

Air Cooling Energy Storage System

TRENE-P100B215

Installation Manual

Version 5.0

www.solaxpower.com



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Safety

















General Notice

1. Contents might be updated or revised as needed. SolaX reserves the right to make improvements or changes in the product(s) and the program(s) described in this manual without the prior notice.
2. The installation, maintenance and grid-related setting can only be performed by qualified personnel who:
 - Are licensed and/or satisfy state and local jurisdiction regulations;
 - Have good knowledge of this manual and other related documents.
 - A medium-voltage operator is required to obtain any Certifications for High-voltage Electrician.
3. Before installing the device, carefully read, fully understand and strictly follow the detailed instruction of the user manual and other related regulations. SolaX shall not be liable for any consequences caused by the violation of the storage, transportation, installation, and operation regulations specified in this document and the user manual.
4. Use insulated tools when installing the device. Individual protective tools must be worn during installation, electrical connection and maintenance.
5. Please visit the website www.solaxpower.com of SolaX for more information.

Safety Instruction

For safety reasons, installers are responsible for familiarizing themselves with the contents of the Manual and all warnings before performing installation.

Descriptions of Labels

	CE mark of conformity		TUV certification
	Protective conductor terminal		Earth (ground) terminal
	The battery module may explode.		Caution, risk of danger
	Caution, hot surface		Caution, risk of electric shock
	Read the enclosed documentations.		Do not operate this system until it is isolated from mains and battery.
	Keep the system away from open flames or ignition systems.		Keep the system away from children.
	Danger of high voltage.		Do not dispose of the device together with household waste.
	Do not touch live parts for 15 minutes after disconnection from the power sources.		
	The system must be disposed of at a proper facility for environmentally-safe recycling.		

 **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.

 **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.

 **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.

 **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 the user manual for technical data.

 **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.

 **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.
- 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.

 **WARNING!**

- 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!**

- 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.

 **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 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.

 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!

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

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°C/302°F. If the battery catches fire, please evacuate immediately since it will generate noxious and poisonous gases.

NOTICE!

Recovery of damaged or wasted battery:

- Dispose of the damaged or wasted batteries according to local laws and regulations instead of placing them in the household trash or 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.

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.

NOTICE!

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

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.
- 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:

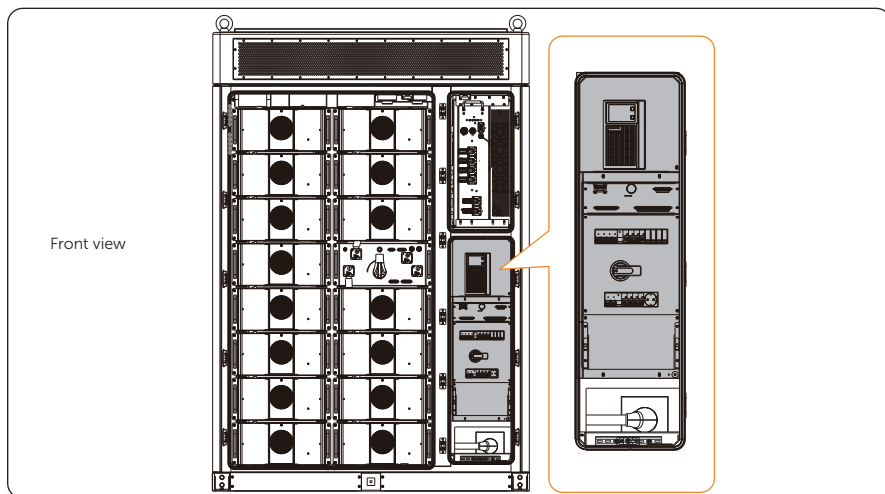
- When deciding the wire diameter, and connecting or wiring cables, follow the local laws, regulations, and codes to ensure safety.
- When external conditions (e.g., placement method, ambient temperature, etc.) change, the cable type must be verified according to IEC-60364-5-52 or local laws, regulations 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.
- 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.

Cabinet Type Identification

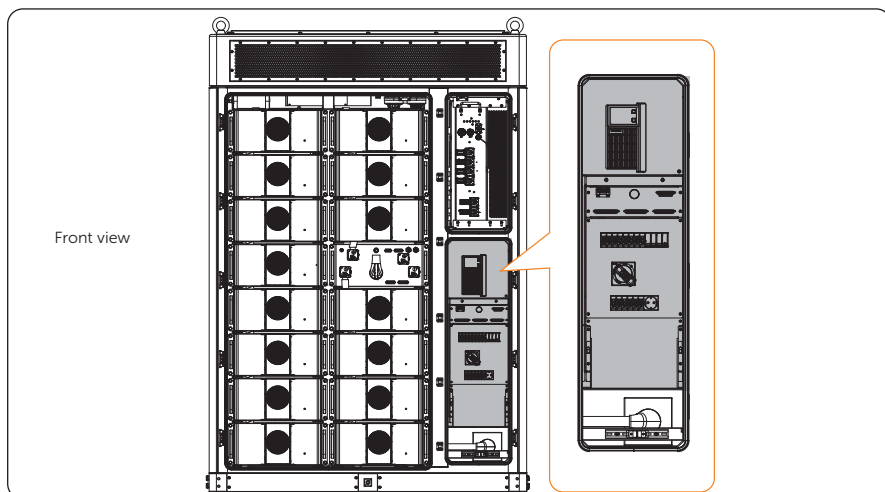
NOTICE!

- Due to product updates, this model is available in two types (Type A and Type B). Before starting work, open the door and identify the type by checking the distribution box located inside the cabinet.

Type A Cabinet

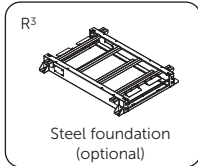
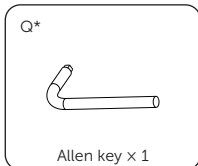
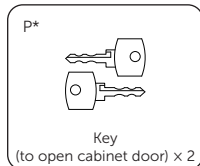
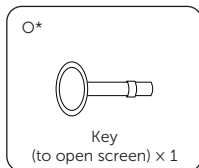
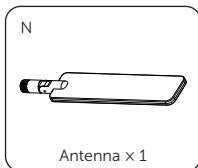
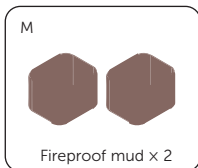
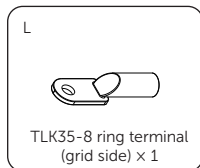
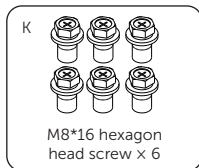
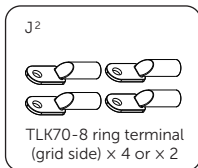
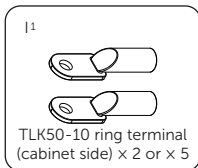
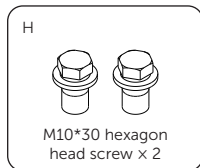
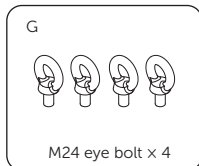
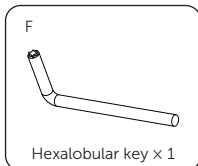
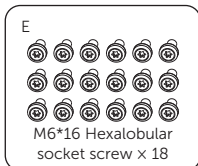
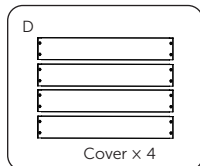
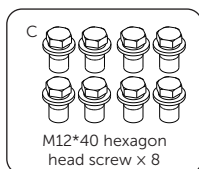
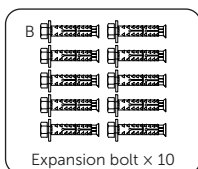
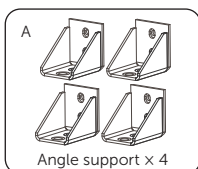
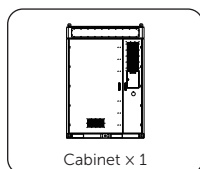


