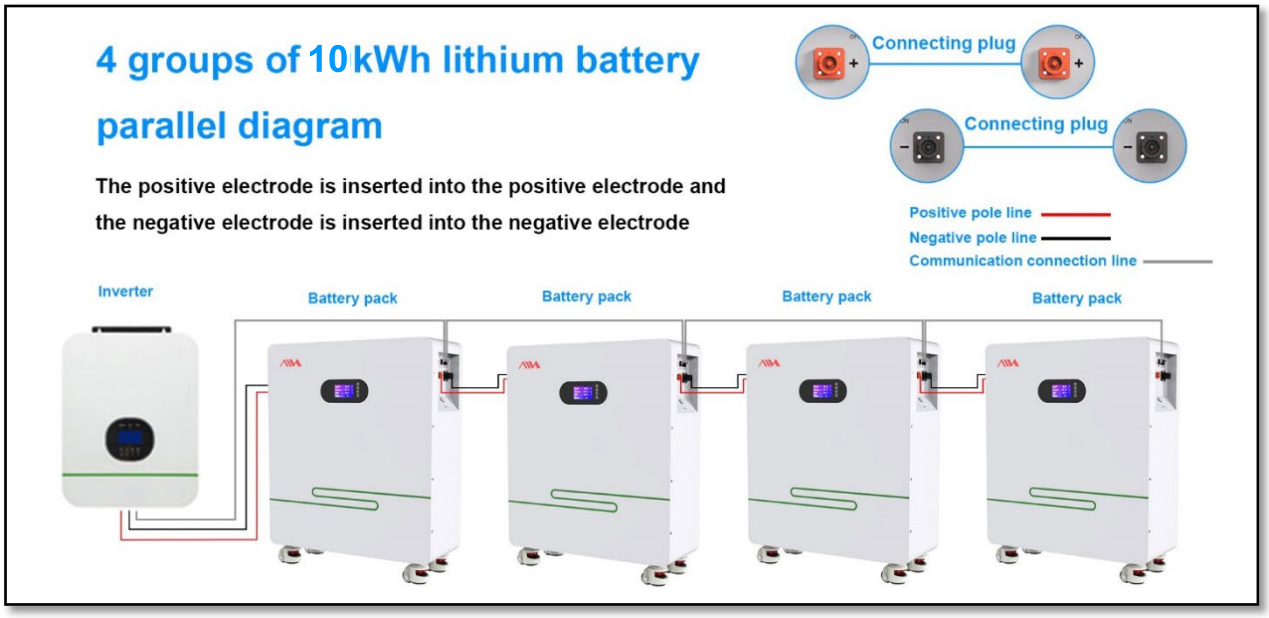



**CAN communication interface**

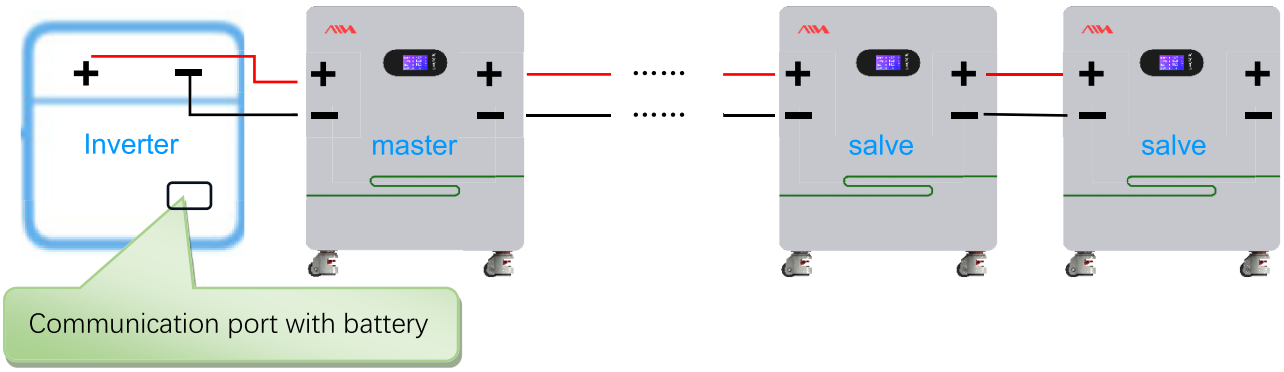
| PIN | Definition |
|---|---|
| 1、8 | RS485-B |
| 2、7 | RS485-A |
| 4 | CAN-H |
| 5 | CAN-L |
| 3、6 | GND |

