



# Rechargeable Li-ion Battery System

(High-Voltage)



## User Manual



Dongguan Hinen New Energy Technology Co., Ltd

Add: No.24 Dongkang Road, Dalingshan Town, Dongguan City, Guangdong Province, China

Tel: +86 (769) 8992 0666

Email: [market@hinen.com](mailto:market@hinen.com)

Website: <https://www.hinen.com>

# Notice

The contents of this document may be updated from time to time due to product version upgrades or for other reasons. If not otherwise agreed, the contents of this document do not replace the safety precautions on the product labels or in the user manual. All descriptions in this document are intended as a guide to use only.

## Contents

<b>1 forward</b>	
1.1 Applicable products	1
1.2 Applicable personnel	1
1.3 Symbol definition	1
<b>2 Safety precautions</b>	
2.1 General safety	2
2.2 Battery safety	3
2.3 Emergency measures	4
<b>3 Product description</b>	
3.1 Product introduction	5
3.2 Application scenarios	6
3.3 Appearance description	7
<b>4 Equipment inspection and storage</b>	
4.1 Check before signing	8
4.2 Packing list	8
4.3 Equipment storage	9
<b>5 System installation</b>	
5.1 Installation requirements	9
5.2 Handling equipment	11
5.3 Battery system installation	11
<b>6 Electrical connection</b>	
6.1 Safety precautions	19
6.2 Electrical connection	20
6.3 Protective ground wire connection	22
6.4 Power cable connection	22
6.5 Communication line connection	23
<b>7 System operation</b>	
7.1 Check before powering on	23
7.2 Battery system power-up	24
7.3 Setting battery parameters	24
7.4 Indicator status	25
<b>8 Maintain</b>	
8.1 Battery system power-down	26
8.2 Maintenance	27
8.3 Troubleshooting	27
<b>9 Technical parameters</b>	30

# 1 Forward

This document mainly introduces the product information, installation and wiring, configuration and testing, troubleshooting and maintenance of the battery system. Before installing or using the product, please read this manual carefully to understand the product safety information and familiarise yourself with the product functions and features. This document may be updated from time to time, please get the latest version of the material and more information about the product from the official website.

## 1.1 Applicable products

This document applies to the following product models:

BH7700P

## 1.2 Applicable personnel

Only for professionals familiar with local codes, standards and electrical systems, who have been professionally trained and are knowledgeable about this product.

## 1.3 Symbol definition

For better use of this manual, the following symbols are used to highlight important information, so please read the symbols and descriptions carefully.

### **Danger**

Indicates a situation with a high potential for danger which, if not avoided, will result in death or serious injury.

### **Warning**

Indicates a situation of moderate potential hazard that could result in death or serious injury if not avoided.

### **Caution**

Indicates a situation with a low potential hazard that, if not avoided, could result in moderate or minor injury to personnel.

### **Note**

Highlights and additions to the content may also provide tips or tricks for optimal use of the product that can help you solve a problem or save you time.

# 2 Safety precautions

本文档中包含的安全注意事项信息在操作设备时请务必始终遵守。

## **Note**

The equipment has been designed and tested in accordance with strict safety regulations, however, as electrical equipment, it is important to follow the relevant safety instructions before carrying out any operation on the equipment, as improper operation may result in serious injury or property damage.

## 2.1 General safety

### **Note**

1. The equipment has been designed and tested in strict compliance with safety regulations, but as electrical equipment, it is necessary to observe the relevant safety instructions before carrying out any operation on the equipment, and any improper operation may result in serious injury or property damage.
2. Please read this document carefully to understand the product and precautions before installing the equipment.
3. All operations of the equipment must be carried out by professional, qualified electrical technicians who are familiar with the relevant standards and safety codes of the project site.
4. When operating the equipment, you need to use insulated tools and wear personal protective equipment to ensure personal safety. Contact with electronic devices need to wear electrostatic gloves, electrostatic bracelets, anti-static clothing, etc., to protect the equipment from electrostatic damage.
5. Equipment damage or personnel injury caused by failure to install, use, or configure the battery in accordance with the documentation is not covered by the equipment manufacturer's responsibility. More product warranty information is available through the official website.

## 2.2 Battery safety
















### Danger

1. The battery system is a high-voltage system and the equipment operates at high voltage. Before operating the equipment in the system, make sure that the equipment is disconnected from the power supply to avoid the risk of electric shock. Strictly observe all safety precautions in this manual and the safety signs on the equipment during operation.
2. Inverters used with batteries need to be approved by the battery manufacturer, and a list of approved inverter and battery matches is available through the official website.
3. Do not disassemble, modify or repair the battery or control box without official authorisation from the equipment manufacturer, as this may pose a risk of electric shock or cause damage to the equipment, and the resulting damage is not covered by the equipment manufacturer's responsibility.
4. Do not hit, pull, drag, crush or step on the device, and do not expose the battery to fire as there is a risk of the battery exploding.
5. Do not place the battery in a high temperature environment, make sure that there is no heat source near the battery, without direct sunlight, when the ambient temperature exceeds 60 °C will be possible to fire.
6. Do not use the battery or control box if it is visibly defective, cracked, damaged or otherwise. Damaged batteries may cause electrolyte leakage.
7. To protect the battery pack and its components from damage during transport, make sure that transport personnel are professionally trained. Record the procedure during transport and keep the equipment balanced to avoid dropping it.
8. Battery equipment is heavy, so please assign corresponding personnel according to the weight of the equipment to prevent the equipment from exceeding the weight range that the human body can carry and injuring people.
9. If the battery fails to start, contact an after-sales service centre as soon as possible. Otherwise, the battery may be permanently damaged.
10. Do not move the battery system while the battery is in operation. If you need to replace the battery or add batteries, please contact the after-sales service centre.

### Danger

1. Ensure that the battery system is not damaged during transport and storage.
2. Transport must be carried out by trained professionals and operations during the process must be documented.
3. Ensure that the equipment is securely placed and not tilted; tipping of the equipment may result in damage to the equipment and personal injury.
4. Use of cables in high-temperature environments may cause aging and damage of the insulation layer. The distance between the cable and the heating device or the periphery of the heat source area should be at least 30mm.
5. Cables of the same type should be bundled together, and cables of different types should be laid out at least 30mm apart. It is prohibited to entangle or cross each other.

## Symbol definition

	Potential hazards exist when the equipment is operating. Please take precautions when operating equipment.		The equipment should be kept away from open flames or sources of ignition.
	High voltage hazard. High voltage is present when the unit is operating, make sure the unit is de-energized when operating the unit.		The equipment should be kept away from areas accessible to children.
	Please use the equipment rationally. If used under extreme circumstances, the equipment may explode.		Do not lift the unit after the battery system is finished wiring or while the battery system is in operation.
	The equipment contains corrosive electrolytes. Please avoid contact with leaking electrolyte or volatile gases.		When the equipment is working, do not directly disconnect or plug in the DC terminals.
	Batteries contain flammable materials, beware of fire.		Recycling sign.
	Before operating the equipment, please read the product manual in detail.		CE certification mark.
	Personal protective equipment is required during installation, operation and maintenance.		Protective earth wire connection point.
	The equipment cannot be disposed of as domestic waste. Please dispose of the equipment according to local laws and regulations, or send it back to the equipment manufacturer.	—	—

## 2.3 Emergency measures

### Battery electrolyte leakage

If the battery module leaks electrolyte, avoid contact with the leaking liquid or gas. The electrolyte is corrosive and contact may cause skin irritation and chemical burns. If you inadvertently come into contact with the leaked substance, perform the following actions:

- **Inhalation:** Evacuate contaminated area and seek medical help immediately.
- **Eye Contact:** Flush with water for at least 15 minutes and seek medical attention immediately.
- **Skin contact:** Wash affected area thoroughly with soap and water and seek medical attention immediately.
- **Ingestion:** Induce vomiting, seek medical attention immediately.

## Fire

- When the battery temperature exceeds 150°C, the battery is at risk of fire, and the battery may release toxic and harmful gases if it catches fire.
- To avoid a fire, make sure there is a carbon dioxide, Novac 1230 or FM-200 fire extinguisher near the unit.
- When extinguishing a fire, do not use ABC dry powder fire extinguishers. Firefighters must wear protective clothing and self-contained breathing apparatus.

## 3 Product description

### 3.1 Product introduction

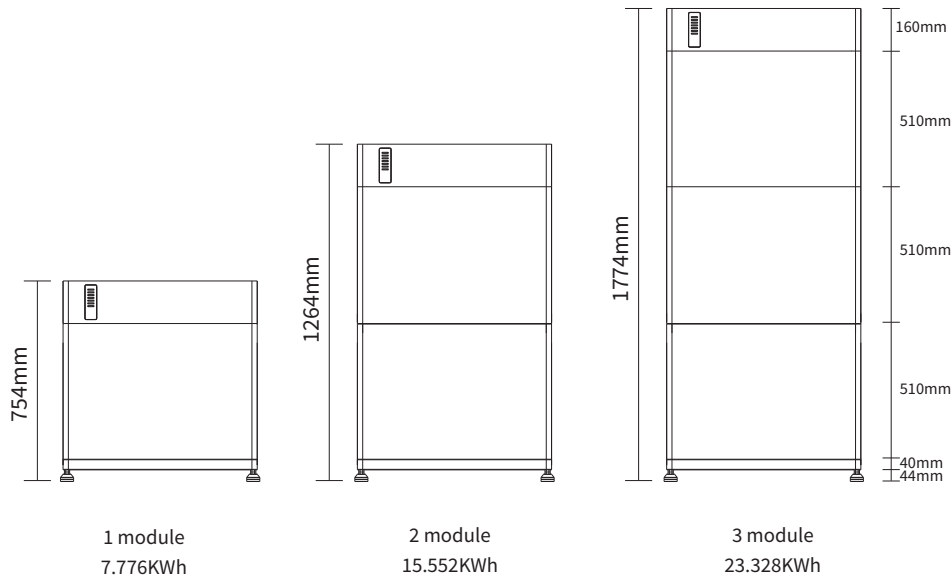
#### Functional overview

The battery system consists of a battery module and a control box, which can store and release electricity according to the requirements of the photovoltaic energy storage system. The input and output ports of the energy storage system are high-voltage direct current.

