SCH320/333/350K-T-EU Grid-tied PV Inverter

User Manual

Shanghai Chint Power System 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").

This PV Inverter is a high performance and highly reliable product specially designed for the EU market except North America solar market.

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

- Plant owner
- Project Engineer
- Installation engineer
- Maintenance engineer

Installation, commissioning, troubleshooting, and maintenance of the inverter must be done only by qualified personnel. If you encounter any problems during the above-mentioned operation, please check the user manual carefully. You can also contact your local dealer or supplier for help if the problem still exists.

Manual Management

Please keep this user manual on hand for quick reference.

Copyrights

Version

This manual is subject to change or modification without prior notice. Users can get the latest manual from our sales channel or our official website: www.chintpower.com.

1 IMPORTANT SAFETY INSTRUCTIONS

(SAVE THESE INSTRUCTIONS)

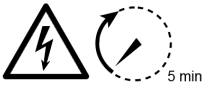
PLEASE READ THIS USER MANUAL CAREFULLY BEFORE THE INSTALLATION AND OPERATION OF THIS PV INVERTER. CPS RESERVES THE RIGHT TO REFUSE WARRANTY CLAIMS FOR EQUIPMENT DAMAGE IF USERS FAIL TO INSTALL THE EQUIPMENT ACCORDING TO THE INSTRUCTIONS IN THIS MANUAL.

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

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

Symbols	Meanings
	**HIGH VOLTAGE!** This equipment works with high voltages. All works on the equipment must only be performed as described in this document.
	**HIGH ENERGY!** Risk of electric shock from energy stored in capacitor. Do not remove cover until 5 minutes after disconnecting all sources of supply.
	**HOT SURFACE!** Hot surfaces. To reduce the risk of burns. Do not touch.
	For more details please see the user manual.
	**WARNING:** For continued protection against risk of fire, replace only with same type and ratings of fuse. Refer to instruction manual for details.
	**EARTH GROUND!** This symbol marks the location of a grounding terminal, which must be securely connected to the earth through the PE (protective earthing) cable to ensure operational safety.
	**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 CE** This inverter has passed CE Certification.
	**Certification TÜV** The safety and quality of the inverter have been certified by TÜV Rheinland.

1.3 Safety Precautions of Operating the PV Inverter

WARNING!

All operations and connections shall be performed by 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.

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.

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.

CAUTION!

Please check the mounting bracket again before hanging up to make sure that the mounting bracket is firmly installed 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.

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

SCH320/333/350K-T-EU series inverters are designed for using with commercial rooftop, and large-scale PV grid-tied systems. The system is generally made up of PV modules, PV inverter and AC power distribution equipment, as shown in Figure 2-1. 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.

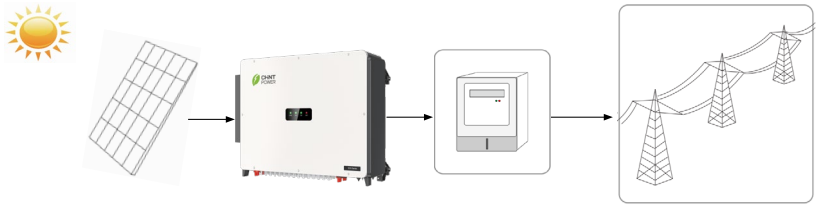


Figure 2-1 Grid-tied PV system

Item	Name	Description
A	PV Module	Monocrystalline, polycrystalline silicon components, non-ground batteries
B	PV Inverter	SCH320/333/350K-T-EU
C	Metering device	Standard metering device for inverter power generation
D	Public Grid	Support IT system, TT system, and TN system

