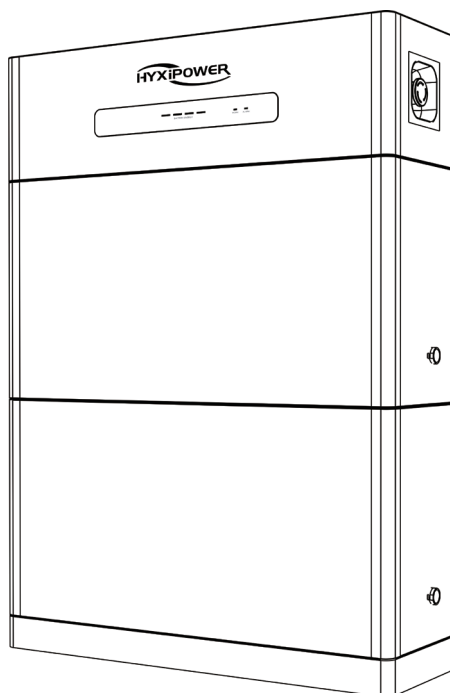


# ***HIGH VOLTAGE BATTERY***

E-50-H2 / E-100-H2 / E-150-H2 / E-200-H2 /  
E-250-H2 / E-300-H2 / E-400-H2 / E-500-H2



Carefully read this user manual before using the product.  
Read and save these instructions.

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# 1 Product Introduction

HYXiPOWER storage high voltage stacker can provide a variety of operating modes according to different needs, self-generation, peak-shaving, battery priority, etc.

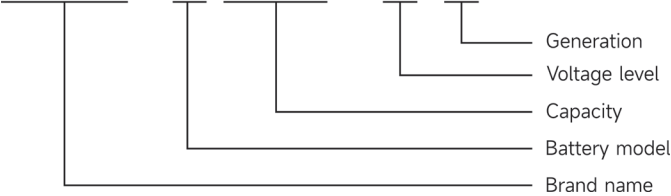
## 1.1 Scope of Application

This manual is intended for the following devices:

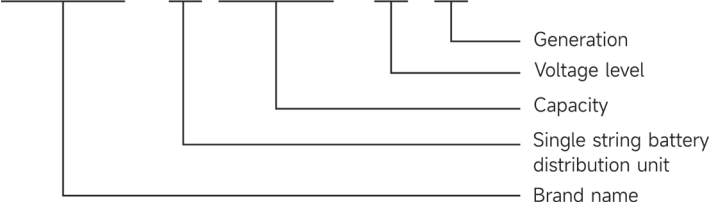
- HYX-E50B-H2, Battery pack module
- HYX-BDUP-H2, BDUP ( Parallel Battery energy distribution unit )
- HYX-BDU-H2, BDU ( Single string Battery energy distribution unit )

## 1.2 Product Naming Rules

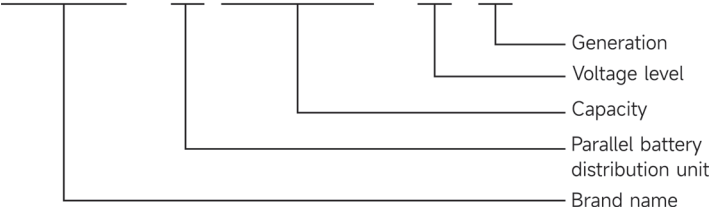
**HYX - E 50B - H 2**



**HYX - E BDU - H 2**











**HYX - E BDUP - H 2**



# 2 Safety Instructions

## 2.1 Symbols on the Label

| Symbol  | Description   |
|---|---|
|  | Risk of danger!<br>There are potential hazards when the equipment is in operation, please take precautions when operating the equipment.                      |
|  | Beware of electric shock!<br>High voltage exists when the equipment is in operation, so when operating the equipment, make sure the equipment is powered off. |
|  | The equipment should be kept away from open flames or sources of ignition.  |
|  | Do not dispose of the product together with the household waste.  |
|  | Please use the equipment reasonably, extreme conditions of use, the equipment has the risk of explosion.  |
|  | Observe enclosed documentation.   |
|  | Wear protective gloves.   |
|  | CE certification mark.<br>The inverter complies with the regulations of CE.   |

## 2.2 Photovoltaic Grid-Connected Power Generation System

When installing, operating and maintaining the equipment, please read this manual and follow all safety precautions marked on the equipment and in the manual.

The "NOTICE", "CAUTION", "WARNING" and "DANGER" items in this manual do not represent all safety items to be observed. They are in addition to all safety precautions. HYXiPOWER shall not be liable for any violation of the general safety requirements or for any violation of the safety standards for the design, manufacture and use of the equipment.

The equipment should be used in an environment that conforms to the design specifications; otherwise, equipment failure may result, and the resulting abnormal functioning of the equipment or damage to components, personal safety accidents, and property damage are not covered by the equipment warranty.

Local laws, regulations and codes should be observed when installing, operating and maintaining the equipment. The safety precautions in the manual are intended only as a supplement to local laws and regulations and norms.

Lifting or lowering the system carries the risk of injury. The battery is heavy. There is a risk of injury if the battery is not lifted or dropped properly during transport or during installation or removal. Two or more people must lift and transport the battery.

## 2.3 Risk Factors

### Risks of Explosion:

- Do not subject the battery module to heavy impacts;
- Do not crush or puncture the battery module;
- Do not dispose of the battery module in a fire.

### Risks of Fire:

- Do not expose the battery module to temperature exceeding 140° F (6° C);
- Do not place the battery module near a heat source, such as a fireplace;
- Do not expose the battery module to direct sunlight;
- Do not allow the battery connectors to touch conductive objects such as wires.

### Risks of Electric Shock:

- Do not disassemble the battery module;
- Do not touch the battery module with wet hands;
- Do not expose the battery module to moisture or liquids;
- Keep the battery module away from children and animals.

### Risks of Damage to the Battery Module:

- Do not expose the battery module to liquids;
- Do not subject the battery module to high pressures;
- Do not place any objects on top of the battery module;
- It shall be protected from the sun and rain.

## 2.4 Response to Emergency Situations

### Leaking Batteries

In case the leakage of electrolyte solution occurs, please avoid direct contact with the electrolyte solution and the gas that may be generated by it. Direct contact may lead to skin irritation or chemical burns. If the user comes into contact with the electrolyte solution, please do as follows:

### Accidental Inhalation of Harmful Substances:

Evacuate from the contaminated area, and seek medical attention immediately.

### Eye Contact:

Rinse eyes with flowing water for 15 minutes, and seek medical attention immediately.

### Dermal Contact:

Wash the affected area thoroughly with soap and water, and seek medical attention immediately.

### Ingestion:

Induce vomiting, and seek medical attention immediately.

**Fire:**

Please keep a Class ABC fire extinguisher or a carbon dioxide extinguisher near the equipment.

**If a fire breaks out where the battery module is installed, please do as follows:**

- Extinguish the fire before the battery module catches fire;
- If the battery module catches fire, please do not try to put out the fire, and evacuate immediately.

**Wet Batteries and Damaged Batteries**

- Do not touch the battery module after being wet from and soaked in the water.
- Do not use the battery module if it is damaged. Otherwise, the loss to life and property will be caused.
- Please pack the battery in its original packaging, and return it to our company or the distributor.

## 2.5 Notes

The operation of transportation, installation, wiring and maintenance shall meet the laws, regulations and related standards of the country and region where it is located.

The user's own materials and tools required for operation must meet the laws and regulations and related standards of the country or region where they are located.

Permission must be obtained from the power department of the country or region in which the system is located before it can be connected to the grid.

Users should be fully familiar with the composition and working principle of the whole grid-connected photovoltaic power generation system and the relevant standards of the country/region where the project is located.

Reverse engineering, decompiling, disassembling, adapting, implanting or other derivative operations of the equipment software are prohibited. It is not allowed to study the internal implementation of the equipment, obtain the source code of the equipment software, steal intellectual property rights, etc. in any way, nor shall the results of any equipment software performance test be disclosed.

## 2.6 Personnel Requirements

Personnel responsible for the installation and maintenance of Hyxi equipment must first be strictly trained to understand various safety precautions and master the correct operation methods.

Only qualified professionals or trained personnel are allowed to install, operate and maintain the equipment.



Only qualified professionals are allowed to remove safety facilities and overhaul equipment. Personnel who operate the equipment, including operators, trained personnel, and professionals should have the local state required special operating qualifications, such as high voltage operation, ascent, and special equipment operation qualifications.

Replacement of equipment or parts (including software) must be done by professionals or authorized personnel.

