STATEMENT

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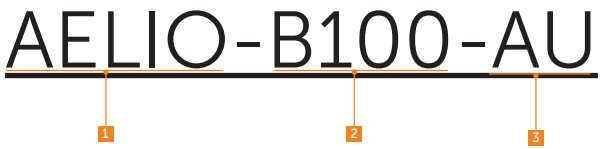
About This Manual

Scope of Validity

This manual is an integral part of AELIO-B100-AU. It describes the transportation, storage, installation, electrical connection, commissioning, maintenance and troubleshooting of the product. Please read it carefully before operating.

Model Code



No.	Definition	Description
1	Product name	Aelio: Refer to the name of hybrid project.
2	Battery capacity	B100: Indicate that the battery capacity is 100 kWh.
3	Country	AU: Australia

Target Group

The installation, maintenance and grid connection setting can only be performed by qualified personnel who

- Are licensed and/or satisfy state and local jurisdiction regulations.
- Have good knowledge of this manual and other related documents.
- A medium-voltage operator is required to obtain any Certifications for High-voltage Electrician.

Conventions

To help users better understand the *Manual*, the explanations for the format and symbols herein are shown as follows:

Format	Description
">"	">" represents that there are multiple selections. For example, the process of "Tap 'Settings' and then Tap 'User Setting'" will be represented in "'Settings'" > 'User Setting'".
" "	Radio buttons, checkboxes, and buttons will show with double quotation marks (" "). For example, tap "OK" button.

Symbol	Description
DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION!	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE!	Provides tips for the optimal operation of the product.

Change History

Version 00 (, 2024)

Initial release

Table of Contents

1 Safety

1.1 General Safety

Before transporting, storing, installing, operating, using and/or maintaining the equipment, please carefully read the document, and strictly follow the instructions and safety precautions given herein, as well as symbols affixed on the equipment.

The operator should not only abide by all safety precautions provided in the document, including but not limited to the "Danger" sign, "Warning" sign, "Caution" sign, and "Notice" sign, but also comply with relevant international, national and local laws and regulations, and industry rules. **SolaX will not assume any responsibilities for the loss caused by improper operation, or violation of safety standards for design, production and equipment suitability.**

SolaX will not be liable for maintenance for possible device failure**,** device malfunction, or parts damage, nor **will the company assume any liability to pay compensation for the possible physical and property damage** resulting from the installation environment that does not meet the design requirements.

The operator should comply with the local laws, regulations, standards and guidelines in the process of transportation, storage, installation, operation, and maintenance.

The device is well designed and tested to meet all applicable states and international safety standards. However, like all electrical and electronic equipment, safety precautions must be observed and followed during the installation of the device to reduce the risk of personal injury and to ensure a safe installation.

Before installing the device, carefully read, fully understand and strictly follow the detailed instruction of the *User Manual* and other related regulations. And the safety instructions in this document are only supplements to local laws and regulations.

SolaX will not assume any responsibilities if any of the following circumstances occurs, including but not limited to:

- Device damage due to force majeure, such as earthquake, flooding, thunderstorm, lighting, fire hazard, volcanic eruption, war, typhoon, tornado, etc.
- Device damage due to man-made cause.
- Device used or operated against local policy or regulations.
- Failure to follow the operation instructions and safety precautions on the product and in this document.
- Installation and use under improper environment or electrical condition.
- Unauthorized modifications to the product or software.
- Device damage caused during transportation by the customer or the third party.
- Storage conditions that do not meet the requirements specified in this document

- Use of incompatible inverters or devices.
- Installation and commissioning operated by unauthorized personnel who are not licensed and /or satisfy state and local jurisdiction regulations.

1.2 Personal Safety

DANGER!

- Do not power on while installing the device. If the device is powered on in the process of installation and disassembly of cables, an electric arc, electric spark or fire will occur at the moment that the cable core contacts conductors. It may cause a fire or result in physical and property damage.
- Do not improperly operate while powering on. Any improper operation may cause a fire, electric shock, or explosion, and it will result in physical and property damage.
- Must remove rings, bracelets, watches, and any other metal jewelry from fingers, hands, or wrists before operation, to avoid electrical shock or burn.
- Must use special insulation tools, of which the insulation grade and dielectric strength level must be consistent with local laws, regulations, standards, and guidelines, in the operation process, to avoid electrical shock, burn, or short circuit fault.

WARNING!

- Must wear special personal protective equipment (PPE), such as a coverall, safety boots, safety glasses, safety helmet, safety gloves, etc.

CAUTION!

- Do not stop the safety switch on the equipment, and neglect the "Danger" sign, "Warning" sign, "Caution" sign, and "Notice" sign on the equipment, as well as safety precautions in the document.
- Must stop working at once, report to the relevant person in charge, and activate protection schemes in case of possible danger that may cause human injury and damage to equipment in the installation and operation process.
- Do not power on during the installation process, or before obtaining confirmation from professionals after finishing installation.
- Do not directly contact power supply equipment, or contact it with other conductors or wet objects.
- Do not touch the running fan with parts, screws, or installation tools, or keep hands clear when the fan is running, to avoid personal injury or property damage.
- Please evacuate and press the fire bell immediately, or call fire department at once in the case of a fire.

1.3 Environment Requirement

DANGER!

The equipment installation site shall meet the following requirements:

- Keep away from combustibles and explosive materials.
- Keep away from heat or fire sources, such as fireworks, candles, heaters, or any other heat-producing appliances. It may cause damage to equipment or a fire.
- Keep away from flammable and explosive gases, or smoky environments.

WARNING!

- The equipment installation site should keep away from liquid areas, such as positions under a water pipe or air outlet where the condensed water is easy to form, or positions under an air-conditioning vent, ventilation opening or equipment room outlet where there is access to water. The water can seep into the internal components of the device, causing device damage and short circuits.
- Do not cover vents and cooling systems while running. Otherwise, it may cause a fire or equipment damage due to the high temperature.
- Do not try to open the cabinet doors on a rainy or high humid day (humidity equal to or greater than 80%). If the cabinet doors happen to be opened on a rainy day, a covering must be arranged to protect the modules in it from water. If the cabinet doors have been opened for over 30 minutes on a highly humid day when the cabinet is off-grid or under grid connection, the operator needs to manually dehumidify. Otherwise, it may not work properly or not connect to the network properly.

CAUTION!

- The storage area should be clean, dry, and well ventilated to prevent dust from entering, and condensed water from generating.
- Strictly observe technical specifications while installing and running the equipment. Or, it may affect the performance and safety of the equipment.
- Do not install, run or operate outdoor equipment or cables (including but not limited to carrying equipment, operating equipment, connecting cables, plugging or unplugging cables that connect to outdoor signal ports, working at heights, outdoor installation, etc.) in bad weather, such as thunderstorms, rain, snow, etc.
- Keep away from the following environments while installing the equipment: environments with dust, smoke, volatile gases, corrosive gases, infrared radiation, organic solvents, or a site with high salt.
- Keep away from environments with metal-conductive or magnetic-conductive dust.
- Keep away from areas suitable for fungus, mould, or other microorganism growth.
- Keep away from areas with strong shaking, serious noise pollution, or powerful electromagnetic interference.
- The installation site must conform to local laws and regulations, and relevant standards.

CAUTION!

- The ground at the installation site must be firm and strong instead of having an adverse geological condition, such as soil with high water content, weak soils, or loose soils. And keep away from low-lying areas since they are prone to water or snow accumulation.
- Keep away from areas prone to water accumulation.
- If the equipment is installed on a grassy plantation, do weed regularly, and harden the ground under the equipment, such as cementing, gravelling, etc.
- When the operator plans to install, operate or maintain the equipment, water, snow, or other objects must be cleared on the top of the device before opening doors to keep them from entering into the device.
- Please check the ground is firm and strong enough to meet the load-bearing requirements of the equipment while it is being installed.
- Must seal the entry holes.
- Must clean the packing materials, such as cartons, foams, plastic bags, ties, etc., on the site after finishing installation.

1.4 Cabinet, Battery and Electric Safety

To prevent personal injury or property damage from improper operation, please carefully read the following installation precautions before installation.

1.4.1 Cabinet Safety

DANGER!

- A safety helmet, belt, or rope must be worn when performing work at height. If the safety rope is adopted, one end must be securely tied to a strong structural part instead of a movable and unsound object or a metal with sharp edges, to prevent fall incidents due to the slip of the rope hook.

WARNING!

- To ensure that a complete set of tools is prepared, are firm and secure. They must pass the verification of professional authorities. DO NOT use any tools that are broken, failed to verify, or are expired.
- To prevent personal injury or equipment damage from slopping or collapsing of the cabinet because it is unstable, please check if the cabinet has been secured before placing any devices into it.
- To protect relevant people from injury, take care of the unstable or heavy devices in the cabinet when taking them out.

WARNING!

- Do not drill holes in the equipment. Otherwise, the sealing performance, electromagnetic shielding performance, or internal components or cables of the equipment will be destroyed, and it can even cause a short circuit on a circuit board if the metal dust generated by drilling enters into the device.

CAUTION!

Safety precautions for lifting and handling heavy devices:

- To prevent injury from oversize loads, assess the device you're about to lift before you start lifting.
- If more than 2 people lift a device, reasonably arrange to have a balanced weight distribution
- Wear personal protective equipment, such as, safety gloves, safety boots, etc., to prevent needless injuries when lifting devices with bare hands.
- Know the right body posture to prevent personal injuries when lifting devices, for instance, bend at your knees, not at your waist or back, and do not twist your back.
- Hold the handles on the device or put your hands underneath the device to move or lift, and do not hold the handles on the parts installed in it.
- To prevent injuries, do not quickly lift the heavy device above the waist.
- To prevent scratches and dents, or damage to components and cables, avoid impact and falling when moving.
- Be aware of workbenches, slopes, steps, and other places where it is easy to slip when moving devices. Ensure that the passageways are smooth, clean, and away from obstacles.
- To prevent tipover, the forklift's forks must be placed under the load. Center the weight of the load between the forks, and adjust the forks to distribute the weight evenly. Firmly attach the loads to the forks before lifting, and arrange for people to watch for when lifting.
- Sea and road (in good condition) transports are an idea for the device instead of rail and air transports. Transport staff should do their best to avoid bumpiness and inclination as much as possible.

CAUTION!

Safety precautions for working at heights:

- Arrange people to protect workers who work at 2 meters in height or higher.
- Workers who work at 2 meters in height or higher are required to be trained and obtain relevant qualifications.
- In the case of one of the following circumstances, workers should immediately stop operation until the device is inspected and confirmed safe by the relevant safety director and technicians.

  1. Wet steel pipe.
  2. Other situations may be dangerous.

CAUTION!

- Should mark off a dangerous area, put up Danger signs, and keep unauthorized people from entering the area.
- Should install guardrails and put up "Watch Your Step" and Danger signs at the edges of workplace and holes.
- Do not stack scaffoldings, gangplanks, or other sundries, and keep the ground service staff from staying or passing under the area where the work is being carried out.
- Take caution with the apparatus and tools brought to ensure that they do not fall.

CAUTION!

Safety precautions for working at heights:

- Workers who work at heights should take advantage of crane slings, baskets, elevating transfer vehicles, cranes, or other methods to transfer objects instead of throwing them from the air to the ground or from the ground to the air.
- Should avoid working on the up and down work platform at the same time. Or, a special protective shed should be built or some protective measures should be taken between two work platforms to protect workers. In addition, do not stack tools and materials on the upper work platform.
- The scaffoldings should be removed from top to bottom instead of being removed at the same time after finishing installation. Take caution when dismantling parts of scaffolding.
- Workers who work at heights must abide by the Safety Regulation for Working at Heights. SolaX will not be liable for personal injury or equipment damage due to violations of the Regulation.
- Do not play and have a break in the area while working at heights.

CAUTION!

Ladder safety:

- A wood or insulated ladder should be used when working with electricity.
- A platform ladder with handrails is preferred instead of a straight ladder.
- Check that the ladder is in good condition, make sure that the load bearing meets requirements, and strictly prohibit overload.
- Place the ladder on a solid and firm surface, and designate a person to hold it.
- Balance your body to prevent injuries when climbing.
- Make sure that the rope is fastened and secured when using the herringbone ladder to prevent incidents.

CAUTION!

Crane safety:

- Crane operators are required to be adequately trained, and certified and licensed to operate said equipment before starting work.
- Must install guardrails and put up Warning signs at the crane working area.
- The groundwork for the hoisting operation must meet the load bearing requirements of the crane.
- Make sure that the hoisting tools have been secured to an object or wall that meets the load bearing requirements before hoisting.
- Keep the ground service staff from staying or passing under the crane boom or suspended load where the work is being carried out.
- Do not drag steel wire rope, wire rope slings, etc., and hit hoisting equipment with hard objects, when hoisting work is being carried out.
- Make sure that the angle between two wire ropes do not exceed 90° when hoisting.

CAUTION!

Drilling safety:

- Wear personal protective equipment when drilling, such as safety glasses, safety gloves, etc.
- Avoid drilling around pipes, and light switches and sockets, as the electrical wires can go horizontally and vertically around these fixtures.
- Cover the device to protect it from dusts and debris entering when drilling, and clean it at once after finishing drilling.

1.4.2 Battery Safety

DANGER!

- Do not connect the positive and negative poles of a battery together. Or, the battery may be short-circuited. A short circuit may cause enormous amounts of current and release large quantities of energy for a short time, which may cause the battery to leak, smoke, release flammable gases, or be in thermal runaway, catch fire, or explode. Therefore, power off the battery before maintenance.
- Overheating the battery can lead to significant risks, including leakage, smoke, release of flammable gases, thermal runnaway, fire, or explosion. In case of one of the following circumstances, do not install battery:
  a. Direct sunlight
  b. Fire source
  c. Heater
  d. Others conditions that can cause overheating
- Never damage the device by crushing, deforming, dropping, impacting, cutting or penetrating with a sharp object. Otherwise, it may cause a fire or leakage of electrolytes;

DANGER!

- Never dismantle, change or damage battery, including penetrating with a sharp object, deforming, soaking in water or other liquids, to keep it away from leakage, smoke, release of flammable gases, thermal runaway, fire or explosion.
- Do not touch battery terminals with any other metal objects, which may cause heat or leak.
- Do not mix different types or makes of the battery pack. It may cause leakage or rupture, resulting in personal injury or property damage.
- The battery electrolyte is toxic and volatile. Never get contact with the leaked liquids or inhale gases in the case of the battery leakage or odor. In such a case, keep away from the battery and contact professionals immediately. Those professionals must wear PPE, such as safety glasses, safety gloves, gas masks, protective clothing, etc., power off the equipment, remove the battery, and contact technical engineers.
- Normally, the battery will not release any gases since it is an enclosed system. However, in the following situations: burnt, needle-pricked, squeezed, struck by lightning, overcharged, or subject to other adverse conditions that may cause battery thermal runaway, the battery may be damaged or an abnormal chemical reaction may occur inside the battery, resulting in electrolyte leakage or production of gases. To prevent fire or device corrosion, ensure that flammable gas is properly exhausted.
- Take steps to protect human beings from the gases released when burning batteries.

WARNING!

- Install batteries in a dry area. Do not install them under areas prone to water leakage, such as air conditioner vents, ventilation vents, feeder windows of the equipment room, or water pipes. Ensure that no liquid enters the equipment to prevent faults or short circuits.
- Equip with fire-fighting equipment, such as dry sand, carbon dioxide fire extinguisher, etc., when installing and commissioning according to construction standards and requirements. Make sure that the above-mentioned fire-fighting equipment conforms to local laws, regulations and standards.
- Before unpacking, and in the process of storage and transportation, ensure that the packing cabinets are intact and the batteries are correctly placed according to the labels on the packing cabinets. Do not place a battery upside down or vertically, lay it on one side, or tilt it. Stack the batteries according to the stacking requirements on the packing cabinets. Make sure that the batteries do not fall or get damaged. Otherwise, they will need to be scrapped.
- After packing, the batteries must be correctly placed in accordance with the requirements. Do not place a battery upside down or vertically, lay it on one side, or tilt or stack it. Make sure that the batteries do not impact, fall get damaged. Otherwise, they will need to be scrapped.
- Tighten the screws on copper bars or cables to the torque specified in this document. Periodically confirm whether the screws are tightened, check for rust, corrosion, or other foreign objects, and clean them up if any. Loose screw connections will result in excessive voltage drops and batteries may catch fire when the current is high.
- After batteries are discharged, charge them in time to avoid damage due to overdischarge.

⚠ CAUTION!

- Please read the document carefully before installation, operation and maintenance.
- Charge the battery within the specific temperature range because the low temperature may result in short circuit. Hence, do not charge the battery if the temperature is below the low limit of the operating temperature.
- Ensure that the packing cabinets are intact before unpacking. Do not use if package is damaged, and contact forwarder and manufacturer immediately.
- May leak electrolytes or release flammable gases if the battery is damaged, including dropping, crashing, bulging, or housing indentation. Do not use in the case of the above-mentioned circumstances. Please immediately contact the installer or professional operation and maintenance staff to remove or change the battery in the case of leakage of electrolytes or structural distortion. Keep the damaged battery away from other devices or inflammable and explosive materials, and ensure that non-professional personnel do not contact the damaged batteries.
- Ensure that the pungent and burning smells go away before operating.
- Do not place any objects, like tools, metal parts, etc., on top of the battery. Check and clean them up if any.
- Do not install batteries in rain, snow, fog, or other extreme weather, to prevent moisture or corrosion.
- Do not install batteries after moisturizing, transport to an isolation area, and be scrapped.
- Check if the shell of the battery is deformed or damaged before installing. If yes, do not install it.
- Check whether the positive and negative terminals of the battery are accidentally grounded. If yes, disconnect them.
- Do not welt or grind near the battery. Because an electric spark or arc may cause a fire.
- Store or recharge the battery according to the document if it is not used for a long time.
- The devices used to charge or discharge the batteries must meet the requirements of local laws, regulations, and standards.
- Power off the battery when installing and maintaining.
- Inspect the damaged battery to ensure that there is no smoke, fire, leakage of electrolytes, or heat in the period of storage.
- Do not touch the battery when it fails because of the high temperature of the surface.
- Do not step, against, or stand on the battery.
- The batteries are not allowed to be used to provide a backup power source in the following circumstances:
  a. Medical equipment that is directly related to human health.
  b. Equipment, like trains, elevators, etc., that may cause injuries to human beings.
  c. Computer systems that play an important role in societies and institutions.
  d. Nearby area with medical equipment.
  e. Other devices that play a similar role, as described above.

NOTICE!

Short-circuit protection
- Use electrical tape to wrap the exposed wire outwards to prevent short circuit when installing and maintaining.
- Prevent any object from entering into batteries.

NOTICE!

In case the battery module leaks electrolyte or any other chemical materials, or gas may be generated due to the leakage of battery module, be sure to avoid contact with the discharge at all times. In case of accidentally coming into contact with them, please do as follows:
- In case of inhalation: Leave the contaminated area immediately, and seek medical attention at once;
- In case of contact with eyes: Rinse eyes with running water for 15 minutes, and seek medical attention;
- In case of contact with skin: Wash the contacted area thoroughly with soap, and seek medical attention;
- In case of ingestion: Induce vomiting, and seek medical attention.

NOTICE!

If a fire breaks out where the battery module is installed, please do as follows:
- In case the battery module is charging when the fire breaks out, provide it is safe to do so, disconnect the battery module circuit break to shut off the power charge;
- In case the device is not on fire yet, use a Class ABC fire extinguisher or a carbon dioxide extinguisher to extinguish the fire;
- If the battery module catches fire, do not try to put out the fire, and evacuate immediately. Others conditions that can cause overheating.
- The battery module may catch fire when it is heated above 302°F/60°C; and in case of catching fire, it will produce noxious and poisonous gas, DO not approach and keep away.

NOTICE!

Effective ways to deal with accidents:
- In case of the damaged battery module, place it into a segregated place, and call the local fire department at the place where the user lives or qualified personnel.
- If any part of the battery module, or wiring is submerged, do stay out of the water and do not touch anything; If the battery module gets wet, don't touch it.
- If the battery module is damaged, don't use it. Otherwise, it may result in both personal injury and property damage.
- Don't use the submerged battery module again, and contact the qualified personnel

NOTICE!

Recovery of damaged or wasted battery:

- Dispose of the damaged or wasted batteries according to local laws and regulations instead of placing them in the household trash or in curbside recycling bins. Otherwise, it may cause environmental pollution or explosions.
- Contact our company or a battery recycling company to scrap the battery, if it leaks electrolytes, or is damaged.
- Contact a battery recycling company to scrap batteries if they are expired.
- Keep the damaged or wasted batteries away from high temperatures and direct sunlight.
- Ensure that the damaged or wasted batteries are not exposed to the following environments: high humidity, corrosion.
- Do not recycle the damaged or wasted batteries for a second use, and immediately contact a battery recycling company to scrap them. Or, it may cause environmental pollution.

1.4.3 Electrical Safety

DANGER!

- Before wiring, check that the device is intact to prevent electric shock or a fire.
- Improper operation may cause a fire, electric shock, etc.
- Prevent any objects from entering into the device when operating. Otherwise, the device may be short-circuited or damaged, the load's power supply may be derated or powered off, or personal injuries may occur.

WARNING!

- A device required to be grounding must be grounded firstly when conducting wiring. The PNGD cable must be disconnected finally after removing any other cables.

CAUTION!

- Do not install cables near air inlet (or outlet) of the device.

NOTICE!

- Please strictly follow the steps described in the document before installing, operating and maintaining the device. Do not modify or change the device, and adjust the installation procedure.
- Permission shall be obtained from the state or local electrical department before conducting the grid connection.
- Abide by the safety regulations stipulated by the power station.
- Mark off an operation area, install a temporary fencing or rope, and put up "No Entry" signs.
- Power off the device and shut down switches before connecting or disconnecting power cables.
- Power off the device at once and do not use again if there are any liquids entering into it.
- Check and confirm whether the tools meet the requirements described in the document before operating the device, and be registered. Check whether the number of tools is correct after installing and operating it.
- Check that the icons on the cable labels are correct before connecting power cables. Ensure that the terminals are completely covered with insulation.
- Ensure that protective shell or insulation sleeving on the electrical components are correctly installed to protect operators from electric shock.
- In the case of multiple inputs, disconnect them first; do not operate the device until it is completely powered off.
- Turn off the corresponding output switch of the power supply equipment while maintaining electrical terminal equipment and power distribution equipment connected to the power supply equipment.
- Must put up “Do Not Switch On” signs and warning signs, to prevent power connection. Do not switch on before the fault is repaired.
- Must follow the steps below if the device needs a power cut in the process of fault diagnosis and troubleshooting: power cut > electricity testing > connecting grounding cable > putting up warning signs and installing guardrails.
- Periodically check whether the screws are tightened fully.
- Only professionals can change the damaged cables.
- Do not alter, damage or obscure the logos and labels attached to the devices.
- Do not clean the internal and external parts of the device with solvents, like water, alcohol or oil.

NOTICE!

Grounding requirement:

- The equipment grounding impedance shall meet the requirements of the local electrical code.
- The equipment shall be permanently connected to a grounding wire within the building's electrical system. Check that the equipment is reliably grounded.
- Do not operate the equipment before connecting it to the equipment grounding connector.
- Do not damage the equipment grounding connector.
- Make sure that the grounding pin in the 3 pin plug is connected to a grounding wire within the building's electrical system in the case of the 3 pin plug.
- In the case of high-current equipment, it shall be ensured that the protective grounding terminal of the device shell has been grounded.

NOTICE!