Table 2-1 Components of Grid-tied PV system

2.2 Product Dimensions and Appearance

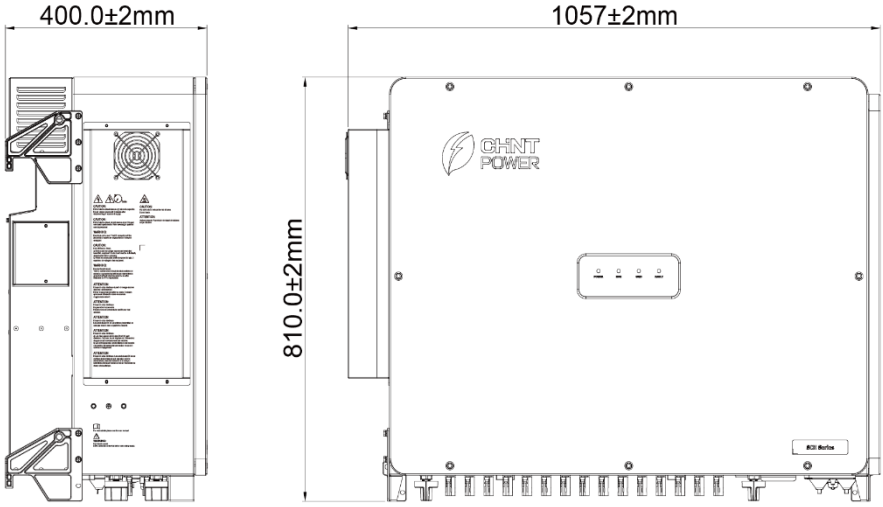


Figure 2-2 Inverter Dimensions

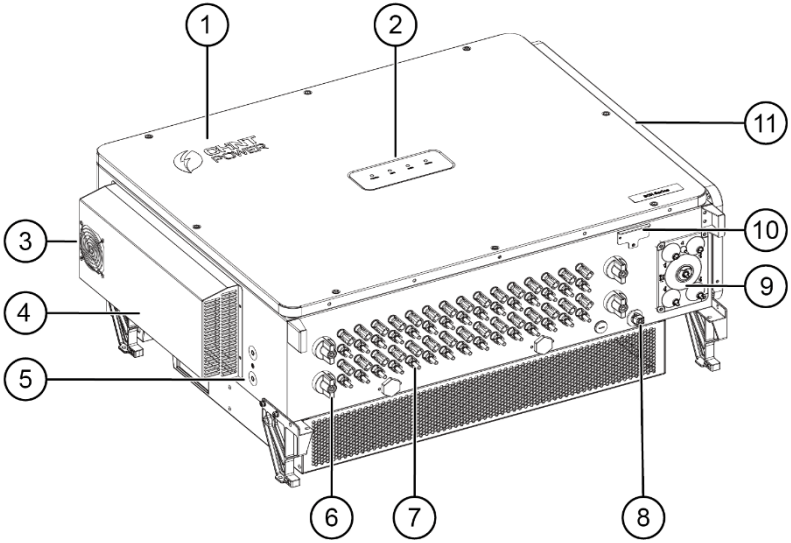


Figure 2-3 Product Appearances

No.	Name	Function
1	Logo	Inverter brand
2	LED Indicator	Indicates operation status of the inverter

3	Fan	Forced cooling of the heat exchanger
4	Heat exchanger	Lowering the operating temperature of the inverter
5	PE point	External grounding
6	DC switch	Safely cut off DC power supply
7	DC terminal	Quick plug terminal connector
8	Communication interface	RS485 /CAN communication line outlet port
9	AC sealing plate	AC and internal grounding cable outlet port
10	LINKIT interface	Install LINKIT module. Connecting to LINKIT module through the mobile app enables monitoring of the inverter.
11	AC wire box	Connect AC and internal grounding cable

Table 2-2 Product Components

2.3 LED Display

LED display of the inverter is shown as follows:

Figure 2-4 LED display of the inverter

Indicators and their indications are 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-tied power generation
		Flash	Derating operation status (on for 0.5 seconds, off for 1.6 seconds)
		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 0.5 seconds, off for 1.6 seconds)

		Off	No power supply
FAULT (Red)	Fault Status Indicators	On	Permanent failure
		Quick Flash	General failure (on for 0.5 seconds, off for 0.5 seconds)
		Slow Flash	Alarm failure (on for 0.5 seconds, off for 2 seconds)
		Off	No fault or no working power supply
ALL	Upgrade status	Flash	LCD or DSP upgrading

Table 2-3 LED Indicators and their indications

2.4 Product Protection 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
- DC Input and AC output overvoltage protection
- DC Input and AC output overcurrent protection
- Ambient temperature monitoring
- Module temperature monitoring
- DC tripping protection

2.5 Schematic Diagram and Circuit Design

The electrical schematic diagram of inverter is as shown in Figure 2-5. 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.