**Description:**

- Professional personnel: People who have training or experience in operating equipment and can clearly understand the various potential sources and magnitudes of hazards during equipment installation, operation, and maintenance.
- Trained personnel: A person who has received the appropriate technical training and has the necessary experience to be aware of the hazards that may be presented to him when performing a particular operation and to take measures to minimize the hazards to himself or to other personnel.
- Operator: A person, other than a trained person or a professional, who may come into contact with the equipment.






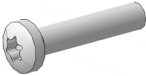



## 3 Limitation of Liability

**HYXiPOWER is not responsible in the event of any of the following:**

- It does not operate in the conditions of use described in this manual.
- The installation and use environment does not comply with the provisions of the relevant international or national or regional standards.
- Unauthorized disassembly, modification of the product or modification of the software code.
- Failure to follow the operating instructions and safety warnings in the product and documentation.
- Equipment damage caused by abnormal natural environment (force majeure, such as earthquake, fire, windstorm, flood, mudslide, etc.)
- Damage to equipment caused by abnormal natural environment (force majeure, such as earthquake, fire, storm, flood, mudslide, etc.)
- Transportation damage caused by the customer's own transportation.
- Damage caused by storage conditions that do not meet the requirements of the product documentation.
- Damage to the hardware or data of the equipment due to customer negligence, improper operation or intentional damage.
- Damage to the system caused by a third party or the customer, including damage caused by handling and installation that does not meet the requirements of this manual, and damage caused by adjustments, alterations, or removal of identification marks that do not meet the requirements of this manual.





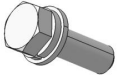

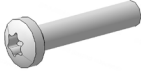



# 4 Installation



## 4.1 Packing List of HYX-EBDU-H2

| No. | Accessories   | Model                                       | Quantity                              |
|-----|---|---|---------------------------------------|
| 1   |    | Anti-tilting bracket                        | 1                                     |
| 2   |    | Wall Mount Tie Rods                         | 1                                     |
| 3   |    | M6-50 hexagonal flange face expansion bolts | 2                                     |
| 4   |    | M5-8 Phillips countersunk head screws       | 4<br>located at the bottom of the BDU |
| 5   |    | M6 screws                                   | 2                                     |
| 6   |   | M4-20 anti-theft screws                     | 2                                     |
| 7   |  | Ethernet cable (1m)                         | 1                                     |
| 8   |  | High voltage cable (HV- 4-6mm²)             | 1                                     |
| 9   |  | High voltage cable (HV+ 4-6mm²)             | 1                                     |

\*Description: PACK without accessories.

## 4.2 Packing List of HYX-EBDUP-H2

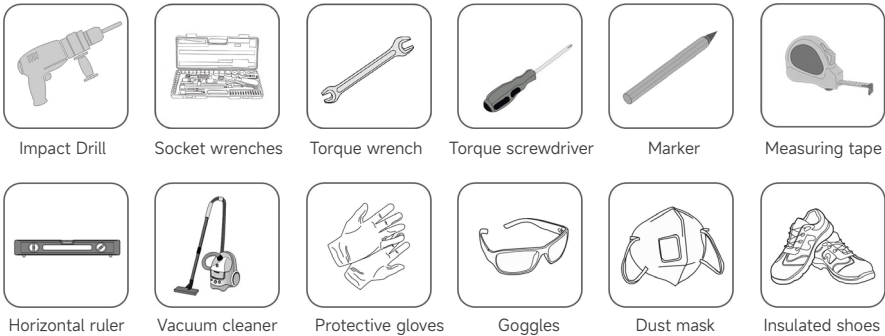
| No. | Accessories   | Model                                       | Quantity                              |
|-----|---|---|---------------------------------------|
| 1   |    | Anti-tilting bracket                        | 1                                     |
| 2   |    | Wall Mount Tie Rods                         | 1                                     |
| 3   |    | M6-50 hexagonal flange face expansion bolts | 2                                     |
| 4   |    | M5-8 Phillips countersunk head screws       | 4<br>located at the bottom of the BDU |
| 5   |    | Grounding screw                             | 1                                     |
| 6   |    | OT terminal                                 | 2                                     |
| 7   |   | M4-20 anti-theft screws                     | 2                                     |
| 8   |  | Ethernet cable (1m)                         | 1                                     |
| 9   |  | High voltage cable (HV- 4-6mm²)             | 1                                     |
| 10  |  | High voltage cable (HV+ 4-6mm²)             | 1                                     |

|    |   |                |   |
|----|---|----------------|---|
| 11 |  | Power cable(+) | 1 |
| 12 |  | Power cable(-) | 1 |

\*Description: PACK without accessories.

### 4.3 Installation Tools

Installation tools include, but are not limited to, the following recommended tools. And if necessary, other auxiliary tools can be used on site.



### 4.4 Location and Environmental Requirements

- The battery enclosure has an IP65 protection rating and shall be installed indoors.
- The battery has no ventilation requirements.
- The battery housing should be installed in a location free from the risk of water (standing water, submersion, etc.). The installation location must be well drained.
- The product needs to be installed on a level surface.

**The following places are not allowed to be installed:**

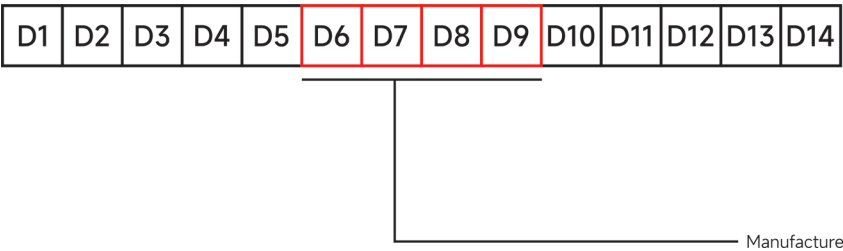
- In environments where the temperature is less than -20°C or more than 50°C .
- Places where humidity and condensation exceed 95%.
- Places where salt and humid air can penetrate.
- Flooded areas.
- Earthquake areas - additional safety measures are required here.
- Locations at altitudes above 2000 meters.
- Explosive atmospheres.
- Locations with prolonged exposure to sunlight.
- Places where the ambient temperature changes drastically.

- Humid rooms.
- Locations with highly flammable materials or gases.
- Locations with a potentially explosive atmosphere.

**When multiple PACKs form a battery system:**

**1. If the factory date of each PACK  $\leq$  3 months, it can be used directly to form a system**

The 6th and 7th digits of SN represent the year, and the 8th and 9th digits represent the number of weeks. E.g. 2421 represents the 21st week of 2024.



**2. If the factory date of each PACK  $>$  3 months, it is recommended to fully charge each PACK separately before forming a system**

Because of the same charging and discharging characteristics of the series system, the imbalance problem can only occur before the formation of the system; After the formation of the system, all the PACKs are charged and discharged at the same time with the exact same amount of power, so there will be no imbalance problem.

**4.5 Product Installation Instructions**

**4.5.1 Installation Space Requirements**

**Installation angle**

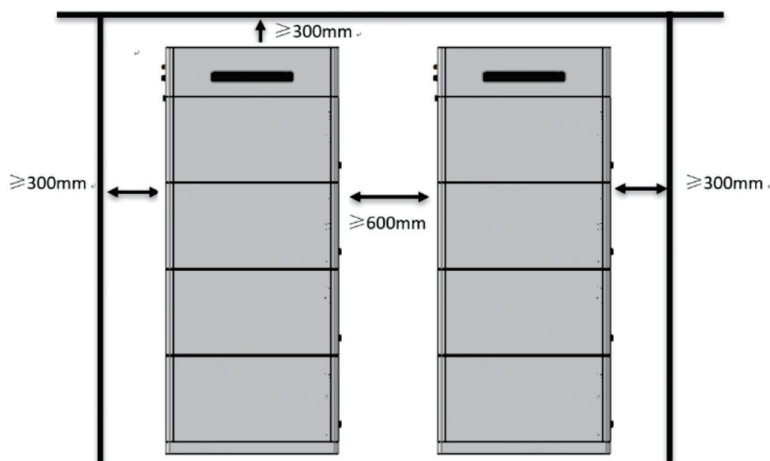
The product supports installation on the ground and with the anti-tilting device, do not tilt the product forward, upside down, backward and sideways installation.

**Installation position**

If you choose other types of walls and floors, the walls and floors should meet the load-bearing requirements of the equipment, and the walls and floors where the installation is located should have fire retardant properties.

