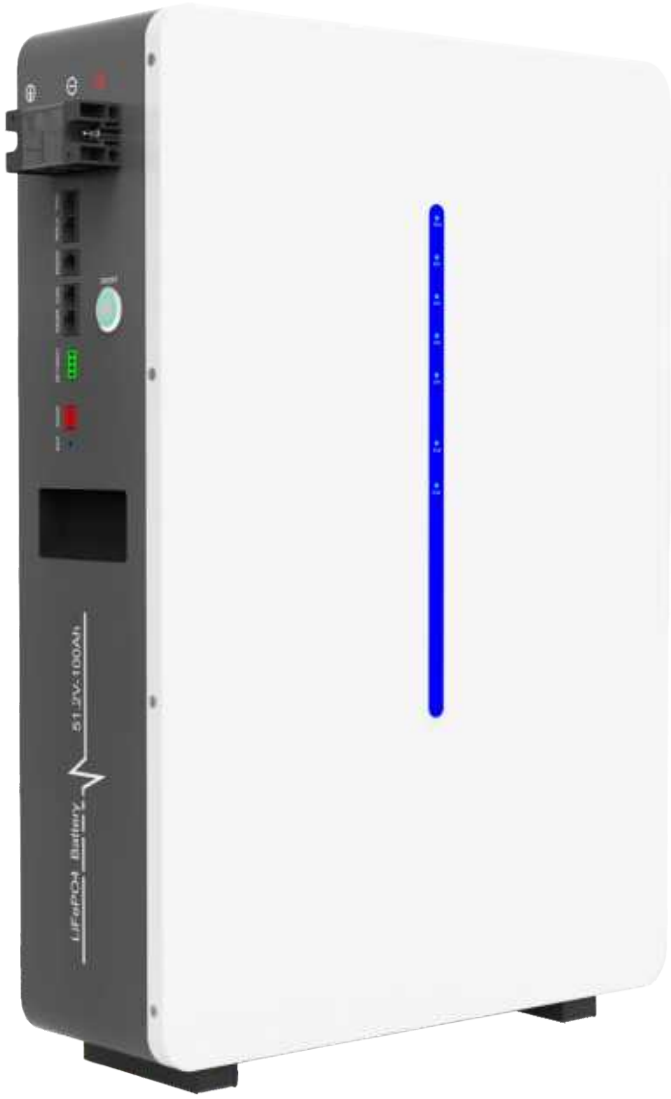
BM Low-Voltage Battery

User Manual



BM051W48
51.2V/100Ah

Energycreative (Shenzhen) Technology Co., Ltd

Table of Contents

1. Instructions

Thank you very much for choosing the BM series household energy storage system developed and produced by our company. Please read and understand all contents of the Manual carefully before installing and using the product. If you have any suggestions during the use, please do not hesitate to give us feedback.

1.1 Range of Application

The installation and user manual of BM series is applicable to the installation and use of the following products:

No.	Model	Rated energy
1	BM051W48	5.12kWh

The product should be used in compliance with local standards, laws and regulations, because any non-compliance with the use may lead to personal injuries and property loss.

The drawings provided in this Manual are used to explain the concepts related to the product, including product information, installation guide, electrical connection, system debugging, safety information, common problems and maintenance, etc.

The internal parameters of this product have been adjusted before delivery. No internal parameters can be changed without permission. Any unauthorized changes to the settings will invalidate the warranty, and the Company will not be liable for any loss resulting therefrom.

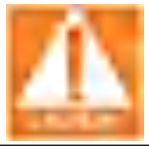
The Manual and other related documents are an integral part of the product and should be kept properly for onsite installation personnel and related technical personnel to consult.

1.2 Meaning of Abbreviations

AC	Alternating Current
DC	Direct Current
PV	Photovoltaic
BMS	Battery Management System
PCS	Power Conversion System
RJ45	Registered Jack 45
SOC	State of Charge
C	Charge C-rate
RS485	RS485 Communication Interface
CAN	Controller Area Network

1.3 Symbol Stipulations

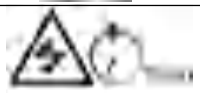
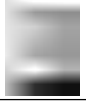
There may be following symbols herein, and their meanings are as follows.

Symbols	Description
	Indicate a hazard with a high level of risk which, if not avoided, will result in death or serious injuries.
	Indicate a hazard with a medium level of risk which, if not avoided, could result in death or serious injuries.
	Indicate a hazard with a low level of risk which, if not avoided, could result in minor or moderate injuries.
	Warning information about device or environment safety. If not avoided, equipment damage, data loss, performance degradation or other unanticipated results may be resulted in. The "NOTICE" does not involve any personal injuries.

2. Safety Precautions

2.1 Safety Symbols

This product contains the following symbols, please pay attention to identifying.

Symbols	Description
	Observe enclosed documentation.
	Danger. Risk of electric shock!
	Danger of high voltages. Danger to life due to high voltages in the Energy storage system.
	Hot surface.
	CE certification.
	Do not touch the product in 5mins after shutdown.
	Comply with RoHS standard.
	The Energy storage system should not be disposed together with the household waste.

2.2 General Safety

2.2.1 Important Notice

Before installing, operating and maintaining the device, please read this Manual first and follow thesymbols on the device and all the safety precautions in this Manual.

The matters indicated with "DANGER", "CAUTION", "ATTENTION" and "NOTICE" in this Manual do not represent all the safety matters to be observed, but are only the supplements to all the safety precautions. The Company will not be liable for any violation of general safety operating requirements, or any violation of safety standards for the design, production and use of the device. The device must be used in an environment that meets the requirements of the design specifications. Otherwise, the device may fail, and the abnormal device function or component damage, personal safety accident, and property loss arising from this are not covered within the quality assurance scope of the device. When installing, operating, and maintaining the device, the local laws, regulations, and codes shall be followed. The safety precautions in this Manual are only supplements to local laws, regulations, and codes. The Company shall not be liable for any of the following circumstances.

- The device is not run under the conditions of operating described in this Manual.
- The installation and operating environment is beyond the requirements of relevant international or national standards.
- The product is disassembled or changed, or the software code is modified without authorization.
- The operation instructions and safety warnings related with the product and in the documents are not followed.
- Damage of the device is caused by abnormal natural environment (force majeure, such as earthquake, fire, and storm).
- Transportation damage is caused during customer's own transportation.
- The storage condition does not meet the requirements of the product related documents and causes damage.

