



# **Rechargeable Li-ion Battery system**

## **EverCore-(99.9-120)kWh**

## **EverCore-(99.9-120)kWh-PRO**

User Manual Version V1.5

# Category

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# **1. Manual Description**

## **1.1. Scope of Application**

This manual is applicable to the integrated energy storage cabinet:

EverCore-99.9kWh, EverCore-99.9kWh-PRO,

EverCore-100kWh, EverCore-100kWh-PRO,

EverCore-120kWh, EverCore-120kWh-PRO

Hereinafter referred to as "EverCore".

## **1.2. Purpose**

The purpose of this manual is to provide detailed product information and instructions for system installation, operation, maintenance, and use.

## **1.3. Manual Usage**

Before using this system, carefully read this manual and ensure that you understand all safety precautions. Then, use the product.

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The content of the manual will be continuously updated and corrected. If there are slight discrepancies from the physical objects, users should refer to the purchased physical objects

#### 1.4. Terms and Acronyms

|              |                                      |
|--------------|--------------------------------------|
| SolisStorage | Ginlong Energy Storage Co., Ltd.     |
| CAE          | Computer Aided Engineering           |
| BESS         | Battery Energy Storage System        |
| FEA          | Finite Element Analysis              |
| EMU          | Energy Management Unit               |
| BMS          | Battery Management System            |
| BCU          | Battery Cluster Management Unit      |
| BMU          | Battery Management Unit              |
| PDU          | Power Distribution Unit              |
| SOC          | State of Charge                      |
| SOF          | State of Function                    |
| SOH          | State of Health                      |
| OCV          | Open Circuit Voltage                 |
| EMC          | Electromagnetic Compatibility        |
| HV           | High Voltage                         |
| CAN          | Controller Area Network              |
| DVP&R        | Design Verification Planning& Report |
| SOP          | Start of Production                  |
| BOL          | Beginning of Life                    |
| EOL          | End of Life                          |
| DOD          | Depth Of Discharge                   |
| DV           | Design Verification                  |
| Hybrid       | Hybrid Inverter                      |
| PV           | Photovoltaic                         |
| EMS          | Energy Management System             |
| AC Coupling  | Alternating Current Coupling         |
| AC           | Alternating Current                  |



|    |                |
|----|----------------|
| DC | Direct Current |
|----|----------------|

## 2. Safety Instructions

This section provides general safety instructions for the operation process. For specific safety instructions regarding the installation procedures, please refer to the corresponding chapters.

### 2.1. Symbol Usage Instructions

This manual provides relevant information, highlighted with appropriate symbols, for user safety and property protection, and to help users operate the product efficiently and optimally.

The following lists the symbols that may be used in this manual. Please read them carefully to better utilize this manual.

#### Warnings in the document

|                                                                                     |                                                                                                                                                      |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | "DANGER" indicates a high potential for danger. If it is not avoided, it will result in the death or serious injury of personnel.                    |
|   | "WARNING" sign indicates a moderate potential hazard. Failure to avoid it could result in the death or serious injury of personnel                   |
|  | "CAUTION" indicates a low level of potential danger. Failure to avoid it could result in moderate or minor injuries to personnel.                    |
|  | "NOTICE" indicates potential risks. Failure to avoid these risks may result in the equipment not functioning properly. Or result in property damage. |

#### Warnings on the product

|                                                                                     |                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Be aware of dangerous voltage</b><br>This product operates under high voltage. All operations on the product must be carried out in accordance with the instructions provided in the product manual. |
|  | <b>Risk of incorrect operation</b><br>Personnel must operate correctly. Misoperation may result in serious personal injury or equipment damage.                                                         |
|  | <b>Be aware of excessive surface temperature</b><br>The product may get hot during operation. Please do not touch this product during the operation process.                                            |

|                                                                                   |                                                                                                                                                            |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>Risk of crushing</b></p> <p>Do not place your hands inside the movable and/or rotating parts of the product</p>                                      |
|  | <p><b>Risk of high noise levels</b></p> <p>The product can generate high noise levels. Hearing protection should be worn when operating the equipment.</p> |

### Product symbols

|                                                                                     |                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p><b>Risk of door swing angle</b></p> <p>The door opening angle is up to 120, and there are labels attached to the door.</p>                                                                |
|    | <p><b>Unlock direction</b></p> <p>Unlock direction label, which is located on the door</p>                                                                                                   |
| Always pay attention to the danger warning signs on the equipment, including:       |                                                                                                                                                                                              |
|  | <p>This sign indicates high voltage inside the cabinet. Touching it may pose a risk of electric shock</p>                                                                                    |
|  | <p>This symbol indicates that this is the PE terminal for protective grounding. It is necessary to ensure a firm connection for the purpose of safeguarding the safety of the operators.</p> |

## 2.2. Safe Usage Instructions

This section presents the general safety guidelines that need to be followed when operating the system. For the safety instructions in the specific usage and maintenance steps, please refer to the warning explanations in the corresponding chapters.



**Electric shock hazard!** Ignoring the following warnings may result in personal death or serious injury.

Only qualified personnel are allowed to operate, install and maintain the system.

Before work, safety protective equipment must be worn, and the protective equipment should comply with local laws, regulations and standards.

Never touch any electrified parts directly.

Before installing the equipment, the AC circuit must be isolated from the power grid, and the AC connection must be disconnected. The DC circuit must be isolated from the battery pack, and the DC connection must be disconnected.

The equipment should have a grounding cable. If several devices are installed together, each device should be grounded separately. The grounding cable should comply with the corresponding safety standards.

Dehumidify the equipment after installation or a prolonged power outage. Then, test the insulation resistance. Do not start the equipment until the insulation test is passed.

Requirement: The insulation resistance on both the AC and DC sides must be no less than 1 MΩ.

The PCB circuit board may generate high voltage when the equipment is powered on, especially the voltage sampling boards for AC and DC. Therefore, be careful of electric shock when using instruments such as an oscilloscope.

When the equipment malfunctions, the main and auxiliary circuits may generate dangerous voltages. Therefore, before working, measure the voltage and ensure that the voltage is below the safe level.

Do not operate the equipment when the cover or door is open

In rainy weather, do not open the equipment door to avoid water ingress and protect personnel from electric shock.

**⚠ WARNING**

**Warning! Ignoring this warning may result in personal injury.**

Even if the power of the equipment has been turned off, the cooling fan may still be rotating. Please do not touch the rotating parts.

When disassembling the components of the equipment, please wear gloves to prevent scratches.

After the system is powered off, do not touch the radiator, heater surface, bus bars or capacitors. Maybe they are very hot and could burn you.

Do not collide with personnel during equipment handling.

An isolation area should be set up during installation operations.

During the lifting process, move and transfer the equipment carefully.

The installation of all equipment must be carried out by installation personnel who have received training in handling high-voltage electricity.

Do not use or install equipment with any defects, cracks, or damage.

Do not attempt to open, disassemble, repair, tamper with or modify the equipment.

Do not perform outdoor installation during severe weather such as rainstorms or sandstorms.

To protect the equipment and its components from damage during transportation, handle them carefully.

Do not hit, pull, drag or step on the equipment. Do not subject the equipment to any strong force. To prevent damage, keep the equipment in the transportation packaging until ready for installation

Do not insert any foreign objects into any part of the equipment.

Do not expose the equipment or its components to direct flames.

Do not install the equipment near heating devices.

Do not immerse the equipment or its components in water or other liquids.

Place the equipment on a level surface to ensure it is stable and does not shake or tilt

The installation of the equipment should take into account the load capacity of the installation ground and floor (according to the requirements of the construction drawings).

## **CAUTION**

### **Caution! Ignoring the following warnings may damage product components.**

When installing the equipment, do not place the conductive sweep device in the cabinet, as it may damage the equipment.

Install the equipment on the platform using the specified strength bolts, and the bolts should comply with the installation requirements.

Ensure that the equipment has good heat dissipation, and the ventilation pipe should not be blocked

Ensure that the electrical bolts are always tightened to the exact torque specified in this document.

If the equipment is not powered for a long time, its lifespan will be affected.

Do not use cleaning agents to clean the equipment, or expose the equipment to flammable or irritating chemical substances or vapors.

Do not use components that have not been authorized by Solis

The transfer and lifting diagrams in this document are for reference only. The specific tools and equipment shall be selected according to the actual site conditions.

## **NOTICE**

The power/battery module is too heavy and requires multiple people to move it. Appropriate protective equipment should be worn, and the protective equipment should comply with local laws, regulations and standards.

Unless otherwise specified, all dimensions are in millimeters.

### **2.2.1. Personnel Requirements**

Only professional electricians or personnel with professional qualifications can perform all operations on this product.

Operators should be fully familiar with the composition and working principle of the entire system.

Operators should be fully acquainted with this manual.

Operators should be fully aware of the relevant standards of the project's location area.

### 2.2.2.Setting of Safety Warning Signs

Please follow the following guidelines when implementing installation, daily maintenance, and inspection operations of this system, in order to prevent irrelevant personnel from approaching and causing incorrect operations or accidents:

Set up clear signs at the front and rear switch positions of the equipment under maintenance to prevent accidental closing of the switch and resulting accidents

Establish warning signboards or set up safety warning tapes near the operation area.

### 2.2.3.Requirements for Escape Routes

To ensure that staff can evacuate the site promptly in case of an emergency, please follow the following guidelines:

During maintenance, repair, or other operations on the equipment, it is essential to ensure that the escape routes are completely unobstructed.

It is strictly prohibited to pile up any items or occupy the escape routes in any way.

### 2.2.4.Electrical Measurement

#### DANGER

There is high voltage in the system. Accidental contact may cause a fatal electric shock hazard. Therefore, when conducting measurements while the system is energized, the following should be done:

Take protective measures (such as wearing insulating gloves).

There must be a companion to ensure personal safety.

### 2.2.5.Usage of Measuring Equipment

#### WARNING

There is a high voltage in the system. Accidental contact could lead to a fatal electric shock hazard. Therefore, when conducting measurements while the system is energized, you should.

Select high-quality measuring equipment whose range and operational conditions meet the requirements of the site.

Ensure that the connections of the measuring equipment and the operation follow the correct procedures to avoid potential hazards such as electric arcs

### 2.2.6.System Parameters Setting

Some EMS parameters in the system software can be set, and they are closely related to the operation of the system. Such EMS parameters can only be set after a reliable analysis and evaluation of the system's operation status.

#### **⚠ WARNING**

Improper parameter settings may affect the normal operation of the system.  
Only professionals are permitted to set the parameters of the system.

### 2.2.7.Moisture Protection

#### **NOTICE**

The ingress of moisture is highly likely to damage electrical equipment! To ensure the normal operation of all system functions, please follow the following items:

When the air humidity is over 95%, do not open the system or equipment doors.

Avoid conducting maintenance or repair operations on the system in rainy or humid weather conditions.

### 2.2.8. Precautions during Maintenance or Repair

#### **⚠ WARNING**

After the system stops running, please wait for at least 10 minutes before conducting maintenance or repair operations on the system. After the system is shut down, when performing maintenance or repair operations on the system, be sure to:

Ensure that the system will not be accidentally re-powered.

Use a multimeter or an electric tester to check and ensure that the system is completely de-energized.

Cover the adjacent potentially electrified components with insulating materials.

During the entire maintenance and repair process, ensure that the escape route is completely unobstructed.

### 2.2.9.Product Scrap

Scrap products shall be immediately recovered and disposed of by the designated qualified manufacturer. In order to avoid safety accidents or serious environmental pollution, it is strictly forbidden to discard discarded products.



## 2.2.10. Personal Protective Equipment (PPE)

### **⚠ WARNING**

It is strictly prohibited to carry out maintenance or repair operations when the equipment is powered on

When conducting maintenance or repair on the equipment, it is recommended that at least two personnel be present on site.

When performing maintenance or repair on the equipment, turn off the system and use a multimeter or an electric tester pen to test to ensure that the system is completely de-energized.

PPE is determined by the incident energy (in Cal/cm<sup>2</sup>) generated by an arc flash at a specified working distance (typically 18 inches). The PPE requirements for EverCore operation correspond to PPE Category 2.

| PPE CATEGORY 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PPE CATEGORY 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PPE CATEGORY 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PPE CATEGORY 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Minimum Arc Rating of<br/><b>4 cal/cm<sup>2</sup></b></p> <p><b>Arc Rated Clothing:</b></p> <ul style="list-style-type: none"> <li>• AR long-sleeve shirt and pants, or AR coverall</li> <li>• AR face shield, or AR flash suit hood</li> <li>• AR jacket, parka, rainwear, or hard hat liner (as needed)</li> </ul> <p><b>Protective Equipment:</b></p> <ul style="list-style-type: none"> <li>• Hard hat</li> <li>• Safety glasses or safety goggles</li> <li>• Hearing protection (with inserts)</li> <li>• Heavy-duty leather gloves</li> <li>• Leather footwear (as needed)</li> </ul>  | <p>Minimum Arc Rating of<br/><b>8 cal/cm<sup>2</sup></b></p> <p><b>Arc Rated Clothing:</b></p> <ul style="list-style-type: none"> <li>• AR long-sleeve shirt and pants, or AR coverall</li> <li>• AR flash suit hood, or AR face shield and AR balaclava</li> <li>• AR jacket, parka, rainwear, or hard hat liner (as needed)</li> </ul> <p><b>Protective Equipment:</b></p> <ul style="list-style-type: none"> <li>• Hard hat</li> <li>• Safety glasses or safety goggles</li> <li>• Hearing protection (with inserts)</li> <li>• Heavy-duty leather gloves</li> <li>• Leather footwear</li> </ul>  | <p>Minimum Arc Rating of<br/><b>25 cal/cm<sup>2</sup></b></p> <p><b>Arc Rated Clothing:</b></p> <ul style="list-style-type: none"> <li>• As required: AR long-sleeve shirt, AR pants, AR coverall, AR flash suit jacket, and/or AR flash suit pants</li> <li>• AR flash suit hood</li> <li>• AR gloves</li> <li>• AR jacket, parka, rainwear, or hard hat liner (as needed)</li> </ul> <p><b>Protective Equipment:</b></p> <ul style="list-style-type: none"> <li>• Hard hat</li> <li>• Safety glasses or safety goggles</li> <li>• Hearing protection (with inserts)</li> <li>• Leather footwear (as needed)</li> </ul>  | <p>Minimum Arc Rating of<br/><b>40 cal/cm<sup>2</sup></b></p> <p><b>Arc Rated Clothing:</b></p> <ul style="list-style-type: none"> <li>• As required: AR long-sleeve shirt, AR pants, AR coverall, AR flash suit jacket, and/or AR flash suit pants</li> <li>• AR flash suit hood</li> <li>• AR gloves</li> <li>• AR jacket, parka, rainwear, or hard hat liner (as needed)</li> </ul> <p><b>Protective Equipment:</b></p> <ul style="list-style-type: none"> <li>• Hard hat</li> <li>• Safety glasses or safety goggles</li> <li>• Hearing protection (with inserts)</li> <li>• Leather footwear (as needed)</li> </ul>  |

Figure 2-1 PPE Classification

### **2.2.11.Other Important Notes**

In addition, the following protective or emergency measures should be taken according to the on-site needs:

When conducting maintenance, repair, or other operations on the system, relevant personnel should take appropriate protective measures as needed at the site, such as wearing noise-proof earplugs, insulated shoes, insulated gloves, and heat-resistant gloves.

All necessary auxiliary measures should be adopted to ensure the safety of personnel and equipment.

This manual cannot cover all possible situations during operation, maintenance, and repair processes. If there are situations not explained in the manual, please contact SolisStorage in time.

To facilitate users' better reading and use of this manual, a large number of pictures are configured in the manual. All pictures are only for explanatory purposes. Users should refer to the actual product received.

## 3. Product Introduction

### 3.1. Product Overview

#### 3.1.1. Product Introduction

EverCore consists of a Solis hybrid inverter with model number: S6-EH3P(29.9-50)K-H-AU, a battery system, an energy management system (EMU), a fire suppression system (FSS), a thermal management system (TMS), and an auxiliary distribution system (PDU)



Figure 3-1 Product Appearance

### 3.1.2.Main Components Introduction

The system consists of a single battery cluster, the battery cluster contains 5/6 battery packs, each of which is composed of 20 battery cells. The system contains 100/120 battery cells. Here we take 120kWh as an induction example.

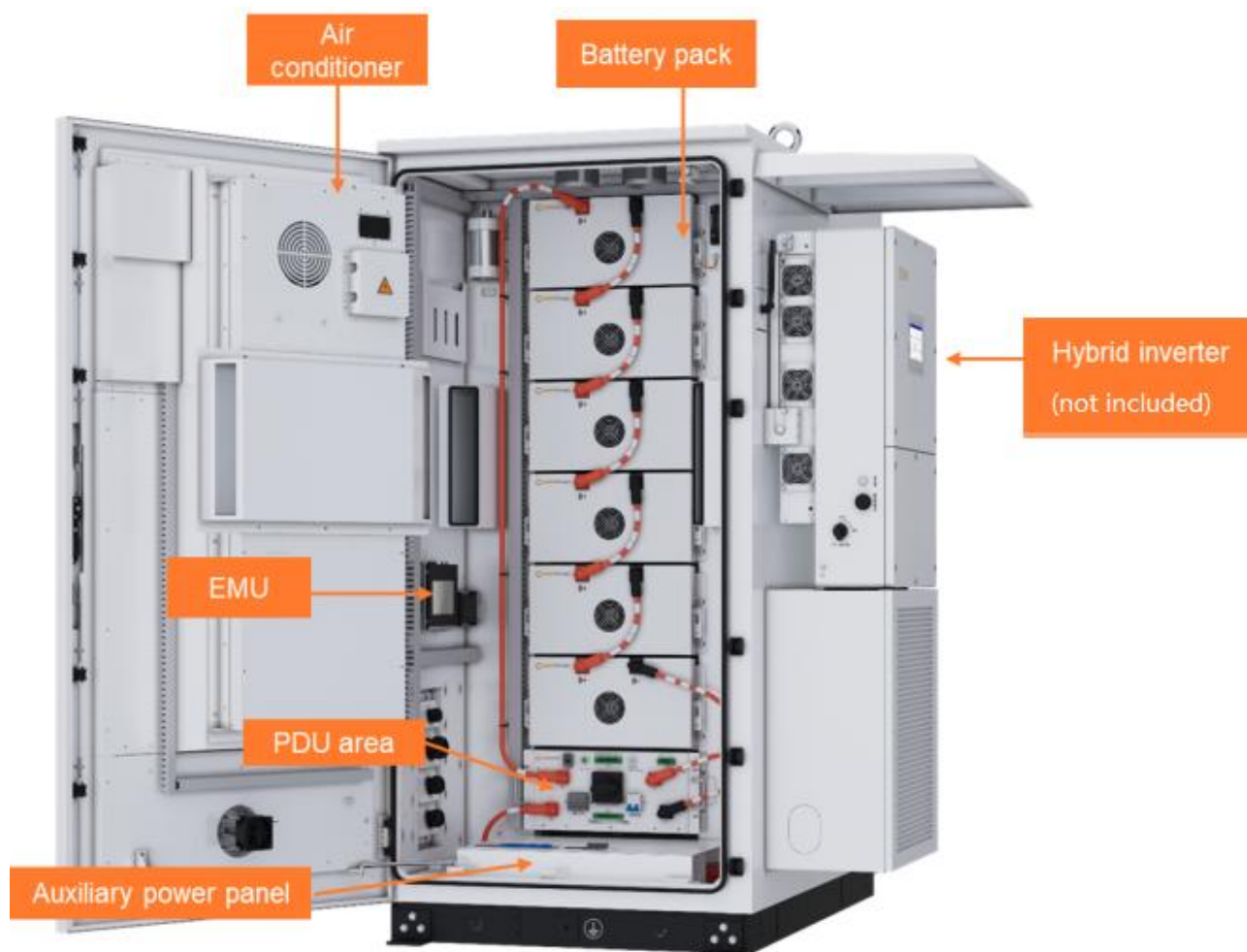


Figure 3-2 Main components

Table 3- 1 System Configuration

| Component             | Amount     |        | Remark                             |
|-----------------------|------------|--------|------------------------------------|
|                       | 120kW<br>h | 100kWh |                                    |
| Pack                  | 6          | 5      | Including BMU                      |
| EMU                   | 1          | 1      | Energy Management Unit             |
| Air-conditioner       | 1          | 1      | Thermal management system          |
| PDU Area              | 1          | 1      | Power distribution unit            |
| Auxiliary power panel | 1          | 1      | LV side device power supply switch |

|                                                       |   |   |                      |
|-------------------------------------------------------|---|---|----------------------|
| Hybrid inverter,<br>not included, purchase separately | 1 | 1 | Power convert system |
|-------------------------------------------------------|---|---|----------------------|

Table 3-2 Product parameter

| NO | Item                                        |                                   | Specification                                                 |                                              |                                             |
|----|---------------------------------------------|-----------------------------------|---------------------------------------------------------------|----------------------------------------------|---------------------------------------------|
|    |                                             |                                   | EverCore-99.9kWh,<br>EverCore-99.9kWh-<br>PRO,                | EverCore-100kWh,<br>EverCore-100kWh-<br>PRO, | EverCore-120kWh,<br>EverCore-120kWh-<br>PRO |
| 1  | Pack number                                 |                                   | 5                                                             | 5                                            | 6                                           |
| 2  | Nominal Energy                              |                                   | 100kWh                                                        | 100.48kWh                                    | 120.57kWh                                   |
| 3  | Nominal voltage                             |                                   | 320 Vd.c.                                                     | 320 Vd.c.                                    | 384Vd.c.                                    |
| 4  | Range of voltage                            |                                   | 290~360 Vd.c.                                                 | 290~360 Vd.c.                                | 348~ 432Vd.c.                               |
| 5  | Ma Charging power                           |                                   | 50kW                                                          | 50kW                                         | 60kW                                        |
| 6  | Max Discharging power                       |                                   | 50kW                                                          | 50kW                                         | 60kW                                        |
| 7  | Auxiliary<br>power<br>supply                | Voltage                           | 230Vac;                                                       |                                              |                                             |
|    |                                             | Power                             | 1.38kW                                                        |                                              |                                             |
| 8  | Operati<br>ng<br>ambient<br>tempera<br>ture | Charging                          | 0℃~+55℃                                                       |                                              |                                             |
|    |                                             | Discharging                       | -25℃~+55℃                                                     |                                              |                                             |
| 9  | Ambient<br>require<br>ment                  | Storage<br>temperature            | 0℃~40℃                                                        |                                              |                                             |
|    |                                             | Transportati<br>on<br>temperature | -30℃~+55℃                                                     |                                              |                                             |
|    |                                             | Operating<br>Height               | ≤4,000m,derating is required when the altitude is above 2000m |                                              |                                             |

|                                                                                                             |                     |                                                                                          |                                                                                                         |        |        |
|-------------------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------|--------|
| 10                                                                                                          | General             | Dimension                                                                                | W*D*H: 950*1540 *2030mm<br>(not including the size of the hybrid inverter)                              |        |        |
|                                                                                                             |                     | Weight                                                                                   | 1500kg                                                                                                  | 1500kg | 1630kg |
|                                                                                                             |                     | IP                                                                                       | IP55(cabinet)<br>IP66(inverter)                                                                         |        |        |
|                                                                                                             |                     | Cooling method                                                                           | Industrial-grade air-conditioning (Cabinet)<br>fan-cooling (Pack)<br>Intelligent fan-cooling (Inverter) |        |        |
|                                                                                                             |                     | Communication protocol                                                                   | TCP/IP, CAN,RS485                                                                                       |        |        |
|                                                                                                             |                     | Refrigerating fluid                                                                      | R134a                                                                                                   |        |        |
| 11                                                                                                          | Compliance standard | UN38.3<br>IEC 62619<br>IEC 63056<br>IEC 62477-1<br>IEC 61000-6-2/IEC 61000-6-4<br>UN3480 |                                                                                                         |        |        |
| *More detailed parameters about hybrid inverter , you can refer to the document on Solis's official website |                     |                                                                                          |                                                                                                         |        |        |

| Battery pack |                         |
|--------------|-------------------------|
| Series       | Battery Pack (EverCore) |
| Model        | PACK-1P20S-314-01       |
| Cell brand   | EVE                     |
| Cell type    | LFP 3.2V/314Ah          |
| Cell model   | MB31                    |
| Cell weight  | 5.6±0.2kg               |

|                                  |                        |
|----------------------------------|------------------------|
| Configuration mode               | 1P20S                  |
| Rated voltage                    | 64V                    |
| Operating voltage range          | 58~72V                 |
| Charge and discharge rate        | ≤0.5C                  |
| Battery pack capacity            | 20.10kWh               |
| Battery pack weight              | 138kg                  |
| Dimensions (W*H*D)               | 435*230*904mm          |
| Cooling concept                  | Air cooling            |
| Ingress protection               | IP20                   |
| Storage temperature range        | 0℃~40℃                 |
| Transportation temperature range | -10℃~45℃               |
| Balancing mode                   | Passive cell balancing |
| Communications port              | CAN 2.0                |

### 3.1.3.Product Size (without inverter)

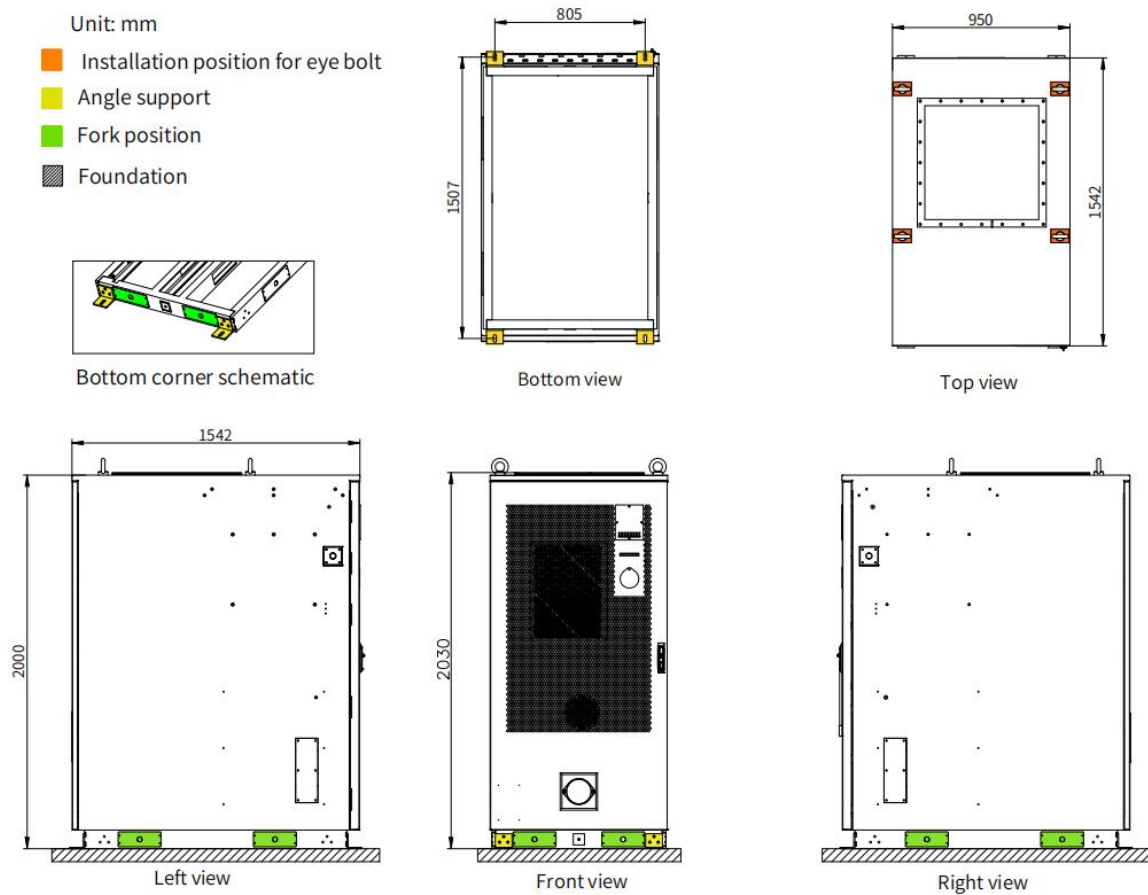
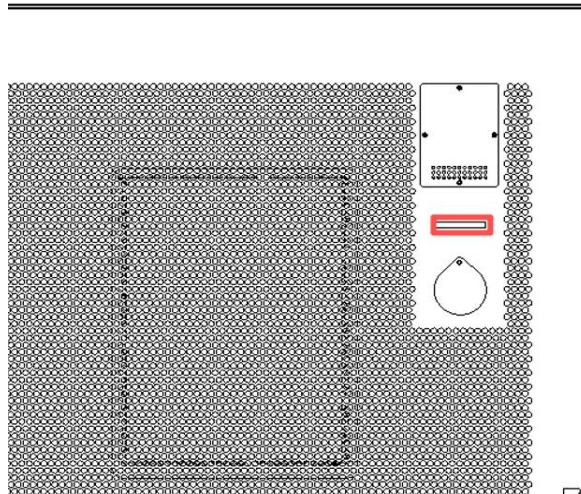


Figure 3-3 Appearance and dimension (without inverter)



### 3.1.4.Indicator Light Introduction

1. The "Run" indicator light is on (green): indicating the battery system is in charging/discharging mode;
2. The "Fault" indicator light is on (red): indicating a fault currently exists in the battery system;
3. The "Alarm" indicator light is on (yellow): indicating the battery system is in alarm mode.



#### **NOTICE**

After confirming that the working power indicator light and the working status indicator light on the front panel are both normal, you can proceed with the subsequent operations. Otherwise, you need to first troubleshoot the problem.