## Installation space

When installing this product, make sure there is no other equipment (except for the installation of necessary equipment, masking devices) and flammable and explosive materials around, and reserve sufficient installation space as shown in the following figure (for example, the highest stacking method of this product) to ensure installation, heat dissipation, safety and other needs.



### 4.5.2 Installation Precautions

- The battery are heavy. There is a risk of injury if the battery is not lifted or dropped properly during transportation or during installation or removal.
- Two or more people lift and transport the inverter and battery.
- When wiring the battery, it must be well protected, one person should wire and one person should supervise and check to prevent the battery short circuit accident.
- The electrical connection must be complete and firm, and the installation position and direction of the CT on the grid side must be correct (the direction of the arrow of the CT faces the grid side), otherwise the current will not be detected; in addition, if you need to realize the backflow prevention, the CT should be installed on the main road of the grid.
- The installer should wear protective equipment.

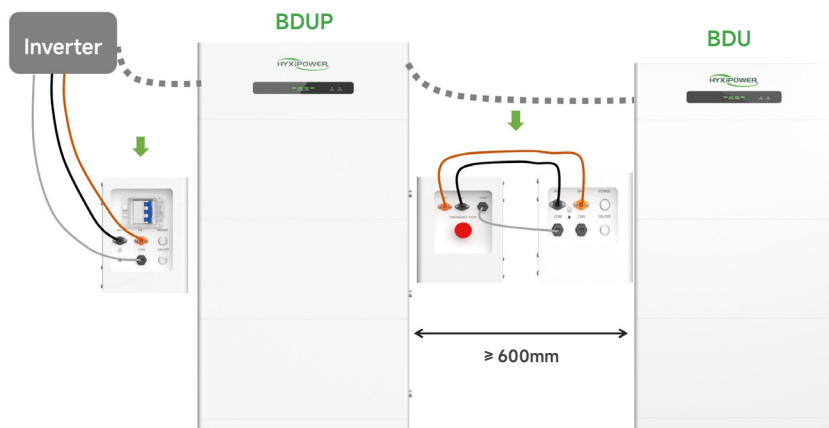
## 4.6 Product Installation Instructions

### 4.6.1 Parallel System Connection Diagram

The diagram shows the connection of the Parallel BDU to the Single string BDU and the Parallel BDU to the inverter. The Parallel BDU is higher than the Single string BDU.

A. The connection between the Parallel BDU and the Single string BDU consists of the high voltage cable and the COM communication wiring harness.

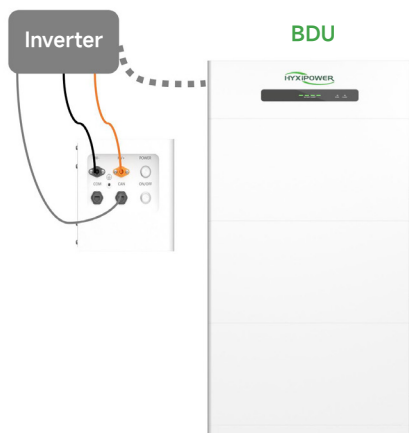
B. The connection between the Parallel BDU and the inverter consists of the high voltage cable and the CAN communication wiring harness.



### 4.6.2 Single String System Connection Diagram

The diagram shows the connection of the Single string BDU to the inverter.

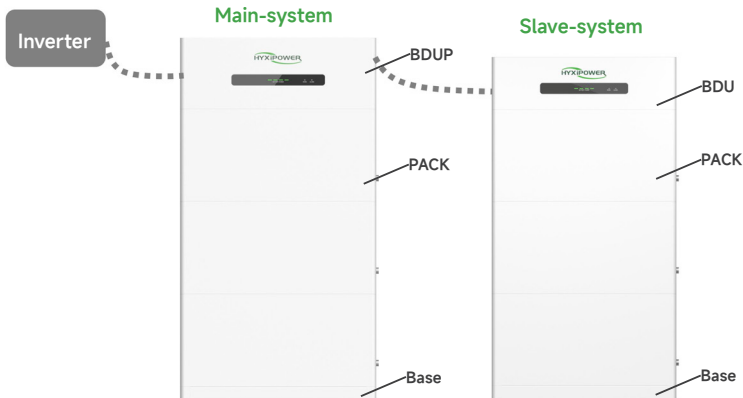
The connection between the Single string BDU and the inverter consists of the high voltage cable and the CAN communication wiring harness.



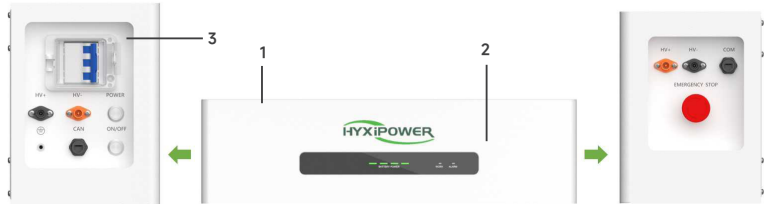
## 4.7 Product Appearance Diagram


### 4.7.1 Overall Appearance Diagram

Overview of the high voltage battery system.



### 4.7.2 Parallel BDU Appearance Schematic




| No.   | Description                                      |
|---|--|
| 1   | Parallel Battery energy distribution unit (BDUP) |
| 2   | BDUP display panel                               |
| 3   | Circuit breaker                                  |
| EMERGENCY STOP  | Parallel BDU emergency stop switch               |
| HV-   | High-voltage negative connector                  |
| HV+   | High-voltage positive connector                  |
| COM   | Debugging connector                              |
| CAN   | Inverter CAN communication connector             |
| ON/OFF  | High voltage power on button                     |
| POWER   | 12V low voltage power on button                  |
|  | Ground connection point                          |



4.7.3 Single String BDU Appearance Schematic

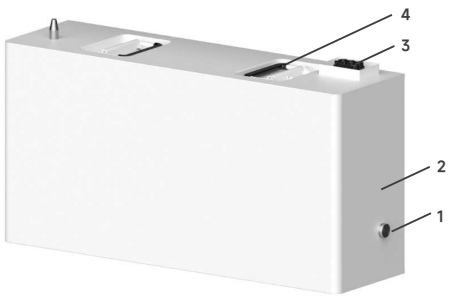
The overview of the Single string BDU is shown as below.



| No.   | Description  |
|---|--|
| 1   | Single string Battery energy distribution unit (BDU) |
| 2   | BDU display panel                                    |
| EMERGENCY STOP  | BDU emergency stop switch                            |
| HV-   | High-voltage negative connector                      |
| HV+   | High-voltage positive connector                      |
| COM   | Debugging connector                                  |
| CAN   | Inverter CAN communication connector                 |
| ON/OFF  | High voltage power on button                         |
| POWER   | 12V low voltage power on button                      |
|  | Ground connection point                              |

4.7.4 Schematic Diagram of Battery PACK Appearance

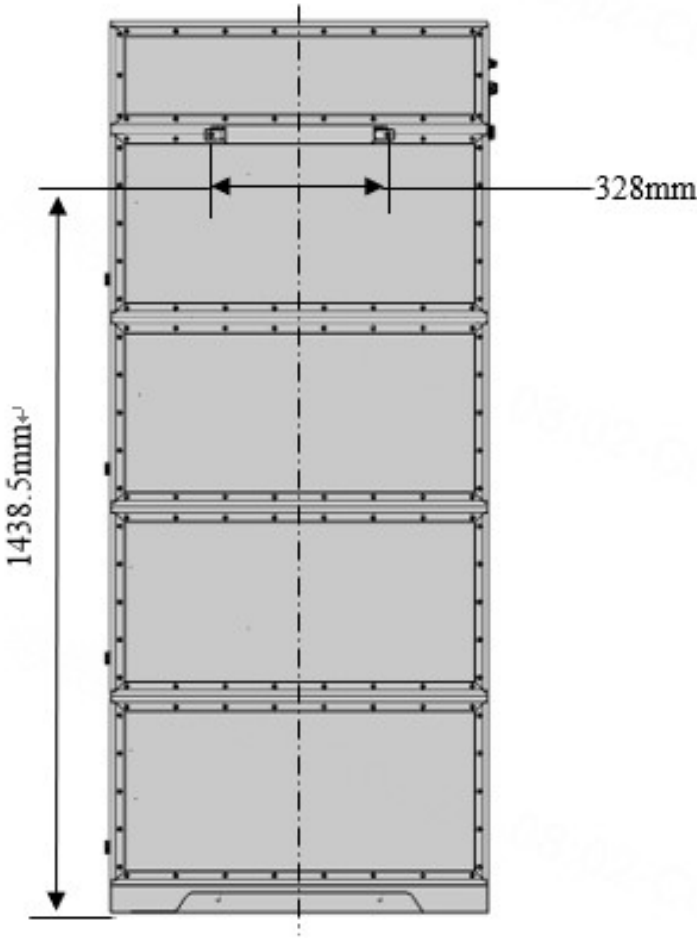
The standard capacity of a single pack module is 5 kWh.