2.2.2 General Requirements

	Operating when the power is on is strictly prohibited during installation.
	It is strictly prohibited to install, use, and operate any outdoor equipment or cables (including but not limited to transporting equipment, operating reequipment and cables, plugging and removing signal ports connected to the outdoor, working at altitude, and outdoor installation) in severe weather, such as thunder, rain, snow, and gale level 6.
	In case of any fire, evacuate the building or equipment area and press the fire alarm bell or dial the fire call. Under any circumstances, re-entry into a burning building is strictly prohibited.
	Under no circumstances should the structure and installation sequence of the device be changed without the manufacturer's permission.
	The battery terminal components shall not be affected during transportation. And, the battery terminal bolts shall not be lifted or transported.
	It is strictly prohibited to alter, damage or block the marks and nameplates on the device.
	The composition and working principle of the entire photovoltaic power generation system, as well as the relevant standards of the country/region where the project is located shall be known fully.
	After the device is installed, the empty packing materials, such as cartons, foam, plastics, and cable ties, shall be removed from the device area.

2.2.3 Personnel Safety

- When operating the device, appropriate personal protective equipment shall be worn. If any fault that may lead to personal injury or damage of the device is found, immediately terminate the operation, report to the responsible person, and take effective protective measures.
- Before using any tools, learn the correct method of using the tool to avoid injuries and damage of the device.
- When the device is running, the temperature of the case is high, which may cause burns. Therefore, do not touch the case.
- In order to ensure personal safety and normal use, reliable grounding should be carried out before use.
- Do not open or damage the battery. The electrolyte released is harmful to skin and eyes, so avoid touch it.
- Do not place irrelevant items on the top of the device or insert them into any part of the device.
- Do not place flammable items around the device.
- Never place the battery in the fire to avoid explosion and prevent the personal safety from being endangered.
- Do not place the battery module in water or other liquids.
- Do not short-circuit the battery terminals, because short-circuiting of the battery may cause combustion.
- The battery may pose a risk of causing electric shocks and large short-circuit currents. When using the battery, the following precautions should be paid attention to:

a) The metal objects, such as watch and rings, shall be removed.

a) Tools with insulated handles should be used.

a) Rubber gloves and shoes should be worn.

a) The charging power supply shall be disconnected before connecting or disconnecting terminals of the battery.

a) Check whether the battery is accidentally grounded. If the battery is accidentally grounded, remove the power supply from the ground.

- Do not clean the internal and external electrical components of the cabinet with water or detergent.
- Do not stand, lean or sit on the device.
- Do not damage any modules of the device.

2.3 Personnel Requirements

- The personnel in charge of installation and maintenance must be strictly trained to understand all safety precautions and master proper operation methods.
- Only qualified professionals or trained personnel are allowed to install, operate and maintain the device.
- The personnel who operate the device, including the operators, trained personnel and professionals, must have special operation qualifications required by the local country, such as high voltage operation, working high above the ground, and special equipment operation qualification.
- The replacement of device or components (including software) must be carried out by professionals or authorized personnel.

2.4 Electrical Safety

2.4.1 General Requirements

Before carrying out electrical connections, ensure that the device is not damaged, or an electric shock or fire may occur.

Never install or remove any power cables when the power is on. The electric arcs or sparks may be generated at the moment when the power cable contacts with the conductor, which may cause fire or personal injuries.

- All the electrical connections must meet the electrical standards of the country/region where the project is located.
- The cables prepared by users themselves shall comply with local laws and regulations.
- Special insulating tools should be used in high-voltage operations.
- Before connecting the power cord, ensure that the label identification on the power cord is correct.
- Operations on the device are allowed only five minutes after the device is completely powered OFF.
- The insulation layer of the cable may be aged or damaged when the cable is used in a high temperature environment. Therefore, the distance between the cable and the heat source must be at least 30mm.
- Cables of the same type should be bundled together. Whereas, the cables of different types should be routed at least 30mm apart, and shall not be wrapped together or crossed.

2.4.2 Grounding Requirements

- When installing the device to be grounded, the protective grounding wire must be installed first; when removing the device, the protective grounding wire must be removed at last.
- It is forbidden to destroy the grounding conductor.
- It is forbidden to operate the device without a grounding conductor installed.
- The device shall be permanently connected to the protective grounding wire. Before operating the device, electrical connection of the device shall be checked to ensure that the device is reliably grounded.

2.5 Installation Environment Requirements

- This product can be used in indoor or outdoor environment.
- Do not install or use this product in an environment where the temperature is lower than -20 ℃ or higher than 55 ℃.
- It should be installed in a dry and well-ventilated environment to ensure good heat dissipation performance.
- The product can be installed at a maximum altitude of 2,000m.
- The installation position should be away from the fire source.
- The product should be installed and used away from children and animals.
- The installation position should be far away from water sources, such as faucets, sewer pipes, and sprinklers, to avoid entering of water.
- The device should be placed on a firm and flat supporting surface.
- Do not place any inflammable or explosive items around the device.
- When the device is running, do not block the ventilation vent or heat dissipation system to prevent fire caused by high temperature.

The operation and service life of the energy storage is related to the operating temperature. The energy storage should be installed at a temperature equal to or better than the ambient temperature.

