

EP Series PV Inverter

User Manual

EP-3600-HAN-UD

EP-3750-HAN-UD



Sineng Electric Co., Ltd.

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This manual is applicable to the following Sineng inverter models:

Model	Rated Capacity
EP-3600-HAN-UD	3600kW
EP-3750-HAN-UD	3750kW

The symbols used in this manual indicate different usage, as described in the following tables. "WARNING" and "CAUTION" may appear to be synonymous, but they actually convey different information. Therefore, to ensure safety and prevent product damage, please read the following description of DANGER, WARNING, CAUTION, and NOTE carefully.

Symbol	Description
 DANGER	DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury and is used only in the most extreme situations.
 WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and is used to warn of an unsafe practice.
NOTE	NOTE is used to inform personnel of installation, operation, or maintenance information that is important but not related to a hazard.

Symbol	Description
	This symbol indicates that there is a danger of electric shock, which may cause personal injury.
	This symbol indicates that there is a danger of high temperature burns.
	This symbol indicates to ground the equipment safely.
	This symbol indicates that the noise is loud during equipment operation and it is necessary to wear anti-noise earmuffs.
	This symbol indicates that there is still dangerous voltage inside the equipment after turning off all the power switches, and it needs to discharge for 5 minutes to drop below the safe voltage before maintenance operations can be carried out.

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Safety precautions

This manual contains important safety instructions for EP-3600-HAN-UD and EP-3750-HAN-UD inverters, which shall be followed when installing and maintaining the inverters. Please read this manual carefully before using the inverters.



DANGER

- When the PV array is exposed to light, the port has high DC voltage. Do not directly touch the DC port and the terminal directly connected to the DC port without protective measures or without confirming the voltage, so as to avoid personal injury. Obvious signs and protective measures must be applied when necessary!
 - There are dangerous voltages inside the inverter during normal operating. Do not disassemble the internal cover plate of the inverter without authorization or permission to avoid damage to the equipment or personal injury.
 - There are energy storage components inside the inverter. After the inverter is completely powered off, wait for no less than 5 minutes before proceeding with subsequent operations.
 - When the AC side of the inverter is connected to the grid, please do not close the AC circuit breaker manually.
-



WARNING

- Please install the inverter in strictly accordance with the instructions in this manual. Otherwise, it may cause damage to the equipment or endanger the personal safety of the operator.
 - The installation, commissioning, and maintenance of the inverter must be implemented by the manufacturer or designated agent. Otherwise, it may endanger the personal safety and cause equipment failure. The damage to the equipment caused by violations of these precautions is not covered by the warranty.
 - The operator shall be fully familiar with the relevant standards and operating safety regulations of the corresponding regions/countries, and perform operations in accordance with relevant regulations.
 - The inverter is applicable to ordinary industrial environments. If it is used in residential areas, it may generate radio frequency (RF) interference. In such a situation, users are required to take additional measures.
 - Before maintaining the DC side of the inverter, please turn off the switch.
 - Before maintaining the AC side of the inverter, please turn off the switch.
 - Electric Shock Hazard. The DC conductors of this photovoltaic system are normally ungrounded but will become intermittently grounded without indication when the inverter measures the PV array isolation.
 - These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that specified in the operating instructions.
-

- For Continued Protection Against Risk Of Fire, Replace Only With Same Type And Ratings Of Fuse.
-



CAUTION

- To prevent accidents caused by misoperation by unrelated personnel, eye-catching warning signs shall be placed around the equipment.
 - Risk Of Electric Shock. Both ac and dc voltage sources are terminated inside this equipment. Each circuit must be disconnected individually and the service person must wait 5 minutes before servicing. When the photovoltaic array is exposed to light, it supplies a dc voltage to this equipment.
 - Risk Of Electric Shock. Both ac and dc voltage sources are terminated inside this equipment. Each circuit must be individually disconnected before servicing.
 - Risk of Electric Shock, Do Not Remove Cover. No User Serviceable Parts Inside. Refer Servicing To Qualified Service Personnel].
 - High leakage current! The inverter must be grounded before connecting the input supply!
 - Risk of Electric Shock. Normally Grounded Conductors May Be Ungrounded and Energized When a Ground-Fault is Indicated.
-

NOTE

- Before performing any operations on the inverter, read this manual and the safety signs and instructions on the surface of the inverter carefully.
-

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Chapter 1 Product Overview

1.1 Overview of PV Power Generation System

Sineng EP series PV inverter converts the direct current (DC) after serial and parallel collection by the PV string of the PV array into three-phase three-wire alternating current (AC). The AC output is boosted by a step-up transformer and then connected to the high-voltage transmission network or the medium and low-voltage distribution network.

The following figure shows the schematic diagram of the PV power generation system.

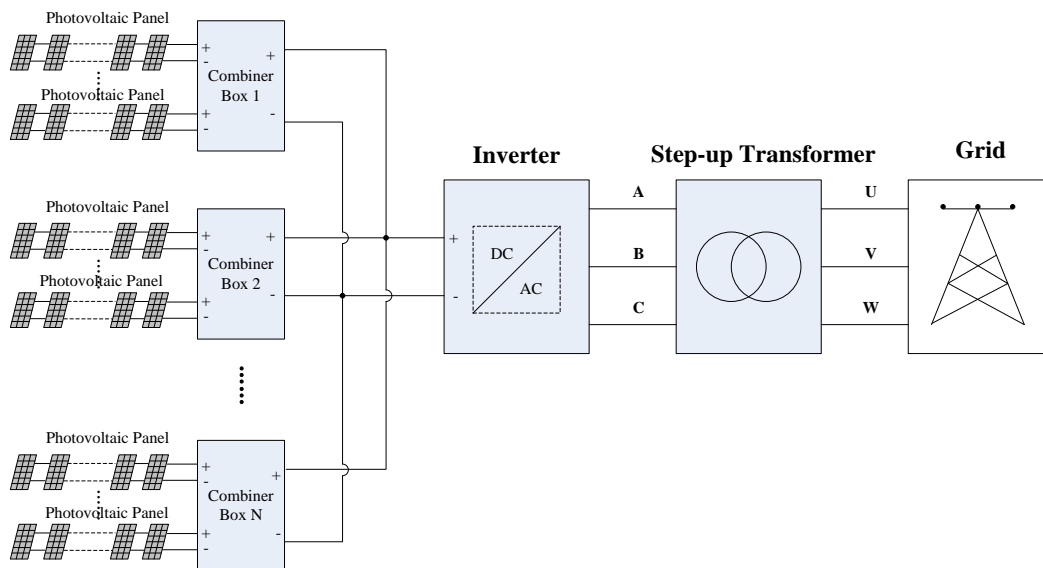
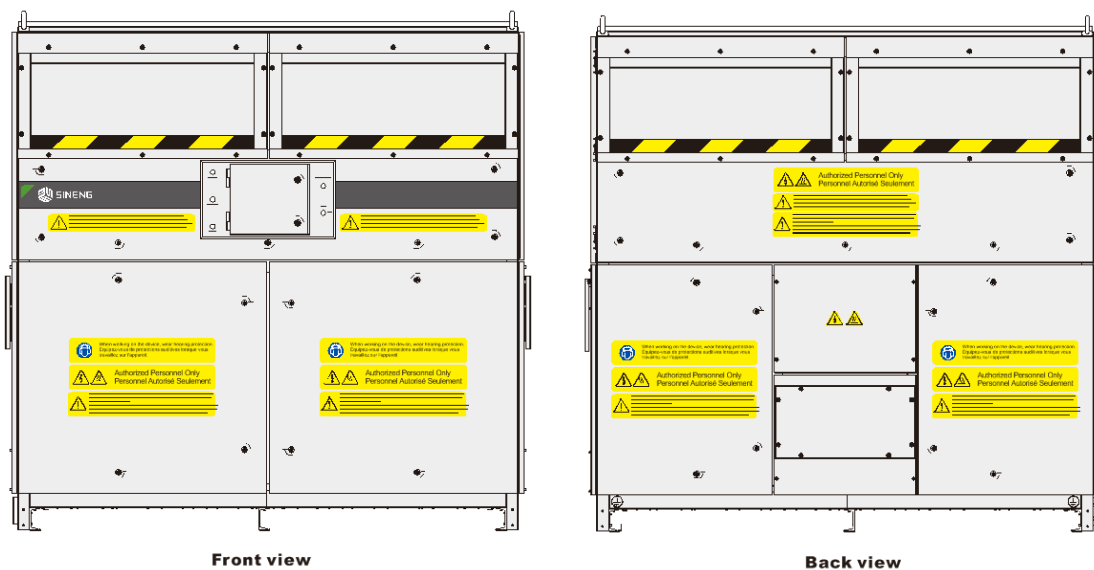


Figure 1-1 Elements of the PV power generation system

1.2 Inverter Appearance

1.2.1 Appearance

The following figures show four views of the inverter.



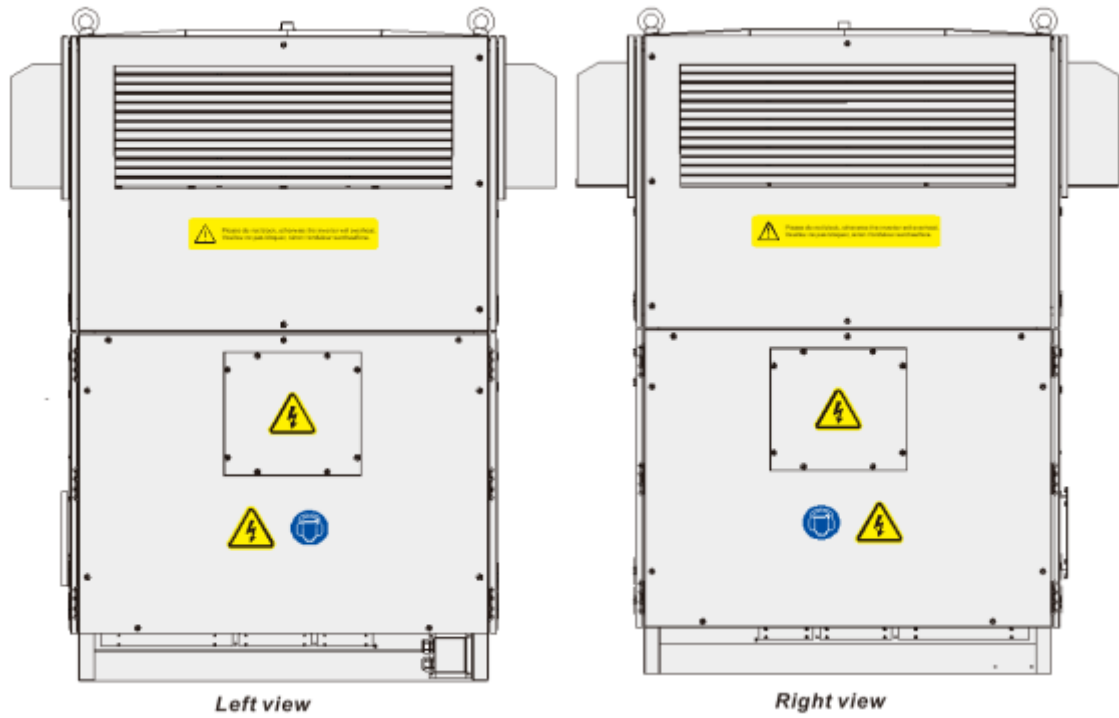


Figure 1-2 Inverter view

1.2.2 Operation Panel Description

Figure 1-3 shows the partially enlarged view of the operation panel of the inverter.

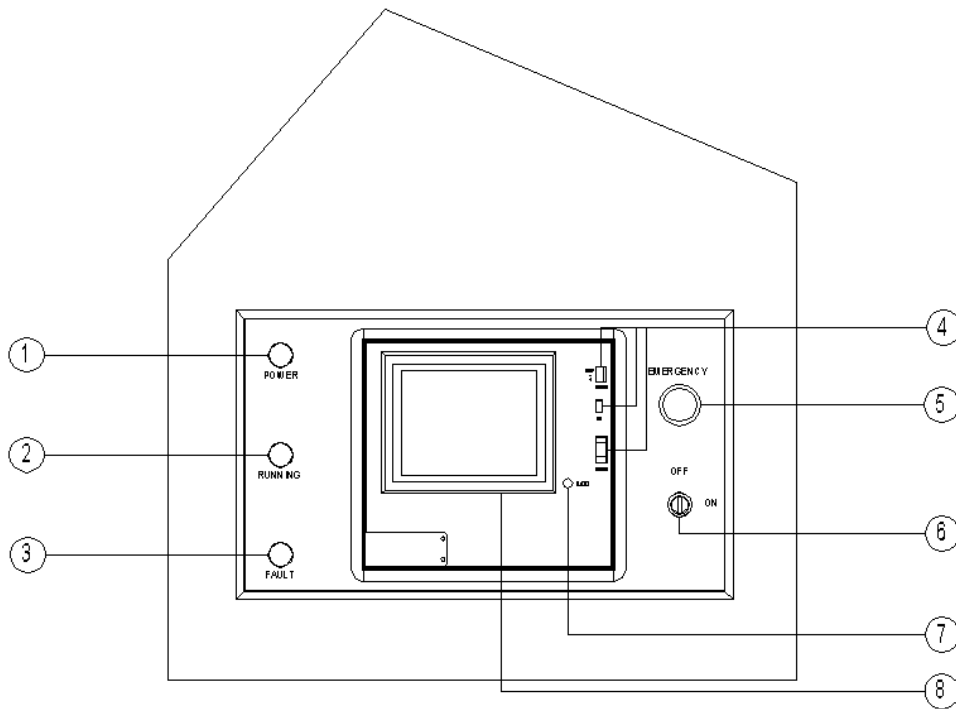


Figure 1-3 Operation panel of the inverter

The operation panel is located on the right side of the upper cover plate of the front compartment. 0 describes the major components and functions of the operation panel.

Table 1-1 Description of operation panel functions

Number	Name	Component Description	Component Function
①	POWER	Power indicator	If this indicator is on, the inverter is in the live status.
②	RUNNING	Operating indicator	If this indicator is on, the inverter is operating properly.
③	FAULT	Fault indicator	If this indicator is on, the inverter is faulty.
④	RS485/USB/RS232	Communication port	You can choose between a 485 interface, a USB interface, or a 232 interface, but you can only choose one of these three at the same time.
⑤	EMERGENCY	EPO button	If you press this button, the inverter will stop immediately. The DC input switch and AC circuit breaker will be automatically disconnected. At this time, the system control board is still in the live state. This switch is a self-lock one. After pressing this switch, release the button in the direction indicated on the button.

Number	Name	Component Description	Component Function
⑥	ON/OFF	Power-on/off knob	<p>If you turn the knob to "ON", the inverter operates automatically when the power-on conditions are met.</p> <p>If you turn the knob to "OFF", the inverter automatically stops.</p>
⑦		Wakeup button of the touch screen	<p>This button can wake up the inverter from the energy-saving mode. After pressing this button, the LCD screen enters the initialization screen. You can operate it in 5s.</p>
⑧	LCD	Touch screen	<p>The LCD cover plate can only be opened with a key. Close the door after use and store the key properly.</p> <p>The LCD is an 8-inch industrial touch screen used as the HCI window of the EP series inverters. When the inverter is working properly, the LCD screen enters the energy-saving mode if it is not operated for more than 10 minutes.</p> <p>(Note: To enter the calibration mode, tap the screen five times continuously. In calibration mode, you need to manually tap five crosses that appear on the screen in sequence respectively for calibration. Then, you can go back to the normal screen.)</p>

1.2.3 Nameplate and Label

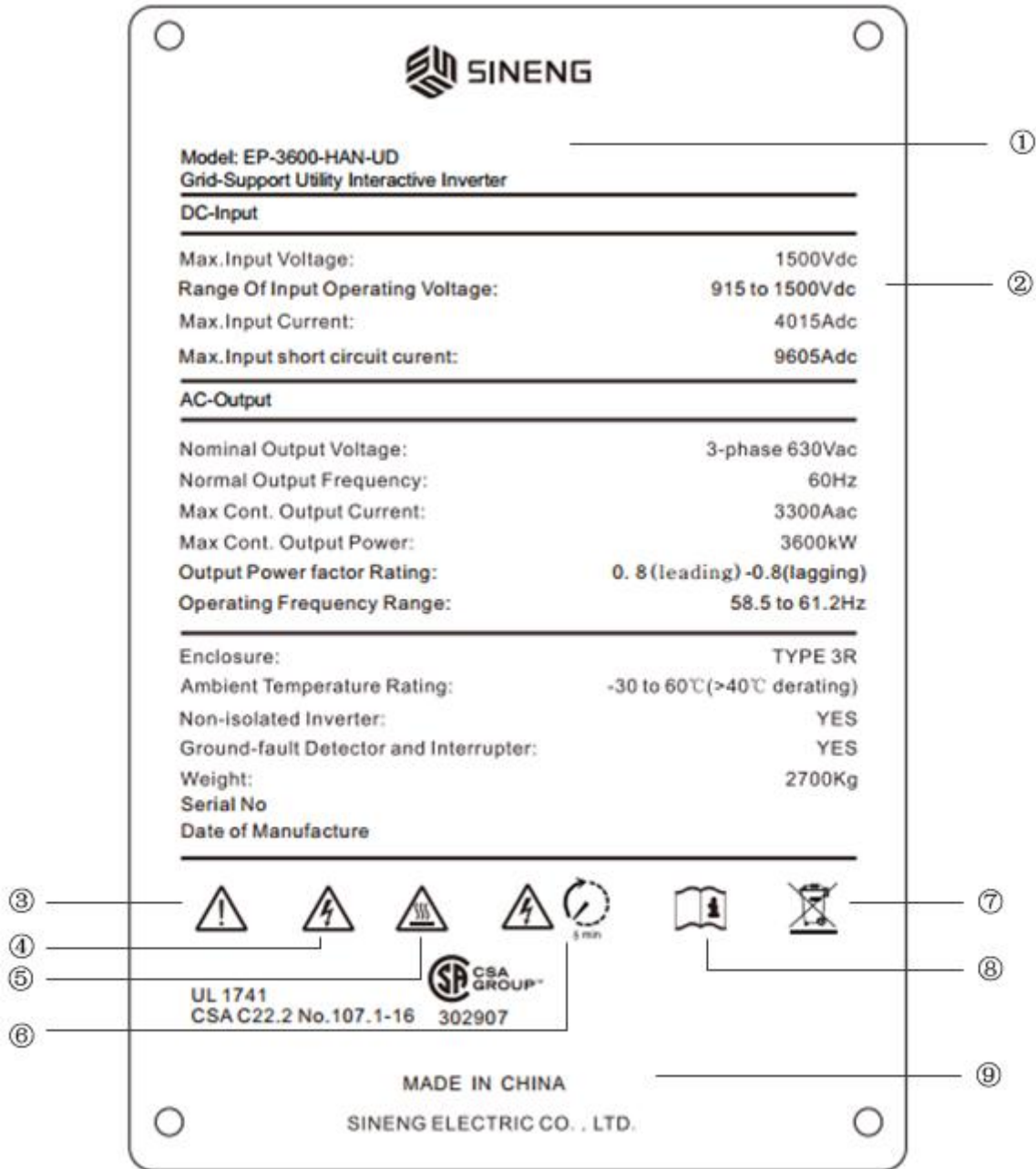







Figure 1-4 Nameplate and label

Table 1-2 Description of marks

SN	Icon	Name	Description
①		Inverter Model	
②		Major technical specifications	
③		Danger warning	The inverter is powered by electricity and there are potential risks, especially when it is powered on. It must be operated by professional personnel with safety protection measures taken.

