



# **Air Cooling Energy Storage System**

**TRENE-P100B215  
Maintenance Manual**

Version 1.0

[www.solaxpower.com](http://www.solaxpower.com)



# STATEMENT

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# About This Manual

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## Scope of Validity

This document describes regular maintenance, troubleshooting and parts replacement for TRENE-P100B215 product. Please read it carefully before operating.




## Target Group

This document is intended for:

- Technical support engineers
- Maintenance engineers

## Conventions

The symbols that may be found in this manual are defined as follows.

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

## Change History

Version 0.0 (2024-12-31)

Updated "1 Safety".

Version 0.0 (2024-10-28)

Initial release

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# 1 Safety

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## 1.1 General Safety

Before transporting, storing, installing, operating, using and/or maintaining the device, please carefully read and understand the document, and strictly follow the instructions and safety precautions given herein, as well as symbols affixed on the device. The safety instructions herein are only supplements to local laws and regulations.

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, regulations, standards, guidelines and industry rules in the process of transportation, storage, installation, operation, and maintenance. 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 device is well designed and tested to meet all applicable state 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.

SolaX will not assume any responsibilities if any of the following circumstances occur, 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 human 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 PCs or devices.
- Installation and commissioning operated by unauthorized personnel who are not licensed and /or satisfy state and local jurisdiction regulations.

## 1.2 Device Safety

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

### 1.2.1 Cabinet Safety

#### DANGER!

- According to the local laws and regulations related to high-altitude work, operators must wear PPE, e.g., a helmet, safety belt, or waist harness, when they work at heights, while the other end of the harness must connect to a secure structure to prevent fall incidents.

#### WARNING!

- Please prepare tools that meet the requirements before installation, and check the number of tools after installation, to avoid leaving them inside the equipment.
- Please ensure that the cabinet has been thoroughly secured before operating it. Otherwise, it may cause personal injury or equipment damage due to tilting or collapsing the cabinet.
- Please ensure that the cabinet's vents and cooling system are working properly when it is running. If the vents are blocked, it will lead to overheating, and even equipment damage or fire hazard.
- Please ensure that the cabinet's vents and cooling system are kept away from heat sources.
- Do not drill holes in the device to avoid equipment failure.
- If the circumstances that may cause personal injury or equipment failure occur, such as, fluid flowing into the equipment, stop operation and power off immediately. Otherwise, it may cause a short circuit or damage.
- Do not open the cabinet doors on a rainy or high humid day ( $\geq 80\%$  humidity). If the doors have to be opened on such days, please take proper protective measures.

#### CAUTION!

- Do not use a straight ladder. When electrical work is involved, a wooden ladder or an insulated ladder shall be used.
- The equipment shall not be used to provide a backup power source in the following circumstances:
  - a. Equipment related to life;
  - b. Sensitive precision instruments;
  - c. Home appliances will be faulty in the case of a power failure during operation.

#### NOTICE!

- The signs and messages on the labels and nameplates attached to the device need to be visible and clear.

## 1.2.2 Battery Safety

### DANGER!

- Do not connect the positive and negative poles of a battery together. Otherwise, it may be short-circuited. This will result in an excessive flow of current and large quantities of energy for a short time, and then will cause battery leakage, smoke, the emission of flammable gases, thermal runaway, fire, or even an explosion. Therefore, the battery must be powered off before maintenance.
- If a battery is overheated, it will cause leakage, smoke, release of flammable gases, thermal runaway, fire, or even an explosion. Therefore, please ensure that the installation site shall be well ventilated and kept away from high temperatures.
- Do not dismantle, change, shake, drop, crush, impact, cut, penetrate with a sharp object, or any other ways to damage the battery. Otherwise, it may cause leakage, smoke, emission of flammable gases, thermal runaway, fire, or even an explosion.
- Do not mix different types or makes of the battery. Otherwise, it may cause leakage or rupture, resulting in personal injury or property damage.
- The battery electrolyte is toxic and volatile. Never get in contact with the leaked liquids or inhale gases in the case of the battery leakage or odor, and contact professionals immediately. The professional must wear PPE (including but not limited to safety glasses, safety gloves, gas masks, and protective clothing) before powering off the device, and then contact our company at once after removing the damaged battery.
- Normally, the battery will not release any gases. 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. If the battery needs to exhaust flammable gas, safe emission measures must be taken to prevent fire and device corrosion.
- Do not use damaged batteries, and ensure that the installation site must be well ventilated.

### WARNING!

- Please read the document carefully before installation, operation and maintenance.
- Must arrange fire-fighting equipment in advance according to the local laws, regulations, and standards while installing and commissioning the device.
- Please check that there is no damage to the outer packaging before and after unpacking, and in the process of storage and transportation. The battery shall be correctly placed or stacked in accordance with the requirements stipulated on the labels to prevent damaging or scrapping the battery resulting from crushing or falling.

 **WARNING!**

- Must tighten screws securing cables and on the copper bars according to the torque information specified in the document, and check whether they are tightened periodically. For instance, whether there is any rust, corrosion, or any other foreign object on it, and then clean it up if any. Because the loose screw connections may result in excessive voltage drops and large currents, leading to generating a lot of heat and burning the battery.
- The battery should be charged in time after discharge, to prevent battery damage due to overdischarge. If a battery pack is stored for a long time, please periodically recharge it to protect it from damage according to the storage requirements specified in the document.
- Please charge the battery within the specific temperature range because the low temperature may result in a short circuit. Hence, do not charge it when the temperature is below the low limit of the operating temperature.
- Do not use the battery when you find a bulge, or dents on the battery housing, and contact the installer or professional maintenance personnel to dismantle and replace it. The damaged battery must be kept away from other devices and flammable and explosive articles, and do not contact it except for professionals.
- Before operation, ensure that there are no irritating or burning smells around the battery.
- Do not weld or grind near a battery. Because electric sparks or arcs may cause fires.
- Do not step, lead, stand, or set on the battery.

 **WARNING!**

- Please check that there is no damage to the outer packaging before unpacking. If damaged, do not use and contact the transporter and manufacturer immediately.
- Do not place installation tools, metal parts and other sundries on the battery while installing. Items on and around it need to be cleaned up in time after finishing installation.
- Do not install the battery in rain, snow, fog and other weather to avoid battery damage.
- If the battery is damaged or accidentally drenched in water, do not install and use it. Please transport it to a safety isolation point and contact the local fire department or professional technicians for scrapping.
- If the battery cables are submerged in water, do not approach, touch or use them.
- Ensure that the positive and negative terminals of the battery are not accidentally grounded. If accidental grounding occurs, disconnect the battery terminals from the ground immediately.

**NOTICE!****Transportation requirements for battery:**

- Relevant qualifications for the transport of dangerous goods must be obtained by the forwarding agent engaged in such businesses, and they must strictly abide by the local regulations for the transport of dangerous goods.
- Please check the battery before transportation. If a battery leaks, smells, or is damaged, do refuse to transport it.
- Please handle gently in the process of loading and unloading, transportation, and moving a battery to prevent bumping, and take effective moisture-proof measures to prevent personal injuries and battery damage.
- Unless otherwise specified, do not transport the batteries, which are classified as dangerous goods, together with food, medicine, or other additives on the same means of transport.

**If the battery leaks electrolyte or any other chemical materials, the electrolyte leakage can lead to toxic gases. Therefore, do not contact with them 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 at least 15 minutes, and seek medical attention;
- In case of contact with skin: Wash the contact area thoroughly with soap, and seek medical attention;
- In case of ingestion: Induce vomiting, and seek medical attention.

**If a fire breaks out where the battery is installed, please do as follows:**

- In case a battery is charging when the fire breaks out, provided it is safe to do so, press the emergency stop button and unplug the power cable;
- In case a battery is not on fire yet, use a water-based fire extinguisher or a carbon dioxide extinguisher to extinguish the fire;
- In case a battery catches fire, do not try to put it out, and evacuate immediately;
- A battery may catch fire when it is heated above 150°F/60°C. If the battery catches fire, please evacuate immediately since it will generate noxious and poisonous gases.

**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 curbside recycling bins. Otherwise, it may cause environmental pollution or explosions.
- Ensure that the damaged or wasted batteries are not exposed to the following situations: high temperatures, high humidity, direct sunlight, or corrosive environments.
- Contact a battery recycling company to scrap the battery, which leaks electrolytes, or is damaged or expired.
- Please take protective steps to prevent battery short circuits before moving batteries.
- Please keep away from flammable material storage areas, residential areas, and other population centers when transporting and storing the damaged battery.

### 1.2.3 PCS Safety

#### DANGER!

- Only operate the PCS if it is in a technically faultless condition. Operating a faulty PCS may lead to electric shock or fire.
- Do not attempt to open the enclosure without authorization from SolaX. Unauthorized opening of the enclosure will void the warranty and can result in lethal danger or serious injury due to electric shock.
- Make sure that the PCS is reliably grounded before any operation to prevent the risk of electric shock causing lethal danger or serious injury.
- Only qualified personnel can perform the installation, wiring, maintenance of the PCS by following this document and the related regulations.

#### WARNING!

- Operators must wear PPE while installation and maintenance of the device.
- During operation, avoid touching any parts of the PCS other than the LED panel.
- Never connect or disconnect the AC and DC connector while the PCS is running.
- Prior to conducting any maintenance, turn off the AC and DC power and disconnect them from the PCS. Wait for 15 minutes to fully discharge the energy.
- Avoid touching the PCS while it is running, as it becomes hot during operation and may cause personal injuries.

#### CAUTION!

- Make sure that children are supervised to prevent them from playing with the inverter.
- Pay attention to the weight of the inverter and handle it properly to avoid personal injuries.

#### NOTICE!

- The PCS has an integrated Residual Current Monitoring Unit (RCMU). If an external Residual Current Device (RCD) is required by local regulations, verify the type of RCD required. It is recommended to use a Type-A RCD with a rating of 300 mA unless a lower value is required by the specific local electric codes. When required by local regulations, the use of an RCD type B is permitted.

### 1.2.4 Utility Grid Safety

#### NOTICE!

- Only connect the PCS to the grid with the permission of the local utility grid company.

## 1.3 Electrical Safety

### DANGER!

- Please make sure that the unit is free from any damage before the electrical connection.
- Do not modify, change, or dismantle the device, do not change the power-on and power-off sequences and the installation procedure written in the document, and please properly and correctly operate it.
- Do not power on the device during installation. Otherwise, it may cause a fire, personal injury, or device damage.
- Must remove earrings, rings, bracelets, watches, and any other metal jewelry before operation, to avoid electrical shock, burns, or even death.
- During operation, special insulated tools must be used to avoid electric shock or short circuit failure. The insulated tools' voltage ratings must exceed the system voltage ratings. Please refer to "12 Technical Data" for system information.

### WARNING!

- Please wear PPE, such as, protective clothing, insulating shoes, goggles, safety helmets, insulating gloves, etc., when conducting electrical wiring.
- Do not touch the power supply equipment directly, or through conductors or damp objects.
- Do not touch the parts of the equipment of which warning signs are attached, to avoid personal injury or device damage.

### CAUTION!

- Do not power on the device until it has been installed and confirmed by professionals.
- In the event of a fire, evacuate immediately and call the local fire services.

### NOTICE!

- Please operate according to the safety code for power station.
- Before installation, it is necessary to set up temporary safety fences or warning lines and hang warning signs in the operation area, to prohibit non-staff from entering here.
- Please make sure that the equipment and its associated switches are off before connecting and disconnecting power cables.

**NOTICE!**

- Please check whether the protective housing and insulating sleeve for an electrical component have been installed correctly after finishing installation, to avoid electric shock.
- Must turn off the output switch of the power supply equipment when maintaining its electrical terminal device and power distribution device.
- If the device is required to be powered off during troubleshooting and diagnosis, please do as the following procedure: power off > electricity testing > connecting grounding cable > hanging warning signs and setting up guardrails.
- Must hang up "Do Not Switch On" warning signs on the relevant switches or circuit breakers before completing maintenance, to prevent power connection. Do not switch on before the fault is solved.
- Do not use water, alcohol, oil, or other solvents when cleaning electrical components inside and outside the device.

**NOTICE!**

**Grounding Requirements:**

- The device's grounding impedance shall meet the requirements of local electrical safety standards.
- The equipment shall be permanently connected to a grounding wire within the building's electrical system. Please check whether the device is reliably grounded before operation. The grounding cable should be removed last while dismantling and maintaining the device.
- Do not start the device if it is not fitted with a grounding conductor.
- All acts against the grounding conductor are prohibited.
- If the device is equipped with a three-pronged socket, make sure that the ground prong is reliably grounded.
- For the device that may generate large contact currents, please make sure that the grounding terminal on the housing has been grounded before powering on, to avoid electric shock.

**Cable Requirements:**

- When deciding the wire diameter, and connecting or wiring cables, follow the local laws, regulations, and codes to ensure safety.
- When external conditions (e.g., placement method, ambient temperature, etc.) change, the cable type must be verified according to IEC-60364-5-52 or local laws, regulations and standards. For instance, whether the cable's current-carrying capacity meets the requirements.
- Before connecting power cables, please make sure that the cable labels are correctly labelled and the cable terminals are well insulated.
- Do not loop and twist cables while conducting electrical wiring. If the length of the power cable is not enough, please replace it instead of joining or welding. Ensure that all the cables of the correct type and size are fully connected and well insulated, and the edges of cable slots and crossing holes are smooth.

**NOTICE!**

- It is recommended to bundle similar cables with cable ties, to ensure that the inside of the device is neat and tidy and to avoid cable jacket damage.
- Please use fireproof mud to seal the threading openings immediately after finishing wiring, to avoid the entry of water vapour or small animals.
- Cables should be kept away from heaters or other heat sources, because a high temperature environment may result in aging and damage to cable insulation.

**NOTICE!**

- Must turn off the output switch of the power supply equipment when maintaining its electrical terminal device and power distribution device.
- If the device is required to be powered off during troubleshooting and diagnosis, please do as the following procedure: power off > electricity testing > connecting grounding cable > hanging warning signs and setting up guardrails.
- Must hang up "Do Not Switch On" warning signs on the relevant switches or circuit breakers before completing maintenance, to prevent power connection. Do not switch on before the fault is solved.

**NOTICE!****Short Circuit Protection:**

- Please use electrical tape to wrap the bare conductor cables to prevent short circuits when installing and maintaining the battery.
- Prevent any object from entering into batteries, which may cause a short circuit.
- Regularly check the screws or copper bars on the device, to ensure that they are fully tightened.

**Protection of Static-sensitive Components from Static Electricity:**

- Please wear anti-static clothing and use anti-static gloves or wrist straps properly before operating sensitive equipment, and ensure that the wrist strap is grounded.
- Do not touch electronic components when picking up single boards or modules with exposed circuit boards.
- Please use anti-static materials to pack disassembled veneer boards or modules before storage or transportation, to avoid damage caused by static electricity.

## 2 Preparation before Maintenance

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### 2.1 Preparation of protective equipment

#### WARNING!

- Avoid installing, operating and maintaining the device or cables outdoors under severe weather conditions such as lightning, rain or snow.

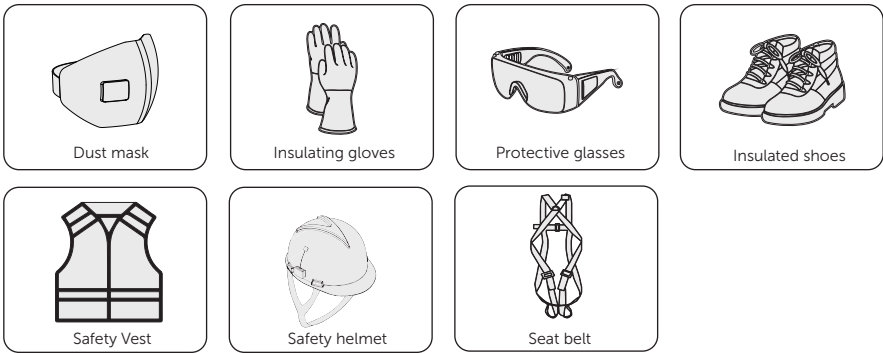
#### CAUTION!

- Please clear the fallen leaves, dust, water, snow, or other debris on the top of the cabinet before opening its doors, to avoid internal damage to the device.

#### Handling of replacement parts

- Please choose an appropriate transport method based on site conditions and device weight.
- Please wear PPE (e.g. protective gloves, shoes, belt, etc.) and lift the device with proper postures, to prevent personal injuries and device damage.
- Please reasonably arrange the number of workers, the right mix, and the handling position to achieve distributing weight and balancing load when moving the device.
- Please hold the handles or the bottom of the device when moving, to avoid device damage.
- Please pay attention to the surrounding environment when moving, such as, obstacles, slippery ground, etc., to avoid personal injuries and device damage.

## Tools requirement



### NOTICE!

- This section lists only protective equipment, refer to the appropriate chapter for specific tool information.

## 2.2 Parts Description

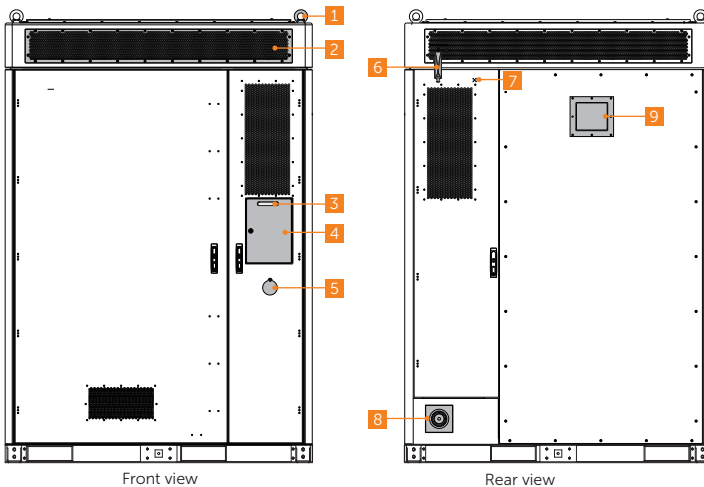


Figure 2-1 Parts description (in the closed state)

Table 2-1 Parts description

No.	Item	Description
1	Eye bolt	Material lifting applications.
2	Air conditioner	Energy storage system air conditioner.
3	LED light	To display status information of all processess running on the system.
4	Display screen	To display information of the whole system.
5	Emergency stop button	To shut down the system in emergency circumstances.
6	Antenna	A 4G antenna, to connect EMS.
7	A reserved antenna port	To connect wireless meter.
8	Fire hose nozzle	To connect the water supply sources.
9	Expansion-proof valve	To exhaust the combustibile gas out of the cabinet.

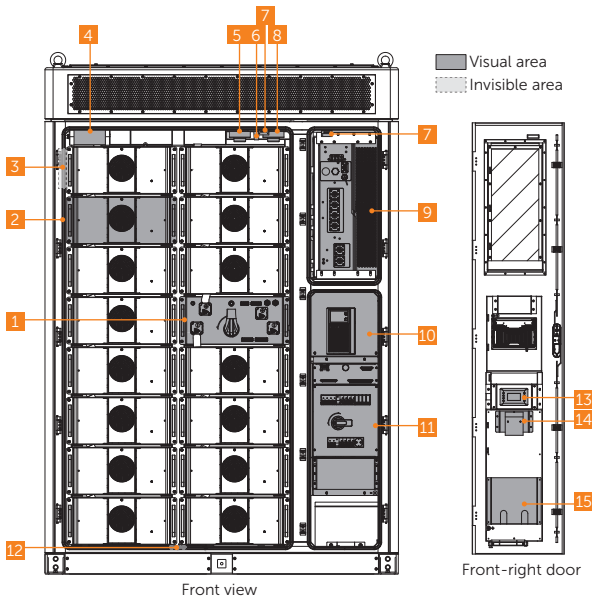


Figure 2-2 Parts description (in the opened state)

Table 2-2 Parts description

No.	Item	Description
1	High-voltage box	To collect current and voltage information on battery tower, and control the charge and discharge of battery pack.
2	Battery pack	/
3	Temperature and humidity sensor	To measure temperature and humidity.
4	Automatic fire sprinkler	To control or suppress the spread of fire
5	Temperature sensor	To detect temperature.
6	CO detector	To detect CO gases.
7	Door sensor	To alert you when the door is open.
8	Smoke detector	To detect smoke.
9	PCS	/
10*	Control area	Including IO module, EMS, UPS, etc.
11	Distribution box	To distribute AC power for the energy storage system.
12	Water sensor	To detect water level based on the principle of potential difference between the two electrodes.
13	Control panel of air conditioner	To monitor the air conditioner and show relevant parameter.
14	Audible and visible alarm	To alert you when the abnormal conditions occur, such as temperature, smoke.
15	File pocket	To put documents.

**NOTICE!**

- The mark "\*" indicates that parts in the front view (Figure 2-4) cannot be fully seen.