3. Product Introduction

3.1 Battery Specifications

Product model	BM051W48
Rated Voltage	51.2V
Rated Capacity(25 ℃/0.5C) (Ah/WH)	100Ah/5120WH
Operating Voltage Range	44.8~57.6V
Maximum Continuous Discharge current	100A
Maximum Continuous Charging current	100A
Charge Temperature Range	-0 ℃ ~ 55℃
Discharge Temperature Range	-20℃ ~ 55℃
Protection Level	IP20
Applicable Standards	UN38.3 MSDS
Communication	CAN/485
Operating Humidity Range	0~95%, Non-condensing.
Altitude	≤2000m
Product Dimension	458*605*158mm
N.W.	44kg

3.2 Model Coding

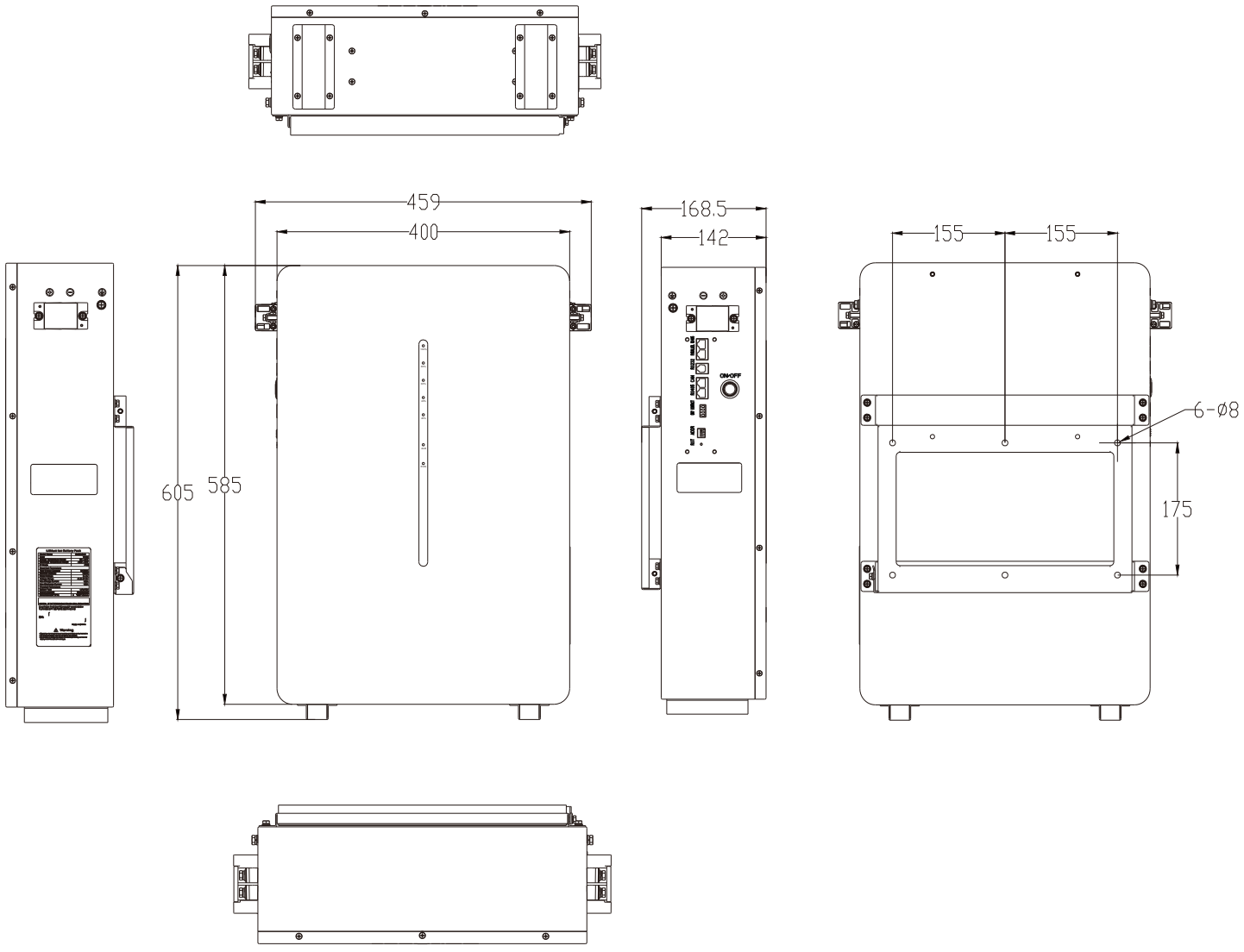
The model coding of the energy storage battery is as follows:

BM 051 W 48
① ② ③

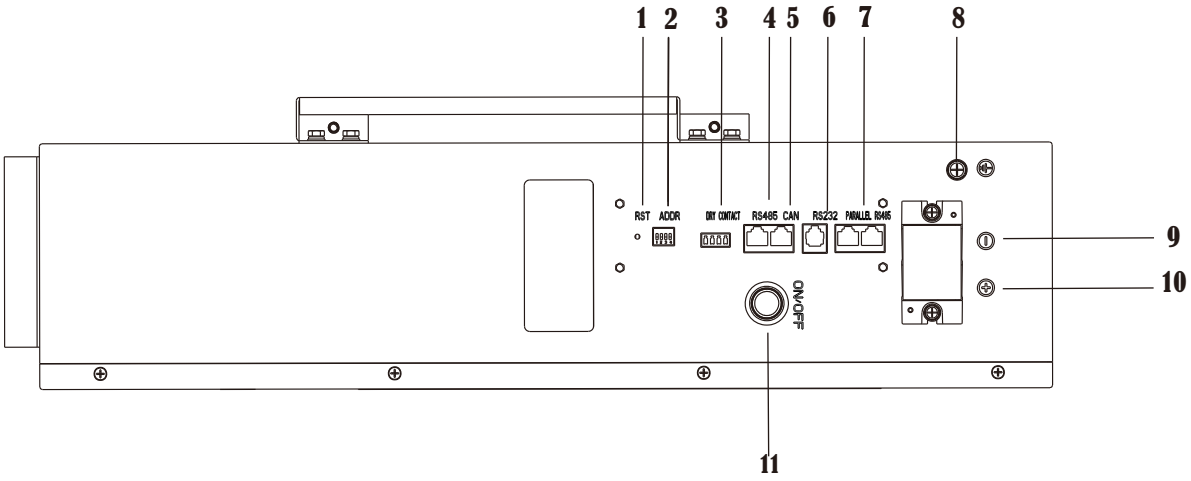
NO.	Meaning	Remark
①	Battery capacity	051:5.12kWh
②	Battery Type	S:Rack-mounted W:Wall-mounted
③	Battery voltage	24: 24V system; 48: 48V system.

