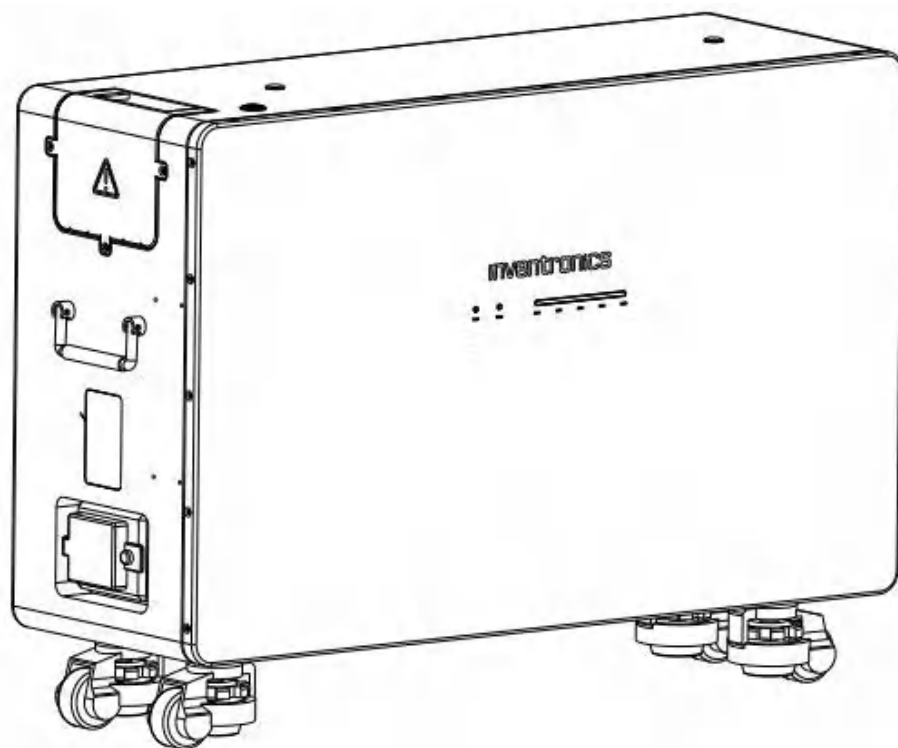




inventronics

Low-voltage energy storage system

User manual






HBP-00016KONLV







Description of safety warning signs



This is a safety warning sign. Used to warn of potential hazards of personal injury, please follow all safety tips with this sign to avoid personal injury or death.

 Dangerous
“Dangerous” means a dangerous situation that, if not avoided, would result in death or serious personal injury.
 Warning
“Warning” means a dangerous situation that, if not avoided, could result in death or serious personal injury.
 Caution
“Caution” means that there is a danger that, if not avoided, could result in minor or moderate injury.
Attention
“Attention” does not involve personal injury.

Product handling guide

			  
< 18 kg < 40 lbs	18-32 kg 40-70 lbs	32-55 kg 70-120 lbs	> 55 kg > 120 lbs

Installation instructions

The operations described in this manual should only be performed by persons with the following skills:

The personnel who install, maintain the battery equipment and the inverter, must undergo rigorous training, understand all the necessary safety precautions, and be able to perform all operations correctly.

Only qualified professionals or trained personnel are allowed to install, operate, maintain the equipment, dismantle safety facilities and inspect the equipment, these personnel must be experts in accordance with IEC 60364 or DIN VDE 0105 standards, qualified on the basis of proven knowledge of the relevant norms, regulations, accident prevention regulations and operating conditions, authorized by the person in charge of component/system safety, before carrying out the necessary work.

The personnel who operate the equipment, including operators, trained personnel and professionals, should have the qualifications for special operations such as high-pressure work, aerial work and special equipment operation as required by the local state.

Replacement of equipment or components (including software), must be operated by a professional or authorized personnel.

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1. Safety precautions

1.1 Declaration

Please read this manual carefully before installation, operation, and maintenance. Improper use may cause personal injury or even death to the user or a third party. It can also cause damage to batteries and other devices. All operations should be carried out by qualified personnel. The Company reserves the right to modify the contents of this document without prior notice to the client. The manufacturer shall not be liable for any consequences arising from:

- Operations outside the conditions specified in this document
- The installation and use environment does not meet the relevant international or national and regional standards
- Do not follow the operating instructions and safety tips for the battery and this document
- Product damage caused by irresistible natural disasters
- Damage caused by the customer during transportation
- Damage caused by non-compliant storage conditions

1.2 General safety requirements



Dangerous

- Do not place the battery in fire or chemicals. The battery may explode.
- Disassembling the battery may create an internal short circuit, which may lead to a fire or other problems.
- Do not disassemble or destroy the battery. The electrolyte released is harmful to the skin and eyes.
- The battery theoretically does not have a flowing electrolyte, but if there is any leakage and comes into contact with the skin, eyes or other parts of the body, rinse the electrolyte with water immediately and seek medical attention.
- During transportation or assembly, the battery may be damaged due to impact or other reasons. If the battery is found to have any abnormal characteristics, such as case damage, electrolyte gas leakage, electrolyte leakage etc. The battery must not be used. Please contact the distributor or installer for a replacement.
- Do not expose the cable, so as not to cause a short circuit in the battery or electric shock to personnel.
- When the battery is working, it is forbidden to touch the output port of the battery pack. The DC cable connected to the inverter may be energized. Contact with a live DC cable, may result in death from

electric shock or serious personal injury.

- When carrying out high-voltage operation, special insulating tools must be used.



Warning

- Wear appropriate personal protective equipment for all work on the battery system.
- Be sure to cut off the power grid before installation, and make sure the battery is in power-off mode.
- For equipment that needs to be grounded, the PE protective ground wire should be installed first when installing the equipment, and the PE protective ground wire should be removed first when removing the equipment. It is forbidden to operate the equipment without properly installing the grounding conductor.
- When operating, please remove metal items from your body, such as watches, necklaces and rings.
- Connect all cables according to the manual, making sure that the positive and negative electrodes are not reversed. No external short circuit.
- Do not connect the battery directly to the utility grid or AC power.
- Do not mix and match this battery with other batteries.
- In case of fire, it can be extinguished with pure water, dry powder or carbon dioxide fire extinguisher.

Attention

- Inspect the contents of the package after receipt. In case of damage, please notify the distributor.
- Do not operate this battery pack in direct sunlight, contact with liquids, excessive dust or high humidity.
- Do not place tools or metal parts on the battery pack.
- It is forbidden to place flammable materials around the device.
- When operating the equipment, please wear anti-static gloves. Don't wear clothes that are prone to static electricity.
- The battery pack cannot be stored in a high temperature environment (greater than 50°C)
- The battery system can only be used as a stationary device. If the battery system needs to be moved or repaired, the power must be cut off and the battery turned off completely.

2. Product Introduction

This system is a high-power DC battery system. It can store and release electrical energy according to the requirements of inverter management. Built-in intelligent BMS (battery management system), which can manage and monitor battery voltage, temperature, current and other information. The energy and power of the battery system can be configured according to different requirements.

2.1 Battery capacity description

The battery supports parallel machine expansion. Up to 4 battery packs of the same type can be connected in parallel. Each battery pack has a capacity of 16.076 kWh.

2.2 The application of battery packs in the power grid

This battery pack is suitable for residential rooftop photovoltaic power station systems.

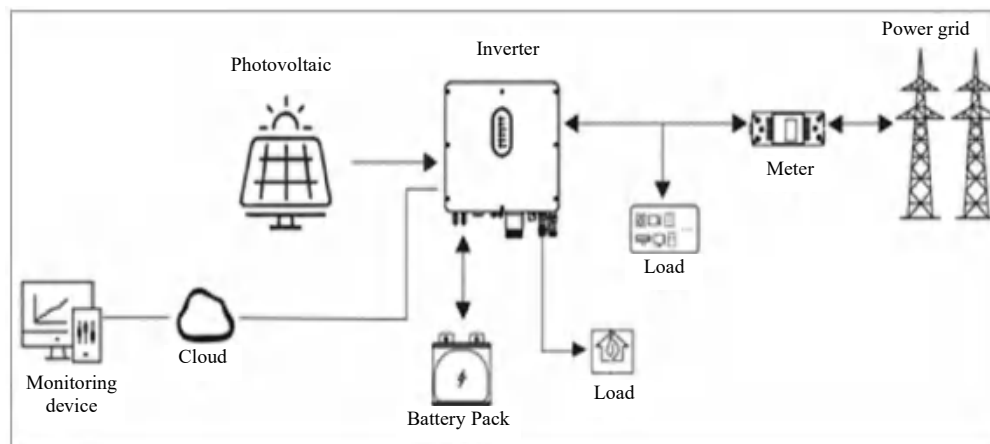


Figure 1 System networking

2.3 Battery pack system

2.3.1 Appearance of the battery pack

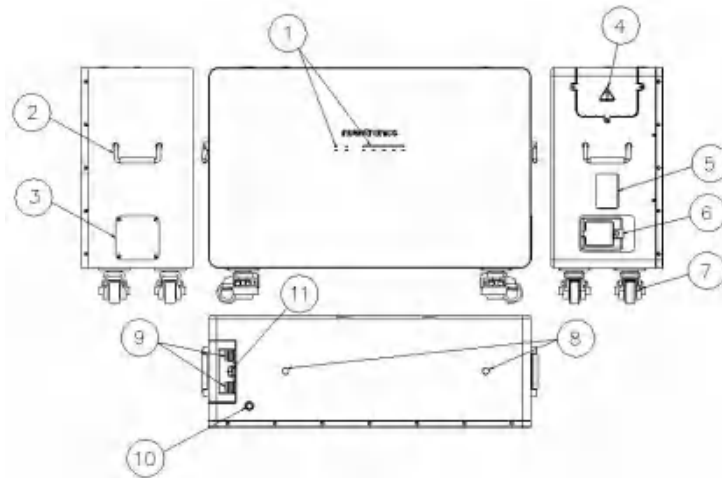


Figure 2 Battery appearance

- | | | |
|--|-----------------------------------|-------------------------|
| (1) Status indicator/battery indicator | (2) Handle | (3) Equalizer interface |
| (4) Terminal block cover | (5) Device tag | (6) DC circuit breaker |
| (7) Carrying wheel | (8) Eyebolt hole for installation | (9) BAT+, BAT- |
| (10) Switch button | (11) Communication interface | |