Wiring requirement:

- Must abide by the local laws, regulations and standards to select, install, and route cables.
- Do not circle or twist cables. Change the power cable if the cable length is insufficient instead of joining it.
- Make sure that cables are secured and well-insulated, and meet specifications.
- Cable troughs or holes must be smooth, burr-free working surface to prevent cable damage.
- Suggest to use cable ties to bind cables to ensure that the cables inside the cabinet are tidied, and to prevent cable jacket damage. Do not circle or twist cables.
- Use fireproofing mud immediately to seal the cable holes if you need to leave for a while after finishing wiring or in the process of wiring, to prevent water vapor and small animals.
- If the external conditions (routing method, temperature, etc.) change, the cable type must be verified according to IEC-60364-5-52 or local laws, regulations and standards. For instance, verify whether the cable ampacity meets the requirements.
- The cable insulation layer may be aging, and even damaged in a high temperature environment. Therefore, at least 30 mm of distance shall be kept between the cables and heater or periphery of heat sources.
- Do as follows to prevent cables from brittle cracking due to shocking or shaking in the low temperature environment, and ensure operation safety:
  a. Handle gently when installing cables in a low temperature environment above 0°C.
  b. Must move the cables indoors and leave them for more than 24 hours before installing them, if the previous storage temperature is below 0°C.
- Do not throw cables to prevent damage and deteriorate performance, such as current capacity, temperature, etc.

NOTICE!

The static electricity generated by human beings can damage the static-sensitive components on the board, like large scale integrated circuit. Therefore, please follow the steps below to prevent static electricity:

- Operators must wear anti-static clothing, and anti-static gloves or wrist straps before contacting the boards, modules with exposed circuit boards, or application specific integrated circuits (ASIC). If the anti-static wrist strap is used, hook up the metal clip that's on one end to a grounded and unpainted metal surface.
- Hold the circuit board or the modules with exposed circuit board by its edges without components. Do not contact the components.
- Use anti-static materials to pack the removed boards or modules before storage or transportation.

2 Product Overview

2.1 Product Introduction

The product AELIO-B100-AU is a commercial and industrial battery cabinet designed as part of the SolaX AELIO series. It provides high-capacity, safe, and scalable energy storage for various applications.

The AELIO-B100-AU integrates lithium-ion battery modules, a high-voltage control and protection system, battery management system (BMS), fire suppression unit, and thermal management system within a single cabinet. When paired with the X3-AELIO hybrid inverter, the AELIO-B100-AU forms the complete AELIO energy storage system.

2.1.1 Features

Cabinet Features

To maintain higher stability of battery cells, the cabinet integrates a smart air cooling system, a quadruple fire safety system, and an AC/DC lightning protection system II, with features of high-performance LFP battery cells, small foot space, high-energy density of a single cabinet, and capacity that can be expanded to the MWh level. Besides, the device also supports the following functions:

- Wireless meter;
- Predictive AI energy management system, and smart control strategy based on photovoltaic and load conditions;
- Virtual Power Plants (VPPs) and microgrid;
- 24/7 remote maintenance and setting.

2.2 Cabinet Overview

2.2.1 Appearance and Dimension

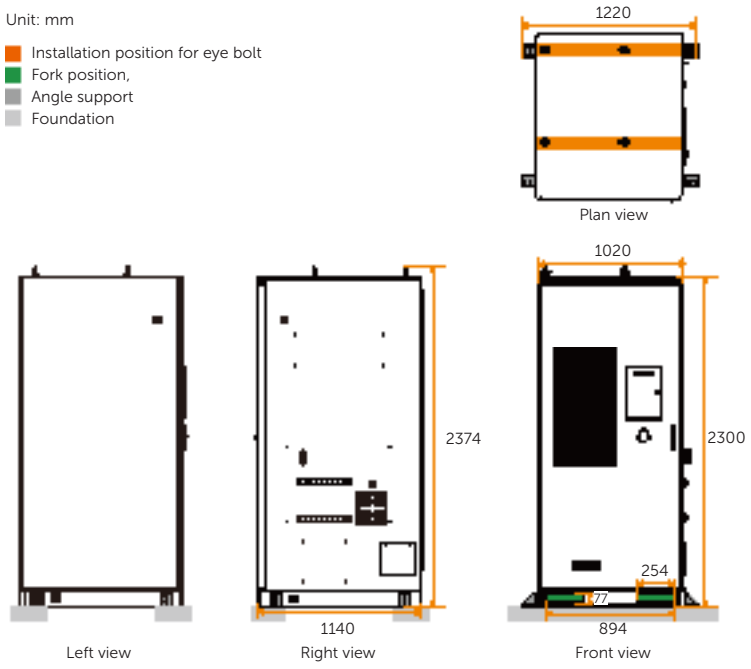


Figure 2-1 Appearance and dimension (without inverter)

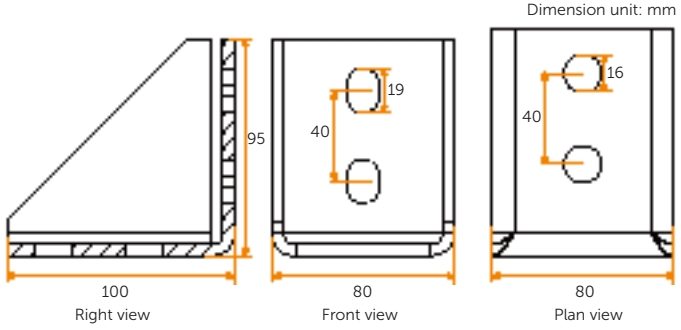


Figure 2-2 Dimension of angle support

2.2.2 Parts Description

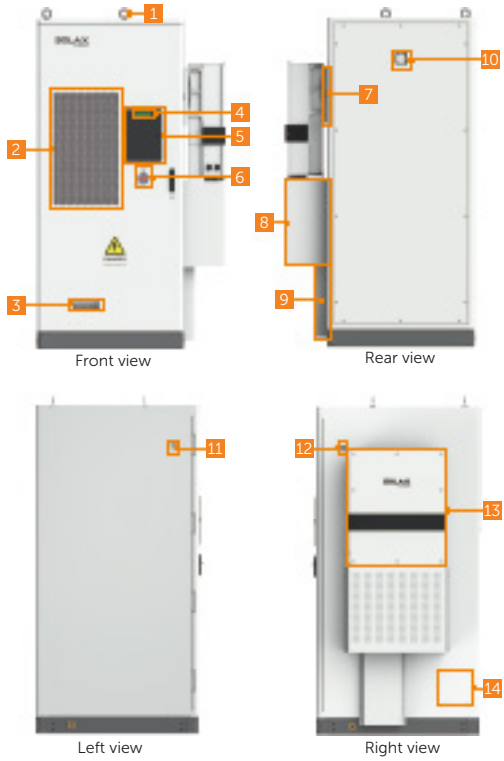


Figure 2-3 Parts description (in the closed state)

Table 2-1 Parts description

No.	Item	Description
1	Eye bolt	Cabinet hoisting position.
2	Air conditioner	To maintain the battery packs at the cabinet in a constant temperature.
3	Exhaust system	Air intake.
4	Indicator	To display status information of all processess running on the system.
5	Display screen	To display information of the whole system.
6	Emergency stop button	To shut down the system in emergency circumstances.
7	Wall bracket	To support the inverter.

No.	Item	Description
8	Large cable cover	To protect cables.
9	Small cable cover	To protect cables.
10	Pressure relief valve	To release excess pressure from the cabinet.
11	A reserved antenna port	To connect wireless meter.
12	Antenna	A 4G antenna, to connect EMS.
13	Inverter	SolaX's X3-Aelio inverter which is not delivered with the cabinet.
14	Fire hose nozzle	To connect the water supply sources.

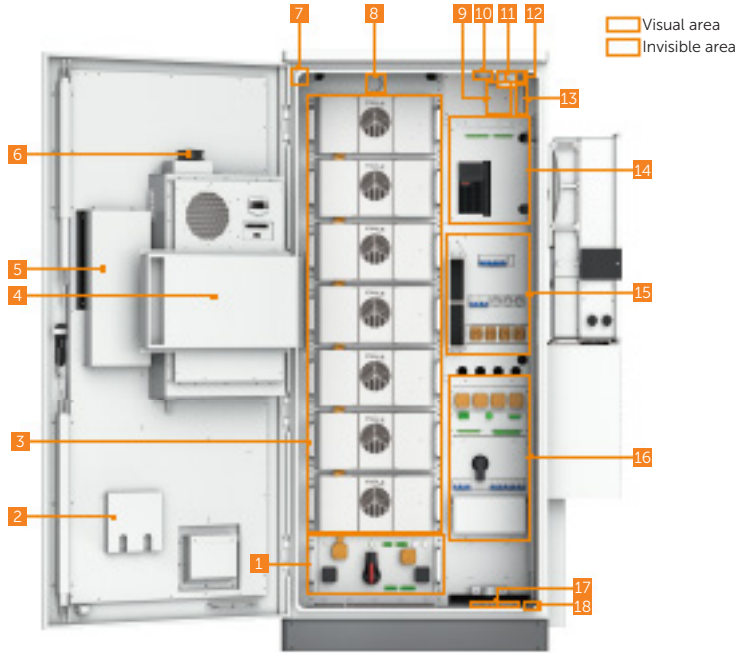


Figure 2-4 Parts description (in the opened state)

No.	Item	Description
1	High-voltage box	To collect current and voltage information on battery tower, ad control the charge and discharge of battery pack.
2	File pocket	To put documents.
3	Battery pack	/

No.	Item	Description
4	Wind baffle	To provide a channel of air to flow.
5	Display screen cover	To protect display screen.
6	Fan	To improve air circulation and dissipate heat when the temperature rises.
7	Temperature and humidity sensor	To measure temperature and humidity.
8	Automatic fire sprinkler	To control or suppress the spread of fire
9	Audible and visible alarm	To alter you when the abnormal conditions occur, such as temperature, smoke.
10	Smoke detector	To detect smoke.
11	Door sensor	To alert you when the door is open.
12	Temperature sensor	To detect temperature.
13	Toxic gases detector	To detect toxic gases.
14	Control area	Including IO module, EMS, UPS, etc.
15	EPS area	/
16	Distribution box	To distribute AC power for the energy storage system.
17	Grounding bar	To provide a physical connection to the earth, and to be used to dissipate current.
18	Water sensor	To detect water level based on the principle of potential difference between the two electrodes.

NOTICE!

- The mark "*" indicates that parts in the front view (Figure 2-3) cannot be fully seen.

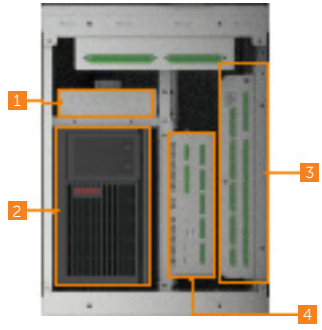


Figure 2-5 Parts description (control area)

Table 2-2 Parts description

No.	Item	Description
1	Switch	/
2	UPS	To provide backup power to ensure that the device is in a normal operating condition.
3	IO module	To collect signal and control other modules.
4	EMS	A energy management system.

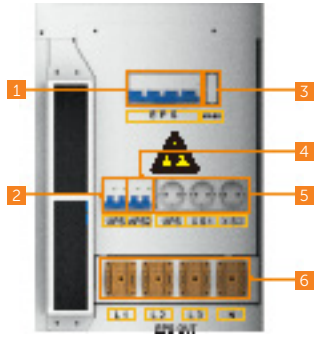


Figure 2-6 Parts description (EPS area)

Table 2-3 Parts description

No.	Item	Description
1	EPS breaker	EPS protection breaker.
2	Breaker (for maintenance)	A protective breaker.
3	WI-BR	To connect WiFi (optional). For the installation procedure and wiring, refer to the WiFi User Manual.
4	UPS breaker	To protect UPS breaker.
5	Socket	Power socket.
6	EPS out	Connect EPS to loads.

2.3 High-voltage Box

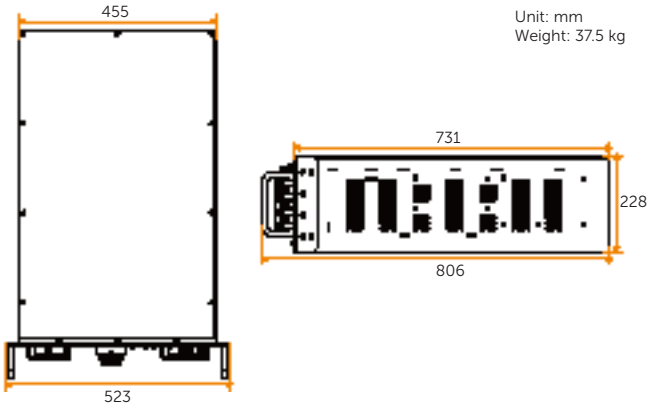


Figure 2-7 Dimension and weight

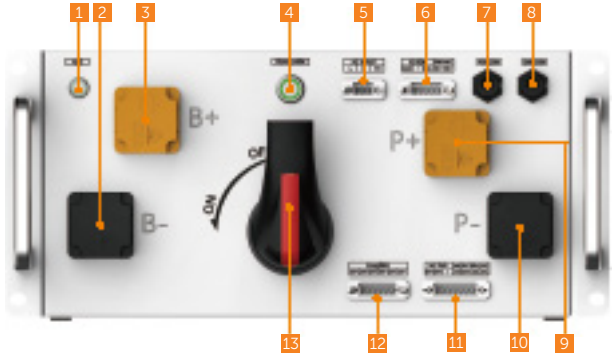


Figure 2-8 Front panel

Table 2-4 Description of front panel

No.	Item	Description
1	ADD button	To assign address.
2	Negative output port	To connect battery pack's negative terminal.
3	Positive output port	To connect battery pack's positive terminal.
4	Power button / status light	To start up or shut down system.
5	AC220V input terminal block	To connect distribution box's CZ1.

No.	Item	Description
6	Communication terminal block (for IO module)	To connect the IO module's CAN port and dry contact of the inverter.
7	Communication port (for inverter)	To connect inverter's communication port.
8	Communication port (for EMS)	To connect EMS's communication port.
9	P+ port	To connect inverter's positive terminal.
10	P- port	To connect inverter's negative terminal.
11	Terminal block (for battery pack)	To connect battery pack's communication cable and power cable.
12	Terminal block (for fan)	To connect fan's power cable.
13	Disconnector	To disconnect the device on the DC side.

2.4 Battery Pack

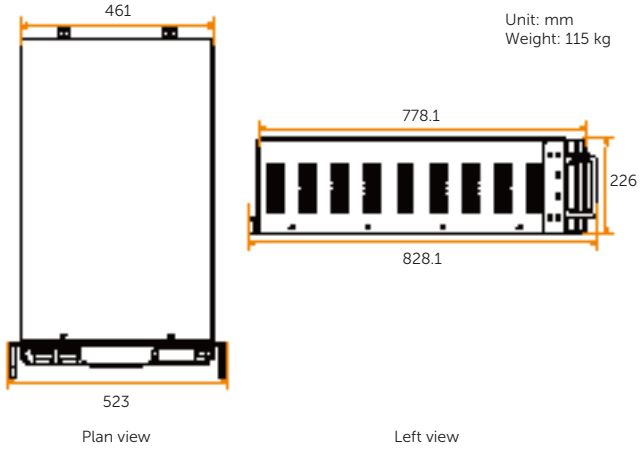


Figure 2-9 Dimension and weight

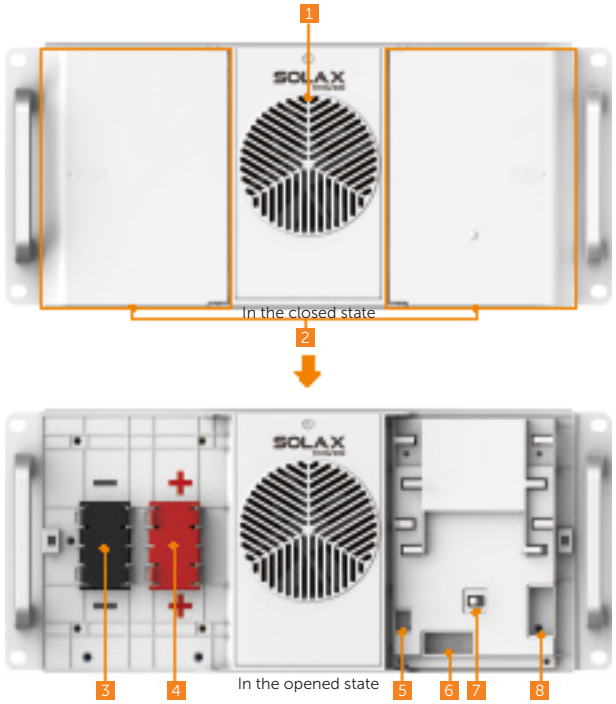


Figure 2-10 Front panel

Table 2-5 Description of front panel

No.	Item	Description
1	Fan	To keep components cool in the cabinet.
2	Left/right door	Please open the door while wiring.
3	Negative terminal	To connect negative terminal of high-voltage box or battery pack.
4	Positive terminal	To connect positive terminal of high-voltage box or battery pack.
5	Connection port (for fan)	To connect the fan.
6	Power connector (for fan)	To provide power to the fan.
7	BMS's status light	To display the running status of BMS.
8	Communication port	To connect communication cable.

2.5 Distribution Box

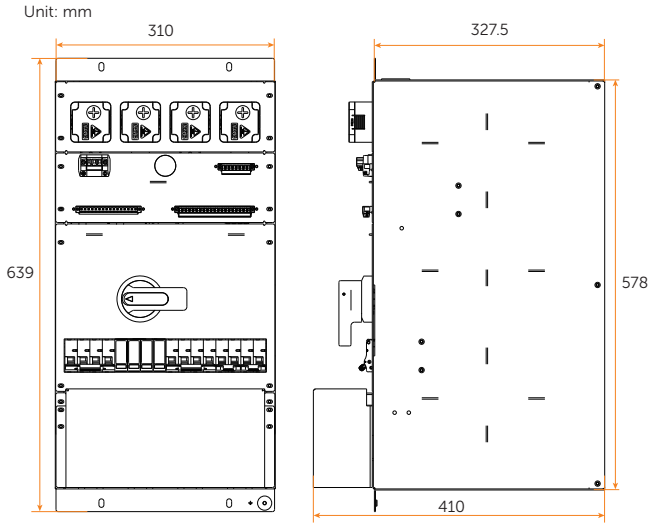


Figure 2-11 Dimension

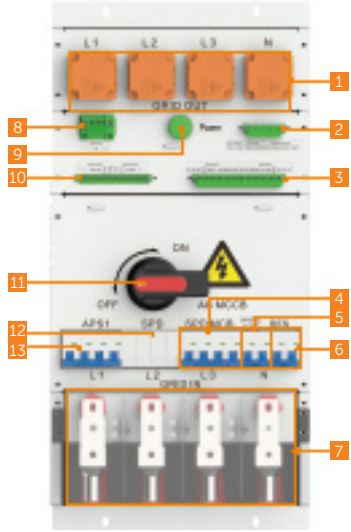


Figure 2-12 Front panel

Table 2-6 Description of front panel

No.	Item	Description
1	Grid out wire connector	For AC side
2	Circuit breaker's electrical control signal	To remotely turn off AC power for emergency.
3	24V power supply port	To provide power supply for the devices inside the cabinet.
4	SPD maintenance breaker	/
5	Air conditioner/liquid cooling unit on/off breaker	/
6	A reserved breaker	/
7	GRID IN wire connector	Port for connecting to power grid.
8	Power supply port for air conditioner	To connect to the air conditioner.
9	LED light	To display the operation state.
10	220 V power supply Port for controlling emergency stop switch	Provides 220V power for other devices in the cabinet.
11	Breaker handle	A switch for AC side.
12	Current terminal	To connect to the grid.
13	Auxiliary power breaker of High-voltage box	/

2.6 IO Module

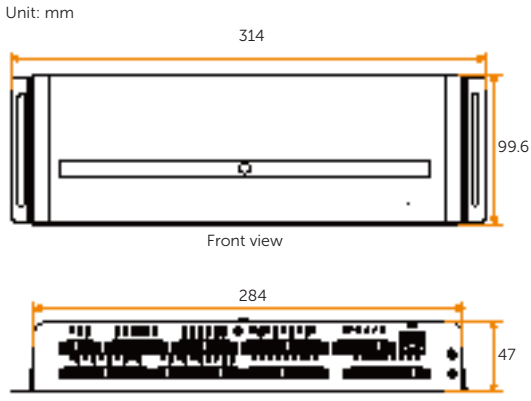


Figure 2-13 Dimension

Electric panel

Figure 2-14 Electric panel

2.7 Other Parts

2.7.1 Air Conditioner

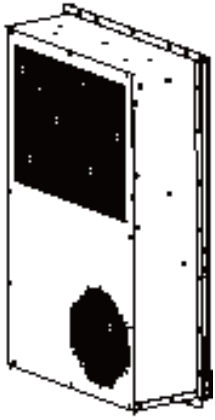


Figure 2-15 Appearance of air conditioner

2.7.2 Automatic Fire Sprinkler

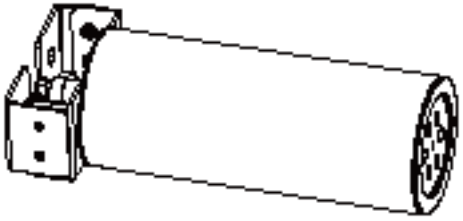


Figure 2-16 Appearance of automatic fire sprinkler

2.7.3 Temperature Sensor

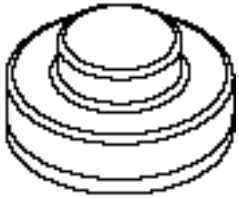


Figure 2-17 Appearance of temperature sensor

2.7.4 Smoke Detector

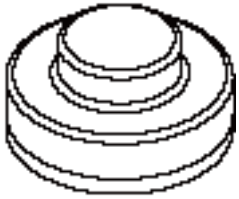


Figure 2-18 Appearance of smoke detector

2.7.5 Toxic Gases Detector

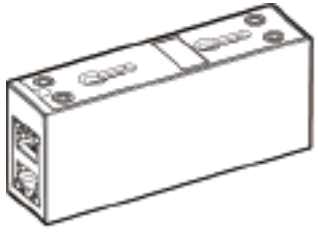


Figure 2-19 Appearance of toxic gas detector

2.7.6 Temperature and Humidity Sensor

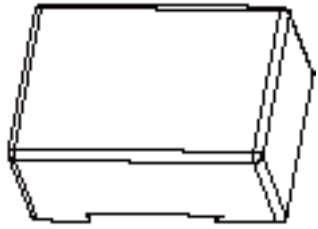


Figure 2-20 Appearance of temperature and humidity sensor

2.7.7 Audible and Visible Alarm

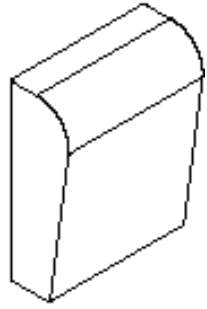


Figure 2-21 Appearance of audible and visible alarm

2.7.8 Water Sensor

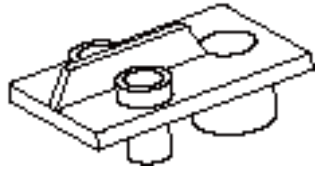


Figure 2-22 Appearance of water sensor

2.7.9 Door sensor

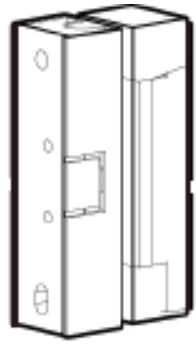


Figure 2-23 Appearance of door sensor

2.8 Operating Principle

2.8.1 Electrical Block Diagram

The label on Electrical Block Diagram should be pasted on the back door. For the position, see following figure.

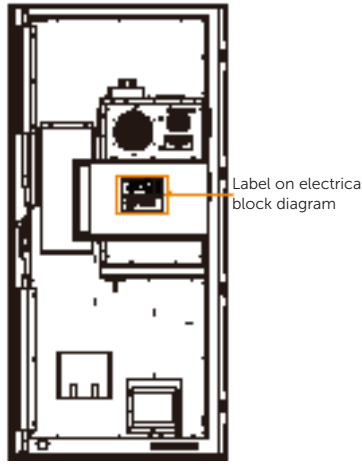


Figure 2-24 Label position

For the detailed information about the label, see Figure 2-24.