Type B Cabinet



Preparation Before Installation

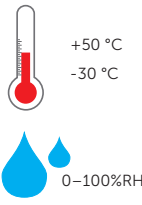

Packing List



NOTICE!

- 1: The quantity of TLK50-10 ring terminals is 2 for the Type A cabinet and 5 for the Type B cabinet.
- 2: The quantity of TLK70-8 ring terminals is 4 for the Type A cabinet and 2 for the Type B cabinet.
- Refer to the actual delivery for the optional accessories. The steel foundation are sold separately.
- The mark "*" indicates that these keys are collected into a bunch.

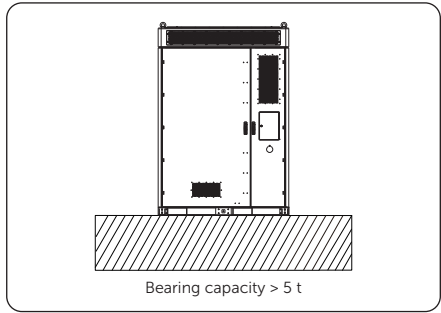
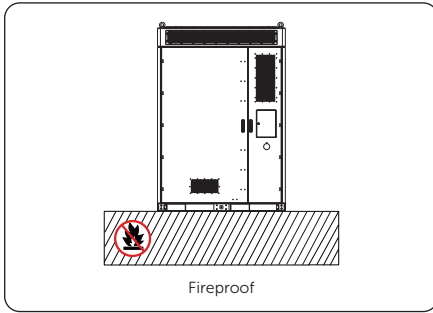
Installation Site Requirements

 <p>+50 °C -30 °C 0-100%RH</p>	 <p>IP55</p>	 <p>3000 m</p>	 <p>Good ventilation</p>
 <p>Avoid sandy or dusty</p>	 <p>Avoid high temperature</p>	 <p>Avoid flammable, explosive materials or dust</p>	 <p>Avoid corrosive substances</p>
 <p>Avoid strong electromagnetic fields and antenna</p>	 <p>Avoid strong vibration and noise</p>	 <p>Avoid radiation</p>	 <p>Avoid conductive and magnetic dust</p>
 <p>Avoid toxic and harmful gases</p>	 <p>Avoid microbial growth</p>		

NOTICE!

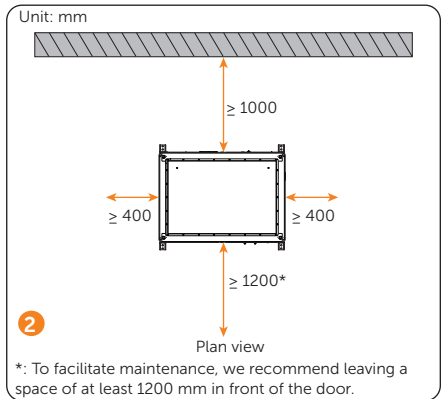
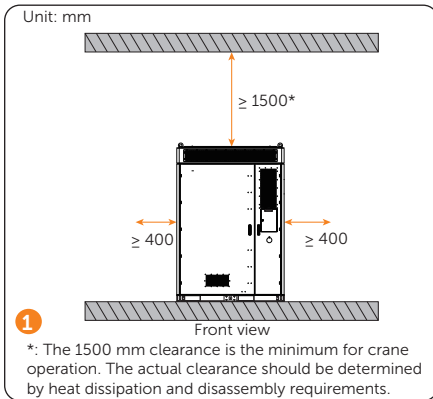
- Keep the cabinet away from coastlines and pollutants. If such conditions are unavoidable, please contact SolaX for advice before installation.
- If the cabinet is installed in polluted areas, please clean the cabinet exterior regularly every 1 to 3 months, or perform cleaning more frequently in easily polluted areas.
- Do not use acidic or alkaline cleaning agents, and make sure to rinse the cabinet thoroughly with clean water after cleaning.

Installation Carrier Requirements

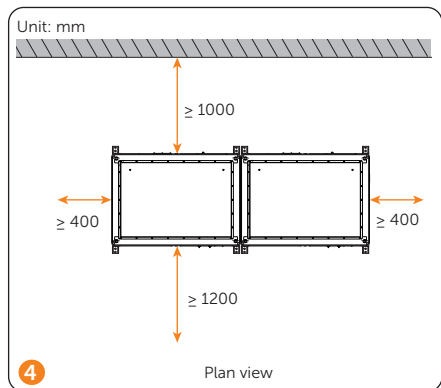
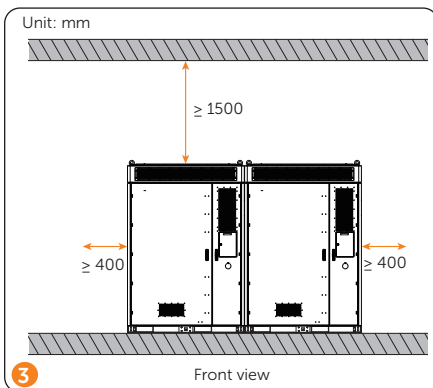