| No. | Description   |
|-----|---|
| 1   | Pressure relief valve   |
| 2   | Battery PACK  |
| 3   | High voltage & communication connector (one on the top & one on the bottom) |
| 4   | PACK puller   |

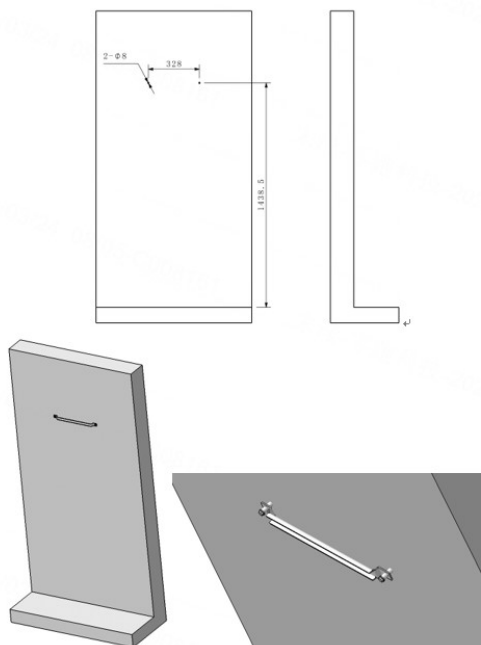
**4.7.5 Installation Holes for Floor-mounting**

The dimensions of the installation holes for the floor-mounted anti-tip structure of this product (taking the highest stacking method of this product as an example):

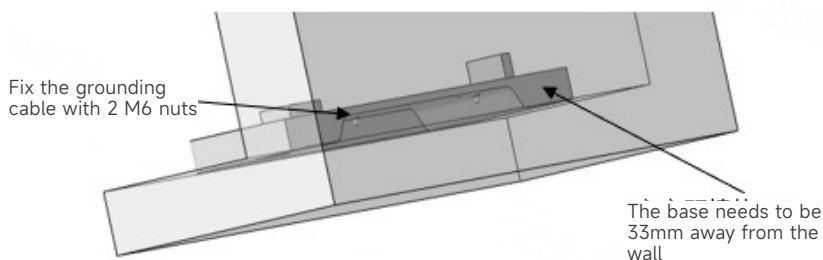


## 4.8 Installation Steps for Floor-mounting

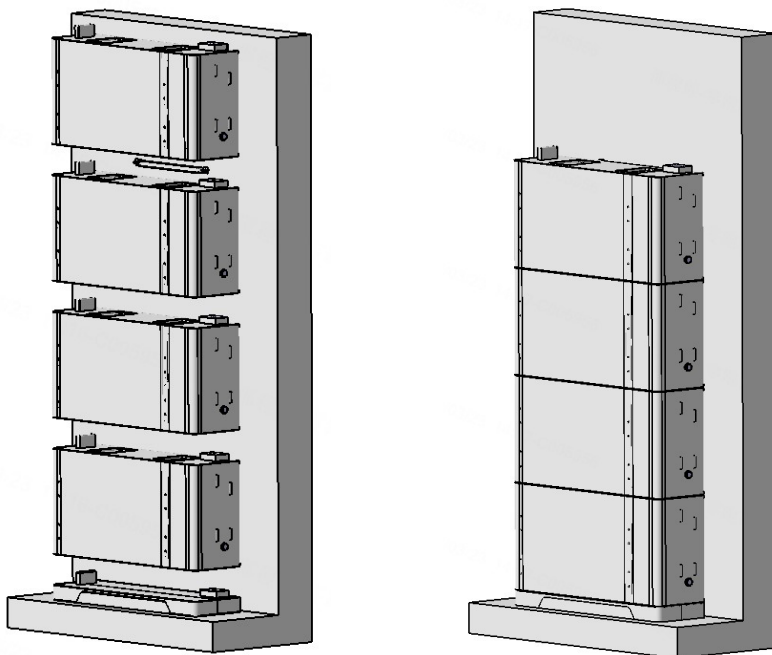
**Step 1:** Wall drilling and installation of wall ties, after selecting a suitable installation site and reserving sufficient installation space, use a tape measure and with the level of the vertical wall to mark a good hole, use an impact drill to drill a fixed hole of 10mm diameter, the depth of the hole is at least 50mm, the expansion screw into the hole, the wall ties on one side of the wall will be installed and locked in the wall.



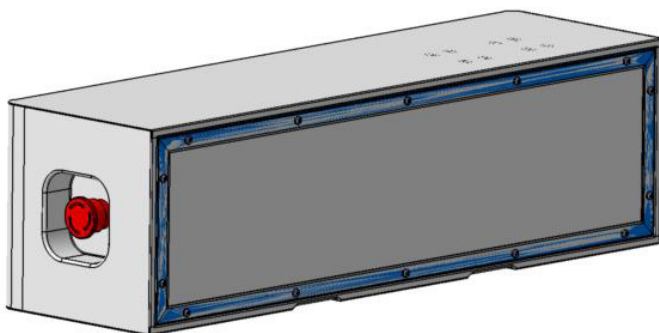
**Step 2:** Ground the base.



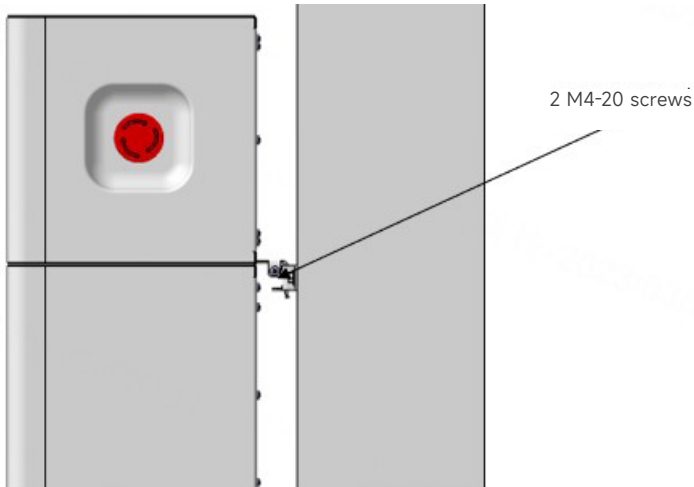
**Step 3:** PACK stacking, according to the installation position of the wall-mounted ties, with the help of a horizontal ruler and marker to determine the placement of the base, PACK stacking in turn to ensure accurate positioning, tightly connected, before and after stacking.



**Step 4:** BDU installation anti-tip bracket, the anti-tip bracket through four M5-8 countersunk head screws fixed in the bottom of the BDU, while paying attention to the installation direction of the anti-tip bracket, the normal installation, the outer flip side of the bracket towards the bottom.



**Step 5:** BDU stacking and hanging anti-toppling device, the BDU installed anti-toppling bracket stacked on the PACK in step 3, to ensure accurate positioning, tightly connected at the same time the anti-toppling bracket can be inserted into the wall ties to play the role of anti-toppling, and then lock into two M4-20 antitheft screws, the installation is completed.



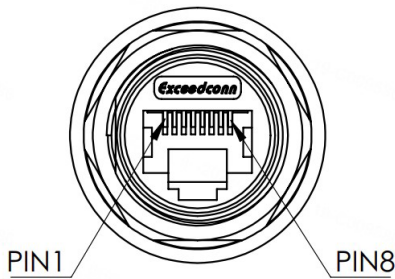
**⚠ DANGER**

- Before drilling, please make sure to avoid the pre-buried utility lines in the wall to avoid danger;
- To prevent dust from entering human respiratory tract or eyes when punching holes, personnel should wear appropriate protective gear;
- Every time you stack a PACK, you need to check the stacking position of the PACK to avoid dumping due to rapid stacking;
- Ensure that the switch is closed when stacking BDU at the end to avoid danger.