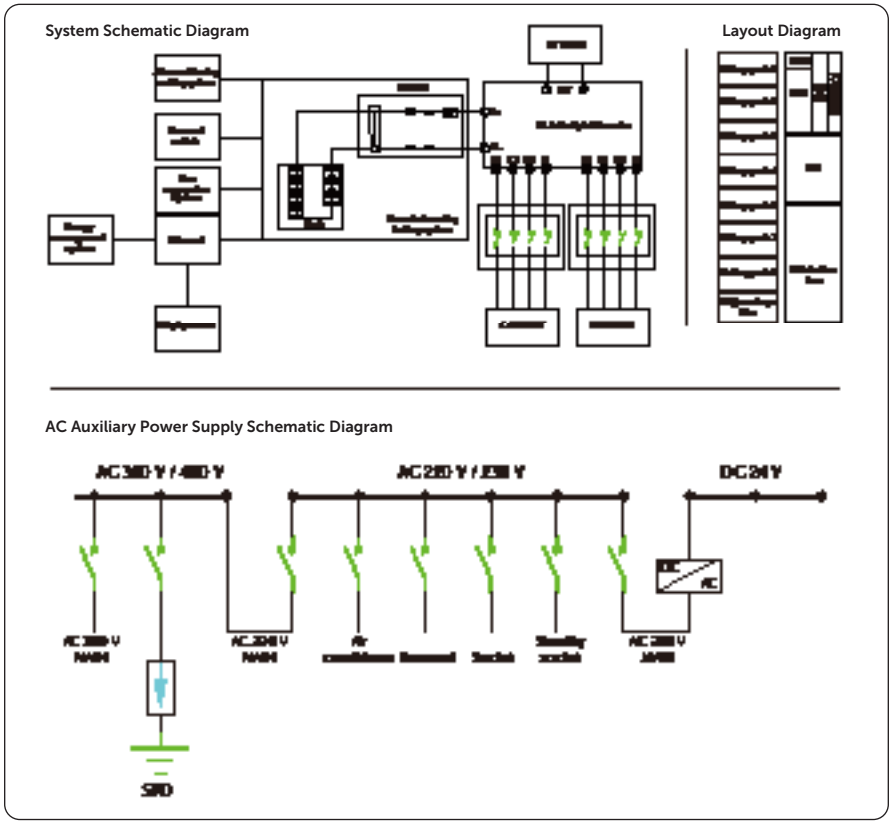


Figure 2-25 Electrical Block Diagram

2.8.2 Indicator

Cabinet's LED Light

The cabinet is equipped with a tri-colour indicator (green/yellow/red) to show its operating status.

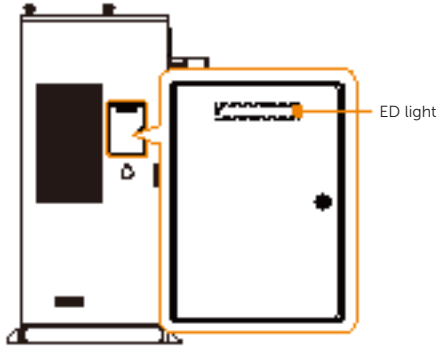


Figure 2-26 LED light

Table 2-7 Description

Status	Description
Solid yellow light	In standby
Solid green light	In operation
Solid red light	System failure

High-voltage Box's LED Light

The box is equipped with a bi-colour indicator (green/red) to show its operating status.

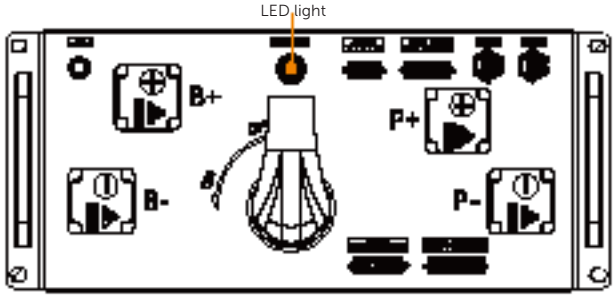


Figure 2-27 LED light

Table 2-8 Description

Status	Description
Flashing green light	In operation
Solid green light	Rely in off state
Solid red light	System failure

Battery Pack's LED light

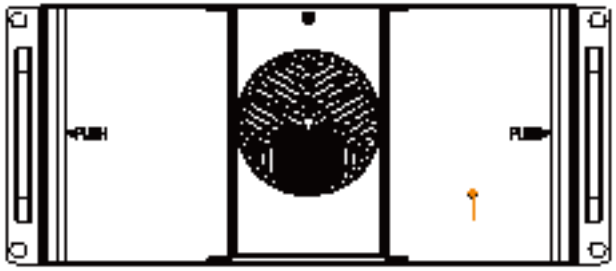


Figure 2-28 LED light

Table 2-9 Description

Status	Description
Flashing green light	In operation

2.9 Symbols

Table 2-10 Symbol description

Symbol	Description
	CE mark of conformity.
	TUV certification.
	RCM mark of conformity
	Protective grounding point.
	Grounding point.
	Caution, hot surface. The enclosure temperature may be high while running. Therefore, do not contact to avoid scalding.
	Danger, electric shock. Do not touch the device after it is powered on. Otherwise, an electric shock may occur.
	Danger. Due to possible risks, do not touch the device after it is powered on.
	Observe enclosed documentation.
	The device cannot be disposed together with the household waste.
	Do not operate the inverter until it is isolated from mains and on-site PV generation suppliers.
	Danger of high voltage. Do not touch live parts for 15 minutes after disconnection from the power sources.

Symbol	Description
	The battery system must be disposed of at a proper facility for environmentally-safe recycling.
	The battery module may explode. The rechargeable battery can become hot during operation. Avoid touch during operation.
	Keep the device away from children.
	Keep the device from open flames or ignition sources.

3 Transportation and Storage

3.1 Transportation Requirements

DANGER!

- Do not disassemble the battery violently. Otherwise, it may lead to battery pack short circuit, damage to the device (leakage, rupture), fire, or explosion.

WARNING!

- Hold the handles on the device or put your hands underneath the device to move or lift, and do not hold the handles on the parts installed in it.
- Strictly follow the document to carry or move the battery pack. Ensure that the device is correctly placed. Do not place a battery upside down or vertically, lay it on one side, or tilt it. And keep away from rain and water.

General requirements are shown as follows:

- Please pay attention to the signs on the package.
- To prevent injury from oversize loads, assess the device you're about to lift before you start lifting.

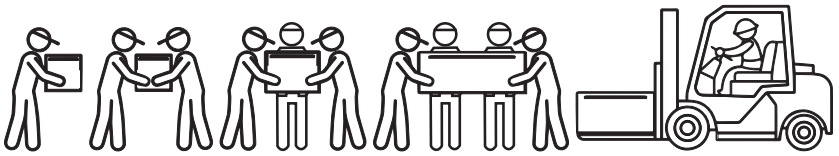


Figure 3-1 Lifting requirement

- If more than 2 people lift a device, reasonably arrange to have a balanced weight distribution
- Wear personal protective equipment, such as, safety gloves, safety boots, etc., to prevent needless injuries when lifting devices with bare hands.
- Know the right body posture to prevent personal injuries when lifting devices, for instance, bend at your knees, not at your waist or back, and do not twist your back.
- Hold the handles on the device or put your hands underneath the device to move or lift, and do not hold the handles on the parts installed in it.

- To prevent injuries, do not quickly lift the heavy device above the waist.
- To prevent scratches and dents, or damage to components and cables, avoid impact and falling when moving.
- Be aware of workbenches, slopes, steps, and other places where it is easy to slip when moving devices. Ensure that the passageways are smooth, clean, and away from obstacles.
- To prevent tipover, the forklift's forks must be placed under the load. Center the weight of the load between the forks, and adjust the forks to distribute the weight evenly. Firmly attach the loads to the forks before lifting, and arrange for people to watch for when lifting.
- Sea and road (in good condition) transports are an idea for the device instead of rail and air transports. Transport staff should do their best to avoid bumpiness and inclination as much as possible.
- The tilt angle of the cabinet must meet the requirement as shown in Figure 3-2. The angle before unpacking: a ≤ 15°; the angle after unpacking: a ≤ 15°.

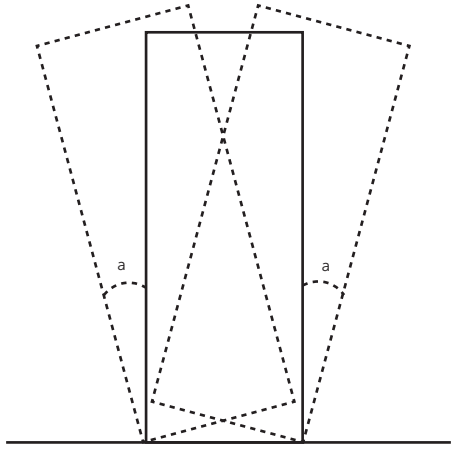


Figure 3-2 Tilt angle

- The battery pack has been certified according to UN38.3: *Section 38.3 of the Sixth Revised Edition of the Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria* and SN/T 0370.2-2009 *Rules for the Inspection of Packaging for Export Dangerous--Part 2: Performance Test*. Therefore, the battery pack is classified in Class 9.
- Relevant qualifications for transport of dangerous goods must be obtained by the forwarding agent engaged in such businesses. Do not transport it in an open trailer.
- Strictly abide by the international regulations on the transport of dangerous goods, and meet the supervision requirements stipulated by the transport

authority of the departure country, transit country, and country of destination, respectively.

- Before transportation, check that the battery package is intact and that there is no abnormal odor, leakage, smoke, or sign of burning. Otherwise, the batteries cannot be transported.
- The packing case must be secured for transportation. Handle the case with care during loading, unloading, and transportation, and take measures to prevent moisture damage to the device during transportation.
- Handle gently when moving the battery pack to prevent bumping and damage to individuals.
- Unless otherwise specified, dangerous goods shall not be mixed with goods containing food, medicine, animal feed, or their additives in the same vehicle or container.
- Unless otherwise specified, do not transport dangerous goods together with food, medicine, animal feeds, or other additives on the same means of transport (e.g., vehicle, container).
- Before moving a faulty battery pack (with scorch, leakage, bulge, or water intrusion), insulate its positive and negative terminals, pack it, and place it in an insulated explosion-proof box as soon as possible. Record information such as the site name, address, time, and fault symptom on the box.
- Keep away from flammable material storage areas, residential areas, and other population centers (e.g., public transport, elevators) when transporting the faulty battery pack.

3.2 Storage Requirements

3.2.1 Cabinet Storage

- Do not remove the original packaging material and check the outer packaging material regularly.
- The required storage temperature: -30°C ~ 55°C.
- The relative humidity should be between 5% and 95%.
- Store the device according to the caution signs on the packaging to prevent equipment damage.

3.2.2 Battery Pack Storage

DANGER!

- Ensure that batteries are stored in a dry, clean, and ventilated indoor environment that is free from sources of strong infrared or other radiations, organic solvents, corrosive gases, and conductive metal dust. Do not expose batteries to direct sunlight or rain and keep them far away from sources of heat and ignition.
- If a battery is faulty (with scorch, leakage, bulge, or water intrusion), move it to a dangerous goods warehouse for separate storage. And it must be scrapped as soon as possible.
- Store the device according to the caution signs on the packaging to prevent equipment damage. Do not place a battery upside down or vertically, lay it on one side, or tilt it.
- Store the battery packs in a separate place. Do not store them together with other devices. Do not stack too high. The storage site should be equipped with qualified fire fighting facilities, such as fire sand and fire extinguishers.

NOTICE!

- If a battery pack is stored for a long time, please periodically recharge it to protect from damage. For details, please refer to "Chapter 9.3.2 Maintenance of Battery Pack".

- The required storage temperature, see the following table 3-1.

Table 3-1 Storage temperature and time

Storage Temperature	Storage Time
50°C to 60°C	3 months
30°C to 50°C	6 months
-20°C to 30°C	12 months

- The relative humidity should be between 5% and 95%.
- If the rechargeable battery has been stored for more than 1 year, it must be checked and tested by professionals before use.

4 Preparation before Installation

4.1 Installation Site Selection

Given the importance of the installation site to the security, service life and performance of the equipment, the site should be selected according to NFPA 855 *Standard for the Installation of Stationary Energy Storage Systems* and local regulations, and based on the principles of wiring, operation and maintenance for convenience.

NOTICE!

- During the installation, commissioning, and operation, fire extinguishers shall be equipped nearby the device according to the fire requirements. The number of fire extinguishers shall be over 2.
- The minimum distance between air exhaust of the equipment and buildings or other equipment's heating ports, ventilation opening, air conditioner vent, windows, doors, or hot sources shall be 4.6 m.
- A port for water fire extinguishing system shall be reserved.
- Measures, for instance, setting up water baffles or drainage facilities, or raising the ground, shall be taken in an unavoidable situation, like an installation site where rainwater may accumulate.

The installation site shall meet the following requirements:

- The device is intended only for outdoor use.
- The surface level of the site must be at least 300 mm above the highest water level in the area. Do not install the equipment in a low-lying area.
- Ensure that no plants have been grown within 3 meters of the site and its surroundings, to avoid wildfires due to the high temperature in the summer which results in equipment on fire.
- Given safety reasons, the distance between the equipment and residential housing shall be over 12, as well as at least a distance of 30.5 meters between the equipment and schools, hospitals, or other population centers. Otherwise, a fire wall must be constructed between the equipment and buildings.
- The safe distance between the equipment and industrial buildings shall meet the local fire safety codes and standards.

Table 4-1 Safe distance

	Safe Distance
The safe distance between the equipment and Class A industrial buildings	≥ 12 m

The safe distance between the equipment and Class B industrial buildings	≥ 10 m
The safe distance between the equipment and Class C and D industrial buildings which meet the requirements of Class I and II fire resistance rating	≥ 10 m
The safe distance between the equipment and industrial buildings which meet the requirements of Class III fire resistance rating	≥ 12 m
If the external wall of the adjacent building with fire-resistant materials, and without windows, doors, and extended eaves, the safe distance shall	(3- 25%*3) m

- If the above-mentioned safe distance cannot be met, a fire wall between the equipment room, storage room, or installation area and Class C, D and E buildings shall have a 3-hour fire-resistance rating. The height and thickness of the fire wall shall be 1 meter over the equipment. In addition, the factors, such as transportation, installation, and maintenance, should be considered before construction.
- Keep away from flammable and combustible.
- Convenient transportation and reliable fire suppression systems are required to be equipped at the installation site.
- Please reserve enough space for capacity expansion.
- The site shall be well ventilated.
- Since the salt-damaged and polluted areas may corrode the equipment, do not install this equipment in those areas. Please strictly follow the requirements below when installing the equipment.
    - » If the installation site of the equipment is selected at the coast, the distance from the equipment to the shore should be over 2000 m. In case the distance from the equipment to the shore is between 500 m and 2000 m, it is not recommended to install (if the user wants to install here, do not install until gets to an actual approval from the distributor or our company's engineer). Additionally, do not install the equipment if the distance from it to the shore is less than 500 m.
    - » The distance from the equipment to the smelters, coal mines, thermal power plants, and other heavy pollution sources should be between 1500 m and 3000 m.
    - » The distance from the equipment to the chemical plants, rubber plants, electroplate factory, and other moderately polluted sources should be between 1000 m and 2000 m.
    - » The distance from the equipment to the light pollution sources, such as food processing plants, leather processing plants, heating boiler factory, slaughter houses, dumping sites, and sewage treatment stations, should be between 500 m and 1000 m.

Table 4-2 Installation spacing requirements

	Safe Distance
Distance from coastal areas	> 2000 m
Distance from heavy pollution sources, such as smelters, coal mines, thermal power plants	> 1500 m
Distance from moderate pollution sources, such as chemical plants, rubber plants, and electroplate factory	> 1000 m
Distance from light pollution sources, such as food processing plants, leather processing plants, heating boiler factory, slaughter houses, dumping sites, and sewage treatment stations	> 500 m

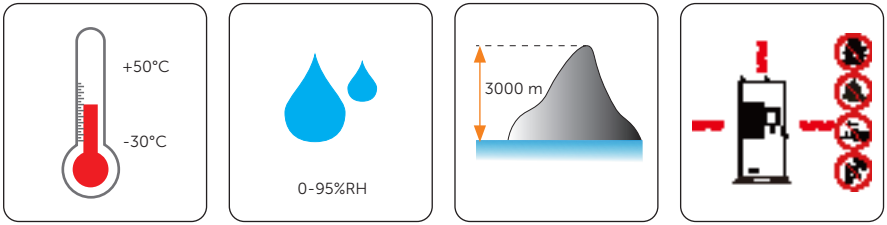
- Keep away from the sand and dust environment.
- Keep away from areas with high vibration, strong noise sources, or strong electromagnetic interference.
- Keep away from places that are easily to generate dust, oil fumes, harmful gases, corrosive gases, etc.
- Keep away from places that store corrosive, flammable and explosive materials.
- Keep away from places where underground facilities have been built.
- Keep away from areas at poor geological conditions (such as rubber soil, weak soil), as well as the waterlogged ground or land subsidence.
- Keep away from places below water reservoirs, water landscapes, and water intake rooms.
- Keep away from seismic zone and earthquake areas of which a seismic fortification intensity is over 9 degrees.
- Keep away from areas where natural disasters (such as debris flow, landslide, quicksand) are likely occur, as well as karst caves.
- Do not install the equipment within the boundaries of mining subsidence (impact) areas.
- Keep away from an area where there is a risk of explosion.
- Keep away from areas that are likely to be flooded if levees or dams broke.
- Keep away from important water source protection areas.
- Keep away from heritage protected areas.
- Keep away from population centers, high-rise buildings, and underground structures.
- Keep away from intersections of urban main roads and heavily travelled roads.

- Please strictly select the installation site in accordance with the following requirements for flood prevention and rainwater control:
  - » The height of the foundation for the large, medium and small electrochemical energy storage systems must be over the highest water level in history.
  - » If the installation site cannot meet the above-mentioned requirements, please find another site, or take measures to prevent flooding and waterlogging based on the actual situation.
  - » Regarding the energy storage power stations affected by wind and wind-waves from rivers, lakes, and seas, the height of the foundation must be 0.5 m above the highest wave height in history.
  - » If a large amount of water flows in or through the foundation, a side ditch or drainage channel is recommended to be built.
- The installation site needs to be equipped with a "Stop" sign:
  - » Solid walls or fences around the energy storage equipment area are recommended to be built. In the case of fences, they have to be lockable, with a height of over 2.2 m. The firewall can be built in place of part or the entire fence based on comprehensive considerations.

4.1.1 Installation Environment Requirements

Installation environment shall meet the following requirements:

- Temperature: -30°C ~ +50°C
- Relative humidity: 0 ~ 95% RH
- Altitude: Below 3000 meters.
- Good ventilation.
- Keep away from flammable, explosive, and corrosive substances, and antennas.



4.1.2 Installation Foundation Requirements

The requirements for foundation are shown as follows:

- The foundation must be made of non-combustible materials, such as solid bricks or concrete. And ensure that the foundation is level, smooth and firm, and has sufficient bearing capacity to withstand the load from the equipment.
- The bearing capacity of the foundation shall be over 3 t. If the above-mentioned requirement cannot be met, re-inspection is required.

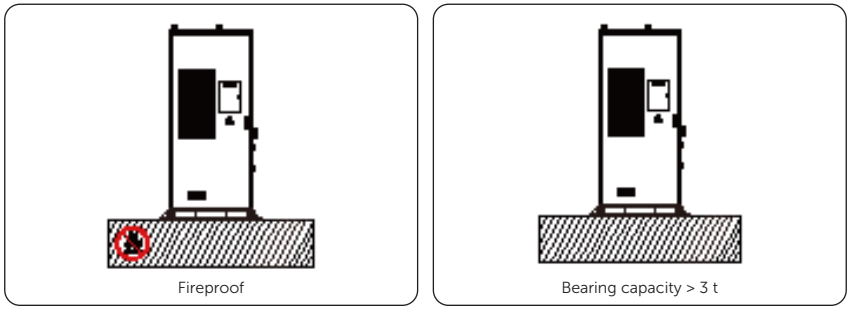


Figure 4-3 Foundation requirement

- The bottom of the foundation pit must be strengthened and filled.
- Do not water or disturb the foundation after starting to dig it. If the foundation is watered or disturbed, continue to dig down and remove the bad soil, and then refill with quality materials.
- The angle of depression between the foundation and cabinet shall be less than 5°, as well as the height of less than 3 mm.
- The foundation is not only higher than the local high-water mark, but also at least 300 mm above the ground.
- Construct drainage facilities based on local geological conditions and municipal drainage standards to ensure that there is no water accumulation at the foundation. The foundation construction should meet the drainage requirements for maximum volume of rainfall in the locality, and the discharged water needs to be treated in accordance with local laws and regulations.
- Dig a trench or reserve a cable entry hole by considering the electrical wiring of the equipment before construction of the foundation.
- Both the reserved holes on the foundation and the cable entry holes on the equipment should be sealed.
- The foundation drawing is only for reference, and cannot be regarded as the final construction drawing. Operators shall recheck the basic parameters according to the environment, geological conditions, seismic requirements, etc. of the installation site.

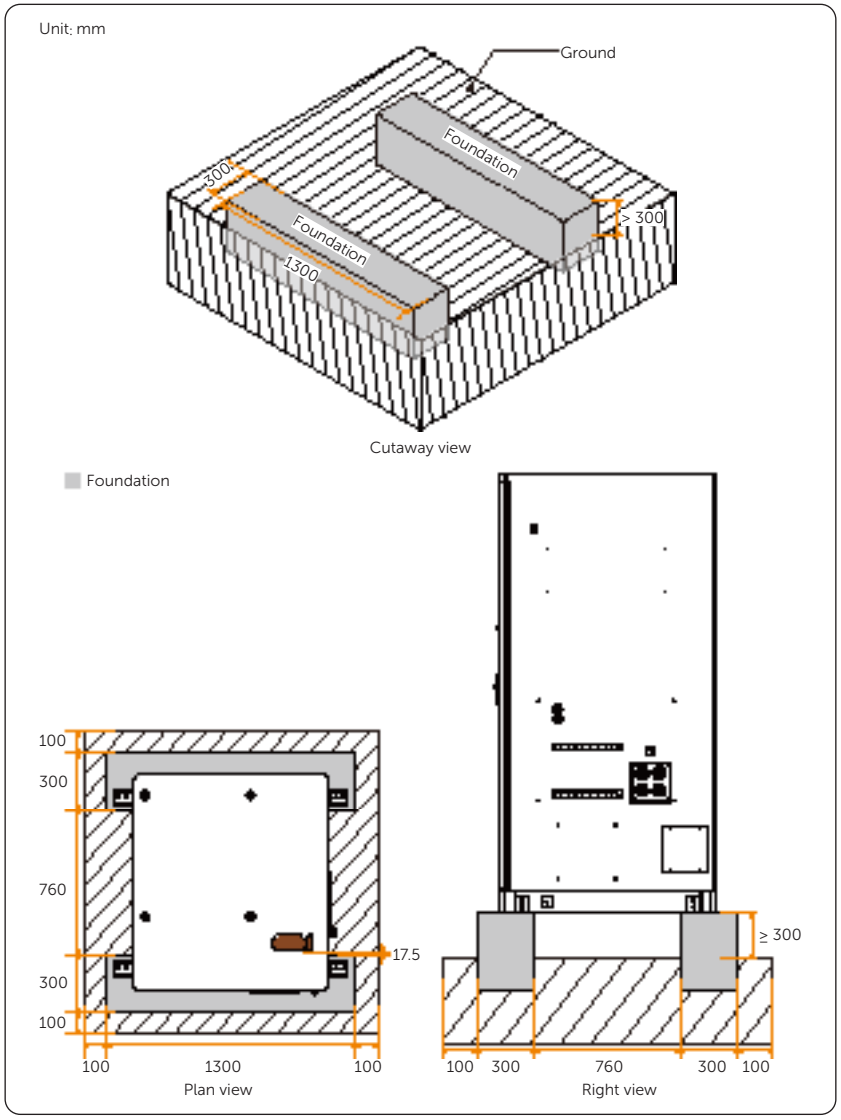


Figure 4-4 Foundation parameter requirements

4.1.3 Forklift Requirements

- Before using the forklift, ensure that it meets the load requirements: load capacity ≥ 3 t;
- The recommended forklift should meet the following requirements: length of fork blade > 1.2 m, width of fork blade between 60 cm and 160 cm, and thickness of fork shank between 25 cm and 70 cm;

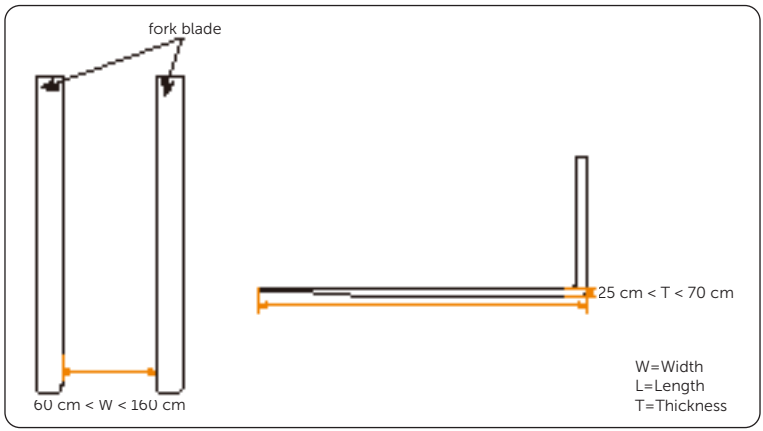


Figure 4-5 Requirements for forklift

- When using the forklift, the lifting height of the forklift must meet the following requirements:
- When the foundation height ≤ 0.3m, the lifting height should be ≥ 2 m;
- When the foundation height > 0.3 m, the lifting height should be increased accordingly.