### 9.5 Parallel connection of batteries

1) Parallel schematic diagram

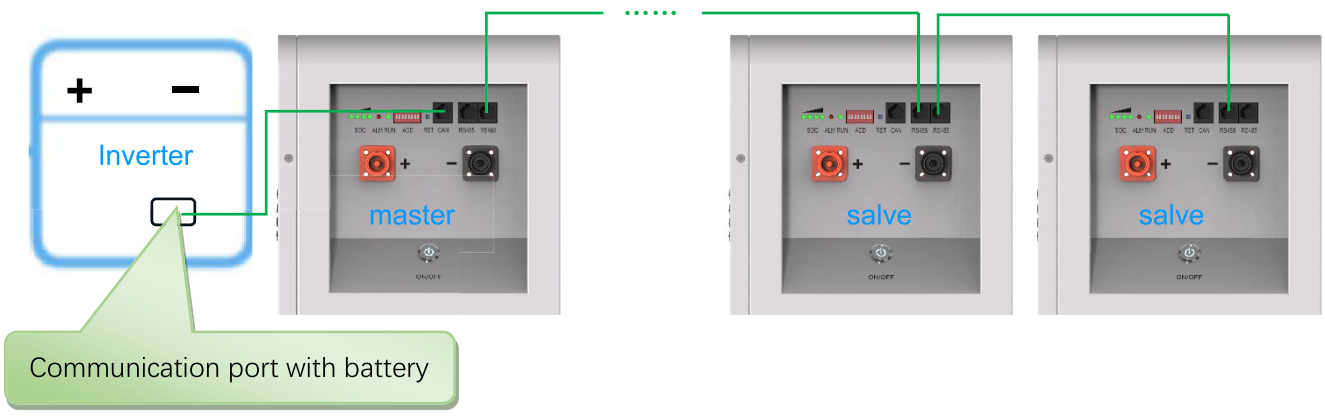



2） Power wire connection




**Note:** Supports up to 16 sets of batteries in parallel

3） Communication connection




**Note:** Supports up to 16 sets of batteries in parallel

### 9.6 Automatic dialing method

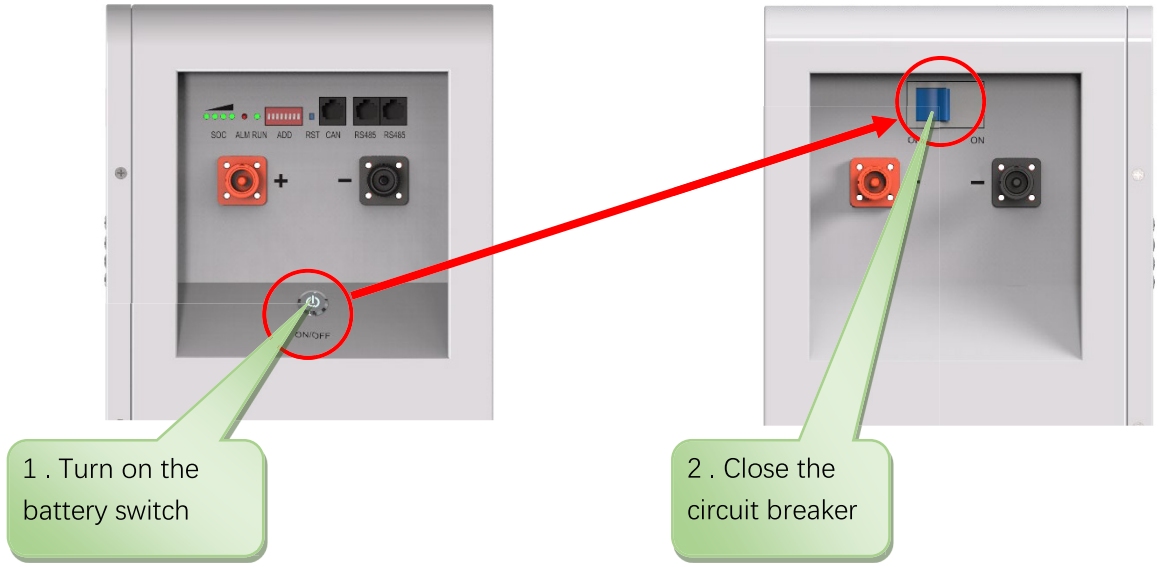
The new battery has an automatic address allocation function, without the need for dialing, and can be connected using a regular network cable. The RS485B of the first battery pack is connected to the RS485A of the second battery pack (the first group is the host, and the host CAN/485 is connected to the inverter communication), the RS485B of the second battery pack is connected to the RS485A of the third battery pack, and gradually connected to the slave.