Figure 3- 4 System operation. Indicator

## 3.2. System Power Supply and Distribution System

### 3.2.1.PDU Area

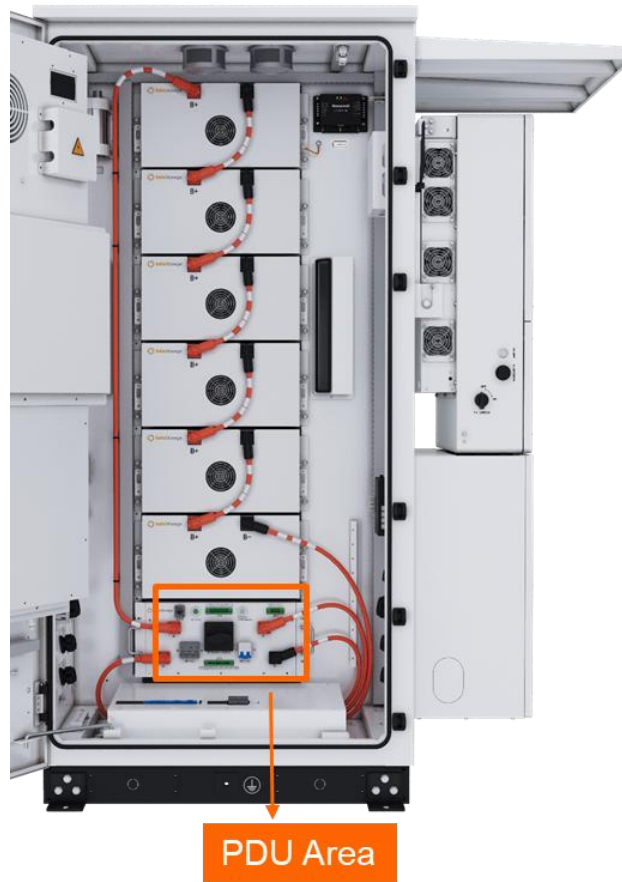


Figure 3-5 PDU Area position

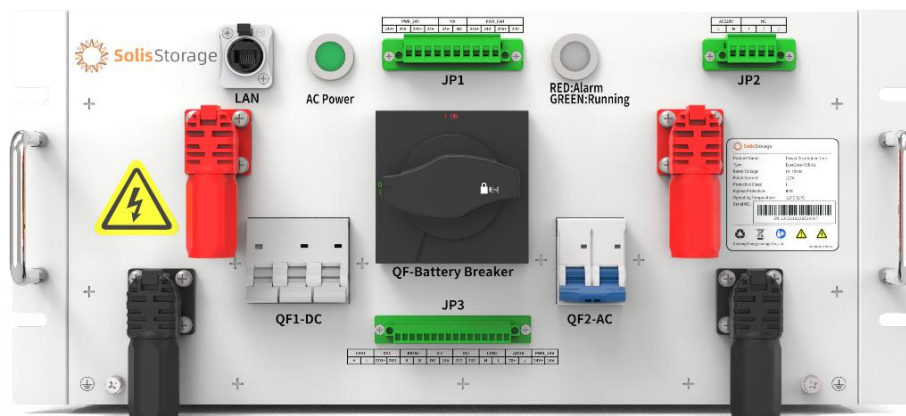


Figure 3-6 PDU Area panel

| No | Item                 | Description                                                       |
|----|----------------------|-------------------------------------------------------------------|
| 1  | AC power light       | Indicate auxiliary AC power supply state –QF2-AC                  |
| 2  | Running status light | System running indicator<br>Red: Alarm<br>Green: Running normally |
| 3  | QF1-DC               | The switch of auxiliary DC side                                   |
| 4  | QF-Battery Breaker   | The main switch of system circuit                                 |
| 5  | QF2-AC               | The switch of auxiliary AC side                                   |

### 3.2.2.Auxiliary Power Panel

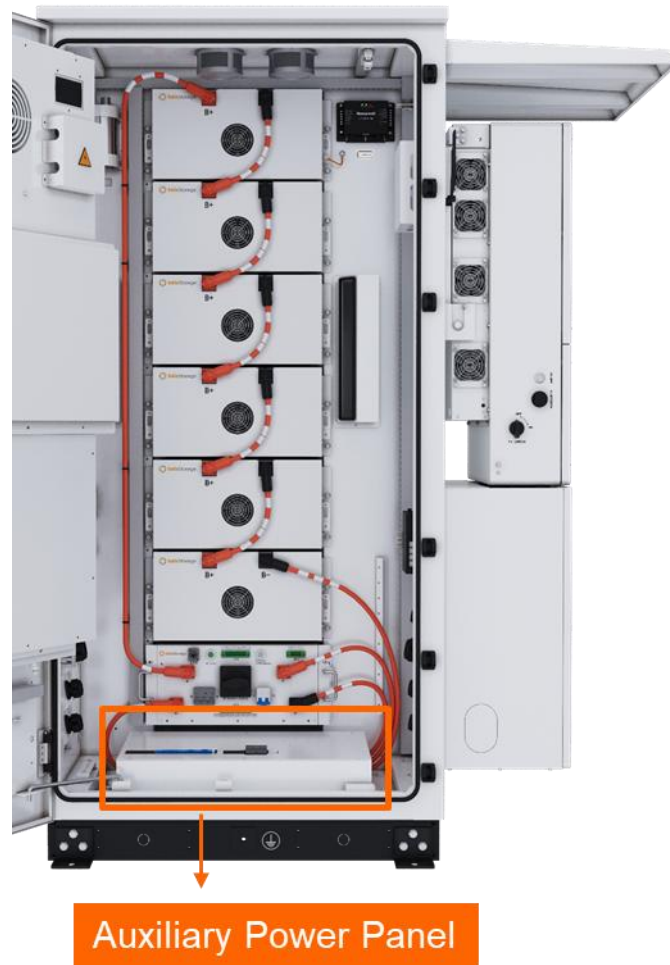


Figure 3-7 Aux power panel position

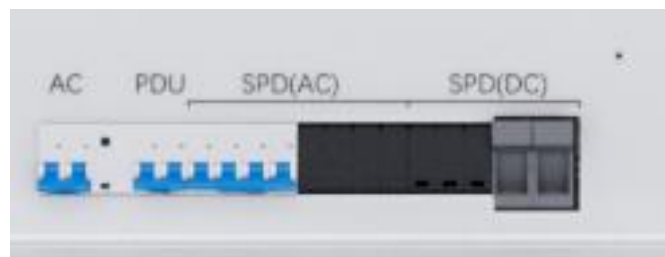


Figure 3-8 Aux power panel

The auxiliary power distribution system is used to provide auxiliary power for the entire control system and air conditioner.

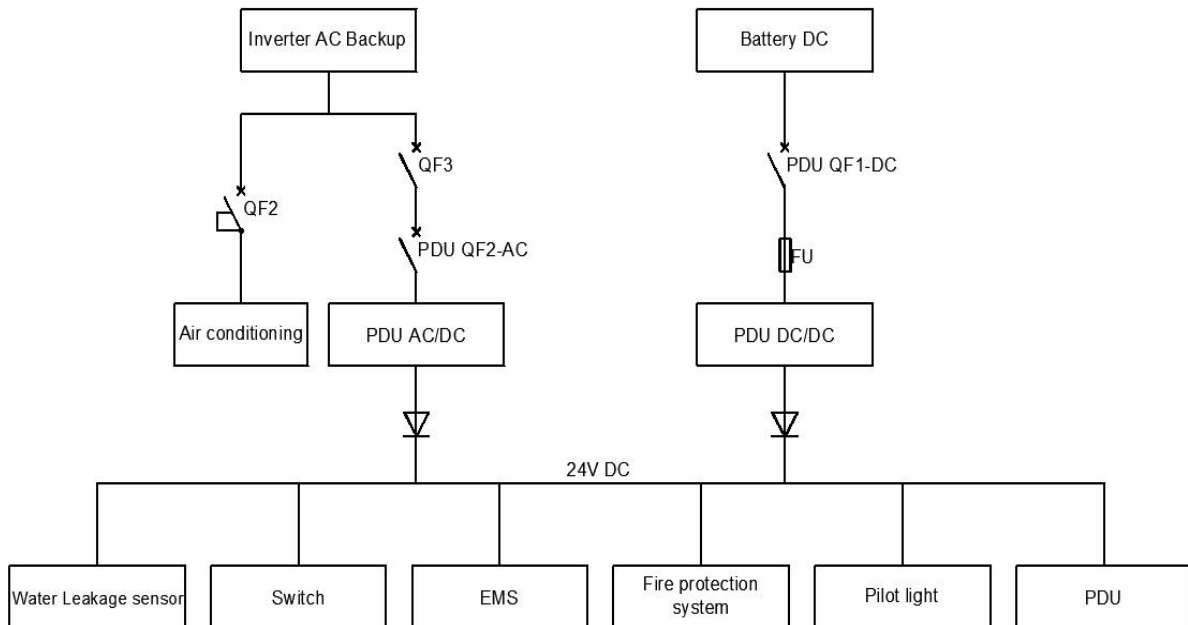


Figure 3-9 Distribution Box Diagram

### The character of auxiliary power

The auxiliary power system consists of an AC auxiliary supply and a DC supply. The AC circuit power supply is taken from the Backup port of the hybrid inverter, used for air conditioner and the controller power supply. The DC power supply is taken from the inner side of the battery and is used for powering the control system.

### 3.3. Thermal Management System



Figure 3- 10 Thermal management system

The Thermal Management System (TMS) consists of an air conditioner, an air duct. It supply the intelligent temperature control of the battery system. The air-cooled management system provides intelligent temperature control management for the energy storage system, ensuring efficient operation of the energy storage system

1. Refrigerant type of air conditioner: R134a (1.3kg)
2. Suitable for extreme ambient temperature applications:-40℃~ +55℃
3. Each battery cabinet is equipped with an air conditioner that provides 5 kW of cooling capacity

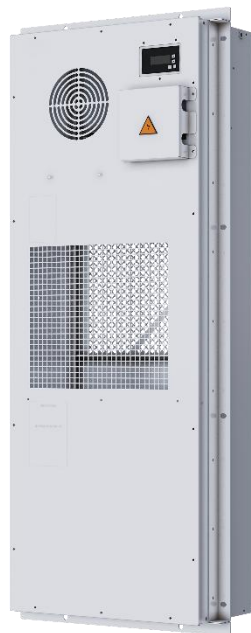


Figure 3- 11 Figure Air conditioner appearance

Table 3-3 Air-conditioner parameter

| Parameter                          | Specification                                  |
|------------------------------------|------------------------------------------------|
| Ambient temperature                | -40℃～50℃                                       |
| Power supply                       | 1/PE AC 230V (50Hz/60Hz)                       |
| Rated Power<br>(Cooling/Heating)   | 1.6/1.2 kW (50Hz)<br>1.8/1.3 kW (60Hz)         |
| Maximum operating current          | 9.5A                                           |
| Anti-corrosion                     | C4                                             |
| Appearance color                   | RAL9003                                        |
| Net weight                         | 75Kg                                           |
| Rated cooling /heating<br>capacity | 3.2 kW (cooling)<br>1 kW (heating)             |
| Noise level                        | 70dB(A)                                        |
| Operating mode                     | Cooling, heating, dehumidification, air supply |

### 3.4. Fire Detection and Alarm System

The detection and alarm system consists of below detectors: smoke sensor, temperature sensor and flammable gas detector (optional configuration), Humidity sensor, water immense sensor and Alarm device, their installation locations are as follows.

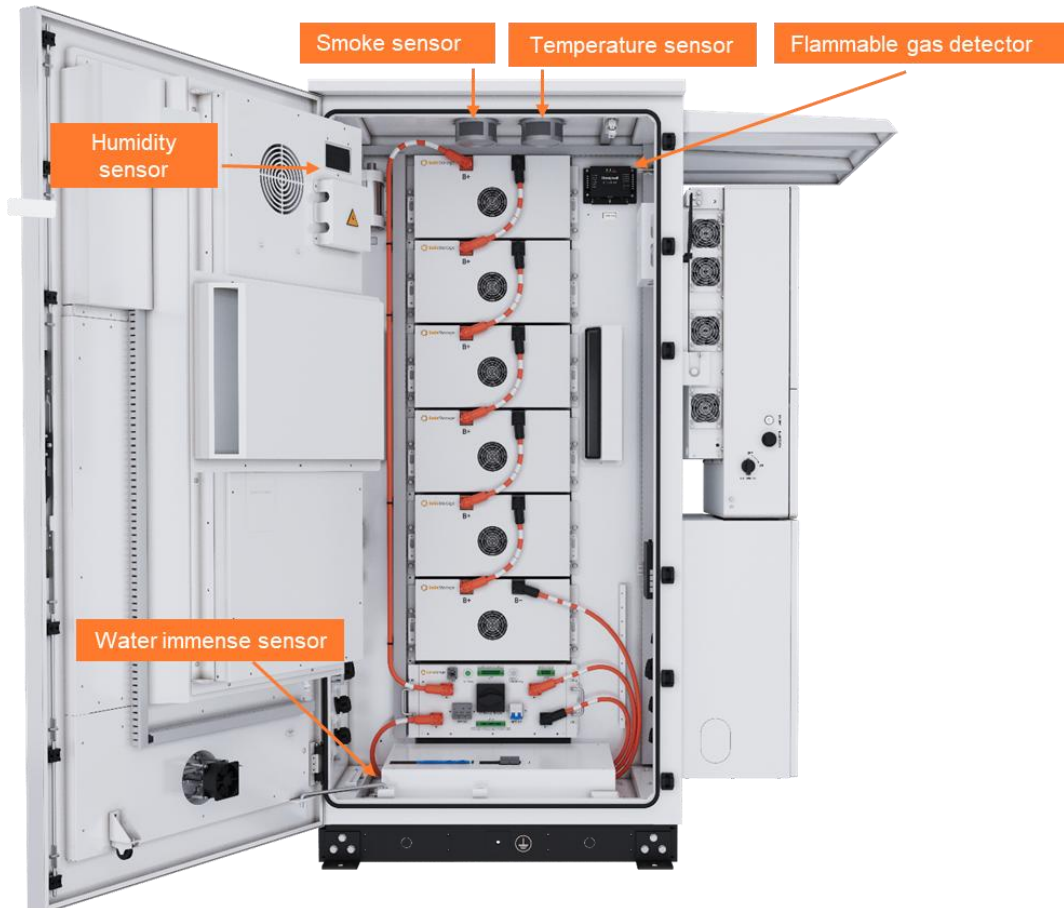


Figure 3- 12 Figure 3-5 Fire Detection System (take 120kWh as an example)



Table 3- 4 Fire detection system

| Device                 | Appearance                                                                        | Alarm or triggering conditions                |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------|
| Smoke sensor           |  | $\geq 0.15$ dB/m (optical signal attenuation) |
| Temperature sensor     |  | $\geq 65^{\circ}\text{C}$                     |
| Flammable gas detector |  | 10% LFL (LFL: lower flammable limit, %VOL)    |



Figure 3- 13 Audible and visual alarm

### 3.5. Fire Extinguishing System

#### (1) Aerosol fire extinguishing system



Figure 3- 14 Aerosol device layout(take 120kWh as an example)

The aerosol is installed on the top of the cabinet. The aerosol is equipped with a temperature-starting detection line. The starting temperature of the detection line is approximately  $170^{\circ}\text{C} \pm 5^{\circ}\text{C}$ .

### 3.6. Explosion and Pressure Relief System

The explosion and pressure relief system consists of pressure relief valve and Explosion relief panel (optional), and the installation position is as follows.

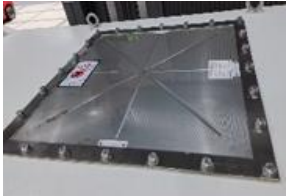


Figure 3- 15 Explosion relief panel and valve position



Figure 3- 16 Relief Valve on the cabinet door

Table 3-5 Explosion relief system

| Devices                | Appearance                                                                         | Alarm or triggering conditions                                                                                                                                      |
|------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Explosion relief panel |   | 10kPa (The pressure difference )<br>(under ambient temperature 20℃ , the pressure difference between the inside and outside of the cabinet is $\geq 10\text{kPa}$ ) |
| Explosion relief valve |  | $4\pm 1.5\text{kPa}$ ( The pressure difference between the inside and outside of the cabinet is $\geq 4\pm 1.5\text{kPa}$ )                                         |

### 3.7. Water Injection System

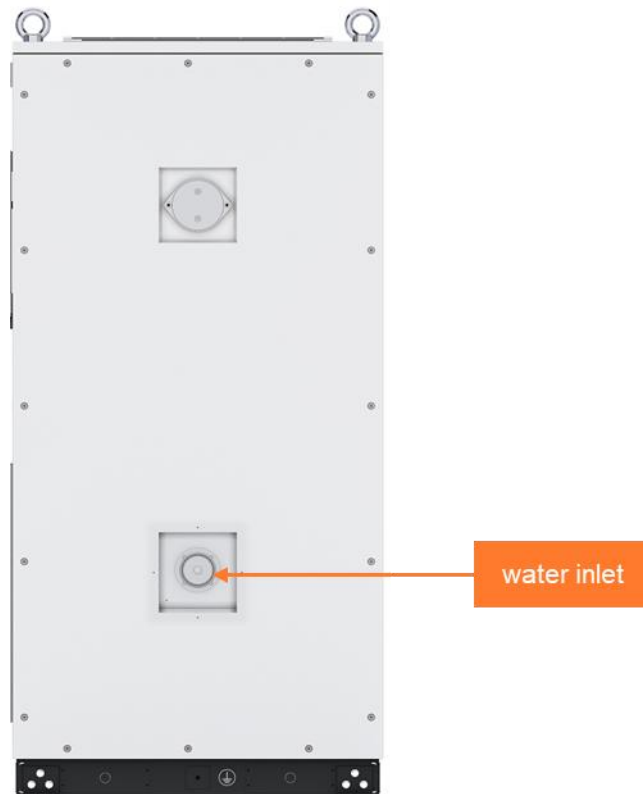


Figure 3- 17 Water injection port

1. A DN65 water hydrant is reserved on the rear side of the cabinet, and a corresponding DN65 fire hydrant quick connector is also selected. Before use, the acrylic cover plate should be removed first. There are two usage schemes for this water inlet port:

- (1) When configuring the DN65 fire hydrant quick connector, the DN65 quick-connect fire hose can be directly connected.
- (2) When there is no DN65 fire hydrant quick connector (or when it is removed), the pre-action pipe network can be connected to this DN65 water pipe connector. (If this method is adopted, periodic inspections shall be performed.)

### 3.8. Fire Suppression Component

The main components are listed in the table below

Table 3-6 Main components of the FSS system

| NO. | Item                                         | component name                                  | amount | Remark                        |
|-----|----------------------------------------------|-------------------------------------------------|--------|-------------------------------|
| 1   | Detection and alarm component                | Flammable gas detector<br>(Li-ion Tamer sensor) | 1      | <b>Optional configuration</b> |
| 2   |                                              | Temperature detector                            | 1      | Standard configuration        |
| 3   |                                              | Smoke detector                                  | 1      | Standard configuration        |
| 4   |                                              | Audible and Visual Alarm                        | 1      | Standard configuration        |
| 5   | Explosion relief and pressure release system | Pressure relief valve                           | 1      | Standard configuration        |
| 6   |                                              | Explosion proof intake valve                    | 1      | <b>Optional configuration</b> |
| 7   |                                              | Explosion proof exhaust valve                   | 1      | <b>Optional configuration</b> |
| 8   |                                              | Explosion relief Panel                          | 1      | <b>Optional configuration</b> |
| 9   | Gas fire-extinguishing system                | Temperature-starting aerosol                    | 1      | Standard configuration        |
| 10  | Fire Water inlet system                      | DN65 external thread external pipe connector    | 1      | Standard configuration        |

### 3.9. Emergency Plan

#### (1) Post-Incident Actions

Once the fire has been extinguished or the system has stabilized, professional personnel must carry out the following cleaning and assessment procedures:

#### ■ Electrolyte Leakage Cleanup:

Safety Protection: Damaged batteries may leak electrolyte, which is corrosive and toxic. Operators must wear chemical protective suits, acid-resistant gloves, and respirators.

Absorption& Disposal: Cover the leaked liquid with sand, dry earth, or specialized chemical absorbent pads. Do not use water to flush the electrolyte directly.

**Waste Disposal:** The collected residue is classified as hazardous chemical waste and must be stored in sealed containers and disposed of by a qualified hazardous waste treatment agency.

■ **Cleaning Fire Suppression Residues:**

**Water Removal:** If the water injection system (via DN65 connector) was used, drain the accumulated water through the cabinet's bottom drain valves or holes. As the firewater may contain chemical pollutants, it should be collected and treated rather than discharged directly into public storm drains.

**Aerosol Cleanup:** Aerosol discharge leaves fine powder on equipment surfaces. After confirming the power is safely disconnected, use industrial vacuum cleaners or dry cloths to remove the powder to prevent long-term corrosion or moisture absorption by electronic components.

(2) **Product Contact Instructions in Emergencies**

During an emergency (e.g., thermal runaway, fire alarm, or leakage), contact with the product must strictly follow these rules:

■ **Prohibited Access:** Unauthorized personnel are strictly forbidden from approaching or attempting to open the cabinet doors during a fire or alarm event. Opening the doors may allow oxygen to enter, causing re-ignition or the loss of fire-extinguishing agents (aerosol).

■ **Safety Radius:** During a thermal runaway risk, personnel should maintain a safety radius of at least 10 meters.

■ **Emergency Connection:** Only firefighters wearing full protective gear are permitted to contact and operate the external DN65 fire water inlet.

■ **Post-Shutdown Safety:** Even after the system has initiated an emergency shutdown and cut off high-voltage power, residual voltage may still exist within the battery strings. Do not touch any internal conductive parts or damaged battery modules until professional personnel verify that the voltage has dropped to a safe level.

### 3.10. System Load Requirements

The 50/60W hybrid inverter backup port supports overload capacity: 1.6 times 2 s.

For other models in the 60k inverter series, you can refer to the specific datasheet to confirm the overload capacity.

Meanwhile, due to different load characteristics, the Backup port of the hybrid inverter has different load capacities and requirements, as described below.

(1) Resistive and RCD loads: When connecting single-phase resistive loads, it should not exceed 100% of the single-phase power; when connecting RCD loads, it should not exceed 60% of the rated power of the hybrid inverter.

(2) Motor-based loads: For direct motor loads, the starting impact power should not exceed 1.1 times the rated power of the hybrid inverter. For motor loads using frequency converters or soft-start types, the power should not exceed 60% of the rated power of the hybrid inverter.

(3) RLC load: The total load capacity shall not exceed the rated power of the hybrid inverter. The peak current during load switching (peak inrush current) shall not exceed twice the rated current of the hybrid inverter, and the minimum power factor shall not be less than 0.8.

(4) If a hybrid inverter is used for loading, apart from the RLC load, the motor load and the RCD load need to be proportionally reduced.

(5) Isolation transformer: The isolation transformer that comes with the hybrid inverter must be started simultaneously with the hybrid inverter. It is not allowed to start the hybrid inverter first and then put the isolation transformer into operation. Moreover, the inrush current at the moment of transformer start-up should not exceed twice the rated current, and the inrush power should not exceed 1.1 times the rated power of the hybrid inverter. Otherwise, a soft starter needs to be added to the transformer.

(6) The peak current at the moment of load switching (base current + inrush current) does not exceed 1.1 times the rated current of the hybrid inverter



## 4. Transportation and Storage Requirements

### 4.1. Transportation Requirements

The equipment can be transported by sea freight or by land. During the loading and unloading process, handle with care to prevent throwing, rolling and excessive pressure; during transportation, avoid external mechanical impacts.

- The transportation plan for bulk goods must be evaluated in advance;
- The speed of vehicles (trucks) must not exceed 100 kilometers per hour and must comply with local laws;
- During driving, do not make sudden braking or sharp turns;
- Ensure the vehicles are in good condition and regularly check their status during transportation to promptly identify and resolve problems;

Based on the characteristics of the battery, in order to maximize the performance of the battery, the transportation and storage should meet the following requirements:

#### CAUTION

1. To reduce the impact of condensation water during transportation on the products, desiccants are installed in each box of the products. Please remove them during operation.
2. The desiccants should not be left in the powered equipment for a long time. If they are not removed in time, they will cause damage to the equipment and may even lead to short circuits or even explosions in the electrical equipment.

- Allowed transportation temperature:  $-30^{\circ}\text{C} \sim +55^{\circ}\text{C}$
- Humidity:  $\leq 85\%$  (no condensation)
- Take appropriate protective measures to keep the SOC level at around 50%, and ensure no short circuit occurs, or prevent liquids from entering the EverCore or being immersed in liquids (such as water, oil, etc.).

## **4.2. Storage Requirements**

EverCore should be stored in a location free of harmful gasses, flammable and explosive products, and corrosive chemicals. It should be kept away from mechanical shocks, heavy pressure, and strong magnetic fields, and also far from heat sources.

The battery system must operate within the optimal working temperature range to extend the battery's service life and enhance its safety performance.

Please check the manufacturing date on the battery cabinet nameplate. If the manufacturing date exceeds 6 months, the battery needs to be recharged, and please contact the local technical personnel for support.

## **5. Site Requirements**

### **5.1. Site Selection Requirements**

#### **5.1.1. Basics Requirements**

The EverCore system is suitable for general outdoor scenarios. According to local laws and regulations, the site selection requirements are as follows:

1. The installation location should not be in low-lying areas, and the site level should be higher than the historical highest water level in that area.
2. The soil conditions should be good, and the ground should be solid. There should be no poor geological conditions such as rubber soil or soft soil layers. Avoid ground that is prone to water accumulation and subsidence.
3. The equipment should be installed in a well-ventilated area.
4. Stay away from strong vibrations, noise sources, and electromagnetic interference areas. Try to avoid existing underground facilities.
5. Stay away from places that produce dust, smoke, and harmful gasses, and from places that produce or store corrosive, flammable, and explosive substances. The distance from airports, landfill sites, riverbanks, coasts, or dams should not be less than 2000 meters.
6. Select an open location and ensure there are no obstacles from surrounding areas.
7. Maintain a distance of at least 50 meters from residential areas to avoid noise pollution.

#### **5.1.2. System Anti-Vibration Protection Requirements**

In EverCore, batteries are connected in series, and the management system and various sensing devices are installed. The whole battery system must be installed firmly and reliably without loosening or shaking. Collision avoidance devices of sufficient strength must be installed at the periphery of the battery system installation space to ensure that no safety incidents (e.g. direct short circuit, overheating and combustion) will be caused by general collisions and will not directly damage the battery system and battery.

### 5.1.3. Ventilation and Heat Dissipation Requirements

EverCore generates a large amount of heat during operation. Excessive equipment temperature will directly affect its electrical performance and even damage the equipment. Therefore, when designing the placement space for EverCore, it is necessary to fully consider the dissipation of these heats to ensure the normal and efficient operation of the equipment. To meet the ventilation requirements of EverCore, its installation environment must at least meet the following requirements:

1. Avoid installing it in a closed space or a place with poor ventilation. Greater ventilation volume can be obtained through construction measures such as adding air supply grilles or fans.
2. The air inlet should have an adequate supply of fresh air. It is necessary to prevent air short circuit (hot air from the air outlet being sucked in from the air inlet).

### 5.2. Clearance Requirements

For single system installation, the site should meet requirement as below figure 5-1:

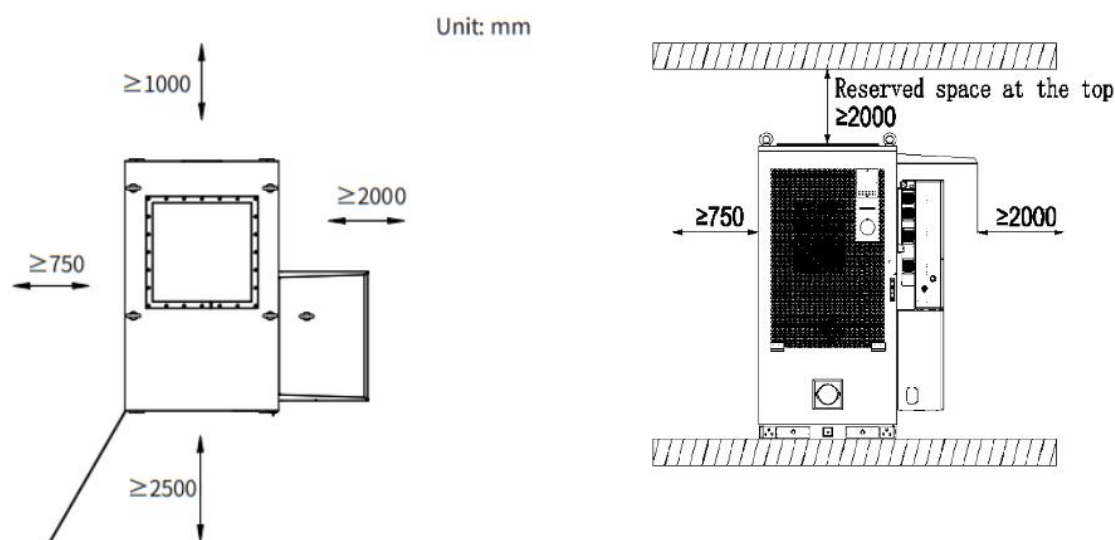
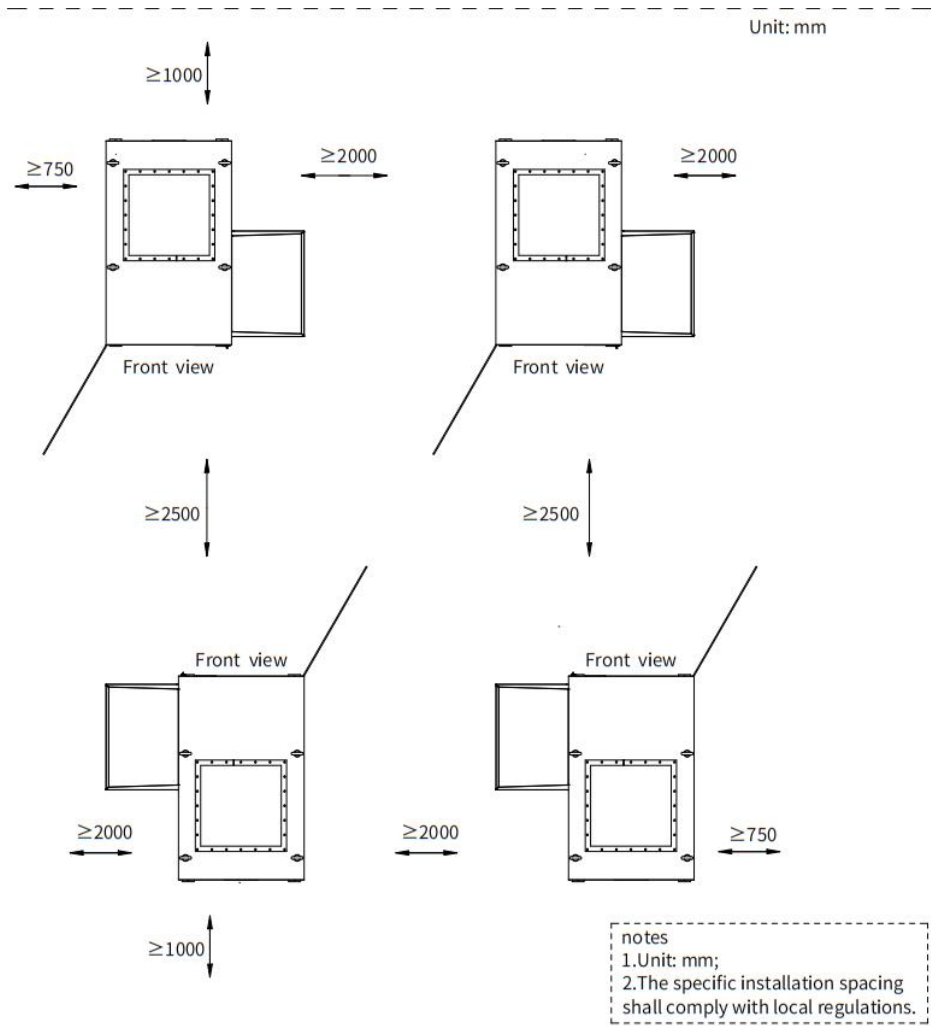


Figure 5- 1 Single system clearance, top view and front view

#### NOTICE

For single-cabinet installation: the front distance should be  $\geq 2500\text{mm}$ , the side distance  $\geq 750\text{mm}$ . For inverter-side installations, considering installation, maintenance, and heat dissipation, the minimum distance is  $\geq 2000\text{mm}$ . The clearance above the system is  $2000\text{mm}$ .