4.1.4 Hoisting Requirements

- Ensure that the crane and steel wire rope meet the load-bearing requirements.
- To prevent the cabinet from scratching, do not drag it when installing and removing hoisting equipment.

Table 4-3 Precaution

	Precaution
Before hoisting	The crane's lifting capacity shall equal or exceed 3 t, as well as the working radius of equalling or exceeding 2 m. If the above requirements cannot be met, it is required to be evaluated by professional personnel.
	A trained and qualified lifting personnel is required.
	Check to ensure that the hoisting tools are in good condition and complete.
	Ensure that the hoisting tools are fixed securely to the fixture or wall that meets the load-bearing requirements.
	Do not operate a hoist if severe weather or wind is apparent when conducting hoisting outdoors.
	Ensure that the crane and steel wire ropes meet the requirements.
	Ensure that all the doors of the equipment are closed and locked.
	Ensure that the knots among steel wire ropes are securely fastened.
	To ensure that the lifting can proceed successfully, it is suggested to conduct it according to the order from left to right or right to left.
During hoisting	Keep unauthorized people from entering the area and standing under crane boom.
	Ensure that the crane is parked in place and avoid long-distance lifting.
	Keep stability, and dutch angle of the cabinet should be less than or equal 5°.
	Ensure that the angle between the two steel wire ropes is less than or equal 90°.
	To avoid impacting the internal components of the equipment, the lifting equipment should be lifted and lowered gently, as well as the cabinet.
	Do not dismantle the steel wire ropes until the cabinet lands smoothly, when it contacts the foundation.
	Do not drag steel wire ropes and lifting tools, and crash the equipment.
	Do not dismantle the steel wire ropes to hoist the next cabinet until the cabinet lands smoothly.

4.1.5 Clearance Requirement

This equipment has multiple installation methods:

- Single cabinet (see Figure 4-6)
- Multiple cabinets (see Figure 4-7 and Figure 4-8)

In order to ensure the heat dissipation of the inverter and facilitate disassembly, the minimum space to be reserved around the cabinet must meet the following standards.

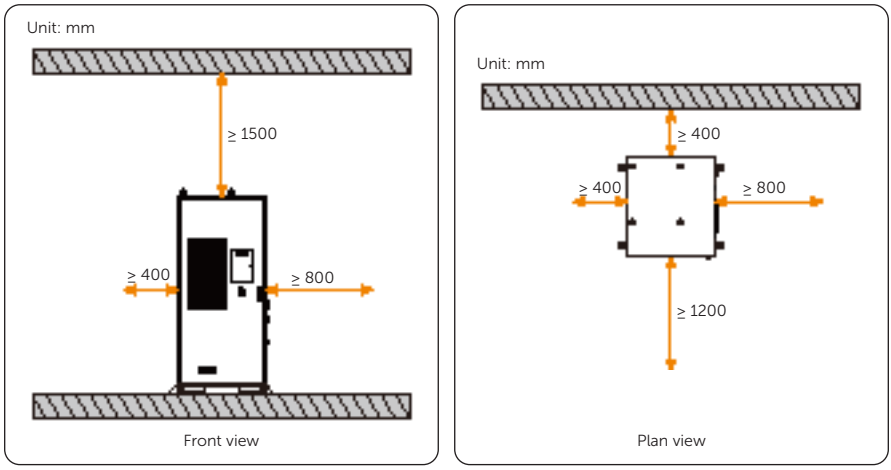


Figure 4-6 Single cabinet

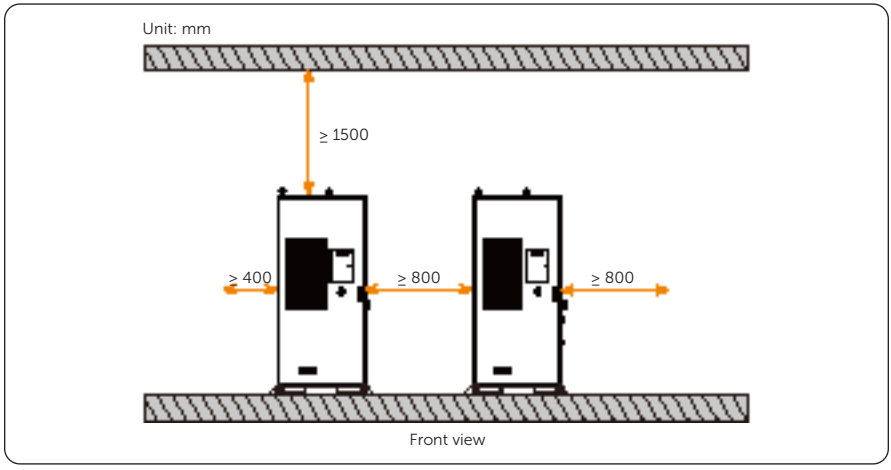


Figure 4-7 two and more cabinets

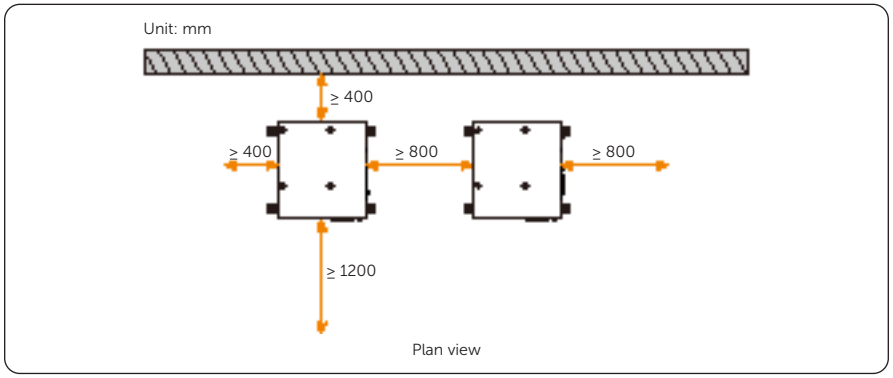
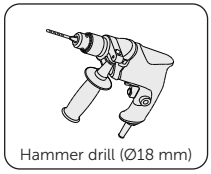
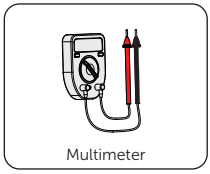


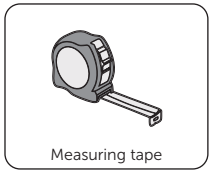
Figure 4-8 two and more cabinets

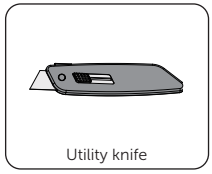
4.2 Tools Requirement

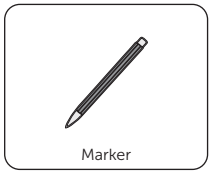
The tools used include but are not limited to the recommended tools below. Please use other auxiliary tools according to the site requirements. Please note that the tools used must comply with local regulations.

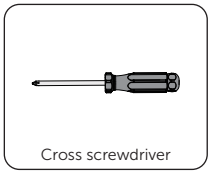

Hammer drill (Ø18 mm)

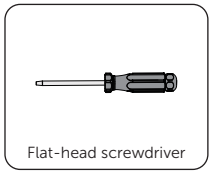

Multimeter

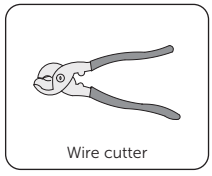

Measuring tape

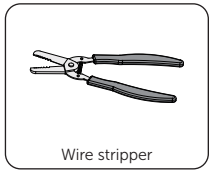

Utility knife

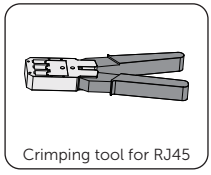

Marker

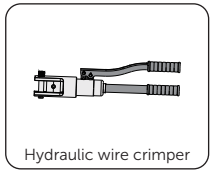

Cross screwdriver

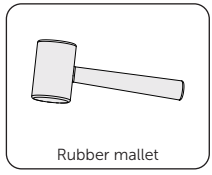

Flat-head screwdriver

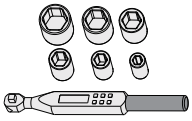

Wire cutter


Wire stripper

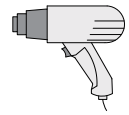

Crimping tool for RJ45

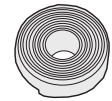

Hydraulic wire crimper

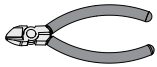

Rubber mallet


Torque wrench (M4~M12)


Spirit level


Heat gun


Heat shrink tubing
(Ø30~60 mm)

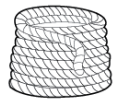

Diagonal pliers


Vacuum cleaner


Cable tie

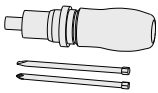

Insulated ladder


Crane


Steel wire rope
(Length > 850 mm*4)

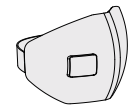

Electric forklift


Steel pipe
(Ø25~30 mm)


Torque screwdriver
(Flat-head: M3)
(Phillips head: M5)

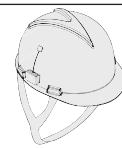

Safety boots


Safety goggles


Anti-dust mask


Insulating gloves


Safety vest


Safety helmet


Safety belt

4.3 Additionally Required Materials

The following is a recommended list of equipment required for installation of the system.

Table 4-4 Additionally required wires

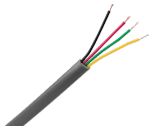
No.	Required Material	Type	Conductor Cross-section
1	Grid wire 	Five-core copper cable * The conductor cross-section of copper cables connecting to the distribution box (a total of 4 copper cables) is 35 mm^2, as well as 16 mm^2 for a copper cable that is connected to the grounding.	35 mm^2 * 4 + 16 mm^2 * 1
2	EPS wire 	Four-core copper cable * The conductor cross-section of copper cables connecting to the cabinet (a total of 4 copper cables) is 25 mm^2.	25 mm^2 * 4
3	Additional PE wire 	Conventional yellow and green wire	16 ~25 mm^2

Table 4-5 Additionally required materials

No.	Required Material	Type
1	Ring terminal 	TLK16-8 ring terminal

5 Unpacking and Inspection

5.1 Unpacking

- The equipment undergoes 100% testing and inspection before shipping from the manufacturing facility. However, transport damage may still occur. Before unpacking the rechargeable battery, please verify that the model and outer packing materials for damage, such as holes and cracks.
- Due to the cabinet height exceeding 2m, please take necessary precautions for working at heights when removing the outer packaging. The unpacking procedure can be referred to the following Figure.

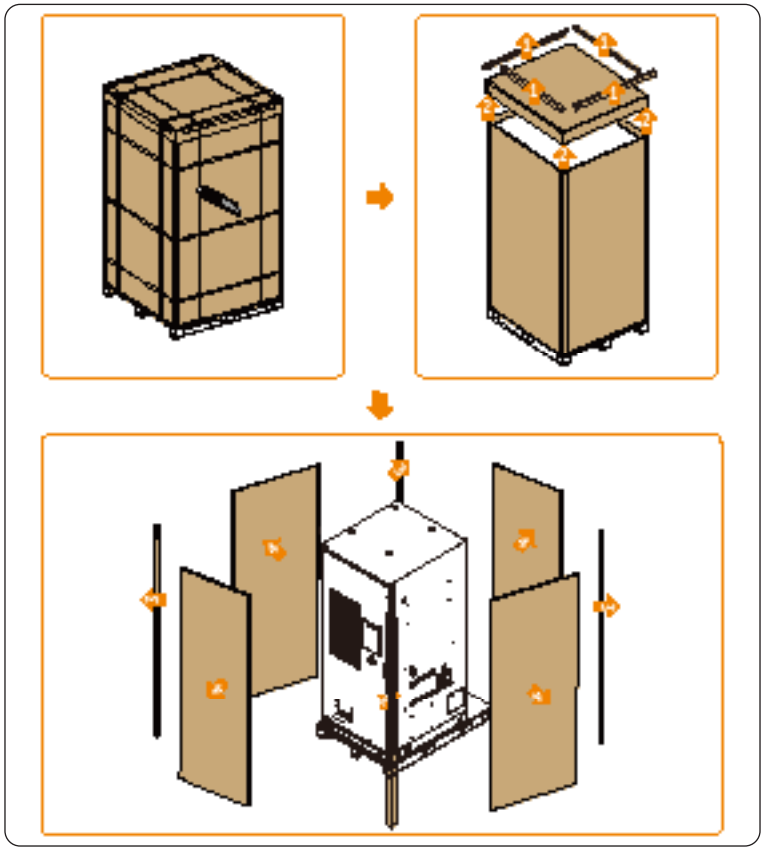


Figure 5-9 Unpacking

- When unpacking, please handle all packaging materials properly for future storage or relocation of this equipment.
- After unpacking, please check if the equipment is intact and if all accessories are complete. If there is any damage or missing accessories, please contact your dealer immediately for assistance.

5.2 Packing List

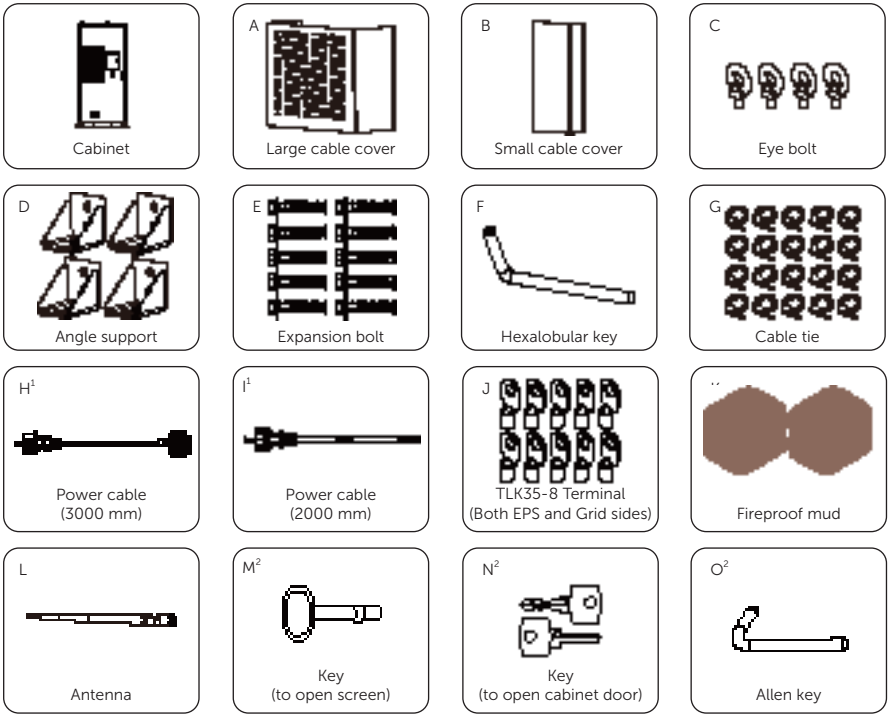


Table 5-1 Packing list

Item No.	Items	Quantity
/	Cabinet	1 pc
A	Large cable cover	1 pc
B	Small cable cover	1 pc
C	Eye bolt	4 pcs
D	Angle support	4 pcs

Item No.	Items	Quantity
E	Expansion bolt	10 pcs
F	Hexalobular key	1 pc
G	Cable tie	20 pcs
H[1]	Power cable (3000 mm)	1 pc
I[1]	Power cable (2000 mm)	1 pc
J	TLK35-8 Terminal (both EPS and grid sides)	10 pcs
K	Fireproof mud	2 pcs
L	Antenna	1 pc
M[2]	Key (to open screen)	1 pc
N[2]	Key (to open cabinet door)	2 pcs
O[2]	Allen key	1 pc

NOTICE!

- The mark "[1]" indicates that if one of the cables connecting the high-voltage box AC input and AC power is damaged, the power cable (3000 mm) can be used as a replacement cable to connect to the AC input and the power cable (2000 mm) can be used as a replacement cable to connect to the AC power.
- The mark "[2]" indicates that these keys are collected into a bunch.

6 Mechanical Installation

WARNING!

- This equipment must be installed by professionals in accordance with local regulations and standards.
- Before drilling, please check and avoid wiring inside the wall to prevent accidents.
- Use insulated tools and wear personal protective equipment (PPE) during installation and maintenance.
- Do not destroy the cabinet's anti-corrosion coating during the process of installation.

CAUTION!

- Pay attention to the weight of the equipment at all times during transportation and installation, as improper lifting or dropping of the equipment may cause personal injury.

6.1 Cabinet Removal from Wooden Pallet

Operators needs to remove the cabinet from the wooden pallet before lifting it. Please following the steps below to remove it.

Step 1: The covers on the forklift holes shall be removed. There are two covers, with 8 screws.

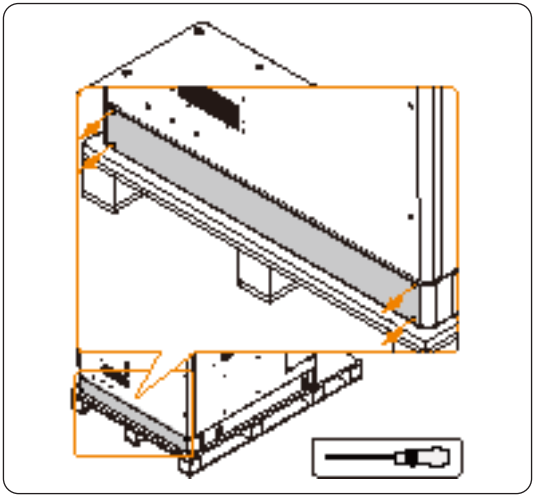


Figure 6-1 Removing cover

Step 2: Unscrew M12 screws on both front and rear sides, with a total of 4 screws.

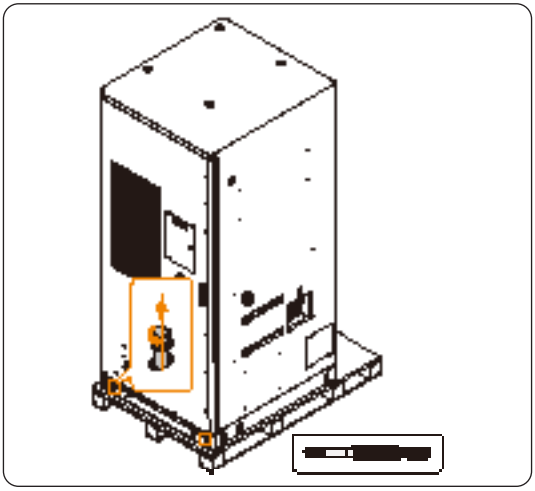


Figure 6-2 Unscrewing M12 screw

Step 3: Use a forklift or crane to remove the cabinet from the wooden pallet.

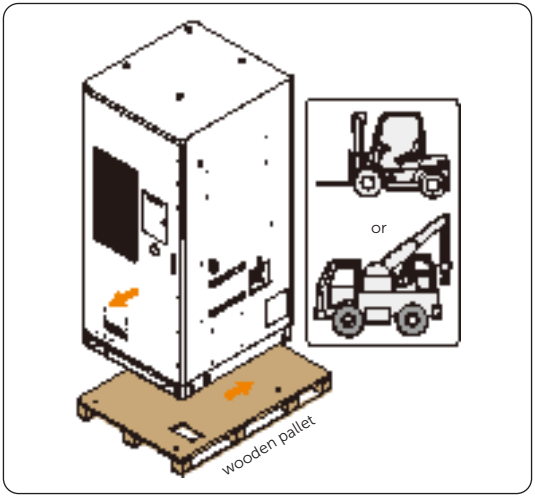


Figure 6-3 Removing cabinet

NOTICE!

- If operators want to use a crane to remove the cabinet, the eye bolts must be installed. See "6.2 Installation of Eye Bolt".

6.2 Installation of Eye Bolt

NOTICE!

- Eye bolts could be installed on the basis of the actual situation.

Please follow the steps below to install eye bolts:

Step 1: Remove the M20 screws (with a total of 4) inside the top eye bolt holes using a torque wrench.

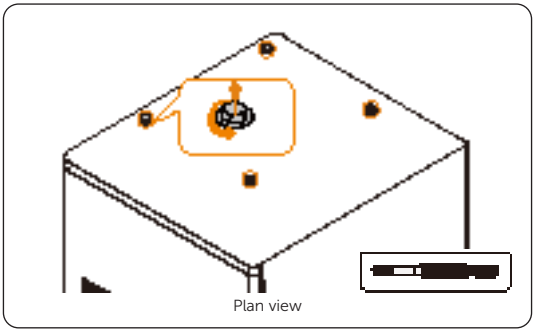


Figure 6-4 Unscrewing M20 screws

Step 2: Insert and clockwise the eye bolts (M20) (Part C) (with a total of 4 eye bolts).

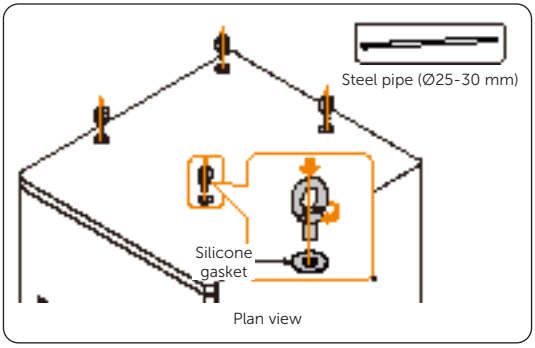


Figure 6-5 Tightening eye bolts

NOTICE!

- Put the silicone gaskets in place before inserting the eye bolts.
- Please ensure that the eye bolt's shoulder makes total contact with the silicone gasket.

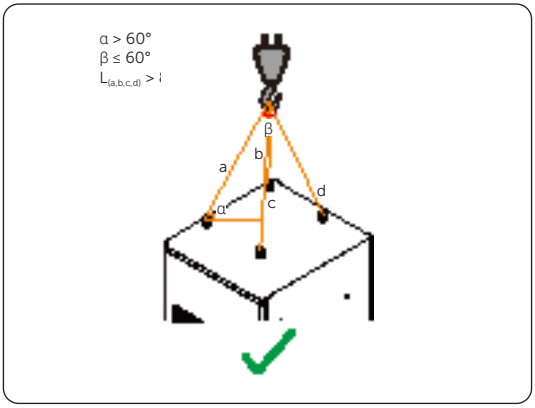


Figure 6-6 Proper way of hoisting

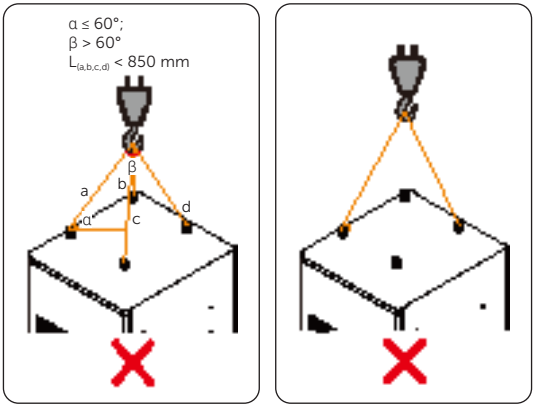


Figure 6-7 Improper way of hoisting

NOTICE!