SN	Icon	Name	Description
④		Electric shock warning	This symbol indicates that there is a danger of electric shock, which may cause personal injury.
⑤		Warning of burns	When the inverter is running, the surface (especially the radiator part) has a high temperature. Do not touch it directly to avoid burns.
⑥		Discharge delay mark	The inverter can be discharged to a safe voltage in 5 minutes after it is powered off. Then, the professional personnel can perform other operations.
⑦		EU WEEE mark	If you intend to discard this product, you must send it to an appropriate place for recovery and recycling. The product cannot be discarded as domestic waste.
⑧		User Manual reference	Professional shall refer to the User Manual for the installation or maintenance of the inverter.
⑨		Manufacturer information	Manufacturer name and address

1.2.4 Size and Specification

Table 1-3 describes the external dimensions, weight, and other information about the inverter.

Table 1-3 External dimensions of the inverter

Model	External dimensions W×H×D (Unit: mm)	Net Weight (kg)
EP-3600-HAN-UD	2335X2300X1865	2700
EP-3750-HAN-UD		

1.2.5 Ventilation Design

The overall air inlet mode of the inverter is as follows: cool air provided at the top and hot air dissipated at the bottom. The external cool air flows into the interior through the front and rear air inlet elbows, and flows out through the sides and bottom of the inverter, as shown in 0.

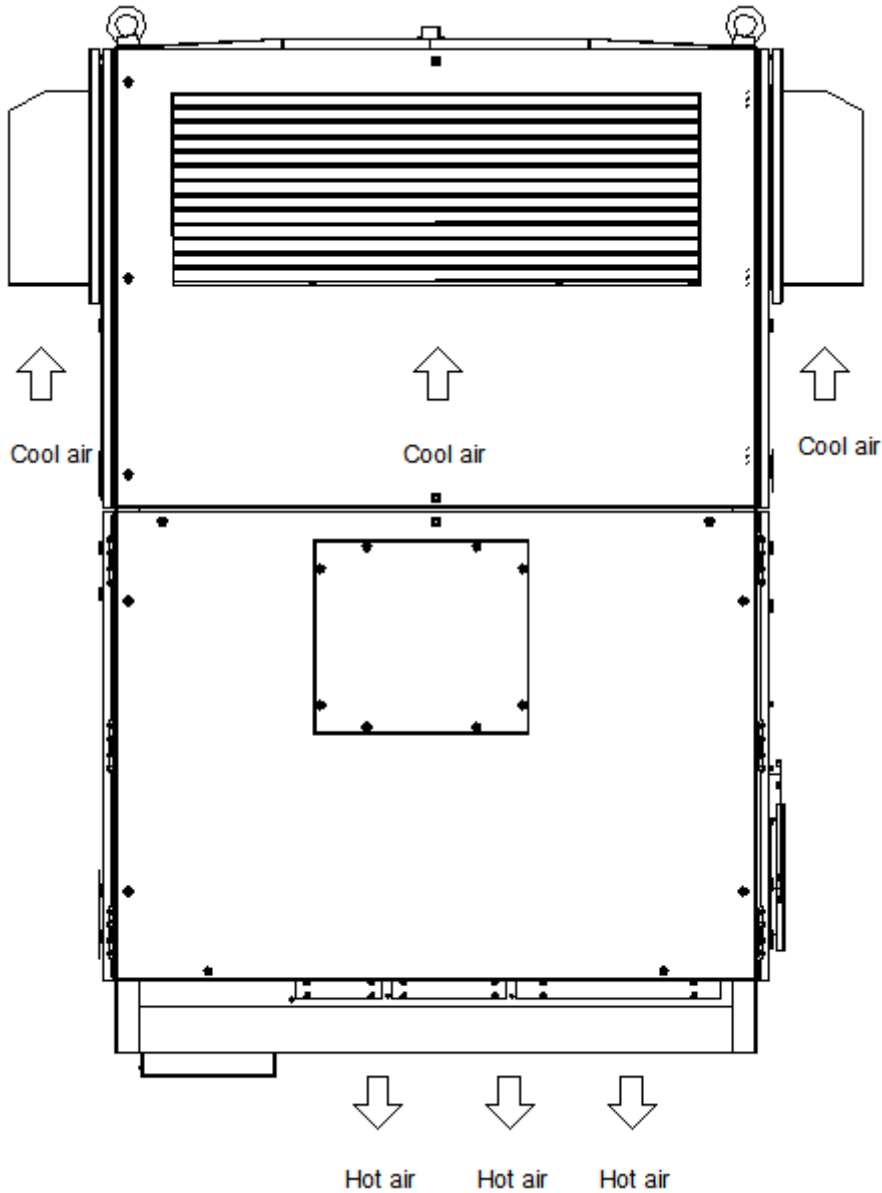


Figure1-5 Schematic diagram of ventilation

1.3 Key Component Positions and Functions

The inverter includes the DC power distribution unit, the DC/AC inverter module and the AC output module. Both the DC power distribution unit and the AC output module are equipped with operation switches and wiring terminals.

1.3.1 DC Power Distribution Unit

The following figure shows the positions of the DC power distribution unit components.

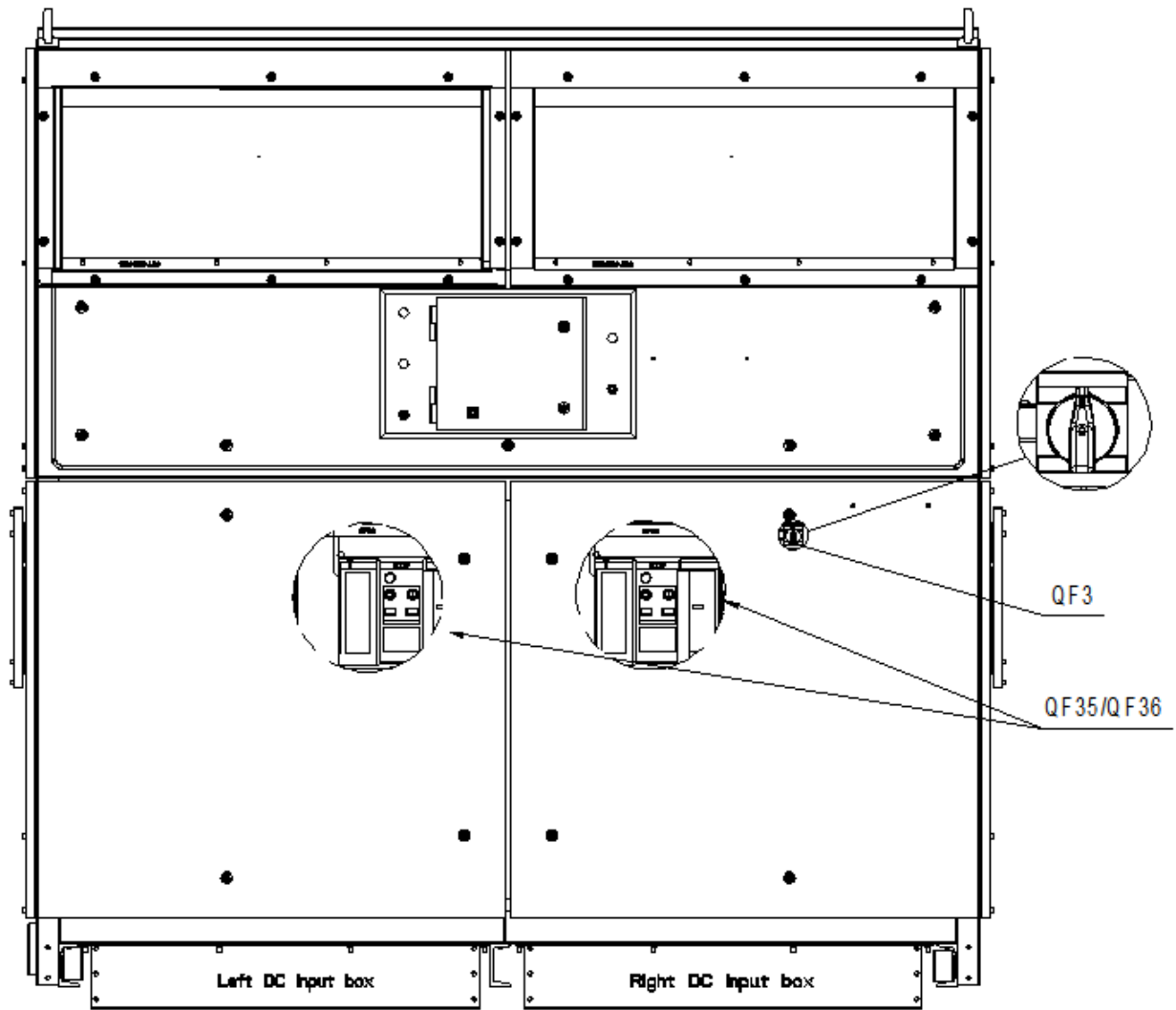


Figure1-6 Positions of key components on the front of the inverter

Table 1-4 Front components and functions

No.	Component	Function
1	DC input switch QF35/QF36	Load switch on the DC side
2	DC maintenance switch QF3	Disconnect this switch before maintenance on the DC side

1.3.2 AC Output Module

The following figure shows the positions of the AC output module components.

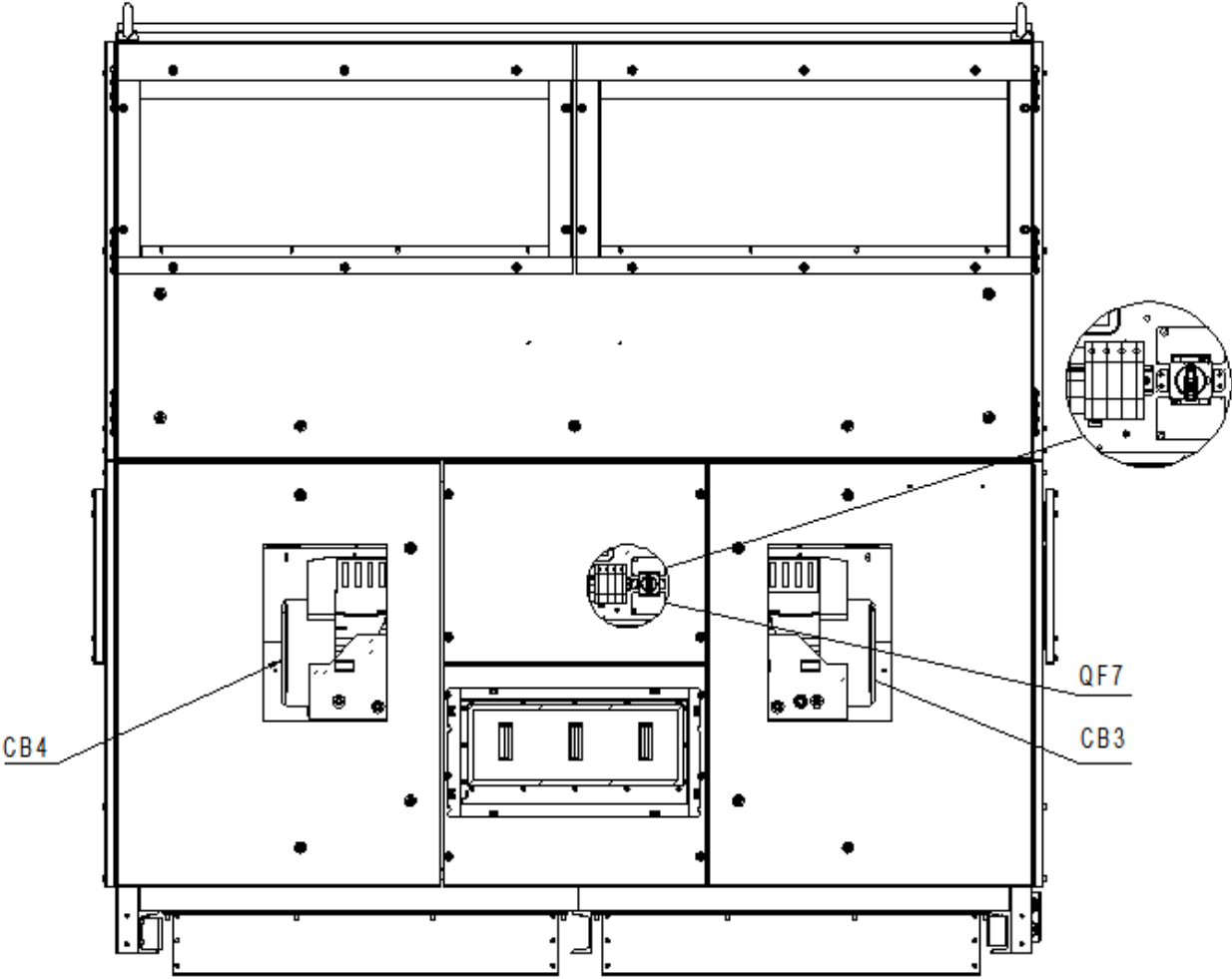


Figure1-7 Positions of key components on the rear of the inverter

Table 1-5 Rear components and functions

No.	Component	Function
1	Circuit breakers CB3 and CB4 on the AC side	Grid connection and protection for the inverter
2	Auxiliary switch for obtaining electricity - QF7	Switch used by the inverter to obtain electricity from the grid

Chapter 2 Inverter Installation

This chapter introduces the on-site environmental conditions required for storage and reliable running of the inverter, installation steps, and other related instructions.

2.1 Storage Before Installation

The inverter shall be stored indoors, such as a large warehouse or workshop, to prevent possible condensation or being soaked in rain at the bottom during the rainy season. It is necessary to store outdoor due to site conditions, the inverter base must be raised, and the specific lifting height should be reasonably determined based on site geological, meteorological, and other conditions. The storage site needs to be dry to prevent dust and moisture erosion. The storage ground needs to be flat, solid, with sufficient bearing capacity, and free of any vegetation covering the ground. Before storage, ensure that the inverter cabinet door is locked and all cabinet door screws are tightened.

The inverters shall be stored in a temperature range of -40°C to $+70^{\circ}\text{C}$ and the relative humidity shall be 0 to 95% (non-condensing). Long-term storage shall be avoided. If the storage period is too long, please place a moisture absorber inside the cabinet.



WARNING

- It is strictly prohibited to store the inverters without packaging. Otherwise, Sineng shall not assume any liability for the damage to the inverters, the shortening in service life or other losses caused by such storage conditions.
 - It is prohibited to store the inverter in a stacked, horizontal or upside-down manner. Otherwise, Sineng shall not assume any liability for the damage to the inverter, the shortening in service lifetime and other potential and additional losses caused by such storage conditions.
 - Ensure that the storage site has sufficient bearing capacity. Otherwise, the ground may collapse when the inverter is stored. Sineng shall not assume any liability for the equipment damage, personal injury and other additional losses caused by the excessive tilt or overturn of the inverter.
 - The inverters shall be stored in a temperature range of -40°C to 70°C , and the relative humidity shall be 0 to 100% (non-condensing).
-

2.2 Handling and Unpacking

For the EP series inverter, the whole equipment must be packed in a pallet with packaging materials such as cushions and moisture-proof bags inside.

2.2.1 Handling Packaged Inverter

To handle packaged EP series inverters, only forklifts can be used. Abide by the following requirements during the handling.

 **DANGER**

- Please operate in strict accordance with the instructions in this manual. Otherwise, the inverter will be dumped and damaged or casualties will be caused!
-

 **WARNING**

- Please carefully observe the instructions and warning signs on the inverter packaging before operations!
 - Ensure that the forklift has sufficient load capacity. Otherwise, damages to the handling tool and inverter may be caused!
 - When using a forklift to move the inverter, no people shall stay within 5 m around the forklift.
-

Requirements for handling with the forklift:

The forklift has a load capacity of more than 6000 kg.