#### Description of available electricity

##### Note

1. The battery system supports expansion of the available power, and supports up to 3 battery modules to expand the available power. The expansion conditions must be strictly observed. For details, please contact your dealer or equipment manufacturer. If the capacity expansion operation is not performed as required, it may cause undervoltage, overvoltage or differential pressure failure in the battery system.
2. The actual height is slightly different, please refer to the actual installation height.

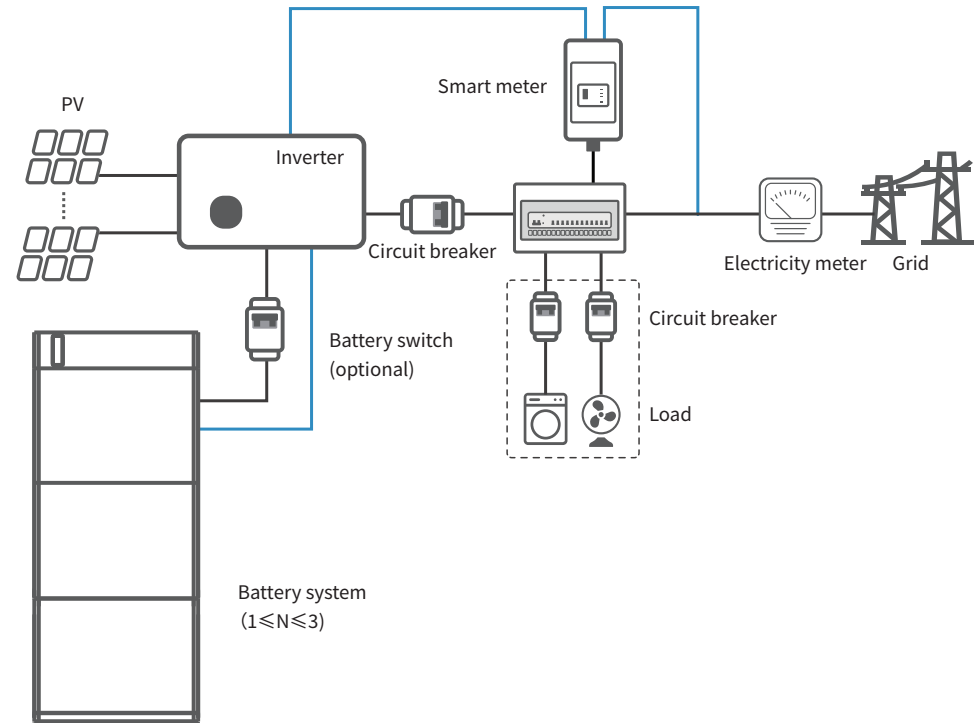


## 3.2 Application scenarios

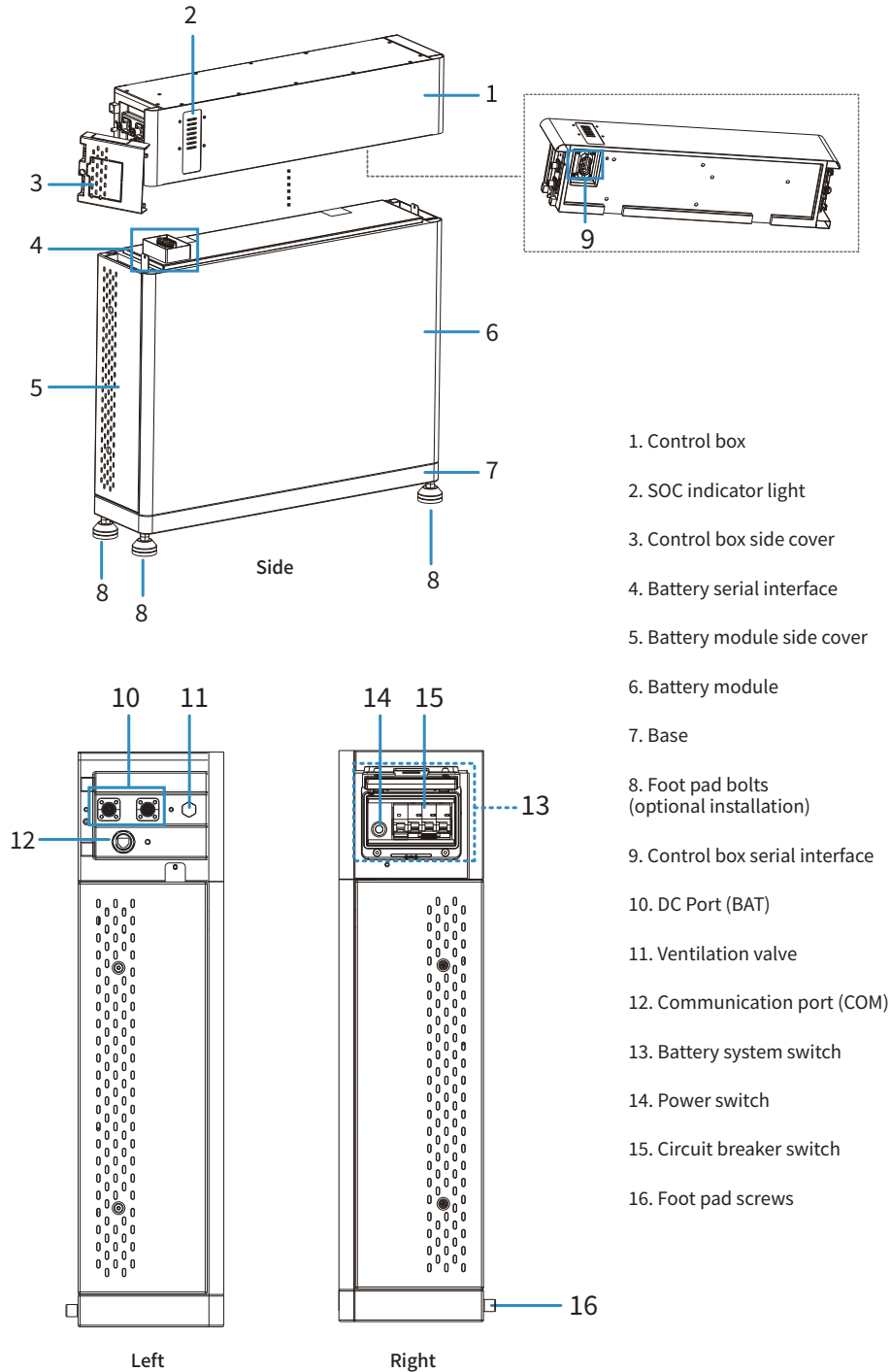
### Note

The circuit breaker between the inverter and battery and the circuit breaker between the battery system must be installed in accordance with local laws and regulations. Recommended specifications:

- Rated voltage  $\geq 750V$
- When the battery system is used in single clusters: the switching current rating between the inverter and the battery is  $\geq 50A$ .



