User Manual

PV Grid-tied Inverter

Applicable to:

SCA100K-T-EU

SCA120K-T-EU

SCA125K-T-EU

Shanghai Chint Power Systems Co., Ltd.

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0 Preface

Before starting installation and operation

This manual contains important information about product installation and safe operation, please read it carefully before use.

Thank you for choosing a photovoltaic Grid-tied inverter for Chint Power Systems (hereinafter referred to as "photovoltaic inverter" or "inverter" in this manual). Relying on innovative design and perfect quality control, Chint power system Grid-tied photovoltaic inverters have high reliable quality and are widely used in high-standard photovoltaic Grid-tied systems.

If you encounter any problems during installation or operation, please refer to this manual first. The instructions in it can solve most of the problems for you.

If the problem persists, you can contact your local dealer or representative again.

Please keep this manual in a safe place for easy reference at any time.

1 IMPORTANT SAFETY INSTRUCTIONS

（SAVE THESE INSTRUCTIONS）

PLEASE READ THIS USER MANUAL CAREFULLY BEFORE THE INSTALLATION AND OPERATION OF THIS PV INVERTER. CPS RESERVES THE RIGHT TO REFUSE WARRANTY CLAIMS FOR EQUIPMENT DAMAGE IF USERS FAIL TO INSTALL THE EQUIPMENT ACCORDING TO THE INSTRUCTIONS IN THIS MANUAL.

FAILURE TO FOLLOW THESE INSTRUCTIONS AND OTHER RELEVANT SAFETY PROCEDURES MAY RESULT IN VOIDING OF THE WARRANTY AND/OR DAMAGE TO THE INVERTER OR OTHER PROPERTY!

1.1 Warnings and Symbols in this Document

	**DANGER!** DANGER indicates a situation that has a high degree of potential hazard which may cause death or serious injury.
	**WARNING!** Indicates that there is a moderate potential hazard, which may cause death or serious injury if not avoided.
	**CAUTION!** Indicates that there is a low-level potential hazard, which may cause moderate or light injury to personnel.
	**NOTICE!** Indicates that there is a potential risk, which may cause the equipment to fail to operate normally or cause property damage.
	**IMPORTANT!** Indicates additional information in the manual, emphasizes and supplements the content, and may also provide tips or tricks for optimizing the use of the product, which can help you solve a problem or save your time.

1.2 Markings on the Product

	**Risk of Electric Shock:** This mark indicates that there is high voltage inside the product and you must follow the instructions in the user manual when operating
	**High Temperature DANGER:** This logo indicates that this product complies with international safety standards, but it will generate heat during operation, so please do not touch the heat sink and the metal surface of the inverter during the operation of the inverter.
	**Dangerous Energy:** Pay attention to the danger of electric shock, please release the internal energy of the device according to the stipulated time.
	**Protection Grounding:** This mark indicates that this is a Protection ground (PE) terminal, which needs to be firmly grounded to ensure the safety of operators.
	**RoHS Symbol:** In accordance with 2011/65/EU regulations, the inverter imposes restrictions on the use of specific hazardous substances in electrical and electronic equipment.
	Certification mark: This inverter has passed CE Certification.

1.3 Safety Precautions of Operating the PV Inverter

	**DANGER!** Before opening the inverter housing for maintenance, you must first disconnect the grid-side AC power supply and PV-side DC power supply, and ensure that the high-voltage energy inside the equipment has been completely released! Generally, you must cut off all connections to the inverter for at least 5 minutes before you can maintain and operate the equipment.
	**WARNING!** All operations and connections please professional engineering and technical personnel! To prevent the risk of electric shock during equipment maintenance or installation, please ensure that all DC and AC power has been separated from the equipment, and ensure that the equipment is reliably grounded.
	**CAUTION!** Please check the wall bracket again before hanging up to make sure that the wall bracket is firmly on the supporting surface. For continued protection against risk of fire, replace only with same type and ratings of fuse. Disconnect supply before changing fuse.
	**NOTICE!** The inverter is specially designed to integrate the generated AC power into the public grid. Do not directly connect the AC output terminal of the device to private AC power equipment. The inverter does not support battery panel grounding. If grounding is necessary, a transformer must be added to the AC side.
	**NOTICE!** After unpacking the inverter, keep all its interfaces sealed always, before and after connecting wires.

	**NOTICE!** Please do not install the inverter in a place exposed to direct sunlight, so as not to reduce the conversion efficiency due to high temperature, in order to ensure the long-term service life of the inverter.
	**IMPORTANT!** Before choosing a power grid code, please contact your local power supply company. If the inverter is set to work under the wrong grid regulations, the power supply company may cancel the operation permit of the equipment. Please ensure that the entire system complies with national standards and applicable safety regulations before running the inverter.

2 General Introduction

2.1 Photovoltaic Grid-tied System

The inverters are suitable for various commercial and large-scale photovoltaic Grid-tied systems. Photovoltaic systems generally consist of solar cell components (PV Modules), Grid-tied inverters and AC power distribution equipment (Figure 2-1). The solar energy is converted into DC power by PV Modules, then the DC power is converted into AC power with the same frequency and phase as the grid through the Grid-tied inverter. The whole or part of the power is supplied to the local load and the remaining power will be fed to the grid.

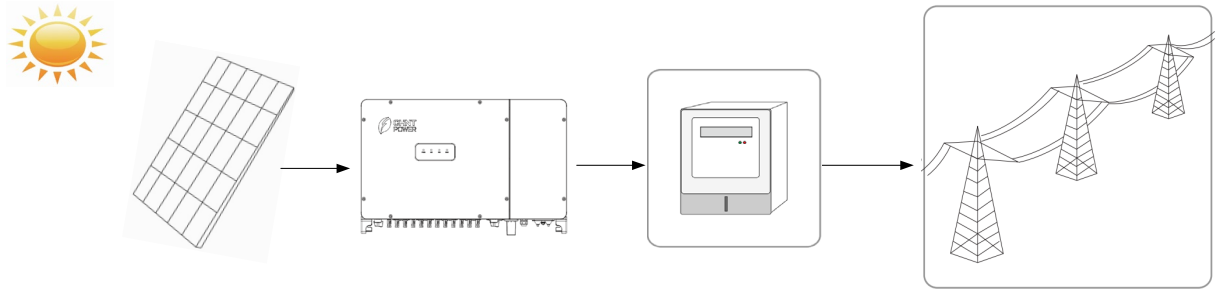


Fig. 2-1 Grid-tied PV Power Generation System

Item	Name	Description
A	PV Modules	Monocrystalline, polycrystalline silicon components, thin film batteries that do not require grounding
B	PV Inverter	SCA 100K-T-EU SCA 120K-T-EU SCA 125K-T-EU
C	Metering Device	Standard metering device for inverter power generation
D	Public Grid	TT, TN, IT System

Table 2-1 Components of Grid-tied PV system

2.2 Product Dimensions and Main Components

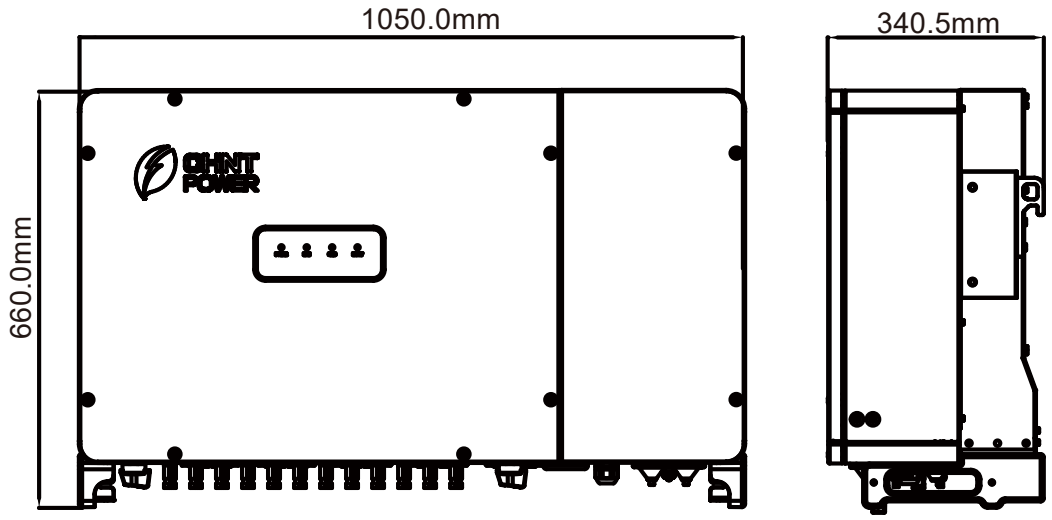


Fig. 2-2 Inverter Dimensions

12 MPPT inverter with 24 DC inputs: SCA 100K-T-EU, SCA 120K-T-EU, SCA 125K-T-EU

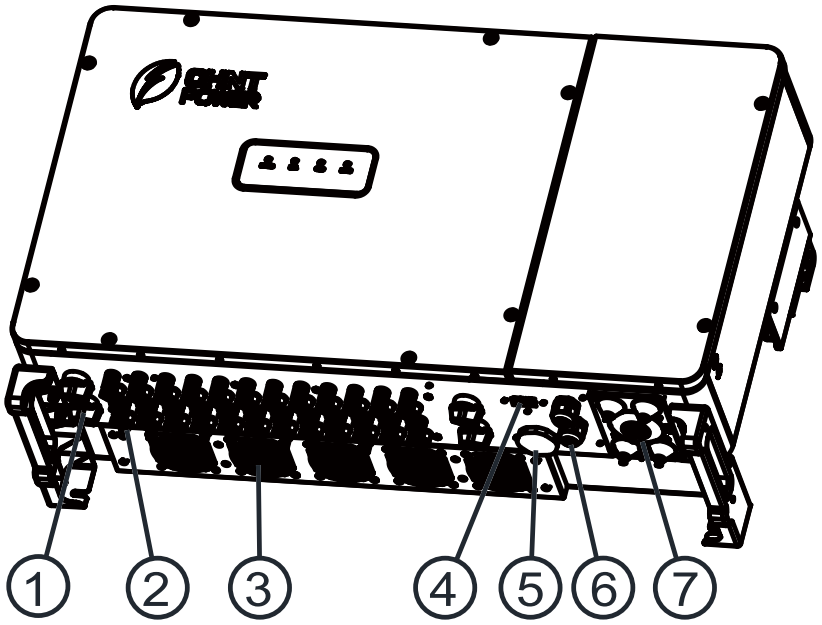


Fig. 2-3 Main Components of Inverter

No.	Name	Function
1	DC isolation breaker	Turn on/off DC power supply
2	PV strings connectors	Insert male/female connectors
3	Fans	Cooling the inverter

4	Communication interface	Insert communication module
5	Vent valve	Balance pressure difference
6	RS485 communication interface	RS485 communication line outlet port
7	AC sealing plate	AC cable outlet port

Table 2-2 Product Components

2.3 LED Display Panel

Fig. 2-4 LED Display Panel

The specific meaning of each indicator status is shown in table 2-3.

LED Icon	Name	Status	Meaning
POWER (Green)	Working Power Indicator	On	Has working power
		Off	No working power
RUN (Green)	Grid Operation Indicator	On	In the state of grid-connected power generation
		Flash	Derating operation status (on for 0.5s, off for 1.6s)
		Off	In other running state or no working power
GRID (Green)	Grid Status Indicator	On	Grid is normal
		Flash	The power grid is abnormal (on for 0.5s, off for 1.6s)
		Off	No power supply

FAULT (Red)	Fault Status Indicator	On	Permanent failure
		Quick Flash	General failure (on for 0.5s, off for 0.5s)
		Slow Flash	Alarm failure (on for 0.5s, off for 2s)
		Off	No fault or no working power supply
4 LEDs	Upgrade status	Flash	Upgrade firmware (on for 0.05s, off for 0.3s)

Table 2-3 LED Indicators and their indications

2.4 Product Protection Functions

- Input polarity reverse connection protection
- Short circuit protection
- Input-to-ground insulation impedance monitoring
- Output voltage and frequency monitoring
- Ground leakage current monitoring
- DC component monitoring of output current
- Anti-islanding protection
- Input and output overvoltage protection
- Input overcurrent protection
- Ambient temperature monitoring
- Module temperature monitoring
- ARC fault protection equipment classification: F-I-AFPE-1-8-3
    - Full coverage with integrated Arc Fault Protection Equipment (AFPE), supporting 3 monitored channels, each with 8 input ports and 1 monitored string per port.

2.5 Product Circuit Structure Design

The figure below is the schematic diagram of the main circuit of the CPS inverter. PV input goes through the lightning protection circuit and DC EMI filter circuit and then through the previous BOOST circuit to achieve maximum power tracking and boost functions. The inverter uses three-level technology to convert the DC voltage into a three-phase AC voltage, filters out high frequency components through an output filter, and then outputs high-quality AC power through a two-stage relay and an EMI filter. In addition, a string detection function (optional) is added.

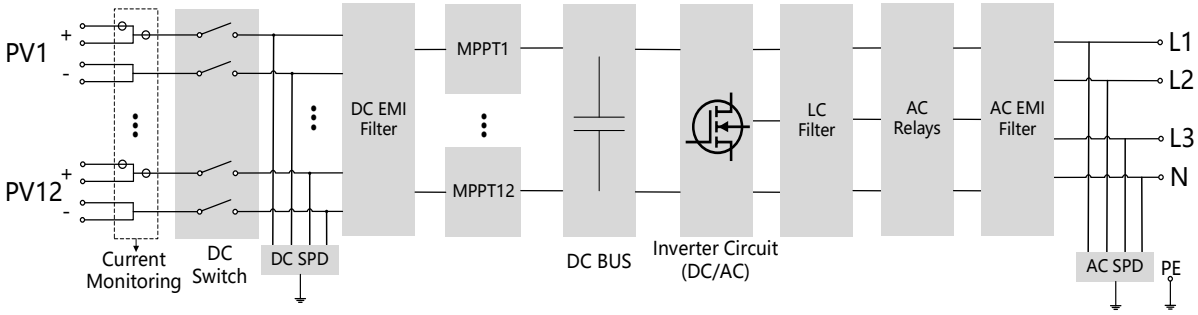


Fig. 2-5 Main Circuit Diagram

3 Mechanical Installation

3.1 Storage before Unpacking

If the inverter is not immediately installed upon arrival, the following requirements should be met when storing the inverter:

- Do not remove the outer packing of the inverter.
- Store it in a clean, dry place to prevent dust and moisture intrusion.
- During the storage period, regular inspections are necessary (it is recommended to check at least once every three months). If packing damage is detected, replace the packing materials promptly.
- Keep the packing away from corrosive substances to avoid damaging the inverter casing.
- If the inverter has been stored for more than 1 year, perform a comprehensive inspection and test by professional personnel before putting it into operation.
- Do not stack multiple inverters beyond the "Stacking Limit" indicated on the outer packing.

Note: Any damage to the inverter caused by improper storage is not covered by the warranty.

3.2 Unpacking for Inspection

The following content is the installation instructions of the inverter, please read carefully and follow the steps to install this product. Before installation, please check whether the following items are included in the box.

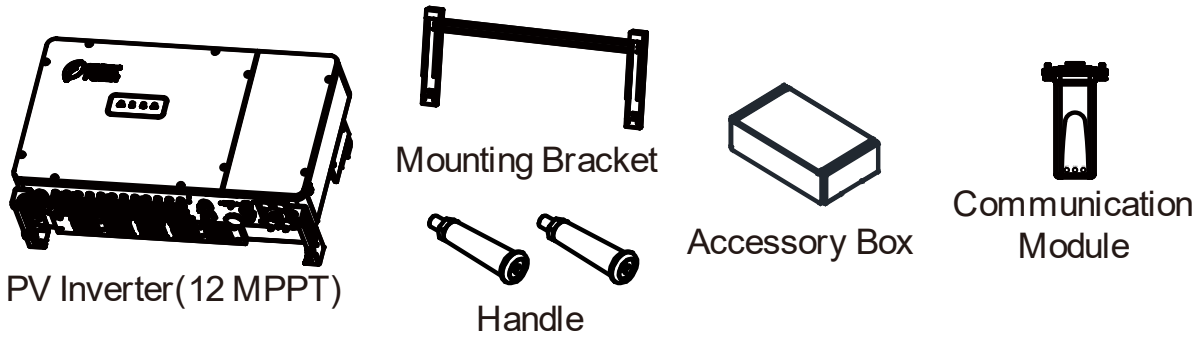


Fig. 3- 1 Scope of Supply

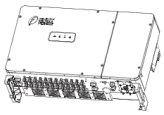
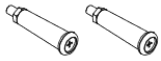
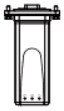
No.	Image	Description	QTY	Function
1		Inverter	1	/
2		Mounting bracket	1	For mounting inverter
3		Handle	2	For mounting inverter
4		Communication Module	1	For communication and monitoring
5		Document	1	Quick guide
6		M10 Nut	4	For mounting bracket
7		Screw M10x50	4	
8		Screw M6x16	4	For fixing inverter and Grounding
9		6-Pin Terminal	1	Connect RS485 cable
10		Pan Head screw M6x18 with plastic flat washer	1	Spare for front cover
11		Unlock tool for DC connector	1	Unlock DC connector
12		DC input male connector & female connector	48	24+ & 24-

Table 3-1 Packing list

3.3 Installation Precautions

- Salt spray settlement is related to the characteristics of seawater, sea wind, precipitation, air humidity, topography, and forest cover in adjacent seas. Therefore, the inverter cannot be installed outdoors in salt-damaged areas (mainly refer to coastal areas within 500m of the coast).
- Inverter generates noise during operation. Do not install it in a place that affects daily life.

- Check that the product environmental specifications (protection degree, operating temperature range, humidity, and altitude, etc.) meet the requirements of the specific project location.
- Make sure that the power grid voltage is within the normal range of the Grid Code chosen.
- Ensure that you have been authorized by the local electricity supply authority to connect to the grid.
- Installation personnel must be qualified electricians or those who have received professional training.
- Wear and use proper PPE (personal protective equipment) during installation.
- Enough space must be provided to allow the inverter cooling system to operate normally.
- Install the inverter away from flammable and explosive substances.
- Make sure the installation condition doesn't exceed the temperature limits specified for the inverter, to prevent undesirable power loss.
- Do not install the inverter near an electromagnetic source which can compromise the normal operation of electronic equipment
- The PV Array is not grounded.
- The bottom power and communication interfaces of the inverter should not bear any weight, and should not be directly in contact with the ground.
- Static electricity may damage the electronic components of the inverter, so anti-static measures should be taken during the replacement or installation process.
- Each inverter must be equipped with an AC circuit breaker and should not be shared among multiple inverters.
- Under no circumstances should the device structure, installation sequence, or any other aspect be modified without the permission of the manufacturer.

For detailed specification ranges and limits, see Chapter 9 Technical Data.

3.4 Installation Requirements

3.4.1 Installation Methods

Before installing the inverter, please confirm whether the supporting structure can bear the weight of the inverter, and install the inverter according to the following instructions:

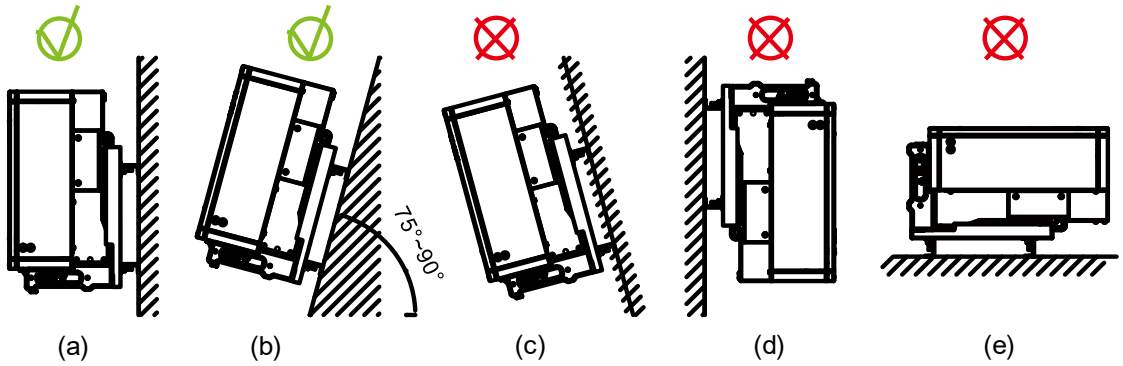


Fig. 3- 2 Inverter rack mounting methods

No.	Explanation
a	If the installation location allows, install the inverter vertically;
b	If the vertical installation cannot be guaranteed, it may be tilted backward 0 to15 degrees from vertical direction;
c	The inverter is not allowed to be installed forward;
d	The inverter is not allowed to be installed backward;
e	The inverter is not allowed to be installed horizontally;

Table 3-2 Mounting Methods

3.4.2 Installation Environment Requirements

It is recommended to install inverter under a shelter to avoid direct sunlight, rain and snow accumulation, to prevent from triggering power derating, increasing inverter failures or reducing its service life.