For multiple system in one site, you can refer to the below figure 5-2



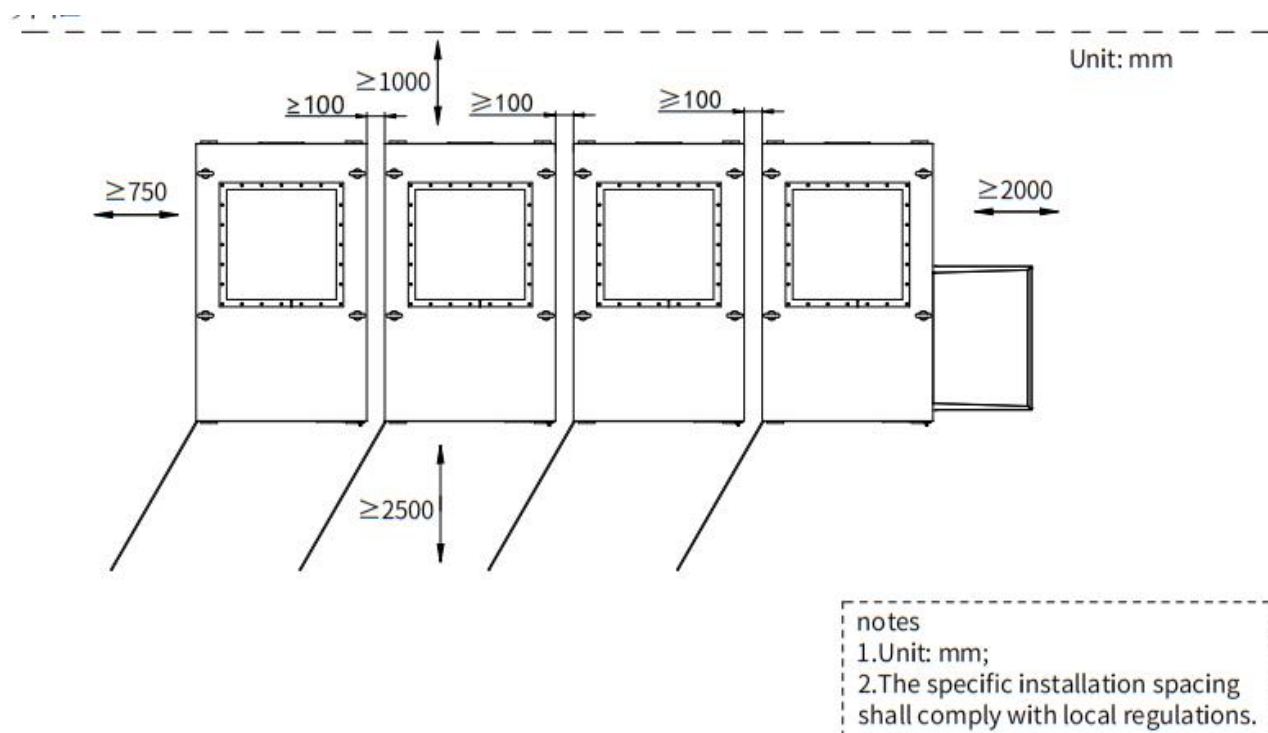


Figure 5-2 Multiple system layout clearance requirement, Top view

1. The minimum distance between back-to-back units is 1000mm.
2. The recommended distance when facing each other should be  $\geq 2500$ mm (between air conditioners).
3. The minimum gap between the back of the cabinet and the wall is 1000mm.
4. The recommended minimum distance between the wall and the cabinet door is 2500mm

#### **CAUTION**

The above minimum interval parameters are for reference only. The specific requirements and standards should be in accordance with those of the local fire department.

#### **WARNING**

It is essential to ensure the unobstructed flow of air through the intake and exhaust ports; otherwise, it will seriously affect the operation of the equipment.

### 5.3. Foundation Requirements

The ESS must be installed on concrete or other non-combustible surfaces. Ensure that the installation surface is horizontal, secure, flat, and has sufficient load-bearing capacity. Subsidence or slope is not allowed.

- the foundation shall sustain the total weight of the equipment. If the loadbearing capacity of the foundation does not meet the requirement, a review is required.

- the bottom of the excavated foundation must be compacted and flat.

- after the foundation is excavated, prevent water from entering the foundation. If water enters the foundation, excavate and refill the affected parts.

- the level tolerance between the foundation and the contact surface of the cabinet must be less than or equal to 3 mm.

- the foundation must be above the highest water level of the local area in history and at least 300 mm above the ground.

- Construct drainage facilities based on the local geological conditions and municipal drainage requirements to ensure that no water will accumulate at the equipment foundation. The foundation construction must meet the local drainage requirements for the maximum historical rainfall. The drained water must be disposed of in accordance with local laws and regulations.

- Reserve trenches or cable inlets for the ESS during foundation construction.

- The reserved holes on the foundation and the cable inlets at the bottom of the equipment shall be sealed.

- The foundation drawings shall not be used as the final construction drawings and are for reference only. For details, contact the product manager of the company to obtain the foundation drawings. The design specifications of the ESS foundation shall be reviewed based on the installation environment, ground bearing capacity, geological features, and seismic resistant requirements of the project site

EverCore system can support both concrete foundation installation and flat ground installation.

Before installing EverCore, please construct the foundation and ditches on the selected ground. The construction requirements for the foundation are as follows:

1. The size of the foundation should meet the installation and bearing capacity requirements of EverCore, as shown in Table 5-1.

Table 5- 1 Foundation Requirements

| Type of ground        | Requirement                                                                                                               | Remark                                                                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Concrete foundation   | The ground needs to be able to bear a load of $1.5 \times n$ (where $n$ represents the number of parallel machines) tons. | The ground should meet the following requirements:<br>◆ Horizontal deviation $\leq \pm 10\text{mm}$<br>◆ Plane degree deviation $\leq \pm 4\text{mm}$ per 2 meters |
| Flat and Level Ground | Floor Loading Requirement: 7.5 Tons per Square Meter                                                                      |                                                                                                                                                                    |

### 5.3.1. Concrete Foundation Requirements

(For a single machine), the concrete foundation should meet the requirements in below figure 5-3.

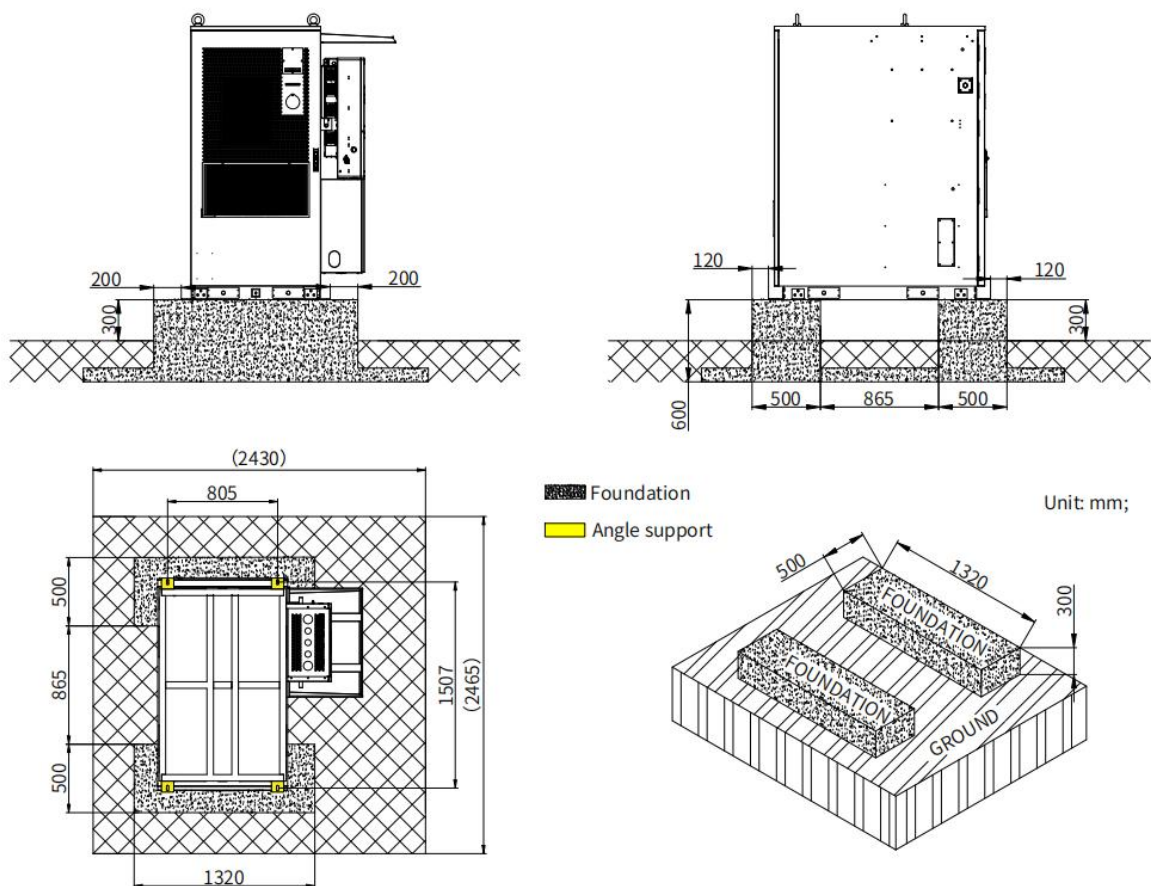


Figure 5- 3 Foundation Requirement



## 5.4. Forklift Requirements

### 5.4.1. Safety Measures Requirements

- 1) Remove the sealing plates at the bottom of the front and back of the cabinet to ensure that the bottom of the front and back of the cabinet is unobstructed.
- 2) Before the forklift's fork arm extends into the bottom of the cabinet, ensure that the height of the fork arm is lower than the bottom of the cabinet, with a gap of no less than 5 centimeters, to avoid colliding with the cabinet. The fork arm slowly penetrates into the bottom of the cabinet to ensure the stability of the product and the forklift during operation.
- 3) When the fork arm is fully extended and in place, ensure the product is stable. Lift the product carefully and keep the lifting process at a constant speed to avoid sudden lifting or shaking.
- 4) During the transfer process, avoid pedestrians or obstacles in advance, keep the forklift at a low and constant speed, pay attention to the surrounding environment, and slow down when turning to prevent the goods from toppling over and falling.
- 5) After reaching the destination, descend slowly to ensure the goods are safely and smoothly delivered.

### 5.4.2. Forklift Equipment Requirements

Pallet transverse spacing: 524.5–924.5 mm; Pallet longitudinal spacing: 275 mm–675 mm; when transporting unopened pallets with a forklift, please insert the forks from the side of the box where the center of gravity label is printed.

- 1) Recommended load capacity:  $\geq 2T$ ;



Figure 5- 4 Forklift requirement

2) .For vertical insertion: recommended length of fork arm:  $\geq 1.6\text{m}$

For Horizontal insertion: recommended length of fork arm:  $\geq 1\text{m}$ .

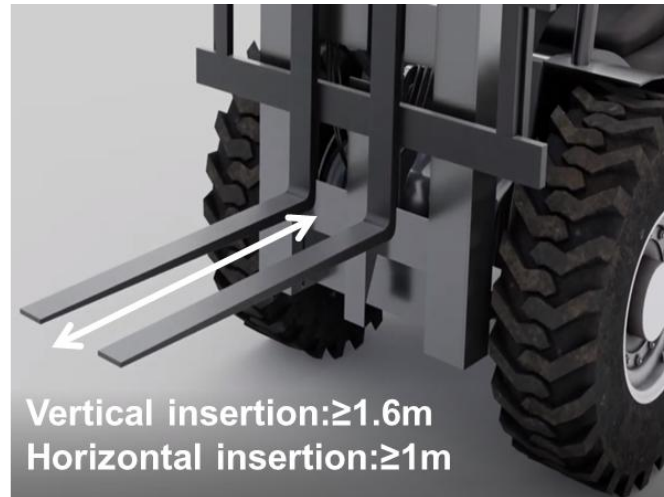


Figure 5- 5 Forklift requirement

3) For vertical insertion: The distance between the two fork arms (excluding the width of the fork arms) should be  $\approx 325\text{mm}$ ,

For Horizontal insertion: The distance between the two fork arms (excluding the width of the fork arms) should be  $\approx 574.5\text{mm}$ ,

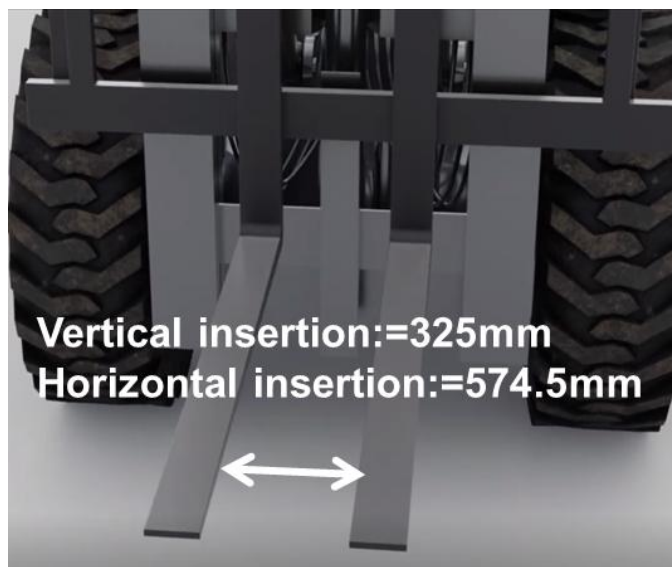


Figure 5- 6 Forklift requirement

## 5.5. Hoisting Requirements

### 5.5.1. Safety Measures Requirements



To prevent personal injury or equipment damage, safety measures must be followed.

1. Strengthen on-site construction management. Set up a warning zone at the lifting site and assign full-time safety personnel to supervise and warn. Non-operational personnel are strictly prohibited from entering.
2. Carefully complete the preparatory work before lifting. Prepare mechanical equipment and heavy lifting rigging according to the plan requirements. Strictly follow the performance inspection of lifting equipment, inspection of lifting rigging, pre-lifting detection and lifting procedures to ensure the safety and reliability of the lifting operation.
3. Before all personnel involved in the construction work arrive, conduct detailed technical briefings to make them understand the essentials, procedures and requirements of the operation. After the crane enters the site, the crane driver will introduce the lifting plan in detail and clearly define the unified command signals.
4. The operation position of the crane and the walking route should be carried out according to the plan requirements. The legs' pads must be safe and reliable. Use special roadbed box layers under the legs to expand the unit force surface. The lifting operation of the crane should be smooth, with slow movements. Pay close attention to the settlement of the crane legs during the lifting operation.
5. The communication between the on-site commander and the crane driver should be timely and reliable. The command signals, flags and gestures should be clear. If any abnormal situation is found, report it to the overall commander of the lifting site promptly to take effective measures as soon as possible.
6. When the wind force is 5 or above, lifting is strictly prohibited in thunderstorms, foggy weather.
7. Construction personnel entering the lifting operation site must strictly abide by the on-site safety regulations and wear labor protection clothing and safety helmets as required.
8. The lifting operation should be under unified command. Operators should hold their own opinions, closely cooperate, and complete the lifting operation safely and smoothly.

**NOTICE**

The lifting equipment is provided by the client.

**CAUTION**

During the lifting process, the center of gravity of EverCore must remain stable.

**5.5.2. Hoisting Equipment Requirements**

4 hoisting hooks are prepared in accessory package, for customers, they need prepare the hoisting rope,

The rope requirement:

Load bearing capacity: 3T

(1) Based on the on-site conditions and the performance of the mechanical equipment, select high-performance lifting equipment, rigging, and shackles for calculation and selection; ensure that the crane and the steel wire rope meet the load-bearing requirements.

(2) Before entering the site, all types of slings, including slings and shackles, should be inspected to ensure they are in good condition. Before the formal lifting operation, the specifications and quality should be reconfirmed to meet the requirements of this lifting operation.

(3) The hoisting points are located at the top of the four terminal corners of EverCore.

(4) When installing or dismantling the lifting device, do not drag EverCore. Otherwise, EverCore may be damaged.

Table 5-2 Lifting parameter requirements

| Equipment Lifting load-bearing requirements | Length of cable | Number of cables | Acceleration |
|---------------------------------------------|-----------------|------------------|--------------|
| >2T                                         | > 1m            | 4                | ≤0.2g        |



Figure 5- 7 Lifting Installation requirement

#### Precautions for Lifting Operations

Table 5- 3 Lifting operation

| Lifting process | Precautionary measures                                                                                                                                                                  |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Before lifting  | The lifting capacity and working radius of the crane meet the requirements. If the on-site working conditions do not meet the requirements, a professional assessment should be sought. |
|                 | EverCore for outdoor use, we recommend that you operate the EverCore in clear, windless and rain-free weather conditions.                                                               |
|                 | EverCore can be lifted using slings with hooks or U-hooks.                                                                                                                              |
|                 | The hook size must match the hole diameter (D=24mm)                                                                                                                                     |
|                 | Each hook should have a working load limit (WLL) of at least 1.8 metric tons.                                                                                                           |
|                 | Before hoisting, ensure that the crane and the steel wire rope meet the requirements.                                                                                                   |
|                 | Make sure that all the doors of EverCore have been closed and locked.                                                                                                                   |

|                        |                                                                                                                             |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| In the lifting process | <p>Unauthorized personnel are not allowed to enter the lifting area.</p> <p>Do not stand under the crane arm.</p>           |
|                        | <p>Ensure that the crane is in the correct position. Do not perform long-distance lifting.</p>                              |
|                        | <p>Maintain the stability of EverCore.</p> <p>The diagonal inclination of EverCore should be less than or equal to 5°.</p>  |
|                        | <p>Lift gently. The cabinet should fall slowly and steadily when dropping to avoid impact on the internal equipment.</p>    |
|                        | <p>When EverCore comes into contact with the base, the steel cable should be removed after the base is evenly stressed.</p> |
|                        | <p>EverCore can only be lifted after it is securely fixed.</p>                                                              |

## **6. Unpacking and Accessory Inspection**

### **6.1. Unpacking**

Before unpacking the equipment, check the outer packing for damage, such as holes and cracks, and check the equipment model. If any damage is found or the equipment model is not what you requested, do not unpack the product and contact your dealer as soon as possible

Unpacking steps

#### **6.1.1.Steps of Product Outer Packaging**

The unpacking steps are as follows:

1. Remove the wrapping film outside the cardboard
2. Remove the top cover of the carton.
3. Remove the white clips from the cabinet.
4. Remove the cardboard enclosure frame.
5. Remove the honeycomb panels from the four sides and the top.
6. Remove the bottom honeycomb panel.
7. Take off the PE bag.

Unpacking is complete.

## 6.2. Accessory and cable Inspection

### 6.2.1. Inspection of Pre-installed Cables

To reduce the wiring workload between the EverCor and the inverter during system commissioning, the EverCor connections have been extended. These include the DC connection, BMS connection, internet connection, and auxiliary power supply connection. The extension cables are bundled inside the cabinet and clearly labelled. Please refer to the image and table below.



Figure 6- 1 Pre-installed cables inside cabinet



Table 6- 1 Pre-installed cables

| Name                  | Figure                                                                             | Amount                                                   | Usage                                                                                         |
|-----------------------|------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Battery DC cables     |   | 4 pcs ( Each diameter is 25mm <sup>2</sup> )             | For inverter battery port connection, they should be connected to inverter battery port       |
| Auxiliary power cable |   | 1 pcs (5 core cable, each diameter is 6mm <sup>2</sup> ) | Used as auxiliary power cable. they should be connected to inverter backup port or Grid port. |
| Communication cable   |   | CAN cable (1pcs)                                         | For BMS communication, it should be connected to inverter BMS1 port                           |
|                       |  | Ethernet cable(1pcs)                                     | For inverter datalogger connection. It should be connected to inverter datalogger.            |

## 6.2.2.Inspection of Accessories Supplied with Cabinet

Check that the deliverable contents are intact and complete, and free from any damage. If any items listed in the Packing List is missing or damaged, contact your dealer or call SolisStorage service.

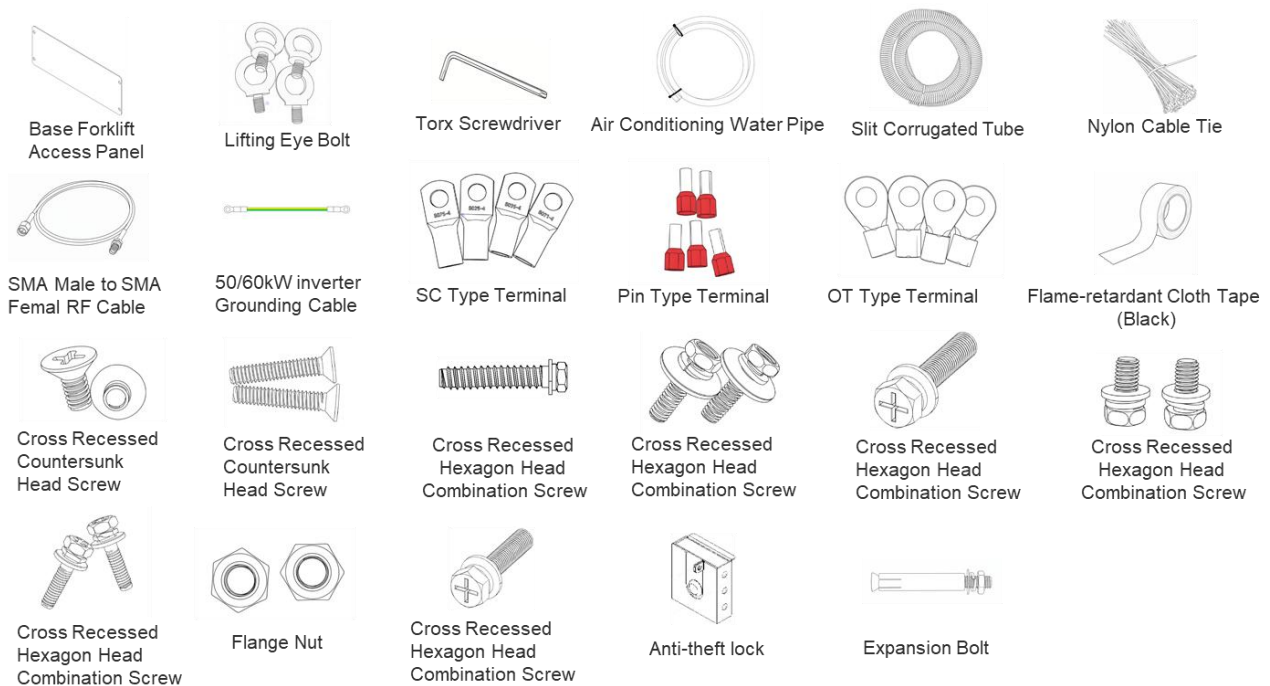


Figure 6- 2 Accessory in cabinet

Table 6- 2

| NO | Item                              | Qty | Usage                                                                                                                                                              | Remark       |
|----|-----------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 1  | Base Forklift Access Panel        | 8   | For forklift entry sealing of cabinet bottom 8 position                                                                                                            |              |
| 2  | Lifting Eye Bolt (M24)            | 4   | For cabinet hoisting usage                                                                                                                                         |              |
| 3  | Torx Screwdriver                  | 1   | For rear door disassembly                                                                                                                                          | Spare tool   |
| 4  | Air Conditioning Water Pipe(1.5m) | 1   | This pipe is designed to link the drain port of the air conditioner to the customer's on-site drainage outlet.                                                     |              |
| 5  | Slit Corrugated Tube(1.5m)        | 1   | For DC cable protection during battery parallel operation                                                                                                          | For parallel |
| 6  | Nylon Cable Tie (20mm)            | 10  | For fixing the wiring harness                                                                                                                                      |              |
| 7  | SMA Male to SMA Female RF Cable   | 1   | For 4G router connection with outside antenna                                                                                                                      |              |
| 8  | Inverter Grounding Cable          | 1   | For Inverter ground cable connection with cabinet                                                                                                                  |              |
| 9  | SC Type terminal                  | 4   | For parallel operation, battery cable terminal crimping on site                                                                                                    | For parallel |
| 10 | Pin Type Terminal                 | 5   | For parallel operation, crimp the L1, L2, L3, L4, and N cores of the Secondary cabinet's auxiliary power cable to 4 terminals, with 1 terminal reserved later use. |              |
| 11 | OT Type Terminal                  | 4   | For parallel operation, crimp the PE cores of the Secondary cabinet's auxiliary power cable to 1 terminal, with 4 terminal reserved later use                      |              |

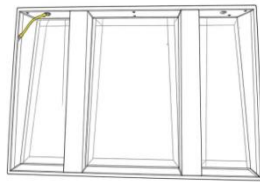
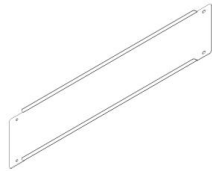
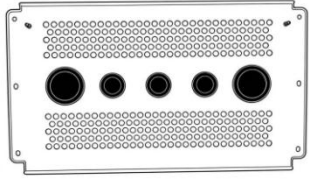
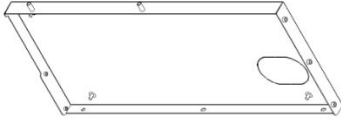
|    |                                                       |   |                                                                                                                                    |             |
|----|-------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 12 | Flame-retardant Cloth Tape (Black) 25m                | 1 | For parallel operation, thread the BAT wiring harness through the corrugated tube, then wrap both ends of the tube with cloth tape |             |
| 13 | Cross Recessed Countersunk Head Screw (M4*8)          | 2 | For LED light fixation                                                                                                             | Spare parts |
| 14 | Cross Recessed Countersunk Head Screw (M4*20)         | 2 | For temperature sensor, smoke sensor fixation                                                                                      |             |
| 15 | Cross Recessed Hexagon Head Combination Screw (M4*16) | 2 | For audible and visual alarm fixation                                                                                              |             |
| 16 | Cross Recessed Hexagon Head Combination Screw (M6*20) | 2 | For pack fixation                                                                                                                  |             |
| 17 | Cross Recessed Hexagon Head Combination Screw (M6*12) | 2 | For PDU PE bar fixation                                                                                                            |             |
| 18 | Cross Recessed Hexagon Head Combination Screw (M8*16) | 2 | For insulating column fixation                                                                                                     |             |
| 19 | Cross Recessed Hexagon Head Combination Screw (M8*25) | 2 | For bus bar fixation                                                                                                               |             |
| 20 | Flange Nut (M8)                                       | 2 | For bus bar fixation                                                                                                               |             |
| 21 | Cross Recessed Hexagon Head Combination Screw         | 2 | For wiring protective baffle fixation                                                                                              |             |
| 22 | Anti-theft lock                                       | 1 | For inverter anti-theft                                                                                                            |             |

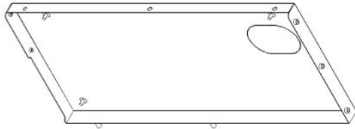
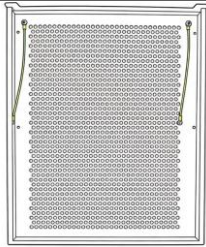
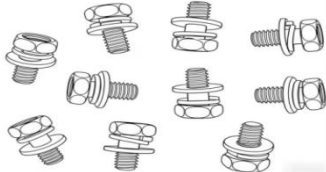
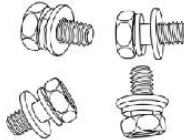
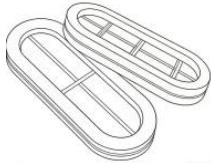
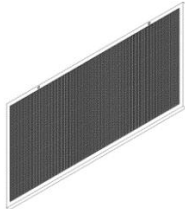
|    |                |   |                                                            |  |
|----|----------------|---|------------------------------------------------------------|--|
| 23 | Expansion Bolt | 6 | For cabinet 4 base feet fixation, 2 reserved for later use |  |
|    |                |   |                                                            |  |
|    |                |   |                                                            |  |
|    |                |   |                                                            |  |
|    |                |   |                                                            |  |
|    |                |   |                                                            |  |
|    |                |   |                                                            |  |

### 6.2.3. Inspection of Accessory Kit

Please ensure that the following items are included in the accessory kit:

Table 6- 3 Accessory Package

| No | Name                    | Qty | Usage                                                      | Item                                                                                  |
|----|-------------------------|-----|------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1  | Sunshade                | 1   | Energy storage cabinet sunshade                            |  |
| 2  | Wiring Cover-panel      | 1   | Energy storage cabinet wire cover-top panel (570*120*10mm) |  |
| 3  | Wiring Cover-panel      | 1   | Energy storage cabinet wire cover-bottom panel             |  |
| 4  | Wiring cover-Left panel | 1   | Energy storage cabinet wire cover- left panel              |  |

|    |                                                            |    |                                                                                                             |                                                                                       |
|----|------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 5  | Wiring cover—right panel                                   | 1  | Energy storage cabinet wire cover- right panel                                                              |    |
| 6  | Wiring cover-Main panel                                    | 1  | Energy storage cabinet wire cover-front panel                                                               |    |
| 7  | Cross slot external hexagon triple combination screw M6*12 | 10 | M6*12/SUS304                                                                                                |    |
| 8  | Cross slot external hexagon triple combination screw M4*12 | 4  | M4*12/SUS304                                                                                                |    |
| 9  | Oval retaining ring (80*120mm/Rubber)                      | 4  | Used for the left side and right side wiring protection on cable entry hole                                 |  |
| 10 | 120kWh ESS dust-proof net (83.4*399*13mm)                  | 1  | Used for the front door side ,installed at the air –conditioner air intake position to prevent dust on site |  |

## 7. Installation

### DANGER

Electric shock danger! Ignoring the following warnings may result in death or serious injury.

Make sure that no DC voltage is supplied to the equipment and there is no AC voltage on the AC lines; otherwise, it may cause serious injury or death. Provide warning labels to notify all personnel whose devices are not turned on. This label should be hung on the outside of the door and remain clearly visible. Make sure that the external AC side circuit breaker and DC circuit breaker are in the open position.

Do not touch the live parts of the device.

Do not place flammable materials near the equipment

### WARNING

The cables or copper bars provided by the user should meet the current-carrying capacity requirements.

It is necessary to comply with all country-specific standards and regulations

Hybrid inverter can only be connected to the public power grid after obtaining authorization from the local network operator

Only professional electricians can perform the operations described in this chapter

All wiring instructions must be followed

All input and output circuits are isolated from the housing

Make sure the electrical insulation meets the requirements before laying the cables

In accordance with EMC regulations, power lines and communication cables should be laid in layers

Provide support and protection for the cables when necessary to reduce their stress

Before wiring, please ensure that the equipment is turned off

Operators are strictly prohibited from operating without training

It is strictly prohibited for workers to work by hand without wearing protective equipment

The key points of connection are: ensuring that the connection is correct, reliable (without looseness), has good contact and no short circuit.

During the wiring process, the positive and negative poles of the DC combiner cabinet must not be reversed

Strictly prevent any form of short circuit during the connection process

## NOTICE

Moisture can damage equipment. For the normal operation of the equipment, please abide by the following rules

Do not open the equipment door when the relative humidity is higher than 95%

Do not maintain or repair the equipment in rainy or other bad weather

The installation and design of the equipment must comply with national and local standards and regulations

The wire dimensions and rated values are provided by the manufacturer in the corresponding table. If other cable sizes comply with local standards or regulations, they can also be used

The size of the grounding wire must be larger than half of the size of the AC or DC cable

## 7.1. Installation Preparation

### 7.1.1.Tools Preparation

The main tools used during the installation process can be referred to in the following figure.