# 5 Electrical & Com. Connection

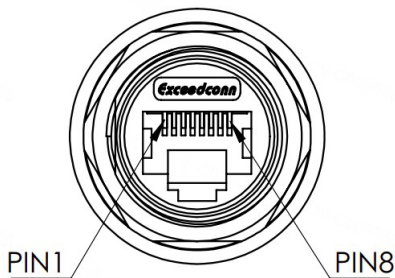
## 5.1 Electrical and Communication Interfaces

### 5.1.1 Communication Interface (COM.)



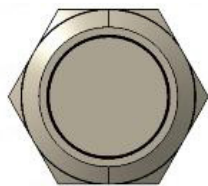
| Pins | Name               | Function      | Connector |
|------|--------------------|---------------|-----------|
| 1    | D_CANH             | Debugging CAN | RJ45      |
| 2    | D_CANL             | Debugging CAN | RJ45      |
| 3    | /                  | /             | /         |
| 4    | CH_CANH            | PCS_CAN       | RJ45      |
| 5    | CH_CANL            | PCS_CAN       | RJ45      |
| 6    | /                  | /             | /         |
| 7    | DO output positive | DO signal     | RJ45      |
| 8    | DO output negative | DO signal     | RJ45      |

5.1.2 Communication Interface (CAN)



| Pins | Name               | Function      | Connector |
|------|--------------------|---------------|-----------|
| 1    | D_CANH             | Debugging CAN | RJ45      |
| 2    | D_CANL             | Debugging CAN | RJ45      |
| 3    | /                  | /             | /         |
| 4    | CH_CANH            | PCS_CAN       | RJ45      |
| 5    | CH_CANL            | PCS_CAN       | RJ45      |
| 6    | /                  | /             | /         |
| 7    | DO output positive | DO signal     | RJ45      |
| 8    | DO output negative | DO signal     | RJ45      |

5.1.3 12V Power Button



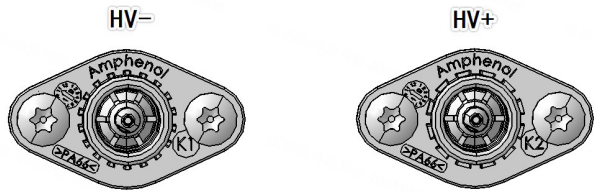
| Button | Function            |
|--------|---------------------|
| POWER  | 12V power on button |

5.1.4 High-voltage Power Button



| Button | Function                     |
|--------|------------------------------|
| ON/OFF | High-voltage power on button |

5.1.5 12V High Voltage Power Interface



| Pins | Name            | Function                     | Remarks  | Connector  |
|------|-----------------|------------------------------|----------|------------|
| 1    | PV module       | High voltage output negative | HV cable | Quick plug |
| 2    | String Inverter | High voltage output positive | HV cable | Quick plug |

5.2 Electrical Connection

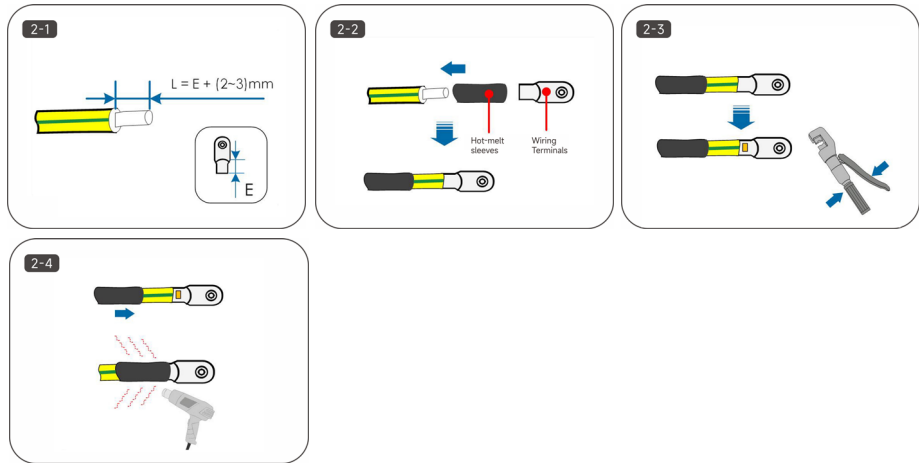
5.2.1 Grounding procedure

The cross-sectional area of the secondary grounding cable must be the same as the cross-sectional area of the PE core in the AC cable.

The secondary grounding cable and terminal block are to be prepared by the customer.

**Step 1:** Make the cable and crimp the terminal block.

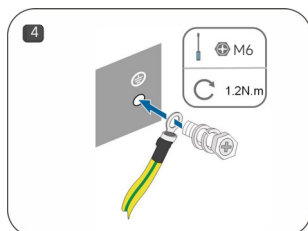
**Step 2:** Remove the screws from the grounding terminal and use a screwdriver to secure the cable.





**Step 3:** Apply silicone or paint to the grounding terminal to improve its corrosion resistance.

**Step 4:** Use an M6 hex socket electric tool (or a manual M6 hex socket wrench) to secure the grounding wire harness to the grounding position on the base with two M6 hex flange nuts.

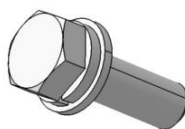


### 5.2.2 Grounding connection

Use two OT terminals to make a ground wire, and then use the ground screw to lock the ground wire to the BDU's ground connection point.



OT terminal\*2

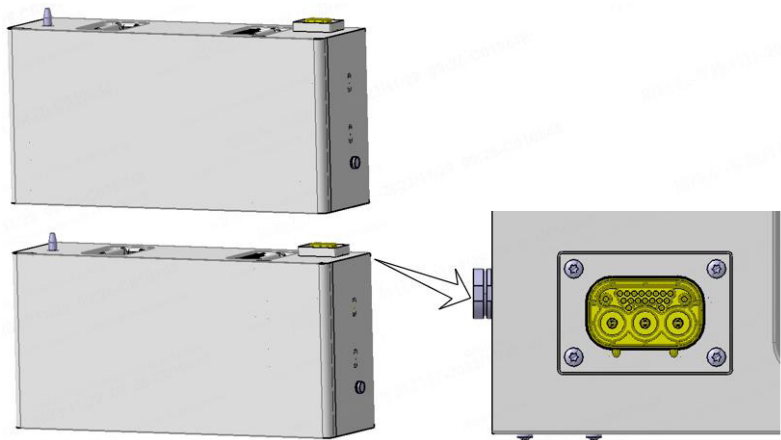


Ground screw

5.2.3 PACK to PACK Connection

High and low voltage mixed connector.

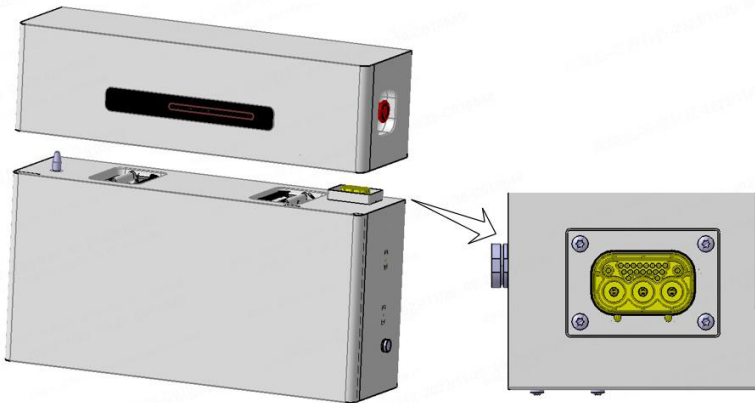
| Pins | Name    | Function                          |
|------|---------|-----------------------------------|
| A    | PE      | Potential Equalization connection |
| B    | PACK+   | HV Power positive                 |
| C    | PACK-   | HV Power negative                 |
| 3    | TXM_LN  | Daisy chain communication_ Low    |
| 4    | TXM_HN  | Daisy chain communication_ High   |
| 5    | WAKE UP | Active BMS                        |
| 6    | 12V-    | 12V power negative                |
| 11   | TXP_LP  | Daisy chain communication_ Low    |
| 12   | TXP_HP  | Daisy chain communication_ High   |
| 14   | 12V+    | 12V power positive                |



## 5.2.4 PACK to BDU Connection

High and low voltage mixed connector.