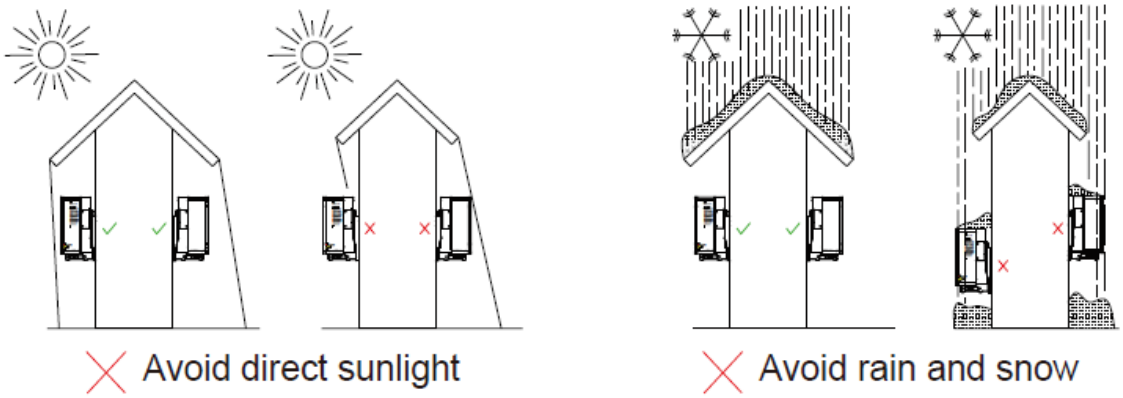


Fig. 3- 3 Installation environment requirements

NOTICE!

Direct sunlight will increase the internal temperature of the inverter, which may cause power derating, increase the failure rate, and reduce the lifespan. You can contact CPS to purchase a dedicated sunshade.

3.4.3 Installation Clearances

During planning and installing the inverter, appropriate clearances shown as below shall be reserved to ensure sufficient ventilation and heat dissipation. If the inverters are installed in relatively enclosed space, this clearance shall be increased properly to maintain well ventilated condition. In addition, no objects shall be put in-between two inverters to prevent any negative influences on heat dissipation.

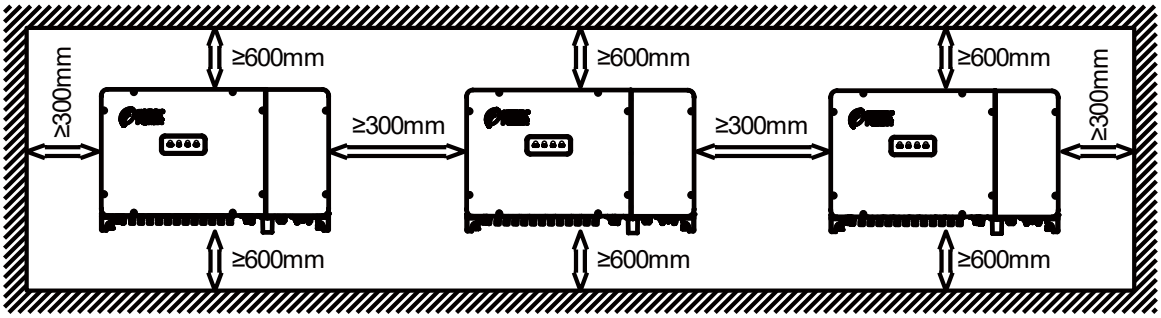


Fig. 3- 4 Installation space requirements for inverter racks

NOTICE!

The distance between two parallel inverters must be ≥300 mm, and good ventilation should be ensured. If the surroundings are relatively closed, please increase this distance appropriately.

3.4.4 Installation Scenarios

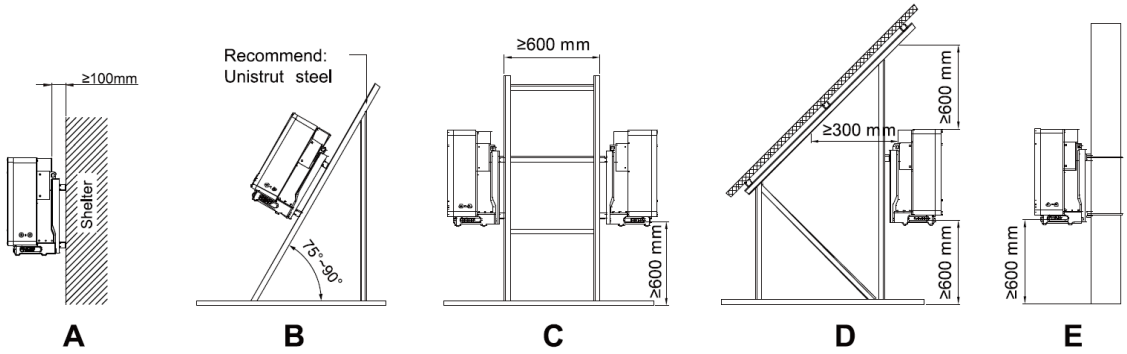


Fig. 3- 5 Installation scenarios

A. Keep a distance between the inverter and the shade on its back to ensure good ventilation.

B. The inverter can lean back ⩽15° while its back shall not be shielded to ensure good ventilation.

C. Two inverters can be installed back to back, and proper distance shall be kept to ensure good ventilation.

D. The inverter can be installed under the panel, while its back and top shall not be blocked to ensure good ventilation.

E. The inverter can be installed on a single column holding rod and shall be checked to confirm a secure installation.

3.5 Installation Procedures

1. Mark the hole positions on the mounting structure according to the hole positions and sizes of the mounting bracket, as shown in Fig. 3- 6.

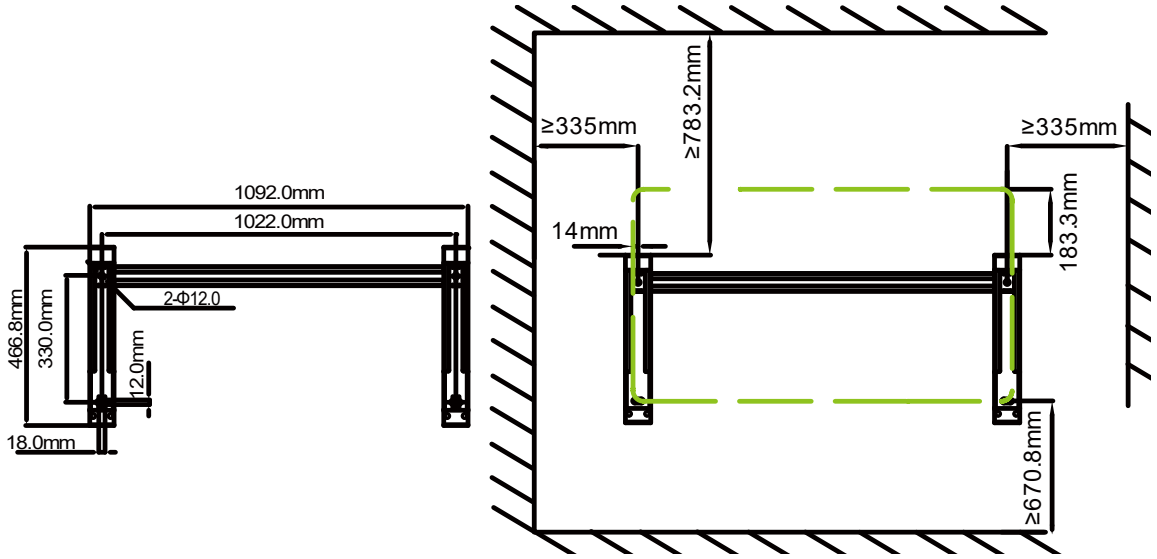


Fig. 3- 6 Mounting hole diagram

2. Drill holes with a Φ12mm drill at the marked position. Tool: Electric drill (with Φ12mm drill bit).

   A. If the distance between the inverter and the shelter is more than 600mm, there is no need to install L baffle. Hang the inverter directly.

   Fix the bracket (3) with the attached screws M10X50 (2), and nut M10 (1). Tool: No. 17 hex socket wrench, torque value: 230.5 kgf.cm.

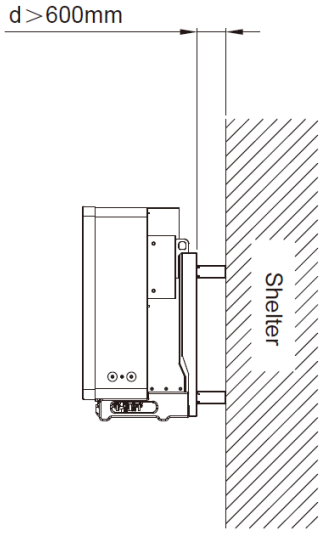


Fig. 3- 7 Shelter distance A

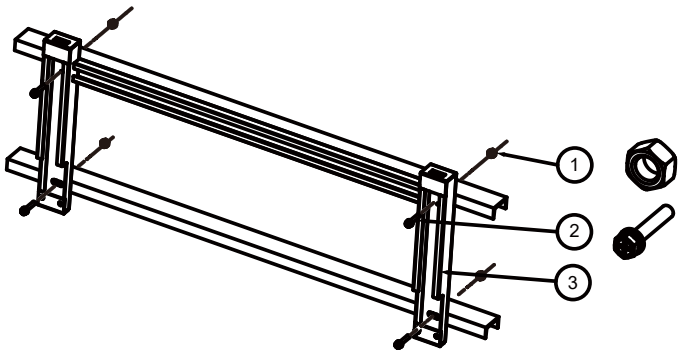


Fig. 3- 8 Fix mounting bracket

B. If the distance between the inverter and the shelter is less than 600mm, you need to use the L baffle. Refer to Fig. 3- 10 for recommended dimensions of L baffle:

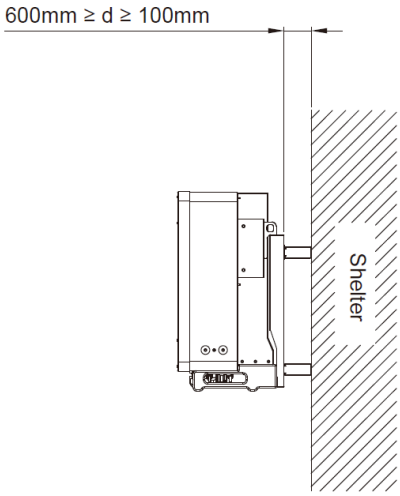


Fig. 3- 9 Shelter distance B

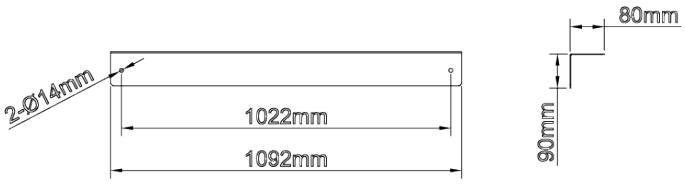


Fig. 3- 10 Recommended dimensions of L baffle

i. Fix the L baffle to the mounting bracket with screws M10-M12 firmly.

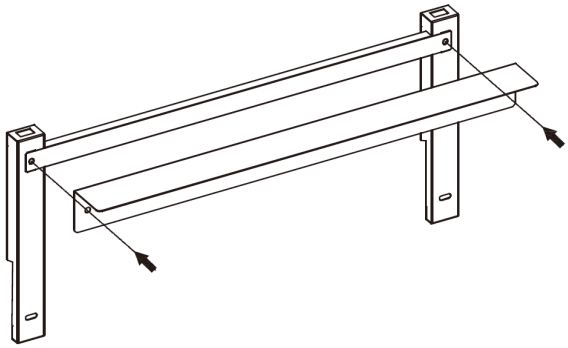


Fig. 3- 11 Fix L baffle

ii. Fix the mounting bracket (3) with the attached screws M10X50 (2), and nut M10 (1). Tool: No. 17 hex socket wrench, torque value: 230.5 kgf.cm.

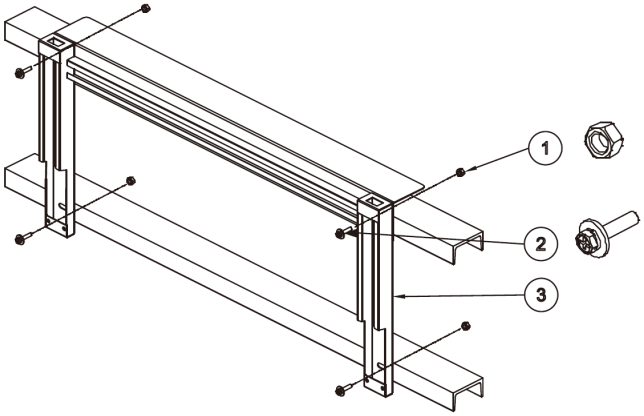


Fig. 3- 12 Fix mounting bracket

CAUTION!

To prevent dust from entering the respiratory system or getting into the eyes during drilling, operators should wear protective goggles and dust masks.

3. Install the inverter on the mounting bracket. There are two installation methods.

- Manual hanging: Two people hold the handles, two people hold the bottom surface and side holders. Hang the inverter on the mounting bracket together by four people, refer to Fig. 3- 13.
- Hoisting method: Tighten two M10 lifting eyebolts (prepared by customer) into screw holes on the both sides of inverter, and use a sling or a hanging rod (inserted through two lifting eyebolts) to lift the inverter onto the mounting bracket. The angle between the two slings must be less than 90 degrees, refer to Fig. 3- 14.

CAUTION!

The host of the inverter weighs approximately 90 kg (≈198.4 lb.).

	Please check the mounting bracket again before hanging up, to confirm that the mounting bracket is firmly on the supporting surface.

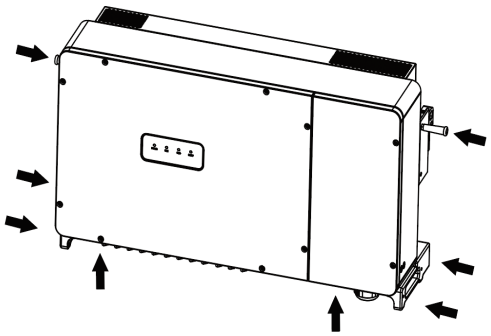


Fig. 3- 13 Hanging the inverter manually

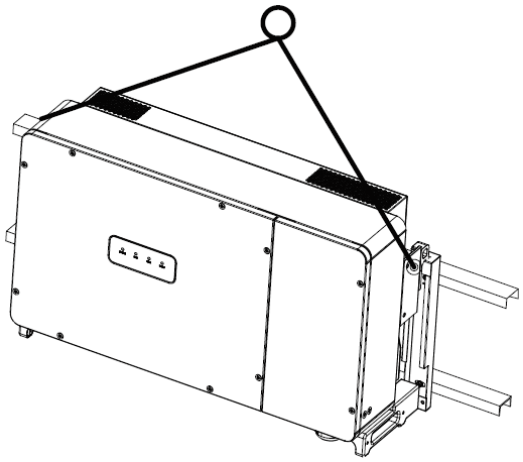


Fig. 3- 14 Hoisting the inverter

4. Use two M6X16 screws to fix inverter on mounting bracket with No.10 hexagon socket wrench, torque value: 60.2 kgf.cm.

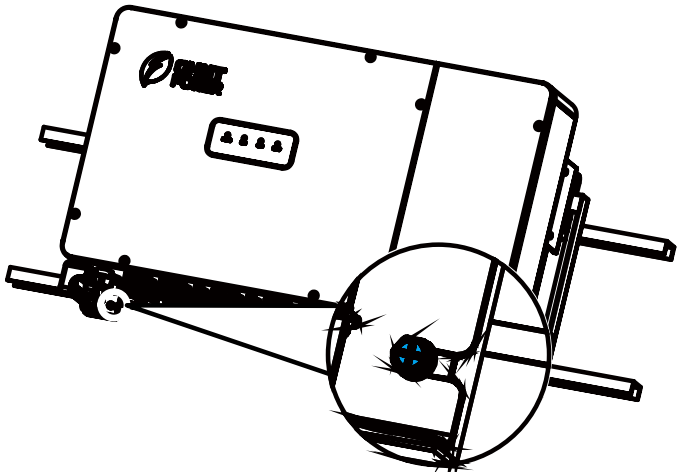


Fig. 3- 15 Inverter fixed on backplane bracket

3.6 Install Self-Check

1. Ensure that supporting points (on the rear side of the inverter) are aligned with holes of mounting bracket.
2. Ensure that the inverter is well fixed.
3. Ensure that the inverter is locked on the mounting bracket and anti-theft lock is installed.

4 Electrical Connection

DANGER!

- The cables shall be connected in accordance with the National Electrical Code and all other applicable local codes or jurisdictions.
- Before connecting all cables, ensure the equipment is free from any damage. Otherwise, it may cause electric shock or fire.
- High-temperature environments may result in insulation aging or damage of cables. The distance between the cables and heat-generating devices or the surrounding area of the heat source should be at least 30mm.
- Before performing any electrical connection, make sure both DC and AC switches are OFF. Otherwise, fatal injury can occur due to high voltage.

NOTICE!

- Please read carefully and refer to Chapter 9 Technical Data before wiring.
- Pay attention to watertight during construction.
- Cables of the same type should be bundled together, and different types of cables should be arranged separately, with no intertwining or crossing allowed.
- Close covers of AC wire box in time after wiring process to avoid water condensation in wire box.
- Before the first power-on operation, or before running it again after long time (6-12 months) shutdown, check if any water-sensitive label in the bottom left corner of AC wire box and that on the capacitive plate turns red. Never power on the inverter once any label turns red.
- Never damage or tamper with vent valve.

4.1 Cable Specification

The inverter external cable must be equipped with the specifications in the table below：

Name	Type	O.D. (mm)	Conductor cross-sectional area (mm^2)
DC Cable	PV cables that meet 1500V standard	5.0~7.2*	4~6
AC cable	Outdoor four-core cable (L1, L2, L3, and N)	38~64	95~240
	Outdoor five-core cable (L1, L2, L3, N, and PE)	40~67	● L1, L2, L3, and N: 95~240 ● PE:⩾Cross-sectional area of phase conductor/2
	Outdoor single-core copper cable	23~32	● 95~240 ● PE:⩾Cross-sectional area of phase conductor/2
Grounding cable	External grounding	/	Same as PE wire in AC cable
Communication cable	Communication cable UTP CAT-5e	4.5~6	3*0.2~0.75
	Shielded twisted pair		3*1~1.5

*For selection exceeds the given range, please consult CHINT for feasibility.

Table 4-1 Cable specifications

4.2 Tools Required and Torque Values

Tools and torque are as follows:

No	Tools	Usage	Torque
1	5mm hex wrench	Fixing upper cover of wire box	29.6 kgf.cm
2	18mm hexagon socket wrench	Fixing AC output terminal	199.9 kgf.cm
3	4mm hex wrench	Fixing AC sealing plate	14.3 kgf.cm
4	No.10 hexagon socket wrench	Fixing grounding terminal	60.2 kgf.cm
5	1.5mm flat-blade screwdriver	Fixing RS485 communication terminal	2.0 kgf.cm
6	Diagonal pliers	Making cables	-
7	Wire stripper	Making cables	-
8	Crimping Tool	Making cables	-

Table 4-2 Tools & Torque required for wiring

4.3 External Interfaces and Internal Connection Points

Refer to the figures below to view the internal and external interfaces of all inverter modules.

