Three-Phase Grid-tied PV Inverter

User Manual

Applicable to

SCA25K-TM-SA, SCA30K-T-SA

SCA50K-T-EU, SCA60K-T-EU

Shanghai Chint Power Systems Co., Ltd.

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0 Preface

Thank you for choosing a Chint Grid-tied PV Inverter (hereinafter referred to as “PV Inverter” or “Inverter”) developed by Shanghai Chint Power System Co., Ltd. (hereinafter referred to as "CHINT").

IMPORTANT!

Please read this manual carefully and make sure that you have understood all the contents thoroughly before you start any operation.

Main Contents

This Installation and Operation manual contains important information, safety guidelines, detailed planning and setup information for installation, as well as information about configuration, operation and troubleshooting. Be sure to read this manual carefully before using.

Target Readers

This document is for qualified electricians only, who must perform the tasks exactly as described.

All persons installing inverters must be trained and experienced in general safety which must be observed when working on electrical equipment. Installation personnel should also be familiar with local requirements, rules and regulations. Qualified persons must have the following skills.

- Knowledge of how an inverter works and is operated.
- Training in how to deal with the dangers and risks associated with installing, repairing and using electrical devices and installations
- Training in the installation and commissioning of electrical devices and installations
- Knowledge of the applicable laws, standards and directives
- Knowledge of and compliance with this document and all safety information

Manual Management

Please keep this user manual on hand for quick reference.

Copyrights

1 IMPORTANT SAFTY INSTRUCTIONS

(SAVE THESE INSTRUCTIONS)

PLEASE READ THIS USER MANUAL CAREFULLY BEFORE THE INSTALLATION AND OPERATION OF THIS PV INVERTER. CHINT 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!Manual Symbol Legend.

1.1 Warnings and Symbols in this Document

Symbols	Meanings
	**DANGER!** DANGER indicates a hazardous situation with high level of risk which, if not avoided, will result in death or serious injury.
	**WARNING!** WARNING indicates a hazardous situation with medium level of risk which, if not avoided, could result in death or serious injury.
	**CAUTION!** CAUTION indicates a hazardous situation with low level of risk which, if not avoided, could result in minor or moderate injury.
	**NOTICE!** NOTICE indicates a hazardous situation which, if not avoided, could result in equipment working abnormally or property loss.
	**IMPORTANT!** INSTRUCTION indicates important supplementary information or provides skills or tips that can be used to help you solve a problem or save you time.

1.2 Markings on the Product

	**Hot Surfaces:** To reduce the risk of burns. Do not touch.
	**Risk of Electric Shock:** Risk of electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.
	**CAUTION:** Risk of electric shock from energy stored in capacitor. Do not remove cover until 10 minutes after disconnecting all sources pf supply.
	**WARNING:** Electric shock hazard. The DC conductors of this photovoltaic system are undergrounded and may been energized.
	High touch current is available, the protective grounding connection must be reliable.
	**CAUTION:** Risk of Electric shock: a) Both AC and DC voltage sources are terminated inside this equipment. Each circuit must be individually disconnected before servicing. b) When the photovoltaic array is exposed to light, it supplies a DC voltage to this equipment.
	**WARNING:** Electric shock hazard. The DC conductors of this photovoltaic system are normally ungrounded but will become intermittently grounded without indication when the inverter measures the PV array isolation.
	For more details please see the user manual. Attention: check the equipment manual for the proper way to carry out the electrical installation and if there is a need for additional electrical protection devices.

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 10 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 mounting 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.
	During operation, consider that the noise emitted based on the environment could possibly exceed the legal thresholds (less than 80 dBA), therefore, suitable ear protection must be worn.
	**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!** 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 and to ensure the long-term service life of the inverter.
	**NOTICE!** After unpacking the inverter, keep all its interfaces sealed always, before and after connecting wires.
	**NOTICE!** Requires external protection device: During the installation of the inverter, it is

	necessary to install a circuit breaker on the AC side as an external protection device. The current carrying capacity of the circuit breaker should be 1.2 to 1.5 times the maximum output current of the inverter. It is strongly recommended that methods, systems or devices for rapid disconnection be used in the DC circuit to ensure safety in fire-fighting situations. The inverter continuously monitors the input connection status in real time. When an electric arc occurs in the input connection, the inverter will automatically disconnect the input connection.
	**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-Connected System

SCA25/30K-T(M)-SA and SCA50/60K-T-EUseries inverters are designed for using with grid-tied PV systems. The PV system is generally made up of PV modules, PV inverter, and AC power distribution equipment, as shown in figure below. The solar energy is converted by PV modules to DC power, and then converted by the inverter to AC power with the same frequency and phase as the AC grid. Now the AC power can be supplied in all or in part to local loads, with the remaining power fed to the grid.

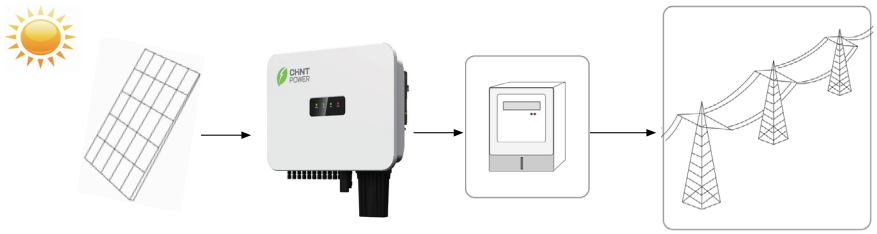


Figure 2-1 Grid-connected PV Power Generation System

Name	Description	Notes
A	PV Module	Monocrystalline silicon, polycrystalline silicon, non-ground PV module
B	PV Inverter	SCA25K-TM-SA SCA30K-T-SA SAC50K-T-EU SAC60K-T-EU
C	AC distribution system	Device such as AC circuit breaker, AC combiner box, metering device
D	Public Grid	Isolation transformer and power grid: support TT, IT, TN-S, TN-C, and TN-C-S system

Table 2-1 Description of Grid-connected PV Power Generation System

2.2 Inverter Appearance

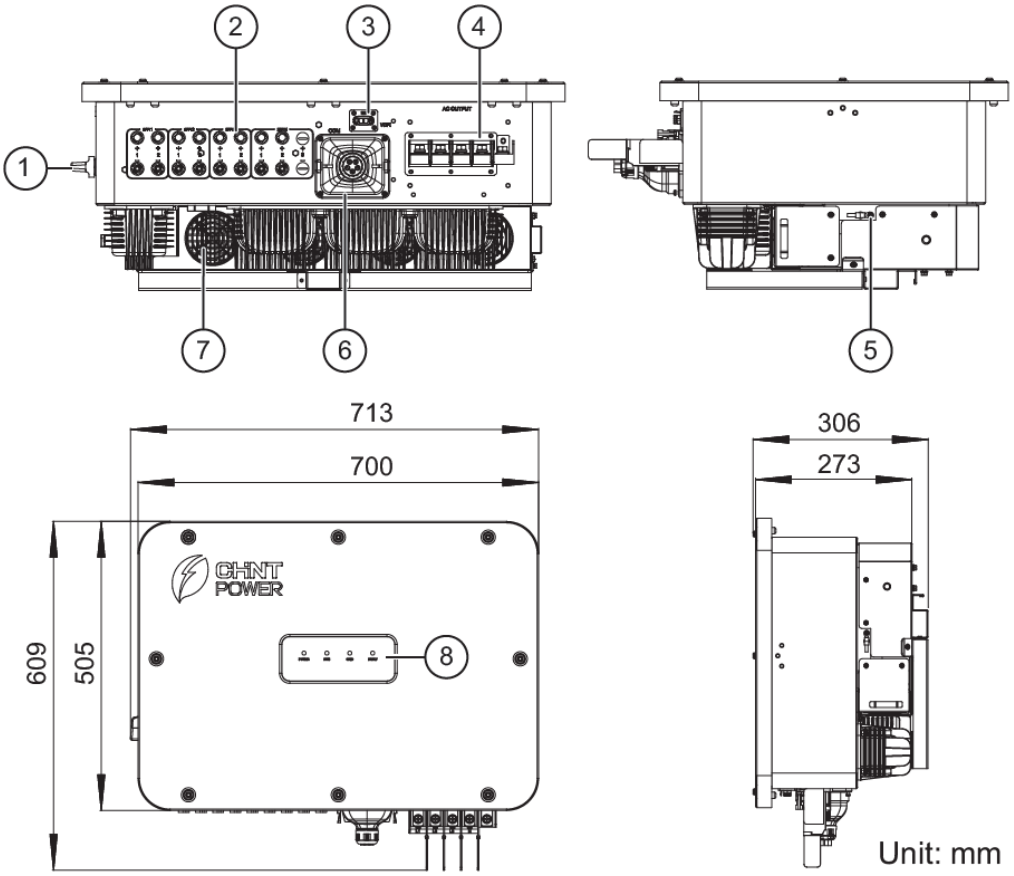


Figure 2-2 Inverter Appearance

No.	Name	Function
1	DC Switch	Turn on/off the DC side power supply
2	DC Input Port	Connect DC input cables
3	Wi-Fi Dongle Interface	Connect communication module
4	AC output terminal	Connect the AC output cables
5	External grounding point	Connect grounding cable
6	Communication Interface	Connect communication cables
7	Fan	Cool the inverter
8	LED Indicator	Indicates the running status of the inverter

Table 2-2 Description of Inverter Appearance

2.3 LED Indicator

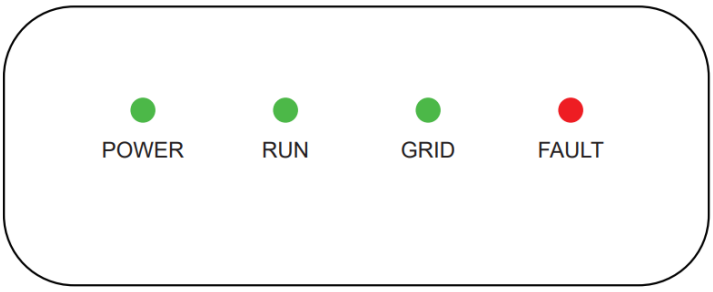


Figure 2-3 LED display of the inverter

Indicators and their indications are shown below:

LED	Name	Status	Function
Power	Grid connection indicator	On(Green)	PV power supply is normal and enough to turn on back-up power
		Off	No power supply
RUN	On-grid run indicator	On(Green)	In on-grid generation status
		Off	In off-grid status or no power supply
Grid	Grid status indicator	On(Green)	Grid is normal
		Off	Grid is abnormal
FAULT	Fault indicator	On(Red)	Fault
		Flash	Alarm(on for 0.5s, off for 0.5s)
		Off	No fault or no power suppy
All lights flash			LCD or DSP upgrade

Table 2-3 Indicators and their indications

2.4 Product Protective Functions

- Short circuit protection
- Input to ground insulation resistance monitoring
- Output voltage and frequency monitoring
- Ground leakage current monitoring
- DC component monitoring of output current
- Anti-island protection
- Input and output overvoltage protection
- Input and output overcurrent protection
- Ambient temperature monitoring
- Module temperature monitoring
- Arc protection
- Power limitation

2.5 Night Power Supply Function

This function enables the inverter to be upgraded at night without affecting the daytime power supply. It's crucial to maintain uninterrupted communication during nighttime. This helps prevent communication failures or shutdowns caused by faults or a lack of PV power at night. Additionally, it facilitates 24-hour monitoring of grid and load data.

2.6 ARC Detection Protection

This inverter arc detection protection conforms to IEC 63027 standard, arc protection device type is as table 2-4, and the detail explanation is as table 2-5.

Inverter Type	ARC protection device type
SCA25K-TM-SA	F-I-AFPE-1-4-2
SCA30K-T-SA	F-I-AFPE-1-4-2
SCA50K-T-EU	F-I-AFPE-1-4-2
SCA60K-T-EU	F-I-AFPE-1-4-2

Table 2-4 ARC protection device type

Letter	Meaning
F	Full covered
I	Integrated
AFPE	Provide detection and interruption function
1	Each input string port connects to one PV array
4	Each detection channel has four input ports
2	Two detection channels

Table 2-5 Arc protection device letter meanings

- **ARC Protection**: This function detects if arcing is occurring on the DC side of the inverter. When an ARC fault is detected, the inverter will shut down immediately. If the number of recordings is less than 5 times in 24 hours, wait for 10 minutes, the inverter will restart automatically and grid connection. If it reaches 5 times, check whether the DC cables or connections have proper insulation. If the insulation is normal, the fault alarm must be manually cleared.
- **ARC Clear**: This function is used to clear the “ARC protection-Occurring” fault manually. The “ARC protection-Occurring” fault alarm needs to be cleared via the MatriCloud App or the monitoring platform.
- **ARC Self-test**: This function is used to detect whether there is any fault in the ARC board. The inverter automatically performs the ARC self-test every day before normal operation, and if there is a fault, the alarm “ARC board fault-Occurring” appears.

2.7 Schematic Diagram and Circuit Design

The electrical schematic diagram of inverter is as shown in figures below. 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 is added.

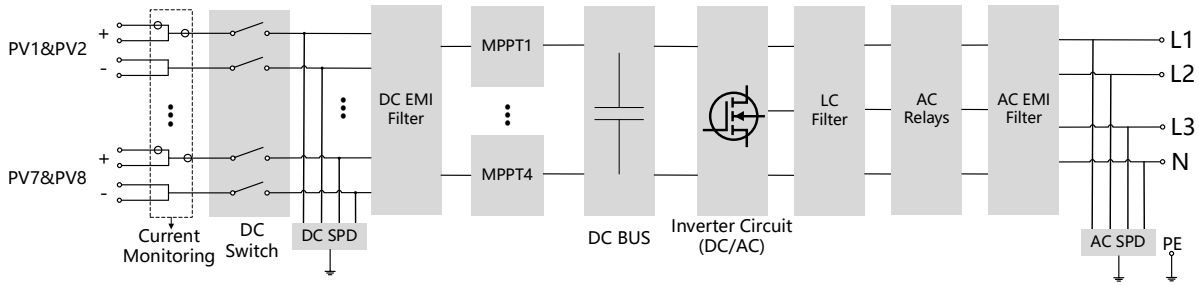


Figure 2-4 Schematic diagram of inverter

3 Mechanical Installation

IMPORTANT!

The following content is the installation instructions of the inverter, please read carefully and follow the steps to install this product.

The installation of this equipment must comply with the technical standars in force for photovoltaic electrical installation (NBR 16690) and fire risk management in photovoltaic systems (IEC 63226).

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 packaging materials promptly.
- Keep the packing box 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

Before performing installation, check the product for any obvious damages or if the items on the delivery list are complete. Contact your supplier if any problem is found. The delivery list is as below:

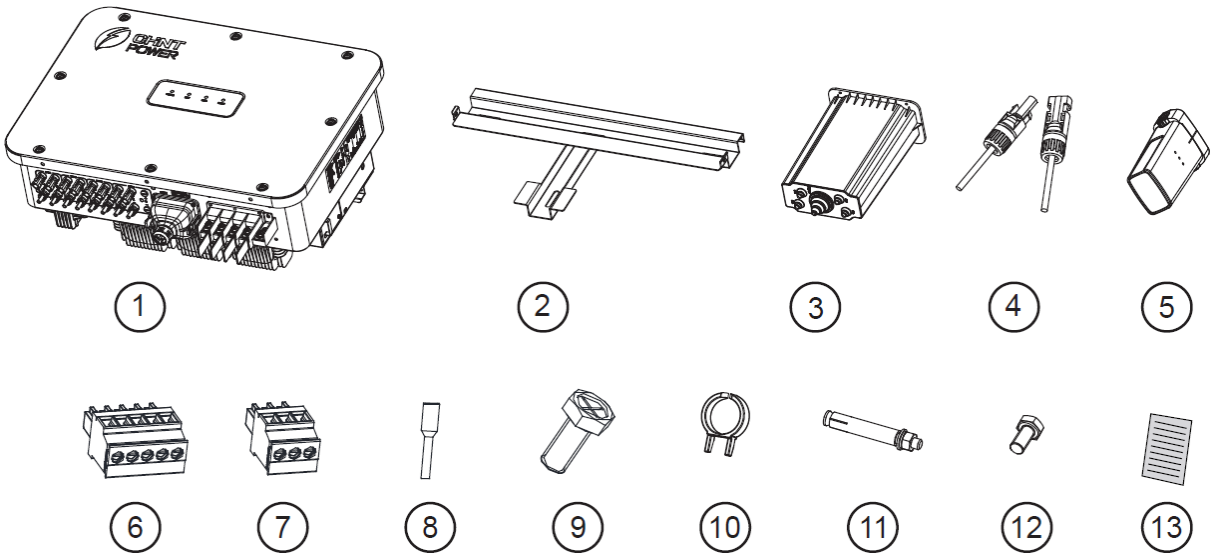


Figure 3-1 Scope of supply

No.	Name	QTY	Notes
1	PV Inverter	1	Last input port is reserved.
2	Mounting bracket	1	Hang the inverter
3	AC terminal cover	1	Connect AC cables and protect AC terminals
4	DC input connector	16	DC male and female connector：8+，8-
5	Communication module	1	For communication between app and inverter
6	5-Pin terminal	2	Connect RS485 cable
7	3-Pin terminal	1	Connect RS485 cable
8	Cord terminal	9	Crimp RS485 cable
9	M6x16 screw	1	Grounding
10	Unlock tool for DC input connector	1	Remove the DC input connector
11	Expansion screw	4	Fix the mounting bracket on the wall
12	M4x12 combined screw	2	Fx inverter onto mounting bracket
13	Document	1	Quick guide

Table 3-1 Delivery List

3.3 Installation Precautions

- 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.
- Sufficient space must be provided to allow the inverter cooling system to operate normally.
- Install the inverter away from flammable and explosive substances, and prohibit old, sick, disabled people and children from approaching.
- The equipment should be installed in an area far away from liquids; It is strictly prohibited to install it below water pipes, air vents, and other locations that are prone to condensation; It is strictly prohibited to install below the air conditioning outlet, ventilation outlet, machine room outlet window, and other locations that are prone to water leakage, to prevent liquid from entering the equipment and causing equipment malfunction or short circuit.
- When installing, if drilling is required, please make sure to avoid the water and electricity wiring inside the wall.
- 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 characteristics of salt mist are easily affected by factors such as seawater, sea breeze, precipitation, relative humidity, terrain, and forest range near the coast. Therefore, inverters should not be installed outdoors in salt affected areas (within 500m from the coast).
- The inverter may generate noise during operation, please do not install it in a place that affects daily life.
- The installation height of the inverter should be easy to observe the LED indicator panel, as well as facilitate electrical connection, operation, and maintenance.
- The PV Array is not grounded (floating).
- 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.
- Reverse engineering, decompiling, disassembling, dismantling, modifying, implanting, or any other derived operations on the device software are strictly prohibited. It is also

prohibited to study the internal implementation of the device, obtain the device software source code, steal intellectual property rights, or disclose any performance testing results of the device software.

- If the gap of the output terminal is not blocked according to the requirements, resulting in machine failure, our company does not carry out warranty, and bear any responsibility.
- Cables of the same type should be bundled together, and different types of cables should be arranged separately, with no intertwining or crossing allowed.
- 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 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.

