SUNWODA ENERGY

Model Series: CIESS 50~60

Oasis 60
Battery Cabinet
User Manual

Preface

Thank you very much for purchasing the product manufactured by Shenzhen Sunwoda Energy Technology Co., Ltd.(hereinafter referred to as Sunwoda).

This manual will provide detailed operating instructions for customers using Oasis 60. Please read this manual carefully before using the product and store it properly in a place where it is easily accessible to installation, operation and maintenance personnel.

The contents of this document may be updated from time to time due to product version upgrades or other reasons. Unless otherwise agreed, this document is intended as a product guide only, and all statements, information and recommendations contained in this document do not constitute any warranty, express or implied.

We sincerely hope that our products and manuals can meet your needs. We welcome your valuable comments to improve and enhance our products. The contents are subject to change without prior notice, subject to the latest physical. For updates or other information, please contact Sunwoda.

Content

1. Safety Instructions

The Battery Cabinet is a specialized piece of power distribution equipment. To ensure safe installation and operation, please read this manual thoroughly before use. Installers should be professionally trained, possess a background in electrical technology, and be familiar with local grid codes and related requirements. Sunwoda assumes no liability for any loss or injury resulting from failure to adhere to the operating instructions provided in this manual.

1.1 Personal safety

⚠ Dangerous
(1) No charged operation is allowed during the installation process. It is prohibited to install or remove cables with electricity. When the cable core comes into contact with the conductor, it may generate electric arcs, sparks, or explosions, which can lead to fire or personal injury.
(2) When the equipment is electrified, the non-standard and incorrect operation may cause fire, electric shock, or explosion, leading to personal injury or property damage.
(3) It is strictly prohibited to wear easily conductive objects such as watches, bracelets, bangles, rings, necklaces, etc. during the operation to avoid being burned by electric shock.
(4) During operation, special insulation tools must be used to avoid electric shock injuries or short circuit faults. The insulation's ability to withstand voltage levels must meet the requirements of local laws, regulations, standards, and specifications.
⚠ Warning
(1) Special protective equipment must be used during the operation process, such as wearing protective clothing, insulated shoes, goggles, safety helmets, insulated gloves, etc.

1.2 Electrical safety

⚠ Dangerous
(1) Before making electrical connections, please ensure that the equipment is not damaged; otherwise, it may cause an electric shock or fire.
(2) Unstandardized and incorrect operations may cause accidents such as fires or electric shocks.
(3) During the operation, it is necessary to prevent foreign objects from entering the interior of the equipment; otherwise, it may cause short circuit faults or damage to the

equipment, load power reduction or power loss, and personal injury.

⚠ Warning

(1) When installing equipment that needs to be grounded, a protective ground wire must be installed first; When dismantling equipment, the protective ground wire must be removed last.

1.3 Environmental safety

⚠ Dangerous

(1) It is strictly prohibited to place the equipment in a flammable, explosive gas, or smoke environment, and any operation is prohibited in this environment.

(2) It is strictly prohibited to store flammable and explosive materials in the equipment area.

(3) It is strictly prohibited to place the equipment near a heat source or fire source, such as smoke, fire, a candle, a space heater, or other heating equipment. Heating of the equipment may cause equipment damage or fire.

(4) During operation, special insulation tools must be used to avoid electric shock injuries or short circuit faults. The insulation's ability to withstand voltage levels must meet the requirements of local laws, regulations, standards, and specifications.

⚠ Warning

(1) The equipment should be installed in an area far away from liquids, and it is strictly prohibited to install it below water pipes, air vents, and other locations that are prone to condensation; It is also strictly prohibited to install it below the air conditioning outlet, ventilation outlet, machine room outlet window, and other locations that are prone to water leakage, to prevent liquid from entering the equipment and causing equipment malfunction or short circuit.

(2) When the equipment is running, do not block the ventilation openings, heat dissipation systems, or use other items to cover it to prevent high temperature damage to the equipment or ignition.

1.4 Mechanical safety

⚠ Dangerous

(1) High-altitude operations must wear safety helmets, safety belts, or waist ropes tied to sturdy structural components. It is strictly prohibited to hang on moving unstable

objects or metal with sharp edges to prevent hook slipping and falling accidents.

⚠ Warning

(1) The tools must be fully prepared and inspected by a professional organization to be qualified. It is prohibited to use tools that have scars, fail the inspection, or exceed the inspection validity period, to ensure that the tools are firm and not overloaded.

(2) Before installing the equipment into the cabinet, first make sure that the cabinet is fixed to avoid tilting and collapsing due to an unstable center of gravity, which may cause injuries to installation personnel and equipment damage.

(3) When pulling equipment out of the cabinet, be careful to install equipment that may be unstable or heavy inside the cabinet to avoid being crushed or crushed.

(4) It is strictly prohibited to drill holes in the equipment. Drilling holes can damage the sealing, electromagnetic shielding performance, internal components, and cables of the equipment, and the metal chips generated by drilling holes entering the equipment can cause circuit board short circuits.

1.5 Battery safety

⚠ Dangerous

(1) It is strictly prohibited to short-circuit the positive and negative terminals of the battery; otherwise, it may cause a short circuit in the battery. The short circuit of the battery will generate a large current and release a large amount of energy in an instant, causing the battery to leak liquid, smoke, release combustible gas, thermal runaway, fire, or explosion. To avoid short circuits in the battery, live maintenance is not allowed.

(2) Do not expose the battery to high-temperature environments or around heating equipment, such as high-temperature sunlight, a fire source, a transformer, a space heater, etc. Overheating of the battery may cause leakage, smoke, the release of combustible gas, thermal runaway, fire, or explosion.

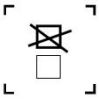
(3) It is strictly prohibited for the battery to be subjected to mechanical vibrations, falls, collisions, hard objects piercing, and pressure impacts; otherwise, it may cause battery damage or fire.

(4) It is strictly prohibited to disassemble, modify, or damage the battery (such as by inserting foreign objects, squeezing by external force, immersion in water or other liquids), so as to avoid liquid leakage, smoke, release of combustible gas, thermal runaway, fire, or explosion of the battery.

(5) It is strictly prohibited for battery terminals to come into contact with other metal objects, as it may cause heating or electrolyte leakage.
⚠ **Warning**
(1) When installing and testing batteries, fire protection facilities such as fire sand and carbon dioxide fire extinguishers must be equipped in accordance with construction standards and specifications. Before putting into operation, it is necessary to ensure that fire-fighting facilities that comply with local laws, regulations, and regulatory requirements are in place.
(2) The battery should be installed in an area far away from liquids, and it is strictly prohibited to install it below areas prone to water leakage such as air conditioning outlets, ventilation vents, machine room outlet windows, and water pipes, to prevent liquid from entering the equipment and causing equipment malfunction or short circuit.
(3) After the battery is discharged, it should be charged in a timely manner; otherwise, it may cause damage to the battery due to over-discharge.

1.6 Description of packaging symbols

Symbol	Interpretation	Symbol	Interpretation
	Caution! Hazards caused by failure to operate as required may result in moderate or minor personal injury, as well as damage to the product!		This equipment must not be discarded with other household waste and must be taken to an appropriate facility for recovery and recycling!
	Hazard: Caution for high voltage danger.		Recyclable!
	Fireworks are strictly prohibited		This faces upwards and must not be tilted upside down.
	No stepping on !		Read the manual carefully before use!
	The unit vents are hot, be careful of touching them!		Grounding protection!

	A 5-minute wait is required after power failure to ensure that the machine is fully discharged!		Fragile items, careful and gentle.
	Fear of rain and humidity.		No Rolling
	Do not stack items on top.		

2 System Introduction

2.1 System Overview

Oasis 60 Battery Cabinet features a full cabinet modular design, easy to integrate, easy to deploy, easy to expand, easy to install, can easily ensure the user's power needs, flexible for peak shaving, self-generation and self-consumption, energy transfer, off-grid power backup and other energy storage scenarios.

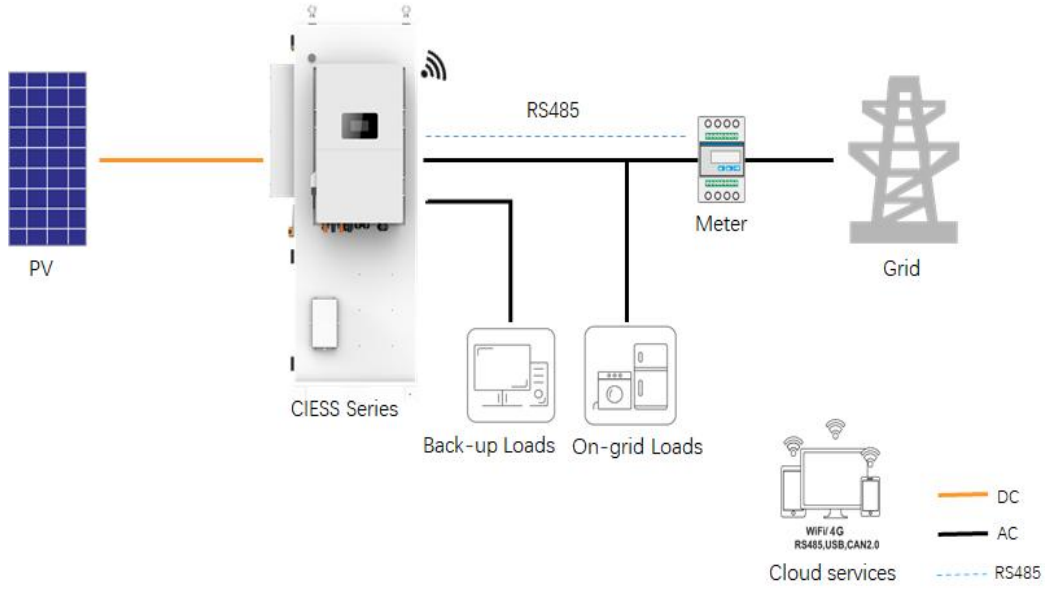


Figure 2.1.1 System Scenario

2.2 Appearance Introduction

The system is mainly composed of battery box, control box, air conditioner, data module, alarm system, fire module, BMS battery management system and other modules. The details are as follows:

2.2.1 Cabinet instruction

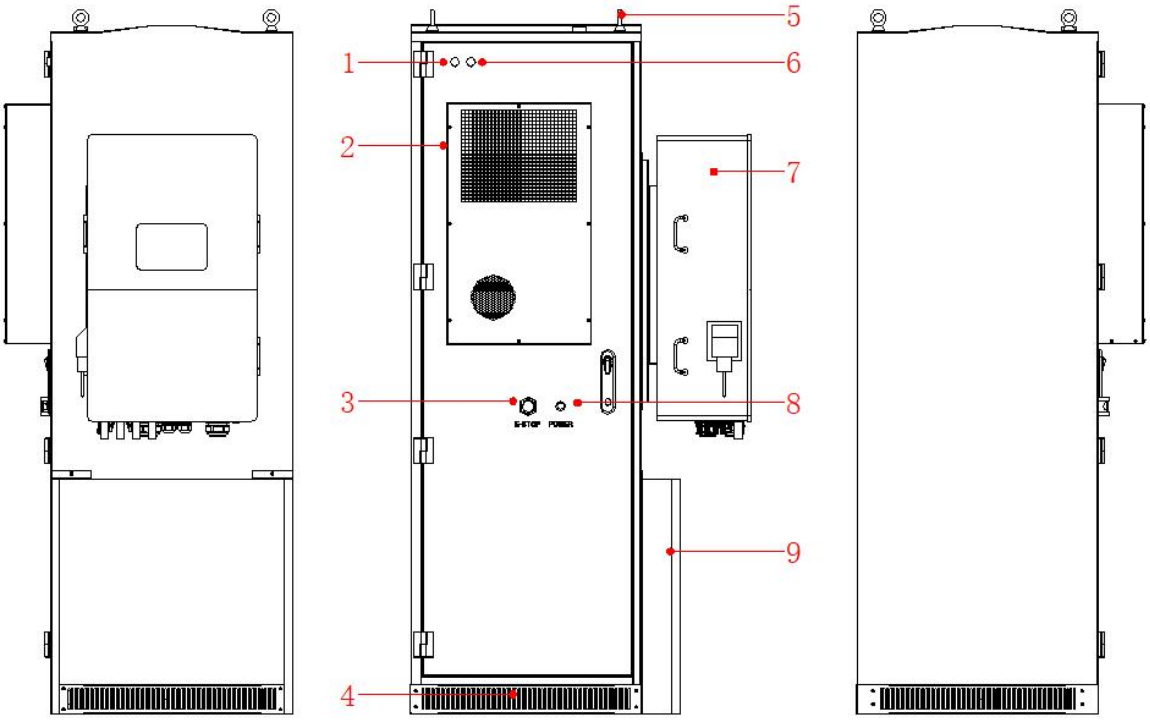


Figure 2.2.1

(1) Operation Indicator; (2) Air Conditioner; (3) Emergency Stop Button; (4) Base; (5) Eye Bolt for Lifting; (6) Alarm Indicator; (7) Energy Storage Inverter (optional); (8) On/Off Button; (9) Wire Cover Plate;

Note:

Air conditioning start and stop is controlled by the ambient temperature inside the cabinet. When the temperature is below 20°C, the air conditioner starts the heating mode (stops at 24°C); when the temperature is above 30°C, the air conditioner starts the cooling mode (stops at 26°C).

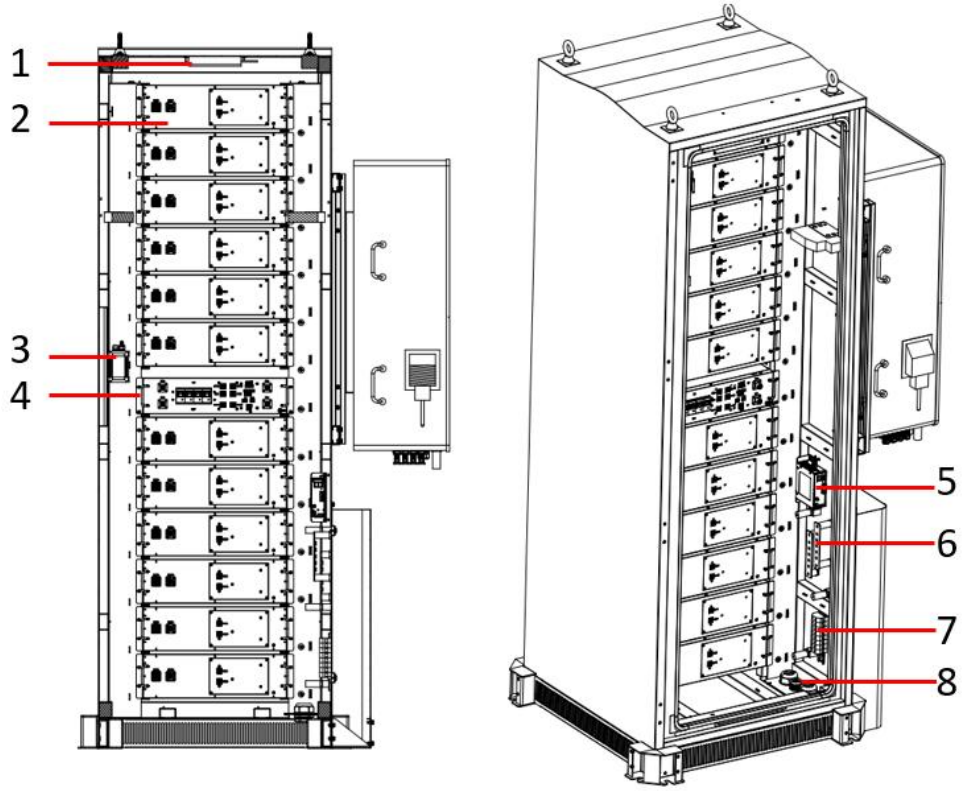


Figure2.2.2 Internal structure of system

(1) Smoke sensor; (2) Battery box; (3) Fire fighting module; (4) Control box; (5) Data module; (6) Positive and negative copper rows; (7) Air conditioner terminal row; (8) Wire routing hole;

Notes:

The fire module contains aerosol, when the internal temperature of the cabinet reaches 185℃±10℃, the aerosol fire extinguishing program will be started. The start and stop of the aerosol is controlled by its internal mechanical structure, and the BMS system in the control box only plays the function of signal acquisition at this time.