### 3.3 Appearance description



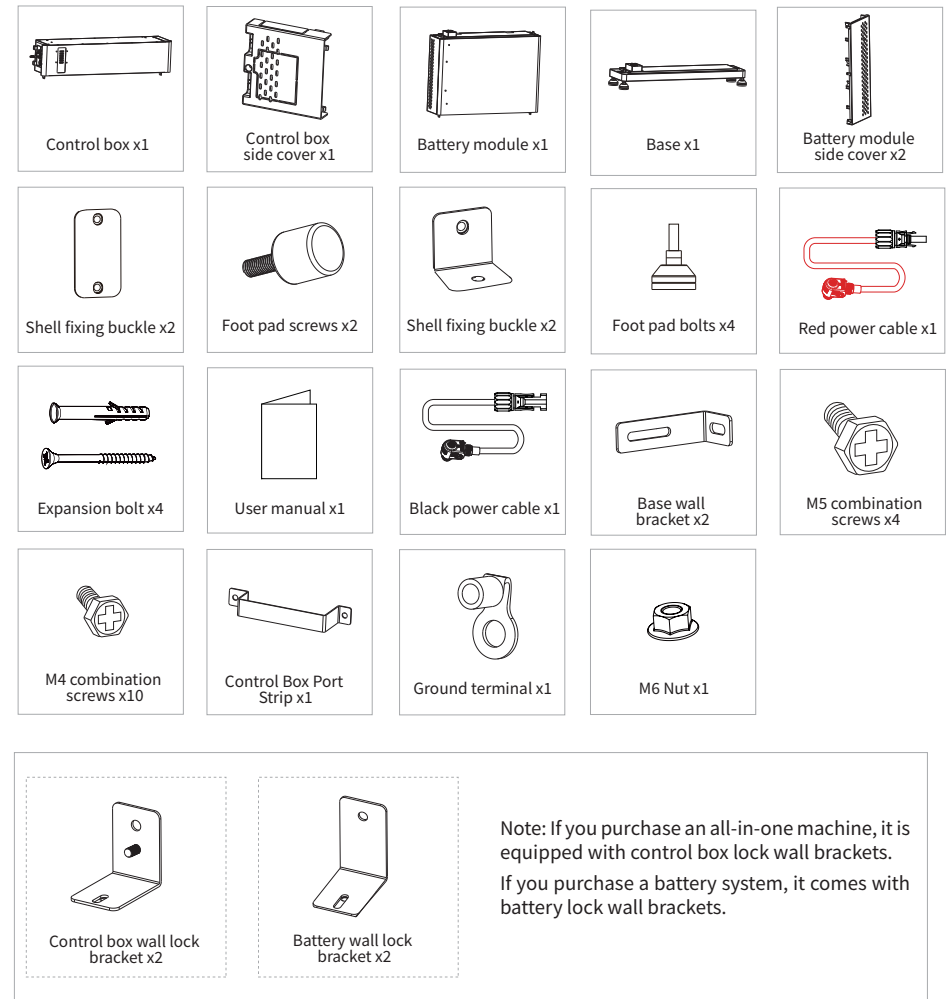
## 4 Equipment inspection and storage

### 4.1 Check before signing

**Before signing for the product, please check the following in detail:**

1. Check whether the outer packaging is damaged, such as deformation, holes, cracks or other signs that may cause damage to the equipment in the box. If there is any damage, please do not open the packaging and contact your dealer.
2. Check whether the device model is correct. If there is any discrepancy, please do not open the package and contact your dealer.
3. Check whether the type and quantity of the delivered parts are correct, and whether there is any damage to the appearance. If damaged, please contact your dealer.

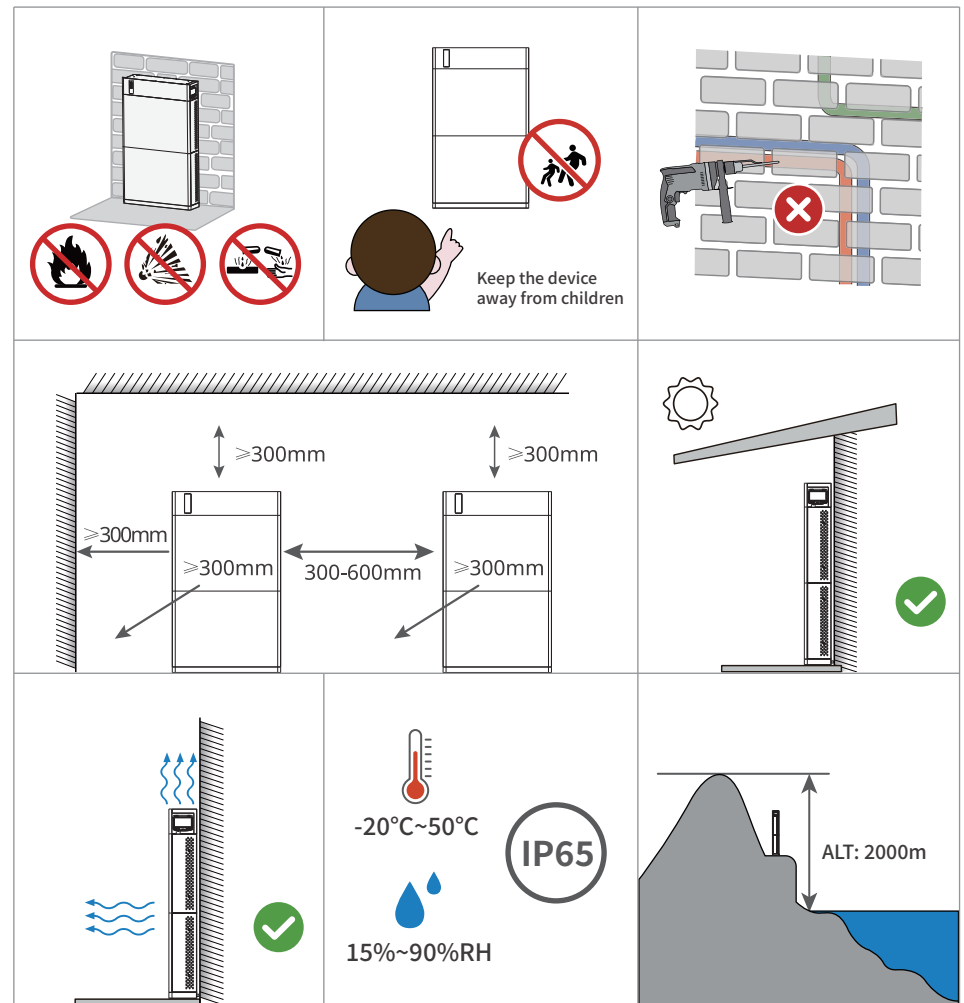
### 4.2 Packing list



## 4.3 Equipment storage

If the equipment is not put into immediate use, please store it according to the following requirements:

1. Make sure that the outer packaging box has not been removed and the desiccant in the box has not been lost.
2. Recommended removal of the removal of the box to complete the installation of the equipment within three days after the removal, if not installed equipment need to use the original box to repackage the equipment for preservation.
3. Ensure that equipment is stacked and orientated in accordance with the labelling instructions on the box.
4. Ensure that there is no risk of equipment tipping after stacking.
5. Ensure that the equipment is stored away from flammable, explosive, corrosive and other items.
6. Make sure the device is stored in a cool place away from direct sunlight.
7. Make sure the storage environment is clean, the temperature and humidity range is appropriate, and there is no condensation.
8. Storage battery SOC range: 25%~50%SOC, a charge and discharge cycle is required every 6 months of storage.
9. Storage temperature range description:
  - When  $-20^{\circ}\text{C} \leq \text{temperature} < 0^{\circ}\text{C}$ , the storage time cannot exceed 1 month.
  - When  $0^{\circ}\text{C} \leq \text{temperature} \leq 35^{\circ}\text{C}$ , the storage time cannot exceed 1 year.
  - When  $35^{\circ}\text{C} < \text{temperature} \leq 40^{\circ}\text{C}$ , the storage time should not exceed 1 month.
10. Storage humidity range requirements: 15~90%RH without condensation. If moisture and condensation are found on the battery interface, the battery system cannot be installed.



## 5 System installation

### 5.1 Installation requirements

#### Installation environment requirements

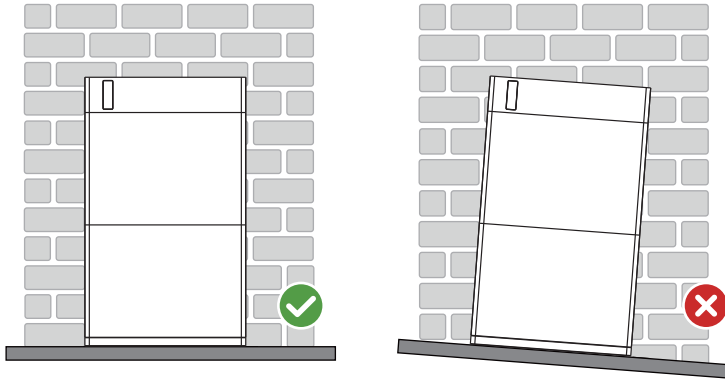
1. The equipment must not be installed in flammable, explosive or corrosive environments.
2. The installation location must be out of the reach of children, and avoid installation in easily accessible locations. High temperatures may exist on the surface when the equipment is in operation, preventing burns.
3. The installation location must avoid water pipes, cables, etc. in the wall to avoid danger when drilling holes.
4. The installation environment needs to be away from the sun, rain, snow, etc. It is recommended to install it in a sheltered installation location. If necessary, an awning can be built.
5. The installation space must meet the ventilation and heat dissipation requirements of the equipment and the operating space requirements.
6. The equipment protection level meets indoor and outdoor installation, and the temperature and humidity of the installation environment must be within a suitable range.
7. The equipment must be installed at a height that is convenient for operation and maintenance. Make sure that the equipment indicators and all labels are easy to view, and the wiring terminals are easy to operate.
8. The equipment installation altitude is lower than the maximum working altitude of 2000m.
9. Stay away from strong magnetic field environments to avoid electromagnetic interference. If there are radio stations or wireless communication equipment below 30MHz near the installation location, please ensure that the distance between the battery and the wireless electromagnetic interference equipment is greater than 30m.

#### Installation carrier requirements

- The installation carrier must not be made of flammable materials and must have fire-retardant properties.
- Make sure the mounting carrier is sturdy and can bear the weight of the device.
- The battery system needs to be installed close to the wall and an anti-tip bracket should be installed to prevent the battery from tipping over.

## Installation angle requirements

- Ensure that the equipment is installed horizontally and not tilted or inverted.



