



- ✓ **SN100PT-X**
- ✓ **SN110PT**
- ✓ **SN125PT**
- ✓ **SN75PT**
- ✓ **SN75PT-LV**

# User Manual




## SN75(LV)-150PT

**Sineng Electric Co., Ltd.**  
**Version: V1.0**

This manual is applicable to the following Sineng PV inverter models:

| Mode      | Rated power |
|-----------|-------------|
| SN125PT   | 125kW       |
| SN110PT   | 110kW       |
| SN100PT   | 100kW       |
| SN75PT    | 75kW        |
| SN75PT-LV | 75kW        |

The symbols used in this manual indicate different usage, as described in the following table. Different symbols can be used in combination.

| Symbol  | Description  |
|---|--|
|   | This symbol indicates a warning sign that needs to be noticed.                                   |
|  | This symbol indicates that there is a danger of electric shock, which may cause personal injury. |
|  | This symbol indicates that special attention must be paid due to high hazard risks.              |

This manual will be updated from time to time due to product upgrades and other reasons without prior notice.

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## Safety precautions

This manual describes important precautions and instructions that must be followed during the operation and maintenance of the SN series PV inverters. Before installation, please read this manual carefully.



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



## Danger

- *The inverter must be reliably grounded. The grounding of the equipment must comply with local electrical codes. Otherwise, it will endanger the personal safety of the operator.*
- *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 used 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 30 minutes before proceeding with subsequent operations.*

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# Overview of Manual

Before unpacking and installing the product, please read this manual thoroughly, which contains the following chapters:

**Symbol Conventions:** This chapter summarizes various symbols that appear in the manual and explains the symbols for better reading.

**Safety Precautions:** This chapter describes precautions that require attention before operation.

**Chapter 1 Product Overview:** This chapter briefly introduces the PV inverter and PV power generation system.

**Chapter 2 Inverter Installation:** This chapter introduces the storage conditions, handling instructions and installation instructions required for the reliable running of the inverter

**Chapter 3 Cable Connection:** This chapter describes the external power cable and communication cable used to connect the inverter to external equipment.

**Chapter 4 Inverter Operation:** This chapter introduces the human machine interface, power-on/off operation and disconnection operations.

**Chapter 5 Events and Alarms:** This chapter provides a list of events and alarms of the inverter.

**Chapter 6 Product Specifications:** This chapter describes the product specifications of SN series PV inverters.

**Chapter 7 Product Maintenance:** This chapter introduces inverter maintenance, including periodic maintenance and daily maintenance.

**After-sales Service Information:** This chapter provides the contact information for after-sales service of the product.

**Appendix :** Accessories package

# Chapter 1 Product Overview

## 1.1 PV Power Generation System

SN series inverters are string PV inverters without transformers. They are used to convert the DC energy of PV panels into AC electrical energy, which can be delivered to the power grid directly or through grid-connected transformers.

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

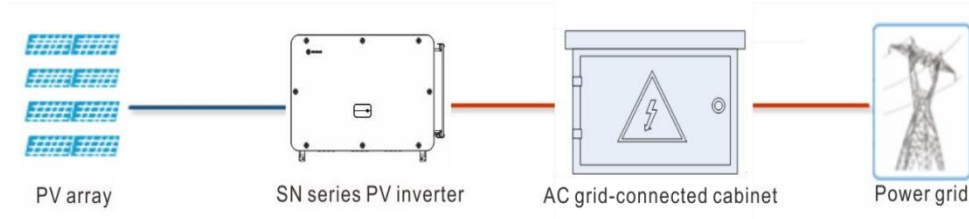


Figure 1-1 Composition of the PV power generation system

The power grids supported by SN125PT/SN110PT/SN110PT-B/SN100PT are TN-S, TN-C, TN-C-S, TT, and IT, as shown in Figure 1-2.

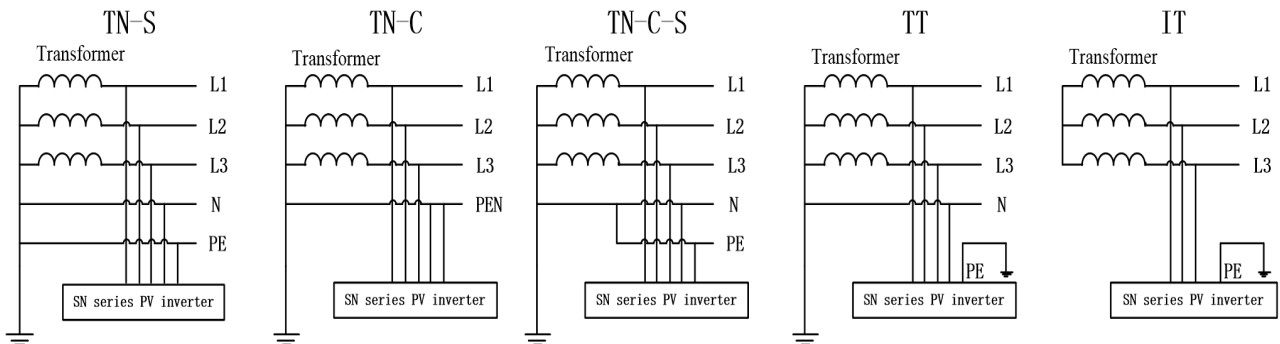


Figure 1-2 Power grids supported by SN series inverter

## 1.2 Inverter Appearance

### 1.2.1 Appearance and Dimensions

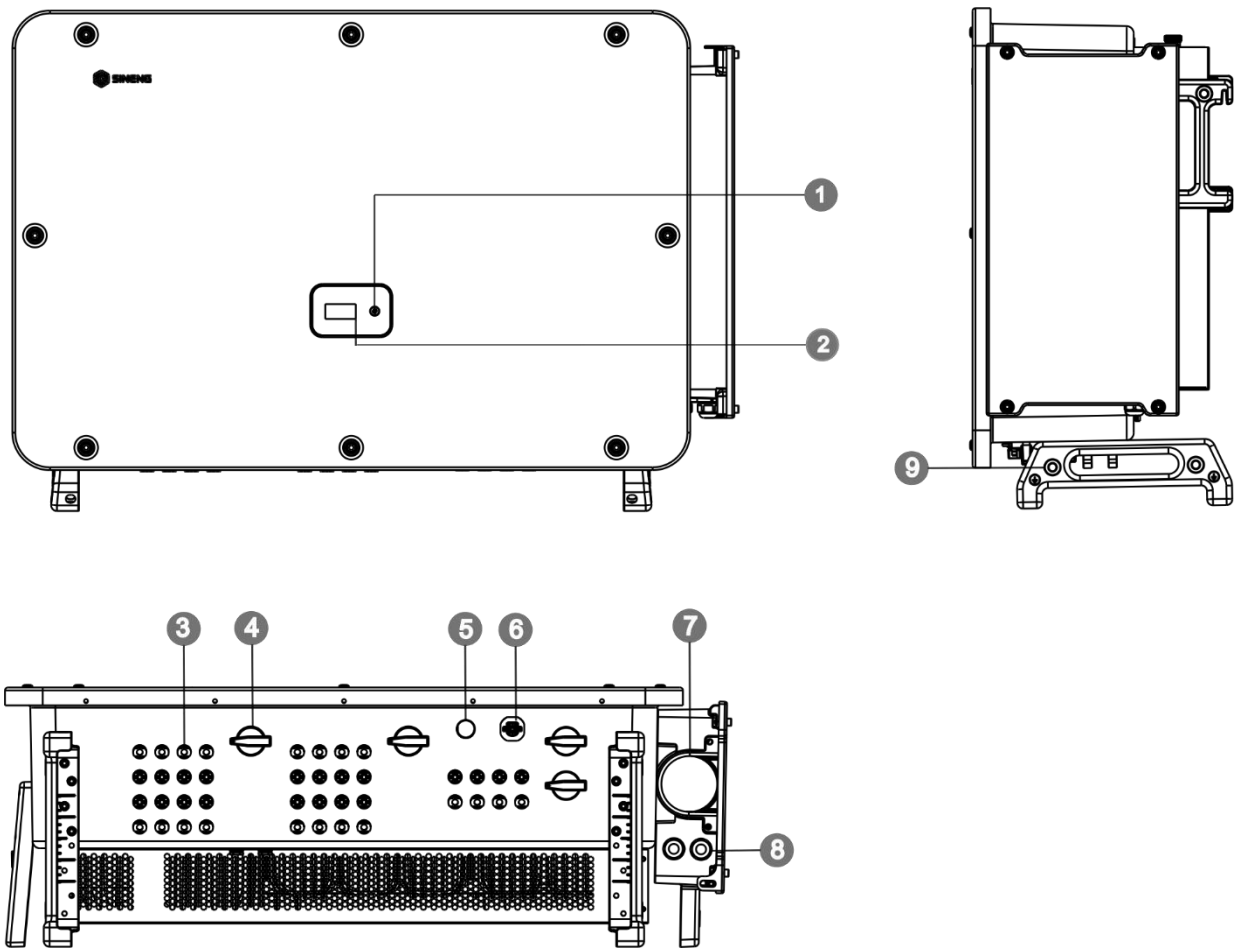


Figure 1-3 Appearance and dimensions

| SN | Item                     | SN | Item                          |
|----|--------------------------|----|-------------------------------|
| ○1 | Indicator/button*        | ○2 | Display*                      |
| ○3 | DC terminal              | ○4 | DC switch                     |
| ○5 | Data collector interface | ○6 | RS485 communication interface |
| ○7 | AC wiring port           | ○8 | Reserved                      |
| ○9 | Ground screw hole        |    |                               |

**Table 1-1 Appearance structure of the inverter**

\*Buttons and display are optional accessories, which are subject to the actual product received.

### 1.2.2 Description of Indicators on the Panel



| Color | Status                             | Description                                      |
|-------|------------------------------------|--|
| Green | Blinking, on for 1s and off for 1s | Standby  |
|       | Steady on                          | Grid-connected operating                         |
| Blue  | Blinking, on for 1s and off for 1s | Updating...                                      |
| Red   | Steady on                          | Fault  |
| Off   |                                    | AC and DC power disconnected, equipment shutdown |

Table 1-2 Description of indicators on the panel

### 1.2.3 Nameplate and Label

**SINENG**

型号 (Model): SN125PT

名称 光伏并网逆变器  
Name GRID-CONNECTED PV INVERTER

直流输入 DC-Input

最大输入电压 1100 Vd.c.  
Max. Input Voltage  
最大输入电流 64/64/64/64 Ad.c.  
Max. Input Current  
输入短路电流 100 Ad.c.  
Isc PV Current  
MPPT电压范围 200-1000 Vd.c.  
MPPT Voltage Range

交流输出 AC-Output

额定输出电压 3/N/PE 230/400 Va.c.  
Rated Output Voltage  
额定输出频率 50 Hz/60Hz  
Rated Output Frequency  
额定输出功率 125 kW  
Rated Output Power  
最大视在功率 137.5 kVA  
Max. Output Apparent Power  
最大输出电流 199.3 Aa.c.  
Max. Output Current  
功率因数范围 0.8(leading)-0.8(lagging)  
Power Factor Range

保护等级 I  
Protective Class  
防护等级 IP66  
Ingress Protection  
工作温度范围 -25°C~+60°C  
Operating Temperature Range  
过电压等级 III [AC], II [DC]  
Overvoltage Category

! ⚡ ⚠ ⚡ 30min

CE

序列号SN:

中国制造 MADE IN CHINA

上能电气股份有限公司  
SINENG ELECTRIC CO., LTD.  
地址: 无锡市惠山区和惠路6号  
ADD: NO.6, Hehui Road, Huishan District, Wuxi

Figure 1-4 Nameplate and Label

| SN             | Description                          | SN             | Description            |
|----------------|--------------------------------------|----------------|------------------------|
| ○ <sub>1</sub> | Trademark and product information    | ○ <sub>2</sub> | Product Specifications |
| ○ <sub>3</sub> | Product identification               | ○ <sub>4</sub> | SN code                |
| ○ <sub>5</sub> | Origin of production and information |                |                        |