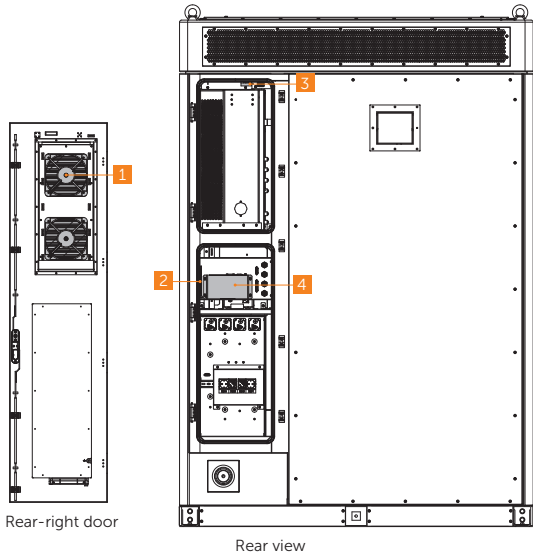


Figure 2-3 Parts description (in the opened state)

Table 2-3 Parts description

No.	Item	Description
1	Fan	To improve air circulation and dissipate heat when the temperature rises.
2	Switch	/
3	Door sensor	To alert you when the door is open.
4	EMS	A energy management system.

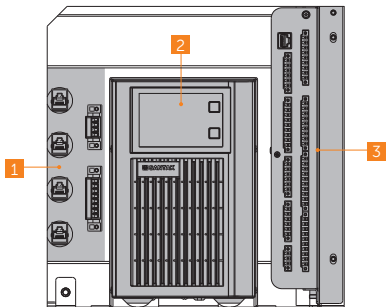


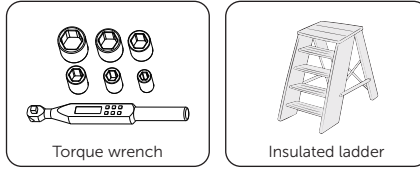
Figure 2-4 Parts description (control area)

Table 2-4 Parts description

No.	Item	Description
1	Ports	To achieve parallel connection.
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.

# 3 Routine Maintenance

## 3.1 Preparation before maintenance



## 3.2 Maintenance steps

Regular maintenance is required for the device. Please follow the instructions below to inspect and maintain the system. 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.

**Step:1** Patrol the system round, checking the following items in turn:

Check Item	Description	Interval Time
System Appearance	<ul style="list-style-type: none"><li>• Check the outside of the cabinet for obvious deformation, rust or damage.</li></ul>	1 year
Operation Status	<ul style="list-style-type: none"><li>• Check the system for abnormal noise while running.</li></ul>	1 year
Antenna	<ul style="list-style-type: none"><li>• Check whether the antenna is rusted due to salt spray. If the communication is abnormal (the cloud platform is offline) and the rust is serious, you can try to troubleshoot by replacing the antenna.</li></ul>	1 year
Environment	<ul style="list-style-type: none"><li>• Check the surrounding environment whether the humidity is at a normal level, whether the dust and air filter are damaged. It must be ensured that the air inlet ventilation condition is good. Otherwise, the battery pack will overheat and generate a fault.</li></ul>	1 year

**Step:2** View alarms on the cabinet screen, for details, see "[4 Alarm Reference](#)".

**Step:3** Power off the system, refer to "[3.3 Power Off](#)" for detailed power off steps.

**Step:4** Open the cabinet door and check the following items:

Check Item	Description	Interval Time
Environment	<ul style="list-style-type: none"> <li>Clean the inside of the cabinet of obvious foreign matter.</li> <li>Check whether there is water leakage and water storage in the cabinet.</li> </ul>	1 year
Electrical connection	<ul style="list-style-type: none"> <li>Check that all cables are securely connected. If the connection is not secure, reconnect or reinforce the cable using the sleeve specified in the instructions.</li> <li>Check the integrity of the cable to ensure that there are no scratches on the parts in contact with the metal surface.</li> <li>Check whether the electrical insulation tape is in good condition and no peeling.</li> <li>Inspect the terminals for oxidation.</li> <li>Use a thermal imager to detect the temperature of the overcurrent connection part, and timely feedback and maintenance if there is any abnormality.</li> </ul>	Check the equipment within one month after the first commissioning and every 1 year thereafter
Connection of terminals and components	<ul style="list-style-type: none"> <li>Check whether the screw is tight. If not tightened, Use a torque tool to secure the screw.</li> <li>Check the screws and copper rods for discoloration.</li> <li>Check whether the circuit terminal is in good condition and whether the temperature of screw is normal.</li> </ul>	Check the equipment within one month after the first commissioning and every 1 year thereafter

**Step:5** Power on the system. For details, refer to ["3.4 Power On"](#).

**Step:6** Check the following items:

Check Item	Description	Interval Time
Operation Status	<ul style="list-style-type: none"> <li>Confirm that the system is running without alarm.</li> </ul>	1 year
Battery pack	<ul style="list-style-type: none"> <li>Check whether the battery appearance is deformed or damaged.</li> <li>Check for abnormal noise during operation.</li> <li>Check the battery pack fan for dust.</li> </ul>	1 year
PCS	<ul style="list-style-type: none"> <li>Check the appearance of the PCS for deformation or damage.</li> <li>Check for abnormal noise during operation.</li> </ul>	1 year
Air conditioning dust net	<ul style="list-style-type: none"> <li>Check for abnormal noise, abnormal vibration and blade blockage.</li> <li>Clean the dustproof net, refer to the instruction manual for specific cleaning steps.</li> </ul>	1 year (every 3 months where environmental conditions are poor)
Smoke detector, temperature sensor, CO detector	<ul style="list-style-type: none"> <li>Check the appearance for damage or deformation.</li> </ul>	1 year

Check Item	Description	Interval Time
Components (distribution box, UPS , EMS , IO module, etc.)	<ul style="list-style-type: none"><li>• Whether the appearance is damaged or deformed.</li><li>• Check for abnormal noise during operation.</li></ul>	1 year
Safety performance	<ul style="list-style-type: none"><li>• Check the shutdown signal and communication by simulating the shutdown operation.</li><li>• Check the warning labels and other labels attached to the equipment for damage. If there is any damage, please replace it in time.</li></ul>	1 year

3.3 Power Off

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

Regarding the detailed location of the modules in the cabinet, see following figure.

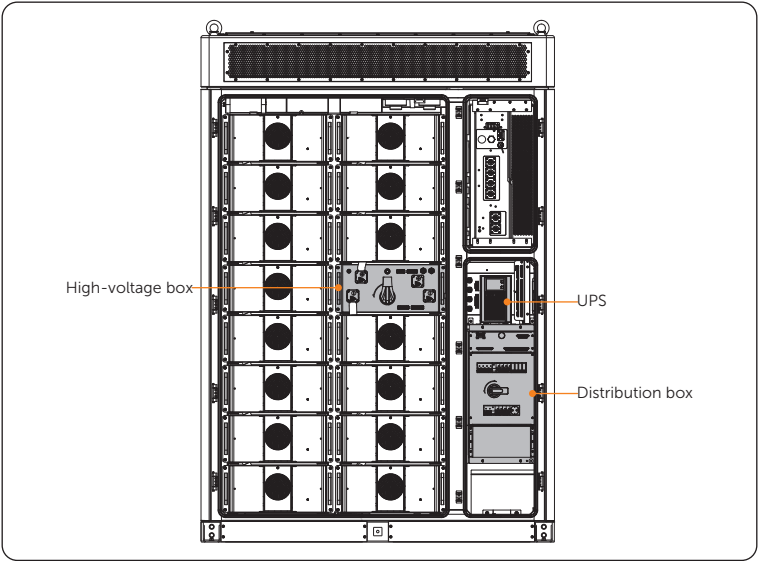


Figure 3-1 Position of modules

## Normal Power Off

**Step:1** Open the door.

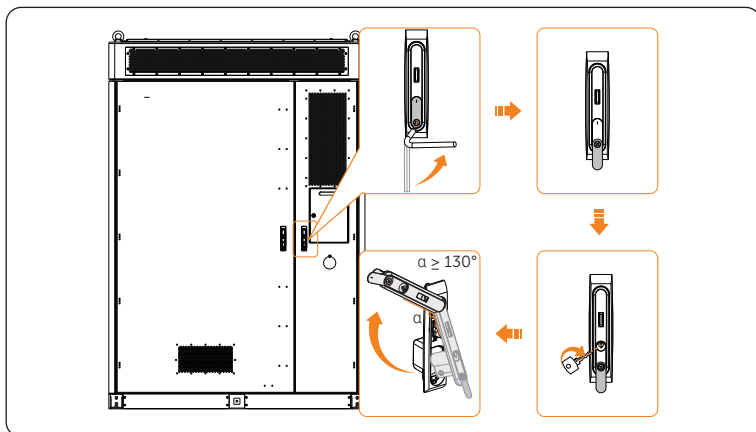


Figure 3-1 Opening the door

**Step:2** Gently press the power button, and rotate the disconnecter of the high-voltage box to "OFF".

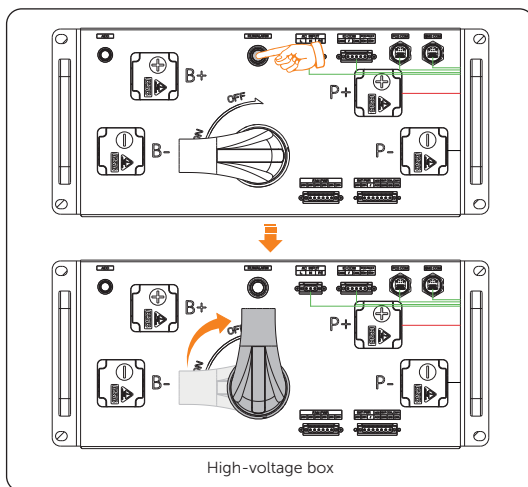


Figure 3-2 Shutting down the high-voltage box

**Step:3** Shut down the distribution box.

1. Flip down the "APS2" breaker;
2. Flip down the "UPS" breaker;

3. Flip down the "HVAC MCB" breaker;
4. Flip down the "SPD MCB" breaker;
5. Flip down the "APS1" breaker";
6. Rotate the switch on the distribution box 90° clockwise to "OFF".

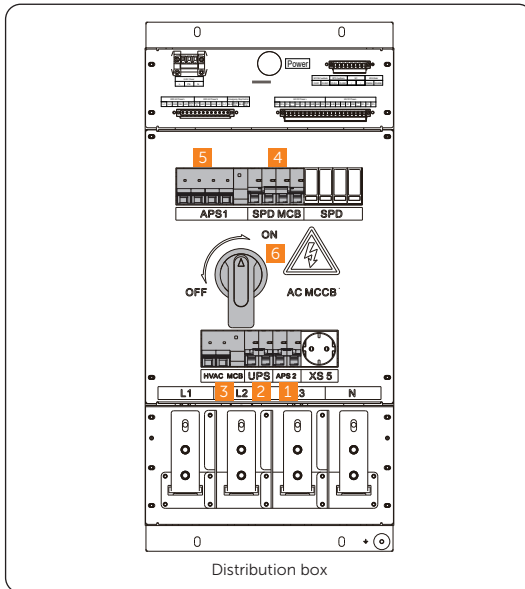


Figure 3-3 Shutting down sequence of distribution box

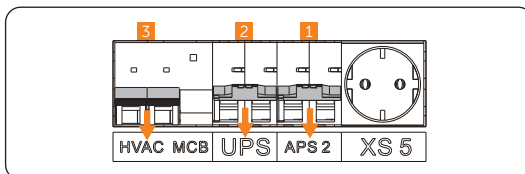


Figure 3-4 Flipping down breakers

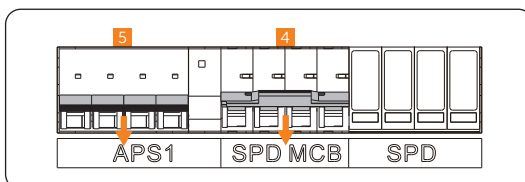


Figure 3-5 Flipping down breakers

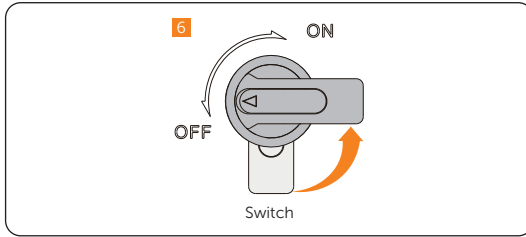


Figure 3-6 Rotating switch

**Step:1** Hold and press the "Power on/off" button to power off the UPS.

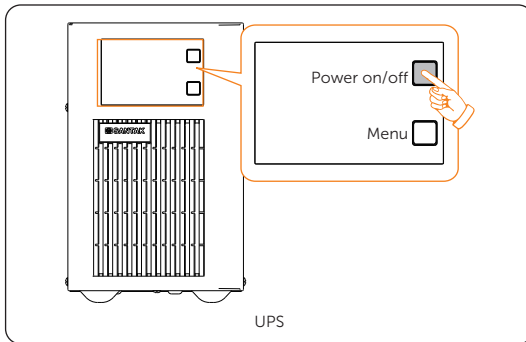


Figure 3-7 Holding and pressing button

**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 15 minutes and wear PPE before conducting maintenance.

### 3.4 Power On

#### Check before power on

Ensure that all cables connected to the EPS and distribution box (grid side) are wired and securely fastened. See Table 3-1 below for details.

Table 3-1 Checklist

No.	Item	Description
1	Equipment appearance	<ul style="list-style-type: none"><li>• Check the equipment is in good condition, with a clean, non-peeling paint, and rust-free surface.</li><li>• Ensure that the labels on the equipment are clear and easy to read. If it is damaged, the label shall be replaced at once.</li></ul>
2	Cable appearance	<ul style="list-style-type: none"><li>• Check whether the outer layer of the cable is intact. Check whether the protective tube is in good condition.</li></ul>
3	Cable connection	<ul style="list-style-type: none"><li>• Check that the cable connection position is consistent with the design principles.</li><li>• Ensure that the procedure for crimping terminals strictly observe the requirements, and the terminals are securely fastened.</li><li>• Check that the labels on the both sides of cables are clear, and the direction of both labels is the same.</li></ul>
4	Wiring	<ul style="list-style-type: none"><li>• Make sure that the wiring steps comply with the principle of strong and weak current separation.</li><li>• Make sure wiring is neat.</li><li>• Leave extra length of cable for adjustment.</li><li>• Keep the cables in the cabinet tidy.</li><li>• Check if the grid connection voltage meets: <math>L1+N=220/230\text{ V}</math>, <math>L2+N=220/230\text{ V}</math>, <math>L3+N=220/230\text{ V}</math>, <math>L1+L2=380\text{ V}</math>, <math>L2+L3=380\text{ V}</math>, <math>L1+L3=380\text{ V}</math>.</li></ul>
5	Copper bars in the battery pack	<ul style="list-style-type: none"><li>• Check to make sure the copper bars are not deformed.</li></ul>
6	Button/Switch	<ul style="list-style-type: none"><li>• Check the distribution box's switch is "OFF".</li><li>• Check the battery packs' switches are "OFF".</li></ul>

#### Power on procedure

##### NOTICE!

- Please check that the emergency stop button remains in the closed position before powering on.

**Step:1** Start the distribution box.

1. Rotate the switch on the distribution box 90° clockwise to "ON";
2. Flip up the "APS1" breaker;
3. Flip up the "SPD MCB" breaker;
4. Flip up the "HVAC MCB" breaker;
5. Flip up the "UPS" breaker;
6. Flip up the "APS2" breaker.

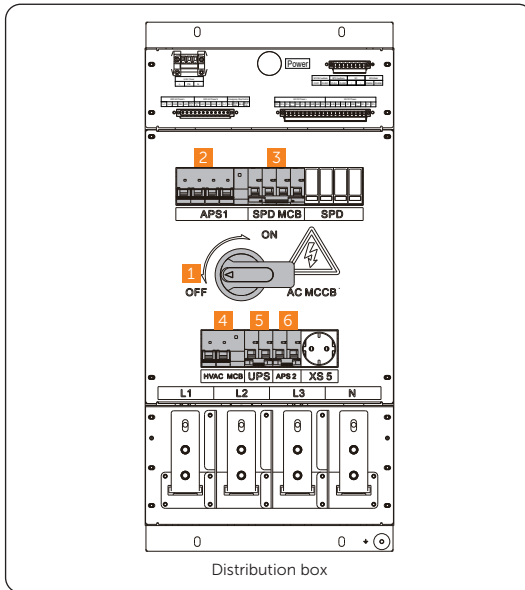


Figure 3-8 Starting sequence of distribution box

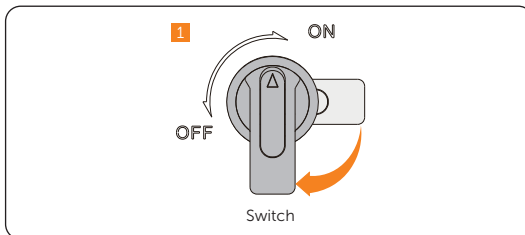


Figure 3-9 Rotating switch

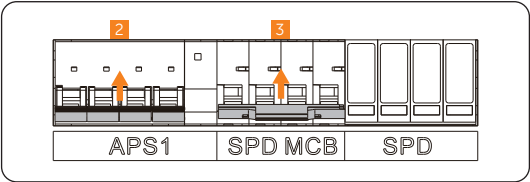


Figure 3-10 Flipping up breakers

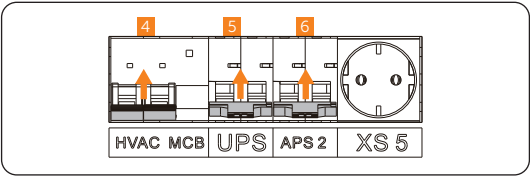


Figure 3-11 Flipping up breakers

**Step:1** The startup sound on boot will be heard when holding and pressing the "Power on/off" button to start the UPS.

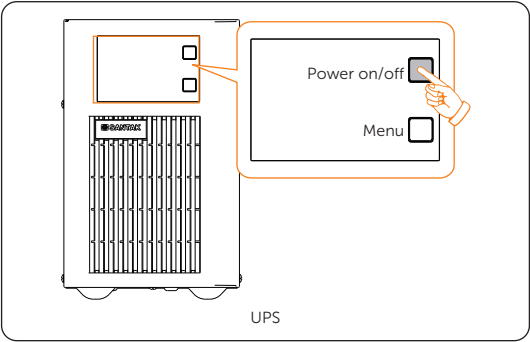


Figure 3-12 Holding and pressing button

**Step:2** Rotate the disconnecter of the high-voltage box to "ON", and then gently press the power button. At the point, the LED light will come on green.

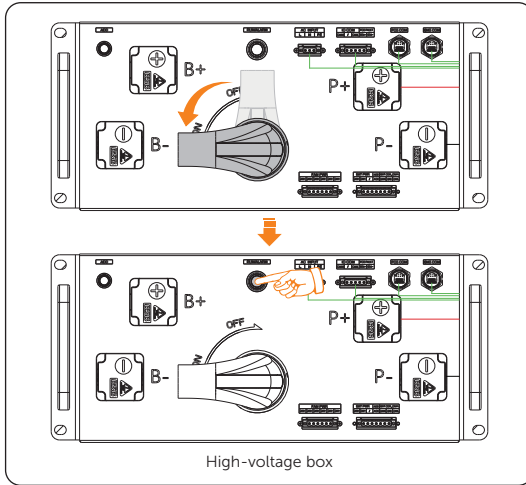


Figure 3-13 Starting the high-voltage box

**Step:3** Close the door after the equipment has been started.

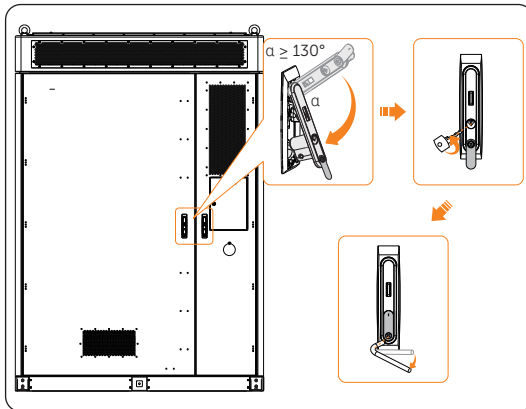


Figure 3-14 Closing the door

### Check after power on

- Step:1** Check whether the system has any abnormal noise.
- Step:2** Check whether the LED indicator reports an error and whether the LCD screen displays an error information.
- Step:3** Check the running status of the system through the cabinet screen.

## 4 Alarm Reference

System alarms can be viewed through the following channels: cabinet screen, ESM1000 webpage, SolaxCloud APP, please handle alarms according to the suggestions. If you are unable to view the alarm information, please check the *TRENE-P100B215 Troubleshooting Manual*.