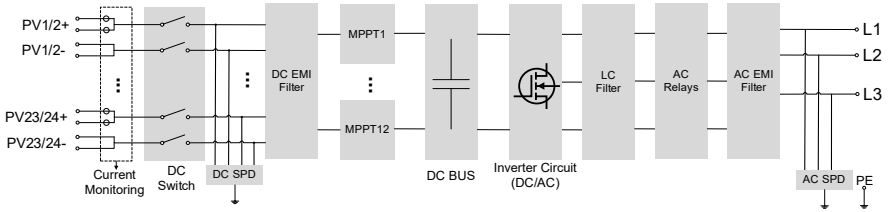


Figure 2-5a Schematic Diagram of the 12MPPT Inverter

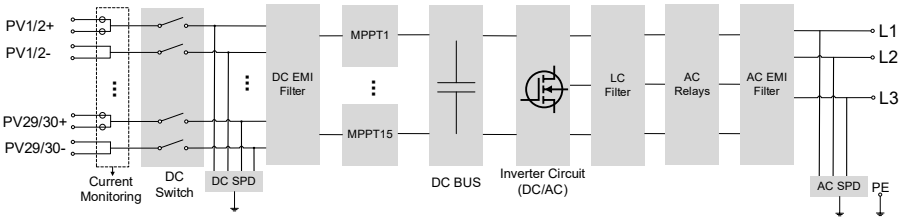


Figure 2-5b Schematic Diagram of the 15MPPT Inverter

3 Mechanical Installation

3.1 Storage before Unpacking

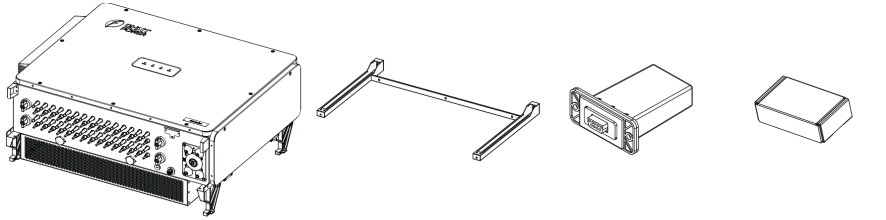
If the inverter is not immediately installed upon arrival, the following requirements should be met when storing the inverter:

- 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 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 unpacking, check whether the packaging box and all safety signs, warning labels, and nameplates on the packaging box and the product are intact. These signs must always be clearly visible and cannot be removed or covered until the product is scrapped.
All the delivery items are shipped in one package, which includes the inverter, mounting bracket, accessory box and LINKIT module.
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:



Inverter (15 MPPT) Mounting bracket LINKIT Accessory box

Figure 3-1 Delivery list

No.	Image	Accessories	Amt	Usage
1		Quick guide, Warranty card	2	For quick guidance and warranty service
2		M10 Nut	6	For mounting

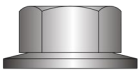
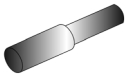
No.	Image	Accessories	Amt	Usage
3		M10 Spring washer	6	bracket
4		M10 Flat washer	6	
5		Screw M10X50	6	
6		Screw M6X16	5	2 for mounting bracket 3 for grounding
7		Handle	4	Carry the inverter
8		Screw M6X18 with plastic flat washer	1	Spare for front cover
9		Unlock tool for DC connector	1	Unlock connector
10		M12 tapered washer combination nut	3	For AC output terminal
11		M12 flat washer	3	
12		8 PIN connector	1	RS485/CAN communication
13		DC Input Male (+) Connector	24(30)	PV DC quick connector 12 MPPTs: 24(+) &24(-) 15 MPPTs: 30(+) &30(-)
		DC Input Female (-) Connector	24(30)	
14		Plug rod	2	Plug seal ring of 8 PIN connector

Table 3-1 Accessories included in accessory box

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**.

