S M A R T E N E R G Y L I G H T S U P T H E G R E E N E A R T H

OmniCube-A215-100K

Quick Installation Manual

This image represents iPotisEdge standardized product. The actual product varies depending on customization.

VIP customization

modular assembly

efficient and flexible

smart and stable

comprehensive after-sales services

*Please read this manual carefully before installation and use. The company is not responsible for any losses caused by improper installation or operation.

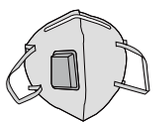
Installation Preparation Tools

Please use the following installation tools during installation.


Goggles


Safety Shoes

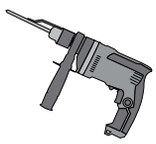

Insulated Gloves


Dust Mask


Safety Helmet


Diagonal Pliers


Wire Stripper

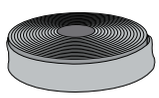

Percussion Drill


Heat Gun


Crystal Crimping Pliers

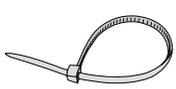

Marker Pen

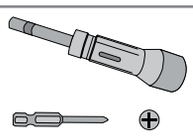

Level

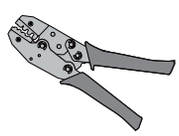

Heat Shrink Tube


Rubber Hammer

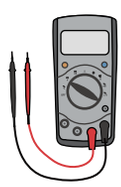

Vacuum Cleaner

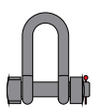

Cable Tie


Torque Screwdriver


Crimping Pliers


Torque Wrench


Multimeter


Hoisting Ring


Scissors

1. Supply List

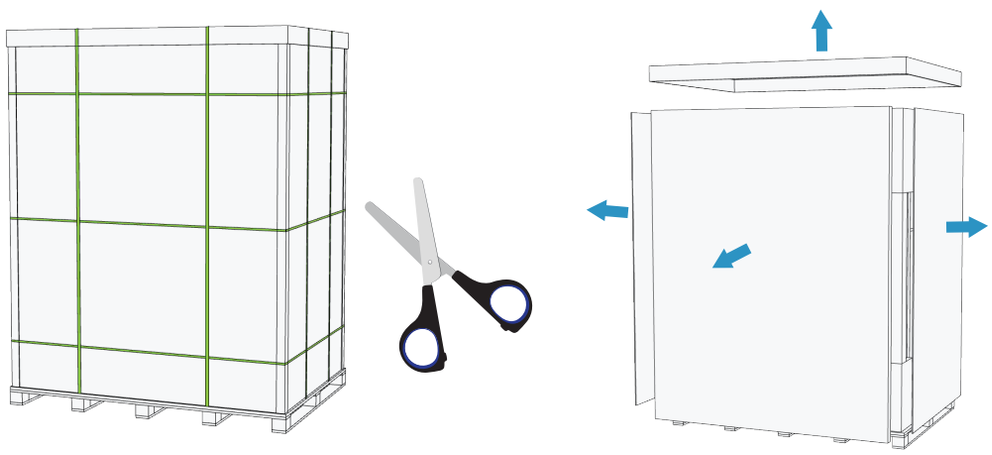
Item	Model/Specification	Unit	Qty	Notes
OmniCube- A215-100K	OmniCube- A215-100K	Set	1	/
Air conditioning water pipe	/	Set	1	/
Door key	/	PCS	6	Two hanging on the door
Display key	/	PCS	2	Keyless slave
Hexagon head bolt assembly	M8*16	PCS	20	4 Spare parts
Cable tie holder	3M Adhesive back（CL-3_White）	PCS	3	To fix air-conditioning hose
Fuse	5*22（6A_AC220V）	PCS	3	Spare part
Sealant	Fireproof Mud-High Temperature Fireproof Sealing Mud	kg	3	/
Indicator light	Green	PCS	2	Spare part
Fault indicator light	Red	PCS	1	Spare part
User manual	OmniCube- A215-100K	PCS	1	/
Quick installation manual	OmniCube- A215-100K	PCS	1	/
PACK connection busbar	/	PCS	8	Required for exported products
PCS auxiliary wire	A set of communication adapter cables	PCS	1	/

2. Product Installation

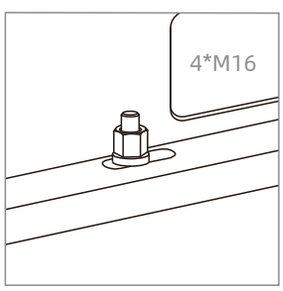
2.1 Product Unpacking

⚠ Instruction

01 Cut the packaging tape with scissors or packing knife, remove the upper cover, fixed sleeves and cardboard box, and then remove the EPE sleeves and PE bags from the system in sequence.



02 Use appropriate tools to remove the four bolts that lock the system onto the bottom bracket .

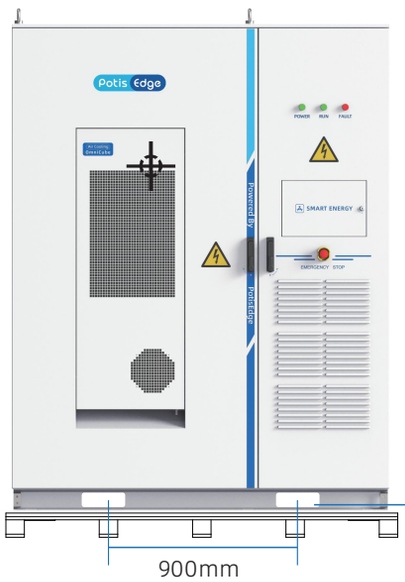


2.2 Forklift Handling

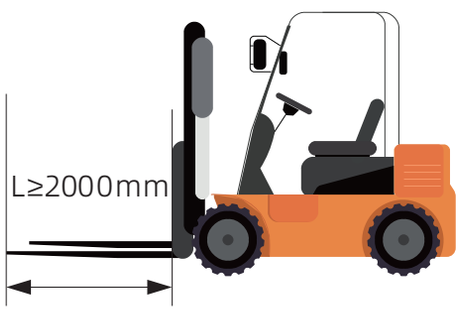
⚠ Caution

- Move the system through the pallet at the bottom of the box.
- When transporting with a forklift, pay attention to the center of gravity (the center of gravity is marked on the outer packaging box).

01 After unpacking, move the the system through the bottom slot to the designated mounting location.



Center Of Gravity

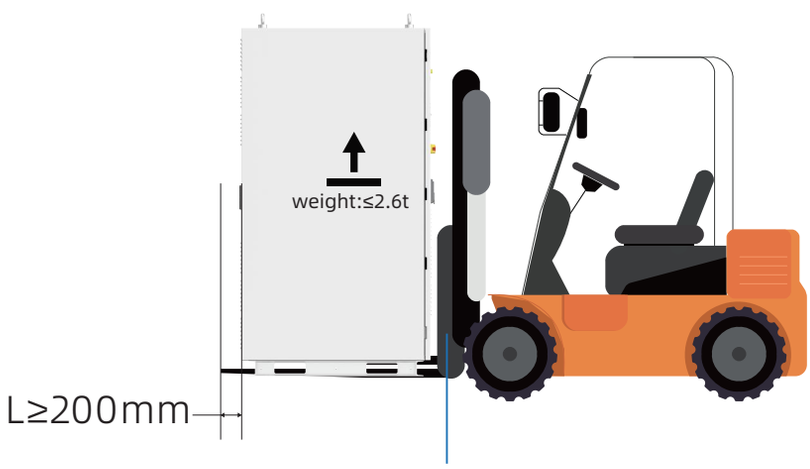


Please ensure that the loading capacity of the forklift is above 3 tons.

Forklift parameters are as follows:

fork thickness ≤ 55 mm, width ≤ 190 mm and length ≥ 2000 mm.

02 When transporting with a forklift, the slot should be inserted according to the center of gravity position on the packaging box to prevent the ESS from tipping over and causing unnecessary losses.



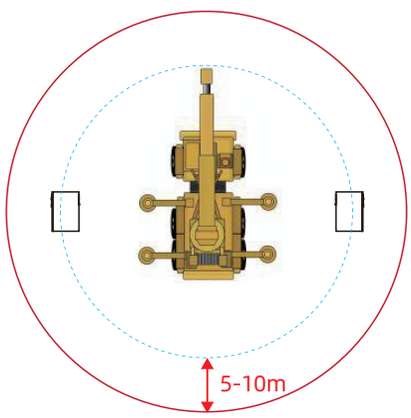
Please use soft pads for protection

2.3 Hoisting

Hoisting Precautions

⚠ Danger

- The blue dotted circle in the crane operation diagram indicates the operating area of the crane.
- No person shall be permitted to stand within the solid red circle while the crane is in operation!