2.3.2 Introduction to panel indicators

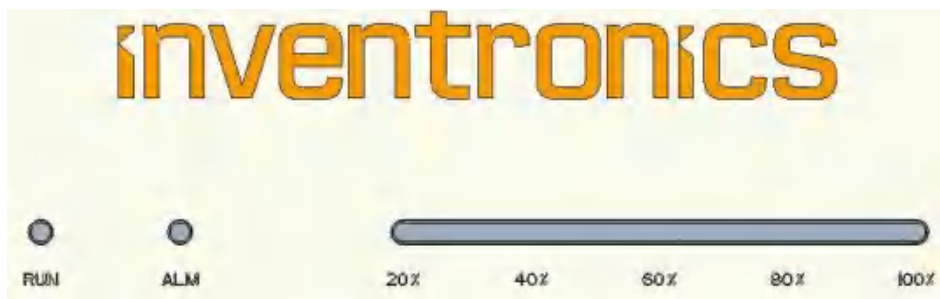


Figure 3 Indicator

1) Indicator introduction

RUN	ALM	20%	40%	60%	80%	100%
Operating light	Warning light	20% battery	40% battery	60% battery	80% battery	100% battery

2) Indicator status description

There are a total of 7 indicators on the front panel, each indicator can display red, yellow, green and other colors. According to the status of the indicator, it is divided into 3 categories:

Indicator status	Quantity	Description
RUN	1	Operating light, indicating the operating status; 1. Under normal conditions: Green Solid bright 2. Discharge status: Green Solid bright 3. Charge status: Green Solid bright
ALM	1	Warning light, indicating BMS alarm/protection/failure fault status; 1. In normal status, no warning, no protection: The warning light is not on 2. Warning status or low battery: The warning light flashes yellow (Over-voltage, under-voltage warning does not give warning indication, yellow light does not flash) 3. Protection status: The warning light flashes red (Over-voltage, under-voltage protection is not indicated, red light does not flash) 4. Failure fault: The warning light is solid red
Battery indicator	5	Battery indicator Displays the battery level. The color is the same as the color of the operating light 1. Charge status: Green, the corresponding battery indicator lights up according to the battery percentage, and the remaining battery indicator lights up and off in turn to show the effect of flowing water 2. Discharge status: Green, the corresponding battery indicator lights up according to the battery percentage

3) POST (Power on Self-Test)

POST	All LED indicators enter the POST status when powered on, all indicators are lit up green from left to right, and enter the working mode after all are lit, and the indicators are displayed according to the corresponding status described in the "Indicator status description" in the previous section.
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4) Electrical interface introduction

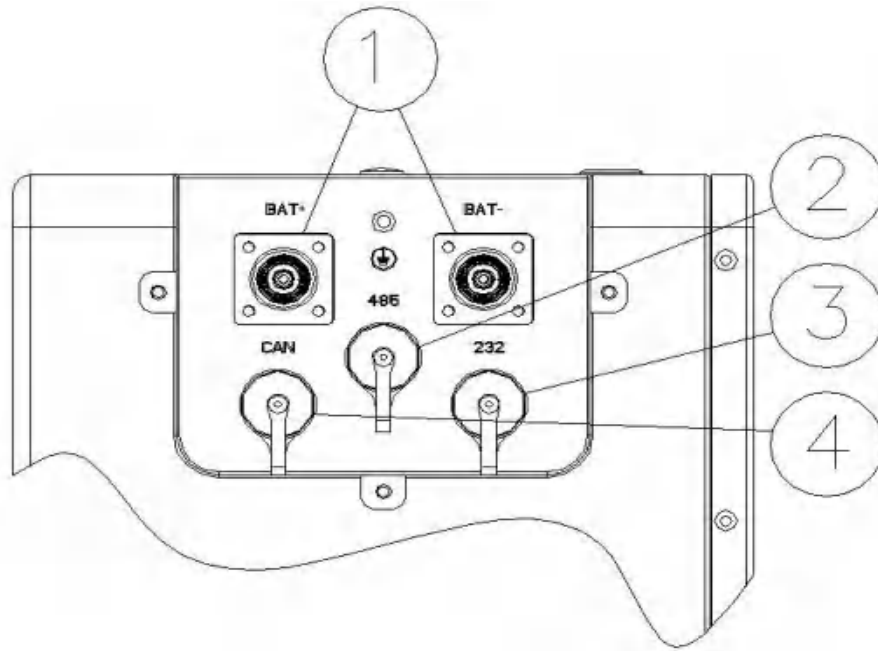


Figure 4 Schematic diagram of the electrical interface

Serial number	Interface introduction	Description
1	Battery interface	“BAT+” is the positive port of the battery “BAT-” is the negative port of the battery
2	RS485 interface	It is used for data communication between battery packs, and communicates through RS485 interface when multiple battery packs are in parallel
3	RS232(RS485) interface	The BMS can communicate with the host computer through the RS232 interface, and can monitor various information of the battery through the host computer; This interface can also be used as a parallel RS485 communication interface, where P4/P5/P6 is an RS232 communication interface; P7/P8 is the RS485 communication interface
4	CAN communication interface	It is used to communicate with the inverter, and when the battery pack is the host, it can be used as a slave data aggregation interface to communicate with the inverter

2.3.3 Introduction to the equalizer interface

The battery pack is equipped with an active balancing interface, which can transfer the energy of the battery with high energy in the battery pack to the battery with low energy through the equalizer (external, need to be purchased separately), so as to extend the lifespan of the battery pack and improve the overall usable capacity of the battery pack.

The equalizer is used when the BMS (battery management system) detects that the voltage difference between the cells inside the battery pack $\geq 45\text{mV} \pm 15\text{mV}$. After opening the equalizer interface cover, insert the equalization module into the equalizer interface of the battery pack, and then charge and discharge the battery pack, the equalization module balances the battery, when the battery voltage $< 2.3\text{V} \pm 15\text{mV}$ or the voltage difference $< 45\text{mV}$, it can stop charging and discharging, stop balancing. Please unplug the equalizer module, and put the equalizer interface cover in place at the same time.

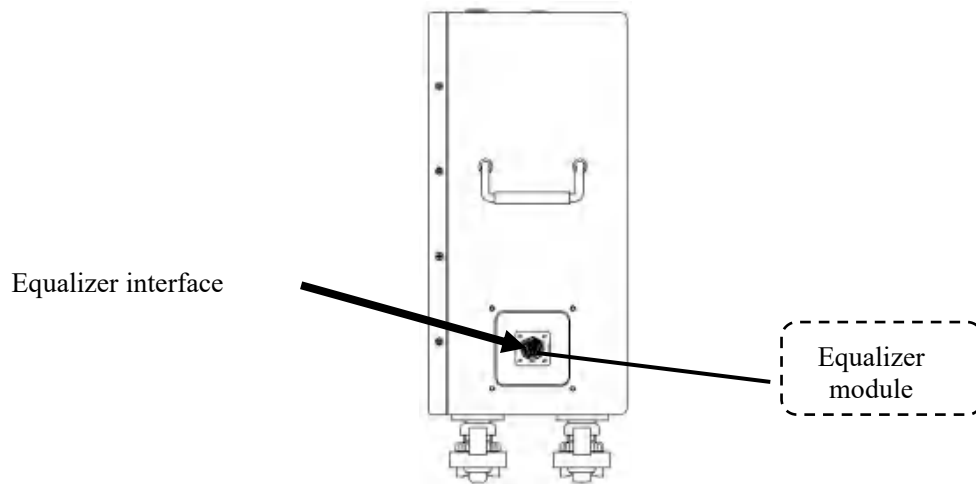


Figure 5 Schematic Diagram of the Equalizer Interface

3. Battery pack system installation

3.1 Packaging inspection

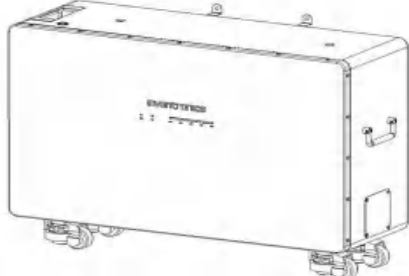


After disassembling the package, the battery pack and supporting accessories can be presented.

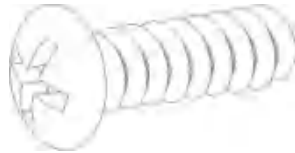
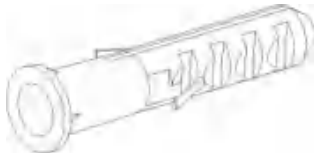


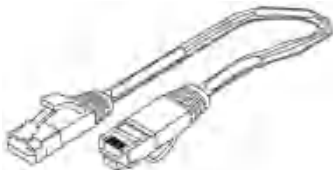

After unpacking, please check the appearance before installation. If the main body of the product is damaged, do not install this product, please consult the distributor.

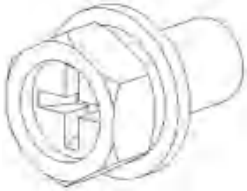


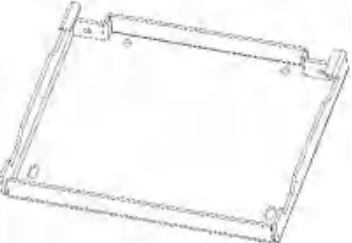
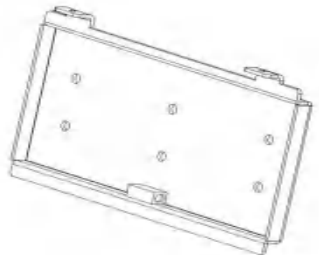
After unpacking, check whether the accessories shipped with the product are complete and whether there is no obvious damage. In case of lost or damaged items, please contact the distributor.