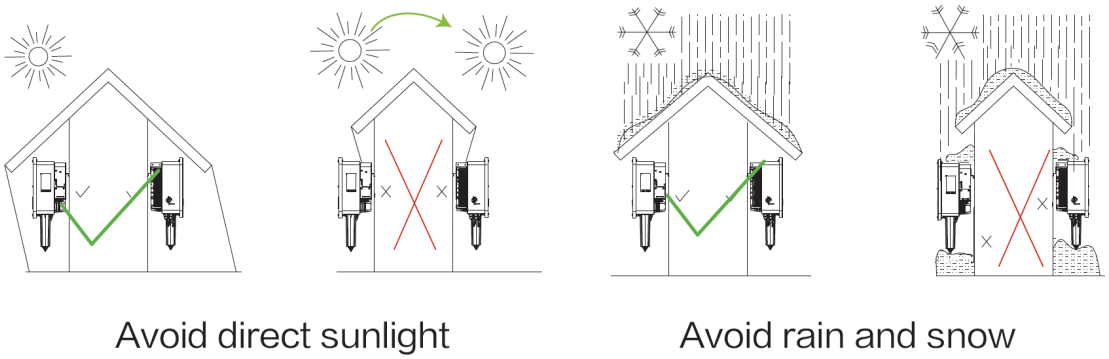


Figure 3-2 Installation environment requirments

3.4.2 Installation Mode Requirements

The inverter shall be installed following the modes as below:

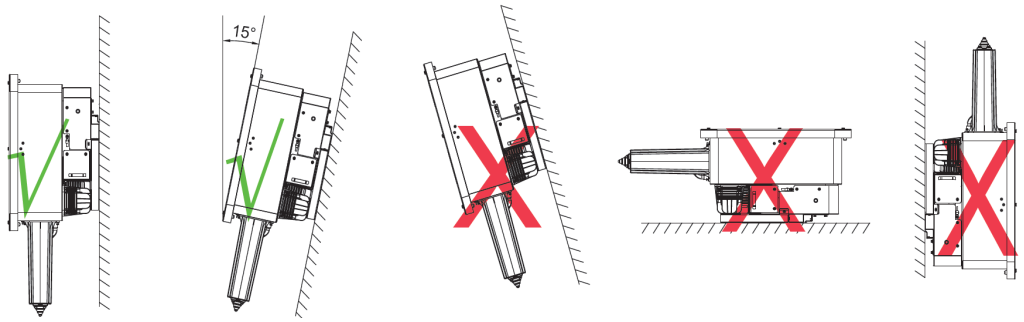


Figure 3-3 Installation mode requirements

No.	Installation Mode	Instruction
A	Vertical	If the installation location allows, install the inverter vertically.
B	Lean Back ≤ 15°	If the inverter cannot be mounted vertically, it may be tilted backward by lower than 15 degrees from vertical direction.
C	No Forward	Do not mount the inverter leaning forward.
D	No Horizontal	Do not mount the inverter horizontally.
E	No Upside-down	Do not mount the inverter upside down.

Table 3-2 Installation mode requirements

3.4.3 Installation Space Requirements

Appropriate clearances shall be reserved to ensure sufficient ventilation and heat dissipation. If the inverters are installed in relatively enclosed space, these clearances 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.

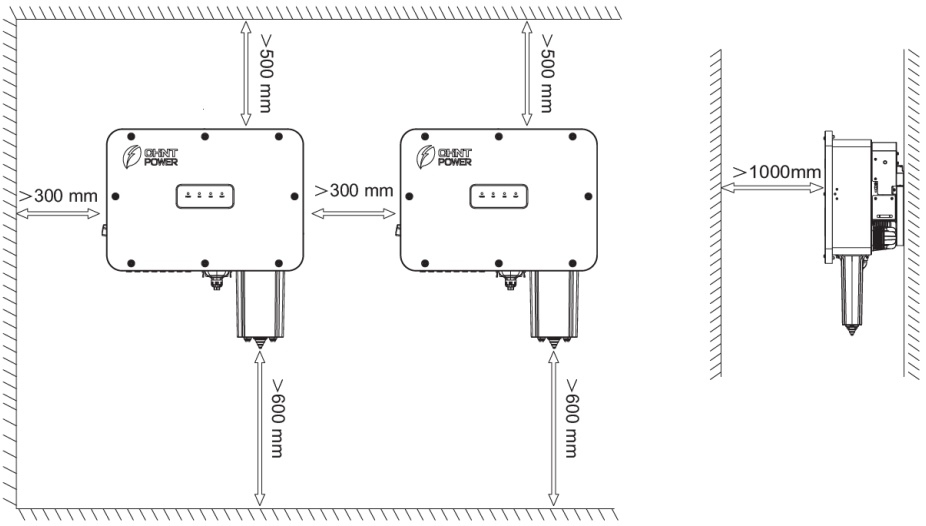


Figure 3-4 Installation space size of the inverter

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.
- There must be no object placed between two or more inverters.

3.5 Installation Procedures

1. Place the mounting bracket horizontally on the wall and mark the punching position with marker pen.

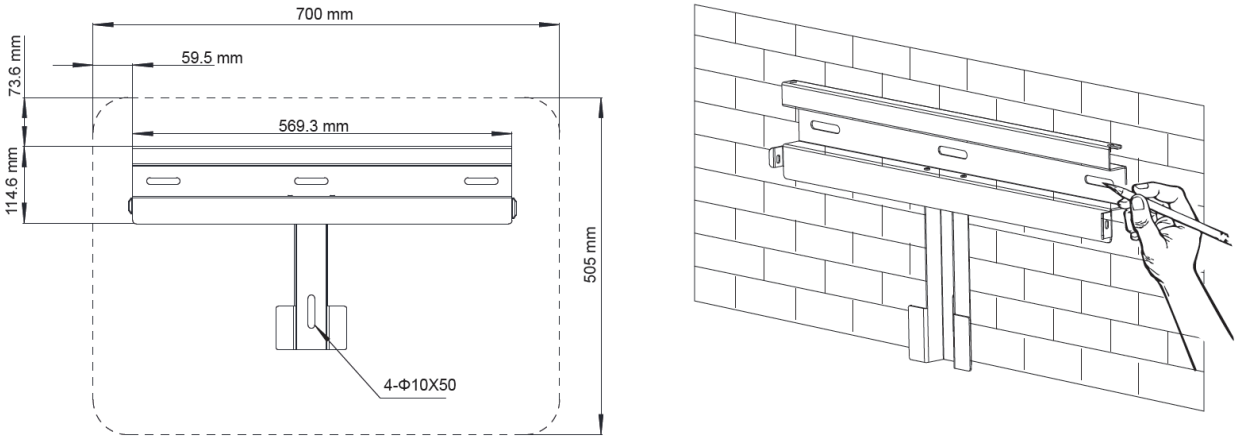


Figure 3-4 Mark the punching position

2. Use a percussion drill (Φ12 mm bit) to drill a hole of 70 mm depth. Use the rubber hammer to knock in the four expansion tubes.

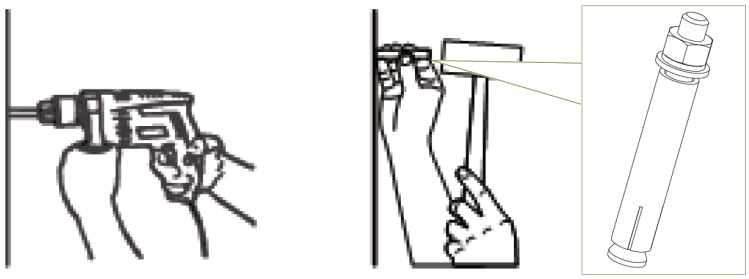


Figure 3-5 Drill holes and install the expansion tube

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. Screw off the four nuts from the expansion tubes. Locate the four holes of mounting bracket at the expansion tubes. Tighten the four nuts with an adjustable wrench. Torque:12.3 N.m.

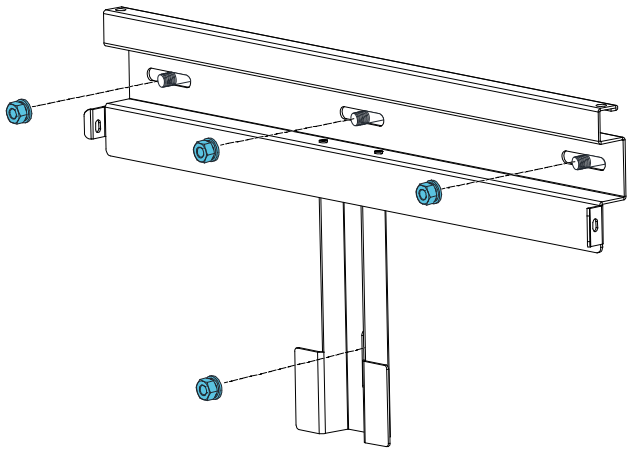


Figure 3-6 Fix the mounting bracket

4. Hang the inverter onto the mounting bracket.

- Machine Lifting: Install two lifting eyebolts (M10, prepared by customer), lift the inverter onto mounting bracket by slings (The minimum angle between the two slings should be less than 90 degrees.).

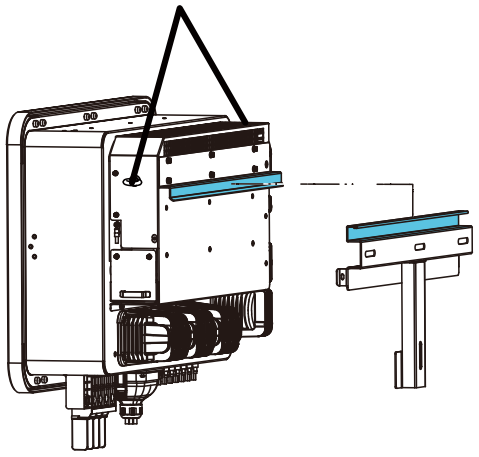


Figure 3-7 Machine lifting

- Manual lifting: 2 people hang the inverter by lifting indicated positions.

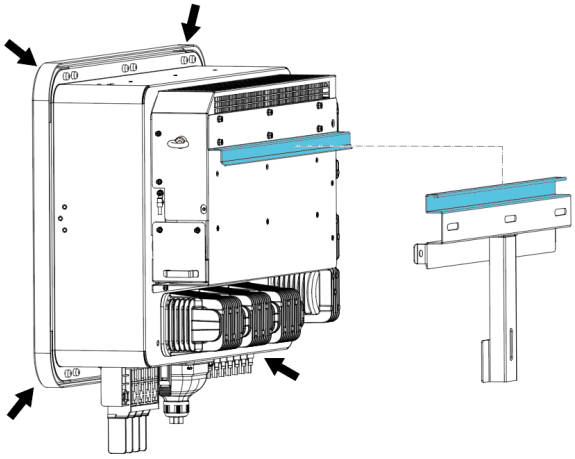


Figure 3-8 Manual lifting

CAUTION:

- The inverter is appropriately 50.5 Kg (≈111.3 pounds).
- Confirm that the mounting bracket is installed on the support plane firmly before hanging the inverter.
- It is recommended to have at least two operators to hang the inverter.

5. Tighten the two M4x12 screws to fix the inverter and mounting bracket. Tool: PH2 screwdriver, torque: 1.6 N.m.

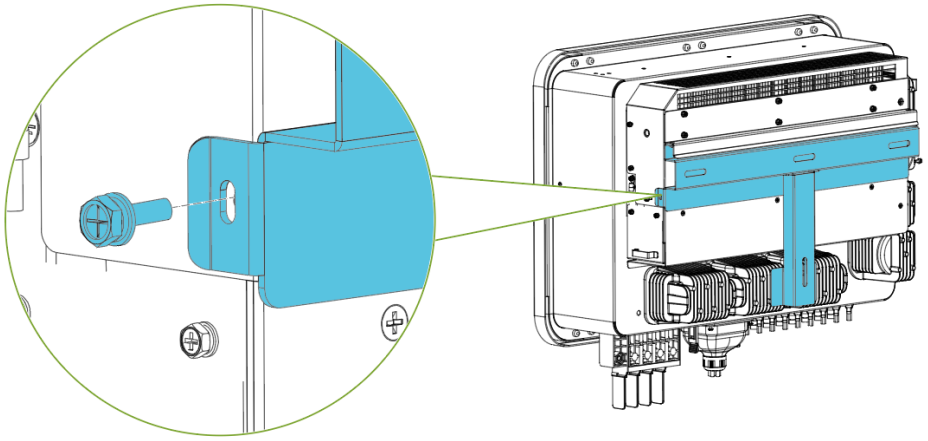


Figure 3-9 Fix the inverter and mounting bracket

6. It is recommended to install two anti-theft locks (prepared by customer) on the two sides to lock the inverter on the mounting bracket.

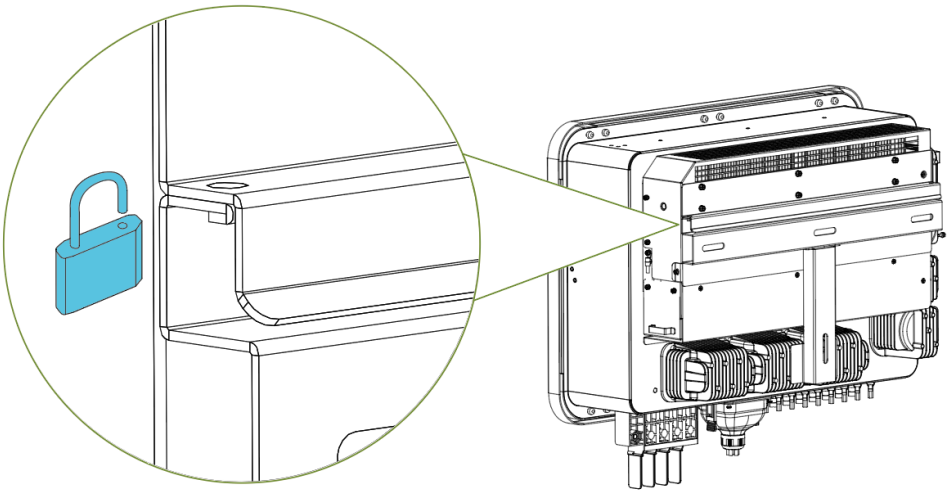


Figure 3-10 Install the anti-theft lock

4 Electrical Connection

DANGER!

Cables shall be connected in accordance with National Electrical Code and all other applicable local codes or jurisdictions. Before performing any electrical connections, ensure DC switch is OFF and wear proper personal protection equipment, or fatal injury can occur due to high voltage.

4.1 Cable Specification

Prepare the connecting cables of the inverter as the table below:

Name	Cable type	Cable outer diameter (mm)	Cross-sectional area(CSA) (mm^2)
AC Cable	Multi-core outdoor special cable	<40	• L1, L2, L3, and N: 35 – 70 [a] • PE: CSA of phase wire conductor / 2
	Single-core outdoor cable	10 - 15	
DC Cable	PV cable that meet 1100V standard	5.0 – 7.2 [b]	4 - 6
COMM. Cable	Outdoor shielded twisted pair	6 – 7 [c]	0.2 - 1
GND	Outdoor special cable	N/A	CSA of phase wire conductor / 2 [d]

Table 4-1 Cable specifications

Note：

a. 70 mm^2 only for aluminum or copper-clad aluminum wire. According to National Electrical Code, NFPA 70, the rated current of conductor size for copper 50 mm^2(AWG 0) is approximate to that of conductor size for aluminum or copper-clad aluminum wire 70 mm^2(AWG 000).

b. For selection exceeds the given range, please consult Chint for feasibility.

c. If the communication cable is smaller than the given range, the cable needs to be glued or treated to ensure sealing and waterproofing.

d. Use copper wire only.

4.2 Tools Required and Torque Values

No.	Tool	Usage	Torque
1	No.13 socket wrench	Fix the AC OT termnal	5.5 N.m
2	PH0 screwdriver	Fix cord terminal, grounding OT terminal and 3PIN & 5PIN terminal	0.6-0.8 N.m

3	PH2 screwdriver	Fix AC cover	2.0 N.m
		Fix communication cover	1.6 N.m
3	Diagonal pliers	Cut cables	-
4	Wire stripper	Remove the insulation layer from cables	-
5	Crimping pliers	Crimp the OT terminal and cable wire core	-

Table 4-2 Tools and torque

4.3 Electrical Cable Connection

4.3.1 Protective Grounding Cable Connection

There are two kinds of grounding methods for this inverter: AC grounding and external grounding (Note: When multiple inverters connected in daisy-chain mode, every inverter shall be grounded separately).

- AC grounding (Required): Connect PE wire to internal grounding stud located on the right side of the AC busbar, refer to *4.5 AC Cable Connection for more information*.
- External grounding (Optional): Connect grounding cable to external grounding hole located at the side of the inverter (Note: After wiring, external grounding position needs to be coated with glue or paint).

Follow the steps below for external grounding:

1. Remove an appropriate length of insulation layer from the PE cable.

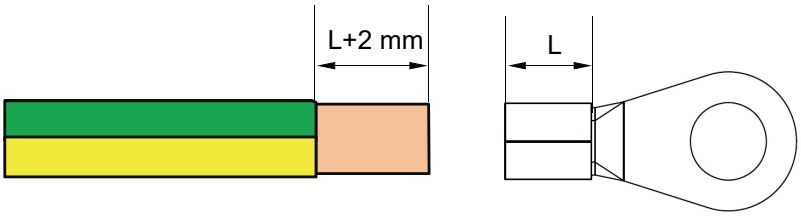


Figure 4-1 Strip PE cable

2. Insert the exposed wire core into the crimping area of the OT terminal, use crimping pliers to crimp the OT terminal.

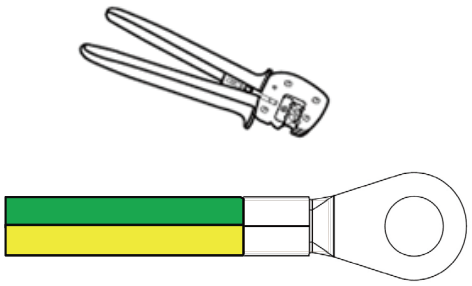


Figure 4-2 Crimp PE cable

3. After crimping, wrap the wire crimping area with heat shrink tube and use hot air gun to seal the tubes.

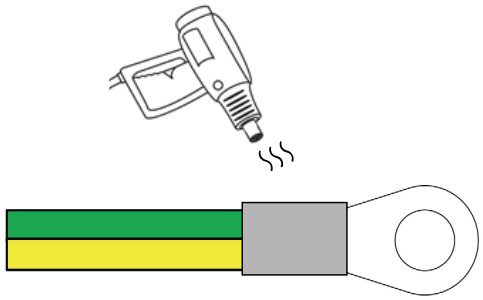


Figure 4-3 Sealing the OT terminal and PE cable

4. Tighten the M6x15 screw to fix the PE cable. Tool: No2 cross screwdriver. Torque: 16.0 Kgf.cm.

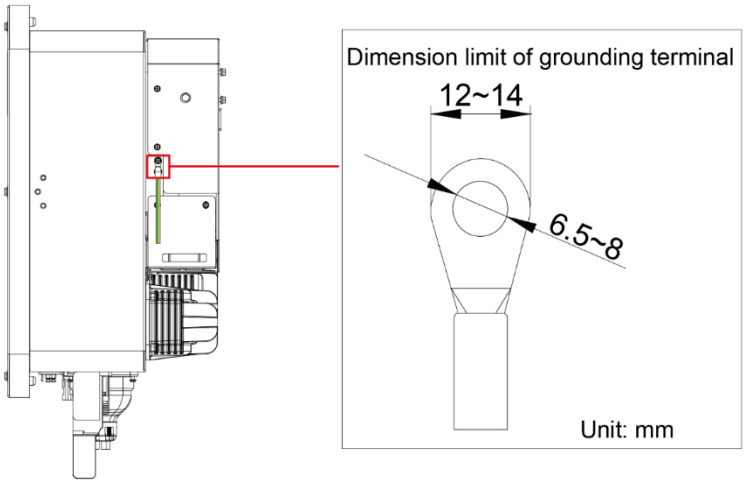


Figure 4-4 External Grounding

WARNING:
The secondary protective grounding connection cannot replace the AC grounding connection, each grounding connection must be reliably grounded.
If not, CHINT will not assume any responsibility for any possible consequences.