## 5.2 Handling equipment

### ⚠ Caution

1. When carrying out transportation, turnover, installation and other operations, the laws, regulations and relevant standards of the country and region must be met.
2. Before installation, the equipment needs to be transported to the installation site. To avoid personal injury or equipment damage during transportation, please pay attention to the following matters:
  - Please assign corresponding personnel according to the weight of the equipment to prevent the equipment from exceeding the weight range that the human body can carry and injuring people.
  - Wear safety gloves to avoid injury.
  - Please ensure that the device remains balanced during transportation to avoid falling.

## 5.3 Battery system installation

### ⚠ Warning

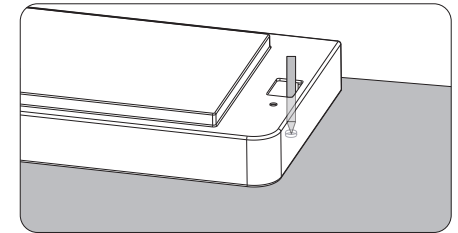
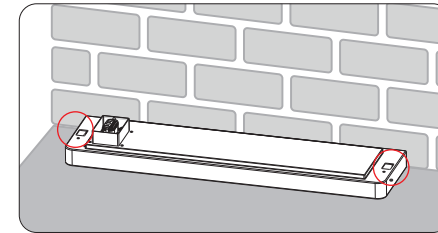
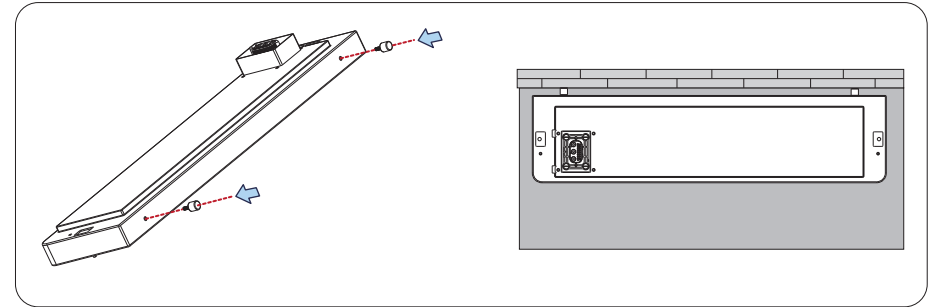
1. Make sure the control box is installed above the battery. Do not install the battery above the control box.
2. When installing the battery system, make sure the installation is level and firm. When placing the battery base, battery or control box, make sure that the upper and lower holes are aligned; the anti-tip bracket is vertically attached to the ground, wall or battery system surface.
3. When using an impact drill to drill holes, the battery system must be covered with cardboard or other objects to prevent foreign matter from entering the device and causing damage to the device.
4. Before installing the battery system, remove the cover of the battery module wiring port.

## Installation base (without foot pads)

**Step 1:** Install two foot pad screws on the back of the base. (The foot pad screws control the appropriate distance between the product and the wall)

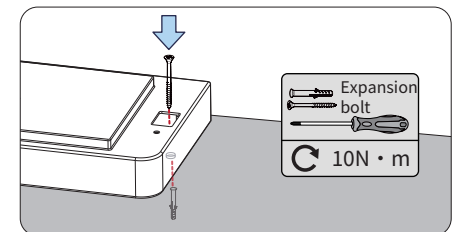
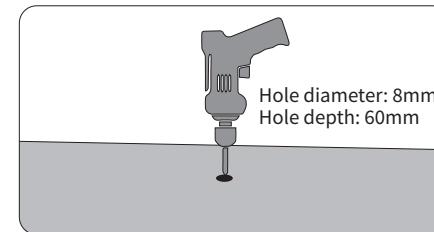
**Step 2:** Place the base against the wall and place it in a suitable position.

**Step 3:** Use a marker to mark the holes on the left and right sides, and then remove the base.



**Step 4:** Use an impact drill to drill the hole.

**Step 5:** After checking that the battery base is installed in the correct direction, use expansion bolts to fix the base.



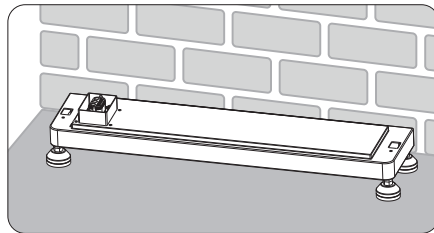
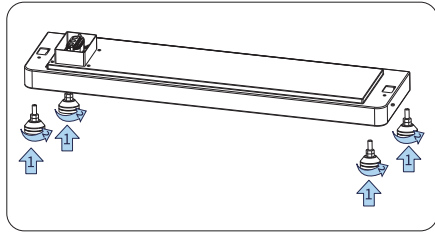
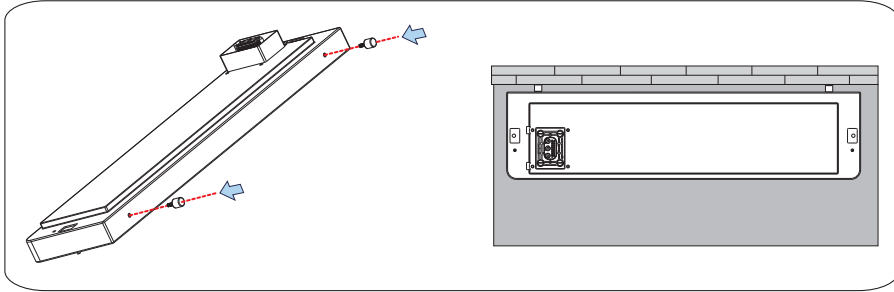


## Installation base (with foot pad bolts)

**Step 1:** Install two foot pad screws on the back of the base. (The foot pad screws control the appropriate distance between the product and the wall)

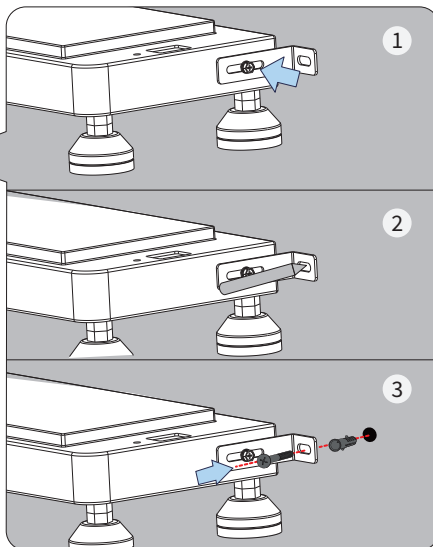
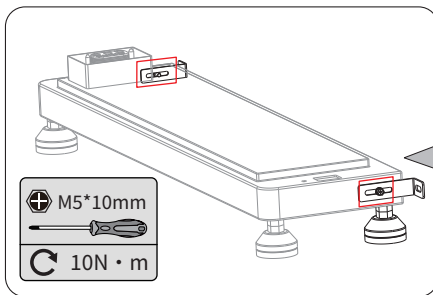
**Step 2:** Install the adjustable foot pad bolts to the base.

**Step 3:** Place the base against the wall and place it in a suitable position.



**Step 4:** Use M5 screws to lock the base wall bracket to the base. (Both sides need to be fixed)

**Step 5:** Use a marker to mark the holes on the left and right sides, then remove the base. Then use 2 expansion screws to complete the wall locking fixation of the base wall bracket. (Both sides need to be fixed)



### Note

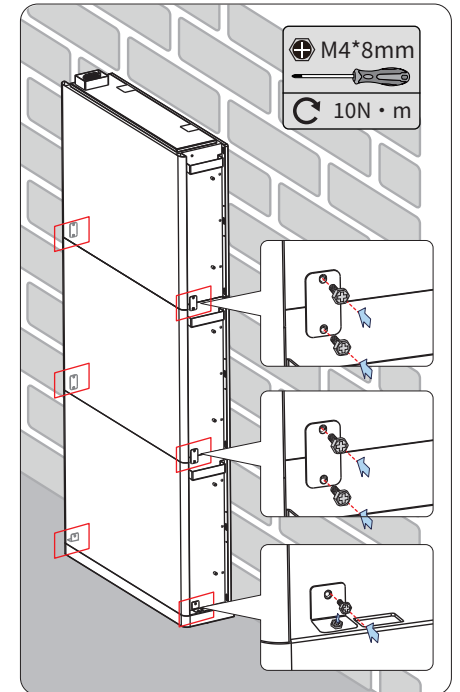
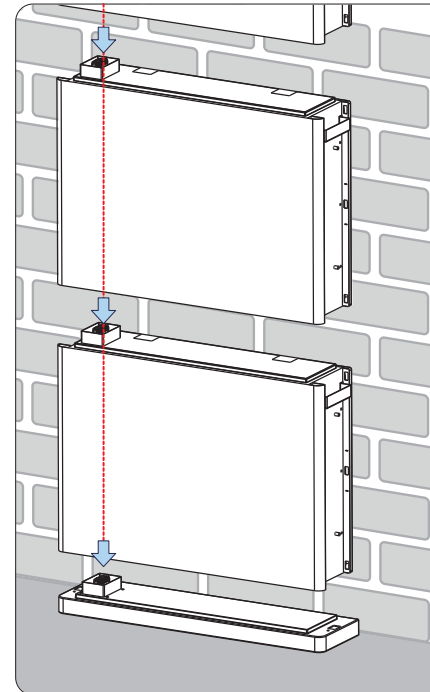
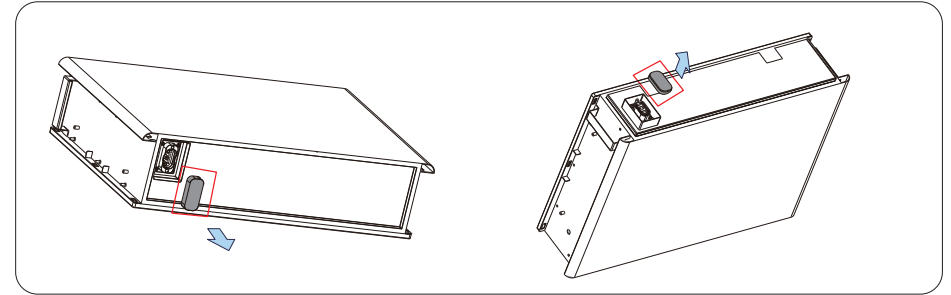
The base wall bracket is not required when the base is not fitted with foot pad bolts.