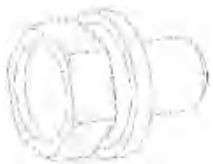
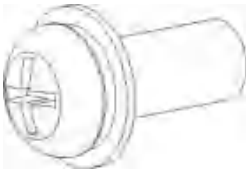
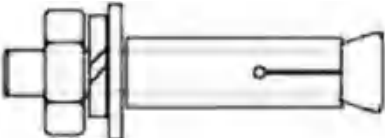

3.2 Delivery list

Table 1 Shipping list

Configuration	Parts	Quantity	Diagram
Standard configuration (Floor-mounting)	Battery Pack	1	 <p>Dimensions (W×H×D): 895 ± 3mm×547 ± 3mm×260 ± 3mm</p> <p>Weight: 135 ± 5Kg</p>
	M10 screw	2	 <p>M10×20mm</p> <p>Outer hexagon combination screw</p>
	Anti-tipping fixture	2	 <p>Dimensions (W×D×H): 50.5mm×20mm×24mm</p>

Standard configuration (Floor-mounting)	Self-tapping screw pa6 ×40	2	 <p>pa6×40mm, pan head, cross groove</p>
	Expansion tube	2	 <p>φ6×40mm, plastic</p>
	Power harnesses	1	 <p>Connector plug, orange, mating with 2AWG cable, cable length 2000mm</p>
	Power harnesses	1	 <p>Connector plug, black, mating with 2AWG cable, cable length 2000mm</p>
	Network cable	1	 <p>cable length 1000mm</p>
	Plastic cover	3	 <p>The crystal head is sealed with a plastic cover</p>










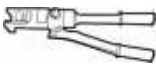

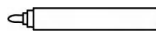







Standard configuration (Floor-mounting)	M5 screw	1	 <p>M5×10mm Outer hexagon combination screw</p>
	PE grounding wire	1	 <p>10AWG grounding cable, yellow/green, cable length 1000mm</p>
	Copper nose (PE grounding)	1	 <p>Mating with 10AWG grounding wire, yellow/green</p>
Optional (Wall-mounting optional)	Wall-mounted backplate	1	 <p>Dimensions (W×D×H): 350mm×287.5mm×41mm</p>
	Wall mount bracket	1	 <p>Dimensions (W×D×H):</p>

Optional (Wall-mounting optional)			400mm×221mm×37mm
	M10 screw	4	 <p>M10×20mm Outer hexagon combination screw</p>
	M6 screw	2	 <p>M6×20mm, pan head, cross groove</p>
	Expansion bolt	6	 <p>M10×60mm</p>
	Eyebolt for installation	2	 <p>M10 eyebolt for installation</p>

3.3 Tools

The tools in the table below may be used during the installation process (prepared by the installer himself).

Table 2 List of installation tools

Category	Tools			
Installation tools	 Torque wrench	 Torque socket wrench	 Hammer drill (with 8mm and 13mm drill bits)	 Phillips screwdriver bit
	 Wire stripper	 Cable cutter	 Cable clamp	 Steel tape measure
	 Wire crimper	 Hydraulic plier	 Utility knife	 Marker pen
	 Gradienter	 Heat shrink tubing (Calibre Ø7mm)	 Heat gun	 Multi-function meter (Measuring range $\geq 600\text{VDC}$)
Personal Protective equipment (PPE)	 Safety glove	 Protective eyewear	 Safety shoes	

3.4 Installation environment

- Choose a dry, clean, tidy, well-ventilated, convenient place for installation, and the use environment must comply with the relevant international, national and local standards for lithium batteries, and comply with local laws and regulations
- Installation ambient temperature: $0^{\circ}\text{C} \sim 40^{\circ}\text{C}$, Relative humidity: 5-95% (non-condensing)

- There are no flammable and explosive objects near the battery installation location
- Install the battery on a wall or flat ground with sufficient load capacity.

3.5 Determine the installation location

3.5.1 Installation angle requirements

The battery can be mounted on the floor, or on the wall. The installation angle requirements are as follows:

- Recommended battery pack installation angle: Upright or backward $\leq 15^\circ$.
- Do not turn the battery pack upside down, tilt it forward, or tilt it back beyond the angle, and install it horizontally.

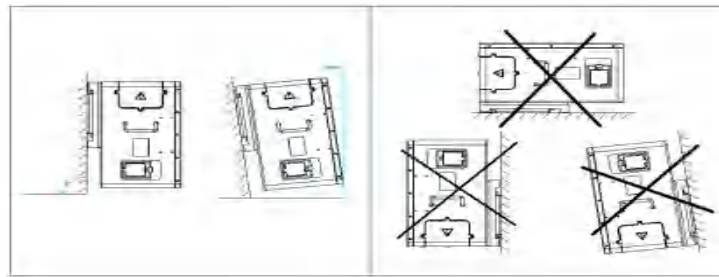


Figure 6 Installation angle requirements

3.5.2 Installation location requirements

The battery is installed on a concrete structure wall with sufficient load-bearing capacity or on the floor. If other types of walls and floors are used, flame retardant materials must be used, and the load-bearing requirements of the equipment (greater than 200kg) must be met.

3.5.3 Installation space requirements

- When installing, you should make sure that there are no other equipment and flammable and explosive materials around the battery. Reserve enough space for heat dissipation and safety isolation.
- When the battery is mounted on the wall, do not place any objects under the battery.

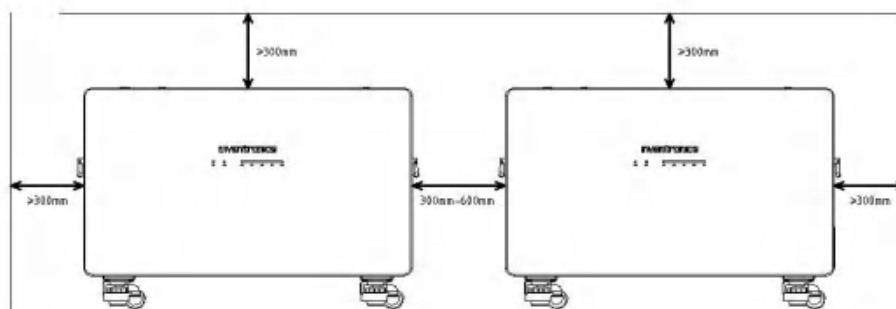


Figure 7 Installation space

Note: Flammable and explosive items or devices should be kept away from the battery pack.

3.6 Installation process

3.6.1 Ground-mounting

1) Installation precautions

Step 1: Two people hold the top of the packaging box with one hand and the bottom of the tray with the other hand, and flip the packaging box 90 degrees along the direction indicated by the arrow and place it on the floor (pay attention to the strength to prevent tipping and avoid damaging the product and the floor);

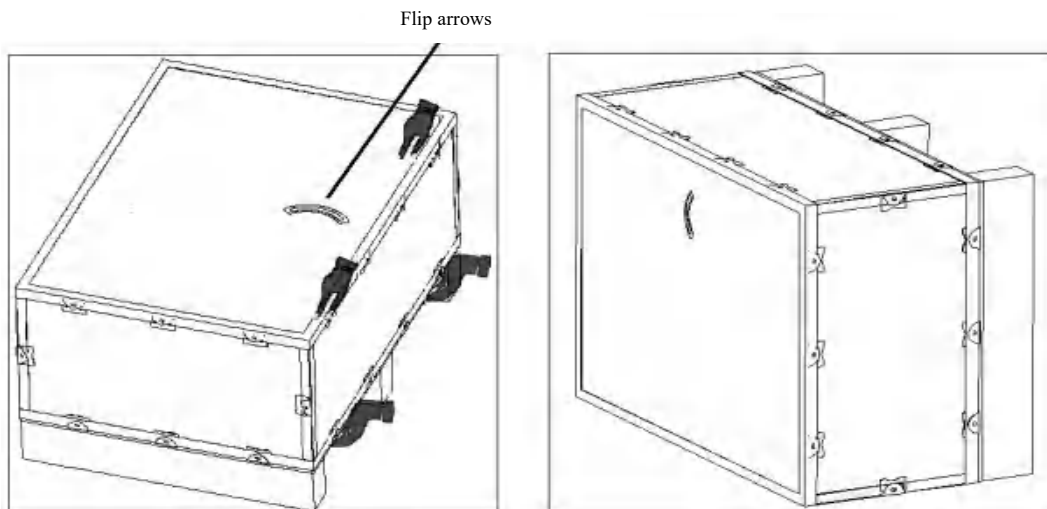


Figure 8 Flip the packaging box

Step 2: Use tools to remove the front, the top, the left and the right wooden box sealing plates of the equipment (pay attention to safety in the process to avoid the equipment from tipping), slide the battery pack out from the packing box, and use the carrying wheels to push the battery pack near the installation position;

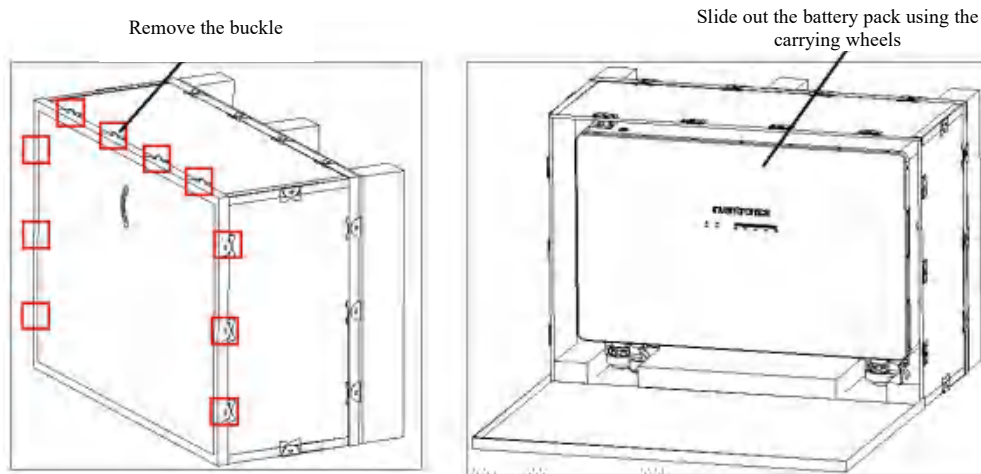


Figure 9 Remove the battery pack

Step 3: Use a steel tape measure to determine the location of the drill holes for securing the battery pack on the wall, and mark them with a marker pen (in mm);