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 following table.

Inverter	Inverter AC breaker current parameter
The whole series inverters	150A

Table 4-3 Specification of AC Breaker Selection

4.3.2 AC Cable Connection

Follow the steps below to connect the AC cables:

1. Select the suitable holes according to the cables type, then cut the seal ring according to the cable outer diameter.

CAUTION!

To avoid water ingress, the hole diameter shall not be greater than the cable diameter.

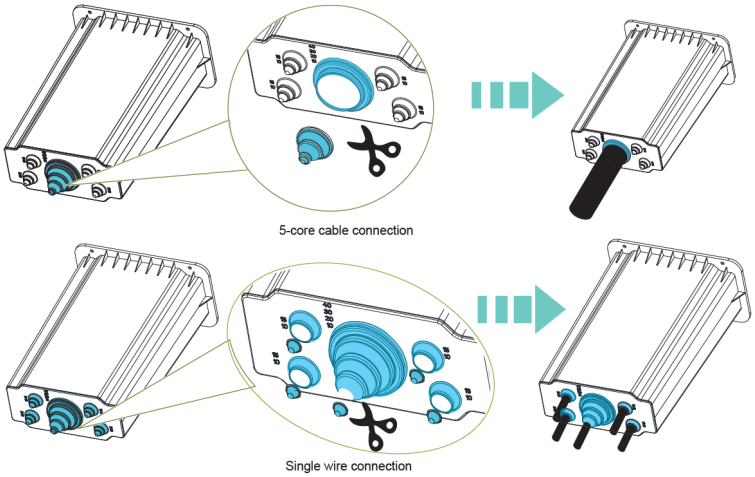


Figure 4-5 Cut seal ring

2. Remove an appropriate length of the jacket and insulation layer from the 5-core cable.

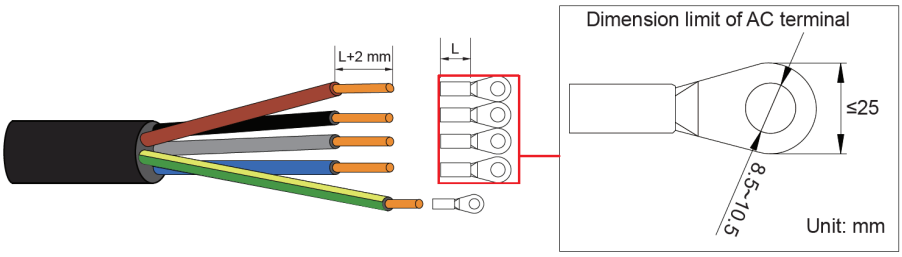


Figure 4-6 Strip wire

NOTICE:

- The PE cable length is required to be 2 cm longer than phase cable (L1, L2, L3, and N).
- The colors of wires in the following figure are for reference only, and the selection of cable should comply with local cable standards.

3. Insert the exposed wire core into the crimp area of the OT terminal, then use crimping pliers to crimp the OT terminal.

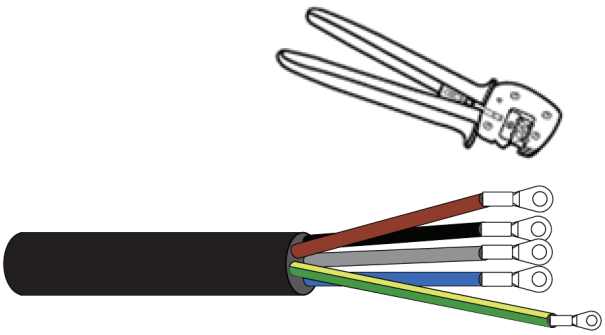


Figure 4-7 Crimp OT terminal

4. Wrap the wire crimp area with heat shrink tube, then use hot air gun to seal the tubes.

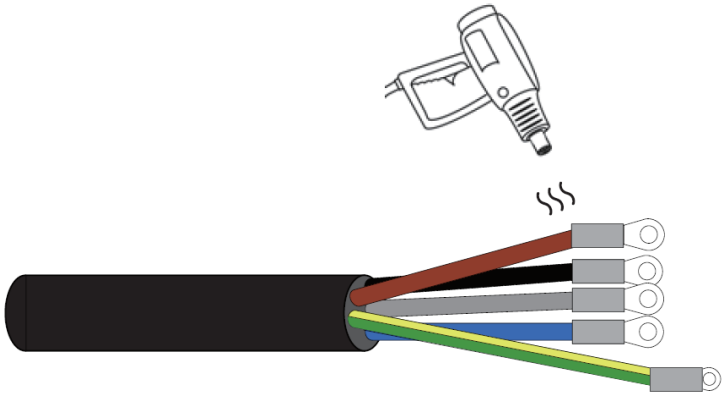


Figure 4-8 Seal the OT terminal and cables

5. Ensure the spacers are connected to baffle gaps between different phases. Remove the screws, align the OT terminals and the screw holes, then tighten the screws again.

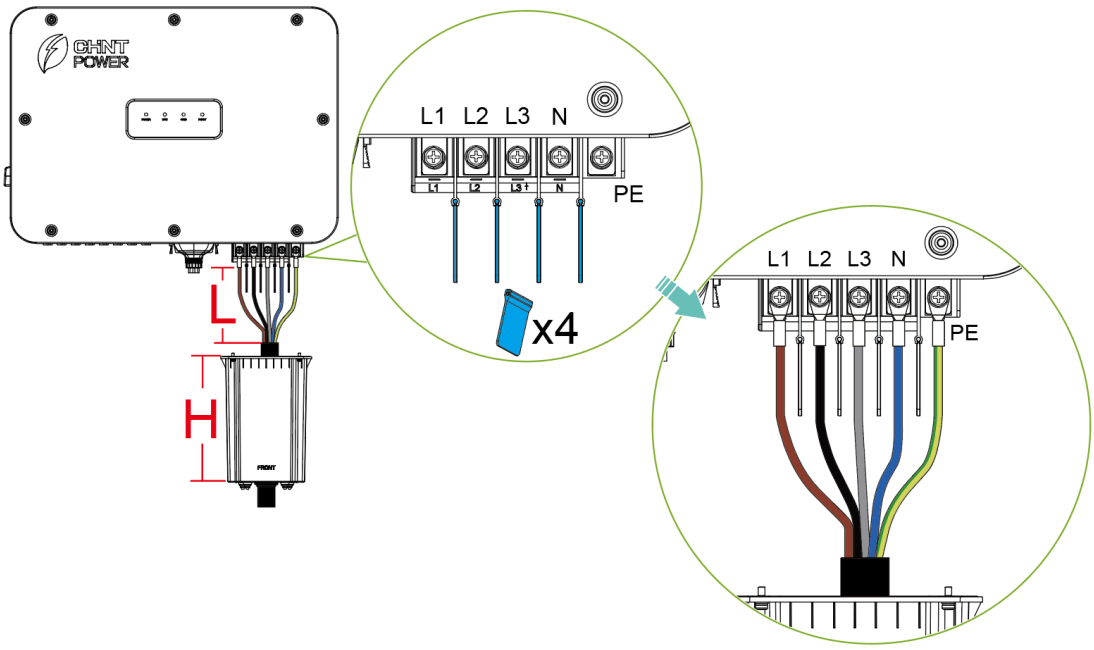


Figure 4-9 Connect AC cables

NOTICE:
Stripping length L shall be at least 50mm shorter than the height H of AC cover

6. Install the AC cover and tighten the four screws on the AC cover.

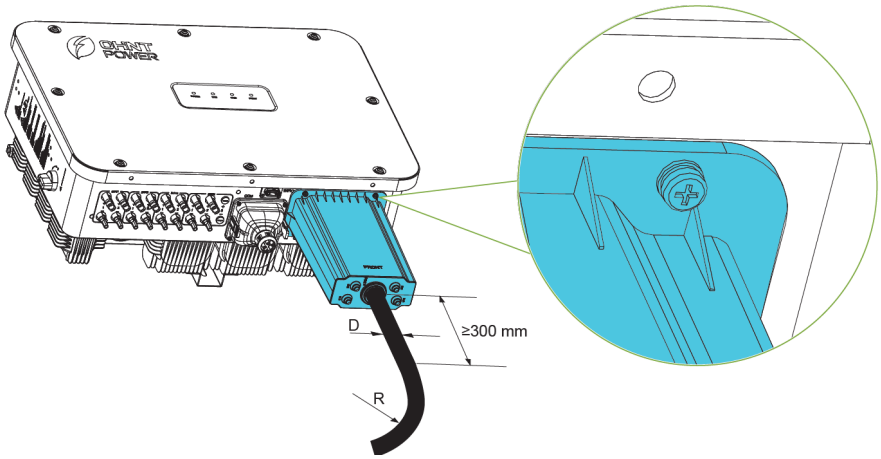


Figure 4-10 Install the AC cover

NOTICE:

The outgoing cable should maintain a vertical length of at least 300mm.

The bending radius (R) of the cable must be greater than 20 times its cable outer diameter (D) to prevent breakage due to excessive stress.

4.3.3 DC Cable Connection

In order to get the best results from your PV inverter, please follow the following guidelines:

- Refer to Figure 4-11 to confirm the DC input configuration, ensuring that the maximum open-circuit voltage of each photovoltaic module is lower than 1100 Vdc under any conditions (considering the negative temperature coefficient of the battery panel, special attention should be paid to the lowest ambient temperature. The open circuit voltage of the photovoltaic array is lower than 1100V).
- Before making DC connection, it is necessary to make sure that the photovoltaic modules of the same input area should be the same, including the same model, the same number of panels, the same inclination angle, and the same azimuth.
- The short-circuit current of each string is less than 50A.

Before connecting the PV module cable to the inverter, please follow these steps:

- Use a multimeter to measure both ends of the photovoltaic module cable to determine the positive and negative terminals.
- Connect the positive (+) cable of the photovoltaic module to the positive (+) input terminal of the inverter.
- Connect the negative (-) cable of the photovoltaic module to the negative (-) input terminal of the inverter.

NOTICE:
To avoid reverse connection of the cables, please use a multi-meter to check the positive and negative polarity of the DC input cables.

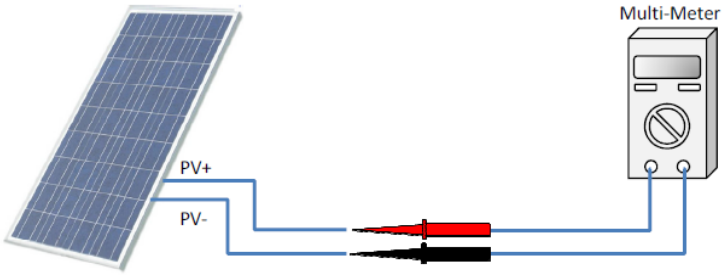


Figure 4-11 DC cable polarity detection

The production of the DC input cable: Professionals will crimp the metal terminals of the DC input connector (as shown in Table 4-3) with special tools.

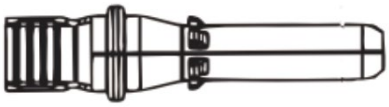
No.	Photos	Usage
1		Positive pole for DC cable
2		Negative pole for DC cable

Table 4-4 Metal Terminal of DC Connector

Follow the steps below to connect the AC cables:

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

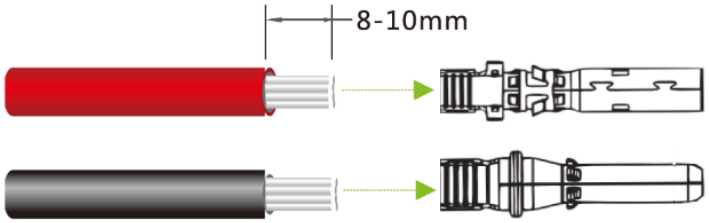


Figure 4-12 Remove jacket and insulation layer

2. Insert the exposed areas of positive and negative power cables into the metal terminals respectively and crimp them using a professional crimping tool, such as Amphenol H4TC0002 or Devalan D4ZCY001..

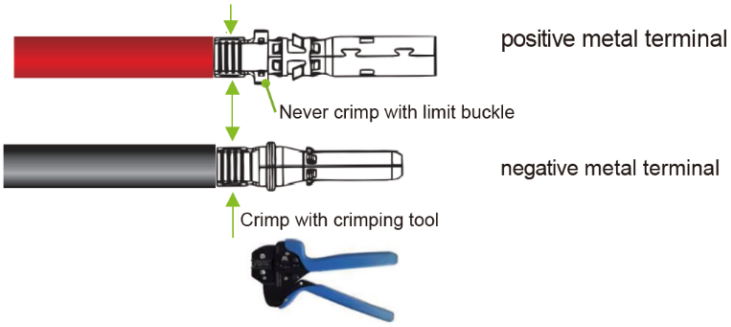


Figure 4-13 Crimp terminals

3. Insert the crimped DC cables into the housings of the DC input connectors, and tighten the sealing nuts, as shown in Figure 3-24 and Figure 3-25.

NOTICE:

The connector used for the DC input must be supplied randomly, or the same model of the same manufacturer. Otherwise, poor contact may occur, affecting normal use.

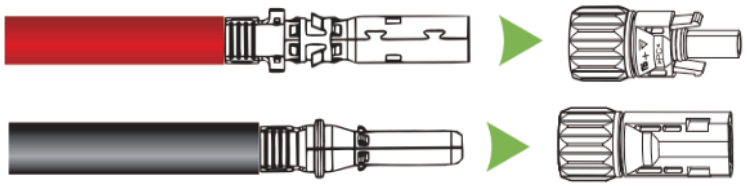


Figure 4-14 Insert DC cables to DC input connectors

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

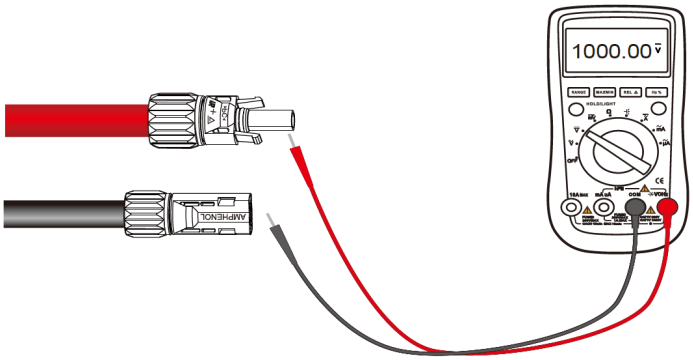


Figure 4-15 Measure DC cables

5. Insert connector (1) into fuse connector (2) until a "click" sound is heard. Then insert fuse connectors into correct PV connectors of the inverter until a "click" sound is heard.

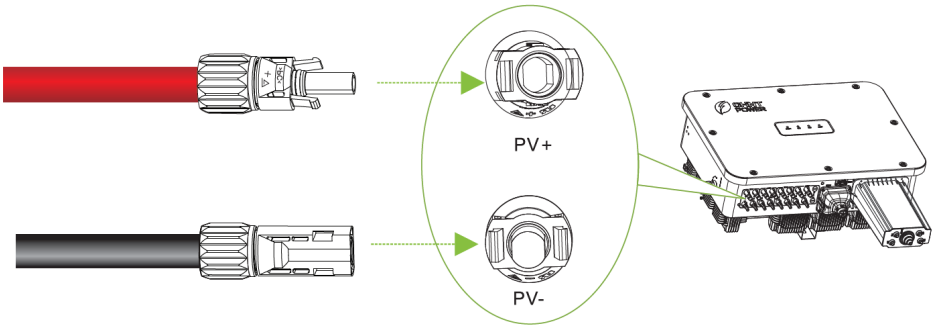


Figure 4-16 Connect the DC connectors to Inverter

NOTICE!

Before connecting the DC connectors, the following must be confirmed:

- The grounding wire must be connected well.
- The DC switch must be in the OFF state.

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.

NOTICE!

During installation of PV string and inverter, if positive or negative PV string is short to the ground because the distribution cable is not connected or routed according to relevant requirements, the AC/DC short circuit may be caused during the operation of the inverter, resulting in device damage. The resulting equipment damage is not covered by the equipment warranty.

4.3.4 RS485 Communication Connection

Follow the steps below to connect the communication cable:

1. Remove the cover: Loosen four securing screws, and then press buckles on both sides of the cover to remove it.

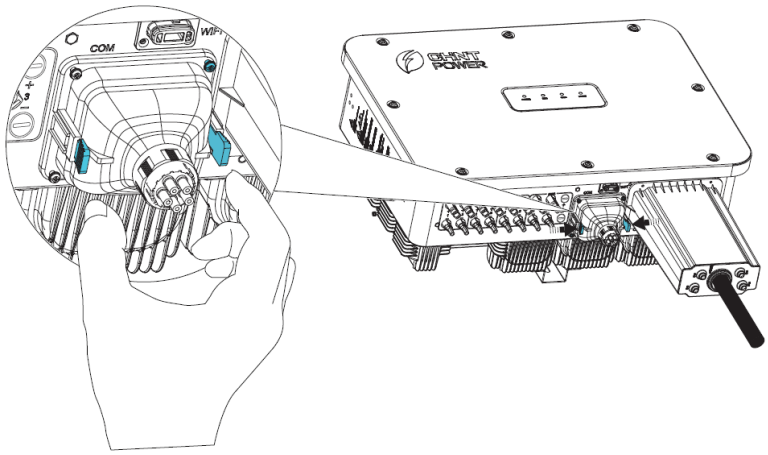


Figure 4-17 Remove the cover

2. Prepare the communication cable: Unscrew locking nut (1) and unplug silicone plug (2) , and then pass communication cable through locking nut (1), silicone plug (2) and cover (3).

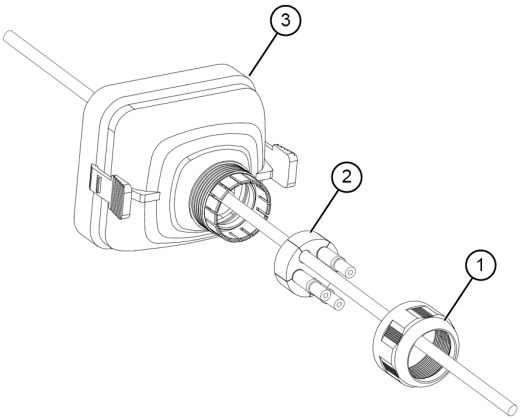


Figure 4-18 Prepare communication cable

3. Strip off insulation layer (length:7-8mm) from communication cables, then insert exposed wire into cord terminal (1), use crimping plier (2) to crimp the cord terminal. Insert cord terminals into 3PIN terminal (3), use PH0 screwdriver to tighten screws. Install cord terminals to 5PIN terminal in the same way.