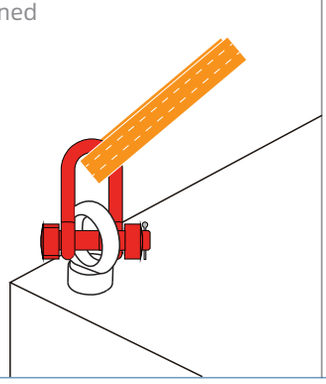


⚠ Warnning

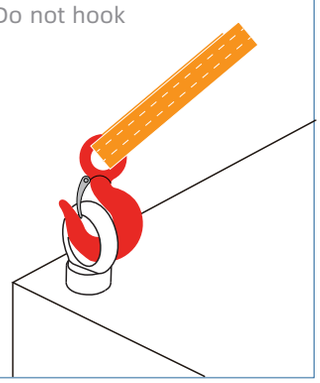
- The system can be lifted using a sling with a hook or U-hook.
- Connect the hoisting device and the system correctly.

⚠ Instruction

The cross pin must be tightened and the safety pin added.



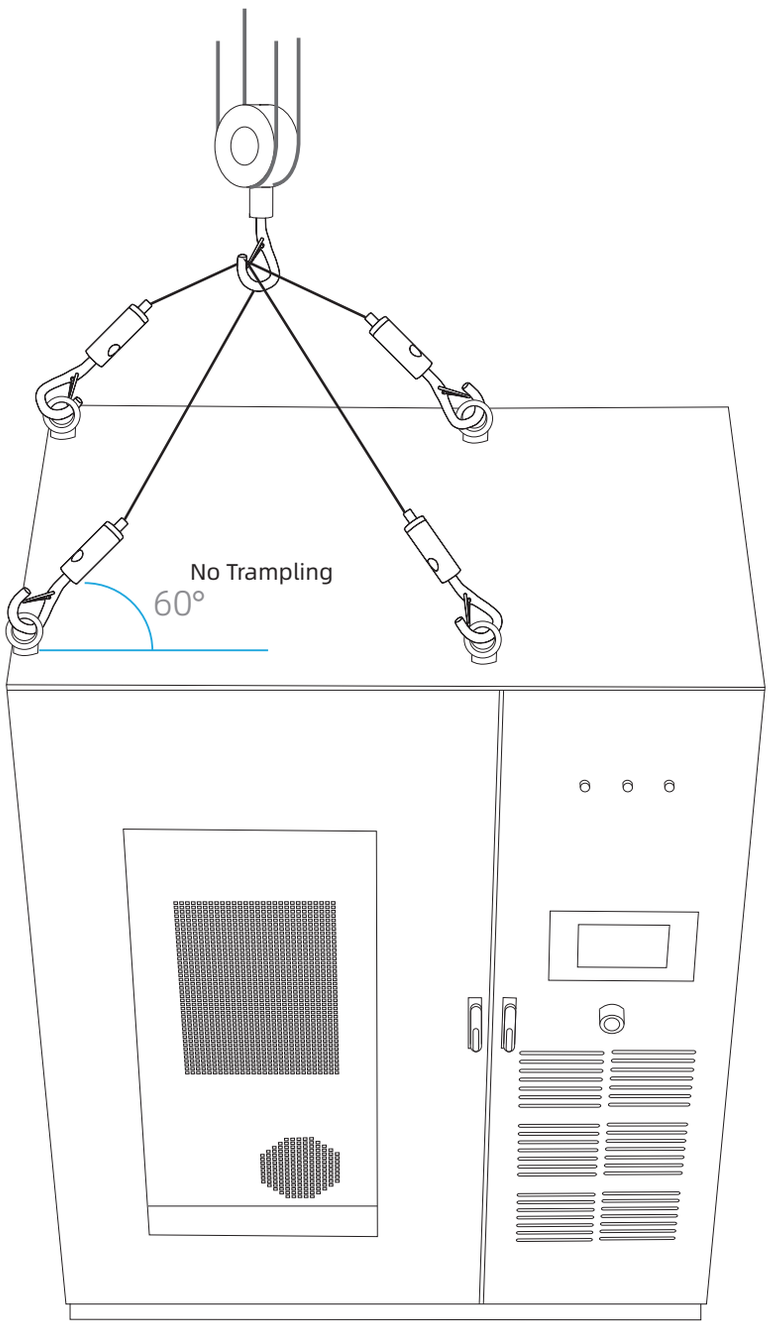
Hook from the inside out. Do not hook from the outside in.



Lifting Precautions

⚠ Warnning

When hoisting and transporting, all safety operation standards and regulations of the country and region where the project is located must be strictly followed.



3. Basic Requirements

3.1 Foundation Requirements

The overall weight of the system is heavy. Before making the foundation, it is necessary to examine the conditions of the installation site (mainly geological, environmental and climate conditions) in detail. Only on this basis can the design and construction of the foundation begin.

⚠ Caution

Do not install in a working environment with metal-conductive dust.

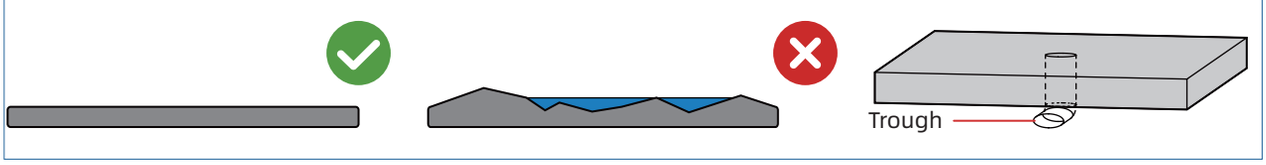
Installation Condition

Operating Temperature	-30 ~ 55℃
Storage Temperature	-30 ~ 50℃
Relative Humidity	0 ~ 95%RH,non-condensing
Operating Altitude	≤2000m
Perpendicularity	No vibration and vertical inclination does not exceed 5°
Pollution Level	Level II
Field Environment	The surrounding environment is dry, well ventilated, and away from flammable and explosive areas.
Soil requirement	The soil at the installation site must have a certain degree of compactness.
	It is recommended that the relative density of the soil in the installation site be at least 98%.
	If the soil is loose, take measures to ensure that the foundation is stable.

Foundation Flatness Requirements

Item	Allowable Deviation（mm）	
	Per meter	Total length
Unflatness	1.0	5.0
Levelness	1.0	5.0
Nonparallelism	-	5.0

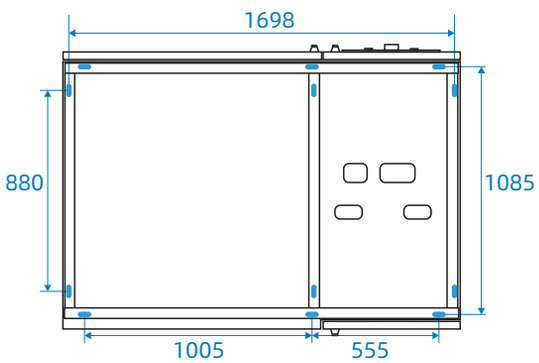
⚠ Instruction



3.2 Cable Duct Requirements

- When building the foundation, cable trenches should be preset according to the overall design of the power station and the cable access mode at the bottom of ESS.
- Due to the thickness of the cables, ample space must be reserved for cables when designing the cable trenches to ensure smooth connection and avoid wear.
- The base of ESS is equipped with 12 18mm x 58mm location kidney-shaped holes. Please use M16 bolts to secure the base to the foundation.