## Install battery module

**Step 1:** Before docking, you need to remove the top socket and bottom plug protective cover of the docked battery box.

**Step 2:** Install the battery module according to the actual selected battery system type.

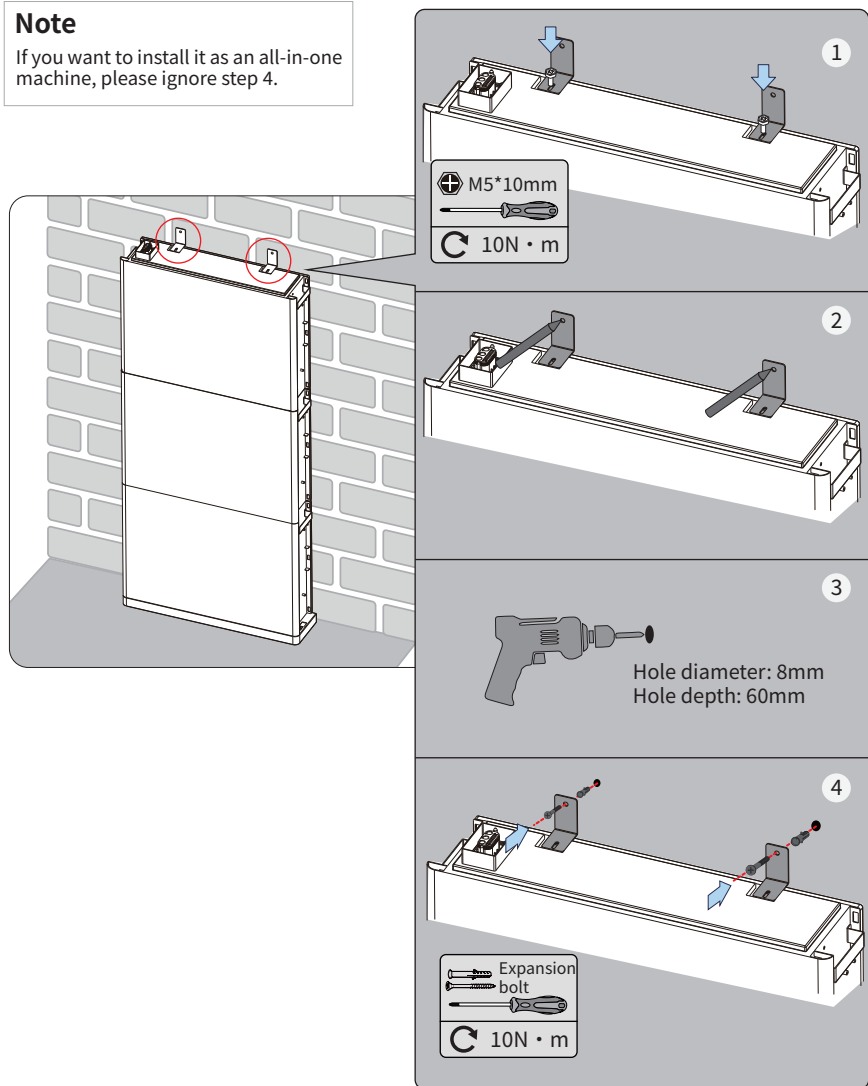
**Step 3:** Use the shell fixing buckle to connect the battery to the battery and the base to the battery. (Both sides need to be fixed)



**Step 4:** Use 2 expansion bolts and 2 M5\*10mm screws to install the battery wall lock bracket to complete the wall lock fixation.

**Note**

If you want to install it as an all-in-one machine, please ignore step 4.



**Warning**

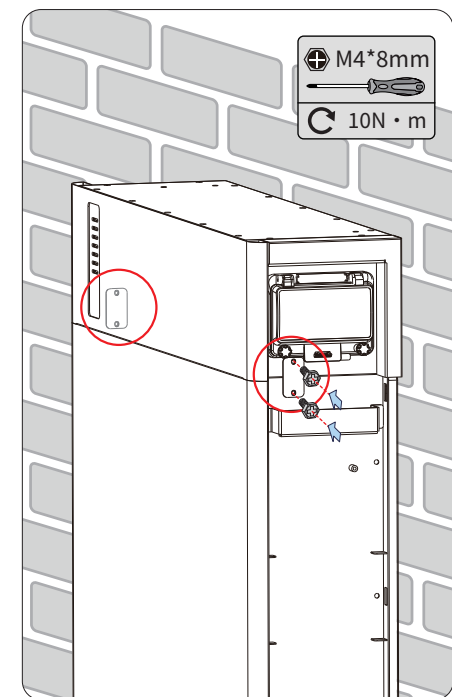
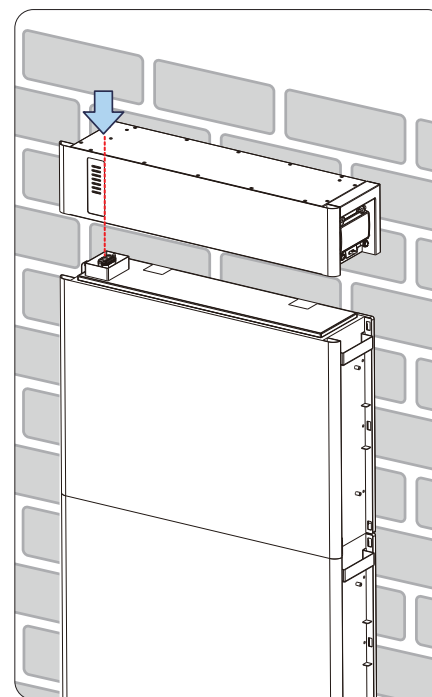
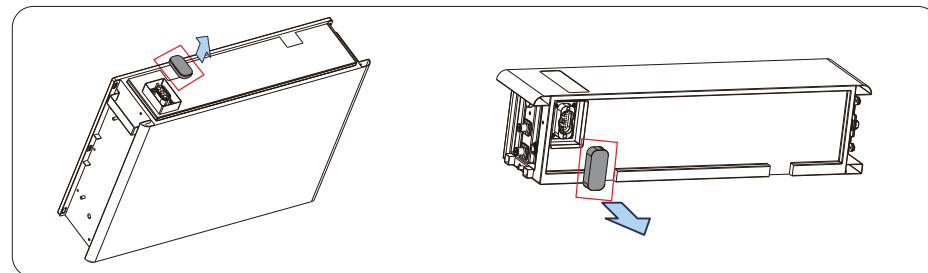
1. After using a marker pen to mark the drilling position, the control box needs to be lifted down to avoid equipment damage caused by the impact drill being too close to the control box when drilling holes.
2. When using an impact drill to drill holes, the battery system needs to be covered with cardboard or other coverings to prevent foreign matter from entering the device and causing damage to the device.

## Install control box

**Step 1:** Before docking, you need to remove the protective cover of the connected battery box socket and the bottom plug protective cover of the control box.

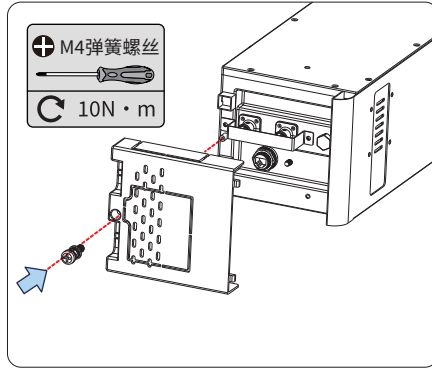
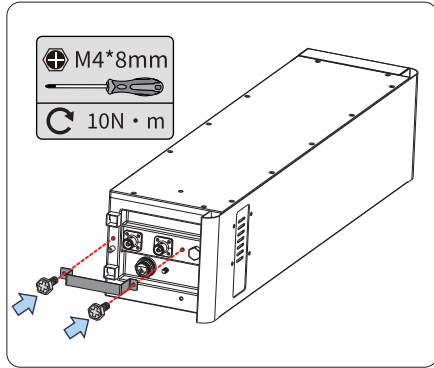
**Step 2:** Grasp the left and right upper frames of the control box, lift the control box, and keep the male and female seats of the control box on the left side and the circuit breaker switch on the right side. Align the plug at the bottom of the control box with the battery socket and slowly lower it to complete the connection between the control box and the top battery.