2.2.2 Control Box

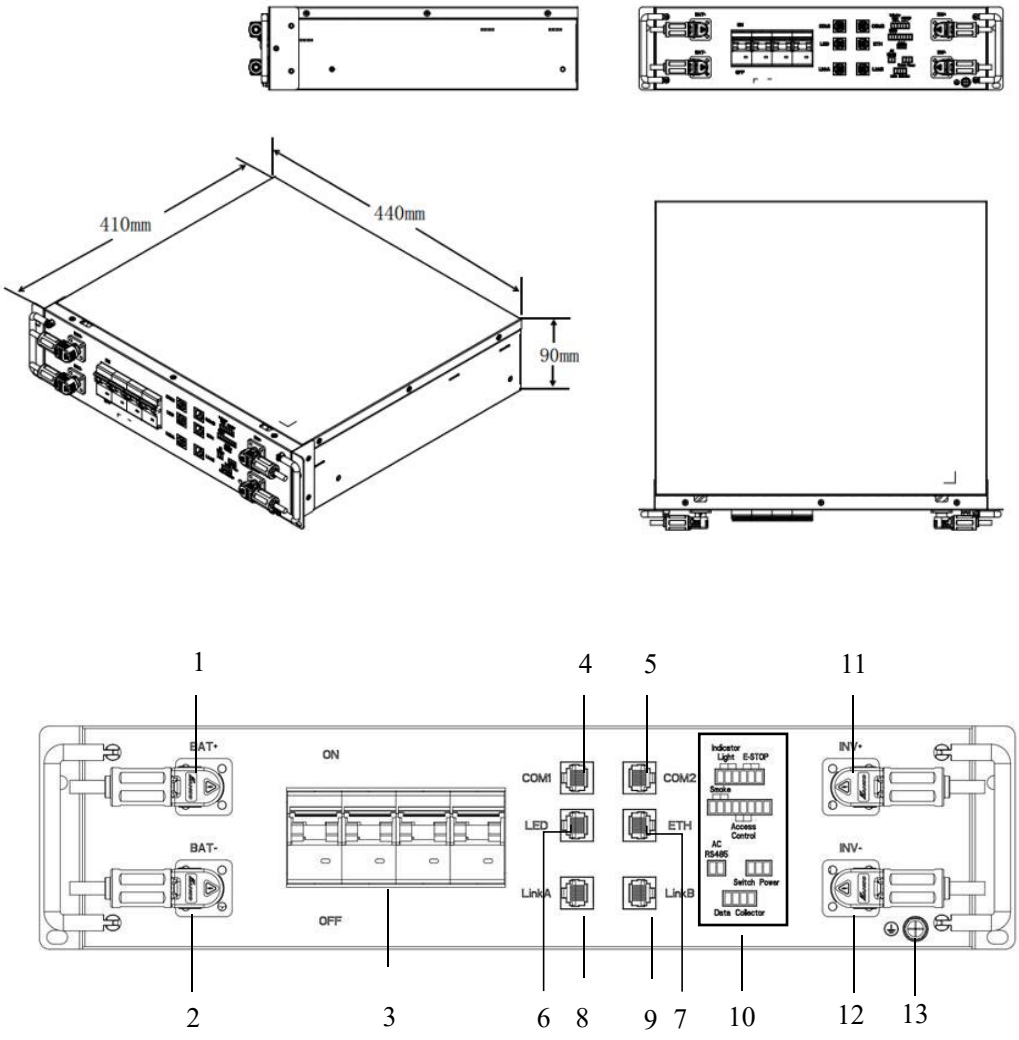


Figure2.2.3 Control Box

(1) BAT+ positive input connector; (2) BAT- negative input connector; (3) Air switch; (4) COM1 connector; (5) COM2 connector; (6) LED lamp connector; (7) ETH connector; (8) Link A connector; (9) Link B connector; (10) Function connector; (11) INV+ positive output connector; (12) INV- negative output connector; (13) Ground wire Connection point;

Notes:

① LED interface: used for external third-party operation alarm equipment;

② ETH interface: for R&D internal maintenance;

2.2.3 Battery Box

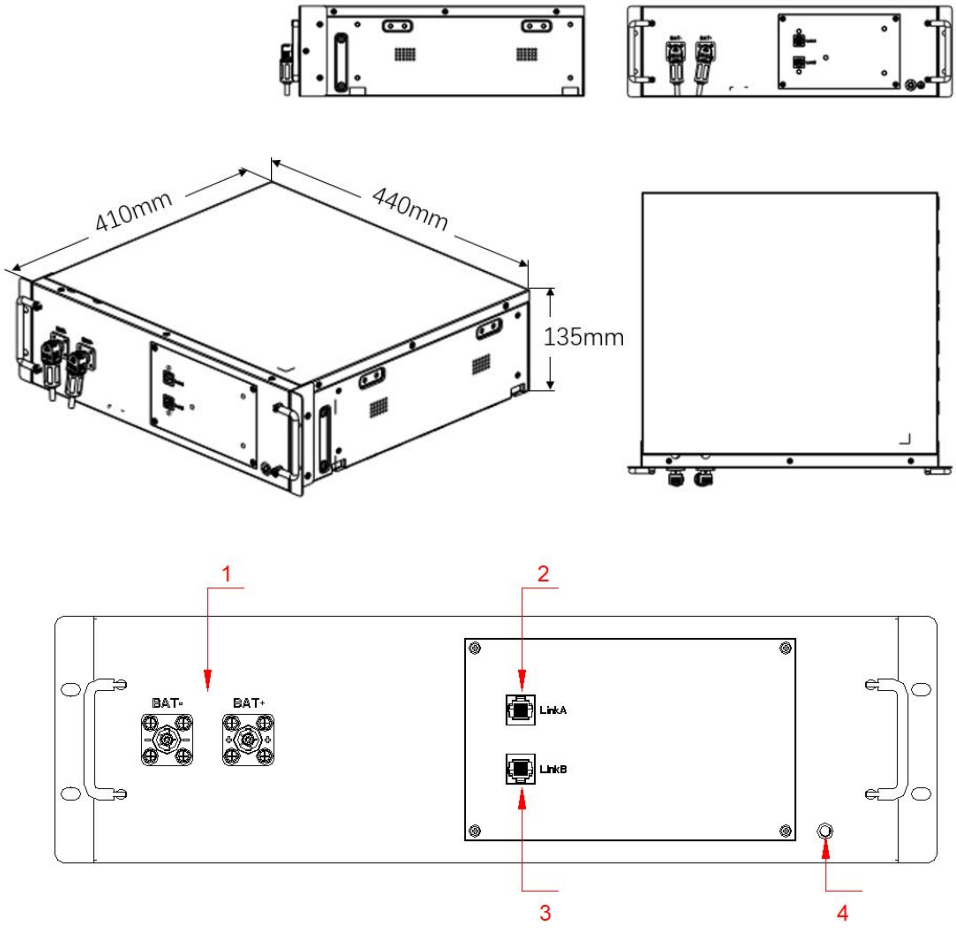


Figure2.2.4 Battery Box

(1) Bat+/- connector; (2) Link A connector; (3) Link B connector; (4) Ground point;

2.3 Nameplate Instruction

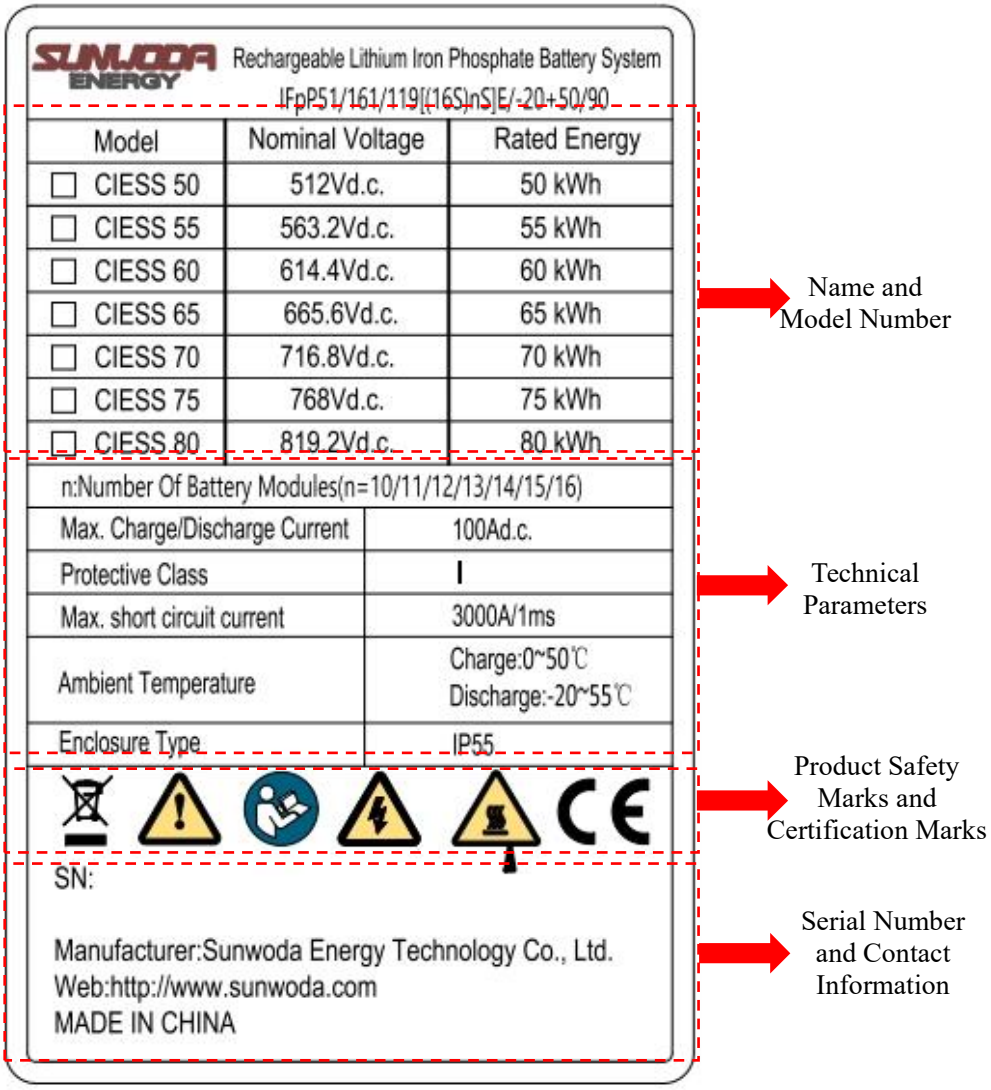


Figure 2.3.1

3 Mounting and Wiring

3.1 Unpack and Check Delivery Packages

3.1.1 Unpack

Transport the cabinet to the perimeter of the destination, paired with a screwdriver to remove the perimeter packaging pieces of the cabinet in preparation for the subsequent installation of the cabinet (Figure 3.1).

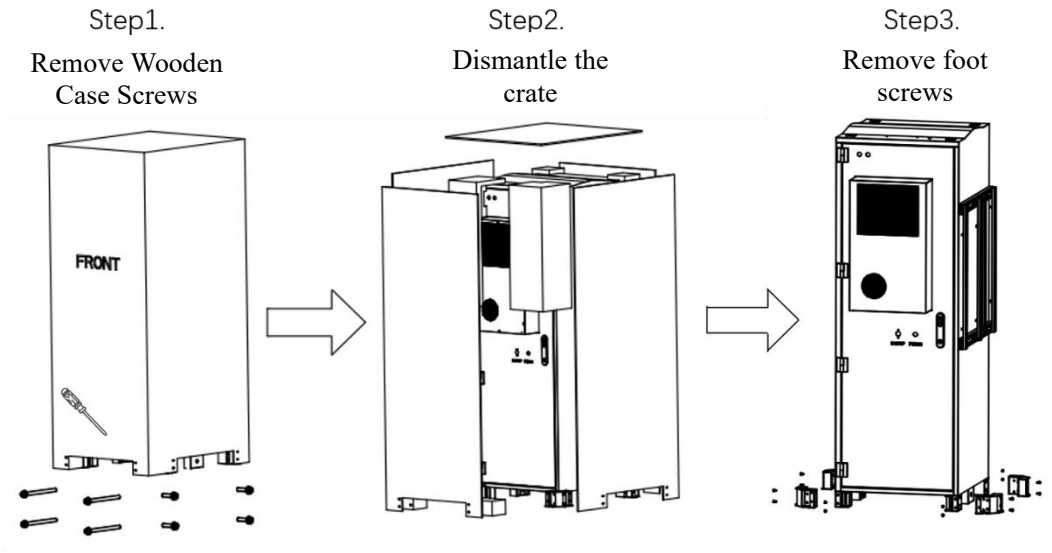
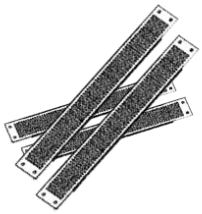
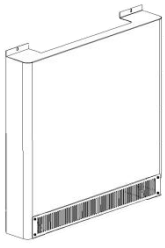


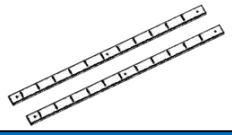
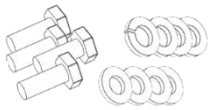
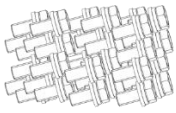
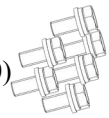
Figure 3.1.1 Unpack

3.1.2 Check accessory packages

Once the unpacking is complete, the cabinet's perimeter boards, foot assemblies, etc. can be discarded. Afterwards, open the front door of the cabinet, take out the accessory box and check whether the objects in the delivery package are complete. The items in the accessory box are listed in the table below:

Table 3.1.1 items in the delivery package

(1) 	(2) 	(3) 
Paper documents	**Front/Back/Side panel**	**Wire cover panel**
User manual: 5503000026141，1pcs；Certificate of Conformity: 5699010055021，1pcs；	Front/back panel: Enclosure Panel 1，2pcs, 718mm,SGCC; Side panel：Enclosure Panel 2，2pcs，749mm,SGCC	5099010030131, 1pcs，754mm*750mm*121mm,

(4) 	(5) 	(6) 
Plate for Cable ties	**Cable ties**	**Expansion bolts**
5099010030151，2pcs，SGCC；	5623000000051，50pcs，white nylon;	5099000031331，4pcs，M12x80 Expansion Bolt Assemblies, color zinc plated carbon steel
(7) 	(8) A.  B C.	(9) 
M8x20 bolt assemblies	M10x25 bolt assemblies	M6x14 bolt assemblies
5007010037321，4pcs，	A. Bolt: 5007010046191, 4pcs; B. Spring washers: 5007020000991, 4pcs; C. Flat washers: 5007030001251, 4pcs	5007010027261，30pcs
(10) 	(11) 	(12) 
M4x16 bolt assemblies	Eye Bolt for Lifting	Pre-insulated Terminals
5007010036281，6pcs	4pcs，mounted on top of cabinet	5699010064841,6pcs
(13) 	(14) 	(15) 
Grounding Cable	To PCS/Parallel Communication Cable	LAN Cable
5619100061411，1pcs，8AWG，UL1015，1.5m	5619100054511, 1pcs, Cat5e,4.2m	5619100062991, 1pcs, Cat5e,2m
(16) 	(17) 	
To PCS/parallel positive power cable	To PCS/Parallel Negative Power Cable	
5619100064711, 1pcs，Split 3AWG into 2pcs 6AWG power cords, UL10269,2.5m	5619100064721, 1pcs, Split 3AWG into 2pcs 6AWG power cords, UL10269,2.5m	

Note: The quantities involved in the above list are the number of single cabinet, and the

number changes multiple times with the increase of the cabinet numbers.

3.2 Mechanical Installation

3.2.1 Installation Precautions

⚠ Before starting the installation, please read the following instructions:
(1) Ensure that the ambient temperature of the installation site is within the specified range of -20°C to +55°C (0°C to 40°C is most recommended).
(2) The battery system needs to be installed on a ground with sufficient load-bearing capacity and levelness; if the ground does not have sufficient support and levelness, it needs to be ensured by other means (e.g., making a foundation, adding load-bearing plates, etc.).
(3) Avoid installing the equipment close to high-temperature heat sources or low-temperature cold source environments.
(4) Avoid installing the equipment in areas with extreme changes in ambient temperature.
(5) Avoid installing the equipment in a strong interference environment.
(6) Avoid installing equipment in sites accessible to children。
(7) Avoid installing the unit in areas prone to waterlogging.
(8) Avoid installing around flammable, explosive, or corrosive items, and do not place related objects near the equipment.
(9) Equip carbon dioxide, Novac1230 or FM-200 fire extinguishers around the equipment just in case.
(10) When a fire occurs, be sure to use the recommended type of fire extinguisher to extinguish the fire, especially prohibit the use of water or ABC dry powder fire extinguishers. Wear protective clothing and self-contained breathing apparatus when extinguishing fires.
(11) Prohibit running the equipment in a smoky environment, and the installation location should be well ventilated.
(12) The installation of the equipment requires the participation of many people, consider the use of cranes or forklifts to assist in the handling, as appropriate.
(13) Prohibit tilting of the installation position, the equipment should also be balanced during transportation, to avoid violent shaking.
(14) Avoid exposing the equipment to the sun, rain, snow and strong environment:

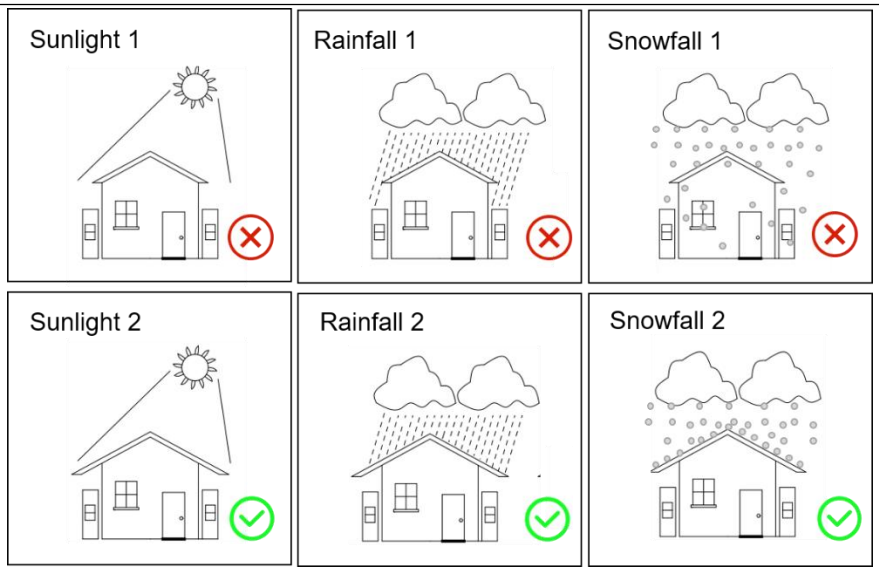


Figure 3.2.1 Installation environment

3.2.2 Pre-installation preparation

Please refer to the relevant size of the cabinets and consider the building size of the cement foundation as appropriate. The cabinet casing and the distribution of the wiring holes at the cabinet bottom is shown in the following diagrams (Fig.3.2.2,3.2.3).

Note:

If you consider underground routing, you should also have a reserved routing slot (depth <100mm).