**Note:** Supports up to 16 sets of batteries in parallel

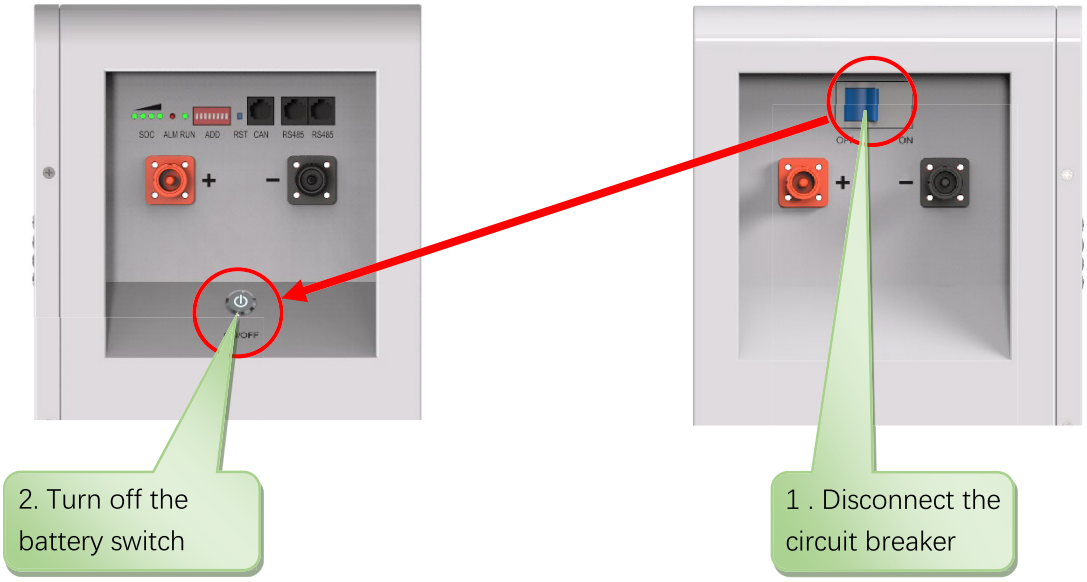
## 10. Power on and off sequence

**Power on:** Press and hold the wake button on the front panel for about 1 second, then the LCD, work indicator lights up, and a beep is heard, and the machine will complete the boot operation.

Note: Due to the characteristics of the machine, after booting, the system will generally stabilize the output within 5~10 seconds; When booting, please turn on the battery first, and then turn on the load.