Installation Clearance Requirements

Clearance Requirements for a Single Cabinet



Clearance Requirements for Multiple Cabinets

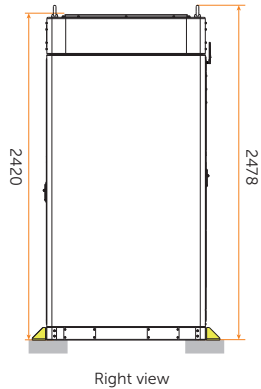
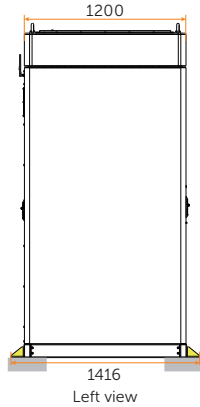
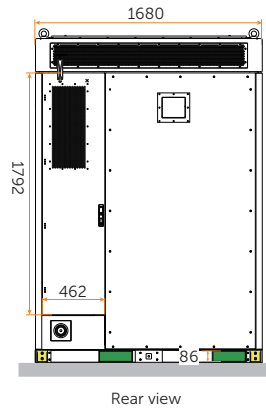
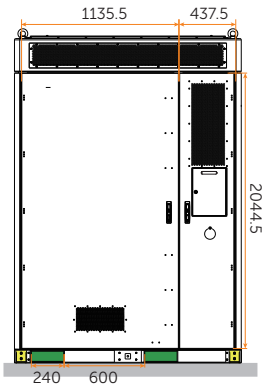
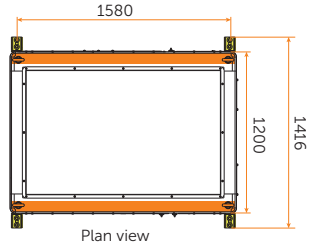


Cabinet Dimensions with Angle Supports

Cabinet with Angle Supports Installed at Front and Rear Sides

Unit: mm

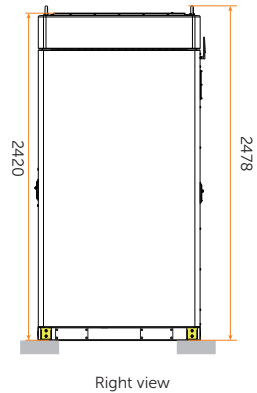
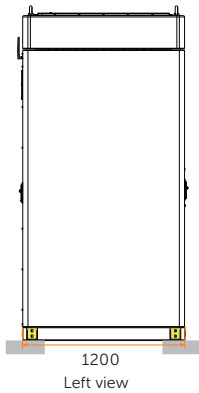
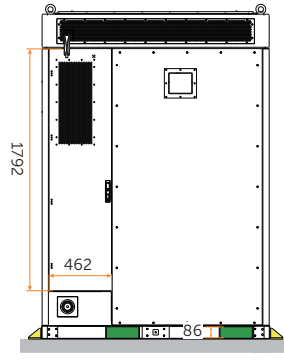
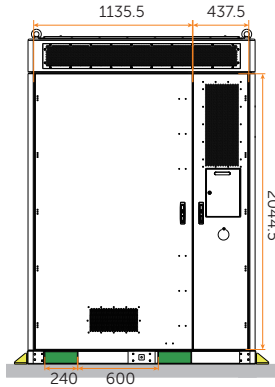
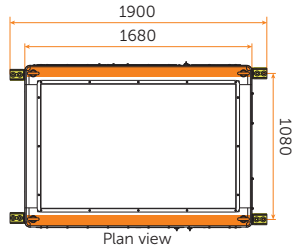
- Installation position for eye bolt
- Fork position
- Angle support
- Foundation



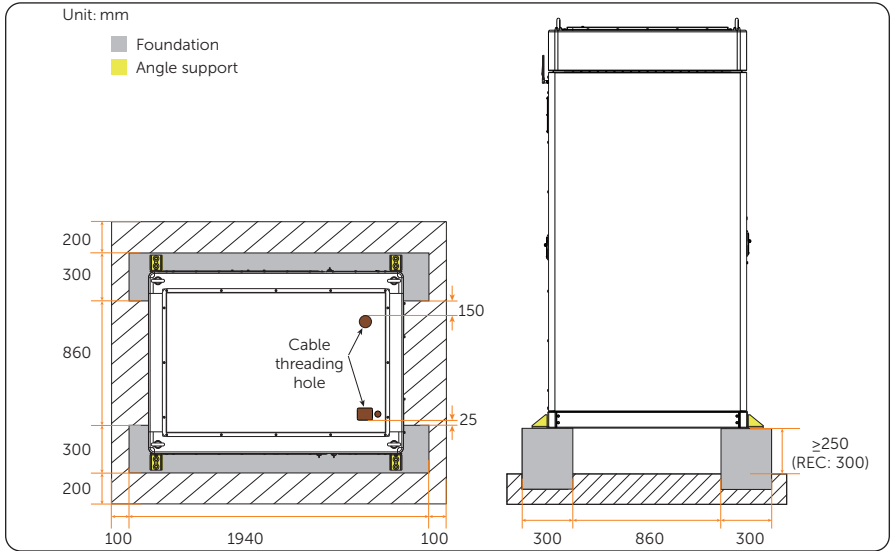
Cabinet with Angle Supports Installed at Left and Right Sides

Unit: mm

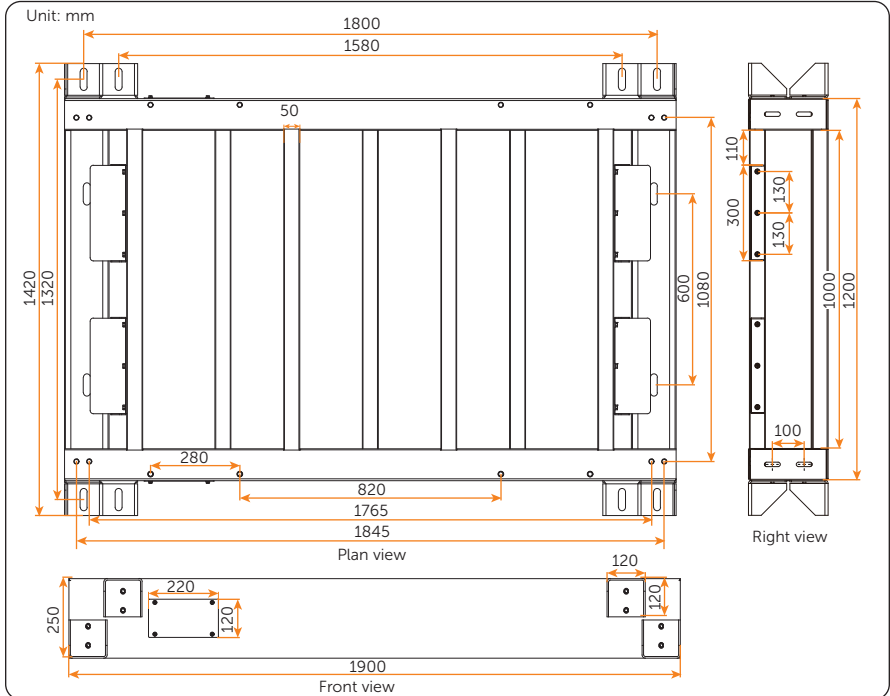
- Installation position for eye bolt
- Fork position
- Angle support
- Foundation