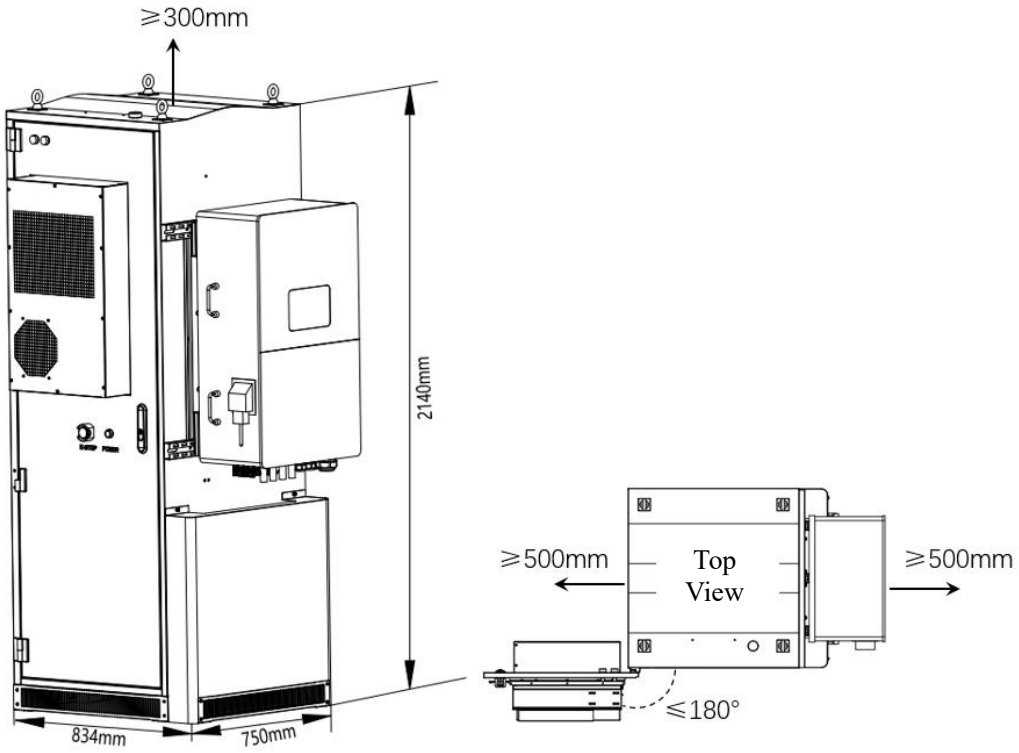


Figure 3.2.2 Cabinet dimensions

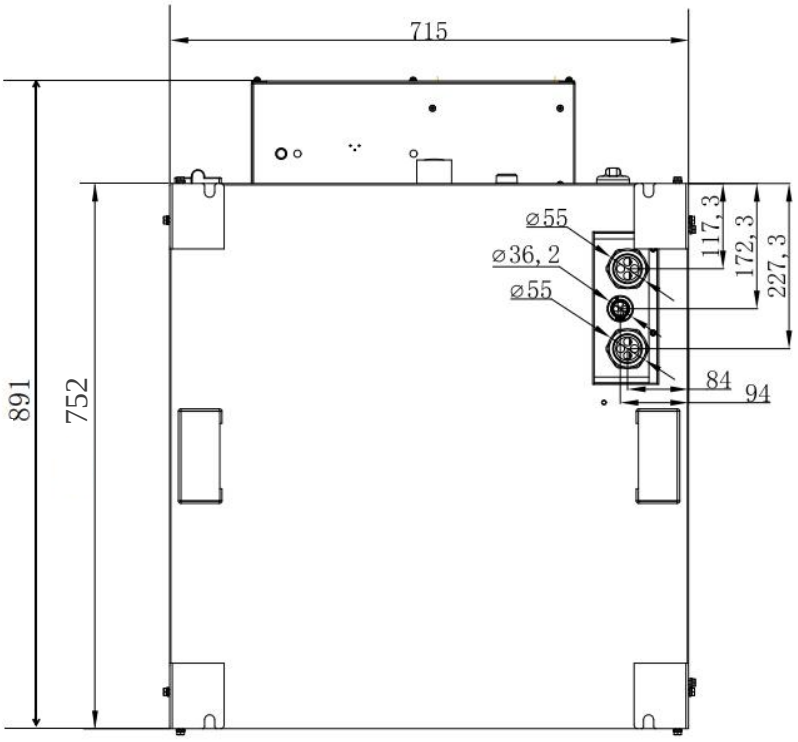


Figure 3.2.3 Positioning diagram of the routing holes at cabinet bottom

Step1 Distance required around the cabinet

Distance should be reserved around the cabinet, as shown in the following diagrams (Figures 3.2.4, 3.2.5):

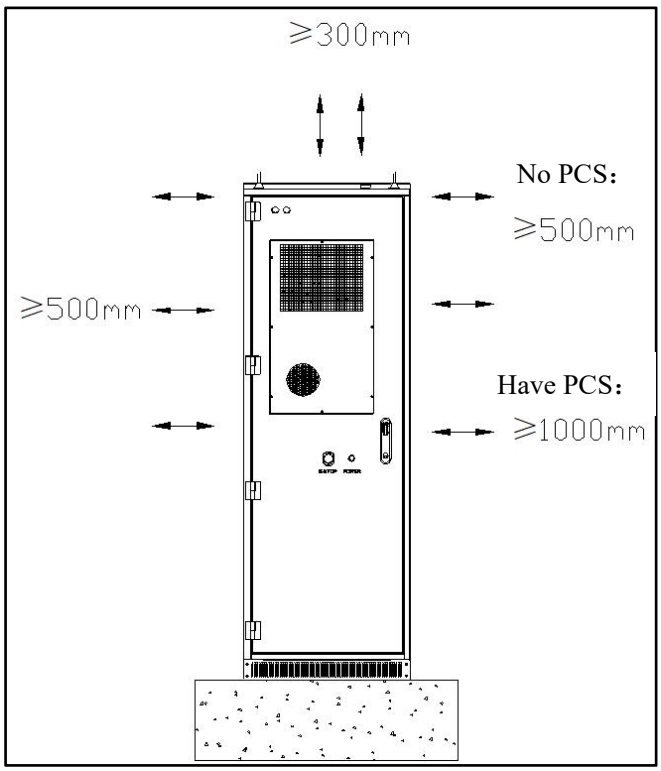


Figure 3.2.4 Single cabinet space requirements

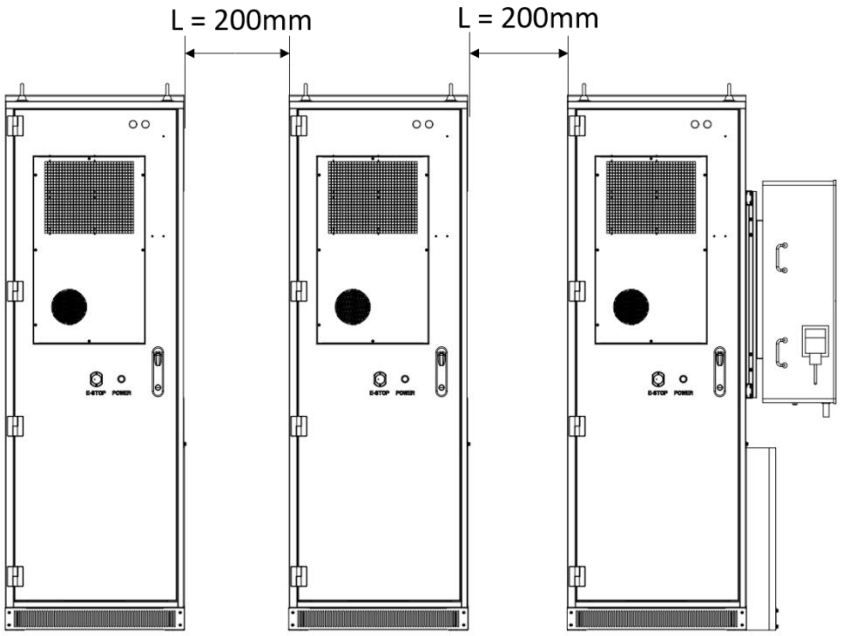


Figure 3.2.5 Multiple cabinet space requirements

Step2 Determine locations of mounting hole

Mounting slots in the bottom of the cabinet are as follows (Figure 3.2.6).

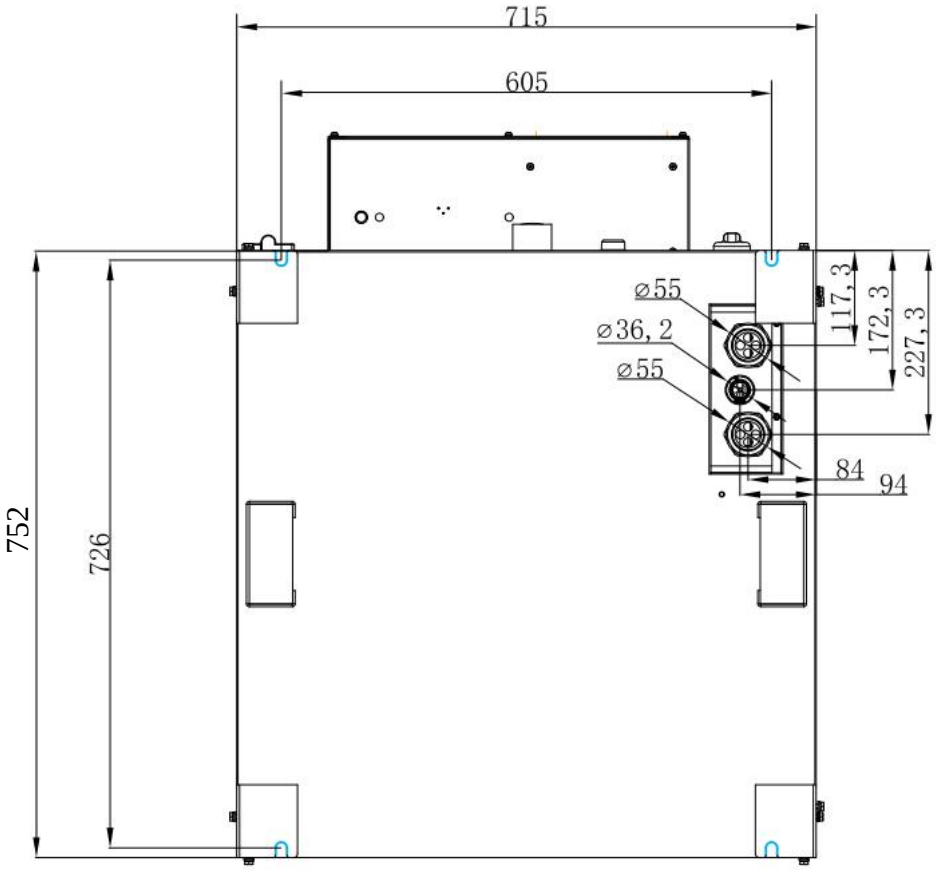


Figure 3.2.6 Location of under-cabinet mounting slots

Step3 Drill holes and install expansion tubes

(1) Refer to Fig. 3.2.6 to mark the position of the base mounting holes to the cement

foundation, and then use impact drill to make the holes. The diameter of the hole should be 14mm and the depth should be 80mm.

(2) Take the expansion bolts (5099000031331) 4pcs, use the rubber hammer to knock them into the four holes, and the expansion pipe should be all into the hole.

(3) Remove the hexagonal nuts, spring washers and flat washers and place them aside to prepare for the installation of the cabinet.

Step4 Lift the cabinet

Using a forklift or crane, align the expansion bolts on the bottom and drop the cabinet. Keep the outdoor cabinet smooth during the move, do not heave up and down or tilt the cabinet at an excessive angle (Figure 3.2.7, 3.2.8). Make sure the front door of the cabinet is locked before moving.

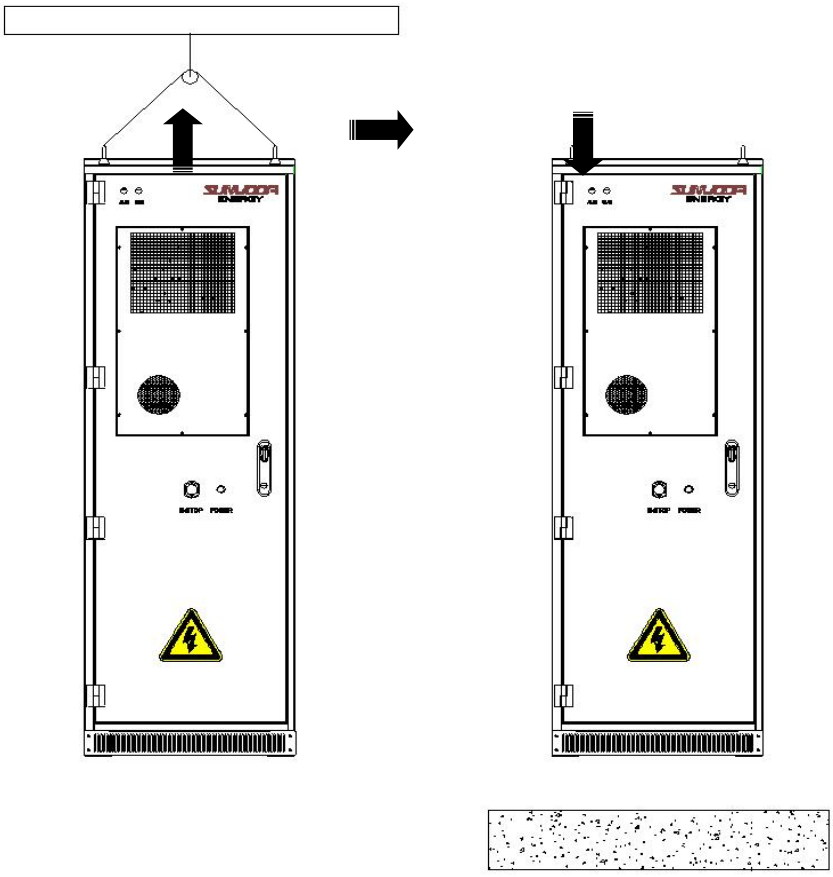


Figure 3.2.7 Moving Equipment
(Note: When lifting, it is necessary to manually install the eye bolts to the top of the cabinet, and be sure to tighten them)

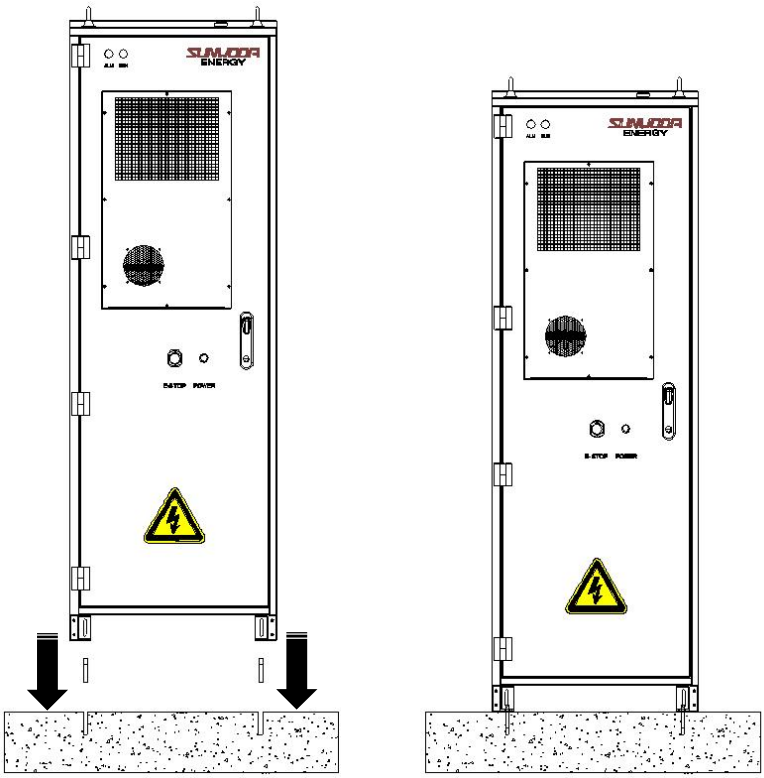


Figure 3.2.8 Aligning Expansion Tube in Base Drop Equipment

Step5 Fixed Cabinet

Install and tighten the spring washers, flat washers and hexagonal nuts removed previously to complete cabinet fastening.

3.2.4 Inverter Installation

Step1 Adjust the cabinet bracket

(1) Refer to the figure below to loosen the four screws on the cabinet bracket and place them aside (Fig. 3.2.9).

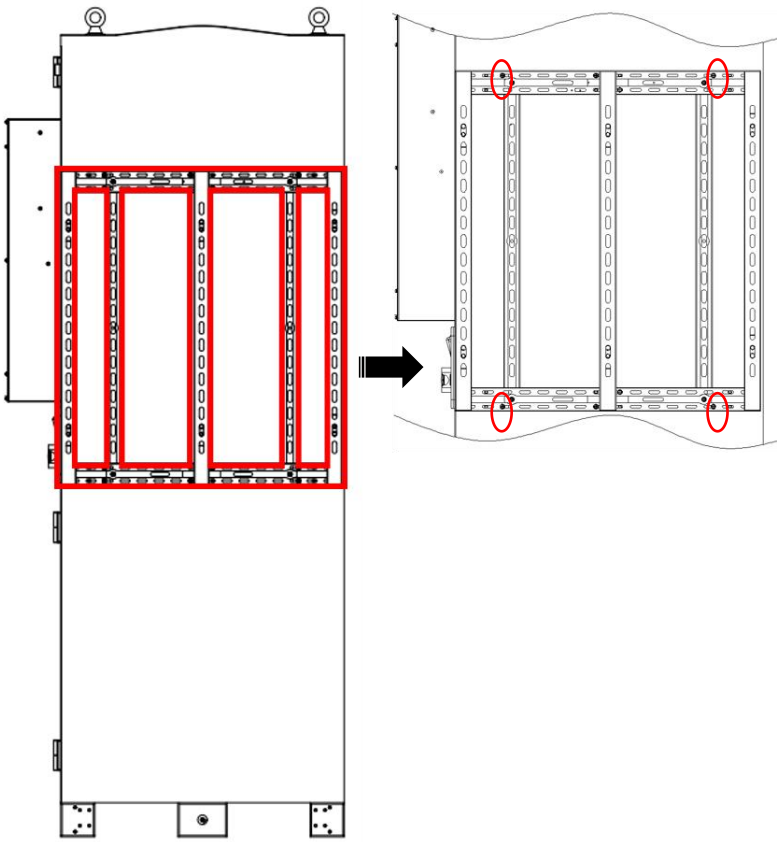


Figure 3.2.9

(2) Adjust the cabinet bracket and the internal nut plate in the slide rail to suitable position against the bracket mounting holes supplied by inverter (Fig. 3.2.10).