### 4.1 Cabinet Screen

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

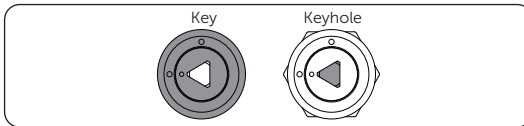


Figure 4-1 Correct position

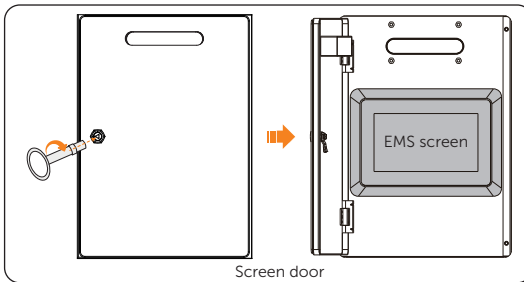


Figure 4-2 Unlocking screen door

**Step:2** On the login screen, enter your user name and password, and then click Login.

- Username: user
- Password: 123456

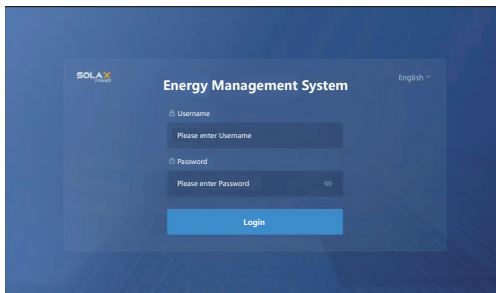


Figure 4-3 Local login

**Step:3** After logging in, click Alarm to enter the alarm information page.

The alarm information page includes the device name, device type, error code, alarm name, alarm level, alarm occurrence time, alarm end time, and operation. Click Details under the operation list to view the alarm details, fault causes and solutions.

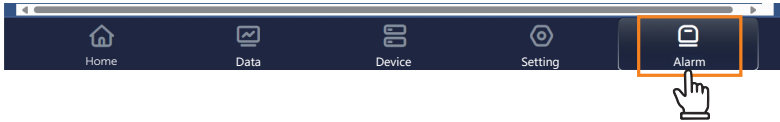


Figure 4-4 Alarm information interface

## 4.2 EMS1000 Web Page

### HINT!

- Screenshot takes V002.05 version as an example, the actual page details may be different.
- IE browser is not supported currently, and we recommend logging in to the webpage through Chrome.

**Step:1** Connect the computer to NET2 of EMS1000 with a network cable, or connect the computer to EMS1000 hotspot named WiFi\_SN, and then go to the defined IP address based on the connection mode.

- » For wired connection: 192.168.11.10
- » For hotspot connection: 192.168.10.10

If the Wi-Fi signal is weak, open the cabinet door and try again.

**Step:2** On the login page, select the language, enter the username and password, and then click **Login**.

- Username: user
- Password: 123456

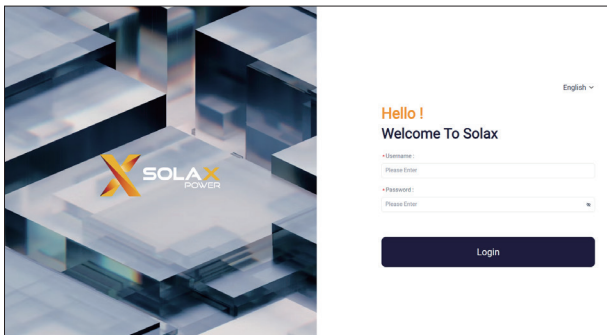


Figure 4-5 Login page

**Step:3** After logging in, click Alarm Information to enter the alarm information page.

The alarm information page includes the device type, device SN, alarm name, error code, alarm level, alarm occurrence time, alarm end time, alarm status and operation. Click Details to view the possible causes of the alarm and suggestions for the alarm.

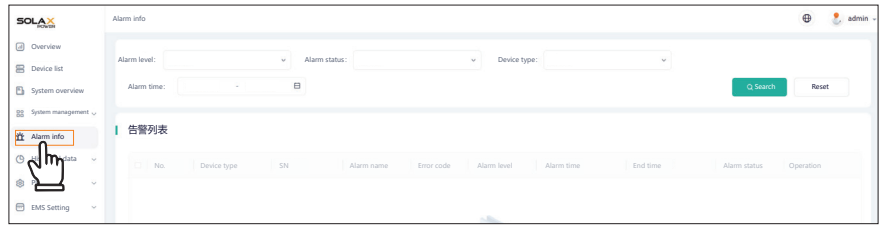


Figure 4-6 Alarm information interface

4.3 SolaXCloud APP

**Step:1** Downloading and installing App.

Select and scan the QR code below to download SolaxCloud APP. You can also find the QR codes at the button right of the login page of [www.solaxcloud.com](http://www.solaxcloud.com). In addition, you can search with the key word SolaxCloud in Apple Store or app store to download it.



Figure 4-7 QR code

**Step:2** Please watch the video or read the document on the SolaXCloud App for relevant operation.

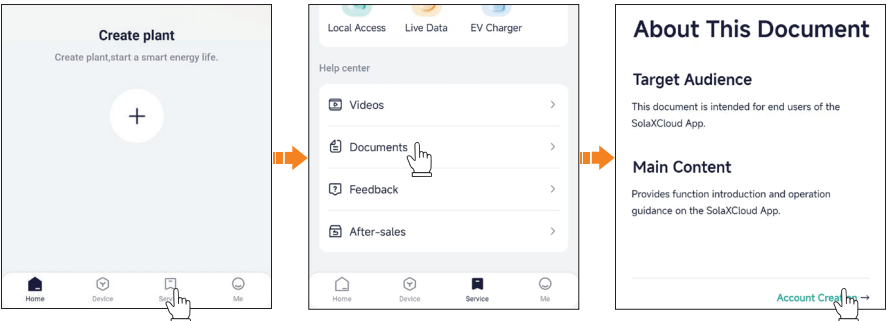


Figure 4-8 App guide on SolaXCloud

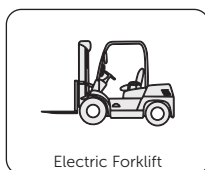
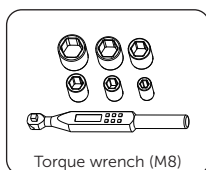
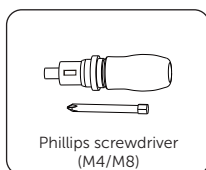
## 5 Replacement of Battery pack

### Fault location

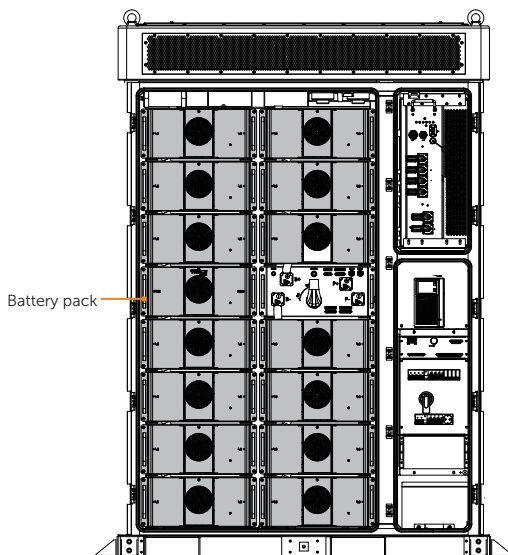
1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

### Preparation before replacement

- Contact SolaX and order replacement parts.
- Tools:



- Position of the battery pack in cabinet:



### 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!

- Before replacing the battery pack, ensure that the system is powered off. Otherwise, electric shocks may occur.
- After the system powers off, there will still be the remaining electricity and heat which may cause electric shocks and body burns. Please wear personal protective equipment (PPE) and begin servicing the system 15 minutes after power off.
- Only qualified person can perform the maintenance for the device.

### WARNING!

- 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.
- Handle gently when moving the battery pack to prevent bumping or damage.
- 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 area, residential areas, and other population centers (e.g., public transport, elevators) when transporting the faulty battery pack.

### WARNING!

- Before unpacking the battery, check whether the package is intact, batteries with damaged packaging should not be used, please notify the transporter and the manufacturer immediately if it is damaged.
- Before installing the battery pack, inspect the battery pack shell for deformation or damage.
- After removing the package from the battery pack, the installation must be completed within 24 hours, if it cannot be installed in time, the battery needs to be repacked and placed in an indoor, dry, non-corrosive gas environment; after completing the installation of the energy storage system, it must be powered on within 24 hours; the unpacking of the batteries to the powering on of the energy storage system needs to be completed within 72 hours, and the power off time can not be more than 24 hours for the later regular routine maintenance.

### NOTICE!

- The expenses for dispose of the wasted or damaged battery packs incurred shall be borne by the user.
- The replaced devices should be sent back to the local Solax warehouse.

**NOTICE!**

- The SOC value of the cabinet needs to be charged/discharged to 40%~50% before the new battery pack is installed and powered up.

## 5.1 Replacement of Battery Pack

### Procedure

**Step:1** As an example, in the picture below. Press "PUSH" on the battery pack to open the cover of the battery to be replaced and the two neighbouring batteries above and below.

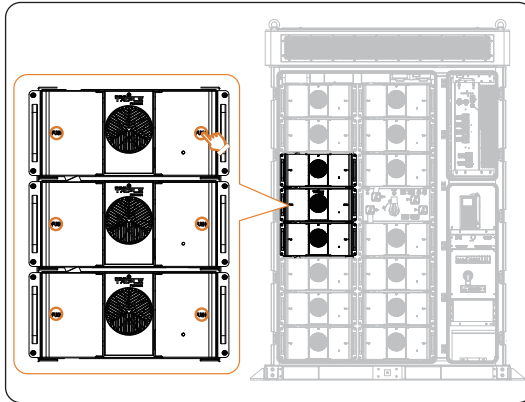


Figure 5-1 Open the battery pack cover

**Step:2** Remove copper bars and cables

1. Pinch both sides of the insulating cover and remove the cover bars;
2. Unscrew the screw;
3. Remove the copper bar and cover the insulating cover;
4. Remove the cable from the battery pack.

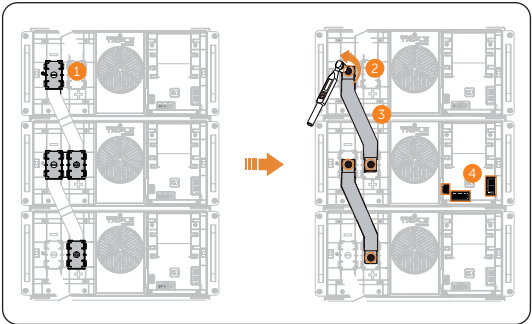


Figure 5-2 Remove the copper bar and cable



- After removing the copper bar, the insulating cover must be installed back on the battery, otherwise it may cause electric shock.

**Step:1** Remove the screws that secure the battery and remove the battery that needs to be repaired or replaced.

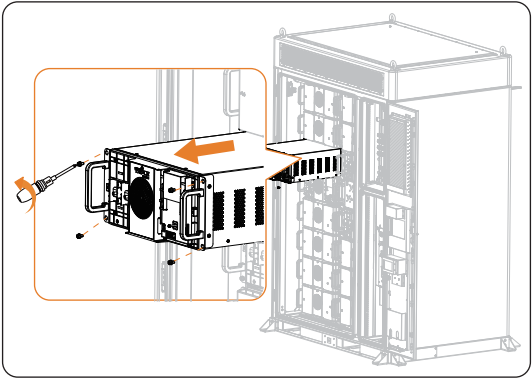


Figure 5-3 Remove the battery

**Step:2** Pull the battery pack to the forklift and transport it with the forklift .

**Step:3** Use a forklift to transport the new battery pack to the need to be replaced location, and then manually push the battery pack into the cabinet. Fix the battery pack with M8 screws.

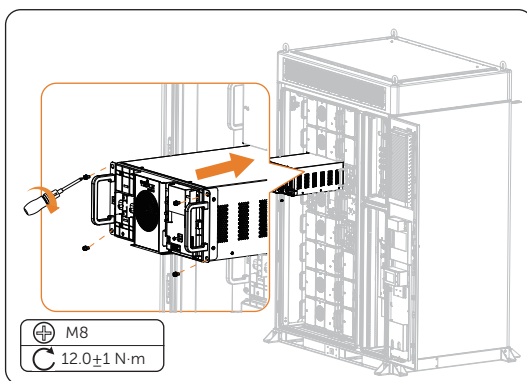


Figure 5-4 Installing the battery pack

**Step:4** Install copper bar and cable

1. Install the copper bar and lock it;
2. Install the insulating cover;
3. Connect the cables.

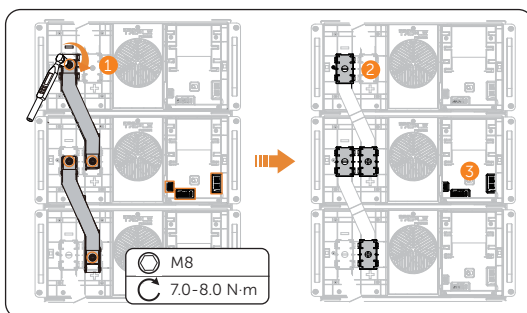


Figure 5-5 Install copper bar and cable

**Checking after replacement**

**Step:1** Power up the system. For details, refer to "[3.4 Power On](#)".

**Step:2** Press and hold the "ADD" button of the High-voltage Box for 10 seconds to assign the address.

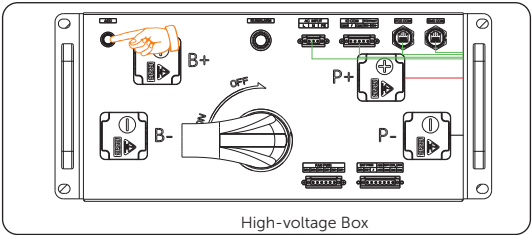


Figure 5-6 Assign the address

**Step:3** Check if function Restore

No.	Check Items	Description
1	Alarm message	The alarm status is displayed as resolved and no new alarms are generated
2	Function	The communication and charging/discharging functions are normal.
3	Operating parameters	<ul style="list-style-type: none"><li>• Number of battery packs: 15</li><li>• Battery pack voltage range: 43.2-58V</li><li>• Single cell voltage range: 2.5-3.65V</li><li>• Battery pack temperature range: -20°C to +53°C</li><li>• Charging cutoff SOC for the ESR: Set it to 90% first, and then adjust it to 100% after the system balancing is complete.</li></ul>
4	Appearance	<ul style="list-style-type: none"><li>• There is no obvious damage to the appearance.</li><li>• There is no obvious paint peeling or rust.</li><li>• The screws are secured.</li><li>• The fans rotate properly without abnormal sound.</li><li>• The front panel vent is clean and free from blockage.</li></ul>

## 5.2 Replacement of Battery Pack Fan

### Procedure

**Step:1** Press to open the cover of the battery pack.

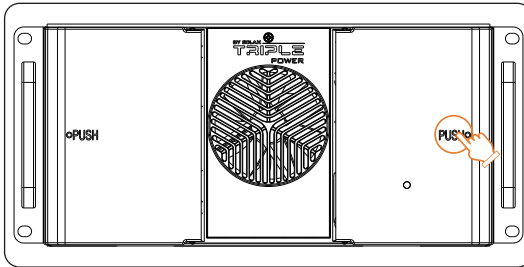


Figure 5-7 Opening the battery panel

**Step:2** Remove the cover by pressing down.

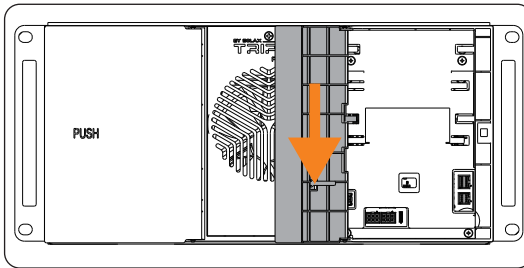


Figure 5-8 Removing the cover

**Step:3** Disconnect the cable.

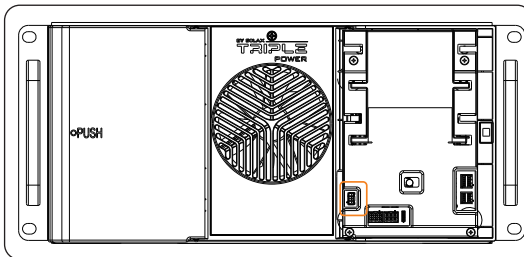


Figure 5-9 Removing the fan line

**Step:4** Unscrew the screw on the cover, remove the cover.

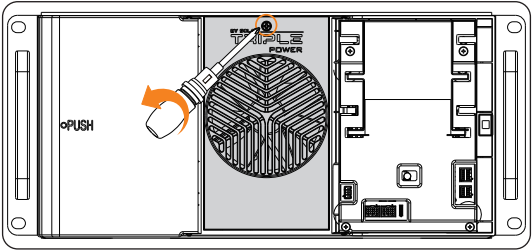


Figure 5-10 Removing fan panel

**Step:5** Unscrew the screws and remove the fan.

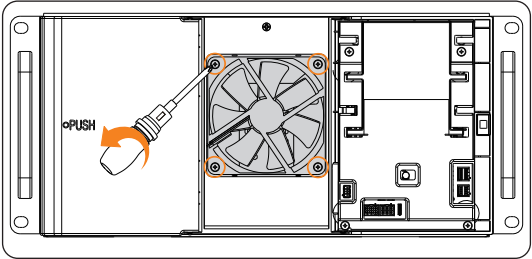


Figure 5-11 Removing the fan to be replaced

**Step:6** Install a new fan and connect the cable.

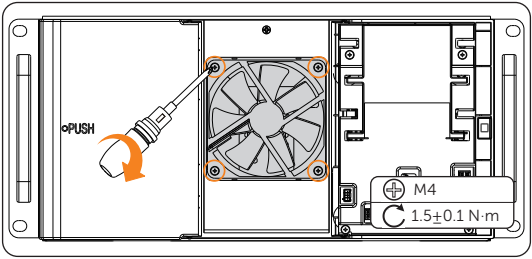


Figure 5-12 Installing a new fan

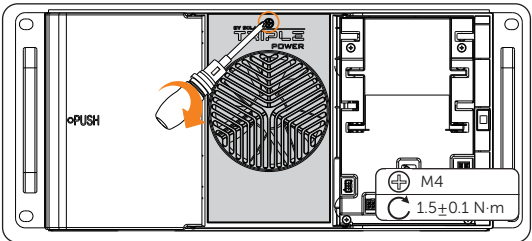


Figure 5-13 Installing the cover

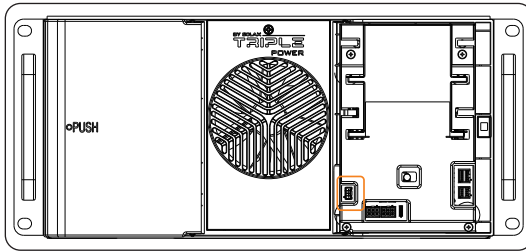


Figure 5-14 Connecting the cable

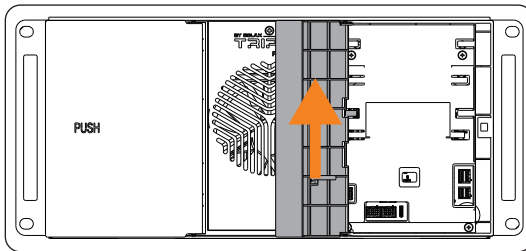


Figure 5-15 Installing the cover

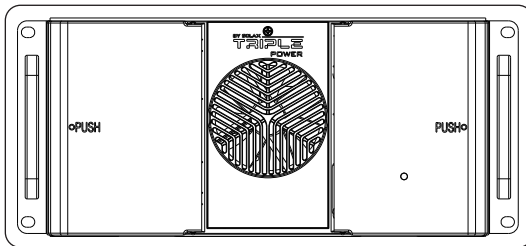


Figure 5-16 Closing the cover

### Checking after replacement

For details of checking procedure after replacement, please refer to "[20 Checking after replacement](#)".