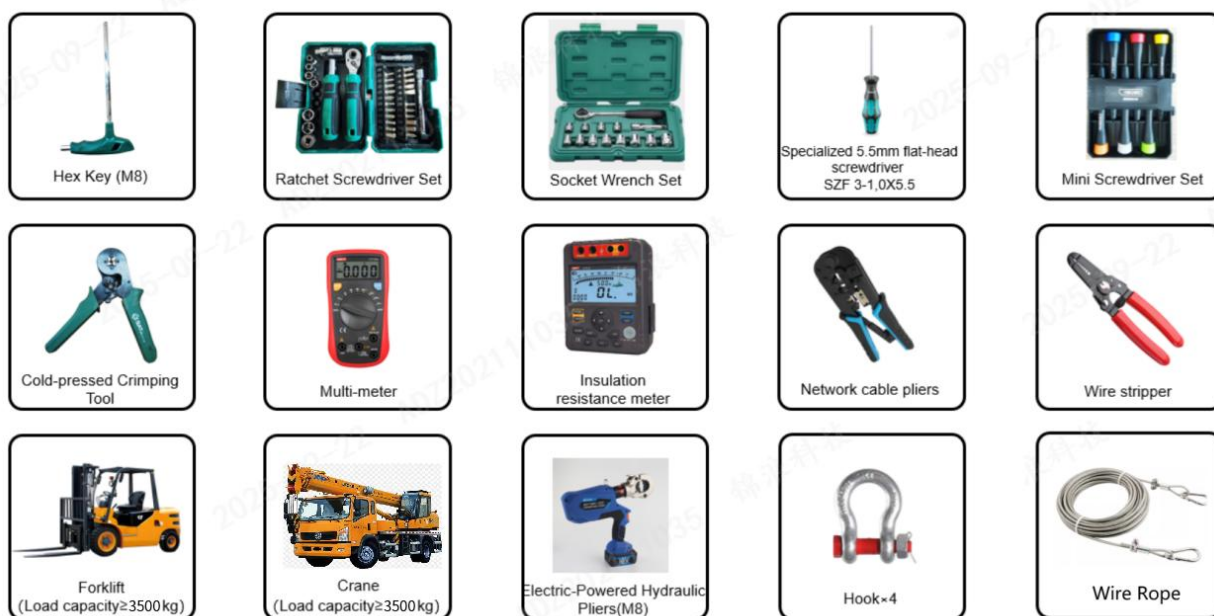


Figure 7- 1 tools list

## 7.2. Battery Cabinet Securing

As shown in Figure7-2, battery cabinet is provided with 4 fixing points on 4 feet.

Fixing  $\phi 14$ mm holes are pre-reserved at the fixing feet points, which shall align with the openings at the bottom corners of the cabinet base. Secure the cabinet using M12 screws with matching nuts.

In accessory package , 4 explosion bolts is already provided with battery cabinet, Level ground installation is suitable for areas where high water accumulation ( $\geq 50$  mm) will not occur. If the installation site is prone to water accumulation, it is recommended to add a concrete foundation.

Footing Spec: 80×80×7 Angle Steel (7 mm Thick)

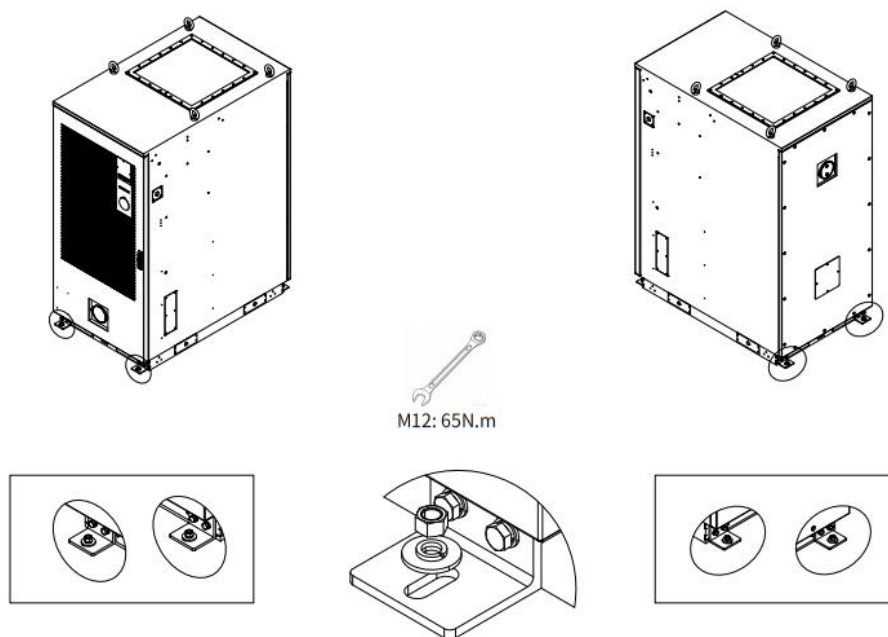


Figure 7-2 Feet position on cabinet

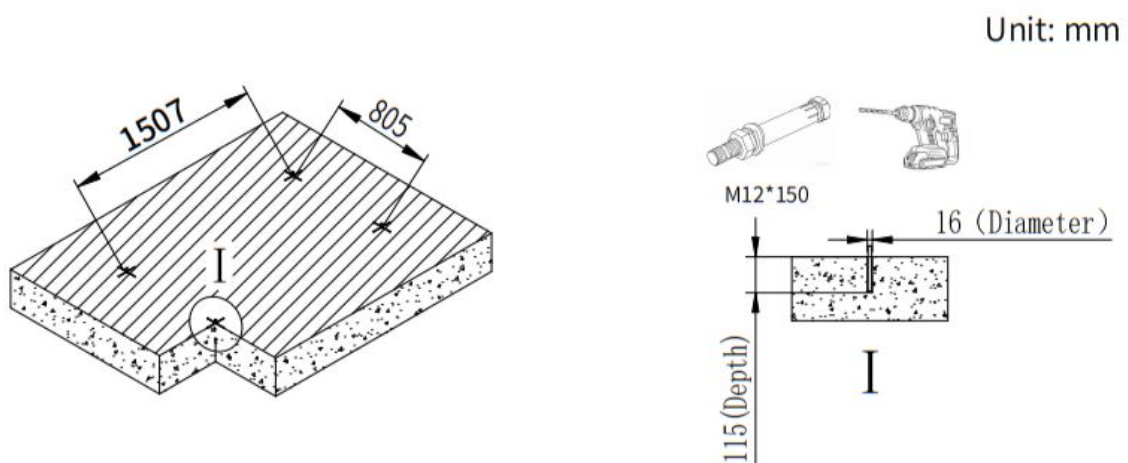


Figure 7-3 Drilling requirements for expansion bolts installation



### 7.3. Cabinet Ground Cable Connection

As shown in Figure 7-4, EverCore has a grounding connection copper bar. The copper bar has a M8 hole and requires the user to connect a ground cable to the ground point at the site.

The recommended cable diameter is 25mm<sup>2</sup>, Use M10\*20 Three-piece Screw/Stainless Steel, Torque: 30N.

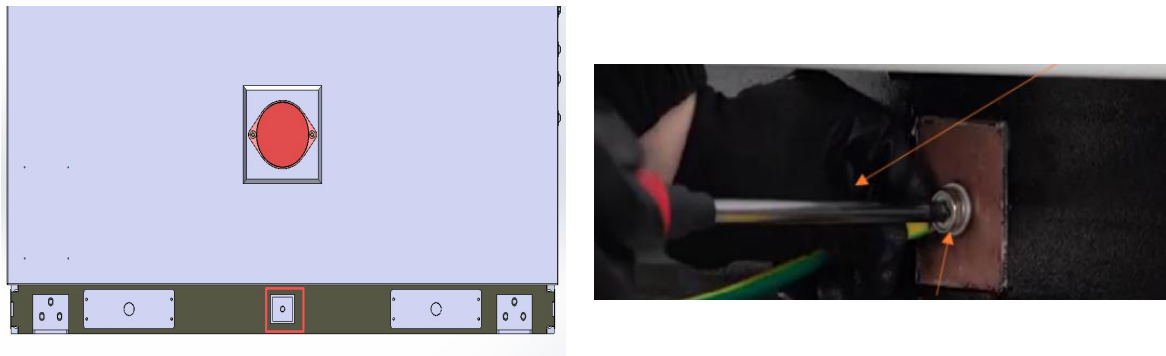


Figure 7-4 Cabinet ground connection

### 7.4. Inverters Wall-mounting Installation

The battery cabinet and the hybrid inverter are shipped separately. At the user's site, the hybrid inverter needs to be installed on the battery cabinet first. The installation steps are as follows:

1. Secure the inverter bracket, then hang the inverter on the bracket.

Use M10×16 hexagonal flange bolts to lock the back plate of the hybrid inverter onto the battery cabinet enclosure, and then use a forklift to assemble the hybrid inverter onto the back plate. Lift the hybrid inverter (be careful to avoid physical strain), and align the back plate of the hybrid inverter with the raised part of the installation bracket. Hang the hybrid inverter on the installation bracket and make sure it is firmly installed.

7.5. The Grounding Cable Connection

M5 Screw removed  
Torque: 3.5N.m

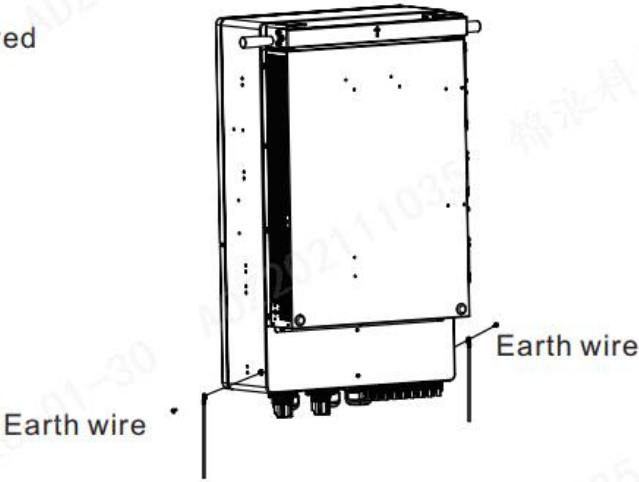


Figure 7-5 Inverter ground point



Figure 7-6 Ground connection with cabinet enclosure

## 7.6. Sunshade Installation

Installing a Sunshade by using M8×25 hexagonal flange bolts to fix Inverter Sunshade at the upper right position of the cabinet.



Figure 7-7  
remove the pre-installed bolts from the cabinet enclosure



Figure 7-8  
fixing the sunshade to cabinet enclosure



Figure 7-9 connect the ground cable of sunshade to cabinet enclosure

## 7.7. Threading Pre-installed Cable inside Cabinet

Be careful for using cabinet door stopper to make an enough space for installer to operate.



Figure 7-10 Cabinet Door stopper position

For product convenient installation, before leaving factory, some cables already pre-installed inside cabinet, for detailed cable definition, you can refer to **chapter 6.2.1** in this manual.

For the cable entry you can see the skill screen inside the cabinet, below is the cable entry definition

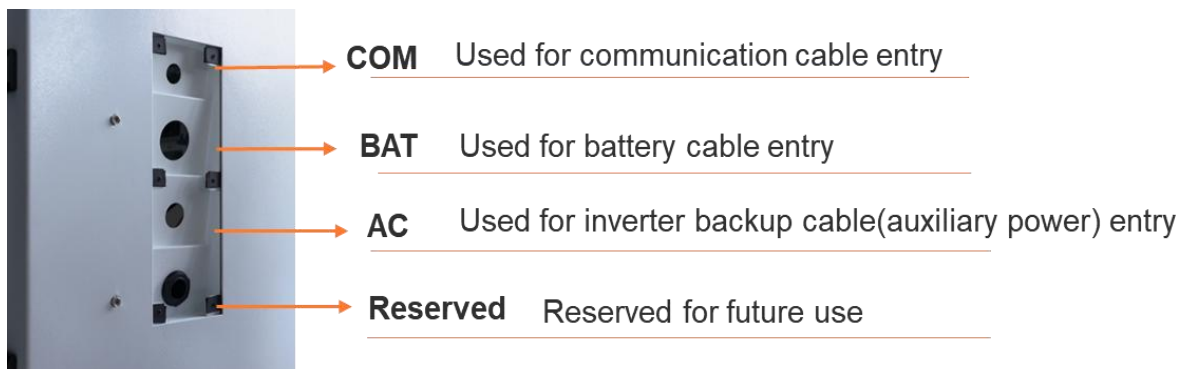


Figure 7-11 Cabinet Cable hole

You just need to connect another terminal to inverter, Ensure the cable gland nuts on both ends of the cable hole are fully tightened, Ensure all cable harnesses are fully threaded into right position.



Figure 7- 12 Steps of threading cable

## 7.8. Cabinet Pre-installed Cable Connection with Inverter

Find the pre-installed DC cables and connect them to 2 dc ports.

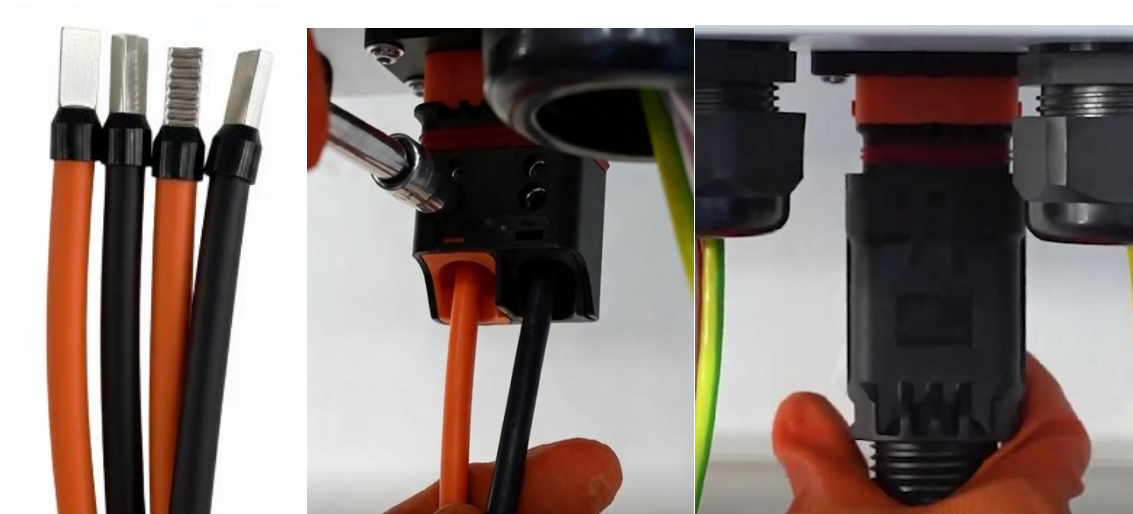


Figure 7- 13 Connecting battery cables to inverter

### 7.8.1.Auxiliary Power Cable Connection with Inverter

You can find the AC cable inside the cabinet, detailed cable appearance you can refer to chapter 6.2.1.1.Connection precautions for the AC cables at the hybrid inverter (including Smart port/ Backup port /Grid port): the allowed maximum temperature when connecting the ac power and the battery terminals is 85°C.



Figure 7- 14 Auxiliary power cable for Cabinet

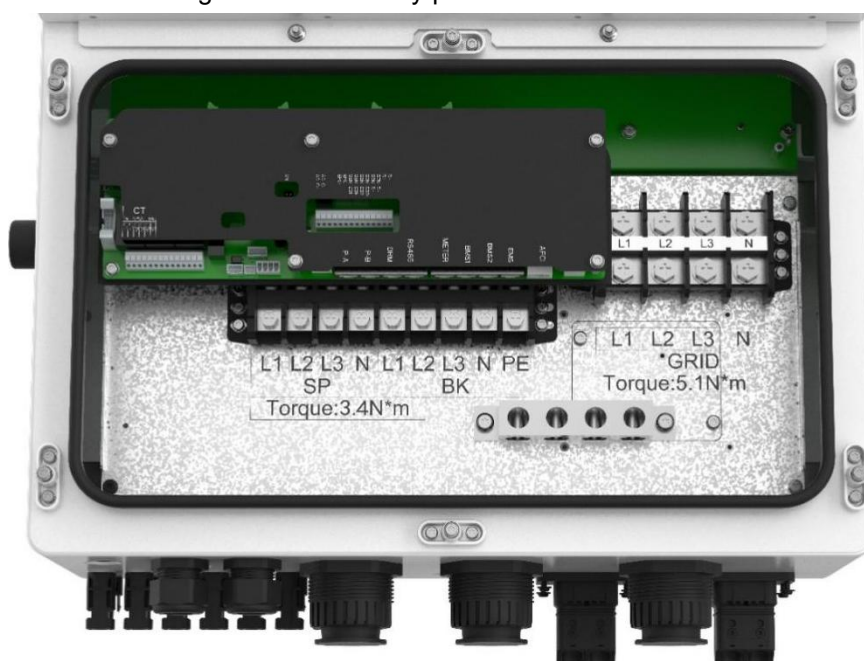


Figure 7- 15 Backup Port on the inverter

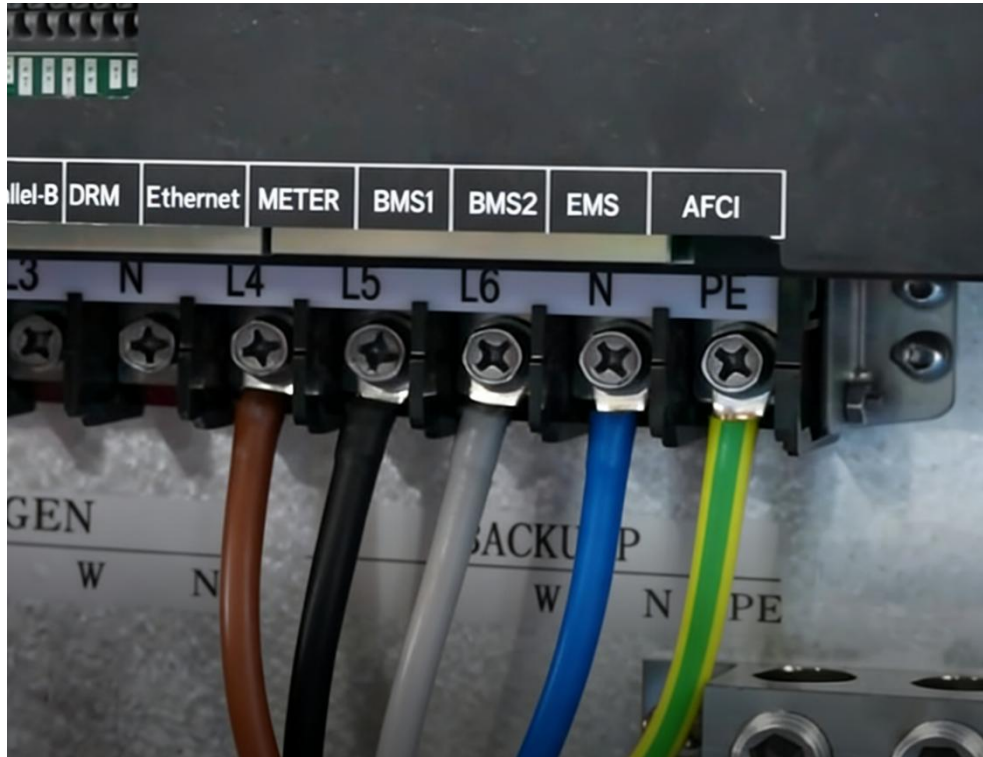


Figure 7- 16 Backup port auxiliary cable connection on inverter

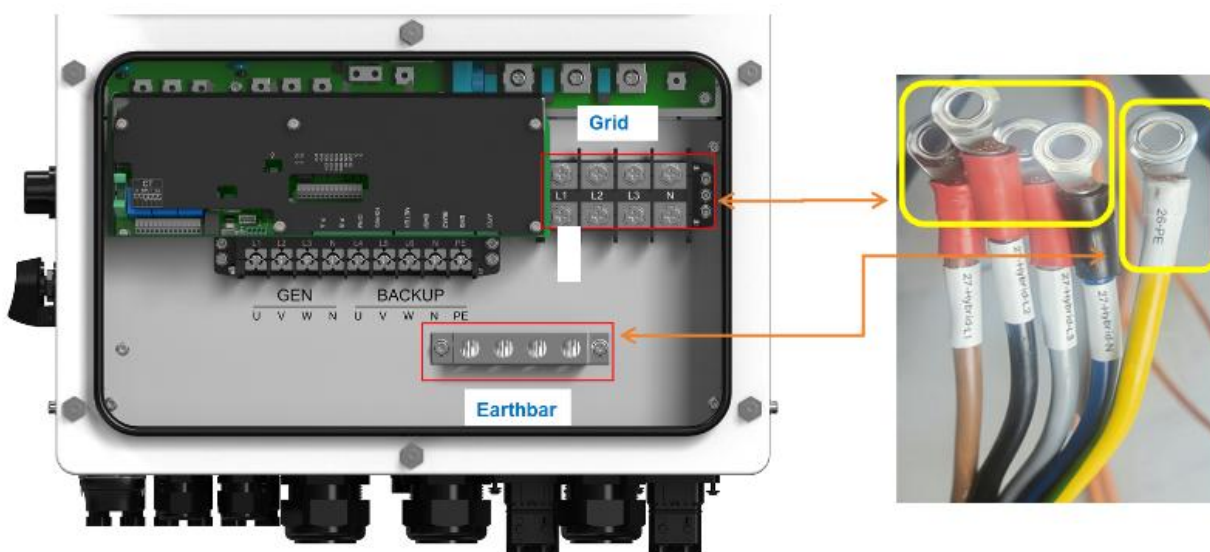
Note: The above method (connecting the auxiliary power line to the inverter's backup port) is applicable in cases where there is a backup load: grid-connected and off-grid switching scenarios, as well as pure off-grid scenarios.

If it is the scenario that multiple hybrid inverters are connected in parallel and operate in pure grid-connected mode (with no backup load and no need for on-grid/off-grid switching), The auxiliary power wiring of each battery cabinet needs to be connected to the grid terminal of the hybrid inverter.

The customers need to prepare the terminals for connecting the grid port and the auxiliary power cables, and perform the on-site crimping operation. (The cross-sectional area of the auxiliary power cables are 6 square millimeters. The bolt size for the power grid port are M8 (L1, L2, L3, N), and the PE port can be directly crimped (PE).

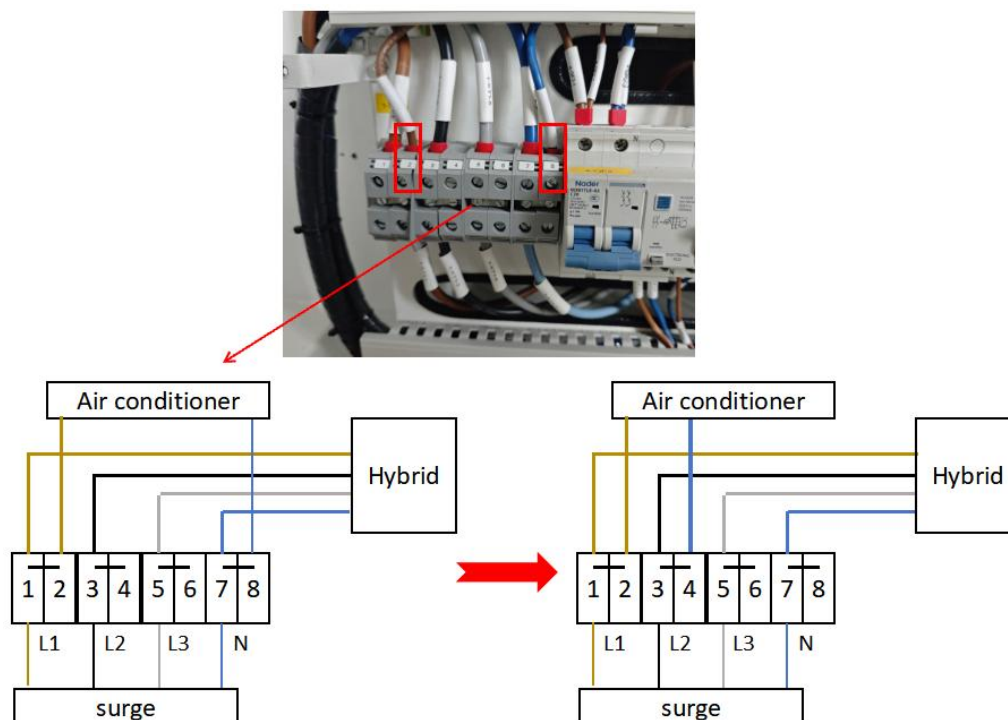


Multiple hybrid inverters are connected in parallel and operate in pure grid-connected mode (with no backup load and no need for on-grid/off-grid switching), the auxiliary power wiring of each battery cabinet needs to be connected to the **grid port**.



#### 7.8.2. For 3/(N)/PE, 220V/ 230V hybrid Auxiliary power wiring connection

Since the power supply for the air conditioner is 220V, considering the three-phase voltage of the power grid being 220/230V, the voltage between L1 and N is only approximately 130V. Therefore, it is necessary to open the bottom cover of the battery cabinet and adjust the auxiliary power wiring.



When a hybrid is combined with multiple battery cabinets for DC expansion, since the auxiliary power supply of the battery is automatically provided by phases L1-L2 when they are manufactured, in order to achieve



balanced three-phase output, the equipment needs to be manually adjusted to draw power from phases L2-L3 or L1-L3.

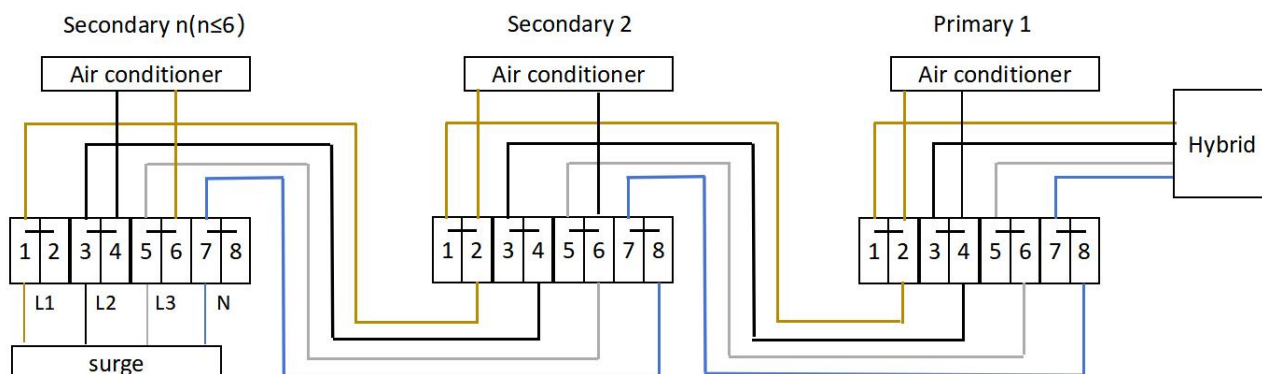


Table 7- 1 Ports connection reference

| Model     | Smart port           | Backup port          | Grid port         | Earth Bar          |
|-----------|----------------------|----------------------|-------------------|--------------------|
| Wire Size | 3AWG/4AWG            | 3AWG/4AWG            | 0AWG/1AWG         | 2 AWG              |
| Torque    | 3.4 N.m              | 3.4 N.m              | 5.1 N.m           | 3.4 N.m            |
| Cable     | 20-25mm <sup>2</sup> | 20-25mm <sup>2</sup> | 50mm <sup>2</sup> | 33 mm <sup>2</sup> |

### 7.8.3.Communication Cable Connection

#### 1. Battery BMS cable connection

CAN communication is supported between inverter and compatible battery models. Please lead the CAN cable through the COM1 or COM2 port of the inverter and connect to the BMS terminal with RJ45 connector

The CAN cable reserved inside the cabinet according to chapter 6.2.2.1, Plugging the CAN cable to communication interface-BMS1.port.



Figure 7- 17 Inverter Bottom BMS Interface

## 2. Data logger Ethernet cable connection.

Follow the connection method shown in Figure 7-21. Find the Ethernet cable inside the cabinet, and connect it to the bottom of data logger, then connect the datalogger to inverter COM port

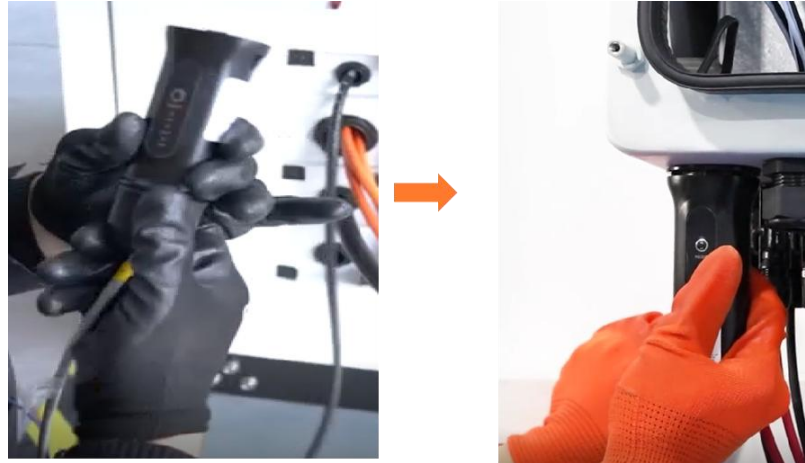


Figure 7- 18 Connect the data logger Ethernet cable on inverter

## 7.9. Inverter Cable Connection

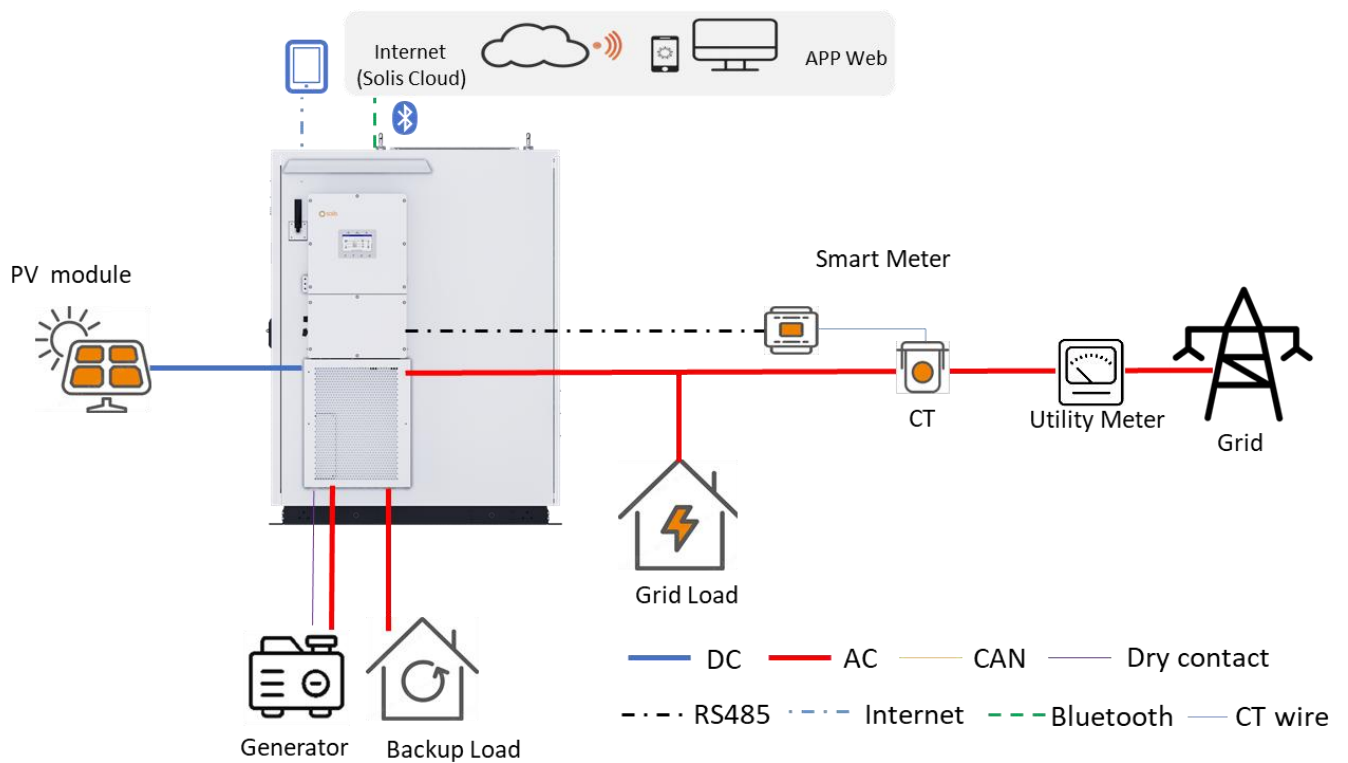


Figure 7- 19 Inverter wiring connection diagram

Table 7-2 Table 7-3 Ports connection reference

| Model     | Smart port           | Backup port          | Grid port         | Earth Bar          |
|-----------|----------------------|----------------------|-------------------|--------------------|
| Wire Size | 3AWG/4AWG            | 3AWG/4AWG            | 0AWG/1AWG         | 2 AWG              |
| Torque    | 3.4 N.m              | 3.4 N.m              | 5.1 N.m           | 3.4 N.m            |
| Cable     | 20-25mm <sup>2</sup> | 20-25mm <sup>2</sup> | 50mm <sup>2</sup> | 33 mm <sup>2</sup> |

### 7.9.1.PV Connection

#### **⚠ DANGER**

Before connecting the inverter, make sure that the open-circuit voltage of the photovoltaic array is within the limit range of the inverter.