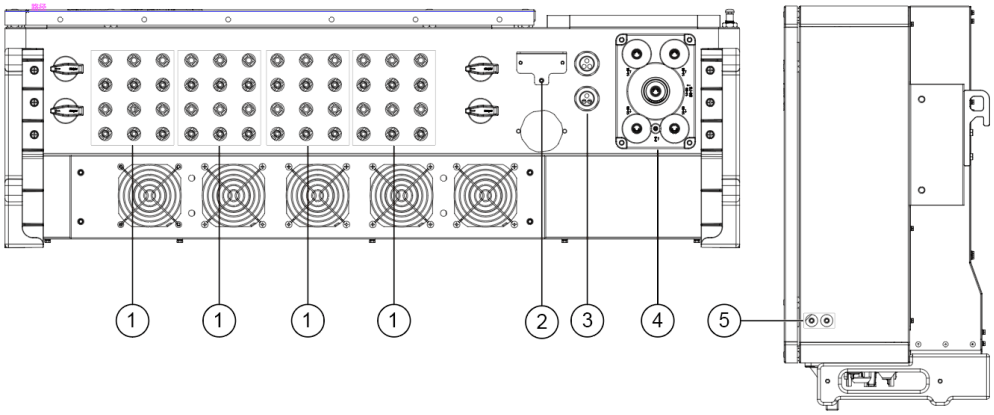


Fig 4-1 External Interface

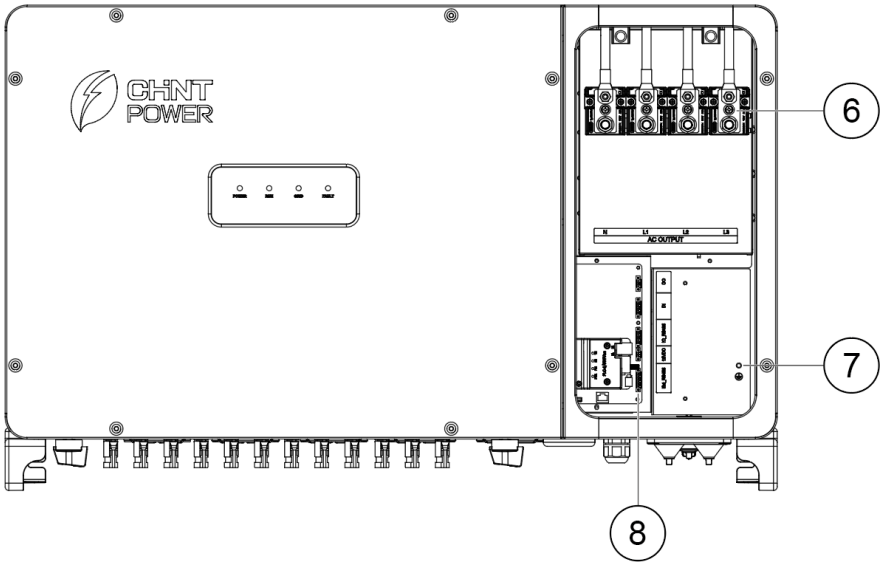


Fig. 4-2 Internal Wiring Point

No.	Description	No.	Description
1	DC Input quick plug terminal	5	External ground point (PE point)
2	Communication interface	6	AC Output terminal block
3	RS485 communication interface	7	Internal ground point
4	AC Sealing Plate	8	RS485 communication terminal (for external communication)

Table 4-3 External Interfaces and Internal Connection Points

4.4 Electrical Cable Connection

Wiring preparation

First of all, loosen the 2 captive screws on upper cover of the wire box, and then pull right to open the upper cover.

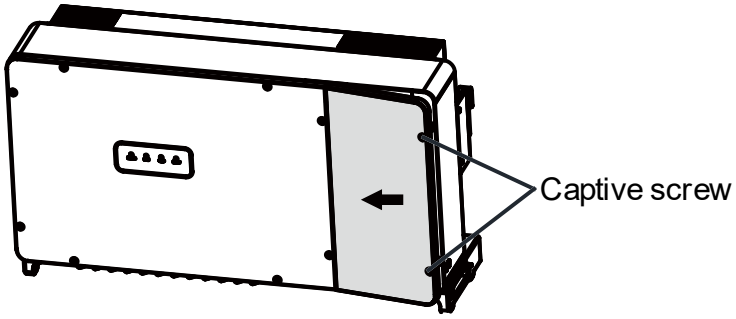


Fig. 4-3 Open upper cover of wire box

4.4.1 Grounding

Connect grounding wire and then tighten with M6x16 screws:

- Internal grounding (required): Connect PE wire to internal grounding stud located on the lower right side of the AC busbar, as shown in Fig. 4-4 on the left.
- External grounding (optional): Connect grounding cable to external grounding hole located at the bottom of the machine next to the AC port, as shown in Fig. 4-4 on the right.

NOTICE!

- After wiring, external grounding position needs to be coated with glue or paint, to improve corrosion resistance.
- Other sizes of grounding cables that meet local standards and safety regulations can also be used for grounding connections. But CHINT Power shall not be held liable for any damage caused.

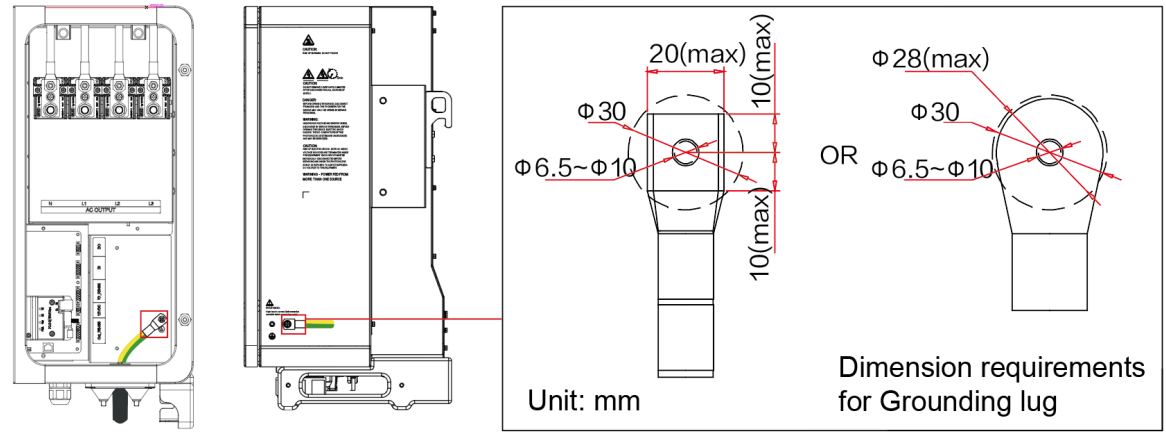


Fig. 4-4 Grounding Method

Depending on the grounding method, the wiring method is different. After the internal

grounding wire is connected, the compression nut of the cable fastening head must be tightened.

4.4.2 AC Wiring

Perform the AC wiring procedures as follows:

1. Loosen the four screws to remove the AC sealing plate from the inverter.

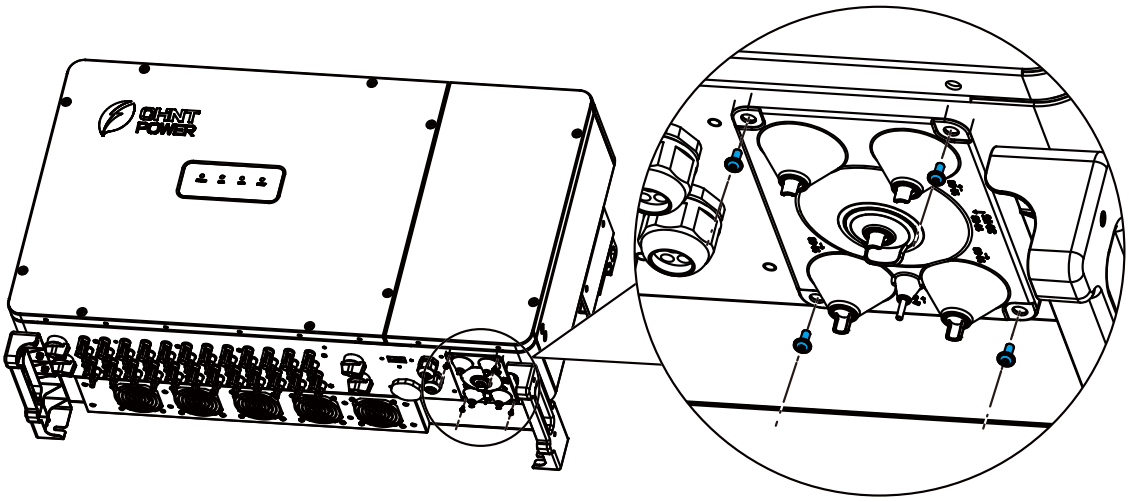


Fig 4-5 Remove AC sealing plate

2. According to cable type, pull off ring tab with hand or plier, and then route cable through the seal ring.
   - For single-core outdoor cable, refer to Fig 4-6(A). Note: When using the middle seal ring for routing, route grounding wire through it rather than L1, L2, L3, or N wire.
   - For four-core and five-core outdoor cable, refer to Fig 4-6(B).

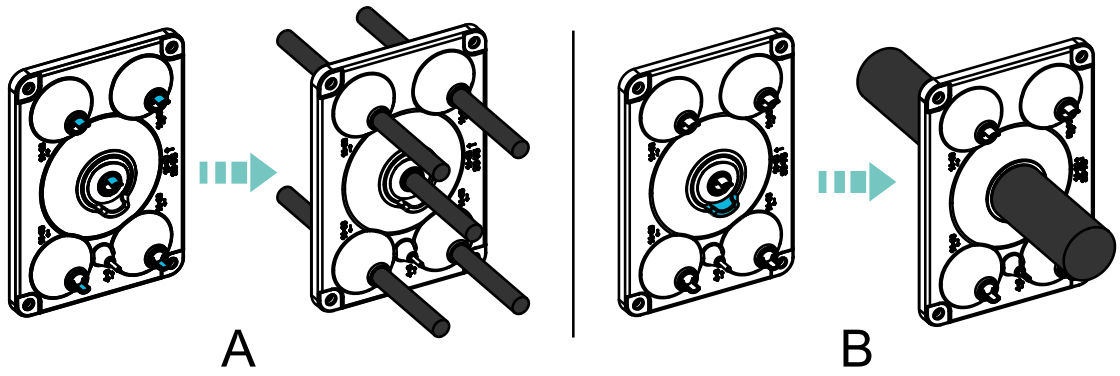


Fig 4–6 Route the cable through the seal ring

NOTICE!

The smallest seal ring of AC sealing plate is reserved. Remember its orientation before removing AC sealing plate and ensure it returns to the original position when recovering the board.

3. Remove an appropriate length of the jacket and insulation layer from the AC output cable.

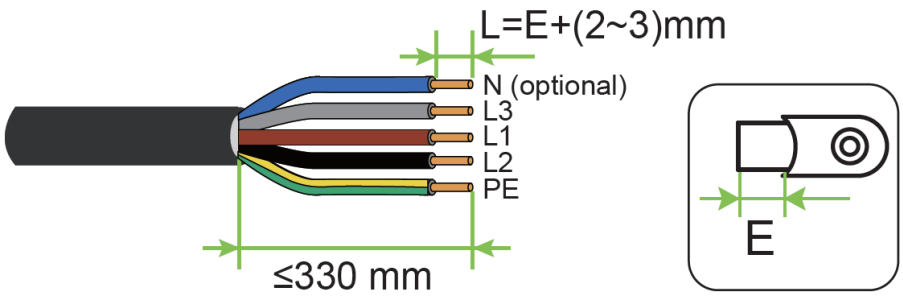


Fig. 4-7 Strip AC wires

4. Insert the exposed core wires into crimping area of OT/DT terminal, crimp them using hydraulic plier, then wrap the crimp areas with heat shrink tubing or insulation tape.

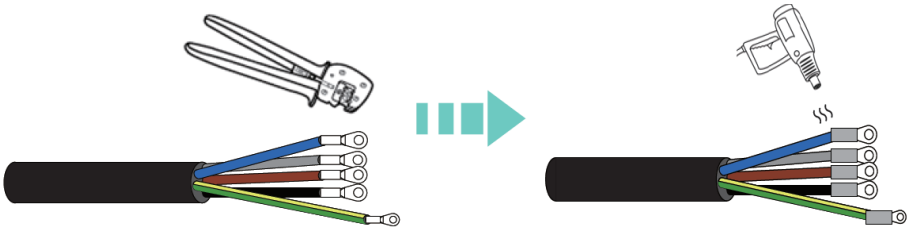


Fig. 4-8 Crimp AC wires and OT/DC terminals

NOTICE!

- Use copper terminals to match copper wires.
- Use Cu-Al bimetallic terminals or aluminum terminals with Cu-Al bimetallic washers to match aluminum wires.
- Ensure the washer's outer contour is no smaller than the OT/DT terminal's. The washers are prepared by customer, and it is recommended to purchase washers and terminals from the same manufacturer.
- Do not connect aluminum terminals directly to the terminal.

5. Unplug the rubber plug (1) of transparent protection cover above the AC terminal block, to remove the transparent protection cover.

   Connect OT/DT terminals to L1, L2, and L3 wiring studs (2) on the AC terminal block, tighten them with tapered washer combination nut.

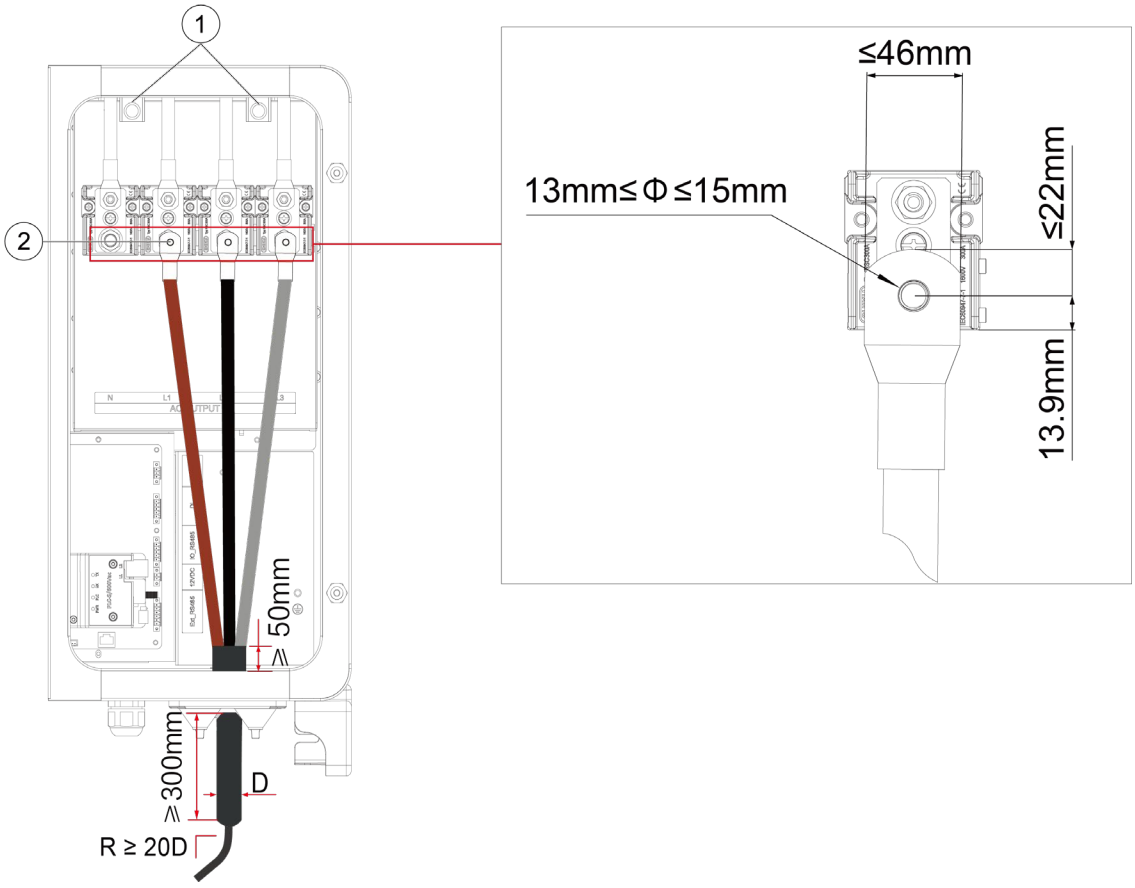


Fig. 4-9 AC Output Line Connection

NOTICE!

- The wire stripping position should be ≥ 50mm higher than the bottom of wire box.
- The cable outside the seal ring should be vertical for at least 300mm.
- The cable's bending radius (R) must be greater than or equal to 20 times the diameter (D) to prevent breakage due to excessive stress.
- The AC output cables outside the inverter should be arranged without force, otherwise adequate mechanical strain relief should be provided.

6. Adjust cable length, and plug the rubber plug to fix the transparent protective cover to prevent accidental contact with the AC busbars.
7. Secure the AC sealing plate to inverter using its original screws.

AC output (L1/L2/L3/N) cables of every inverter are connected to AC grid through the 4 pole AC breaker to make sure the inverter can be safely disconnected from AC grid. Please choose the AC breaker referring to the Table 4-4:

Inverter	Inverter AC breaker current parameter
SCA100K-T-EU	250A
SCA120K-T-EU	300A
SCA125K-T-EU	300A

Table 4-4 Specification of AC Breaker Selection

NOTICE!

Leakage current >1a or without leakage current function.

4.4.3 DC Wiring

To ensure the optimum performance of the inverter, please read the following guidelines before performing any DC connections:

- Confirm the DC configuration and ensure that the maximum open circuit voltage of the PV modules is lower than 1100VDC under any conditions. It is recommended that the difference between the actual MPPT voltages of each channel should not be greater than 100V.
- Before connecting the PV array to the inverter, ensure that the PV array has good insulation to ground, and ensure that the voltage and maximum short-circuit current of each PV string are within the allowable range of the inverter.
- If the polarity of the DC input cable is reversed or there is a short circuit to ground between the positive and negative poles of different MPPT, and the DC circuit breaker is already in the "ON" state, do not operate it immediately, otherwise it may cause damage to the machine. Please turn the DC circuit breaker to "OFF" and remove the DC cable to check the polarity when the string current drops below 0.5A. If there is a positive or negative error, adjust the polarity.
- It is not recommended to connect PV arrays to inverters in parallel mode, which means that each PV string is connected in parallel outside the inverter and then separately connected to the inverter.
- Do not connect the same PV string to multiple inverters, as it may cause damage to inverters.
- Mixing different brands or models of PV modules in the same MPPT, or connecting PV modules with different directional angles or inclinations in the same PV string, may not necessarily damage the inverter, but it can lead to a decrease in system performance.
- When the input voltage is between 1000V-1100V, the inverter startup process may trigger overvoltage protection; When the voltage is restored within the MPPT operating voltage range, the inverter will resume normal operation.
- Check the polarity before terminating the DC cables of PV strings according to the following steps, as shown in figure 4-10:

a. Use a multi-meter to measure the PV strings' cable ends and check the polarity.

b. The positive (+) terminal of cable should match the positive (+) terminal of inverter's DC input.

c. The negative (-) terminal of cable should match the negative (-) terminal of inverter's DC input.

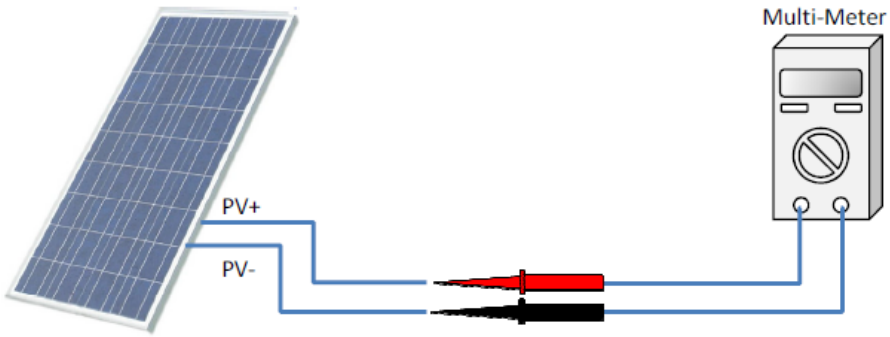


Fig. 4-10 Polarity check

⚠	**NOTICE!** It is important to use a multi-meter to check the polarity of the DC input cables to avoid any risk of reverse polarity.
⚠	**WARNING!** • A reversed string is extremely hazardous and will result in damage to the device damages or property when the irradiation is high. • The DC input connectors and metal terminals must be supplied randomly, or the same model of the same manufacturer. Otherwise, poor contact may occur, affecting normal use.

Perform cable connection as the following steps:

1. Remove an appropriate length of the jacket and insulation layer from the DC input cable of PV strings.

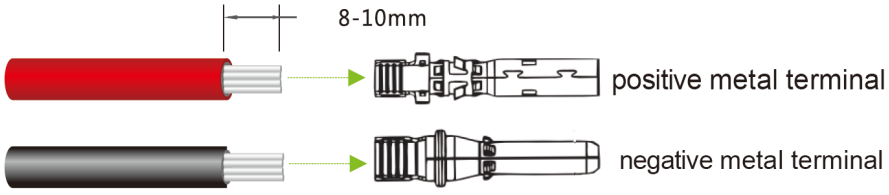


Fig. 4-11 DC Wire stripping

2. Insert the exposed areas of the positive and negative power cables into the metal terminals of the male and female connectors respectively and crimp them using a crimping tool (Amphenol H4TC0002 or Devalan D4ZCY001).