Instruction

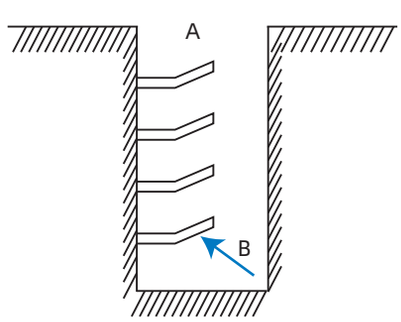


Location hole

3.3 Cable Trench Design

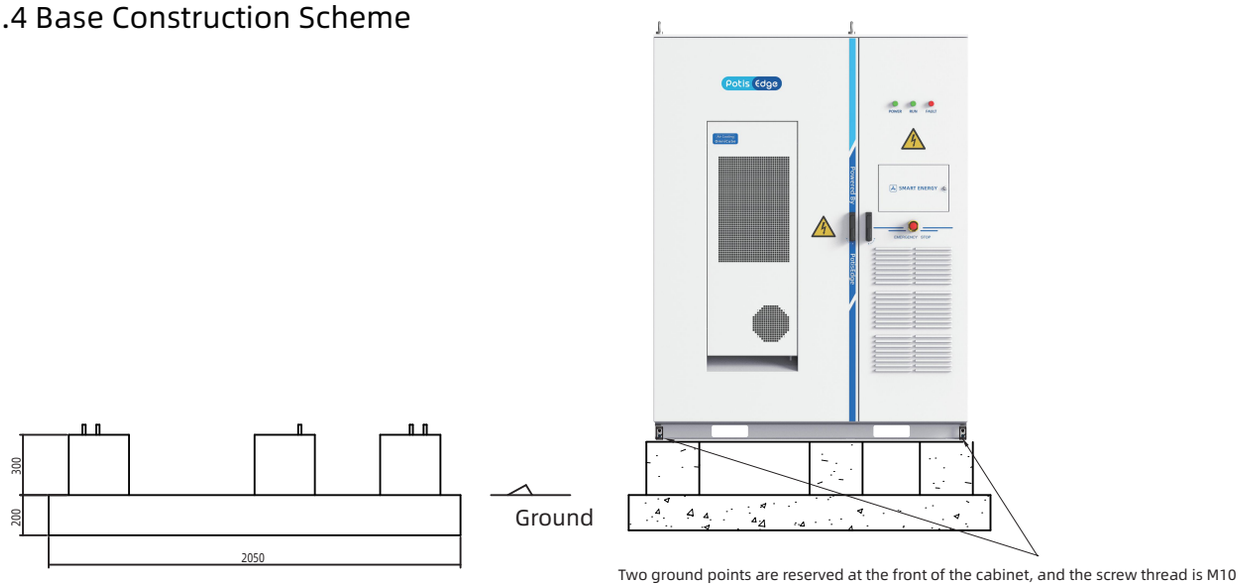
The following figure shows the section of cable troughs. Users can determine the number of cable brackets based on specific needs. The communication cables, control cables, and power cables must be laid separately. The DC circuit and AC circuit must be laid separately. This is conducive to installation and maintenance, and mitigate the interference caused by the power circuit to the communication and control signal lines.

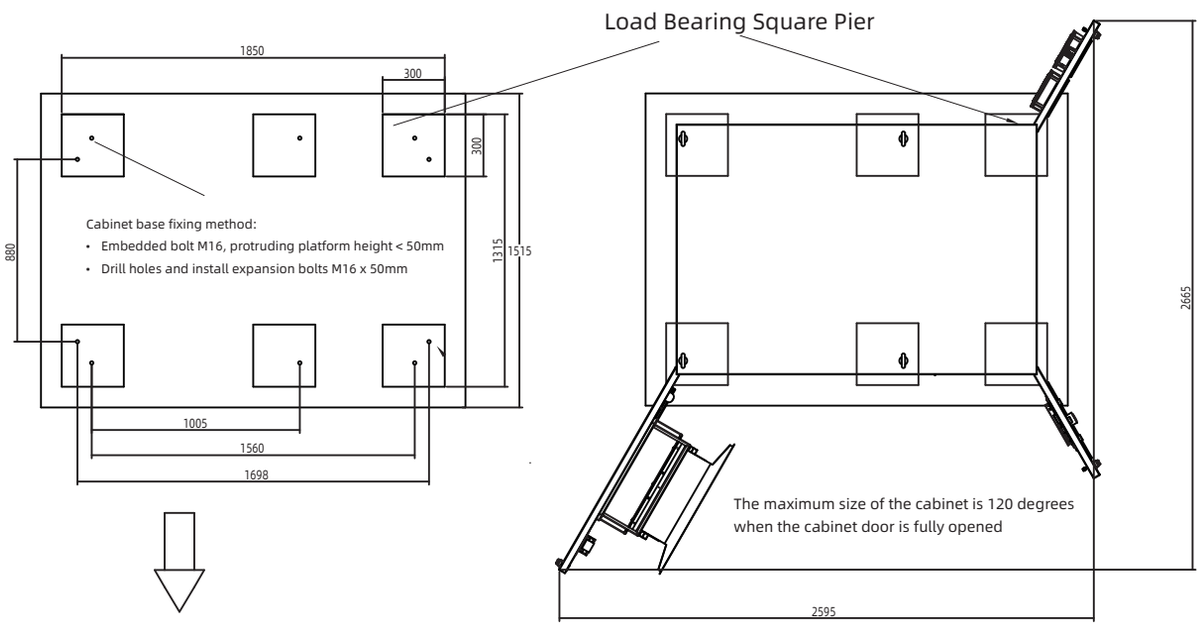
Instruction



Serial number	Name
A	Cable tray
B	Cable bracket

3.4 Base Construction Scheme



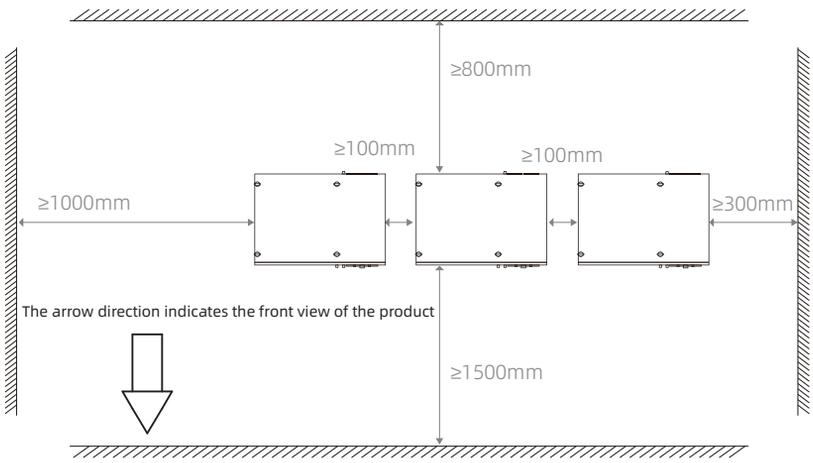


⚠ Instruction

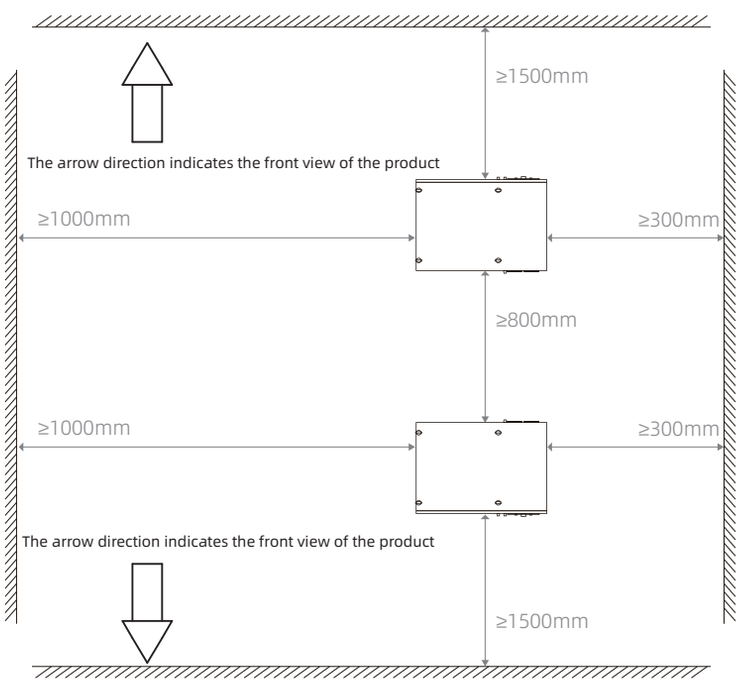
1. The concrete foundation should be horizontal, with a flat surface, and can evenly bear the weight of the battery cabinet. The foundation for one single cabinet should be able to bear a load greater than 3 tons.
2. The inner wall of the groove and the foundation platform are sealed with M10 mortar with a thickness of 10, and the surface is flat.
3. The bottom of the base should be slightly inclined to the drainage tank to avoid water accumulation. Cable supports or cable troughs can be set up according to the actual situation.
4. Use Φ10 round steel or 30x4 flat steel to lead the grounding points to the top of the high and low voltage foundation from both sides. The grounding resistance must meet the requirements of the local electric power department.
5. This diagram illustrates the positioning of the energy storage cabinets and is for reference only. The specific foundation measurements should be comprehensively evaluated based on the actual situation of the project.