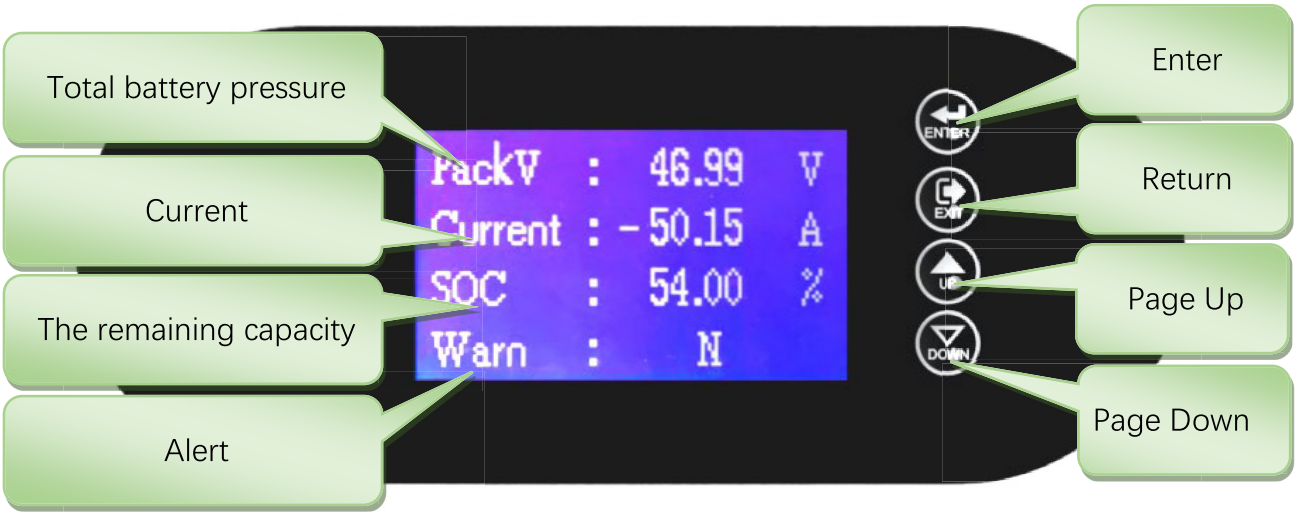
**Power off:** First turn off the load, then disconnect the circuit breaker, and finally turn off the battery switch, At this time, the LCD and work indicator lights will go out, and a beep sound will be heard. The machine will complete the shutdown operation.




## 11. LCD screen display and settings

### 1) Main page

After power on activation, the battery management interface will be displayed, and press the Enter key to enter the main page. As shown in the following figure:



**2) Functional interface**

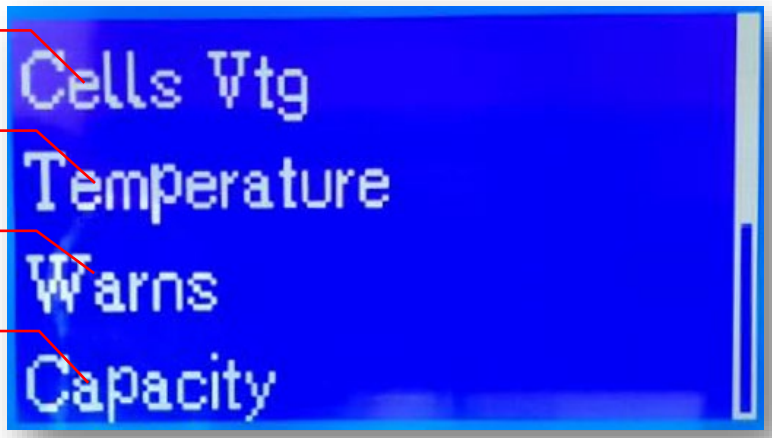
Press “Enter “or “Down” to enter detailed battery parameter information