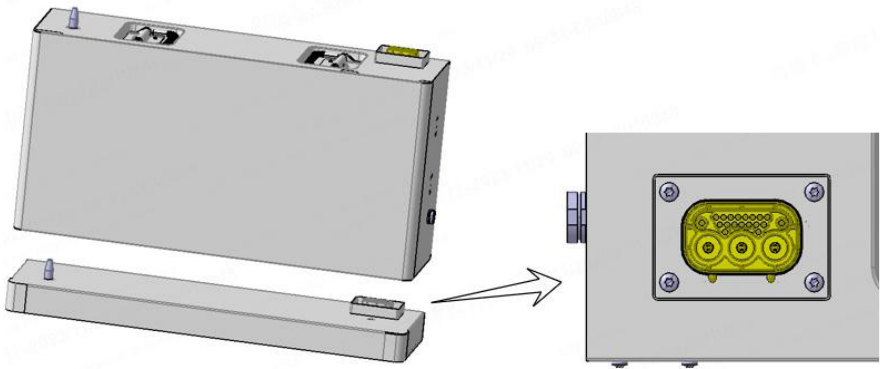
| Pins | Name    | Function                          |
|------|---------|-----------------------------------|
| A    | PE      | Potential Equalization connection |
| B    | PACK+   | HV Power positive                 |
| C    | PACK-   | HV Power negative                 |
| 3    | TXM_LN  | Daisy chain communication_ Low    |
| 4    | TXM_HN  | Daisy chain communication_ High   |
| 5    | WAKE UP | Active BMS                        |
| 6    | 12V-    | 12V power negative                |
| 11   | TXP_LP  | Daisy chain communication_ Low    |
| 12   | TXP_HP  | Daisy chain communication_ High   |
| 14   | 12V+    | 12V power positive                |



5.2.5 PACK to BASE Connection

High and low voltage mixed connector.

| Pins | Name   | Function                          |
|------|--------|-----------------------------------|
| A    | PE     | Potential Equalization connection |
| B    | PACK+  | HV Power positive                 |
| C    | PACK-  | HV Power negative                 |
| 3    | TXM_LN | Daisy chain communication_ Low    |
| 4    | TXM_HN | Daisy chain communication_ High   |
| 11   | TXP_LP | Daisy chain communication_ Low    |
| 12   | TXP_HP | Daisy chain communication_ High   |



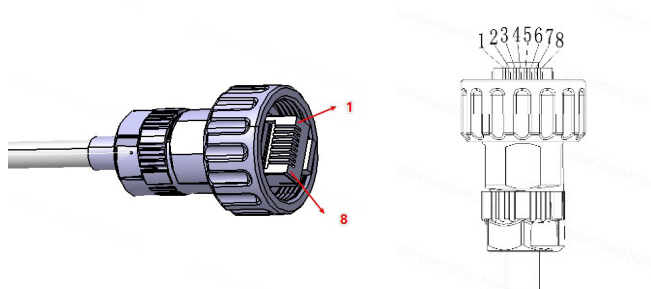
5.2.6 Parallel BDU to INV Connection

Making BMS communication cables

To ensure the normal operation of the BMS and inverter wiring before the BMS communication cable needs to be made.

The communication cables are defined as follows:

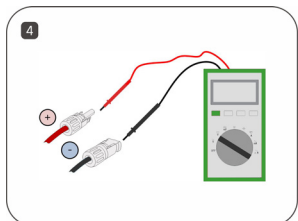
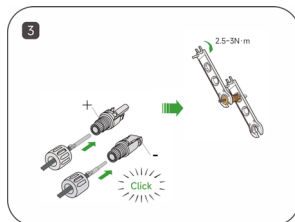
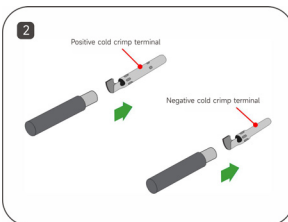
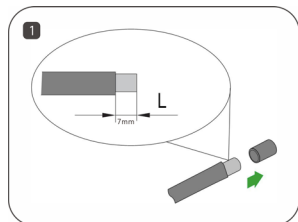
| Pins | Name               | Function      | Connector |
|------|--------------------|---------------|-----------|
| 1    | D_CANH             | Debugging CAN | RJ45      |
| 2    | D_CANL             | Debugging CAN | RJ45      |
| 3    | /                  | /             | /         |
| 4    | CH_CANH            | PCS_CAN       | RJ45      |
| 5    | CH_CANL            | PCS_CAN       | RJ45      |
| 6    | /                  | /             | /         |
| 7    | DO output positive | DO signal     | RJ45      |
| 8    | DO output negative | DO signal     | RJ45      |



### Electrical connection of BDU and inverter

**Step 1:** Strip off the insulation layer of all DC cables by about 7mm.

**Step 2:** Use crimping pliers to bundle the cable ends at the wiring terminals.



**Step 3:** Connect the inverter's negative quick plug to the HV- socket of the battery BDUP.

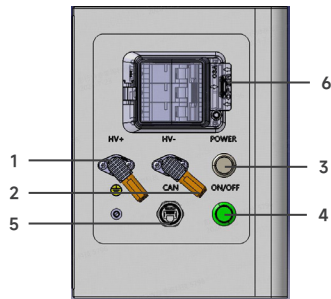
**Step 4:** Connect the positive quick plug of the inverter to the HV+ socket of the battery BDUP.

**Step 5:** Connect the inverter's MBDU communication cable to the CAN port of BDUP.

5.2.7 Switch On When System Connected

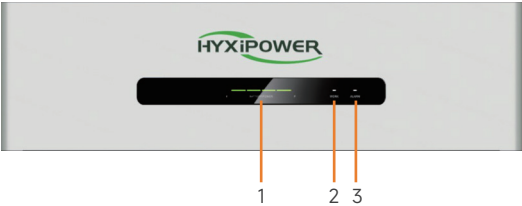
When all system connections have been made, turn "POWER" button and "ON/OFF" button on.

| Pins | Name    | Function                         |
|------|---------|----------------------------------|
| 1    | HV+     | High-voltage positive connector  |
| 2    | HV-     | High-voltage negative connector  |
| 3    | POWER   | 12V low voltage power on button  |
| 4    | ON/OFF  | High voltage power on button     |
| 5    | CAN     | Inverter communication connector |
| 6    | Breaker | Circuit breaker                  |



# 6 LED Indicator Description

## 6.1 LED display and system status



| Pins | Name       |
|------|------------|
| 1    | SOC Green  |
| 2    | WORK Green |
| 3    | ALARM Red  |

| System Status      | WORK              | ALARM             | SOC                            |  |  |  |
|--------------------|-------------------|-------------------|--------------------------------|--|--|--|
|                    |                   |                   |                                |  |  |  |
| Shutdown           | Off               | Off               | Off                            |  |  |  |
| Idle state         | On 0.5s, off 1.5s | Off               | According to the power display |  |  |  |
| Normal operation   | On                | On 0.5s, off 0.5s | According to the power display |  |  |  |
| First level alarm  | On                | On 0.5s, off 1.5s | According to the power display |  |  |  |
| Second level alarm | Off               | Off               | According to the power display |  |  |  |
| Third level alarm  | Off               | On                | According to the power display |  |  |  |

## 6.2 SOC lamp and capacity correspondence

| System Status       | Charging          |                   |                   |                   | Discharging |     |     |     |
|---------------------|-------------------|-------------------|-------------------|-------------------|-------------|-----|-----|-----|
| Capacity indicator  |                   |                   |                   |                   |             |     |     |     |
| SOC<25%             | On 0.5s, off 1.5s | Off               | Off               | Off               | On          | Off | Off | Off |
| 25% ≤ SOC<50%       | On                | On 0.5s, off 1.5s | Off               | Off               | On          | On  | Off | Off |
| 50% ≤ SOC<75%       | On                | On                | On 0.5s, off 1.5s | Off               | On          | On  | On  | Off |
| 75% ≤ SOC<90%       | On                | On                | On                | On 0.5s, off 1.5s | On          | On  | On  | On  |
| 90% ≤ SOC<100%      | On                | On                | On                | On                | On          | On  | On  | On  |
| Operation indicator | On                |                   |                   |                   |             |     |     |     |

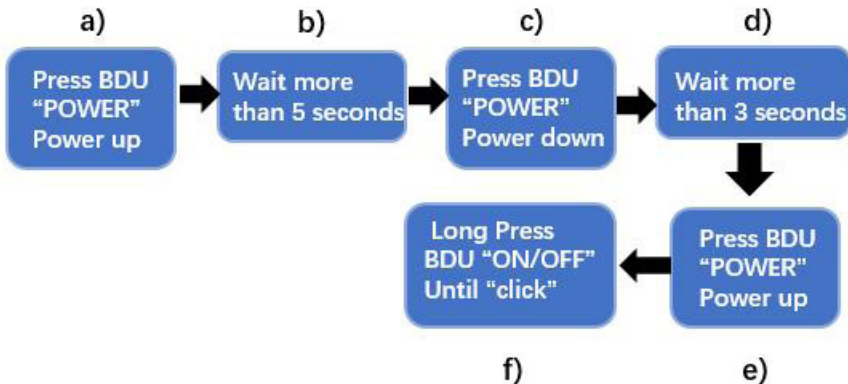
# 7 Battery System Startup and Shutdown Procedure

## 7.1 Single String System Startup Steps.

### The first-time battery system startup after installation

- a) Press the BDU "POWER" button, both indicators of "POWER" and "ON/OFF" light up.
- b) Wait for more than 5 seconds.
- c) Press the BDU "POWER" button, both indicators of "POWER" and "ON/OFF" will go out.
- d) Wait for more than 3 seconds.
- e) Press the BDU "POWER" button, both indicators of "POWER" and "ON/OFF" light up.
- f) Long press the BDU "ON/OFF" button for more than 3s until hear "click".
- g) All LED indicators are on, indicating that the system is running. The system startup is complete.