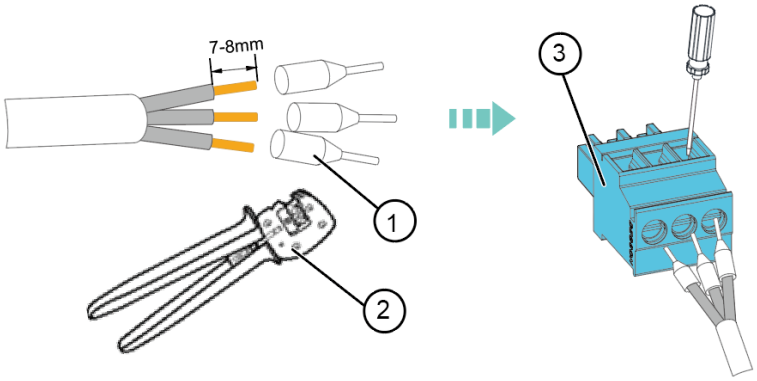


Figure 4-19 Insert crimped cable to 3-Pin terminal

4. Insert 3-Pin terminal and 5-Pin terminal to inverter:

   a) For single inverter: simply insert 3-Pin terminal to correct interface. For multiple inverters in network: insert the 5-pin terminal and 3-pin terminal to the correct interfacs.

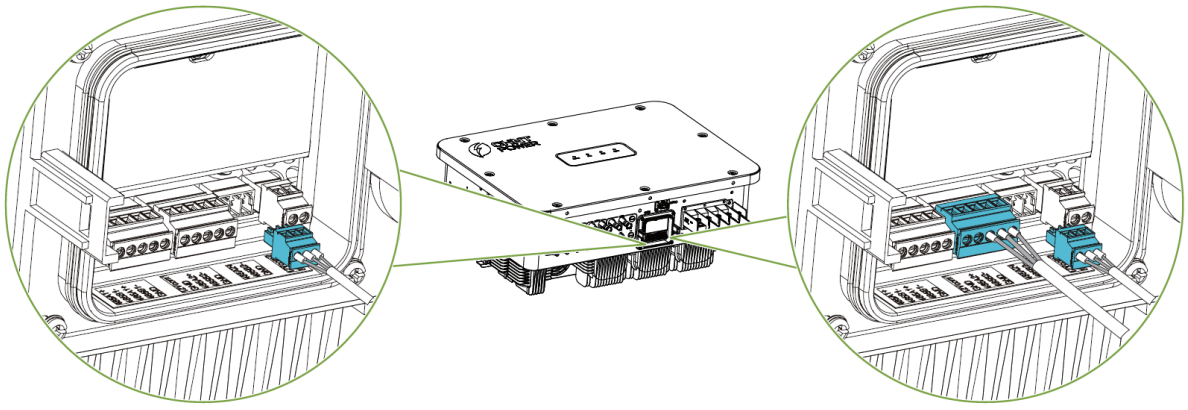


Figure 4-20 Connect pin terminal to single inverter

PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Definition	485A1+	485B1-	485A1+	485B1-	GND	12VCom1	GND	485A2+	485B2-	GND	485A2+	485B2-	GND	12VCom2	KEY
Function	1st pair of 485_1 signal ports		2nd pair of 485_1 signal ports		Communication grounding	12Vdc power supply	Power supply grounding	1st pair of 485_2 signal ports		Communication grounding	2nd pair of 485_2 signal ports		Communication grounding	12Vdc power supply for dry node; help achinve dry node function	Dry connect

Table 4-5 Pin Definitions

b) If there are multiple inverters in the network and the last inverter is more than 200m and less than 1000m distant from Gateway, insert 5-Pin terminal and 3-Pin terminal to correct interfaces. Then, connect these inverters in daisy-chain mode as below. Use either RS485_1 or RS485_2 consisently for all connections; do not mix the tow interfaces. For detailed information about Gateway connection, refer to the specific manual of Gateway (Note: If Gateway requires 12V power supply, connect PIN 6-7).

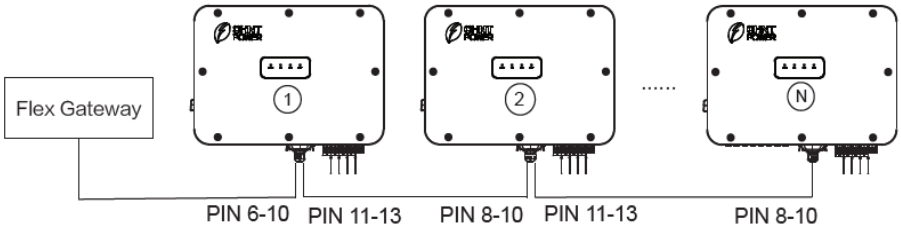


Figure 4-21 Connect pin termnals to multiple inverters

5. Install communication cable cover and tighten the locking nut. Use PH2 screwdriver to tighten the four screws. **Note**: Cable outlets need to be sealed if necessary to ensure watertighting.

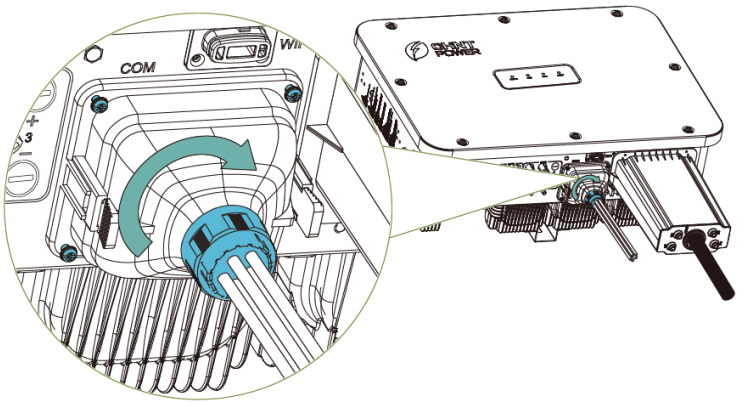


Figure 4-22 Secure the cover

4.3.5 Communication Module Installation

Insert the communication module into the Wi-Fi dongle interface until you hear a "click" sound.
Note: The indicator of communication module faces outward.

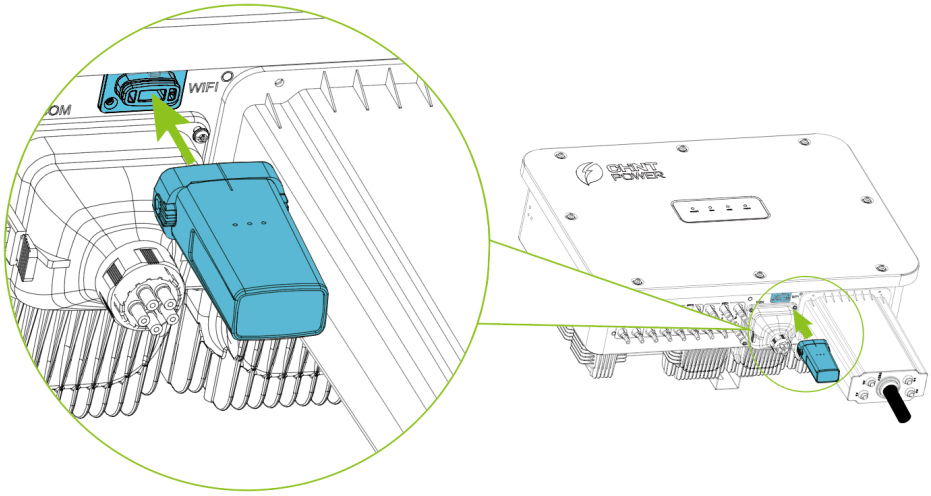


Figure 4-23 Insert communication module

4.3.6 Anti-Backflow for Single Inverter

Note: Anti-Backflow is a standard function of SCA25/30K-T(M)-SA and SCA50/60K-T-EU Inverters, which can be enabled or disabled based on user requirements.

⚠	**NOTICE!** • Anti-Backflow is a standard function of SCA25/30K-T(M)-SA and SCA50/60K-T-EU Inverters, which can be enabled or disabled based on user requirements. • This section describes anti-backflow wiring configurations for single inverter. For multi-inverter anti-backflow function, refer to *Smart Power Controller User Manual*.

Follow the diagram 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.

Connect the RS485 communication cable to the inverter, refer to *Section 4.3.4 RS485 Communication Connection.*

After completing the wiring procedures, the relevant configuration need to be set in the Chint Connect App, please see *6.3..4.1* Anti-Backflow Parameter Configuration in Chint Connect.

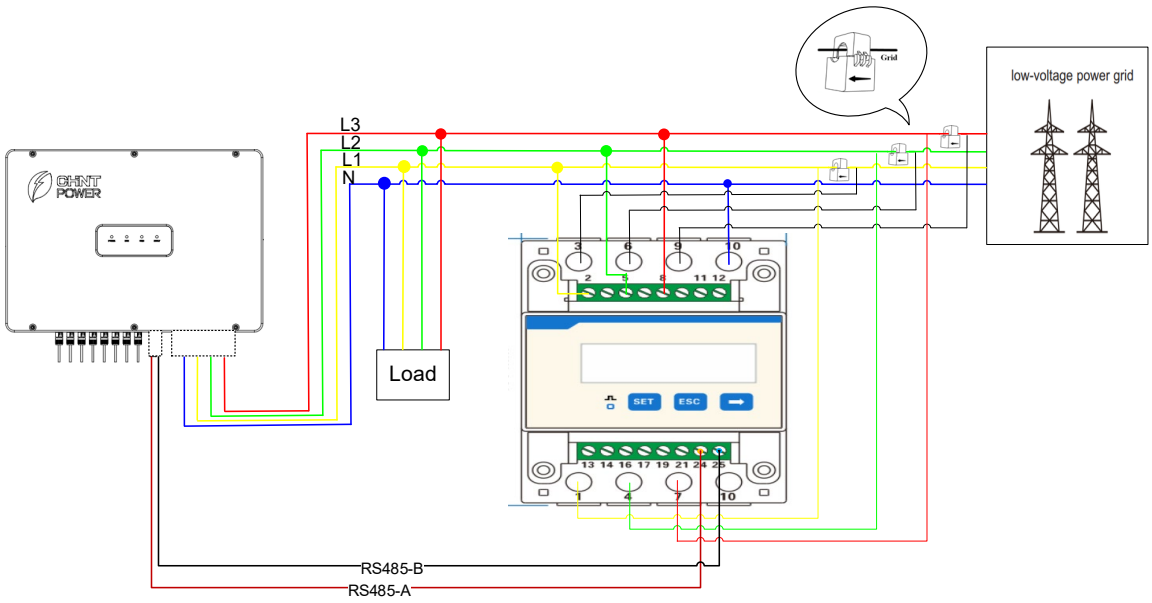


Figure 4-24 Three phase four wire: via current transformer

5 Inverter Commissioning

WARNING!

- Please follow the guidelines below before performing any on-grid operation to eliminate possible dangers.
- When the equipment is powered on for the first time, it is imperative that professionals correctly configure the parameters.
- Before operating in grid-connected mode, adhere to the following guidelines to identify and eliminate potential hazards, ensuring safety.

5.1 Pre-Commissioning Checks

5.1.1 Mechanical installation

Perform the following inspections by referring to chapter 3 Installation.

- Make sure all the mounting brackets are secure.
- Make sure all the screws have been tightened to the specified torque values.

5.1.2 Electrical Connections

Perform the following inspections by referring to chapter 4 Electrical Connection

- 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.
- Turn the DC Switch to the "OFF" position.
- Make sure the AC circuit breaker is appropriately sized.
- Test and check that the AC voltage is within the normal operating range.
- Make sure the DC open circuit voltage of input strings is less than 1100V or 1050V.

5.2 Inverter Commissioning Steps

Complete the test and inspection before operation. Confirm that there is no error.

Follow the steps below to test run the inverter.

1. Close the AC side circuit breaker;
2. Close the DC side circuit breaker (If there is no DC circuit breaker, skip this step);
3. Set the inverter DC switch to the “On” position. When the solar array procedures enough power, the inverter LED power indicator will be lit and the inverter will enter the self-check state in turn.

6 App Interface and Setting

IMPORTANT!

Complete the test and inspection before operation, to confirm that there is no error.

The following contents are applicable to SCA25K/30K-T(M) and SCA50K/60K-T-EU series inverters, we just take SCA60K-T-EU as instance.

This interface is for your reference only. The specific information varies with device.

6.1 App Download

The inverter conducts human-computer interaction through the "Chint Connect" App.

Users can download the iOS version in the Apple store or Android version in the Google store, or directly scan the QR code to download. (Support Android 4.4 and IOS 11.0 system or higher version system).

6.2 APP Connection and Quick Configuration

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.

Once powered, the inverter will automatically create a wireless network that can be visible as an Access Point from the user communication devices (tablet, smartphone, etc.). Users can perform the following procedures to set the App easily. First of all, open the Bluetooth function on your phone, then open Chint Connect App.

1. Open Chint Connect App, click **App Setting** at the bottom to set the language, App platform, synchronize cloud data or check its version.

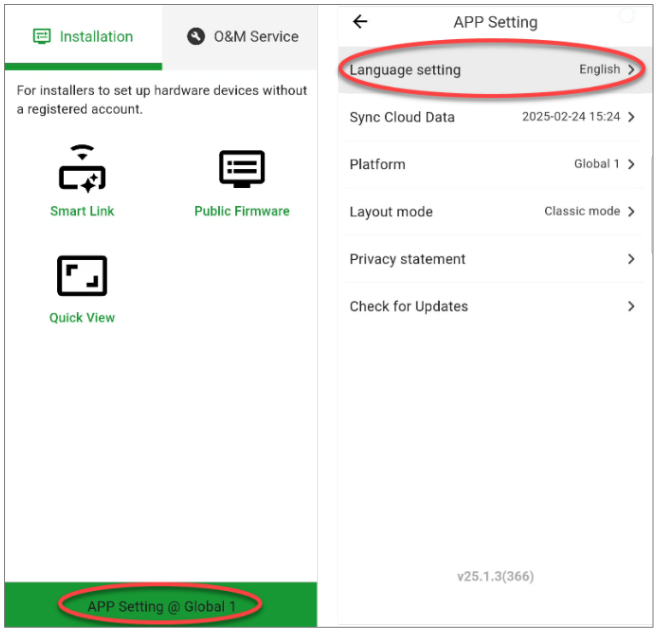


Figure 6-1 App Settings

2. Back to landing page, click **Smart Link** to enter the **Connect to The Adapter** interface.

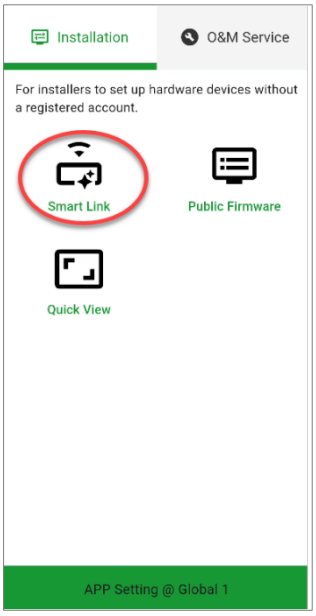


Figure 6-2 Click Smart Link

3. Click the wireless network named CUGW-XXXXXXX (the last four numbers can be found on the label of Wi-Fi Dongle), or click the green QR icon under the list to scan the bar code of Wi-Fi Dongle to connect network; Or you can try Wi-Fi Mode by touching the icon in the top right corner and inputting password “Password”.

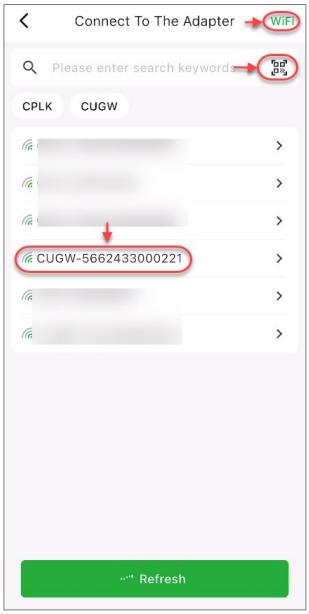


Figure 6-3 Connect to adapter

4. If the connection is successful, you will be redirected to the adapter inforamtion interface.Click **Device Settings** to access to the main interface.

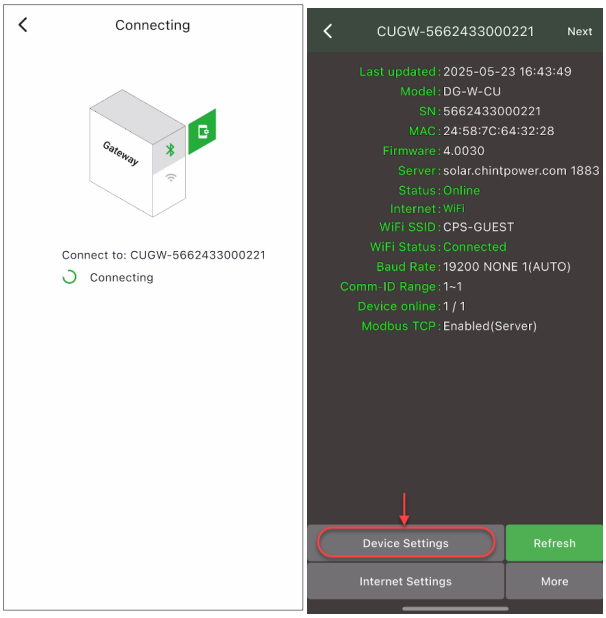


Figure 6-4 Adapter information

5. The **Data** interface is displayed as shown below, providing real-time information about the inverter.

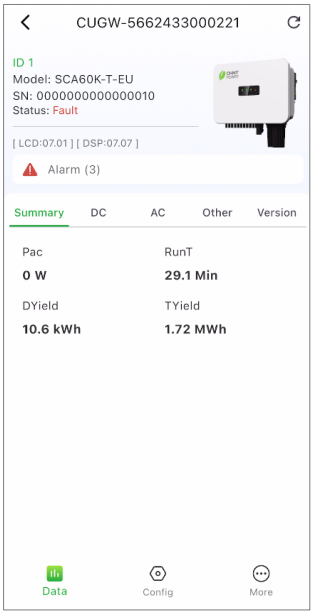


Figure 6-5 Data

6. If the inverter fails to operate normally, the FAULT light will illuminate, and the interface will display "Fault" status. Tap the Alarm icon to view detailed fault information here. Troubleshoot related problems and restart. Contact CPS Customer Service if necessary.