### 5.3 Replacement of BMU

#### Procedure

**Step:1** Press to open the cover of the battery pack.

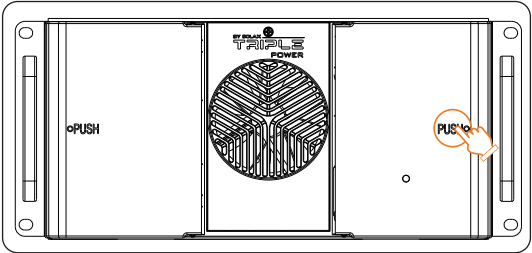


Figure 5-17 Opening the battery panel

**Step:2** Remove the cover by pressing down.

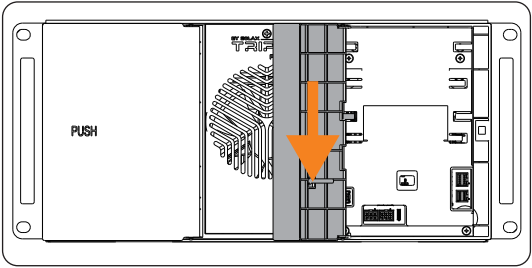


Figure 5-18 Removing the cover

**Step:3** Remove the cable of the BMU.

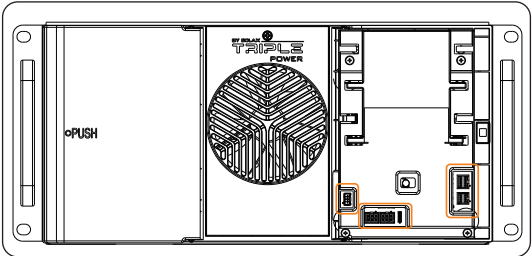


Figure 5-19 Disconnecting the cable

**Step:4** Remove the PCBA cover.

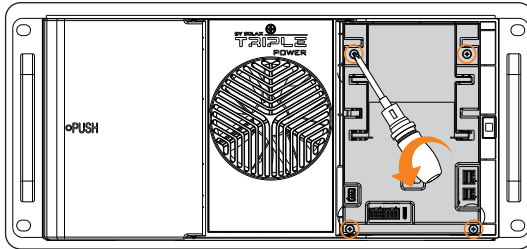


Figure 5-20 Removing the PCBA cover

**Step:5** Removing the cables of the BMU.

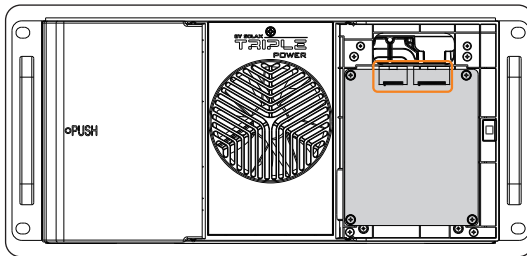


Figure 5-21 Removing BMU cable

**Step:6** Remove the BMU.

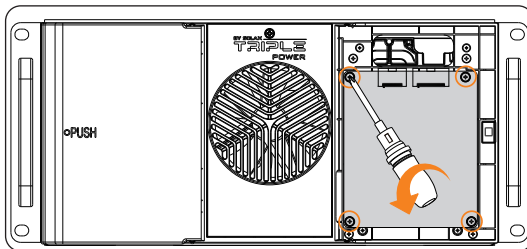


Figure 5-22 Removing the BMU

**Step:7** Install the new BMU.

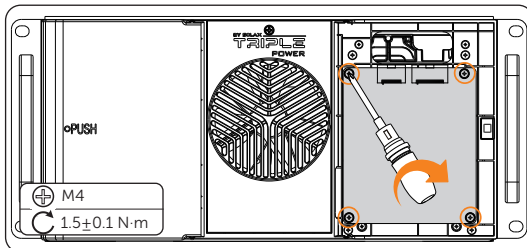


Figure 5-23 Installing a new BMU

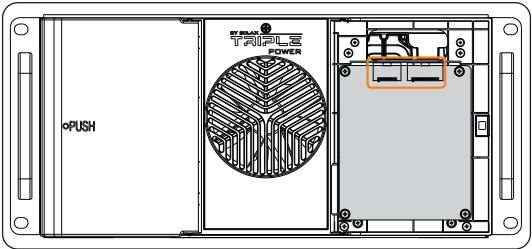


Figure 5-24 Connecting the cables of the BMU

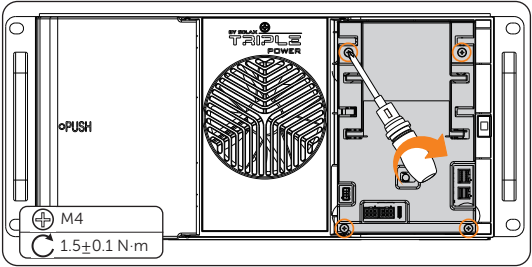


Figure 5-25 Installing the PCBA Panel

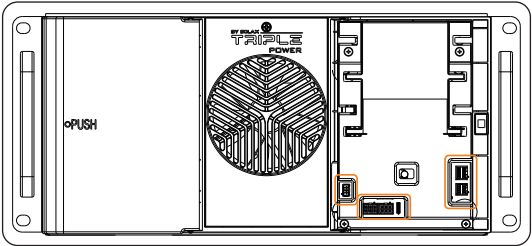


Figure 5-26 Connecting the cables

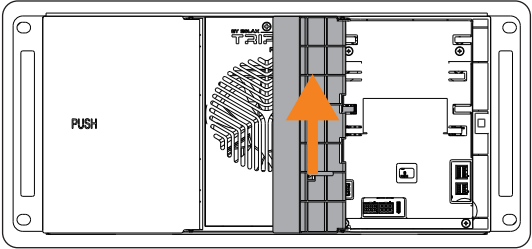


Figure 5-27 Installing the cover

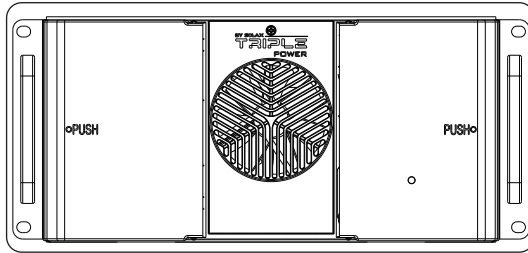


Figure 5-28 Closing the battery cover

### Checking after replacement

- Step:1** Power on the system. For details, refer to "3.4 Power On".
- Step:2** Press and hold the "ADD" button of the High-voltage Box for 10 seconds to assign the address.

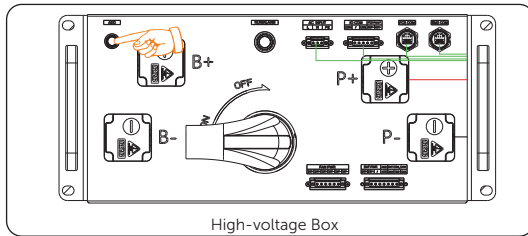


Figure 5-29 Assign the address

- Step:3** Check whether the indicator on the battery pack front panel is flashing green light and check whether the battery pack communication is normal via EMS1000 webpage or SolaX Cloud App.

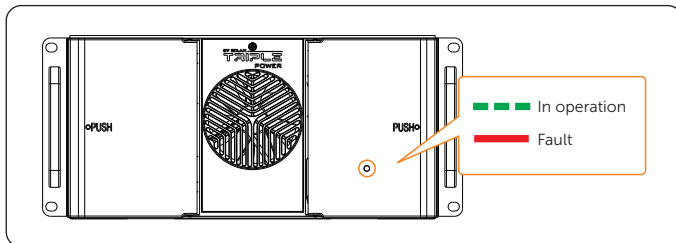


Figure 5-30 Battery indicator light

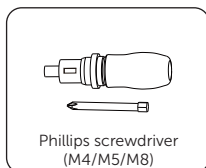
## 6 Replacement of High-voltage Box

### Fault location

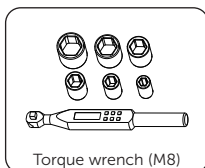
1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

### Preparation before replacement

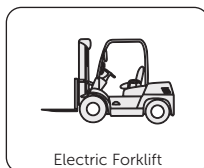
- Contact SolaX and order replacement parts.
- Tools:



Phillips screwdriver  
(M4/M5/M8)



Torque wrench (M8)

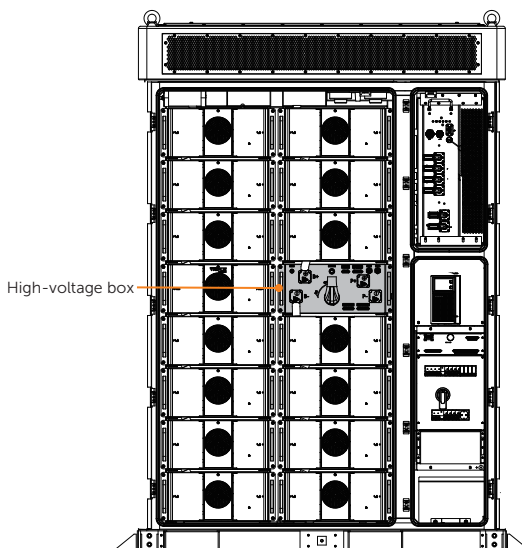


Electric Forklift



Insulated ladder

- Position of the High-voltage Box in cabinet:



### ⚠ WARNING!

- Before replacing the high-voltage box, make sure that the system power is turned off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power failure.
- Equipment maintenance must be carried out by professional personnel.

## 6.1 Replacement of High-voltage Box

### Procedure

**Step:1** Open the covers of the upper and lower battery packs in the high voltage box.

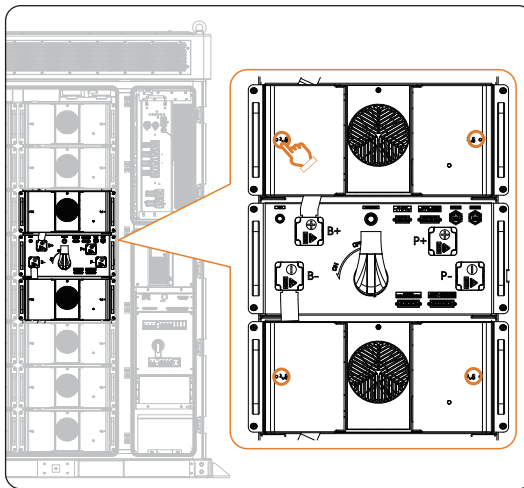


Figure 6-1 Opening the battery pack cover

**Step:2** Remove copper bar and cable

1. Pinch both sides of the insulating cover and remove the insulating cover;
2. Unscrew the screws;
3. Remove the copper bar and cover the insulating cover;
4. Unplug the cable from the circled area.

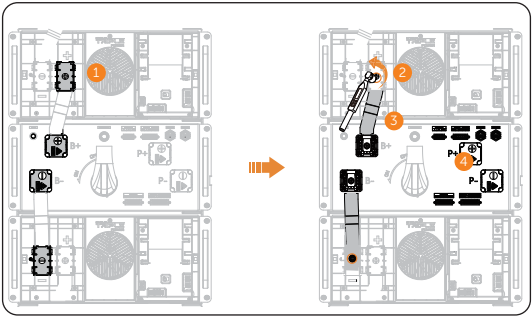


Figure 6-2 Removing copper bars and cables

**Step:1** Remove the screws and take out the High-voltage Box.

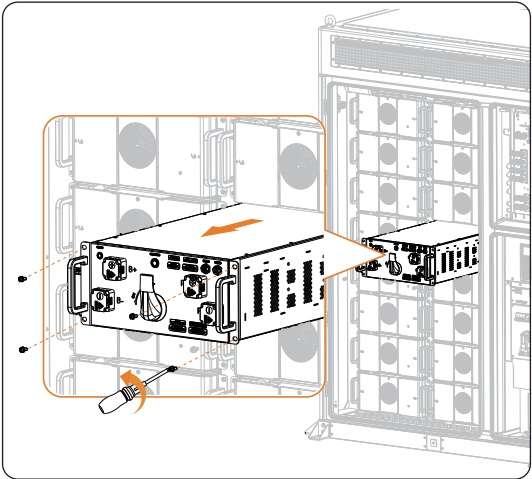


Figure 6-3 Taking out the High-voltage Box

**Step:2** Pull the high-voltage box to the forklift and transport it with the forklift.

**Step:3** Use a forklift to transport the new high-voltage box to the designated location, and then manually push the high-voltage box into the cabinet. Fix the high-voltage box with M8 screws.

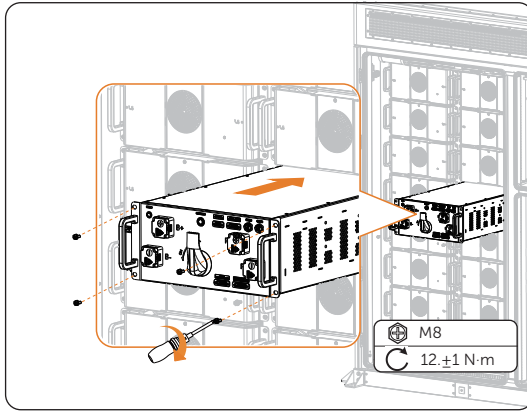


Figure 6-4 Installing a new High-voltage Box

**Step:4** Install copper bar and cable

1. Install the copper bar;
2. Tighten the screw (The connection torque between the battery pack pole and the copper bar is  $12\pm1 \text{ N} \cdot \text{m}$ , and the torque between the high-voltage box pole and the copper bar is  $7.0\text{-}8.0 \text{ N} \cdot \text{m}$ );
3. Install the insulating cover;
4. Connect the cable on the high-voltage box.

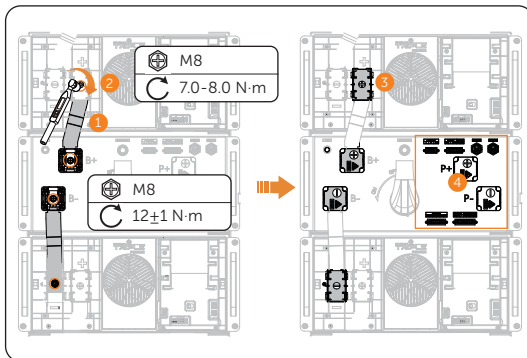


Figure 6-5 Installation of copper bars and wiring

**Checking after replacement**

**Step:1** Power on the system. For details, refer to "3.4 Power On".

**Step:2** Press and hold the "ADD" button of the High-voltage Box for 10 seconds to assign the address.

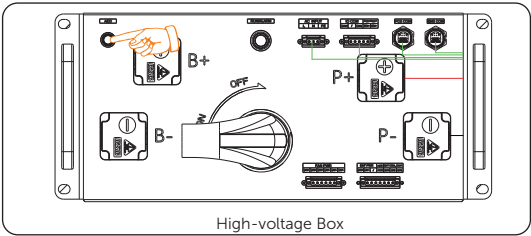


Figure 6-6 Assign the address

**Step:3** For details of checking procedure after replacement, please refer to ["20 Checking after replacement"](#).

## 6.2 Replacement of HVU and SBMU

### Procedure

- Step:1** Remove the High-voltage Box from the cabinet. For details, refer to ["6.1 Replacement of High-voltage Box"](#).
- Step:2** Unscrew the screws of the upper cover of the High-voltage Box and remove the upper cover.

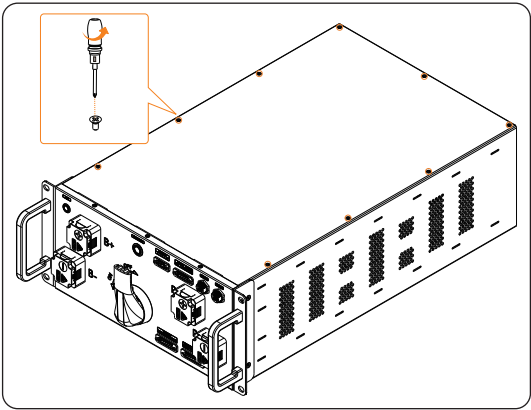


Figure 6-7 Opening the upper cover

**Step:3** Unplug the cables of HVU or SBMU. Unscrew the screws.

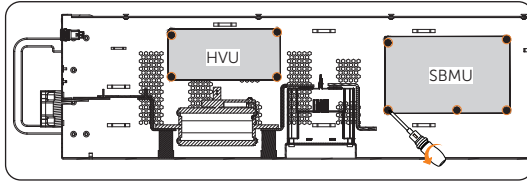


Figure 6-8 Removing the HVU or SBMU (right view)

**Step:4** Install the new HVU or SBMU and fix it with screws. Insert the cable according to the line mark.

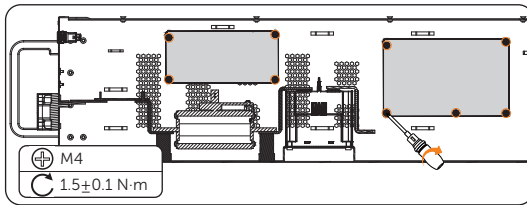


Figure 6-9 Installing (right side view)

**Step:5** Install the upper cover of the High-voltage Box and tighten it with screws.

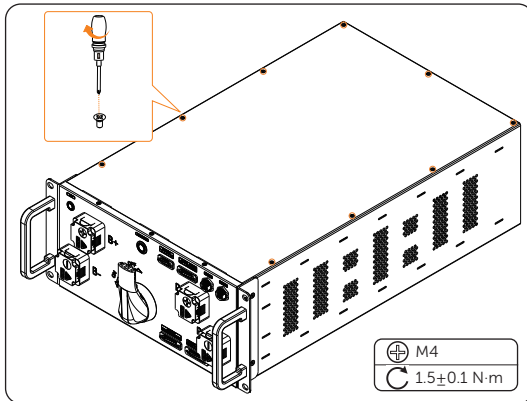


Figure 6-10 Installing upper cover

**Step:6** Install the High-voltage Box back into the cabinet as "[6.1 Replacement of High-voltage Box](#)".

### Checking after replacement

**Step:1** Power on the system. For details, refer to "[3.4 Power On](#)".

**Step:2** Press and hold the "ADD" button of the High-voltage Box for 10 seconds to assign

the address.

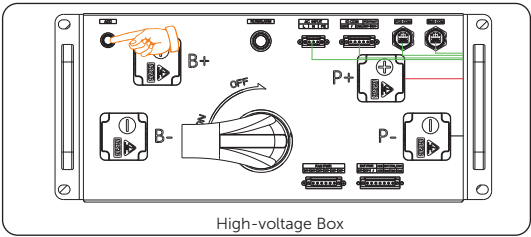


Figure 6-11 Assign the address

**Step:3** Reference "20 Checking after replacement" .

### 6.3 Replacement of High Voltage Box Fuse

#### Procedure

- Step:1** Remove the High-voltage Box from the cabinet. For details, refer to "6.1 Replacement of High-voltage Box".
- Step:2** Unscrew the screws of the upper cover of the high-voltage box and remove the upper cover of the high-voltage box.

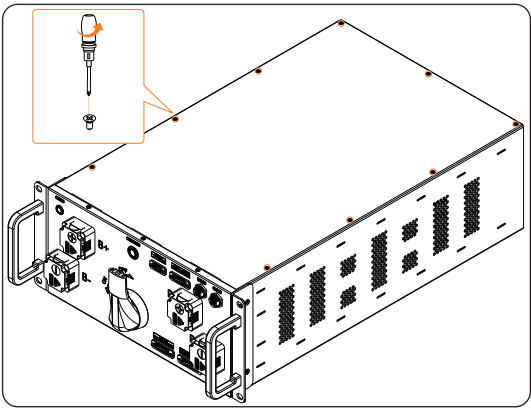


Figure 6-12 Removing upper cover

**Step:3** Use a multimeter to measure the fuse ON-OFF status (ON for normal, OFF for abnormal).

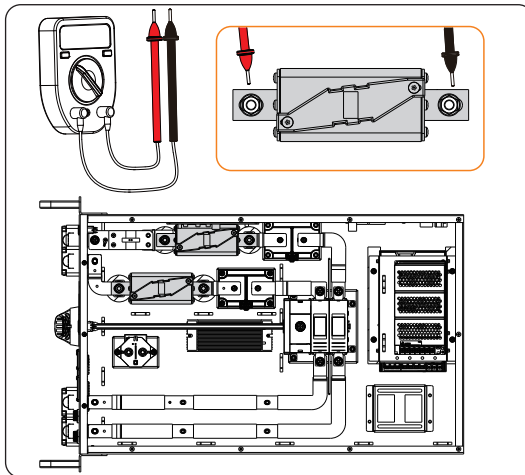


Figure 6-13 Measuring the on-off state of the fuse

**Step:4** Remove the cables of the fuse. Loosen the M8 nuts from the fuses and remove the fuses.

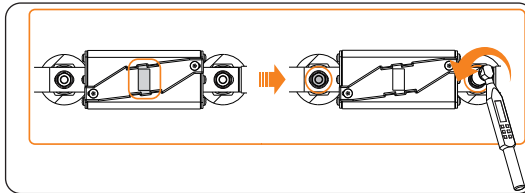


Figure 6-14 Removing fuse to be replaced (top view)

**Step:5** Install new fuses and secure with nuts. Connect the cables of the fuse.

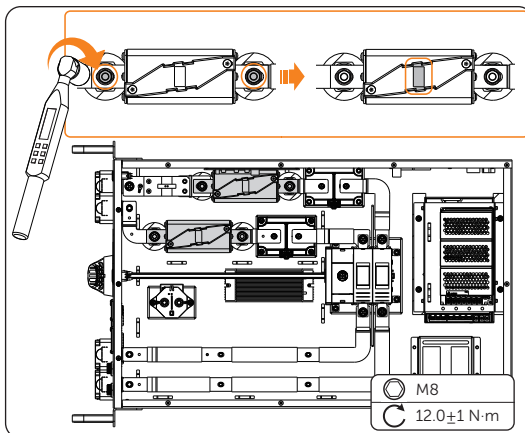


Figure 6-15 Installing fuse (top view)

- Step:6** Use a multimeter to measure the replaced fuse ON-OFF status (ON for normal, OFF for abnormal).