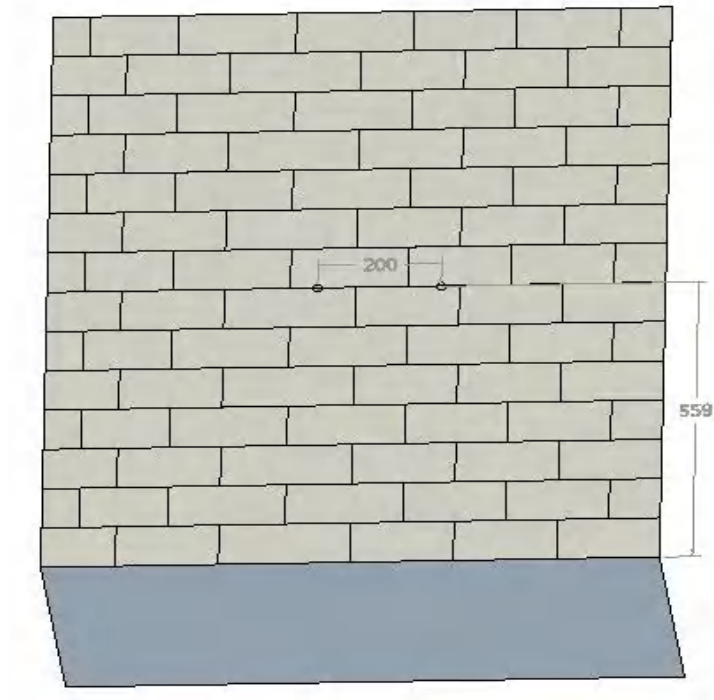


Figure 10 Mark the punch location

Step 4: Use a percussion drill to make 2 $\varnothing 8\text{mm}$ holes in the wall, and insert 2 $\varnothing 6 \times 40\text{mm}$ expansion tubes into the holes;

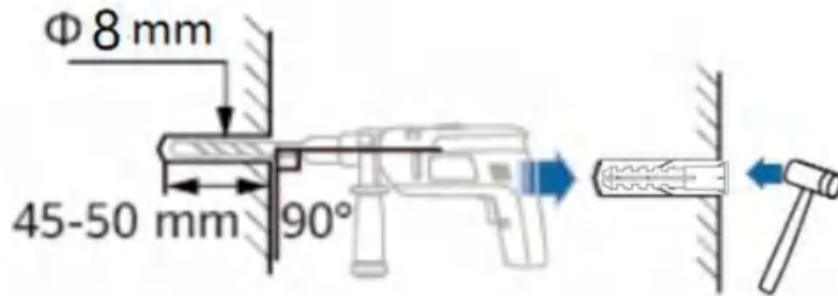


Figure 11 Install the expansion tube



When drilling, avoid water pipes and power lines buried in walls.

Step 5: Install the anti-tipping fixture with 2 M10 \times 20 hexagon screws, and the torque should be 33 N \cdot m;

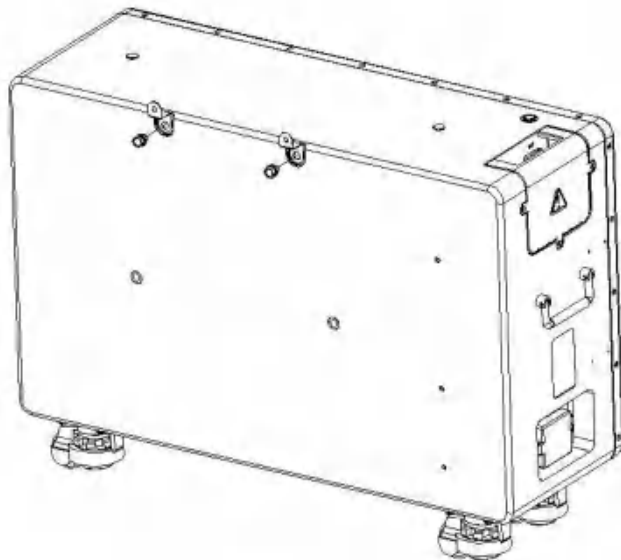


Figure 12 Install the anti-tipping pendants

Step 6: Use 2 PA6×40 self-tapping screws to fix the battery pack on the wall, and the torque should be 7 N·m;

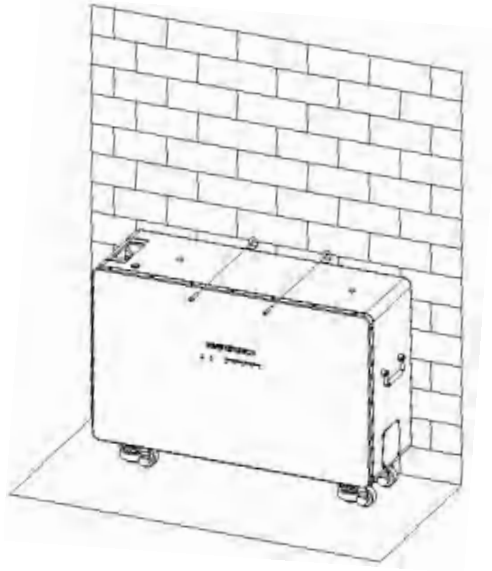


Figure 13 Fix the battery pack



Dangerous

When drilling, avoid water pipes and power lines buried in walls.

Step 7: Rotate the adjustment paddles counterclockwise to make the non-slip support base fit snugly against the ground;

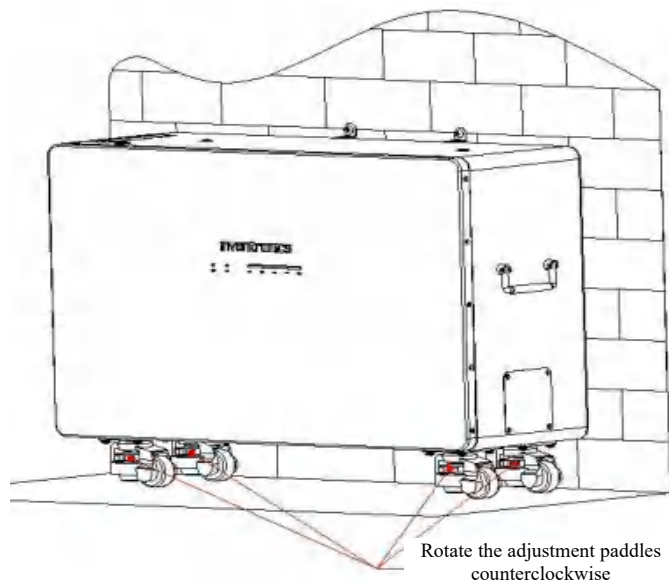


Figure 14 Fix the carrying wheels

3.6.2 Wall-mounting

1) Installation precautions

Step 1 and **step 2** refer to **step 1 and step 2 of** ground-mounting installation;

Step 3: Use a steel tape measure to determine the location of the drill holes for securing the battery pack on the wall, and mark them with a marker pen (the minimum height of the screw hole from the ground is 379mm);

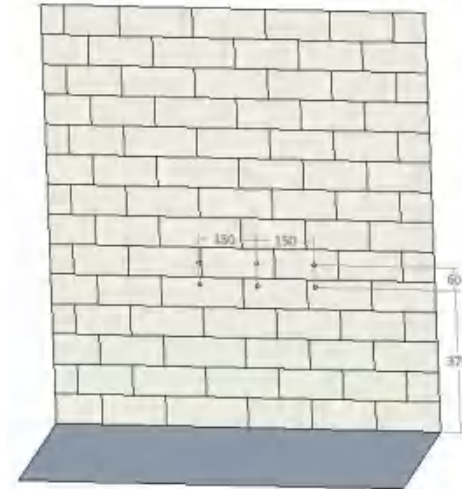


Figure 15 The size of the mounting holes for the wall-mounting bracket

Step 4: Use a percussion drill to drill a $\varnothing 13\text{mm}$ *6pcs hole in the wall, and insert the M10*6pcs expansion bolt into the hole;

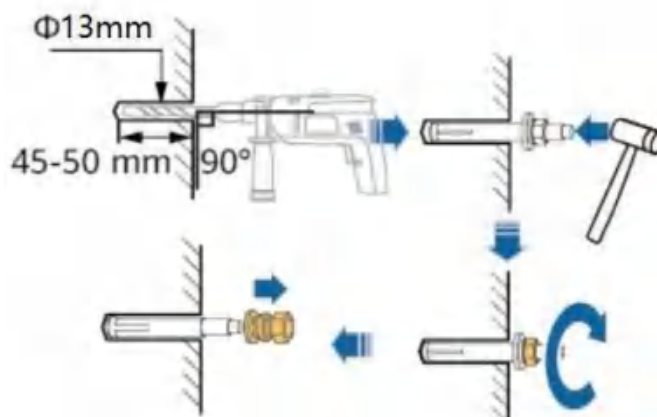


Figure 16 Install the expansion bolt

Step 5: Observe the gradienter to install the wall-mounting bracket horizontally on the wall, and the torque should be $33\text{N}\cdot\text{m}$;

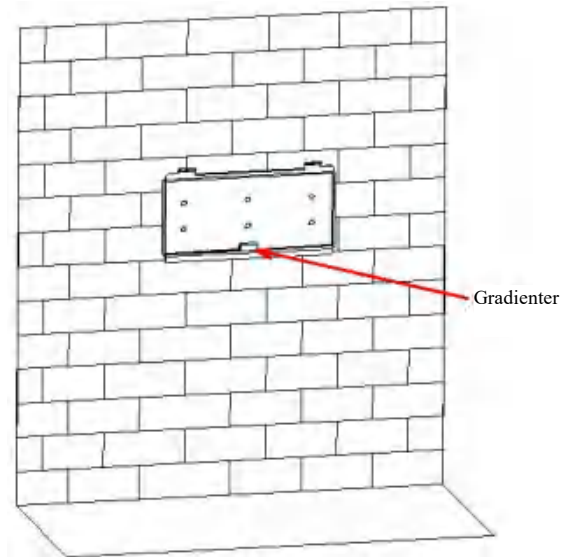


Figure 17 Install the wall-mounting bracket



Dangerous

When drilling, avoid water pipes and power lines buried in walls.