3.3 Appearance Description

3.3.1 Dimension

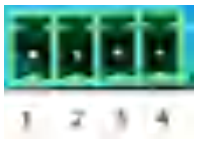
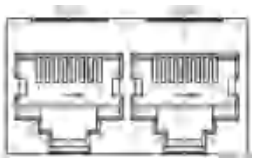


3.3.2 Appearance and Interface Introduction



No.	Interface	Function
1	RESET	Reset button
2	ADD	Address allocation for batteries in parallel.
3	Dry contact	Normally open（×2）.
4	RS485	Connect with the external inverter.
5	CAN	Connect with the external inverter.
6	RS232	Local monitoring and system upgrade.
7	Parallel RS485	Communication between batteries in parallel.
8	Ground terminal	Battery grounding.
9	BAT-	Battery Negative.
10	BAT+	Battery Positive.
11	ON/OFF	Battery ON/OFF.

Communication interface definition

No.	Interface	Type	Picture	instruction	
3	Dry contact			1:COM2 2:NO2 3:COM1 4:NO1	
4	RS485	RJ45		1:RS485-B1 2:RS485-A1 3:GND 4:NC	5:NC 6:GND 7:RS485-A1 8:RS485-B1
5	CAN	RJ45		1:NC 2:GND 3:NC 4:CANH	5:CANL 6:NC 7:NC 8:NC
6	RS232	RJ12		1:NC 2:NC 3:TX (veneer) 4:RX (veneer)	5:GND 6:NC
7	Parallel RS485	RJ45		1:RS485-B 2:RS485-A 3:GND 4:NC 5:NC 6:GND 7:RS485-A 8:RS485-B	9:RS485-B 10:RS485-A 11:GND 12:NC 13:NC 14:GND 15:RS485-A 16:RS485-B

4. System Installation

4.1 Pre-installation inspection

Outer packaging inspection

Before opening the outer packaging of the energy storage device, checkwhether there is any visible damage on the outer packaging, such as holes, cracks or other possible signs of internal damage, and check the type of energy storage device. If there is any abnormality in the packaging of the energy storage device or the model is inconsistent, please do not open it and contact us as soon as possible.

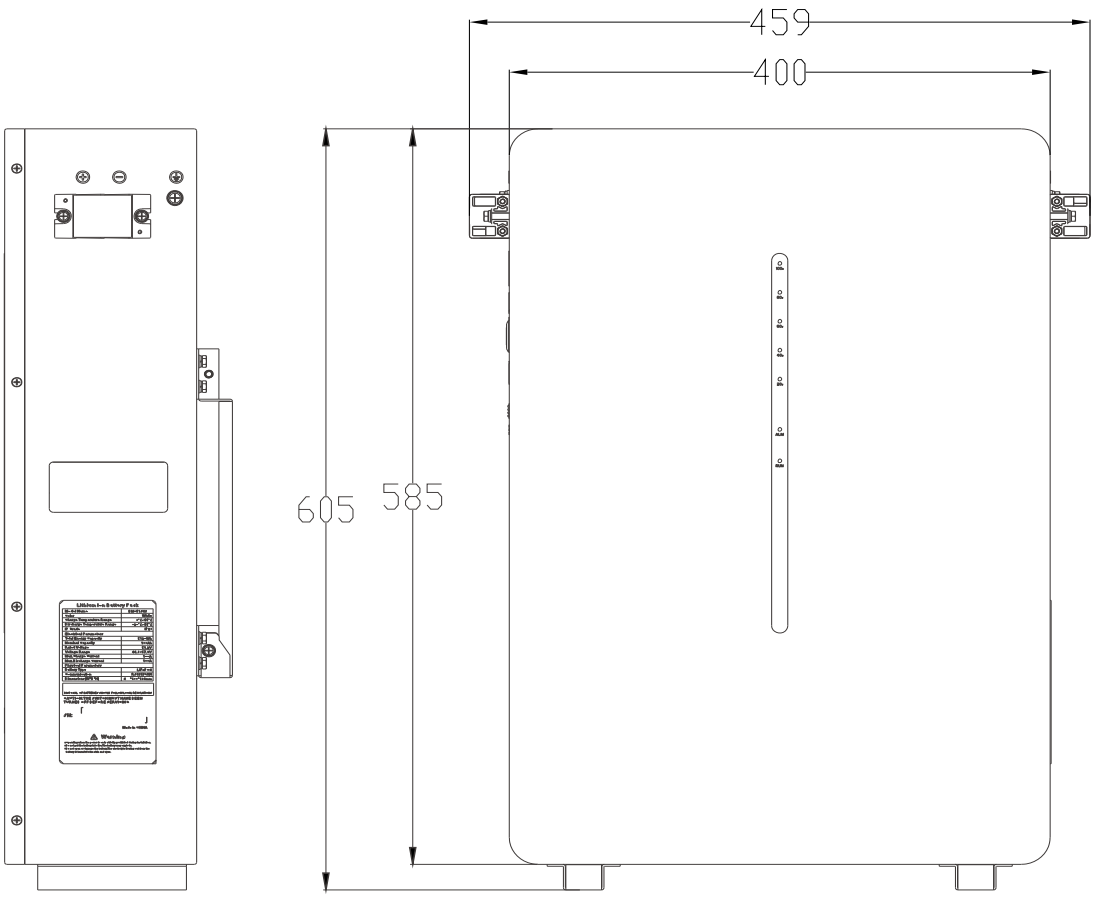
Inspection of delivery items and accessories

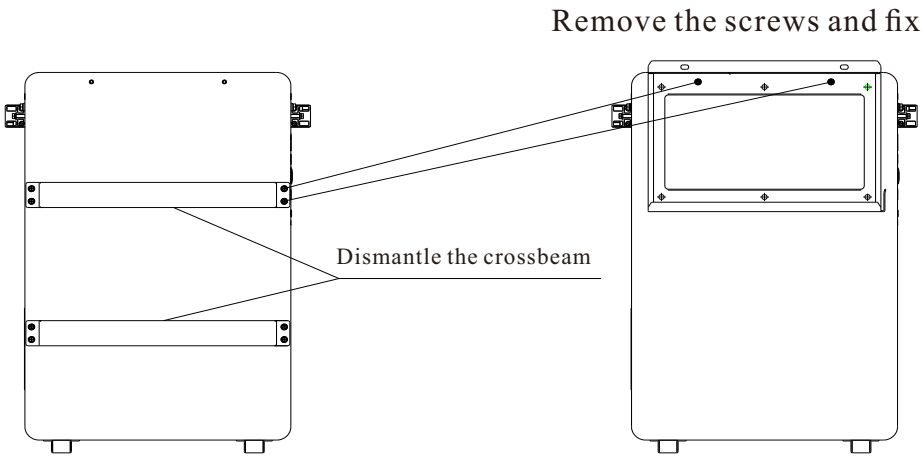
After opening the outer packaging of the energy storage device, checkwhether the products are complete and whether there is any obvious external damage. If there is any missing or damaged item, please contact us.