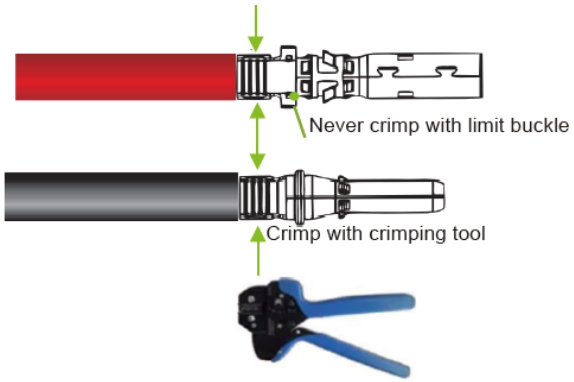


Fig. 4-12 Crimp power cables

NOTICE!

The DC input connectors and metal terminals must be supplied randomly, or the same model of the same manufacturer. Otherwise, poor contact may occur, affecting normal use.

3. Insert the crimped positive and negative power cables into the corresponding male and female connectors until a "click" sound is heard.

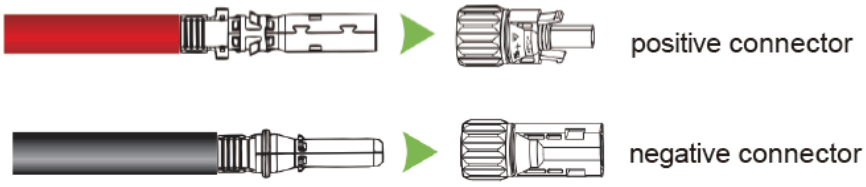


Fig. 4-13 Insert power cables to connectors

NOTICE!

- The grounding wire must be connected well.
- When PV array is exposed to light, it supplies a DC voltage to inverter, so DC switch should be in the OFF state.

4. Measure the cable ends of PV strings using a multi-meter. Ensure that the polarities of the DC input power cables are correct.

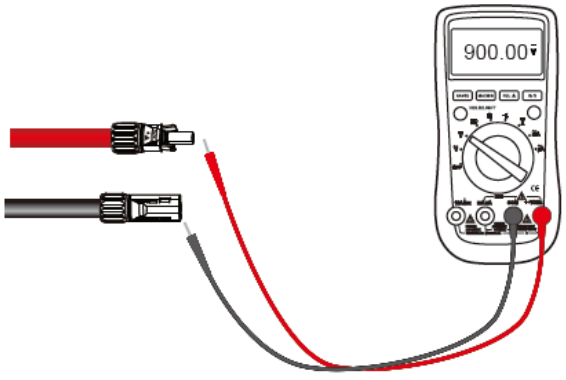


Fig. 4-14 Measure the cable ends of PV strings

5. Insert the positive and negative connectors into their corresponding terminals of the inverter until a "click" sound is heard.

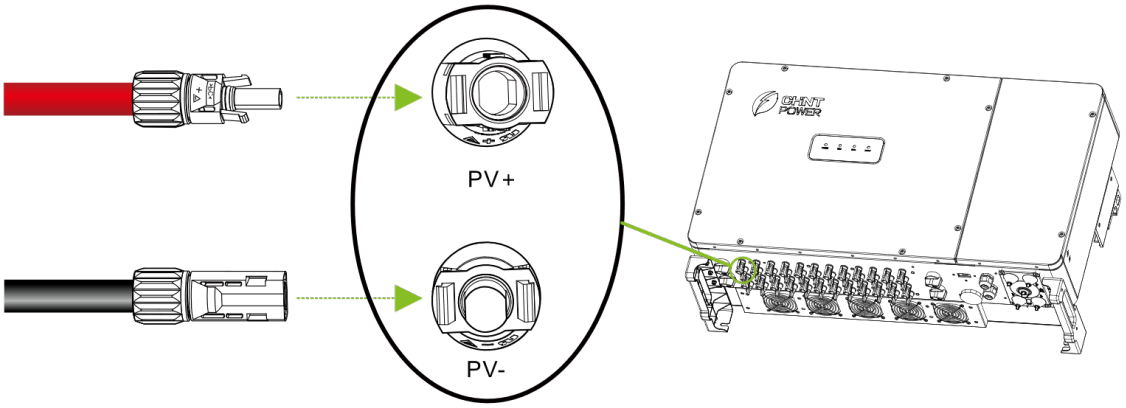


Fig. 4-15 Insert the positive and negative connectors

NOTICE!

Make marks on all positive and negative power cables to identify their correct strings (such as PV1+, PV1-, PV2+, PV2-). Make sure all strings are connected to corresponding ports according to port names printed on the device, to avoid wrong connection. Otherwise, it may result in device damages or property loss.

4.5 Communication Connection

WARNING!

- Make sure all DC and AC power has been disconnected before opening the wire box and ensure that hazardous high voltage and power has been discharged to avoid risk of electric shock.
- Wait at least 5 minutes before opening the wire box.

The inverter supports RS485 communication method. The RS485 communication method will be introduced in detail.

4.5.1 Communication Terminals Introduction

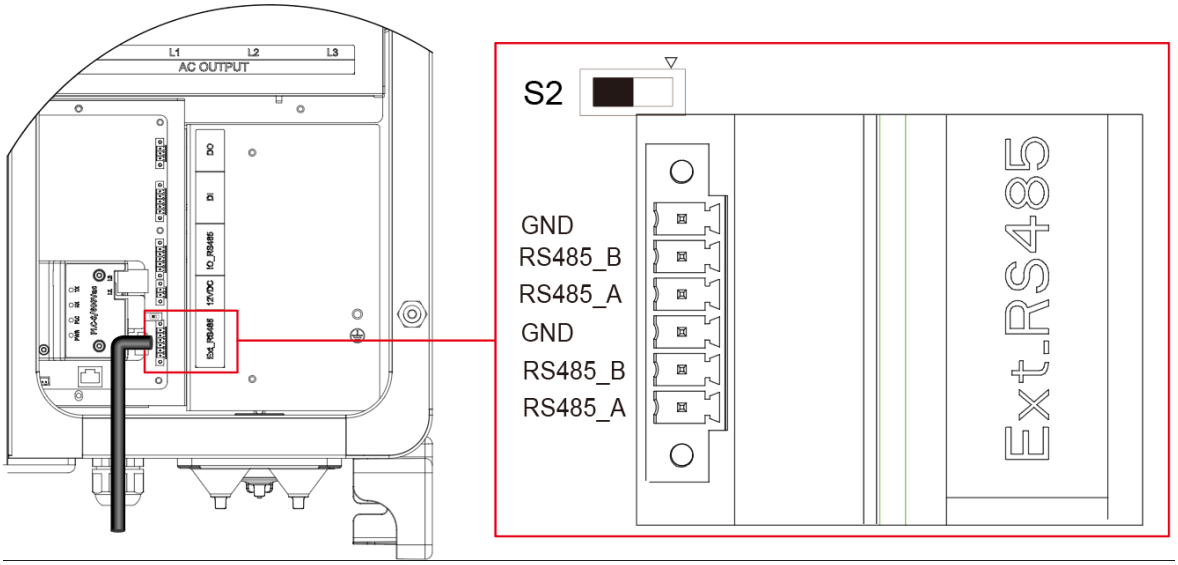


Fig. 4-16 Communication terminals

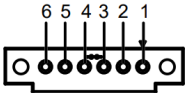
Name	Picture	Configuration
RS485 port (6pin connector)		1 - 485GND 2 - RS485- 3 - RS485+ 4 - GND 5 - RS485- 6 - RS485+
RS485 Communication 120Ω Terminal resistance selection switch S2		OFF - Disable the terminal resistor ON - Enable the terminal resistor

Table 4-5 Communication terminals Interfaces

4.5.2 RS485 Cable Connection

1. Crimp communication cables into 6-pin connector according to the pin definition of communication terminals, as shown below.
2. Insert the 6-pin connector to communication terminals.

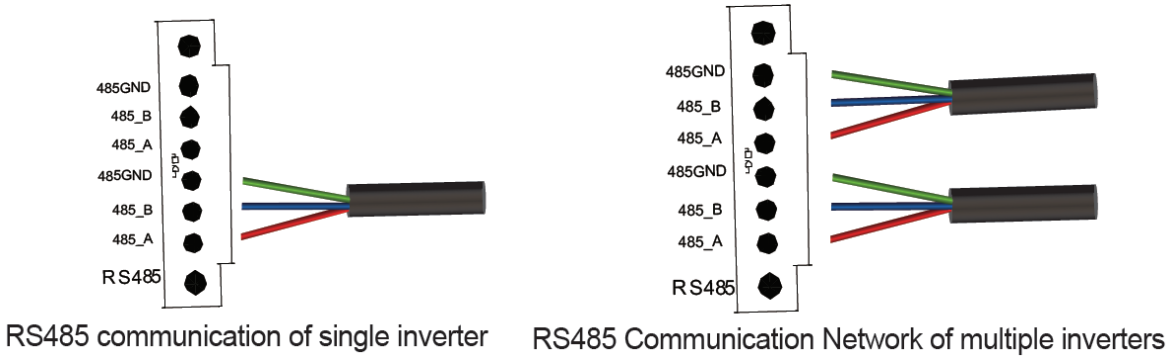


Fig. 4-17 RS485 Cable Connection

4.5.3 Communication Network

When the number of inverters in the network is large and the last inverter is more than 200m and less than 1000m from data logger, in order to improve the communication quality, it is recommended to turn the DIP switch S2 to on, which is the 120ohm terminal resistance on the communication terminals of the terminal inverter, and keep DIP switch S2 of other inverters as OFF.

NOTE: If there is only one inverter and it's more than 200m and less than 1000m distant from data logger, the Modbus termination switch should also be set to ON, otherwise, it can be set as OFF.

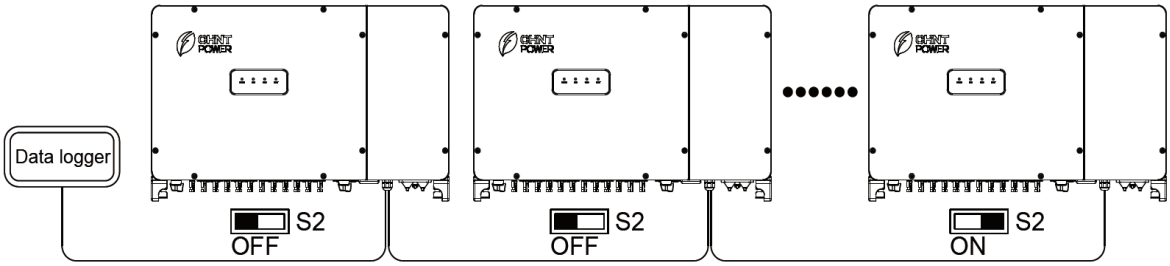


Fig. 4-18 RS485 Communication Network in Daisy chain

After completing all the wiring steps, fix the 2 captive screws on the upper cover of the wire box with a 5mm hex wrench, and close the upper cover.

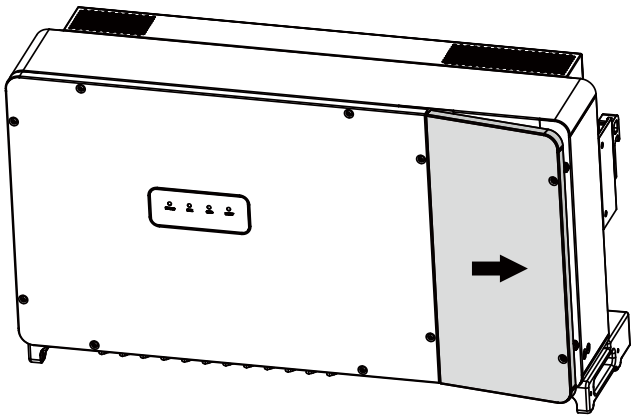


Fig. 4-19 Close upper cover of wire box

IMPORTANT!

- Screws must be tightened when fixing the cover to prevent water problem.
- Bind cables at positions 300 ~ 350 mm away from DC connectors and AC sealing plates (refer to Fig. 4-20). Otherwise, swaying, or swaying cables may loosen the connectors or sealing plates, which may affect the protection degree of the inverter.

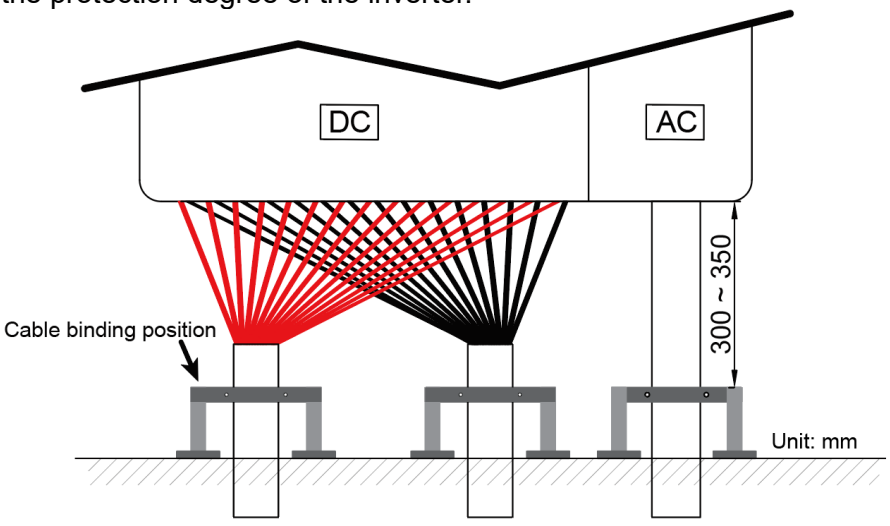


Fig. 4-20 Bind cables

4.6 Install the Communication Module

1. Remove two upper screws on the communication module cover, loosen the lower screw, then rotate the cover to expose the communication interface.

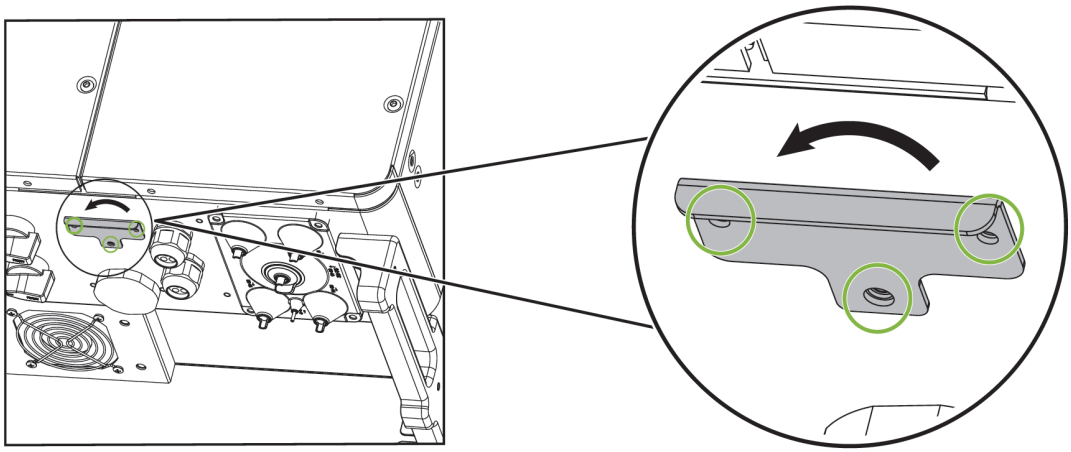


Fig. 4-21 Remove cover

2. Fasten communication module onto communication port with its original two screws. Note: Indicators face towards front cover of the inverter. Tool required: No.2 Phillips head screwdriver. Torque: 16.3 kgf.cm.

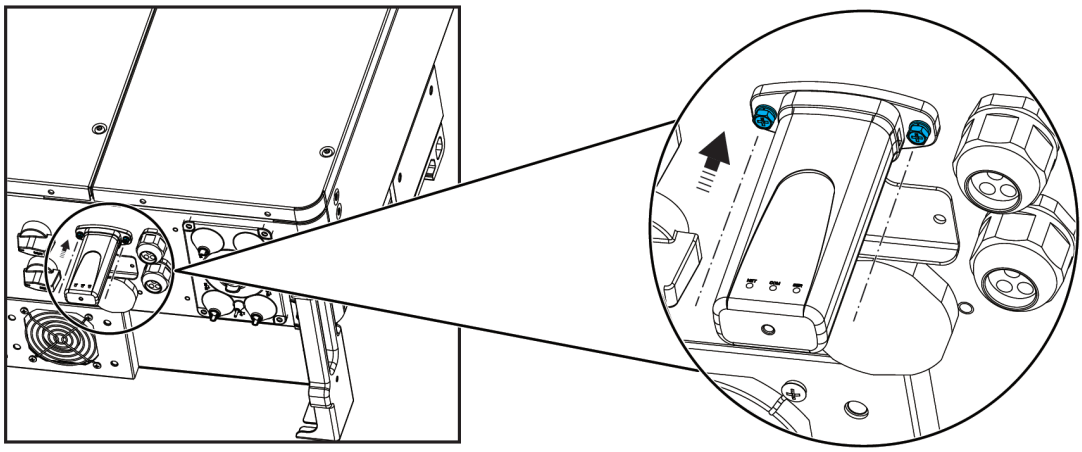


Fig. 4-22 Install the Communication module

4.7 Anti-Backflow for Single Inverter

Note: Anti-Backflow is a standard function of SCA100/120K-T-EU Inverter, which can be enabled or disabled based on user requirements.

Follow the diagram Fig. 4-23 below to perform the single anti-backflow wiring:

1. Before performing any electrical connections, ensure the meter is intact and all cables are de-energized.
2. Connect the L1, L2, L3 (N) lines from the grid side to the meter.
3. Connect the CT (Current Transformer) to the meter.
4. Install the CT onto the corresponding phase line in the direction of current flow.
5. Connect the RS485 communication cable to the inverter, refer to Section 4.5.2 RS485 Cable Connection for details.

After completing the wiring procedures, the relevant configuration needs to be set in the MatriCloud App, please see 6.2.2 Anti-Backflow Parameters Configuration in MatriCloud in MatriCloud.