Attention

When drilling, to prevent dust from being inhaled or in contact with your eyes, please wear safety goggles and dust masks.

- Wipe off dust in or around the hole, and measure the aperture. If the hole position is not accurate, please re-drill the hole.
- After removing the nut, elastic pad, and flat pad, level the head of the expansion sleeve with the concrete wall or ground. Otherwise, the installation parts will not be securely mounted on the wall or ground.
- Loosen the nut, the elastic pad and the flat pad of the bottom expansion bolt.

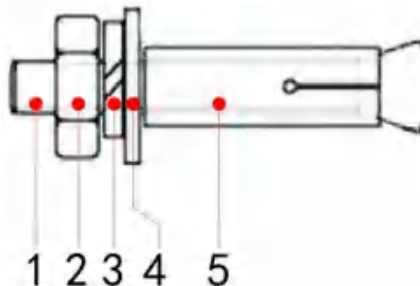


Figure 18 Structure diagram of the expansion bolt

1 Bolt; 2 Nut; 3 Elastic pad; 4 Flat pad; 5 Expansion sleeve

Step 6: Two M10 eyebolts are screwed to the end (torque 33 N·m) and assembled on the battery pack;

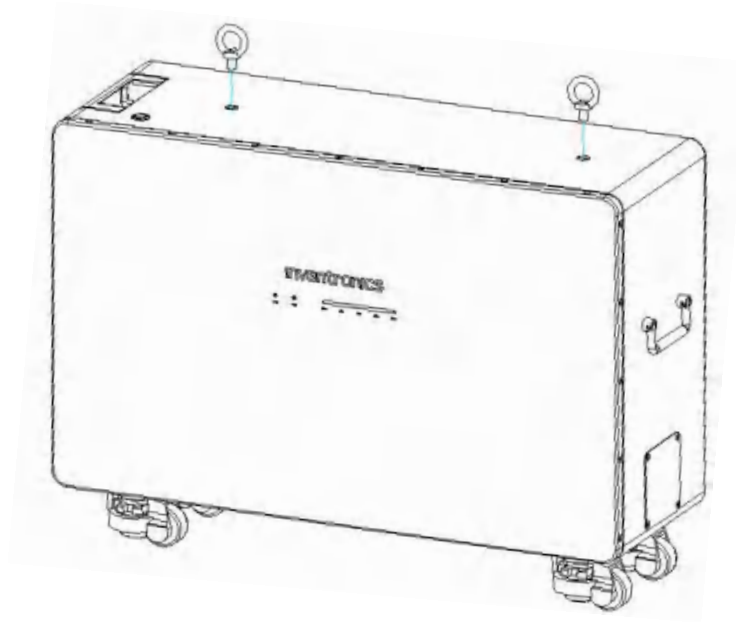


Figure 19 Eyebolt for installation

Step 7: Install the wall-mounting backplate on the battery pack with 4 M10×25 hexagon combination screws with a torque of 33 N·m;

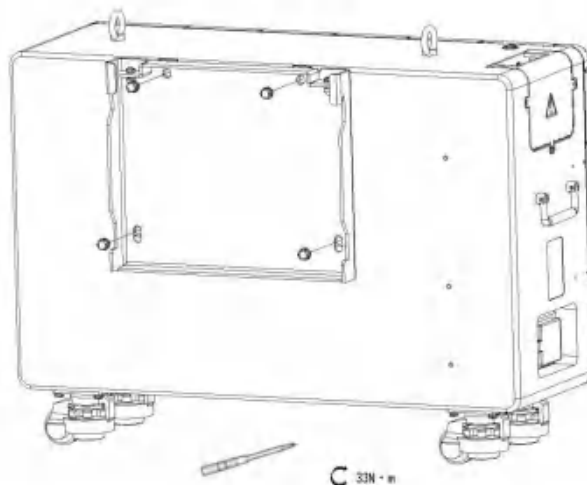


Figure 20 Install the wall-mounting backplate

Step 8: The rope is threaded through the two eyebolts, and the battery pack is lifted using the lifting tool, and the battery pack is hung on the wall-mounting bracket that has been installed;

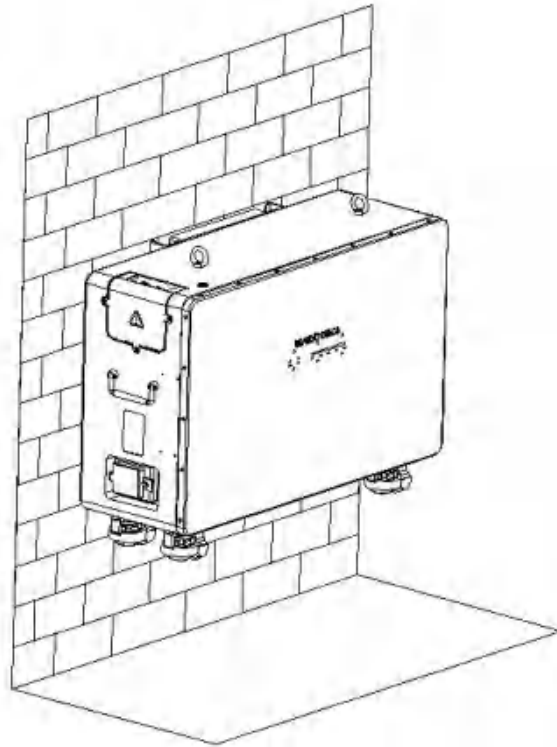


Figure 21 Hang the battery pack on the wall

Step 9: Use 2 M6×20 Phillips pan head screws to fix the wall-mounting bracket and wall-mounting backplate together, with a torque of 7 N·m;

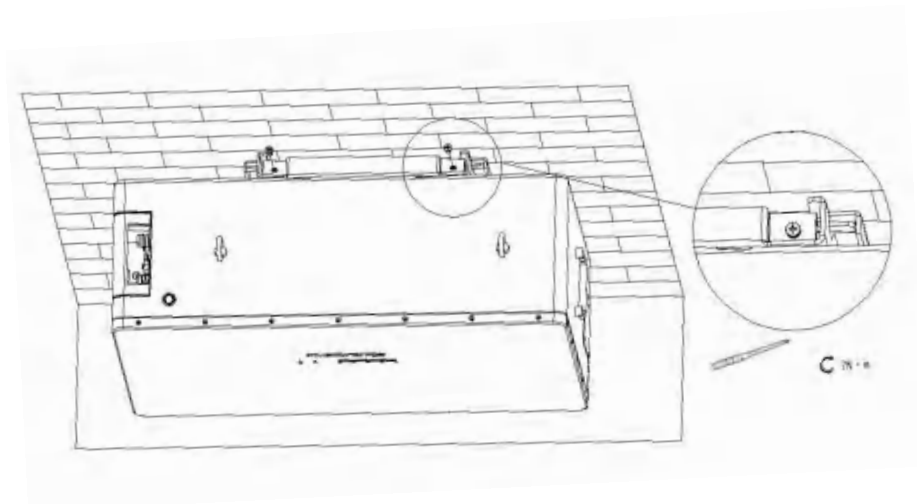


Figure 22 Wall-mounting bracket and wall-mounting backplate

Step 10: Remove the eyebolts, and tighten the rubber stopper;

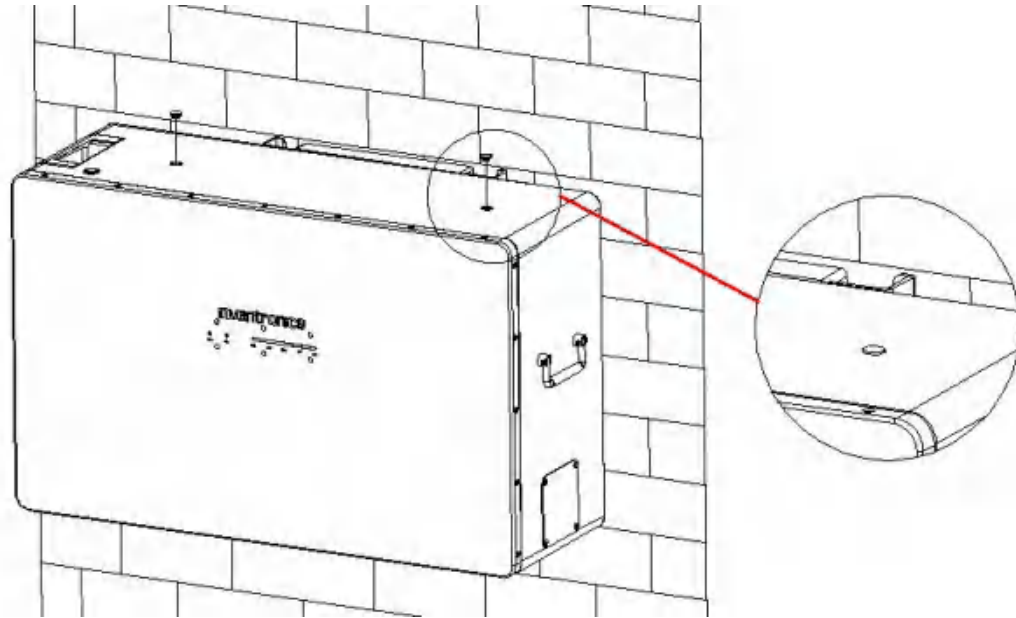


Figure 23 Fix the rubber stopper

Step 11: Remove the carrying wheels (optional);

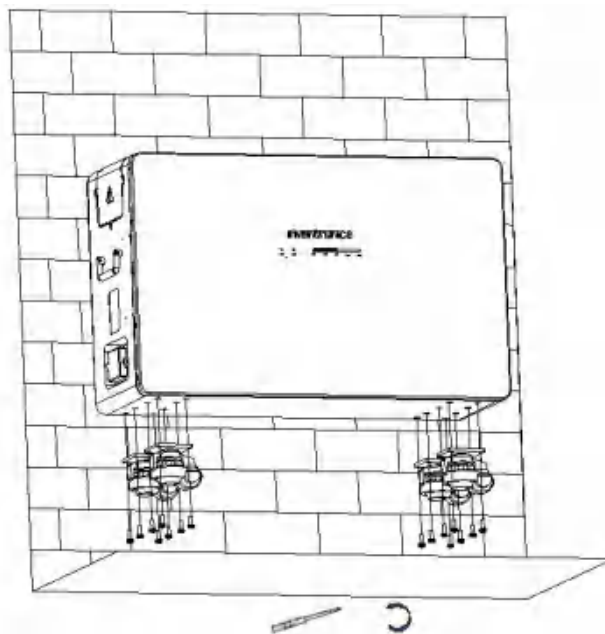


Figure 24 Remove the carrying wheels

3.6.3 Cable preparation

Connect the DC power cord to the connectors (“+” and “-”) that shipped with the product.