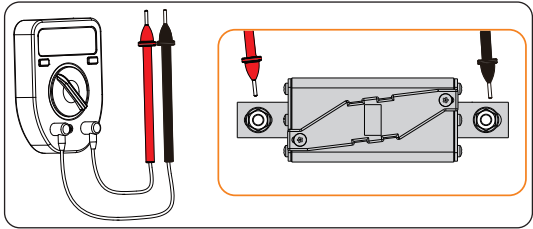


Figure 6-16 Measuring the on-off state

- Step:7** Install the top cover of the high-voltage and secure with screws.

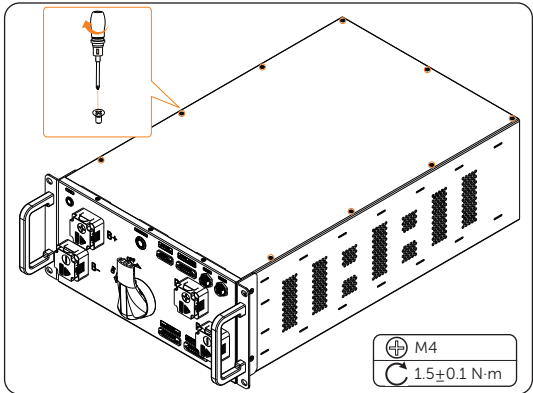


Figure 6-17 Installing upper cover

- Step:8** Install the High-voltage Box back into the cabinet as "[6.1 Replacement of High-voltage Box](#)".

### Checking after replacement

- Step:1** Power on the system. For details, refer to "[3.4 Power On](#)".
- Step:2** Press and hold the "ADD" button of the High-voltage Box for 10 seconds to assign the address.

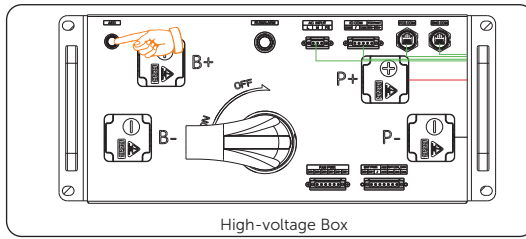


Figure 6-18 Assign the address

**Step:3** For details of checking procedure after replacement, please refer to ["20 Checking after replacement"](#).

## 6.4 Replacement of High-voltage Box Contactor

### Procedure

- Step:1** Remove the High-voltage Box from the cabinet. For details, refer to "[6.1 Replacement of High-voltage Box](#)"
- Step:2** Unscrew the screws and remove the upper cover

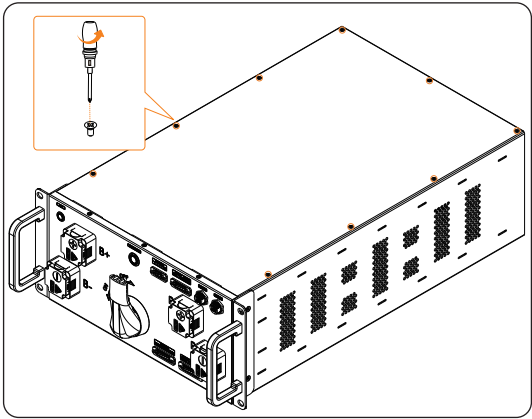


Figure 6-19 Removing upper cover

- Step:3** Use a multimeter to measure the ON-OFF status of the contactor (ON for abnormal, OFF for normal).

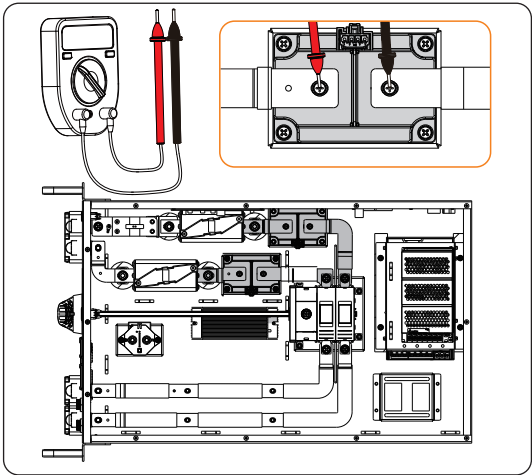


Figure 6-20 Measuring contactor status

- Step:4** Remove the cable from the contactor. Unscrew the copper bar on the contactor, remove the copper bar and remove the contactor.

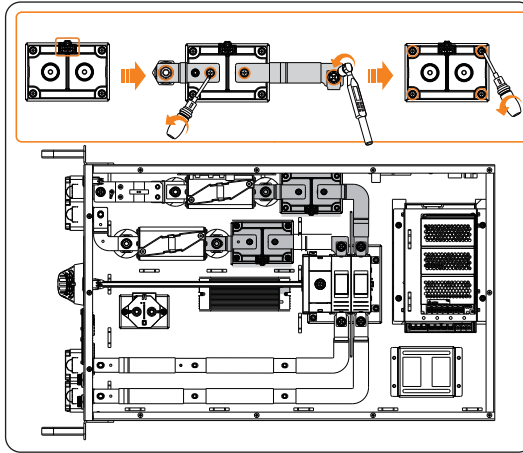


Figure 6-21 Removing contactor (top view)

- Step:5** Install a new contactor and secure with screws. Install the copper rod and connect the cable .

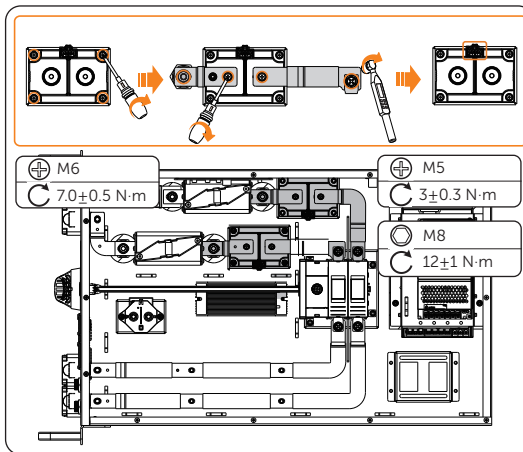


Figure 6-22 Installing contactor (top view)

- Step:6** Use a multimeter to measure the ON-OFF status of the replaced contactor (ON for abnormal, OFF for normal).

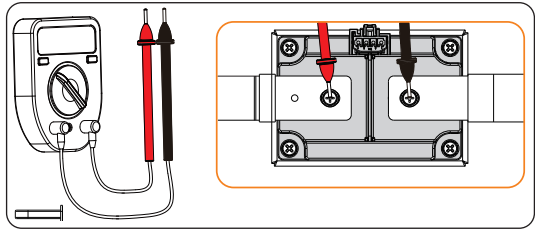


Figure 6-23 Measure contactor on-off

**Step:7** Install the high-voltage power supply upper cover and fix it with screws.

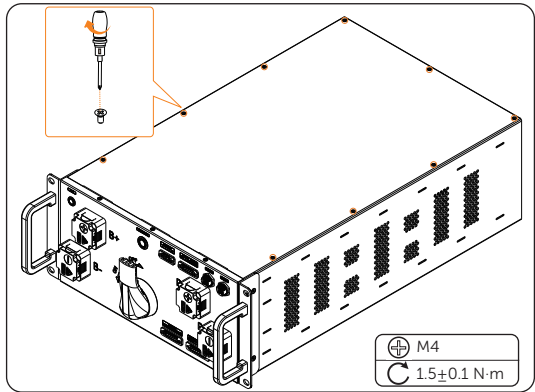


Figure 6-24 Installing upper cover

**Step:8** Install the High-voltage Box back into the cabinet as "6.1 Replacement of High-voltage Box".

### Checking after replacement

- Step:1** Power on the system. For details, refer to "3.4 Power On".
- Step:2** Press and hold the "ADD" button of the High-voltage Box for 10 seconds to assign the address.

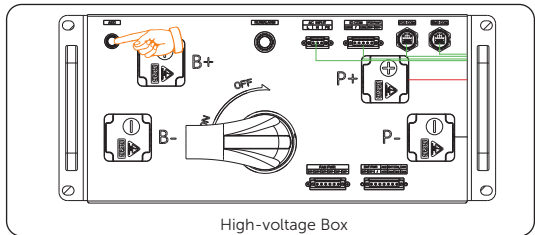


Figure 6-25 Assign the address

**Step:3** Reference "20 Checking after replacement".

## 7 Replacement of EMS

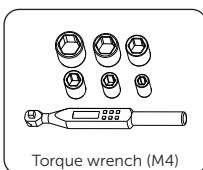
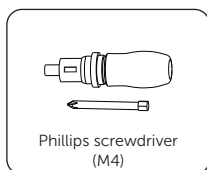
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### Fault location

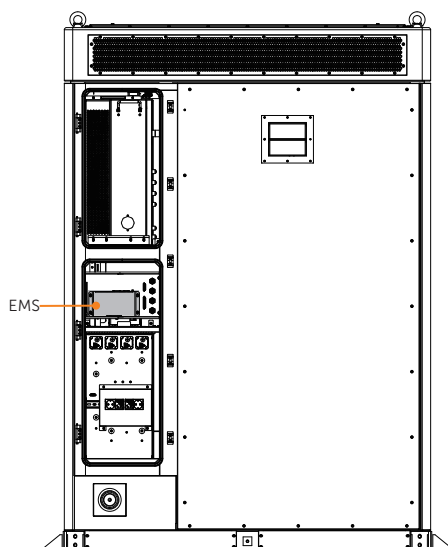
1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

### Preparation before replacement

- Contact SolaX and order replacement parts.
- Tools:



- Position of the EMS in cabinet:



**WARNING!**

- Before replacing the EMS, make sure the system is powered off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power failure.
- Equipment maintenance must be carried out by professional personnel.

**Procedure**

**Step:1** Remove cables from EMS.

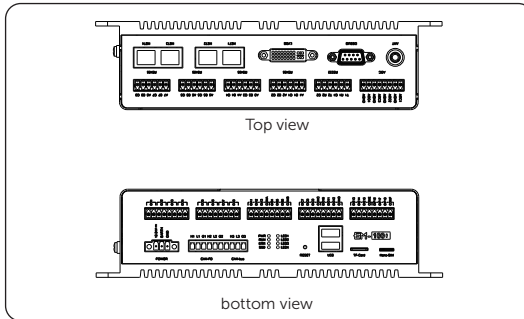


Figure 7-1 EMS Wiring Area

**Step:2** Remove the cables on the front of the sheet metal and on the Switch.

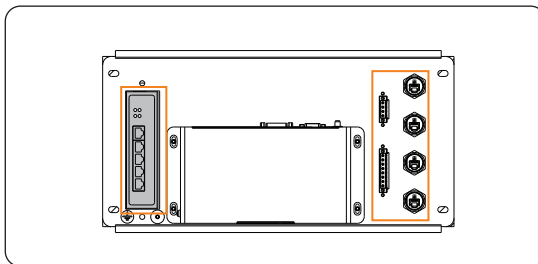


Figure 7-2 Sheet metal (front view)

**Step:3** Unscrew the screws on the metal plate, remove the cables on the back of the metal plate, and then remove the EMS and the metal plate together.

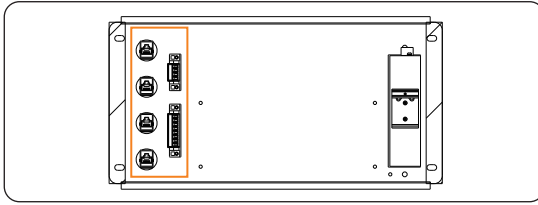


Figure 7-3 Sheet metal wiring area (rear view)

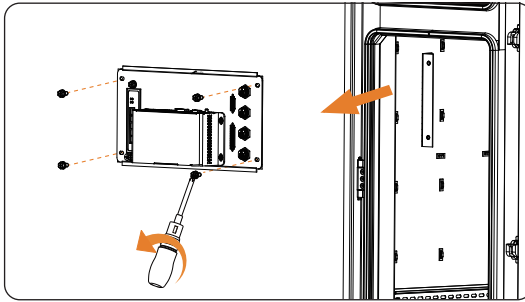


Figure 7-4 Removing sheet metal

**Step:4** Remove the EMS from the sheet metal.

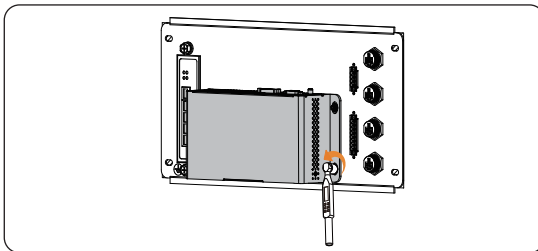


Figure 7-5 Removing the EMS

**Step:5** Install a new EMS to the sheet metal.

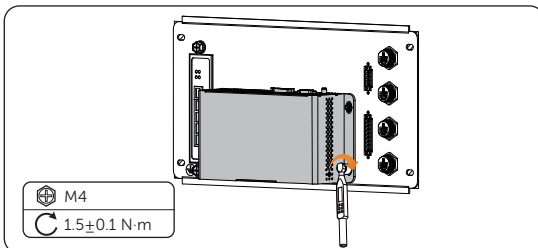


Figure 7-6 Installing a new EMS

**Step:6** Install the metal plate and EMS to the cabinet by inserting the cables on the back of the metal plate.

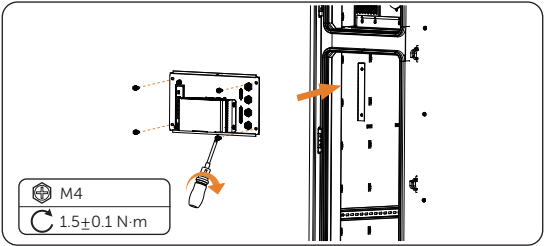


Figure 7-7 Installation

**Step:7** Connect the EMS , Switch and sheet metal front cables according to silk screen and cable markings.

**Checking after replacement**

**Step:8** For details of checking procedure after replacement, please refer to "[20 Checking after replacement](#)".

## 8 Replacement of Switch

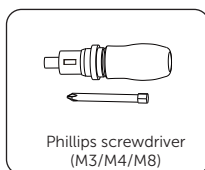
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### Fault location

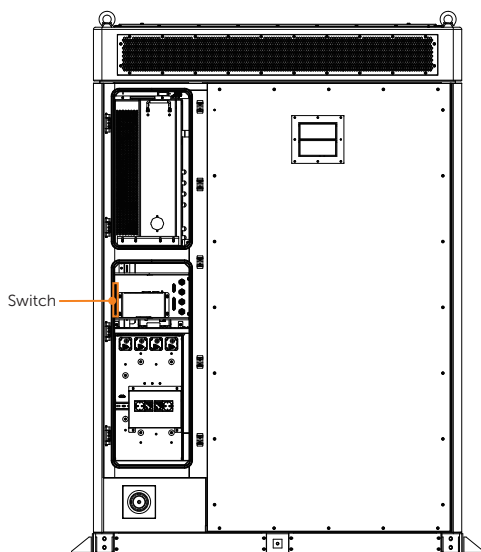
1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

### Preparation before replacement

- Contact SolaX and order replacement parts.
- Tools:



- Position of the Switch in cabinet:



 **WARNING!**

- Before replacing the Switch, make sure the system is powered off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power failure.
- Equipment maintenance must be carried out by professional personnel.

**Procedure**

**Step:1** Remove the Switch, EMS and the cables on the metal plate.

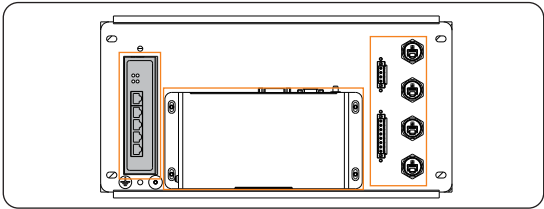


Figure 8-1 Wiring connection area

**Step:2** Unscrew the screws on the metal plate, remove the cables on the back of the metal plate, and then remove the EMS and the metal plate together.

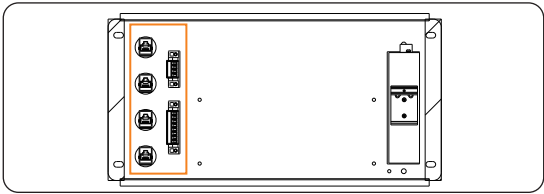


Figure 8-2 Sheet metal wiring area (rear view)

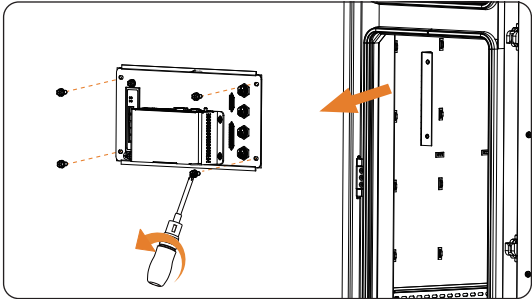


Figure 8-3 Removing the sheet metal

**Step:3** Remove the Switch from the sheetmetal.

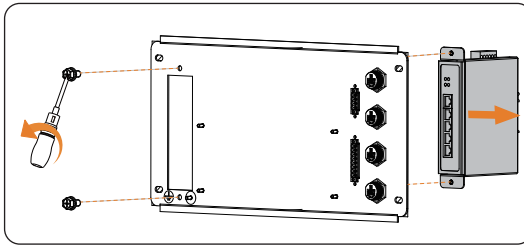


Figure 8-4 Removing the Switch from the sheet metal

**Step:4** Remove the Switch from the holder.

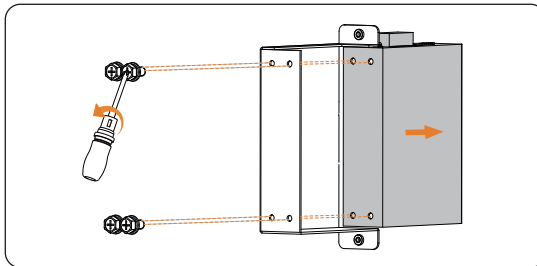


Figure 8-5 Removing the Switch

**Step:5** Assemble the new or repaired Switch with the bracket.

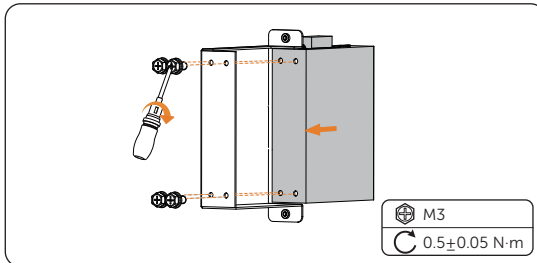


Figure 8-6 Installing the new Switch

**Step:6** Install the Switch with the bracket on the metal plate.

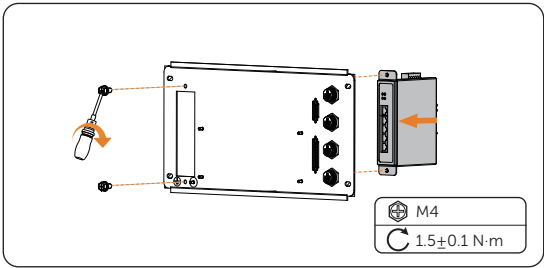


Figure 8-7 Installing the Switch

**Step:7** Install the cables on the back of the sheet metal and install the Switch back into the cabinet.

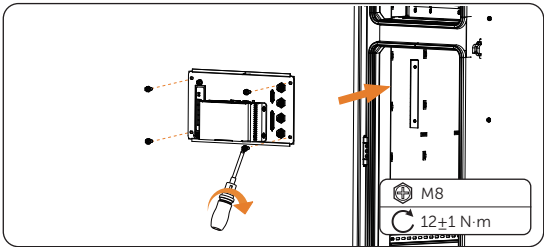


Figure 8-8 Installing the Switch

**Step:8** Connect all cables according to silk screen and cable marking.

Checking after replacement

**Step:1** Power on the system. For details, refer to "3.4 Power On".

**Step:2** Check if the wiring port indicator on the Switch is flashing yellow.

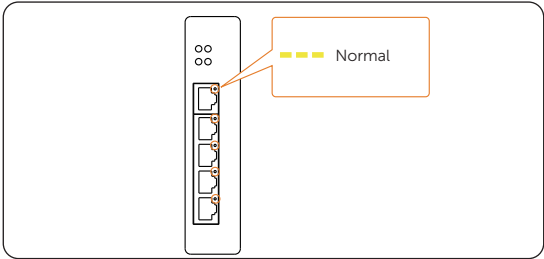


Figure 8-9 Switch Normal Operation Indicator

## 9 Replacement of UPS

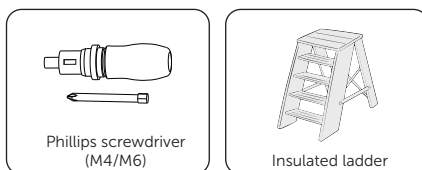
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### Fault location

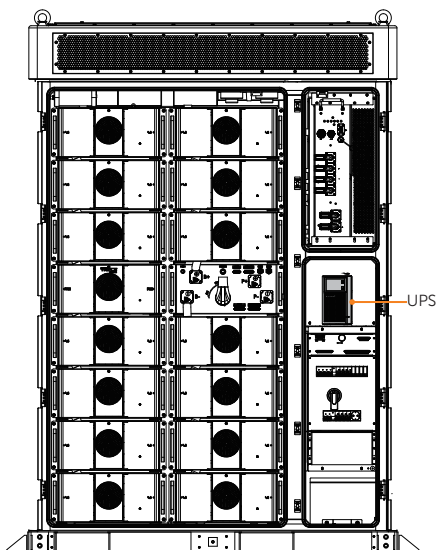
1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

### Prepare before replacement

- Contact SolaX and order replacement parts
- Tools:



- Position of the UPS in cabinet:



 **WARNING!**

- Before replacing the UPS, make sure the system is powered off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power failure.
- Equipment maintenance must be carried out by professional personnel.