1. When using the forklift to move the EP series inverter, the forklift teeth shall be symmetrically distributed on both sides of the longitudinal support beam in the middle of the inverter, and the distance between the forklift teeth and the support beam shall be greater than 0.5 m.
2. When using the forklift to move the inverter, the front end of the forklift teeth shall protrude from the front end of the inverter.
3. Lift the inverter slightly using the forklift. After the inverter becomes balanced, move it to the target installation position.

2.2.2 Handling Unpackaged Inverter

To move an unpackaged inverter, remove the packaging of the whole inverter and check the items inside. If there is no error, you can move the inverter. Unpackaged EP series inverter can be moved by forklift or crane. If the forklift is used, the requirements for equipment handling are consistent with those describe in section 2.2.1. If the crane is used, abide by the following requirements:

1. Requirements for crane handling: The wire rope must have a load capacity of more than 6000 kg.
2. Secure the wire rope at the lifting ring on the top of the inverter, and then lift the inverter slowly.
3. When hoisting the inverter, slowly lift the inverter about 10 cm above the ground. After confirming that the inverter is balanced, evacuate the hoisting assistance personnel 5 m away from the crane operation area before moving.
4. There shall be no personnel or equipment below the hoisting distance, and no personnel shall stay within 5 meters around the crane.
5. During the whole hoisting process, ensure that the product is stable and not tilted. As shown in Figure 2-1, the angle between the wire rope and the horizontal plane shall be no more than 60°.

6. After the inverter is hoisted to the installation site, slowly lower the inverter and place it on the site.



WARNING

- Before moving by crane, please ensure that the lifting ring is not loose due to transportation, vibration and other reasons. If it is loose, please tighten it before hoisting.
- Ensure that the crane and wire rope have sufficient bearing capacity. Otherwise, it may cause damage to the crane and inverter, or may cause personal injury or death in severe cases!
- When using the crane to move the inverter, no people shall stay within 5 m around the hoisting distance.
- In case of severe weather conditions, such as heavy rain, heavy fog, and strong wind, stop the hoisting work.

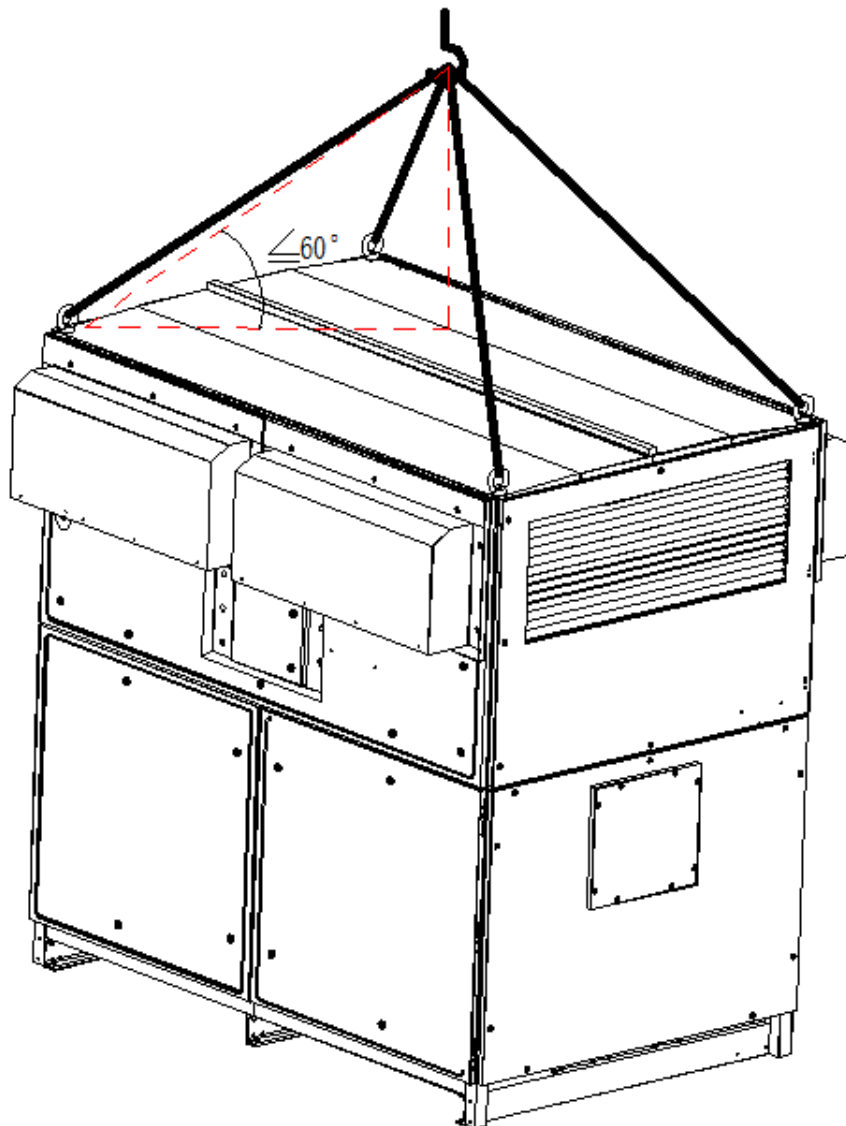


Figure 2-1 Hoisting the inverter

2.2.3 Unpacking

Inverters shipped separately are packaged before leaving the factory to provide necessary protection for transport and storage of the inverters. Before installing the inverter on site, the package of the EP series inverter must be removed according to the following instructions:

- Remove the moisture-proof bags of the inverter.
- Remove the cushions inside the inverter package.
- Use a wrench to remove the four fastening bolts that secure the bottom of the inverter to the pallet.



WARNING

- After the fastening bolts that secure the bottom of the inverter to the pallet are removed, it is prohibited to move or hoist the inverter with the pallet. Otherwise, it will cause the inverter to fall over and be damaged or cause personal injury or death!
-

2.2.4 Checking the Inverter After Unpacking

After the unpacking, inspect the appearance of the inverter. The inspection items for the appearance of the inverter shall include but not limited to the following:

- The appearance of the inverter shall be flat, clean, and free of scratches, rust and stains.
- The surface of the cabinet cover plate of the inverter shall have no unevenness.
- The painting of the inverter cover plate shall have no bulges or fading.
- The knobs and indicators on the front of the inverter shall not be missing or damaged.
- Inverter components (such as inverter door panel) shall not be missing.

If necessary, open the inverter door panel with the key delivered with the equipment and check its interior. After the inspection is completed, restore the inverter in a timely manner. The internal inspection of the inverter includes but is not limited to the following:

- Ensure that there is no misalignment, upside down or missing of the internal cover plate.
- Ensure that the internal cover of the inverter is free of rust and oil stains.
- Ensure that there is no irregular perforation caused by non-machining factor in the metallic cover plate inside the inverter.
- Ensure that there are no missing parts inside the inverter.
- Ensure that the switches of the inverter have no cracks, deformations, or missing.
- Ensure that the fastening bolts between the copper bars are not loose.

NOTE

- Do not open the inverter door panel in severe weather such as windy, sandy, rainy and snowy days!
 - When opening or closing the flip up door on the front or back of the inverter, it requires two or more people
-

to operate.

A set of delivery-attached accessories are included in the inverter package. 0 lists the delivery-attached accessories of the inverter.

Table 2-1 List of the delivery-attached accessories

No.	Item	Quantity
1	Product certificate	1 PCS
2	Factory test data sheet of the inverter	1 PCS
3	Inverter User Manual	1 PCS
4	Inverter Installation Manual	1 PCS
5	Power cable fastening bolts	1 set
6*	Bottom baffle	1 set
7*	Deepening DC junction box	1 set
8*	DC energy storage junction box	1 set

Remarks: The items marked with * are optional. Therefore, the actual product may be different.

Please refer to the attached packing list for details.

If the delivery accessories are missing or incomplete, contact Sineng customer service personnel.

2.3 Inverter Installation

2.3.1 Installation Environment Requirements

- The inverter shall be installed in a well-ventilated place to prevent its performance from being affected by poor heat dissipation.
- The installation area of the inverter shall be far away from flammable and explosive materials, and there shall be no equipment that generates strong electric interference.
- Do not install the inverter near residential areas that are relatively sensitive to noise.
- The inverter shall not be installed in low-lying places where water is easy to accumulate.
- When the ambient temperature of the entire machine is above 40°C, the inverter will begin to derate. Therefore, it is recommended that users can install a sunshade device on the top of the inverter to avoid direct sunlight. Otherwise, it may affect the power generation.

2.3.2 Installation Foundation Requirements

The inverter shall be installed on the foundation platform on site, as shown in Figure 2-2, 0 and 0.

Figure 2-2 is the right view of the inverter installation foundation platform: On the DC side, cables enter the inverter through the bottom of the foundation platform. On the AC side, cables pass through the AC output junction box and exit from the area below the junction box.

During the installation of the inverter, strictly follow the scheme shown in Figure 2-2, and check whether it meets the requirements described in 0.

After the construction is completed, ensure that there is enough space at the bottom of the foundation platform to facilitate on-site personnel to perform AC and DC wiring.

For details about the foundation platform, see the GA diagram.

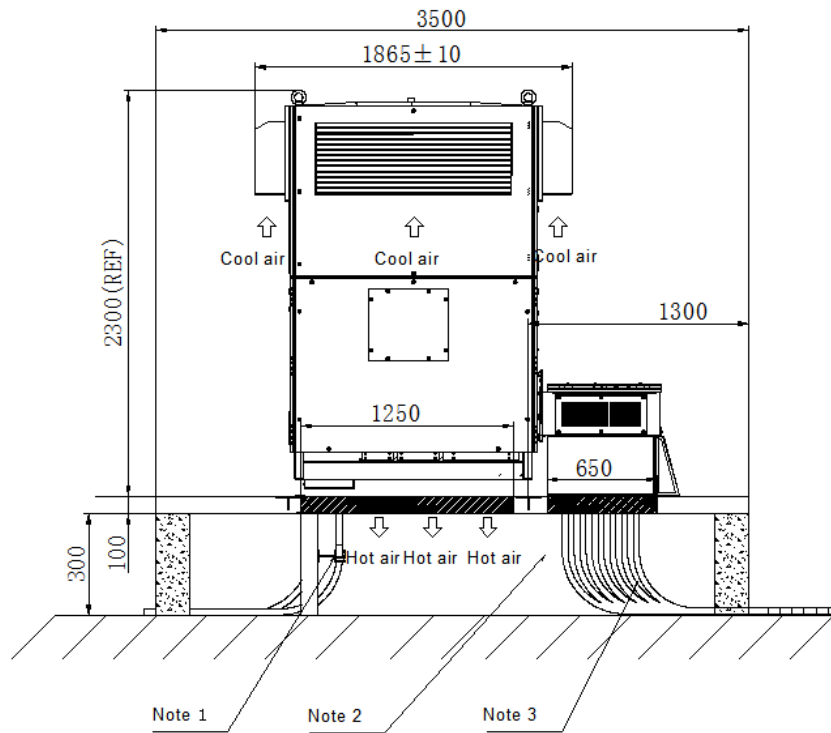


Figure 2-2 Right view of the inverter foundation (mm)

DANGER

- The lower end of the cable inlet on the DC side is designed with a fixed beam. After a certain amount of wiring margin is left, fasten the cable on the fixed beam to ensure that the cable is placed vertically to avoid short-circuits and fires caused by unreasonable fastening of the cable and other factors.
- The bottom of the inverter foundation needs to be left blank to avoid backfilling, and the total exhaust area reserved on both sides of the foundation as well as the front and rear ends shall not be less than 3.5 m^2 . After backfilling the muck, the effective height from the surface of the muck to the foundation surface shall not be less than 0.3 m, to prevent the inverter from overheating or malfunctioning.
- The lower end of the cable outlet on the AC side is designed with a fixed beam. After a certain amount of wiring margin is left, fasten the cable on the fixed beam to ensure that the cable is placed vertically to avoid short-circuits and fires caused by the cut of the cable by the platform or unreasonable fastening of the cable and other factors.

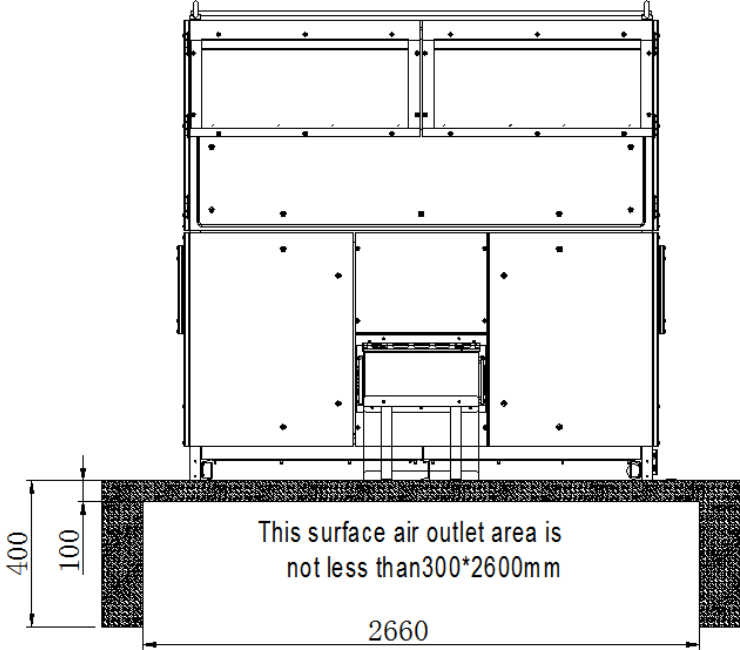


Figure 2-3 Rear view of the inverter foundation (mm)

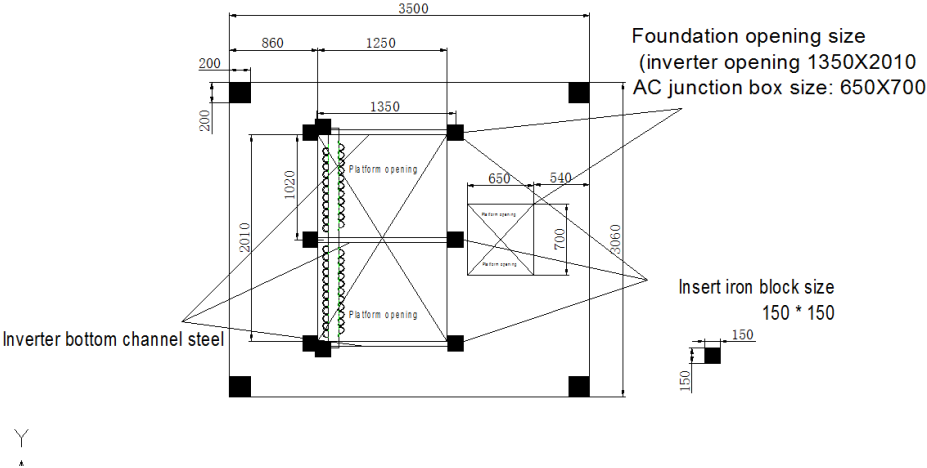


Figure 2-4 Bottom view of the inverter foundation (mm)

Considering the requirements of inverter ventilation and subsequent maintenance, the distance between the inverter and surrounding objects must meet the requirements specified in 0.

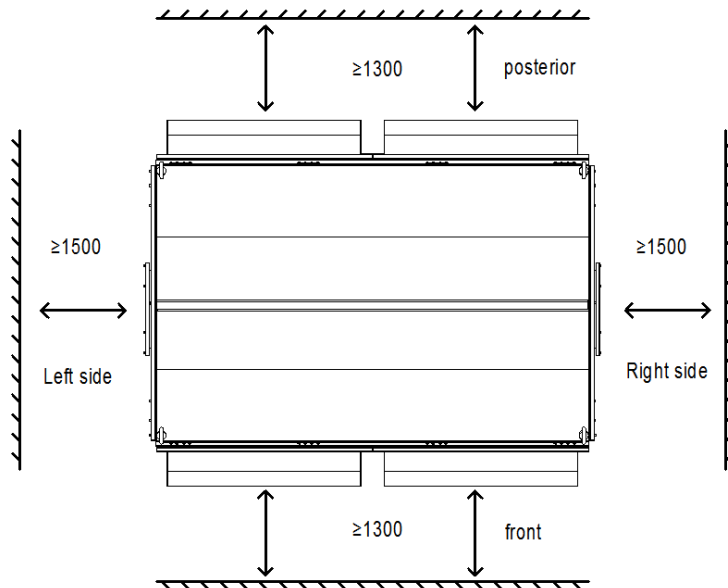


Figure 2-5 Top view of the inverter installation distance (unit: mm)

Do not place any objects within the distance shown in 0. The site foundation shall be installed on a flat ground with no risk of collapse and water accumulation, and the construction of the foundation platform must be completed in strict accordance with 0, 0, and 0.

Warning

- The foundation of the inverter must be constructed in strict accordance with the drawings provided by Sineng. Otherwise, it may affect the installation and reliable operating of the inverter.
- The design and effective air outlet area of the air duct of the foundation platform must be completed in strict accordance with Sineng requirements. Otherwise, the inverter cannot operate normally for a long term.
- The relative position of the inverter on the foundation platform must be in strict accordance with Sineng requirements. Otherwise, the inverter cannot operate normally for a long term.
- The whole inverter must be firmly connected to the foundation platform by welding or other means.
- The foundation platform of the inverter must remain flat, the bottom of the inverter must be evenly loaded, and there must be no risk of unloading a certain suspended point or excessive stress on a certain point.
- The bottom of the AC outlet component of the inverter must be at the same level as the bottom of the inverter, and cannot be suspended. Otherwise, the AC output copper bar may sink.
- When using a metallic mesh to protect the hollow area of the foundation platform, ensure that the air outlet rate of the metallic mesh cover must be greater than 90%.
- After installing the input power cable on the DC side of the inverter, confirm that the cable is tightly tied to the cable support beam at the bottom of the foundation.
- The third party is recommended to provide a sunshade device on the top of the inverter to avoid direct sunlight. Otherwise, it may affect the power generation.