NO.	Name	Quantity	Describe
1	Battery pack	1	48V/51.2V100Ah/150Ah/200Ah
2	Power cord (1m, optional)	1	6AWG wire - M6 screw
3	Communication cable (1m, optional)	1	RJ45 communication cable
4	User's manual	1	This document

4.2 Equipment Installation

4.2.1 Installing On The Ground

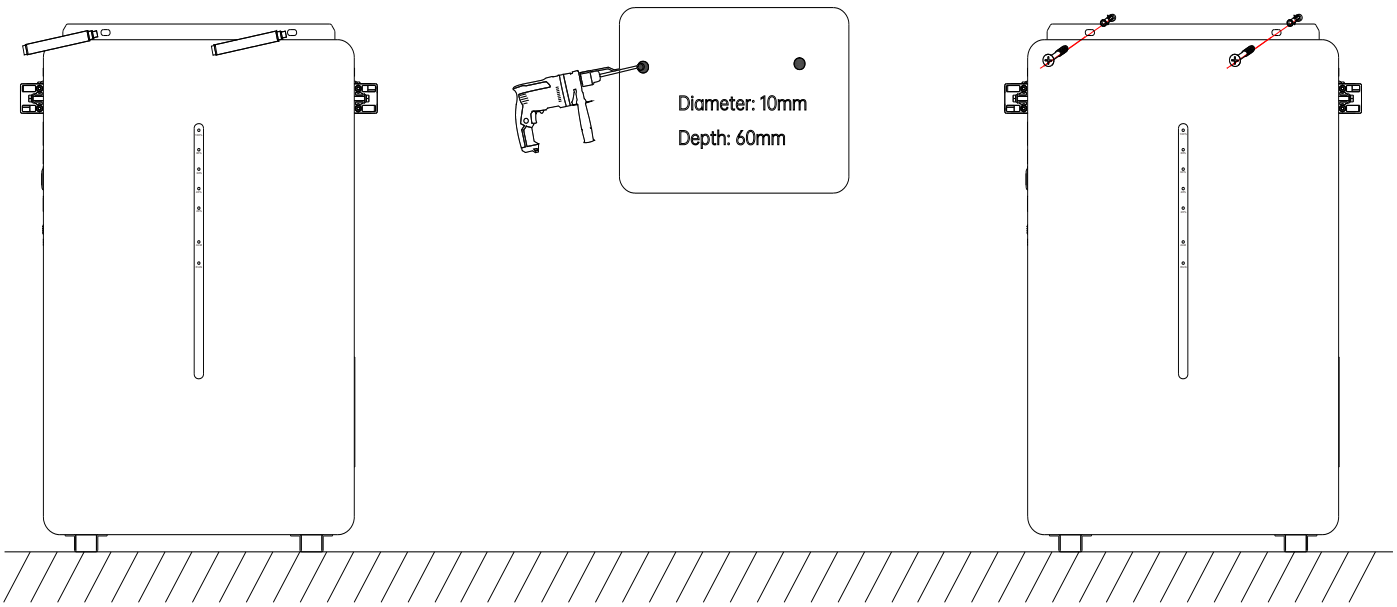




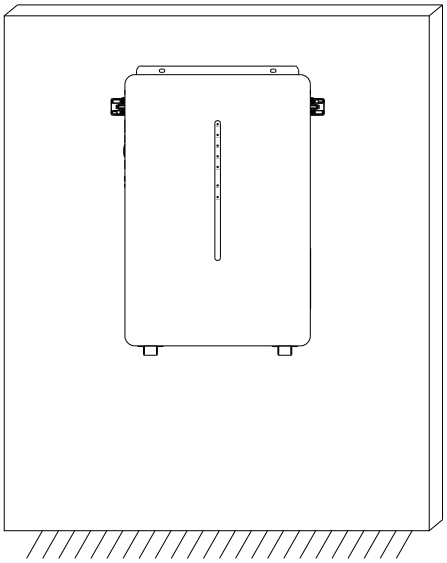
Mark the punching position with a marker pen

Use an impact drill to drill holes

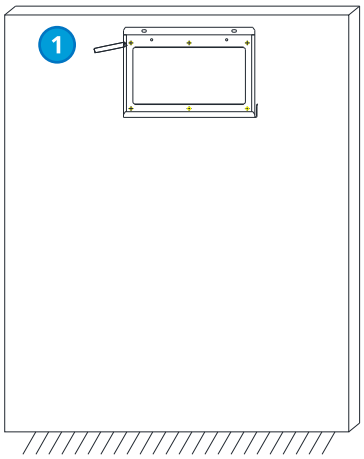
Use expansion screws to secure the battery to the wall



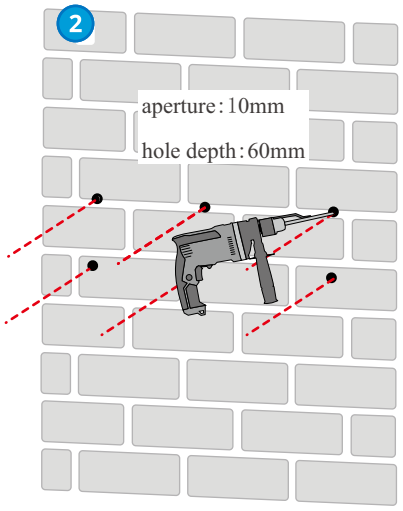
4.2.2 Installing On The Wall



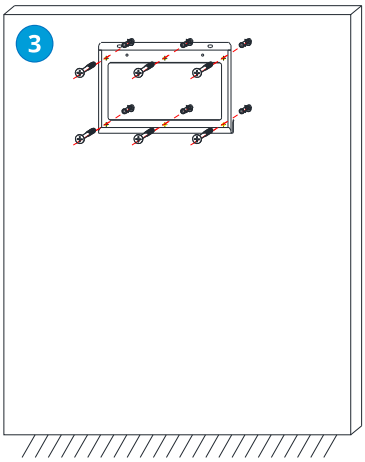
Mark the punching position with a marker pen