3.4 Installation Requirements

3.4.1 Installation Environment

It is recommended to install the inverter under a roof or CHINT sunshade, avoiding direct sunlight, rain and snow accumulation can reduce power derating and extend service life.

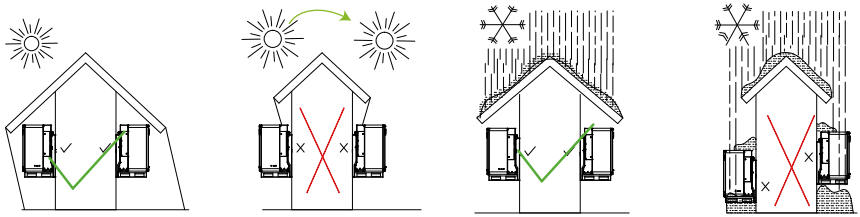


Figure 3-2 Environment requirements

3.4.2 Installation Modes

The inverter shall be installed following the modes as below:

a) If the location permits, install the inverter vertically.
b) If the inverter cannot be mounted vertically, it may be tilted backward by lower than 15 degrees from vertical direction.
c) Do not mount the inverter leaning forward.
d) Do not mount the inverter upside down.
e) Do not mount the inverter horizontally.

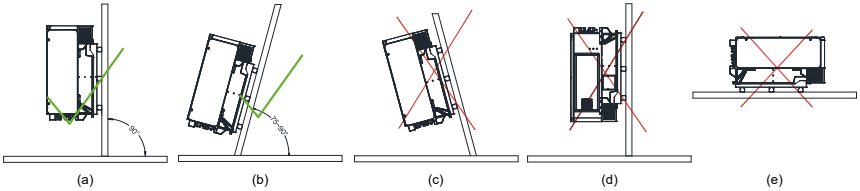


Figure 3-3 Installation modes

3.4.3 Installation Scenarios

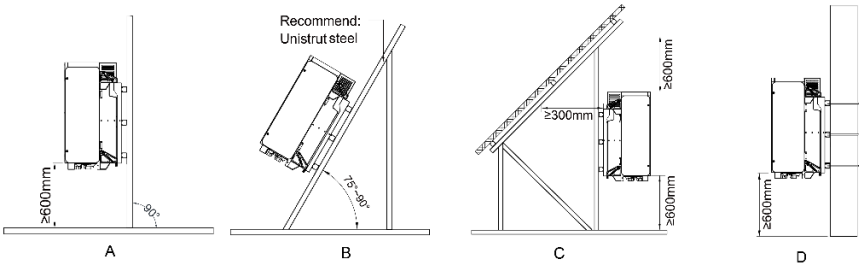


Figure 3-4 Installation requirements for inverter racks

A. Install inverter vertically on mounting bracket if installation conditions permit.
B. The inverter can be installed at an angle of ⩽15° leaning back while its back shall not be shielded to ensure good ventilation.
C. The inverter can be installed under the panel, while its back and top shall not be blocked to ensure good ventilation.
D. The inverter can be installed on a single column holding rod and shall be checked to confirm a secure installation.

NOTICE!
Make sure that the mounting structure (mounting bracket, rack, etc.) is capable to bear the weight of the inverter.

3.4.4 Space Requirements

The distance between the inverter and surrounding objects should meet the following conditions:

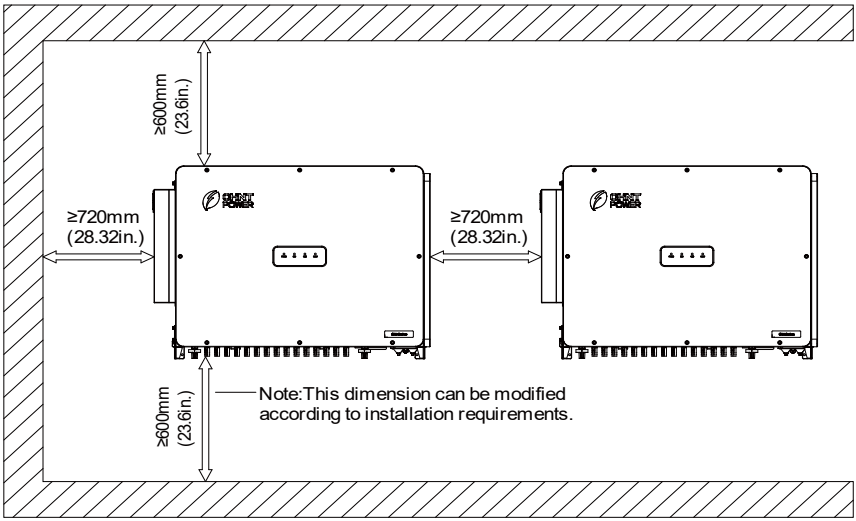


Figure 3-5 Installation space requirements

NOTICE!

The distance between two parallel inverters must be ≥720 mm, and good ventilation should be ensured. If the surroundings are relatively closed, please increase this distance appropriately.

3.5 Installation Procedures

1. Mark the positions of mounting holes on the installation structure (shelter, steel rack, etc.) according to the size of the mounting brackets.

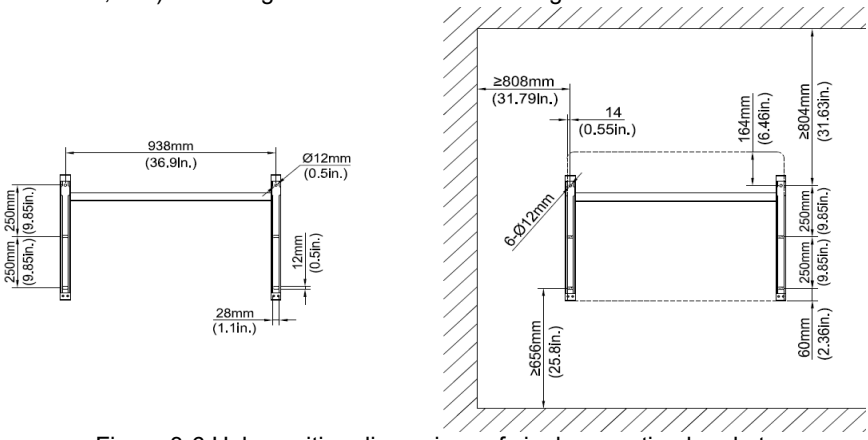


Figure 3-6 Hole position dimensions of single mounting bracket

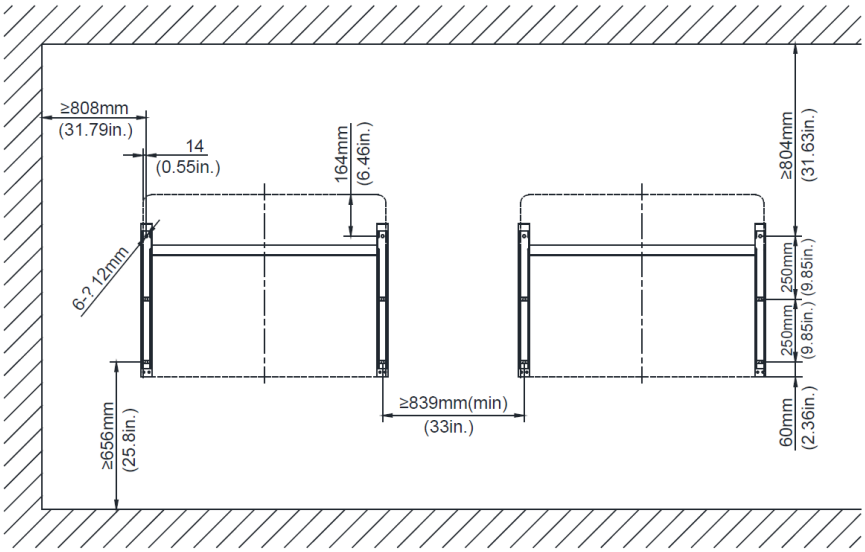


Figure 3-7 Hole position dimensions of multiple mounting brackets

2. Drill holes with a Φ12mm drill at the marked position, and then install the

bracket ⑤ with the equipped screws M10X50 ④, M10 flat washer ③, M10 spring washer ②, and M10 nut ① (They are included in the package). Tools: Electric drill (with Φ12mm drill bit), No. 17 hexagon socket wrench, torque: 230 kgf.cm.