2.3.3 Fastening the Inverter

Use a forklift or crane to move the inverter to the foundation.

Align the six fastening holes on the bottom of the inverter, The positions of the six fixing holes are shown in Figures 2-6 and 2-7. It is recommended to open $\varnothing 13$ holes for fixing the inverter on the foundation and use the M12 \times 55 bolts in the delivery-attached accessories of the inverter to secure the cabinet on the installation plane.

Tighten the inverter fastening screws with a torque of 45 N.

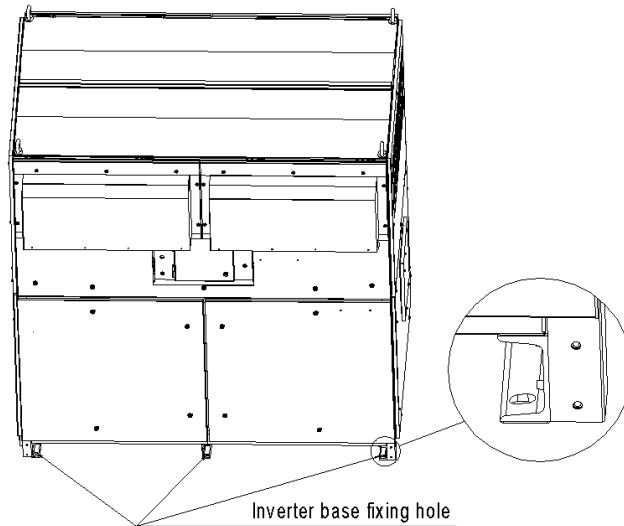


Figure 2-6 Location drawing of inverter front fixing hole

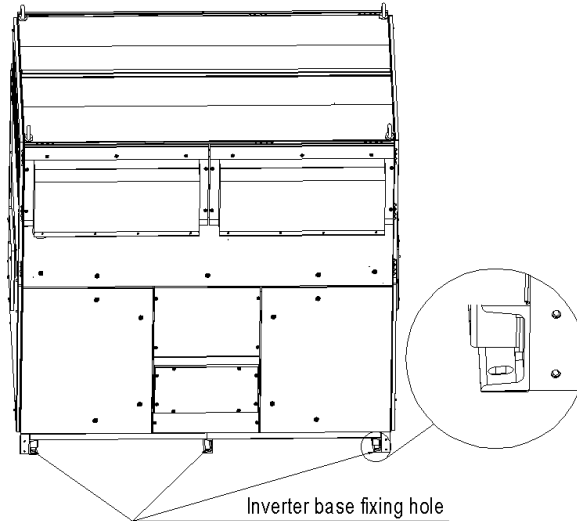


Figure 2-7 Location drawing of inverter back fixing hole

NOTE

- To ensure the reliable operating of the inverter, the fastening screws must be tightened strictly in accordance with the recommended torque!
-

Chapter 3 Electrical Connections

3.1 Safety precautions

DANGER

- When the inverter is exposed to light, the DC port has high voltage. Do not directly touch the DC port and the terminal electrically connected to the DC port without protective measures or without confirming the voltage, so as to avoid personal injury.
- The insulation layer of the power cable must be intact and free from damages and scratches. Otherwise, it may cause short circuit and fire!
- Before wiring the inverter, check and confirm that all link cables of the equipment have no dangerous voltage. Obvious warning signs must be set for the external power distribution switches of the equipment to avoid misoperation of the external switches, which will endanger the personal safety of the operator.
- Before wiring the inverter, confirm that the DC input switches and AC circuit breakers in the inverter cabinet are in the disconnected state. Ensure that the AC wiring port is disconnected from the power grid and the AC port has no voltage.

WARNING

- Strictly follow the indications on the labels inside the inverter to connect the cables. Otherwise, it will cause damage to the equipment.
- The cable connections of the inverter must be safe and reliable. Cable selection and tightening torque must comply with the requirements of this manual. Otherwise, it may cause fire and damage to the inverter.
- When you open the wiring compartment door, pay attention to the adhesive tape on the door, and do not scratch or damage it. Otherwise, it may cause water entry.
- Please do not open the wiring compartment of the inverter in rain or snow weather to avoid the risk of water entry.

NOTE

- The specifications of the inverter cables shall meet the relevant standards of the local region or country.
 - During the electrical connection process, do not pull the cables or wires forcibly, so as not to damage the insulation performance.
 - All cables and wires must have a certain bending space.
 - It is necessary to take the auxiliary measures to fasten the cables so that the cables are not subjected to stress.
 - Cables shall be kept away from heating devices to avoid aging and damage of the insulation layer in high temperature environment.
-

3.2 Cable Connection

3.2.1 Cable Specifications Confirmation

The external cables of the inverter include the power cables, communication cables, grounding cables, and dry contact signal cables of the inverter. This section details the methods and precautions for connecting the external cables of the inverter.

Table 3-1 List of inverter cables

Classification of Inverter Cables	Description	Recommended Cable Specifications
DC power cable of the inverter	DC main power input cable	400 mm ² to the maximum
DC power cable/copper bar of the inverter	AC main power output cable/copper bar	400 mm ² to the maximum
Communication cable of the inverter	Information exchange between the inverter and the back-end monitoring system	Shielded twisted pair
Ground bar/cable of the inverter	Whole equipment protective grounding	Half of the cable diameter on the AC side

When designing and installing the external cables of the inverter, follow the instructions in this section and local wiring regulations to ensure that the power cables are routed separately from the communication cables and dry contact signal cables. It is recommended that communication cables and signal cables be shielded to avoid interference from other signals. The selected cables must have sufficient current-carrying capacity. The cable diameter must be selected according to the maximum current-carrying capacity, and the length must have a margin. The specifications and materials of the DC input cables shall be the same. The specifications and materials of the AC output cables shall be the same. The selected cables must be flame-retardant.

3.2.2 Connecting DC Power Cables

Step 1: Open the lower door panel of the front compartment of the inverter cabinet. Remove the protective baffle on the DC input power side of the front compartment, as shown in Figure 3-1.

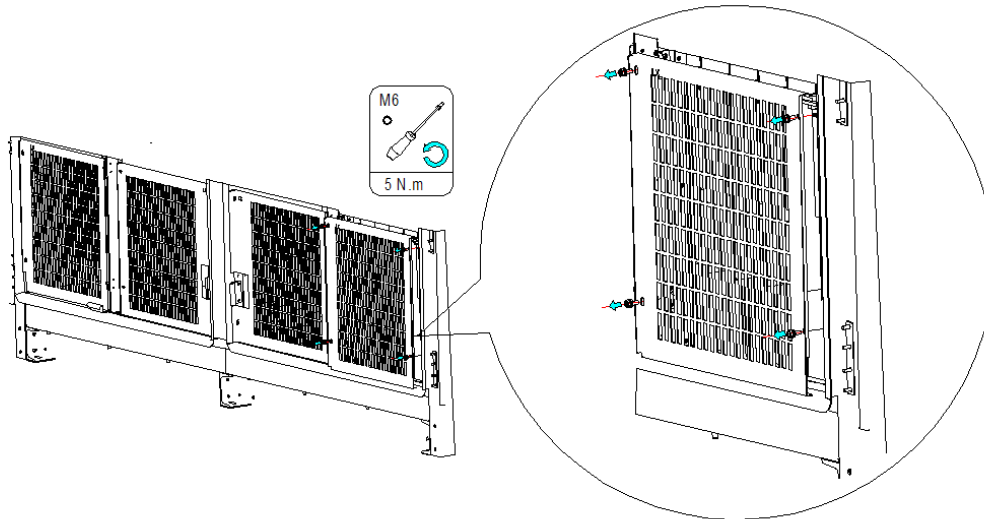


Figure 3-1 Protective baffle on the DC input power side

Step 2: The bottom on the DC side of the inverter is a solid aluminum plate. You need to open a hole on the aluminum plate. The hole position needs to be perpendicular to the terminal, the hole size needs to match the cable diameter, and the cable cannot be cut. The number of holes is related to the number of configured paths on the DC side, with a maximum support of 22 paths. The input cables on the DC side shall be evenly arranged on the left and right sides. Figure 3-2 shows the wiring terminal on the DC input side, where the front row is the positive pole, the back row is the negative pole, and DC input tributaries 1-22 are distributed from right to left in sequence.

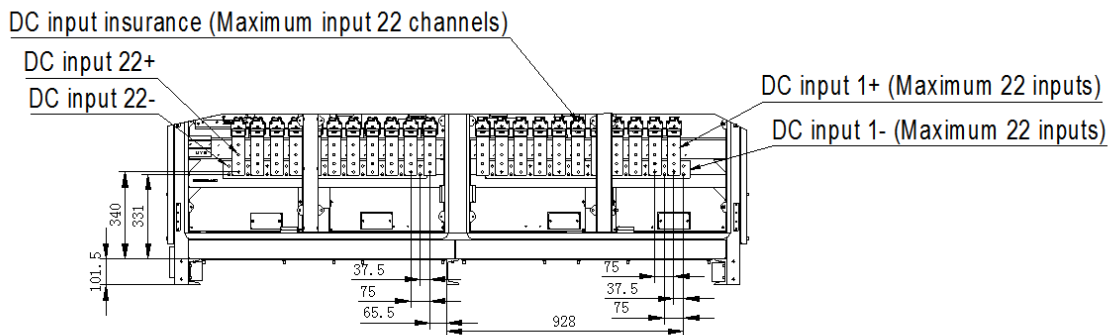


Figure 3-2 Wiring terminal on the DC input side

Step 3: Pass the PV DC input cable through the bottom aluminum plate, and enter the inverter cabinet, mark the polarity of the cable, reliably crimp the appropriate terminals, and then use the M12 * 40 bolts reserved on the copper bar to fix the terminals to the wiring holes, as shown in Figure 3-3. If copper wires are used as the cables, only copper conductors can be used as the terminals. If aluminum

wires are used as the cables, only copper copper-clad aluminum conductors can be used as the terminals.

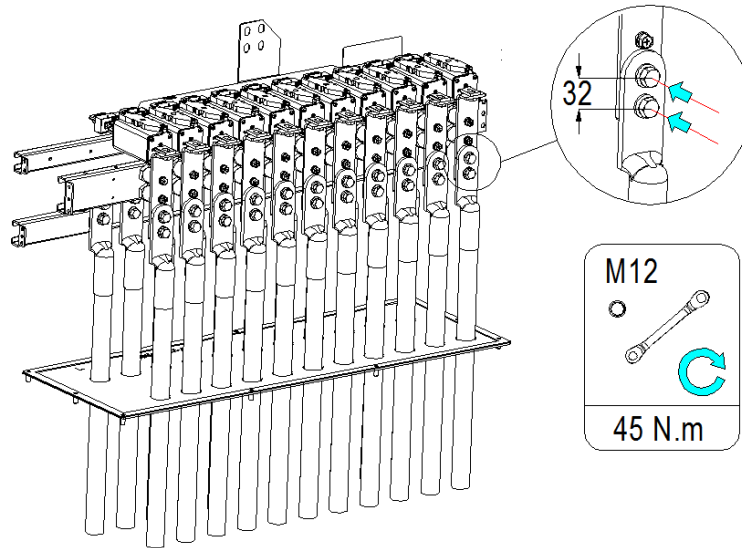


Figure 3-3 Connecting the PV cable and the copper bar

Step 4: As shown in Figure 3-4, the ground wire of the PV cable and the negative electrode cable enter the inverter cabinet through the wiring hole, crimp the appropriate terminal, and then use the bolts reserved on the ground bar to fix the ground wire terminal to the ground bar.

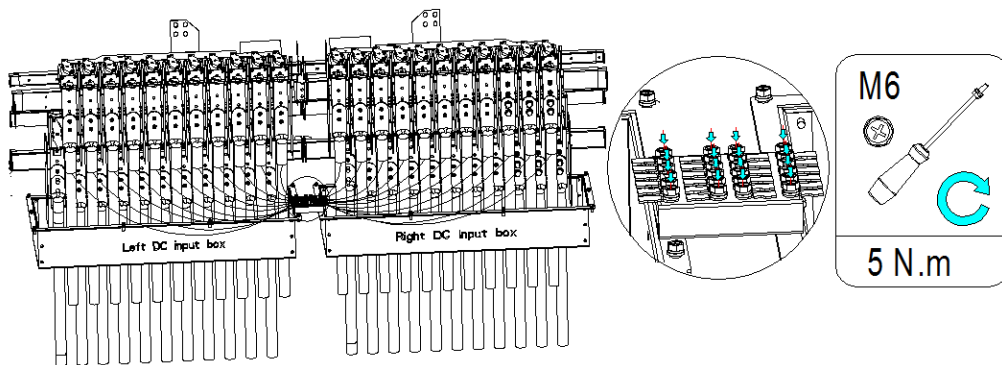


Figure 3-4 Connection of the PV cable and ground bar

After completing the wiring on the DC side of the inverter, seal the gaps in the input wiring holes and the reserved wiring holes with firestop putty. The effective distance between the firestop putty and the lower edge of the cable terminal shall not be less than 20 mm. It is recommended to lay separate firestop putty for each wiring hole gap.

DANGER

- After installing the power input cables on the DC side of the inverter, ensure that the cables on the DC side are not squeezed or broken at the cable inlet of the inverter. Otherwise, the inverter may catch a fire.

- Ensure that the contact surface between the DC input cable and the inverter input copper bar is smooth and the cable fastening torque meets the relevant requirements. Otherwise, the inverter may catch a fire.



WARNING

- After completing the cabling on the DC side of the inverter, seal the gaps in the input wiring holes and the reserved wiring holes with firestop putty, to prevent foreign matter or moisture from entering the inverter, which will affect the normal operation of the inverter.
- Be sure to use the screws delivered with the equipment to connect the power cables or copper bars. Otherwise, it may cause abnormal connections and affect the normal operating of the inverter.
- The weight borne by each tributary copper bar on the DC side shall be less than 40 kg, and the weight borne by each conversion copper bar on the AC side shall be less than 200 kg. If the weight borne is beyond the specified range, it will cause damage to the structure and affect the normal operating of the inverter.

NOTE

- After installing the input power cable on the DC side of the inverter, ensure that the metallic protective plate in front of the DC side is restored.
- Ensure that the configuration power of the left and right DC MPPTs is equal, and the number of DC input tributaries is equal. Otherwise, it will cause loss of power generation.
- When connecting the power cable of the inverter to the wiring copper bar, ensure that the bending radius of the cable is not less than the recommended bending radius of the power cable used by the current inverter model.
- After installing the input power cable on the DC side of the inverter, confirm that the cable is tightly tied to the cable support beam at the bottom of the foundation.

3.2.3 Connecting AC Power Copper bar

The copper bar is used for standard connection. If connection with cables is required, contact Sineng.

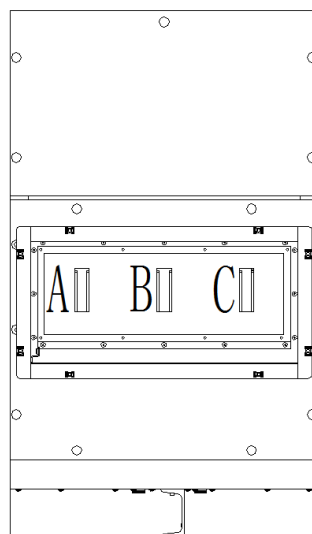


Figure 3-5 Wiring terminal on the AC output side

**WARNING**

- When the AC side adopts the cable exit method, the current imbalance output by each phase must not exceed 20%.

3.2.4 Ground Cable Connection

The total grounding area of the inverter shall not be less than 800 mm², and the grounding resistance shall be less than 4 ohms. A 100×100 mm³ grounding area is reserved on the left and right sides of the inverter respectively.

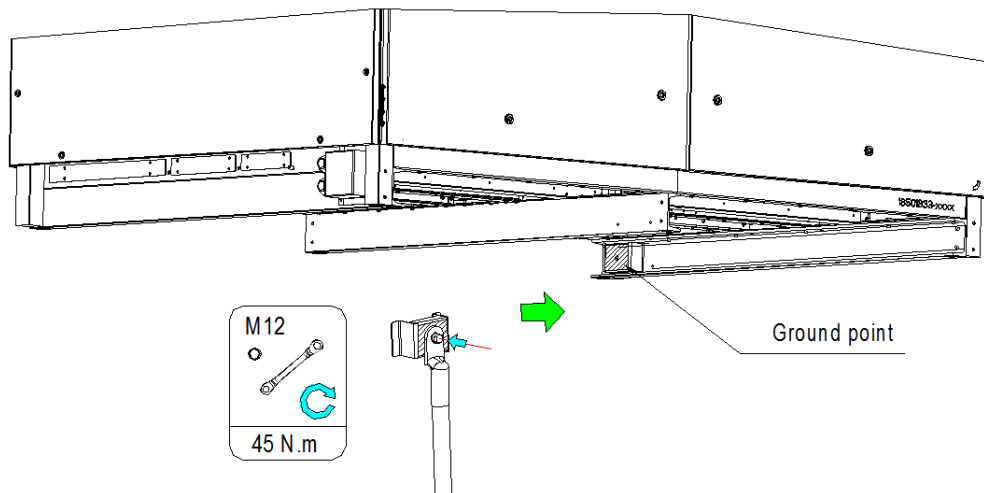


Figure 3-6 Grounding point of the inverter

The external grounding points of the inverter can be grounded in the following two manners:

- Connect the grounding cable to the external grounding points with M12 bolts, where the recommended cable is of 50 mm² to 95 mm².
- Weld the grounding steel flat onto the external grounding point, after which anticorrosion processing needs to be performed.

3.2.5 Dry Contact Signal Cable Connection**WARNING**

- After signal cables are connected, seal the cable holes using firestop putty.
- Signal cables need to be routed separately from power cables to ensure that the distance between signal cables and power cables is greater than 20 cm.