3.5 Space Requirement

Side-by-side mounting



Back-to-back mounting



4. Fixing ESS

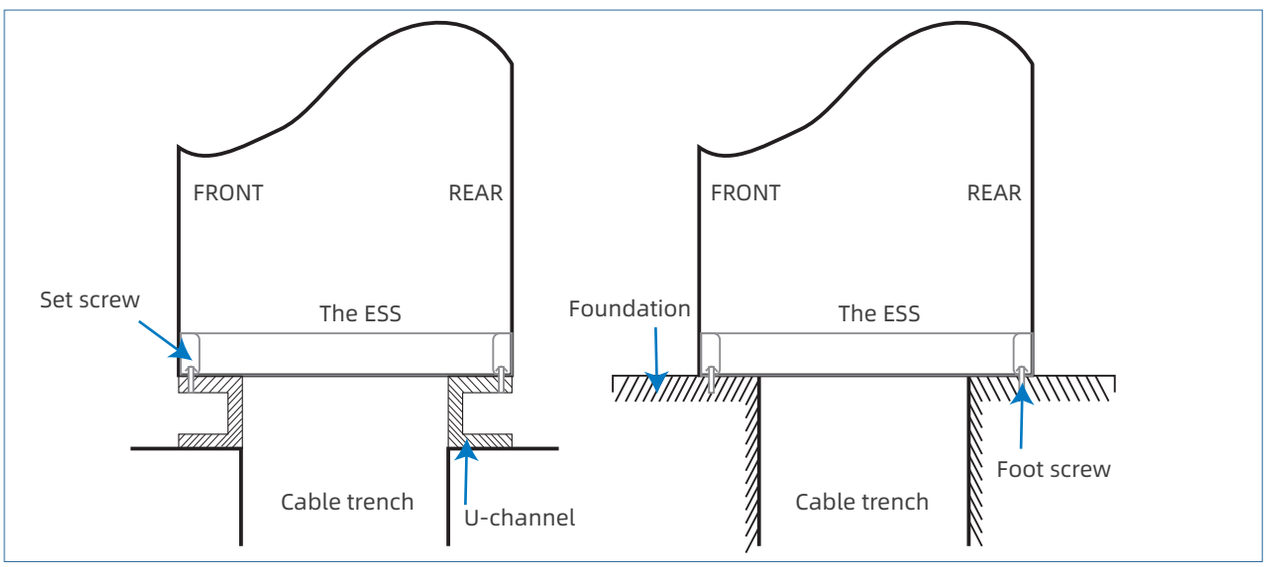
⚠ Caution

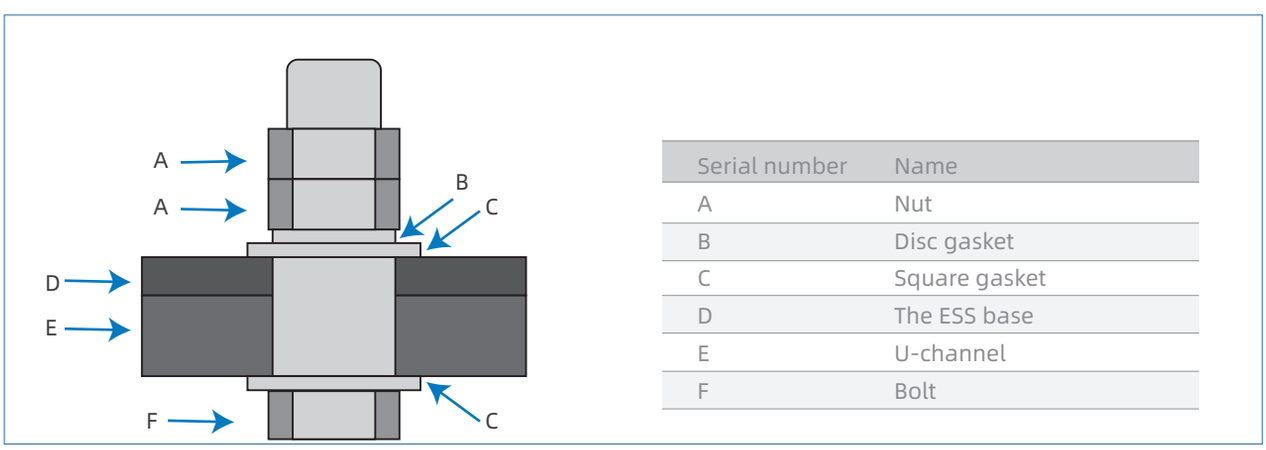
- Ensure that the ESS is vertically pressed to the ground without tip-over risk.
- Ensure that the ESS is securely installed to prevent the system from falling on workers below the structure.

Step 1: Select appropriate tools to transport the ESS to the installation position and align it with the mounting holes.

Step 2: Secure the ESS to the U-channel or foundation through the kidney-shaped hole holes in the base by using M16 bolts.

Step 3: Install the four baffles on the left, right, front, and rear sides of the ESS base, after which the ESS installation is complete.





Serial number	Name
A	Nut
B	Disc gasket
C	Square gasket
D	The ESS base
E	U-channel
F	Bolt

5. Electrical Connection

5.1 Preparation Before Electrical Connection

Remove Protective Film

Before delivery, the inlet and outlet of the system are coated with protective film. Remove these protective film before starting the system.

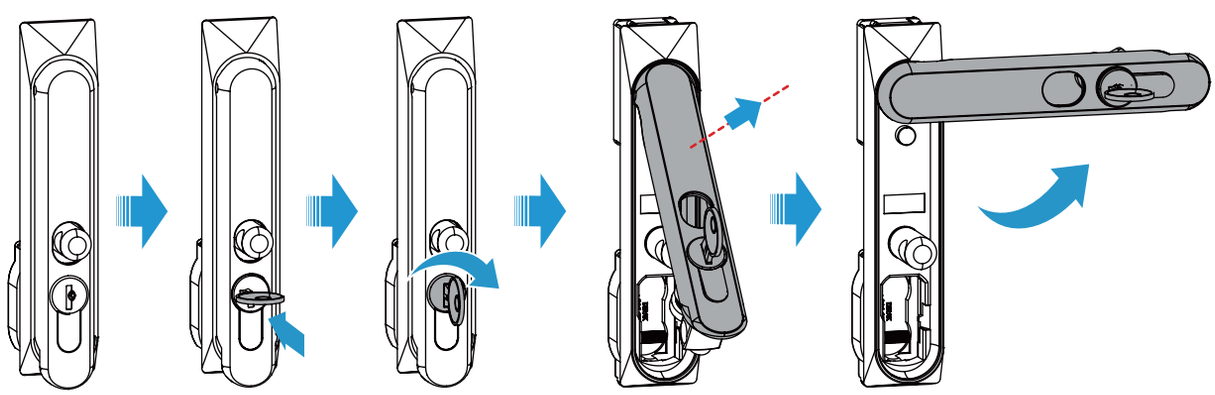
When the system is running, ensure that the water outlet of the air conditioner is not blocked and the water is flowing smoothly.

Open the Door

The user needs to open the cabinet door of the ESS before wiring. The opening and closing of cabinet doors require the use of cabinet door keys. The opening steps are shown in the following diagram:

⚠ Instruction

- Please use the key delivered with the product to open the cabinet door. Perform the reverse operation to close the door.
- Please safeguard the key for future use.

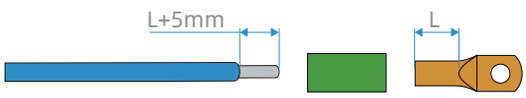


Make terminals

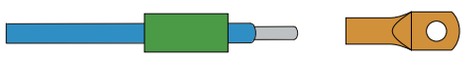
⚠ Instruction

If a multi-core cable is used, add a cable protection finger cover at the fork to prevent the outer insulation from cracking.

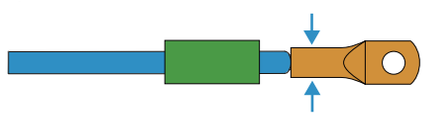
01
- Remove the insulation sheath at the end of the cable.
- The length of the insulation sheath at the end of the cable should be the depth of the cable nose pressure hole, plus about 5mm.



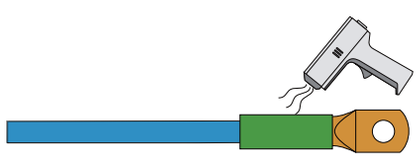
02 Select a heat shrink tube that meets the cable size and is about 2 cm longer than the copper nose crimping tube.