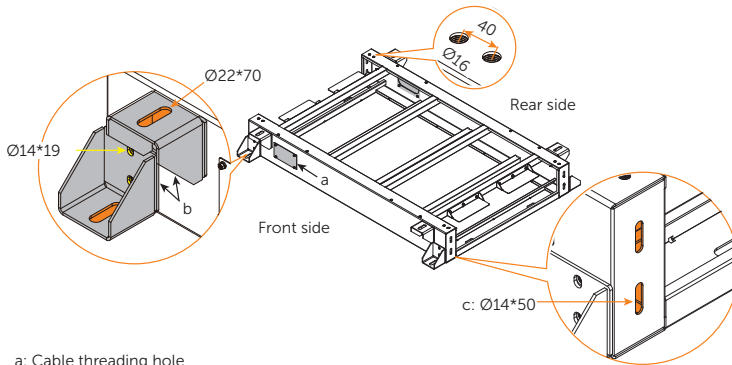
Concrete Foundation Dimensions



Steel Foundation Dimensions (Optional)



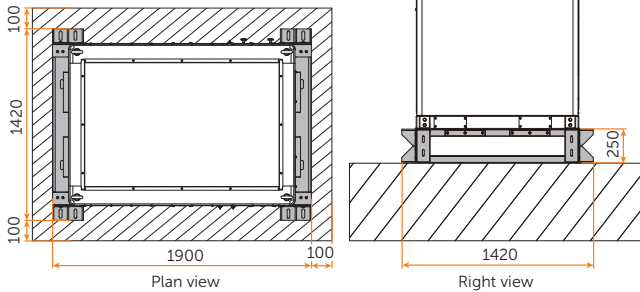
Unit: mm



- a: Cable threading hole
- b: Angle support
- c: To connect to a second cabinet

Unit: mm
■ Foundation

Note: If the cabinet's angle supports are installed at left and right sides, the foundation's angle supports, which are designed to secure the cabinet, may not be installed.



NOTICE!

After completing construction of the steel foundation, please strictly comply with the following steps:

- a. Install the bottom angle support first to secure the foundation to the ground;
- b. Install the top angle support (if any);
- c. Finally, install the cabinet onto the steel foundation.

Mechanical Installation

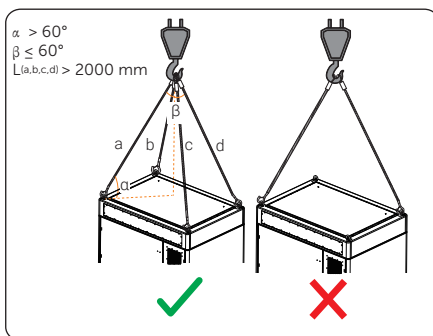
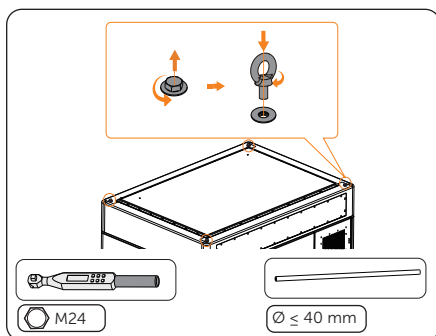


WARNING!

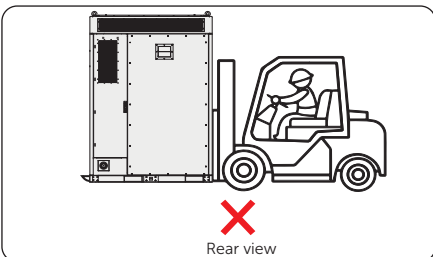
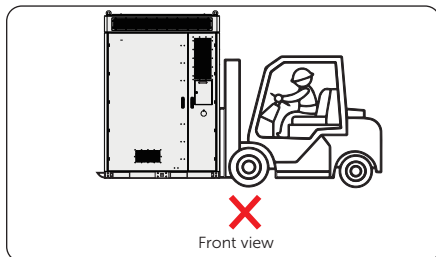
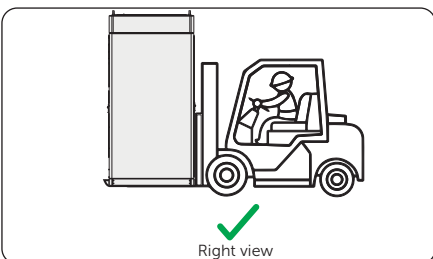
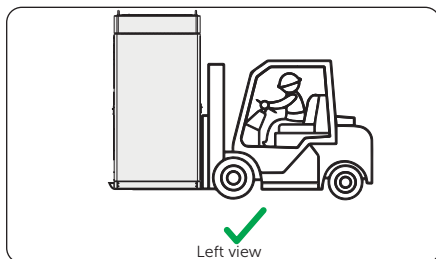
- Do not destroy the cabinet's anti-corrosion coating during the process of installation.

Handling

Crane Hoisting



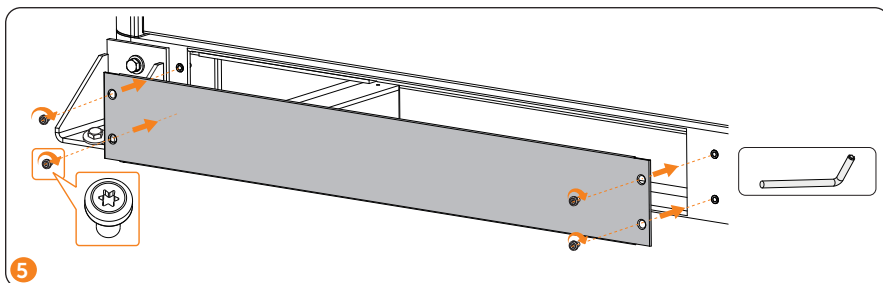
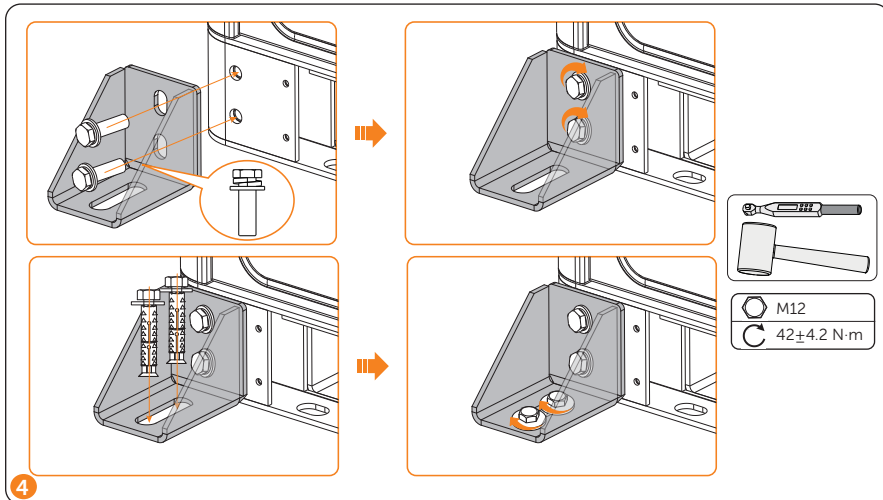
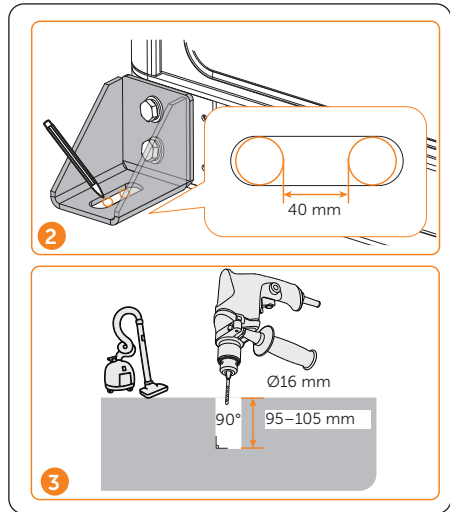
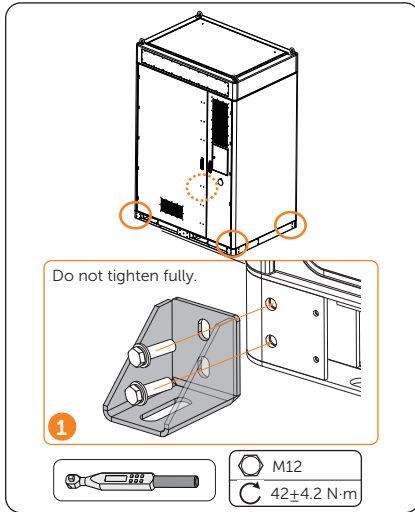
Forklift Handling