**Procedure**

**Step:1** Remove the panel.

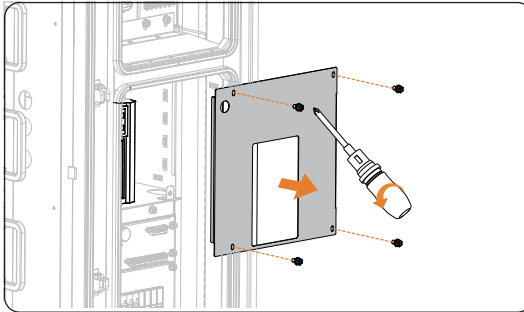


Figure 9-1 Removing the panel

**Step:2** Unplug the UPS cables.

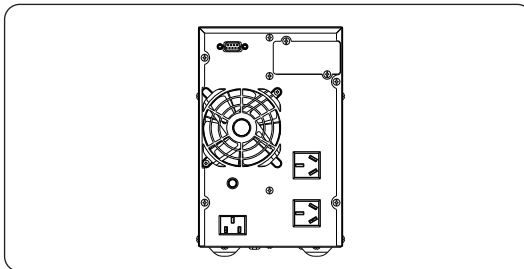


Figure 9-2 UPS Wiring Panel

**Step:3** Unscrew the screws that fix the UPS and take out the UPS.

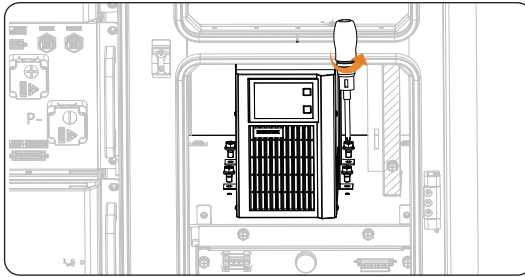


Figure 9-3 Removing the UPS

**Step:4** Place the new or maintained UPS in the cabinet and screw on the screws.

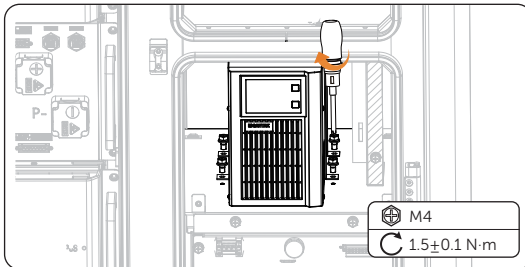


Figure 9-4 Installing the UPS

**Step:5** UPS wiring.

**Step:6** Install the panel.

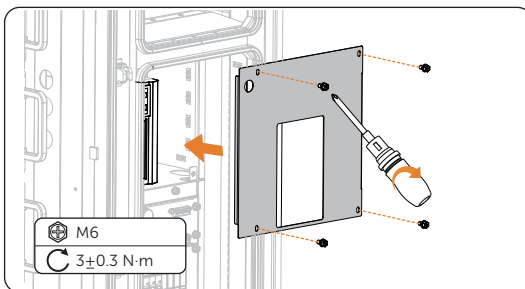


Figure 9-5 Mounting the panel

### Checking after replacement

**Step:1** Power on the system. For details, refer to ["3.4 Power On"](#).

**Step:2** Check whether the UPS can be started normally, whether the function keys can be used, and whether the screen can be displayed normally.

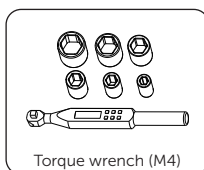
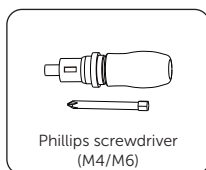
# 10 Replacement of IO Module

## Fault location

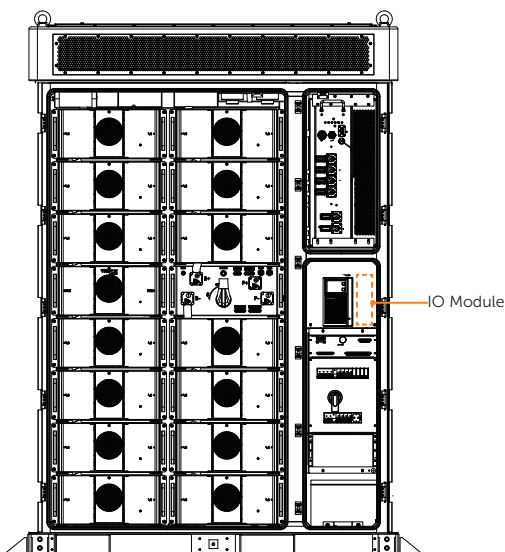
1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

## Preparation before replacement

- Contact SolaX and order replacement parts.
- Tools:



- Position of the IO modules in cabinet:



### ⚠ WARNING!

- Before replacing an IO module, ensure that the system is powered off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power failure.
- Equipment maintenance must be carried out by professional personnel.

## Procedure

**Step:1** Remove the panel.

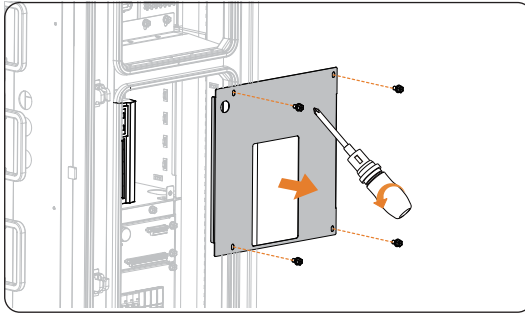


Figure 10-1 Removing panel

**Step:2** Remove the cables from the IO module.

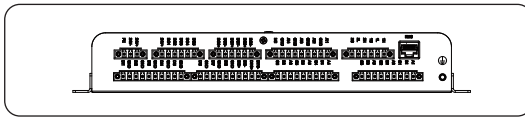


Figure 10-2 IO Module wiring panel

**Step:3** Remove the IO module from the cabinet.

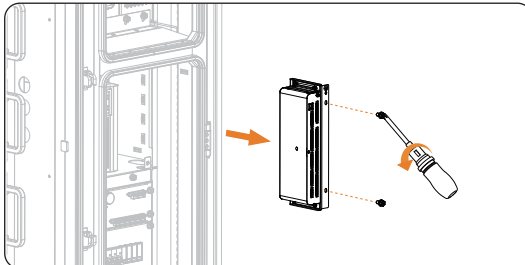


Figure 10-3 Removing the IO module

**Step:4** Disconnect the IO module from the bracket.

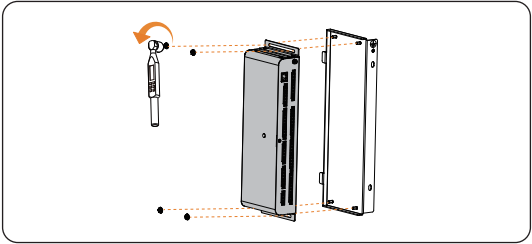


Figure 10-4 Dismantling the IO module

**Step:5** Replace the new IO module and assemble the new IO module with the bracket.

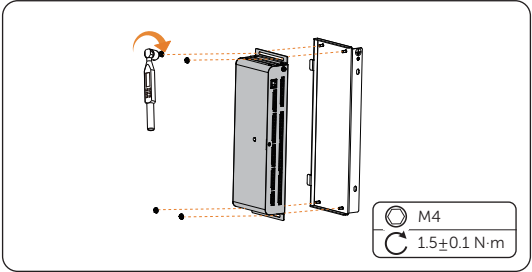


Figure 10-5 Assembling IO modules and brackets

**Step:6** Install the IO module into the cabinet.

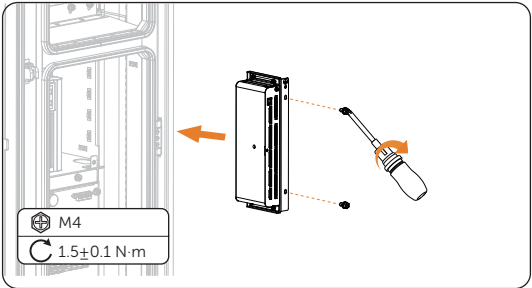


Figure 10-6 Installing IO modules

**Step:7** Connect the cables according to the line label and screen printing.

**Step:8** Mounting the panel

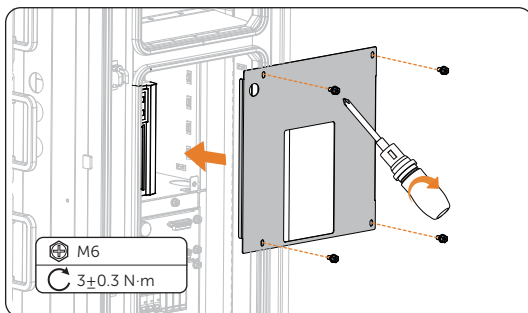


Figure 10-7 Mounting the panel

### Checking after replacement

For details of checking procedure after replacement, please refer to "20 Checking after replacement".

# 11 Replacement of CO Detector

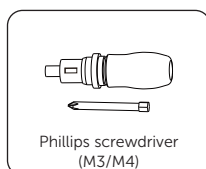
---

## Fault location

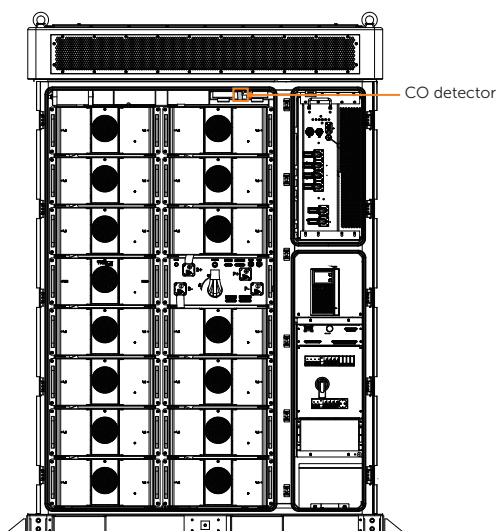
1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

## Preparation before replacement

- Contact SolaX and order replacement parts.
- Tools:



- Location of the CO detector in the cabinet:



### ! WARNING!

- Before replacing the CO detector, ensure that the system is powered off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power failure.
- Equipment maintenance must be carried out by professional personnel.

## Procedure

**Step:1** Remove the wiring cables on the CO detector.

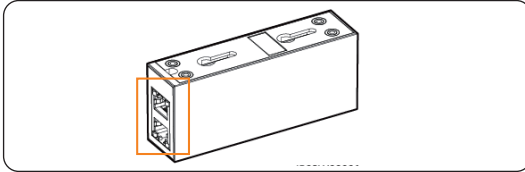


Figure 11-1 Removing wiring cables

**Step:2** Remove the CO detector.

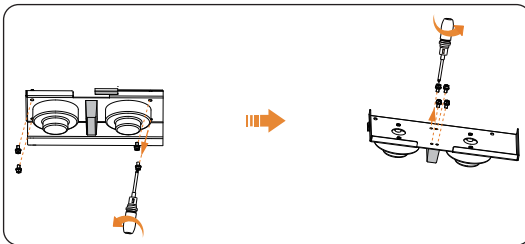


Figure 11-2 Remove CO detector

**Step:3** Install a new CO detector. Connect cables.

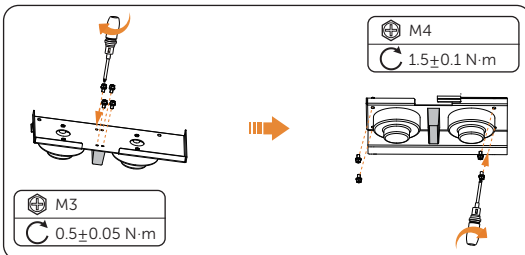


Figure 11-3 Installing a new CO detector

### Checking after replacement

For details of checking procedure after replacement, please refer to "[20 Checking after replacement](#)".

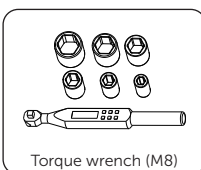
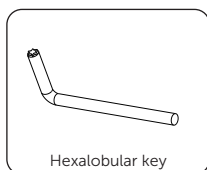
## 12 Replacement of Air conditioner

### Fault location

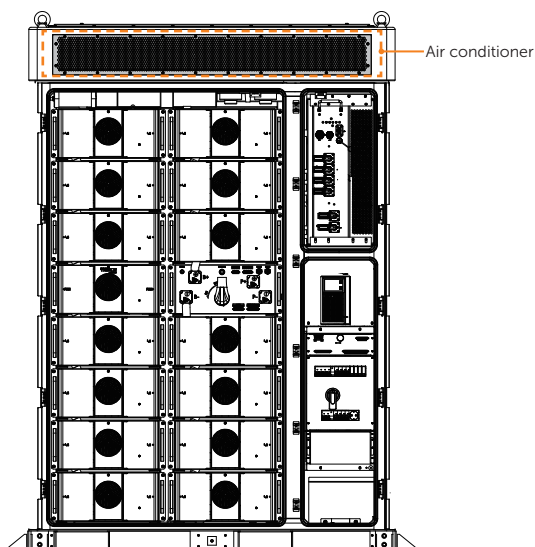
1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

### Preparation before replacement

- Contact SolaX and order replacement parts.
- Tools:



- Position of the air conditioner in cabinet:



 **WARNING!**

- Before replacing the air conditioner, make sure that the system is powered off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power failure.
- Equipment maintenance must be carried out by professional personnel.

**Procedure**

**Step:1** Remove the cabinet cover.

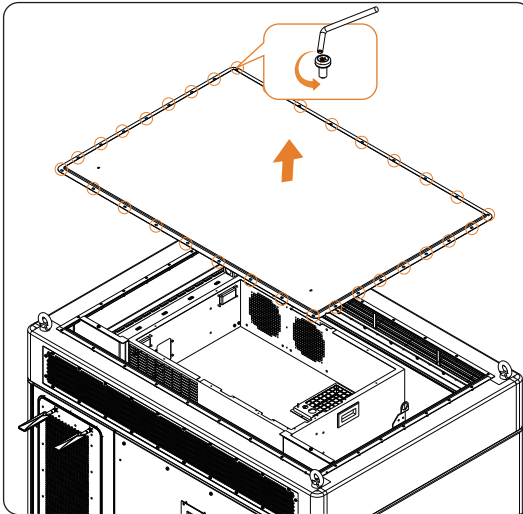


Figure 12-1 Remove the upper cover of the cabinet

**Step:2** Remove the connected cables on the air conditioner.

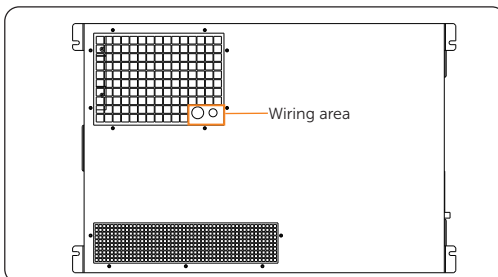


Figure 12-2 Removing cables (top view)

**Step:3** Unscrew the screws that fix the air conditioner and take out the air conditioner.

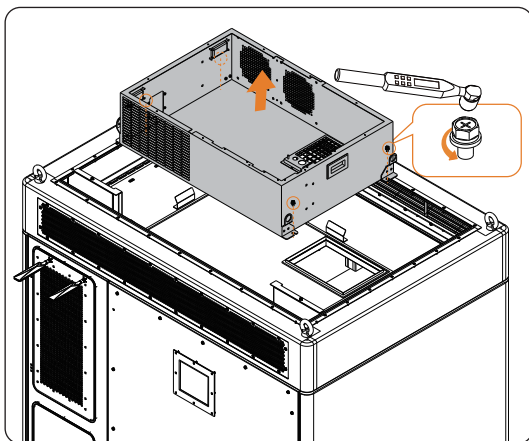


Figure 12-3 Removing air conditioner

**Step:4** Install new air conditioner, fix air conditioner.

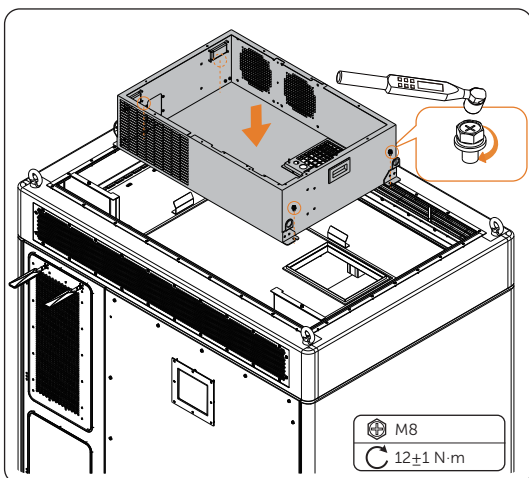


Figure 12-4 Installing the new air conditioner

**Step:5** Install the upper cover of cabinet.

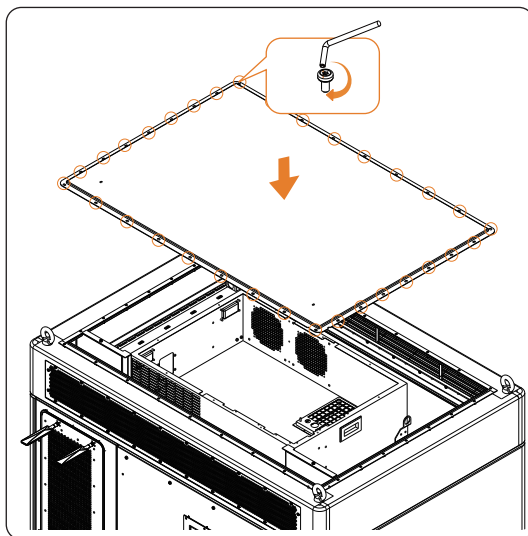


Figure 12-5 Installing top cover

### Checking after replacement

For details of checking procedure after replacement, please refer to "20 Checking after replacement".

# 13 Replacement of Smoke detector and Temperature sensor

---

## Fault location

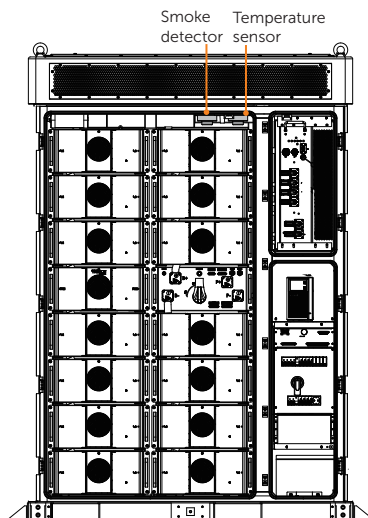
1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

## Preparation before replacement

- Contact SolaX and order replacement parts.
- Tools:



- Position of the Smoke detector and Temperature sensor in cabinet:



**! WARNING!**

- Before replacing the smoke detector and temperature sensor, make sure the system is powered off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power failure.
- Equipment maintenance must be carried out by professional personnel.

**Procedure**

**Step:1** Loosen the cover of the smoke detector and temperature sensor counterclockwise.

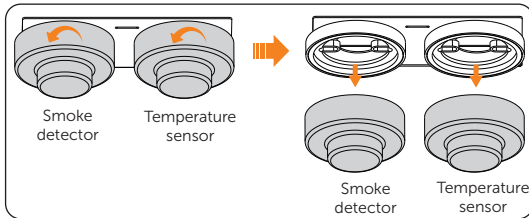


Figure 13-1 Remove the smoke detector and temperature sensor

**Step:2** Install a new smoke detector and temperature sensor on the base.

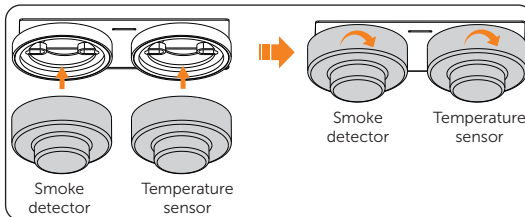


Figure 13-2 Installing smoke detector and temperature sensor

**Checking after replacement**

For details of checking procedure after replacement, please refer to "20 Checking after replacement".