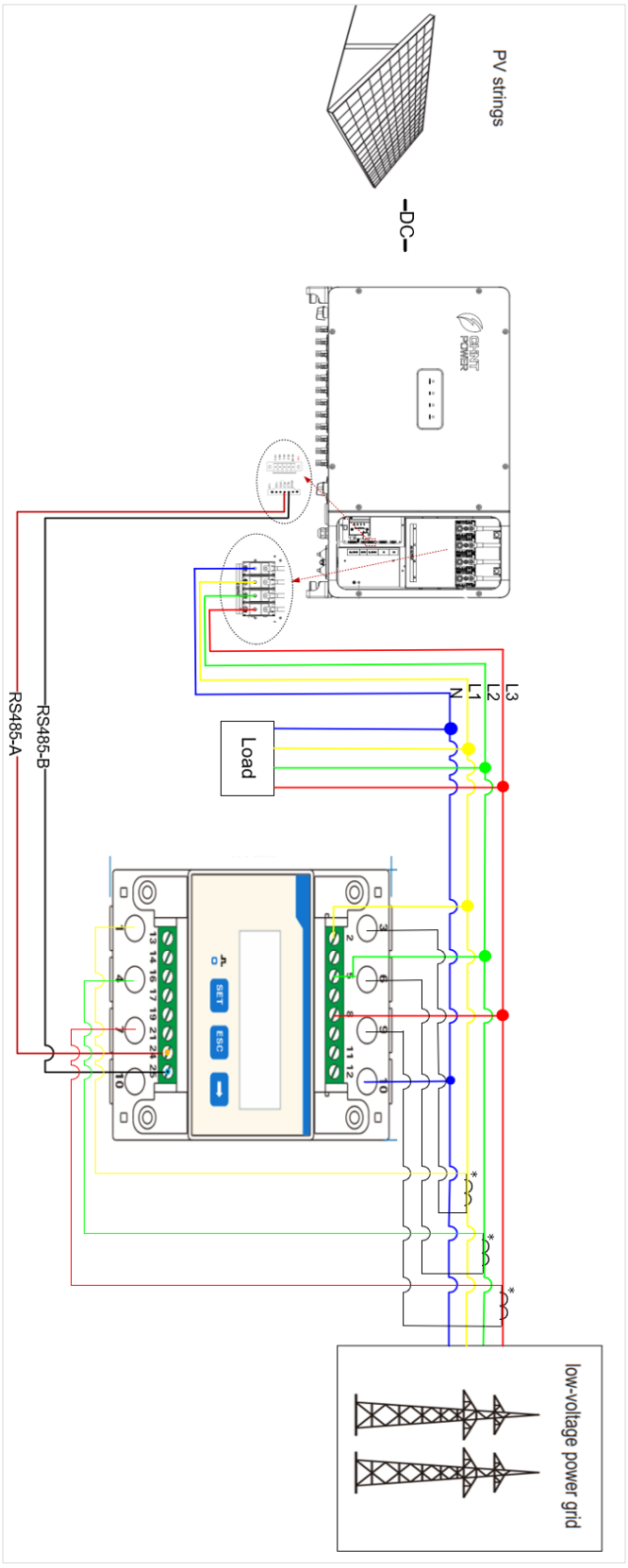


Fig. 4-23-a Three phase four wire - via current transformer (CT)

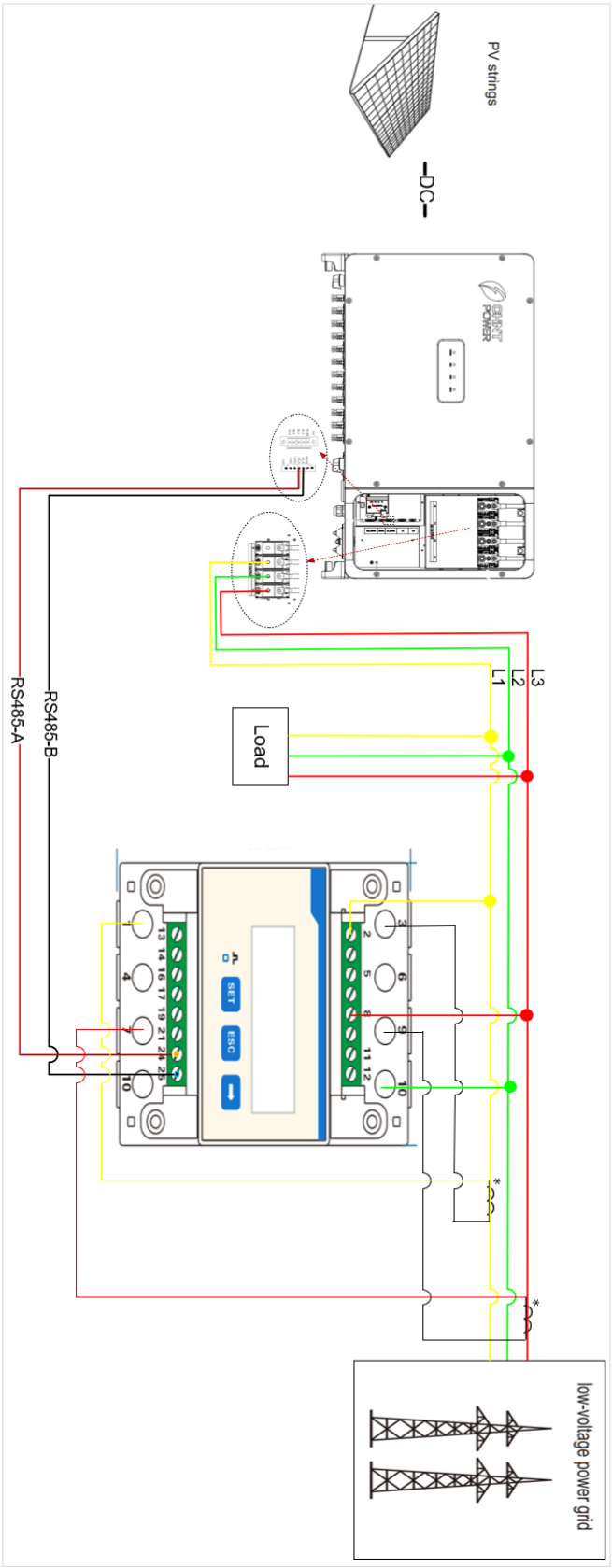


Fig. 4-23-b Three phase three wire - via current transformer (CT)

5 Commissioning

WARNING!

Before connecting to the grid, please follow the following guidelines to eliminate hidden dangers and ensure safety.

When the equipment is powered on for the first time, it is imperative that professionals correctly configure the parameters.

5.1 Inverter Installation Inspection

Confirm that the supporting structure is firm and reliable, and the mounting screws are fastened. (Refer to 3 Mechanical Installation)

5.2 Inverter Connection Cable Inspection

- Confirm that all cables are connected firmly and reliably and there are no wrong or missing connections.
- The cables are placed reasonably and will not be mechanically damaged.
- Pay special attention to whether the positive and negative polarity of the DC cable on the input side is correct, and turn the DC Switch to the "OFF" position. (Refer to 4 Electrical Connection)

5.3 Electrical Inspection

- Confirm that the AC side circuit breaker selection is reasonable.
- Test whether the AC side voltage is normal.
- Test whether the open circuit voltage on the DC side is ≤1100V.

5.4 Commissioning Steps

Complete the test and inspection before operation. Confirm that there is no error. Follow the steps below to test the inverter.

1. Close the AC side circuit breaker.
2. Close the DC side circuit breaker (Skip this step if no breaker).
3. Set the inverter DC switch to the "ON" position. When the solar array produces enough power, the inverter LED POWER indicator will be lit, and the inverter will enter the self-check state in turn.

6 App Local Control

IMPORTANT!

- Complete above commissioning and inspection before operation, to confirm that there is no error.
- Both AC and DC sides of the inverter shall have been powered on.
- Viewing distance between mobile phone and inverter shall be kept within 5m, to ensure good communication quality.
- Open the Bluetooth function on your phone at first and the inverter can only pair with one Bluetooth at a time, which means only mobile phone can connect with the inverter successfully at one time.
- When updating inverter through the app, the inverter will stop generating power for 3-5 minutes.
- This chapter gives a brief introduction to the connection and settings of the MatriCloud APP. For detailed information on the operations and settings of the APP, please refer to the MatriCloud APP User Manual.

6.1 App Download

User can download the "MatriCloud" app from the app store (available in the Apple Store for iOS devices or the Google Store for Android devices) or directly download it by scanning the provided QR code. The app is compatible with Android 8.0 and iOS 13.0 or higher phone system.

6.2 App Connection and Setting

NOTICE!

The mobile phone should remain within a visible distance of five meters from the inverter; otherwise, the communication signal quality between the APP and the inverter cannot be guaranteed.

Users can perform the following procedures to set the APP easily. First, open the Bluetooth function on your phone.

1. Open the MatriCloud APP, click Europe to select right server, and click English to select the language.

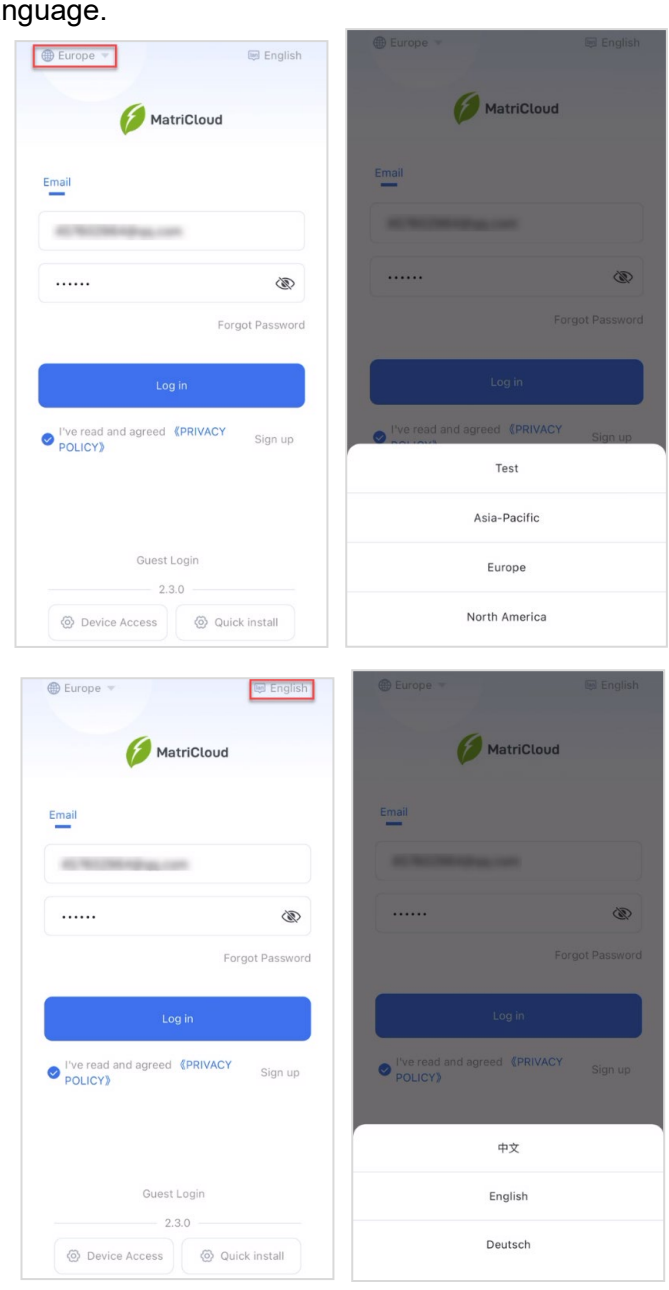


Fig.6- 1 Configure the server and language

2. Click “Device Access” and then "Bluetooth Connect" button to open the device name list. Choose the correct device name and then you will be directed to the Home interface
   Note: The device name "XXXXXXXX" is the last 8 digits of SN on the communication module label.

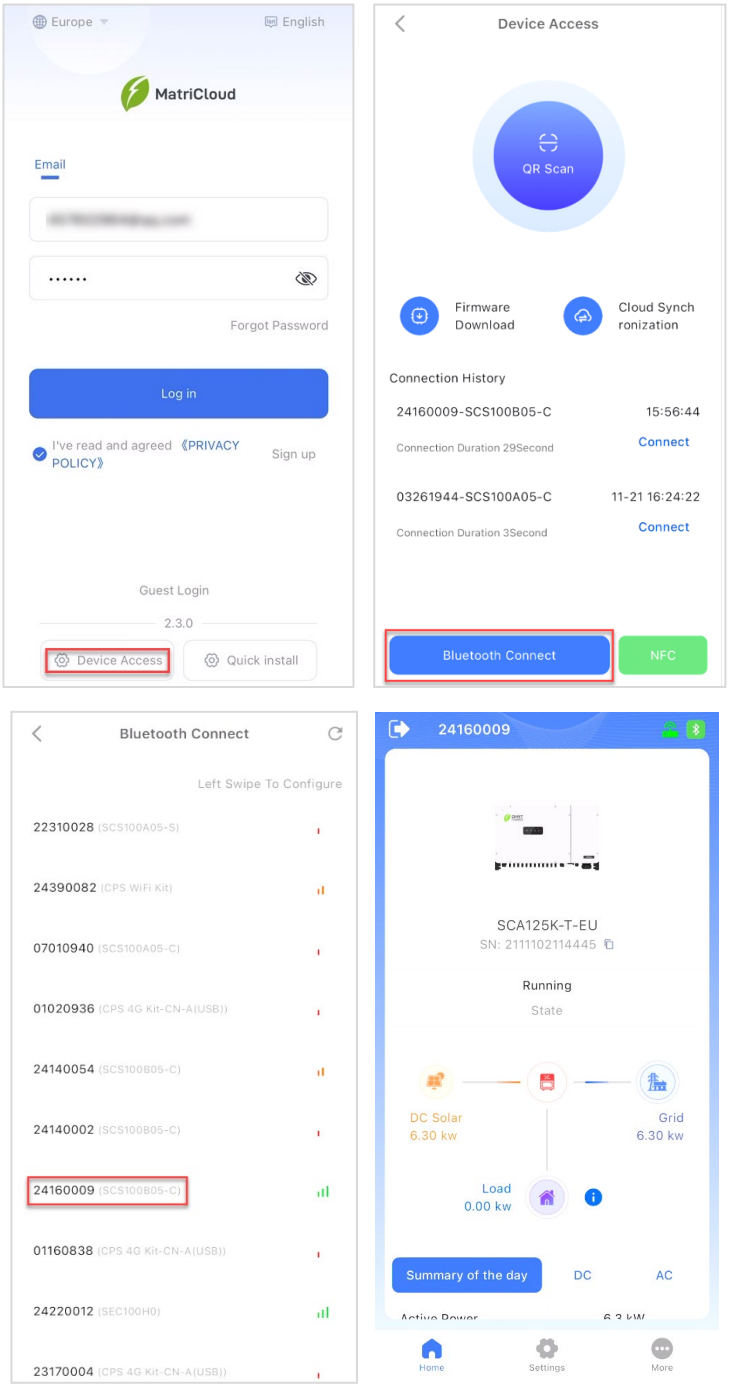


Fig.6- 2 Connect to inverter

3. Click “More” and select “Basic Settings”

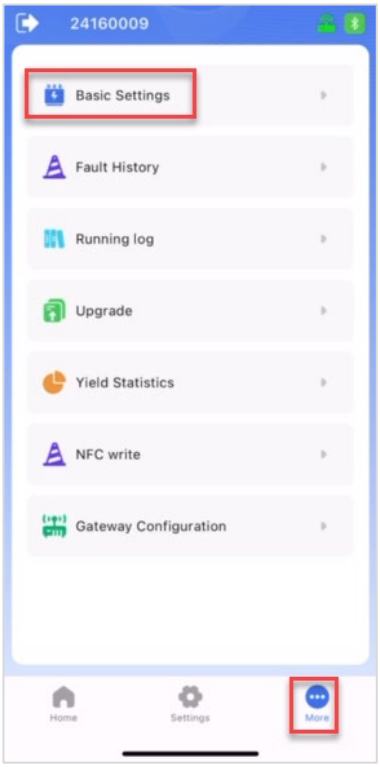


Fig.6- 3 More interface

4. Configure the basic parameters, such as Grid Connection Rule, Neutral Line Setting, and others.

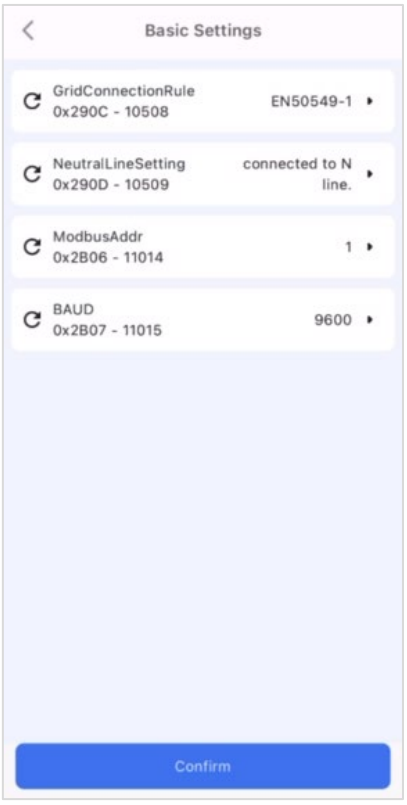


Fig.6- 4 Basic settings

5. Click “Settings” (If password needed, enter “1111”), and you will be directed to the setting interface.

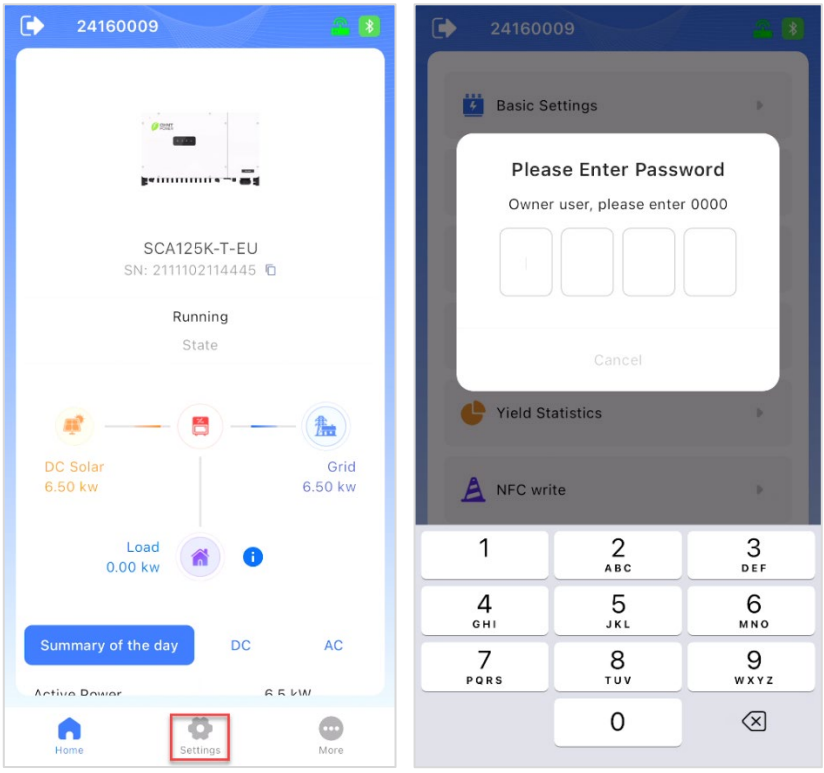


Fig.6- 5 Enter password

The "Settings" page includes two parts: "Input Register Map" and "Hold Register Map". On “Input Register Map” part, you can read only relevant parameters. On “Hold Register Map” part, you can set and modify parameters as required.

Input Register Map (only "READ")

- Input Registers Data Mapping
- Grid Status Information Data Area
- Inverter Output Status Information Data Area
- Inverter PV Input Status Information Data Area
- Inverter Internal Status Information Data Area
- Inverter Fault Status Information Data Area
- Additional Debugging Display Area
- Lcdless Information Area

Hold Register Map

- Power Dispatching
- Grid Protection Parameters
- Active Power Derating Parameters
- Reactive Power Derating Parameters
- ARC Parameters
- LVRT/HVRT

- Others Parameters
- Enable/disable Control Parameters
- Control Commands
- Inverter Basic Information
- Factory Automatic Test Command
- Lcdless Basic Parameters

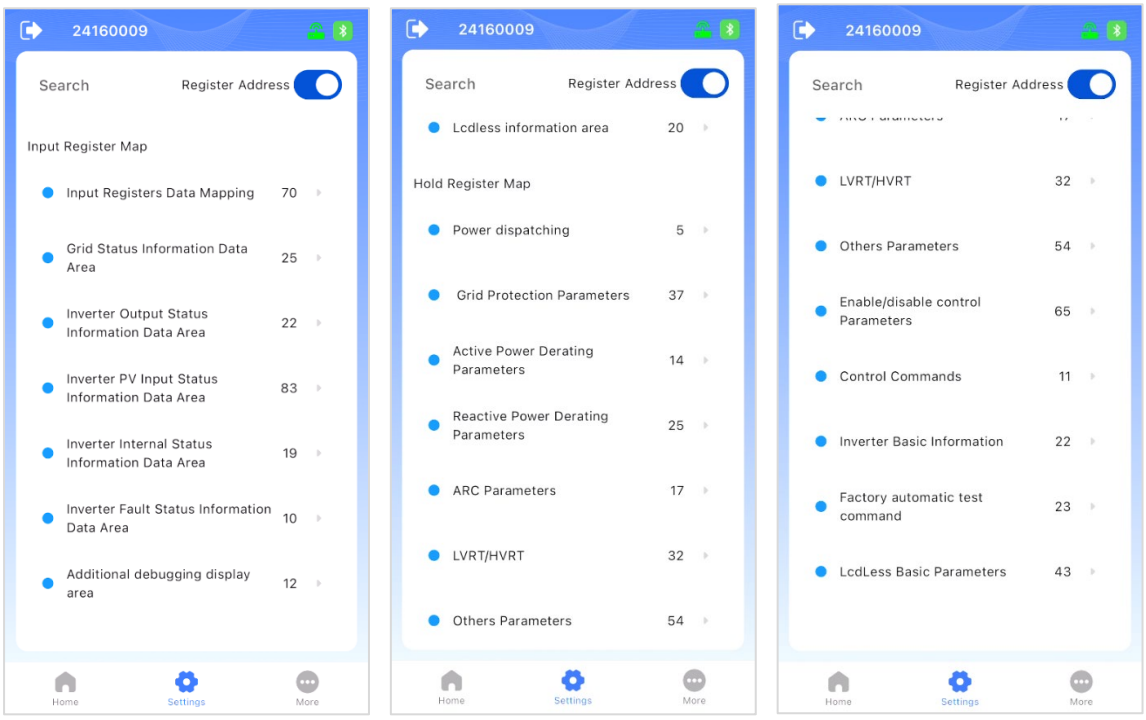


Fig.6- 6 Setting interface

⚠	**NOTICE!** Register parameters must be modified according to the communication protocol under the guidance of the engineer. Please contact our service personnel if any problem.

6. If any fault, click the red text on the main interface or click “More” button to view the fault details, resolve the fault using the troubleshooting tables in Section 8.2 APP Display Troubleshooting.