\*When first installed, the battery system requires two "POWER" reboot processes for internal validation.



### Battery system startup normal process when NOT first installation

- a) Press the BDU "POWER" button, both indicators of "POWER" and "ON/OFF" light up.
- b) Long press the BDU "ON/OFF" button for more than 3s until hear "click".
- c) All LED indicators are on, indicating that the system is running. The system startup is complete.



## Battery system shutdown process

- a) Long press the BDU “ON/OFF” button for more than 3s until hear “click”.
- b) Press the BDU “POWER” button, both indicators of “POWER” and “ON/OFF” will go out.
- c) All LED indicators are on, indicating that the system is running. The system startup is complete.

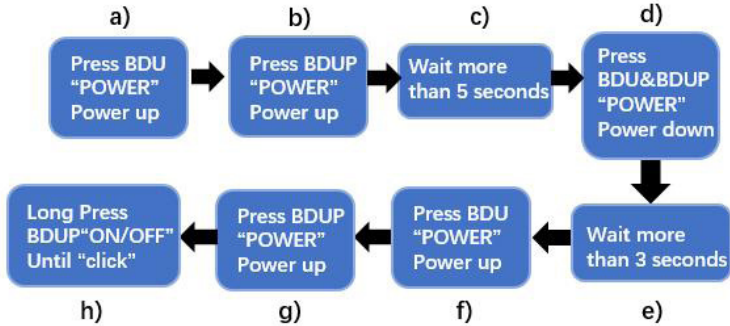
### BDU



## 7.2 Parallel System Startup Steps

**The first-time battery system startup after installation (When first installed, the battery system requires two "POWER" reboot processes for internal validation).**

- a) Press the BDU “POWER” button, both indicators of “POWER” and “ON/OFF” of the BDU light up.
- b) Press the BDUP “POWER” button, both indicators of “POWER” and “ON/OFF” of the BDUP light up.
- c) Wait for more than 5 seconds.
- d) Press the BDUP “POWER” button and the BDU “POWER” button again to turn off (Arbitrary order), both indicators of “POWER” and “ON/OFF” will go out.
- e) Wait for more than 3 seconds.
- f) Press the BDU “POWER” button, both indicators of “POWER” and “ON/OFF” of the BDU lights up.
- g) Press the BDUP “POWER” button, both indicators of “POWER” and “ON/OFF” of the BDUP light up.
- h) Long press the BDUP “ON/OFF” button for more than 3s until hear “click”. No need to press the BDU “ON/OFF” button.
- i) All LED indicators are on, indicating that the system is running. The system startup is complete.



### Battery system startup normal process when NOT first installation

- a) Press the BDU "POWER" button, both indicators of "POWER" and "ON/OFF" of the BDU light up.
- b) Press the BDUP "POWER" button, both indicators of "POWER" and "ON/OFF" of the BDUP light up.
- c) Long press the BDUP "ON/OFF" button for more than 3s until hear "click". No need to press the BDU "ON/OFF" button.
- d) All LED indicators are on, indicating that the system is running. The system startup is complete.

### Battery system shutdown process.

- a) Long press the BDUP "ON/OFF" button for more than 3s until hear "click".
- b) Press the BDUP "POWER" button and the BDU "POWER" button (Arbitrary order), both indicators of "POWER" and "ON/OFF" will go out.
- c) All LED indicators are on, indicating that the system is running. The system startup is complete.



## 8 Online Monitoring

All the battery data is uploaded to the inverter, and the monitoring is uploaded from the inverter side.

## 9 Routine Maintenance

### 9.1 Routine maintenance

- Please shutdown the battery system if the inverter is on off-grid status and does not work for more than three days. Please refer to the procedure of chapter 7 to shut down the system.
- If the energy storage system is not used for more than three months, it is necessary to charge the energy storage battery to a full charge to avoid over-discharge due to self-consumption of the system.
- The battery has a discharge depth of 85%, i.e. the system stops discharging when 15% of the power SOC remains. It is recommended to charge in time.
- If the battery does not receive a charge source (from PV or GRID) for an extended period, please turn off the "12V" button. Otherwise, self-consumption may deplete the battery completely.

#### Product cleaning

- First, gently wipe the surface with a soft microfiber cloth to remove dust or debris.
- Moisten the cloth with water (neutral detergent can also be added) and wring out excess water.
- Wipe away any debris or dirt.
- Finally, wipe off all water from the surface with a dry microfiber cloth.

#### CAUTION

- The cleaning process should be carried out away from electrical connections to prevent water from getting inside the product housing, connection ports, etc.
- Do not wipe the product with reagents other than water (H2O).

### 9.2 General Troubleshooting

#### Battery communication failure:

- Failure analysis: CAN communication or 485 communication failure.
- Solution: Check if the communication line is in good contact.

#### Battery over-undervoltage fault:

- Failure Analysis: Voltage range is not compatible with the battery and the battery energy is insufficient.
- Solution: Check the battery voltage, PV or whether it will be charged automatically when there is grid.

**Overload fault:**

- Failure Analysis: The load is too large.
- Solution: Check whether the load exceeds the machine power, all down and then part of the load up.

**Output short circuit fault:**

- Fault analysis: There is a short circuit working condition on the load side.
- Solution: All power down, after the power indicator goes off, check whether the load is short circuited, and then power up after troubleshooting.

**9.3 Storage Requirements:**

- Short-term storage (duration <1 month): Temperature  $\leq 50^{\circ}\text{C}$ .
- Long-term storage (3 months): Temperature  $\leq 35^{\circ}\text{C}$ , battery charge state at 30%-50%.
- Long-term storage (more than 6 months): Temperature  $\leq 25^{\circ}\text{C}$ , battery charge state at 30%-50%.
- When not in use for an extended period, it is recommended to perform a standard charge and discharge maintenance on the battery every 6 months. The battery should be stored at a charge state of 30%-50%.

**Note:** Long-term storage can lead to irreversible loss of battery capacity. For example, according to CN national standards, a battery stored at  $45^{\circ}\text{C}$  with 50% state of charge (SOC) for 28 days should have a capacity recovery rate of  $>94\%$ .

It is recommended to fully charge each battery pack to 100% SOC before installing a new system or expanding energy capacity, and then proceed with the installation or expansion.

**SOC Handling:**

Occasional SOC fluctuation are considered normal and do not affect the normal operation of the system. If SOC fluctuates frequently, please contact the installer or manufacturer.

It is recommended to fully charge each battery pack to 100% SOC before installation or energy expansion for a new system. Then proceed with installation or expansion.

**9.4 Alarm Description**

The following alarms are recoverable alarms, please refer to the following table to process and resume operation.