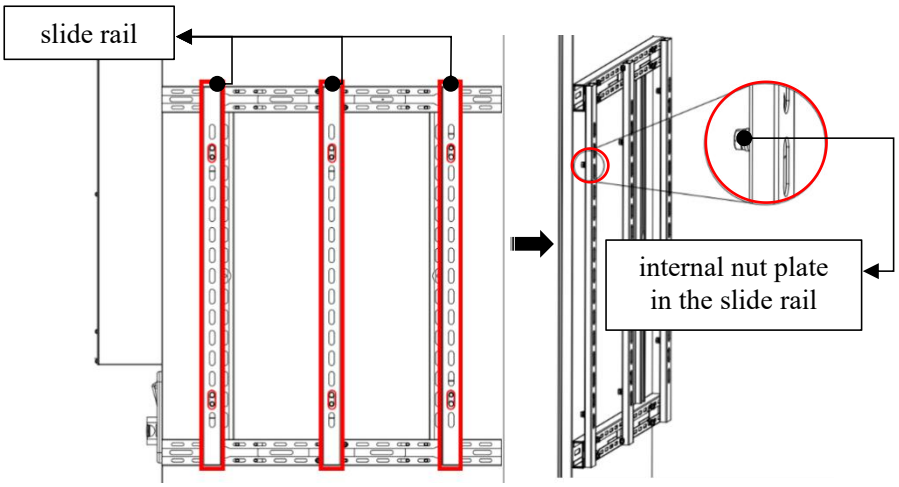


Figure 3.2.10

(3) Reinstall the screws removed previously back into the cabinet bracket to complete the fixing of the slide. In addition, the movement and fixation of the nut plate is mainly based on the tightness and looseness of the nuts on it (Fig. 3.2.10).

Note: Since the distance from the inverter bottom to the cabinet bottom should be kept between 850mm~910mm to ensure the length of the wire sufficient, please make sure to estimate

the vertical position of the nutplates reasonably to avoid mounting the inverter too low or too high (Fig. 3.2.11,3.2.12).

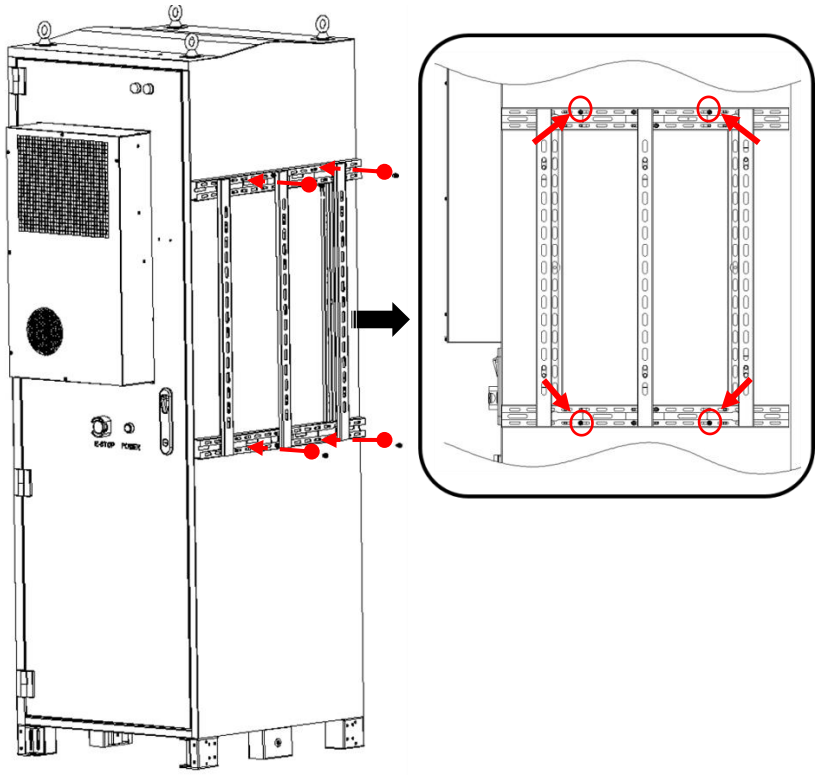


Figure 3.2.11

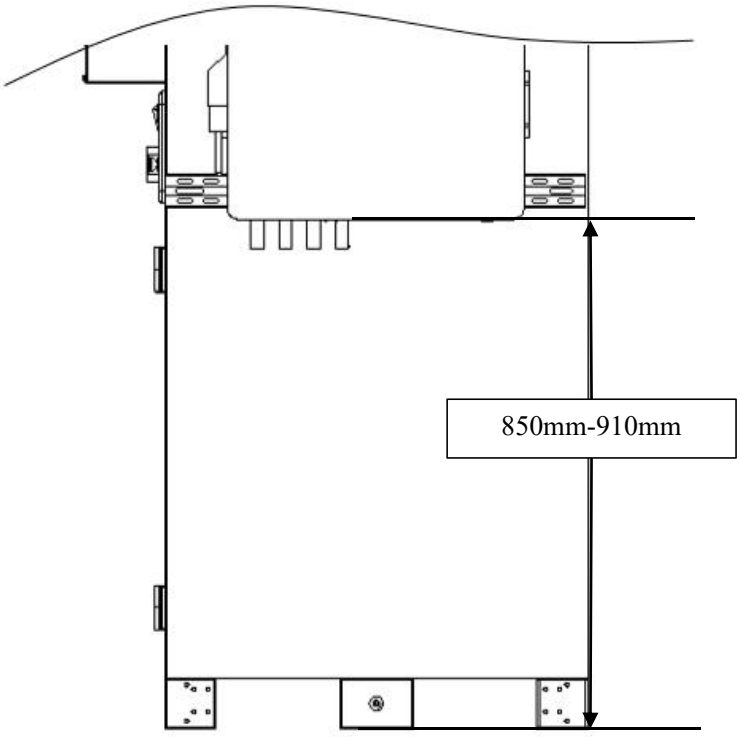


Figure 3.2.12

Step2 Mount the PCS to cabinet bracket

(1) Take the PCS mounting bracket and use 4pcs M8 (5007010037321) or M10 bolts

(5007010046191) to mount the PCS bracket to the cabinet bracket. Different bolt sizes are used to install different PCS brackets. When using M10 bolts, please use them together with M10 spring washers (5007020000991) and flat washers (5007030001251).

(2) Hook up the inverter to the bracket and fasten the inverter according to the inverter's professional user's manual (Fig. 3.2.13).

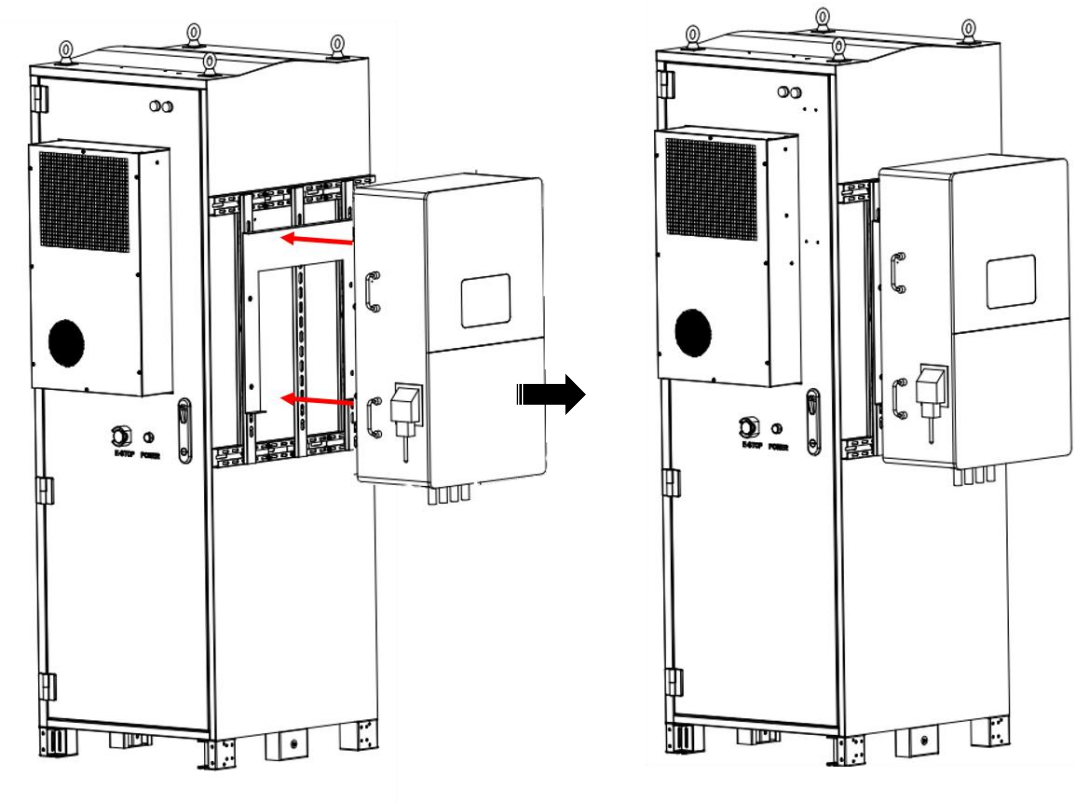


Figure 3.2.13

3.3 Cable Installation

3.3.1 Check before connecting

Before connecting the cables, please make sure that the control box air switch and all upper level switches are disconnected, and then check whether the cables between the battery modules are well connected, and keep a proper distance between the cables and the heat generating devices or heat sources, and leave at least 30mm of space around the cables to avoid the aging or breakage of the insulation layer due to high temperature (Figure 3.3.1).

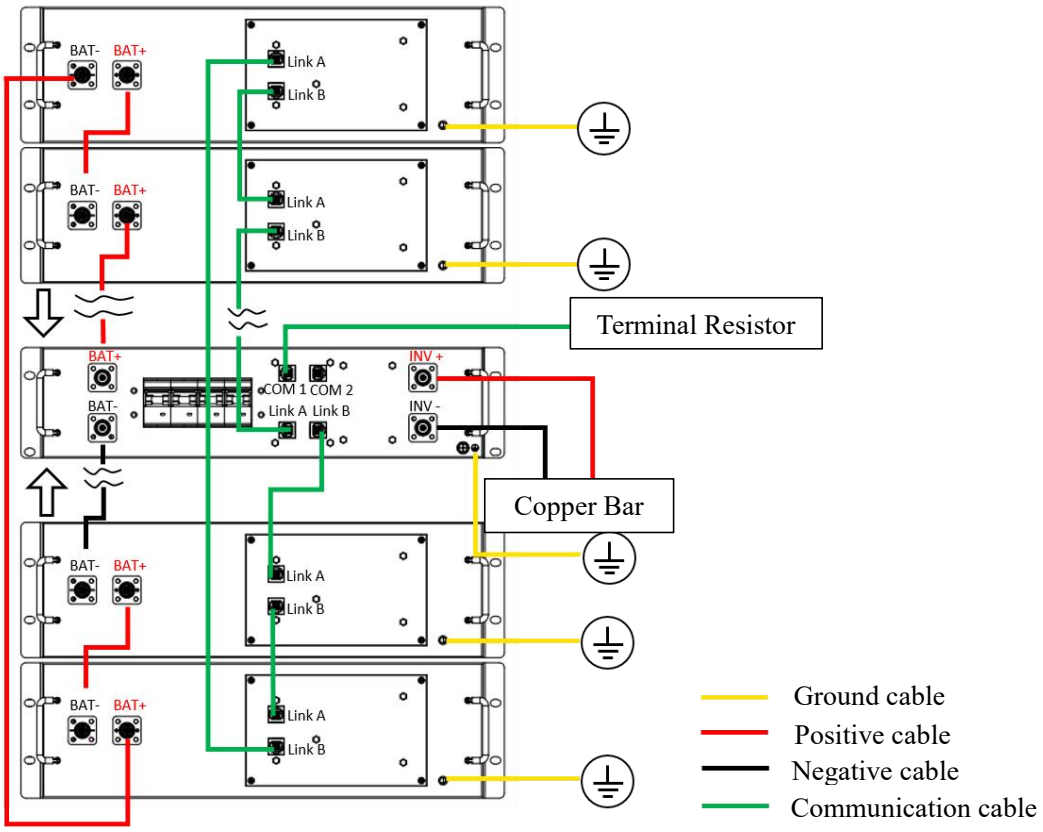


Figure 3.3.1 Overview of cable connections of battery modules

3.3.2 Wiring Precautions

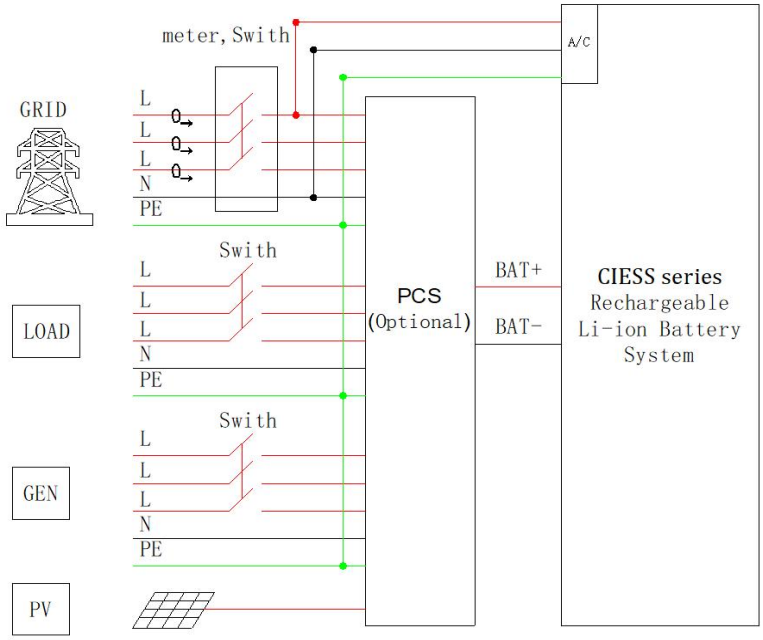


Figure 3.3.2 Outdoor cabinet wiring schematic

(1) The wiring schematic for the outdoor cabinet is shown above (Figure 3.3.2). When connecting electrical cables, the ground wire must be connected first in accordance with local regulations, and when removing the system, the ground wire should be disconnected last.

(2) Outdoor cabinets are available in both above ground and below ground routing. For above ground routing, the bottom side panels may be installed or removed as appropriate.

(3) If take the underground alignment (especially for the use of multiple cabinets and machines), pay attention to the reference to Figure 3.2.3 in the cement foundation to reserve the alignment groove, the depth of the alignment groove should be less than 100mm (Figure 3.3.3).

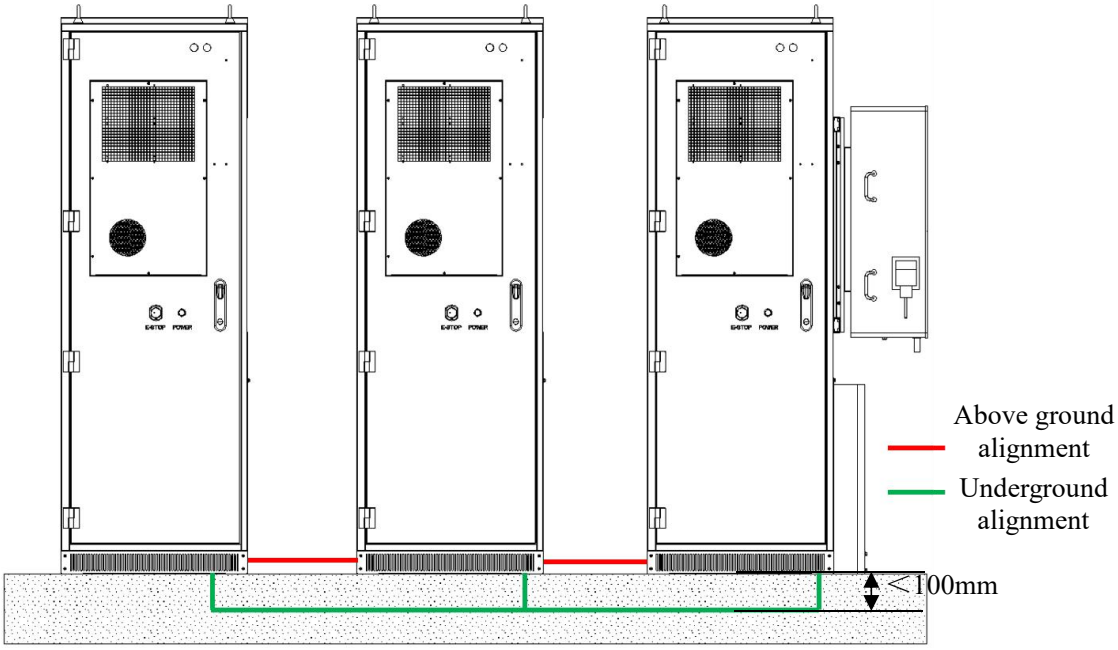


Figure 3.3.3 Parallel alignment of multiple cabinets

3.3.3Connect the ground wire

Step1 Connect the ground wire to the outdoor cabinet.

Step1 Connect the ground wire to the outdoor cabinet.

Take out the ground wire (5619100061411) and use M6x14 screws (5007010027261) to connect one end of the ground wire to the outside of battery cabinet, see the following figure for the exact position of the connection (Figure 3.3.4):

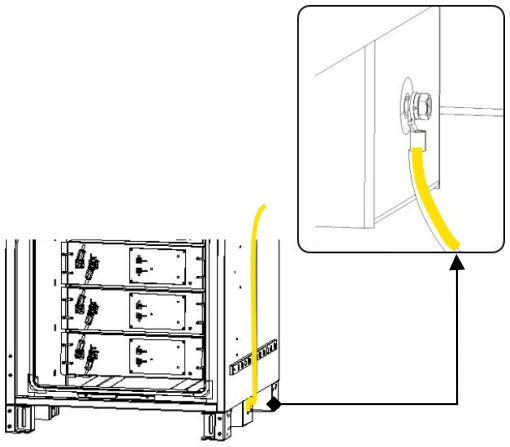


Figure 3.3.4

Step 2 Connect ground wire to PCS or other external ground point

The ground wire inside the system is connected before shipment. The ground wire from the system to other external grounding points such as PCS must be connected manually on site. Before

connection, please connect the external ground wire properly according to local regulations. And then refer to the wiring guidance from the PCS side to see how to connect the ground wire to PCS.