Cell voltage query

Temperature query

Alarm query

Capacity query

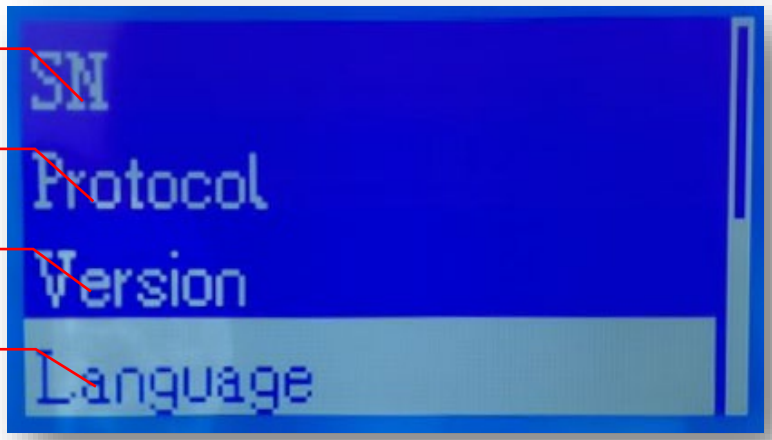



BMS_SN

Protocol switching

Version

Language

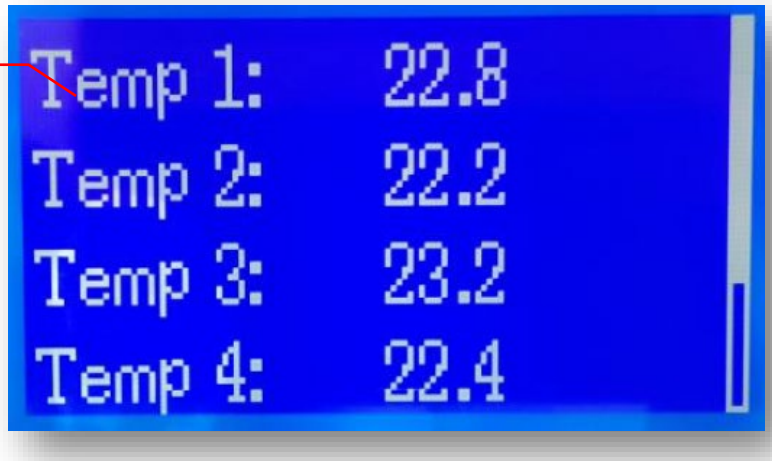



**3) Cell data**

Cell 01-Cell 16：
Cell voltage value

**4) temperature data**

Temp 1-Temp 4：Cell temperature value




Ambient temperature

Power temperature

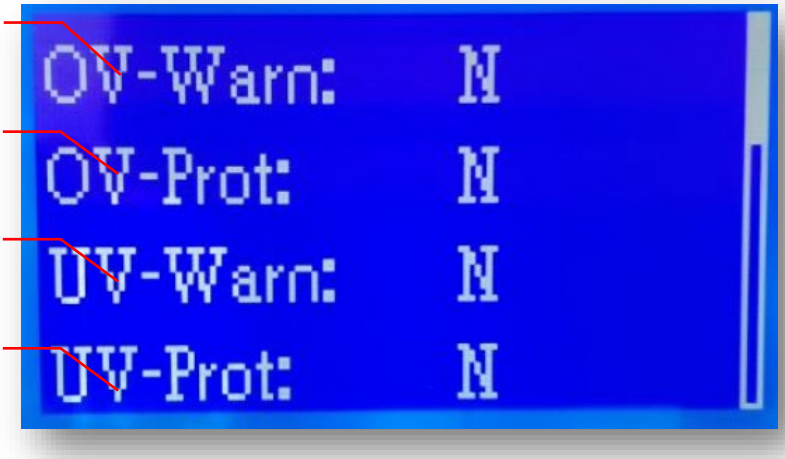

**5) Alarm data**

High voltage warning

Over voltage protection

Low voltage warning

Under voltage protection

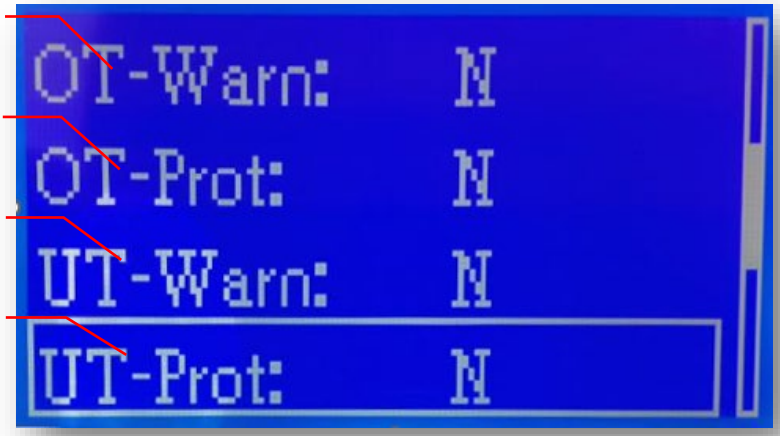


High temperature warning

Over temperature protection

Low temperature warning