The inverter provides RS485 communication interfaces and dry contact signals. Figure 3-6 shows the terminal definitions.

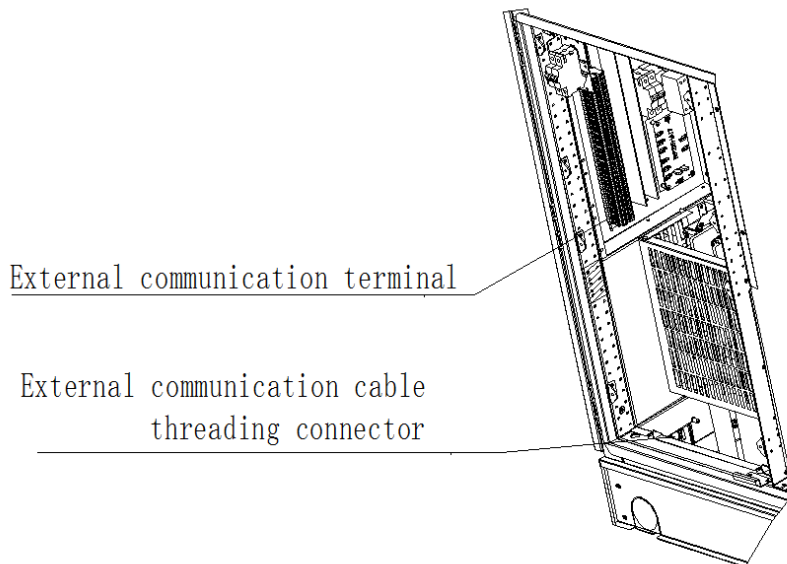


Figure 3-6 Dry contact terminal blocks and signal cable holes

Table 3-2 describes the attributes of external communication cable terminals.

Table 3-2 External dry contact wiring terminals

Terminal No.	Description	Terminal No.	Description
XB1-1	RS485C+	XB7-1	CB3 internal normally closed contact NC1
XB1-2	RS485C-	XB7-2	CB3 internal normally closed contact NC1_C
XB1-3	RS485B+	XB7-3	CB4 internal normally closed contact NC1
XB1-4	RS485B-	XB7-4	CB4 internal normally closed contact NC1_C
XB2-1	Input dry contact 5A	XB7-5	CB3 internal normally open contact NO1
XB2-2	Input dry contact 5B	XB7-6	CB3 internal normally open contact NO1_C
XB2-3	Input dry contact 6A	XB7-7	CB4 internal normally open contact NO1
XB2-4	Input dry contact 6B	XB7-8	CB4 internal normally open contact NO1_C
XB2-5	Input dry contact 2A	XB7-9	CB3 alarm NO
XB2-6	Input dry contact 2B	XB7-10	CB3 alarm NO_C
XB3-1	NC of 2# output dry contact	XB7-11	CB4 alarm NO
XB3-2	COM of 2# output dry contact	XB7-12	CB4 alarm NO_C

Terminal No.	Description	Terminal No.	Description
XB3-3	NO of 2# output dry contact	XB13-1	24 V+ power supplied to SAU
XB3-4	NC of 3# output dry contact	XB13-2	24 V- power supplied to SAU
XB3-5	COM of 3# output dry contact	XB13-3	24 V-PE power supplied to SAU
XB3-6	NO of 3# output dry contact		
XB4-1	Inverter access control output signal NO		
XB4-2	Inverter access control output signal COM		
XB5-1	External signal COM of inverter smoke sensor		
XB5-2	External signal NO of inverter smoke sensor		
XB6-1	EPO signal output of inverter		
XB6-2	EPO signal COM of inverter		

It is recommended to use shielded two-core reinforced insulated cables as communication cables of the inverter. The cross-sectional area of a communication cable shall not exceed 0.75 mm^2 . The communication cable shall be grounded only at the shield layer. The communication port is a plug-connected wiring terminal, and it is recommended to use a tinned tubular copper terminal with passivation treatment. You can fasten the communication cable terminals using a flat-blade screwdriver with a fastening torque of 0.22–0.25 N.m.

3.2.6 DC Energy Storage Interface Installation Options

Annex 1 describes the methods of installing the DC energy storage interface options.

Chapter 4 Inverter Operations



- Non-professional personnel are prohibited to open the door panel in of the inverter, as there is a high voltage risk!
 - When the inverter is running normally, there is dangerous voltage inside the equipment. Please operate the inverter in strict accordance with the instructions in this manual!
 - Only professional personnel are allowed to operate the inverter. Others cannot operate it without authorization!
-

4.1 Power-On/Off Operations

4.1.1 Power-On Operation

Before initial power-on of the inverter, check whether the following requirements are satisfied:

Ensure that the installation site environment of the inverter meets the relevant requirements.

Ensure that the connection of the power input/output cables, ground cables, and signal cables of the inverter meets the relevant requirements.

Ensure that the EPO button of the inverter is in the released position and the power-on/off knob is in the "OFF" state.

Ensure that the switches of each combiner box and the main circuit breakers of each box-type transformer are all in the disconnected state.

Ensure that QF35/QF36 and CB3/CB4 of the inverter are all in the disconnected state.

Ensure that the door plate and cover plate of the inverter are correctly installed.

After the inspections, power on the inverter in the following sequence for the first time:

1. Connect the output switches in each combiner box of the inverter.
-



- After the output switches of the combiner box are connected, a dangerous voltage exists at the DC input port of the inverter.
-

2. Close QF35/QF36 of the inverter.
-



- After the QF35/QF36 of the inverter is closed, a dangerous voltage exists inside the inverter.
-

3. Manually connect the main circuit breaker of the box-type transformer.

After about one minute, the LCD touch screen of the inverter turns on. Check whether any indicator is on red, indicating an alarm. Check whether the bus voltage meets the minimum power-on conditions.

4. Rotate the power-on/off knob to "ON". After a short delay, the CB3/CB4 is automatically connected and the inverter is connected to the grid for operation.

In the power-on process, if an anomaly occurs, press the EPO button immediately to stop the power-on operation, and immediately contact Sineng customer service personnel.

4.1.2 Emergency Power-off

In case of emergency, press the EPO button immediately to disconnect the inverter from the PV board and the grid. Manually press the EPO button. Then, the QF35/QF36 and CB3/CB4 of the inverter are disconnected. At this time, the AC and DC cable ports and the control board of the inverter are still live, and a dangerous voltage still exists inside the inverter.



After pressing the EPO button, a dangerous voltage still exists on the DC part and the copper bar outside the AC circuit breaker.

After emergency shutdown, ensure that the inverter is completely powered off before operating it. For details, see section 4.1.5.

4.1.3 Automatic Power-on and Power-off

If you turn the power-on/off knob to "ON", the inverter runs automatically after the grid-connected conditions are met. When the PV board energy is insufficient, the inverter will automatically shut down.



After the automatic shutdown, the CB3/CB4 on the AC side is automatically disconnected, the C input switch QF35/QF36 is still connected, and there is still a dangerous voltage inside the inverter.

4.1.4 Manual Power-off

If you turn the power-on/off knob to "OFF", the inverter is automatically shut down.



After the manual shutdown, the CB3/CB4 on the AC side is automatically disconnected, the QF35/QF36 on the DC side is still connected, and there is still a dangerous voltage inside the inverter.

4.1.5 Completely Powering Off the Inverter

After manual shutdown, dangerous voltages still exist inside the inverter. Follow the steps below to completely power off the inverter:

- Press the EPO button.
- Disconnect the general output switch in each combiner box of the inverter one by one.
- Disconnect the main circuit breaker of the box-type transformer or the high-voltage load switch.
- Wait for no less than 5 minutes to ensure that the internal capacitance of the inverter is completely discharged.
- Use a multimeter to confirm that there is no dangerous voltage at the DC input ports and AC output ports.

Chapter 5 Events and Alarms



WARNING

- Non-professional personnel are prohibited to handle inverter alarms or failures!
- Please strictly follow the instructions in this menu to handle inverter events!

5.1 Event Information

Table 5-1 Event information description

Event	Description
Inverter connected to power grid to generate power	When the inverter switches to the grid-connected state, the system displays "Inverter enabled" or "Inverter disabled".
Inverter alarm generated	When the system generates an alarm in the grid-connected state, the system displays "Inverter alarm generated".
Remote power-on	When the inverter is remotely powered on, the system displays "Remote power-on".
Remote power-off	When the inverter is remotely powered off, the system displays "Remote power-off".

5.2 Alarm Information

Table 5-2 describes common fault alarms that may occur during normal operating of the inverter and the suggested handling methods.

Table 5-2 List of fault alarms

Alarm	Description	Handling Method
Power grid undervoltage	The power grid voltage is lower than the preset lower limit.	/
Power grid overvoltage	The power grid voltage is higher than the preset upper limit.	/
Power grid underfrequency	The power grid frequency is lower than the preset lower limit.	/
Power grid overfrequency	The power grid frequency is higher than the preset upper limit.	/
Power grid voltage unbalanced	The power grid voltage unbalance is higher than the preset limit.	/

Alarm	Description	Handling Method
Grid-tied current unbalanced	The power grid current unbalance is higher than the preset limit.	/
Low voltage ride-through of the power grid	The power grid voltage encounters low voltage ride-through and dropout.	/
Power grid reversed	The power grid phase is reversed	Check and change the wiring sequence on the AC side of the inverter.
Power grid phase loss	The phase of the power grid is lost.	Check the wiring on the AC side and the AC circuit breaker of the inverter.
Anti-islanding protection	The power grid encounters the islanding effect.	/
AC surge protector failure	The AC surge protector is faulty.	Check and replace SPD2.
DC surge protector failure	The DC surge protector of module 1 is faulty.	Check and replace SPD2.
DC surge protector failure of module 2	The DC surge protector of module 2 is faulty.	Check and replace SPD2.
Main power fan failure of front compartment	The main power fan of the front compartment works abnormally or is stalled.	Check and replace the main power fan of the front compartment.
Main power fan failure of rear compartment	The main power fan of the rear compartment works abnormally or is stalled.	Check and replace the main power fan of the rear compartment.
Left fan failure	The left fan works abnormally or is stalled.	Contact Sineng customer service personnel.
Right fan failure	The right fan works abnormally or is stalled.	Contact Sineng customer service personnel.
Spoiler fan failure	The spoiler fan works abnormally or is stalled.	Check and replace the spoiler fan.
Abnormal drive cable connection	The drive cables of module 1 and module 2 are incorrectly connected.	Check whether the drive cables are inserted tightly and replace the corresponding drive cables.
Overheat protection of the inverter	The collected temperature is higher than the allowable upper limit of the temperature.	Check whether the inverter is clogged. Clean and replace the dust filter.
Overtemperature operating of the inverter	The collected temperature is higher than the allowable upper limit of the temperature.	Check whether the inverter is blocked. Clean and replace the dust filter.
Module 1 OCP	A phase of module 1 reports the OCP event.	Contact Sineng customer service personnel.
Module 2 OCP	A phase of module 2 reports the OCP event.	Contact Sineng customer service personnel.
Module 1 VCE anomaly	The T2 or T3 tube of module 1 reports the VCE event.	Contact Sineng customer service personnel.

Alarm	Description	Handling Method
Module 2 VCE anomaly	The T2 or T3 tube of module 2 reports the VCE event.	Contact Sineng customer service personnel.
Air inlet overtemperature	The maximum value of the air inlet temperature of the front and rear compartments is higher than the "Air inlet temperature alarm threshold" in the monitoring parameters.	Check the dust filters of the front and rear air inlet elbow assemblies.

5.3 Key Protection Parameter Settings

With the permission of the inverter manufacturer, the customer can set the key protection parameters of the inverter through the operation panel. Table 5-3 lists the key protection parameters of the inverter.



WARNING

- The setting of key protection parameters must be permitted by the inverter manufacturer.

Table 5-3 Description of protection parameters

Specifications	Description
Power grid level-1 overvoltage protection threshold (%)	Set the level-1 overvoltage protection threshold for the power grid. If the actual voltage exceeds this value, the system takes the protection action.
Power grid level-2 overvoltage protection threshold (%)	Set the level-2 overvoltage protection threshold for the power grid. If the actual voltage exceeds this value, the system takes the protection action.
Power grid level-3 overvoltage protection threshold (%)	Set the level-3 overvoltage protection threshold for the power grid. If the actual voltage exceeds this value, the system takes the protection action.
Power grid level-4 overvoltage protection threshold (%)	Set the level-4 overvoltage protection threshold for the power grid. If the actual voltage exceeds this value, the system takes the protection action.
Power grid level-1 overvoltage protection time (s)	Set the time when the system takes the level-1 overvoltage protection action for the power grid.
Power grid level-2 overvoltage protection time (s)	Set the time when the system takes the level-2 overvoltage protection action for the power grid.
Power grid level-3 overvoltage protection time (s)	Set the time when the system takes the level-3 overvoltage protection action for the power grid.
Power grid level-4 overvoltage protection time (s)	Set the time when the system takes the level-4 overvoltage protection action for the power grid.
Power grid level-1 undervoltage protection threshold (%)	Set the level-1 undervoltage protection threshold for the power grid. If the actual voltage exceeds this value, the system takes the protection action.

Specifications	Description
Power grid level-2 undervoltage protection threshold (%)	Set the level-2 undervoltage protection threshold for the power grid. If the actual voltage exceeds this value, the system takes the protection action.
Power grid level-3 undervoltage protection threshold (%)	Set the level-3 undervoltage protection threshold for the power grid. If the actual voltage exceeds this value, the system takes the protection action.
Power grid level-4 undervoltage protection threshold (%)	Set the level-4 undervoltage protection threshold for the power grid. If the actual voltage exceeds this value, the system takes the protection action.
Power grid level-1 undervoltage protection time (s)	Set the time when the system takes the level-1 undervoltage protection action for the power grid.
Power grid level-2 undervoltage protection time (s)	Set the time when the system takes the level-2 undervoltage protection action for the power grid.
Power grid level-3 undervoltage protection time (s)	Set the time when the system takes the level-3 undervoltage protection action for the power grid.
Power grid level-4 undervoltage protection time (s)	Set the time when the system takes the level-4 undervoltage protection action for the power grid.
Power grid level-1 overfrequency protection threshold (%)	Set the level-1 overfrequency protection threshold for the power grid. If the actual overfrequency offset exceeds this value, the system takes the protection action.
Power grid level-2 overfrequency protection threshold (%)	Set the level-2 overfrequency protection threshold for the power grid. If the actual overfrequency offset exceeds this value, the system takes the protection action.
Power grid level-3 overfrequency protection threshold (%)	Set the level-3 overfrequency protection threshold for the power grid. If the actual overfrequency offset exceeds this value, the system takes the protection action.
Power grid level-4 overfrequency protection threshold (%)	Set the level-4 overfrequency protection threshold for the power grid. If the actual overfrequency offset exceeds this value, the system takes the protection action.
Power grid level-5 overfrequency protection threshold (%)	Set the level-5 overfrequency protection threshold for the power grid. If the actual overfrequency offset exceeds this value, the system takes the protection action.
Power grid level-1 overfrequency protection time (s)	Set the time when the system takes the level-1 overfrequency protection action for the power grid.
Power grid level-2 overfrequency protection time (s)	Set the time when the system takes the level-2 overfrequency protection action for the power grid.
Power grid level-3 overfrequency protection time (s)	Set the time when the system takes the level-3 overfrequency protection action for the power grid.
Power grid level-4 overfrequency protection time (s)	Set the time when the system takes the level-4 overfrequency protection action for the power grid.
Power grid level-5 overfrequency protection time (s)	Set the time when the system takes the level-5 overfrequency protection action for the power grid.
Power grid level-1 underfrequency protection threshold (%)	Set the level-1 underfrequency protection threshold for the power grid. If the actual underfrequency offset exceeds this value, the system takes the protection action.

Specifications	Description
Power grid level-2 underfrequency protection threshold (%)	Set the level-2 underfrequency protection threshold for the power grid. If the actual underfrequency offset exceeds this value, the system takes the protection action.
Power grid level-3 underfrequency protection threshold (%)	Set the level-3 underfrequency protection threshold for the power grid. If the actual underfrequency offset exceeds this value, the system takes the protection action.
Power grid level-4 underfrequency protection threshold (%)	Set the level-4 underfrequency protection threshold for the power grid. If the actual underfrequency offset exceeds this value, the system takes the protection action.
Power grid level-5 underfrequency protection threshold (%)	Set the level-5 underfrequency protection threshold for the power grid. If the actual underfrequency offset exceeds this value, the system takes the protection action.
Power grid level-1 underfrequency protection time (s)	Set the time when the system takes the level-1 underfrequency protection action for the power grid.
Power grid level-2 underfrequency protection time (s)	Set the time when the system takes the level-2 underfrequency protection action for the power grid.
Power grid level-3 underfrequency protection time (s)	Set the time when the system takes the level-3 underfrequency protection action for the power grid.
Power grid level-4 underfrequency protection time (s)	Set the time when the system takes the level-4 underfrequency protection action for the power grid.
Power grid level-5 underfrequency protection time (s)	Set the time when the system takes the level-5 underfrequency protection action for the power grid.

Table 5-4 lists the ranges of the protection parameters in compliance with Table 5-3.