Step 1: Crimp the DC connector;

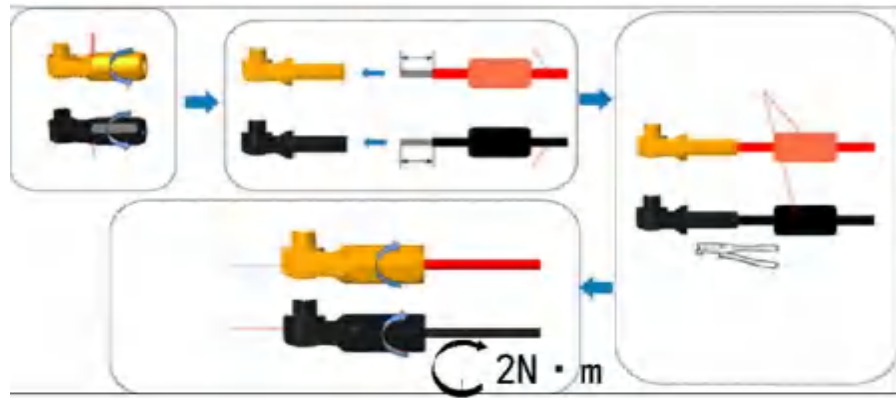


Figure 25 Connect the battery system DC cable to the inverter

Attention

- It is recommended to use a 50mm² or equivalent cable for the DC input power connection from the battery system to the inverter.
- The total length of the DC power cord is based on the actual distance and wiring from the battery system to the inverter.
- Please refer to the user manual of the corresponding inverter for the terminal block connected to the inverter at the other end of the DC cable.

Step 2: Install the 4P twisted pair cable (Cat5e and above) on the RJ45 crystal head in the order of wire color shown in Figure 26.

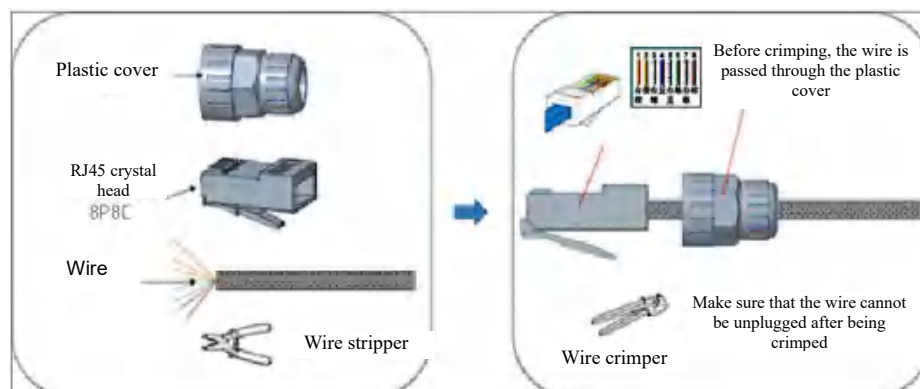
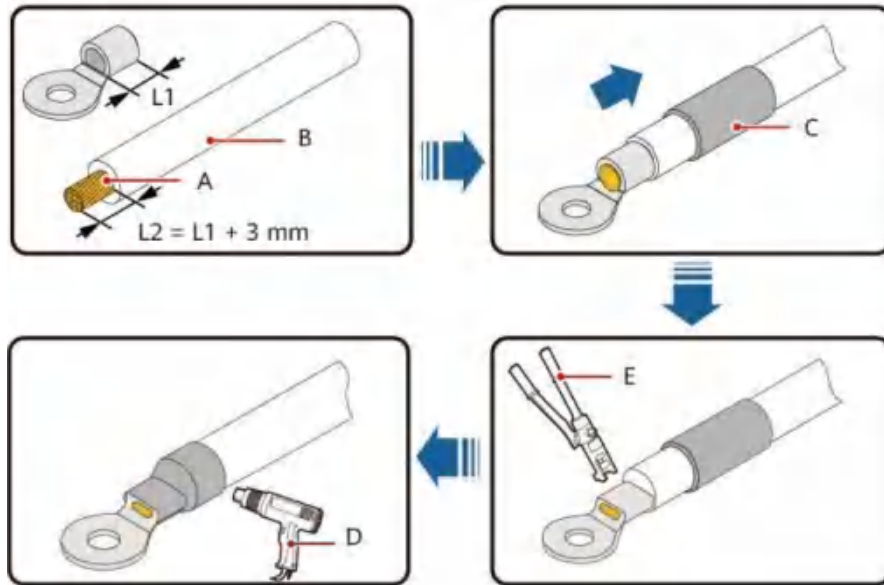


Figure 26 Crimp the signal cable

Step 3: Crimp the PE terminals (shipped with the product) to the PE cable (10AWG or equivalent specification). The total length of the PE wire depends on the actual distance from the battery system to the grounding point and the wiring;



(A) Core wire (B) Insulating layer (C) Heat shrink sleeve (D) Heat gun (E) Hydraulic plier

Figure 27 Crimp PE wire

3.6.4 Cable installation

Step 1: Make sure the DC circuit breaker of the battery system is in the OFF position, and remove the protective cover;

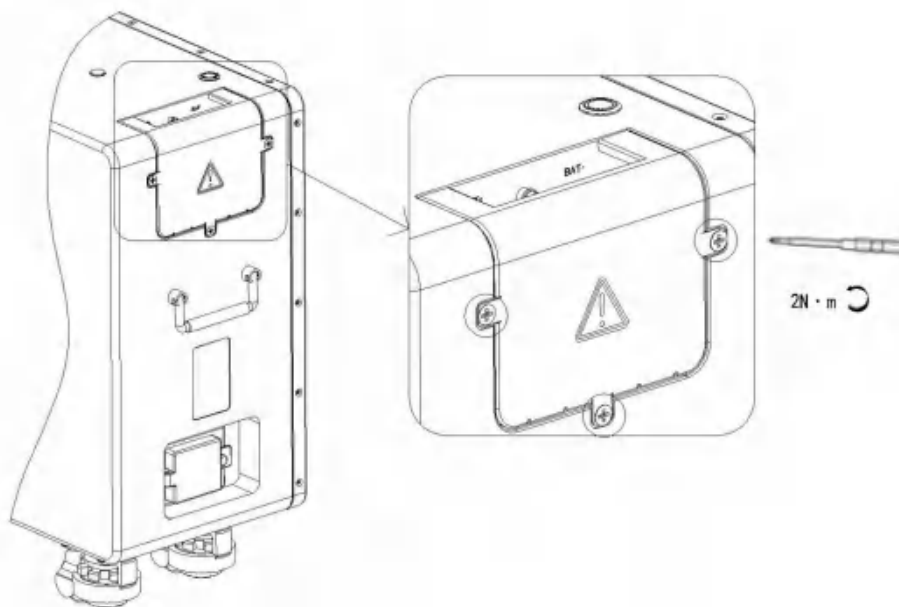


Figure 28 Remove the protective cover

Step 2: Connect the positive and negative wires to the BAT+ and BAT-, be careful not to connect them in reverse, the positive and negative plugs in reverse connection will cause damage to the equipment.

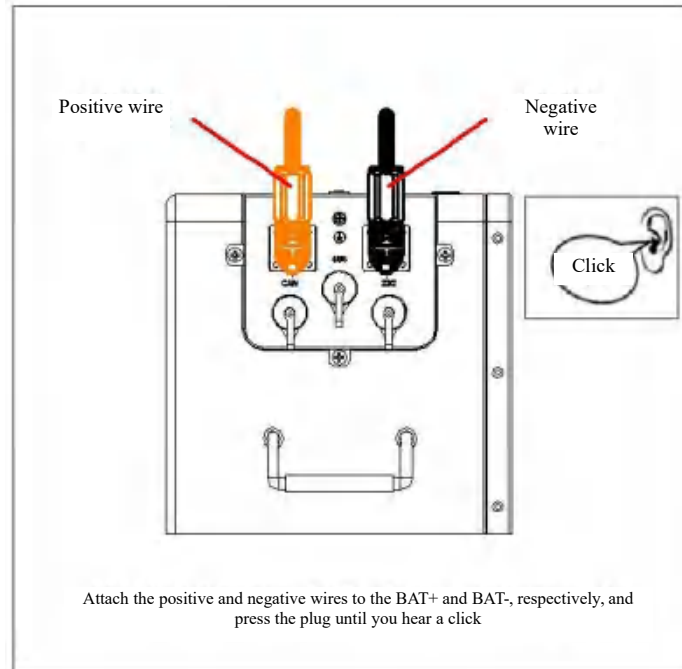


Figure 29 Install the positive and negative wires

Step 3: Connect the PE wire from the battery pack to the grounding point;