**Step 3:** Use the shell fixing buckle to connect the battery and the control box together. (Both sides need to be fixed)



**Step 4:** After the wiring is completed, install the control box port strip. (Please refer to the wiring section for wiring)

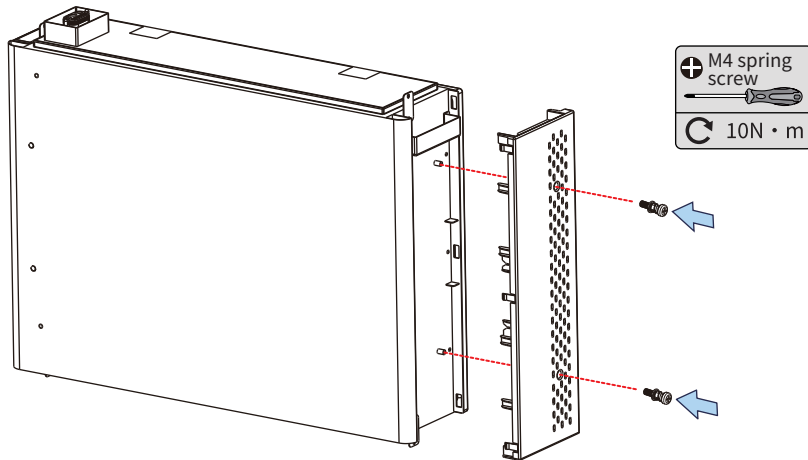
**Step 5:** Install the control box side cover.



## Install the battery side cover

**Step 1:** Complete the installation of the battery system or all-in-one machine according to the above steps.

**Step 2:** Align the screw holes of the battery side cover with the two holes on the side of the battery, and use a screwdriver to tighten the side cover spring screws. (Side covers need to be installed on both sides)



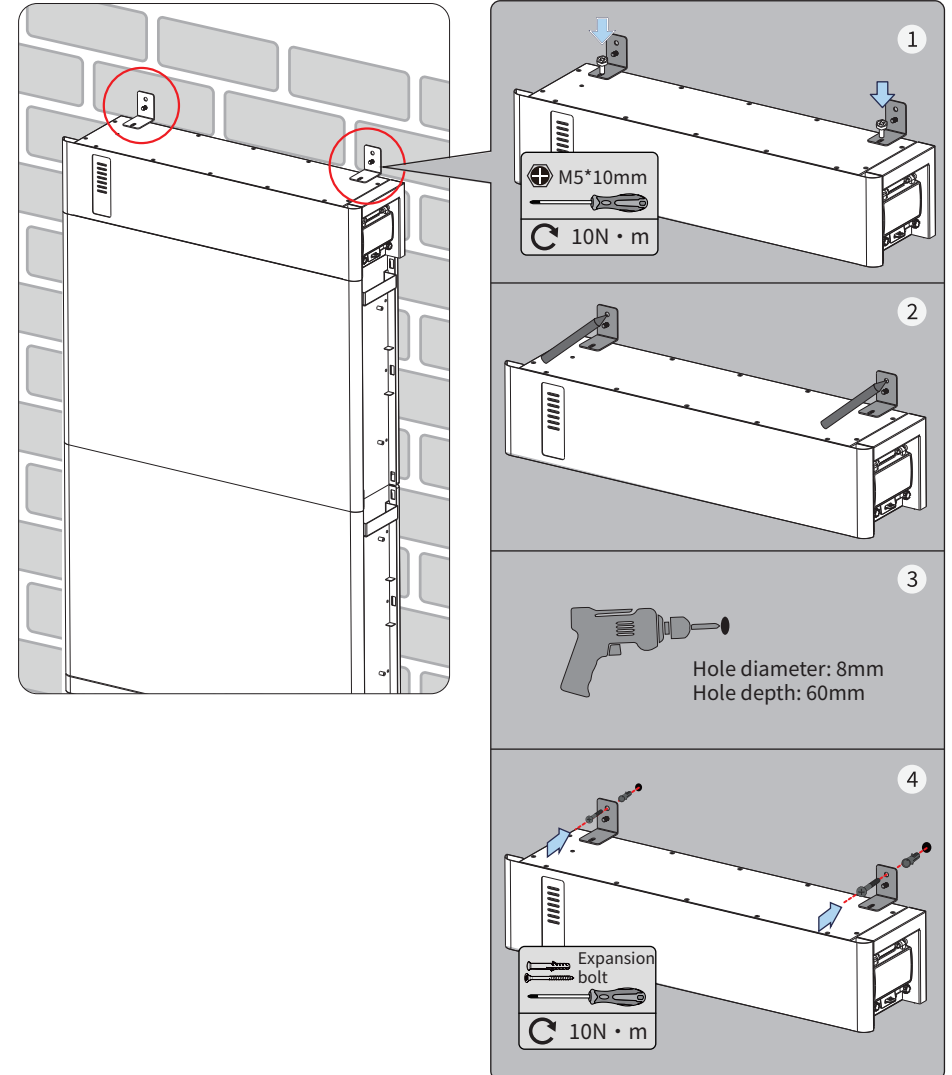
## Control box wall lock bracket

### Note

If you are not installing an all-in-one machine, please ignore this step.

**Step 1:** Use 2 expansion screws and 2 M5\*10mm screws to install the control box wall lock bracket to complete the wall-locking fixation of the control box.

**Step 2:** After the all-in-one machine is installed, check whether the installation is level and firm. If the installation base with foot pads is tilted or shaken, you can adjust the installation status of the battery system by rotating and adjusting the foot pads.



## 6 Electrical connection

### 6.1 Safety precautions

#### Danger

1. This battery system is a high-voltage system, and high voltage exists when the equipment is running. Before operating the equipment in the system, make sure the equipment is powered off to avoid the risk of electric shock. When operating the equipment, you must strictly abide by all safety precautions in this manual and the safety signs on the equipment.
2. All operations, cables and component specifications used during the electrical connection process must comply with local laws and regulations.
3. Cables of the same type should be bundled together and arranged separately from cables of different types. It is prohibited to entangle or cross each other.
4. When crimping the terminal block, please ensure that the conductor part of the cable is in full contact with the terminal block. Do not crimp the cable insulation and the terminal block together. Otherwise, the equipment may not be able to operate, or the device may generate heat due to unreliable connection after operation. This may lead to damage to the inverter terminal block.

#### Note

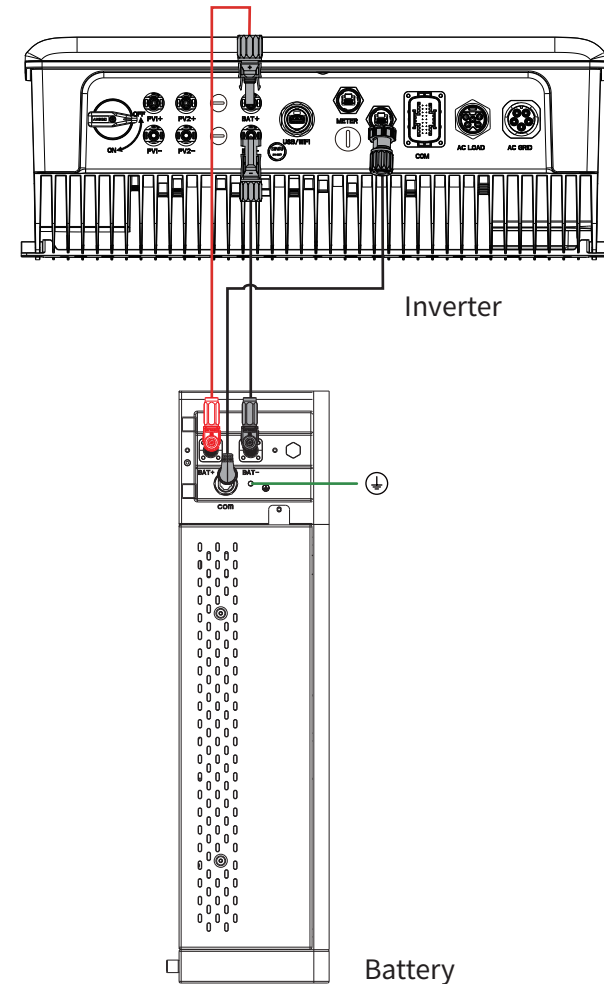
1. When making electrical connections, please wear safety shoes, protective gloves, insulating gloves and other personal protective equipment as required.
2. Only professionals are allowed to perform electrical connection related operations.
3. The cable colors in the graphics in this article are for reference only, and the specific cable specifications must comply with local regulations.