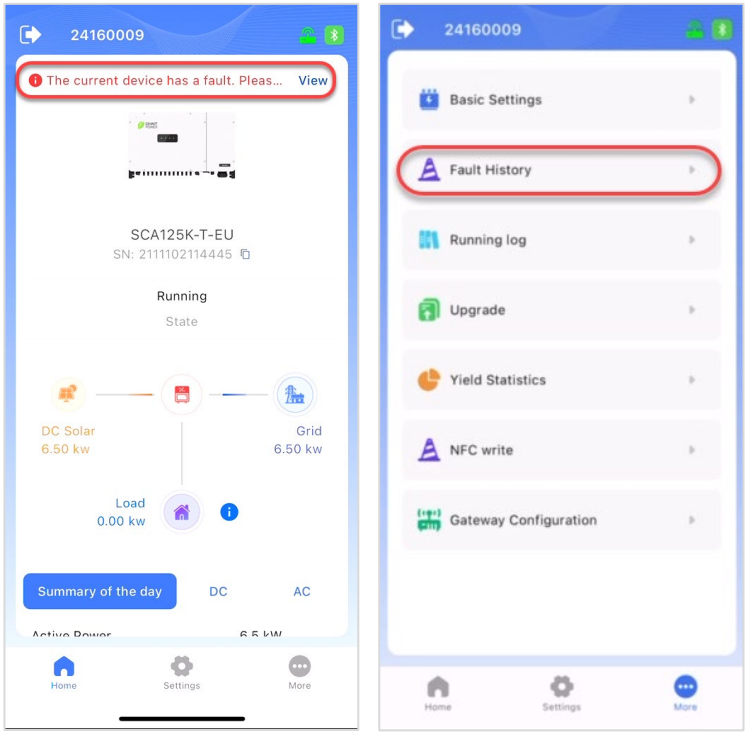


Fig. 6-7 More interface

6.2.1 Control Commands Introduction

You can enable/disable or configure the following parameters in the "**Control Commands**" group:

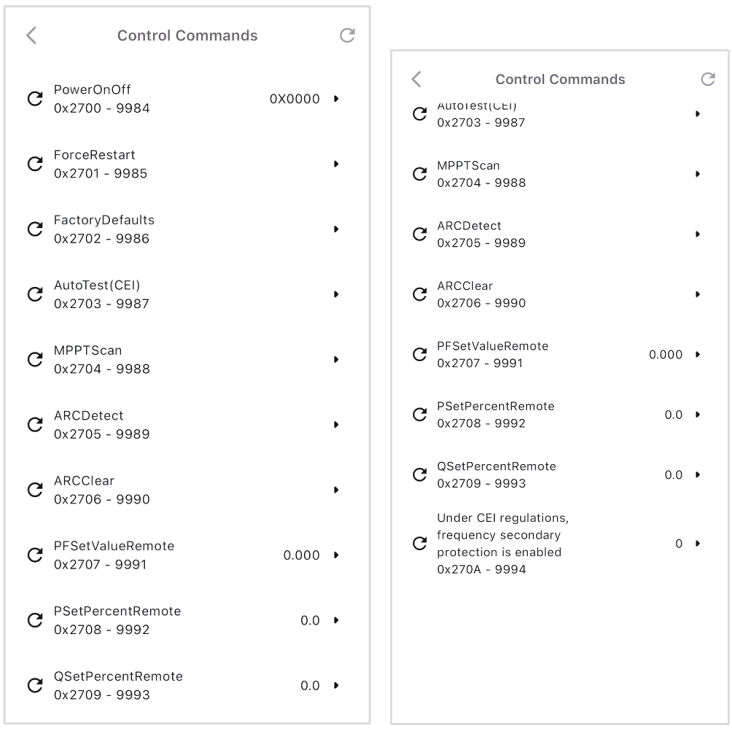


Fig.6- 8 Control commands

- **PowerOnOff**: Manual power on or power off. Normally, it is not necessary to turn off the inverter, but it can be shut down manually if Grid Code setting or maintenance is required.
- **ForceRestart**: When a permanent failure occurs, you have the option to re-energize the inverter. After re-energizing, the fault will be restored. Alternatively, you can perform a forced restart through the APP or web interface, and the fault will also be restored. There are no limitations on the number of times these procedures can be carried out.
- **FactoryDefaults**: The manufacturer's parameter default values can be restored when the inverter is not in operation mode. Otherwise "Fault Operated" will be reported.
- **AutoTest(CEI)**: Only for Italian Grid Code.
- **MPPTScan**: It is used to execute the MPPT scanning manually. The device screen will skip to normal operation interface if the MPPT scanning succeeds, or remain on the interface if the scanning fails.
  MPPT scan function is used for multi-MPP tracking, and is useful if the PV panels are partly shadowed or installed with different angles. The factory setting of MPPT scan is enabled, yet can also be set to Disabled. When the MPPT scan function is enabled, the scan period is 60 minutes.
  The inverter will scan the maximum power point in the MPPT range, according to the following conditions:

  The total input power is lower than 90% of the active power.

  Once this MPPT scan function is activated on the device, it will search the maximum power point at a voltage step of 5V in the MPPT range for full load, and retrieve the maximum power point.
- **ARCDetect:** This function is used to manually detect whether the ARC board is faulty (if 4G network card is connected, this function can be used remotely on web page). During normal operation, using this function will shut down the running device for ARC detection. If there is a fault, the "ARCDetect" item will display "Error" and an ARC board fault record will show on the fault page under the "Fault History" menu (refer to section 8.2 to check fault information); If there are no faults, the "ARCDetect" item will display "successful".
  Note: The device will automatically perform ARC board detection before normal operation every day. Therefore, it's unnecessary to perform this function when the device is running normally.
- **ARCClear:** This function is used to manually clear the ARC protection of the machine (if 4G network card is connected, this function can be used remotely on web page). The device is preset to automatically reconnect 5 times within 24 hours by default (the automatic reconnection time can be set in parameter area of ARC Parameters under Hold Register Map. When ARC protection is triggered for the fifth time, it is necessary to manually clear the ARC fault. Then the device will resume the automatic reconnection function – reconnect five times within 24 hours.
- **PFSetValueRemote:** When the mode of CtrModeReactivePw under "Enable/disable Control Parameters" group is set to remote dispatch mode, you can set the PF value.
- **PSetPercentRemote**: When the mode of CtrModeReactivePw under "Enable/disable Control Parameters" group is set to remote dispatch mode, you can set the target value of reactive power.

- **QSetPercentRemote:** When the mode of CtrModeActivePw under “Enable/disable Control Parameters” group is set to remote dispatch mode, you can set the target value of active power.
- **Under CEI regulations, frequency secondary protection is enabled:** Perform it under CEI regulations.

6.2.2 Anti-Backflow Parameters Configuration in MatriCloud

After complete the anti-backflow wiring as per ***4.7 Anti-Backflow for Single Inverter***, the following settings need to be set in the MatriCloud.

1. Enable the Anti-Backflow function: Go to **Settings > Enable/Disable Control Parameters**”, set **AntiRefluxEn** parameter to **Single Anti-refluxEn**.

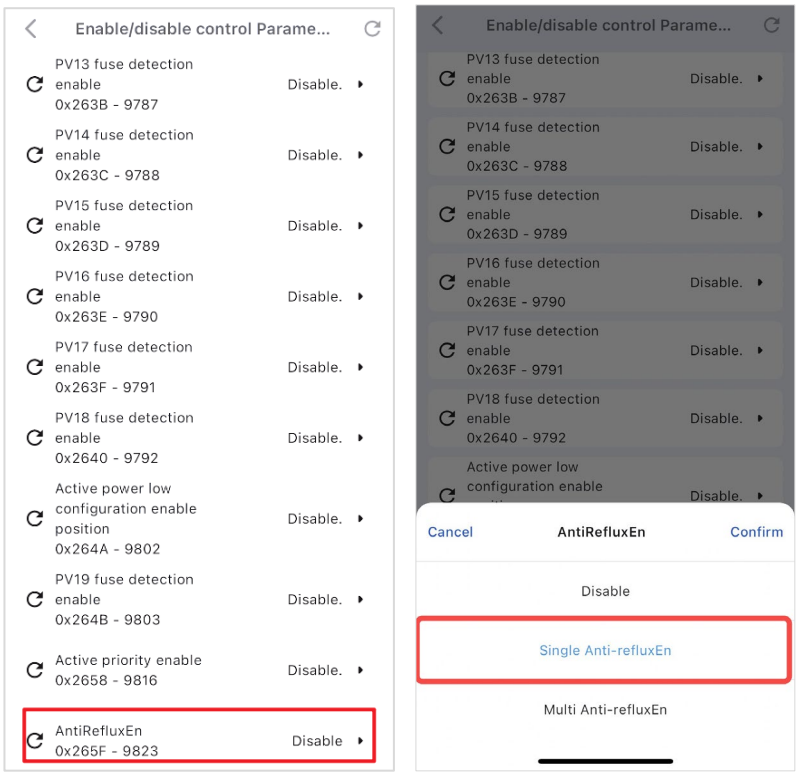


Fig. 6-9-c Enable single anti-refluex

2. Enable the communication of the meter:

   a) Go to “**Setting > LcdLess Basic Parameters**” interface.

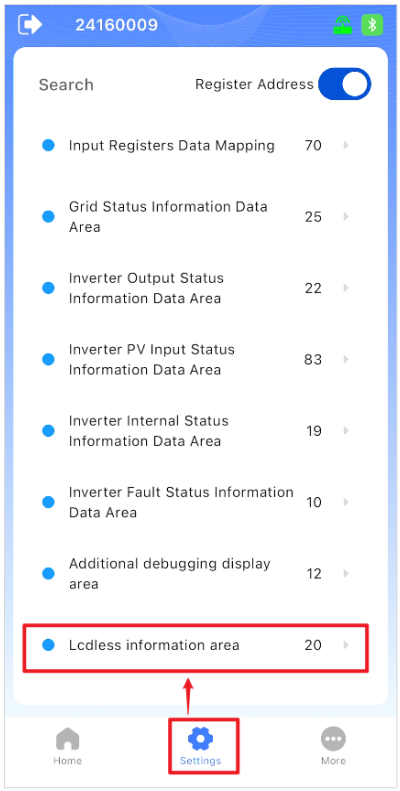


Fig. 6-9-a Configure Meter

b) Configure the **MeterType** and **MeterPowerTrend** parameters:

- MeterType: The type of the meter, select **DTSU666**.
- MeterPowerTrend: The connection direction of the meter CT.

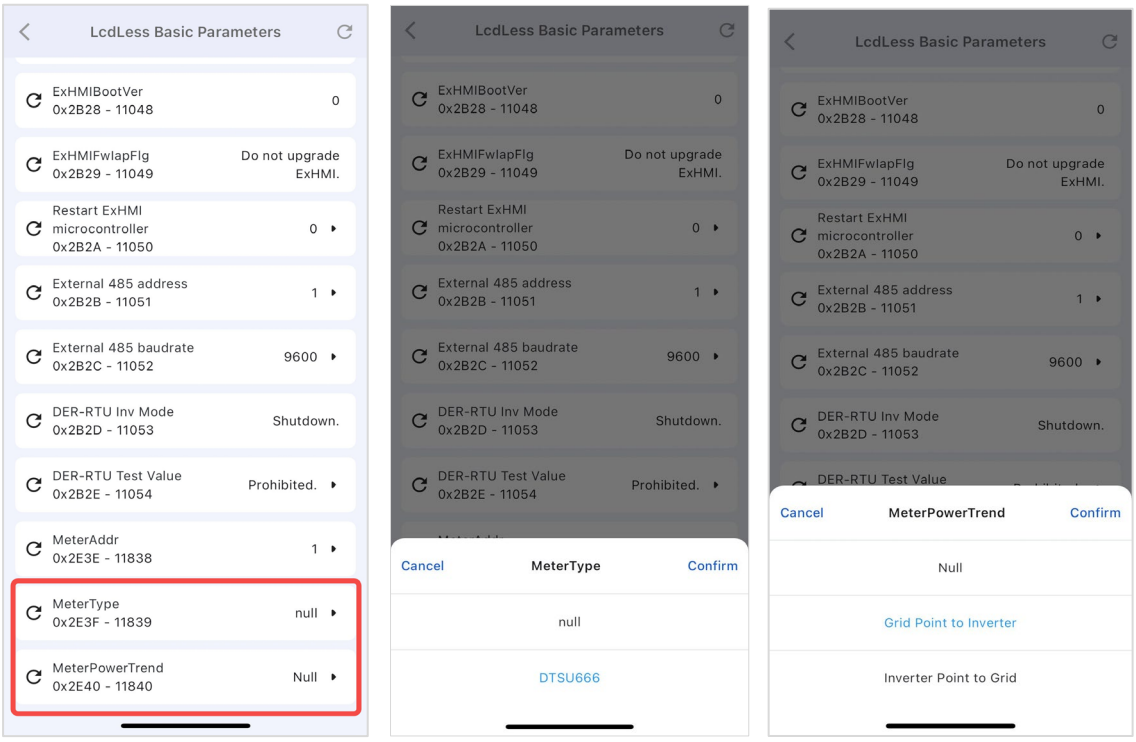


Fig. 6-9-b Configure MeterType and MeterPowerTrend

3. Disable the anti-backflow function: Go to **Settings > Enable/Disable Control Parameters**", set **AntiRefluxEn** parameter to **Disable.**

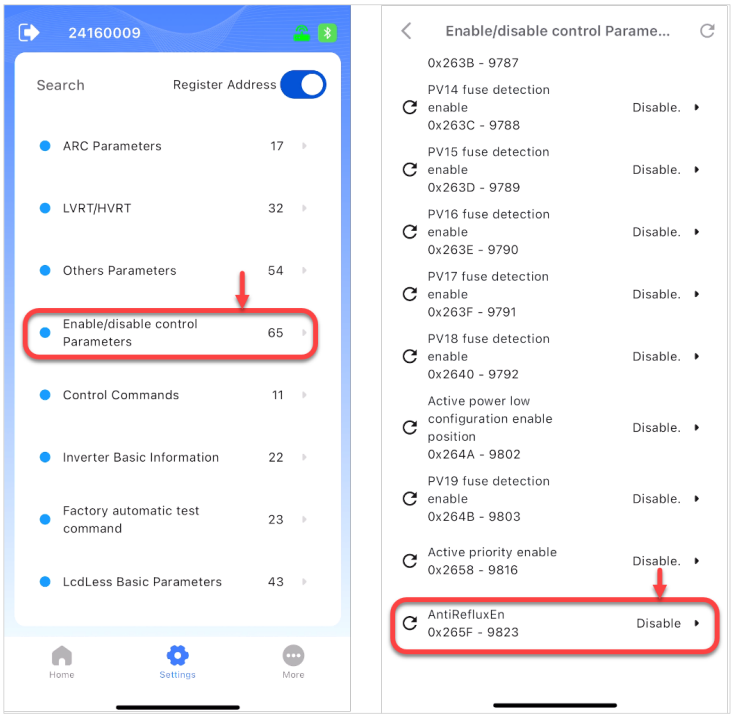


Fig 6-10 Disable AntiRefluxEn function

4. After disabling the anti-backflow function, the active power dispatching value must be set to achieve full power output of the inverter: navigate to **Setting > Power dispatching**, and set the **PSet** parameter to **100.0**.

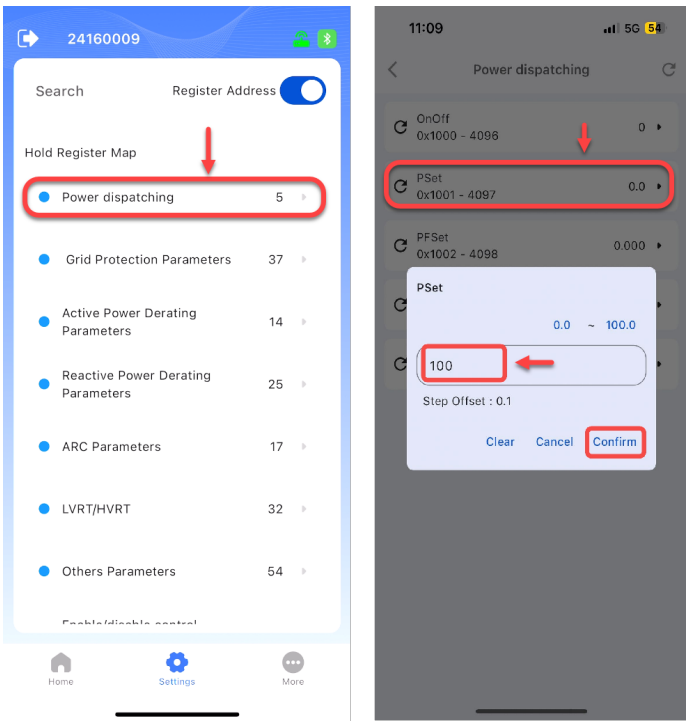


Fig 6-11 Reset the value of PSet

7 Maintenance

WARNING!

- Before starting any product maintenance, the inverter should be stopped running, the AC circuit breaker connected to the grid and the PV input on the DC side shall be all disconnected, and then wait at least 5 minutes before starting any operation.
- Maintenance operations can be performed by qualified personnel only.
- To reduce the risk of electrical shock, please do not perform other servicing other than those specified in the operation instructions unless you are qualified to do so.

7.1 Check Electrical Connection

- Check all the cable connections as a regular maintenance inspection every 6 months or once a year.
- Check the cable connections. If loose, please tight all the cables acc. to Chapter 4 Electrical Connection.
- Check for cable damage, especially whether the cable surface is scratched or smooth. Repair or replace the cables if necessary.

7.2 Clean the Air Vent Filter

The inverter can become hot during normal operation. So, the inverter uses built-in cooling fans to provide sufficient air flow to help in heat dissipation.

In order to ensure good ventilation and heat dissipation of the inverter, it is necessary to check the air inlet and outlet regularly.

Ensure that air inlets and outlets are not blocked and clean the vent with soft brush or vacuum cleaner if necessary.

7.3 Replace the Cooling Fans

If the internal temperature of the inverter is too high or abnormal noise is heard assuming the air vent is not blocked and is clean, it may be necessary to replace the external fans.

IMPORTANT!

Please disconnect the AC & DC power before replacing the fans.

Refer to the following procedures for replacing the cooling fans.

1. Use a No.2 Phillips head screwdriver to remove the 4 screws fixing the fan tray as shown in Fig. 7-1.

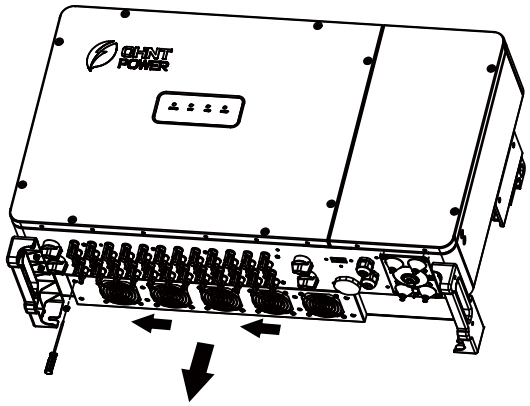


Fig. 7-1 Remove the fan tray and fan

2. Disconnect the watertight cable connector from cooling fan, as shown in Fig. 7-2.

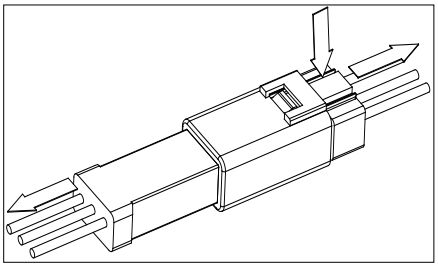


Fig. 7-2 Disconnect the watertight cable connector

3. Use a No.2 Phillips head screwdriver to remove the 4 screws fixing every fan.

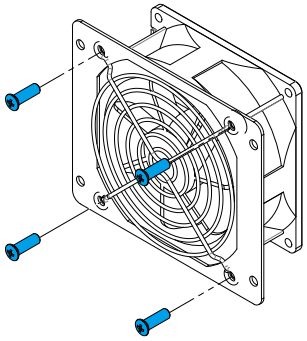


Fig. 7-3 Replace cooling fans

4. Place the new cooling fans on the fan tray, and fasten the cable on the fan tray with cable ties. Tools required: No.2 Phillips head screwdriver, torque value: 14~18kgf.cm
5. Reinstall the assembled fans onto the inverter. Tools required: No.2 Phillips head screwdriver, torque value: 16kgf.cm.

7.4 Replace the Inverter

IMPORTANT!

Make sure the AC breaker and DC switch of inverter are turned off.

Replace the inverter in reverse order relative to the installation steps in section 3.

1. Use a No.10 hexagon socket wrench (torque value: 60.2 kgf.cm) to remove the two M6X16 screws.
2. Remove the inverter from its mounting bracket with the coordination of 4 people.
3. Replace the new inverter on the mounting bracket and fasten it.

8 Troubleshooting

8.1 LED Lamp Troubleshooting

If the LED light indicates any faults, please perform troubleshooting according to the Table 8-1:

LED Lamp Failure State	Troubleshooting Method
“Power” light not on	1. Disconnect the external AC circuit breaker 2. Turn the DC switch to the “OFF” position 3. Check PV input voltage and polarity
“GRID” light flashing	1. Disconnect the external AC circuit breaker 2. Turn the DC switch to the “OFF” position 3. Check that the grid voltage and circuit breaker wiring are correct and firm
“RUN” light off or “FAULT” light on	Refer to Table 8-2 for troubleshooting

Table 8-1 LED Light Troubleshooting

8.2 APP Display Troubleshooting

DANGER!