Before connection, confirm that the polarity of the output voltage of the photovoltaic array matches the "DC+" and "DC-" symbols.

Please use the approved DC cables for the photovoltaic system.

The user's on-site PV system should be connected to the hybrid inverter, you can thread the PV cable from left wiring protective panel or bottom panel.

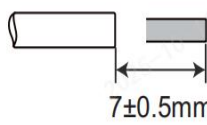


Figure 7-20 PV cable Connection on inverter

1. PV Cable Installation

1. Select the appropriate DC cable and strip the outer sheath of the wire by  $7 \pm 0.5$  millimeters.

Please refer to the table below for specific specifications.



| Cable type                | Cross section (mm <sup>2</sup> ) |                   |
|---------------------------|----------------------------------|-------------------|
|                           | Range                            | Recommended value |
| Industry generic PV cable | 4.0~6.0<br>(12~10AWG)            | 4.0 (12AWG)       |

Figure 7-21

2. Remove the DC terminals of the accessory package, rotate the nut to disassemble it, and remove the waterproof rubber ring.

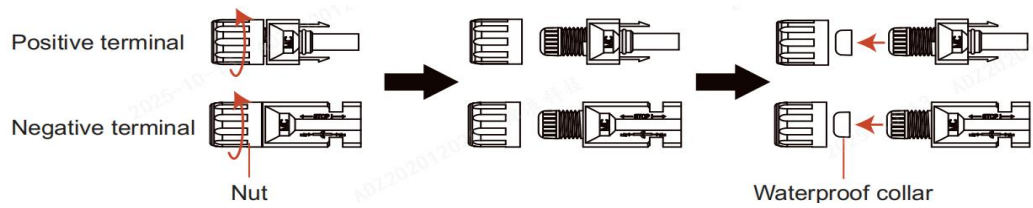


Figure 7-22

3. Pass the stripped DC cable through the nut and the waterproof rubber ring.

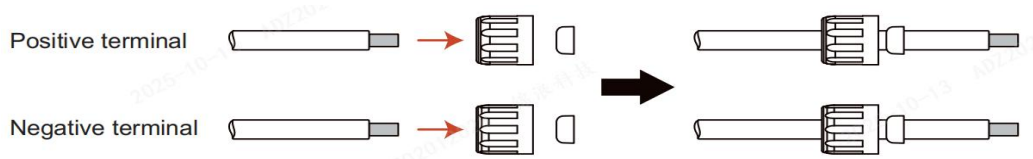


Figure 7-23

4. Connect the wire part of the DC cable to the metal DC terminal, and use the dedicated DC terminal crimping tool for crimping.

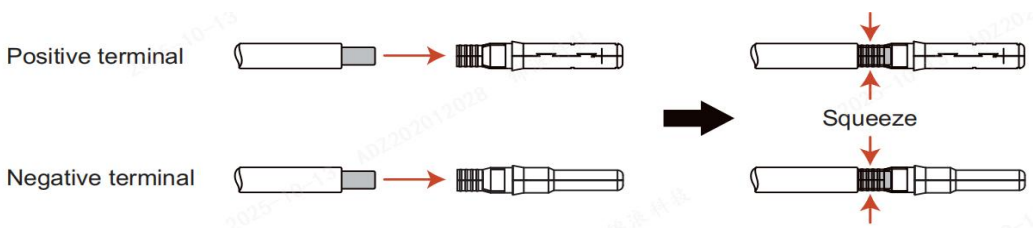


Figure 7-24

5. Insert the press-welded DC cable firmly into the DC terminal, then insert the waterproof rubber ring into the DC terminal and tighten the nut.

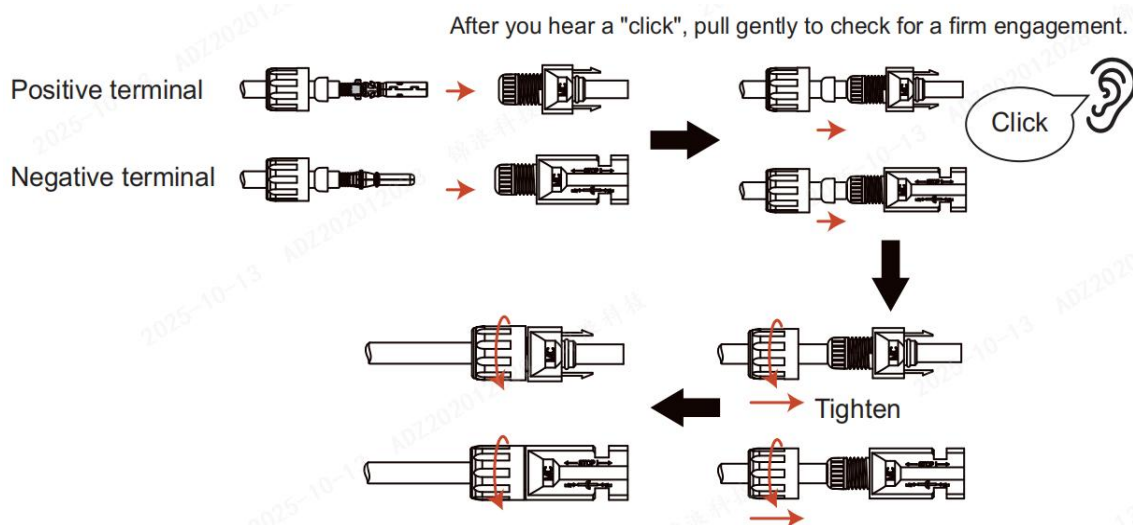


Figure 7-25

6. Use a multimeter to measure the DC input photovoltaic voltage and verify the polarity of the DC input cable.



Figure 7-26

7. Connect the already wired DC terminals to the inverter as shown in the figure, and gently tighten the nuts to ensure a secure connection. When you hear a "click" sound, it indicates that the connection is correct and secure.

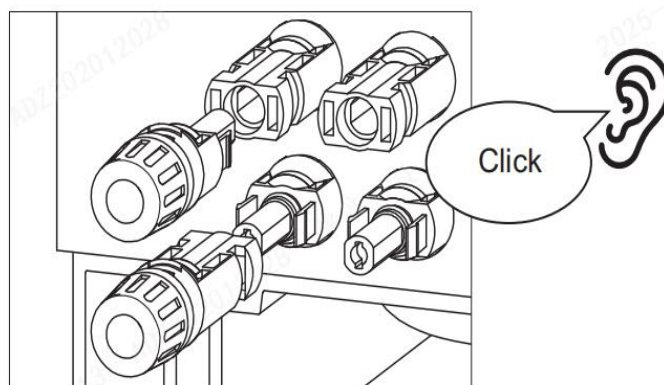


Figure 7-27

When installing, please pay attention to the following points:

If the DC input is accidentally reversed or the inverter malfunctions or operates abnormally, the DC switch must not be turned off. Otherwise, it may cause a DC arc, damage the inverter, and even lead to a fire.

The correct operation is:

1. Use the clamp-type clamp meter to measure the DC series current.
2. If the current is higher than 0.5A, wait until the solar irradiance decreases until the current drops below 0.5A.
3. Only when the current is lower than 0.5A, is it allowed to close the DC switch and disconnect the photovoltaic series.
4. To completely eliminate the possibility of faults, disconnect the photovoltaic series after closing the DC switch to avoid secondary faults caused by continuous photovoltaic energy the next day.

Please note that any damage caused by incorrect operation is not covered by the equipment warranty.

Table 7-4 PV input requirement

|                                      |           |
|--------------------------------------|-----------|
| Max input voltage                    | 1000V     |
| Rated voltage                        | 600V      |
| Start voltage                        | 180V      |
| MPPT voltage range                   | 150-850 V |
| Max input current                    | 4*42A     |
| Max short current                    | 4*60A     |
| MPPT number/Max input strings number | 4/8       |

Please note that the maximum operating altitude is 4,000 meters. However, when the altitude exceeds 2000 meters, the maximum input photovoltaic voltage will decrease. The table below shows the relationship between altitude and voltage.



Table 7- 5

| Altitude (m) | Voltage (Vdc) |
|--------------|---------------|
| 2000         | 1000          |
| 2700         | 1000          |
| 3000         | 981           |
| 3500         | 925           |
| 4000         | 875           |

### 7.9.2.Utility Grid Connection

About local grid connection with inverter. Please refer to Figure for the wiring procedure:



Figure 7-28 Grid port position of inverter

Table 7-6 Connection reference

| Model     | Grid port         |
|-----------|-------------------|
| Wire Size | 0AWG/1AWG         |
| Torque    | 5.1 N.m           |
| Cable     | 50mm <sup>2</sup> |

Detailed wiring steps are as follows:

1. Disconnect the AC circuit breaker to ensure it won't accidentally turn on.
2. Strip the insulation sheath from the end of the AC cable to a length B, where B (insulation stripping length) is 2 mm –3 mm longer than A (OT cable terminal crimping area).
3. Place R-type terminals on both ends and perform a secure crimp connection. The crimped part of the terminals must be insulated with heat shrink tubing or insulating tape.
4. Select the matching diameter of the outlet sealing ring according to the diameter of the AC cable. Cut the diameter of the sealing ring to the appropriate size, pass the cable through the sealing ring, remove the nut at the corresponding position of the wiring box, and use a socket wrench to connect the cable to the corresponding AC terminal block in sequence. The torque should follow the recommended torque in table.
5. When the cable is coming out in right wiring box, there should be no openings or gaps between the tower protective sleeve and the cable.
6. After the AC cable are wired, the cables should be fixed, the installers should use the ribbon to secure the wire harnessed in the holes of the surrounding metal shells.
7. For detailed connection information, refer to the Solis hybrid inverter manual.

### **7.9.3.Backup Load Connection**

The power cable of the user load should be connected to the backup port of the hybrid inverter. The following is the interface definition:

NOTE: The auxiliary power and backup load cable should be connected to a same set of backup terminal, you should lock 2 sets cable in 1 set copper terminal.

### **7.9.4.Generator Connection**

The diesel generator is connected to the EverCore hybrid inverter. Please refer to Figure to ensure the connection procedures are correct.

The two GEN DO1 terminals are for a voltage-free dry contact signal for connecting to a generator's NO relay which starts up the generator whenever necessary. When generator operation is not required, Pins 21 (GEN DO1+) and 22 (GEN DO1-) are in open circuit. When generator operation is needed, Pins 21 and 22 are in closed circuit. For automatic control function of generator, you should connect the dry



contact signal cable to the DO ports

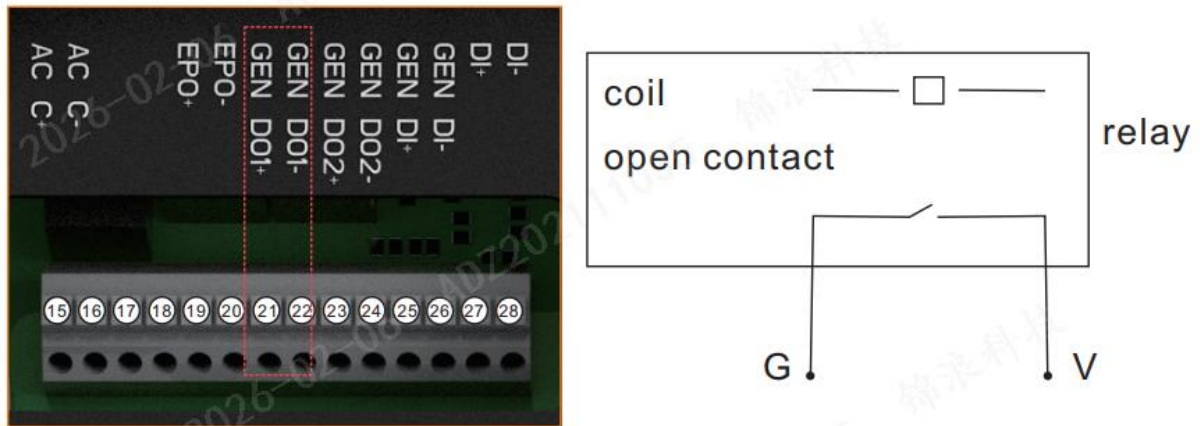


Figure 7-29 Generator DO ports

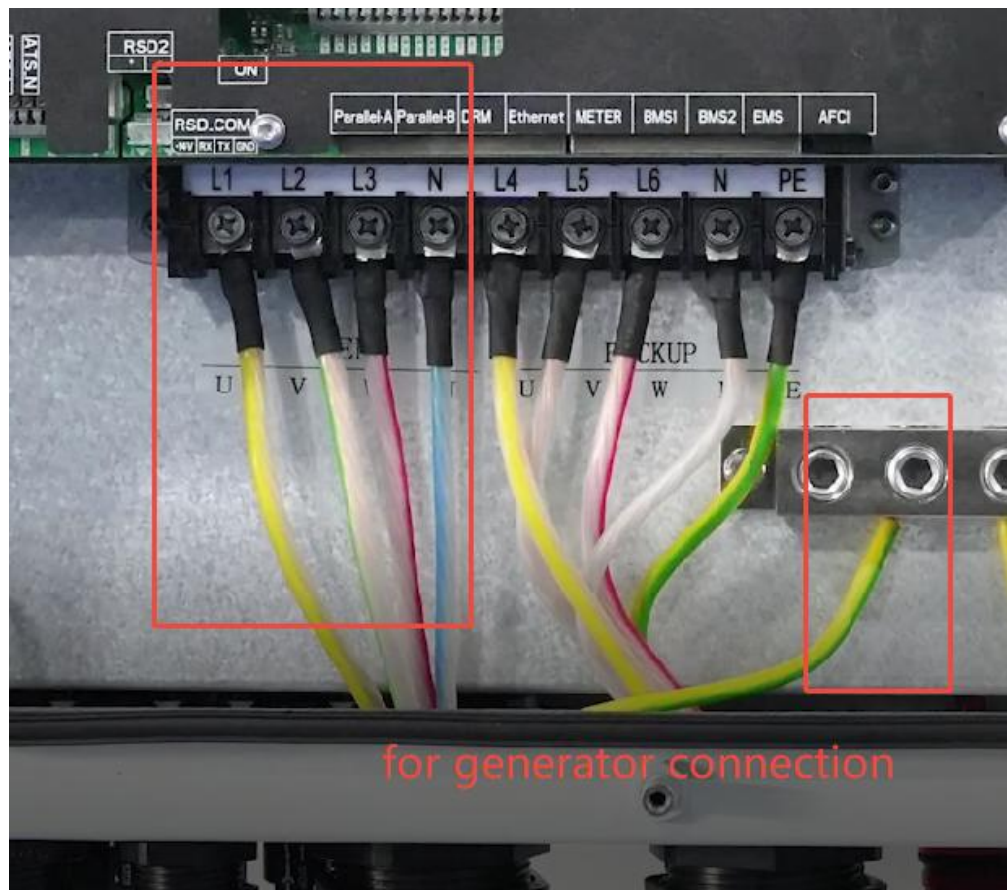


Figure 7-30 Generator Connection Position on inverter

- Detailed wiring steps are as follows
- 1. Disconnect the AC circuit breaker to ensure it won't accidentally turn on.
- 2. Strip the insulation sheath from the end of the AC cable to a length B, where B (insulation

stripping length) is 2 mm – 3 mm longer than A (OT cable terminal crimping area). Place R-type terminals on both ends and perform a secure crimp connection. The crimped part of the terminals must be insulated with heat shrink tubing or insulating tape.

3. When connecting to the grid port and the SMARTLOAD/GEN/INV ports, remove the three screws on the cover of the inverter junction box, and then remove the junction box cover.

4. Select the matching diameter of the outlet sealing ring according to the diameter of the AC cable. Cut the diameter of the sealing ring to the appropriate size, pass the cable through the sealing ring, remove the nut at the corresponding position of the wiring box, and use a socket

5. Wrench to connect the cable to the corresponding AC terminal block in sequence. The torque should follow the recommended torque in table.

6. When the cable is coming out in right wiring box, there should be no openings or gaps between the tower protective sleeve and the cable.

7. After the AC cable are wired, the cables should be fixed, the installers should use the ribbon to secure the wire harnessed in the holes of the surrounding metal shells.

8. For detailed connection information, refer to the Solis hybrid inverter manual.

#### **7.9.5.Smart Meter Connection**

The wiring principle between the smart meter and the CT is shown in the following diagram. It mainly consists of two parts: One part is the wiring between the smart meter itself and the CT, and the other part is the wiring between the smart meter and the hybrid inverter. The connections related to the smart meter and CT are mainly divided into voltage input, current input, auxiliary power supply, communication lines, as shown in the following diagram:

1. The voltage measurement cable should be directly connected to the input port of the client's power grid, including L1, L2, L3 and the N line.

2. The current measurement should be detected by CT, CT device must be installed on each phase cable of the power grid. When connecting, be sure to pay attention to the polarity of the CT and ensure that the phase sequence of the CT connected to L1, L2, and L3 is correct; otherwise, it will affect the normal use of the product.

Table 7-7 CT cable sequence

| CT cable             | Ports on meter       |
|----------------------|----------------------|
| L1 CT+ cable(white)  | 20(S <sub>11</sub> ) |
| L1 CT- cable (black) | 19(S <sub>21</sub> ) |
| L2 CT+ cable (white) | 18(S <sub>12</sub> ) |
| L2 CT- cable (black) | 17(S <sub>22</sub> ) |
| L3 CT+ cable (white) | 16(S <sub>13</sub> ) |
| L3 CT- cable (black) | 15(S <sub>23</sub> ) |

3. Meter Auxiliary power supply: an external 220Vac power supply must be provided separately to power the electricity meter. The power line needs to be connected to the LA (5) and NA (6) terminals of the smart meter.

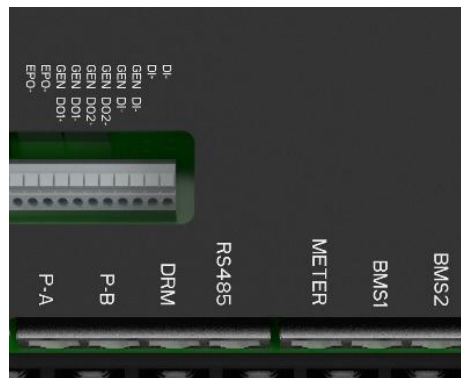


Figure 7-31 Meter Connection Port on inverter

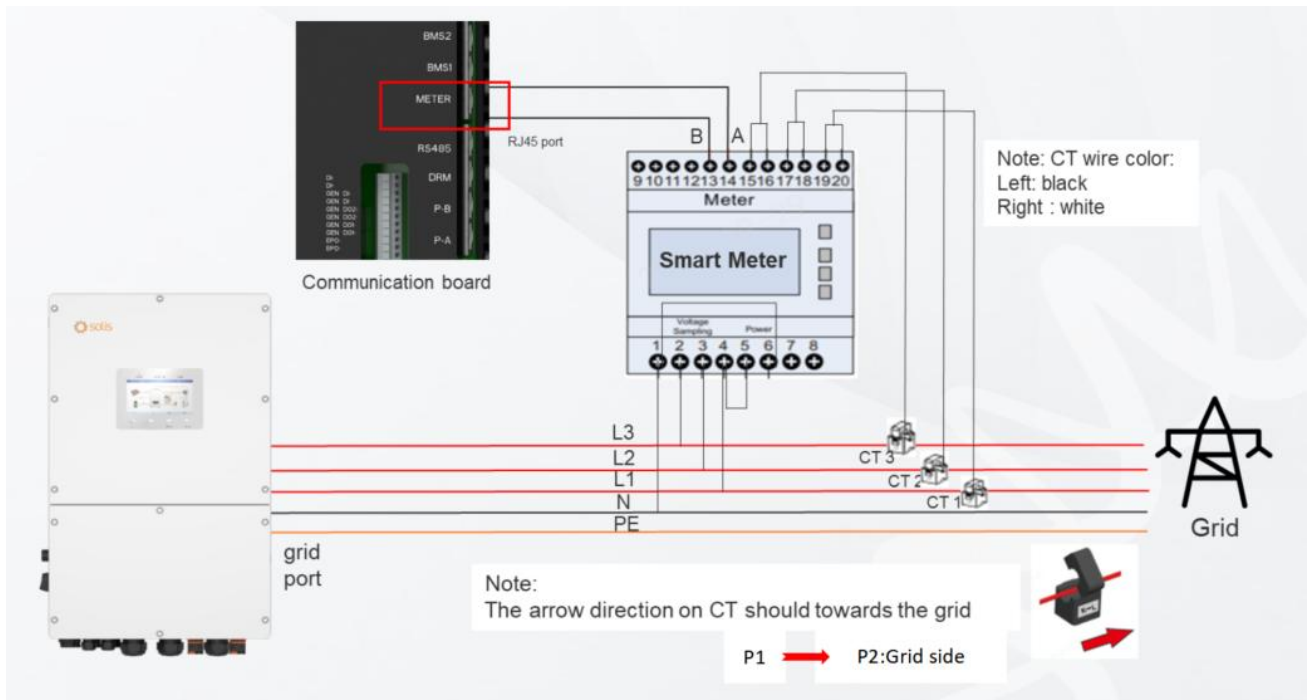


Figure 7-32 Meter Cable Connection on inverter

## 7.10. Wiring Protective Baffle Panel Installation

Securing the left and right side panel firstly, and if you have the load cable or other grid cable, generator cable, you should thread these AC cable to the bottom panel, after that install the bottom panel.



Figure 7-33 Wiring protective baffle panel installation diagram

Using M6×12 hexagonal flange nuts, securing corresponding panels to the right position

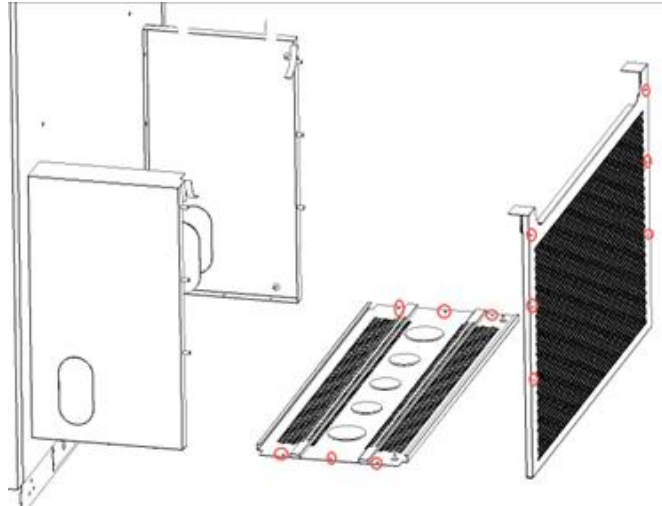


Figure 7-34 Securing position

Connecting the ground cable of the right / left side baffle to cabinet enclosure



Figure 7-35 Panel ground cable installation

Fix the front panel.

After the assembly of the hybrid inverter wiring harness is completed, use M6×12 hexagonal flange bolts to fix front panel at both ends of the side plates.

Table 7-8 Bolt and Nut Torque Gauge

| Bolt diameter | Torque(N.m) | Re-twisting torque(N.m) |
|---------------|-------------|-------------------------|
| M6            | 10          | 9                       |
| M8            | 20          | 15                      |
| M10           | 30          | 25                      |
| M12           | 50          | 45                      |

## 7.11. Battery Pack Wiring

To ensure transportation safety and prevent possibility of a shorting of battery terminals, some battery cables are not connected and need to be manually connected during system commissioning.

As highlighted in Figure 7-36, two battery terminals are not connected:

1-the positive terminal at the top left is not connected. The cable is secured to the left side of the battery cabinet.

2-The negative terminal at the bottom right is not connected. The cable is secured to the right side of the battery cabinet.

During system commissioning, installer need to connect above two cables onsite. The orange one should be connected to the positive terminal (B+), and the black one to the negative terminal (B-). The detailed operation steps are as follows:

1. Before installation, it should be confirmed that the pins of the power line connector are not skewed or broken, and should be inserted as vertically as possible.
2. Install the DC power line according to the color and refer to Figure 5-43. When connecting the wire harness, do not pull the wire harness forcefully.
3. After the connector is assembled in place, you should hear a click. Gently pull the connector by hand; it must not be loose.

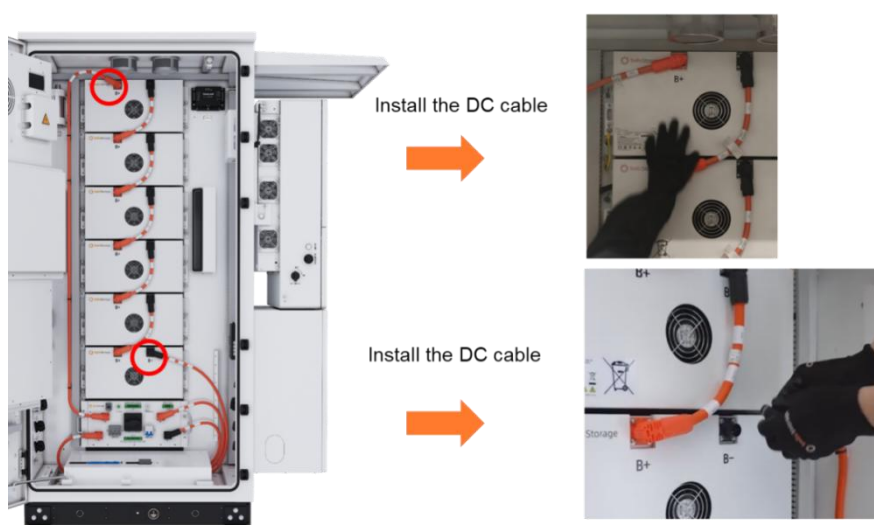


Figure 7- 36 Diagram of Power Cables in the Battery Compartment

## 7.12. System External Dry Contact Signal Connection (optional)

The EverCore system provides a dry contact output for Fire Protection Linkage activation. Upon detecting fire protection linkage system activation, the system will enable the Fire Protection Linkage dry contact to transmit a signal to the client.

Table 7-9 External Dry Contact Interface

| Position        | Terminal | Definition of terminal  | Connector type   |
|-----------------|----------|-------------------------|------------------|
| EverCore<br>XT3 | XT3:1    | Fire Protection Linkage | Tubular terminal |
|                 | XT3:2    |                         | Tubular terminal |

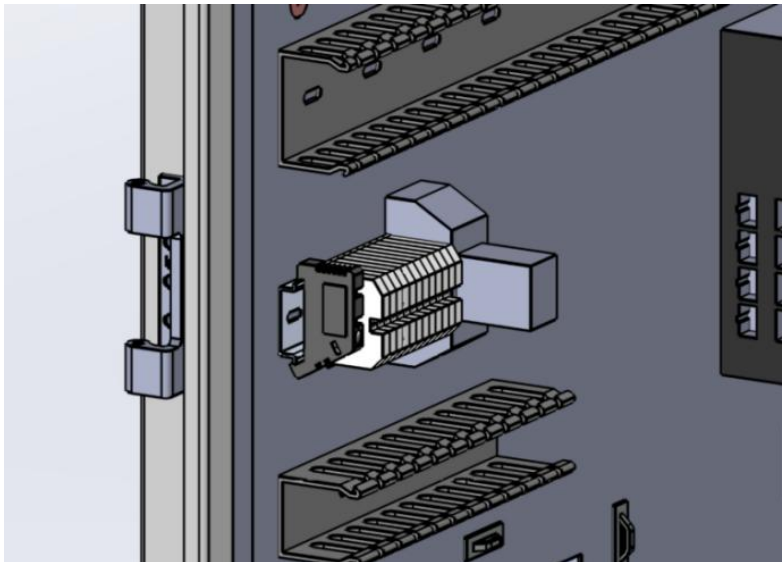


Figure 7-37 External Dry Contact Control



7.13. Broadband Router Installation

Customers need prepare the router by themselves. you can connect the Ethernet cable from switch from left side or right side

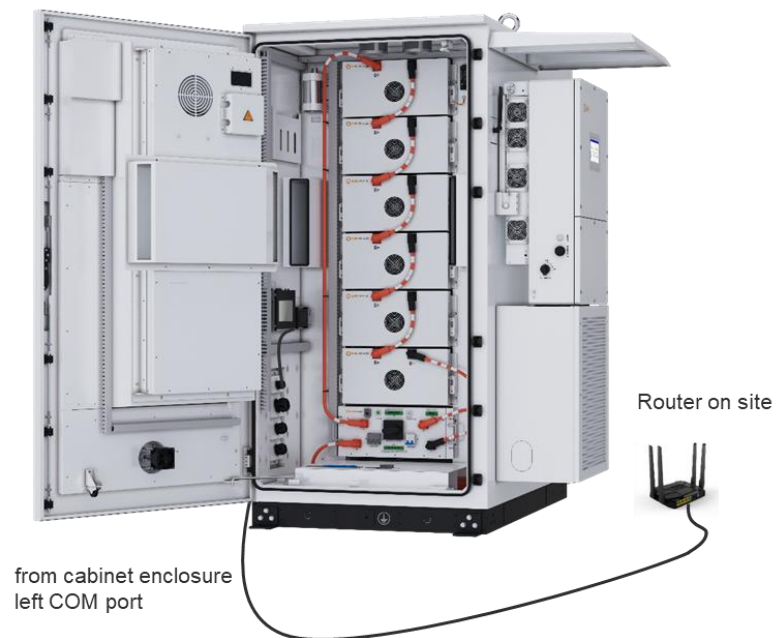


Figure 7-38

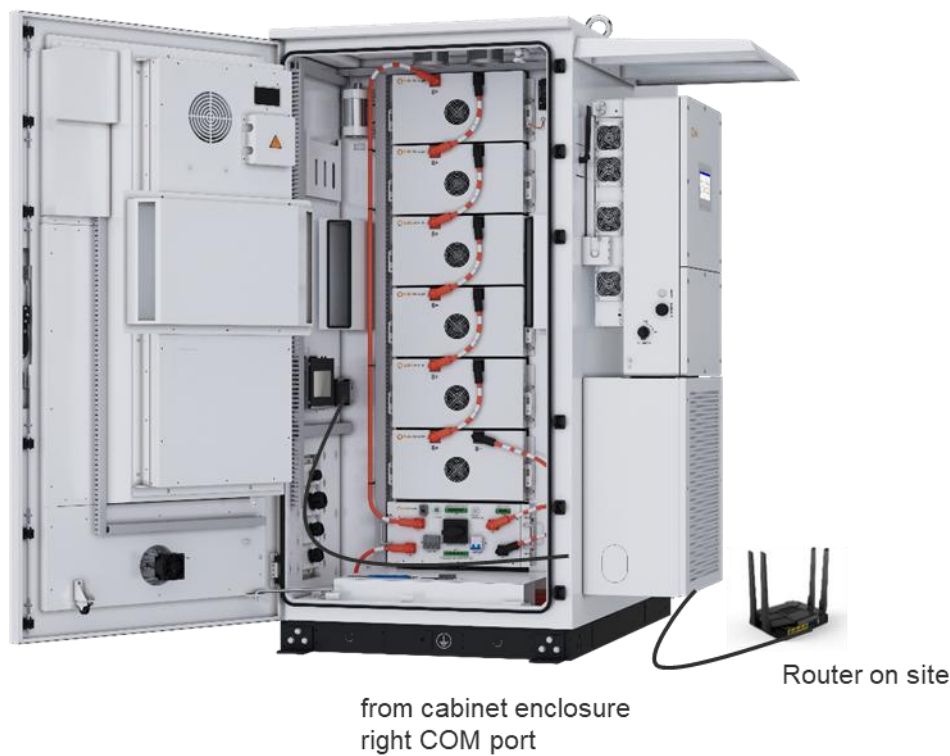


Figure 7-39



## 7.14. Air-conditioner Drain Pipe Installation (optional)

1. The pipe is prepared in the accessory package, if your installation foundation is like below figure, you should install the drain pipe to divert water to the designated location.

