

PowerFusion 2.0 Delivery Guide

Document Version: V1.0

Release Date: 2026-04-20

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1. Cabinet Installation

1.1 Site Selection Requirements

The equipment is suitable for general outdoor scenarios.

The site selection requirements are as follows:

The installation location must not be in a low-lying area, and the site's horizontal plane should be above the historical highest water level in the area.

The soil condition is good, the ground is solid, and there should be no adverse geological conditions such as rubber soil or weak soil layers. Avoid selecting ground that is prone to water accumulation and subsidence.

Well-ventilated areas.

Avoid areas near strong vibrations, loud noise sources, and strong electromagnetic field interference.

Avoid locations with existing underground facilities as much as possible.

The equipment's corrosion resistance level is C3, suitable for Class C or better environments, and not suitable for Class D or E environments.

Should be away from places that generate dust, oil smoke, harmful gases, and those that produce or store corrosive, flammable, or explosive materials.

The distance from airports, landfill sites, riverbanks, coastlines, or dams should be no less than 500m.

Operating temperature requirements: -20°C to 55°C . When the ambient temperature exceeds 55°C , please choose a shaded installation location or build a sunshade to ensure reliable shading.

Class C environment: Outdoor offshore environment, outdoor environment more than 500m from the ocean, 1500m to 3000m from heavy pollution sources such as smelters, coal mines, and thermal power plants, 1000m to 2000m from moderate pollution sources such as chemical, rubber, and electroplating industries, and 500m to 1000m from light pollution sources such as food, leather, heating boilers, slaughterhouses, centralized garbage dumps, and sewage treatment plants.

Class D environment: Outdoor nearshore environment, outdoor environment less than 500m from the coastline or marine environment, less than 1500m from heavy pollution sources such as smelters, coal mines, and thermal power plants, less than 1000m from moderate pollution sources such as chemical, rubber, and electroplating industries, and less than 500m from light pollution sources such as food, leather, heating boilers, slaughterhouses, centralized garbage dumps, and sewage treatment plants.

E-type environment: special environments, such as underground, underwater, or seabed, and other special environments like manholes.

1.2 Installation Foundation Requirements

The foundation requirements shall be based on the descriptions in the construction site design drawings.