Table 1-3 Description of nameplate (The SN125PT as an example)








| Icon  | Item                   | Description   |
|---|------------------------|---|
|    | Danger warning         | The inverter is a power electronic product and has potential risks, especially after it is powered on. It must be operated by professional personnel with safety protection measures taken. |
|    | Warning mark           |   |
|    | Burning warning        | When the inverter is running, the surface (especially the radiator part) has a high temperature. Do not touch it directly to avoid burns.   |
|  | 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.                                       |
|  | User Manual mark       | Professional personnel should refer to the User Manual for the installation or maintenance of the inverter.   |
|  | EU WEEE mark           | If you intend to discard this product, you must send it to an appropriate place for recovery and recycling. The product must not be treated as domestic waste.                              |
|  | CQC certification mark | This product has passed the NB/T 32004 certification of China Quality Certification Center (CQC).   |

Table 1-4 Description of marks (The SN5.0PT as an example)

### 1.3 Main Circuit Structure

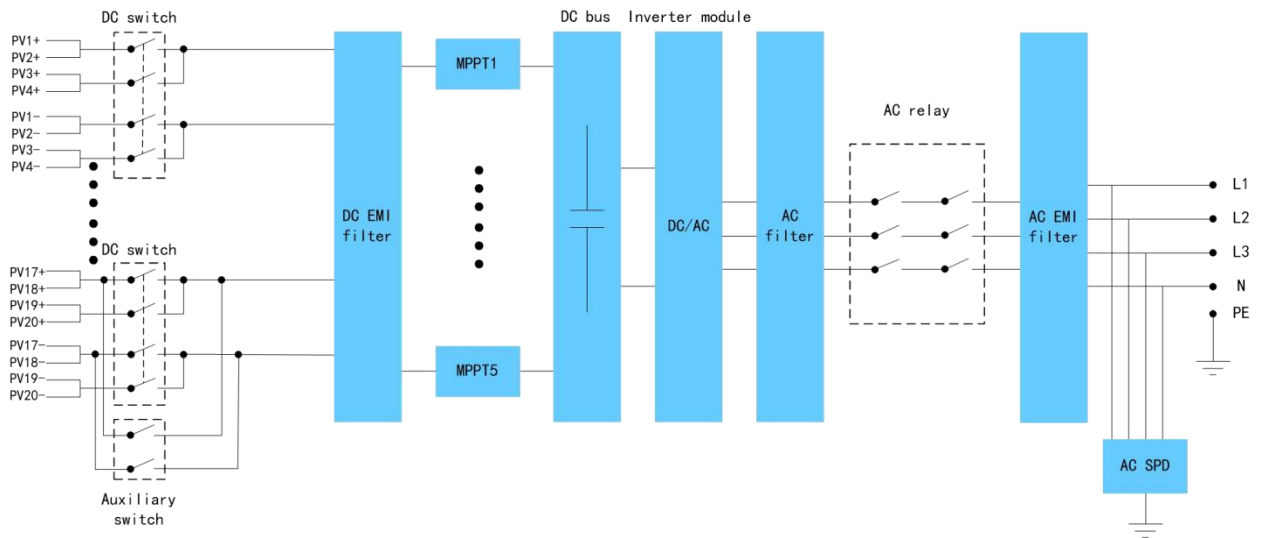


Figure 1-5 Schematic diagram of the SN125PT/SN110PT/SN100PT-X/SN75PT/SN75-LV

# Chapter 2 Inverter Installation

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

## 2.1 Storage Before Installation

---



### WARNING

- *The inverters must be stored indoors, and the package of the inverters must be intact. 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.*
  - *No more than 4 Si-Box data collection boxes should be stacked together! It is strictly prohibited to store the inverter horizontally or upside down!*
  - *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

---



### WARNING

- *Ensure that the inverter packaging is intact and undamaged before handling! If the packaging is damaged, please stop subsequent operations! In such a case, please contact Sineng or shipping company.*
  - *Please carefully observe the instructions and warning signs on the inverter packaging before working!*
  - *Keep balance when disassembling and handling the inverters to prevent personal injury caused by the falling of the inverters.*
  - *When handling the inverter, please hold the handle position at the bottom of the inverter and the side position of the main radiator near the top. Avoid hitting other objects with the top or bottom radiator, so as not to damage the inverter housing and internal components, and avoid squeezing and scratching the operator. Remember not to hold the top radiator while handling the inverter!*
  - *When the inverter is placed on the ground, cushion materials such as foam or paper should be placed on the bottom of the inverter to avoid damage to the housing.*
- 

Unpack the inverter according to the steps in Figure 2-1, and place the inverter on a flat place to prevent the inverter from toppling and prevent the radiator from collision.

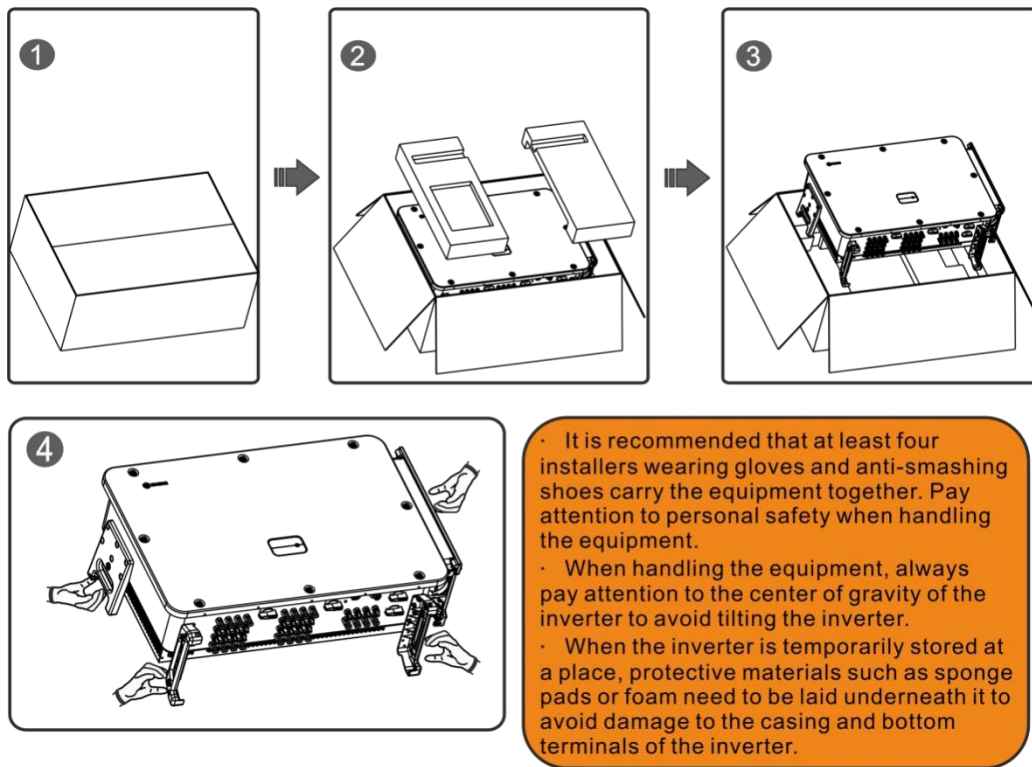


Figure 2-1 Schematic diagram of unpacking the SN series inverter

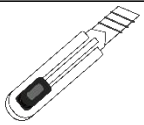


## 2.3 Inverter Installation



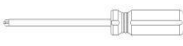


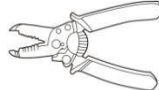

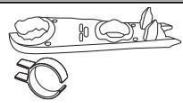
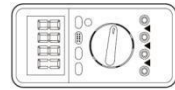
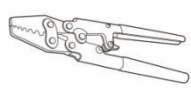
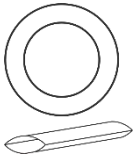



### WARNING

- Ensure that the inverter packaging is intact and undamaged before installation!
- During the normal running of the inverter, the temperature of the chassis and radiator is relatively high. Please do not install the inverter in crowded places or places where are easily accessible to non-professional personnel!

### 2.3.1 Installation Tools

| No. | Name   | No. | Name   | No. | Name  |
|-----|--|-----|--|-----|---|
| ○1  | <br>Guarded blade utility knife | ○2  | <br>Measuring tape or level | ○3  | <br>Marker |

| ○4  | <br>Electric drill (drill bit at Φ12/Φ14)                | ○5  | <br>M6 hex key  | ○6  | <br>Phillips screwdrivers: M3, M4, M5, M6, and M8 |
|---|---|-----|--|-----|--|
| ○7  | <br>M8 and M10 outer hexagon socket wrenches             | ○8  | <br>Diagonal pliers                                       | ○9  | <br>Wire stripper                                 |
| No.   | Name  | No. | Name   | No. | Name   |
| ○10   | <br>Crimping tool (H4TC0001)                             | ○11 | <br>DC interconnection terminal removal wrench (H4TC0001) | ○12 | <br>Multimeter (range ≥1100V)                     |
| ○13   | <br>Crimping pliers (output cable terminals and others) | ○14 | <br>Heat shrinkable tube and insulation tape             | ○15 | <br>Heat gun                                    |
| Note: Operators need to prepare own insulation shoes, insulation gloves, dust masks and protective goggles. |   |     |  |     |  |

### 2.3.2 Installation Environment Requirements

- The protection level of the inverter is IP66, and it can be installed indoors or outdoors. It is recommended to be installed in a place with shelters that can avoid direct sunlight. The shelters can be directly behind the PV panel or under the eaves.
- The inverter should be installed in a well-ventilated place to prevent its performance from being affected by poor heat dissipation.
- When the inverter is running, the surface (especially the radiator part) has a high temperature. Please install it in a place where is not easily accessible. Please keep it away from children and special group of people.
- The installation area of the inverter should be far away from flammable and explosive materials, and there should be no equipment that generates strong electric interference.
- The mounting rack or wall of the inverter should be able to resist fire at a certain grade.

### 2.3.3 Installation Angle

When installing the inverter, try to make it perpendicular to the ground and install it in the forward direction. If there is an inclination angle, ensure that the inclination angle and inclination direction meet the installation requirements.

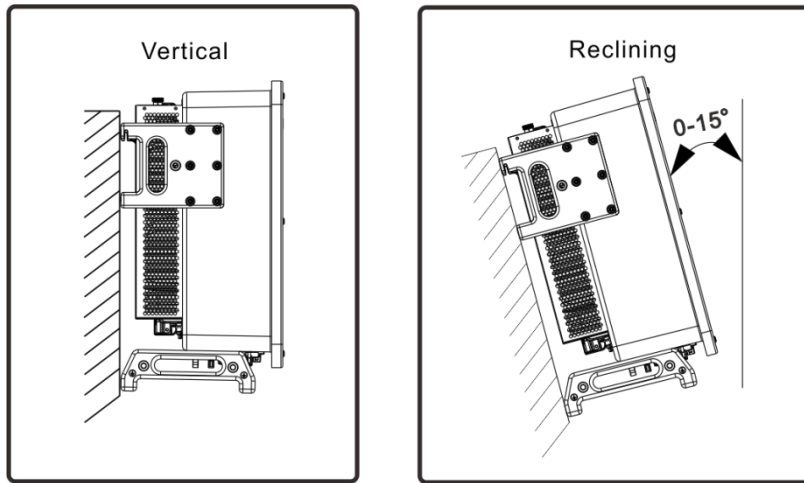


Figure 2-2 Schematic diagram of the installation space for a single inverter

**Note:**

1. It is recommended to install the equipment vertically or with a caster angle of 85°. Equipment failure due to non-conforming installation is not covered by the product warranty.
2. When installing the equipment, ensure that the radiator is free from obstructions to ensure unobstructed air ducts.

**2.3.4 Installation Space**

**2.3.4.1 Single Inverter Installation**

When installing a single inverter, reserve sufficient space around the equipment to facilitate the installation, maintenance and heat dissipation of the inverter. It is recommended that the distance between the bottom of the inverter and the ground be greater than or equal to 800mm after installation. Figure 2-3 shows the installation space of a single inverter.