Under temperature protection

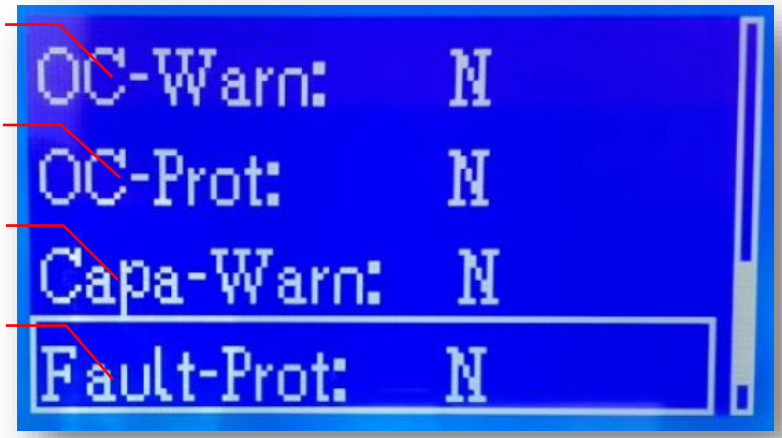



Overcurrent warning

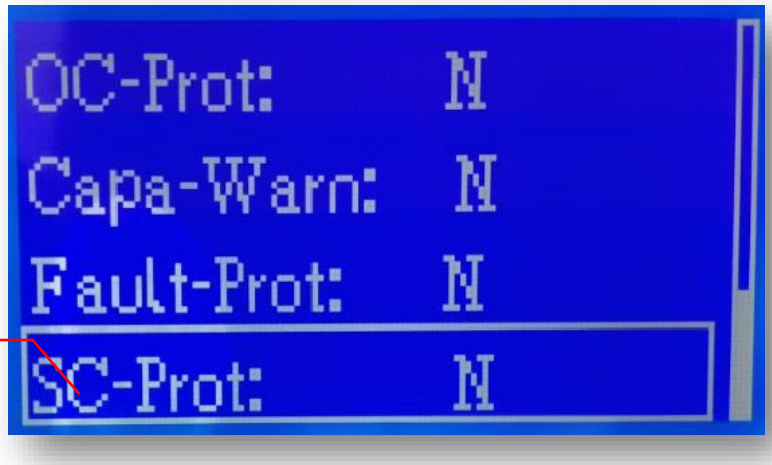
Overcurrent protection

Remaining capacity alarm

Failure protection




Short circuit protection



6) Capacity data

Battery capacity

The remaining capacity

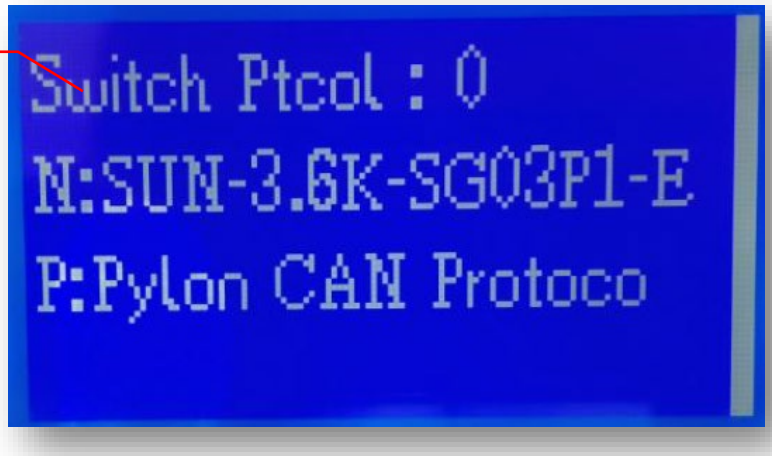
Cycles


7) SN

The BMS-SN code is also a Bluetooth name


8) Protocol switching

Switching communication protocols

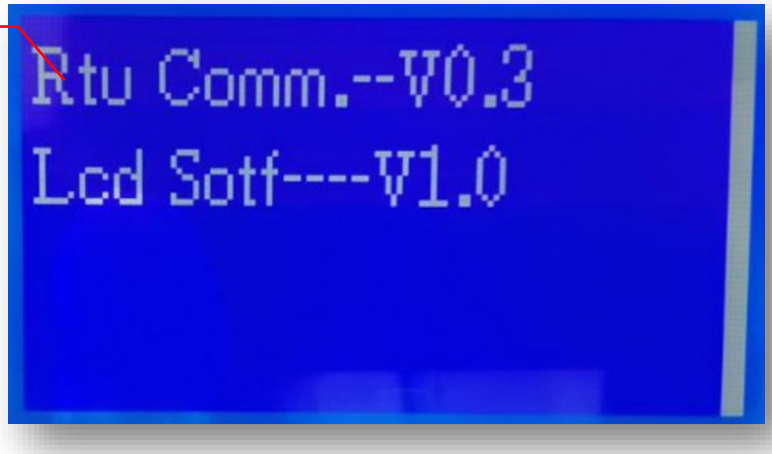



Note: Switch the protocol to the corresponding protocol interface, press the confirm button twice, and the protocol switch will be normal.