## 6.2 Electrical connection

### Single battery system

#### Note

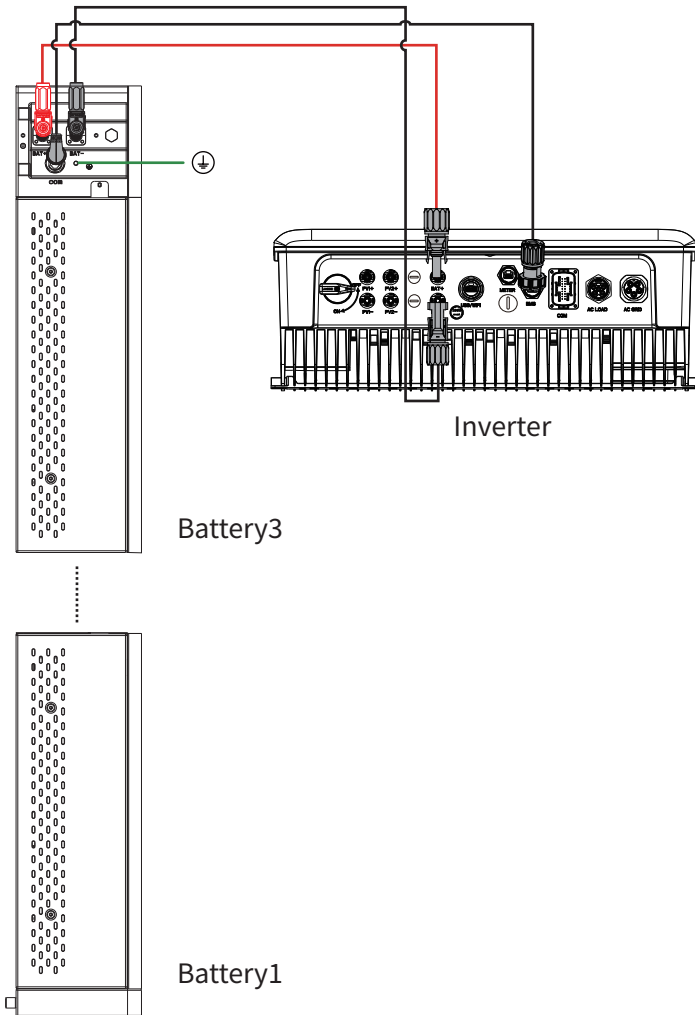
1. The battery positive terminal BAT+ is connected to the inverter BAT+, and the battery positive terminal BAT- is connected to the inverter BAT-. Be careful not to make the wrong connection.
2. Connect the battery COM communication port to the inverter communication port with a network cable.



## Multiple battery systems

### Note

1. Multiple battery systems with a maximum number of stacks not exceeding three batteries.
2. The battery positive terminal BAT+ is connected to the inverter BAT+, and the battery positive terminal BAT- is connected to the inverter BAT-. Be careful not to make the wrong connection.
3. Connect the battery COM communication port to the inverter communication port with a network cable.

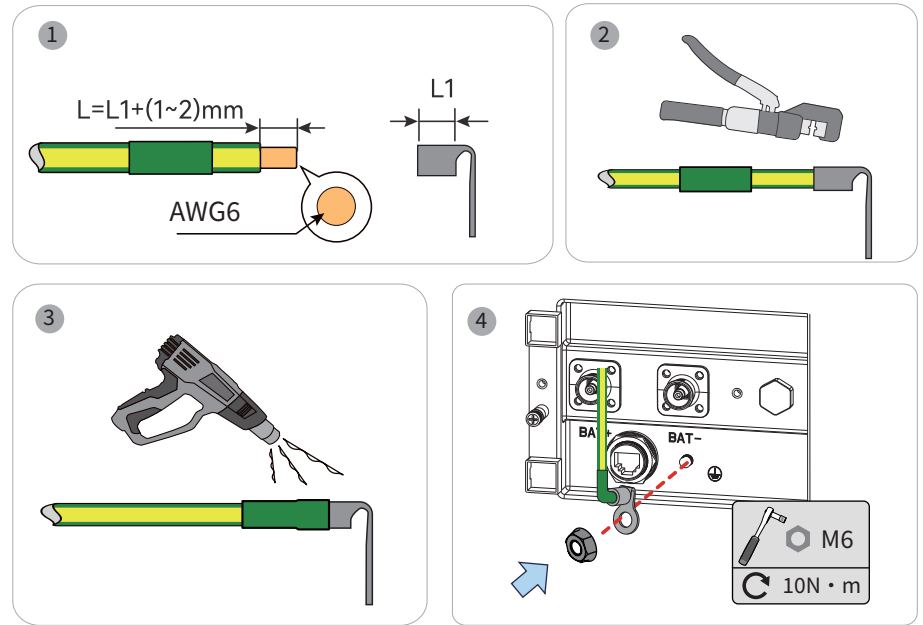


## 6.3 Protective ground wire connection

### Note

1. When installing equipment, the protective ground wire must be installed first; when dismantling equipment, the protective ground wire must be removed last.
2. Please ensure that the pulling force after the cable crimping is  $>400N$ .
3. Please bring your own protective ground wire. Recommended specifications:

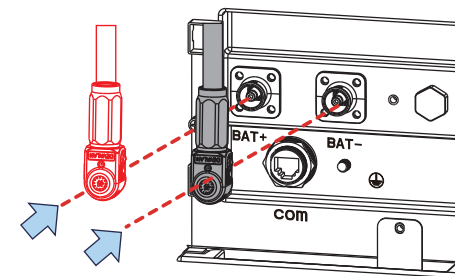
- Type: Outdoor single-core copper wire
- Wire specification: AWG6



## 6.4 Power cable connection

### Warning

According to the diagram below, the BAT+ red power cable connects to BAT+, and the BAT- black power cable connects to BAT-.



## 6.5 Communication line connection

### Warning

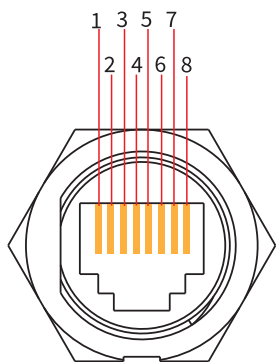
1. If the inverter model you match is shipped with a communication cable between the inverter and the battery, you can determine whether to use the distributed cable according to the actual situation. For detailed cable specifications, please refer to the inverter of the corresponding model. User manual.
2. If you need to prepare your own communication cable, recommended specifications: standard network cable and RJ45 crystal connector.

### COM interface definition

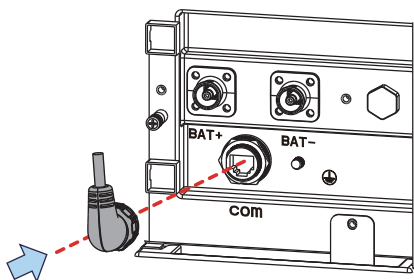
RJ45 PIN	Definition	Remark
1	WAKE UP	
2	GND	
3	CAN3H	
4	CAN2H	
5	CAN2L	
6	CAN3L	
7	RS485-A	
8	RS485-B	

RJ45 PIN definition for inverter & BMS communication

RJ45 communication port



COM



### Warning

1. For the battery system communication line connection requirements, please refer to the system wiring network. This chapter only introduces the communication line connection method and port definition.
2. If you need to prepare your own communication cable, recommended specifications: standard network cable and RJ45 crystal connector.

## 7 System operation

### 7.1 Check before powering on

When powering up the battery system, be sure to check the following to prevent system damage.

No.	Check items
1	The equipment is installed firmly, the installation location is convenient for operation and maintenance, the installation space is convenient for ventilation and heat dissipation, and the installation environment is clean and tidy.
2	The protective ground wire, power wire, communication wire, and terminal resistor are connected correctly and firmly.
3	The cable binding meets the wiring requirements, is reasonably distributed, and is not damaged.
4	Unused ports are blocked.

### 7.2 Battery system power-up

#### Warning

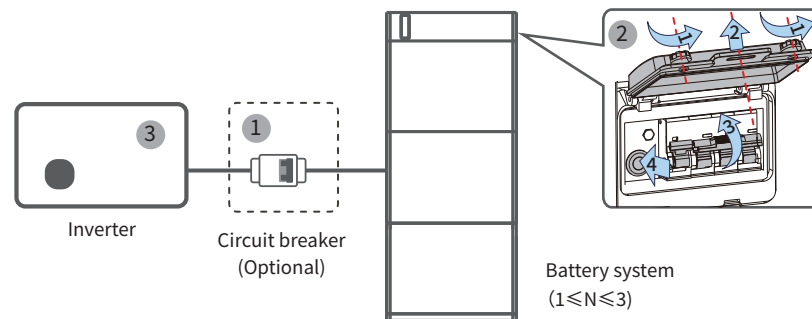
1. The dotted box is an optional configuration.
2. The circuit breaker between the inverter and the battery and the circuit breaker between the battery system must be installed in accordance with local laws and regulations.
3. When shutting down the battery system, please strictly comply with the battery system power-on requirements to prevent damage to the battery system.
4. In order to ensure effective protection of the battery system, the cover of the battery system switch remains closed, and the protective cover can be closed automatically after opening. If the battery system switch is not used for a long time, it needs to be tightened with screws.

#### Method 1:

**Step 1:** Close the circuit breaker between the inverter and the battery system.

**Step 2:** First close the circuit breaker switch in the battery system switch, then press and hold the button switch until the indicator light turns green.

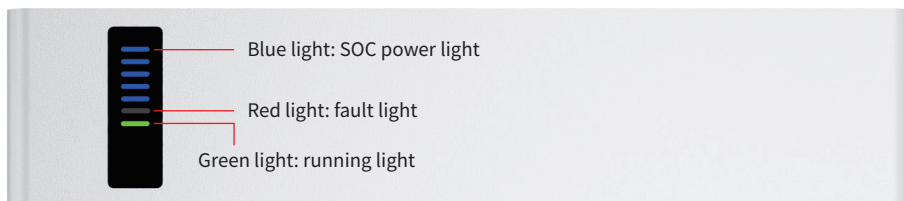
**Step 3:** Power on the inverter in the system. For detailed operations, please refer to the user manual of the corresponding model of inverter.