03 Crimping wire cooper nose
- Place the exposed copper core part of the stripped wire end into the wire crimping hole of the wiring copper lug.
- Use the terminal crimping machine to crimp the wiring lug tightly.
- Crimp more than twice.



04
- Put the heat shrink tube over the wiring copper lug to completely cover the crimping hole.
- Use a hot hair dryer to tighten the heat shrink tube.



Cable Specification

Cable specifications should be configured according to the specific system capacity, routing method, and design specifications. The following specifications are for reference.

The circuit breaker at the following rated current	The cable specifications should not be smaller	Maximum terminal width for the circuit breaker	Reference ranges for the copper terminals	Notes
250A	ZC-YJV22-0.6/1kV-4x95+1x50	23mm	A/B/C/N:JGC95-8	When buried in the ground
			PE:DT-50/JG50-8/SC50-8	
	ZC-YJV22-0.6/1kV-4x70+1x35		A/B/C/N:DT-70/JG70-8/SC70-8	When not buried in the ground
			PE:DT-35/JG35-8/SC35-8	

Electrical Connection Sequence

01 Grounding → 02 Battery wiring → 03 Load wiring (Optional) → 04 PV wiring(Optional)

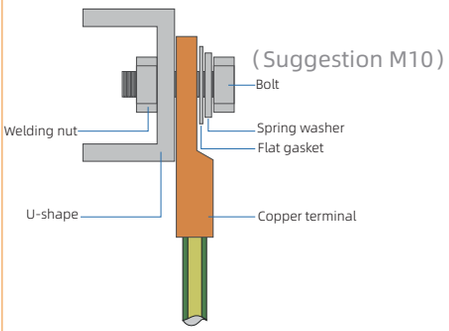
→ 05 Grid wiring → 06 Connecting RS485 Cables to the Master Cabinet → 07 PV wiring(Optional)

5.2 Grounding

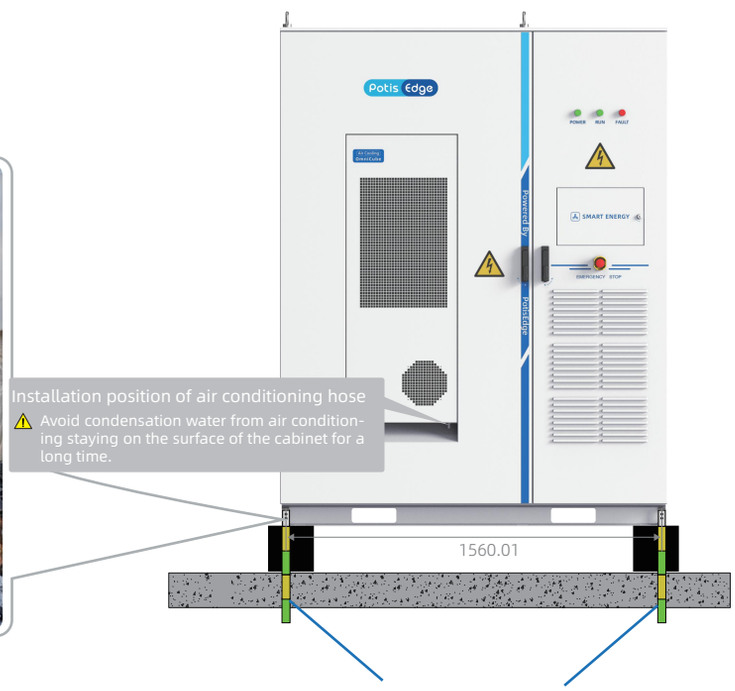
⚠ Instruction

- There are two grounding methods: using grounding flat steel welding for fixation (recommended) or using grounding cables for fixation.
- Please bring your own protective grounding flat steel (hot-dip galvanized flat steel).

⚠ Warnning



01. The ground connection between the device and the ground electrode must be securely fixed. Measure the grounding resistance after grounding.
02. The grounding resistance must be less than 4 Ω.
03. Whether the ground part is welded or fixed by screws, apply anti-rust treatment after the grounding.

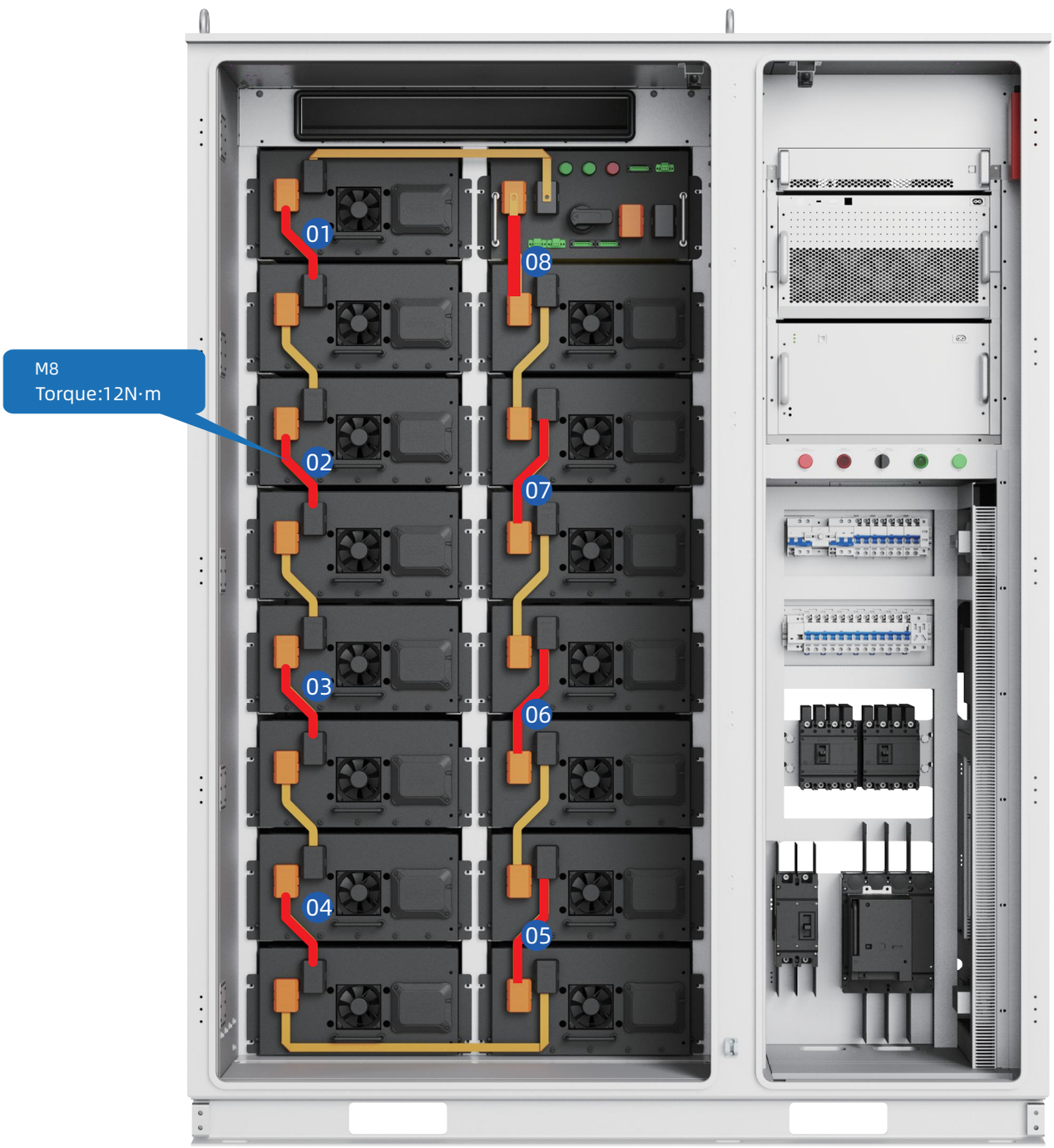


Ensure at least two groundings are connected

5.3 Battery Wiring

⚠ Instruction

- If the cable connection between the batteries inside the ESS is complete, skip to the next step.
- If some parts are not connected, please refer to the figure to complete the cable connection.
- When performing installation operations, please ensure that all switches are in the disconnected state and wear insulated gloves, otherwise it may cause personal injury or equipment damage.
- Please make sure to install the PACK copper bars in the order of 01~08, as shown in the figure.



Installation sequence: 01 → 02 → 03 → 04 → 05 → 06 → 07 → 08

Unconnected components

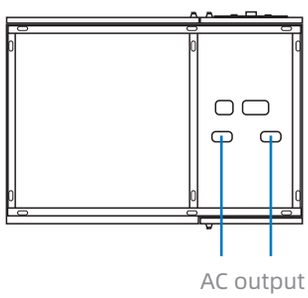
5.4 Load Wiring (Optional)

Step 1: Route the cable through the bottom wiring area.