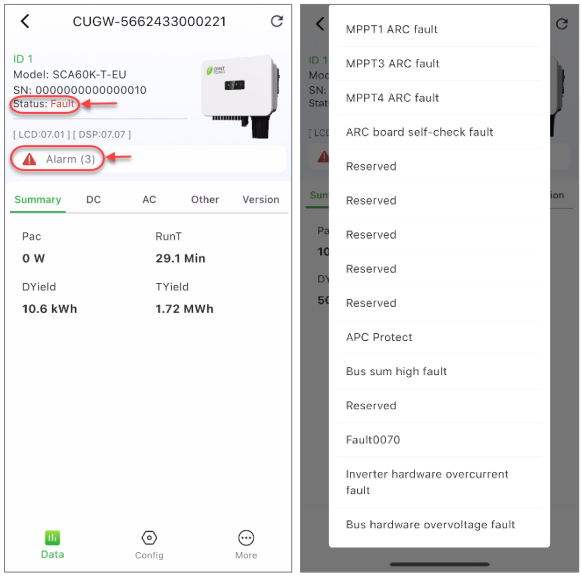


Figure 6-6 View falult details

7. Click **Config** icon and input password “1111”, go to inverter parameters configuration interface.

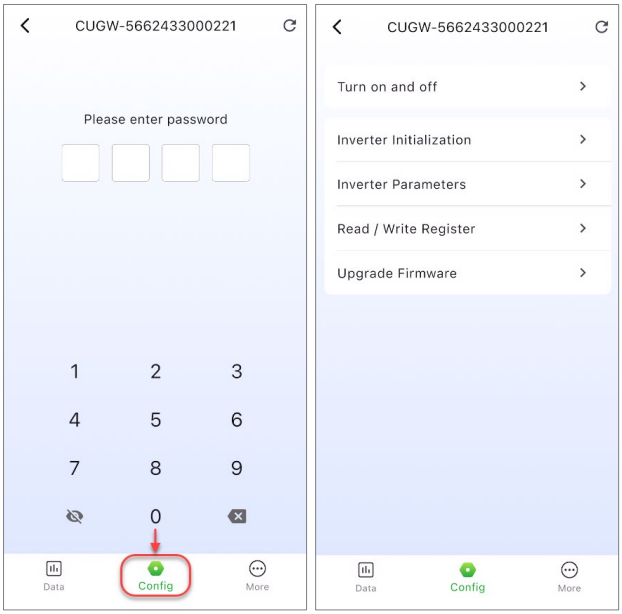


Figure 6-7 Input configuration password

8. Click **Turn on and off** to turn on the inveter.

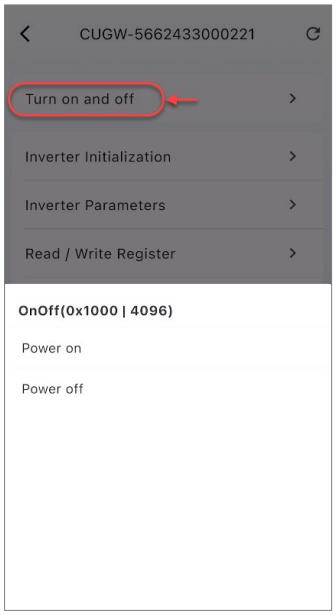


Figure 6-8 Turn on/off the inverter

9. Click **Invertr Initialization** to set Grid Code, PV Link Type, Neutral line, RS485 and other parameters if necessary.
   - Standard Value: Choose the Grid Code according to the requirements of your local authority.
   - PV Link Status: DC input connection and working mode of MPPT tracker can be configured as Independent or parallel according to the connection modes of inverter.
   - Connect N: Used to choose if the neutral line is connected or not.
   - RS485_2: Choose the communication data Modbus Address and Baud Rate.
   - Time Set: Configure the system time.

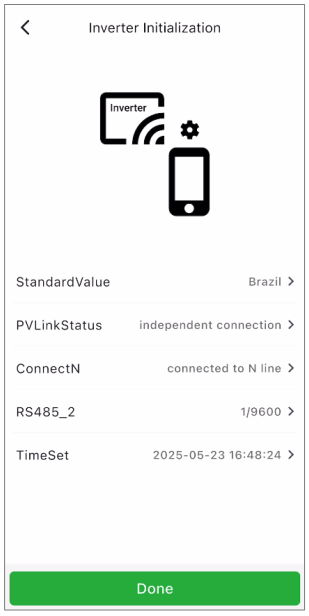


Figure 6-9 Initiallize Inverter

IMPORTANT!

Please check with your local electricity supply company before selecting a Grid Code. If the inverter is operated with a wrong Grid Code, the electricity supply company may cancel the interconnection agreement.

Placing the inverter into operation before the overall system complies with the national rules and safety regulations of the application is not permitted.

10. Click **More** to veiw the Current Alarm and History Alarm.

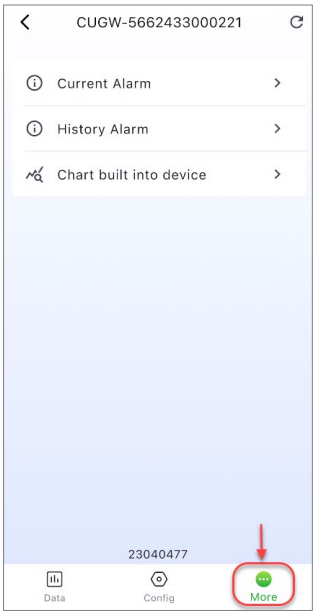


Figure 6-10 View Alarm

6.3 Interface Overview and App Setting

The main interface is displayed as shown below, providing real-time information about the inverter.

In the main interface, there are three navigation menus:

- Data: Displays the real-time information of the inverter.
- Config: Config the parameters of the inverter.
- More: View alarm and power yield data.

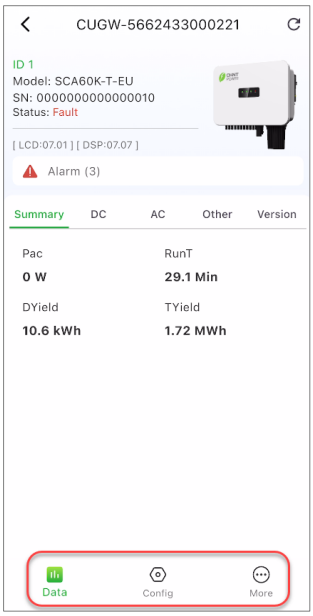


Figure 6-11 Main Interface

6.3.1 Data Menu

The **Data** interface displays the real-time information of the inverter that includes the following sections:

- **Summary**: Summary of Power AC (Pac), running time (RunT), daily yield (DYield), total Yield (TYield).
- **DC**: The DC section displays the information of PV input mode, total DC power output (Pdc), voltage and current of each MPPT.
- **AC**: The DC section displays the information of each phase line.
- **Other**: The other section displays the information of RS485, module temperature(Tmod), and internal temperature (Tinter).
- **Version**: The version section displays the information of grid code , PmaxLim (Power Maximum Limit), SmaxLim (Apparent Power Maximum Limit), the LCD firmware version, LCD boot version, DSP version, CPLD (Complex Programmable Logic Device) version.

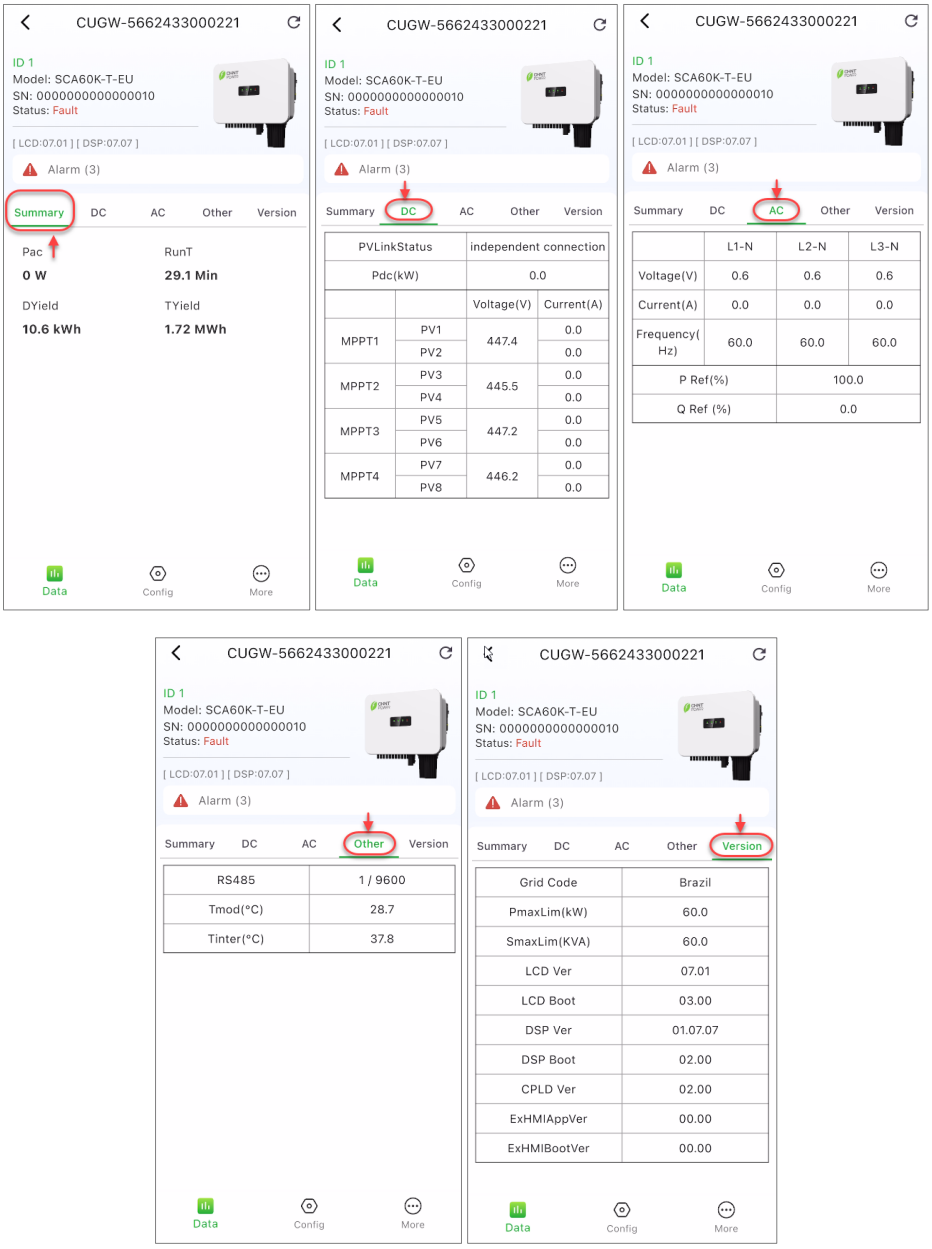


Figure 6-12 Real-time Data

6.3.2 Config Menu

Click the **Config** icon and input the password “1111”, you will go to the config interface.

Then it’s possible to access the following sub-menus on the config interface.

- Turn on and off: Controls the device's power state.
- Inverter Initialization: Sets up or prepares the inverter for operation (e.g., configuring basic settings).
- Inverter Parameters: Adjusts or views the inverter’s working values (e.g., voltage, frequency, power limits).
- Read/Write Register: Accesses or modifies internal device settings for advanced configuration or troubleshooting.
- Upgrade Firmware: Updates the device’s internal software to improve performance or fix issues.

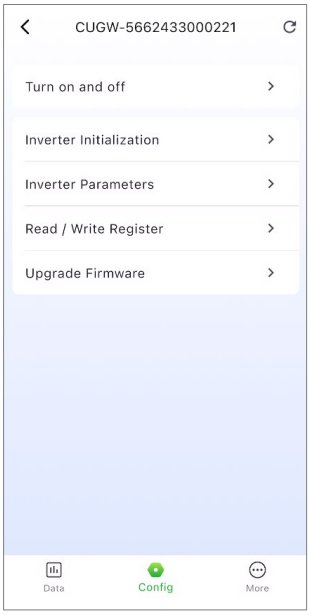


Figure 6-13 Configure Options

6.3.2.1 Turn on and off

Turn on and off option Control the device's power state (startup or shutdown).

- **Manual Turn ON/OFF**: Manual Power ON/OFF is required after Grid Code setting or manual (fault) shut-down. Touch to submenu “Turn ON/OFF”. Then move the cursor to “Turn ON” to start the inverter, the inverter will start up and operate normally if the start-up condition is met. Otherwise, the inverter will go to stand-by mode.
  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.
  Move the cursor to submenu “Turn ON/OFF”. Move the cursor to “Turn OFF” and ensure, then the inverter will be shut down.
- **Automatic Turn ON/OFF**: The inverter will start up automatically when the output voltage and power of PV arrays meet the set value, AC power grid is normal, and the ambient temperature is within allowable operating range.
  The inverter will be shut down automatically when the output voltage and power of PV modules are lower than the set value, or AC power grid fails; or the ambient temperature exceeds the normal range.

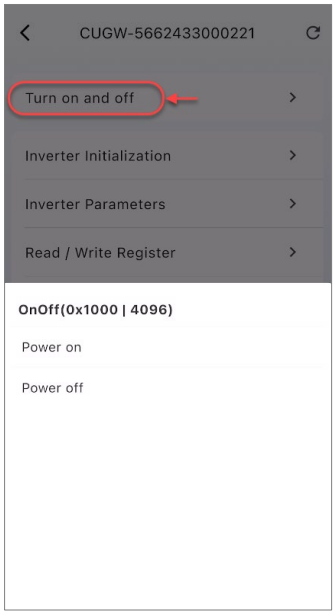


Figure 6-14 Turn on and turn off the inveter

6.3.2.2 Inverter Initialization

Inverter Initialization configures critical startup parameters to ensure safe and compliant operation.Which includes:

- **Standard Value**: Selects regional standards (e.g., Brazil) for voltage, frequency, and grid synchronization.
- **PV Link Status**: Defines solar array connections (e.g., Independent).
- **Connect N**: Configures grounding (e.g., Connected to N Line for safety).
- **RS485_2**: Communication Parameters: Sets RS485 addresses for device communication.
- **TimeSet**: Configure system time.

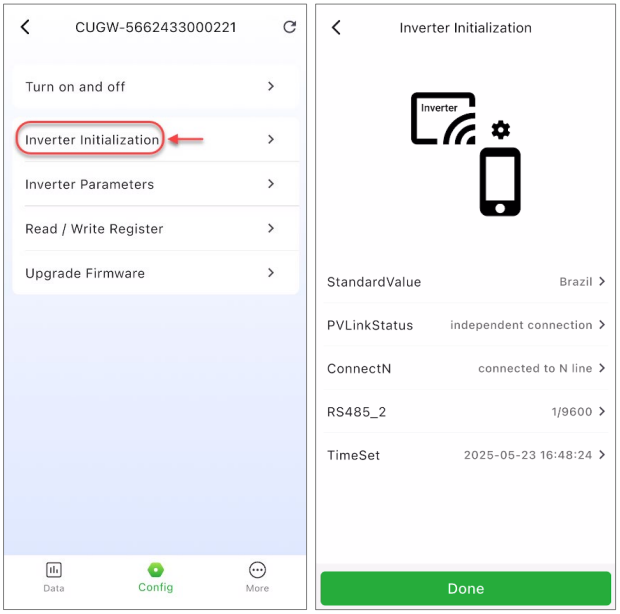


Figure 6-15 Inverter Initialization

6.3.2.3 Inverter Parameters

Inverter Parameters configures essential parameters to ensure the inverter operates safely and complies with regional grid standards. The configurable parameters are as follows:

- **Standard Value**: Selects grid compliance standards (e.g., "Brazil" for local voltage/frequency requirements).
- **PV Link Status**: Configures solar panel connections (e.g., "Independent Connection" for MPPT optimization).
- **Connect N**: Specifies grounding mode (e.g., "Connected to N Line" for safety).
- **RS485** : Communication interfaces, sets Baud Rate and Modbus Site addresses for RS485.
- **TimeSet**: Synchronizes the device clock (e.g., "2025-02-24 15:29:11").
- **Inverter SN**: The inverter's serial number
- **Common Password:** communication password ("ComPaswd").

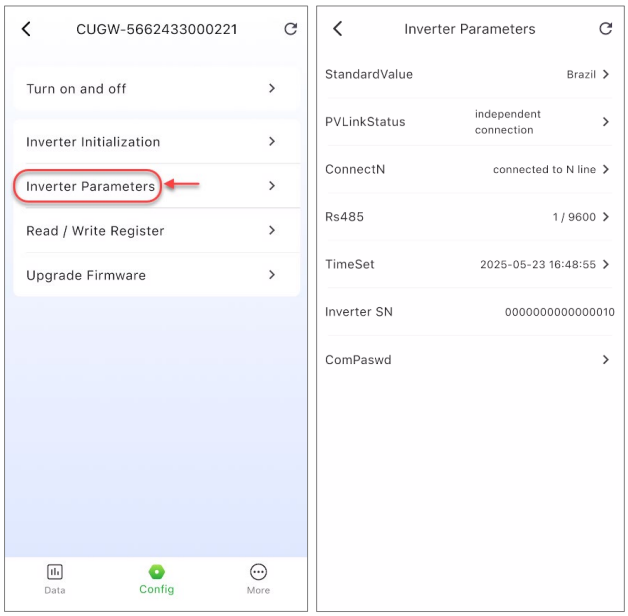


Figure 6-16 Inverter parameters

IMPORTANT!

Please check with your local electric supply company before selecting a grid code. If the inverter operates with a wrong grid code, the electric supply company may cancel the interconnection agreement.

6.3.2.4 Read/Write Register

In the **Read/Write Register** interface, you can configure the register parameters as follows:

- Power Dispatch
- Grid Protection Parameters
- Active Power Derating Parameters
- Reactive Power Derating Parameters
- ARC Parameters
- Other Parameters
- Enable/disable contorl Parameters
- Control Command
- Inverter Basic Information
- THB (Total Harmonic Distortion)
- LcdLess Basic Parameters
- Power Generation Data
- LcdLess Information Data

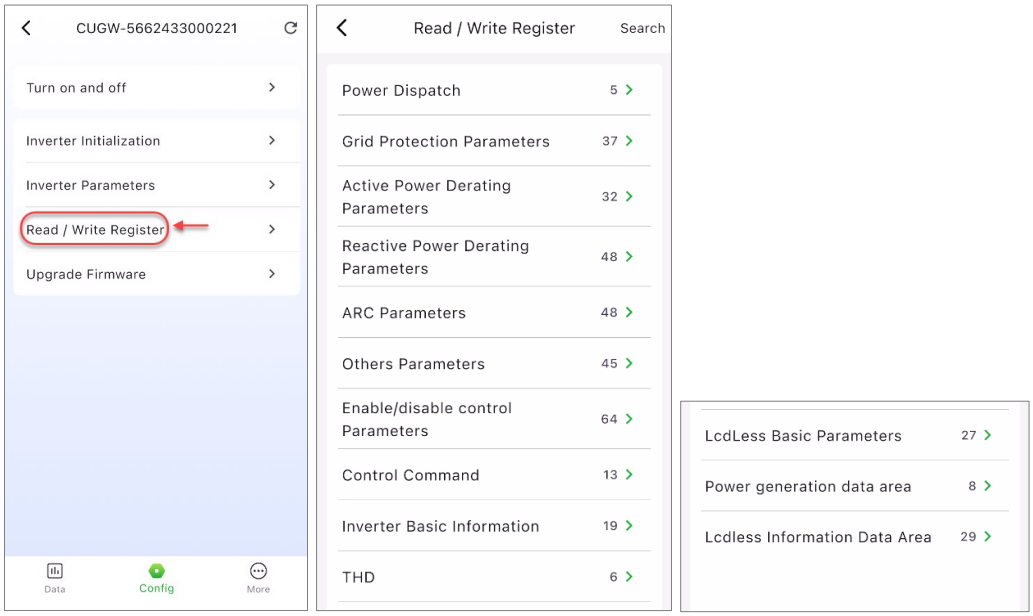


Figure 6-17 Read/Write Register

6.3.2.4.1 Power Dispatch

On the **Power Dispatch** interface, you can find following common parameters shown as below.