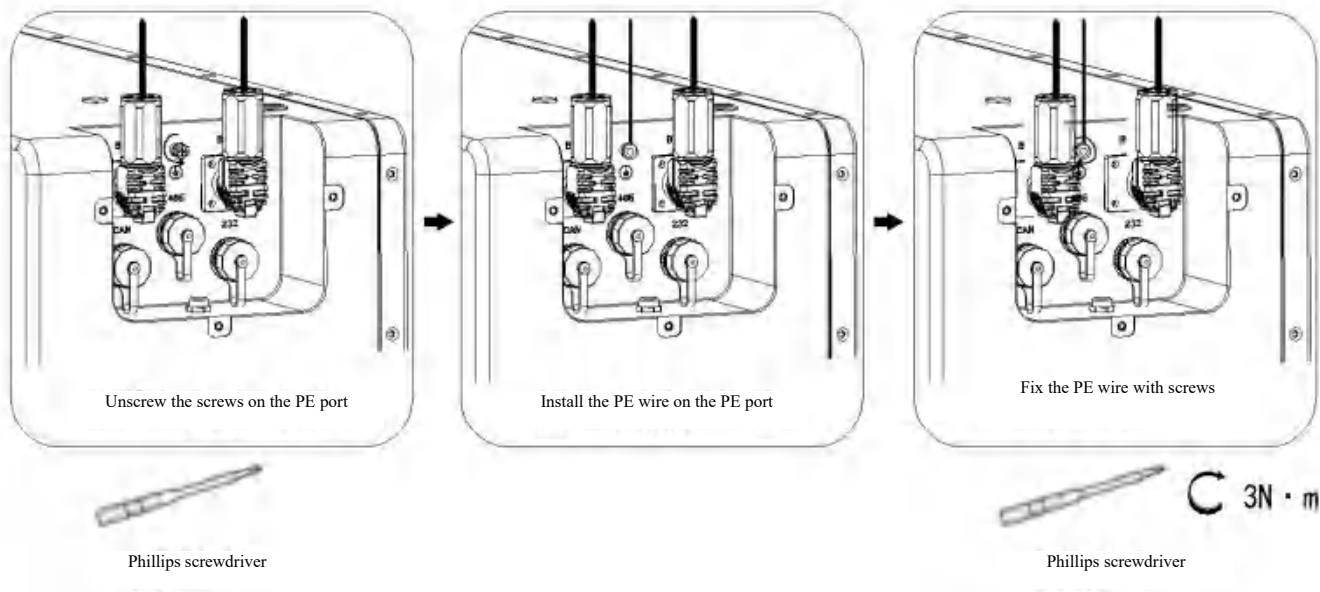


Figure 30 Install the PE wire

Step 4: Connect the battery pack signal cable to the inverter;

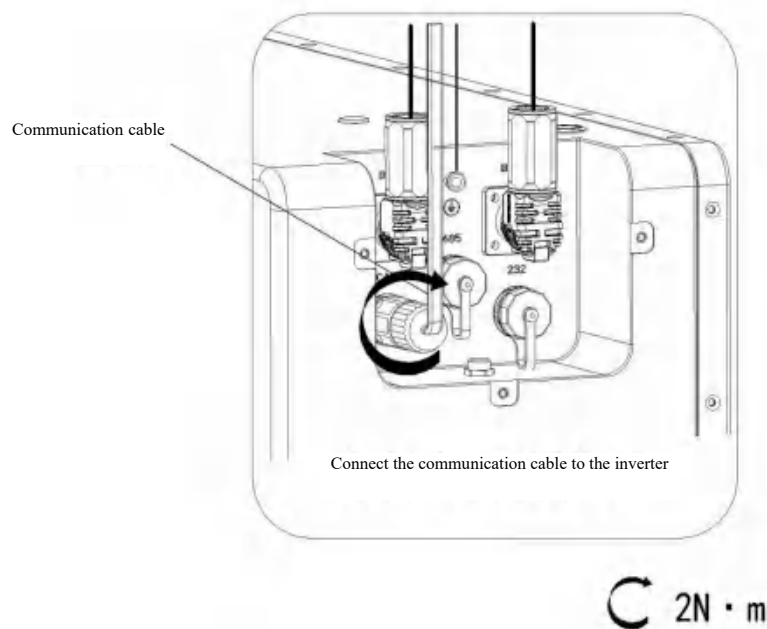


Figure 31 Install the signal cable

Step 5: Install the protective cover;

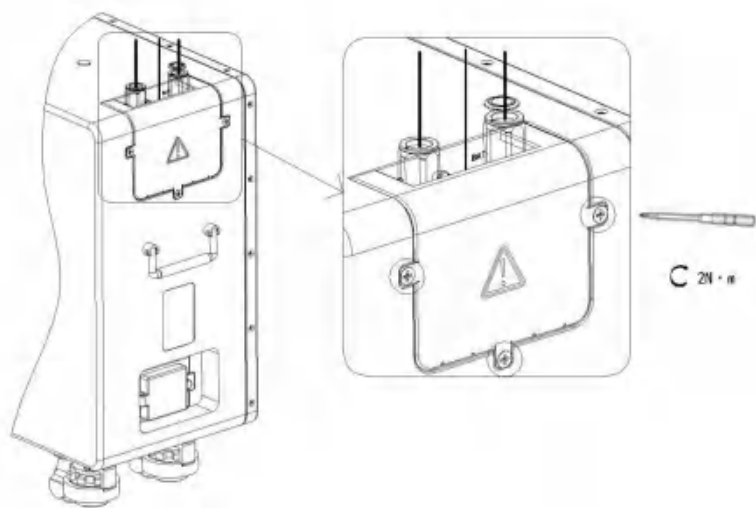


Figure 32 Install the protective cover;



Caution

Risk of injury due to short circuit of the battery module:

The short circuit of the power cord or conductor between the output port BAT+ and BAT- of the battery module may cause a short circuit in the battery module and damage the battery pack, please operate with caution when connecting.

Risk of electric shock during wiring:

Wear appropriate PPE for all work on the battery system.

Step 6: Open the circuit breaker cover and turn the circuit breaker from OFF to ON;

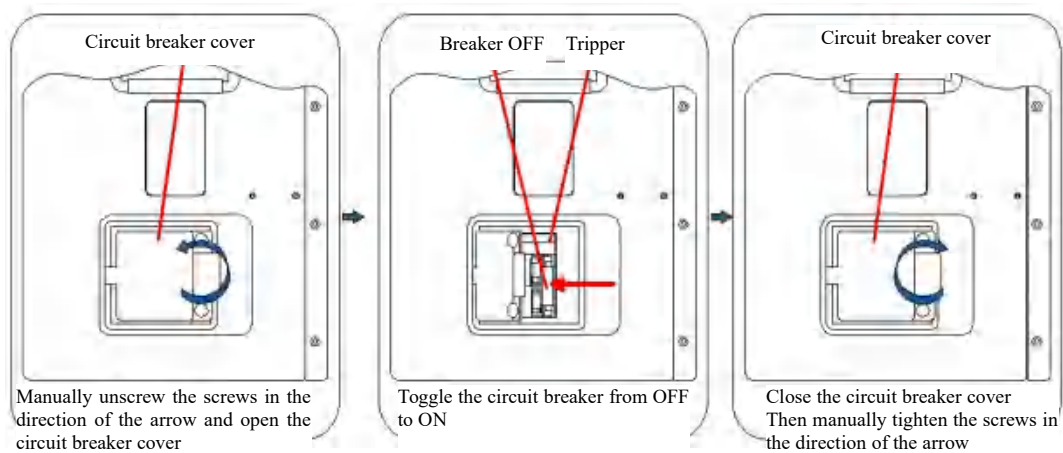


Figure 33 Circuit breaker

4. Power-on and power-off of system

4.1 Preparation before operating

- 1) Confirm that the battery pack is securely installed
- 2) The environment is well ventilated
- 3) There must be no external objects or parts left on top of the battery system
- 4) The cables are reasonably distributed to prevent mechanical damage
- 5) Make sure all terminals are connected correctly and securely and that the battery pack is well grounded

4.2 Operating of battery system

Step 1: Put the DC circuit breaker of the battery pack in the “ON” position, press the power button on the top of the battery pack, wake up the battery pack from the power-off status, and the LED indicators will light up sequentially from “RUN” for 0.5 seconds;

Step 2: Check the status of the LEDs in the control box. If the Alarm-LED flashes or solids red, it means that the battery pack is faulty, please check the fault information through communication;

Step 3: Start the inverter, set the inverter according to the inverter manual to charge and discharge the battery pack for one cycle. Use the inverter to check if the battery pack can work properly. If after a full charge-discharge cycle, the battery pack fault indicator does not flash and the inverter side does not trigger the fault, it means that the battery pack can be matched with the inverter.

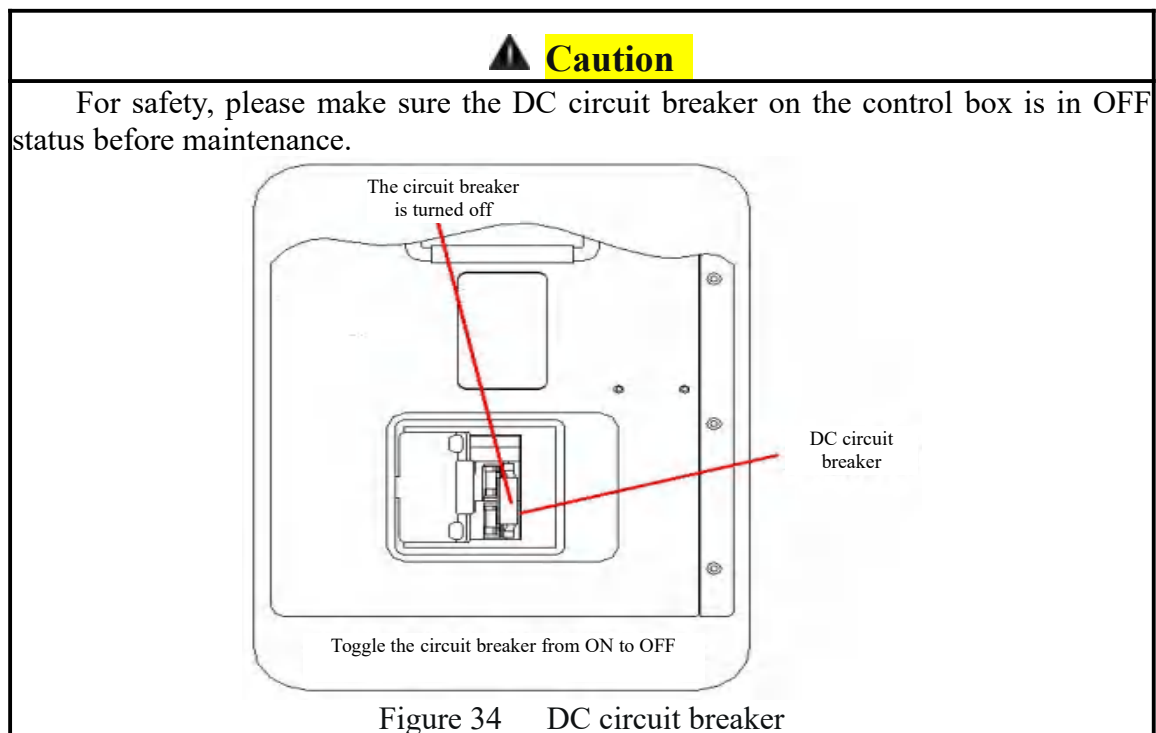
4.3 The battery pack is de-energized

If the battery is not in use or needs maintenance, follow the steps below to turn off the battery pack.