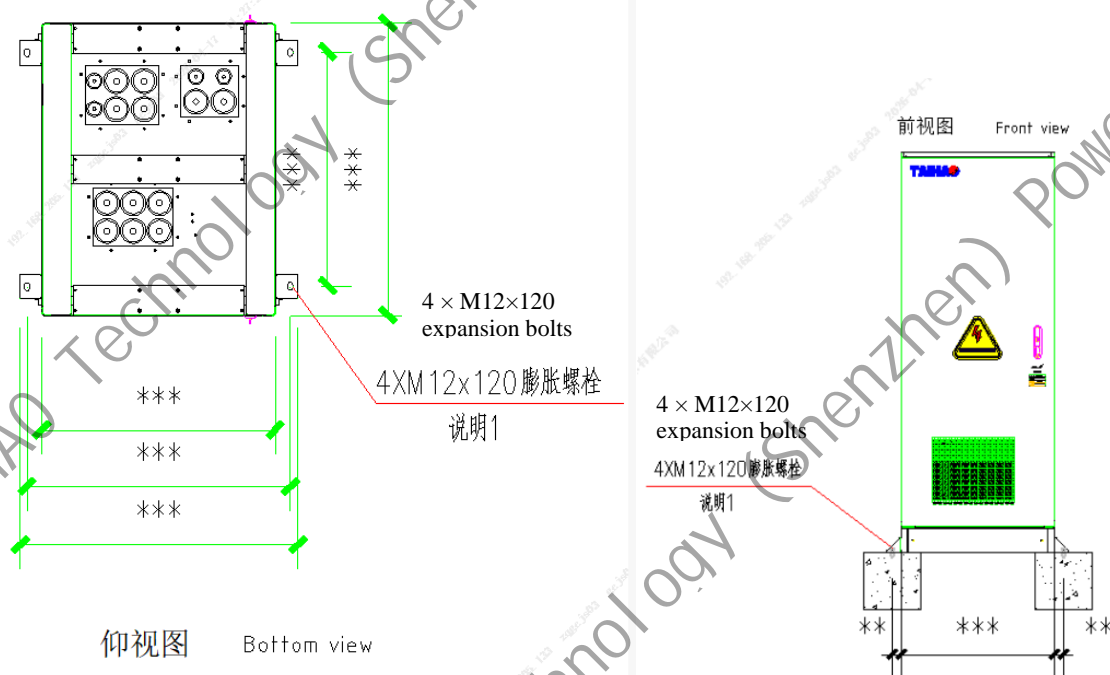
Installation Space Requirements

The L80 cabinet adopts a front-opening design, and the maintenance distance in front of the cabinet should be no less than 1400mm;

The L150 and L300 cabinets adopt a front and rear opening design, and the maintenance distance in front and behind the cabinet should be no less than 1800mm;

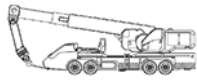


The side of the cabinet must retain a space of no less than 200mm for heat dissipation and safety distance;

The following is a reference diagram for the foundation:









1.3 Hoisting the Cabinet

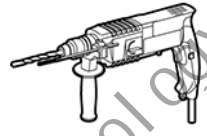
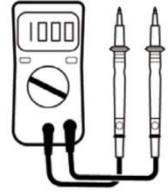

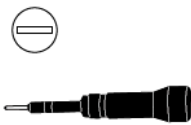


1.3.1 Tools for Handling



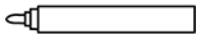
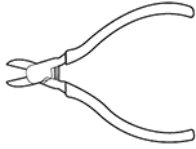
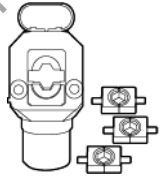
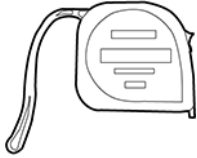

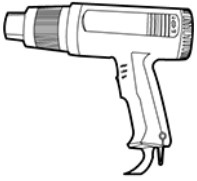

| | | |
|--|---|--|
|  <p>Cranes Lifting capacity $\geq 3t$; Working radius $\geq 2m$</p> |  <p>Hoisting rope hook Rope length $\geq 19.4m$</p> |  <p>Step ladder</p> |
|--|---|--|

1.3.2 Safety protective tools

| | | |
|--|---|--|
|  <p>Insulated gloves</p> |  <p>Protective gloves</p> |  <p>Safety helmet</p> |
|  <p>Reflective vest</p> |  <p>Protective goggles</p> |  <p>Insulated shoes</p> |

1.3.3 Installation and Use of Tools

| | | |
|---|---|---|
|  <p>Impact Drill Drill Bit: $\Phi 16mm$</p> |  <p>Multimeter</p> |  <p>Rubber Hammer</p> |
|  <p>Flat Insulated Torque Screwdriver</p> |  <p>Cross Insulated Torque Screwdriver</p> |  <p>Insulated Torque Socket Wrench (including extended socket)</p> |