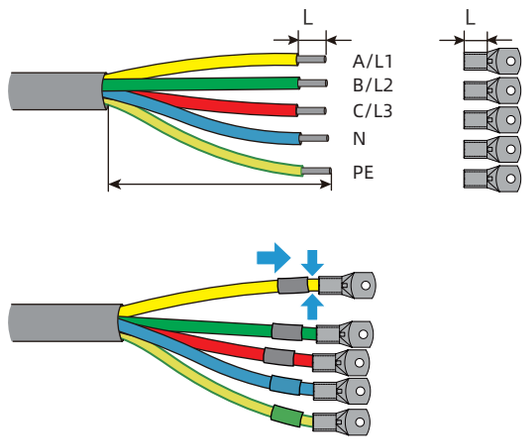
Step 2: Strip out the appropriate length and crimp the AC wire terminals to the AC cables.

Step 3: Connect the AC cables to the corresponding terminals on the ESS.

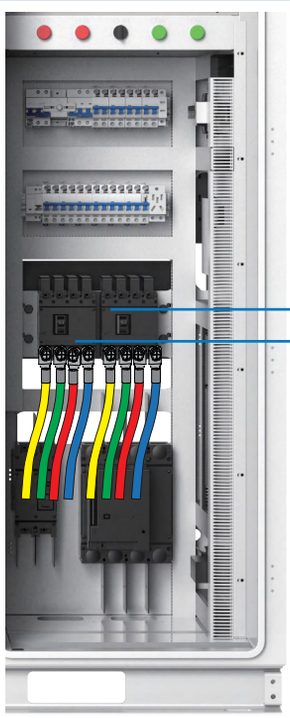
01

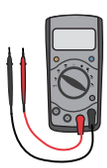


02



03



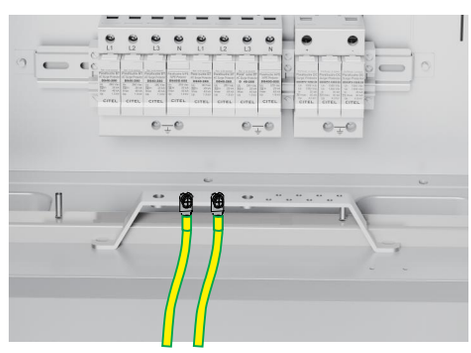


⚠ Danger

Disconnect the AC circuit breaker and measure with a multimeter to ensure that there is no voltage at the terminals. Do not perform any operation until 20 minutes later.

M8 screws
Torque: 12 N·m

The terminal strips are on the back of the ESS.



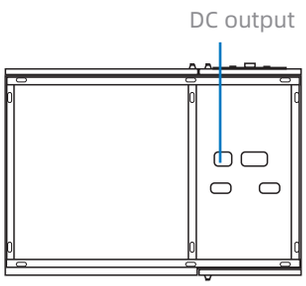
5.5 PV Wiring(Optional)

Step 1: Route the cable through the bottom wiring area.

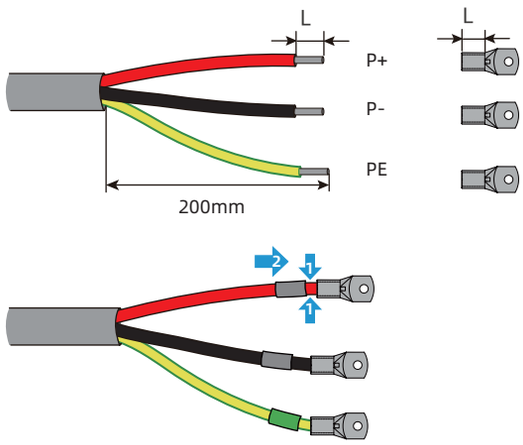
Step 2: Strip out the appropriate length and crimp the DC wire terminals to the DC cable.

Step 3: Connect the DC cables to the corresponding terminals on the ESS.

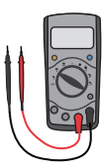
01



02



03

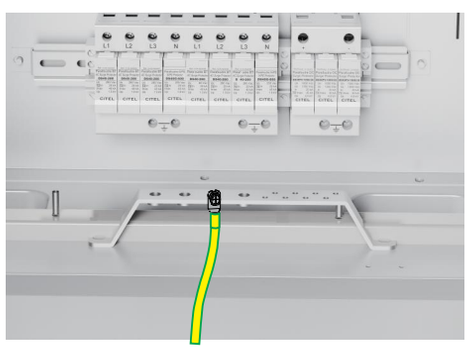


⚠ Danger

Disconnect the AC circuit breaker and measure with a multimeter to ensure that there is no voltage at the terminals. Do not perform any operation until 20 minutes later.

M8 screws
Torque: 12N·m

The terminal strips are on the back of the ESS.



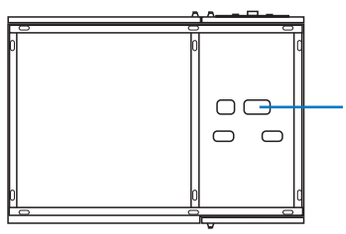
5.6 Grid wiring

Step 1: Route the cable through the bottom wiring area.

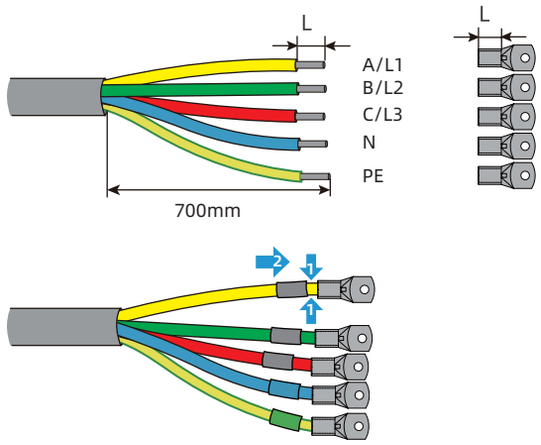
Step 2: Strip out the appropriate length and crimp the AC wire terminals to the AC cable.

Step 3: Connect the AC cables to the corresponding terminals on the ESS.

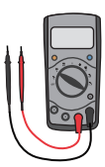
01



02



03



⚠ Danger

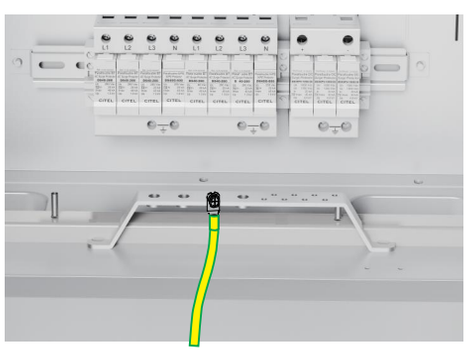
Disconnect the AC circuit breaker and measure with a multimeter to ensure that there is no voltage at the terminals. Do not perform any operation until 20 minutes later.

Directly connect to the grid if local utility grid requirement is met.

Grid

M10 screws
Torque: 20 N·m

The terminal strips are on the back of the ESS.

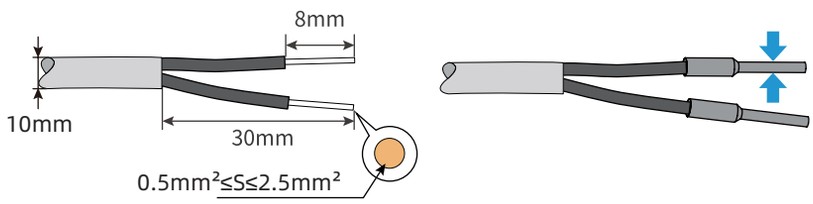


5.7 Connecting RS485 Cables to the Master Cabinet

⚠ Caution

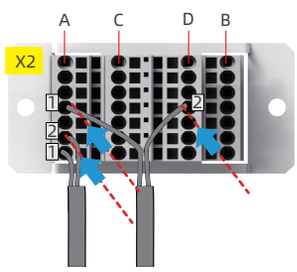
- RS485 communication cable is used to connect the smart meter and transmit the circuit information collected by the meter to the energy storage system.
- Use shielded twisted pair for RS485 communications.

01



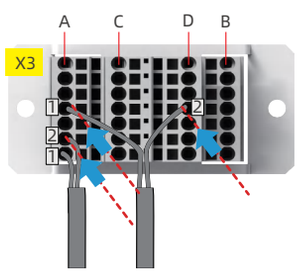
02

The sequence number of the terminal strip follows an ascending order(1-17). The terminal strip shown in the figure serves the illustrative purpose only.