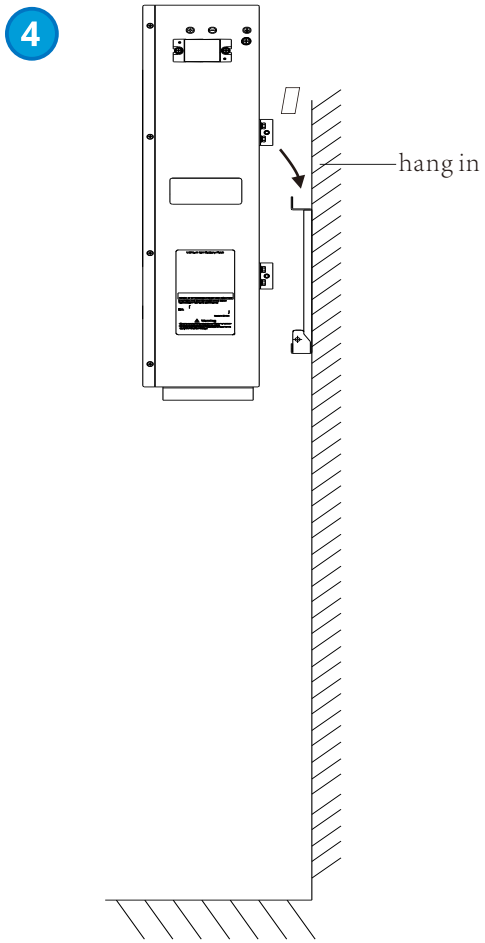
Use an impact drill to drill holes



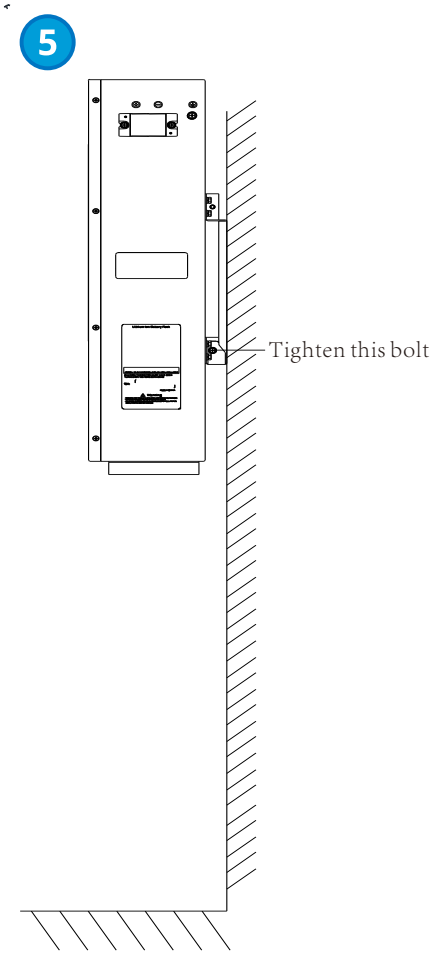
Use expansion screws to secure the hanging board to the wall



Hang the battery on the hanging board



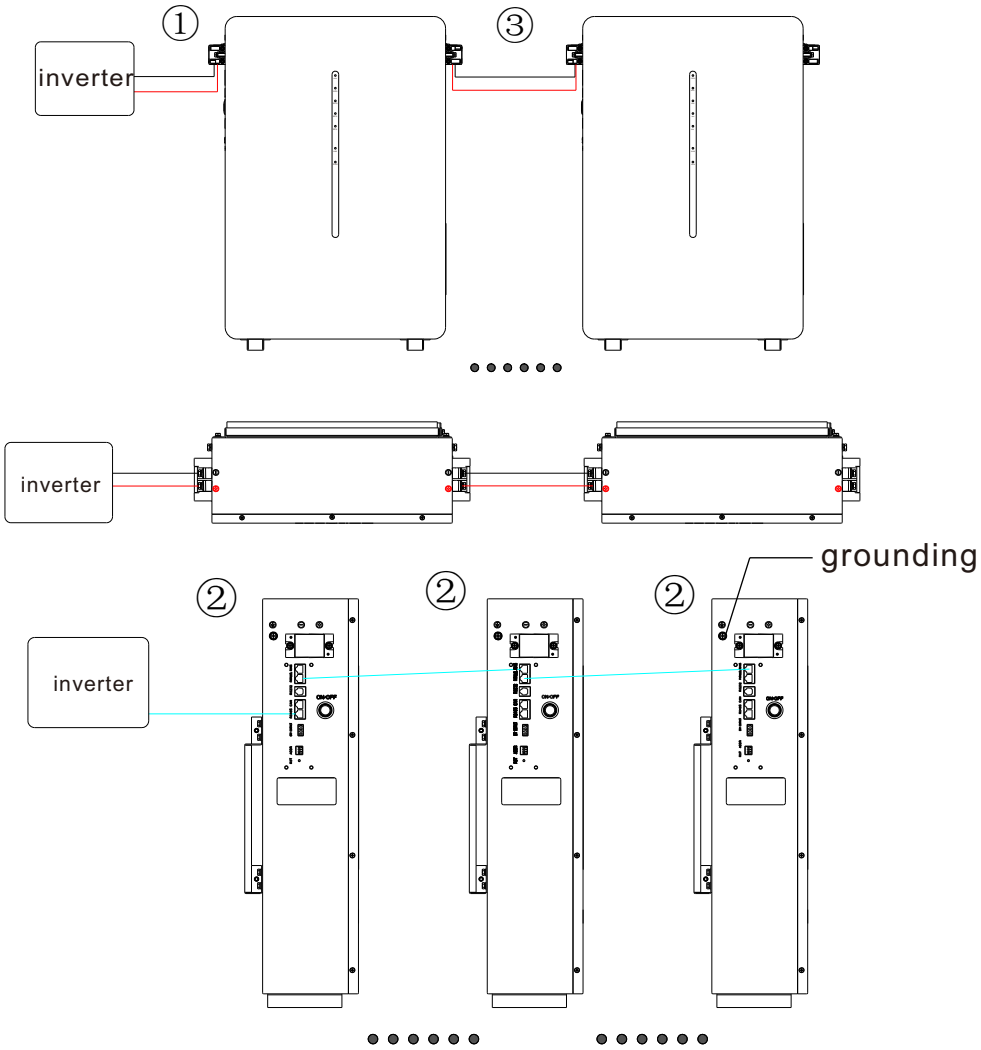
Tighten the screws to fix it in place



5. Electrical Connections

In order to avoid electrical shock or other injury, inspect existing electronic or plumbing installations before drilling holes.