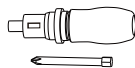
## 14 Replacement of Door Sensor

### Fault location

1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

### Preparation before replacement

- Contact SolaX and order replacement parts.
- Tools:

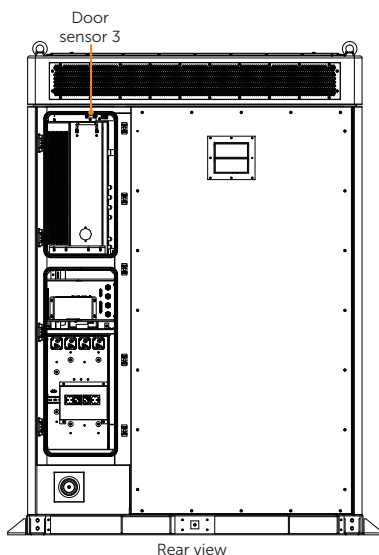
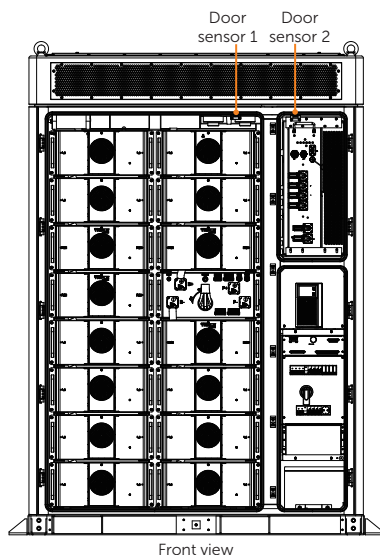


Phillips screwdriver  
(M3)



Insulated ladder

- Position of the door sensor in cabinet:



### WARNING!

- Before replacing the door sensor, make sure that the system power is turned off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power failure.
- Equipment maintenance must be carried out by professional personnel.

### Procedure

**Step:1** After removing the wiring on the door sensor, loosen the screw on the door sensor and remove the door sensor.

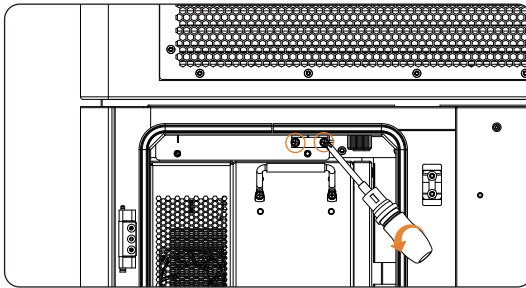


Figure 14-1 Removing the door sensor

**Step:2** Connect the cable and install a new door sensor.

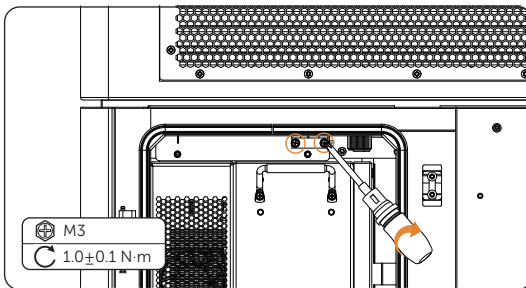


Figure 14-2 Installing a new door sensor.

### Checking after replacement

For details of checking procedure after replacement, please refer to "20 Checking after replacement".

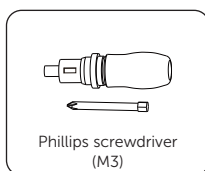
# 15 Replacement of Temperature and Humidity Sensor

## Fault location

1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

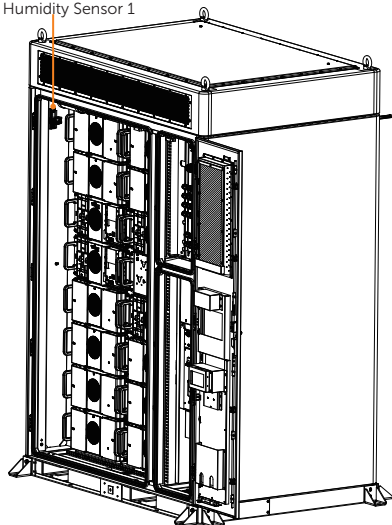
## Preparation before replacement

- Contact SolaX and order replacement parts.
- Tools:

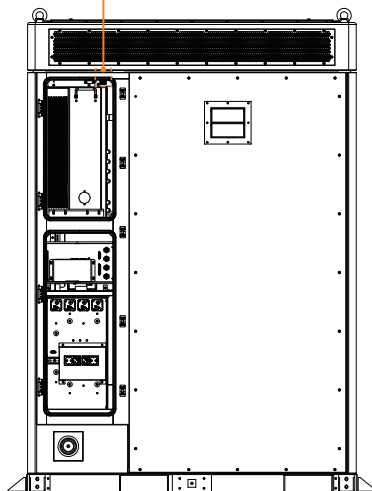


- Position of the temperature and humidity sensor in cabinet:

Temperature and  
Humidity Sensor 1



Temperature and  
Humidity Sensor 2



### WARNING!

- Before replacing the temperature and humidity sensor, make sure that the system is powered off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power failure.
- Equipment maintenance must be carried out by professional personnel.

### Procedure

**Step:1** Use a flat-blade screwdriver to unscrew the port that fastens the cables, and remove the cables from the temperature and humidity sensor. (Take temperature and humidity sensor 1 as an example)

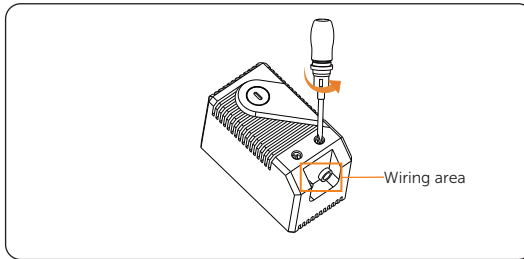


Figure 15-1 Removing cables

**Step:2** Unscrew and remove the fixture outward along the guide, and then remove the temperature and humidity sensor.

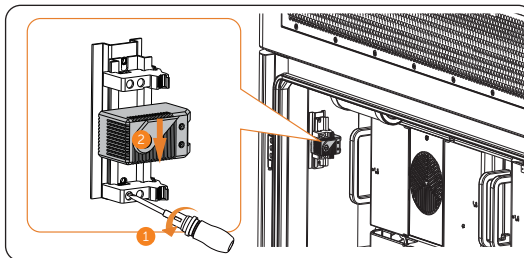


Figure 15-2 Removing temperature and humidity sensor

**Step:3** Install the temperature and humidity sensor along the slide rail and lock the screw.

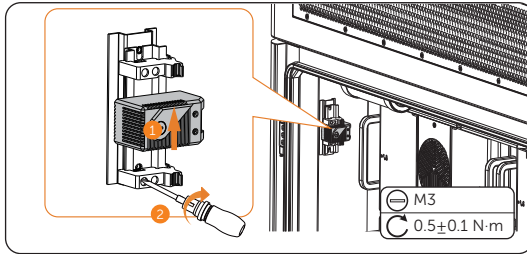


Figure 15-3 Installing temperature and humidity sensor

**Step:4** Connect cables.

### Checking after replacement

For details of checking procedure after replacement, please refer to ["20 Checking after replacement"](#).

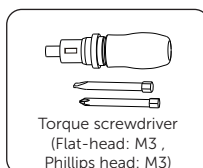
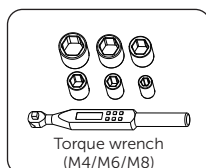
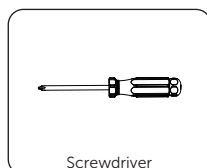
# 16 Replacement of Distribution box

## Fault location

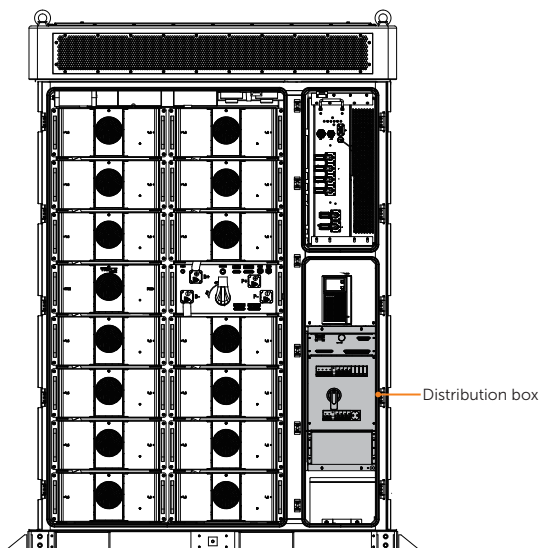
1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

## Preparation before replacement

- Contact SolaX and order replacement parts.
- Tools:



- Position of the distribution box in cabinet:



**WARNING!**

- Before replacing the distribution box and accessories, make sure that the system power is turned off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power failure.
- Equipment maintenance must be carried out by professional personnel.

## 16.1 Replacement of Distribution box

### Procedure

**Step:1** Remove the cable cover of the distribution box.

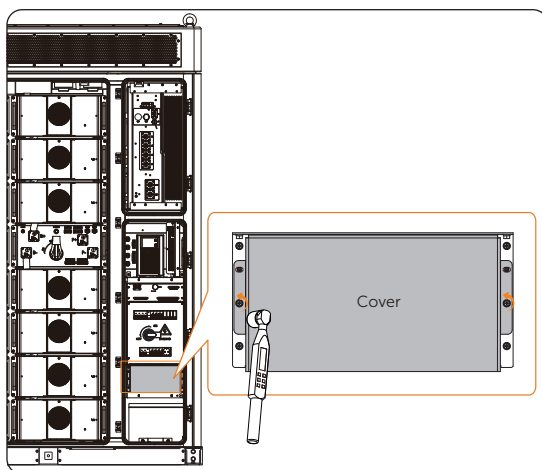


Figure 16-1 Removing the cable cover

**Step:2** Loosen the screw and remove the cables.

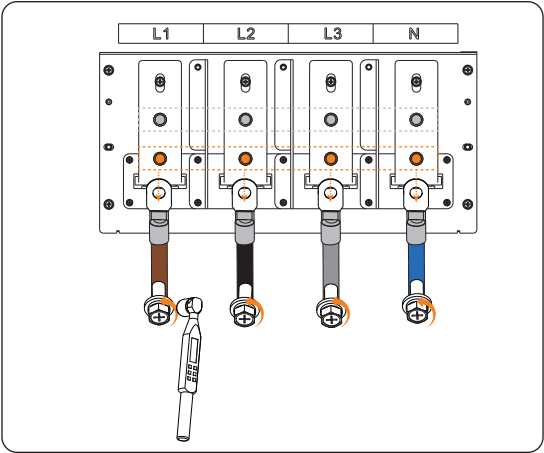


Figure 16-2 Removing the cables

Step:3 Remove the terminal.

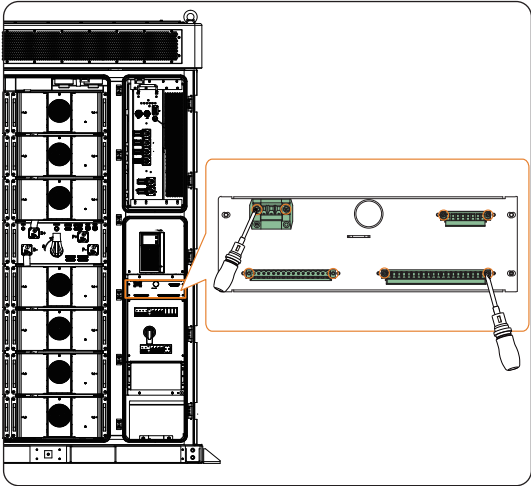


Figure 16-3 Removing the terminal

Step:4 Open the rear cabinet door and remove the cover by pinching both sides of the cover.

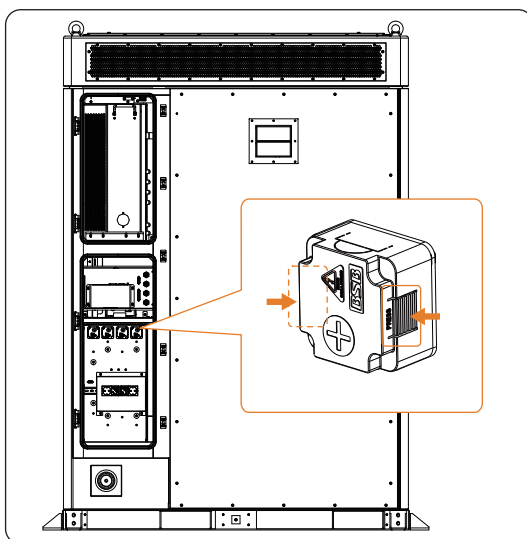


Figure 16-4 Removing the cover

**Step:5** Loosen the screw and remove the cables.

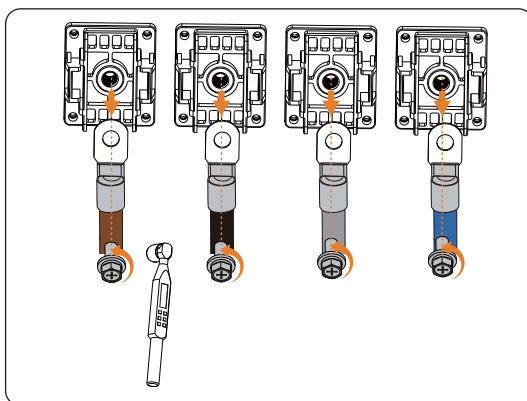


Figure 16-5 Removing the cables

**Step:6** Unscrew the screw on the distribution box and take out the distribution box.

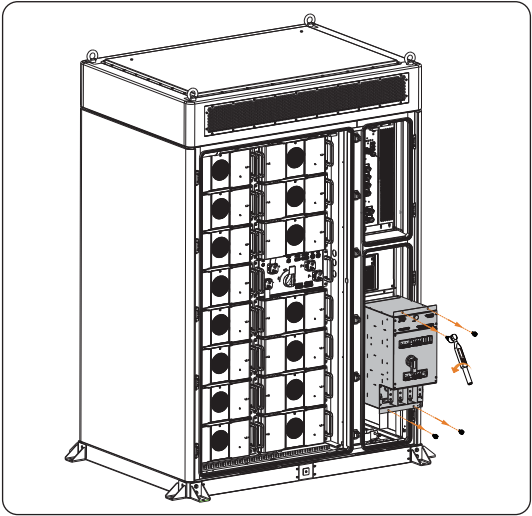


Figure 16-6 Removing distribution box

**Step:7** Install new distribution box.

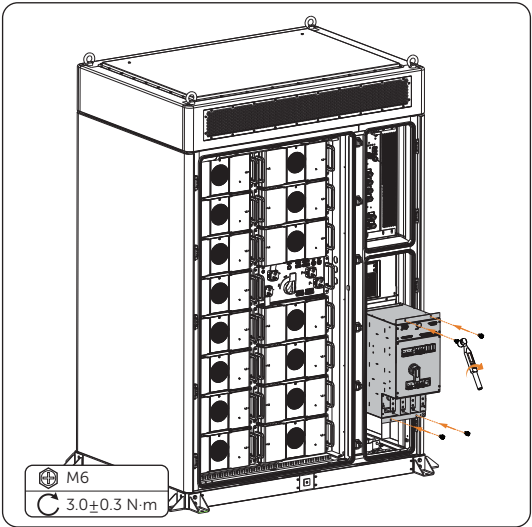


Figure 16-7 Installation of distribution box

**Step:8** Insert the M8 screw to secure and connect the assembled L1/L2/L3/N cable to the wiring interface, and tighten the screw. There are two options. recommend connect using option B. The port of option a is considered a reserved port.

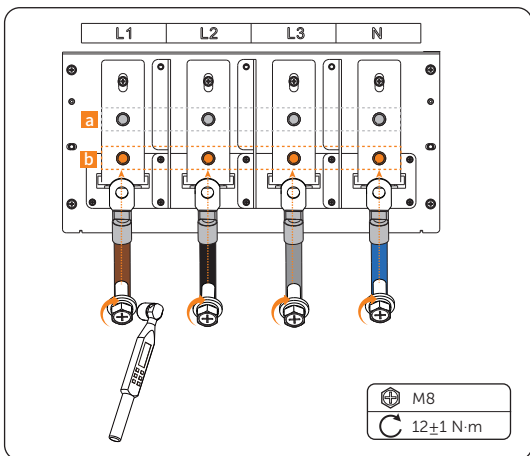


Figure 16-8 Wiring

**Step:9** Fix the wire shield to the distribution box again, and tighten the screws (torque:  $1.2 \pm 0.12$  N·m).

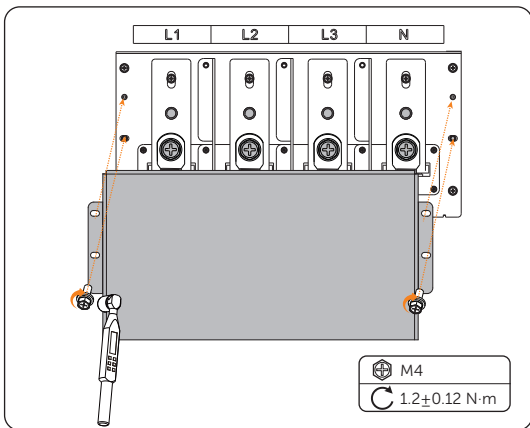


Figure 16-9 Installing cable cover

**Step 10:** Insert the Terminal Block into the port and tighten the set screw.

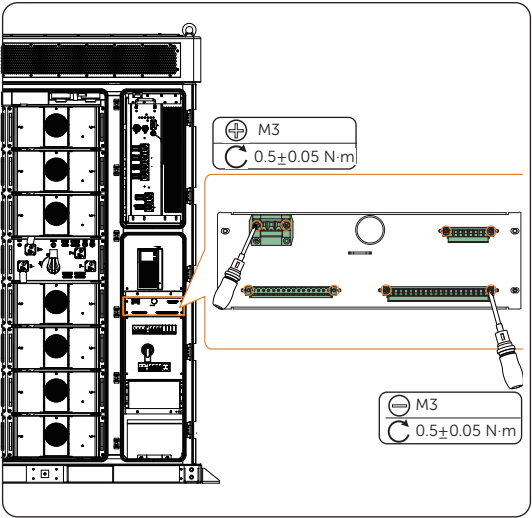


Figure 16-10 Connecting the terminal

**Step 110:** Remove the terminal cover by pressing the buttons on both sides of the cover. Connect the L1/L2/L3/N cable to the wire interface and secure with the M8 screw. Pin cover back into position.

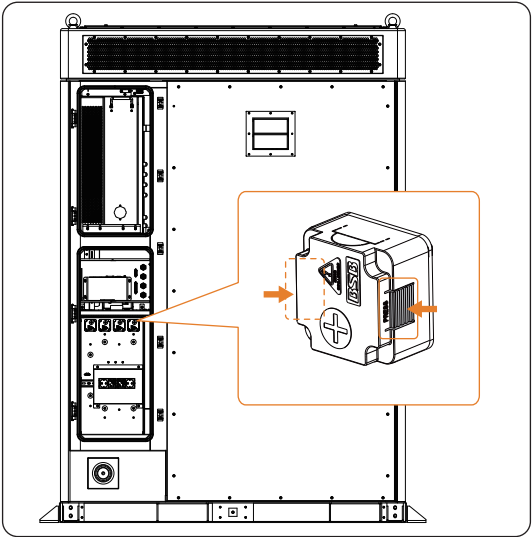


Figure 16-11 Removing the cover

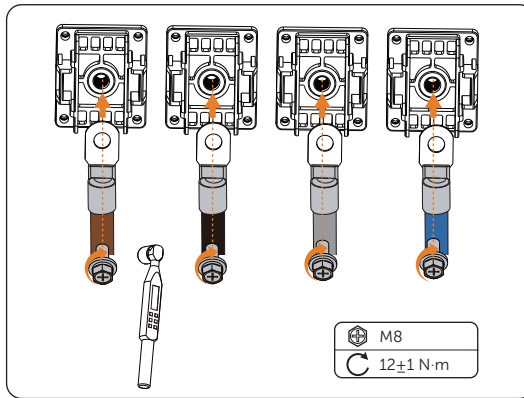


Figure 16-12 Wiring

### Checking after replacement

- Step:1** Power on the system. For details, refer to "3.4 Power On".
- Step:2** Check whether the system is back to normal by EMS1000 a web page or SolaXCloud.

## 16.2 Replacement of SPD Module

### Procedure

**Step:1** Unscrew the screws on the front panel of the distribution box and remove the panel (No need to remove the distribution box from the cabinet).