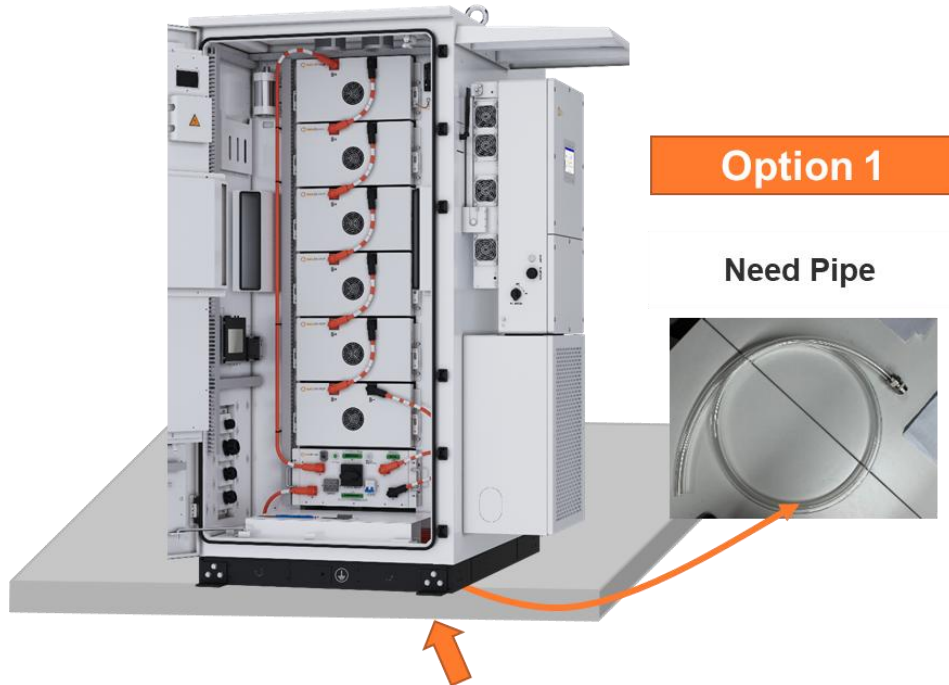


Figure 7-40

Water pipe installation method 1:



Figure 7-41

- a. Use a 24-inch open-end wrench to rotate and remove the retaining nut at the water outlet.
- b. Insert the removed nut into the water pipe (the water pipe is in the accessory package)
- c. Insert the water pipe into the bottom water outlet of the cabinet.
- d. Use an open-end wrench to tighten the nut.

Water pipe installation method 2:

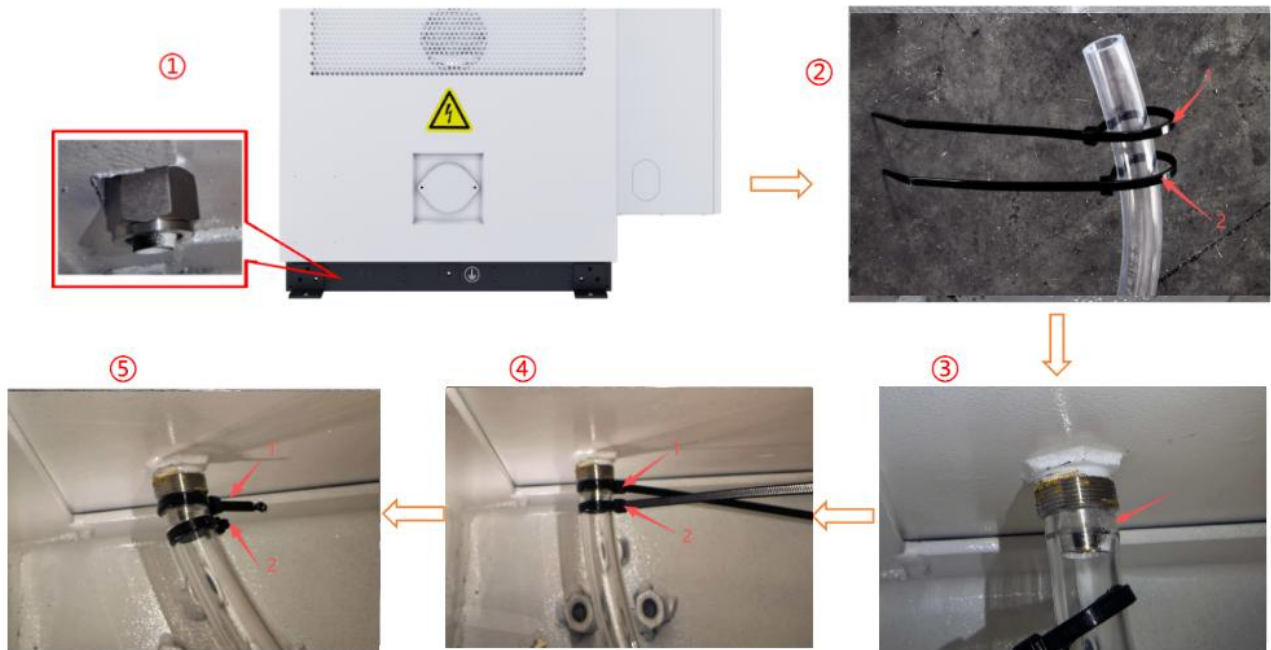


Figure 7-42

- a. Insert the cable ties(in the attachment package) into the water pipe.
- b. Put the water pipe into the water outlet.
- c. Tighten the cable ties.
- d. Cut off the excess part of the cable ties.

2. If your foundation is like the bellow figure, you don't need the pipe.

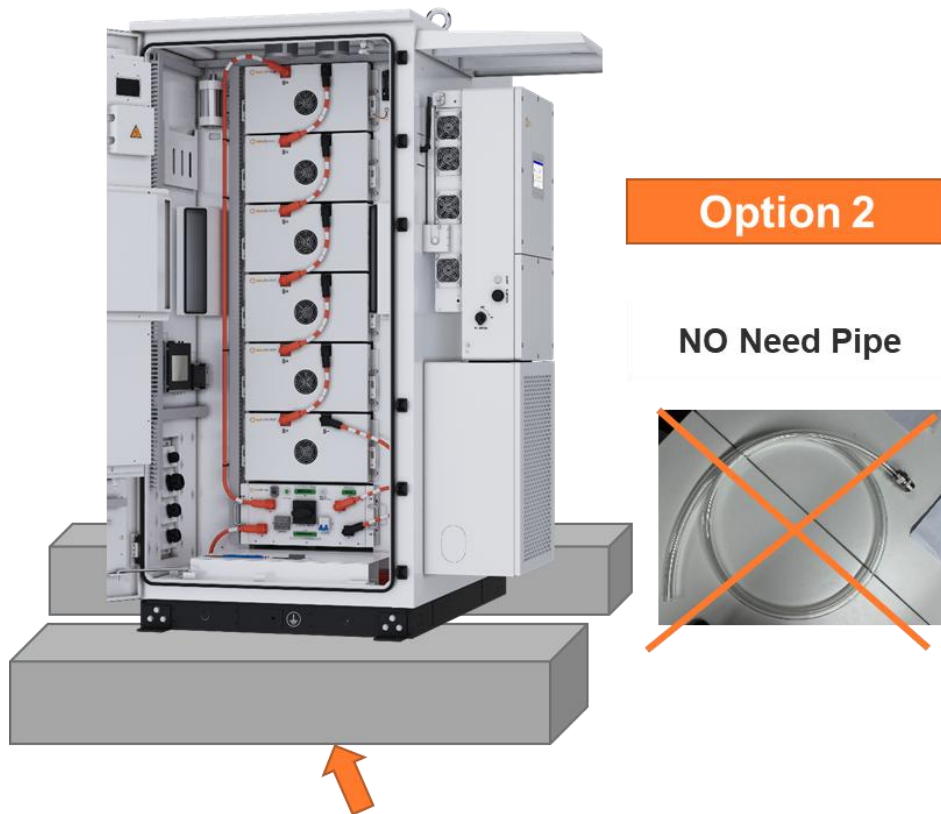


Figure 7-43

### 7.15. Dust cover Installation

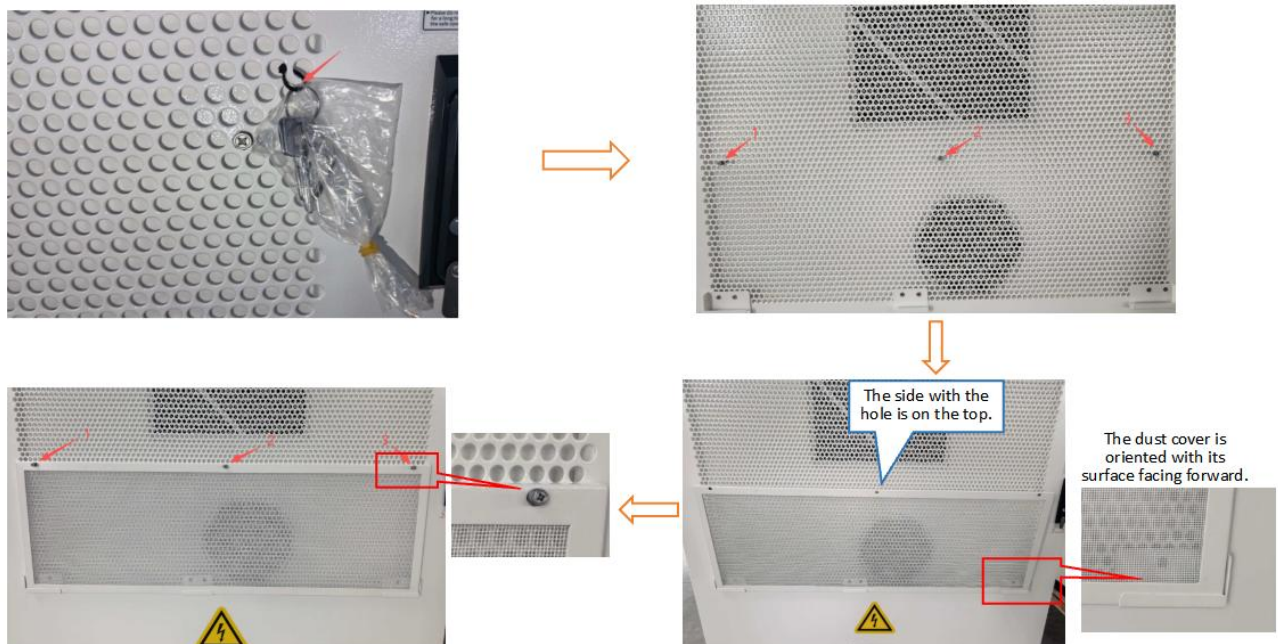


Figure 7-44

- a. Use the diagonal pliers to cut off the cable ties and remove the cabinet door key.
- b. Use the Phillips screwdriver to remove the reserved screws on the cabinet door.
- c. Place the dust filter in the groove of the bracket (the dust filter is in the accessory package).
- d. Use the M6\*25 hex socket combination screw that was removed to fix the dust filter (recommended torque: 2.5 N.M).

## 7.16. Anti-theft Lock Installation

For preventing the stealing of inverter, you should install a lock (in accessory package) to the bracket

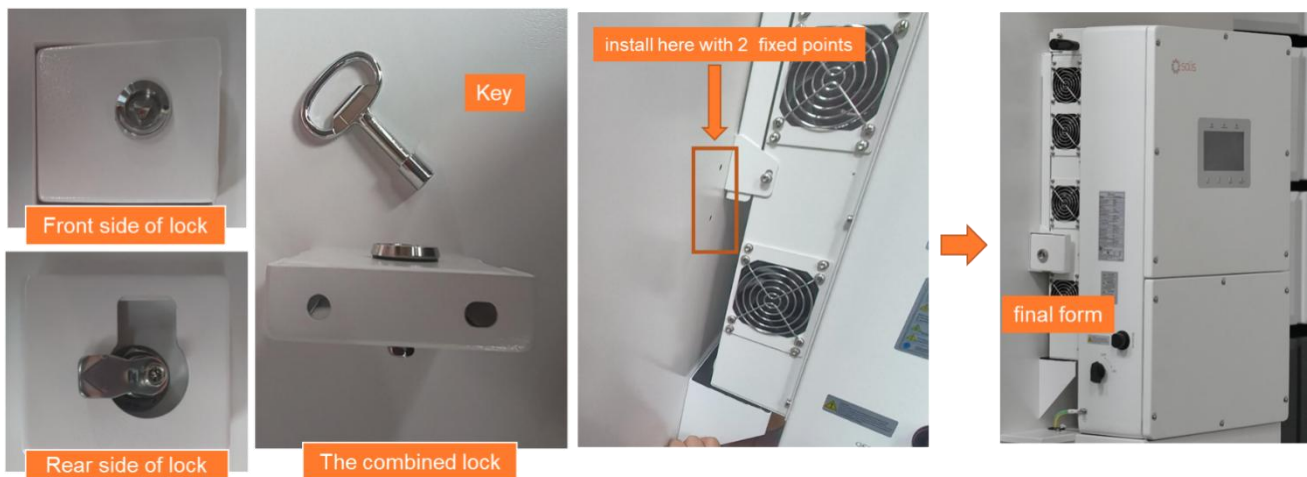


Figure 7-45 Lock Installation

### 7.17. Removal of the Cover for the Water Connector

For the convenience of water injection through the fire water connection if a fire breaks out on-site, remove the transparent cover from the water connection after installation is finished.



Figure 7-46 Remove the water inlet cover

### 7.18. Forklift Entry Panel Installation

After all the cables and necessary components installation are finished, you should seal the forklift entry, the cover panel in the accessory package, the sealing positions are as below figure

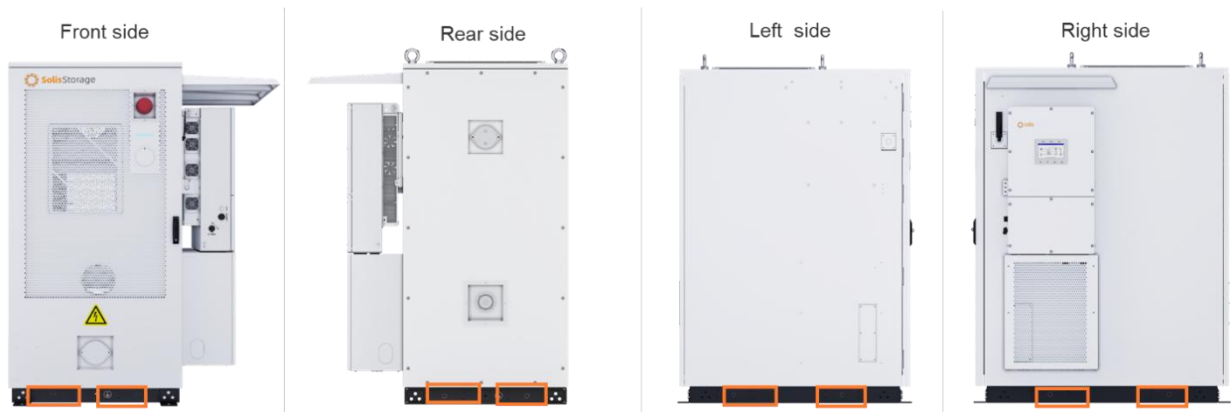


Figure 7-47 Sealing the forklift entry



## 8. System Commission

### 8.1. Inspection before Power-ON

#### 8.1.1. Inspection of Wiring Quality

1. Check whether the polarity of the DC cables is correct, whether the nuts are installed properly, and whether the cable labels are correct.
2. Check whether the phase sequence of the AC cables is correct, whether the connection terminals are fixed properly, and whether the cable labels are correct.
3. Check whether the insulation resistance of all equipment meets the requirements.
4. Check whether the positive and negative poles of EverCore are short-circuited, and whether the AC cable terminals L1, L2, L3, N, and PE are short-circuited.
5. Check whether the grounding conductance of the grounding wire is good.
6. Before powering on, check the connection cables of the entire system to ensure reliable cable connections, without aging, cracking, or insulation damage.
7. Check whether all communication cables and terminals are tightly and reliably connected;

#### 8.1.2. Inspection of Components State

Before the trial run, please check the following items:

Table 8- 1 System Inspection

| NO | Inspection items                                                                                                   |
|----|--------------------------------------------------------------------------------------------------------------------|
| 1  | Check if all cable connections are reliable.                                                                       |
| 2  | Check if system is well ventilated.                                                                                |
| 3  | Check if system is reliably grounded.                                                                              |
| 4  | Test the AC input items of system to ensure if they are correct.                                                   |
| 5  | Check if all switches of system are in the off position.                                                           |
| 6  | Check if the PDU area isolating switch is in the off position.                                                     |
| 7  | Ensure that the grid voltage and frequency on the AC side are in accordance with the input requirements of system. |



Figure 8-1 Check cable connection

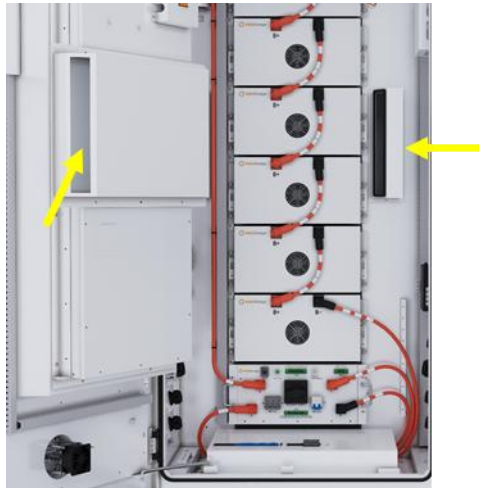


Figure 8-2 Check air duct

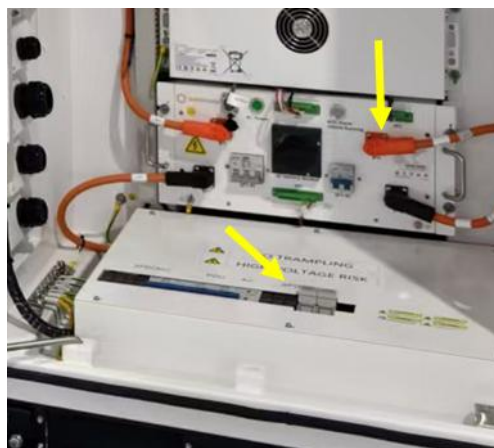


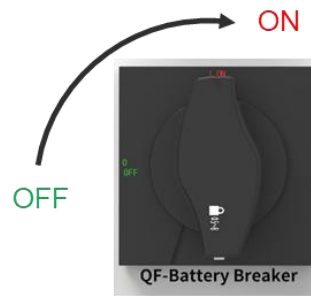
Figure 8-3 Check switch

## 8.2. System Power-On Operation

Don't forget to turn on the PV switch under the bottom of inverter, after that, you should following the following steps

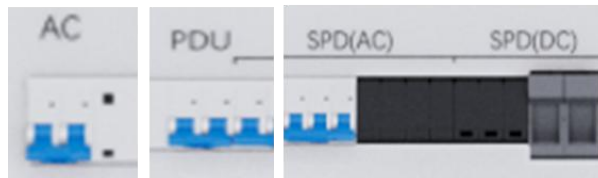


- 1 Turn on inverter



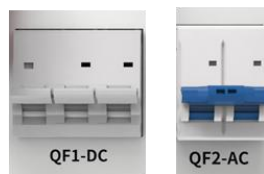
- 2

Push up ↑



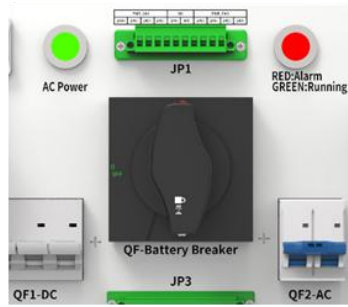
- 3 Turn on AC,PDU switch and SPD (AC) Protection Switch

Push up ↑



- 4 Turn on QF1-DC,QF2-AC





- 5 When the AC Power green indicator light is on, it indicates that the auxiliary power supply on the high-voltage cabinet has been activated.

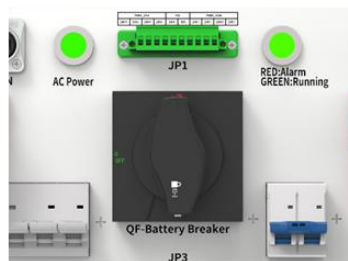


- 6 enable "On-click on grid" button on EMU screen

Waiting for 30S-60S

Check  
indicator lights

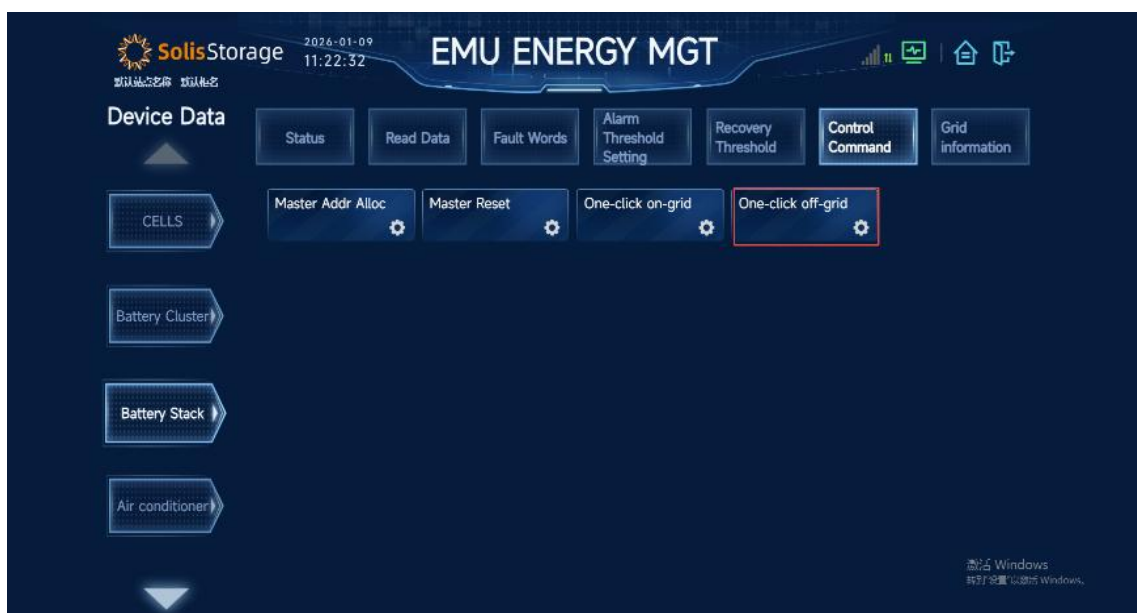
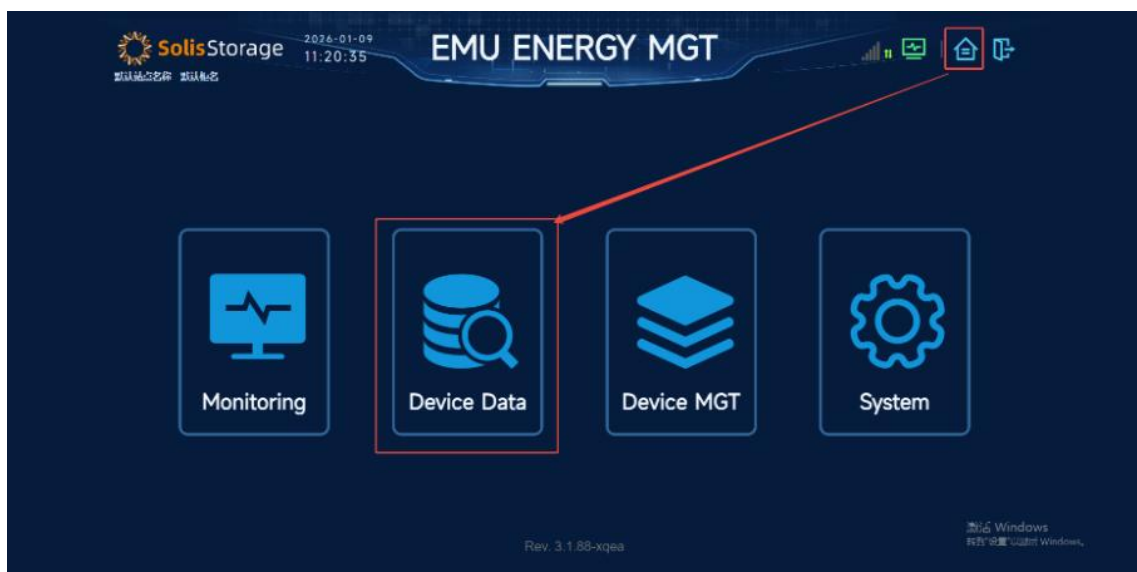
Power-On Successfully



- 7 When the system running indicator light changes from red to green, it indicates that the system has been powered on successfully

Figure 8-4

find the button: one-click-off on EMU inside the cabinet



After power on successfully, you should do the following power-on inspection

Table 8-2 Inspection items

|                                                                                                |
|------------------------------------------------------------------------------------------------|
| Export the monitoring data of all devices and check whether the data are normal                |
| Check whether the indicator light status of each device is corresponding to the running status |
| Check the working status of the flammable gas detector (H2)                                    |
| Check the indicator light of the smoke sensor                                                  |
| Check the indicator light of the temperature sensor                                            |

And you should do the following parameters inspection to ensure the system running at a normal state

Table 8-3 Parameters inspection

| Model<br>Parameter      | EverCore-100/120kWh                                                |
|-------------------------|--------------------------------------------------------------------|
| Total Battery Charge    | 0 kWh<br>(New product, initial state, first use)                   |
| Total Battery Discharge | 0 kWh<br>(New product, initial state, first use)                   |
| SOC                     | 5-100%                                                             |
| SOH                     | 100%<br>(New product, initial state, first use)                    |
| Total Voltage           | EverCore-100kWh ESS: 290~360Vdc<br>EverCore-120kWh ESS: 348~432Vdc |
| Total current           | 0A (first start)                                                   |
| Direction               | Static (first start)                                               |
| Installed Capacity      | 100/120kWh                                                         |
| Min Cell Voltage        | 2900mV~3600mV                                                      |
| Max Cell Voltage        | 2900mV~3600mV                                                      |
| Min Cell Temperature    | 5℃-56℃                                                             |
| Max Cell Temperature    | 5℃-56℃                                                             |

### 8.3. Quick Setting on APP (SolisCloud)

System can be commissioned and monitored by SolisCloud APP.

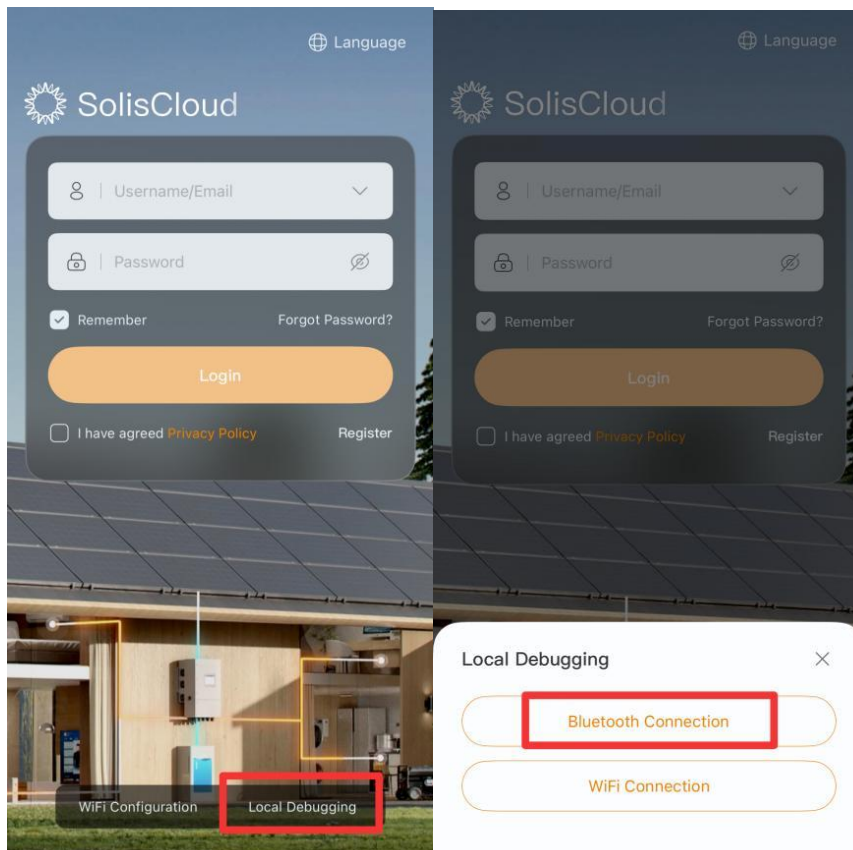
You can download the app by scanning the QR Code or download it in the App Store in your region, the App version should be higher than V5.1.1



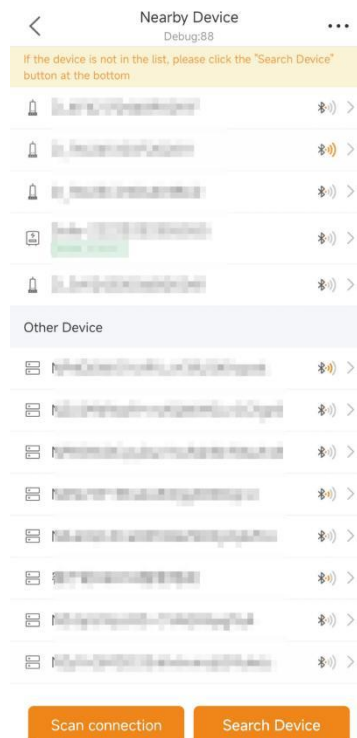
#### 8.3.1. Log in the APP Via Bluetooth

Step 1: Turn on Bluetooth switch on your phone and then open the SolisCloud APP.