Table 5-4 Ranges of the protection parameters

Specifications	Range	Default Value
Power grid level-1 overvoltage protection threshold (%)	105 to 150	110
Power grid level-2 overvoltage protection threshold (%)	105 to 150	120
Power grid level-3 overvoltage protection threshold (%)	105 to 150	120
Power grid level-4 overvoltage protection threshold (%)	105 to 150	120
Power grid level-1 overvoltage protection time (s)	0.01 to 3600.00	13.00
Power grid level-2 overvoltage protection time (s)	0.01 to 3600.00	0.16
Power grid level-3 overvoltage protection time (s)	0.01 to 3600.00	0.16
Power grid level-4 overvoltage protection time (s)	0.01 to 3600.00	0.16
Power grid level-1 undervoltage protection threshold (%)	20 to 95	88

Specifications	Range	Default Value
Power grid level-2 undervoltage protection threshold (%)	20 to 95	50
Power grid level-3 undervoltage protection threshold (%)	20 to 95	50
Power grid level-4 undervoltage protection threshold (%)	5 to 95	50
Power grid level-1 undervoltage protection time (s)	0.01 to 3600.00	21.00
Power grid level-2 undervoltage protection time (s)	0.01 to 3600.00	2.00
Power grid level-3 undervoltage protection time (s)	0.01 to 3600.00	2.00
Power grid level-4 undervoltage protection time (s)	0.01 to 3600.00	2.00
Power grid level-1 overfrequency protection threshold (%)	0.2 to +10.0	1.2
Power grid level-2 overfrequency protection threshold (%)	0.2 to +10.0	2
Power grid level-3 overfrequency protection threshold (%)	0.2 to +10.0	2
Power grid level-4 overfrequency protection threshold (%)	0.2 to +10.0	2
Power grid level-5 overfrequency protection threshold (%)	0.2 to +10.0	2
Power grid level-1 overfrequency protection time (s)	0.01 to 3600.00	300.00
Power grid level-2 overfrequency protection time (s)	0.01 to 3600.00	0.16
Power grid level-3 overfrequency protection time (s)	0.01 to 3600.00	0.16
Power grid level-4 overfrequency protection time (s)	0.01 to 3600.00	0.16
Power grid level-5 overfrequency protection time (s)	0.01 to 3600.00	0.16
Power grid level-1 underfrequency protection threshold (%)	-10.0 to -0.2	-1.5
Power grid level-2 underfrequency protection threshold (%)	-10.0 to -0.2	-3.5
Power grid level-3 underfrequency protection threshold (%)	-10.0 to -0.2	-3.5
Power grid level-4 underfrequency protection threshold (%)	-10.0 to -0.2	-3.5
Power grid level-5 underfrequency protection threshold (%)	-10.0 to -0.2	-3.5
Power grid level-1 underfrequency protection time (s)	0.01 to 3600.00	300.00

Specifications	Range	Default Value
Power grid level-2 underfrequency protection time (s)	0.01 to 3600.00	0.16
Power grid level-3 underfrequency protection time (s)	0.01 to 3600.00	0.16
Power grid level-4 underfrequency protection time (s)	0.01 to 3600.00	0.16
Power grid level-5 underfrequency protection time (s)	0.01 to 3600.00	0.16

Chapter 6 Product Specifications

6.1 Application Standards

The inverter design complies with the related standards in China and other countries.

- *UL 1741 - Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources (Third Edition, Revision September 28, 2021)*
- *IEEE1547-2018 IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces*
- *IEEE1547.1-2020 IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Energy Resources with Electric Power Systems and Associated Interfaces*
- *CSA C22.2 No. 107.1-16 - Power conversion equipment*

Note: Conformity to UL 1741 (Third Edition, September 28, 2021) includes compliance with applicable requirements of UL1741 Supplement SB and IEEE 1547.1-2020 with the SRDs of IEEE 1547-2018, IEEE 1547a-2020 and Hawaiian Electric Co. SRD-V2.0. While the grid support function evaluated according to IEEE 1547.1-2020, the interoperability is verified with IEEE 2030.5-2018 communication protocol.

6.2 Conventional Parameters

Table 6-1 Conventional parameters

Item	Specifications	
	EP-3600-HAN-UD	EP-3750-HAN-UD
Whole machine model	EP-3600-HAN-UD	EP-3750-HAN-UD
Dimensions (mm)	2335X2300X1865	
Net Weight (kg)	2700	
Operating temperature	-30 to 60°C (>40°C derating)	
Storage temperature	-40°C to 70°C	
Relative humidity	0-100%, non-condensing	
Altitude	2000m	
Pollution level	Level III	

6.3 Electrical Characteristics

Table 6-2 Electrical characteristics

Item	Specifications	
	EP-3600-HAN-UD	EP-3750-HAN-UD
Maximum DC input voltage (Vdc)	1500	1500
Maximum input current (Adc)	4015	4049
MPPT voltage range (Vdc)	915 to 1300	958 to 1300

Item	Specifications	
	EP-3600-HAN-UD	EP-3750-HAN-UD
Number of MPPT tributaries	2	2
Number of DC input tributaries	18 to 22	18 to 22
Rated output power (kVA)	3600	3750
Maximum output power (kVA)	3600@40°C 3240@50°C	3750@40°C 3375@50°C
Rated grid voltage (Vac)	630	660
Grid voltage range (Vac)	0.88 Un~1.1 Un	0.88 Un~1.1 Un
Rated output current (Aac)	3300	3280
Maximum output current (Aac)	3300	3280
Maximum output overcurrent protection per line	2000A	2000A
Trip limit and trip time accuracy - Voltage	±6.6 V	±6.3 V
Trip limit and trip time accuracy - Frequency	±0.01 Hz	±0.01 Hz
Minimum measurement accuracy-Active power	± 187.5kW	± 180kW
Minimum measurement accuracy-Reactive power	± 187.5kVar	± 180kVar
Trip limit and trip time accuracy - Time	±1% setting, but not less than 50ms	±1% setting, but not less than 50ms
Rated grid frequency/Grid frequency range (Hz)	60/58.5 to 61.2	
REACTIVE susceptance (s)	5.6*10 ⁻⁶	
Output DC component	<Output current rating × 0.5%	
Output power factor at rated power	>0.99	
Adjustable range of power factor	-0.8~0.8 adjustable	

**WARNING**

- The actual grid voltage needs to be lower than 1.4 times of the rated grid voltage. Otherwise, it will have the risk of damaging the inverter.
- Ensure that the configuration power of the left and right DC MPPTs is equal, and the number of DC input tributaries is equal. Otherwise, it will cause loss of power generation.

6.4 System Characteristics

Table 6-3 System characteristics of EP-3600-HAN-UD/EP-3750-HAN-UD

Item	Specifications	
	EP-3600-HAN-UD	EP-3750-HAN-UD
Maximum efficiency energy	98.9%	
CEC efficiency	98.50%	
Power consumption in standby state (W)	<300	
Power consumption at night (W)	<200	
Degree of protection	Type 3R	
Display and operation UI	LCD touch screen	
Cooling method	Forced ventilation (Fan)	
Communication Protocol	IEEE Std 2030.5™	

Chapter 7 Product Maintenance

This chapter describes the routine maintenance of the inverter. Please read the instructions in this chapter carefully before performing inverter maintenance.

7.1 Maintenance Precautions

DANGER

- Only authorized personnel with electrical operation qualifications can maintain the inverter, and others are not allowed to operate it without permissions.
- In order to ensure the safety of maintenance personnel, it is prohibited to touch any live parts of the inverter when the inverter is running, and always check whether the ground point of the inverter is reliably connected.
- Dangerous voltages exist inside the inverter. Do not disassemble the internal cover plate of the inverter without authorization or permission to avoid damage to the equipment or personal injury.
- After the inverter is completely powered off, there are still dangerous voltage hazards in the inverter! Wait for 5 minutes before operating the inverter!

WARNING

- Please use qualified spare parts provided by Sineng only. Sineng shall not assume any liability for the equipment damage due to the use of non-Sineng spare parts.
- Unauthorized or non-permitted disassembly of the inverter may cause damage to the equipment. Such equipment damage is not covered by the product warranty!
- These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that specified in the operating instructions.

CAUTION

- To prevent misoperation by irrelevant personnel, place the "No closing" sign on each combiner box of the inverter and the main circuit breaker switch of the box-type transformer to prevent accidents caused by misoperation.

NOTE

- After the maintenance, do not leave any metal parts such as screws and tools in the cabinet. Otherwise, the inverter may be damaged.
 - To reduce the risk of electric shock, do not perform maintenance items other than those described in this manual.
 - When replacing the dust filter, wear personal protective equipment such as gloves and glasses.
 - Avoid replacing the dust filter in dusty or humid weather.
 - Avoid cleaning the dust filter around the inverter to prevent dust from being sucked into the inverter again.
-

7.2 Periodic Maintenance

The inverter requires periodic inspection and maintenance to ensure long-term reliable operating. Periodic maintenance can enhance the reliability of the inverter and prolong its service life. Figure 7-1 shows the periodic inspection checklist.

Table 7-1 Periodic inspection checklist

Check Item	Method	Inspection Cycle
System state and cleaning	<ul style="list-style-type: none"> ● Check whether the inverter and internal components is damaged or deformed. ● Check whether there is any abnormal noise during the operating of the inverter. ● Check whether the temperature inside the inverter is too high. ● Check whether the air inlet and outlet of the inverter are blocked. 	Once a year or when anomaly is detected
Fan	<ul style="list-style-type: none"> ● Check whether there is abnormal noise when the fan is running. ● Check whether the fan is blocked by foreign matter. ● View running state of the fan. 	Once every six months
Tightness	<ul style="list-style-type: none"> ● Check whether all door panels and key screws are well sealed. 	Once a year

Check Item	Method	Inspection Cycle
Cable connection	Carry out the inspection after the inverter is completely powered off. During the inspection, if any non-conformity is found, correct it immediately. <ul style="list-style-type: none"> ● Check whether the cable layout is standard and whether there is a short circuit. If there is any anomaly, correct it immediately. ● Check whether all inlet and outlet holes of the inverter are well sealed. ● Check whether there is water seepage inside the inverter. ● Check whether the power cable connection is loose. Re-tighten the cable according to the required torque. ● Check whether the cable is damaged, especially whether there are cut marks on the skin in contact with the metal surface, and whether the insulating strap is peeled off. ● Check whether the ground cable is reliably connected. The grounding resistance shall not be greater than 4Ω. ● Check whether the equipotential connection inside the inverter is correct. 	Half a year after the first commissioning, and once every half a year or once every year thereafter
Air inlet and outlet	Check the dustproof cotton at the air inlet and outlet, and clean the dustproof cotton if necessary	Once every three months

7.3 Common Maintenance Items

It is recommended to carry out the maintenance once every six months. If the operating environment is windy and sandy or the dust is thick, it is necessary to shorten the maintenance cycle and increase the maintenance frequency.

7.3.1 Replacing the DC Surge Protector

The markings of the DC surge protectors are SPD1 and SPD2. Figure 7-1 shows the positions of the surge protectors.

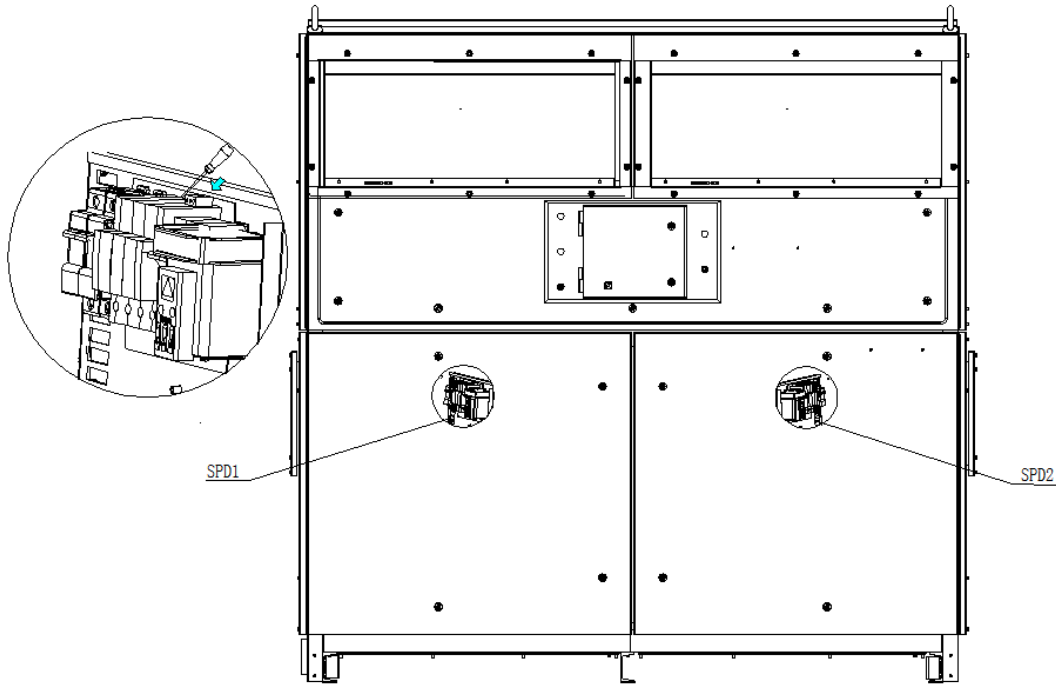


Figure 7-1 Positions of the DC surge protectors

Replace the DC surge protector in the following cases:

- The inverter reports the DC surge protector failure alarm.
- In the routine inspection, the status indication window of the SPD1 or SPD3 module turns red.
- The operating duration of the SPD1 or SPD2 module exceeds 10 years.

Replace the SPD1 or SPD2 in the following steps:

1. Completely power off the inverter in accordance with the instructions in this manual. Wait for at least 5 minutes. Ensure that the conductors are not live and are current-free.
2. Open the cabinet door and confirm the SPD1 or SPD2 module to be replaced.
3. Replace the surge protector module using the relevant tools. As shown in Figure 7-1, when replacing the surge protector, remove the cables connected to it, and then connect the cables back after the replacement.
4. After the replacement is completed, restore the site.

After the maintenance work is completed, power on the inverter in accordance with instructions specified in this manual.

7.3.2 Replacing the AC Surge Protector

The marking of the AC surge protector is SPD3. Figure 7-2 shows the position of the surge protector that you can see after the rear door plate is opened.

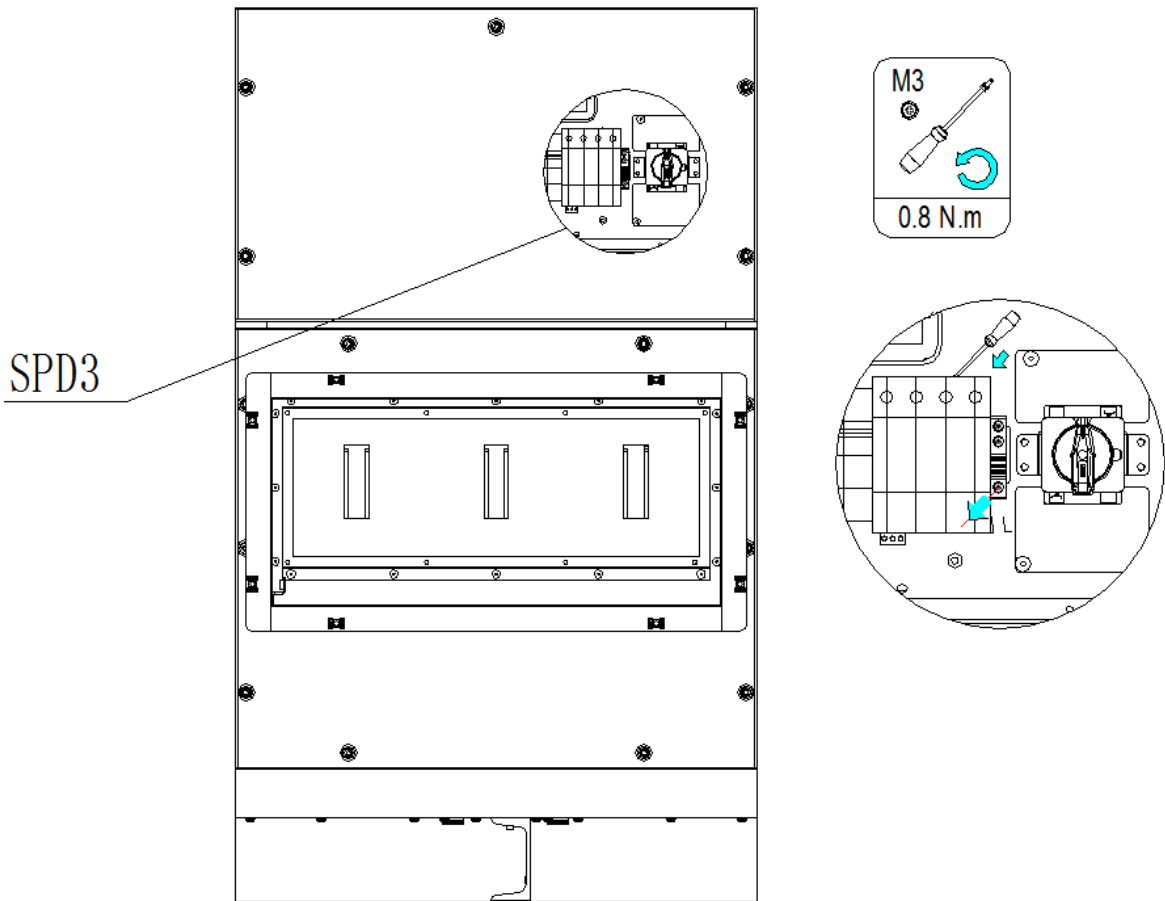


Figure 7-2 Position of the AC surge protector

Replace the AC surge protector in the following cases:

- The inverter reports the AC surge protector failure alarm.
- In the routine inspection, the state indication window of the SPD3 module turns red.
- The operating duration of the SPD3 module exceeds 10 years.

Replace the SPD3 module in the following steps:

1. Completely power off the inverter in accordance with the instructions in this manual. Wait for at least 5 minutes. Ensure that the conductors are not live and are current-free.
2. Open the cabinet door and confirm the SPD3 to be replaced. As shown in Figure 7-2, when replacing the surge protector, remove the cables connected to it, and then connect the cables back after the replacement.
3. Replace the surge protector module using the relevant tools.
4. After the replacement is completed, restore the site.