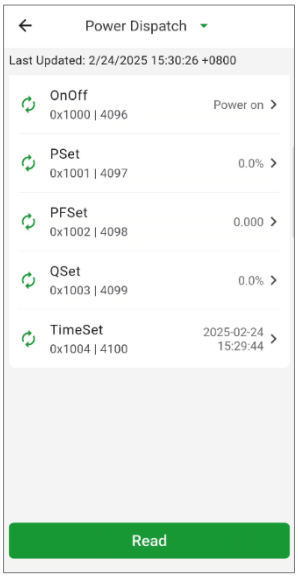
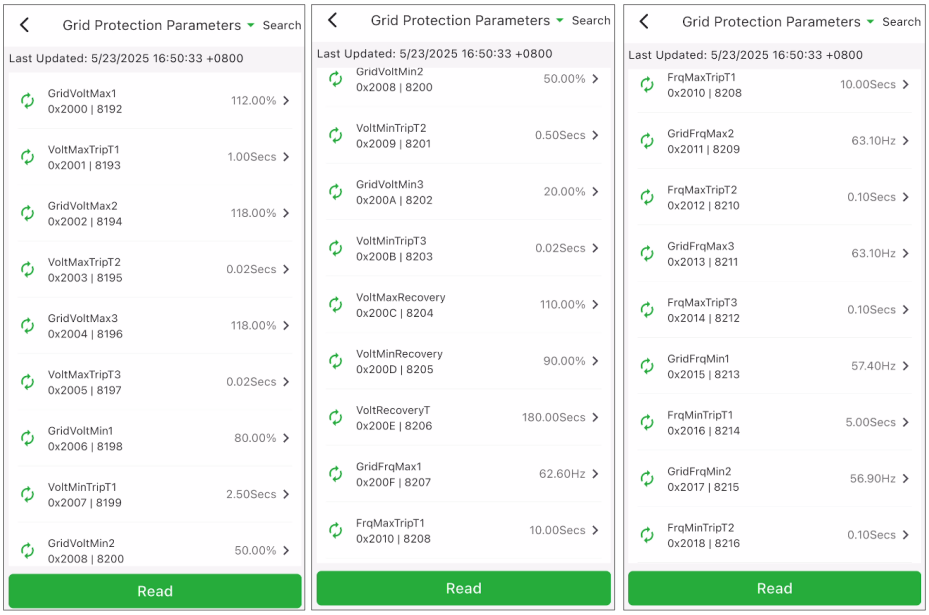


Figure 6-18 Power Dispatch interface

6.3.2.4.2 Grid Protection Parameters

The **Grid Protection Parameters** interface displays the protect parameters of the AC grid voltage, frequency and recovery, etc.

In addition, you can find and set the protection levels of over voltage, under voltage, over frequency and under frequency.



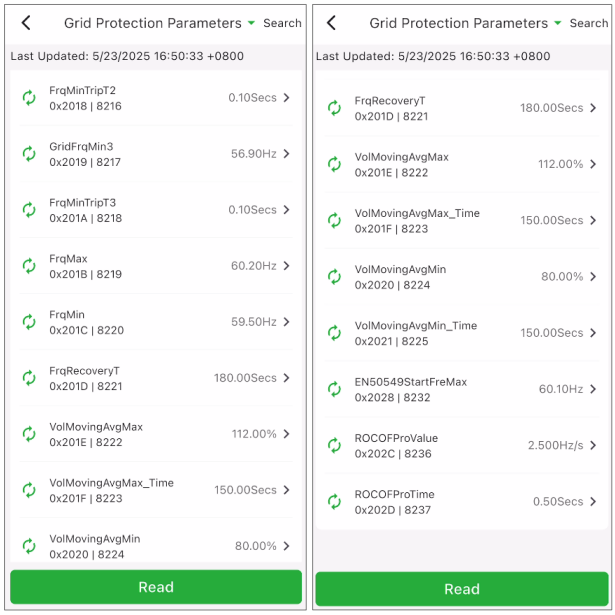


Figure 6-19 Grid Protection Parameters

6.3.2.4.3 **Active Power Derating Parameters**

The ActivePower Derating Parameters menu is used to set the active power derating parameters, including Active Power Derating, Over Voltage Derating, Over Frequency Derating, etc.

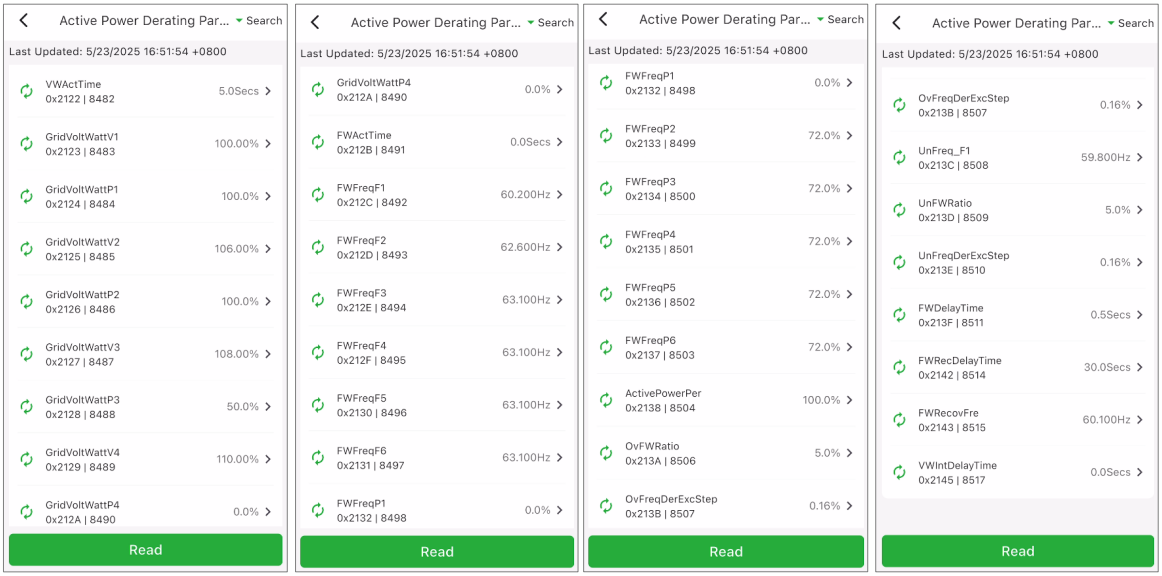


Figure 6-20 ActivePower Derating Parameters

You can see the curve of over voltage derating and curve of over frequency derating in figures below.

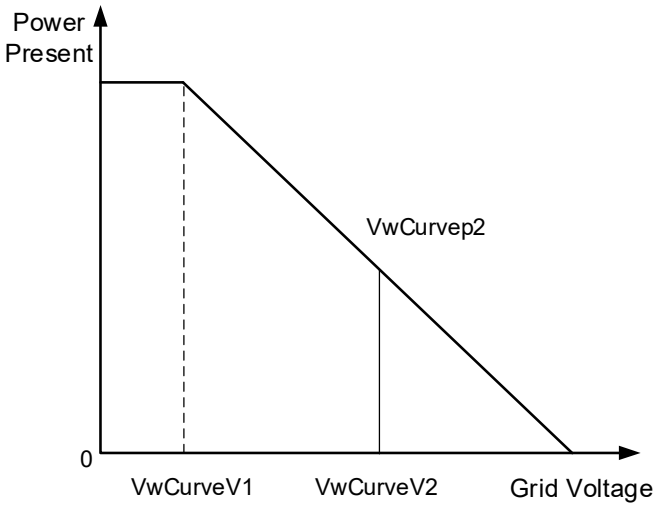


Figure 6-21 Curve of over voltage derating

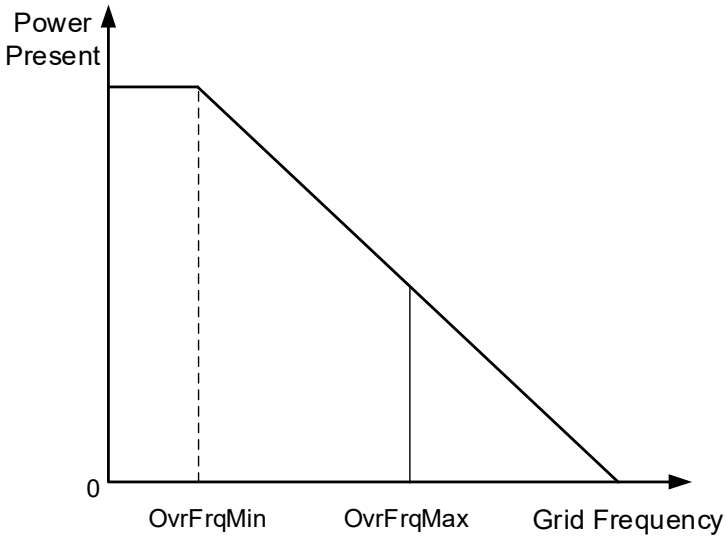


Figure 6-22 Curve of over frequency derating

6.3.2.4.4 **Reactive Power Derating Parameters**

The ReactivePowerDerating parameters group is used to set the Grid reactive power derating parameters, including PF parameters and Qu parameters, etc.

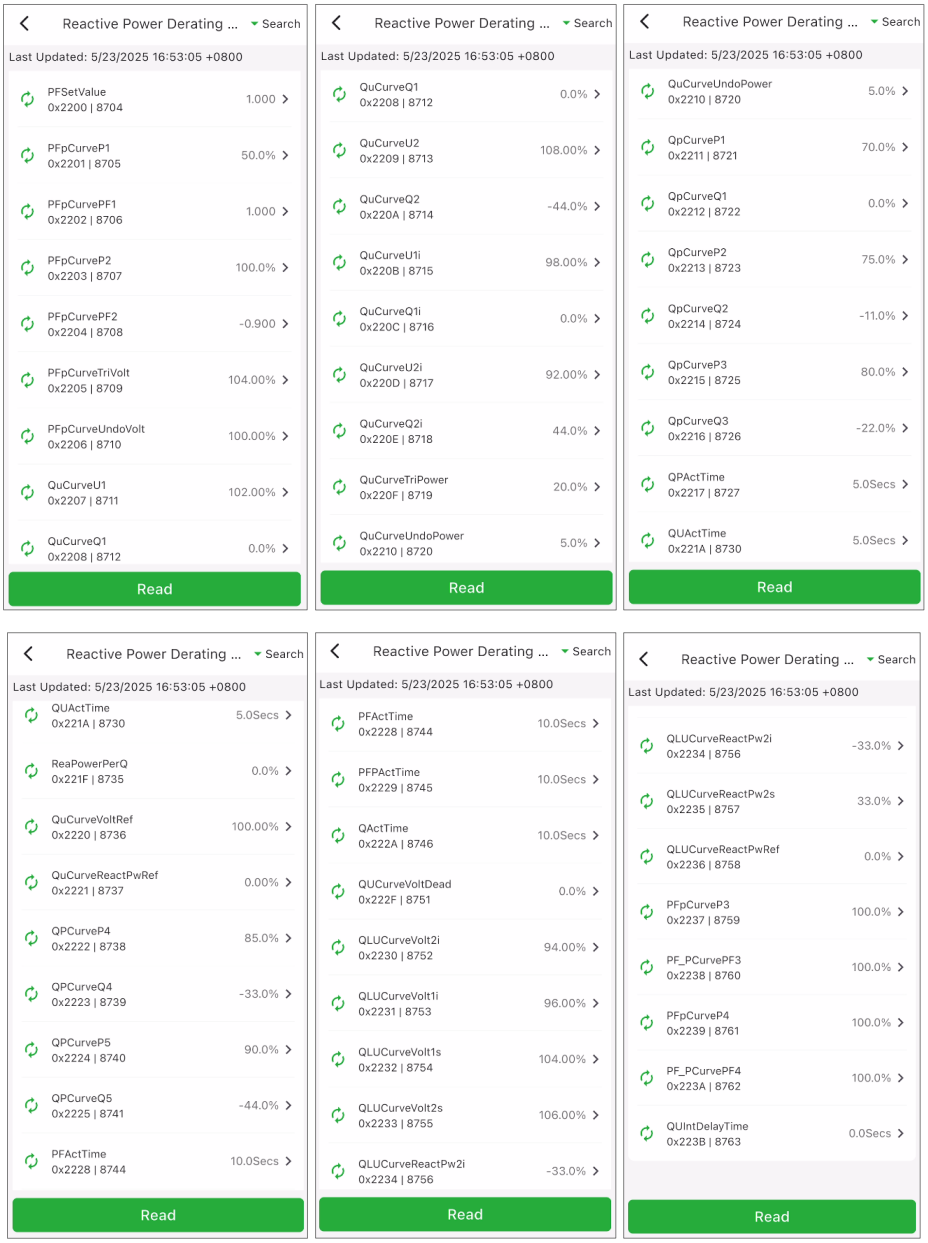


Figure 6-23 ReactivePowerDerating

Note: The PF and Q value can be adjusted by remote software if the “Remote” is selected.

- PF Set: Set the PF value. Note: Change the reactive power by adjusting the power factor.
- PF(P) Curve：PF curve mode. Note: The power factor changes according to the power change, as shown in figure below.

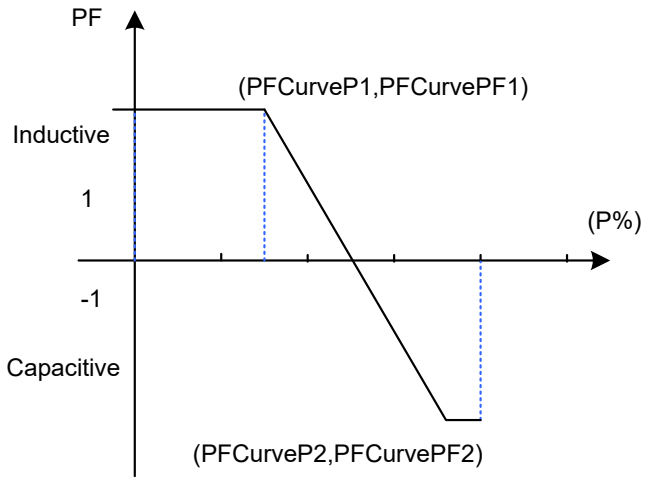


Figure 6-24 PF(P) Curve Mode

- Q(u) Curve：Q(u) curve mode. Note: The reactive compensation changes according to the grid voltage change, as shown in figure below.

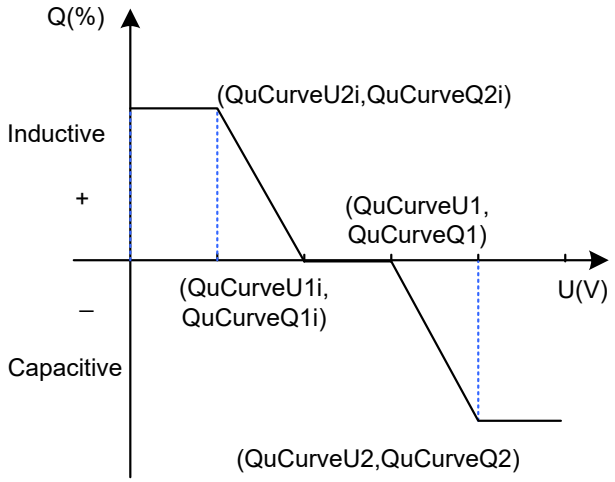


Figure 6-25 Q(u) Curve Mode

6.3.2.4.5 ARC Parameters

The ARC parameters group is used to configure the ACR function related paramters.

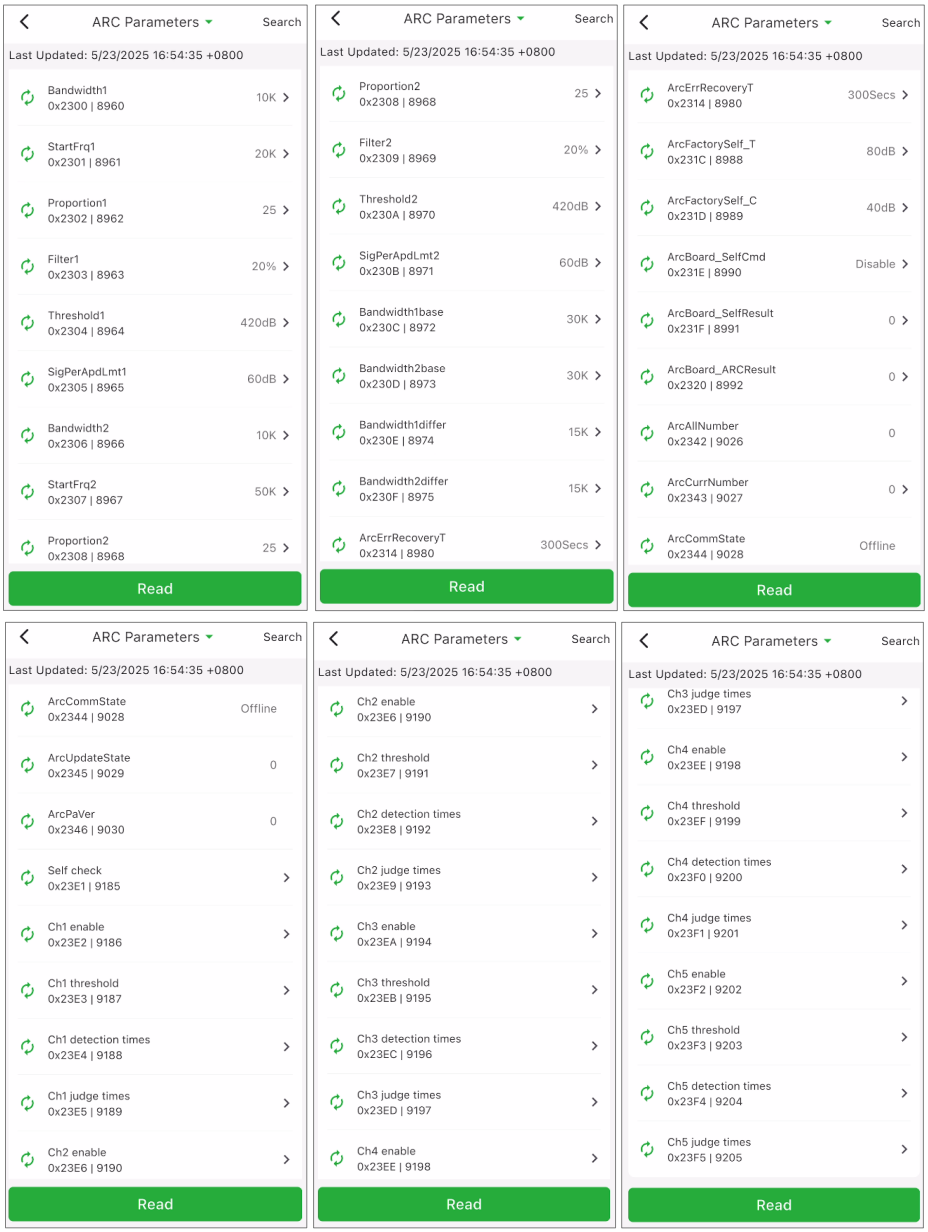


Figure 6-26 ARC Parameters

6.3.2.4.6 Other Parameters

In the **Other Parameters** group, you can find following common parameters shown as below.