Click "Local Debugging"——> "Bluetooth Connection"

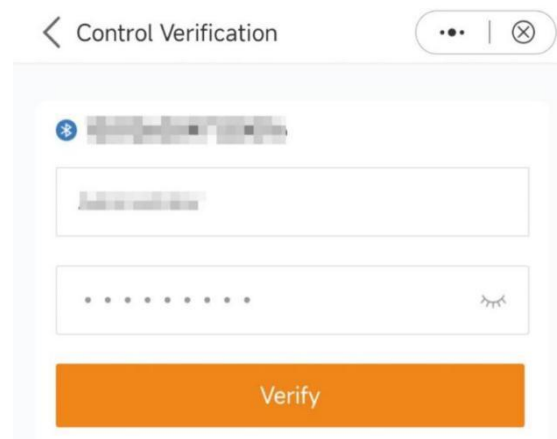


Step 2: Select the Bluetooth signal from the inverter. (Bluetooth Name: Inverter SN)



Step 3: Login account.

If you are the installer, please select the account type as Installer. If you are the plant owner, please select the account type as owner. Then set your own initial password for control verification. (The first time log-in operation must be finished by installer in order to do the initial setup)

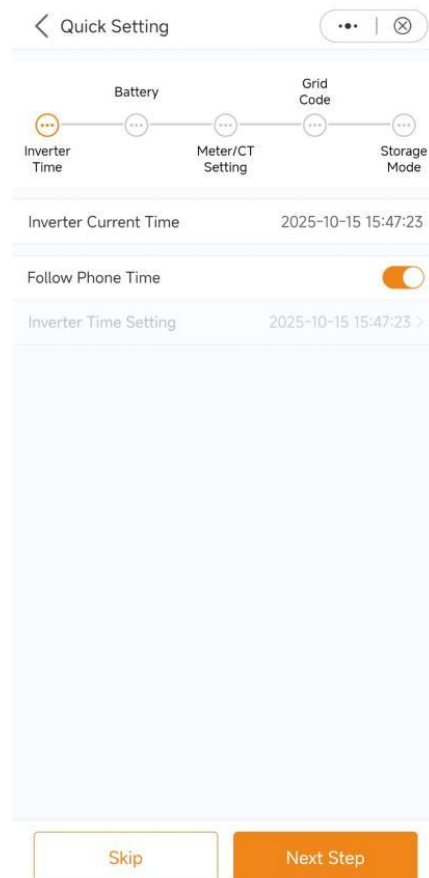


### 8.3.2.APP Quick Setting

If this is the first time the inverter has been commissioned, you will need to first go through the Quick Settings. Once this has been done, these settings can be changed later.

#### (1) Inverter Time:

Set inverter time and date, tap the slider next to "Follow Phone Time", then tap "Next step" at the bottom right corner.



#### (2) Battery:

- Select number of battery banks: The default value for EverCore should be **1**,

Select battery connect method: for EverCore system, the battery connection default method is 2 batteries in parallel, DC1 and DC2 ports be parallel to one terminal

- Select battery model: **SolisStorage**

- Select battery cabinet quantity setting; it means the number of parallel cabinet

You can manually configure a dynamic or static IP address for the battery cabinet.

< Batt Model

Number of Battery Banks 1 >

Battery Model SolisStorage >

Battery Connection Method

DC Line  
--- BMS Communication Line

Battery Cabinet Quantity Setting 6 >

Online Battery Cabinet Settings Refresh

6 Parallel-Connected 6 Online 0 Offline

Master No.1 SN: 4555555555CESVEFVFV Setting >

No.2 SN: 4555555555CESVEFVFV Setting >

No.3 SN: 4555555555CESVEFVFV Setting >

No.4 SN: 4555555555CESVEFVFV Setting >

No.5 SN: 4555555555CESVEFVFV Setting >

No.6 SN: 4555555555CESVEFVFV Setting >

Save

< Quick Setting

Tip

The selection method must correspond to the field connection!

DC Line  
--- BMS Communication Line

BMS1 port must be connected among all modes  
BAT in parallel is the preferred mode when > 50kWh

Cancel Confirm

6 Parallel-Connected 6 Online 0 Offline

Back Next Step

< Setting

SN:4

Internet Access Method Static IP Address >

IP

0.0.0.6

Gateway

0.0.0.6

Subnet mask

0.0.0.6

Preferred DNS

0.0.0.6

Standby DNS

0.0.0.6

Save

< Setting

SN:4

Internet Access Method Dynamic IP Address >

Save

(3) CT/Meter setting:

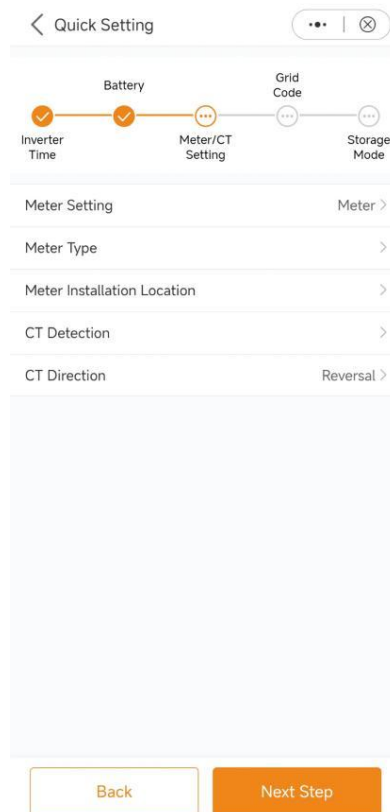
- Select CT or Meter;

- Set Meter type (Solis provide Eastron 3 phase meter, it is self-identifiable).

- Set Meter installation location: Grid side / Load side / Grid+ PV inverter;

- Set CT ratio: default 60 (Solis provide ESCT-T50-300A/5A CT), if the user installs their own CT, then need to set the CT ratio manually. If the system is connected to the Meter, then the CT ratio needs to be set on the Meter.

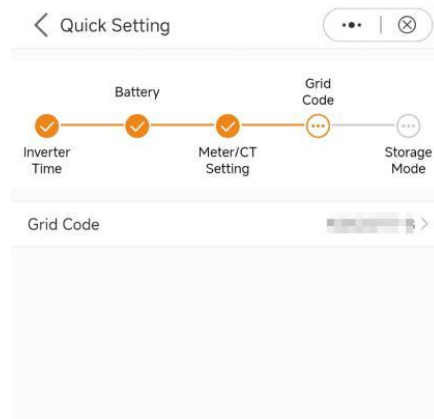
- CT direction: When CT is installed correctly, select "Forward"; when CT is installed in the wrong direction, the sampling current of CT will be reversed when calculating the power, select "Reversal" to correct it.





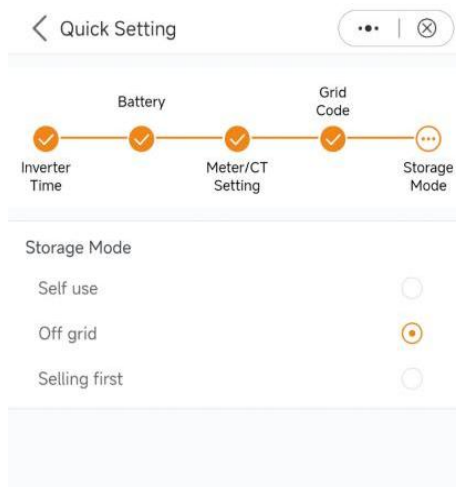
(4) Grid code:

Select grid code that meets the local regulations.

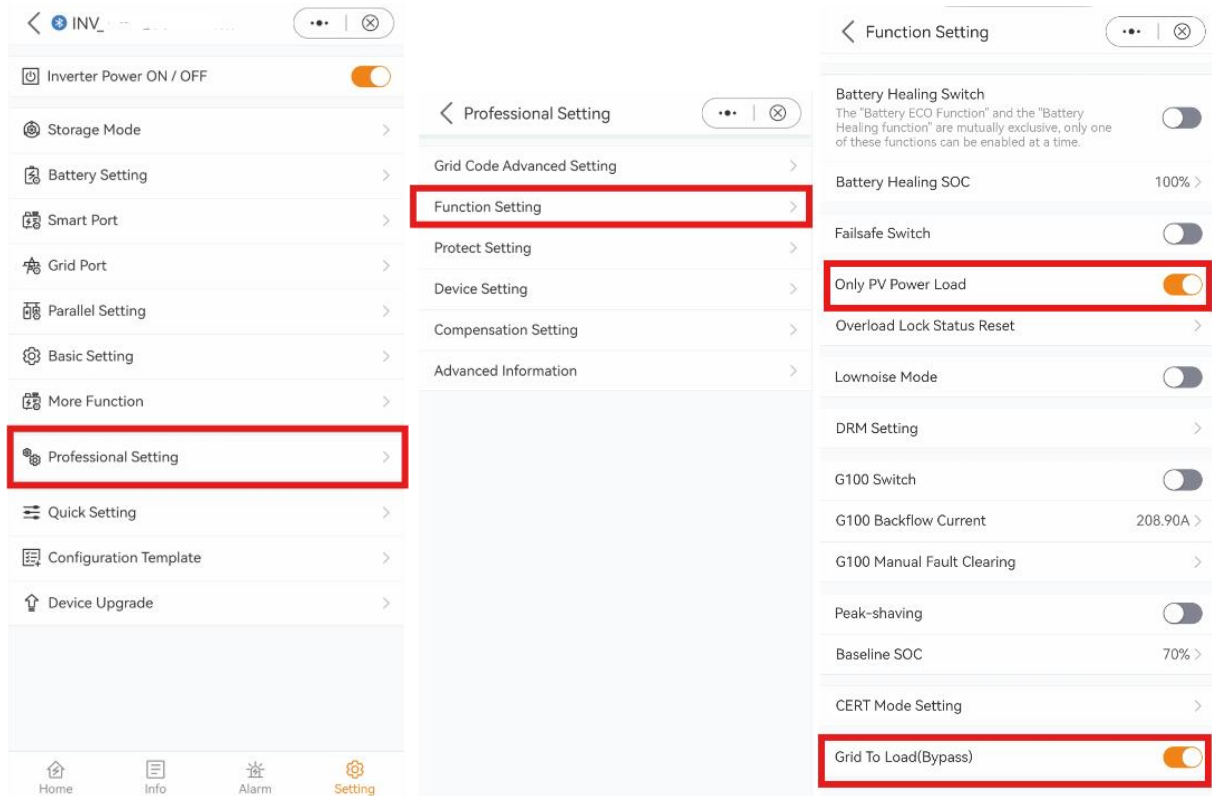


(5) Storage mode:

ALL modes first priority is to use the available PV power to support loads. The different modes determine what the second priority, or use of the excess PV power, will be. Self-use / Selling first / Off-grid are exclusive, the user can select only one mode.



To ensure that the AC backup power source of the battery cabinet can still supply power normally even when only PV or only the grid is available, the "Only PV Power Load" and "Grid To Load (Bypass)" functions need to be enabled in the APP function settings. Click the bottom right corner "Setting", then click "Professional Setting" and "Function Setting" - check and enable both functions.



## 8.4. System Power-Off Operation

When the system needs maintenance or repair, it must be powered off. The shutdown process must be carried out strictly in accordance with the following steps.

### **WARNING**

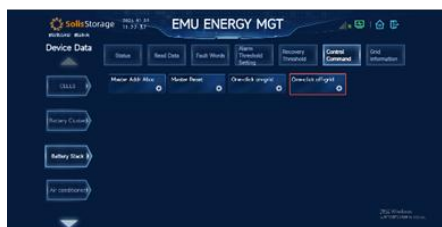
After the system stops running, please wait for at least 10 minutes before conducting maintenance or repair operations on the system. After the system is shut down, when performing maintenance or repair operations on the system, be sure to ensure that the system will not be accidentally re-powered.

Using a multimeter or an electric tester to check and ensure that the system is completely de-energized.

Cover the adjacent potentially electrified components with insulating materials.

During the entire maintenance and repair process, ensure that the escape routes are completely unobstructed.

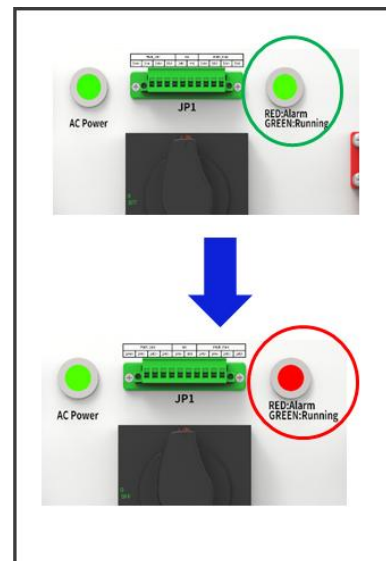
1.following the steps to operate power-off procedures



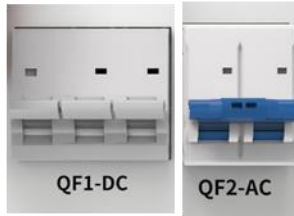
**1** Press One click off-grid button on EMU

Waiting for 30S-60S

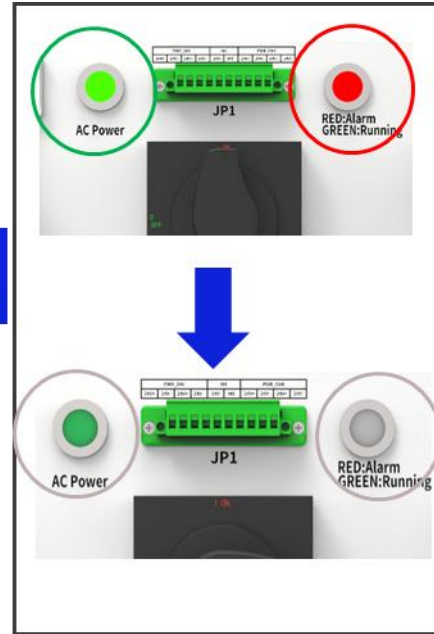
Check  
indicator lights



Push down ↓

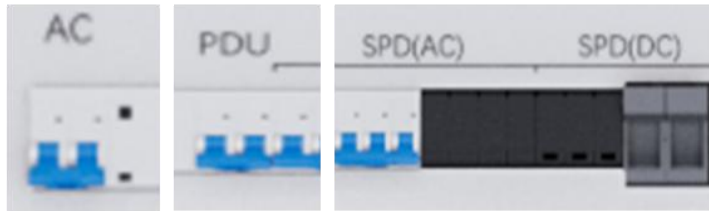


Check  
indicator lights

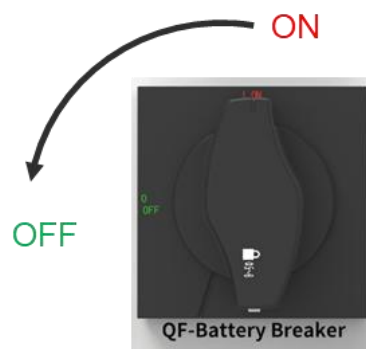


- 2 Turn off on QF1-DC,QF2-AC

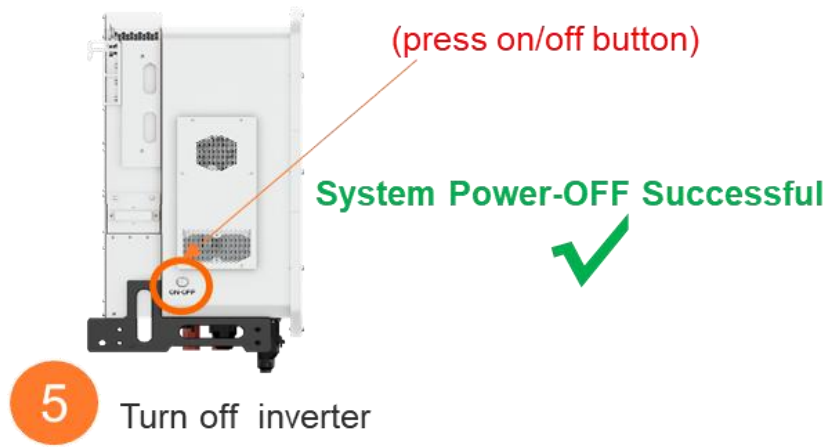
Push down ↓



- 3 Turn off AC,PDU switch and SPD (AC) Protection Switch



- 4 Turn off QF-Battery Breaker,



## 9. Parallel system

### 9.1. AC coupling parallel operation

1.Before doing the parallel mode, please upgrade all the EMU(Inside the battery cabinet) and hybrid inverters to the latest version(ARM&DSP).

2.Check if the evercore battery cabinets and hybrids are the same model. Eg, match a 50kW-120kWh system with 50kW-120kWh system. Do not install systems in parallel mode from different model!

3.When there are up to 6pcs of inverters working in parallel mode, the on-grid to off-grid switching time is less than 20ms. When there are up to 7~10pcs of inverters working in parallel mode,It is recommended to install external switching devices such as STS.

4.It is recommended that the specification and total capacity of battery on the master and slave inverter be same; If it's different, connect the battery of larger capacity to the master inverter, if the battery with larger capacity is connected to a slave inverter , may fail to fully discharge in heavy load scenarios.

5.Parallel connection of Battery port is not supported between each inverter, each inverter should have its own battery connected independently.

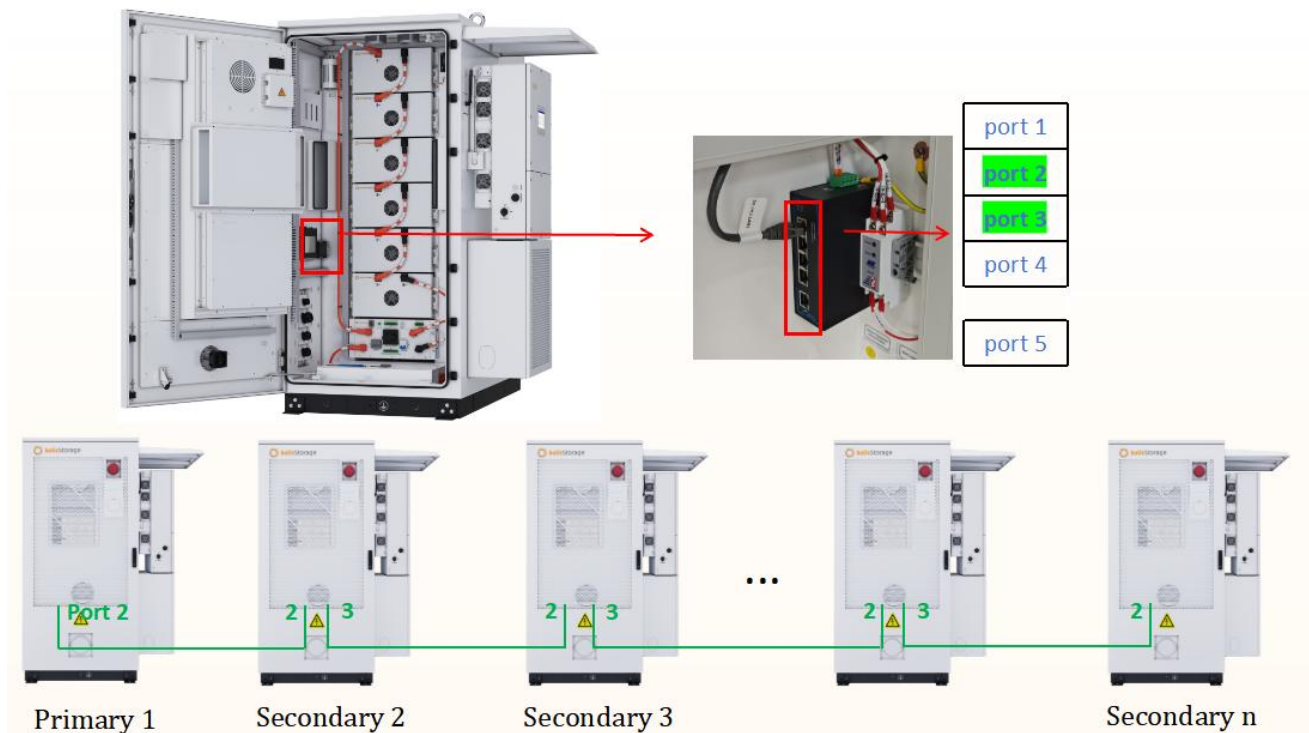
6.When the current on each phase of the grid side is over 300A, for which indicates sum of the load and the inverter system output capacity, customers need to equip their own CT, which can meet the secondary side current of 5A.

#### 9.1.1.Connection of the communication lines for the Cabinets

The EMUs inside the battery cabinet need to be connected through the CAN wiring harness(Need to be prepared by the customer themselves): Start from the “port 2” of the primary(host) cabinet, connect to the “port 2” of the second cabinet, then from the “port 3” of the second cabinet, to connect to the “port 2” of the next cabinet...

For the EMU communication lines, the customer is required to prepare them according to the placement distance. To avoid interference during operation, the following requirements apply(During the DC expansion, the communication lines of the EMU also have the same requirements.):

1. Use shielded network cables ,Category 6A (Cat6a) is recommended.
2. All terminations shall be crimped in accordance with the T568B wiring standard.
3. The tensile strength (pull-out force) between the plug and the cable conductors shall be greater than 50N .
4. Ensure 100% continuity for all 8 conductors and shield layer.



### 9.1.2.Connection of the communication lines for the hybrid inverters

You can use the CAN cable in accessory as the parallel communication cable(3m).

We recommend 3~5m parallel distance between inverters.

If you have the longer distance demand on customer site:

Solis support 20m distance with no communication fault between the first and last under 2 units parallel mode;

Solis support 60m distance with no communication fault between the first and last under 6 units

parallel mode.

#### Parallel communication wiring:

Please connect the paralleled inverters with P-A and P-B terminals;

Connecting the inverters hand in hand as figure1:

"Parallel\_B" of Master 1 to "Parallel\_A" of slave 2

"Parallel\_B" of Slave 2 to "Parallel\_A" of slave 3

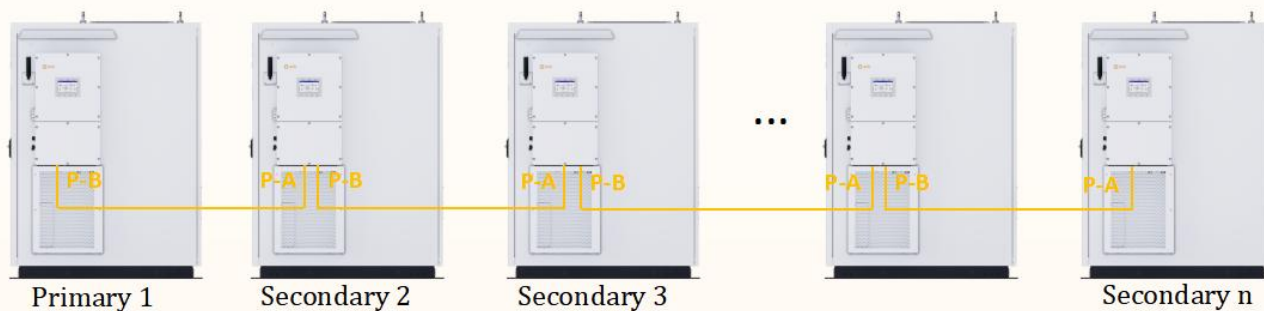
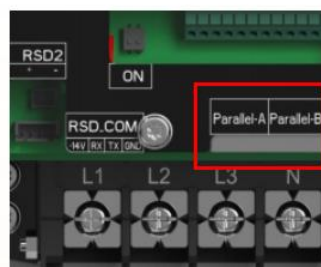
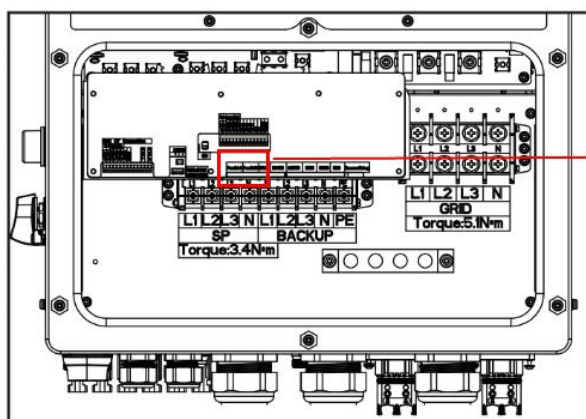
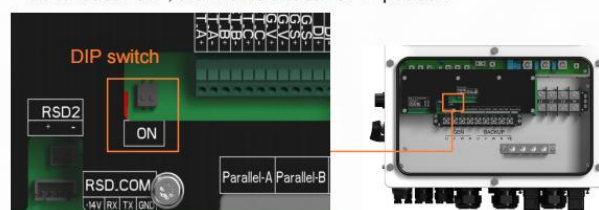
"Parallel\_B" of Slave 3 to "Parallel\_A" of slave 4

..... and so on.



Turn the DIP switch on the ARM board of **first and last** inverter to: **ON**, and the other unit to: **OFF**. For example:

- If there are 2 inverters in parallel, both DIP switches to: "ON";
- If there are 3 inverters in parallel, the first and last inverter's DIP switches to: "ON", the middle one to "OFF" position.



### 9.1.3.Hybrid inverters Master/Slave settings

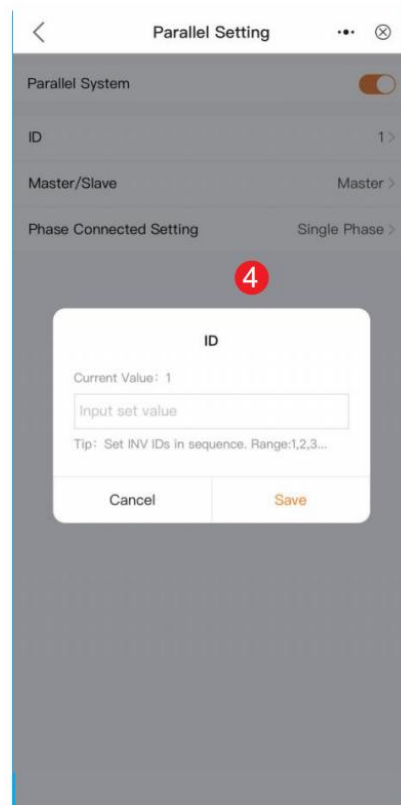
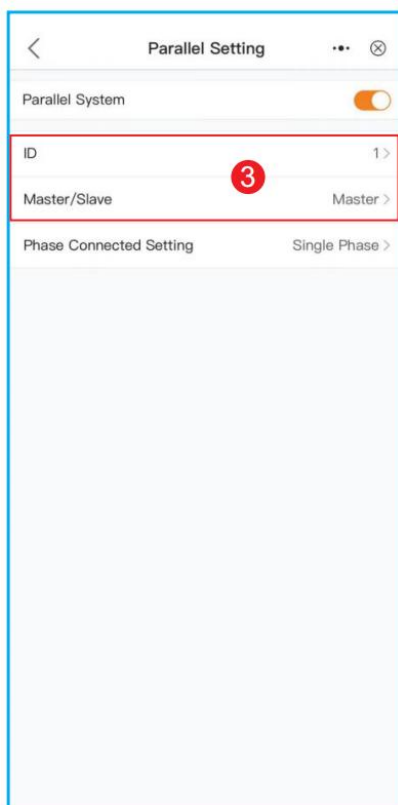
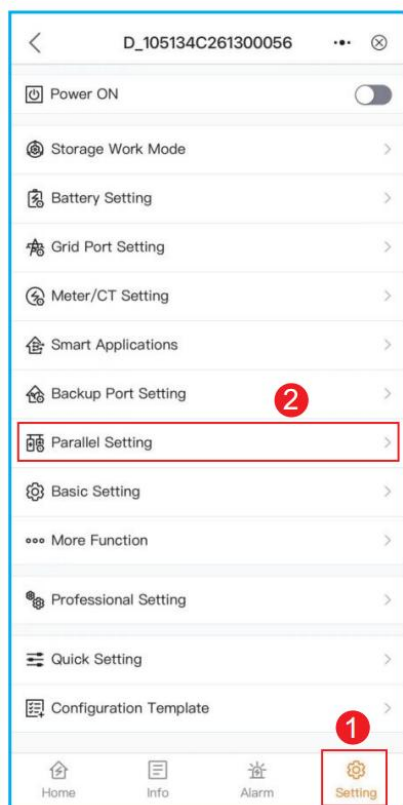
- 1.Select Parallel setting
- 2.Set the Master hybrid ID to 1
3. Set the Slaves ID to 2,3,4 ....and so on....



Note:

1. When under parallel system (inverter amount > 2), the AC cable length difference from inverter grid/backup port to the busbar should not exceed 10%.