- Before lifting, please prepare sufficient length of lifting ropes according to the actual situation.
- L=Length

6.3 Fork Position

NOTICE!

- When using a forklift to move the cabinet, please secure it according to the actual situation to ensure that the cabinet does not pose a risk of tipping over.

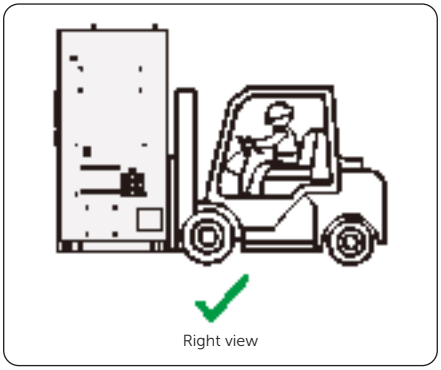


Figure 6-1 Right positions

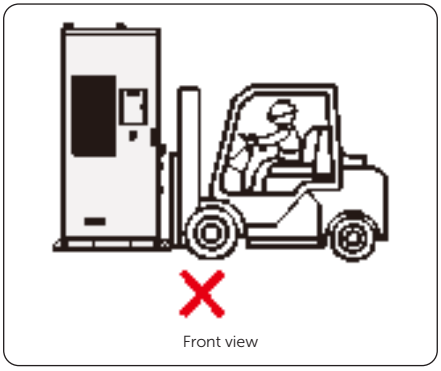


Figure 6-2 Wrong positions

NOTICE!

- For installation space requirements, please refer to "Chapter 4.1.5 Clearance Requirement".
- For foundation requirements, please refer to "Chapter 4.1.2 Installation Foundation Requirements".
- Before lifting, please prepare sufficient length of lifting ropes according to the actual situation.
- L=Length

6.4 Installation Dimensions

Before installation, please refer to "Chapter 2.2.1 Appearance and Dimension" for installation, ensuring sufficient space is reserved for the installation and heat dissipation of the entire equipment.

6.5 Installation Procedure for Angle Support and Cover

NOTICE!

- The angle supports delivered with the cabinet are required to be installed.

Step 1: After determining the installation position of the cabinet, unscrew the M12 screws from the cabinet, with a total of 8 screws.

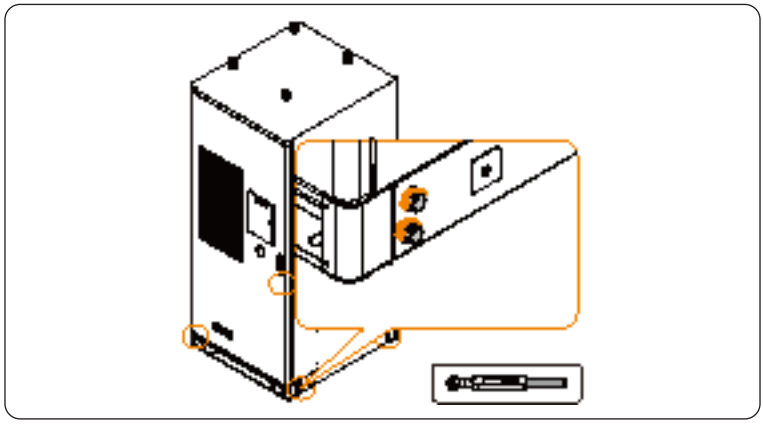


Figure 6-3 Unscrewing M12 screws

Step 2: Attach the angle supports (Part D) to the cabinet, align the holes on the angle support with the holes on the cabinet, and draw a circle on the bottom of the angle support. There are totalling 4 angle supports for a cabinet.

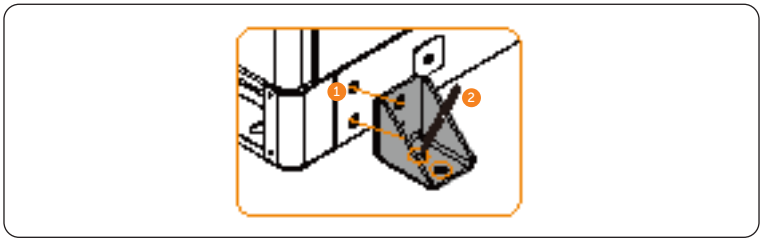


Figure 6-4 Aligning holes and marking hole position

NOTICE!

- Please properly keep the screws.

Step 3: Remove the angle supports, drill holes at the previously marked positions (drill bit: Ø18 mm; hole depth: 95~105 mm). After drilling, clean the foundation surface with a vacuum cleaner.

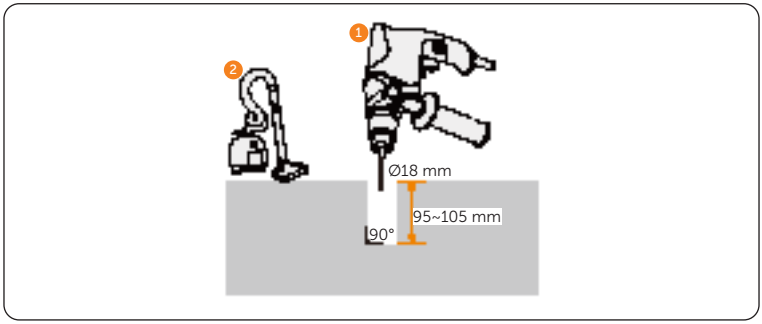


Figure 6-5 Drilling holes

Step 4: Attach the angle supports to the cabinet, and insert M12 screws and tighten them clockwise using a torque wrench (torque: 42±4.2 N·m). Each angle support has two screws, with a total of four angle supports.

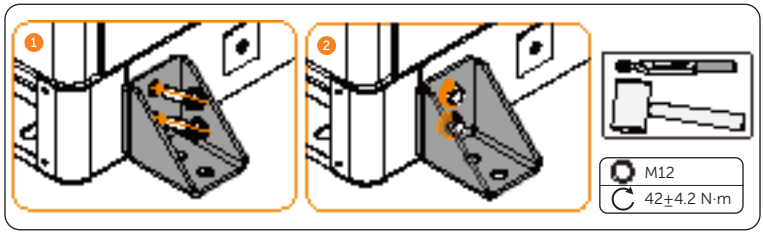


Figure 6-6 Tightening M12 screws

NOTICE!

- Reinstall the angle supports, ensuring that the screw holes on the angle support align with the screw holes on the cabinet and foundation.

Step 5: Use a rubber hammer to drive the expansion bolts (Part E) into the foundation screw holes, and then tighten them clockwise with a torque wrench (M12) (torque: 42±4.2 N·m).

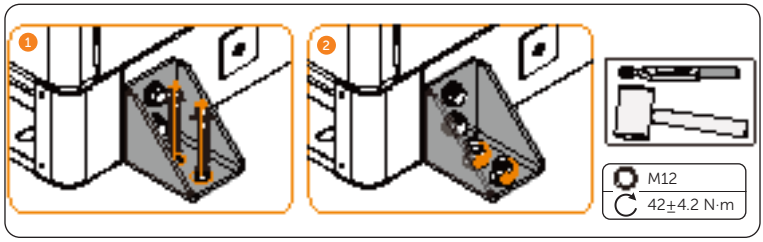


Figure 6-7 Tightening expansion bolts

Step 6: Reinstall covers to seal the forklift hole and tighten the screws (M5) (torque: 3±0.3 N·m). Each cover has 4 screws, with a total of 2 covers.

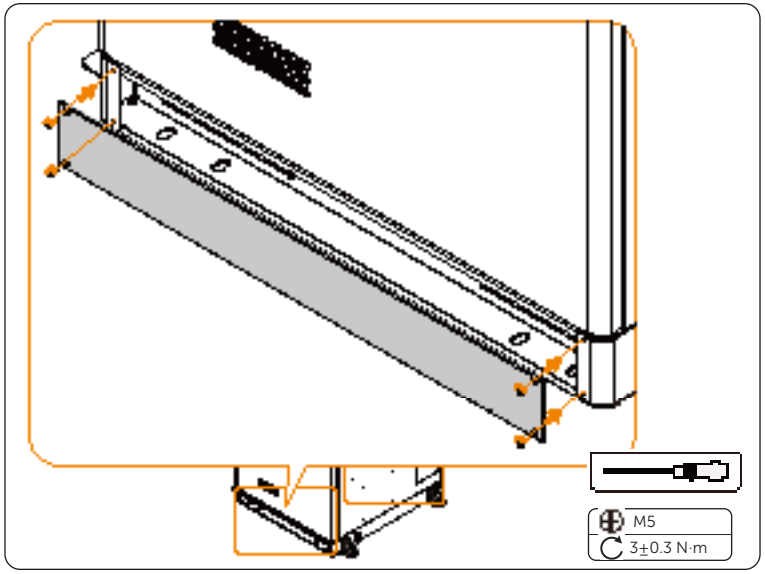


Figure 6-8 Fixed covers

Step 7: Install the inverter.

6.6 Antenna Installation

NOTICE!

- The user can decide whether the reserved port connects an antenna based on the actual situation.
- Regarding the other antenna port (the right one), the antenna is delivered with the accessories kit.
- **The antenna shall be installed after finishing installation of the inverter.**

There are two antenna ports in the cabinet. One is located on the right side, and the other is located on the left side. It is recommended to install an antenna on the right one, and the left one is regarded as a reserved port. For the antenna installation steps, please do as follows.

Step 1: Remove the silicone cap.

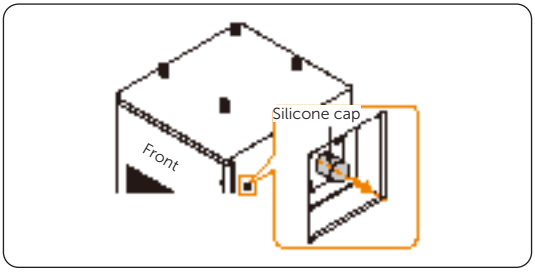


Figure 6-9 Removing silicone cap

Step 2: Take out the antenna (Part L), and make sure that it is securely inserted and tightened by turning it clockwise.

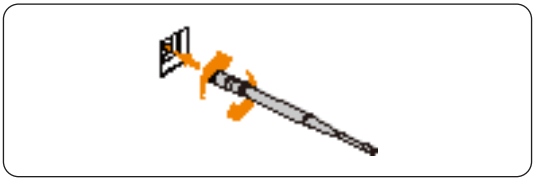


Figure 6-10 Installing antenna

Step 3: Fold it up 90°.

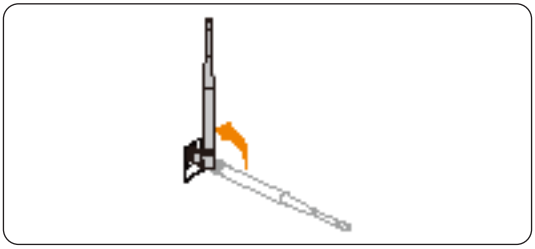


Figure 6-11 Folding up

After installing the antenna, see following figure.

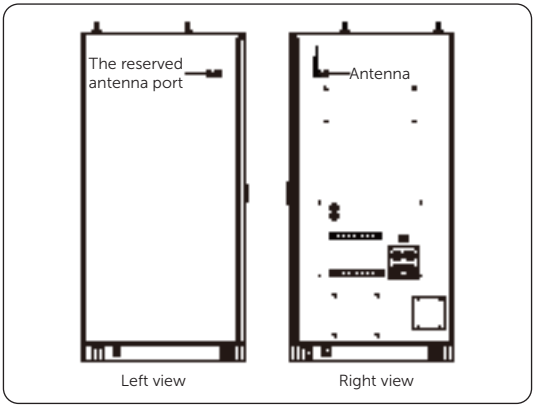


Figure 6-12 Installing an antenna

6.7 Installation Procedure for Cable Cover

NOTICE!

- Do not install the cable cover until all the cables are wired.

Step 1: Unscrew M6 hexalobular screws, with a total of 8 screws (a1, a2, a3 and a4 for the large cable cover, and b1, b2,b3 and b4 for the small cable cover).

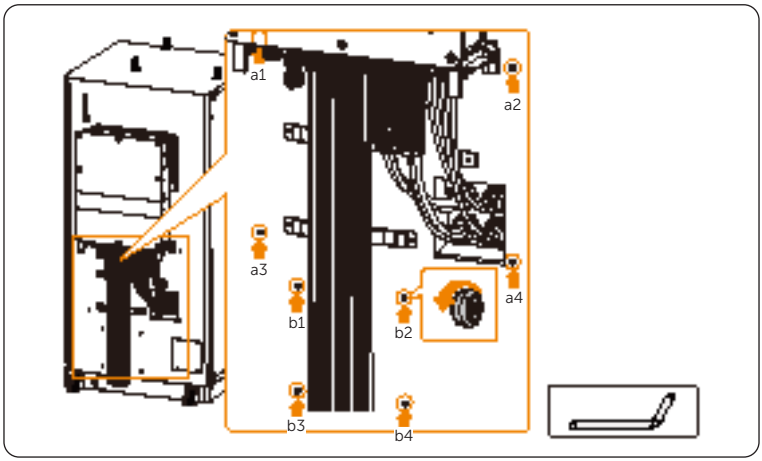


Figure 6-13 Unscrewing M6 screws

Step 2: Attach the large cable cover (Part A) to the cabinet, and insert and tighten the M6 hexalobular screws by using a hexalobular key (Part F). (torque: 5±0.5 N·m)

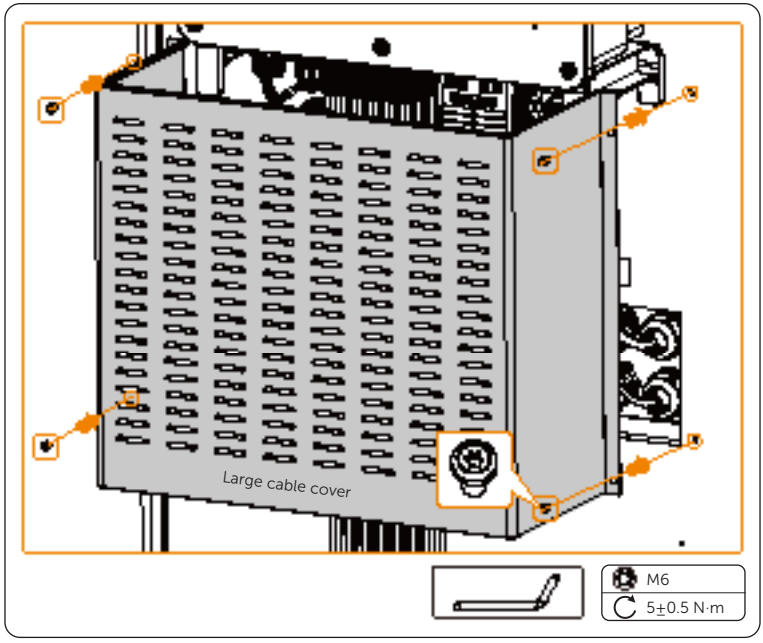


Figure 6-14 Attaching large cable cover

Step 3: Attach the small cable cover (Part B) to the cabinet, and insert and tighten the M6 hexalobular screws by using a hexalobular key. (torque: 5±0.5 N·m)

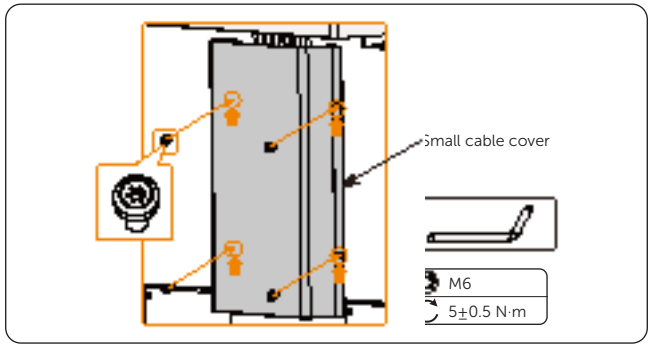


Figure 6-15 Attaching small cable cover

7 Electrical Connection

NOTICE!

- Before wiring, operators are required to learn which parts need to be conducted wiring. For details, please refer to Figure 7-1.

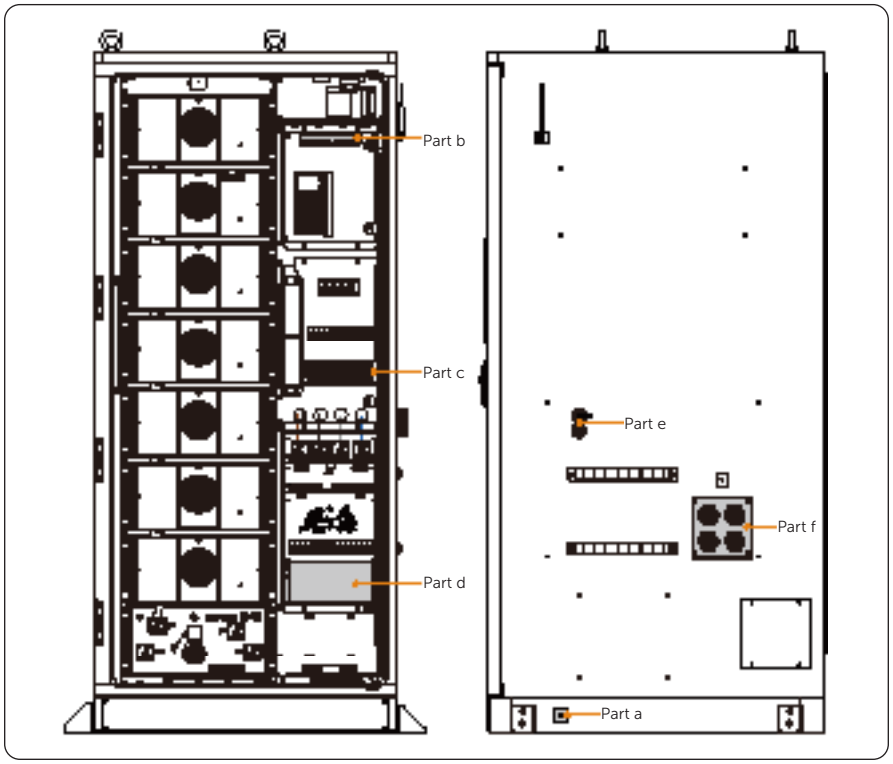


Figure 7-1 Parts that need wiring

7.1 Grounding Connection

Regarding the PE connection, namely **Part a** in "Figure 7-1 Parts that need wiring", please strictly follow the steps below.

Step 1: Strip the cable jacket about 15 mm to 20 mm from the end.

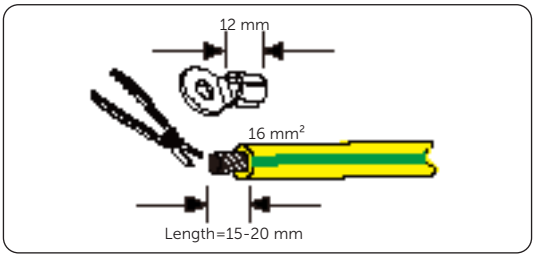


Figure 7-2 Striping cable jacket

Step 2: Cut the heat-shrink tubing (Ø15-20 mm) to about 30 mm to 40 mm long, carefully slide it onto the end of the cable, and then carefully slip the wires all the way into the grounding terminal (Part F).

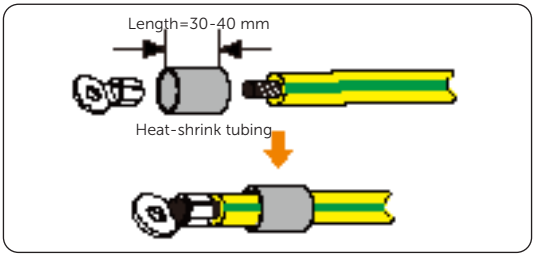


Figure 7-3 Cutting heat-shrink tubing

Step 3: Crimp the terminal, and heat the heat-shrink tubing after it wraps the end of terminal.

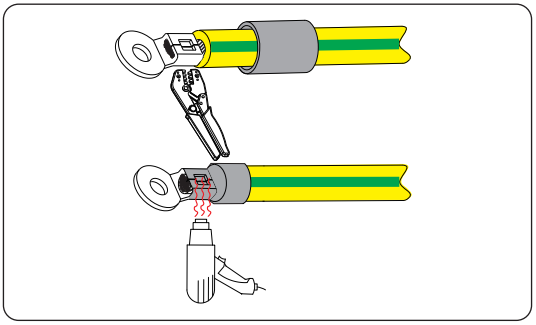


Figure 7-4 Crimping and heating

Step 4: Unscrew the M12 screw, and then connect the assembled grounding cable to the grounding port of the battery module, and then tighten M12 screw (torque: 42±2 N·m).

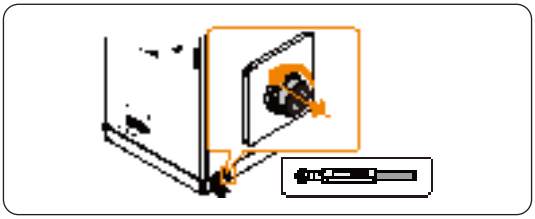


Figure 7-5 Unscrewing M12 screw

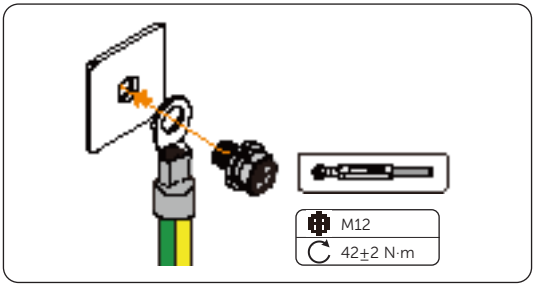


Figure 7-6 Tightening M12 screw

NOTICE!

- The cable cover must be installed after finishing wiring. For detailed installation procedure, please refer to "Chapter 6.6 Installation Procedure for Cable Cover".

7.2 EPS Connection

Regarding the EPS connection, namely **Part c** in "Figure 7-1 Parts that need wiring", please strictly follow the steps below.

NOTICE!

- Take out the underground electrical wiring which is buried beneath the ground.
- Regarding the terminal requirements, please refer to "Chapter 12.1 Requirements for OT/DT/OT Terminal".

Step 1: Use an Allen key (Part O) and a key (Part N) to open the front door.

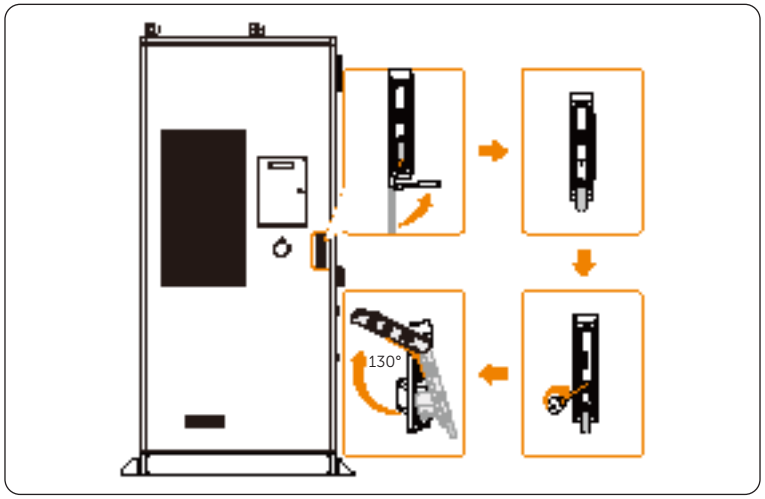


Figure 7-7 Opening front door

NOTICE!
• Please keep the keys properly.