After the maintenance work is completed, power on the inverter in accordance with instructions specified in this manual.

7.3.3 Dust Filter Maintenance

The overall air inlet mode of the inverter is as follows: cool air provided at the top and hot air dissipated at the bottom. The external cool air flows into the interior through the front and rear air inlet elbows as well as the side air inlet, and flows out through the bottom of the inverter. The green arrow indicates the air inlet and the red arrow indicates the air outlet, as shown in Figure 7-3 and Figure 7-4.

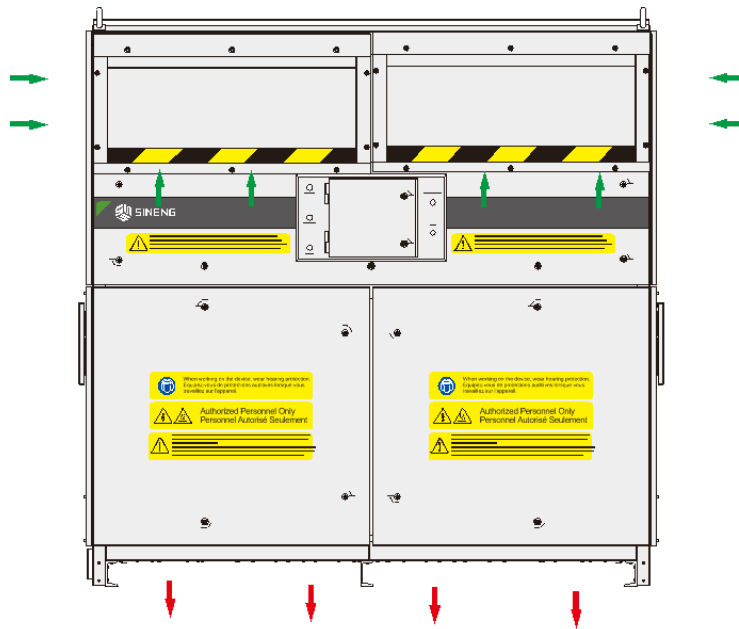


Figure 7-3 Air duct in front of the inverter

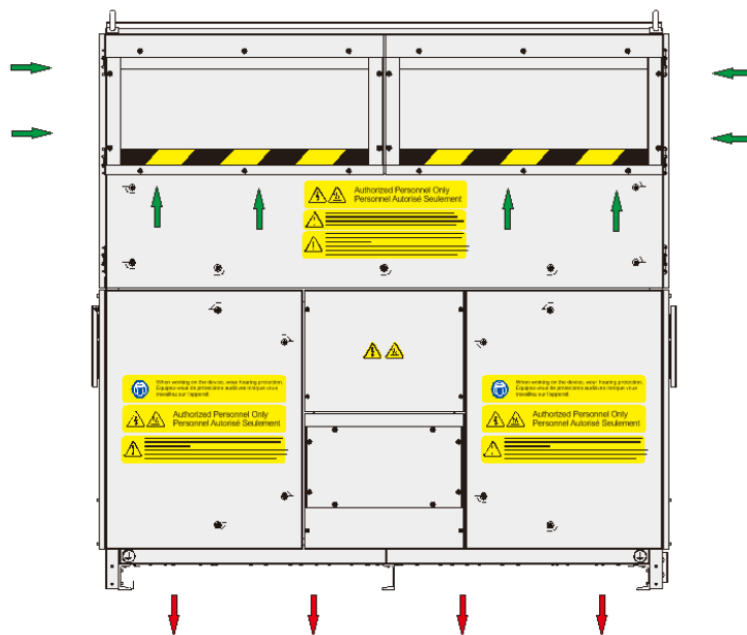


Figure 7-4 Air duct in rear of the inverter

7.3.3.1 Cleaning the Dust Filter on the Top Elbow

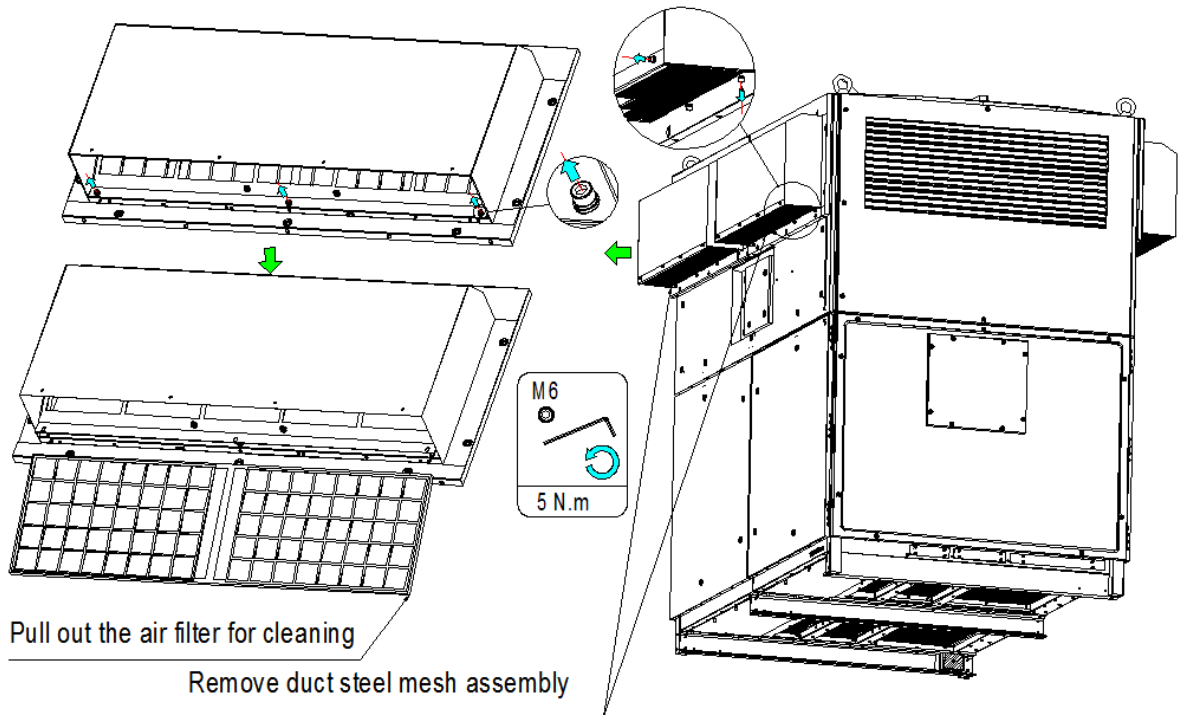


Figure 7-5 Schematic diagram of top elbow installation

1. Remove the fluff filter.
2. Remove the air duct stencil assembly.
3. Remove the screws of the dust filter sealing plate at the bottom, and open the dust filter sealing plate.
4. Take out the dust filter and clean it. Then, install the dust filter and the fluff filter back.

7.3.3.2 Cleaning the Bottom Air Outlet Dust Filter

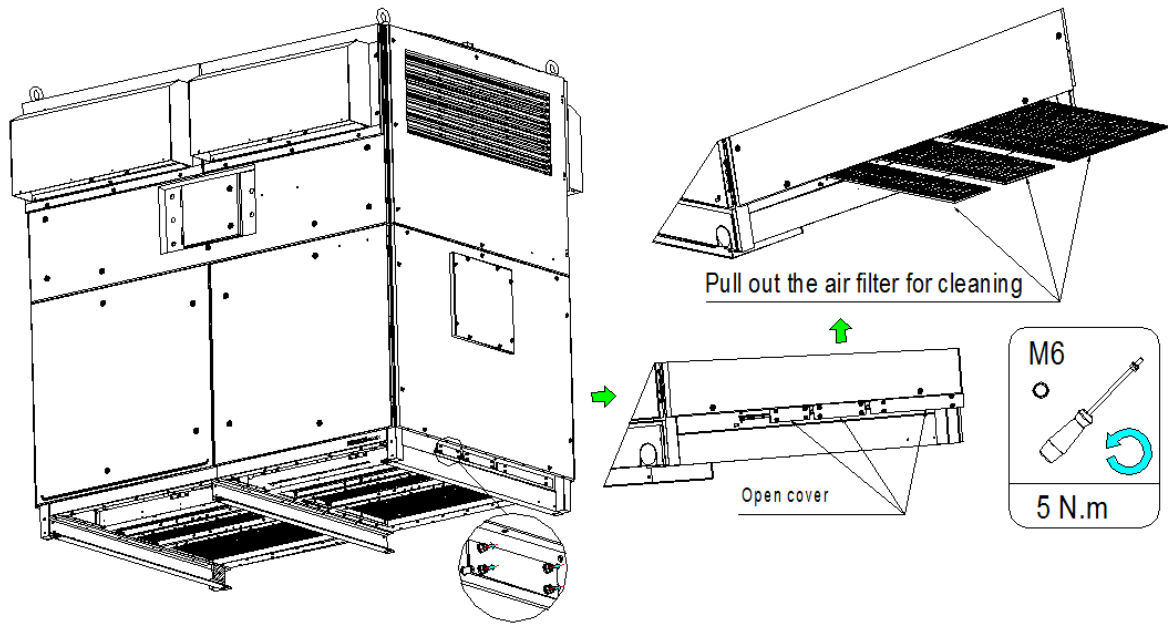


Figure 7-6 Schematic diagram of bottom elbow installation

1. Remove 5-M6 screws of the door panel.
2. After opening the door, remove 9-M5 screws of the dust filter.
3. Take out the dust filter and clean it. Then, install the dust filter back.

Note: Be sure to re-install the dust filter after cleaning. Otherwise, there will be a risk of animals entering the inverter and causing a short circuit!

7.3.3.3 Cleaning the Dust Filters on Both Sides of Door Panel

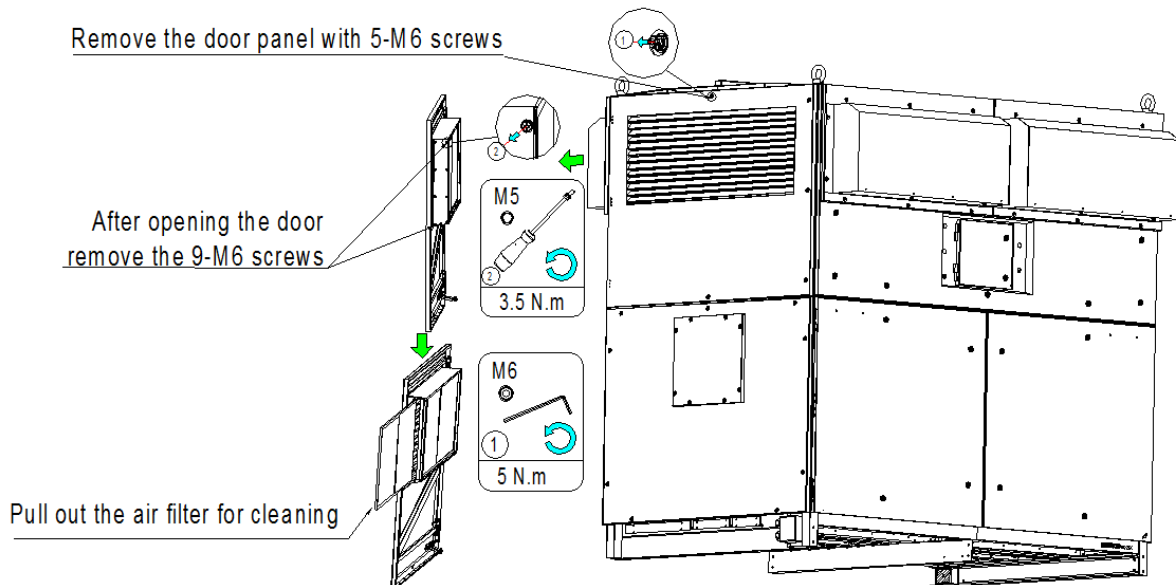


Figure 7-7 Schematic diagram of side elbow installation

1. Remove 5-M6 screws of the door panel.
2. After opening the door, remove 9-M5 screws of the dust filter.
3. Take out the dust filter and clean it. Then, install the dust filter back.

7.3.4 DC Fuse Maintenance

7.3.4.1 Positive Fuse Maintenance

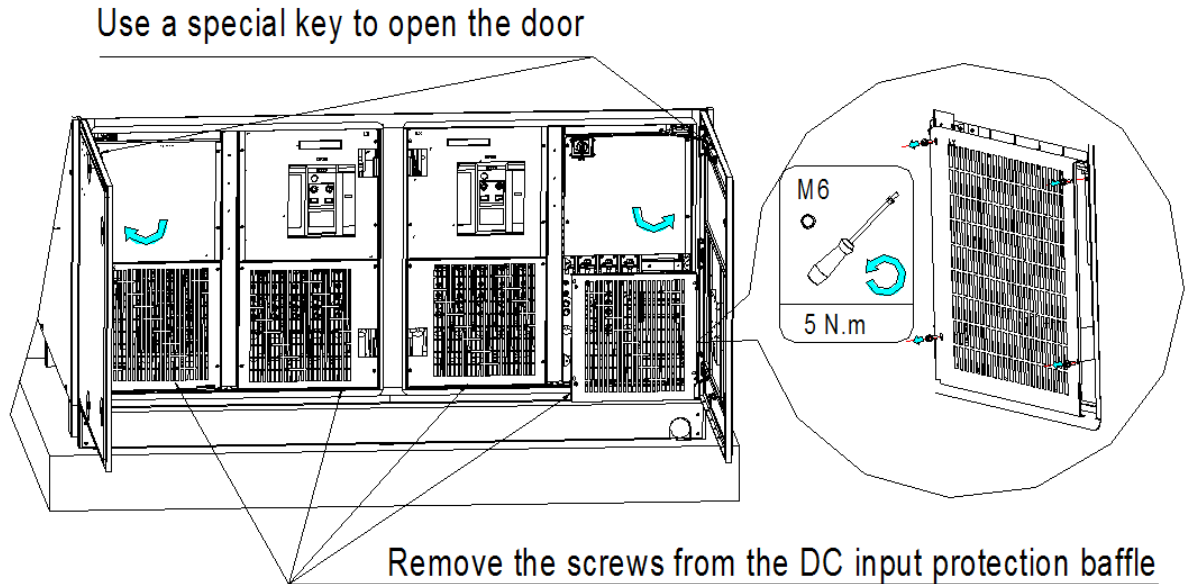


Figure 7-8 Schematic diagram 1 of the positive fuse on the DC side

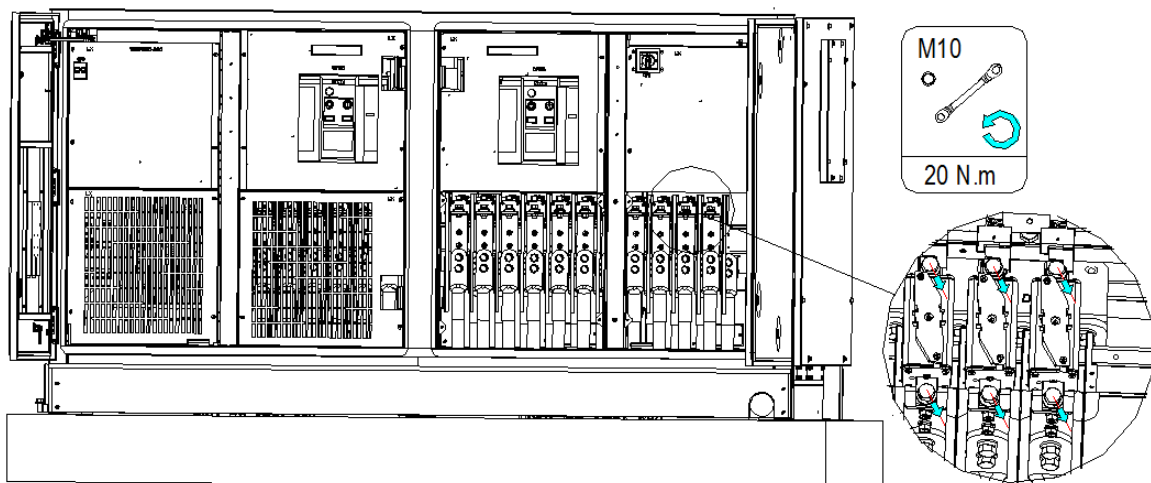


Figure 7-9 Schematic diagram 2 of the positive fuse on the DC side

The procedure is as follows:

1. Completely power off the inverter in accordance with the instructions in this manual. Wait for at least 5 minutes. Ensure that the conductors are not live and are current-free. Please strictly abide by the maintenance precautions described in 7.1 of this chapter!
2. Open the door panel on the DC side with the dedicated key. Remove the M6 fastening screws on the protective baffle on the DC input power side.

Confirm the specific location of the faulty fuse.

3. Remove the M10 or M12 fastening bolts on both ends of the faulty fuse.
4. Replace the spare parts of the fuse, and tighten the fastening bolts on both ends of the fuse with a torque of 15-20 Nm. After the work is completed, install the inverter back and close the door. Then, power on the inverter in accordance with instructions specified in this manual.