NOTICE!

- After unloading the cabinet, inspect it for paint damage (peeling or chipping). If found, repair it according to the user manual.

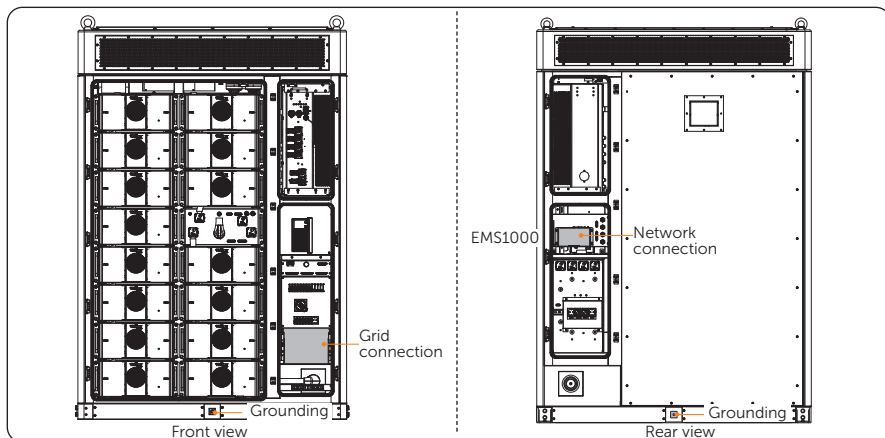
Securing the Cabinet



Electrical Connection

Position of the Wired Parts

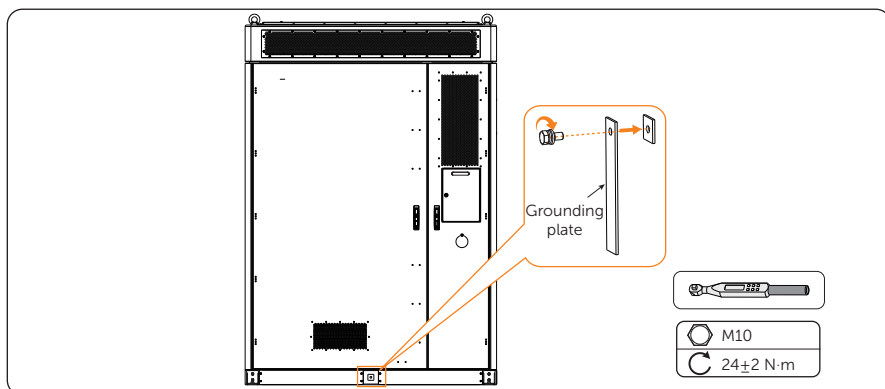
Since the wiring is identical for both types, this section uses Type B as the reference.



Grounding Connection

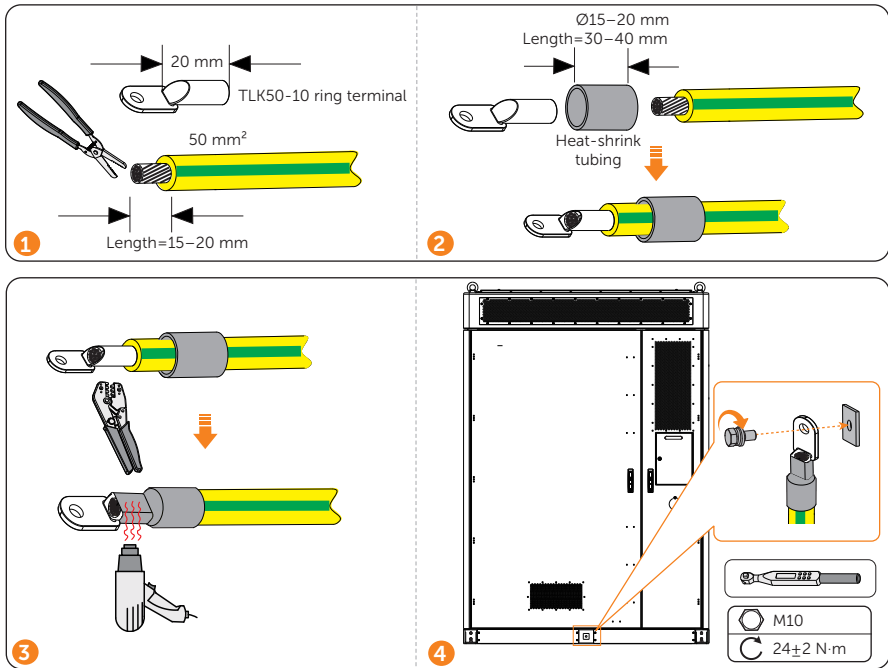
Ground the cabinet through a grounding plate or a PE wire.

Grounding Through a Grounding Plate



NOTICE!

- Prepare the terminals by yourself. Terminals shall be suitable for 50 mm² conductors and M10 terminal screws.



Grid Cable Preparation

No.	Cable	Cross-sectional area	Strip length
A	Five-core cable	/	240–280 mm
B	L1/L2/L3/N	50 mm ²	20–24 mm
C	PE	35 mm ²	16–20 mm

No.	Cable	Heat-shrink tubing		Terminal
		Diameter	Length	
A	L1/L2/L3/N	∅20–25 mm	40–50 mm	Type A: TLK70-8 Type B: TLK50-10
B	PE	∅14–18 mm	40–50 mm	TLK35-8

See "[Cabinet Type Identification](#)" for cabinet type identification.