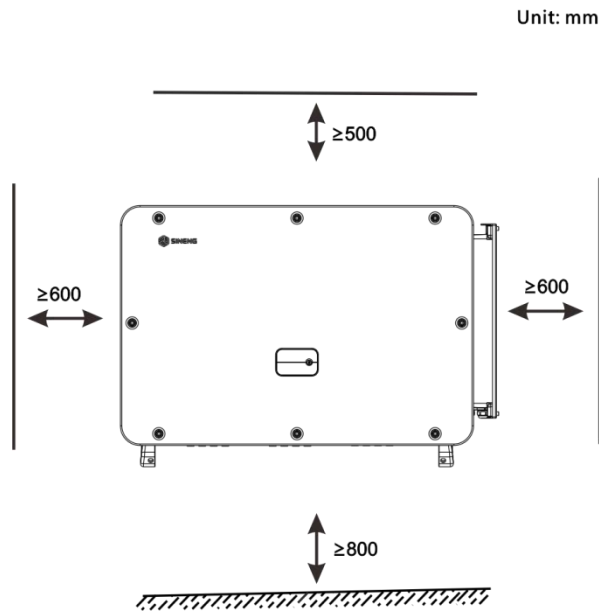


Figure 2-3 Schematic diagram of the installation space for a single inverter

#### 2.3.4.2 Multiple Inverter Installation

To ensure good heat dissipation and easy maintenance of the inverters, leave a proper distance between inverters. Generally, multiple inverters can be installed in a single-row side-by-side mode or multi-row staggered mode. This section describes the specific installation requirements.

##### ◆ Single-row side-by-side installation

In this installation mode, the distance between the inverters should not be less than 600mm, as shown in Figure 2-4. The distance between the inverter and the upper, lower, left, and right objects (such as walls) must meet the space requirements of single inverter installation, as shown in Figure 2-3.

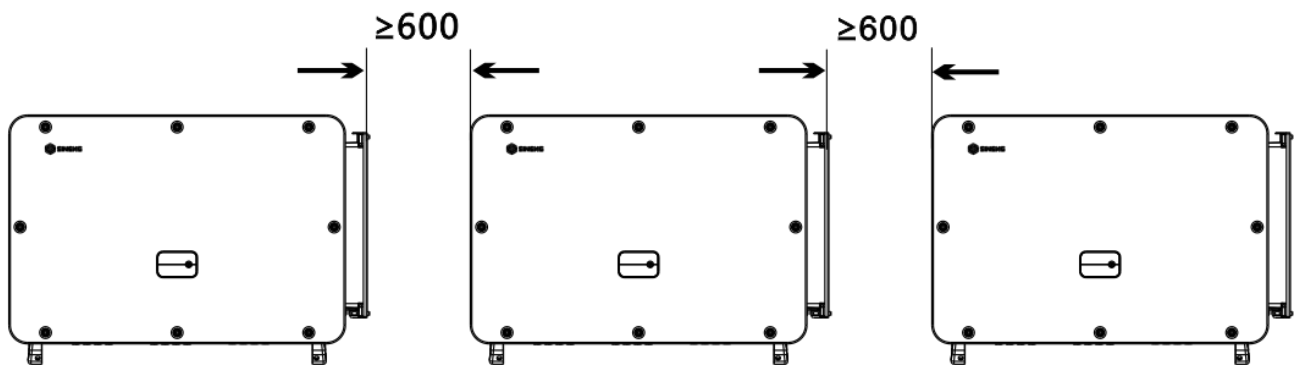


Figure 2-4 Schematic diagram of single-row side-by-side installation mode (unit: mm)

##### ◆ Multi-row staggered installation



When installing multiple rows of inverters, to facilitate the heat dissipation of the inverters, two adjacent rows of inverters are not allowed to cross in the upper and lower spaces. The lateral distance of the staggered inverters should not be less than 300mm, and the row spacing should not be less than 300mm, as shown in Figure 2-5. The distance between the inverter and the upper, lower, left, and right objects (such as walls) must meet the space requirements of single inverter installation, as shown in Figure 2-3.

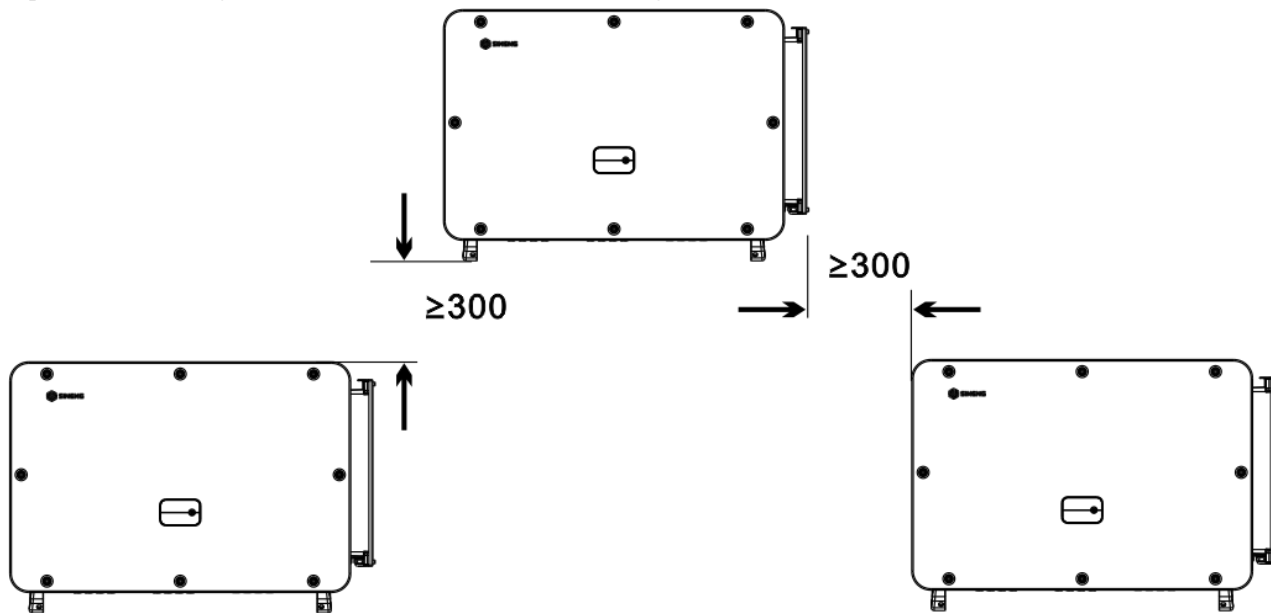


Figure 2-5 Schematic diagram of multi-row staggered installation mode (unit: mm)

### 2.3.5 Installation Requirements

#### 2.3.5.1 Drawing of Inverter Installation Dimensions

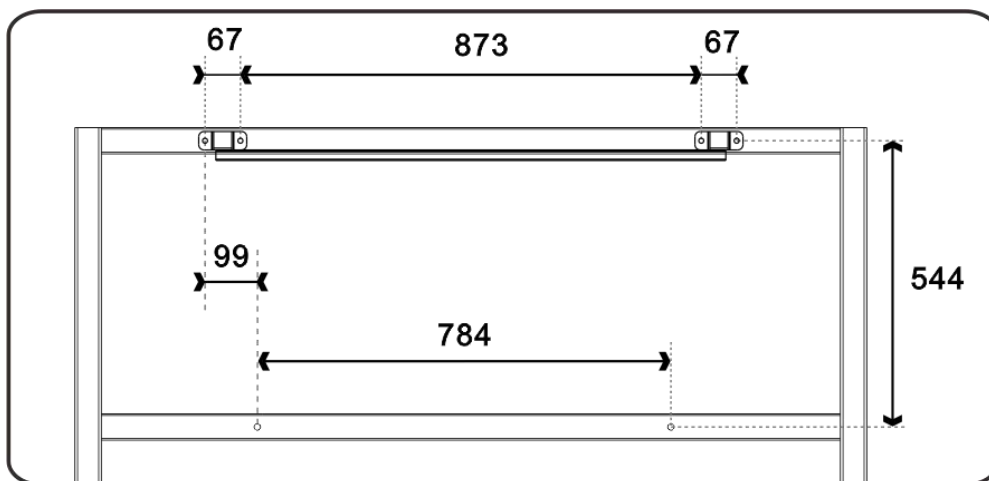


Figure 2-6 Backplane dimensions (unit: mm)

#### 2.3.5.2 Bracket-mounted Mode

Figure 2-7 shows the installation process of the mounting ears of the inverter. Take the mounting ears (or according to the dimensions of the mounting ears), measure the positions of the mounting holes on the bracket, and mark them with a marker. Install the mounting ears with M8\*60 bolts on the bracket, and hang the inverter on the mounting ears. Fix the left and right feet with M6 screws. At this moment, the installation is completed.

**Step 1** Determine the punching position according to the inverter installation dimensions drawing shown in Figure 2-7. Measure the dimensions using a level, and mark the puncturing area using a marker.