## Note

After the battery system is started, please ensure that the communication between the inverter and the battery system is normal within 15 minutes. If the inverter and the battery system cannot communicate normally, the battery system switch will automatically turn off and power off the battery system.

## 7.4 Indicator status



Indicator light	Condition
Green	It lights up during normal operation and does not light up when a fault occurs.
Red	It does not light up during normal operation and is always on when a fault occurs.
Blue	SOC battery indicator light shows the current battery capacity.

SOC indicator light			
Describe	SOC=0%	0%<SOC<20%	20%<SOC<40%
SOC indicator light			
Describe	40%<SOC<60%	60%<SOC<80%	80%<SOC<=100%

## 8 Maintain

### 8.1 Battery system power-down

#### Danger

1. When operating and maintaining the battery system, please power off the battery system. Operating the device with power on may cause damage to the device or risk of electric shock.
2. When shutting down the battery system, please strictly comply with the battery system power-off requirements to prevent damage to the battery system.

#### Note

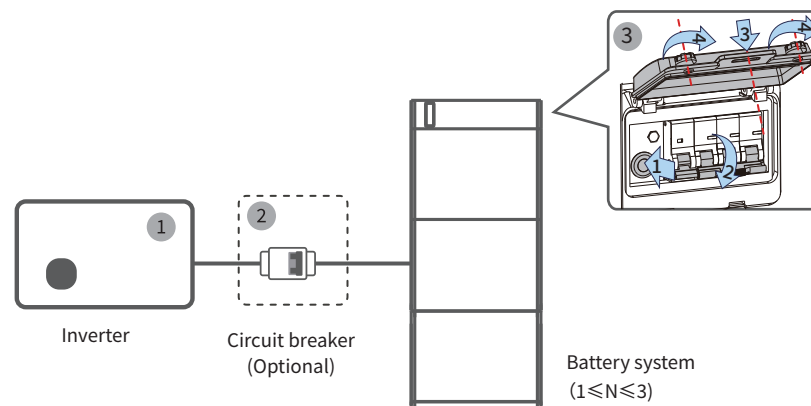
1. The dotted box is an optional configuration.
2. The circuit breaker between the inverter and the battery and the circuit breaker between the battery system must be installed in accordance with local laws and regulations.
4. In order to ensure effective protection of the battery system, the cover of the battery system switch remains closed, and the protective cover can be closed automatically after opening. If the battery system switch is not used for a long time, it needs to be tightened with screws.

#### Method 2:

**Step 1:** Power off the inverter in the system. For detailed operations, please refer to the user manual of the corresponding model of inverter.

**Step 2:** Open the circuit breaker between the inverter and the battery system.

**Step 3:** Press and hold the button switch for more than 10 seconds until the red light turns on, then turn off the circuit breaker switch.



## 8.2 Maintenance

### Warning



1. If you find any problems that may affect the battery or energy storage inverter system, please contact after-sales personnel. Private disassembly is prohibited.
2. If you find that the internal copper wire of the conductive wire is exposed, it is forbidden to touch it, high-voltage danger, please contact the after-sales personnel, and it is forbidden to dismantle it privately.
3. If other emergencies occur, please contact after-sales personnel as soon as possible and perform operations under the guidance of after-sales personnel, or wait for on-site operation by after-sales personnel.

Maintain content	Maintenance cycle
Check whether the anti-tipping bracket is loosely installed, if so, please tighten the corresponding position.	Once every 6 months
Check whether the casing is damaged. If so, please repaint it or contact the after-sales service center.	Once every 6 months
Check whether the exposed wires are worn. If so, please replace the corresponding cables or contact the after-sales service center.	Once every 6 months
Check whether there is any debris accumulated around the battery. If so, please clean it to avoid affecting the heat dissipation of the battery.	Once every 6 months
Check for water or pests to avoid long-term intrusion into the battery.	Once every 6 months

## 8.3 Maintain










When the battery system fails, it may cause the battery system to automatically shut down or some functions to become abnormal. Please troubleshoot according to the following methods. If the troubleshooting methods cannot help you, please contact the after-sales service center. When contacting the after-sales service center, please collect the following information to facilitate quick resolution of the problem.

1. Battery information, such as: serial number, software version, equipment installation time, fault occurrence time, fault occurrence frequency, etc.
2. Equipment installation environment, such as weather conditions, etc. Installation environment recommendations can provide photos, videos and other files to assist in analyzing problems.

SOC indicator	Fault category	Solution
	Battery overvoltage	Shut down and let it sit for 2 hours. If the problem persists after restarting, please contact the after-sales service center.
	Battery undervoltage	Please contact the after-sales service center.

SOC indicator	Fault category	Solution
	High monomer temperature	Shut down and let it sit for 2 hours. If the problem persists after restarting, please contact the after-sales service center.
	Charging low temperature	Shut down and wait for the temperature to recover. If the problem persists after restarting, please contact after-sales service.
	Discharge low temperature	Shut down and wait for the temperature to recover. If the problem persists after restarting, please contact after-sales service.
	Charging overcurrent	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
	Discharge overcurrent	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
	Insulation resistance too low	Please contact the after-sales service center.
	Temperature difference is too large	Shut down and let it sit for 2 hours. If the problem persists after restarting, please contact the after-sales service center.
	Single unit pressure difference is too large	Restart the battery and leave it for 12 hours. If the problem still exists, please contact the after-sales service center.
	Fuse failure	Please contact the after-sales service center.
	Abnormal wiring harness	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
	Relay cannot close	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
	Relay sticking	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
	Parallel cluster fault	Please check whether the battery model matches. If not, please contact the after-sales service center.



SOC indicator	Fault category	Solution
	Interlock signal failure	Check whether the terminal resistor is installed correctly. If the problem persists after restarting, please contact the after-sales service center.
	BMU communication failure	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
	EEPROM failure	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
	Circuit breaker adhesion fault	Please contact the after-sales service center.
	Precharge failure	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
	High voltage box over temperature fault	Shut down and let it sit for 2 hours. If the problem persists after restarting, please contact the after-sales service center.
	Shunt failure	Shut down and let it sit for 2 hours. If the problem persists after restarting, please contact the after-sales service center.
	Reverse connection fault	Please contact the after-sales service center.
	Main control hardware failure	Please contact the after-sales service center.

## 9 Technical Parameter

Product Name	Rechargeable Li-ion Battery System		
Power control unit model	BH7700P		
Battery module model	BH7700A	BH7700B	BH7700C
Type	1 module	2 module	3 module
<b>System Data</b>			
Rated capacity	7.776KWh	15.552KWh	23.328KWh
Available energy	6.998KWh	13.996KWh	20.995KWh
Battery module	172.8V, 45Ah, 7.776KWh	345.6V, 45Ah, 15.552KWh	518.4V, 45Ah, 23.328KWh
Battery type	LFP(LiFePO <sub>4</sub> )		
Cycle life	6000 cycles		
Battery configuration	54S1P	108S1P	162S1P
Rated voltage	172.8 Vd.c	345.6 Vd.c	518.4 Vd.c
Operating voltage range	135~194.4 Vd.c	270~388.8 Vd.c	405~583.2 Vd.c
Operating voltage range	135~583.2 Vd.c		
Max. continuous charge / discharge current	45A		
Maximum charge/ discharge power	7.776KWh	15.552KWh	23.328KWh
Depth of discharge	90%		
<b>Protection</b>			
Overvoltage/ undervoltage protection	Yes		
Overcurrent protection	Yes		
Over-temperature/under-temperature protection	Yes		
DC circuit breaker	Yes		

General Data			
Battery Net Weight	87KG	174KG	261KG
Battery System Weight	104KG	191KG	278KG
Dimensions (excluding foot pads)	730*710*180mm	730*1220*180mm	730*1730*180mm
Dimensions (including foot pads)	730*754*180mm	730*1264*180mm	730*1774*180mm
Installation location	Indoor/Outdoor		
Installation method	Floor stand		
Run logging	8M-byte		
Communication	CAN		
Operating temperature	charge:0~55°C/Discharge:-20~60°C		
Storage temperature	-20~40°C (≤One month)/0~35°C (≤One year)		
Humidity	15% to 90% no condensing		
Working height	≤2000m		
Enclosure Type	IP65		
Protective Class	Class I		
Cooling method	Natural convection		
Certification	CB, CE, UKCA, LOA, SONCAR, RCM, EMC, ROHS, S-Mark,KBIA, UL		
	IEC 62619:2022, IEC 60730-1 Appendix H,IEC/EN 62368-1, EN IEC 61000-6-1/3, IEC 60529, IEC 60068-2-52		
	UN 38.3, MSDS		
Warranty	5 Years Warranty, 10 Years Performance Life		
Country of manufacture	Made in China		
<p>Rated capacity *: Test conditions, 100% DOD, 0.5C charge and discharge at +25±2°C.  Available energy*: Test conditions, 90% DOD, 0.5C charge and discharge at +25±2°C.  Cycle life*: Test conditions, 90% DOD, 0.5C charge and 0.5C discharge at +25±2°C.  Maximum Charge and Discharge Current*/Power *: Maximum continuous charge and discharge current and power derating will be temperature and SOC dependent.</p>			