Step 2: Unscrew M4 screws, and remove the cover. There are totalling M4 screws (× 4).

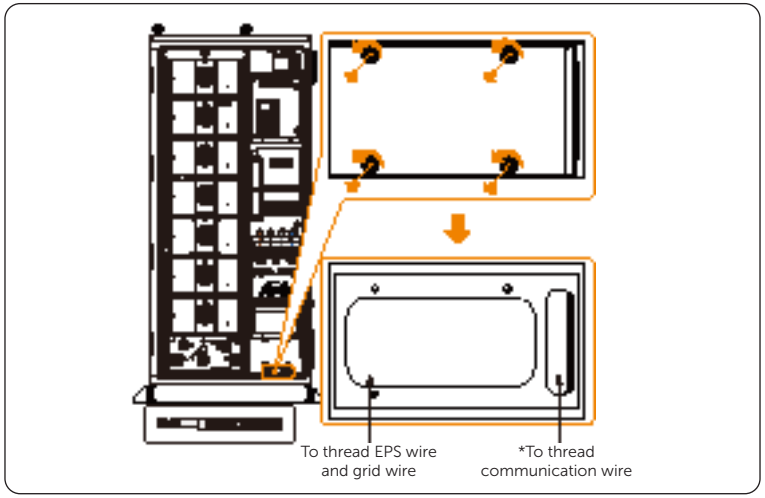
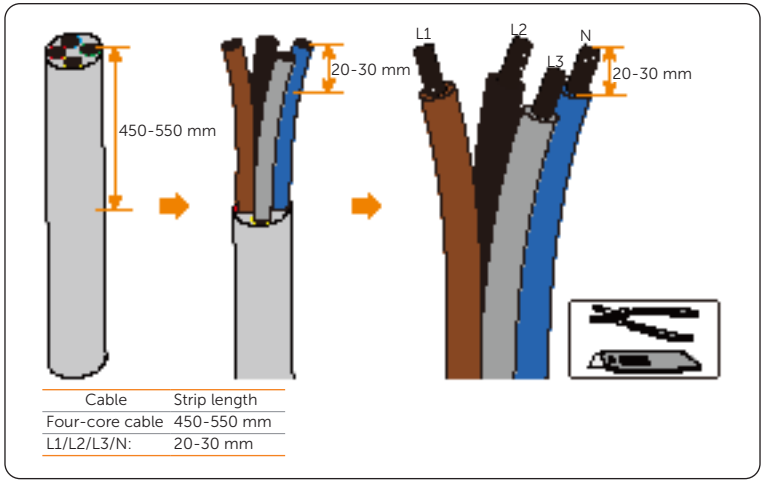


Figure 7-8 Unscrewing M4 screws and removing cover

Step 3: Strip the four-core cable about 450 mm to 550 mm.
Strip the cable jacket (for L1/L2/L3/N) about 20 mm to 30 mm.



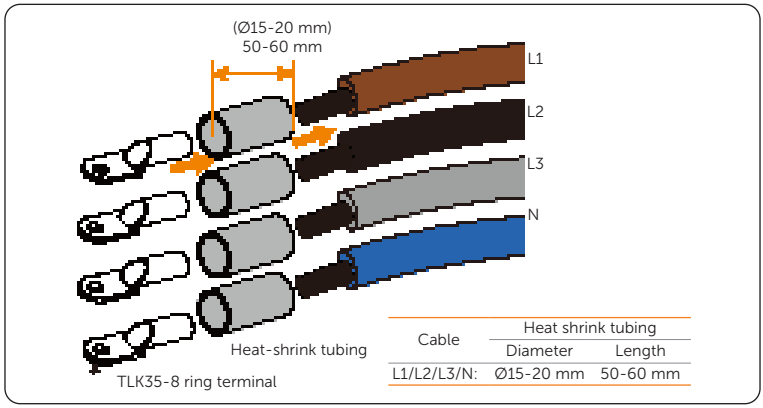
Cable	Strip length
Four-core cable L1/L2/L3/N:	450-550 mm 20-30 mm

Figure 7-9 Striping cable jacket

NOTICE!

- It's important to give the power cable a health check before stripping it.
- It's necessary to use controlled motion to strip the insulation down the wire, to prevent damage to the wires.
- Make sure that the insulation layer has been stripped to a sufficient length so that the center conductor is fully exposed without any damage or nicks. In addition, make sure that no extra insulation remains beyond the connector once it's crimped on.

Step 4: Cut the heat-shrink tubing (Ø15-20 mm) to about 50 mm to 60 mm long for L1/L2/L3/N wires;
Carefully slide it onto the end of the cable, and then carefully slip the wires all the way into the copper terminals (Part J).



Cable	Heat shrink tubing	
	Diameter	Length
L1/L2/L3/N:	Ø15-20 mm	50-60 mm

Figure 7-10 Slipping wires

Step 5: Crimp the terminal using hydraulic wire crimper. Since the procedure for installing a terminal is same, take the L1 wire, for instance.

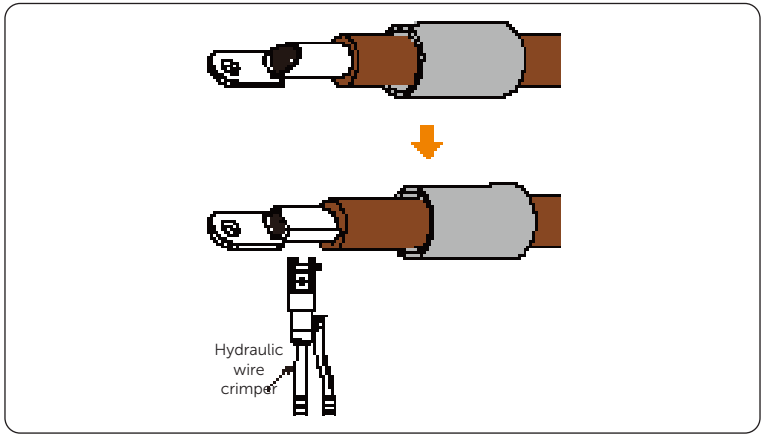


Figure 7-11 Crimping

NOTICE!

- Do not damage the conductor insulation while crimping.
- Do not place the conductor insulation into the terminal.

Step 6: Heat the heat-shrink tubing after it wraps the end of terminal.

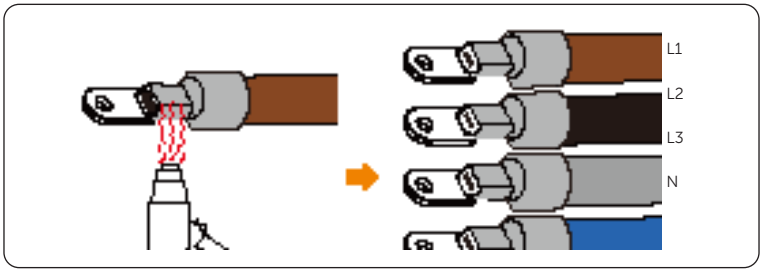


Figure 7-12 Heating

NOTICE!

- Move the heat gun back and forth slowly to distribute the heat evenly across the surface of heat shrink tubing.

Step 7: Thread EPS wire through the "yellow area" from the outside to the inside.

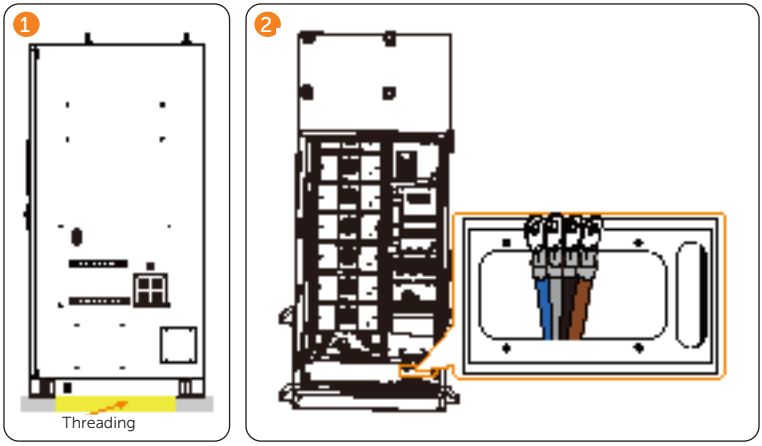


Figure 7-13 Threading EPS wires

Step 8: Unscrew M5 screws using cross screwdriver to remove the metal cable cover. There are a total of three pieces of M5 screws.

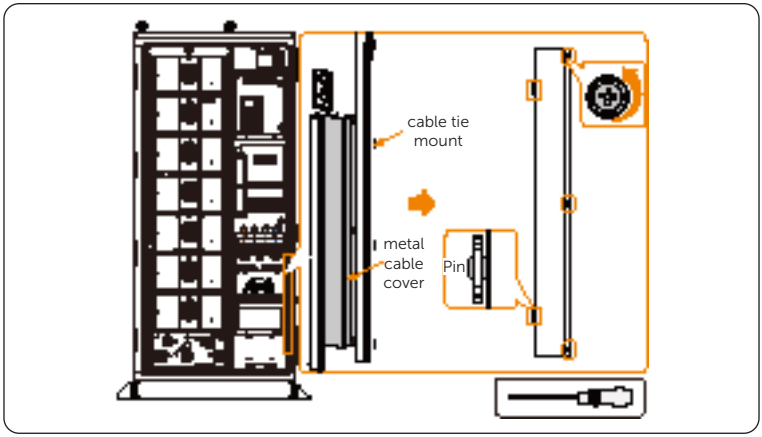


Figure 7-14 Removing metal cable cover

Step 9: Thread the EPS wire, recover the meal cable cover, and tighten the M5 screws (torque: 3±0.3 N·m).

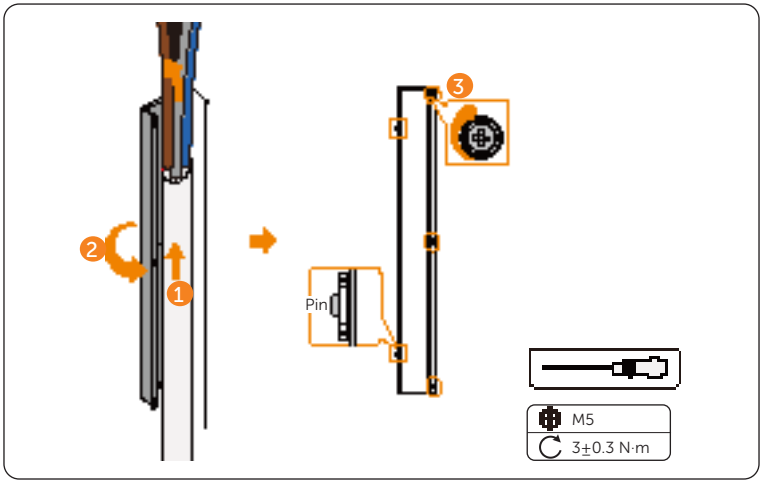


Figure 7-15 Threading EPS wire

NOTICE!

- Please check whether the pins are in holes properly.

Step 10: Pull out terminal covers by pressing the buttons on both sides of the cover.

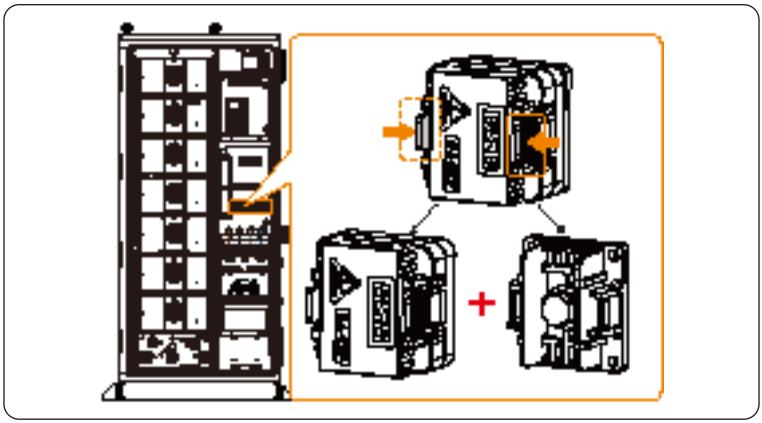


Figure 7-16 Pulling out covers

NOTICE!
• Please keep the covers properly.

Step 11: Unscrew the M8 screws using torque wrench, connect the assembled L1/L2/L3/N wires to the wire interface, and then tighten them (torque: 12±1 N·m). There are a total of 4 pieces of M8 screws.

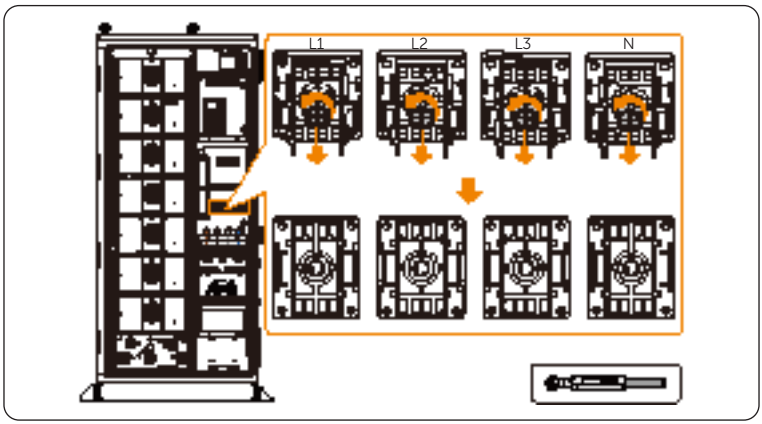


Figure 7-17 Unscrewing M8 screws

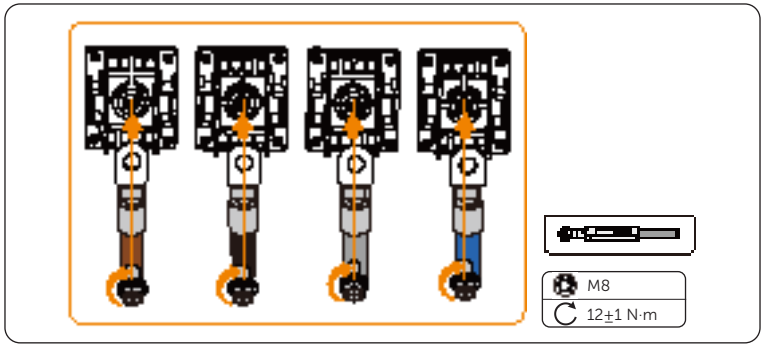


Figure 7-18 Connecting EPS wire and tightening M8 screws

NOTICE!

- Label on the cable must correspond to silk screen on the device.

Step 12: Reinstall the covers back after finishing wiring.

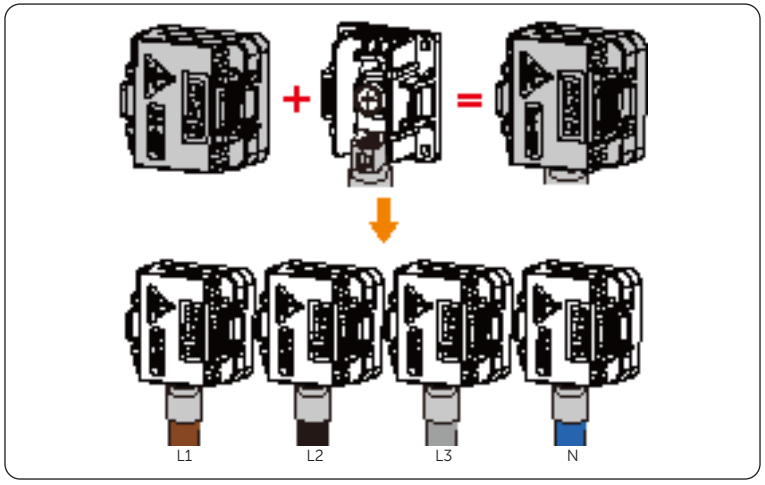


Figure 7-19 Reinstalling covers

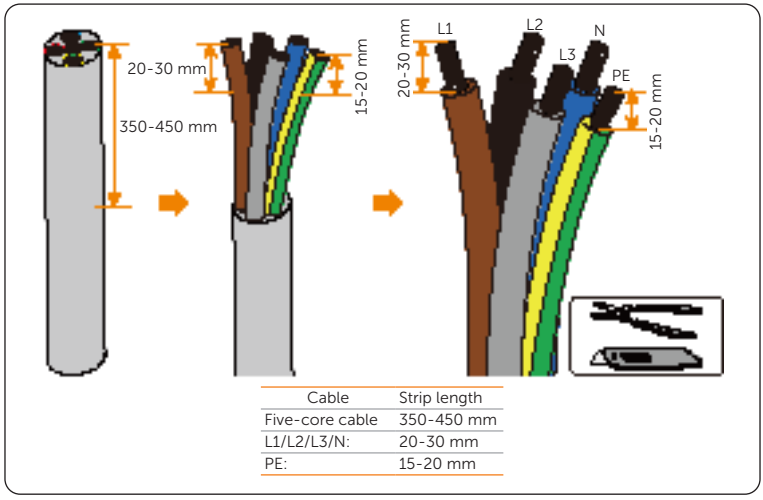
7.3 Grid Connection

Regarding the grid connection, namely **Part d** in "Figure 7-1 Parts that need wiring", please strictly follow the steps below.

NOTICE!

- Regarding the terminal requirements, please refer to "Chapter 12.1 Requirements for OT/DT/OT Terminal".

Step 1: Strip the five-core cable about 350 mm to 450 mm;
Strip the cable jacket (for L1/L2/L3/N) about 20 mm to 30 mm;
Strip the PE cable jacket about 15 mm to 20 mm.



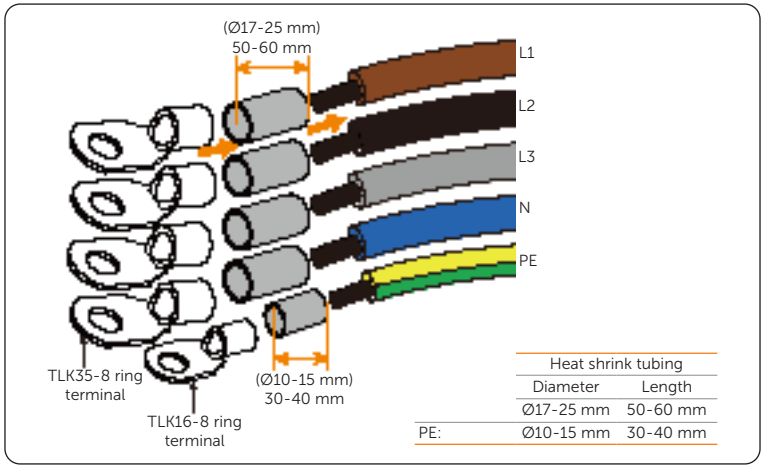
Cable	Strip length
Five-core cable	350-450 mm
L1/L2/L3/N:	20-30 mm
PE:	15-20 mm

Figure 7-20 Striping cable jacket

NOTICE!

- It's important to give the power cable a health check before stripping it.
- It's necessary to use controlled motion to strip the insulation down the wire, to prevent damage to the wires.
- Make sure that the insulation layer has been stripped to a sufficient length so that the center conductor is fully exposed without any damage or nicks. In addition, make sure that no extra insulation remains beyond the connector once it's crimped on.

Step 2: Cut the heat-shrink tubing (Ø17-25 mm) to about 50 mm to 60 mm long for L1/L2/L3/N wires;
Cut the heat-shrink tubing (Ø10-15 mm) to about 30 mm to 40 mm long for PE wire;
Carefully slide it onto the end of the cable, and then carefully slip the wires all the way into the copper terminals (Part E).



	Heat shrink tubing	
	Diameter	Length
	Ø17-25 mm	50-60 mm
PE:	Ø10-15 mm	30-40 mm

Figure 7-21 Cutting heat-shrink tubing

Step 3: Crimp the terminal using hydraulic wire crimper. Since the procedure for installing a terminal is same, the following steps take the L1 copper wire as an example.

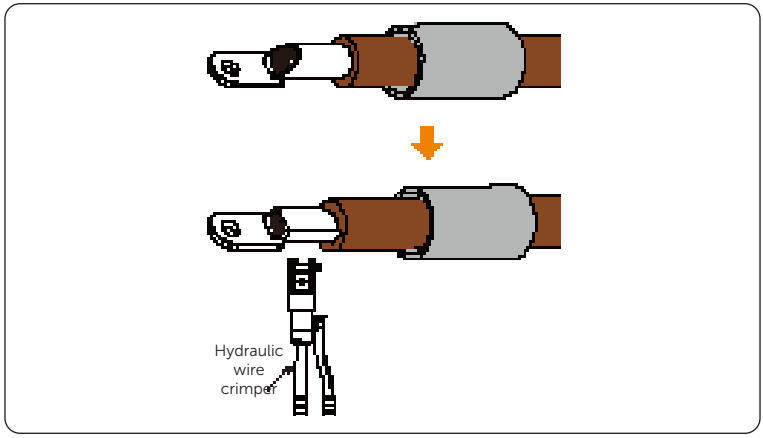


Figure 7-22 Crimping

NOTICE!

- Do not damage the conductor insulation while crimping.
- Do not place the conductor insulation into the terminal.

Step 4: Heat the heat-shrink tubing after it wraps the end of terminal.

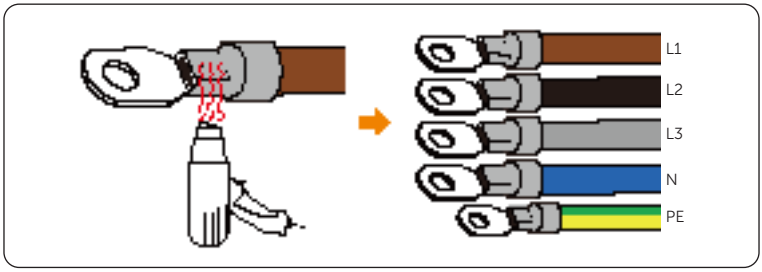


Figure 7-23 Heating

NOTICE!

- Move the heat gun back and forth slowly to distribute the heat evenly across the surface of heat shrink tubing.

Step 5: Thread Grid wire through the "yellow area" from the outside to the inside.

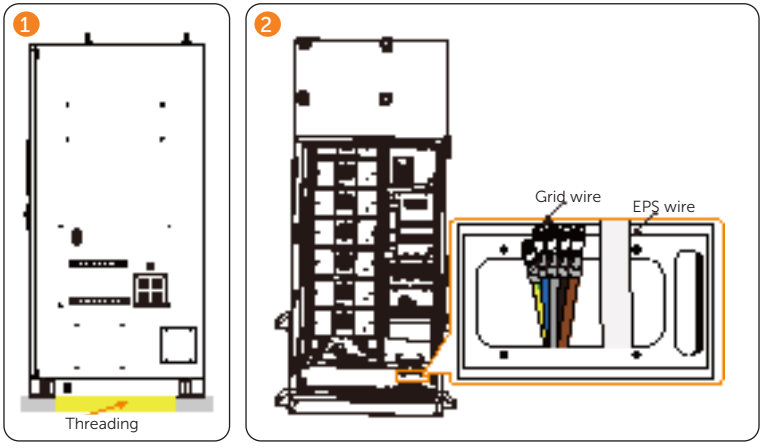


Figure 7-24 Threading EPS wires

Step 6: Unscrew M5 screws to open clamp.