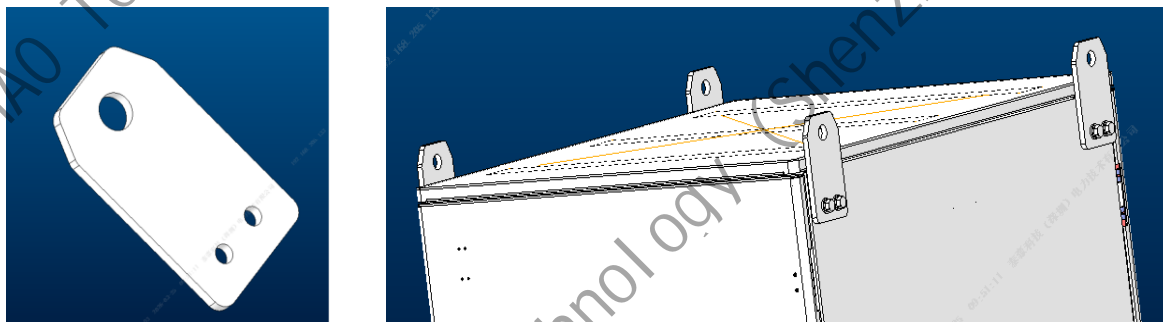
| | | |
|---|---|---|
|  |  |  |
| Utility Knife | Wire Stripper | Marker |
|  |  |  |
| Diagonal Cutting Pliers | Separable Hydraulic Pliers | Steel Measuring Tape |
|  |  |  |
| Heat Shrink Tubing | Hot Air Gun | Outdoor Tie Wraps |

1.3.4 Lifting Steps

1. After unpacking the cabinet, remove the fixed brackets that secure the cabinet to the wooden board.
(Note: Please do not discard the fixed brackets after removal; there are 2 on each side), see the image below:



2. Install the lifting plates on both sides of the cabinet and securely tighten the lifting plate screws, as shown in the image below:



3. Use the lifting rope to secure it to the four lifting pieces, and use a crane to lift it to the installation position. After the lifting is completed, remove the lifting pieces.

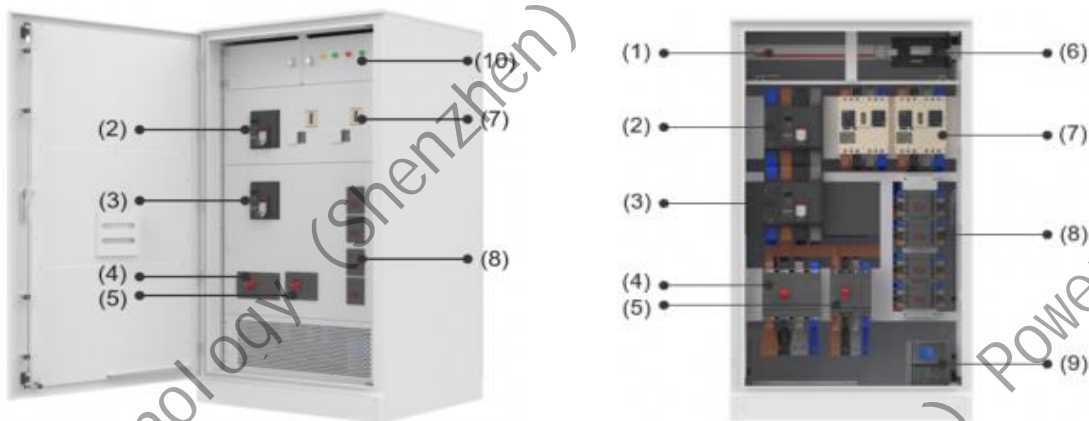
4. After hoisting the cabinet to the selected mounting position, use the fixing bracket to secure the cabinet to the mounting position. (Brackets are brackets that are fixed to wooden planks)



2. Install the cables

2.1 Component Introduction

PowerFusion Integrated Control Cabinet for Commercial and Industrial Use (here in after referred to as "Integrated Cabinet") has the following appearance and main components:



- | | | | |
|----------------------|-------------------------------|-------------------|---------------------------|
| (1) Auxiliary Switch | (2) Mains Input Switch | (3) Bypass Switch | (4) Inverter Switch |
| (5) Load Switch | (6) SmartMGC | (7) Fast Switch | (8) Energy Storage Switch |
| (9) UPS | (10) AC Power Indicator Light | | |