The operation related to electrical connection must be performed by professional electrical technicians. When making electrical connections, operators must wear personal protective equipment.



Please connect the system as shown above

NO.	Cables	Description	Recommended Specifications
①	Power Cable	Power cable between battery and inverter	1 AWG cables
②	Signal line, signal line	Signal cables between battery modules or between battery and inverter	Category 5 shielded network cable
③	Battery module parallel cable	When multiple batteries are used in parallel, the power lines between the battery modules	1 AWG cables

6. System Debugging

6.1 Inspections Before Power-On

No.	Inspection items	Acceptance criteria	Validation
1	The energy storage is installed in place.	The installation is correct, secure and reliable.	□Yes □No
2	The installation environment meets requirements.	The installation space is reasonable and the environment is clean and tidy without any construction.	□Yes □No
3	The power cord is correctly connected.	The positive and negative terminals are connected correctly without any missing.	□Yes □No
4	The signal line is correctly connected.	The signal line is connected reliably, and there is no wrong position.	□Yes □No
5	The grounding is reliable.	The grounding wire is correctly and reliably connected.	□Yes □No
6	The switch of the energy storage battery module is OFF.	All switches connected to the energy storage are in the "OFF" state.	□Yes □No

6.2 System Status Indication

6.2.1 LED Display

Light strip distribution

Run-Led	Alarm-Led	Led-01	Led-02	Led-03	Led-04	Led-05
Running lights	Warning light	20%	40%	60%	80%	100%

Light Usage Classification

There are a total of 7 R-G-LED lights on the light board, each of which can display multiple colors such as red, yellow, blue, green, etc. The lights are divided into 3 categories according to their uses:

Light classification	Quantity	Display instructions
Run-Led	1	Running light, indicating the running status; In normal state: green, always on; Discharge status:green, always on; Charge status:green, always on;
Alarm-Led	1	Alarm light, indicating BMS alarm/protection/failure fault status; Normal state, no alarm, no protection: off; Alarm status or low battery: yellow flashing (overvoltage and undervoltage alarms do not provide alarm indication and do not flash yellow); Protection status: flashing red; (overvoltage and undervoltage protection do not indicate, and the red light does not flash); Failure: Red is always on;
S0C-Led	10	Battery indicator light: displays battery capacity; The color is consistent with the running light color; Charging status: green, showing battery capacity, remaining SOC light run water effect; Discharge status: green, press SOC to display battery capacity
Power on self test	/	All LED (green) self-test displays after powering on are as follows: Green running water light, the green display starts from the indicator light Run-Led and increases in sequence, and finally lights up completely, and then enters the working mode;
Sleep and Brownout States	/	All LEDs off

Interface Definition

Interface	Position No.	Definition	Describe	Remark
J1 LED port	1	LED_5V	LED power input	The pin numbering is only for the convenience of sorting. Please refer to the structure diagram for the specific signal PIN pins.
	2	LED_OUT	LED strip signal output	
	3	GND	Ground	

6.2.2 Buzzer Act ion Description

In case of fault, it beeps for 0.25S every 1S,
In protection mode, the beeping sound is 0.25S every 2S (except over-voltage protection); In alarm mode, the beeping sound is 0.25S every 3S (except over-voltage alarm);

The buzzer function can be enabled or disabled by the host computer, and is disabled by factory default. Buzzer Action Description

6.2.3 Reset button description

When the BMS is in sleep mode, press the button (3~6S) and then release it, the protection board is activated, and the LED indicators light up in sequence starting from "RUN" for 0.5 seconds. When the BMS is activated, press the button (3~6S) and then release it, the protection board will be dormant, and the LED indicators will light up for 0.5 seconds starting from the lowest power indicator. When the BMS is activated, press the button (6~10S) and then release it, the protection board will be reset, and all LED indicators will light up for 1.5 seconds at the same time.
After the BMS is reset, the parameters and functions set by the host computer are still retained. If you need to restore to the initial parameters, you can do so through the "Restore Defaults" of the host computer, but the relevant operation records and storage data remain unchanged (such as power, number of cycles, protection records, etc.).

6.2.4 Sleep and wake up

Sleep

The system enters low power mode when any of the following conditions are met:
(1)Single or overall over-discharge protection is not released within 30 seconds.
(2)Press the button (3~6S) and release it.
(3)The lowest single voltage is lower than the sleep voltage and the duration reaches the sleep delay time (no communication, no protection, no balance, no current).
(4)The standby time exceeds 24 hours (no communication, no charging and discharging, no AC power).
(5)Force shutdown through the host computer software.
Before entering sleep mode, make sure that no external voltage is connected to the input terminal, otherwise the low power consumption mode cannot be entered.

Wake up

When the system is in low power mode, if any of the following conditions are met, the system will exit low power mode and enter normal operation mode:
(1)Connect the charger, the charger output voltage must be greater than 48V.
(2)Press the button (3~6S), then release the button.
(3)RS232 is activated.

7. Communication Description

7.1 RS232 Communication

BMS can communicate with the host computer through the RS232 interface, so that various information of the battery can be monitored by the host computer, including battery voltage, current, temperature, status and battery production information. The default baud rate is 9600bps.

7.2 CAN Communication

The default baud rate is 500K. This interface is used to communicate with the inverter. When this battery is the host, it can summarize the slave data and communicate with the inverter.

7.3 Parallel RS485 Communication

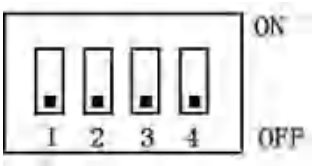
You can view the information of PACK, the default baud rate is 9600bps. If you need to communicate with the monitoring device via RS485, the monitoring device acts as the host and polls data based on the address. The address setting range is 2~15.