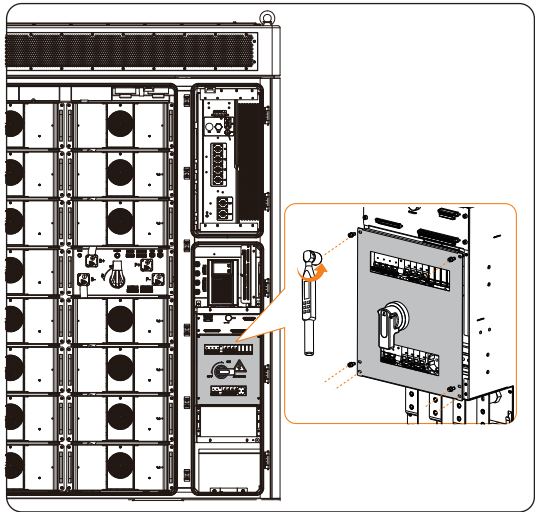


Figure 16-13 Removing the front panel

**Step:2** Remove the cable from the SPD module.

**Step:3** Use a screwdriver to pry up the clip on the SPD and pull the SPD module out upwards.

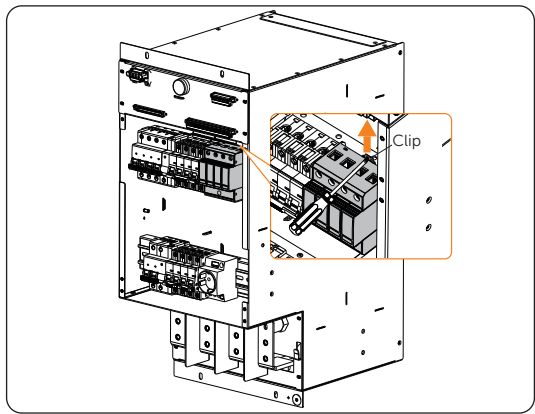


Figure 16-14 Removing the SPD module

**Step:4** Pry the clip, install a new SPD module and wire it.

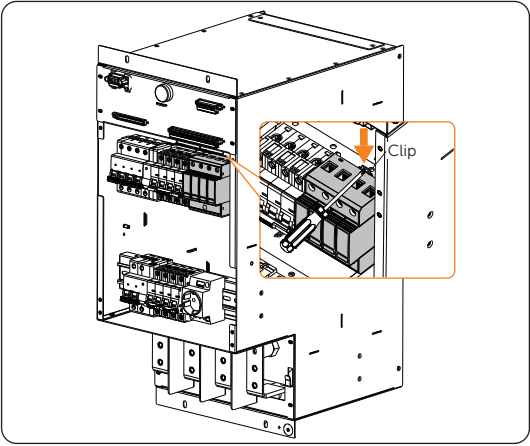


Figure 16-15 Installing the SPD Module

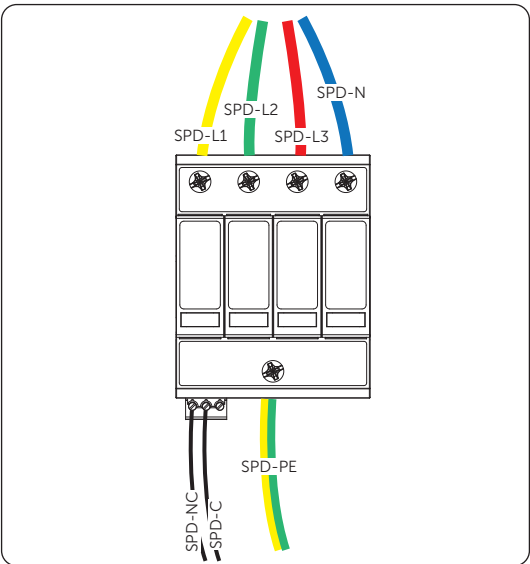


Figure 16-16 SPD Wiring

**Step:5** Install the panel.

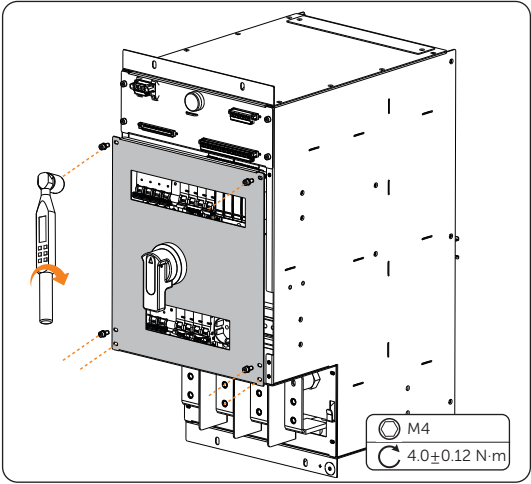


Figure 16-17 Mounting the panel

**Checking after replacement**

**Step:1** Power on the system. For details, refer to "3.4 Power On".

**Step:2** Check if the SPD module indicator is green.

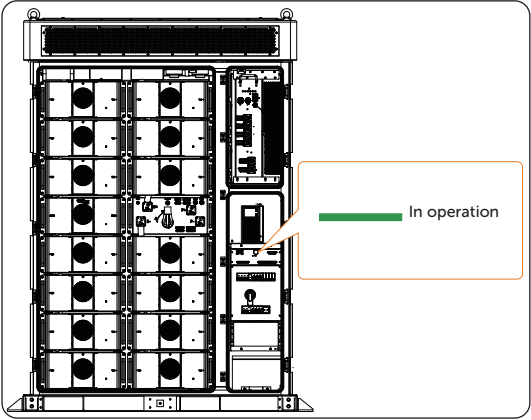


Figure 16-18 SPD Module Indicator

**Step:3** Check whether the status of the SPD module is normal via EMS1000 webpage or SolaX Cloud App.

# 17 Replacement of Water Sensor

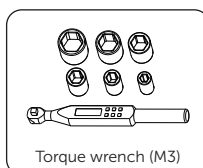
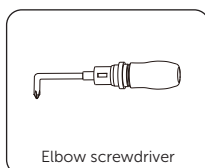
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## Fault location

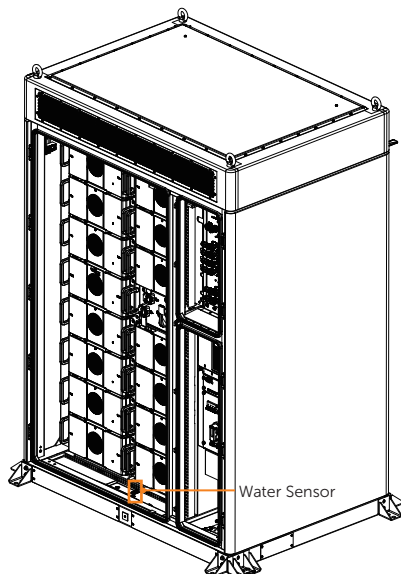
1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

## Preparation before replacement

- Contact SolaX and order replacement parts.
- Tools:



- Position of the water sensor in cabinet:



 **WARNING!**

- Before replacing the water sensor, ensure that the system is powered off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power failure.
- Equipment maintenance must be carried out by professional personnel.

**Procedure**

**Step:1** Unscrew the M3 screws on the water sensor and remove the water sensor.

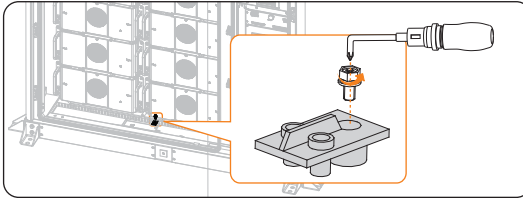


Figure 17-1 A removal of the water sensor

**Step:2** Unscrew the M3 nut counterclockwise to remove the water sensor cable.

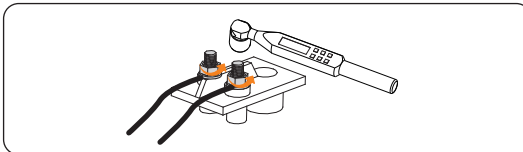


Figure 17-2 Removing the cable

**Step:3** Install a new water sensor and connect the cable.

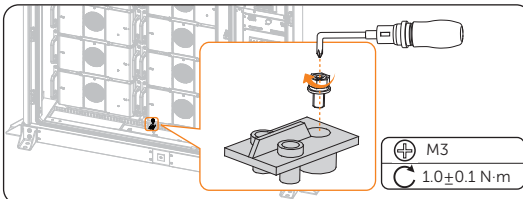


Figure 17-3 Installing the water sensor

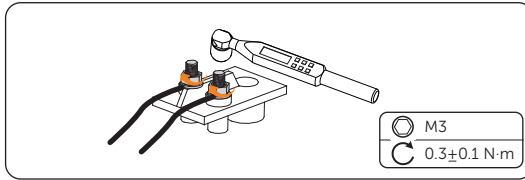


Figure 17-4 Connecting the cable

### Checking after replacement

- Step:1** Power on the system. For details, refer to ["3.4 Power On"](#).
- Step:2** Check whether the system is back to normal by EMS1000 a web page or SolaXCloud.

# 18 Replacement of Audible and Visual Alarm

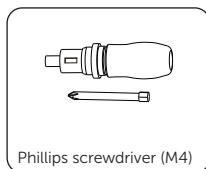
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## Fault location

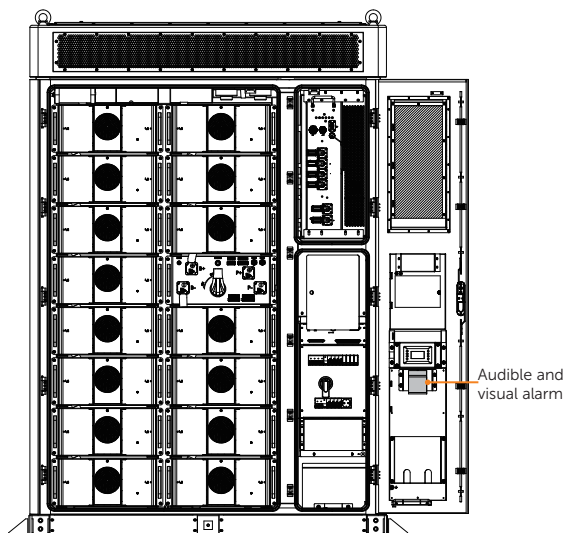
1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

## Preparation before replacement

- Contact SolaX and order replacement parts.
- Tools: Refer to specific sections.



- Position of the audible and visual alarm in cabinet:



**WARNING!**

- Before replacing the audible and visual alarm, make sure that the system power is turned off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power failure.
- Equipment maintenance must be carried out by professional personnel.

**Procedure**

**Step:1** Remove the outer cover of the audible and visual alarm.

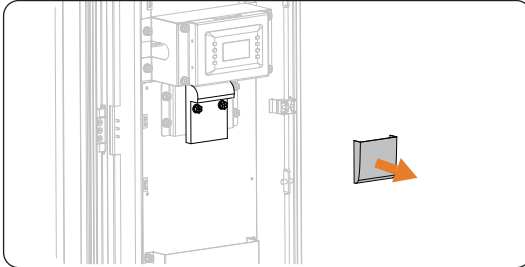


Figure 18-1 Removing the cover

**Step:2** Unscrew the screw and remove the audible and visual alarm.

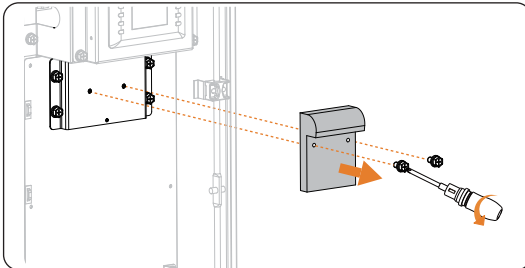


Figure 18-2 Removing audible and visual alarm

**Step:3** Install new audible and visual alarms.

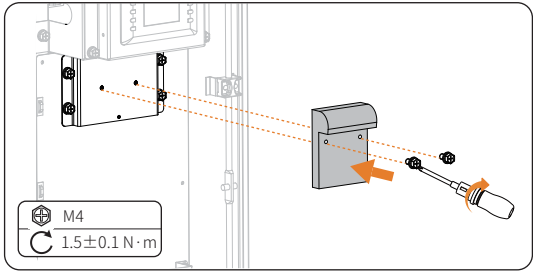


Figure 18-3 Installation of audible and visual alarm

**Step:4** Install cover for audible and visual alarm.

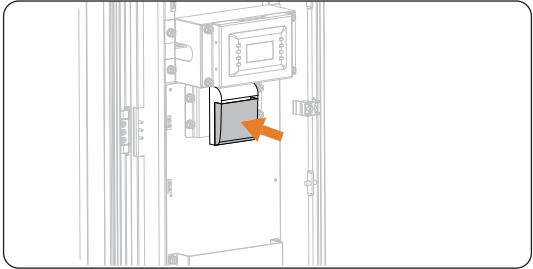


Figure 18-4 Installing cover

### Checking after replacement

**Step:1** Power on the system. For details, refer to "3.4 Power On".

**Step:2** Check whether the system is back to normal through the EMS1000 web page or Arroway.

# 19 Replacement of PCS

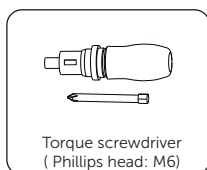
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## Fault location

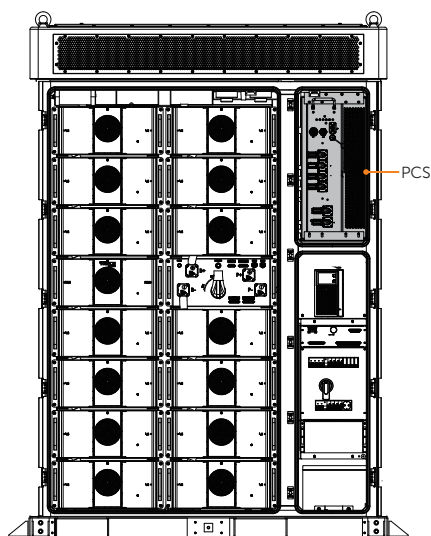
1. View alarm information via cabinet screen, EMS1000 webpage, SolaXCloud App or troubleshooting manual.
2. Refer to the alarm handling suggestions in the alarm details.

## Preparation before replacement

- Contact SolaX and order replacement parts.
- Tools:



- Position of the PCS in cabinet:



 **WARNING!**

- Before replacing the energy storage converter, make sure that the system power is turned off. Otherwise, there is a risk of electric shock.
- After the system is powered off, there will still be residual power and heat, which may cause electric shock and body burns. Please wear personal protective equipment (PPE) and start maintaining the system at least 15 minutes after the power outage.
- Equipment maintenance must be carried out by professional personnel.

## 19.1 Replacement of PCS

### Procedure

**Step:1** Remove the PCS cables.

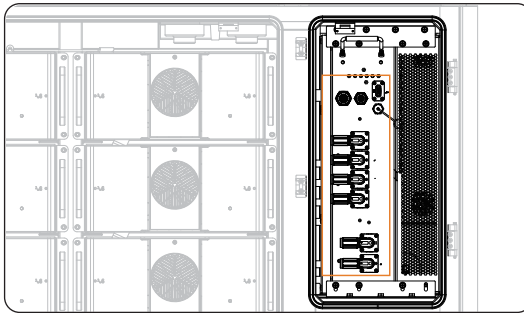


Figure 19-1 Wring area

**Step:2** Unscrew the screws and remove the bracket that secures the PCS.

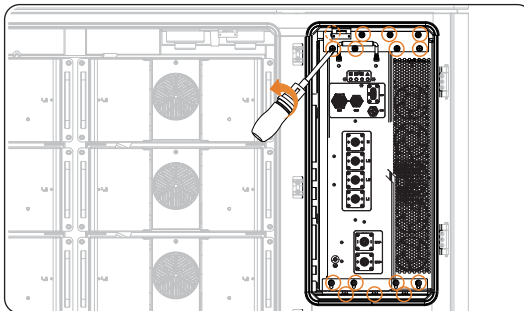


Figure 19-2 Removing brackets (front view)

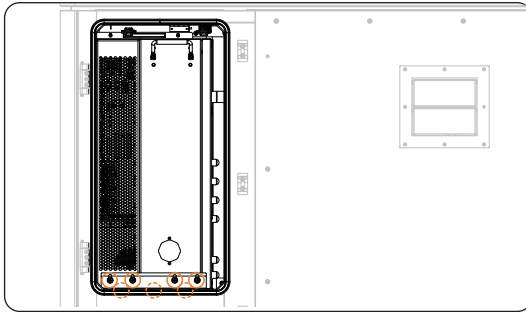


Figure 19-3 Removing bracket (rear view)

**Step:3** Take out the PCS for maintenance or replace it with a new one.

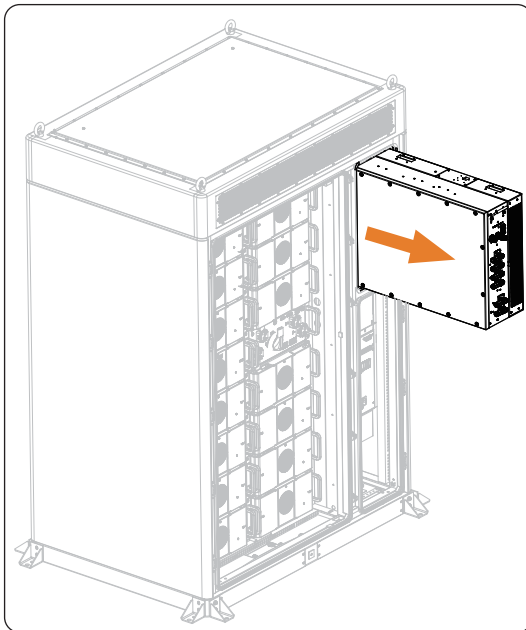


Figure 19-4 Taking out the PCS

**Step:4** Place a serviced or new PCS into the cabinet.

**Step:5** Install the bracket that secures the PCS to the cabinet.

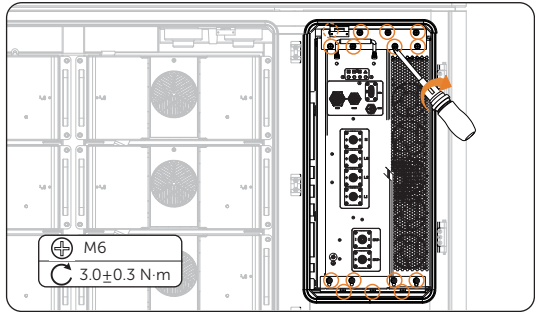


Figure 19-5 Installing the brackets(Front view)

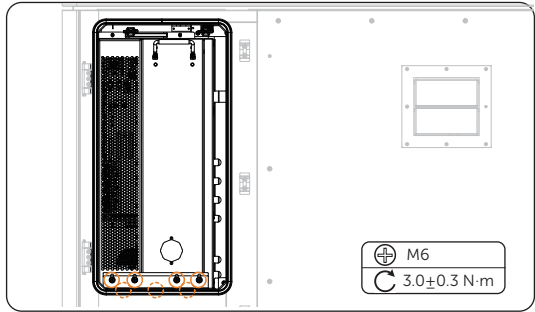


Figure 19-6 Installing the bracket (rear view)

**Step:6** Wiring the PCS.

### Checking after replacement

- Step:1** Power on the system. For details, refer to ["3.4 Power On"](#).
- Step:2** Check whether the system is back to normal by EMS1000 a web page or SolaXCloud.

## 19.2 Replacement of External Fan

### Procedure

- Step:1** Remove the PCS. For details, refer to "[19.1 Replacement of PCS](#)".
- Step:2** Use a Phillips screwdriver to loosen the screw on the PCS, pull out the fan assembly, and then disconnect the terminal connected to the fan.

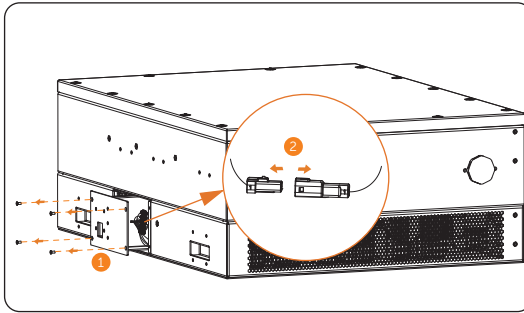


Figure 19-7 Disconnecting the fan

- Step:3** Loosen the screw on the fan that needs to be replaced and remove the fan.

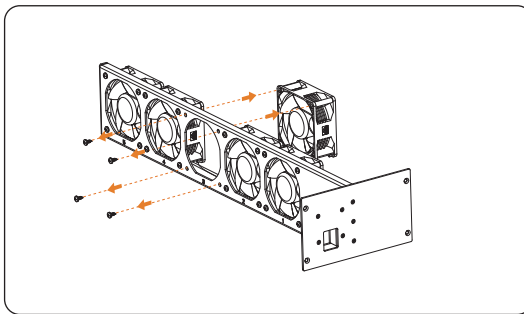


Figure 19-8 Fan remove

- Step:4** After replacing the fan, follow the sequence install a new fan.
- Step:5** Install the PCS into the cabinet, reference "[19.1 Replacement of PCS](#)".

## 20 Checking after replacement

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- Step:1** Check that the replacement parts are installed and connected correctly and securely.
- Step:2** Check the cable jacket for damage, especially the cable jacket connecting with the metal parts.
- Step:3** Power on the system. For details, refer to "[3.4 Power On](#)".
- Step:4** Check the running status of the system and ensure that the functions are restored.
- Step:5** Check whether the alarm status is displayed as resolved and no new alarms are generated via the cabinet screen, EMS1000 webpage or SolaX Cloud App.

# 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.au



## 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  
E-mail: [info@solaxpower.com](mailto:info@solaxpower.com)