Step 3 Complete schematic of single/parallel cabinet ground connection

(1) Single Cabinet Mode

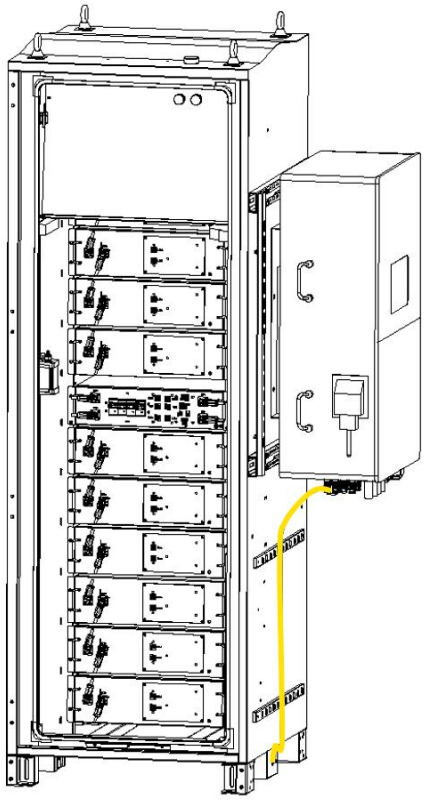


Figure 3.3.5 Single cabinet ground connection

(2) Parallel Cabinet Mode

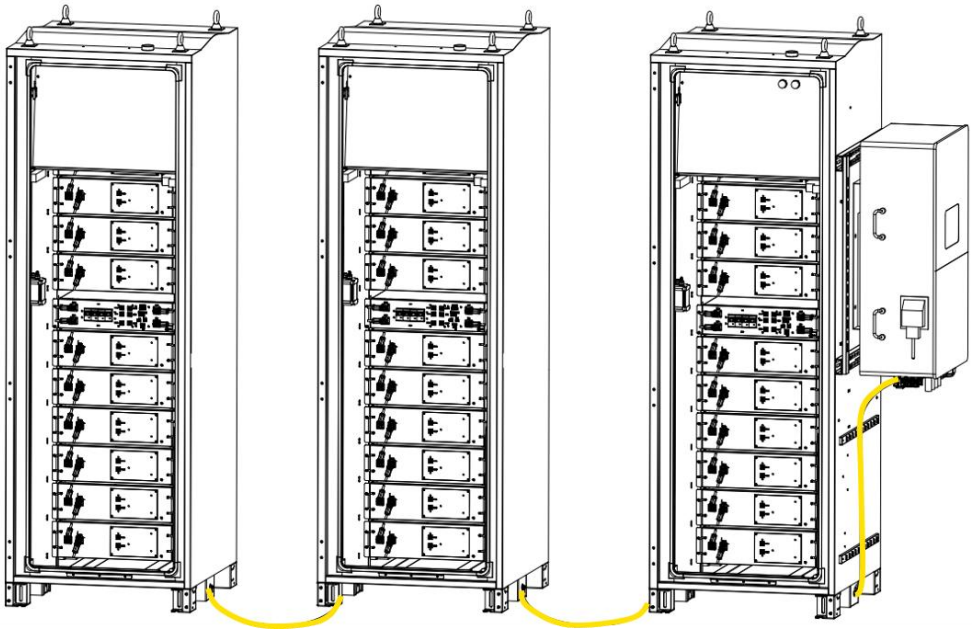


Figure 3.3.6 Multi-Cabinet Ground Connection (Optional)

3.3.4 Connect air conditioner power supply lines

Step1 Prepare the cable

Air conditioning is powered by alternating current, and the recommended specification is 14AWG,2.5mm² .

Tabel 3.3.1 Recommended specifications for air-conditioning power supply cable

Model	Wire Size	Cable(mm²)	Amount
Air conditioner power supply cable	14AWG	2.5	1pcs/phase, 3 phase in total.

Step2 Install air conditioner power cable

(1) Remove the protective cover from the inside of the cabinet.

The air conditioner power cable wiring port is hidden under the protective cover plate on the inside wall of the cabinet. When installing, please remove the protective cover plate (Fig. 3.3.7) and set it and M6 bolts on it aside temporarily.

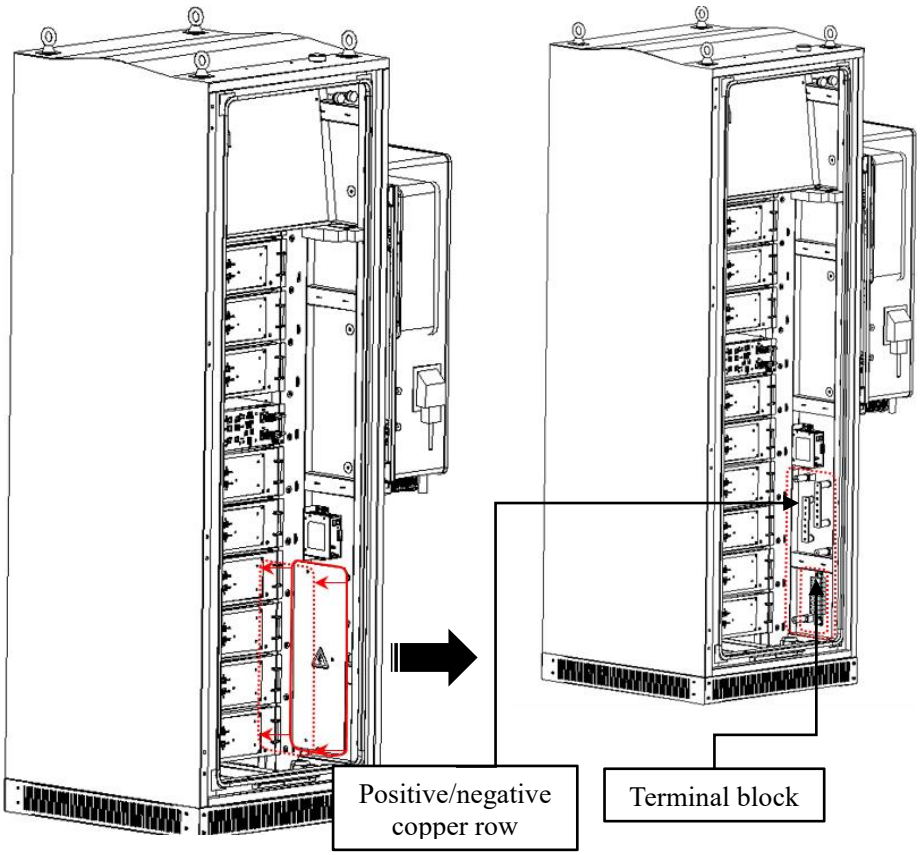


Figure 3.3.7

(2) Pull air conditioner power cable through cabinet bottom routing hole

Thread the air conditioner power cable through middle hole. The structure of the bottom routing hole is shown in Fig.3.3.8. The threading method is shown in Fig.3.3.9 .

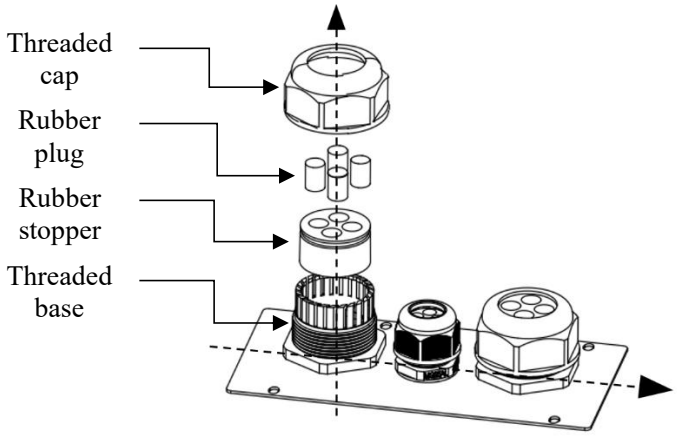


Figure 3.3.8 Internal structure of the routing hole

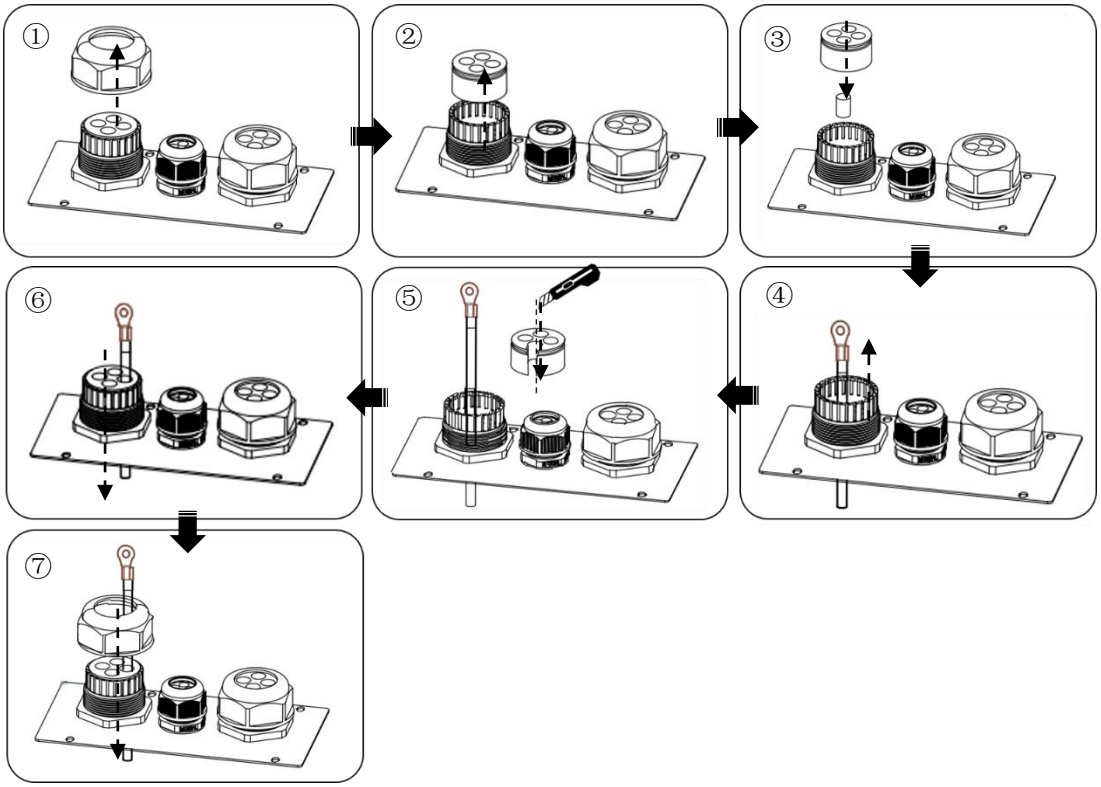


Figure 3.3.9 Threading method

Figure Notes:

① Remove - threaded cap;
② Remove - rubber stopper.
③ Push out the suitable rubber plug;
④ Thread the cable through the routing hole;
⑤ Attach the rubber stopper to the cable. If necessary, cut the edge of the rubber stopper appropriately;
⑥ Push the rubber stopper back into the threaded base;
⑦ Replace the threaded cap and tighten it.

< A > The rubber stopper and the rubber plug in the routing hole serve as seals to protect system against moisture, so do not remove them if there is no need to thread the wires.

< B > Figure 3.3.9 is for reference only, please refer to the corresponding chapter for the specific route holes when threading.

(3) Adjust the extension length of air conditioner power supply cable

Please manually adjust the extension length of the air conditioning power supply line in the cabinet according to the situation.

(4) Strip wire and install tube pre-insulated terminals

The air conditioner power cable must be connected to the terminal block in three L/N/PE phases. Each phase of the cable must be connected to a tubular pre-insulated terminal (5699010064841). The following figure shows the crimping method (Figure 3.3.10).

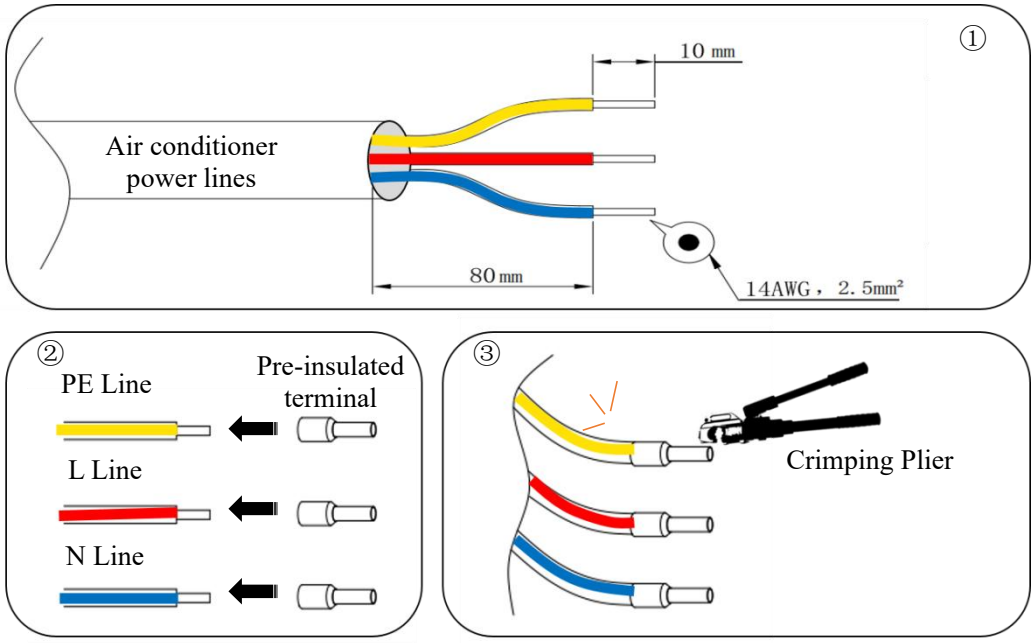


Figure 3.3.10 Crimping method of tubular pre-insulated terminals

Figure Notes:

① Strip the air conditioner power cable to expose the neutral wire, live wire and ground wire of appropriate length inside, and then cut the outer skin to leak out the internal metal wire core. Recommended peeling length: 10mm;

② Take 3pcs of tubular pre-insulated terminals (5699010064841) to cover the above-mentioned stripped metal wire core;

③ Press the tube type pre-insulated terminal tightly with crimping pliers;

(5) Connect the air conditioner power cable to terminal block

The air conditioner power cable is converted through a terminal block. Figure 3.3.11 shows the structure of the terminal block. And generally, the internal electrical cables from the air conditioner to the terminal block are connected before delivery, but the electrical cables from the external AC cable to the terminal block need to be connected manually on site.When wiring, please ensure that the port connected by the three-phase power cable is accurate (Figure 3.3.12, Table 3.3.2).

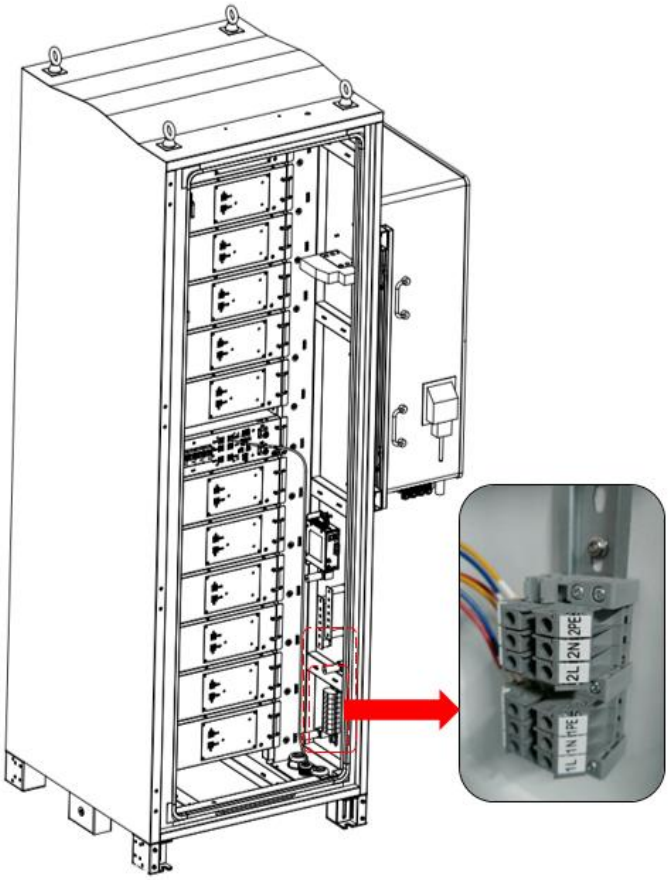


Figure3.3.11 Terminal block structure

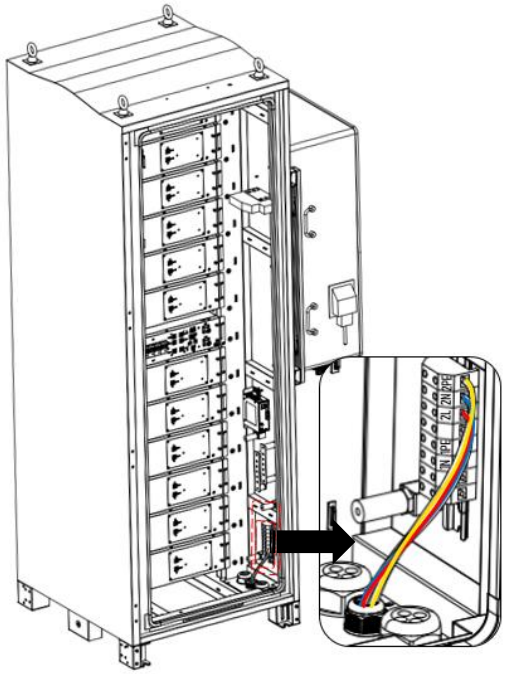


Figure 3.3.12 Connection method of air conditioner power cable

Table3.3.2 Connection positions of power cables with different colors

Terminal type	1L/2L	1N/2N	1PE/2PE
Cable color	Red	Blue	Yellow

3.3.5 Connect Power cables

Note: The power cables are mainly connected via copper rows. The structure of the power

cable is shown in the following figure (Fig. 3.3.13):

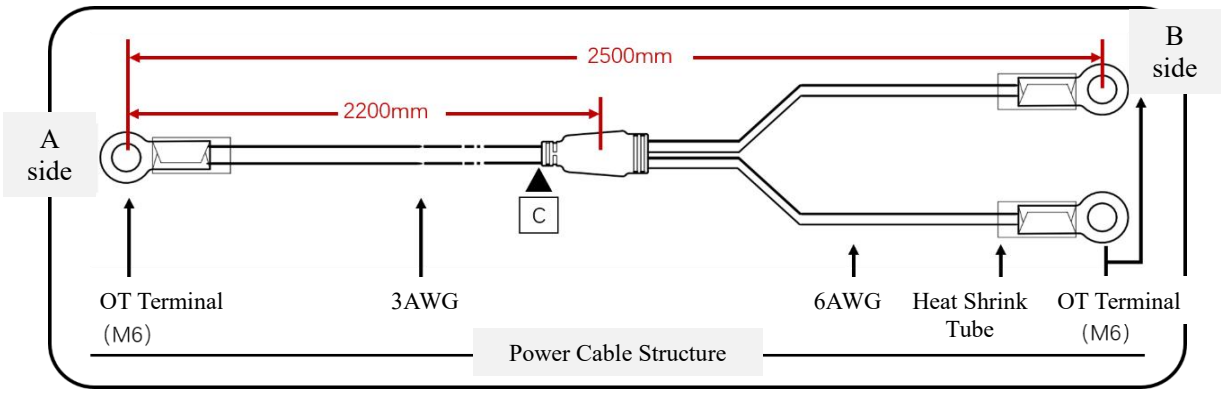


Figure 3.3.13

(1) Connects to PCS power cable

Step1 Lead power cable through the bottom of the routing holes.