Step 1: Through the inverter host computer or APP, stop charging and discharging the battery pack.

Step 2: Press the power button on the battery pack. Wait until all the indicators go out.

Step 3: Put the battery pack DC circuit breaker in the “OFF” position.



5. Battery pack parameters

5.1 Performance parameters of the battery pack

Table 3 System parameter table

Product specifications	16.076kWh
Battery type	LFP
Nominal capacity of cell (Ah)	314
Nominal voltage of cell (V)	3.2
Nominal voltage of battery pack (V)	51.2
Maximum charge and discharge current (A)	200
Operating voltage range of battery pack (V)	44.8-57.6
Capacity of battery pack (kWh)	16.076
Ingress Protection rating	IP65
Operating temperature (°C)	Charge: 0~50 Discharge: -20~50
Battery pack weight (kg)	135±5
Dimensions(W*H*D)(mm)(including carrying wheels)	895±3*547±3*260±3
Cooling method	Natural cooling
Operating altitude (m)	≤2000
Standard for communication between the battery pack and the inverter	CAN
Standard for communication between the battery packs	RS485
Standard for communication between the battery pack and the host computer	RS232
Battery pack status indicator	2 LED(RUN, ALM)
Battery pack capacity indicator	5 LED (20%, 40%, 60%, 80%, 100%)
Authentication	CE(EN IEC61000-6-1) CE(EN IEC61000-6-3) CB(IEC62619/IEC63056) UN38.3
Local connection mode	Bluetooth
Cloud platform connection mode	Wi-Fi (optional)
Heating method	Heating film (optional)
System switch	Button
System power output switch	DC circuit breaker
Installation method:	Floor-mounting, optional wall-mounting

Storage temperature recommendations: For batteries stored for a longer period, it is recommended to control the temperature between 0°C~ 25°C and the humidity below 95% RH, and then charge and discharge the battery every six months if conditions allow.

6. Parallel Solution

1 battery pack can be connected to the residential hybrid inverter by means of a direct connection. When the battery pack is larger than 1, the DC cable of each battery pack is connected to the converging module by DC coupling to realize the confluence to the residential hybrid inverter (adapted to the same type of battery pack according to the actual user scenario), and the number of battery packs in parallel can reach up to 4 units.

Converging module: The current of multiple battery packs is combined, so as to better manage and control the flow direction and distribution of current, this module has high efficiency and reliability, can effectively integrate the output and input of the battery pack, and ensure the stable operation of the system.

Schematic diagram of parallel for battery pack, as shown in the following Figure:

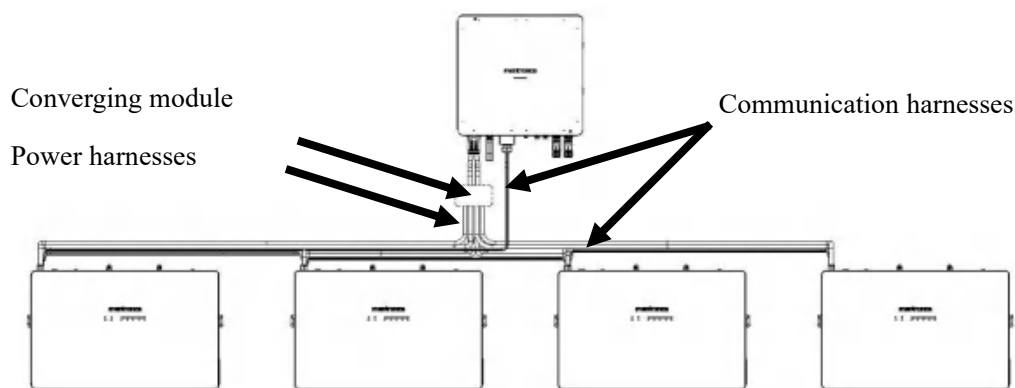


Figure 35 Schematic Diagram of Parallel

When multiple battery packs are paralleled, the power harness of a single battery pack needs to be connected to the input port of the converging module, and then the output port is connected to the residential hybrid inverter, as shown in the following Figure:

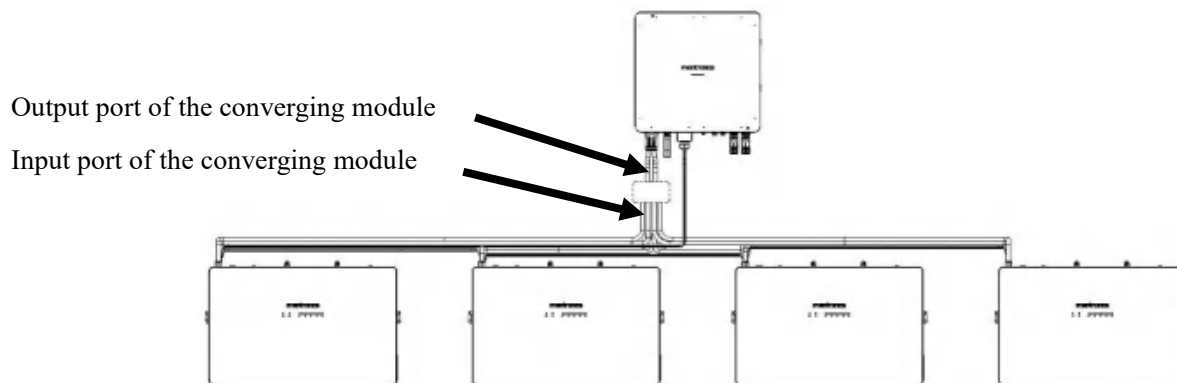


Figure 36 Schematic Diagram of Parallel Power Harness Connection

When multiple battery packs are paralleled, 4P twisted pair cables are used to communicate with each battery pack, and the No. 1 battery pack directly connected to the residential hybrid inverter is the host, and the No.

2, 3, and 4 battery packs are the slaves, as shown in the following Figure:

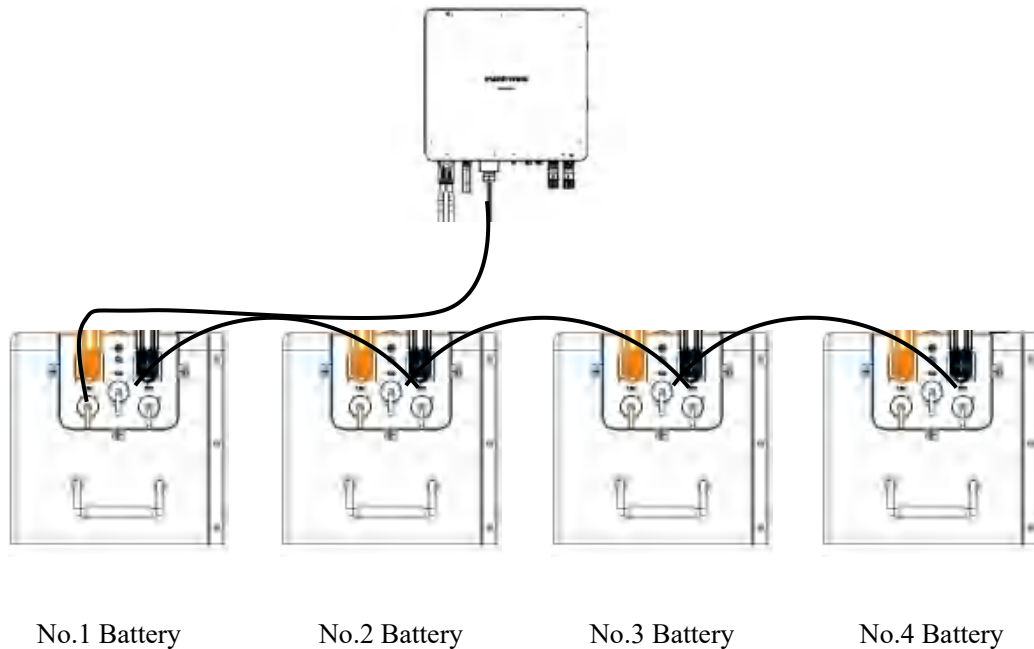


Figure 37 Schematic Diagram of Parallel Communication Harness Connection

7. Packaging, transportation, storage requirements

7.1 Packaging requirements for the outer packaging box of the product

The battery pack is pre-charged to the SOC (State of Charge, which means the ratio of the remaining power of the battery to its nominal capacity) in the range of 30%~50% or shipped according to client requirements. The remaining capacity of the battery pack after loading and before charging is determined by the storage time and conditions.

1. The battery pack complies with the UN38.3 certification standard.
2. In particular, it is necessary to comply with the revised special rules on the carriage of goods by road and the current law on dangerous goods.

7.2 Product transportation requirements

The battery pack should be protected from severe vibration, impact or squeezing during transportation, and protected from sun and rain, and can be transported by cars, trains, ships, airplanes and other means of transportation

During the loading and unloading process, the battery should be handled gently to prevent falling, tumbling and heavy pressure.

7.3 Product storage requirements

The battery pack should avoid contact with corrosive substances, and should be kept away from fire and heat sources.

The accumulator should be charged to within 50%~55% of the SOC before storage; It is recommended to discharge and charge the battery every 3 months.

Note: If the above instructions are not followed for long-term storage, the lifespan of the battery will be greatly reduced.

8. Regular maintenance

Check the battery system voltage through the host computer (APP or cloud platform) that is compatible with the inverter with the battery pack. Check if the system voltage is abnormal. For example: the cell voltage is abnormally high, low.

8.1 SOC inspection

Check the SOC status of the battery system through the host computer (APP or cloud platform) that is compatible with the inverter with the battery pack. Check whether the battery pack SOC is abnormal.

8.2 Cable inspection

Visually inspect all cables of the battery system. Check whether the cable is broken, aged, loose.