| No. | Inverter brand | Inverter protocol |
|---|---|---|
| 0 | pylontech（CAN protocol） | Pylon_CAN |
| 1 | Growatt（CAN protocol） | Growatt_CAN |
| 2 | Goodwe（CAN protocol） | Goodwe_CAN |
| 3 | Sofar（CAN protocol） | Sofar_CAN |
| 4 | SMA（CAN protocol） | SMA_CAN |
| 5 | Victron（CAN protocol） | Victron_CAN |
| 6 | Studer（CAN protocol） | Studer_CAN |
| 7 | Ginlong（CAN protocol） | Ginlong_CAN |
| 8 | Voltronic（RS485 protocol） | Voltronic_485 |
| 9 | SRNE（RS485 protocol） | SRNE_485 |
| 10 | Growatt（RS485 protocol） | Growatt_485 |
| 11 | Pylon（RS485 protocol） | Pylon_485 |
| 12 | Deye（Pylon RS485 protocol） | Deye_485 |

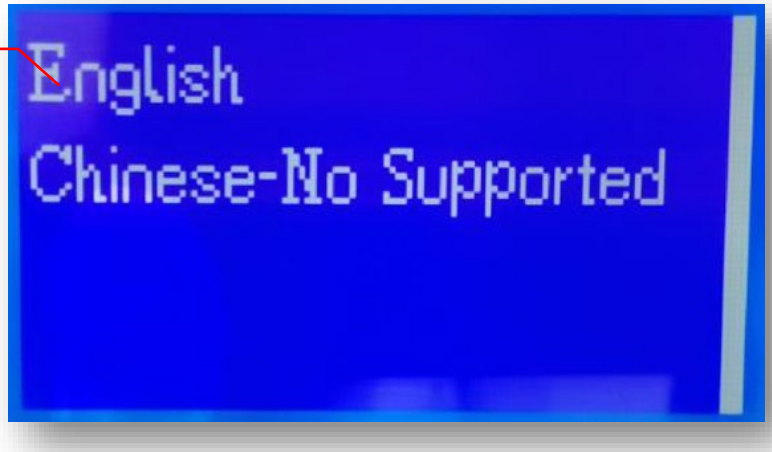
**9) Version**

**Version**



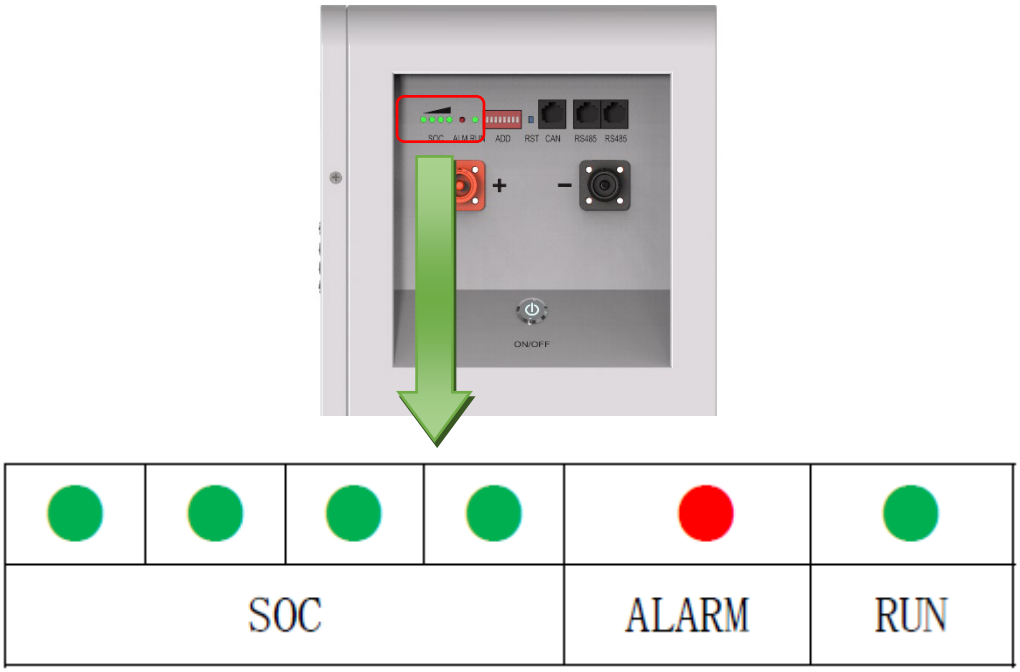

**10) Language**

**Language(Chinese version is currently not supported)**



## 12. LED indicator instructions

### 12.1 Schematic diagram of LED indicator light positions




### 12.2 Capacity indication

| System status | | charge | | | | discharge | | | |
|---|---|---|---|---|---|---|---|---|---|
| Capacity indicator | | L4● | L3● | L2● | L1● | L4● | L3● | L2● | L1● |
| Remaining capacity | 0 ~ 25% | OFF | OFF | OFF | Flicker2 | OFF | OFF | OFF | ON |
| | 25 ~ 50% | OFF | OFF | Flicker2 | ON | OFF | OFF | ON | ON |
| | 50 ~ 75% | OFF | Flicker2 | ON | ON | OFF | ON | ON | ON |
| | ⩾75% | Flicker2 | ON | ON | ON | ON | ON | ON | ON |
| Running indicator ● | | ON | | | | Flicker3 | | | |

### 12.3 Light Blink explanation

| Flashing mode | ON | OFF |
|---|---|---|
| Flash 1 | 0.25s | 3.75s |
| Flash 2 | 0.5s | 0.5s |
| Flash 3 | 0.5s | 1.5s |

### 12.4 Status indicator

| System status | running state | RUN | ALM | SOC | | | | illustrate |
|---|---|---|---|---|---|---|---|---|
| | | ● | ● | ● | ● | ● | ● | |
| Shutdown | dormancy | OFF | OFF | OFF | OFF | OFF | OFF | All OFF |
| Standby | normal | Flash 1 | OFF | OFF | OFF | OFF | OFF | Standby state |
| charge | normal | ON | OFF | According to battery capacity indication | | | | Highest LED flash 2 |
| | Overcurrent alarm | ON | Flash 2 | According to battery capacity indication | | | | Highest LED flash 2 |