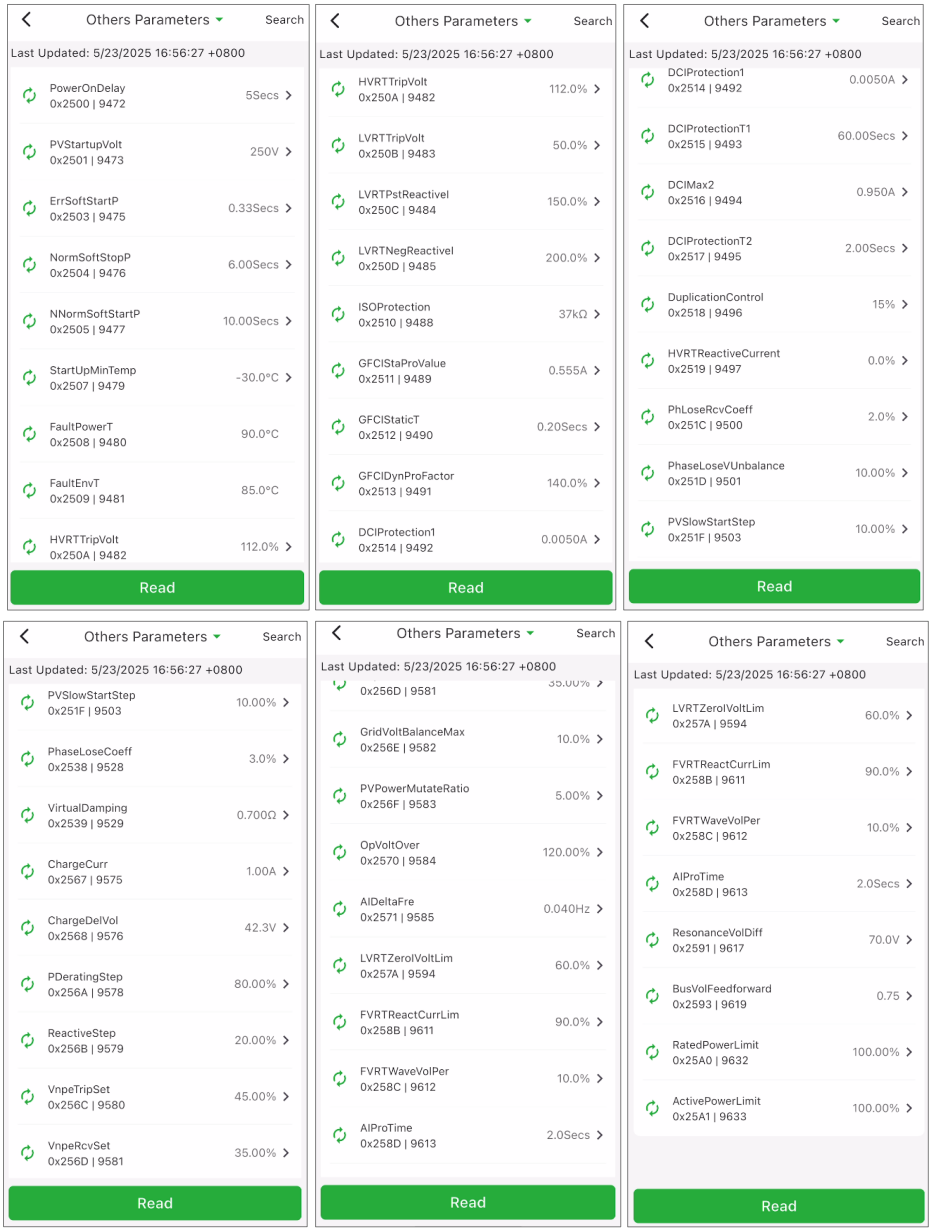


Figure 6-27 Other Parameters

6.3.2.4.7 Enable/disable Control Parameters

In the **Enable/disable Control** interface, you can find following common Enable/disable parameters shown as below.

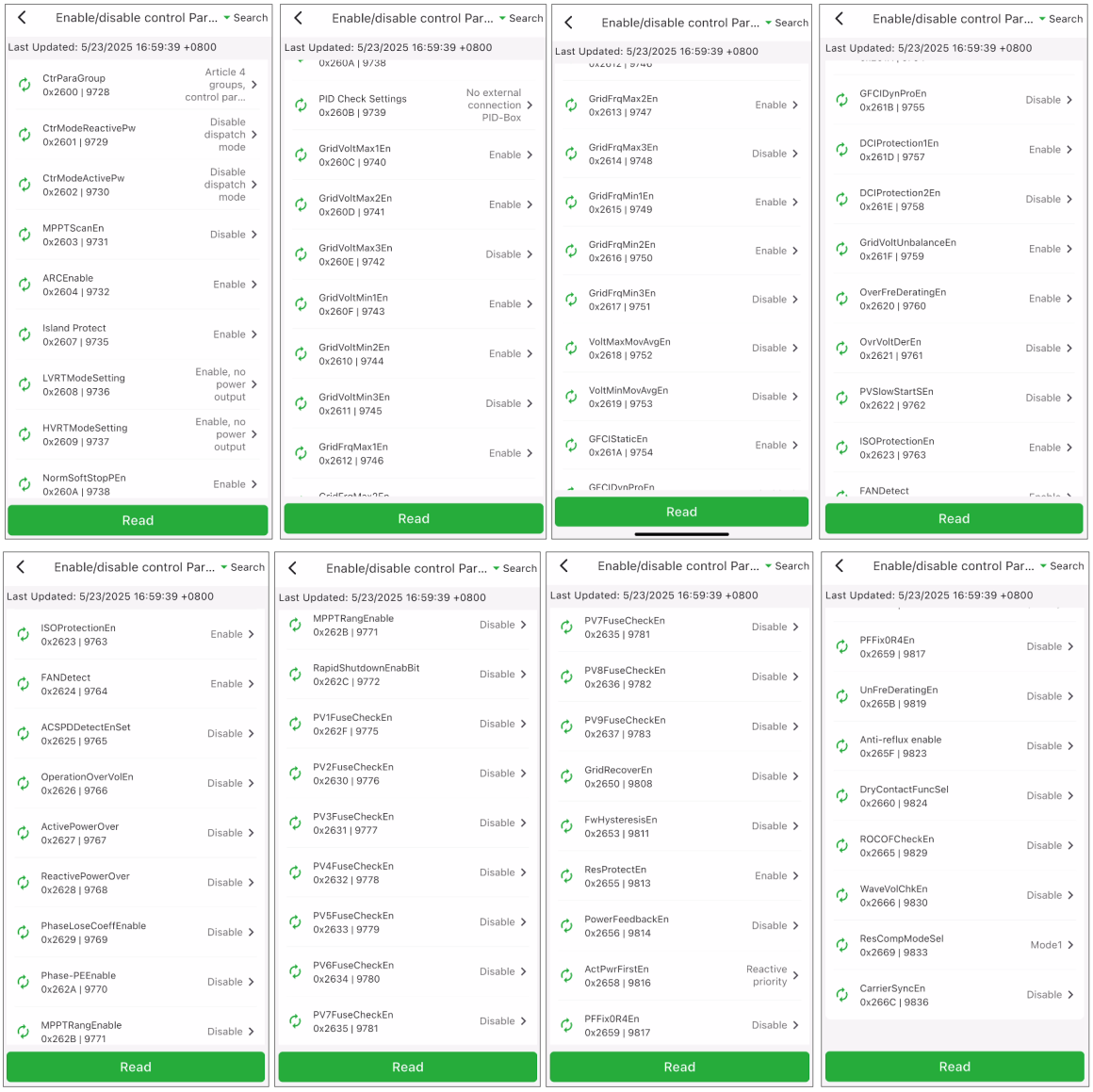


Figure 6-28 Enable/disable Control interface

6.3.2.4.8 **Control Command**

In the **Control Command** interface, you can access the following submenus:

- **Powe OnOff:** This function can be used to control remotely the turn on/off status of the device.
- **Force Restart**: 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.
- **FactoryrDefaults**: 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)**: Available for grid code CEI-021.
- **MPPTScan**: Scan MPPT.
- **ARC Detect:** 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 the “ARC protection-Occur” is shown in “History Faults”, wait for 10 minutes and the inverter can reconnect automatically; 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.

- **ARC Clear:** This function is used to manually clear the “ARC protection-Occur” fault 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 interface). 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.
- **PFSetValue Remote**: Users can use this function to set the PF value remotely.
- **PSetPercent Remote**: Users can use this function to set the active power percent remotely.
- **QSetPercent Remote**: Users can use this function to set the reactive power percent remotely.
- **PidSvgEnable: Enable or disable PID/SVG.**
- **PidSelect SystemType:** To configure the PID stystem type.
- **Fan Detect:** Detect Fan.

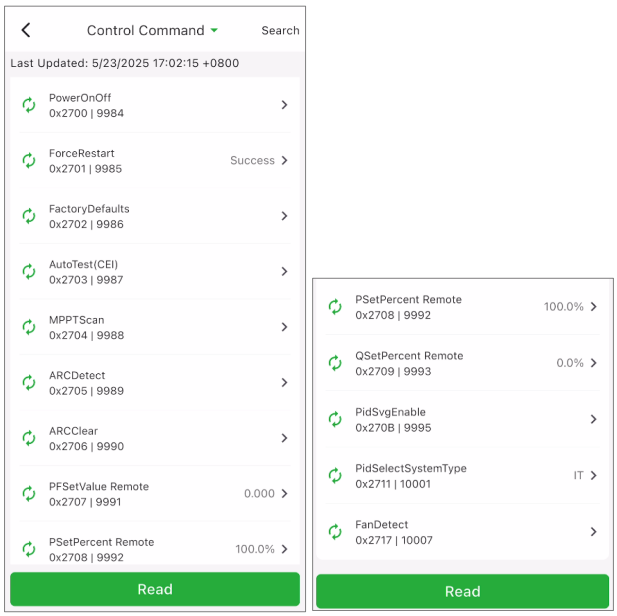


Figure 6-29 Commands interface

6.3.2.4.9 Inverter Basic Information

On the interface, you can see the basic information about the inverter, such as type, DSP version number, series number, grid code, N line setting, PV connection mode, etc.

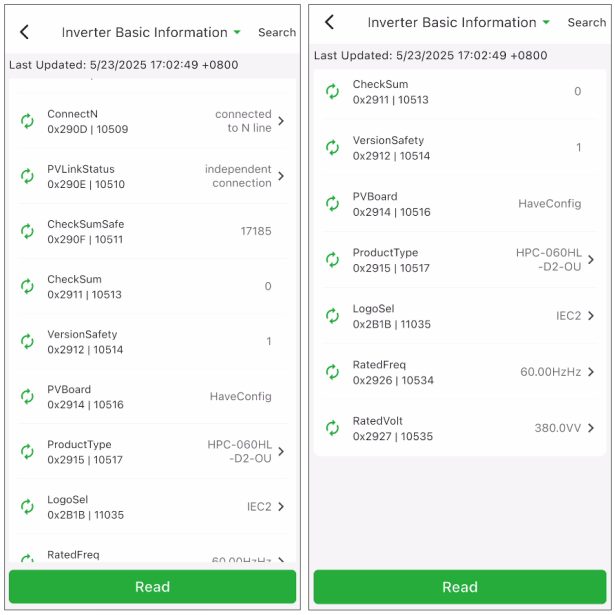


Figure 6-30 Inverter basic information interface

6.3.2.4.10 **THD**

The THD group is used to configure the voltage harmonic and current haromics.

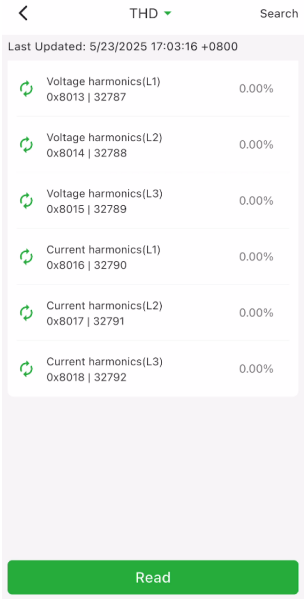


Figure 6-31 THD

6.3.2.4.11 **LcdLess Basic Parameters**

On the LcdLess Basic Parameters interface, you can find some basic information related to LCD module, such as LCD version number, Modbus address, Baud rate, etc.

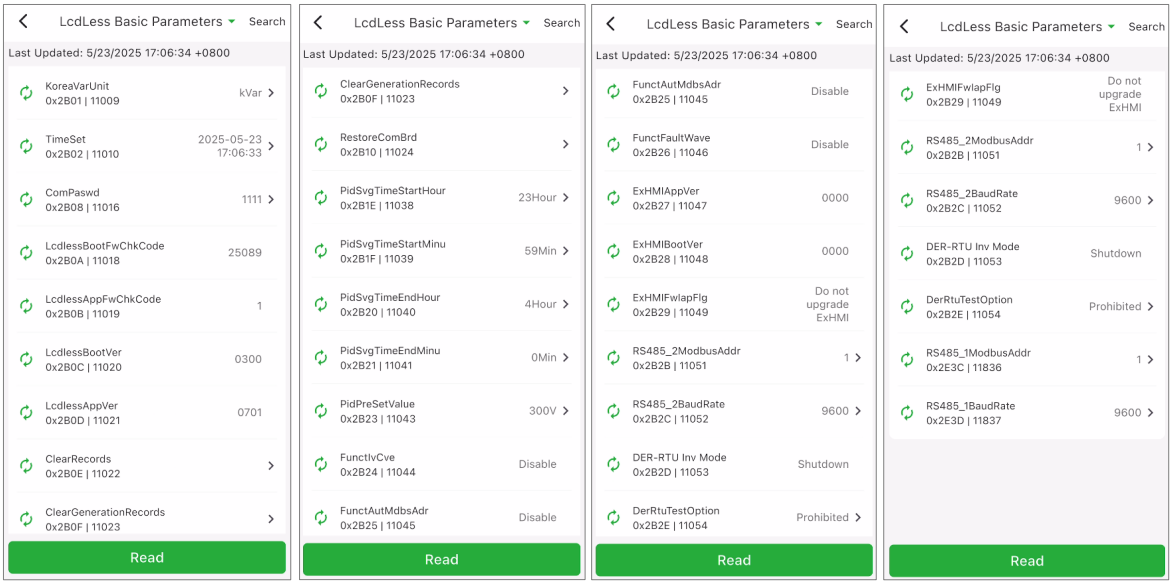


Figure 6-32 LcdLess Basic Parameters interface

6.3.2.4.12 **Power Generation Data**

The power generation data group is used to enable or disable power generation data and reset the total power generation data.

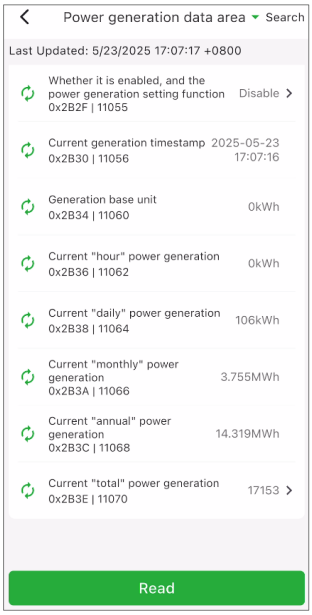


Figure 6-33 Power Generation Data

6.3.2.4.13 **Lcdless Information Area**

The **Lcdless Information Area** provides real-time monitoring and configuration of critical system parameters, including anti-backflow protection status (**AntiRefluxEn**), meter communication settings (**MeterAddr**, **MeterType**), anti-backflow data (ABF grid, ABF load).

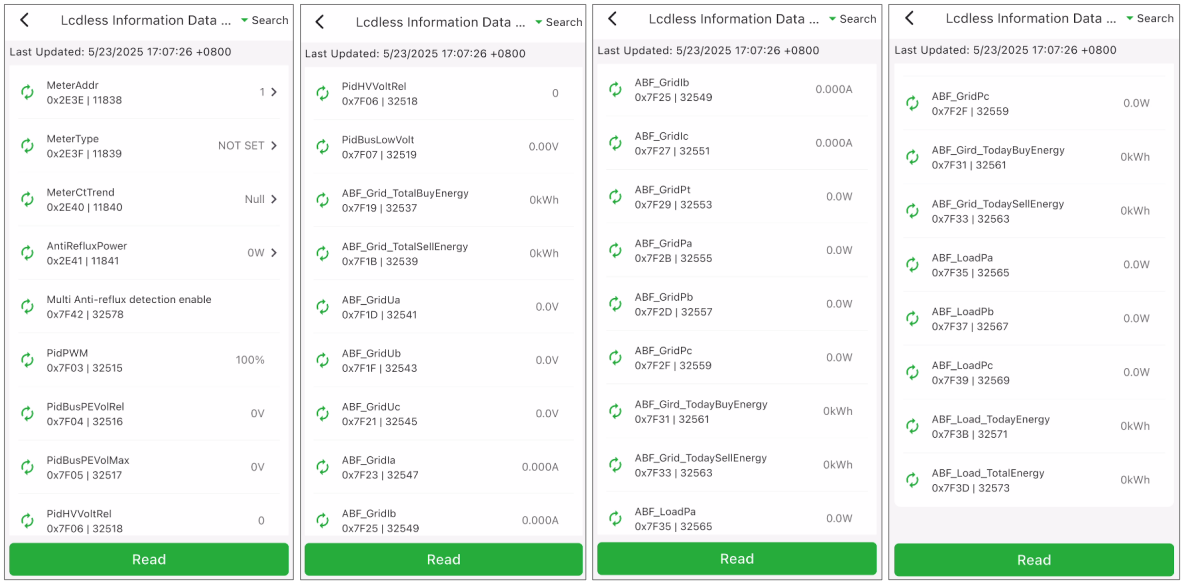


Figure 6-34 Lcdless Information Area

6.3.2.5 Firmware Upgrade

As to the detailed procedures for firmware upgrade, refer to specific instructions or consult our after-sale support personnel.

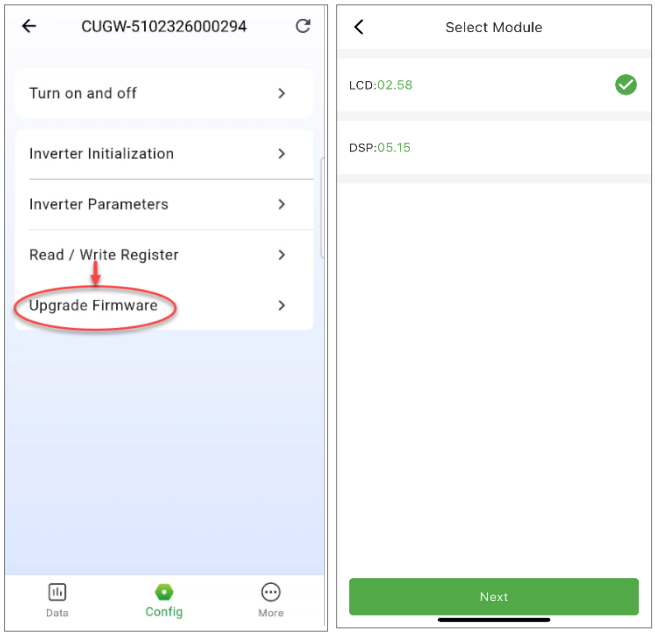


Figure 6-35 Firmware Upgrade

6.3.3 More Menu

More menu includes the following options:

- Current Alarm: View active alerts or issues in real-time.
- History Alarm: View history alarm and running status.
- Chart built into device: Explore visual data of power generation situation at different times period.