| Fault name                    | Action   | Recovery conditions   |
|-------------------------------|--|---|
| Battery discharge overcurrent | Prohibition of discharge/disconnect high voltage relay | <ul style="list-style-type: none"><li>• Turn off part of the load.</li><li>• Restart the device.</li></ul>                    |
| Battery charge overcurrent    | Prohibition of charge/ disconnect high voltage relay   | <ul style="list-style-type: none"><li>• Restart the device.</li><li>• Please contact HYXiPOWER after-sales service.</li></ul> |
| Battery charge overvoltage    | Prohibition of charge/ disconnect high voltage relay   | <ul style="list-style-type: none"><li>• Restart the device.</li><li>• Please contact HYXiPOWER after-sales service.</li></ul> |

| Fault name                               | Action  | Recovery conditions   |
|--|---|---|
| Battery discharge undervoltage           | Prohibition of discharge / disconnect high voltage relay            | <ul style="list-style-type: none"> <li>Restart the device.</li> <li>Please contact HYXiPOWER after-sales service.</li> </ul>  |
| Battery discharge high temperature       | Prohibition of discharge / disconnect high voltage relay            | <ul style="list-style-type: none"> <li>Turn off the load of the equipment, and leave it until the battery temperature is less than 40°C .</li> <li>Please contact HYXiPOWER after-sales service.</li> </ul> |
| Battery charge high temperature          | Prohibition of charge / disconnect high voltage relay               | <ul style="list-style-type: none"> <li>Leave the battery temperature less than 40°C .</li> <li>Please contact HYXiPOWER after-sales service.</li> </ul>   |
| Battery discharge low temperature        | Prohibition of discharge / disconnect high voltage relay            | <ul style="list-style-type: none"> <li>Leave to wait for the battery temperature is greater than 2°C .</li> <li>Please contact HYXiPOWER after-sales service.</li> </ul>                                    |
| Battery charge low temperature           | Prohibition of charge / disconnect high voltage relay               | <ul style="list-style-type: none"> <li>Leave to wait for the battery temperature is greater than 2°C .</li> <li>Please contact HYXiPOWER after-sales service.</li> </ul>                                    |
| Battery discharge high temperature       | Prohibition of discharge / disconnect high voltage relay            | Turn off the load of the equipment, and leave it until the battery temperature is less than 40°C .  |
| Excessive battery temperature difference | Prohibition of discharge and charge / disconnect high voltage relay | <ul style="list-style-type: none"> <li>Leave the battery temperature difference less than 4°C .</li> <li>Please contact HYXiPOWER after-sales service.</li> </ul>   |
| Tandem cascade communication lost        | Disconnect high voltage relay                                       | Please contact HYXiPOWER after-sales service.   |
| Battery pack communication lost          | Disconnect high voltage relay                                       | <ul style="list-style-type: none"> <li>Check the connection between BDU and battery pack harness.</li> <li>Please contact HYXiPOWER after-sales service.</li> </ul>   |
| Smoke sensor communication lost          | Disconnect high voltage relay                                       | Please contact HYXiPOWER after-sales service.   |
| BDU overtemperature                      | Prohibition of charge and discharge/ disconnect high voltage relay  | <ul style="list-style-type: none"> <li>Leave to BDU temperature less than 40°C .</li> <li>Please contact HYXiPOWER after-sales service.</li> </ul>  |
| BDU main positive relay failure          | Prohibition of charge and discharge/ disconnect high voltage relay  | Please contact HYXiPOWER after-sales service.   |
| BDU main negative relay failure          | Prohibition of charge and discharge/ disconnect high voltage relay  | Please contact HYXiPOWER after-sales service.   |
| Pre-charge fault                         | Prohibit high voltage   | <ul style="list-style-type: none"> <li>Turn off part of the load.</li> <li>Restart the device.</li> </ul>   |




| Fault name                                   | Action  | Recovery conditions  |
|--|---|--|
| BMS self-test fault                          | Prohibit high voltage   | <ul style="list-style-type: none"> <li>Restart the device.</li> <li>Please contact HYXiPOWER after-sales service.</li> </ul> |
| Battery temperature detection sensor failure | Prohibition of charge and discharge/disconnect high voltage relay | <ul style="list-style-type: none"> <li>Restart the device.</li> <li>Please contact HYXiPOWER after-sales service.</li> </ul> |
| Cell voltage sampling line failure           | Prohibition of charge and discharge/disconnect high voltage relay | <ul style="list-style-type: none"> <li>Restart the device.</li> <li>Please contact HYXiPOWER after-sales service.</li> </ul> |
| Low insulation resistance of BDU             | Prohibit high voltage   | <ul style="list-style-type: none"> <li>Restart the device.</li> <li>Please contact HYXiPOWER after-sales service.</li> </ul> |

# 10 Appendix

## 10.1 Technical Parameter

| Battery System                        | HYX-E50-H2  | HYX-E100-H2  | HYX-E150-H2  | HYX-E200-H2  | HYX-E250-H2  |
|---------------------------------------|---|--|--|--|--|
| Module Number                         | <br>1 Module | <br>2 Modules | <br>3 Modules | <br>4 Modules | <br>5 Modules |
| Nominal Battery Energy [kWh]          | 5.3   | 10.6   | 15.9   | 21.2   | 26.5   |
| Available Energy [¹ kWh]              | 5   | 10   | 15   | 20   | 25   |
| Nominal Voltage [V]                   | 102.4   | 204.8  | 307.2  | 409.6  | 512  |
| Working Voltage [V]                   | 86.4 ~ 115.2  | 172.8 ~ 230.4  | 259.2 ~ 345.6  | 345.6 ~ 460.8  | 432 ~ 576  |
| Rated Output Power [kW]               | 3.0   | 6.0  | 9.0  | 12.0   | 15.0   |
| DOD [%]                               | 95  |  |  |  |  |
| Cell Type                             | LiFePO4   |  |  |  |  |
| Max. Charging/Discharging Current [A] | 32  |  |  |  |  |
| Peak Power [kW]                       | 7, Lasts 10s  |  |  |  |  |
| Peak Current [A]                      | 35, Lasts 10s   |  |  |  |  |
| SOC Indicator                         | 4*LED (25%, 50%, 75%, 100%)   |  |  |  |  |
| State Indicator                       | 2*LED (work, alarm)   |  |  |  |  |
| Communication                         | CAN, RS485  |  |  |  |  |
| Operating Temperature [°C]            | -10 to +50  |  |  |  |  |
| Ingress Protection Rating             | IP65 (PACK IP67)  |  |  |  |  |
| Working Humidity [RH]                 | 5 ~ 95%   |  |  |  |  |
| Working Altitude [m]                  | < 4000  |  |  |  |  |
| Calendar Life                         | > 6,000 (70%EOL)  |  |  |  |  |
| Dimension [W*H*D, mm]                 | 700*600*200   | 700*950*200  | 700*1300*200   | 700*1650*200   | 700*2000*200   |
| Net Weight [kg]                       | BDU (9kg)*1+PACK (44kg)*N+base (5.6kg)*1  |  |  |  |  |
| Alarms                                | Over charge / Over discharge/Over current /<br>Over temperature / Short Circuit               |  |  |  |  |

\*1: Test conditions: 100% depth of discharge, 0.2C rate charge & discharge at 25°C , at the beginning of service life.

| Battery System                        | HYX-E300-H2   | HYX-E400-H2   | HYX-E500-H2   |
|---------------------------------------|---|---|---|
| Module Number                         |  |  |  |
|                                       | 6 Modules   | 8 Modules   | 10 Modules  |
| BDUP and BDU                          | 3 pack+3 pack   | 4 pack+4 pack   | 5 pack+5 pack   |
| Nominal Battery Energy [kWh]          | 31.8  | 42.4  | 53  |
| Available Energy [kWh]                | 30  | 40  | 50  |
| Nominal Voltage [V]                   | 307.2   | 409.6   | 512   |
| Working Voltage [V]                   | 259.2 ~ 345.6   | 345.6 ~ 460.8   | 432-576   |
| Rated Output Power [kW]               | 18  | 24  | 30  |
| DOD [%]                               |   | 95  |   |
| Cell Type                             |   | LiFePO4   |   |
| Max. Charging/Discharging Current [A] |   | 60  |   |
| SOC Indicator                         |   | 4*LED (25%, 50%, 75%, 100%)   |   |
| State Indicator                       |   | 2*LED (work, alarm)   |   |
| Communication                         |   | CAN, RS485  |   |
| Operating Temperature [°C]            |   | -10 to +50  |   |
| Ingress Protection Rating             |   | IP65 (PACK IP67)  |   |
| Working Humidity [RH]                 |   | 5 ~ 95%   |   |
| Working Altitude [m]                  |   | < 4000  |   |
| Calendar Life                         |   | > 6,000 (70%EOL)  |   |
| Dimension [W*H*D, mm]                 | Master: 700*1350*200<br>Slave: 700*1300*200                                       | Master: 700*1700*200<br>Slave: 700*1650*200                                       | Master: 700*2050*200<br>Slave: 700*2000*200                                       |
| Net Weight [kg]                       | BDUP (10.5kg)*1+BDU (9kg)*1+PACK (44kg)*N+base (5.6kg)*2                          |   |   |
| Alarms                                | Over charge / Over discharge/Over current /<br>Over temperature / Short Circuit   |   |   |



## 10.2 Contact Information

If you have any questions about this product, please contact us.

In order to provide you with faster and better after-sales service, we need your assistance in providing the following information.

- Equipment model : \_\_\_\_\_
- Serial number of the device: \_\_\_\_\_
- Fault code / name: \_\_\_\_\_
- A brief description of the fault phenomenon: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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The manual is subject to change without notice while the product is being improved.



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