| | Overvoltage protection | Flash 1 | OFF | OFF | OFF | OFF | OFF | |
| | Temperature and overcurrent protection | Flash 1 | Flash 1 | OFF | OFF | OFF | OFF | |
| discharge | normal | Flash 3 | OFF | According to battery capacity indication | | | | According to battery capacity indication |
| | Alarm | Flash 3 | Flash 3 | | | | | |
| | Temperature, overcurrent, short circuit protection | OFF | ON | OFF | OFF | OFF | OFF | Stop discharging, and there is no action force after 48h when the mains is offline dormancy |
| | Low voltage protection | OFF | OFF | OFF | OFF | OFF | OFF | Stop discharging |

## 13. Maintenance

| Maintenance project | Maintenance Cycle |
|---|---|
| If the battery is not in use, it needs to be fully charged and discharged to 25-50%. | Every 3 months |
| Check if the wall bracket is installed loose, and if so, tighten the corresponding position. | Every 3 months |
| Check if the shell is damaged. If so, please repaint or contact the after-sales service center. | Every 3 months |
| Check if there is any wear on the exposed wires. If there is, please replace the corresponding cable or contact the after-sales service center. | Every 3 months |
| Check if there is any debris accumulation around the battery. If there is, please clean it to avoid affecting the battery's heat dissipation. | Every 3 months |
| Check for water or pests to avoid long-term battery intrusion. | Every 3 months |


⚠ If you find a problem that may affect the battery system, please contact the after-sales personnel and do not disassemble it privately.

⚠ If the copper wire inside the conductive wire is exposed, it is forbidden to touch, high voltage danger, please contact the after-sales personnel, it is forbidden to disassemble without permission.

⚠ In case of other emergencies, please contact the after-sales personnel as soon as possible, operate under the guidance of the after-sales personnel, or wait for the after-sales personnel to operate on-site.

Professional Manufacturer of Energy Storage Batteries