2.2 Cable Preparation

| Serial Number | Cable Description | Cable Type | Starting Point | Ending Point | Source |
|---------------|-------------------|------------|---------------------------------|--------------------|---------------|
| 1 | AC Power Inlet | 4/5 Core | Power Supply at the Upper Level | Integrated Cabinet | User-provided |

| Serial Number | Cable Description | Cable Type | Starting Point | Ending Point | Source |
|---------------|-------------------------------------|---|---|-----------------------|---------------|
| | | Outdoor Copper Core Cable / Aluminum Alloy Cable | of the Integrated Cabinet | | |
| 2 | Energy Storage PCS Incoming Line | 4/5 Core Outdoor Copper Core Cable / Aluminum Alloy Cable | Energy Storage Equipment | Integrated Cabinet | User-provided |
| 3 | Photovoltaic Inverter Incoming Line | 4/5 Core Outdoor Copper Core Cable / Aluminum Alloy Cable | Photovoltaic Inverter | Integrated Cabinet | User-provided |
| 4 | Load Feeder Line | 4/5 Core Outdoor Copper Core Cable / Aluminum Alloy Cable | Load Distribution Cabinet | Integrated Cabinet | User-provided |
| 5 | Working Ground Wire | Single-Core Outdoor Copper Core Cable | Power Supply at the Upper Level of the Integrated Cabinet | Integrated Cabinet | User-provided |
| 6 | Protective Ground Wire | Single-Core Outdoor Copper Core Cable | Upper-Level Equipment | Integrated Cabinet | User-provided |
| 7 | Energy Storage Communication Cable | Category 6 Shielded Network Cable | SmartMGC | ESS | User-provided |
| 8 | Inverter Communication Cable | RS485 Shielded Cable | SmartMGC | Photovoltaic Inverter | User-provided |

Note a: When multiple cables are laid in parallel for the energy storage PCS input line and the photovoltaic inverter input line, the number of cables in parallel must be configured according to the specific models of the PCS and inverter.

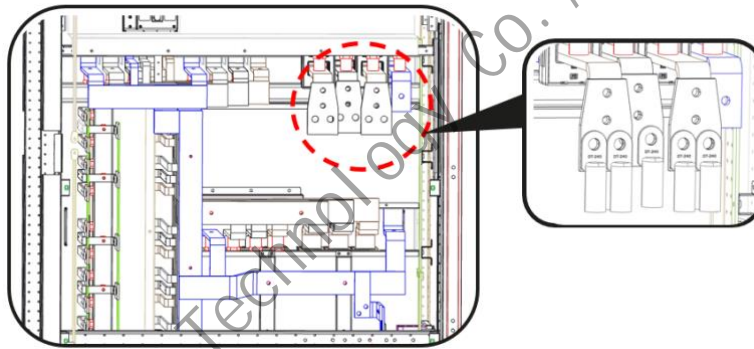
Note b: The cable type is selected based on the grounding type of the low-voltage system, supporting grounding types such as TN-S, TN-C, TN-C-S, etc.

Cable Terminal Correspondence Table (Applicable to L80, L150, L300 cabinet types)

| Cable Specifications | 240mm ² | 185mm ² | 150mm ² | 120mm ² | 95mm ² | 70mm ² | 50mm ² | 35mm ² |
|----------------------|--------------------|--------------------|--------------------|--------------------|-------------------|-------------------|-------------------|-------------------|
| DT terminal | DT16 | DT16 | DT12 | DT12 | DT10 | DT10 | DT8 | DT8 |

2.3 Connecting to the mains power supply

- Hold1Connect the mains power supply line.
 - Each terminal supports a maximum of2cables connected in parallel.
 - The connection method for each line of cable is the same; this document uses one line as an example to describe the connection method.
 - Outdoor copper core/copper-clad aluminum/aluminum alloy cables (to be provided by the user).
- 1、According to the cable selection, choose the cable entry hole and connect the mains power supply cable to the grid switch.
 - 2、Use fireproof sealant to seal the bottom cable entry hole.