Lead power line A side through the Bottom Routing Hole of Outdoor Cabinet, refer to Figure 3.3.9. It is recommended to thread the line through the first Routing Hole of Battery Cabinet inside (Figure 3.3.14).

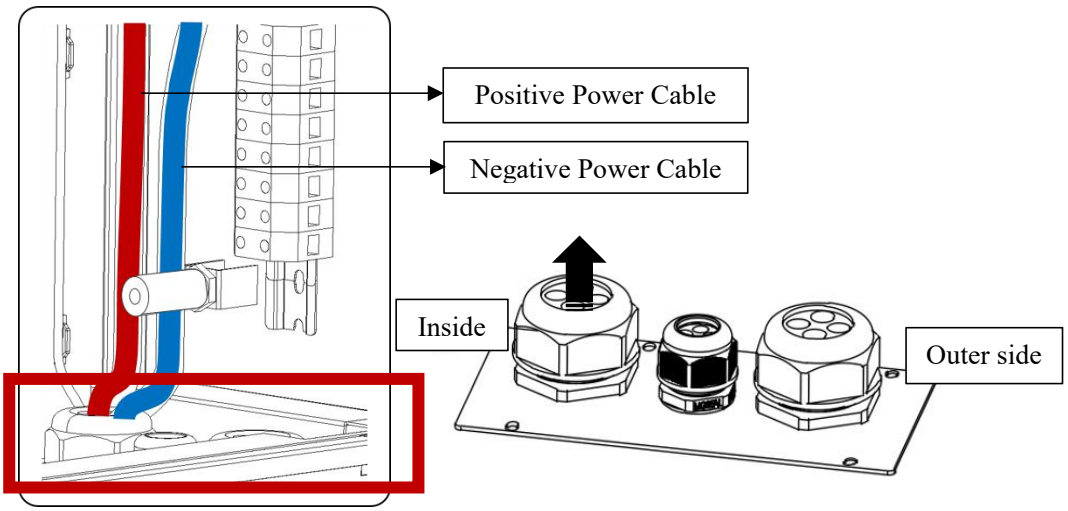


Figure 3.3.14

Materials Involved:

To PCS positive power cable (5619100064711)	To PCS negative power cable (5619100064721)

Step2 Crimp the power cable to the copper row inside the outdoor cabinet.

Take M6x14 screws (5007010027261) to crimp the A side of power cable to the copper row inside the outdoor cabinet, do not connect the wrong way.

Note:

Positive copper row with red marking, negative copper row with black marking (Figure 3.3.15).

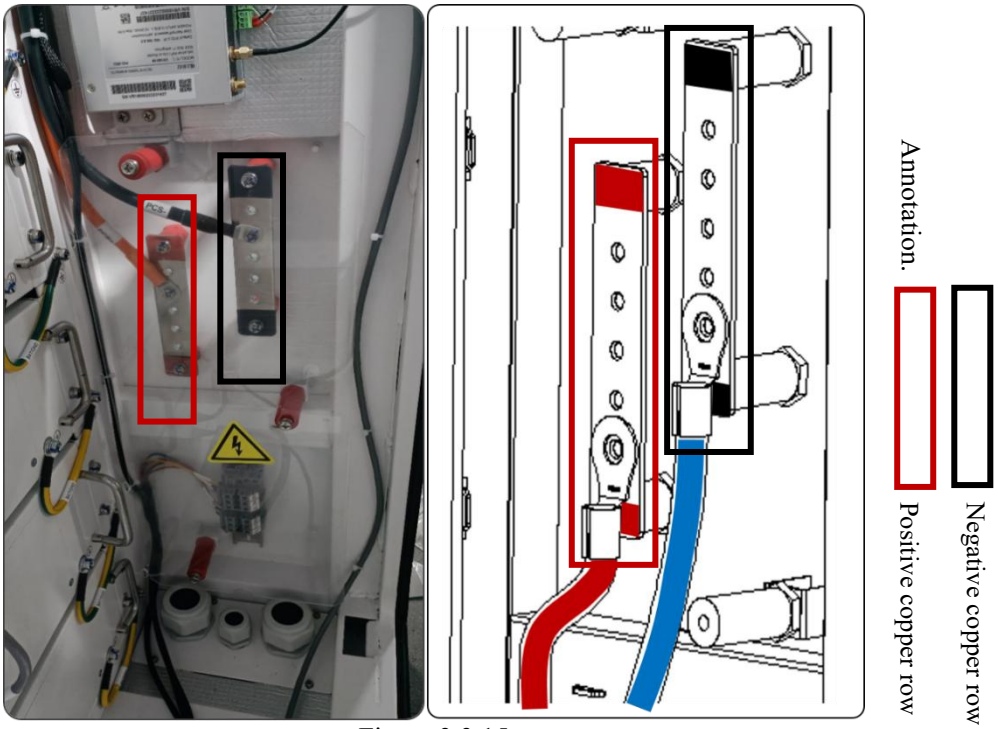


Figure 3.3.15

Step3 Connect power cable to PCS

The PCS connector crimping corresponds to the OT terminal on the B side.

< A > Connect power cable to DEYE terminals

The terminal interface of DEYE inverter is shown in the figure below (Fig. 3.3.16).During the wiring process, please connect the OT terminal on the B side of the positive power cable and the OT terminal on the B side of the negative power cable to the “Bat+” and “Bat-” interfaces shown in the figure respectively. Refer to the wiring instructions provided by the inverter manufacturer for details.

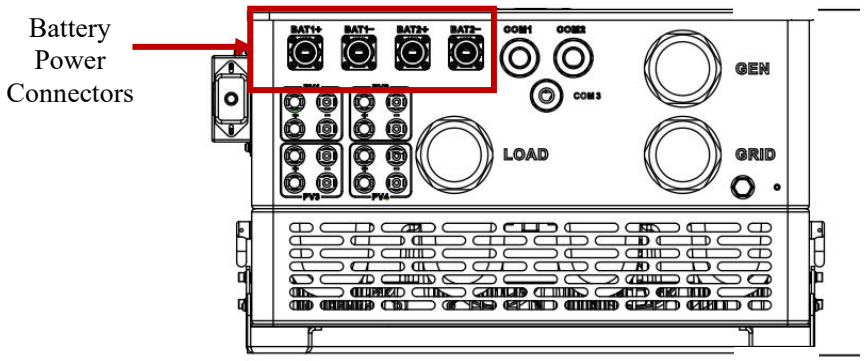


Figure 3.3.16

< B > Connect power cables to Solinteg terminals

The Solinteg inverter connector is shown below (Figure 3.3.17). When connecting, cut the wiring harness from point “C” (Fig. 3.3.13) and connect the cables according to the wiring instructions provided by inverter manufacture.

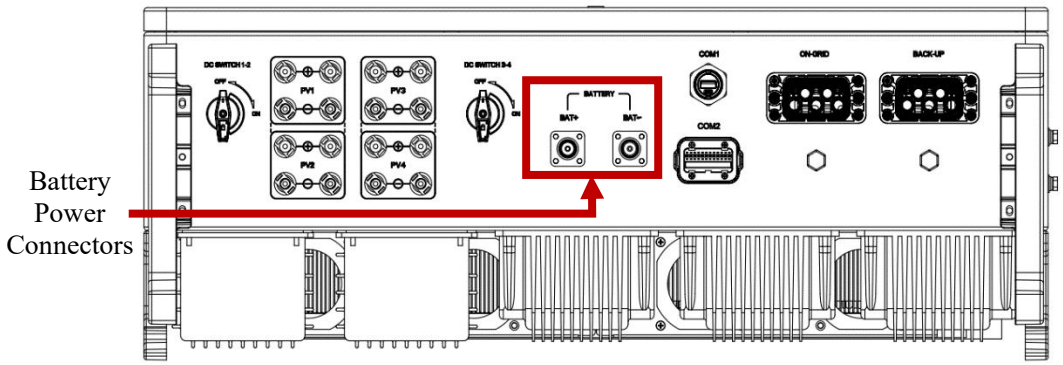


Figure 3.3.17

Note: If other inverters are used, please refer to the above approach as necessary.

(2) Connect the parallel power cable (Optional)

Tip: If you use single machine only, please skip this part.

The power cable wiring method from cabinet to cabinet during parallel machine is as follows (by default, the cabinet close to the master cabinet is the No.1 slave cabinet):

Step 1 Step 1 Lead the power cable through the master cabinet routing hole.

Lead the power cable A side through the master cabinet routing hole, see Figure 3.3.9 for details of wiring method, and it is recommended to thread the cable from the outermost routing hole(Figure 3.3.18).

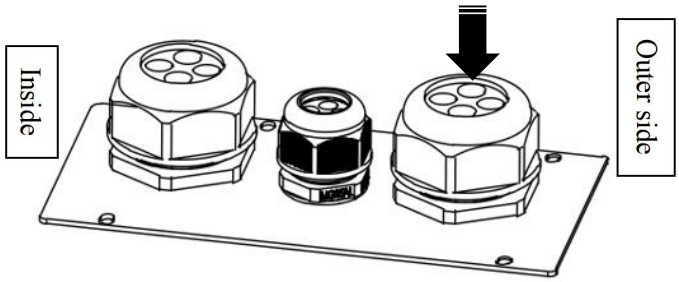


Figure 3.3.18

Materials involved:

Parallel positive power cable (5619100064711)	Parallel negative power cable (5619100064721)

Step 2 Lead power cable through the No. 1 slave cabinet routing hole.

Lead power cable A side through the No. 1 slave cabinet routing holes, see Figure 3.3.9 for details of threading method. Recommended to thread the cable from innermost routing holes (Figure 3.3.19).

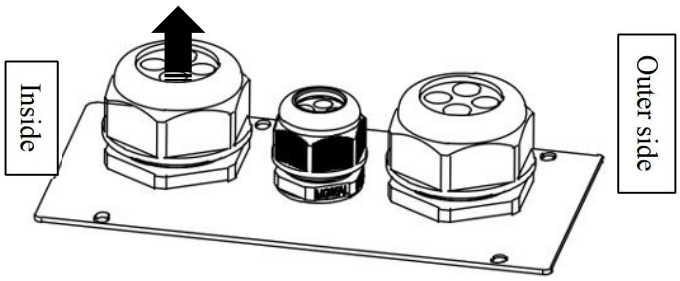


Figure 3.3.19

Materials involved:

Parallel positive power cable (5619100064711)	Parallel negative power cable (5619100064721)

Step 3 Connect the power cable A side to copper row of slave cabinet No.1

Adjust the threading length appropriately, and then use M6x14 bolts (5007010027261) to crimp the OT terminals of the power cable A side to internal copper rows of the No.1 slave cabinet, see Figure 3.3.15.

Step 4 Connect the power cable B side to copper row of mater cabinet.

Adjust the threading length appropriately, and then use M6x14 bolts (5007010027261) to crimp the OT terminals of the power cable B side to internal copper rows of master cabinet, both OT terminals need to be crimped on.

Tip:

If the three cabinets are in parallel, repeat the above steps to complete the connection of power cables from slave cabinet No. 1 to No. 2.

(3) Schematic of single/parallel cabinet power wiring

A. Single cabinet mode

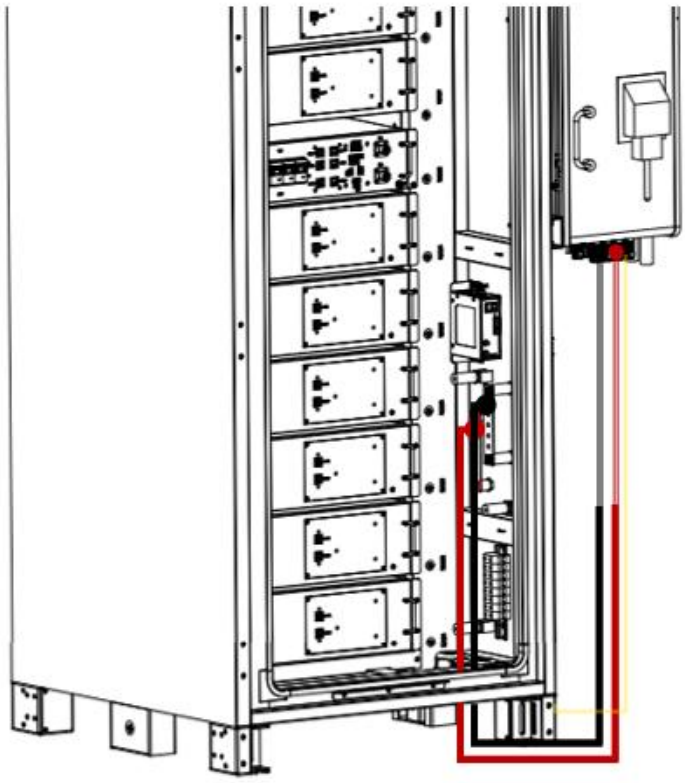


Figure 3.3.20

B. Parallel cabinet mode

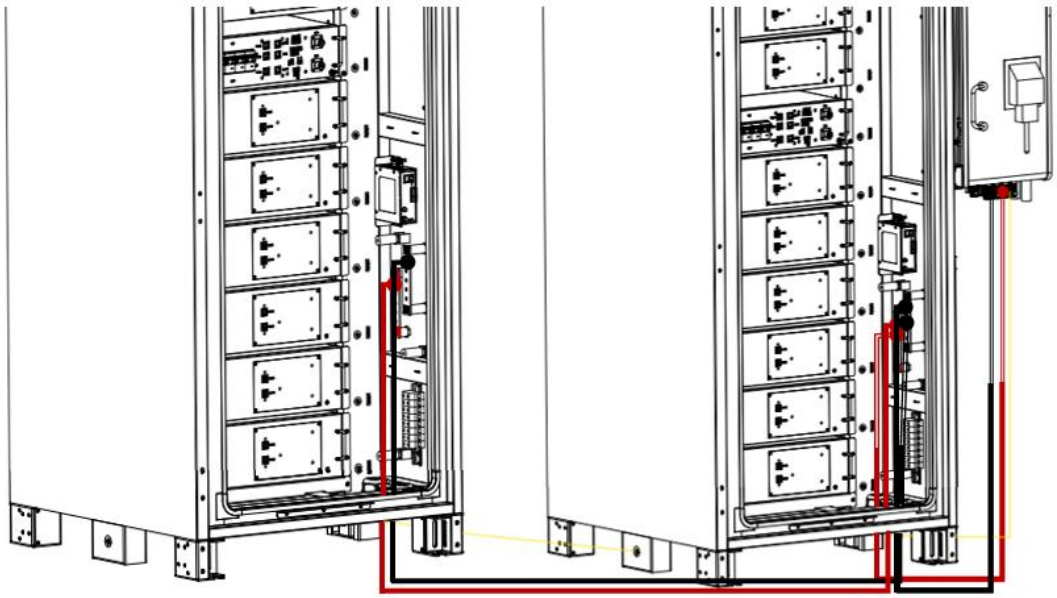


Figure 3.3.21

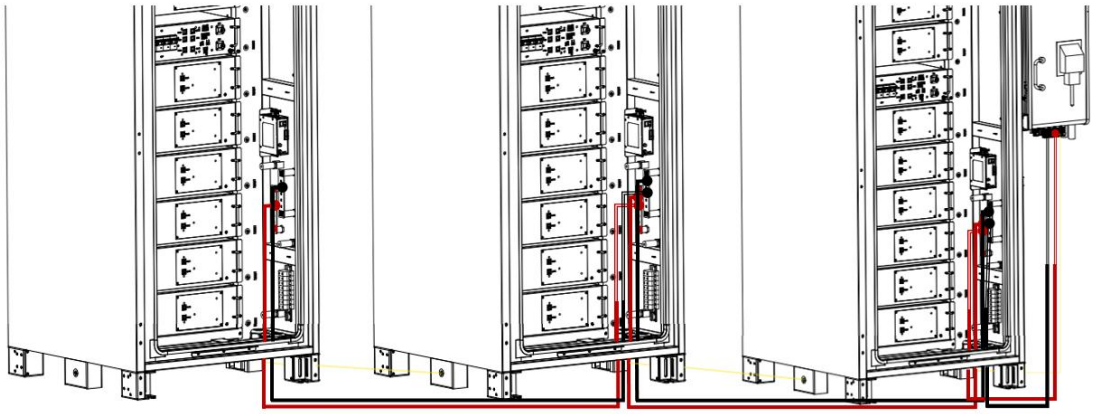


Figure 3.3.22

3.3.6 Connect communication cables

Tip: The connection of communication cables is mainly realized through the COM port.

(1) Connect to PCS communication cable

Step 1 Pull the communication cable through the bottom routing hole

See Figure 3.3.9 for details on threading, recommended threading through the second alignment hole in the center (Figure 3.3.23).

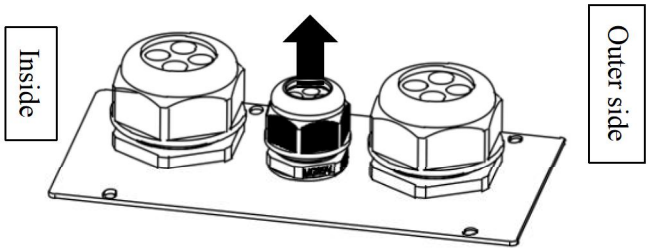


图 3.3.23

Materials involved:

COM communication cable（5619100054511）

Step 2 Connect the communication cable to COM2 port of battery cabinet.