- Please disconnect the inverter from AC grid and PV modules before opening the equipment. Make sure hazardous high voltage and energy inside the equipment has been discharged.
- Do not operate or maintain the inverter until at least 5 minutes after disconnecting all sources of DC and AC.

When the photovoltaic power generation system fails, such as: output short circuit, grid voltage overvoltage, undervoltage, grid frequency overfrequency, underfrequency, high ambient temperature, and device internal failure, the inverter will automatically stop and the fault information will be displayed on the APP.

Before contacting the after-sales service, you can quickly locate the cause of the fault based on the faults listed in Table 8-2, and deal with it according to the recommended handling method. There are three main types of failures: warning, protection, and failure.

Fault Type	Fault Code	Solution
Warning	CommErr (Internal Communication Failure)	1. Observe for 5 minutes to see if the inverter can automatically eliminate this alarm; 2. Disconnect the DC switch and let the system receive power again; 3. Contact after-sales service personnel
	ExtFanErr (External Fan Alarm)	1. Observe for 5 minutes to see if the inverter can automatically eliminate this alarm; 2. Check on the spot whether there are foreign objects on the fan blades; 3. Disconnect the DC switch and let the system receive power again; 4. Contact after-sales service personnel
	IntFanErr (Internal Fan Alarm)	1. Observe for 5 minutes to see if the inverter can automatically eliminate this alarm; 2. Check on the spot whether there are foreign objects on the fan blades; 3. Disconnect AC power and let the system receive power again; 4. Contact after-sales service personnel
	Warn0030 (EEPROM Read/Write Failure)	1. Observe for 5 minutes to see if the inverter can automatically eliminate this alarm; 2. Contact after-sales service personnel
	Warn0040 (DC side lightning protection device Abnormality)	1. Observe for 5 minutes to see if the inverter can automatically eliminate this alarm; 2. Check whether the DC lightning protector is damaged 3. Contact after-sales service personnel
	Warn0050 (Temperature Sensor Abnormality)	1. Check the temperature display value 2. Disconnect AC power and let system receive power again 3. Contact after-sales service personnel

	Warn0100 (AC side MOV Abnormality)	1. Observe for 5 minutes to see if the inverter can automatically eliminate this alarm 2. Contact after-sales service personnel
	MeterCommErr (Meter Communication Failure)	1. Check if the configuration of communication is right 2. Observe for 5 minutes to see if the inverter can automatically eliminate this alarm 3. Contact after-sales service personnel
	MPPTxFuseWarn (x=1-12) (MPPT Fuse Warning)	Check if the DC cable of MPPT 1-12 is connected correspondingly
Protection	Protect0090 (Bus Voltage High)	1. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	Protect0070 (Bus High Voltage Difference)	
	Protect0060 (Bus Soft Start Timeout)	1. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	Protect0050 (Inverter Soft Start Timeout)	
	Protect0030 (Inverter Current High)	1. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	Protect0020 (Grid-tied relay protection)	
	Protect0010 (Inverter current offset)	
	Protect0180 (Inverter current DC component offset)	

	Protection 0170 (DCI current is too high)	1. Set the maximum DCI to 400mA 2. Restart the inverter to observe whether the fault is automatically eliminated 3. Contact after-sales service personnel
	Protect0160 (Frequency detection abnormality)	1. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	Protect0150 MiniMCU Protection	
	Protect0140 (Inverter hardware over current)	
	Protect0130 (Inverter current unbalance)	1. Check if the three phases of grid is balanced 2. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 3. Contact after-sales service personnel
	Protect0110 (Bus hardware over voltage)	1. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	Protect0210 (Inner self-diagnosis hardware failure)	
	Protect0260 (PV connection abnormality)	1. Check if the DC cable connection of PV is firm 2. Check if the connected number of MPPT is aligned with the number of MPPT needed 3. Contact after-sales service personnel
	Protection0230 Start-up inverter open loop self-check failure	1. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	Protect0460 (Overcurrent blocking protection)	

	Protect0610 (GFCI static failure)	1. Check if the grounding of inverter is firm 2. Contact after-sales service personnel
	Protect0570 (Catch phase-locked loop check exceptions)	1. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	Protect0550 (Bst hardware overcurrent)	
	Protect0540 (Product model abnormality)	Contact after-sales service personnel
	Protect0530 (CPLD program version abnormality)	
	Protect0520 (CPLD clock abnormality)	
	Protect0470 (AC grounding failure)	1. Check if the grounding is firm 2. Contact after-sales service personnel
	TempOver (Over-temperature protection)	1. Check whether the external ambient temperature is within the working range of the inverter 2. Check if the fan and air outlet are blocked 3. Check whether the installation environment and spacing meet the requirements, and whether the heat dissipation meets the requirements 4. Observe for 30 minutes to see if the fault is automatically eliminated 5. Contact after-sales service personnel
	IsolationErr (Insulation Resistance is too low)	1. Check whether the PV cable and ground cable are normal 2. Restart the inverter and observe whether the fault is automatically eliminated 3. Contact after-sales service personnel

	GFCIErr (Leakage Current is too high)	1. Check whether the PV cable and ground cable are normal 2. Restart the inverter and observe whether the fault is automatically eliminated 3. Contact after-sales service personnel
	MPPTxRevConnect (x=1-12) (MPPTx Reverse connection failure)	1. Check if the positive and negative poles are reversed 2. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 3. Contact after-sales service personnel
	MPPTxVolHigh (x=1-12) (MPPTx voltage is too high)	1. Check if the voltage of PV is too high (too many solar cell boards) 2. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 3. Contact after-sales service personnel
	ARC protection (ARC protection fault)	1. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	Arc board fault	1. Clear the faults on the APP or the Web 2. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 3. Contact after-sales service personnel
	GridV.OutLim (1. The valid value of grid wire voltage is exceeded 2. The valid value of grid phase voltage is exceeded 3. Grid phase failure 4. Grid voltage unbalance)	1. Check if the three phases of grid is normal 2. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 3. Contact after-sales service personnel

	GridF.OutLim (Grid frequency failure)	1. Check if the grid frequency is normal: 2. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 3. Contact after-sales service personnel
Failure	Failure 0020~0150	1. Restart the inverter, disconnect the AC and DC connections, wait for 5 minutes to discharge and then turn it on 2. Contact service personnel

Table 8-2 Fault Information Table

9 Technical Data

Model Name	SCA100K-T-EU	SCA120K-T-EU	SCA125K-T-EU
DC Input			
Max. DC Voltage	1100Vdc		
MPPT Voltage Range[1]	200~950Vdc		
Start Voltage	300Vdc		
Rated DC Voltage	615Vdc		
Number of MPPT/Max. Number of DC Connection Sets	12/24		
Max. input current per MPPT	30A		
Max. DC short-circuit current per MPPT	45A		
DC Disconnection Type	Integrated Switch		
AC Output			
Rated AC Power	100kW	120kW	125kW
Max. AC Power	110kVA	132kVA	125kVA
Rated AC Voltage	380 / 400V		
AC Voltage Range[2]	322 - 528Vac		
Grid Connection Type	3 / (N) / PE		
Max. AC Current	167.2A	201A	190A
Rated Frequency	50Hz / 60Hz		
Grid Frequency Range	45 - 55Hz/ 55 - 65Hz		
Power Factor (cosφ)[5]	>0.99 (±0.8 adjustable)		
Current THD	< 3%		
AC Disconnection Type	-		

Model Name	SCA100K-T-EU	SCA120K-T-EU	SCA125K-T-EU
System Data			
Topology	Transformerless		
Max. Efficiency	98.11%	98.50%	98.50%
Euro Efficiency	98.00%	98.10%	98.10%
Consumption at Night	< 6W		
Environment Data			
Ingress Protection	IP66		
Cooling Method	Cooling Fans		
Operating Temperature Range[3]	-30°C - +60°C		
Ambient Humidity	0 - 100%		
Altitude[4]	4000m		
Display and Communication			
Display	LED+ APP (Bluetooth)		
Communication	RS485 / Wi-Fi (Standard)/ & 4G (Optional)		
Mechanical Data			
Dimensions (W*H*D)	1050.0 * 660.0 * 340.5mm		
Weight	90 kg		
DC Connection Type	MC4 (Max. 6mm^2)		
AC Connection Type	OT/DT Terminal (Max. 240mm^2)		
Safety			
Certifications	IEC/EN 62109-1/2, IEC 63027, IEC 61727/62116, IEC/EN 61000-6-2/4, IEC 61000-3-11/12, EN 50549-1, EN 50549-2, NF EN 50549-1, NC RfG, CEI 0-16, CEI 0-21, UNE 217001, UNE 217002, NTS_V2.1, RD 647, RD 413, RD 1699, VDE-AR-N 4105, VDE-AR-N 4110		

Note:

1. DC Input Voltage De-rating

Inverter full power operating range is 500-850VDC for 120-125kW. Below and above this

range, there is a linear de-rating of the inverter output power.

DC input voltage linear de-rating is shown in the following figure:

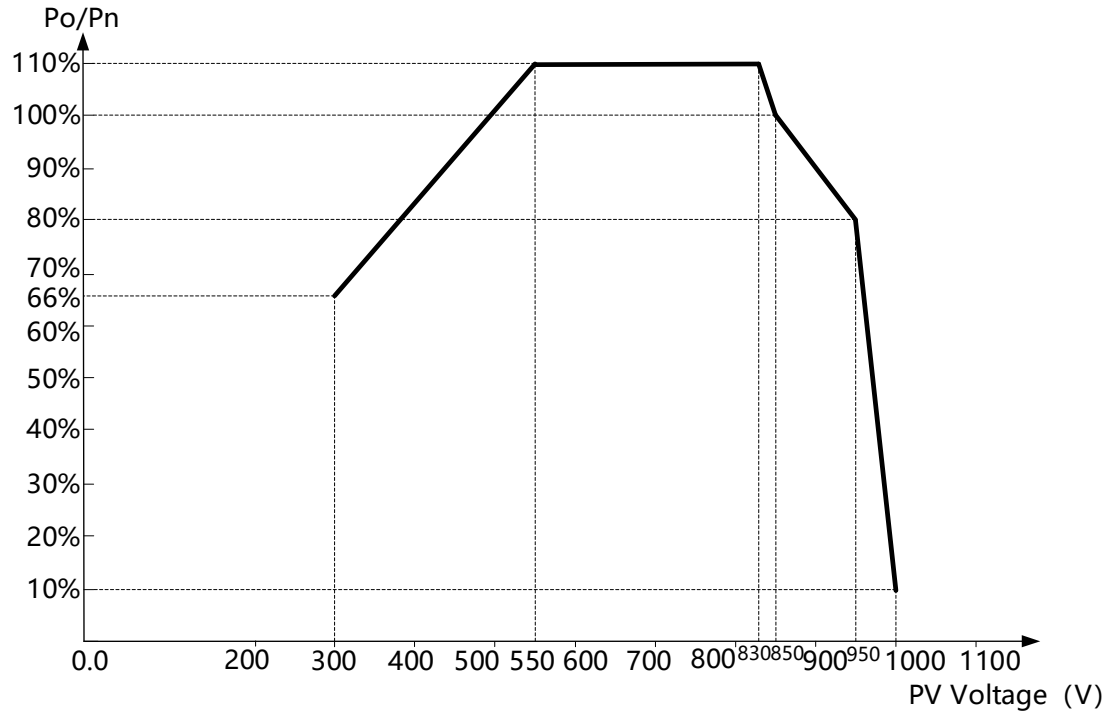


Fig.9- 1 SCA100K-T-EU DC voltage de-rating curve

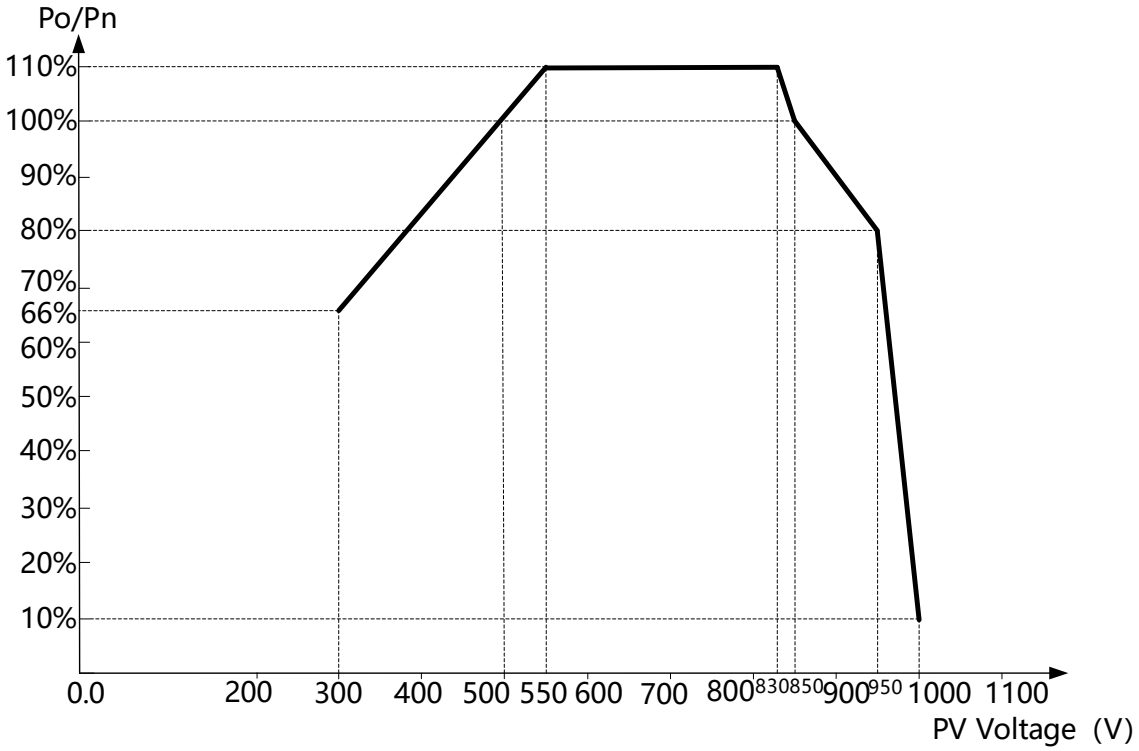


Fig.9- 2 SCA120K-T-EU DC voltage de-rating curve

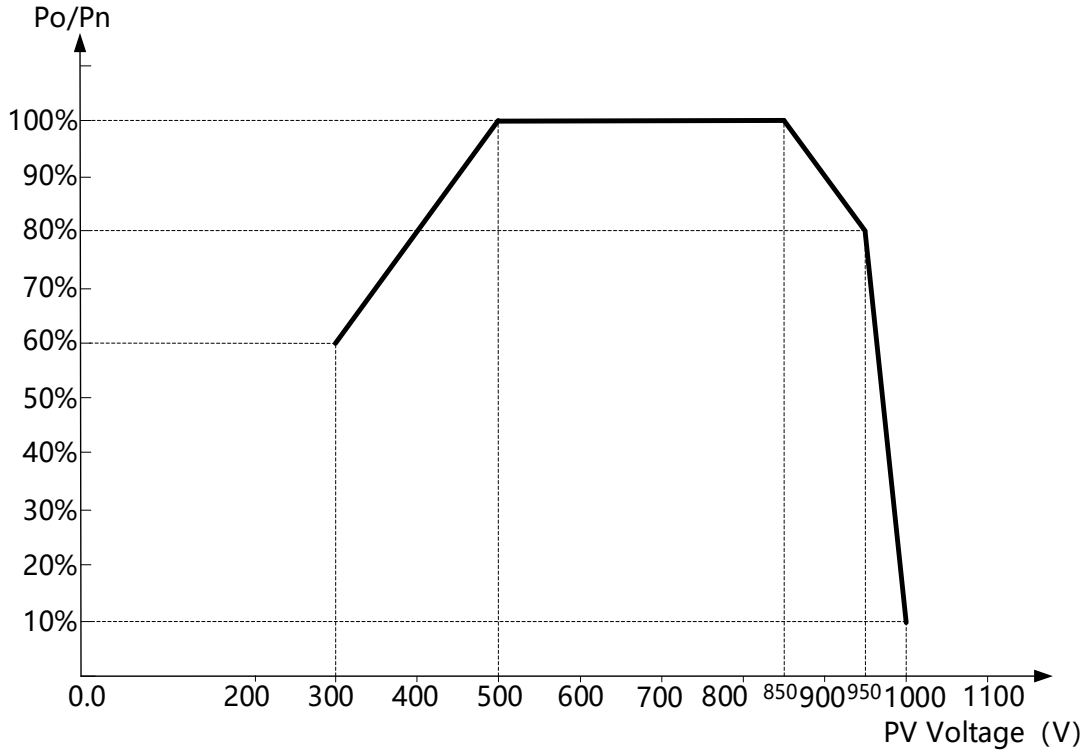


Fig.9- 3 SCA125K-T-EU DC voltage de-rating curve

2. AC Output Voltage De-rating

Inverter AC output voltage operating range is 0.8Un-1.1UnVAC (Un：standard grid rated value).

AC output voltage linear de-rating is shown in the following figure:

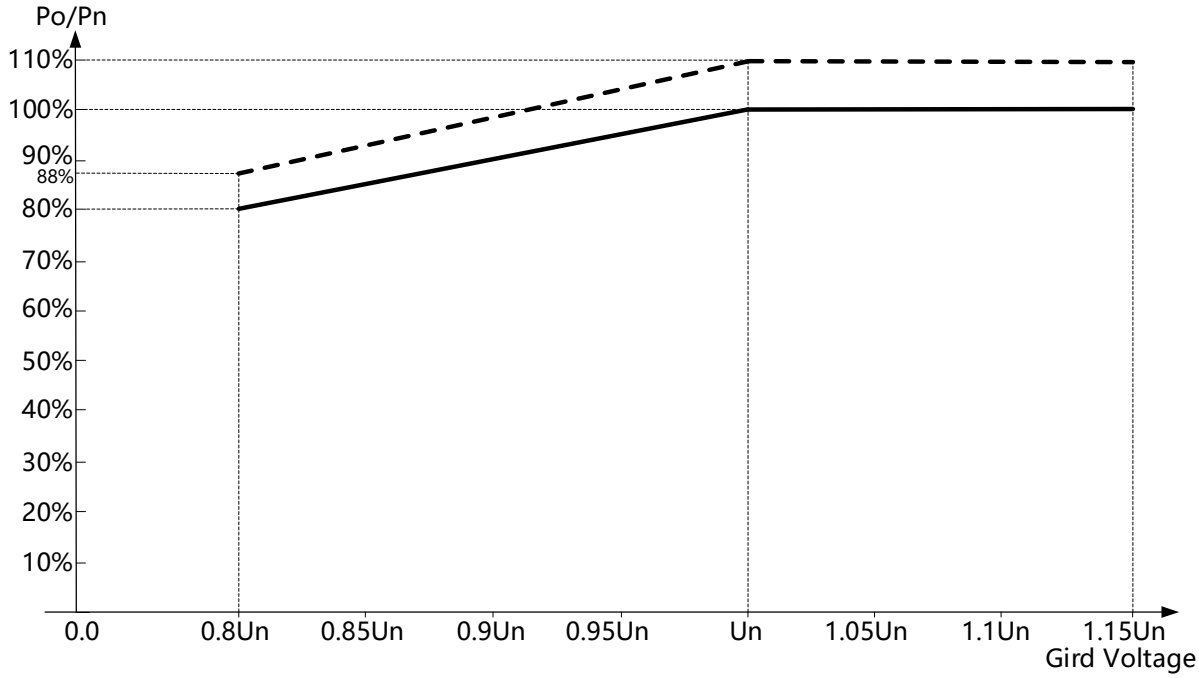


Fig.9- 4 SCA100K-T-EU/SCA120K-T-EU AC Output Voltage De-rating

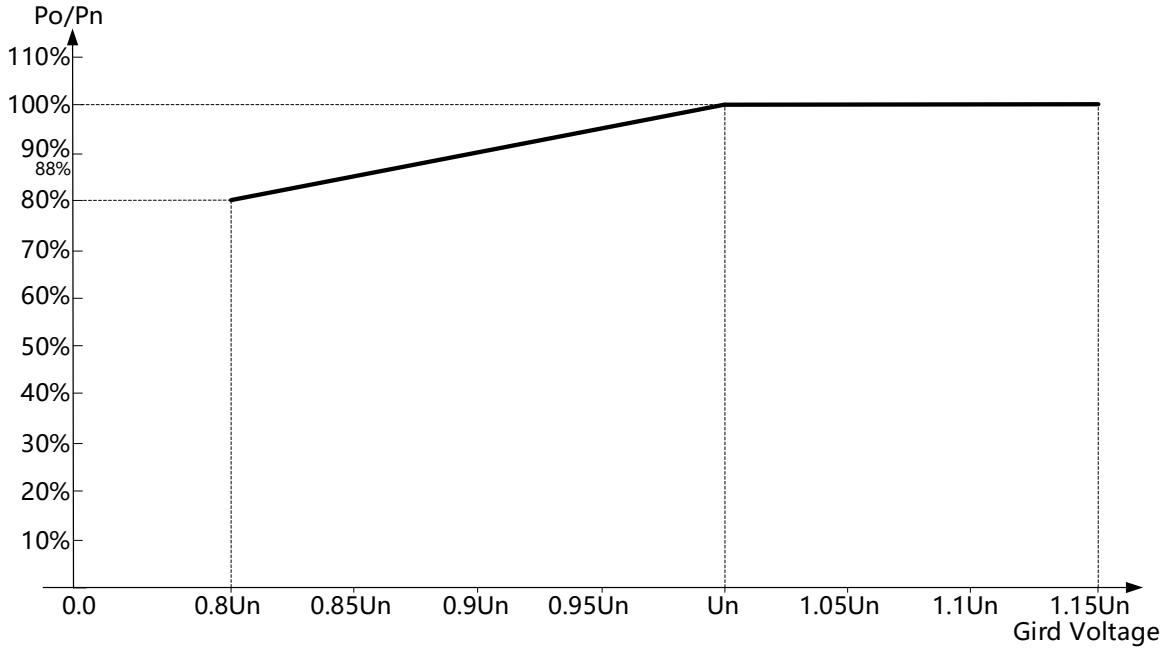


Fig.9- 5 SCA125K-T-EU AC Output Voltage De-rating

3. Temperature De-rating

Inverter output power needs to be de-rated when installed at temperature 45°C. De-rating needs to be performed according to the following figure:

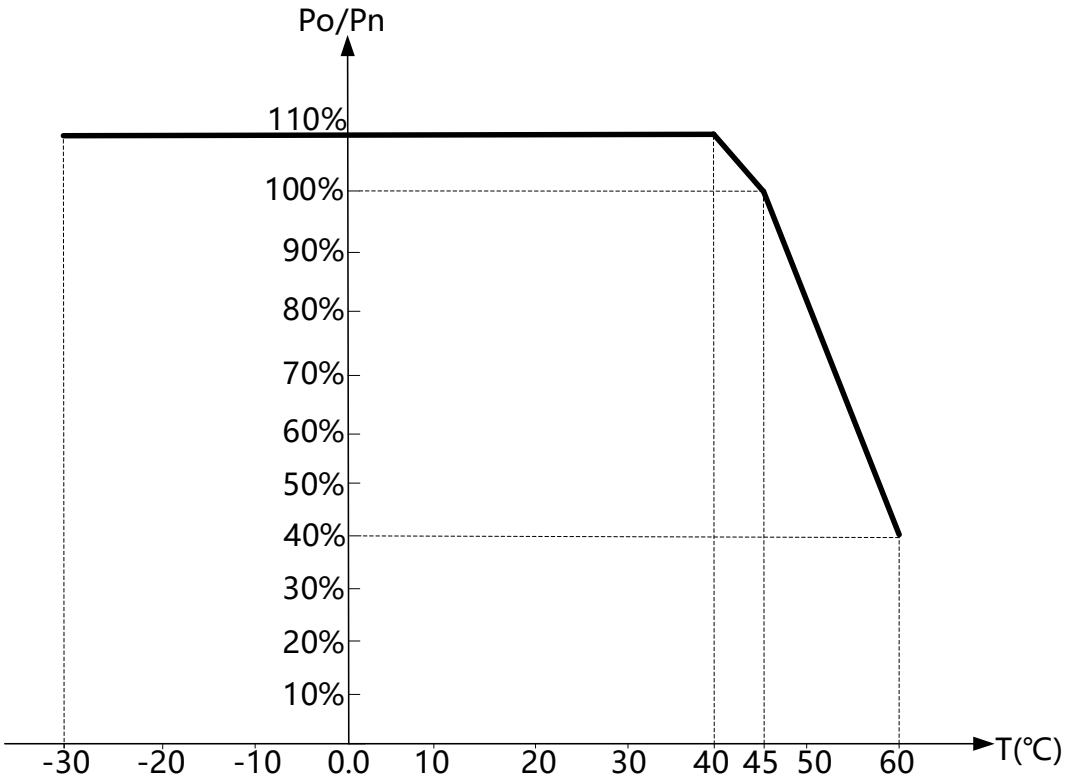


Fig.9- 6 SCA100K-T-EU/SCA120K-T-EU temperature dependency de-rating

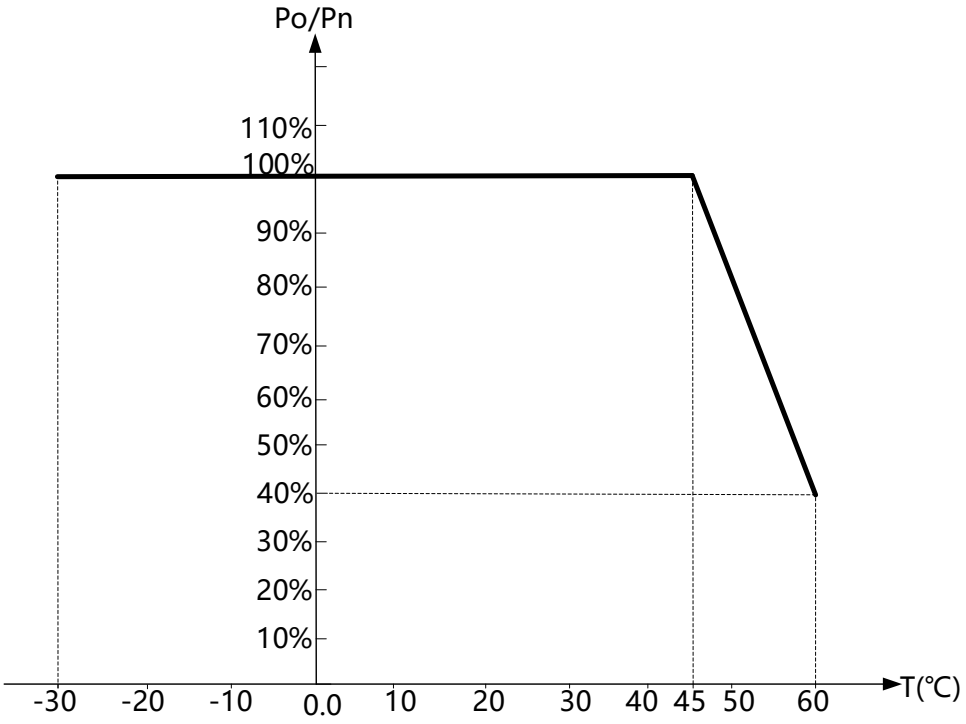


Fig.9- 7 SCA125K-T-EU temperature dependency de-rating

4. Altitude De-rating

The altitude and output power de-rating details are shown in the following figure.

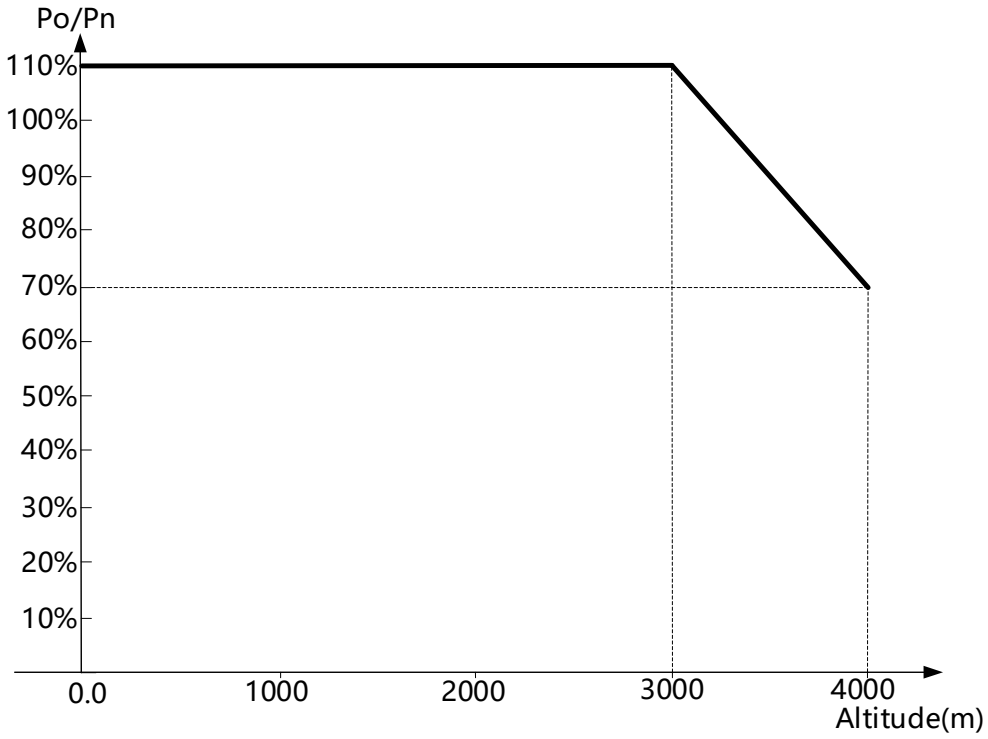


Fig.9- 8 SCA100K-T-EU/SCA120K-T-EU altitude de-rating

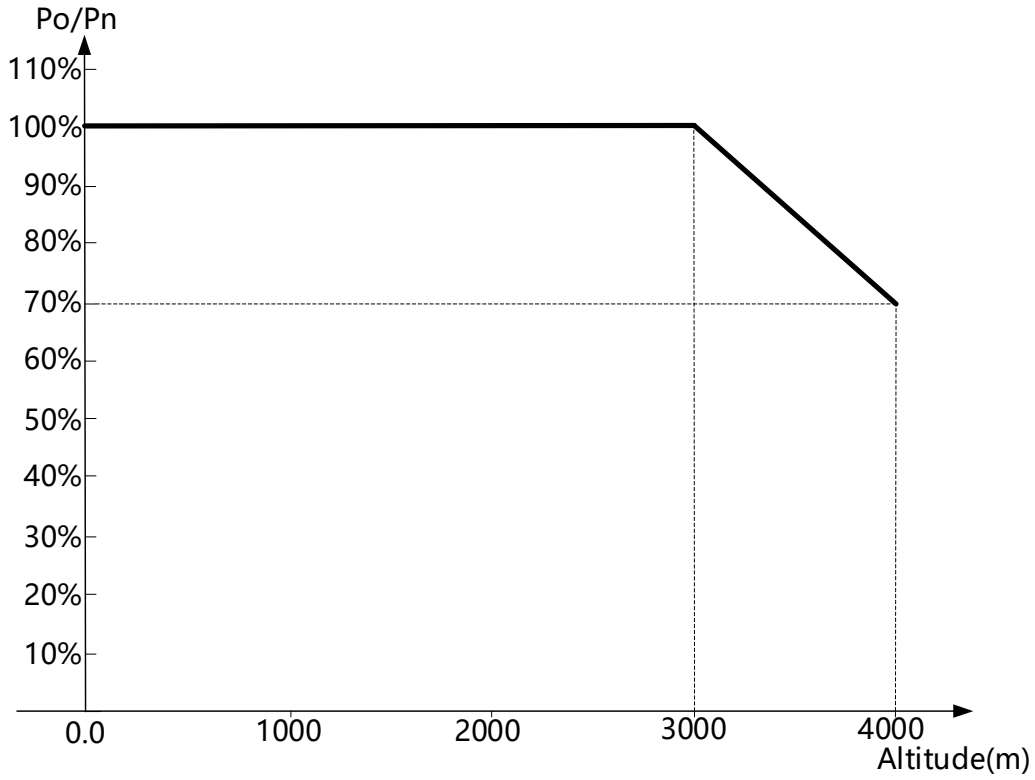


Fig.9- 9 SCA125K-T-EU altitude de-rating

5. P-Q Capabilities at Nominal Output Voltage

Inverter is capable providing reactive power of ±0.8 at nominal grid voltage and rated ambient temperature. The following figure details inverter reactive power capabilities at various input voltages and various ambient temperature conditions.

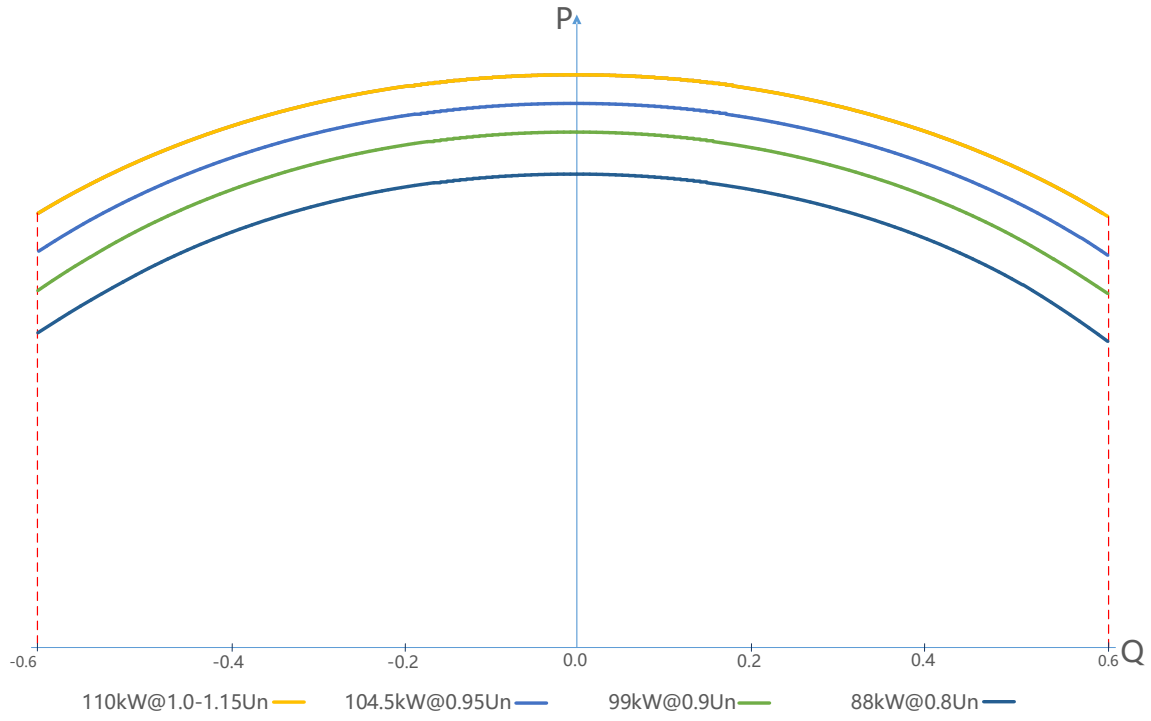


Fig.9- 10 SCA100K-T-EU/SCA120K-T-EU P-Q curve

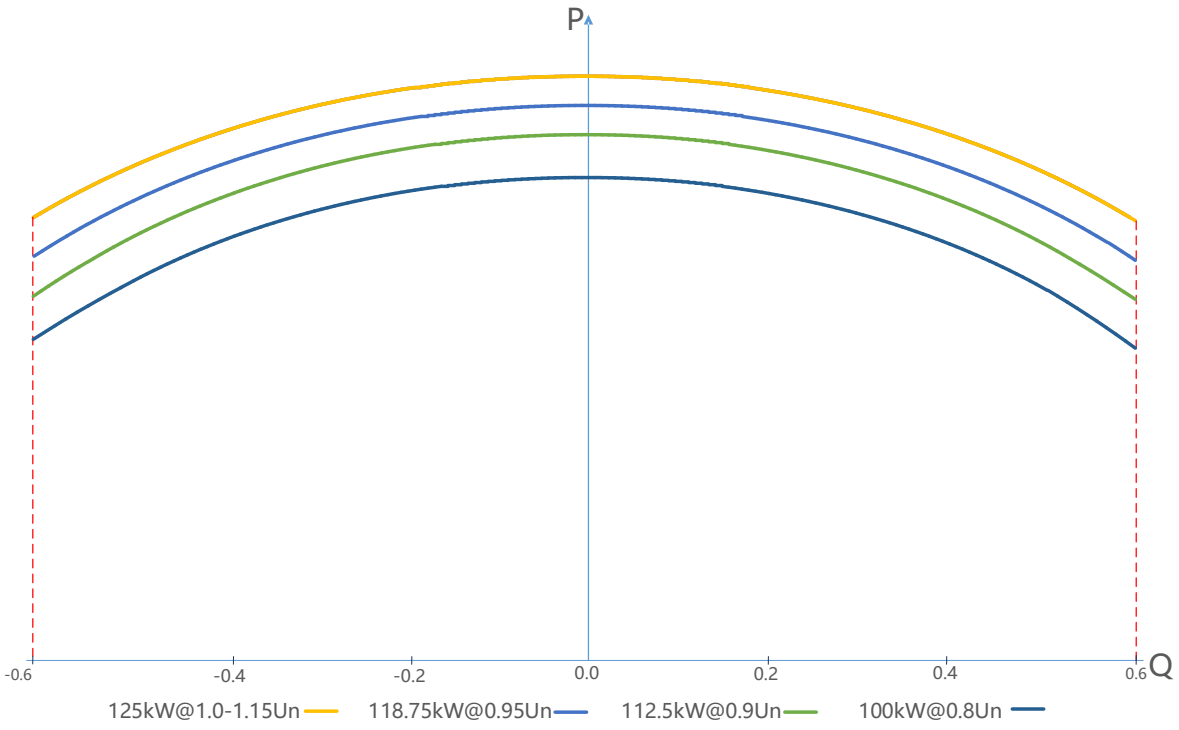


Fig.9- 11 SCA125K-T-EU P-Q curve

10 Quality Assurance

10.1 Liability Exemption

1. Exceed the quality assurance period of the product.
2. Cannot provide product serial number or the SN is not clear/complete.
3. Damage during transportation/storage/handling.
4. Misuse, abuse, intentional damage, negligence or accidental damage.
5. Improper commissioning, testing, operation, maintenance or installation performed by customer, including but not limited to:
    - Failure to meet safe operating environment or system requirements of external electrical parameters provided in written document;
    - Failure to operate the covered product in accordance with the product's operating manual or user guide;
    - Relocate and reinstall systems not in accordance with the requirements of Chint power;
    - Unsafe electrical or chemical environment or other similar kind of conditions;
    - Direct failure caused by wrong voltage or faulty power system;
    - Unauthorized disassembly of the products, or unauthorized modification of the product or provided software;
6. Entrust installation, maintenance personnel not designated by the CHINT to install, repair and disassemble the products;
7. Damages caused by ignoring the safety warnings in the manual or break the rules in relevant statutory safety regulations;
8. Damages caused by operating environment beyond the requirements of the product user manual or failure to commissioning, install, use and maintain the equipment according to the requirements of the product user manual.
9. Unforeseen disasters or irresistible accidents (including but not limited to acts of public enemies, acts of government agencies or domestic or foreign institutions, vandalism, riots, fires, floods, typhoons, explosions or other disasters, epidemic or quarantine restrictions, labor disturbances or labor shortages, accidents, cargo embargoes or any other events beyond the control of CHINT).
10. The lightning protection measures have not been implemented or are not in accordance with standards (Photovoltaic systems' lightning protection measures should comply with the relevant national and IEC standards; otherwise, it may result in damage to photovoltaic devices such as modules, inverters, distribution facilities, etc.,

due to lightning strikes).

11. Other circumstances that are not covered by the company's after-sales warranty agreement.

10.2 Quality Clause (Warranty Clause)

1. For products that fail during the warranty period, our company will repair or replace new products free of charge;
2. Customer shall present the invoice of the product and date of purchase. At the same time, the trademark on the product should be clearly visible, otherwise we have rights to refuse quality assurance.
3. The unqualified product under replacement should be returned to our company;
4. It is necessary to provide a reasonable time for the company to overhaul the equipment.
5. For more warranty terms, refer to the applicable standard warranty policy in place at time of purchase

If you have any questions about the photovoltaic Grid-tied inverter, please contact us, we will be very happy to help you.

11 Recycling

Distributors or installers should contact the inverter manufacturer after removing the inverter from the photovoltaic module and follow the instructions below to dispose.

The inverter cannot be disposed of as household waste.

When the inverter's service life expires, please dispose of it in accordance with the electrical waste disposal laws applicable to the installation location.

You can contact the inverter manufacturer or distributor for handling.

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