Smart Meter
1:RS485A
2:RS485B

The sequence number of the terminal strip follows an ascending order(1-24). The terminal strip shown in the figure serves the illustrative purpose only.



Smart Meter
1:RS485A
2:RS485B

⚠ In a parallel-connected system, the smart meter RS485A can be connected to X3:16B/X3:16C/X3:16D, and RS485B can be connected to X3:17B/X3:17C/X3:17D in the master cabinet.
The strategy meter RS485A can be connected to X3:13A, and RS485B can be connected to X3:13C.

⚠ In the system with a single cabinet, the smart meter RS485A can be connected to X3:19B/X3:19C/X3:19D, and RS485B can be connected to X3:20B/X3:20C/X3:20D.
The strategy meter RS485A can be connected to X2:22A, and RS485B can be connected to X2:22C.

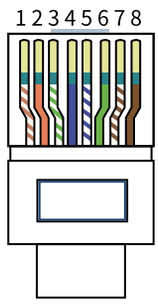
5.8 Installing the Signal Cables

⚠ Caution

- The ESS can be connected to the monitoring platform through the LAN communication cable.
- You can view the equipment information, configure the parameters and set the system operation mode through the remote monitoring platform.
- When connecting the LAN communication cable, the cable routing should avoid interference sources, such as power lines, so as not to affect the signal reception.

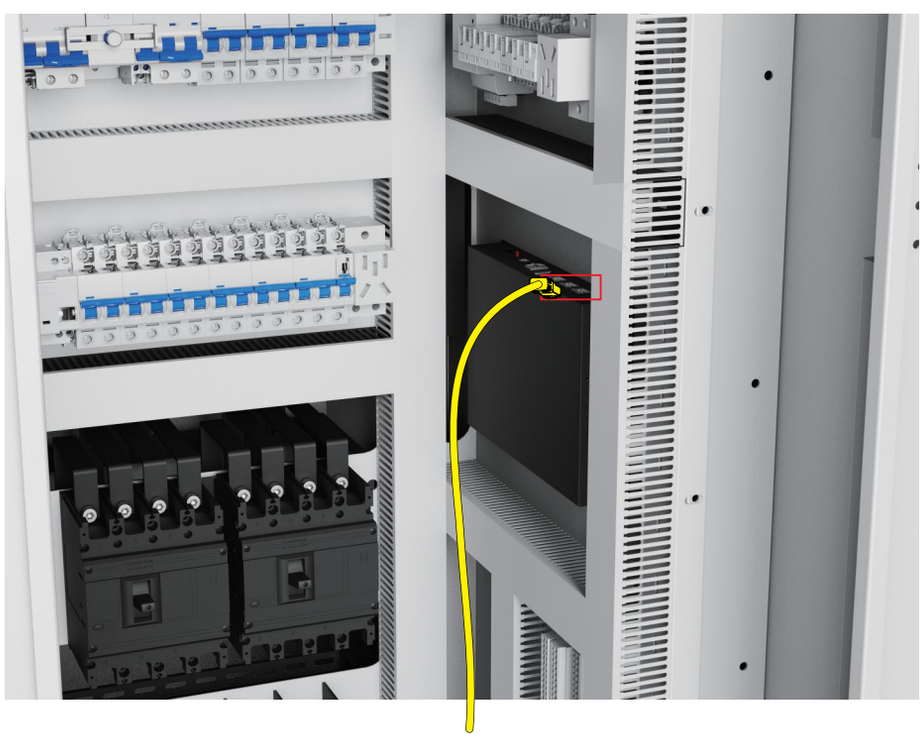
⚠ Instruction

01 Signal cables are conventional network cables (CAT 5E outdoor shielded network cables), which can should be prepared by users themselves.

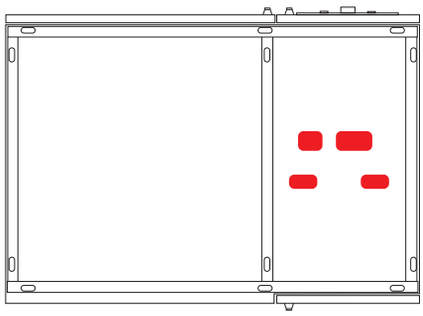


No.	Color
1	Orange white
2	Orange
3	Green white
4	Blue
5	Blue white
6	Green
7	Brown white
8	Brown

02 The signal cables must be shielded before being plugged in any port.



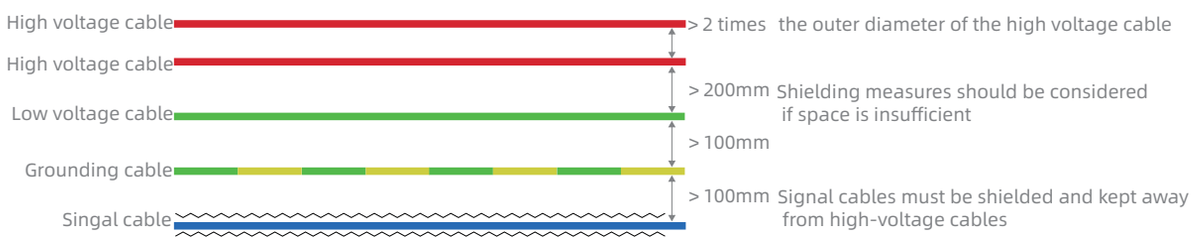
5.9 Wiring and Waterproofing



Fire-resistant mud

After all wiring harnesses are connected, block the outlet with fire-resistant mud.

⚠ Warning



5.10 Installation Checklist

After the ESS is fully installed, its mechanical installation and electrical connections should be meticulously checked. At least two staff members are required to carry out the check according to the items listed in the table below. Records shall be made during the check. Once nonconformity is found with the national and industrial standards or specifications, it shall be corrected immediately.

Mechanical Installation Check
☐ The ESS has no deformation or damage.
☐ The bottom of the ESS is fixed and the brackets are stable.
☐ There is ample space around the ESS.
☐ The ambient conditions of the ESS include temperature, humidity, and ventilation meet requirements.
☐ Cooling air flows steadily.
☐ Seal protection of the cabinet enclosure is complete and reliable.
Electrical Installation Check
☐ The ESS is firmly grounded.
☐ The grid voltage matches the rated output voltage of the ESS unit.
☐ The phase sequence of the grid is consistent, and the tightening torque meets the requirements.
☐ The DC input is correctly connected to the positive and negative anodes, and the tightening torque meets requirements.
☐ Communication cabling is correct, and a certain distance from other cables is kept.
☐ The cable number is correct, clear and easy to distinguish.
☐ The insulation shield is complete and reliable, and the warning labels are clear and firm.
Other Check
☐ All unused cables are tightened with insulation cable ties.
☐ There are no tools, parts, conductive dust generated by drilling, or other foreign matters left in the cabinet.
☐ There is no condensation or frosting inside the cabinet.

6. System Commissioning

6.1 Power-on Check

No.	Check item
1	The equipment is securely installed with an installation position easy for O&M. The installation space is well-ventilated, easy for heat dissipation, clean and tidy.
2	The ground protective cable, on-grid AC cable, load cable, and communication cable must be properly and securely connected.
3	Cables must be bundled in accordance with cable routing requirements, properly distributed, and free from damage.
4	The battery cluster switch, AC switch, and DC power switch are disconnected.
5	The voltage and frequency of the on-grid access point of the ESS meet the grid connection requirements.

6.2 System Power-on

Step1: Use multimeter to check whether the input voltage of the on-grid MCCB meets requirements (AC380V). If yes, go to the next step.

Step2: Turn on QF1-1, QF2 to QF6.

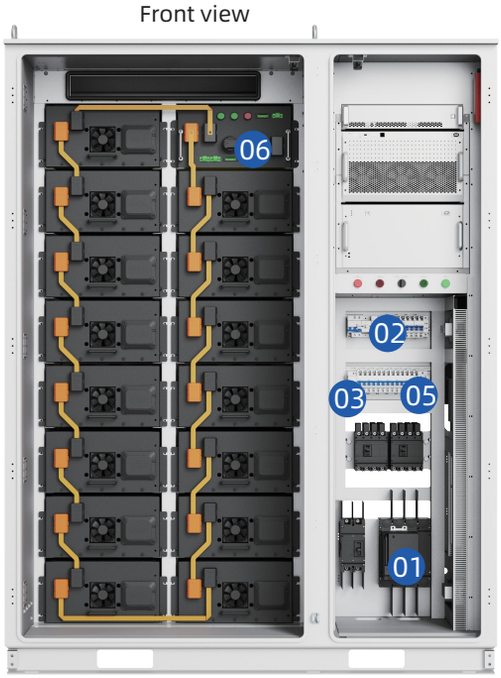
Step3: Turn on QF7. (If there is no on-grid demand, please go directly to the next step)

Step4: Turn on the UPS.