**Step 2** Use an impact drill to drill a hole with a diameter of  $\phi 10$ .

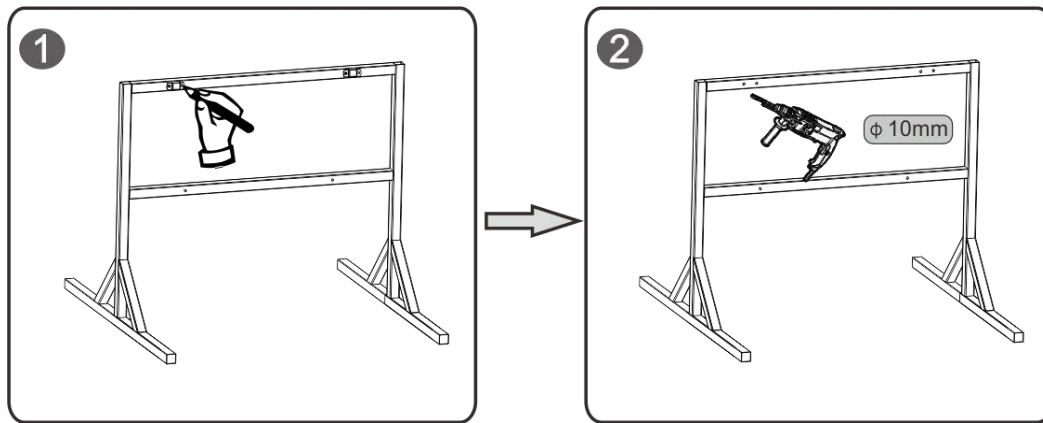


Figure 2-7 Schematic diagram of backplane of the inverter

**Step 3** Fasten the mounting ears to the wall using bolts.

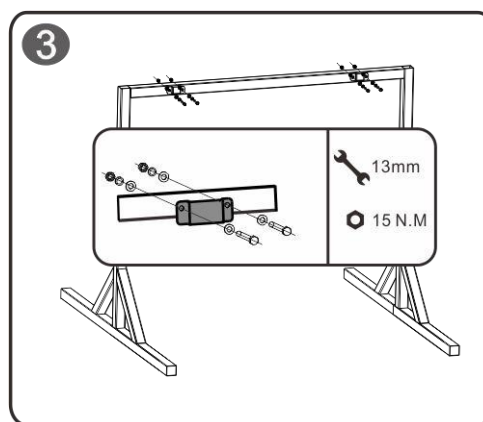


Figure 2-8 Schematic diagram of backplane installation for the inverter

**Step 4** Hang the inverter on the mounting ears.

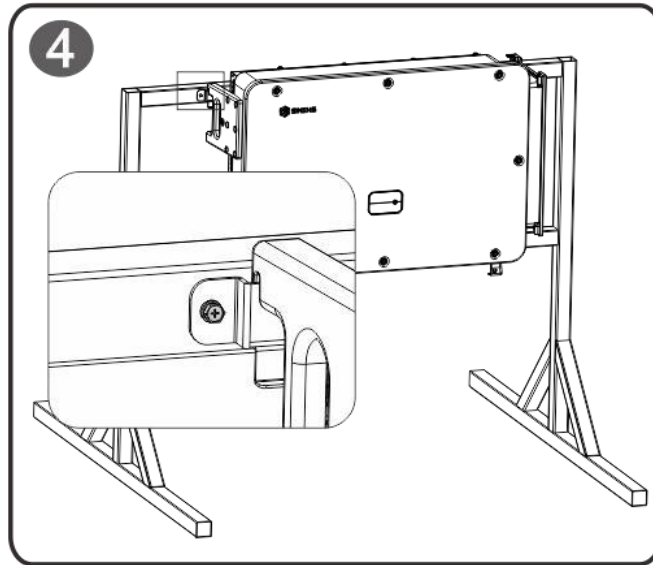


Figure 2-9 Schematic diagram of backplane installation for the inverter

**Step 5** Fix one M8 screw on the left and right feet of the inverter respectively. The installation is completed.

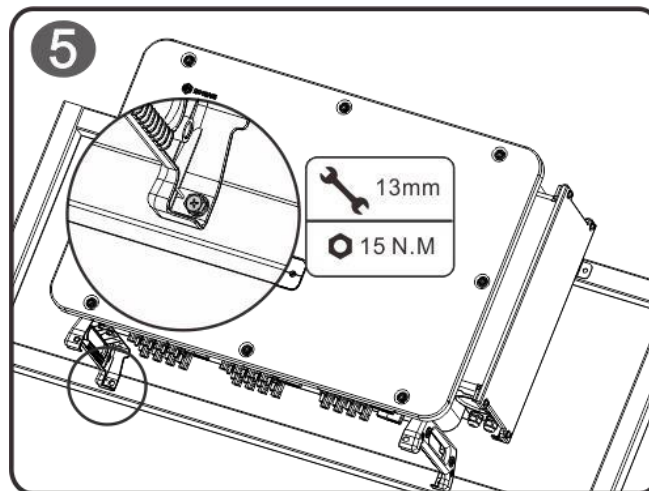


Figure 2-10 Schematic diagram of backplane installation for the inverter

**Note:**

1. Pay attention to personal safety when handling the equipment.
2. The accessory package of the product includes multi-purpose bolts (matching bracket installation and wall installation modes). If bracket installation method is adopted, remove the expansion tube and matching nut on the bolt, and use the additional hexagonal nut and flat washer in the accessory package. If the wall installation method is adopted, you can directly use the bolt with expansion tube.

3. If the wall installation method is adopted on site, it is recommended that the hole size of the wall should be  $\phi 12$  mm and the depth should not be less than 70 mm.
4. For the hook-mounted mode, prepare U-steel and U-shaped bolts independently.
5. The bearing capacity of the wall or bracket is equal to or higher than 320kg.

## Chapter3 Electrical Connections

### Danger

- *When there is light, a DC high voltage endangering the personal safety of the operator exists at the PV panel port!*
- *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 cabling the inverter, check and confirm that all connection 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, 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.*
- *It is prohibited to open the upper cover without permissions. If the tamper-proof label is torn and the inverter is damaged, it will not covered by the product warranty.*

The external cables of the SN series PV inverters include DC input cables, AC output cables, communication cables, and ground cables. Table 3-1 lists the cables and functions. Table 3-2 lists the cables that need to be prepared by customers.

| Classification of Cables Operated by User | Description   | Remarks                                     |
|---|---|---|
| Ground cable                              | Ground cable  | Connecting to the nearest ground point      |
| AC output cable                           | Connecting the AC combiner box and the AC output side of the inverter | Outdoor multi-core cable                    |
| DC input cable                            | Connecting the PV panel and the DC input side of the inverter         | PV cable in compliance with 1100 V standard |
| Communication cable                       | Communication signal cable  | Outdoor multi-core cable                    |

**Table 3-1 List of cables**

Table 3-2 Recommended cable specifications

| Category of Cable   | Conductor Properties                        | Conductor cross-sectional area | Outer Diameter of Cable | Terminal Specifications | Tightening Torque |
|---------------------|---|--------------------------------|-------------------------|-------------------------|-------------------|
| Ground cable        | Outdoor copper core cable                   | 35–150 mm <sup>2</sup>         | /                       | OT terminal: M12        | 30 N.m            |
| AC output cable     | Outdoor copper core cable (4/5-core)        | 70–300 mm <sup>2</sup>         | 40-75 mm                | OT terminal: M12        | 30 N.m            |
|                     | Outdoor aluminum core cable (4/5-core)      | 70–300 mm <sup>2</sup>         |                         |                         |                   |
| DC input cable      | PV cable in compliance with 1100V standards | 4–6 mm <sup>2</sup>            | 4–7.8 mm                | /                       | /                 |
| Communication cable | Multi-core cable (AWG22-AWG24)              | 0.2–1.0 mm <sup>2</sup>        | 8-14 mm                 | /                       | 0.5N.m            |

### 3.1 Connecting the Ground Cable



#### WARNING

- *The inverter must be grounded reliably. Otherwise, it may cause personal injury or abnormal operation of the inverter!*

The inverter should be grounded in the shortest path. The procedure for connecting the protective ground cable is as follows:

- (1) Strip a section of bare copper core of the ground cable in the corresponding specifications using the wire stripper. Ensure that the length of the bare copper core is 3 mm longer than that of the OT terminal.
- (2) Cover the OT terminal with a heat shrinkable tube in a suitable size. It is recommended that the length of the heat shrinkable tube (withstand voltage  $\geq 600\text{V}$ ) be 1.5-2 times the length of the terminal.
- (3) Crimp the OT terminal to the bare copper core using the crimping pliers.
- (4) Blow the heat shrinkable tube tightly using the heat gun to wrap the terminal and cable tightly. At this time, the cable is completely made (the cable making process is shown in Figure 3-1 ).
- (5) Fasten the OT terminal of the ground cable to the ground interface with M12 screws, with a tightening torque of 30N.m (For more information, see Figure 3-1 ).

**Remarks:** After the ground terminal is fastened, it is recommended to apply silicone or outdoor paint on the outside of the terminal to improve the anti-corrosion capability of the terminal.

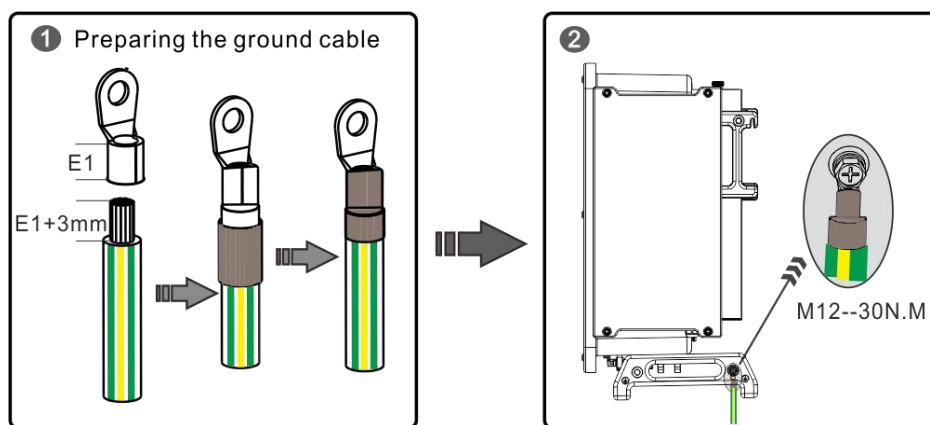


Figure 3-1 Schematic diagram of cable making (OT terminal)

**Note:**

1. You need to independently prepare OT terminal, cable and heat shrinkable tube used for the protective ground cable.
2. You need to prepare other tools, including diagonal pliers, wire stripper, crimping pliers, heat gun, M12 socket or wrench.

### 3.2 Connecting the AC Cable



**WARNING**

- *An AC circuit breaker that matches the power of the inverter must be connected between the inverter output and the power grid, and each inverter must be equipped with an independent circuit breaker!*
- *The tapered end and fastening screw of the AC cable must be tightened. Otherwise, there is a risk of damage to the inverter or fire hazard!*
- *When connecting the AC cable, ensure that the AC circuit breaker is disconnected!*
- *It is prohibited to connect any load between the inverter and the AC circuit breaker!*

#### 3.2.1 AC Circuit Breaker Selection

To ensure that the SN series inverter is normally disconnected from the power grid under abnormal conditions, please select a suitable AC circuit breaker. Table 3-3 lists the recommended specifications.

| Inverter Model | Recommended AC Circuit Breaker Specifications |
|----------------|---|
| SN125PT        | 250A  |
| SN110PT        | 250A  |

|  |      |
|--|------|
| <b>SN110PT-B</b>   | 250A |
| <b>SN100PT</b>   | 250A |
| <b>Table 3-3 Recommended AC circuit breaker specifications</b> |      |

SN series inverter integrates a leakage current protection circuit. When the leakage current is higher than the protection value stipulated in safety regulations, the inverter automatically disconnects from the power grid. If the AC circuit breaker has a leakage current detection function, please select the appropriate equipment according to Table 3-4.

| <b>Inverter Model</b>  | <b>Trigger Value of Leakage Current</b> |
|--|---|
| <b>SN125PT</b>   | 1250mA                                  |
| <b>SN110PT</b>   | 1100mA                                  |
| <b>SN110PT-B</b>   | 1100mA                                  |
| <b>SN100PT</b>   | 1000mA                                  |
| <b>Table 3-4 Recommended leakage current protection equipment specifications</b> |   |

### 3.2.2 AC Cable Connection

Select appropriate AC cables based on application scenarios. The following table lists the recommended cables.

| <b>Application Scenario</b>   | <b>Recommended Cable</b>                |
|---|---|
| <b>The chassis housing is grounded and there is no neutral cable.</b> | Four-core cable (L1, L2, L3, and PE)    |
| <b>The chassis housing is grounded and there is no neutral cable.</b> | Five-core cable (L1, L2, L3, N, and PE) |
| <b>Table 3-5 Recommended AC cables</b>                                |   |

SN series inverter disables the phase sequence self-adaptation by default. The specific procedure for connecting the cables is as follows:

- (1) Crimp the OT terminals of cable as shown in the figure below.



- (2) Wrap a waterproof strip around the cable.
- (3) Open the compartment door.
- (4) Remove the fixed clamp from the cable.
- (5) Fix the AC cable on the terminal block with M12 screw. The tightening torque is 30 N.m.
- (6) Install the fixed clamp on the cable with M6 screw. The tightening torque is 5 N.m. Close the door.

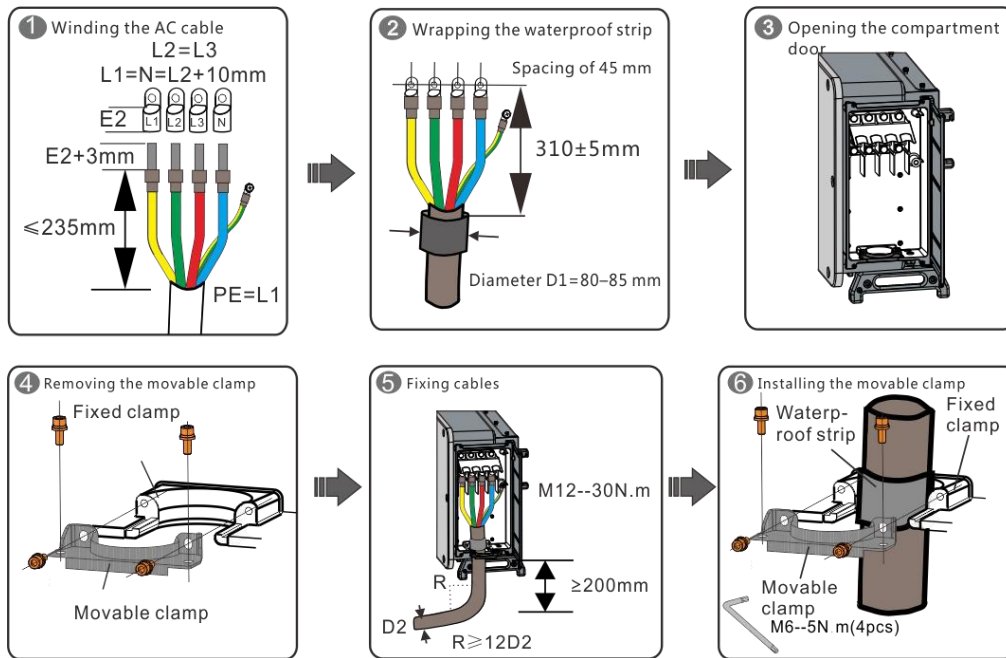


Figure 3-2 Schematic diagram of AC cable installation

**Note:**

1. Before connecting the AC output cable, disconnect the circuit breaker between the power grid and the inverter.
2. Crimp the OT terminal after the cable passes through the cable lock. Be sure to tighten the terminal during installation. After the wiring is completed, be sure to lock the wiring compartment door.
3. The cable lock on the AC output side is multi-core. Please select the appropriate rubber lining according to the outer diameter of the cable on site. After installation, be sure to tighten the tail nut of the cable lock. It is recommended to seal the port using firestop putty to prevent water from entering the chassis.
4. If aluminum wire is used on site, direct contact with copper and aluminum is strictly prohibited, and copper-aluminum transfer terminals must be used.