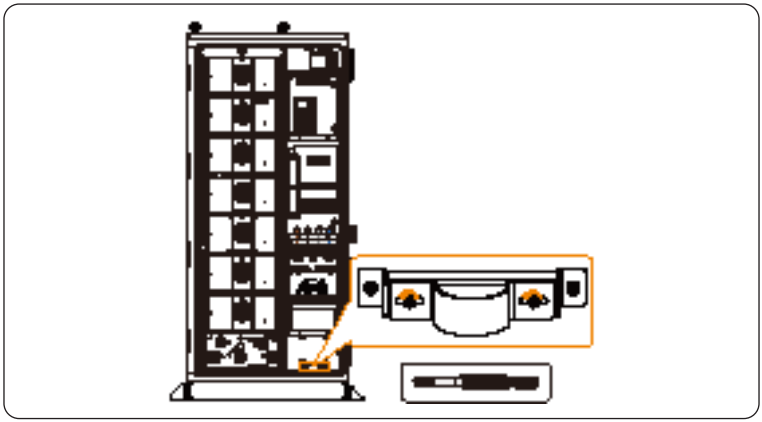


Figure 7-25 Opening clamp

Step 7: Run the grid wire through the clamp, and then insert and tighten M5 screws (torque: 2.35±0.15 N·m N·m).

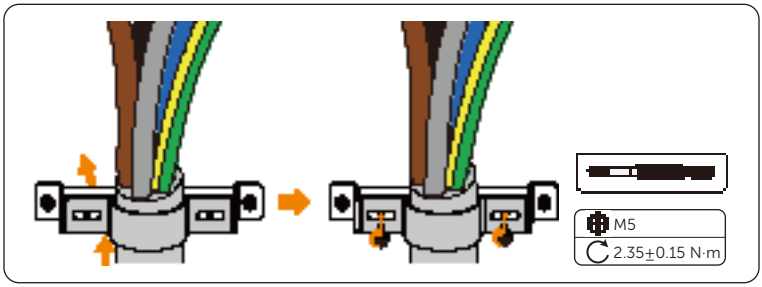


Figure 7-26 Threading grid wires

Step 8: Unscrew M5 screws to remove the cover.

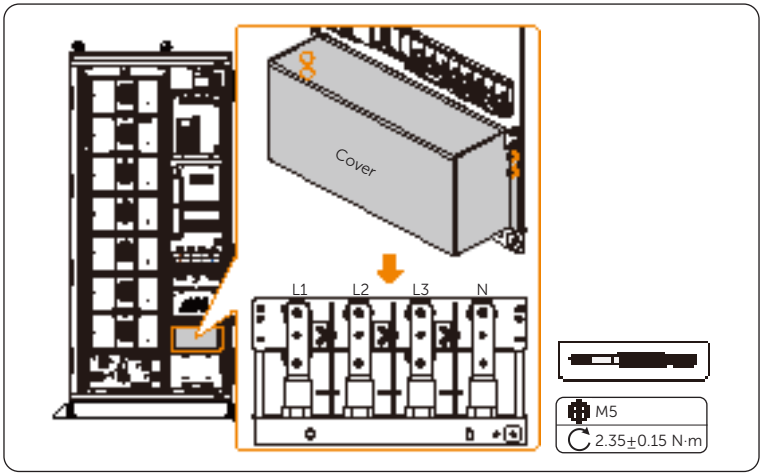
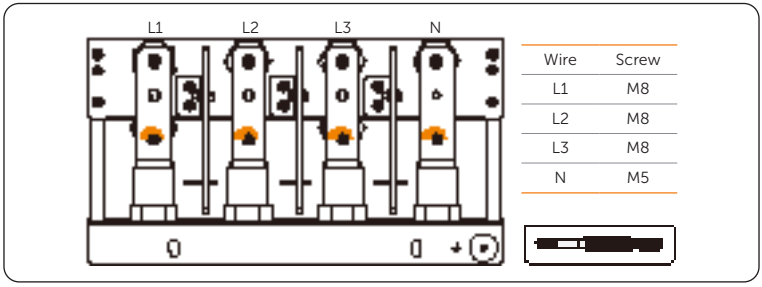


Figure 7-27 Removing cover

NOTICE!
• Please keep the M5 screws and cover properly.

Step 9: Unscrew the M8 screws using torque wrench, connect the assembled L1/L2/L3/N wires to the wire interface, and then tighten them. There are three pieces of M8 screws and one piece of M5 screw. (torque for M8: 12±1 N·m) (torque for M5: 2.35±0.15 N·m)



Wire	Screw
L1	M8
L2	M8
L3	M8
N	M5

Figure 7-28 Unscrewing M8 screws

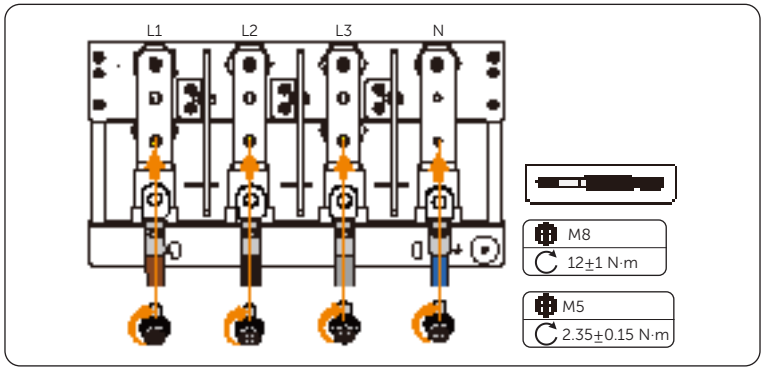


Figure 7-29 Tightening M8 screws

Step 10: There are four M8 screws (a, b, c and d), and any one of them can be connected to the PE wire. Hence, unscrew a M8 screw using a torque wrench, connect the assembled PE wire to the copper bar, and then tighten it (torque: 12±1 N·m).

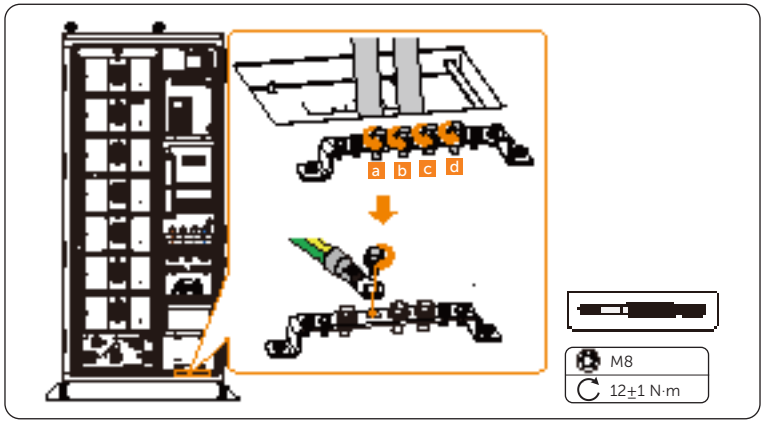


Figure 7-30 Connecting PE wire

Step 11: Reattach the cover to the distribution box, and then correctly insert and tighten M5 screws (torque: 2.35±0.15 N·m).

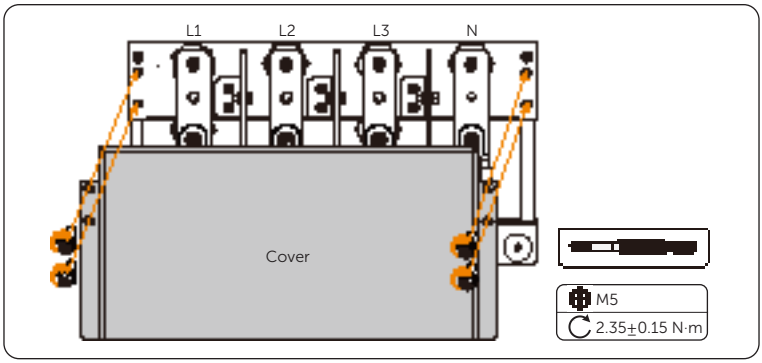


Figure 7-31 Reattaching cover

Step 12: Lay the fireproof mud (Part K) to plug the cable threading holes in the cabinet.

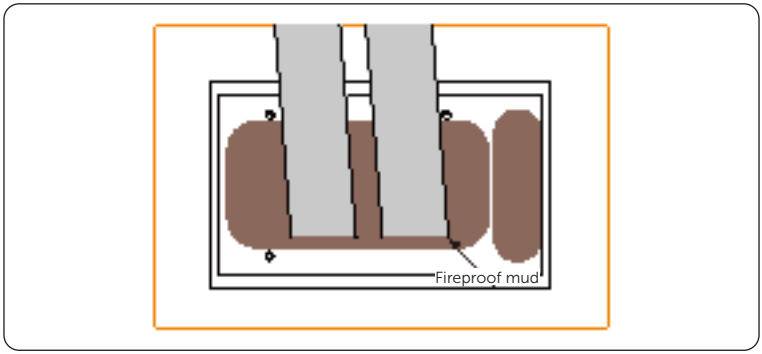


Figure 7-32 Laying fireproof mud

NOTICE!

Notice for fireproofing mud:

- Take out the fireproof mud delivered with the cabinet and knead it into a ball shape. In the case of the low temperature, place it into warm water, of which the temperature range is between 40°C and 70 °C, with its package until it is soft.
- Clean the area around the cable threading hole before sealing it.
- The fireproof mud should be evenly spread, embedded, or filled in the cable threading hole. If such a hole is too large, a fireproofing board can be placed to enhance fire protection before using the mud.
- The fireproof mud needs to be cured after sealing the cable threading hole. Prevent water from entering and colliding during curing.

7.4 Reserved Wire Interface

The **Part b** in "Figure 7-1 Parts that need wiring", the reserved wire interfaces, is reserved for users to connect to other devices.

The requirements for the acceptable cables are shown as the following table.

Table 7-1 Requirements for acceptable cables

	Cross-section
CSA of cable	0.5 mm^2

7.5 Communication Connection (to inverter)

Please refer to the X3 AELIO user manual for details on communication connection procedures.

8 Commissioning

8.1 Check before Power On

Ensure that all the cables connecting to the EPS and distribution box (grid side) are wired and securely fastened. For details, please refer to the following Table 8-1.

Table 8-1 Checklist

No.	Item	Description
1	Equipment appearance	• Check the equipment is in good condition, with a clean, non-peeling paint, and rust-free surface. • Ensure that the labels on the equipment are clear and easy to read. If it is damaged, the label shall be replaced at once.
2	Cable appearance	• Check that the cable jacket is in good condition. • Check that the protective pipes are in good condition.
3	Cable connection	• Check that the cable connection position is consistent with the design principles. • Ensure that the procdure for crimping terminals strictly observe the requirements, and the terminals are securely fastened. • Check that the lables on the both sides of cables are clear, and the direction of both labels is the same.
4	Wiring	• Ensure that the wiring procedure is consistent with the principle of separation of strong and weak electricity. • Ensure that the cables are neatly places. • Leave a little extra length for adjustments. • Keep cables tidy in the cabinet. • **Check if the grid connection voltage meets: L1+N=220/230 V, L2+N=220/230 V, L3+N=220/230 V, L1+L2=380 V, L2+L3=380 V, L1+L3=380 V.**
5	Copper bars in the battery pack	• Check to make sure the copper bars are not deformed.
6	Button/Switch	• Check the distribution box's switch is "OFF". • Check the battery packs' switches are "OFF".

8.2 Power ON

Regarding the detailed location of the modules in the cabinet, please refer to "Figure 2-4 Parts description (in the opened state)".

NOTICE!
• Please check that the emergency stop button remains in the closed position before powering on.

Step 1: Start the distribution box.

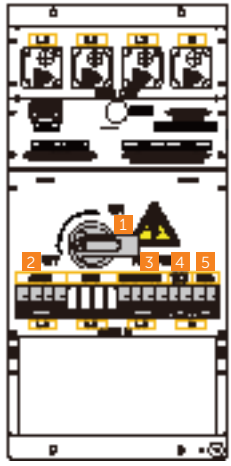
» Rotate the switch on the distribution box 90° clockwise to "ON";

» Flip up the "auxiliary power breaker of high-voltage box (APS1)";

» Flip up the "lightning protection breaker (SPD MCB)";

» Flip up the "air conditioner/liquid cooling unit on/off breaker (HVAC MCB)";

» Flip up the "reserve breaker (RES)".



Distribution box

Figure 8-1 Starting sequence of distribution box

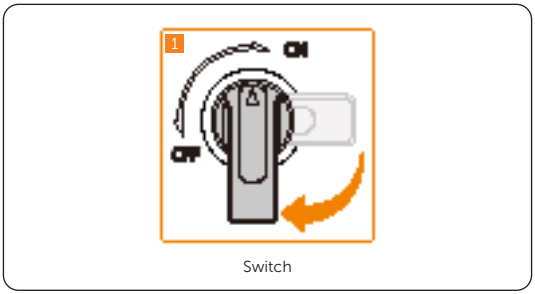


Figure 8-2 Rotating switch

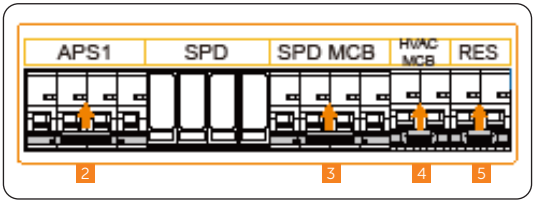


Figure 8-3 Flipping up breakers

Step 2: Inverter

Step 3: Perform operations on the EPS area.

» Flip up EPS breaker;

» Flip up "breaker for maintenance (APS2)";

» Flip up "UPS breaker (UPS)".

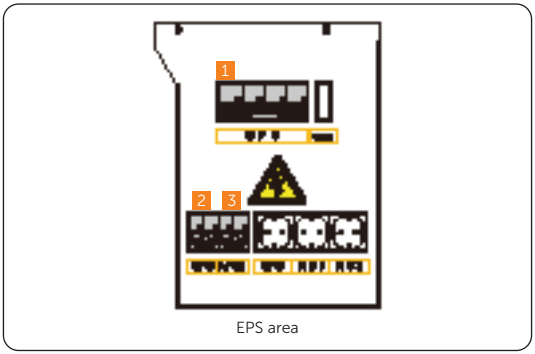


Figure 8-4 Performing on EPS area

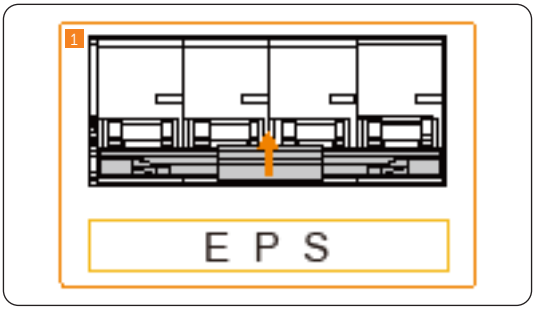


Figure 8-5 Flipping up EPS breaker

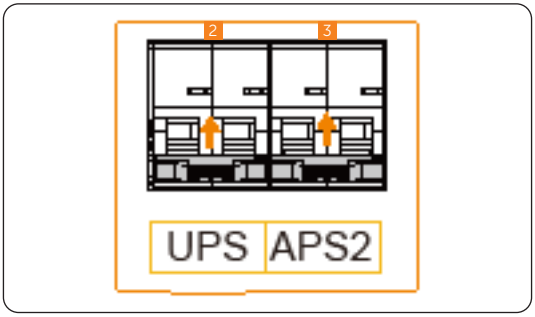


Figure 8-6 Flipping up UPS and APS2 breaker

Step 4: The startup sound on boot will be heard when holding and pressing the "Power on/off" button to start the UPS.

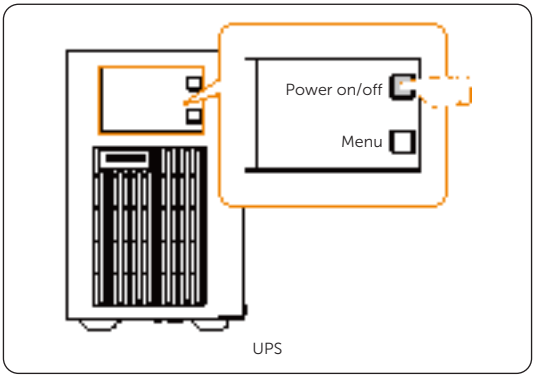


Figure 8-7 Holding and pressing button

Step 5: Rotate the disconnector of the high-voltage box to "ON", and then gently press the power button. At the point, the LED light will come on green.

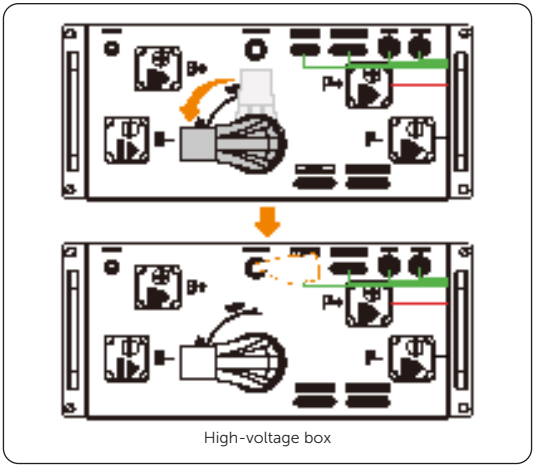


Figure 8-8 Starting the high-voltage box

Step 6: Close the door after the equipment has been started.

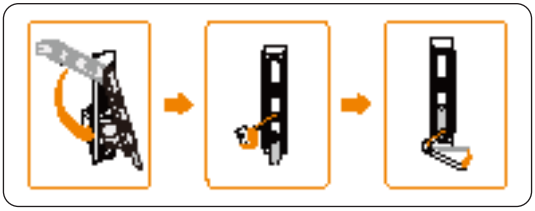


Figure 8-9 Closing the door

NOTICE!
• Please properly keep the key.

8.3 Monitoring Connection

Please refer to the X3 AELl0 user manual for details on monitomng connection procedures.

9 EMS Setup

After successful commissioning, the operator can set up the EMS.

Step 1: Gently and correctly guide the key (Part R) into the keyhole, and then turn it clockwise to unlock the screen door.

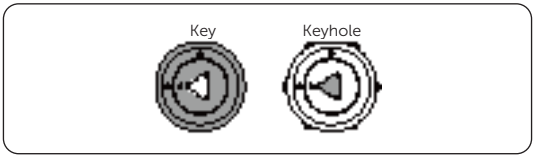


Figure 9-1 Correct position

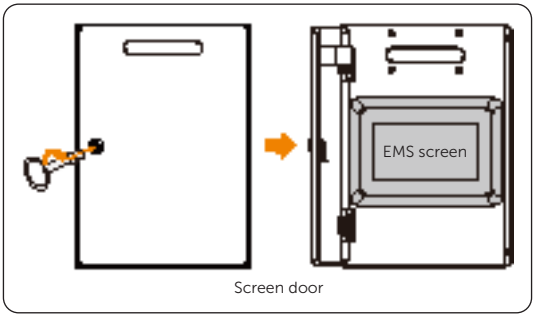


Figure 9-2 Unlocking screen door

10 Troubleshooting and Maintenance

10.1 Power Off

NOTICE!
• Check whether the system is still running before power off. Do not power off if the device is "under load".

There are two circumstances: 1. Normal power off; 2. Emergency power off.

Regarding the detailed location of the modules in the cabinet, please refer to "Figure 2-4 Parts description (in the opened state)".

Normal Power Off

Step 1: Open the door.

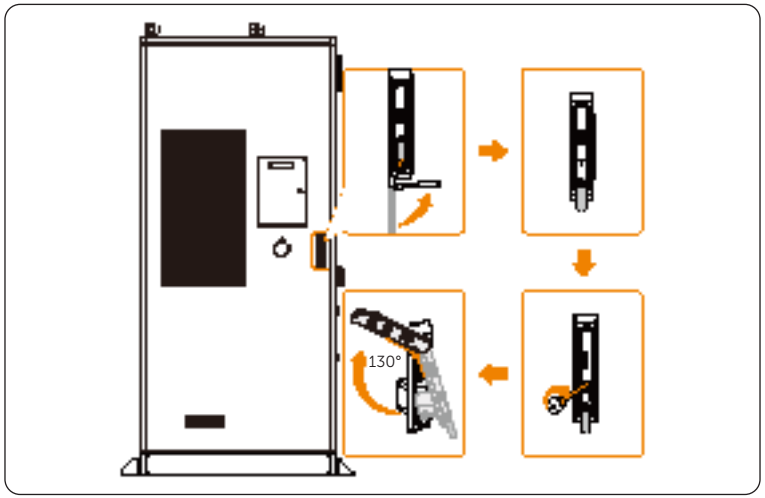


Figure 10-1 Opening the door

Step 2: Inverter

Step 3: Perform operations on the EPS area.

» Flip down EPS breaker;

» Flip down "breaker for maintenance (APS2)";

» Flip down "UPS breaker (UPS)".

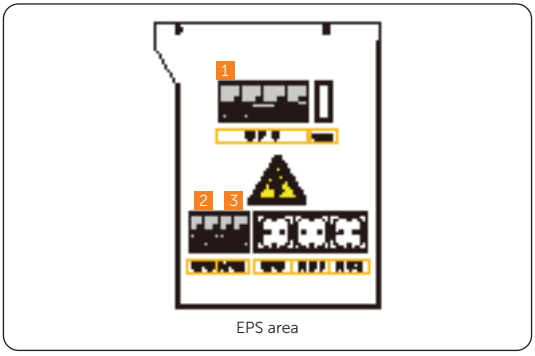


Figure 10-2 Performing on EPS area

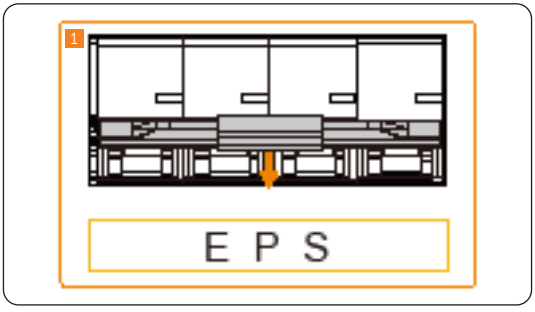


Figure 10-3 Flipping down EPS breaker

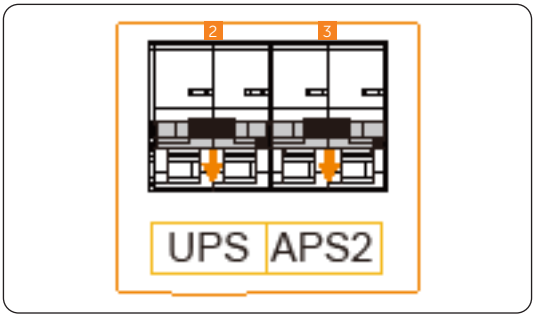


Figure 10-4 Flipping down UPS and APS2 breaker

Step 4: Gently press the power button, and rotate the disconnector of the high-voltage box to "OFF".

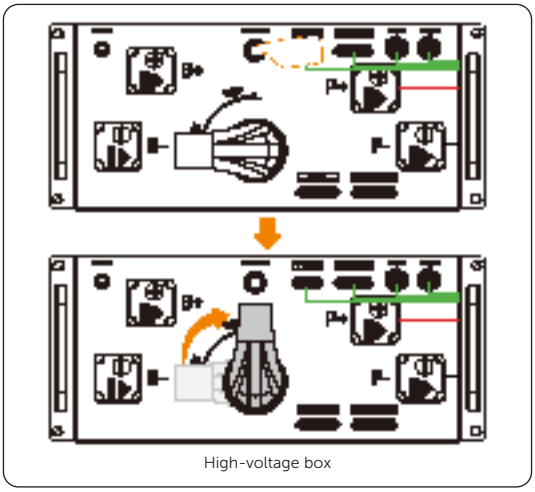


Figure 10-5 Shutting down the high-voltage box

Step 5: Hold and press the "Power on/off" button to power off the UPS.

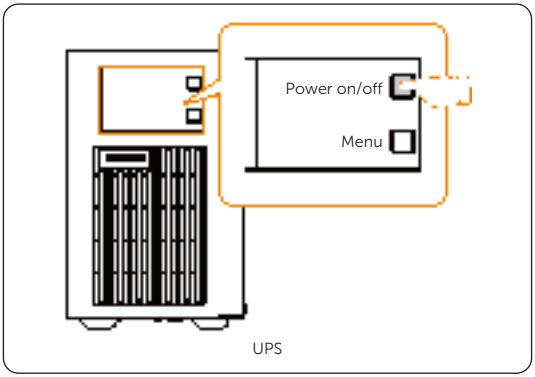


Figure 10-6 Holding and pressing button

Step 6: Shut down the distribution box.