Step5: Turn on QF10 to QF12，QF14 to QF15，QF21.

Step6: Open the HV BOX. Turn the handle on the switch box to “ON”.

Front view



Rear view

Power-on step: 01 → 02 → 03 → 04 → 05 → 06

⚠ Instruction

- If the UPS is under voltage and no voltage is detected in the QF1-1 auxiliary power supply, manually switch to the
- QF1-2, and the mains supplies power to the UPS.
- After the UPS is charged, normal operation is possible if the auxiliary power switches from QF1-2 to QF1-1.

⚠ Caution

Under the off-grid mode, the system is put at risk of failing to start up when the battery runs out of juice and the operating temperature is below -20℃.

6.3 System Power-off

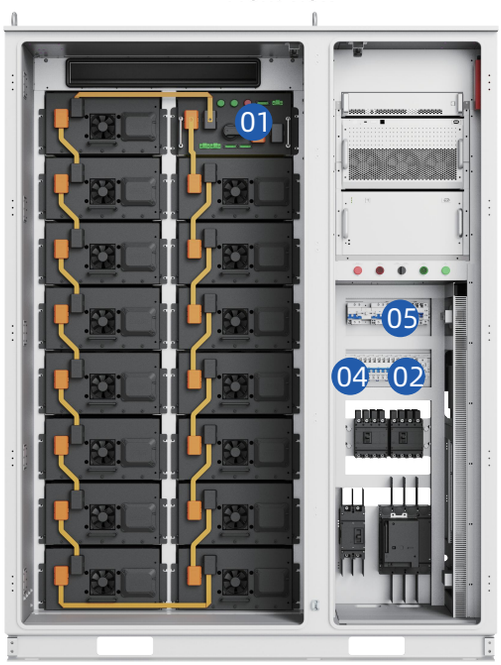
⚠ Danger

- When operating and maintaining the ESS, power off the system. Otherwise, the system may be damaged or electric shocks may occur.
- After the system is powered off, it takes some time for the internal components to discharge. Please wait until the devices are fully discharged according to the required time label.
- In case of emergency, use the emergency stop switch to power off the device.

Power-off step: 01 → 02 → 03 → 04 → 05

Step1: Disconnect the HV BOX, and turn the handle on the switch box to "OFF".
Step2: Turn off QF10 to QF12, QF14 to QF15, QF21.
Step3: Turn off the UPS.
Step4: Turn off QF7. (If there is no on-grid demand, please go directly to the next step)
Step5: Turn off QF1-1, QF2 to QF6.

Front view



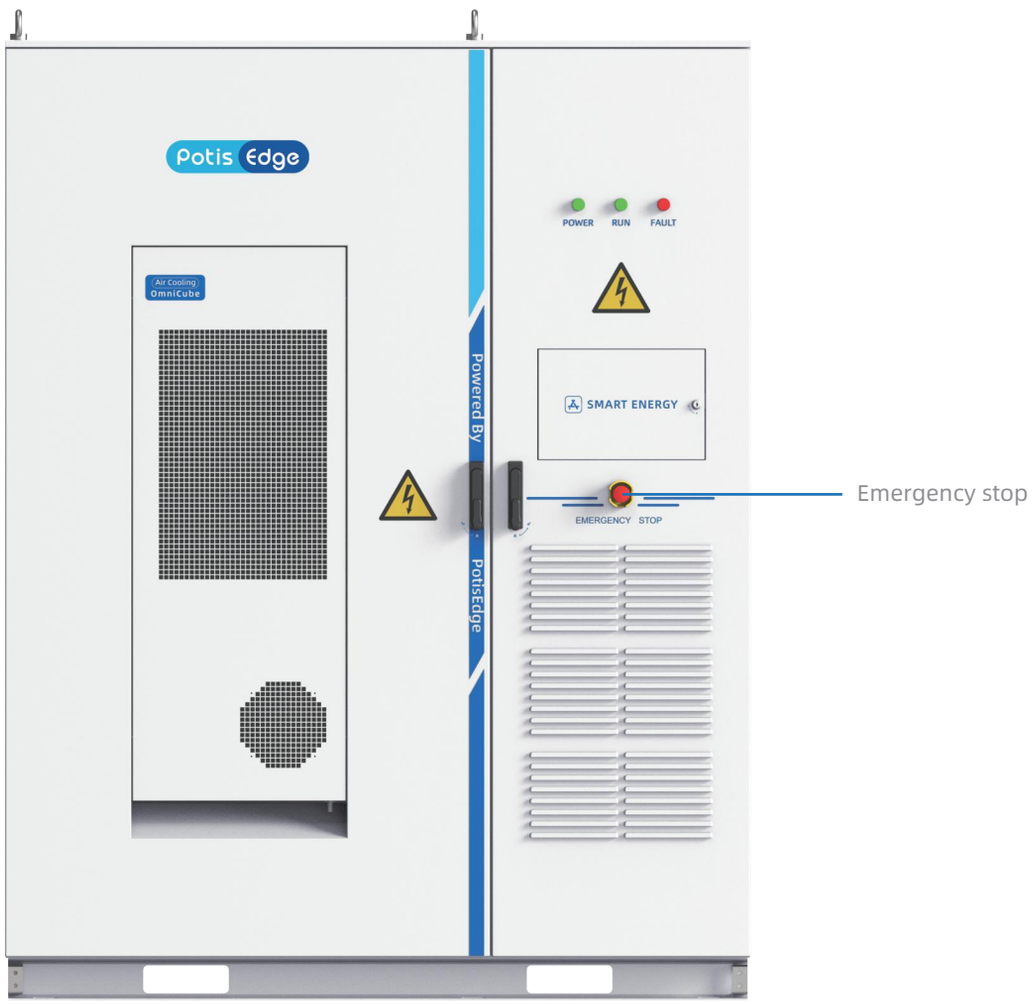
Rear view

6.4 Unscheduled Power-off (Emergency Stop)

⚠ Instruction

In the event of an emergency, personnel must evacuate ASAP and contact professional(s).

Power off the machine by pushing the emergency stop button on the front door.

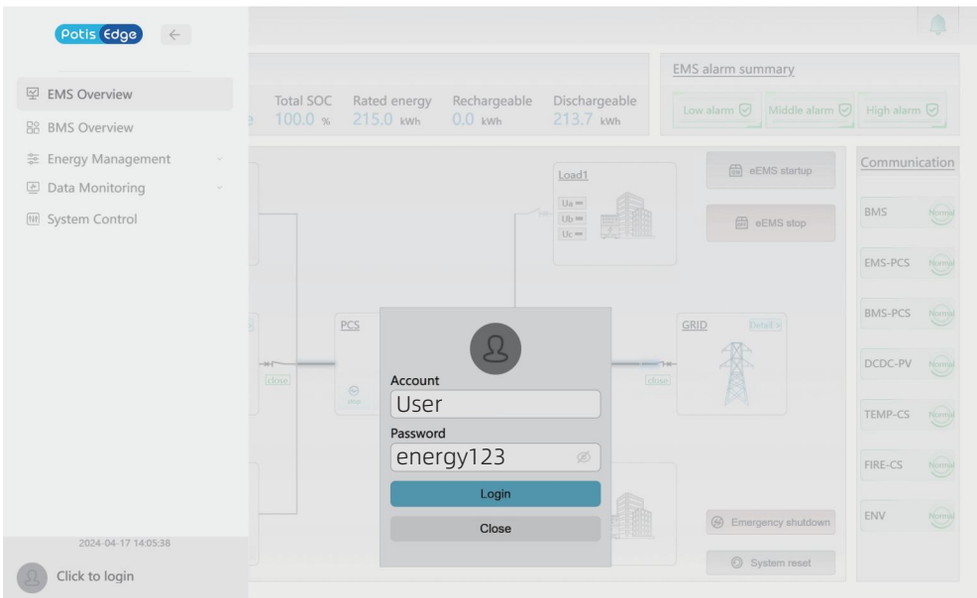


7. System Login

Default account: User

Default password: energy123

Click "Login" and the login interface pops up. Enter the account name and password to log in to the system.



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