### 3.3 Connecting the DC Cable

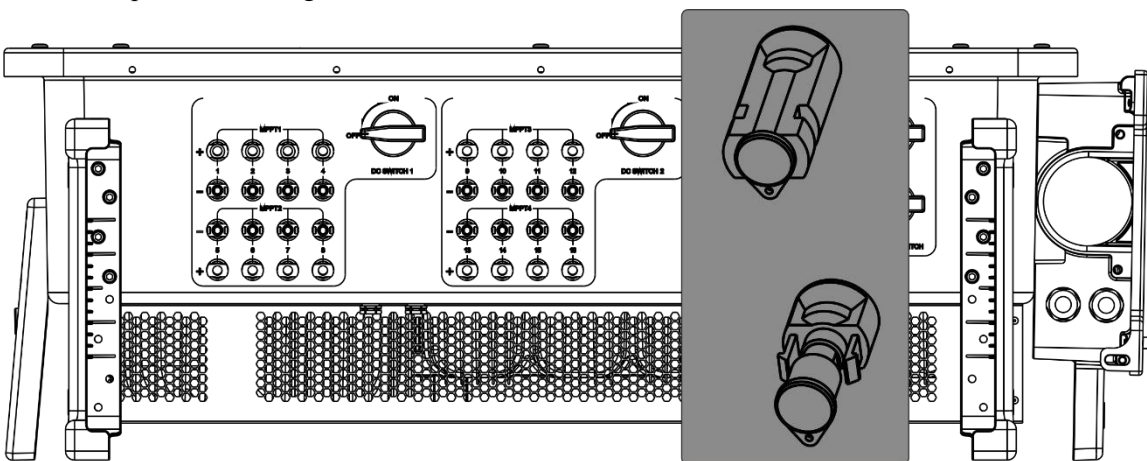


#### Warning

- *When there is light, the PV panel outputs high voltage, which endangers the life of operator!*
- *Before cabling, ensure that the PV panel is completely shielded by an opaque cloth.*
- *The DC switch of the inverter must be in the "OFF" state!*
- *The parameter configuration of the PV panel string should be consistent with the configuration of the DC input parameters of the inverter.*
- *If the inverter is directly connected to the power grid, the positive and negative electrodes of the PV panel cannot be directly grounded.*
- *The positive and negative poles of the PV panel cannot be short-circuited to the ground. Otherwise, it may cause equipment damage during the operation of the inverter. The damage to the equipment caused by violations of these precautions is not covered by the warranty.*
- *It is prohibited to use DC terminals with specifications, models and brands not specified by Sineng!*
- *Before connecting the PV string to the inverter, ensure that the PV string is well insulated from the ground.*
- *To increase the power generation capacity of the system, it is recommended that each string of the same MPPT be connected to the same number of PV strings with the same specifications and the orientation!*

#### 3.3.1 Connecting DC Current

Each terminal on the DC side is provided with a dust plug (as shown in Figure 3-3) to ensure that the inverter can reach IP66 protection rating.



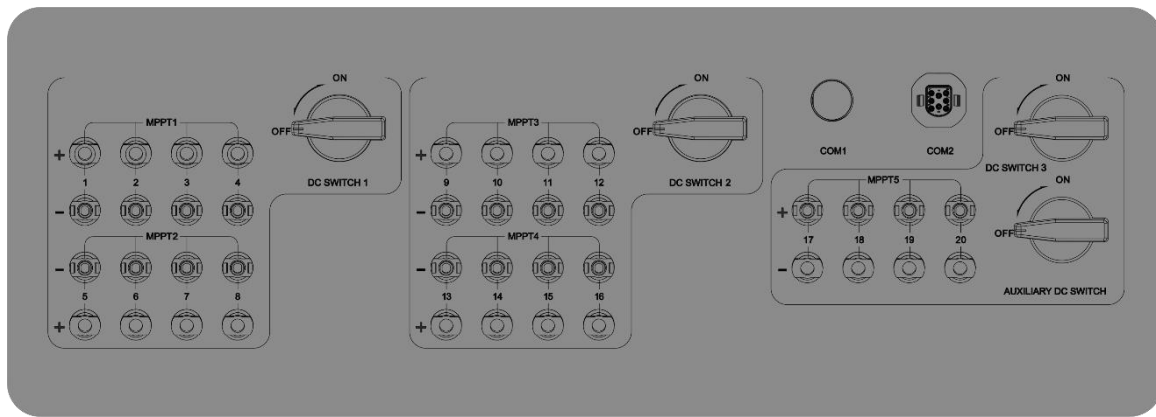


Figure 3-3 DC input terminal

The DC side adopts the dedicated PV interconnection terminal. The procedure for connecting the DC cable is as follows:

- (1) Strip the positive and negative cable insulation skins to a suitable length using a wire stripper, put the cables into the corresponding metallic terminals, and crimp them tightly using a crimping tool.
- (2) Insert the crimped positive and negative cables into the corresponding insulation housing respectively until you hear a click, indicating that they are installed in place.
- (3) Rotate to tighten the plastic nuts at the end of the insulation housing of the positive and negative connectors.
- (4) Measure the voltage of the positive and negative DC terminals using the multimeter to ensure that the polarity of the PV panel is correct, and ensure that the voltage is lower than the maximum input voltage that the system can withstand.
- (5) Remove the dust-proof plug from the DC input side, and insert the positive and negative connectors into the positive and negative electrodes of the DC input terminal of the inverter until you hear a "click", indicating that the connectors are installed in place.

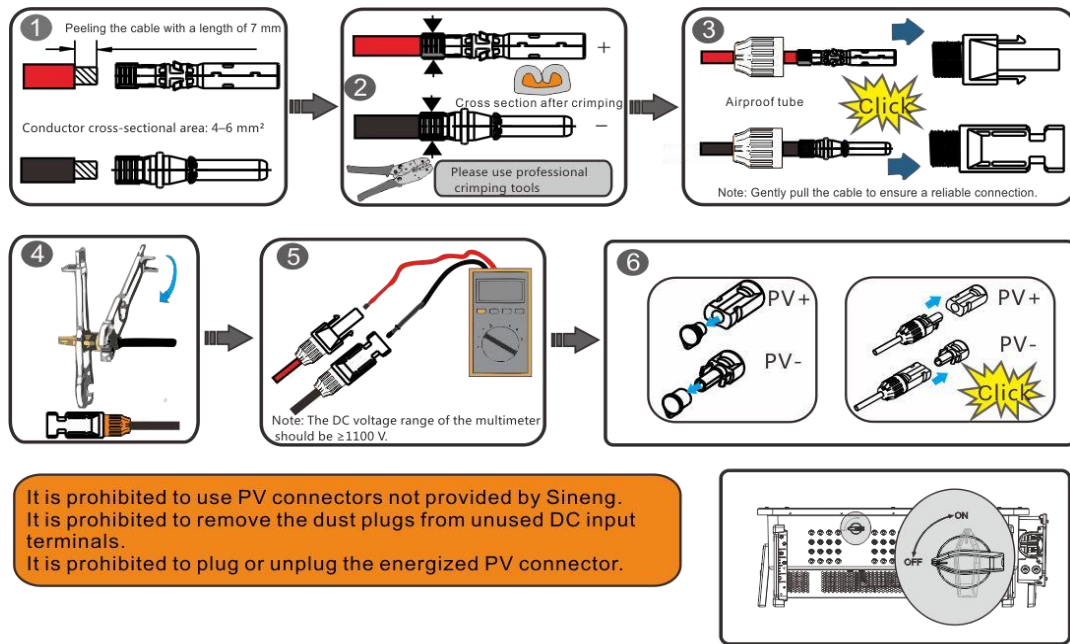


Figure 3-4 Schematic diagram of DC cable connection

**Note:**

1. After the positive and negative terminals are inserted into the insulation housing, gently pull them to check for insecure or loose connections.
2. When using a multimeter to measure the voltage, if the measured value is negative, the polarity of the DC input is incorrect. Please correct the polarity.
3. When using a multimeter to measure the voltage, if the measured value is larger than 1100 V, the voltage exceeds the inverter working voltage range. Please re-configure the equipment.

**3.3.2 Recommended String Configuration**

When the string input is not fully configured, the following principles must be followed:

- The string should be evenly distributed to 5 MPPTs.
- For the SN125PT/SN110PT model, PV17 or PV18 must be connected to the string.
- For the SN110PT-B/SN100PT model, PV13 or PV14 must be connected to the string.

**3.4 Installing the Communication Module**



*Please install the communication module strictly according to the User Manual!*

The following figure shows the process of installing the 4G data collector.

1. Before installation, read the data collector user manual carefully.
2. Unscrew the dust cover of the aviation plug, interconnect the data collector with the aviation plug, and tighten the plastic nut clockwise.

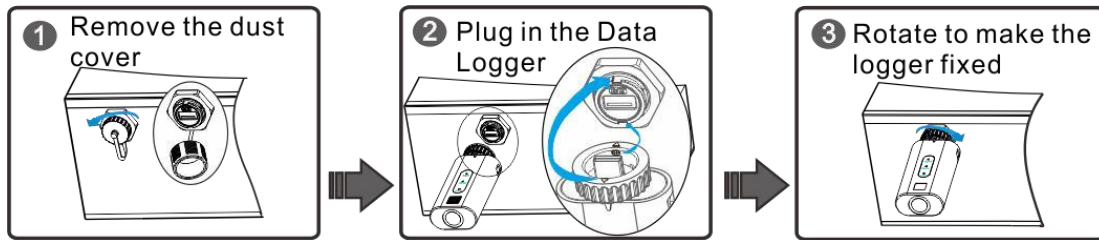


Figure 3-5 Installing the data collector

**Note:**

1. This step is only for scenarios where the data collector is configured. Figure 3-5 shows the installation method.
2. When installing the data collector, face three indicators outward.
3. When installing data collector, do not rotate the data collector. Otherwise, it will cause the terminals on the board to become loose and cause water to enter the inverter.
4. When installing the data collector, tighten the plastic nut clockwise. Otherwise, there is a risk of abnormal communication or water entry.

### 3.5 Installing the Communication Cable



**WARNING**

- Please strictly follow the indication on the labels of the inverter communication ports to connect the communication cable!
- When arranging communication lines, separate the communication lines and power lines to avoid signal interference and affect communication.