7.3.4.2 Negative Fuse Maintenance

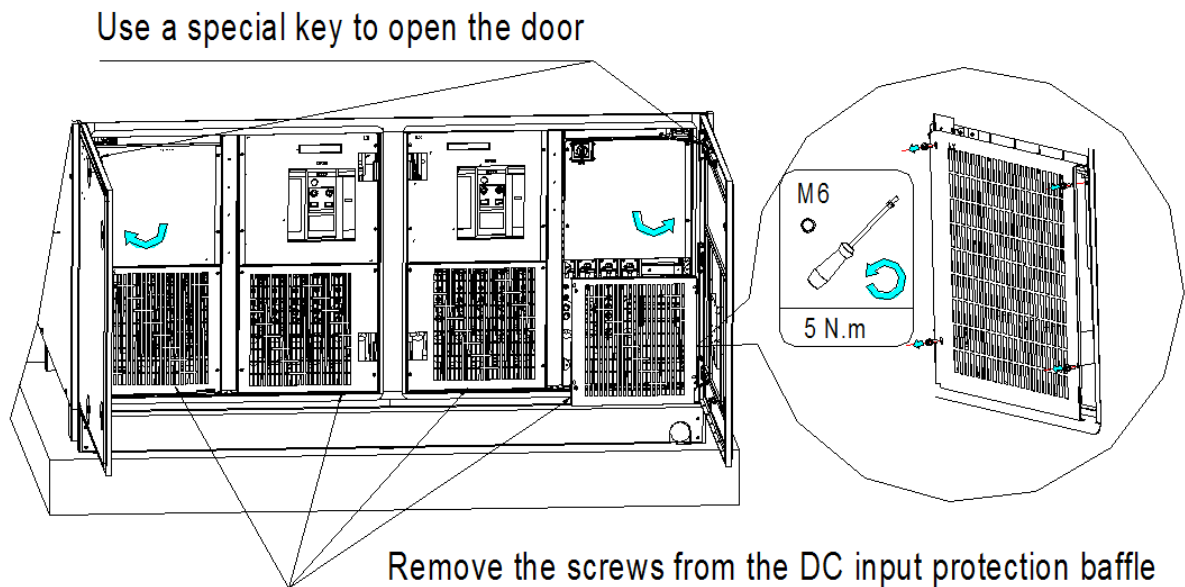


Figure 7-10 Schematic diagram 1 of the negative fuse on the DC side

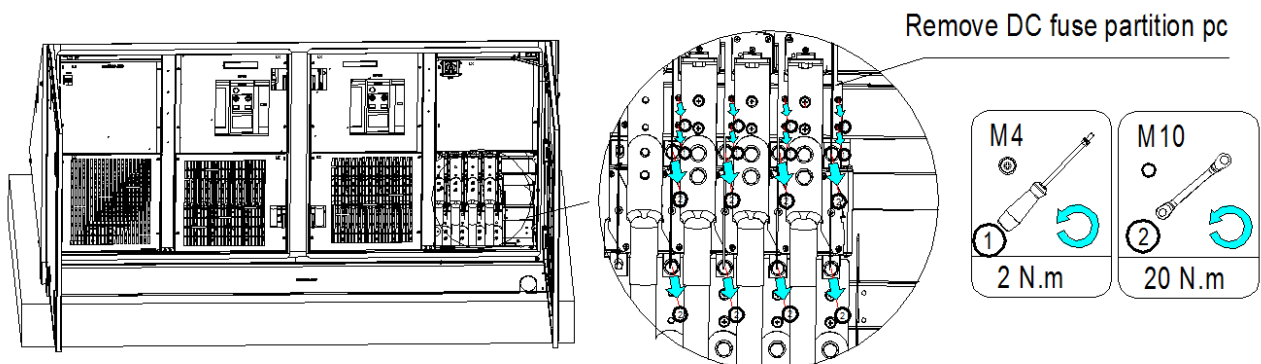


Figure 7-11 Schematic diagram 2 of the negative fuse on the DC side

The procedure is as follows:

1. Completely power off the inverter in accordance with the instructions in this manual. Wait for at least 5 minutes. Ensure that the conductors are not live and are current-free. Please strictly abide by the maintenance precautions described in 7.1 of this chapter!
2. Open the door panel on the DC side with the dedicated key. Remove the M6 fastening screws on the protective baffle on the DC input power side.

Confirm the specific location of the faulty fuse.

3. Remove the M10 fastening bolts on both ends of the faulty fuse.
4. Replace the spare parts of the fuse, and tighten the fastening bolts on both ends of the fuse with a torque of 15-20 Nm.

After the maintenance work is completed, power on the inverter in accordance with instructions specified in this manual.

Annex 1 DC Energy Storage Interface Installation

Before installing the DC energy storage interface option, the following points should be noted:

- Field assembly, with each component weighing no more than 25kg, and accessories provided by our company;
- This option is packaged separately, please check the list of materials before installation;
- Due to volume and weight limitations, this option does not include line protection devices, and requires independent external configuration of DC line protection devices or other necessary equipment.

Please follow the steps below to install the DC energy storage interface option.

Step 1: Open the DC energy storage interface door panel and remove the 8-M6 screws, as shown in 0.

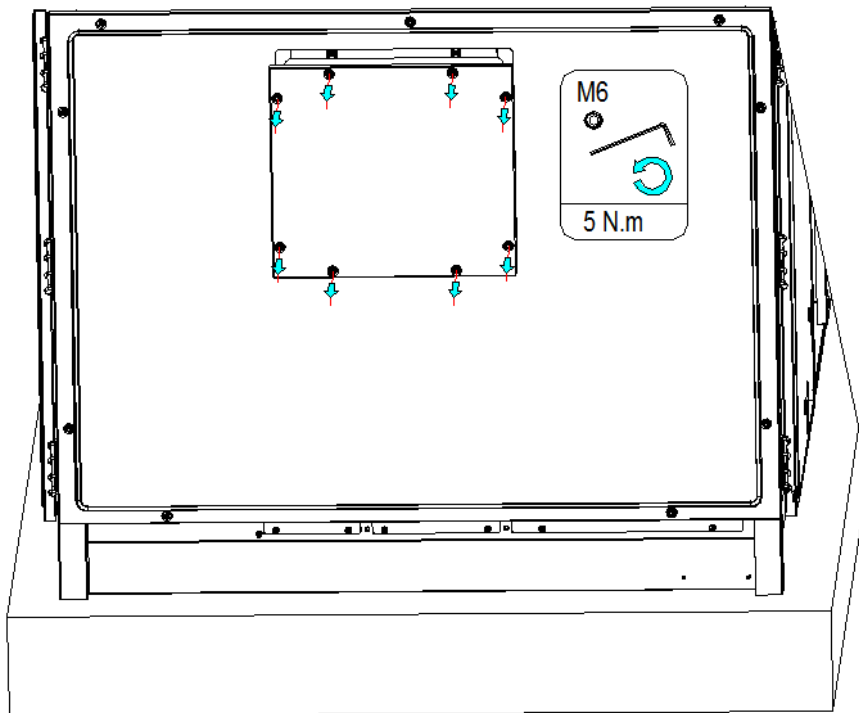


Figure 8-1 Schematic diagram 1 of DC energy storage interface installation

Step 2: Fasten the support of the DC energy storage interface. Do not secure the 2-M12 screws temporarily, as shown in 0.

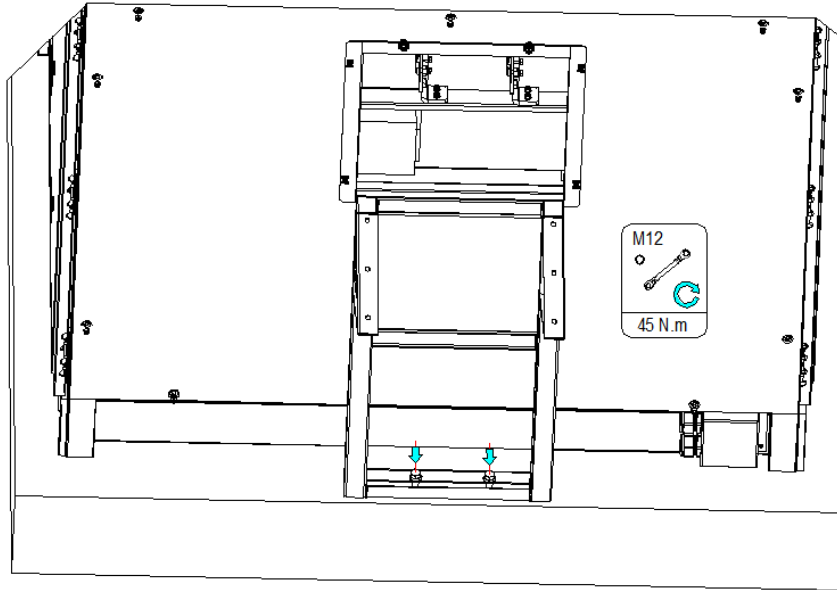


Figure 8-2 Schematic diagram 2 of DC energy storage interface installation

Step 3: Fasten the screws of the DC energy storage interface box and then install the box body and support, as shown in 0.

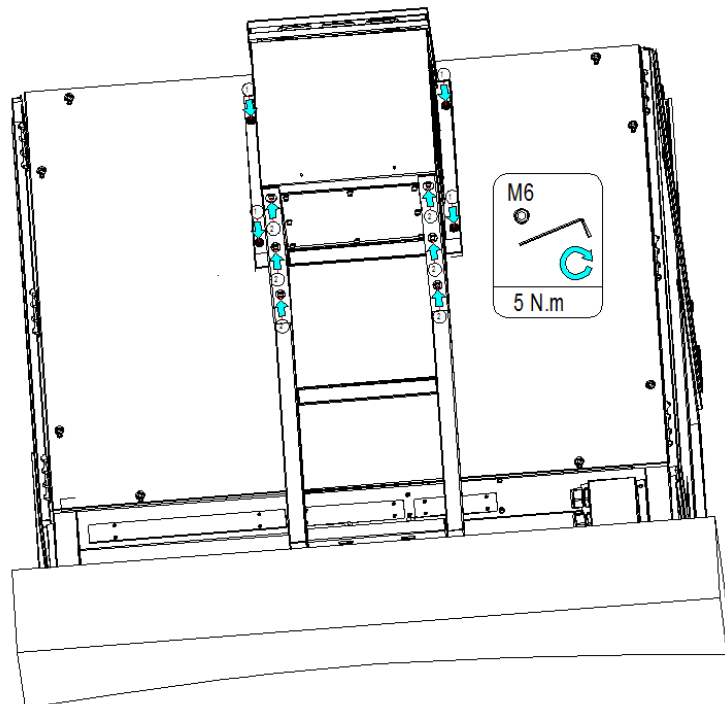


Figure 8-3 Schematic diagram 3 of DC energy storage interface installation

Step 4: Open the sun visor of the energy storage interface and the upper cover of the box body, and remove the ground cable of the door panel, as shown in 0.

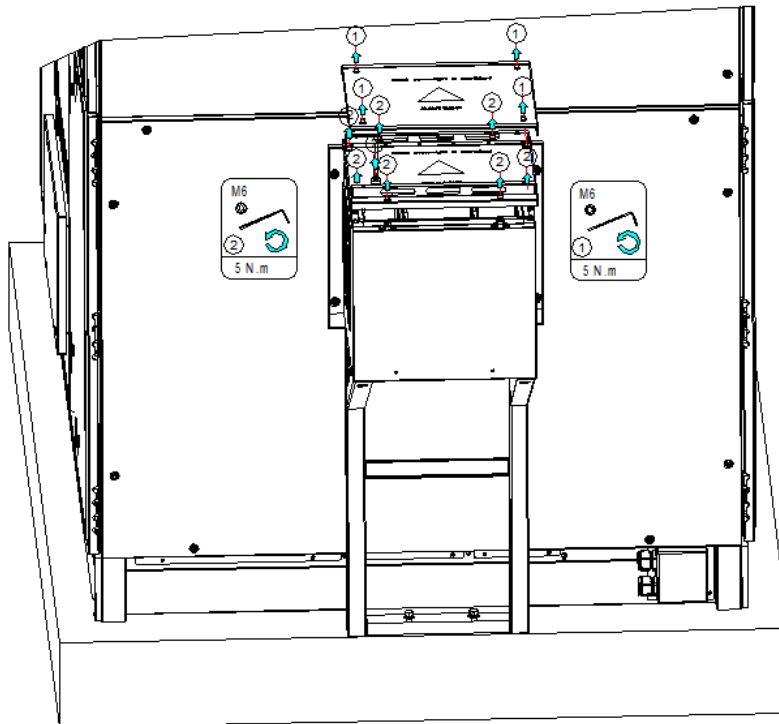


Figure 8-4 Schematic diagram 4 of DC energy storage interface interior

Step 5: Secure both sides of the wiring copper bar on the bakelite, connect the ground cable of the energy storage box, and connect the cables, as shown in 0.

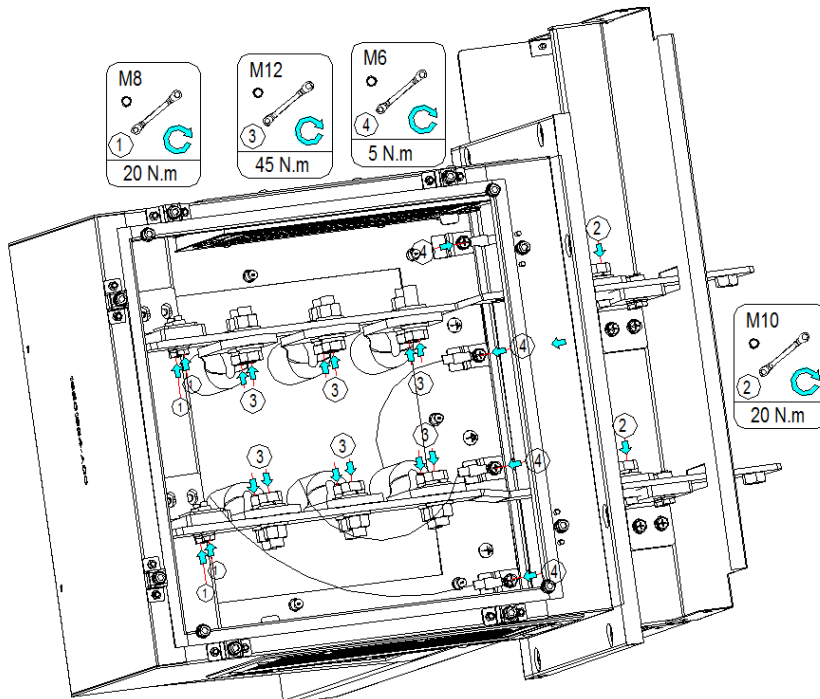


Figure 8-5 Schematic diagram 5 of DC energy storage interface installation

Step 6: Fasten the door panel screws, connect the door panel ground cable of the energy storage box, and then fasten the sun visor, as shown in 0.

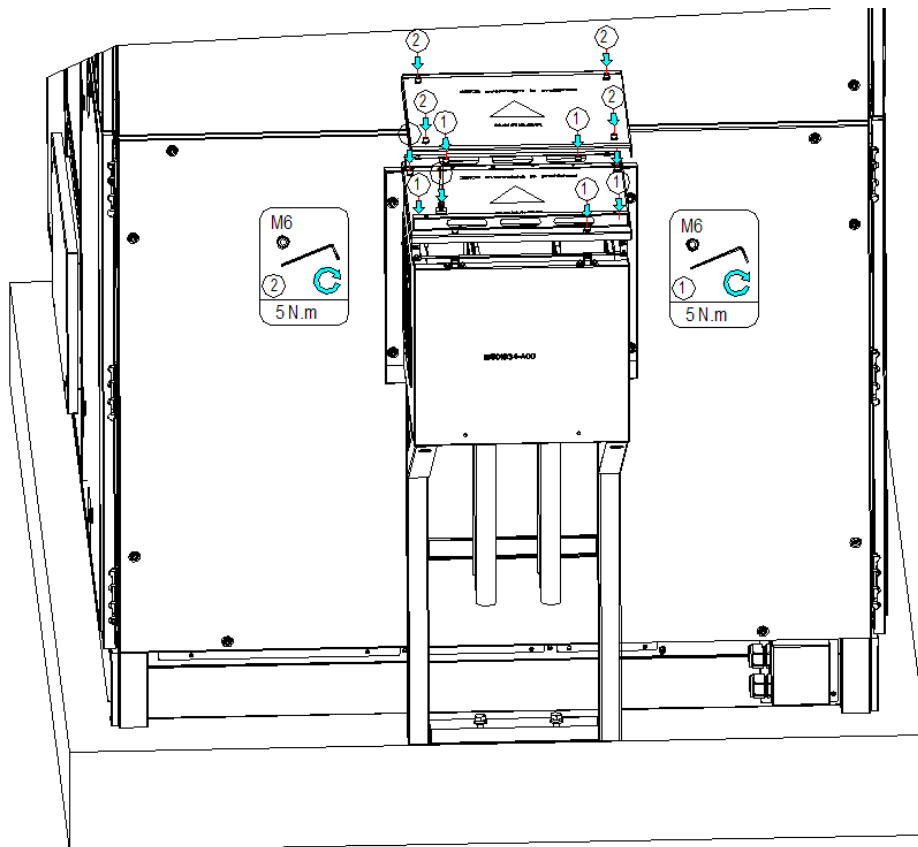


Figure 8-6 Schematic diagram 6 of DC energy storage interface door panel installation

After completing all electrical connections, a thorough and careful inspection of the wiring is required. Use fireproof and waterproof materials to tightly seal the cable inlet and the gaps around it, and install or lock all the cover plates and door panels.

 **DANGER**

Electric shock hazard!

- Be sure to tighten the screws and lock the door panel tightly. If the product is not locked and touched by non-professionals, it may cause casualties.

Warranty Card

Thank you for choosing Sineng PV inverter.

Product model:

Factory No.:

Please refer to the instructions in the *EP Series 1500V Dual MPPT PV Inverter User Manual* for specifications, implementation standards, and technical conditions of this product.

This product is guaranteed for _____ year(s). During the warranty period, Sineng will provide free component maintenance or replacement services for failures caused by non-human reasons and non-force majeure (including but not limited to earthquakes, mudslides, floods, typhoons, and wars).

User name:

User address:

Contact person:

Phone number of user:

Email:

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