7.4 Independent RS485 Communication

The default baud rate is 9600bps. This interface is used to communicate with the inverter. When this battery is the master, it can summarize the slave data and communicate with the inverter.

7.5 DIP Switch Settings

When PACK is used in parallel, the address can be set by the DIP switch on the BMS to distinguish different PACKs. Avoid setting the same address. For the definition of the BMS DIP switch, refer to the table below. In parallel mode, the default DIP address is 1 for the host, and the battery address connected to the inverter must be set to 1.



Place	DIP switch position			
	#1	#2	#3	#4
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

8. System Maintenance

8.1 System Power-OFF

After the system is powered OFF, the case still has residual power and heat, which may cause electric shocks or burns. Therefore, protective gloves should be worn before operating the energy storage 5 minutes after the system is powered OFF. Maintenance operations on energy storage should be performed only after ensuring that all indicator lights of the energy storage are OFF.

Power-OFF operation steps of the system:

Step 1: Turn OFF the breaker switch between the inverter and AC output (If installed).

Step 2: Turn OFF the breaker switch between the inverter unit and AC input (If installed).

Step 3: Turn OFF the breaker switch between the inverter unit and the PV string (If installed).

Step 4: Turn OFF the battery breaker switch, all LED indicators are OFF.

Step 5: Turn OFF button on all storage battery modules, the energy storage is powered OFF successfully.

8.2 Routine Maintenance

To ensure the long-term and good operation of the energy storage system, it is recommended to perform the routine maintenance as described in this section.

Items	Methods	Maintenance interval
System cleanliness	Check if the radiator is covered or dirt on a regular basis.	Once every six months to one year.
Running status of system	● Observe whether the energy storage appearance is damaged or deformed. ● Listen to whether the energy storage has any abnormal sound during running. ● When the energy storage is running, check whether the indicator of the energy storage battery is correct.	Once every six months.
Electrical connection	● Check if any cable connection is OFF or loose. ● Check if any cable is damaged, and especially if there are cuts on the sheath where the cable contacts with the metal surface. ● Check if the unused DC input terminals, energy storage terminals, COM ports, and covers are locked.	Half a year after first debugging and testing, and once every six months to one year thereafter.
Grounding reliability	Check if the grounding cable is grounded reliably.	Half a year after first debugging and testing, and once every six months to one year thereafter.

8.3 Common Faults and Handling Methods

Faults	Handling measures
Press the power button on the battery, the indicator light does not work.	Check whether the bottom of the battery breaker switch is open, if the battery breaker switch is not open, please open the breaker switch first.
All indicators of the battery are OFF.	If the battery power is low, you need to charge it before using it. If the battery is not used for a long time, it will automatically sleep, and it can be used normally after restarting.
Battery over-current protection fault.	Check whether there is a short circuit in the battery wiring. Check whether the load power exceeds the maximum.
The battery cannot be charged.	Check if the battery is fully charged Check whether the ambient temperature is below -10 degrees.
Communication error.	Check whether the communication interface is incorrectly plugged in and whether the wiring is secure. Whether the battery address is set correctly.

9.Battery Storage and Maintenance

9.1Battery storage requirements

Dispose of in fire. Batteries may explode.
Damage to the battery. The electrolyte flowing out of the battery is harmful to the skin and eyes. The electrolyte may also be toxic.

1. When storing batteries, they should be placed correctly according to the markings on the packaging box. Do not turn them upside down or put them on their side.
2. When stacking battery packaging boxes, they should comply with the stacking requirements on the outer packaging.
3. Be careful when moving the battery and do not damage the battery.
4. Storage environment requirements:
   - Ambient temperature: -20℃ to 55℃, recommended storage temperature: -10℃ to 40℃.
   - Relative humidity: 10%RH-90%RH.
   - Dry, well-ventilated and clean.
   - Keep away from corrosive organic solvents, gases and other substances.
   - Avoid exposure to direct sunlight.
   - The distance to the heat source must not be less than two meters.
5. When storing, the battery should be disconnected from external connections. If there is an indicator light on the battery panel, the indicator light should be off.
6. The warehouse manager shall count the battery inventory every month and report the battery inventory planning link regularly. If any battery has been stored for nearly 15 months (-10℃ to 25℃, 9 months (25℃ ~ 35℃), 6 months (35℃ ~ 55℃), it should be charged in time.
7. When delivering stored batteries, the first-in-first-out principle should be followed.
8. After battery production and testing, it should be charged to at least 50% SOC before storage. If the device is not used for a long time, please discharge the battery to 45%-60% of the battery capacity and disconnect the battery output to avoid battery exhaustion;
9. Do not touch the battery pack with wet hands.
10. Do not crush, drop or puncture the battery.
11. Batteries should always be disposed of in accordance with local safety regulations.
12. The battery should be stored and charged in accordance with the requirements of this user manual.
13. When storing or transporting batteries, do not reverse the polarity of the batteries. Batteries must not be stacked without protective packaging, and the number of stacked batteries must not exceed the number specified on the packaging.
14. All operators of the energy storage system shall comply with the user manual, installation and service manual and quality assurance requirements. Any damage to the equipment caused by ignoring or misreading the user manual, installation and service manual and quality assurance requirements will void the product warranty.

9.2 Battery charging requirements

Batteries that are stored for a long time (unused, more than 3 months) must be stored in a dry and cool place. The storage voltage is 51V~53V. The battery should be stored in a clean environment at 23±2℃ and the humidity is 45%~75%. If the battery will be shelved and not used for a long time, it should be charged every

3 months to ensure that the battery voltage is within the above range.
For batteries and long-term storage, daily maintenance is required. Please charge the battery to 40% SOC at a current of 0.2C according to the requirements in the table below.

Storage temperature	Storage environment relative humidity	Storage time	SOC Company
<-10℃	/	prohibit	/
-10~25℃	5%~70%	≤12 months	30%≤SOC≤60%
25~35℃		≤6 months	
35~45℃		≤3 months	
>45℃	/	prohibit	/

9.3 Equipment cleaning

It is recommended to clean and maintain the product regularly. When cleaning, use a soft dry cloth or a vacuum cleaner to remove dust and stains from the product.