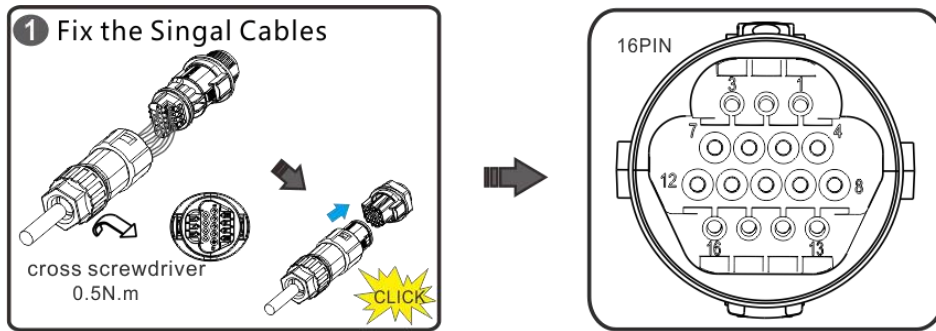
The communication terminal has 16 pins. Table 3-8 and Table 3-9 describe the definition of terminal communication signals.

| Pin No. | Definition | Function   | Pin No. | Definition | Function |
|---------|------------|--|---------|------------|----------|
| 4       | RS485_1A   | RS485_1 differential+, used for data collector cascading | 1       | DRM_GND    | Reserved |
| 8       | RS485_1B   | RS485_1 differential-, used for data collector cascading | 2       | DRM4/8     | Reserved |

|    |                   |  |    |           |               |
|----|-------------------|--|----|-----------|---------------|
| 9  | Matching resistor | RS485_2 matching resistor, 120Ω (short-circuit)                                    | 3  | DRM3/7    | Reserved      |
| 11 | RS485_2A          | RS485_2 differential+IN, used for data collector cascading or anti-backflow meter  | 5  | DRM2/8    | Reserved      |
| 12 | RS485_2A          | RS485_2 differential+OUT, used for data collector cascading or anti-backflow meter | 6  | DRM1/5    | Reserved      |
| 13 | Matching resistor | RS485_2 matching resistor, 120Ω (short-circuit)                                    | 7  | COM/DRM 0 | Reserved      |
| 15 | RS485_2B          | RS485_2 differential-IN, used for data collector cascading or anti-backflow meter  | 10 | PE        | Casing ground |
| 16 | RS485_2B          | RS485_2 differential-OUT, used for data collector cascading or anti-backflow meter | 14 | PE        | Casing ground |

**Table 3-6 Definition of communication signals**

The procedure for connecting the communication cable is as follows:



**Figure 3-6 Connecting the communication cable**

**Note:**

1. Ensure that the protective layer of the communication cable is located inside the connector. Otherwise, the sealing level of the communication terminal is degraded.
2. After fixing the signal cable terminal, tighten the nut at the end of the communication terminal, and tighten the nut of the cable gland.

**3.6 Inspection after Installation**

| No. | Check Item   | Inspection Result (Yes √/No ×) |
|-----|--|--------------------------------|
| 1   | Check whether all switches on the DC side are in the "OFF" position. | <input type="checkbox"/>       |

|   |   |                          |
|---|---|--------------------------|
| 2 | Check whether the inverter is securely installed.   | <input type="checkbox"/> |
| 3 | Check whether the external ground cable is connected correctly, whether the terminal is fastened, whether the grounding is reliable, and whether there is no open circuit or short circuit. | <input type="checkbox"/> |
| 4 | Check whether the AC output cable is connected correctly, whether the terminal is fastened, and whether there is no open circuit or short circuit.  | <input type="checkbox"/> |
| 5 | Check whether the polarity of the DC input cable is correct, whether negative and positive polarities are firmly interconnected, and whether there is no open circuit or short circuit.     | <input type="checkbox"/> |
| 6 | Check whether the communication cable is connected correctly, whether the terminal is fastened, and whether there is no open circuit or short   | <input type="checkbox"/> |
| 7 | Check whether the plastic screw caps at the lock ends of the communication cable lock are tightened.  | <input type="checkbox"/> |
| 8 | Check whether the unused interfaces are equipped with dust plugs.   | <input type="checkbox"/> |
| 9 | Check whether the data collector is properly installed. (Only for products configured with data collectors)   | <input type="checkbox"/> |

# Chapter 4 Inverter Operations

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- *Non-professional personnel are prohibited to open the front panel 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 in Chapter 2 of this manual.
- Ensure that the connection of input and output power cables, signal cables, and ground cables meet the requirements specified in Chapter 3 of this manual.
- Ensure that the circuit breaker of the combiner box connected to the AC side of the inverter is in the open state.
- Check the positive and negative polarities of the DC input cables and ensure that the phase sequence of the AC output cables meets the requirements specified in Chapter 3 of this manual.
- All switches on the DC end are in the "OFF" position.
- Before connecting the equipment to the power grid, measure the voltage and frequency of the grid-connected access point to ensure that the grid-connected specifications of the inverter meet the requirements specified in Chapter 6 of this manual.

After the preceding conditions are satisfied, power on the inverter for the first time in either of the following ways:

Way 1 (turn on the AC power and then DC power):

- (1) Close the circuit breaker connected to the inverter in the AC grid-connected cabinet and observe the blinking state of the green LED indicator.
- (2) Turn the DC switches "DC SWITCH 1", "DC SWITCH 2" and "DC SWITCH 3" to the "ON" position one by one, and keep the auxiliary switch "AUX DC SWITCH" in the "OFF" position.

Way 2 (turn on the DC power and then AC power):



- (1) Turn the "AUX DC SWITCH" to the "ON" position, and wait for 60 seconds. Observe that the LED indicator is on green and then red.
- (2) Then, turn the DC switches "DC SWITCH 1", "DC SWITCH 2" and "DC SWITCH 3" to the "ON" position one by one.
- (3) Close the circuit breaker connected to the inverter in the AC grid-connected cabinet and observe that the green LED indicator is on.
- (4) Turn the "AUX DC SWITCH" to the "OFF" position.
- (5) Establish a connection with the inverter through RS485 communication or other communication methods. If there is no fault or alarm information, the inverter automatically starts up and connects to the grid without human intervention. If there is fault and alarm information about the inverter, address the problem based on the information provided in Chapter 5 or contact Sineng customer service personnel.



### **Danger**

- *If the LED indicator is not on within 60 seconds after connecting "AUX DC SWITCH", should immediately disconnect "AUX DC SWITCH" and check whether the polarity and voltage of the PV panel are normal.*
- *The DC switch will automatically disconnect when the inverter displays "PV reverse connection", "string current backflow" or "abnormal grounding of string" alarms. Check the fault information through the Solar app. After the fault is eliminated, you need to use the metal handle in the accessory to connect the DC switch. After the DC switch is automatically disconnected, the red indicator lights up on the panel. You need to operate according to the fault recovery recommendations. Do not connect the DC switch at will.*
- *When the DC switch is connected for the first time after it is automatically disconnected, the DC switch needs to be manually charged. At this time, a larger torque is required, which is normal.*
- *When maintaining the PV panel, be sure to disconnect the DC switch of the inverter as well as the circuit breaker in the corresponding AC grid-connected cabinet to which the inverter is connected. Otherwise, there is a risk of electric shock!*

---

#### **4.1.2 Power-Off Operation**

Power off the equipment in the following steps:

- (1) Power off the equipment through RS485 or other communication modes.
- (2) Disconnect the circuit breaker in the AC grid-connected cabinet to which the inverter is connected.
- (3) Set the DC switch of the inverter to the "OFF" position.

#### **4.1.3 DC Switch Operation**

You can determine whether the DC switch of the inverter is automatically disconnected by checking the reverse connection, backflow, grounding fault or internal fault of the inverter through the Solar app, or checking whether the red indicator lights up on the inverter panel and the DC switch is in the "OFF" position. Carry out troubleshooting based on the alarm information. If the fault is reverse connection, backflow or grounding fault, after the equipment is completely powered off and the fault is eliminated, reset the DC switch or contact Sineng to

confirm the repair solution. Equipment damage caused by forced reset after the DC switch is automatically disconnected is not covered by the warranty.

The DC switch in the automatic disconnected state cannot be reset by manual rotation. You can reset it by inserting the metal handle in the accessory into the switch knob and turn it clockwise. Two "clicks" sound indicate that the switch is fully connected.

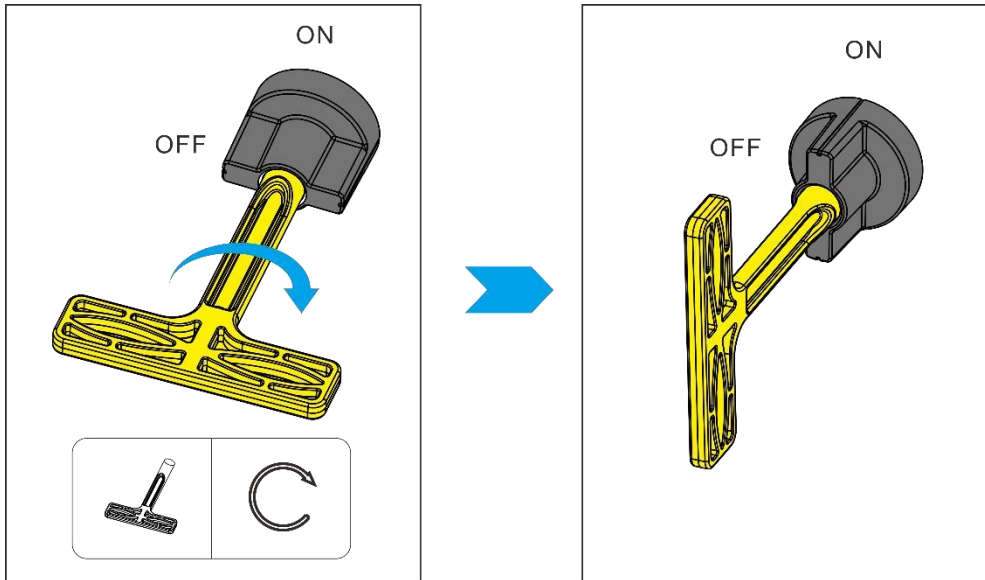


Figure 4-1 Schematic diagram of connected DC switch

## 4.2 Cable Disconnection Operation

### **Danger**

- *After the inverter is disassembled, wait for 30 minutes until the energy storage components in the inverter complete the discharge!*
- *When maintaining the PV panel, be sure to disconnect the DC switch of the inverter as well as the switch in the corresponding AC combiner box. Otherwise, there is a risk of electric shock!*
- *Before removing the DC cable, ensure that the string current is 0. Otherwise, there is a risk of arcing!*

Before disconnecting the cables of the inverter, ensure that the inverter is completely powered off. The procedure for disconnecting the cables as follows:

- (1) Disconnect the circuit breaker connected to the inverter in the AC grid-connected cabinet and make a warning sign to prevent misoperation by other personnel!
- (2) Remove the interconnection terminal on the DC side using a special DC tool, as shown in the following figure.



Figure 4-2 Schematic diagram of removing the DC terminal

- (3) Open the AC wiring compartment, remove the cable clamp, remove the AC power cable, and properly keep the removed power cable.
- (4) Remove the waterproof parts of the communication port, remove the communication cable, and properly handle the removed communication cable.
- (5) Remove the ground cable.