» Flip down the "auxiliary power breaker of high-voltage box (APS1)";

» Flip down the "lightning protection breaker (SPD MCB)";

» Flip down the "air conditioner/liquid cooling unit on/off breaker (HVAC MCB)";

» Flip down the "reserve breaker (RES)";

» Rotate the switch on the distribution box 90° counter-clockwise to "OFF".

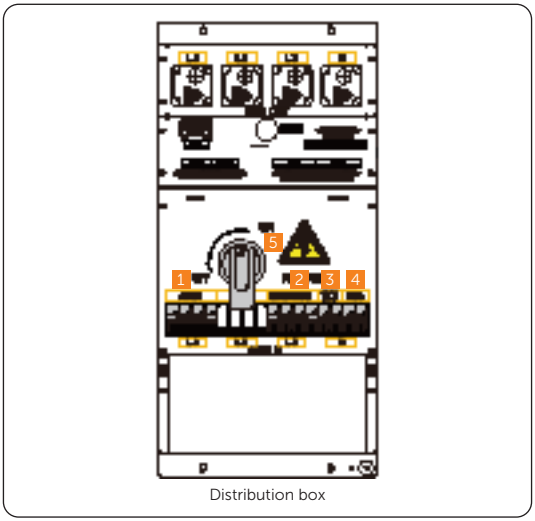


Figure 10-7 Shutting down sequence of distribution box

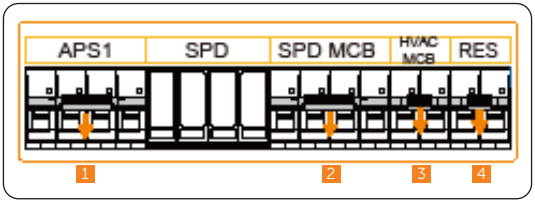


Figure 10-8 Flipping down breakers

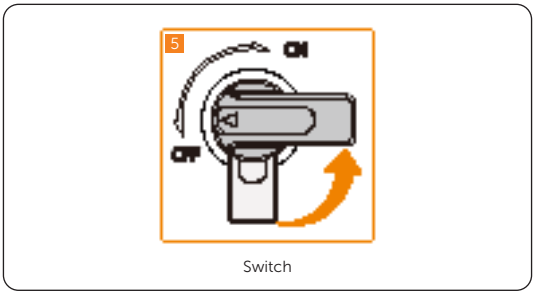


Figure 10-9 Rotating switch

WARNING!

- The device may still have power and heat after turning off, which may cause electric shock and personal injuries. Therefore, please allow it to cool for at least 5 minutes and wear PPE before conducting maintenance.

Emergency Power Off

WARNING!

- Do not press the emergency stop button except for emergencies.
- Some modules inside the cabinet may still have power after pressing the emergency stop button, therefore, non-professionals are not allowed to operate them.

Step 1: Rotate the cover

Step 2: Press the emergency stop button.

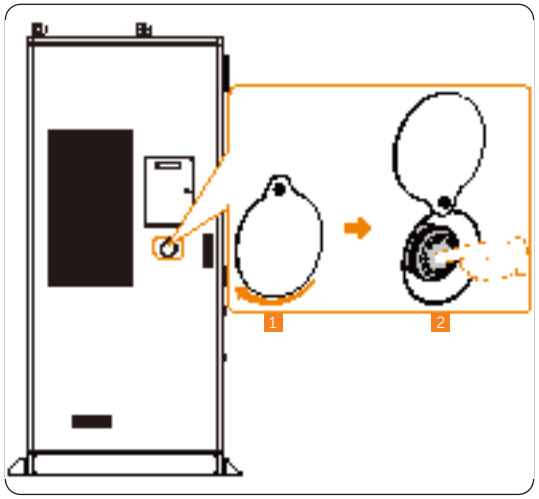


Figure 10-10 Pressing emergency stop button

NOTICE!

If it has been pressed, the emergency stop button must be reset before starting the equipment. The reset steps are shown as follows:

a. Rotate the cover;
b. Rotate the button according to the arrow direction shown on the button. Then the button will spring back to its original position.

10.2 Troubleshooting

This section lists the possible problems with the equipment, and provides information and procedures for identifying and resolving them. In case of any errors, check for the warnings or error messages on the system control panel or App, and then refer to the suggestions below. For further assistance, contact SolaX Customer Service. Please provide the model and SN of the cabinet, and be prepared to describe the system installation details.

Table 10-1 Troubleshooting list

Facult	Description and Diagnosis
UCellHi_4	Single Cell Overvoltage Category IV • Do not power on, and the charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.

Facult	Description and Diagnosis
UCellHi_5	Single Cell Overvoltage Category V • Do not power on, and the charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
UCellLow_4	Single Cell Undervoltage Category IV • Do not power on, and the charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
UCellLow_5	Single Cell Undervoltage Category V • Do not power on, and the charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
UCellDiff	Voltage difference fault • Or contact SolaX for help.
HVBOver_4	Overvoltage category IV of total voltage • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
HVBOver_5	Overvoltage category V of total voltage • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
HVBLow	Undervoltage category IV of total voltage • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
HVBLow	Undervoltage category V of total voltage • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.

Facult	Description and Diagnosis
PosRlyAdh	Sticking contacts of main positive relay • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
PosRlyOpen	Open circuit of main positive relay • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
TempHigh	Overtemperature fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
TLineFlt_1	Temperature sampling fault level 1 • Check if the temperature sensor is short-circuited. • Or contact SolaX for help.
TLineFlt_4	Temperature sampling fault level 4 • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
TempLow	Low-temperature fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
DsgOver_4	Discharge overcurrent fault level 4 • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
DsgOver_5	Discharge overcurrent fault level 5 • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.

Facult	Description and Diagnosis
ChgOver_4	Charge overcurrent fault level 4 • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
ChgOver_5	Charge overcurrent fault level 5 • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
ICOMFault	Internal communication fault • Do not power on, and the charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
OCOMFault	External communication fault • Do not power on, and the charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
MCOMFault	Intermediate network communication fault • Do not power on, and the charging current is limited to 0 A. • Or contact SolaX for help.
UCellLineOpenFlt	Voltage sampling fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
VoltSensorFlt	Voltage sensor fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
CurrSensorFlt	Current sensor fault • Contact SolaX for help.
NegRlyAdh	Sticking contacts of main negative relay • Restart the device. • Or contact SolaX for help.

Facult	Description and Diagnosis
NegRlyOpen	Open circuit of main negative relay • Restart the device. • Or contact SolaX for help.
FlashFlt	Flash fault • Check if the external Flash communication is normal. • Or contact SolaX for help.
ChgReqFlt	Charging request fault • Check the device is properly charged. • Or contact SolaX for help.
InsFlt	Insulation fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
SOCLowFlt	Low SOC • Check if the device is running out of power. • Or contact SolaX for help.
PreChgFailFlt	External short-circuit fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
AFEProtectFlt	Battery's hardware protection fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
SelfCheckFlt	Self-test fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
LinkerTempHilFlt_3	Fault on overtermperature of high-voltage connector • Check whether the charge/discharge current is over 50% of rated charge/discharge current. • Or contact SolaX for help.
LinkerTempHilFlt_5	Fault on overtermperature of high-voltage connector • Check whether the charge/discharge current is over 50% of rated charge/discharge current. • Or contact SolaX for help.

Facult	Description and Diagnosis
BatLinkerTempHi_5	High-temperature fault of pole • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
FanFault	Fan fault • Check whether any foreign objects stick to the fan. • Contact SolaX for help.
FuseSt	Fuse fault • Contact SolaX for help.
DCSwitch	DC switch fault • Contact SolaX for help.

10.3 Maintenance

Regular maintenance is required for the device. The table below lists the operational maintenance for expressing the optimum device performance. More frequent maintenance service is needed in the worse work environment. Please make records of the maintenance.

WARNING!

- Only qualified person can perform the maintenance for the device.
- Only use the spare parts and accessories approved by SolaX for maintenance.

10.3.1 Maintenance Routine

Table 10-1 Maintenance list

Check Item	Description	Interval Time
The operating status and environment of the system	• Check whether there is any damage to the distributed energy system, and the equipment is deformed. • Check whether there are any abnormal noise in the running system. • Check whether the parameter is correct shown in the screen. • Check whether there is any damage to the main components. • Check whether the temperature of the equipment shell is normal. Meanwhile, it is suggested to use a thermal imager or any other monitoring systems to identify signs of heat. • Check whether the surrounding is at normal humidity level, and there is any damage to the dust and air filters. a. Must ensure that the air intake is well ventilated. Otherwise, the battery pack failure will be caused due to overheating. b. Please gently open the door to prevent raising dust from the filter cotton. Otherwise, the smoke detector will alarm and give a command to the automatic fire sprinkler to spray gas.	Every 6 months

Check Item	Description	Interval Time
System cleaning	• Check whether the circuit boards and components are clean. • If necessary, clean the modules by air compressor. **Note: 1. The system must be shut down before cleaning. 2. The maintenance period shall be shortened if the cabinet is installed in heavily polluted environments.**	Every 6 months
Electrical connection	• Check whether the power cables are fastened securely. If not, please tighten them again according to the torque written in the document. • Check there is any damage to the cables, especially the cable jacket connecting with the metal parts. • Check whether the electrical insulation tape is in good condition and no peeling.	The check shall be scheduled within one month after the first commissioning, and then can be scheduled every 6 months
Terminal and block connection	• Check whether the screws are fastened securely. If not, please tighten them again according to the torque written in the document. • Check whether there is any fading to the screws and copper bars. • Check whether the wiring arrangement is reasonable. • Check whether the loop terminals are in good condition, and the temperature of the screws is normal.	The check shall be scheduled within one month after the first commissioning, and then can be scheduled every 6 months
Relay maintenance	• Do a routine inspection for the corrosion of all metal components. • Do an annual inspection for the connectors (auxiliary switches and microswitches) to make sure that the equipment is in good running condition. • Check whether the parameter is correct (especially the voltage and insulation).	Every 6 months
Aerosol inspection	• Check whether the aerosol is in good condition, and wiring are fastened securely.	Every 6 months

Check Item	Description	Interval Time
Safety function	• Check whether the emergency stop button and LED is in good working condition. • Check the stopping signal and communication by simulating the shutdown operation. • Check whether there are any damages to warning signs and other labels pasted on the equipment. If so, please replace them in time.	Every 6 months

10.3.2 Maintenance of Battery Pack

Circumstance	Measure
If the ambient temperature for storage is between 30°C and 50°C	Recharge the battery packs at least once every 6 months
If the ambient temperature for storage is between -20°C and 30°C	Recharge the battery packs at least once every 12 months.
In the first installation	The interval among manufacture dates of battery packs shall not be exceed 3 months.
If a battery module is replaced or added for capacity expansion	Each battery's SOC should be consistent. The max. SOC difference should be ±5%.
If users want to increase their battery system capacity	Ensure that the SOC of the existing system capacity is about 40%. The manufacture date of the new battery pack shall not exceed 6 months. If the manufacture date of the new one exceeds 6 months, please charge it to around 40%.

WARNING!

- Only qualified person can perform the maintenance for the device.

11 Dispose of Wasted and Damaged Battery Pack

Please dispose of the rechargeable battery or accessories in accordance with the disposal regulations for electronic waste which is applied at the installation site.

NOTICE!

- The expenses for dispose of the wasted or damaged battery packs incurred shall be borne by the user.

12 Technical Data

Battery System

Model	AELIO-B100	AELIO-B100-AU
Battery type	LiFePO4	
Rated battery capacity [kWh]	100.4	100
Rated battery voltage [V]	358.4	
Battery voltage range [V]	296.8~408	
Discharge depth [%]	90	
Rated charge/discharge current [A]	140	
Max charge/discharge current [A]	140	
Auxiliary Power Input Voltage [a.c. V]	L/N/PE, 230, 220	
Auxiliary Power Input Current [a.c. A]	Max. 10	
Auxiliary Power Frequency [Hz]	50/60	
Prospective Short Circuit Current (Battery Side) [A]	8488	
Operating Temperature [°C]	-30~55	
Ingress Protection	IP55	
Protective Class	I	

General Parameter

Model	AELIO-B100	AELIO-B100-AU
Dimensions (with Inverter) (W×H×D) [mm]*	1310 × 2300 × 1140	
Dimensions (without Inverter) (W×H×D) [mm]	1020 × 2300 × 1140	
Weight (with Inverter) [kg]	1600	
Weight (without Inverter) [kg]	1500	
Operating ambient temperature range [°C]	-30~55	
Relative humidity(Non-condensing) [%]	0~95	
Max. operating altitude [m]	3000	
Cooling concept	Forced air cooling	
Ingress protection	Cabinet: IP55; Inverter: IP65*	
Fire protection	Aerosol / Water	
Topology	Non-isolated	
Standard	IEC62619, IEC63056:2000, IEC61000, IEC62477-1, UN38.3	

The mark "*" indicates that the information about the inverter may be recorded in the above table.

Wireless Operating Frequency:

GSM 900/1800 MHz: 33 ±2dBm

WCDMA B1/8: 23 ± 2dBm

LTE B1/3/7/8/20/28/38/40: 23 ± 2dBm

CE Statement:

SolaX Power Network Technology (Zhejiang) Co., Ltd. declares that the product is incompliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. In accordance with Article 10(2) and Article 10(10), this product allowed to be used in all EU member states.

13 Appendix

13.1 Requirements for OT/DT/OT Terminal

- In the case of a copper cable, please use a copper wiring terminal.
- In the case of a copper-clad aluminum cable, please use a copper wiring terminal.
- In the case of an aluminum alloy cable, please use a copper-to-aluminum wiring terminal or an aluminum wiring terminal with a copper-to-aluminum washer.
  - » Do not connect the aluminum wiring terminal to the terminal block. Otherwise, electrochemical corrosion may occur, compromising the reliability of the cable connection.
  - » The copper-to-aluminum wiring terminal or the aluminum wiring terminal with a copper-to-aluminum washer used must meet the IEC61238-1 requirements.
  - » When using the copper-to-aluminum washer, you must confirm that the aliminum side of the washer contacts the aluminum wiring terminal, as well as the copper side of the washer contacting the terminal block.

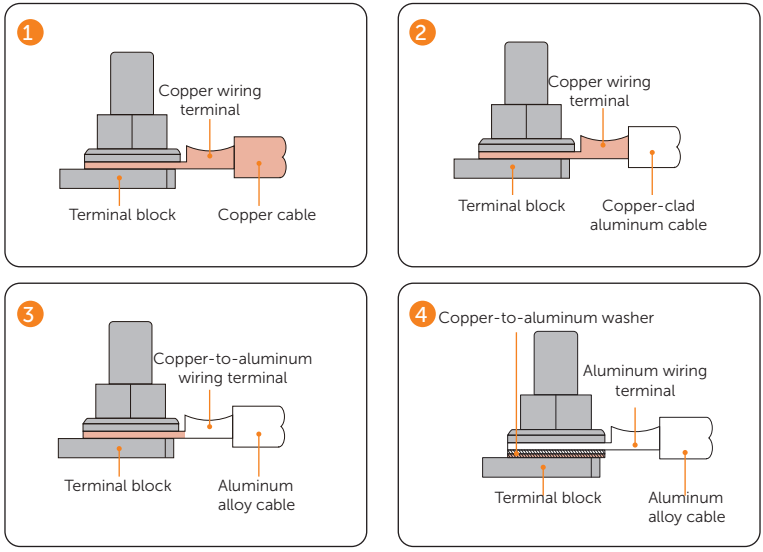


Figure 13-1 Requirement for OT/DT/OT terminal

13.2 How to Repaint the Cabinet

In bad weather conditions, such as rain, snow, gales, sandstorms, etc., stop carrying out repainting even if the equipment is installed outside.

Strictly comply with the pantone color described in the document while repainting.

Repainting description

To keep the equipment appearance intact, please repaint it immediately in the case of flaking and peeling paint.

NOTICE!

- Prepare tools and sufficient materials according to the On-site Assessment Report of the Extent of the Paint Damage.

Table 13-1 Repainting description

Extent of the paint damage	Tools and materials	Procedure	Description
Light scratches on equipment (without reaching the steel substrate)	Spray paint or oil paint, hairbrush (for small scratched area), fine sandpaper, absolute alcohol, cotton cloth, paint sprayer (for large scratched area).	Steps 1, 2, 4, and 5	a. Regarding the painting, the pantone color (Pantone 11-4800TCX) is for reference. b. Regarding the light scratches or small area of stubborn stains, it is suggested to use spray paint and hairbrush. c. Regarding the deep scratches or the large area of stubborn stains, it is suggested to use oil paint and paint sprayer. d. Make sure that the damaged area with even coverage and thin, to create a consistent and even appearance. e. Allow the paint to dry for at least 30 minutes before conducting the next step.
Stubborn stains on equipment			
Deep scratches on equipment (the damaged primer, reaching the steel substrate)	Spray paint or oil paint, zinc-rich primer, hairbrush (for small scratched area), fine sandpaper, absolute alcohol, cotton cloth, paint sprayer (for large scratched area).	Steps 1, 2, 3, 4, and 5	
The damaged logo or pattern, dents and dings	If the logo or any other patterns are damaged, contact your local spraying company to customize a repainting plan in accordance with the size, color, and extent of the damage to the logo or patterns. a. If the damaged area is < 100 mm2 and the depth is < 3 mm, it is recommended to use a poly-putty base to fix the dents and dings first and then deal with them according to the Procedure for Deep Scratches. b. If the damaged area is > 100 mm2 or the depth is > 3 mm, contact your local supplier to make a repair plan based on the actual situation.		

Procedure

Step 1: Gently sand the scratched surface with a fine sandpaper to remove rust or stains.

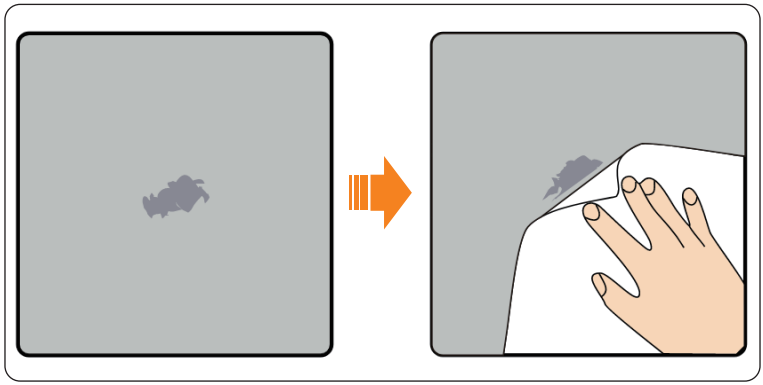


Figure 13-2 Sanding the scratched surface

Step 2: Clean the scratched area properly with a wet cotton cloth to remove dirt, and then wipe it with a dry cotton cloth.

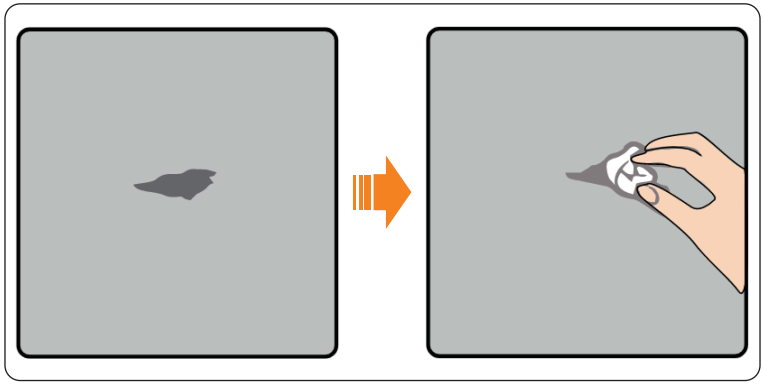


Figure 13-3 Cleaning the scratched area

Step 3: Apply the zinc-rich primer to the scratched area through a hairbrush or paint sprayer.

NOTICE!

- If the bare metal underneath can be seen,
  - » Firstly, the epoxy zinc-rich primer must be applied;
  - » Secondly, apply the acrylic top coat until the primer is dry and the bare metal cannot be seen.
- The epoxy zinc-rich primer and the acrylic top coat shall be decided according to the surface coating of the equipment.

Step 4: Given the damage degree, one of the following methods, self painting, brush painting, or paint sprayer can be chosen to evenly paint the damaged area.

NOTICE!

- Make sure that the damaged area with even coverage, smooth and thin, to create a consistent and even appearance.
- If there are any other colors on the equipment, carefully position the tape or paper over the undamaged area before painting, to avoid staining these colors.

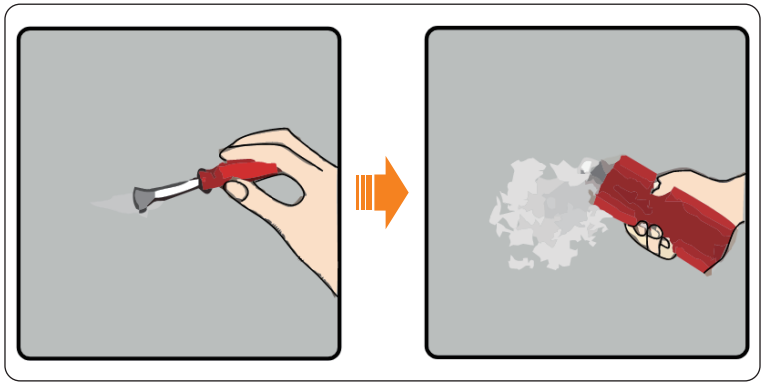


Figure 13-4 Painting the damaged area

Step 5: Allow the paint to dry for at least 30 minutes, and then check whether the repaired area meets requirements.

NOTICE!

- The color of the repaired area shall be consistent with the surrounding area. Use a colorimeter to measure the color difference, of which Delta E shall be ≤ 3. If the color cannot be measured by a colorimeter, please confirm that there is no obvious color difference at the edges between the repaired area and the surrounding area, as well as no bumps, scratches, flakings, or breaks.
- In the case of spray painting, it is suggested to paint 3 times first before checking whether it meets the requirements. If not, please repeat spray painting until it meets the requirements.

Contact Information

UNITED KINGDOM
Unit C-D Riversdale House, Riversdale Road, Atherstone, CV9 1FA
+44 (0) 2476 586 998
service.uk@solaxpower.com

AUSTRALIA
21 Nicholas Dr, Dandenong South VIC 3175
+61 1300 476 529
service@solaxpower.com

TURKEY
Fevzi Çakmak mah. aslım cd. no 88 A Karatay / Konya / Türkiye
service.tr@solaxpower.com

GERMANY
Am Tullnaupark 8, 90402 Nürnberg, Germany
+49 (0) 6142 4091 664
service.eu@solaxpower.com
service.dach@solaxpower.com

USA
3780 Kilroy Airport Way, Suite 200, Long Beach, CA, US 90806
+1 (408) 690 9464
info@solaxpower.com

NETHERLANDS
Twekkeler-Es 15 7547 ST Enschede
+31 (0) 8527 37932
service.eu@solaxpower.com
service.bnl@solaxpower.com

POLAND
WARSAW AL. JANA P. II 27. POST
+48 662 430 292
service.pl@solaxpower.com

SPAIN
+34 9373 79607
tecnico@solaxpower.com

ITALY
+39 011 19800998
support@solaxpower.it

BRAZIL
+55 (34) 9667 0319
info@solaxpower.com

PAKISTAN
service.pk@solaxpower.com

SOUTH AFRICA
service.za@solaxpower.com

SolaX Power Network Technology (Zhejiang) Co., Ltd.

ADD.: No. 278, Shizhu Road, Chengnan Sub-district, Tonglu County, Hangzhou, Zhejiang, China

Tel.: +86 (0) 571-56260011

E-mail: info@solaxpower.com / service@solaxpower.com