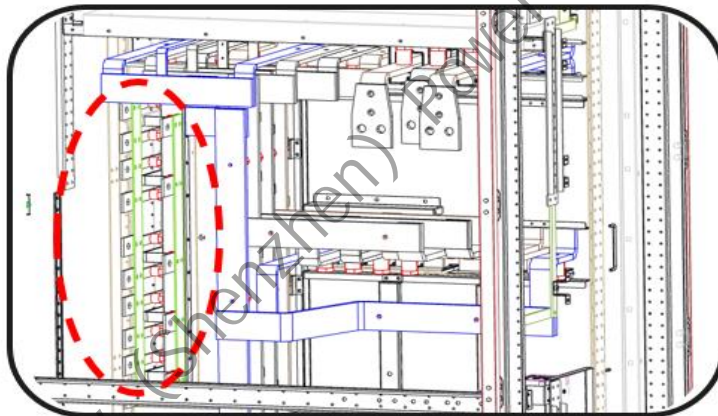
2.4 Connection of Energy Storage Wiring

Supports a maximum of one energy storage P CS incoming connection.

Each terminal supports a maximum of 2 cables connected in parallel.

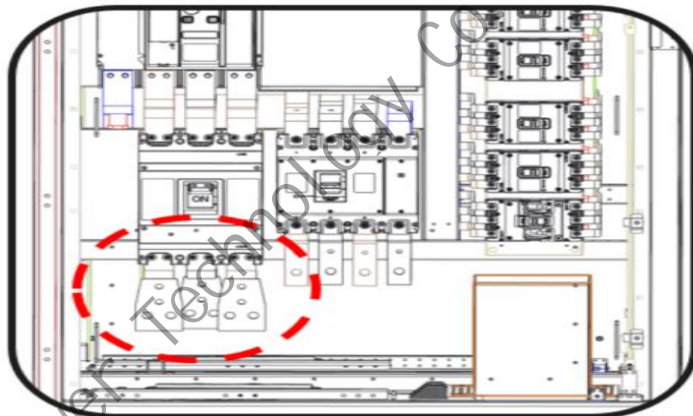
Outdoor copper core/copper-clad aluminum/aluminum alloy cables (to be provided by the user).

1. According to the cable selection, choose the wiring hole and connect the energy storage P CS incoming cable to the energy storage M CCB.
2. Seal the bottom wiring hole with fireproof mud.



2.5 Connect photovoltaic wiring

- Supports one photovoltaic main incoming connection.
 - Each terminal supports a maximum of 2 cables connected in parallel.
 - Outdoor copper core/copper-clad aluminum/aluminum alloy cables (to be provided by the user).
1. According to the cable selection, choose the wiring hole and connect the photovoltaic main incoming cable or the photovoltaic smart controller incoming cable to the switch.
 2. Seal the bottom wiring hole with fireproof mud.



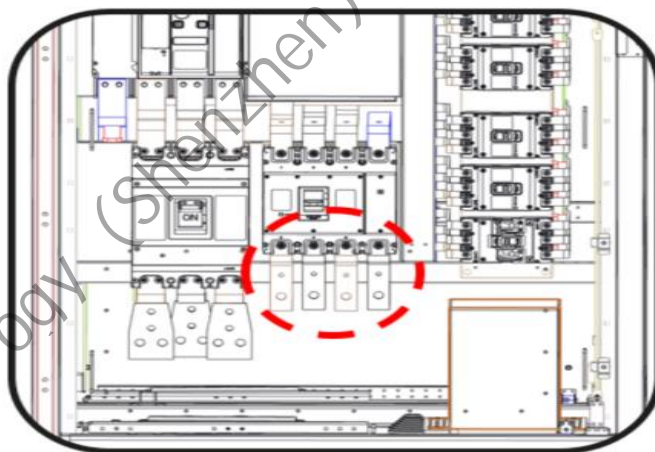
2.6 Connect load feeder

Supports 1 Access to road electrical load feeder.

Each terminal supports a maximum of 2 cables connected in parallel.