# 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

| 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".                                     |

Table 5-1 Event information description

### 5.2 Alarm Information

When the inverter is running, if it encounters a power grid failure, PV panel failure, or inverter status exception, it makes intelligent identification and displays the failure information on the panel or mobile app. The following table lists the failure alarms, description, and handling suggestions.

| Alarm ID | Alarm Name              | Handling Method  |
|----------|-------------------------|--|
| 20000    | Power grid over-voltage | <ol style="list-style-type: none"> <li>1. Check whether the voltage of the inverter on the AC output side meets the grid requirements.</li> <li>2. Check whether the phase sequence of the AC wire is connected correctly, and whether the N wire and PE wire are connected correctly and firmly.</li> </ol> |
| 20001    | Power grid undervoltage | <ol style="list-style-type: none"> <li>1. Check whether the voltage of the inverter on the AC output side meets the grid requirements.</li> <li>2. Check whether the phase sequence of the AC wire is connected correctly, and whether the N wire and PE wire are connected correctly and firmly.</li> </ol> |
| 20002    | Power grid unbalanced   | <ol style="list-style-type: none"> <li>1. Check whether the voltage of the inverter on the AC output side meets the grid requirements.</li> <li>2. Check whether the phase sequence of the AC wire is connected correctly, and whether the N wire and PE wire are connected correctly and firmly.</li> </ol> |
| 20003    | Instantaneous over-     | <ol style="list-style-type: none"> <li>1. Check whether the voltage of the inverter on the AC output</li> </ol>  |

|       |   |  |
|-------|---|--|
|       | voltage of grid                             | <p>side meets the grid requirements.</p> <ol style="list-style-type: none"> <li>2. Check whether the phase sequence of the AC wire is connected correctly, and whether the N wire and PE wire are connected correctly and firmly.</li> </ol>   |
| 20004 | 10 min over-voltage of grid                 | <ol style="list-style-type: none"> <li>1. Check whether the voltage of the inverter on the AC output side meets the grid requirements.</li> <li>2. Check whether the phase sequence of the AC wire is connected correctly, and whether the N wire and PE wire are connected correctly and firmly.</li> </ol>   |
| 20005 | Power grid overfrequency                    | <ol style="list-style-type: none"> <li>1. Check whether the frequency of the inverter on the AC output side meets the grid requirements.</li> <li>2. Check whether the phase sequence of the AC wire is connected correctly, and whether the N wire and PE wire are connected correctly and firmly.</li> <li>3. Check the frequency of fault occurrence. If it occurs occasionally, it may be caused by instantaneous power grid frequency changes and no handling is required.</li> </ol> |
| 20006 | Power grid underfrequency                   | <ol style="list-style-type: none"> <li>1. Check whether the frequency of the inverter on the AC output side meets the grid requirements.</li> <li>2. Check whether the phase sequence of the AC wire is connected correctly, and whether the N wire and PE wire are connected correctly and firmly.</li> <li>3. Check the frequency of fault occurrence. If it occurs occasionally, it may be caused by instantaneous power grid frequency changes and no handling is required.</li> </ol> |
| 20007 | No mains                                    | <p>Under normal circumstances, the inverter will be reconnected to the power grid after the power grid resumes to normal. If the fault occurs repeatedly, perform the following steps:</p> <ol style="list-style-type: none"> <li>1. Check whether the upper-level AC switch of the inverter is connected.</li> <li>2. Check whether the phase sequence of the AC wire is connected correctly, and whether the N wire and PE wire are connected correctly and firmly.</li> </ol>           |
| 20008 | High voltage ride-through of the power grid | Check whether the voltage of the inverter on the AC output side meets the grid requirements.   |
| 20009 | Low voltage ride-through of the power grid  | Check whether the voltage of the inverter on the AC output side meets the grid requirements.   |
| 20010 | Islanding                                   | Check whether the voltage of the inverter on the AC output side meets the grid requirements.   |
| 20011 | Power grid reversed                         | <ol style="list-style-type: none"> <li>1. Check whether the phase sequence of the AC wire is connected correctly.</li> <li>2. If phase sequence detection is not required, you can enable the phase sequence adaptive function.</li> </ol>   |
| 20012 | Power grid phase loss                       | <ol style="list-style-type: none"> <li>1. Check whether the voltage of the inverter on the AC output side meets the grid requirements.</li> <li>2. Check whether the AC wire is connected correctly, and whether the N wire and PE wire are connected correctly and firmly.</li> </ol>   |
| 20013 | The grounding is abnormal.                  | Measure whether the voltage between the N wire and the ground is higher than 30 V.   |
| 20014 | Output current unbalanced                   | <ol style="list-style-type: none"> <li>1. After the fault is eliminated, the inverter resumes normal operation without manual intervention.</li> </ol>   |

|  |                                     |   |
|--|-------------------------------------|---|
|  |                                     | 2. If the fault occurs repeatedly, which affects the normal power generation, contact Sineng After-sales Service Center.  |
| 20015  | Harmonic current exceeded limit     | 1. After the fault is eliminated, the inverter resumes normal operation without manual intervention.<br>2. If the fault occurs repeatedly, which affects the normal power generation, contact Sineng After-sales Service Center.  |
| 20016  | High DC component of output current | If the fault occurs repeatedly, check whether the phase sequence of the AC wire is connected correctly, and whether the N wire and PE wire are connected correctly and firmly.  |
| 20017, 20032, 20033, 20034, 20035, 20036, 20037, 20038, 20039, 20040, 20041, 20074, 20075, 20078, 20081, 20082, 20083, 20084, 20086, 20087, 20088, 20089, 20090, 20091, 20092, 20093, 20094, 20098, 20099, 20100, 20101, 20102, 20128, 20129, 20130, 20131, 20132, 20133, 20134, 20135, 20136, 20137, 20138, 20139, 20166, 20167, 20168, 20178, 20179, 20180, 20181, 20184, 20194, 20195, 20196, 20197, 20200, 20210, 20211, 20212, 20213, 20216, 20226, 20227, 20228, 20229, 20232, 20242, 20243, 20244, 20245, 20248 | Equipment is abnormal               | 1. Wait for the inverter to resume normal operation.<br>2. Disconnect the AC switch and DC switch, wait for 15 minutes, connect the AC switch and DC switch in sequence, and restart the inverter. If the fault persists, contact Sineng After-sales Service Center.  |
| 20065  | Leakage current error               | Wait for the inverter to resume normal operation. If the fault occurs repeatedly, check as follows:<br>1. Humid environment or poor lighting of the PV panel may cause this fault. Generally, the inverter will be reconnected to the power grid after the environment improves.<br>2. If the environment is normal, check whether the insulation of DC and AC cables is normal.<br>3. If the fault is not caused by the above reasons and persists, contact Sineng After-sales Service Center. |
| 20066  | Insulation resistance error         | Wait for the inverter to resume normal operation. If the fault occurs repeatedly, check as follows:   |

|       |   |  |
|-------|---|--|
|       |   | <ol style="list-style-type: none"> <li>1. Check the ground impedance of the string and DC cable. If there is a short circuit or insulation layer damage, take rectification measures.</li> <li>2. If the cable is normal and the fault occurs in a cloudy and rainy day (or dewy morning), check again after the weather improves.</li> <li>3. If the fault is not caused by the above reasons and persists, contact Sineng After-sales Service Center.</li> </ol> |
| 20067 | PV voltage-to-ground exception          | <p>Wait for the inverter to resume normal operation. If the fault occurs repeatedly, check as follows:</p> <ol style="list-style-type: none"> <li>1. Check the ground impedance of the string and DC cable. If there is a short circuit or insulation layer damage, take rectification measures.</li> <li>2. If the fault is not caused by the above reasons and persists, contact Sineng After-sales Service Center.</li> </ol>                                   |
| 20068 | Mismatch software and hardware versions | <ol style="list-style-type: none"> <li>1. Wait for the inverter to resume normal operation.</li> <li>2. Disconnect the AC switch and DC switch, wait for 15 minutes, connect the AC switch and DC switch in sequence, and restart the inverter. If the fault persists, contact Sineng After-sales Service Center.</li> </ol>   |
| 20069 | Software upgrade                        | Upgrade the inverter software. Contact Sineng After-sales Service Center.  |
| 20070 | Communication exception                 | <ol style="list-style-type: none"> <li>1. Wait for the inverter to resume.</li> <li>2. If the fault occurs repeatedly, contact Sineng After-sales Service Center.</li> </ol>   |
| 20071 | Communication exception                 | <ol style="list-style-type: none"> <li>1. Wait for the inverter to resume.</li> <li>2. If the fault occurs repeatedly, contact Sineng After-sales Service Center.</li> </ol>   |
| 20072 | Communication exception                 | Turn off the switches on the AC output side and DC input side. Connect the switches on the AC output side and DC input side in 15 minutes. If the fault persists, contact Sineng After-sales Service Center.   |
| 20073 | Communication exception                 | Turn off the switches on the AC output side and DC input side. Connect the switches on the AC output side and DC input side in 15 minutes. If the fault persists, contact Sineng After-sales Service Center.   |
| 20076 | Relay fault                             | <ol style="list-style-type: none"> <li>1. Restart the inverter and check whether the inverter can work normally.</li> <li>2. Check whether the N wire and ground wire of the inverter are well connected.<br/>If the fault occurs repeatedly, contact Sineng After-sales Service Center.</li> </ol>  |
| 20079 | DC surge protector failure              | Turn off the switches on the AC output side and DC input side. Connect the switches on the AC output side and DC input side in 15 minutes. If the fault persists, contact Sineng After-sales Service Center.   |
| 20080 | AC surge protector failure              | Turn off the switches on the AC output side and DC input side. Connect the switches on the AC output side and DC input side in 15 minutes. If the fault persists, contact Sineng After-sales Service Center.   |
| 20085 | Relay fault                             | <ol style="list-style-type: none"> <li>1. Wait for the inverter to resume normal operation.</li> <li>2. Disconnect the AC switch and DC switch, wait for 15 minutes, connect the AC switch and DC switch in sequence, and restart the inverter. If the fault persists, contact Sineng After-sales Service Center.</li> </ol>   |

|   |                                    |   |
|---|------------------------------------|---|
| 20096,<br>20097   | High temperature                   | <ol style="list-style-type: none"> <li>1. Check whether the inverter installation environment and space meet the heat dissipation requirements.</li> <li>2. Check whether the fan is blocked by foreign objects and ensure that the fan can work normally.</li> <li>3. Check whether the ambient temperature of the inverter is too high.</li> </ol>  |
| 20110   | Seriously overheated               | <ol style="list-style-type: none"> <li>1. Check whether the inverter installation environment and space meet the heat dissipation requirements.</li> <li>2. Check whether the fan is blocked by foreign objects and ensure that the fan can work normally.</li> <li>3. Check whether the ambient temperature of the inverter is too high.</li> <li>4. After manually eliminating the fault, restart the inverter. If the fault occurs repeatedly, contact Sineng After-sales Service Center.</li> </ol> |
| 20111   | Low temperature                    | Wait for the ambient temperature to return to the specified range of the specifications, and the inverter will automatically turn on.   |
| 20112,<br>20113,<br>20114   | Internal fan fault                 | If the fault occurs repeatedly, contact Sineng After-sales Service Center.  |
| 20115,<br>20116,<br>20117,<br>20118,<br>20119<br>and<br>20120     | External fan fault                 | <ol style="list-style-type: none"> <li>1. Restart the inverter and check whether the inverter can work normally.</li> <li>2. Check whether the external fan of the inverter is blocked by foreign objects and check whether the fan is working normally.</li> <li>3. If the fault occurs repeatedly, contact Sineng After-sales Service Center.</li> </ol>  |
| 20160,<br>20161,<br>20162,<br>20163,<br>20164,<br>20165,<br>20169 | Bus over-voltage                   | <ol style="list-style-type: none"> <li>1. Restart the inverter and check whether the inverter can work normally.</li> <li>2. Check whether the PV string voltage meets the maximum input voltage requirement of the inverter.</li> </ol>  |
| 20176,<br>20192,<br>20208,<br>20224,<br>20240                     | MPPTx input voltage                | Check the series configuration of PV panels to ensure that the open-circuit voltage of each string is lower than the maximum operating voltage of the inverter. After the configuration is correct, the inverter will automatically turn on.  |
| 20177,<br>20193,<br>20209,<br>20225,<br>20241                     | MPPTx input current                | Check the PV panel configuration to ensure that the sum of the string currents corresponding to each MPPT is lower than the nominal current. After the configuration is correct, the inverter will automatically turn on.   |
| 20182,<br>20198,<br>20214,<br>20230,<br>20246                     | MPPTx reverse current              | <ol style="list-style-type: none"> <li>1. Check whether the string corresponding to the alarm is connected reversely. If so, it is recommended to turn off the DC switch and adjust the string polarity when the solar radiation decreases and the string current drops below 0.5 A.</li> <li>2. If the fault is not caused by the above reasons and persists, contact Sineng After-sales Service Center.</li> </ol>  |
| 20183,<br>20199,<br>20215,<br>20231,                              | Abnormal grounding of MPPTx string | <p>Wait for the inverter to resume normal operation. If the fault occurs repeatedly, check as follows:</p> <ol style="list-style-type: none"> <li>1. Check the ground impedance of the string and DC cable. If there is a short circuit or insulation layer damage, take</li> </ol>   |