3 Take L1 wire for instance.

4

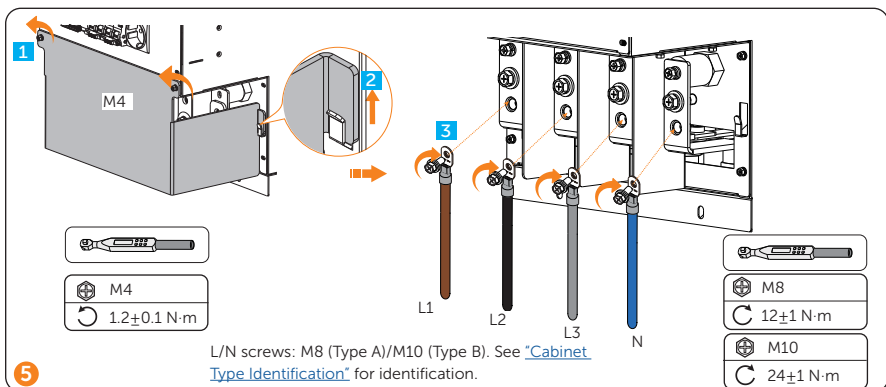
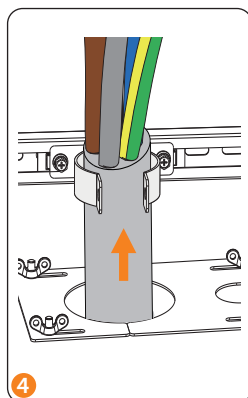
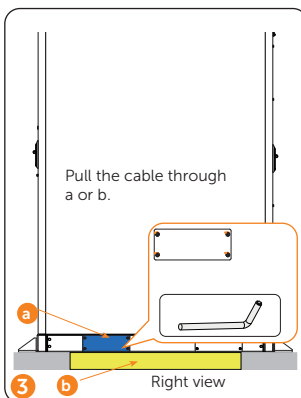
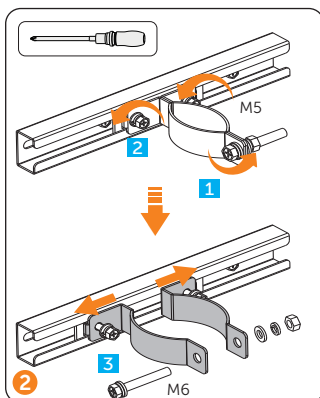
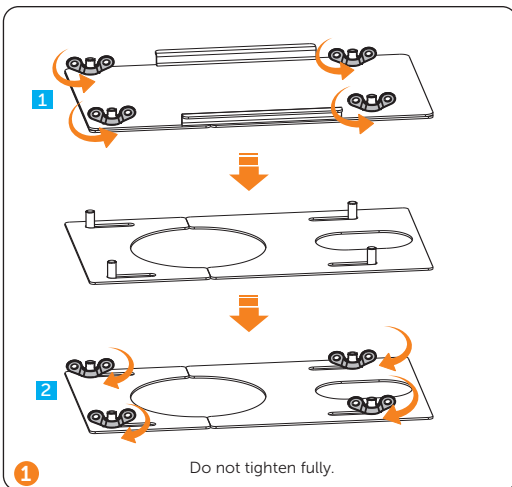
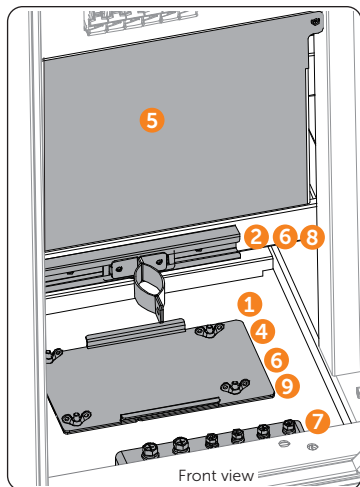
Door Operation

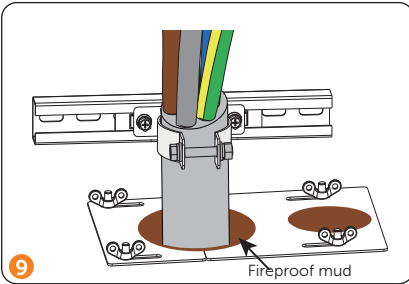
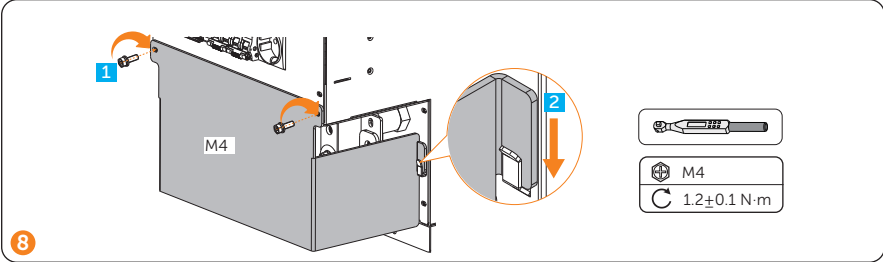
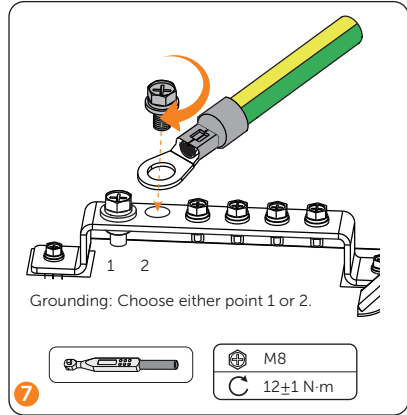
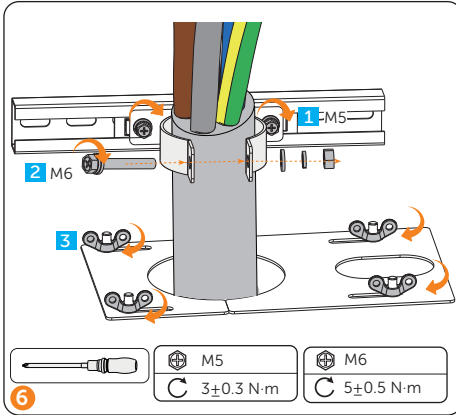
Open the door

Close the door

130°

Grid Connection





NOTICE!