Outdoor copper core/copper-clad aluminum/aluminum alloy cables (to be provided by the user).

1. According to the cable selection, choose the wiring hole, and connect the photovoltaic main incoming line or the photovoltaic intelligent controller incoming cable to the load switch.
2. Seal the bottom wiring hole with fireproof mud.



2.7 Grounding Wire

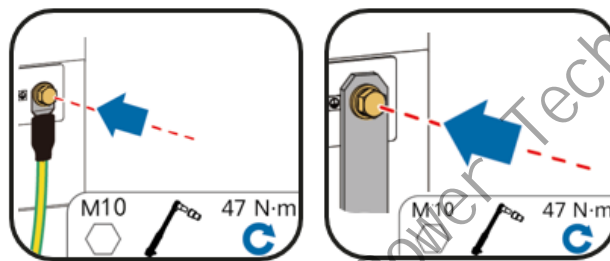
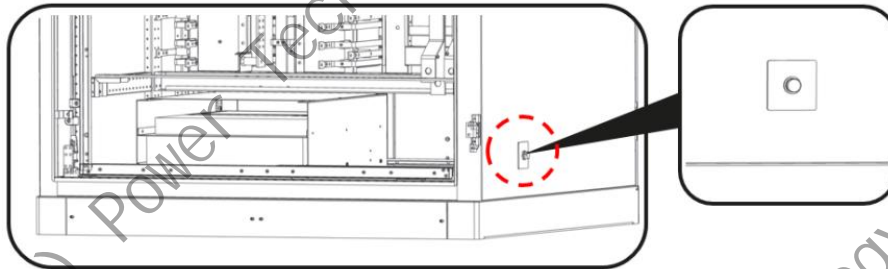
PowerFusion integrated cabinet protective grounding

Outdoor copper core/copper-clad aluminum/aluminum alloy cables/hot-dip galvanized flat steel (to be provided by the user).

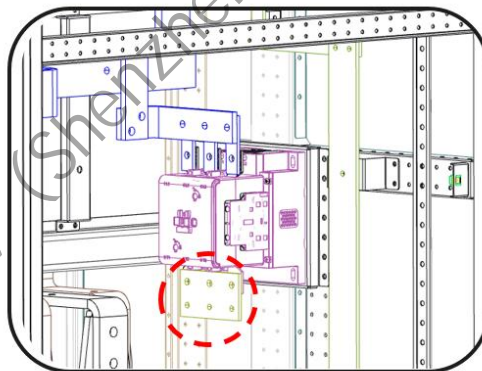
1. Produce cables and connect the protective ground wire.
2. If the system's grid-connected and off-grid switch is a 4P and is equipped with an N-line grounding switch, a grounding cable (with a recommended cross-sectional area not less than that of the load

side N-line) must be connected to the outgoing terminal of the N-line grounding switch and connected to an external grounding electrode. (If the system's grid-connected and off-grid switch is a 3P and there is no N-line grounding switch, this step can be ignored.)

Connect the PowerFusion cabinet to the ground wire as shown in the figure below:



Connect N to the grounding copper bus as shown in the figure below (4P system):