|   |                      |   |
|---|----------------------|---|
| 20247   |                      | <p>rectification measures.</p> <ol style="list-style-type: none"> <li>If the cable is normal and the fault occurs in a cloudy and rainy day (or dewy morning), check again after the weather improves.</li> <li>If the fault is not caused by the above reasons and persists, contact Sineng After-sales Service Center.</li> </ol>   |
| 20272,<br>20288,<br>20304,<br>20320,<br>20336,<br>20352,<br>20368,<br>20384,<br>20400,<br>20416,<br>20432,<br>20448,<br>20464,<br>20480,<br>20496,<br>20512,<br>20528,<br>20544,<br>20560,<br>20576 | Abnormal PVn         | <ol style="list-style-type: none"> <li>Check whether the open-circuit voltage of the string is abnormal.</li> <li>Check whether the string is blocked.</li> </ol>   |
| 20273,<br>20289,<br>20305,<br>20321,<br>20337,<br>20353,<br>20369,<br>20385,<br>20401,<br>20417,<br>20433,<br>20449,<br>20465,<br>20481,<br>20497,<br>20513,<br>20529,<br>20545,<br>20561,<br>20577 | PVn over-current     | <p>Check the PV panel configuration to ensure that the current of each string is lower than the nominal current. After the configuration is correct, inverter will automatically turn on.</p>   |
| 20274,<br>20290,<br>20306,<br>20332,<br>20338,<br>20354,<br>20370,<br>20386,<br>20402,  | PVn current backflow | <ol style="list-style-type: none"> <li>Check whether the number of corresponding strings connected in series on the inverter is less than other strings. If so, turn off the DC switch when the string current drops below 0.5 A, and adjust the number of strings.</li> <li>Check whether the open-circuit voltage of the string is abnormal.</li> <li>Check whether the string is blocked.</li> </ol> |

|   |                               |  |
|---|-------------------------------|--|
| <p>20418,<br/>20434,<br/>20450,<br/>20466,<br/>20482,<br/>20498,<br/>20154,<br/>20530,<br/>20546,<br/>20562,<br/>20578</p>  |                               |  |
| <p>20275,<br/>20291,<br/>20307,<br/>20333,<br/>20339,<br/>20355,<br/>20371,<br/>20387,<br/>20403,<br/>20419,<br/>20435,<br/>20451,<br/>20467,<br/>20483,<br/>20499,<br/>20515,<br/>20531,<br/>20547,<br/>20563,<br/>20579</p> | <p>PVn reverse connection</p> | <ol style="list-style-type: none"> <li>1. Check whether the string corresponding to the alarm is connected reversely. If so, it is recommended to turn off the DC switch and adjust the string polarity when the solar radiation decreases and the string current drops below 0.5 A.</li> <li>2. If the fault is not caused by the above reasons and persists, contact Sineng After-sales Service Center.</li> </ol> |

Remarks:  $x=1, 2, 3, 4$ ;  $n=1, 2, 3, \dots, 20$

# Chapter 6 Product Specifications

## 6.1 Application Standards

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

NB/T 32004-2018 Technical specification of PV grid-connected inverter

IEC 61000-6-4/IEC 61000-6-2 EMC immunity requirements for inverters

IEC62109-1 General requirements for photovoltaic inverter safety regulations

IEC62109-2 Special requirements for photovoltaic inverter safety regulations

GB/T19939-2005 Inverter performance determination method and test requirements

## 6.2 Conventional parameters

| Item                  | Specifications         |         |         |        |           |
|-----------------------|------------------------|---------|---------|--------|-----------|
| Whole machine model   | SN100PT-X              | SN110PT | SN125PT | SN75PT | SN75PT-LV |
| Dimensions (mm)       | 1008*700*362           |         |         |        |           |
| Net weight (kg)       | 75                     |         |         |        |           |
| Operating temperature | -25°C to 60°C          |         |         |        |           |
| Storage temperature   | -40°C to 70°C          |         |         |        |           |
| Relative humidity     | 0-100%, non-condensing |         |         |        |           |
| Altitude              | 4000m                  |         |         |        |           |
| Pollution level       | Level III              |         |         |        |           |

Table 6-1 Conventional parameters

## 6.3 Electrical Characteristics (DC Input)

| Item   | Specifications |         |         |        |           |
|--|----------------|---------|---------|--------|-----------|
| Whole machine model                            | SN100PT-X      | SN110PT | SN125PT | SN75PT | SN75PT-LV |
| Maximum access component power (kWp)           | 150            | 165     | 187.5   | 112.5  | 112.5     |
| Maximum open-circuit voltage of PV array (Vdc) | 1100           |         |         |        |           |
| Maximum single-channel input current (Adc)     | 64/64/64/64/64 |         |         |        |           |
| Startup voltage of inverter (Vdc)              | 250            |         |         |        |           |

|   |          |         |
|---|----------|---------|
| Over-voltage level at the DC input of the equipment | II       |         |
| MPPT voltage range (Vdc)                            | 200-1000 | 200-800 |
| Number of DC input strings                          | 4/4/4/4  |         |
| Number of MPPT tributaries                          | 5        |         |
| Maximum short-circuit current (A)                   | 100      |         |
| Table 6-2 Electrical Characteristics (DC Input)     |          |         |

#### 6.4 Electrical Characteristics (AC Output)

| Item  | Specifications  |         |         |        |  |
|---|---|---------|---------|--------|--|
| Whole machine model                                 | SN100PT-X   | SN110PT | SN125PT | SN75PT | SN75PT-LV                              |
| Grid system   | 3/N/PE  |         |         |        |  |
| Rated output power (kW)                             | 100   | 110     | 125     | 75     | 75                                     |
| Maximum output apparent power (kVA)                 | 110   | 121     | 137.5   | 75     | 75                                     |
| Rated output voltage (Vac)                          | 230/400   |         |         |        | 127/220                                |
| Output working voltage range (Vac)                  | 320–480 (phase voltage at 184–276)  |         |         |        | 172–268<br>(phase voltage at 99.4–155) |
| Rated output current (Aac)                          | 144.9   | 159.4   | 181.1   | 113.6  | 196.9                                  |
| Maximum output current (Aac)                        | 159.4   | 175.4   | 199.3   | 113.6  | 196.9                                  |
| Rated frequency (Hz)                                | 50/60   |         |         |        |  |
| Over-voltage level at the AC input of the equipment | III   |         |         |        |  |
| Total harmonic distortion of output voltage         | Total distortion rate <3% (grid THD <sub>v</sub> ≤2%, load≥50%)   |         |         |        |  |
| Output power factor                                 | When the load current is higher than 50%: PF>0.99; when the load current is higher than 30% and lower than 50%: PF>0.98; when the load current is lower than 30%, the PF value is not required. |         |         |        |  |
| Output DC component                                 | <0.5%*I <sub>n</sub> (rated current)  |         |         |        |  |
| Table 6-3 Electrical Characteristics (AC output)    |   |         |         |        |  |

#### 6.5 Electrical Characteristics (Protection Characteristics)

| Item                | Specifications |         |         |        |           |
|---------------------|----------------|---------|---------|--------|-----------|
| Whole machine model | SN100PT-X      | SN110PT | SN125PT | SN75PT | SN75PT-LV |

|   |                       |
|---|-----------------------|
| DC reverse connection protection                                  | Provided              |
| Leakage current protection  | Provided              |
| Anti-islanding protection   | Provided              |
| DC switch   | Provided              |
| Detecting ISO   | Provided              |
| String detection  | Provided              |
| Lightning protection  | AC/DC surge protector |
| PID protection  | Provided              |
| Table 6-4 Electrical Characteristics (Protection Characteristics) |                       |

## 6.6 Electrical Characteristics (System Characteristics)

| Item  | Specifications     |         |         |        |           |
|---|--------------------|---------|---------|--------|-----------|
|   | SN100PT-X          | SN110PT | SN125PT | SN75PT | SN75PT-LV |
| Whole machine model   | SN100PT-X          | SN110PT | SN125PT | SN75PT | SN75PT-LV |
| Self-power consumption at night (W)                           | < 2                |         |         |        |           |
| Display and operation UI                                      | LED/Bluetooth      |         |         |        |           |
| Insulation resistance (MΩ)                                    | >1 (1000 Vdc)      |         |         |        |           |
| IP rating   | IP66               |         |         |        |           |
| Cable entry method  | Bottom entry       |         |         |        |           |
| Cooling method  | Forced air cooling |         |         |        |           |
| Table 6-5 Electrical Characteristics (System Characteristics) |                    |         |         |        |           |

# Chapter 7 Product Maintenance

This chapter describes inverter maintenance, including inverter maintenance cycle and inverter maintenance methods. Please read the instructions in this chapter carefully before performing inverter maintenance.



- Only professional personnel are allowed to maintain the inverter. Others cannot maintain it without authorization!
- 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.
- After the inverter is completely powered off, there are still dangerous voltage hazards in the inverter! Wait for 30 minutes before operating the inverter!
- When the inverter is working, it is prohibited to plug or unplug the DC connector!
- 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!

## 7.1 Periodic Maintenance

Periodic inspection and maintenance of the inverter can help you understand the inverter state in a timely manner, thereby improving the reliability of the inverter. Table 7-1 shows the periodic inspection checklist.

| Check Item             | Method  | Inspection Cycle  |
|------------------------|---|---|
| System cleaning        | Check that there are no foreign objects on the radiator and monitor the overall health state of the inverter.   | Once a year or when anomaly is detected   |
| Fan                    | Check whether there is abnormal noise when the fan is running.<br>Check whether the fan blades have cracks.<br>Check whether the fan at the air inlet is blocked by foreign objects.<br>Check whether derating protection is enabled for the fan. | Once every six months   |
| System operating state | Check whether the appearance of the inverter is damaged or deformed.  | Once a year   |
| Cable Connection       | Check whether the AC and DC cables are reliably connected and are intact.<br>Check whether the ground cable is reliably connected.  | Half a year after the first commissioning, and once every half a year or once every year thereafter |
| Tightness              | Check that all terminals and connections are well   | Once a year   |

|  |         |  |
|--|---------|--|
|  | sealed. |  |
| Table 7-1 Periodic inspection check list |         |  |

## After-sales Service Information

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Sineng Electric Co., Ltd. provides a full range of technical support services for customers. Customers can contact the nearest Sineng local office or customer service center, or directly contact the HQ.

Sineng Electric Co., Ltd.

Address: No.6, Hehui Road, Huishan Economic Development Zone, Wuxi, China

Postal code: 214174

Customer service hotline: 0510-88888118

Fax: 0510-85161899



# Warranty Card

Thank you for choosing Sineng product.

Product model: \_\_\_\_\_

Delivery No.: \_\_\_\_\_

Please refer to the instructions in the *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 repair or replacement services for failures caused by non-human reasons and force majeure (including but not limited to earthquakes, mudslides, floods, typhoons, and wars).

User name: \_\_\_\_\_

User address: \_\_\_\_\_

Contact person: \_\_\_\_\_

Phone number of user: \_\_\_\_\_

Email address: \_\_\_\_\_

Sineng Electric Co., Ltd.

Address: No.6, Hehui Road, Huishan Economic Development Zone, Wuxi, China

Postal code: 214174

Customer service hotline: 0510-88888118

Fax: 0510-85161899

Website: [www.si-neng.com](http://www.si-neng.com)

**SN75PT-LV/SN75PT/SN100PT-X/SN110PT/SN125PT****Packing List**

| No. | Part Name                 | Unit | PCS | Check |
|-----|---------------------------|------|-----|-------|
| 1   | Inverter                  | PCS  | 1   |       |
| 2   | Quick Installation Manual | PCS  | 1   |       |
| 3   | Mounting Bracket          | PCS  | 1   |       |
| 4   | Male PV Connector         | PCS  | 20  |       |
| 5   | Female PV Connector       | PCS  | 20  |       |
| 6   | Male Metal Terminal       | PCS  | 20  |       |
| 7   | Female Metal Terminal     | PCS  | 20  |       |
| 8   | Screw Accessory           | PCS  | 1   |       |
| 9   | Communication Connector   | PCS  | 1   |       |
| 10  | Cable sealing strips      | PCS  | 1   |       |
| 11  | Metal handle              | PCS  | 1   |       |
| 12  | Factory Inspection Report | PCS  | 1   |       |