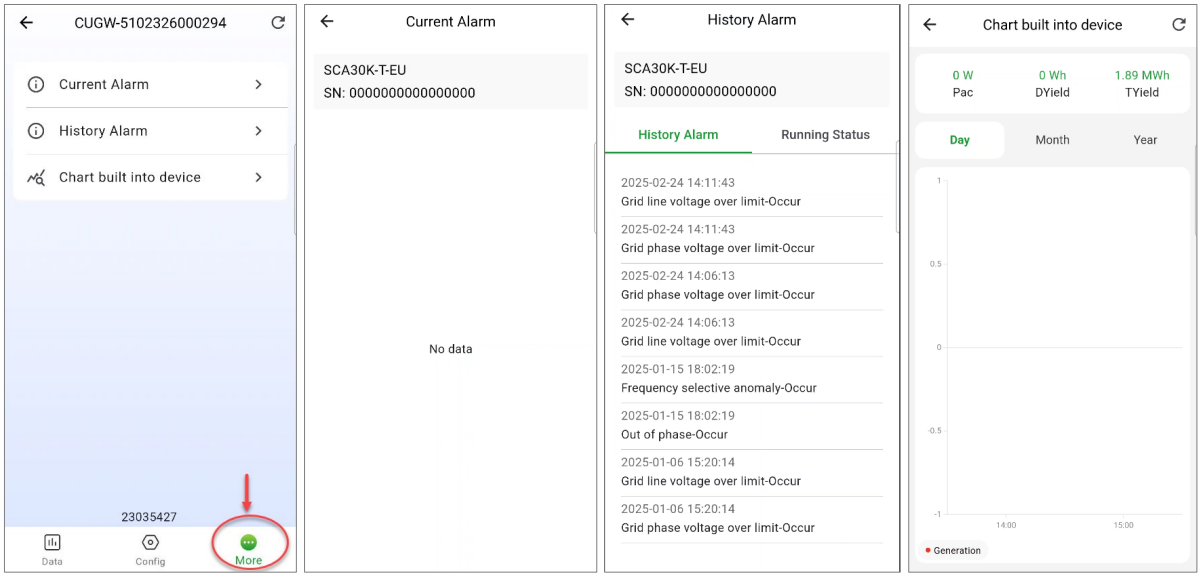


Figure 6-36 More interface

6.4 Main Function Configuration

6.4.1 Anti-Backflow Paraemter Configuration in Chint Connect

After completing the anti-backflow wiring as per *4.3.5 Anti-Backflow for Single Inverter*, the following configurations need to be set in the Chint Connect App.

Enable Anti-Backflow:

1. Go to **Config** > **Enable/Disable Control Parameters**, set Anti-reflux enable to **Single Anti-reflux Enable**.

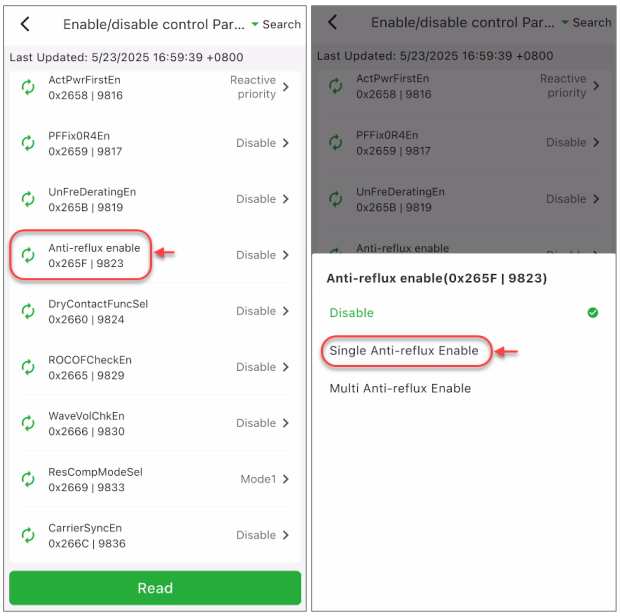


Figure 6-37 Enable anti-backflow

2. Select meter type: go to **Config > Lcdless Information Area**, set **MeterType** parameter to **DTSU666**.

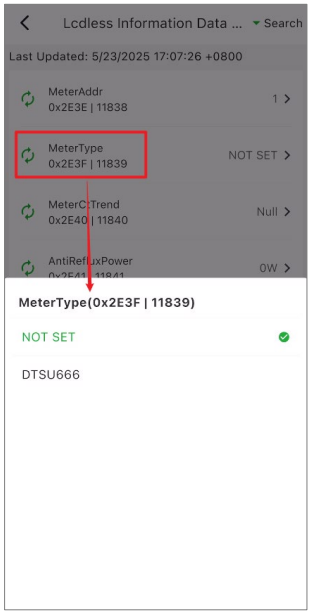


Figure 6-38 Configure meter type

7 Maintenance and Replace

WARNING:

Before starting any product maintenance, the inverter must be stopped running, the AC circuit breaker (connected to the grid) and the PV input on the DC side must be all disconnected, and then wait at least 10 minutes before starting any operation.

7.1 Maintenance

7.1.1 Electrical Connection Check

Check all the cable connections as a regular maintenance inspection every 6 months.

- Check if the cable connection is loose tighten the cables refer to section 3.2;
- Check if the cables are damaged, especially whether the cable surface is scratched or smooth. Repair or replace the cables if necessary.

7.1.2 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.

7.1.3 Replace The Cooling Fan

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 contact CHINT to get the authorization for replacing the fans. Fan brand: DELTA, model: QFR0812MJ-00 series.
- Please disconnect the AC & DC power before replacing the fans.

1. Remove the two screws of the fan bracket, and pull out the fan mounting bracket. Tool: PH2 screwdriver.

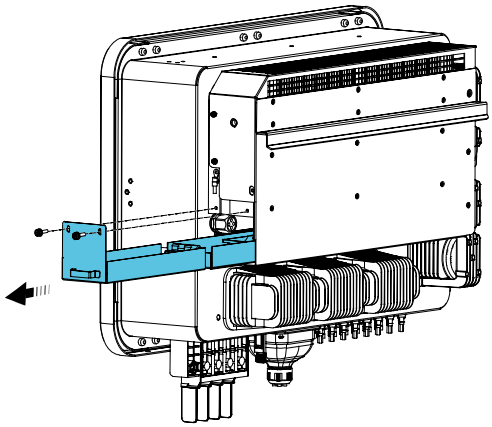


Figure 7-1 Pull out the fan bracket

2. Disconnect the watertight cable connector from cooling fan as shown in the figure below, and pull out the fan bracket.

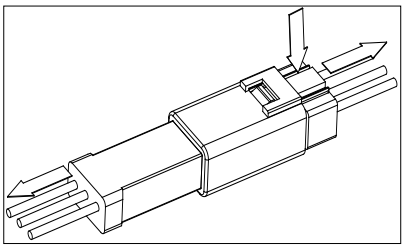


Figure 7-2 Disconnect the connector

3. Remove the four screws and replace the fan. Tool: PH2 screwdriver.

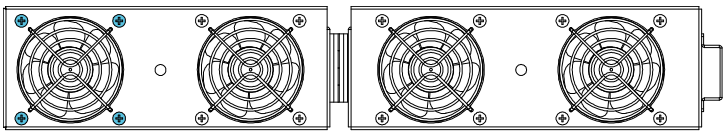


Figure 7-3 Remove the screws of the fan

4. Install a new fan on the bracket and tighten the four screws as figure 8-3. Tool: PH2 screwdriver, torque: 1.0-1.2 N.m.
5. Place the connectors and cables in the slot of the fan bracket, push the fan bracket into the inverter and tighten the two screws. Tool: PH2 screwdriver, torque: 1.6 N.m.

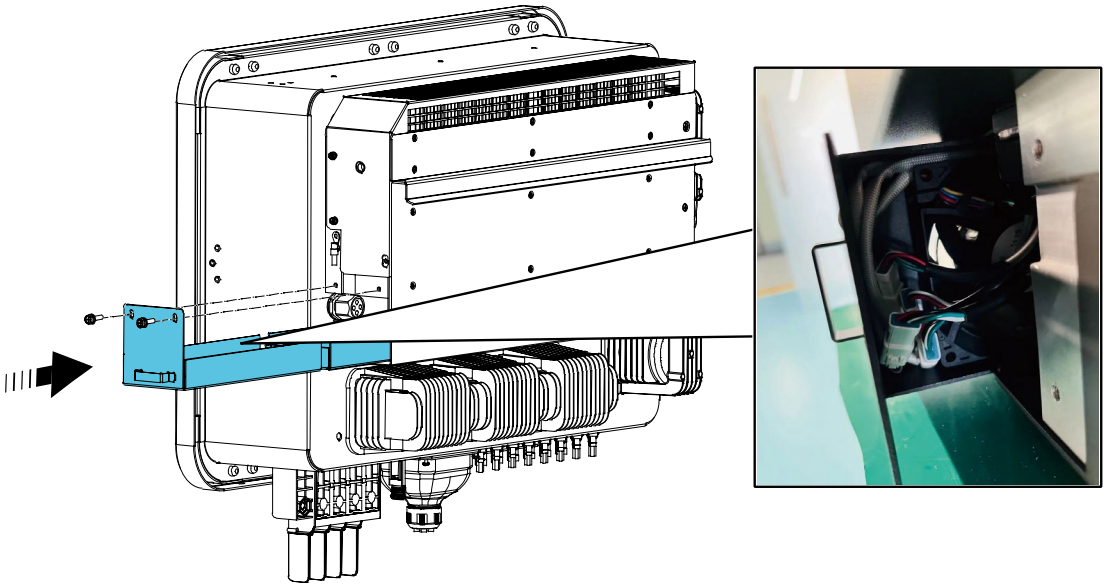


Figure 7-4 Push the fan bracket into the inverte

7.2 Replace the Inverter

IMPORTANT!

Make sure both the AC breaker and dc switch are turned off.

1. Disconnect all the cables, refer to section 4 Electrical connection;
2. Remove the two screws. Tool: PH2 screwdriver.

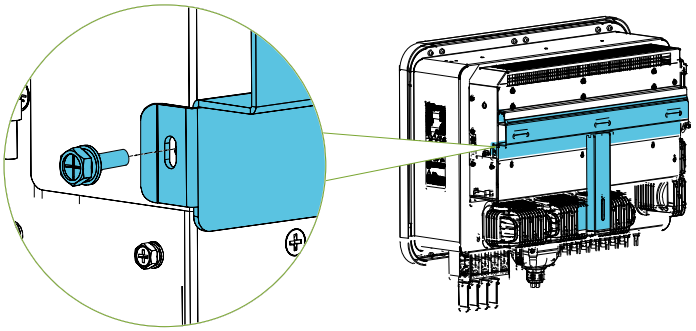


Figure 7-5 Remove the screws

3. Remove the anti-theft lock to unlock the inverter and the mounting bracket.

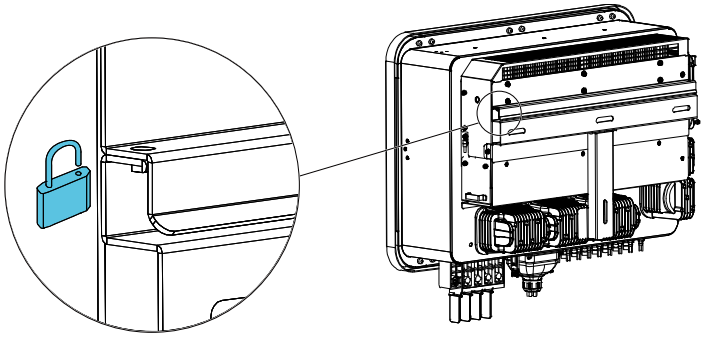


Figure 7-6 Remove the anti-theft lock

4. Hang the inverter from the mounting bracket.
5. Hang the new inverter on the mounting bracket and tighten the two screws to fix the inverter and mounting bracket. Tool: PH2 screwdriver, torque: 1.6 N.m.

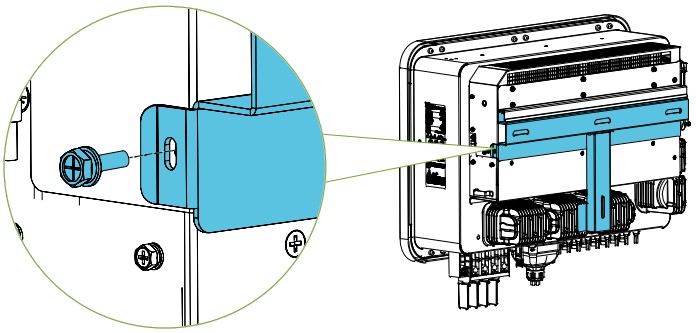


Figure 7-7 Fix the new inverter

8 Troubleshooting

8.1 LED Indicator Troubleshooting

If the LED light indicates any faults, please perform troubleshooting according to the table below.

LED status	Solutions
Warnings	1. Turn off the external AC breaker. 2. Switch the DC switch to OFF position. 3. Check the PV input voltage and polarity.
Common (restorable) faults	1. Turn off the external AC breaker. 2. Switch the DC switch to OFF position. 3. Check if the grid voltage is normal. 4. Check if the cable connection of AC side is correct and secure.
Unrecoverable fault	Refer to Table 8-2 to 8-4 for troubleshooting.

Table 8-1 Troubleshooting based on LED Indicator

8.2 Common Fault 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 10 minutes after disconnecting all sources of DC and AC.

The inverter will be shut down automatically if the PV power generation system fails, such as output short circuit, grid overvoltage/under voltage, grid over frequency/under frequency, high environmental temperature or internal malfunction of the machine. The fault information will be displayed on the APP interface.

The troubles can be identified and resolved based on the definitions, possible causes and recommended solutions listed in the following table. There are generally 3 types of fault: warning, protection and hardware fault. Proper analysis is recommended before contacting after-sales service.

Type	Fault code	Solutions
Warning	Internal Communication Failure	1. Observe for 10 minutes to see if the inverter can automatically eliminate this alarm; 2. Disconnect the DC and AC switch, then let the system receive power again; 3. Contact after-sales service personnel

Type	Fault code	Solutions
	External Fan Alarm	1. Observe for 10 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 and AC switch, then let the system receive power again; 4. Contact after-sales service personnel
	Internal Fan Alarm	1. Observe for 10 minutes to see if the inverter can automatically eliminate this alarm; 2. Disconnect DC and AC switch, then the system receive power again; 3. Contact after-sales service personnel
	Protection 0030 (Eeprom fault）	1. Observe for 10 minutes to see if the inverter can automatically eliminate this alarm; 2. Contact after-sales service personnel
	Protection 0050 (Temperature Sensor Abnormal)	1. Check the temperature display value 2. Disconnect DC and AC switch, then let system receive power again 3. Contact after-sales service personnel
Protection	Protection 0090 (Bus Voltage High)	1. Restart the inverter, disconnect the AC and DC connections, wait for 10 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	Protection 0070 (Bus High Voltage Difference)	1. Restart the inverter, disconnect the AC and DC connections, wait for 10 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	Grid voltage abnormality	1. Check whether the AC input voltage of the inverter is normal 2. Disconnect DC and AC switch, then restart the inverter 3. Contact after-sales service personnel
	Voltage frequency abnormality	1. Check whether the AC input voltage of the inverter is normal 2. Disconnect DC and AC switch, then restart the inverter 3. Contact after-sales service personnel

Type	Fault code	Solutions
	Protection 0020 (Grid-tied relay protection)	1. Restart the inverter, disconnect the AC and DC connections, wait for 10 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	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
	Protection 0010 (Inverter current bias fault)	1. Turn off DC switch and AC circuit breaker, wait for 10 minutes to discharge and then turn it on. 2. Contact after-sales service personnel.
	Protection 0180 (Inverter current DC component bias fault)	1. Turn off DC switch and AC circuit breaker, wait for 10 minutes to discharge and then turn it on. 2. Contact after-sales service personnel.
	Protection 0170 (DCI current is too high)	1. Set the maximum DCI to its highest allowable value (*refer to 6.3.2.4.6 Other Parameters*) 2. Restart the inverter to observe whether the fault is automatically eliminated 3. Contact after-sales service personnel
	Insulation impedance 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
	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.
	Protection 0150 (MiniMCU fault)	1. Disconnect the AC and DC connections, wait for 10 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	Protection 0100	1. Disconnect the AC and DC connections, wait for 10 minutes to

Type	Fault code	Solutions
	The leakage current sensor is abnormal	discharge and then turn it on 2. Contact after-sales service personnel
	Reverse MPPTx Input (x=1,2,3,4)	1. Disconnect the AC and DC connections and exchange the positive and negative poles of the reverse branch circuit 2. Restart the inverter and observe whether the fault is automatically eliminated. 3. Contact after-sales service personnel
	MPPTx input voltage is too high (x=1,2,3,4)	1. Check if the PV input voltage is within the range of 1100V 2. Restart the inverter, disconnect the AC and DC connections, wait for 10 minutes to discharge and then turn it on 3. Contact after-sales service personnel
	Protection 0230 Start-up inverter open loop self-check failure	1. Disconnect the AC and DC connections, wait for 10 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	Resonance protection	1. Disconnect the AC and DC connections, wait for 10 minutes to discharge and then turn it on 2. Contact after-sales service personnel
	Protection 0510	1. Check if the PV input voltage is within the range of 1100V. 2. Disconnect the AC and DC connections, wait for 10 minutes to discharge and then turn it on 3. Contact after-sales service personnel
	Protection 0470	1. Check if N cable is grounded, and if the live cable is connected to N cable mistakenly. 2. Restart the inverter and observe whether the fault is automatically eliminated 3. Contact after-sales service personnel

Figure 8-1 Troubleshooting list

9 Technical Data

Model Name	SCA25K-TM-SA	SCA30K-T-SA	SCA50K-T-EU	SCA60K-T-EU
DC Input				
Max. DC Voltage	1100Vdc			
MPPT Operating Voltage Range	200-800 Vdc		200-1000 Vdc	
Start voltage	250 Vdc			
Rated DC Input Voltage	400 Vdc		620 Vdc	
Number of MPPT	4		4	
Number of DC Connection sets per MPPT	2		2	
Max. Input Current per MPPT	40A			
Max. DC Short-Crcuit Current per MPPT	50A			
DC Disconnection Type	Intergrated switch			
AC Output				
Rated AC Output Power	25 kW	30 kW	50 kW	60 kW
Max. AC Output Power	27.5 kVA	33 kVA	55 kVA	66 kVA
Rated AC Output Voltage	220 V		380 V / 400 V	
AC Output Voltage Range	176 - 246 V		304 - 426 V	
Grid Connection Type	3 / (N) / PE			
Max. AC Output Current	72.1 A	86.6 A	83.6 A	100.3 A
Grid Frequency	50 / 60Hz			
Grid Frequency Range	45-55 / 55-65Hz			
Power Factor	＞0.99(±0.8 adjustable)			
Current THD	<3%			
System Data				
Topology	Transformerless			
Max efficiency	97.43%	97.43%	98.49%	98.56%
Euro efficiency	97.03%	97.13%	98.44%	98.43%
Protection				
DC Reverse Connection Protection	Yes			
AC Short Circuit Protection	Yes			
Leakage Current Protection	Yes			
24h Grid Monitoring	Yes			
Ground Fault Monitoring	Yes			
Surge Protection	DC Type II / AC Type II			
AFCI	Yes			
PID Recovery	Yes			
Environmental parameters				

Ingress Protection	IP66
Cooling Method	Cooling Fans
Operating temperature	-30°C to + 60°C
Operating	0-100%, No condensation
Operating altitude	4000m
Display and communication	
Display	LED+APP (Bluetooth)
Communication	RS485 / Wi-Fi (Standard) & 4G / Ethernet (Optional)
Consumption at Night	< 15 w
Structural parameters	
Dimensions (WxHxD)	713 * 609* 306mm
Weight	50.5 kg
DC Connection Type	MC4 (Max. 6 mm^2)
AC Connection Type	OT / DT Terminal (Max. 70 mm^2)
Safety	
Certifications	IEC/EN 62109-1/2, IEC/EN 61000-6/3, IEC/EN 62920, IEC 61727/62116, PORTARIN Nº 140&515, IEC63027

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. Equipment damage caused by improper pre operation inspection, debugging, testing, operation, maintenance, or installation by the 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;
   - 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;
   - Entrust maintenance personnel not designated by the CHINT to repair and disassemble the products.
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 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

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.

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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