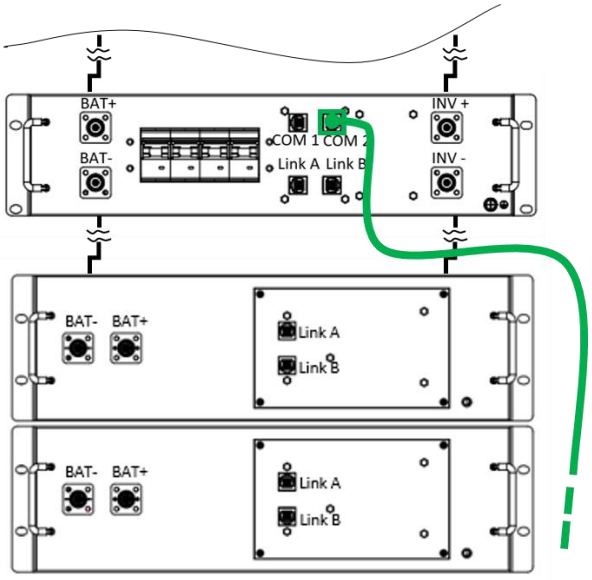


Figure 3.3.24

Step 3 Connect communication cable to inverter's BMS communication port.

The location of the inverter BMS communication interface may vary depending on the brand. Please refer to the wiring guidance of inverter to complete this operation.

(2) Connect the parallel communication cable (Optional)

This section is only necessary when multiple cabinets are in parallel. For single-unit use, skip this section please. The wiring method of communication cable between cabinets is as follows:

Step 1 Unplug the terminal resistor at the COM1 port of master cabinet No. 1.

The battery cabinet COM1 port is factory-installed with terminating resistors by default, and the excess terminating resistor need to be unplugged when parallel use (Figure 3.3.25).

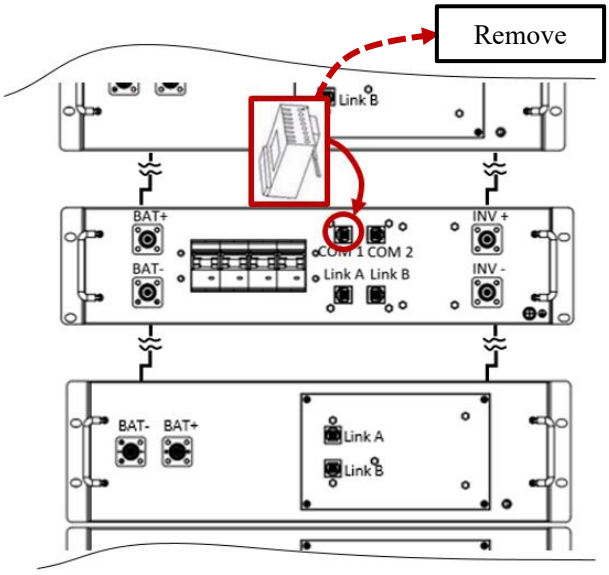


Figure3.3.25

Step 2 Lead communication cable through routing hole

See Figure 3.3.9 for details of the threading method, and it is recommended to thread the communication line through the second alignment hole in the center (Figure 3.3.23).

Step 3 Connect communication cable to COM2 port of No.1 slave cabinet.

Step 4 Connect communication cable to COM1 port of master cabinet.

Optional:

If three cabinets are in parallel, repeat the above steps to complete the connection of the communication cable from slave cabinets No.1 to No.2.

(3) Schematic of single/parallel cabinet communication wiring

A. Single cabinet mode

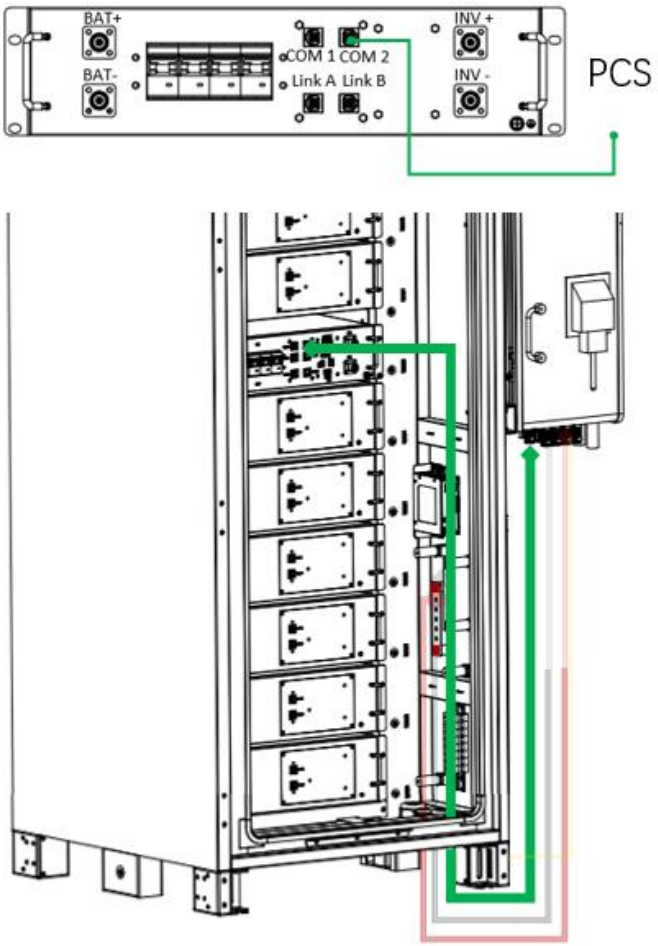


Figure 3.3.26

B. Parallel cabinet mode

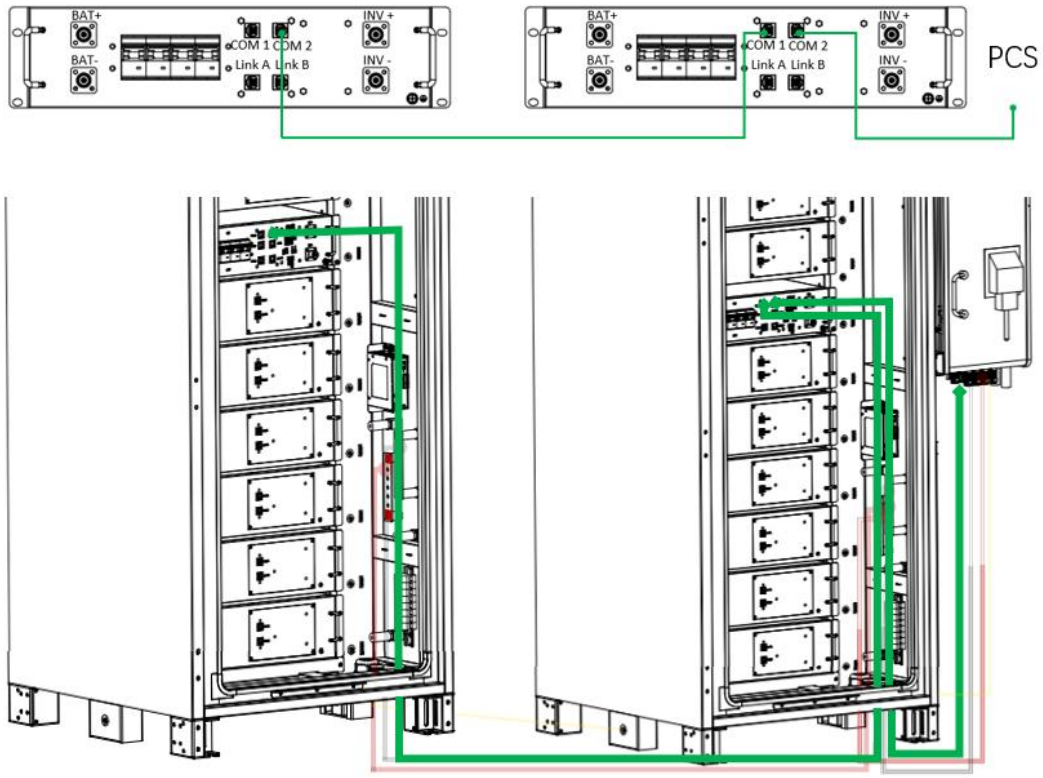


Figure 3.3.27

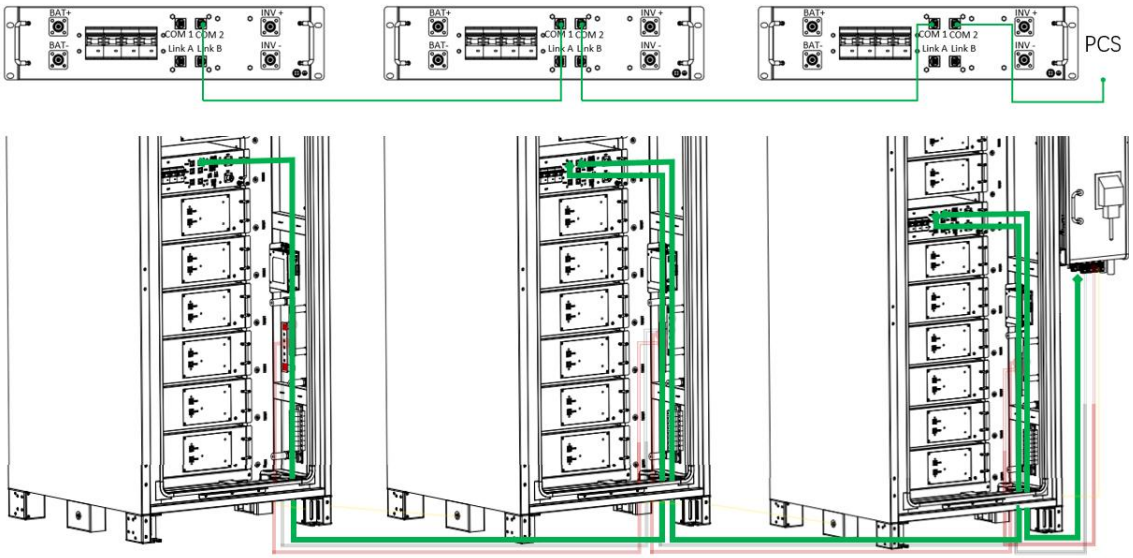


Figure 3.3.28

3.3.7 Connect LAN/WAN communication cable (optional)

The wiring port of LAN/WAN communication cable is on the data box, and the location of the data box is shown in the following figure (Figure 3.3.29). Connecting the LAN port to PC, you can debug the equipment and network distribution locally; connecting the WAN port to router, you can distribute the network to the data module by wired way, connecting the main cabinet to the IOT cloud platform.

Tip:

The battery cabinet supports wireless network distribution as well, if it is connected wirelessly, please ignore the connection of WAN port, and connect the system through local PC's Browser.

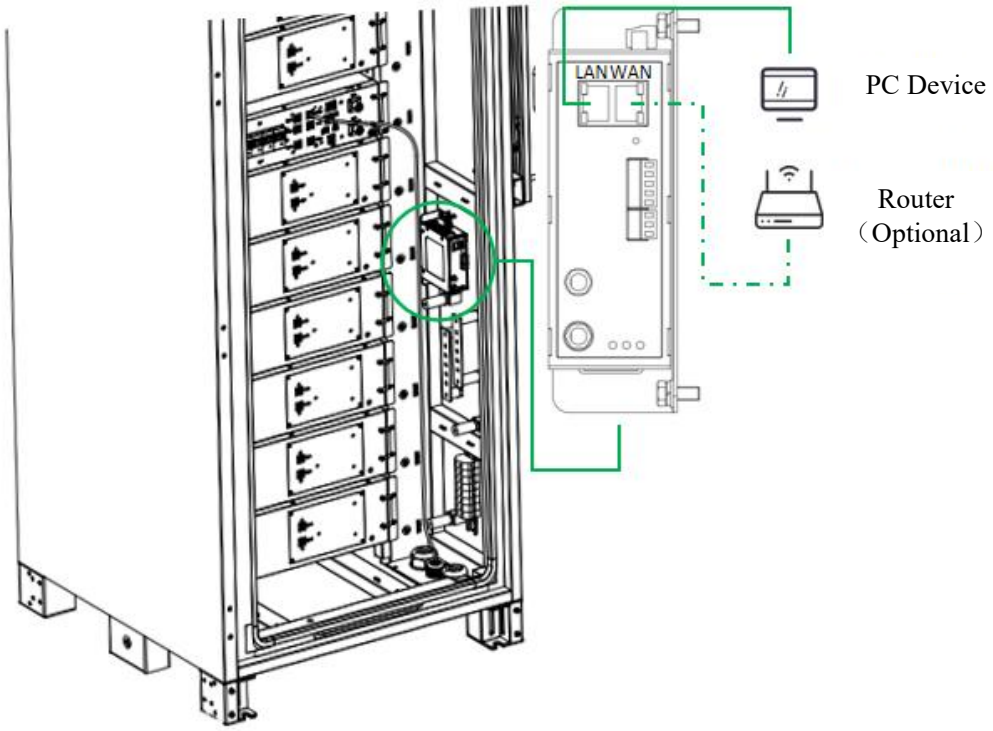


Figure 3.3.29

3.3.8 Install the protective cover plate

Find the protective cover plate removed in 3.3.4-Step2 and the 3pcs M6x14 screws on it, and install them back in the same way as before.

Note: If the wiring harness is too lax, adjust it appropriately with a cable tie (5623000000051).

3.3.9 Install the wire cover plate

Tip: Please skip this part if the equipment is slave.

Step 1 Install the cable tie plate

Take 6pcs M4x16 screws (5007010036281) to fix cable tie plate (5099010030151) on the cabinet space under inverter (Figure 3.3.30).

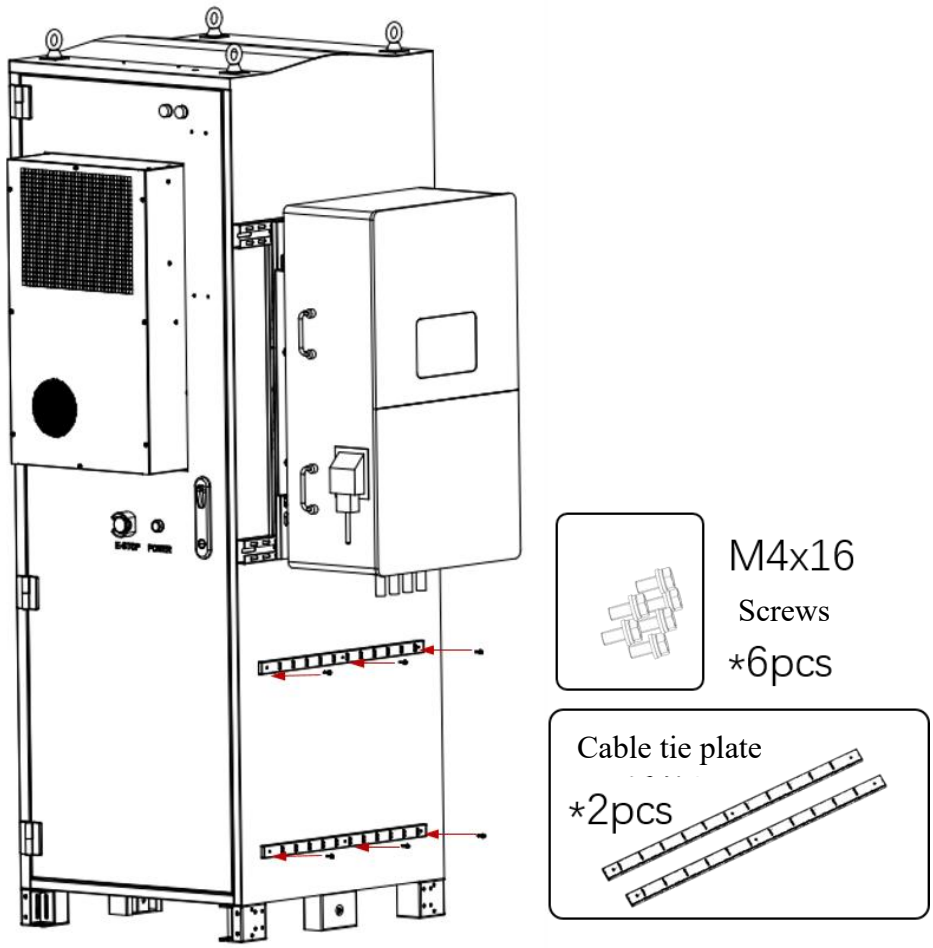


Figure 3.3.30

Step 2 Tie the cable harness

Take a cable tie (5623000000051) and tie the harness to the tie plate to properly organize the harness.The structure of tie plate is shown in Figure3.3.31.

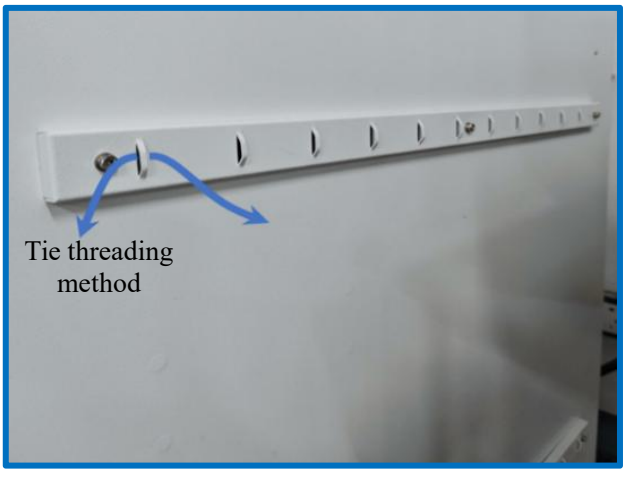


Figure 3.3.31 Tie plate structure

Step 3 Install the cover plate

① Remove enclosure plate at the underside of cover plate.

Note: Keep the removed screws in a safe place for further use (Fig. 3.3.32).

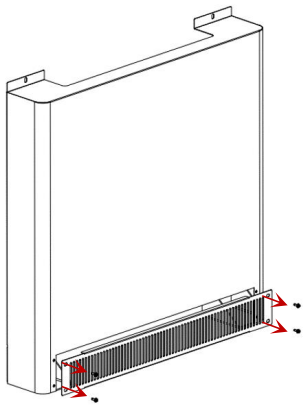


Figure 3.3.32

② Fasten the cover plate to cabinet

Take the cable cover plate (5099010030131) and 6pcs M6x14 screws (5007010027261) to secure the cable cover plate to cabinet bottom (Figure 3.3.33).