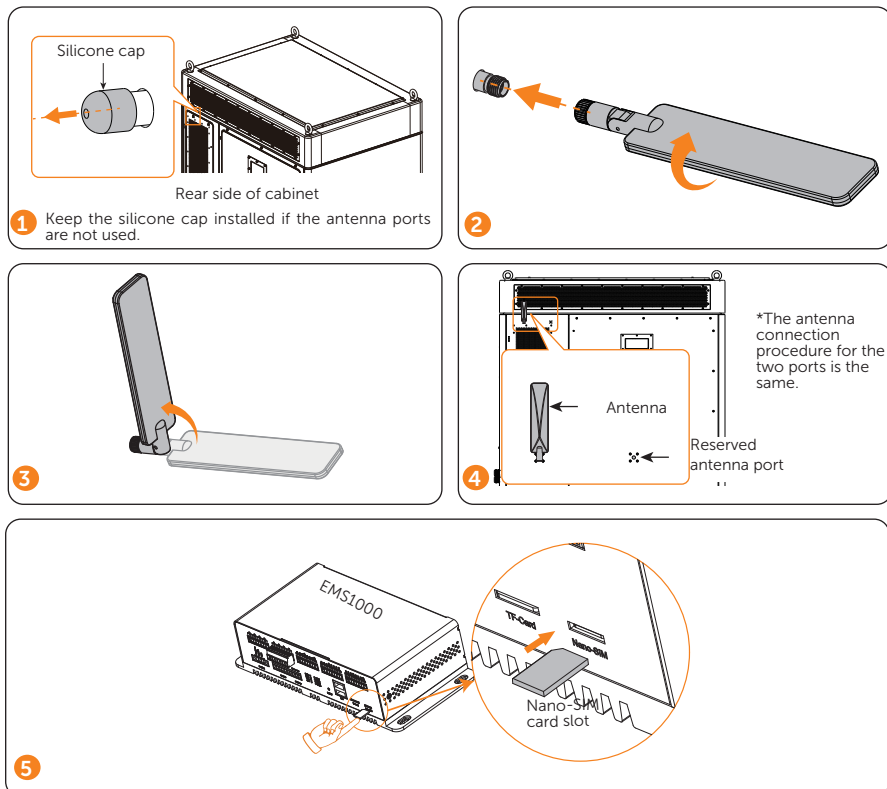
Notice for fireproof mud:

- Knead the fireproof mud into a ball; soften in warm water (40–70 °C) if too hard.
- Clean the cable hole before sealing.
- Fill the hole evenly with the mud; add a fireproof board for large holes.

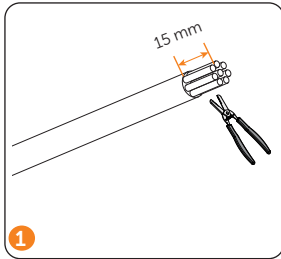
Network Connection

Connect the cabinet to network wirelessly via 4G, or via a wired Ethernet connection.

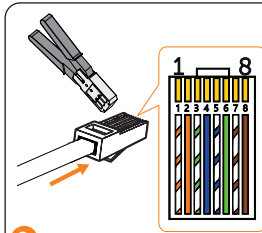
Wireless Connection (4G)



Wired Connection (Ethernet)



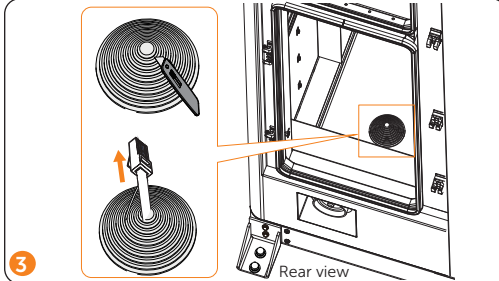
1



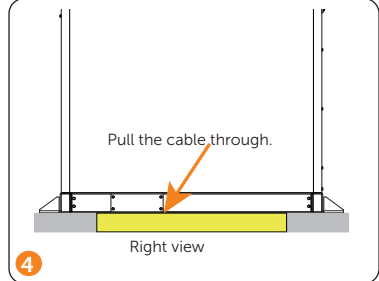
2

No. Color

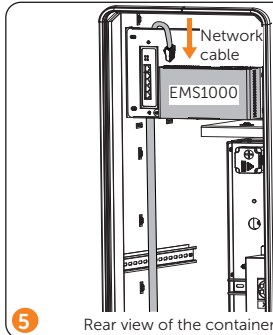
- | | |
|---|---------------------------|
| 1 | White with orange stripes |
| 2 | Orange |
| 3 | White with green stripes |
| 4 | Blue |
| 5 | White with blue stripes |
| 6 | Green |
| 7 | White with brown stripes |
| 8 | Brown |