2. You must set the parallel mode on Solis app for each hybrid in case of avoiding the damage to hybrid when power on.



## 9.2. DC coupling expansion operation

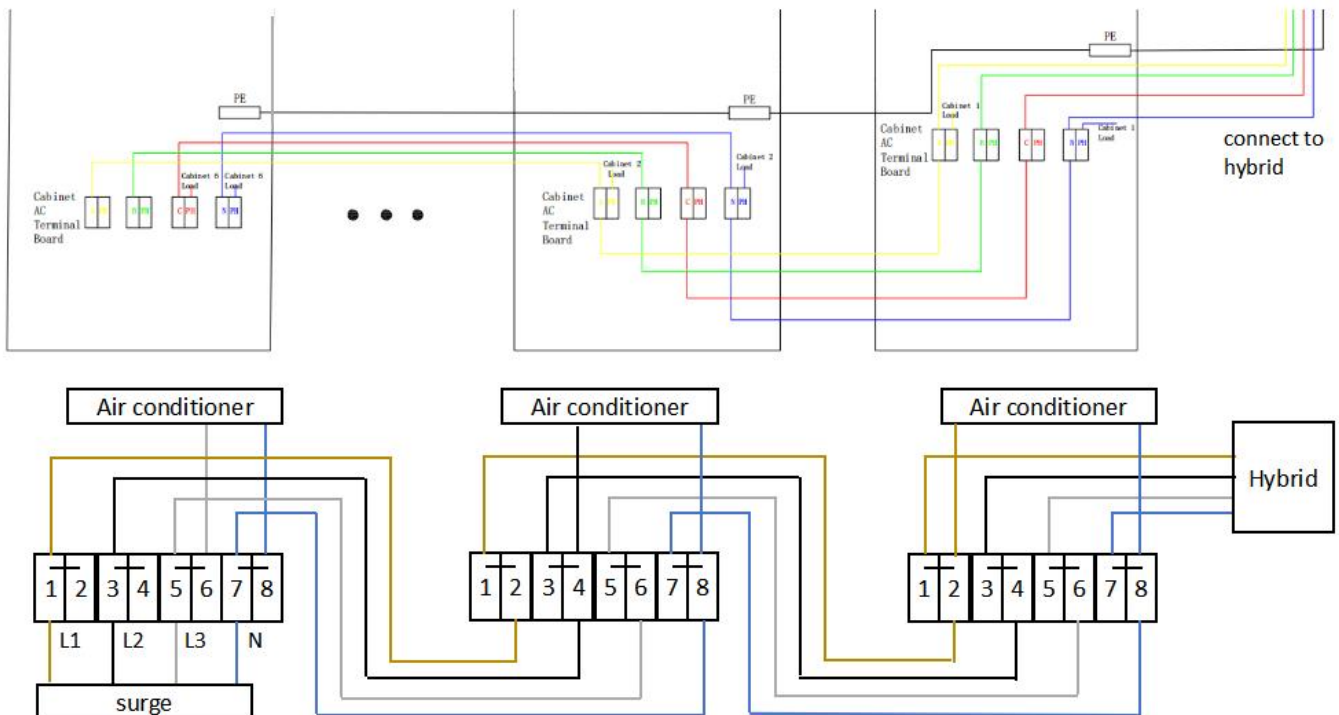
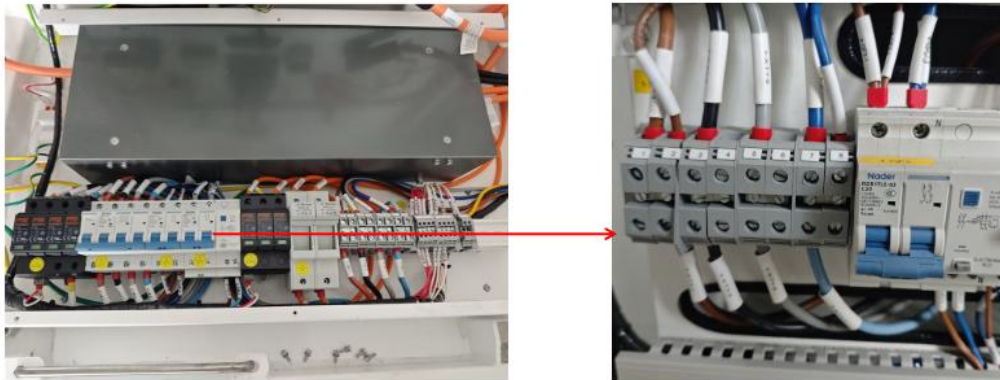
### 9.2.1. Power lines and communication lines connection

#### Battery wiring connection (2 positive, 2 negative) :

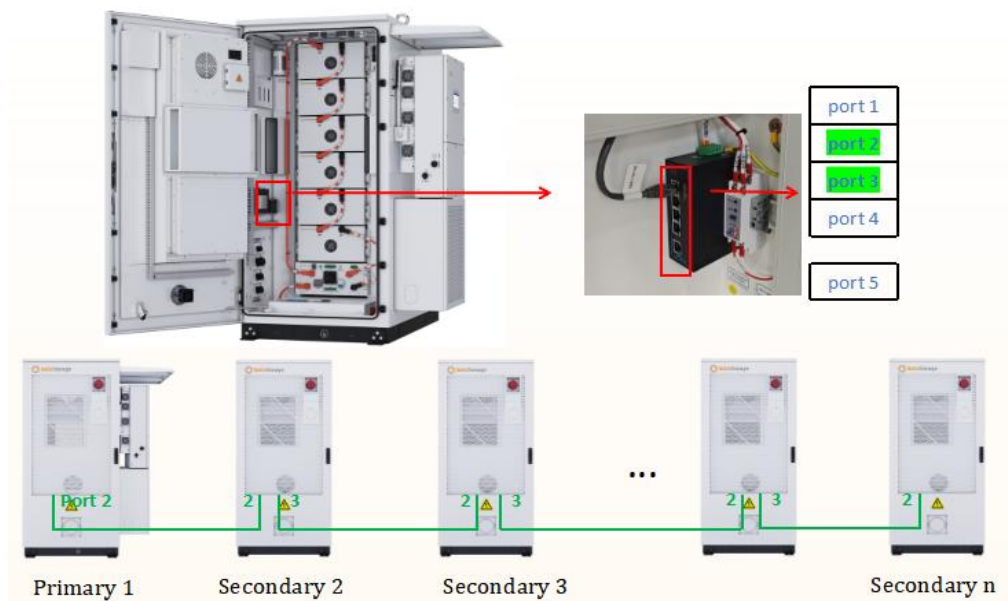
Remove the battery wiring cover and locate the copper bus, connect the four battery cables as shown in the diagram.

#### Auxiliary power wiring connection:

When the battery is shipped from the factory, the auxiliary power supply is automatically powered by the L1 phase. To achieve balanced three-phase output, the device needs to be manually adjusted so that it draws power from the L2 or L3 phase.



## EMU communication wiring connection:



### 9.2.2.EMU settings

#### Set Master

1. Click **System** ► **Operating**.
2. Click the **Master/Slave Setting** module.
3. In the pop-up editing dialog box, click the drop-down arrow, select the desired mode, and then click **Sure**.



## Set Slave

### (1) Add Slave

The master controller and slave controllers are connected through the WAN 1 network port. For multiple slaves, use a switch for networking. Users can automatically or manually assign incrementing IP addresses.

1. Click **System ► Controller**
2. Click **Get List** button
3. Click **One-click Add** button
4. Click **Apply Now** button。



If you need to adjust the arrangement order of the slave machines, click on the corresponding drag icon of the machine, and then drag it up and down to the desired position. As shown in the figure below, after dragging "Slave 3" to the position of "Slave 2", Slave 2 will occupy this logical position and present the corresponding logical relationship.

Click **System ► Controller**.

**SolisStorage** 2026-02-03 13:45:21 **EMU ENERGY MGT**

默认站点名称 默认柜名

**System**

Basic Parameter Operation **Controller**

| Name   | Controller Serial Number | Version       | IP                                                | Gateway Address                                   | Mask Address                                          | Status | Machine ID | Operate |
|--------|--------------------------|---------------|---------------------------------------------------|---------------------------------------------------|-------------------------------------------------------|--------|------------|---------|
| Master | 21883000006D             | v2-8.061.1440 | Actual IP 172.18.37.5<br>Configure IP 172.18.37.5 | Actual IP 172.18.37.1<br>Configure IP 172.18.37.1 | Actual IP 255.255.255.0<br>Configure IP 255.255.255.0 | Online | 0          | +       |
| Slave2 | 218831000122             | v2-8.054.1335 | Actual IP 172.18.37.6<br>Configure IP 172.18.37.6 | Actual IP 172.18.37.1<br>Configure IP 172.18.37.1 | Actual IP 255.255.255.0<br>Configure IP 255.255.255.0 | Online | 0          | +       |
| Slave3 | 218830000068             | v2-8.054.1335 | Actual IP 172.18.37.7<br>Configure IP 172.18.37.7 | Actual IP 172.18.37.1<br>Configure IP 172.18.37.1 | Actual IP 255.255.255.0<br>Configure IP 255.255.255.0 | Online | 0          | +       |

One-click Add Get List Apply Now

## (2) Delete Slave (If necessary)

1. Click **System ► Controller**.

2. Click the "Delete" button on the right side of the slave device that needs to be removed.

**SolisStorage** 2026-02-03 13:53:53 **EMU ENERGY MGT**

默认站点名称 默认柜名

**System**

Basic Parameter Operation **Controller**

| Name   | Controller Serial Number | Version       | IP                                                | Gateway Address                                   | Mask Address                                          | Status | Machine ID | Operate |
|--------|--------------------------|---------------|---------------------------------------------------|---------------------------------------------------|-------------------------------------------------------|--------|------------|---------|
| Master | 21883000006D             | v2-8.061.1440 | Actual IP 172.18.37.5<br>Configure IP 172.18.37.5 | Actual IP 172.18.37.1<br>Configure IP 172.18.37.1 | Actual IP 255.255.255.0<br>Configure IP 255.255.255.0 | Online | 0          | +       |
| Slave2 | 218831000122             | v2-8.054.1335 | Actual IP 172.18.37.6<br>Configure IP 172.18.37.6 | Actual IP 172.18.37.1<br>Configure IP 172.18.37.1 | Actual IP 255.255.255.0<br>Configure IP 255.255.255.0 | Online | 0          | +       |
| Slave3 | 218830000068             | v2-8.054.1335 | Actual IP 172.18.37.7<br>Configure IP 172.18.37.7 | Actual IP 172.18.37.1<br>Configure IP 172.18.37.1 | Actual IP 255.255.255.0<br>Configure IP 255.255.255.0 | Online | 0          | +       |

One-click Add Get List Apply Now

## 10. Trouble Shooting

### **⚠ WARNING**

After the system stops running, please wait for at least 10 minutes before conducting maintenance or repair operations on the system. After the system is shut down, when performing maintenance or repair operations on the system, please note:

Ensure that the system will not be accidentally re-powered.

Use a multimeter or an electric tester to check and ensure that the system is completely de-energized.

Cover the adjacent potentially electrified components with insulating materials.

During the entire maintenance and repair process, ensure that the escape route is completely unobstructed.

### 10.1. Battery System Failures Trouble shooting

#### 10.1.1. Fault, Alarm Handling and Countermeasures

If there is an alarm message displayed in the "System Alarm Information" tab, or if the battery system malfunctions, please follow the corresponding handling procedures as described in the table below. If the problem still cannot be resolved, please contact SolisStorage.

Table 9- 1 Explanation of Common Fault Information

| EverCore Series Energy Storage Cabinets - Alarm Fault Codes and Handling Suggestions |             |        |                                            |                                                                                                                                                                                          |                                                               |
|--------------------------------------------------------------------------------------|-------------|--------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Version:<br>v1.0                                                                     |             |        |                                            |                                                                                                                                                                                          | Date: 2026-1-20                                               |
| NO                                                                                   | module      | code   | alarm name                                 | Description and Diagnosis                                                                                                                                                                | troubleshooting advice                                        |
| 1                                                                                    | EMU-Primary | 502231 | Too Few High Voltage Online Cabinets Fault | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |

|   |                       |         |                                           |                                                                                                                                                                                          |                                                                                              |
|---|-----------------------|---------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 2 | EMU-Primary           | 6600028 | Intercluster circulation<br>Level 2 alarm | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | 1. Check the inverter<br>2. Or please contact SolisStorage after-sales for help and support. |
| 3 | EMU-Primary           | 6600029 | Intercluster circulation<br>Level 1 alarm | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | 1. Check the inverter<br>2. Or please contact SolisStorage after-sales for help and support. |
| 4 | EMU-Primary           | 500499  | Inverter<br>Communication<br>Failure      | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | 1. Check the inverter<br>2. Or please contact SolisStorage after-sales for help and support. |
| 5 | Single<br>Cabinet EMU | 6600041 | EMU and BCU<br>communication failure      | Communication timeout, charging current and discharge current are limited to 0A, if the inverter is abnormal, disconnect the DC circuit breaker in the energy storage cabinet            | Please contact SolisStorage after-sales for help and support.                                |
| 6 | Single<br>Cabinet EMU | 6600042 | Flooding sensor alarm                     | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support.                                |
| 7 | Single<br>Cabinet EMU | 800301  | System emergency<br>stop failure          | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support.                                |

|    |                    |         |                                                           |                                                                                                                                                                                          |                                                               |
|----|--------------------|---------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| 8  | Single Cabinet EMU | 800120  | DC lightning protection alarm                             | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 9  | Single Cabinet EMU | 6600035 | AC lightning protection alarm                             | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 10 | EMU-Primary        | 6600000 | Communication Fault between Secondary EMU and Primary EMU | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 11 | Air Conditioner    | 6600036 | High temperature alarm                                    | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 12 | Air Conditioner    | 6600037 | Low temperature alarm                                     | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 13 | Air Conditioner    | 6600038 | High voltage alarm                                        | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |



|    |                 |         |                                                             |                                                                                                                                                                                          |                                                                                                                                 |
|----|-----------------|---------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 14 | Air Conditioner | 6600039 | Low voltage alarm                                           | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support.                                                                   |
| 15 | Air Conditioner | 200041  | Compressor alarm                                            | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support.                                                                   |
| 16 | Air Conditioner | 200048  | Internal fan alarm                                          | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support.                                                                   |
| 17 | Air Conditioner | 6600040 | Communication failure between EMU and air conditioner       | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support.                                                                   |
| 18 | BMS             | 500437  | The total voltage of the cluster is too low for two levels  | The discharge current is limited to 0A.                                                                                                                                                  | 1. Please charge in time and wait 24 hours for recovery.<br>2. Or please contact SolisStorage after-sales for help and support. |
| 19 | BMS             | 500438  | The total voltage of the cluster is too high for two levels | The charging current is limited to 0A.                                                                                                                                                   | 1. Wait for recovery<br>2. Or please contact SolisStorage after-sales for help and support.                                     |
| 20 | BMS             | 500439  | Fast charge overcurrent moderate alarm                      | The charging current is limited to 0A.                                                                                                                                                   | 1. Wait for recovery<br>2. Or please contact SolisStorage after-sales for help and support.                                     |

|    |     |        |                                                        |                                                                                                                                                                                                      |                                                                                                       |
|----|-----|--------|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| 21 | BMS | 500442 | Discharge overcurrent<br>moderate alarm                | The discharge current is limited to 0A.                                                                                                                                                              | 1. Wait for recovery<br>2. Or please contact<br>SolisStorage after-sales<br>for help and support.     |
| 22 | BMS | 500443 | Low insulation<br>moderate alarm                       | The charging current and discharge current<br>are limited to 0A. If the power-off feedback<br>of the inverter is not received, the energy<br>storage cabinet relay will be disconnected<br>after 3s. | 1. Wait for recovery<br>2. Or please contact<br>SolisStorage after-sales<br>for help and support.     |
| 23 | BMS | 500446 | Monomer overvoltage<br>moderate alarm                  | The charging current is limited to 0A.                                                                                                                                                               | 1. Wait for recovery<br>2. Or please contact<br>SolisStorage after-sales<br>for help and support.     |
| 24 | BMS | 500447 | Monomer<br>undervoltage<br>moderate alarm              | The discharge current is limited to 0A.                                                                                                                                                              | Step 1 Wait for recovery<br>2. Or please contact<br>SolisStorage after-sales<br>for help and support. |
| 25 | BMS | 500448 | Monomer pressure<br>difference large<br>moderate alarm | The charging current is limited to 0A.                                                                                                                                                               | 1. Wait for recovery<br>2. Or please contact<br>SolisStorage after-sales<br>for help and support.     |
| 26 | BMS | 500449 | Charging<br>overtemperature<br>moderate alarm          | The charging current is limited to 0A.                                                                                                                                                               | 1. Wait for recovery<br>2. Or please contact<br>SolisStorage after-sales<br>for help and support.     |
| 27 | BMS | 500450 | Moderate warning of<br>undertemperature<br>charging    | The charging current is limited to 0A.                                                                                                                                                               | 1. Wait for recovery<br>2. Or please contact<br>SolisStorage after-sales<br>for help and support.     |
| 28 | BMS | 500451 | Discharge<br>overtemperature<br>moderate alarm         | The discharge current is limited to 0A.                                                                                                                                                              | 1. Wait for recovery<br>2. Or please contact<br>SolisStorage after-sales<br>for help and support.     |

|    |     |        |                                                           |                                         |                                                                                                                            |
|----|-----|--------|-----------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 29 | BMS | 500452 | Discharge<br>undertemperature<br>moderate alarm           | The discharge current is limited to 0A. | 1. Wait for recovery<br>2. Or please contact<br>SolisStorage after-sales<br>for help and support.                          |
| 30 | BMS | 500453 | Monomer temperature<br>difference large<br>moderate alarm | The charging current is limited to 0A.  | 1. Wait for recovery<br>2. Or please contact<br>SolisStorage after-sales<br>for help and support.                          |
| 31 | BMS | 500456 | Battery module<br>overvoltage moderate<br>alarm           | The charging current is limited to 0A.  | 1. Wait for recovery<br>2. Or please contact<br>SolisStorage after-sales<br>for help and support.                          |
| 32 | BMS | 500457 | Battery module<br>undervoltage<br>moderate alarm          | The discharge current is limited to 0A. | 1. Wait for recovery<br>2. Or please contact<br>SolisStorage after-sales<br>for help and support.                          |
| 33 | BMS | 500461 | The total voltage of<br>the cluster is too low            | The charging current is limited to 0A.  | 1. Wait for recovery<br>2. Check the inverter<br>3. Or please contact<br>SolisStorage after-sales<br>for help and support. |
| 34 | BMS | 500462 | The total voltage of<br>the cluster is too high           | The charging current is limited to 0A.  | 1. Wait for recovery<br>2. Check the inverter<br>3. Or please contact<br>SolisStorage after-sales<br>for help and support. |
| 35 | BMS | 500463 | Fast charge<br>overcurrent serious<br>alarm               | The charging current is limited to 0A.  | 1. Wait for recovery<br>2. Check the inverter<br>3. Or please contact<br>SolisStorage after-sales<br>for help and support. |

|    |     |        |                                                               |                                                                                                                                                                                          |                                                                                                                                                    |
|----|-----|--------|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 36 | BMS | 500466 | Severe discharge overcurrent alarm                            | The charging current is limited to 0A.                                                                                                                                                   | 1. Wait for recovery<br>2. Check the inverter<br>3. Or please contact SolisStorage after-sales for help and support.                               |
| 37 | BMS | 500467 | Low insulation serious alarm                                  | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | 1. Wait for recovery<br>2. Check the inverter<br>3. Or please contact SolisStorage after-sales for help and support.                               |
| 38 | BMS | 500468 | SOC is too low serious alarm                                  | SOC too low alarm                                                                                                                                                                        | Please charge in time to prevent excessive discharge of the energy storage cabinet                                                                 |
| 39 | BMS | 500470 | Monomer overvoltage serious alarm                             | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | 1. Wait for recovery<br>2. Check the inverter<br>3. Or please contact SolisStorage after-sales for help and support.                               |
| 40 | BMS | 500471 | Monomer under voltage serious alarm                           | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | 1. Please charge it in time and wait for recovery.<br>2. Check the inverter<br>3. Or please contact SolisStorage after-sales for help and support. |
| 41 | BMS | 500472 | Severe warning due to high pressure difference of single unit | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support.                                                                                      |

|    |     |        |                                                          |                                                                                                                                                                                          |                                                                                             |
|----|-----|--------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| 42 | BMS | 500473 | Serious charge overtemperature alarm                     | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | 1. Wait for recovery<br>2. Or please contact SolisStorage after-sales for help and support. |
| 43 | BMS | 500474 | Serious charge under-temperature alarm                   | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | 1. Wait for recovery<br>2. Or please contact SolisStorage after-sales for help and support. |
| 44 | BMS | 500475 | Serious discharge overtemperature alarm                  | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | 1. Wait for recovery<br>2. Or please contact SolisStorage after-sales for help and support. |
| 45 | BMS | 500476 | Serious discharge under-temperature alarm                | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | 1. Wait for recovery<br>2. Or please contact SolisStorage after-sales for help and support. |
| 46 | BMS | 500477 | Serious warning with large single temperature difference | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | 1. Wait for recovery<br>2. Or please contact SolisStorage after-sales for help and support. |
| 47 | BMS | 500479 | Rapid temperature rise severe alarm                      | Warning if the temperature rises too fast                                                                                                                                                | 1. Wait for recovery<br>2. Or please contact SolisStorage after-sales for help and support. |
| 48 | BMS | 500480 | Battery module overvoltage serious alarm                 | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | 1. Wait for recovery<br>2. Or please contact SolisStorage after-sales for help and support. |

|    |     |         |                                            |                                                                                                                                                                                                              |                                                                                                                                                                              |
|----|-----|---------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 49 | BMS | 500481  | Battery module under voltage serious alarm | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s.                     | 1. Please fill the energy storage cabinet in time and let it stand for 24 hours to wait for recovery.<br>2. Or please contact SolisStorage after-sales for help and support. |
| 50 | BMS | 6600001 | contactor failure                          | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s.                     | Please contact SolisStorage after-sales for help and support.                                                                                                                |
| 51 | BMS | 6600042 | contactor adhesion failure                 | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the DC circuit breaker of the energy storage cabinet will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support.                                                                                                                |
| 52 | BMS | 6600002 | circuit breaker failure                    | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s.                     | Please contact SolisStorage after-sales for help and support.                                                                                                                |
| 53 | BMS | 6600003 | PACK fire trigger                          | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s.                     | Please contact SolisStorage after-sales for help and support.                                                                                                                |
| 54 | BMS | 6600005 | Fuse failure                               | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s.                     | Please contact SolisStorage after-sales for help and support.                                                                                                                |

|    |     |         |                                       |                                                                                                                                                                                          |                                                               |
|----|-----|---------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| 55 | BMS | 6600008 | BMU communication failure             | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 56 | BMS | 500491  | Voltage acquisition fault             | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 57 | BMS | 500492  | Temperature acquisition fault         | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 58 | BMS | 500501  | CAN Hall sensor failure               | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 59 | BMS | 500502  | CAN Hall sensor communication failure | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 60 | BMS | 6600010 | BCU self-test fault                   | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |

|    |     |         |                                                                     |                                                                                                                                                                                          |                                                                                             |
|----|-----|---------|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| 61 | BMS | 6600012 | The temperature of the high pressure box is too high for two levels | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support.                               |
| 62 | BMS | 6600013 | The temperature of the high pressure box is too high                | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support.                               |
| 63 | BMS | 6600015 | Module pressure difference is too large two                         | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | 1. Wait for recovery<br>2. Or please contact SolisStorage after-sales for help and support. |
| 64 | BMS | 6600016 | Module pressure difference is too large                             | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support.                               |
| 65 | BMS | 6600018 | BMU self-test fault level 1                                         | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support.                               |
| 66 | BMS | 6600019 | Current sensor fault                                                | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support.                               |



|    |     |         |                                                            |                                                                                                                                                                                          |                                                               |
|----|-----|---------|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| 67 | BMS | 6600021 | NTC fault level 1                                          | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 68 | BMS | 6600023 | Abnormal charge and discharge circuit                      | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 69 | BMS | 6600024 | Cluster total pressure calibration difference is too large | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 70 | BMS | 6600025 | precharge fault                                            | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |
| 71 | BMS | 6600026 | BCU Functional Safety Alarm                                | The charging current and discharge current are limited to 0A. If the power-off feedback of the inverter is not received, the energy storage cabinet relay will be disconnected after 3s. | Please contact SolisStorage after-sales for help and support. |

### 10.1.2.System Fault Diagnosis and Elimination Procedure

(1) Shut down and temporarily stop this unit from operating.

(2) Status recording: Record the phenomena at the time of the failure immediately, try to keep it complete, such as taking photos, making videos, taking screenshots of the screen, and saving the corresponding data.

(3) Fault type identification: Refer to the following fault information description table, preliminarily

determine the fault type, and send the records and confirmation results together to the supplier or technical support engineer. The user's feedback information is extremely important for the maintenance work.

(4) Notify the technical engineer and follow his guidance, combine the diagnostic methods provided in the table above, conduct a preliminary diagnosis, and further confirm the specific type of the fault.

(5) After confirming the specific fault type, contact the engineer to solve the problem on-site immediately.

(6) Fault record: After the failure is resolved, fill in the daily operation fault record form to facilitate retrospect.

### **10.1.3. Handling of Abnormalities and Accidents**

In case of abnormalities or accidents in the battery system, appropriate and effective handling measures should be taken promptly to eliminate further damage and losses:

#### **Overheating:**

Under normal circumstances, when the battery in the system overheats, the cooling system of the battery system will automatically operate to dissipate heat and cool the system to the optimal working temperature range. If the battery system fails to reach the target temperature within the specified time or the temperature exceeds the safe usage limit, the management system will issue a warning and require immediate cessation of use. In this case, the battery should be immediately stopped and the relevant technicians should be notified for a comprehensive inspection to eliminate the fault before it can be used again.

#### **Leakage:**

During use, if leakage is detected in the battery system, personnel in the energy storage room must be evacuated immediately, and relevant technicians must be notified to handle the situation on site. The system can be used again only after the fault is eliminated. It is strictly prohibited to operate the battery with faults or continue to use it forcefully.

#### **Over-discharge:**

When the battery system is completely discharged, the overall voltage is too low or the voltage of some individual batteries is lower than their normal working voltage range. The management system will issue a warning and require immediate cessation of use of the battery and charging. At this time, the discharge of the battery should be immediately stopped, and charging should be started for the battery.

It is strictly prohibited to forcibly continue discharging the battery at this time, as it will damage the battery's performance and, in severe cases, may cause the battery to be permanently damaged and unable to be used.

#### Short Circuit:

Battery system short circuits caused by various reasons must be immediately evacuated the personnel in the energy storage room, the relevant power sources and electrical equipment must be cut off (if possible), the battery and the system must be disconnected, and relevant technicians must be notified to arrive on site for maintenance and fault elimination. Batteries that have been severely short-circuited cannot be used again. They must be fully inspected by the manufacturer before a decision can be made on whether partial repair and use is possible.

#### Fire:

Battery system fire accidents caused by various reasons must be immediately evacuated the personnel in the energy storage room. No irrelevant personnel are allowed to approach the energy storage room within the safe range (because there may be explosion risks). Special fire extinguishers should be used by professionals for firefighting. After the fire is extinguished, personnel wearing necessary protective equipment should first cut off the power connection lines, and the battery system should be fully discharged through resistance (to zero volts) before the battery system can be removed for subsequent operation analysis.

#### Battery system collision:

Due to various reasons, if the battery system is collided, deformed or pierced by foreign objects, it should be immediately disconnected from the power connection line, and relevant technicians should be notified to handle the situation. If the battery needs to be removed, it should be fully discharged by personnel wearing necessary protective equipment before the battery can be removed.

#### Other accidents:

When the battery system needs to be repaired or the battery system needs to be removed due to other accidents, the battery circuit should be disconnected to ensure that the battery will not be short-circuited. The battery system should be removed under safe conditions to prevent damage from collisions, falls, upside-down, etc. If such situations occur, please follow the above regulations for handling.

## 10.2. Trouble Shooting for Air conditioner

### 10.2.1. Trouble Shooting

| NO | Fault or alarm phenomenon  | Possible causes                                                                                                                                                                                                                                                                                                       | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Temperature sensor failure | 1. The sensor is damaged, broken or short-circuited;<br>2. Sensor damage.                                                                                                                                                                                                                                             | 1. Check if the cable connection is tight<br>2. If the above issues are not resolved, contact SOLIS.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 2  | System HV alarm            | 1. The condenser is clogged or scaled;<br>2. Failure of the external fan;<br>3. The external circulating air is short-circuited or blocked;<br>4. Excessive refrigerant was charged during maintenance;<br>5. Excessively high ambient temperature;<br>6. False alarm from the sensor in the middle of the condenser. | 1. Clean the condensing heat exchanger regularly;<br>2. Inspect/Replace the condensing fan;<br>3. The air inlet and outlet of the external mask must be well isolated, and it should be ensured that there are no close-range obstructions directly in front of the on-site cabinet installation.<br>4. Please have it repaired by professionals and add the appropriate amount of refrigerant as required by the nameplate.<br>5. Appropriately lower the ambient temperature or add shading devices;<br>6. If the above issues are not resolved, contact SOLIS. |

|   |                          |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | Cabinet high-temperature | <ol style="list-style-type: none"> <li>1. The condenser is clogged or scaled;</li> <li>2. Excessively high ambient temperature;</li> <li>3. The refrigeration system malfunctions;</li> <li>4. A cabinet with a relatively high heat generation has been added Equipment;</li> <li>5. The temperature setting is inappropriate;</li> <li>6. False alarm from the temperature sensor inside the cabinet.</li> </ol> | <ol style="list-style-type: none"> <li>1. Clean the condenser heat exchanger regularly;</li> <li>2. Appropriately lower the ambient temperature or add shading devices;</li> <li>3. Please have professionals conduct inspection and maintenance.</li> <li>4. Reevaluate the calorific value and make adjustments;</li> <li>5. Re-evaluate the temperature setting value and its deviation;</li> <li>6. If the above issues are not resolved, contact SOLIS.</li> </ol> |
| 4 | Cabinet low-temperature  | <ol style="list-style-type: none"> <li>1. The temperature setting is inappropriate;</li> <li>2. The refrigeration system cannot be turned off.</li> <li>3. False alarm from the temperature sensor inside the cabinet.</li> </ol>                                                                                                                                                                                  | <ol style="list-style-type: none"> <li>1. Re-evaluate the temperature setting value and its deviation;</li> <li>2. If the above issues are not resolved, contact SOLIS.</li> </ol>                                                                                                                                                                                                                                                                                      |
| 5 | The evaporator is frozen | <ol style="list-style-type: none"> <li>1. Internal air circulation short circuit;</li> <li>2. Poor air intake or exhaust inside the cabinet;</li> <li>3. Internal fan failure;</li> <li>4. The refrigeration system cannot be turned off.</li> <li>5. The temperature sensor in the middle of the evaporator gave a false alarm.</li> </ol>                                                                        | <ol style="list-style-type: none"> <li>1. Ensure that there is a certain distance between the internal circulation air inlet and the equipment inside the cabinet, and add an intermediate partition.</li> <li>2. Ensure smooth air circulation at the air inlet and outlet of the internal circulation without severe blockage.</li> <li>3. If the above issues are not resolved, contact SOLIS.</li> </ol>                                                            |
| 6 | Abnormal communication   | The terminal of the wire harness is loose.                                                                                                                                                                                                                                                                                                                                                                         | Check if the wiring has come loose.                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## 10.3. Fire Protection System Trouble Shooting

### 10.3.1.Smoke Detector Fault

| NO | Fault or alarm phenomenon                  | Causes                        | Solution                                     |
|----|--------------------------------------------|-------------------------------|----------------------------------------------|
| 1  | The test smoke detector did not alarm      | The smoke detector is damaged | Replace smoke detector, refer to chapter 7.6 |
| 2  | The smoke detector gave a false fire alarm | The smoke detector is damaged | Replace smoke detector, refer to chapter 7.6 |

### 10.3.2.Temperature detector fault

| NO | Fault or alarm phenomenon                        | Causes                              | Solution                                           |
|----|--------------------------------------------------|-------------------------------------|----------------------------------------------------|
| 1  | The test temperature detector did not alarm      | The temperature detector is damaged | Replace temperature detector, refer to chapter 7.6 |
| 2  | The temperature detector gave a false fire alarm | The temperature detector is damaged | Replace temperature detector, refer to chapter 7.6 |

### 10.3.3.Gas detector alarm

| NO | Fault or alarm phenomenon               | Causes                                                         | Solution                                       |
|----|-----------------------------------------|----------------------------------------------------------------|------------------------------------------------|
| 1  | The test detector did not alarm         | detector is damaged                                            | Replace the detector                           |
| 2  | LED indicator display Continuous yellow | 1.cable failure<br>2.need calibration<br>3.detector is damaged | 1.check it<br>2.re-calibration<br>3.replace it |

### 10.3.4.Audible and visual alarm fault

| NO | Fault or alarm phenomenon     | Causes               | Solution   |
|----|-------------------------------|----------------------|------------|
| 1  | The detector tested not alarm | The alarm is damaged | Replace it |