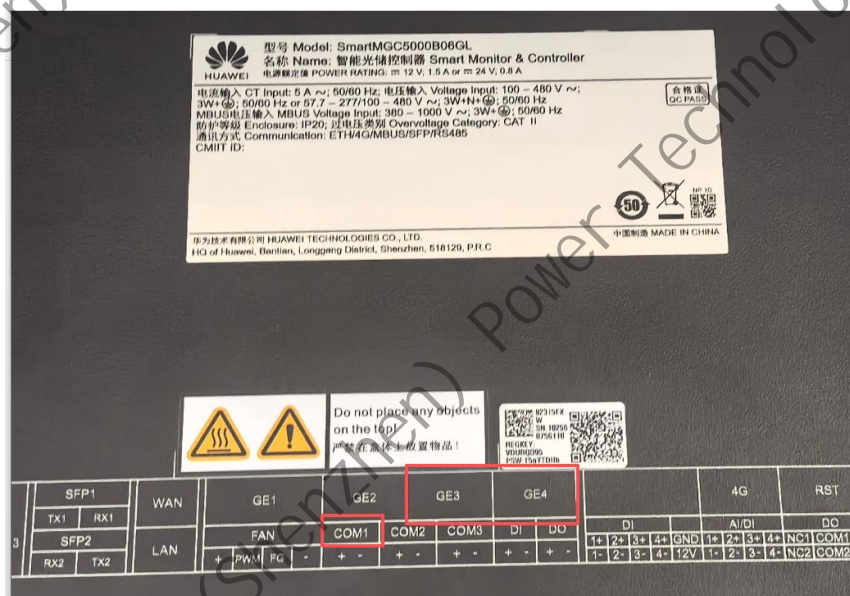


2.8 Connecting Communication Lines

The communication from data acquisition to energy storage uses Category 6 shielded network cables, and the communication from data acquisition to the photovoltaic inverter uses RS485 communication cables (to be provided by the user).

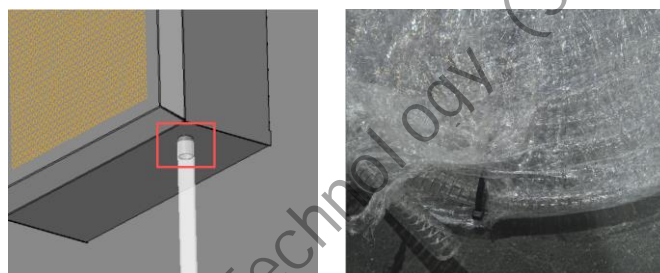
After the corresponding cables are prepared, label them (for distinguishing communication network cables) and connect to SmartMGC.

Connect the energy storage network cable to the G E3 and G E4 interfaces, and connect the communication line of the photovoltaic inverter to the COM1 port.



2.9 Connect the air conditioning water pipe

On-site, depending on the actual situation, the drainage pipe of the air conditioner can be connected to the air conditioner's water outlet. It is recommended to use a drainage pipe with an inner diameter.18mm soft hose, no mandatory requirements for other performance.



3. Power on and off operations

3.1 Power-On Operation

The power-up and power-down follow the order of "load side first, then power side / power side first, then load side." Before energizing, the insulation and equipment integrity must be checked.

- Before the first power-on, use a multimeter to check that the external power sources (including but not limited to mains power, generators, energy storage, and photovoltaic power) are all in a powered-off state. Live operations are prohibited;

- Cables are reliably connected and secured;
- Check the switches in the cabinet to ensure all switches are in the off position;
- Turn on the lightning protection switch in the secondary warehouse;
- Close the mains switch (connect to external mains power);
- Close the auxiliary power switch in the secondary warehouse (the backup switch does not need to be closed);

- Close the energy storage switch;
- Close the photovoltaic input switch;
- Close the oil machine input switch (if applicable);
- Power on the energy storage system;
- Check if the power indicator light is functioning normally;
(The indicator light is normal, then power on successfully)
- Close the load switch;
- Use a multimeter to check if the supply voltage is normal;
- After power-up is complete, close the cabinet door.

3.2 Power Down Operation

After opening the cabinet door, listen and check if the power supply equipment is normal.

After confirming there are no abnormalities, follow the steps below to perform the power down operation.

- Open the load switch;
- Open the generator switch (if any);
- Open the energy storage switch;

- Open the photovoltaic incoming switch;
- Power switch for municipal electricity is turned off;
- Secondary warehouse auxiliary power switch is turned off;
- Check the switches in the cabinet to ensure all switches are in the off position;
- Check if all power indicator lights are off
- If maintenance is required, use professional tools such as a multimeter or voltage tester to check

if the cabinet is completely powered off.

- Power down completed.