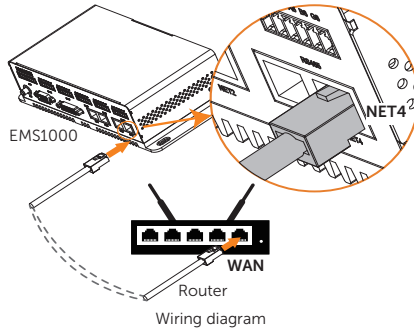
3



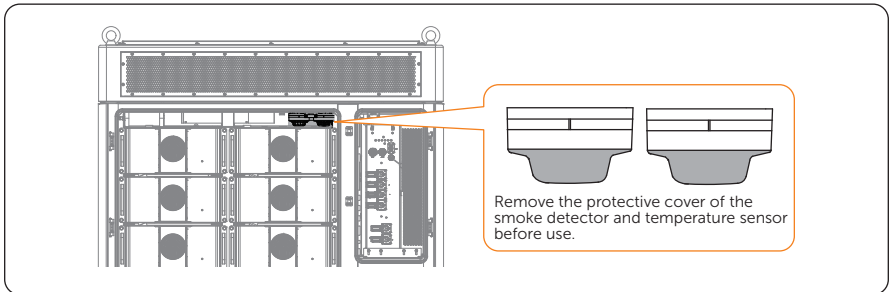
4



5



Removal of Detector and Sensor Protective Covers

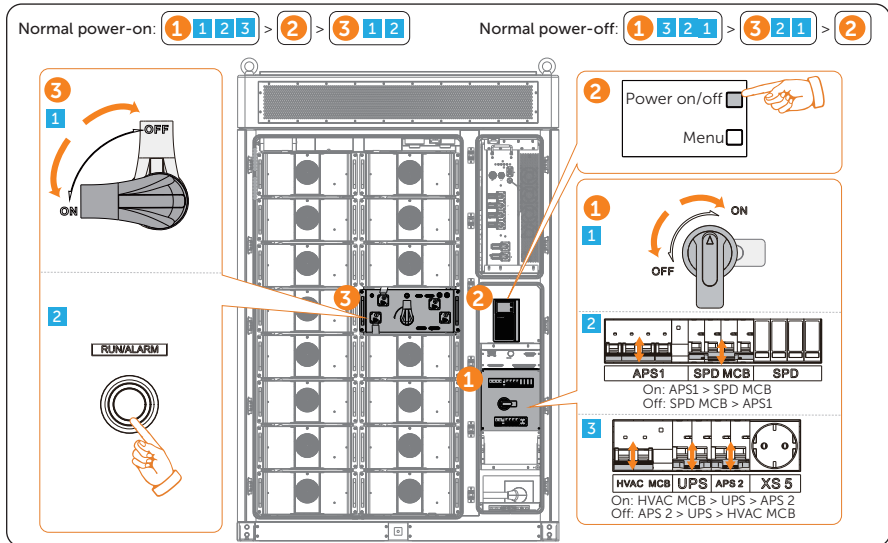


System Power-on and Power-off

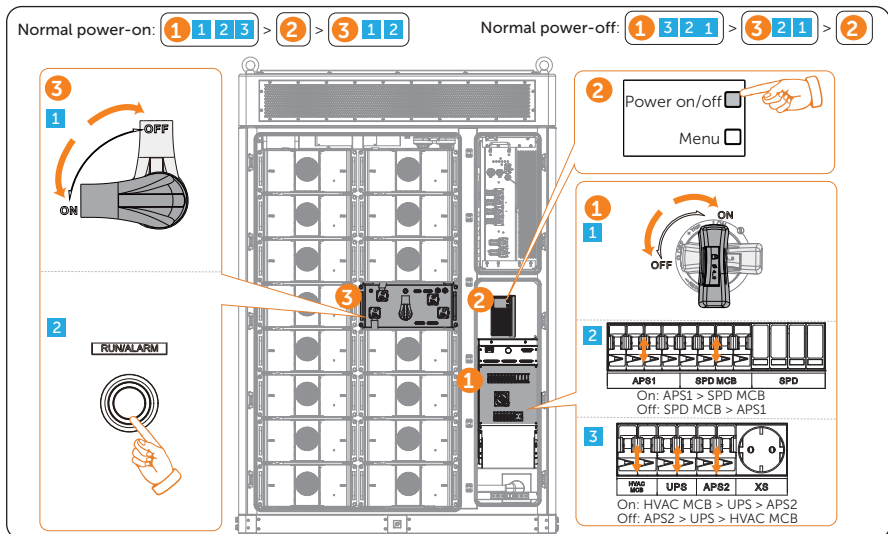
Normal Power-on and Power-off

See "[Cabinet Type Identification](#)" to identify your cabinet type.

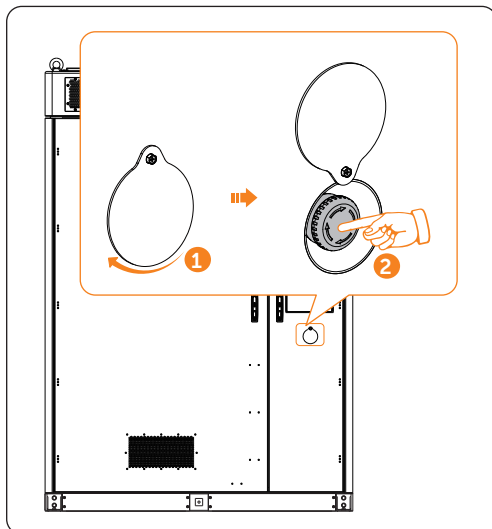
Type A: Normal Power-on and Power-off



Type B: Normal Power-on and Power-off



Emergency Power-off



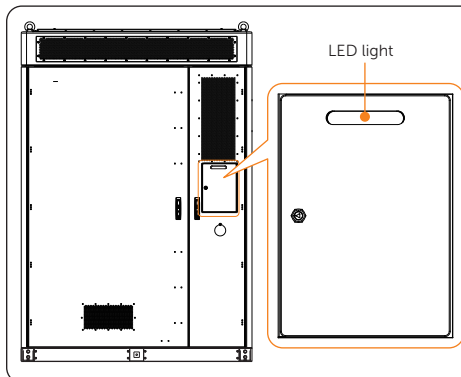
WARNING!

- Do not press the emergency stop button except for emergencies.

NOTICE!

- If the emergency stop button has ever been pressed down, it must be reset before you power the system next time. The resetting procedure is as follows:
 - a. Rotate the cover;
 - b. Rotate the button according to the arrow direction shown on the button. Then the button will spring back to its original position.

LED Indicator

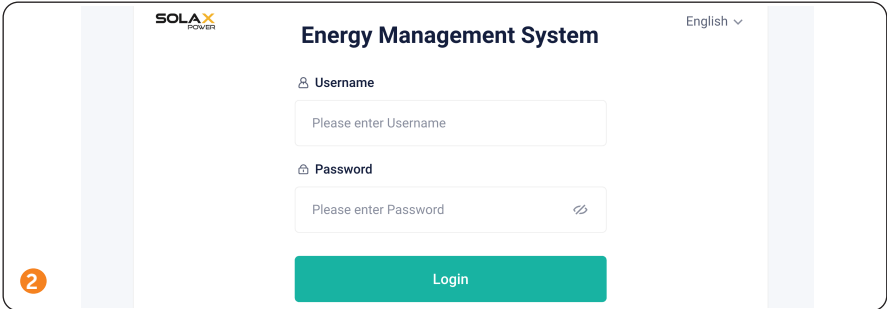
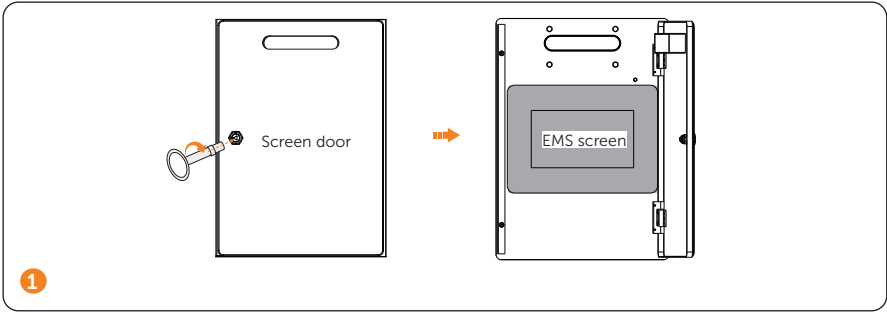


LED light

Status	Description
	In standby
	In operation
	System failure

System Configuration

EMS Configuration



NOTICE

Account information for logging in to EMS

Username	Initial Password
user	123456

Position of EMS SN label

The diagram shows the interior of the cabinet door with a grey rectangular label pointing to the location of the EMS SN label.

Username **Password**

user 123456 by default

NOTICE!

- Scan the SN QR code of EMS on the label pasted on the bottom of the cabinet door interior, or log in to EMS through the user account, and then go to **Data > EMS > EMS Registration No.** to obtain the SN.



Warranty Registration

Please visit the website: <https://www.solaxcloud.com/user-center/> to complete the warranty registration. For more detailed warranty terms, please visit SolaX official website: www.solaxpower.com.



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