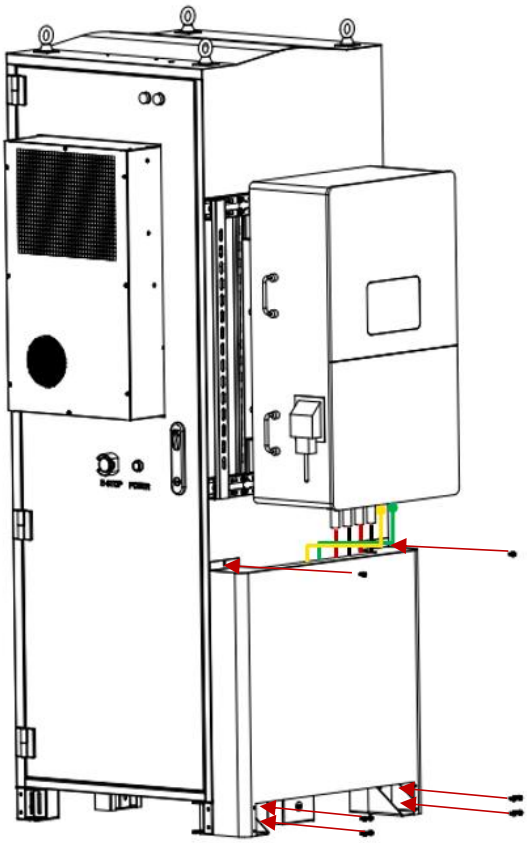


Figure 3.3.33

③ Reinstall the enclosure at the bottom of cover plate

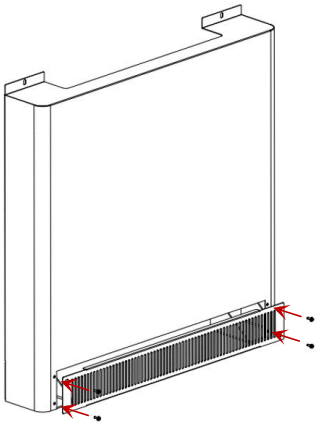


Figure 3.3.34

3.3.10 Install enclosure panels at the cabinet bottom

Step 1 Install the front enclosure

Take 1pcs 718mm enclosure plate and 4pcs M6x14 screws (5007010027261) to cover the space under the outdoor cabinet air conditioner.

Step 2 Install the back enclosure

Take 1pcs 718mm enclosure plate and 4pcs M6x14 screws (5007010027261) to cover the space at the back of the cabinet bottom.

Step 3 Install the left side enclosure

Take 1pcs 749mm enclosure plate and 4pcs M6x14 screws (5007010027261) to cover the space on the left side of cabinet bottom.

Step 4 Install the right side enclosure (Optional)

Tip: If the cabinet is installed with wire cover plate, please skip this part.

Take 1pcs 749mm enclosure plate and 4pcs M6x14 screws (5007010027261) to cover the space on the right side of cabinet bottom.

Step 5 Finish the installation

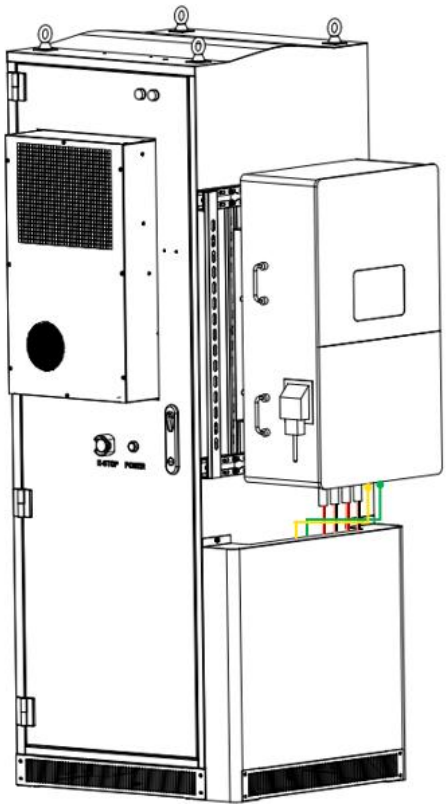


Figure 3.3.35

4. Trial Run Guidance

4.1 Indicator Light Introduction

No.	Red Light	Green Light	Description
1	No light	1s/1 Flash	Initialization state, Starting state, Stopping state
2	No light	Light	Running status
3	Light	No light	Whole stack failure state
4	1s/1 Flash	No light	Single cluster failure status

4.2 Power Up and Down Guidance

4.2.1 Pre-power-up check

(1) The equipment is firmly installed, the installation position is convenient for operation and maintenance, the installation space is convenient for ventilation and heat dissipation, and the installation environment is clean and tidy.

(2) Ground cable, battery power cable, inverter power cable, communication cable, and AC power cable are connected correctly and securely.

(3) Cable ties meet alignment requirements, are well distributed, and are not damaged.

(4) Before powering up, all switches are in the disconnected state.

4.2.2 System boot

Step 1: Open the front door and place the main control box air switch in the open position in the direction indicated by the arrow in the figure below (Figure 4.2.1).

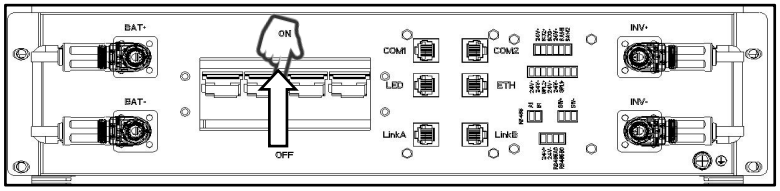


Figure 4.2.1

Step2: Press the front door POWER button for 3S, the green indicator light blinks steadily for 1s once to turn on the battery (Figure 4.2.2).

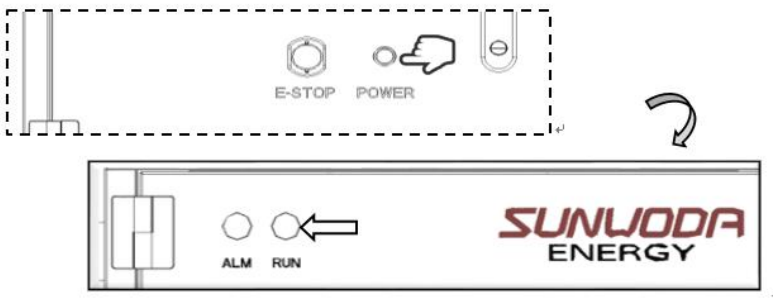


Figure 4.2.2

Step 3: After the cabinet door green light indicator is standing, press the inverter ON/OFF switch, the inverter LCD screen lights up to have inverter power on completed.

Step 4: Place the inverter DC switch "ON" (Figure 4.2.3).

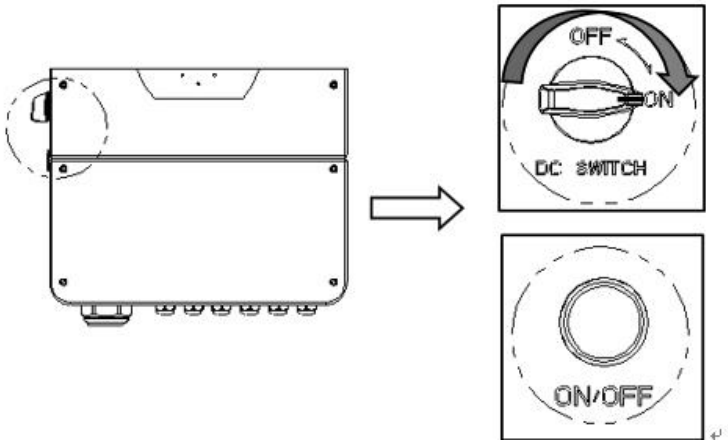


Figure 4.2.3

4.2.3 System Shutdown

Before powering down the battery system, make sure there is no load on the AC side of the inverter and that the circuit breaker between the battery system and the inverter is disconnected.

Step 1: Disconnect the inverter side "LOAD" switch.

Step 2: Disconnect the inverter side "GRID" switch.

Step 3: Disconnect the inverter side "GNE" switch.

Step 4: Disconnect the air condition power supply switch.

Step 5: Press the front door POWER button for 3 seconds, the running green indicator light will turn off, then put the air switch of the main control box in the off state, and the system will shut down (Figure 4.2.4).

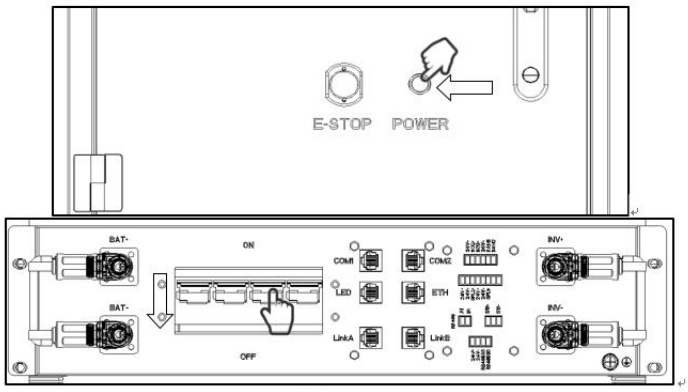


Figure 4.2.4

Step 6: Place the inverter DC switch to "OFF" and press the ON/OFF switch to turn off the system (Figure 4.2.5).

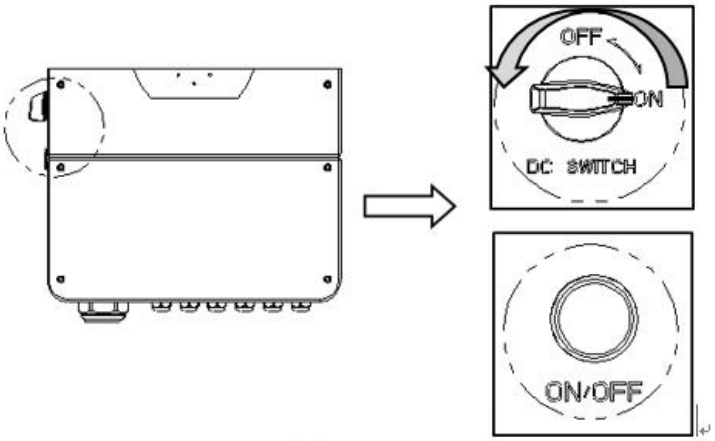


Figure 4.2.5

5. Maintenance and Common Troubleshooting

5.1 Daily Maintenance

(1) It is recommended that the battery system needs to be recharged every 6 months from the factory.

(2) When the device is not in use for a long time, it is necessary to discharge the battery to a level between 45% and 55% and disconnect the battery output to avoid emptying the battery.

(3) During the storage period of the system, professional personnel should regularly inspect the system to check if the wiring is loose or detached, or clean the surface and interior of the system; If any defects are found, please contact the dealer promptly.

⚠ Dangerous
(1) When operating and maintaining the battery system, please remove the power from the system. Operating the equipment with power may cause damage to the battery system or pose a risk of electric shock.
⚠ Warning
(1) If any issues are found that may affect the battery system or energy storage inverter system, please contact after-sales personnel, and unauthorized disassembly is prohibited.
(2) If the copper wire inside the conductive wire is found to be exposed, do not touch it; and there is a danger of high voltage. Please contact after-sales personnel, and unauthorized disassembly is prohibited.
(3) If other unexpected situations occur, please contact after-sales personnel as soon as possible and operate under their guidance, or wait for on-site operation by after-sales personnel.

5.2 Battery Fault Handling

Phenomenons	Reasons	Solutions
POWER button does not respond	Button damaged or poorly wired	Replace button, check cable conduction status, or contact supplier
Short discharge time	Low energy level	Keep the product continuously charged for more than 2 hours to fully charge the battery storage system.
	Product overload	Check the load status and remove non-essential loads.
	Battery aging, capacity	Replace the battery. Contact the supplier for

	reducing	the battery and its components.
Unable to charge or discharge	Internal malfunction	Please contact the supplier.
	Battery Discharge to SOC protection level	① Modify the SOC lower limited value on the PCS side. ② Charge the battery to restore it.
	Battery overheating	Stand it at room temperature for more than 3 hours.
Communication abnormality of the battery	The connection of the communication cable is abnormal.	Check whether the connection of the battery's CAN communication cables are tight.
Red Indicator Light	\	According to the fault information (function code) displayed on the PCS side, check the PCS function fault table to find out the corresponding fault cause.
Inverter cannot be started	Low battery voltage or PV offline	Start the inverter through the grid, afterwards, charge the battery.
Batteries cannot be charged from the grid.	Inverter setup problems	See the user manual description of inverter for details.
	Battery Fault Protection	According to the prompted fault information,find out the corresponding fault cause.
	Grid Fault	Check whether the grid voltage is normal.

6. Transportation and Storage

6.1 Transportation Requirements

⚠ Dangerous
(1) Rough loading and unloading, severe vibration, impact, or compression are prohibited to prevent exposure to sunlight and rain; otherwise, it may cause battery short circuit, damage (leakage, rupture, etc.), fire or explosion, etc.
⚠ Warning
(1) Please ensure that the equipment is balanced during transportation to avoid falling.
(2) It is prohibited to carry the battery through its terminals, bolts, or cables during transportation to avoid damage to the battery.
(3) When handling, the battery should be carried in the required direction, and it is prohibited to invert, tilt, fall, mechanical impact, rain or snow, or fall into the water.
⚠ Attention
(1) The battery has passed UN38.3 certification, and this product belongs to Class 9 dangerous goods.
(2) Comply with international regulations for the transportation of dangerous goods and meet the regulatory requirements of the transportation regulatory authorities of the country of origin, destination, and destination.
(3) When transporting, it is recommended to choose sea freight or highways with good road conditions; and railway and air freight are not supported. During transportation, bumps and tilting should be minimized as much as possible.
(4) Before transportation, the packaging of the battery must be checked for completeness and undamaged, and there must be no odor, leakage, smoke, fire, or other phenomena. Otherwise, transportation is prohibited.
(5) When handling batteries, they should be handled with care; and it is strictly prohibited to touch the batteries, and personal safety should be taken into account.
(6) The transportation packaging box must be firm, and care should be taken during loading, unloading, and transportation, with proper moisture-proof measures taken.
⚠ Notes
(1) The handling of heavy objects must be balanced and stable with force; Move at a uniform and low speed. The positioning requirement is stable and slow to avoid any impact or drop that may scratch the surface of the equipment or damage the components

and cables of the equipment.
(2) When carrying heavy objects, special attention should be paid to workbenches, slopes, stairs, and other areas that are prone to slipping. When carrying heavy objects through the threshold, ensure that the width of the door is sufficient for the equipment to pass through, to prevent collisions or scratches on fingers.
(3) When using a forklift for transportation, the forklift must be forked in the middle position to prevent tipping over. Before moving, please fasten the equipment to the forklift with ropes. When moving, a dedicated person is required to take care of it.
(4) The inclination angle of the cabinet should meet the requirements shown in the diagram, with a packaging inclination angle α≤ 15 °, and inclination angle after removing packaging α≤ 10 °.
(5) When handling equipment by hand, safety protective equipment such as protective gloves and safety shoes should be worn to avoid injury.

6.2 Storage requirements

⚠ Warning
(1) The battery is stored indoors. No direct sunlight or rain, dry and well-ventilated, with a clean surrounding environment, free from a large amount of infrared and other radiation, no organic solvents or corrosive gases, no metal-conductive dust, etc., away from heat and ignition sources.
(2) If the battery experiences bulging, deformation, damage, or leakage, it must be scrapped regardless of storage time.
(3) When storing batteries, please place them correctly according to the packaging box markings. It is strictly prohibited to place them upside down, sideways, or tilted. When stacked, they should comply with the stacking requirements on the outer packaging.
(4) The site must be equipped with fire protection facilities that meet the requirements, such as fire sand, fire extinguishers, etc.
⚠ Attention
(1) It is recommended to use batteries in a timely manner. For batteries that have been stored for a long time, please regularly recharge them; otherwise, it may cause battery damage.
(2) The ambient air should not contain corrosive or flammable gases and should not be tilted or stored upside down.

⚠ Notes
(1) During storage, relevant certificates that meet the storage requirements of the product need to be saved, such as temperature and humidity log data, storage environment photos, and inspection reports.
(2) Store in a clean and dry place and prevent erosion by dust and moisture. It is prohibited to suffer from rainwater or surface water erosion.
(3) Storage environment requirements: Recommended storage temperature: 20 ℃~30 ℃. Relative humidity: 5% RH to 80% RH. Dry, ventilated, and clean. Avoid contact with corrosive organic solvents, gases, and other substances. Avoid direct sunlight. The distance from the heat source must not be less than two meters.
(4) From the date of shipment by the manufacturer, the battery needs to be maintained at a maximum interval of 6 months. The requirements for the recharge interval after the battery is emptied are as follows: If the ambient temperature is (30,40] ℃, power should be replenished within 15 days; if the ambient temperature is ≤ 30 ℃, power should be replenished within 30 days. It is recommended to store at a state of charge of 45% to 55% SOC.

Appendix

Product Parameters			
Model Type	CIESS 50	CIESS 55	CIESS 60
System Parameters			
Battery numbers	10pcs	11pcs	12pcs
Rated voltage	512V	563.2V	614.4V
Voltage range	448~576V	492.8-633.6V	537.6-691.2V
Rated energy	50kWh	55kWh	60kWh
Weight	720kg	765kg	807kg
Dimensions	715*891*2140mm		
Expansion	Supports up to 3 battery cabinets in parallel		
Protection class	IP55		
Temperature control	air-conditioning		
Charging ambient temperature	0-50℃		
Discharging ambient temperature	-20-55℃		
Recommended storage temperature	20～30℃		
Working humidity	10%~95%RH（without condensation）		
Communication	CAN/RS485/Wifi		
Max. continuous charge current	100A		
Max. continuous discharge current	100A		
Work altitude	2000m		
Cycle life	6000times（25℃，0.5C/0.5C，90%DOD）		
Basic protection functions	Charge over-voltage, discharge under voltage, over-current, over temperature, short circuit protection, etc.		
Accreditation	IEC62619、CE、UN38.3、IEC62477		
Packaging, transportation, and installation			
Packaging	Wooden case packing for the whole machine		
Transportation	Sea and land transportation		
Installation	Floor mounting		

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