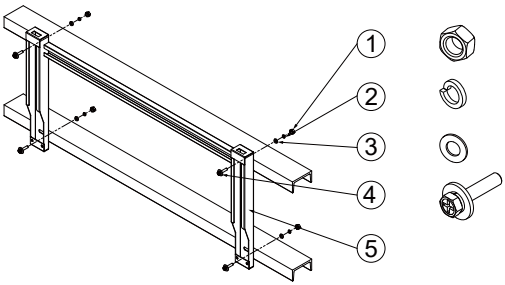


Figure 3-8 Install the mounting bracket

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:
   (a) Hoist mounting(preferred): tighten two M12 lifting eyebolts (offered by customer) to the screw holes as indicated. Use sling rope or bar (inserted through both lifting eyebolts) to lift the inverter onto the mounting bracket. The minimum angle between the two sling ropes should be less than 90 degrees, refer to Figure 3-9.

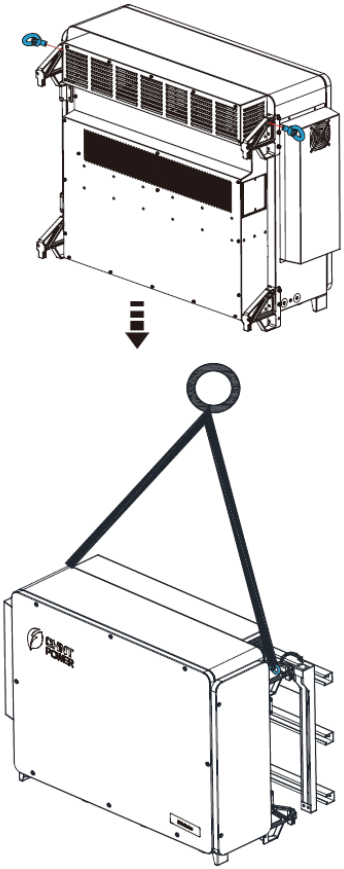


Figure 3-9 hoist mounting

(b) Manual hanging: install four handles into the screw holes as indicated. Four people are needed to properly lift the inverter by the four handle positions and bottom surface marked in Figure 3-10, and mount the inverter onto the mounting bracket.

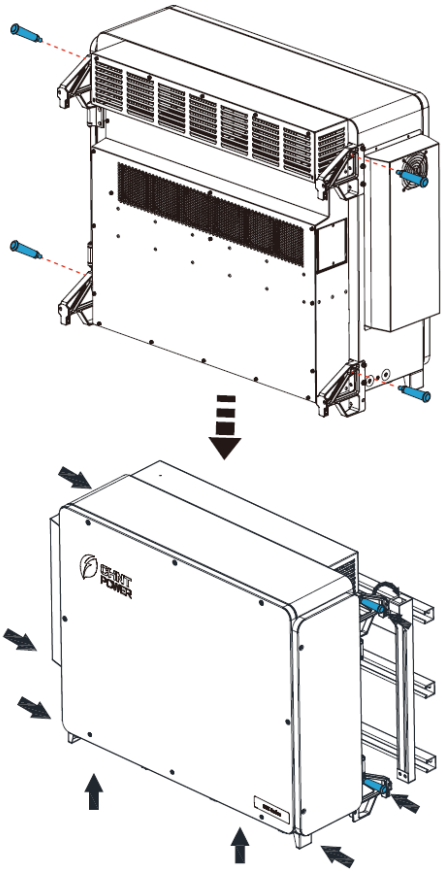


Figure 3-10 Manual hanging

CAUTION!

The total weight of the inverter is approx. 131kg (288.8 pounds).

Ensure the mounting bracket is properly installed before hanging the inverter on the bracket.

When handling the inverters, pay attention to maintain balance to prevent them from tipping or falling.

4. Use two M6X16 screws to fasten inverter on mounting bracket.
   Tools required: No.10 hexagon socket wrench, torque: 60kgf.cm.

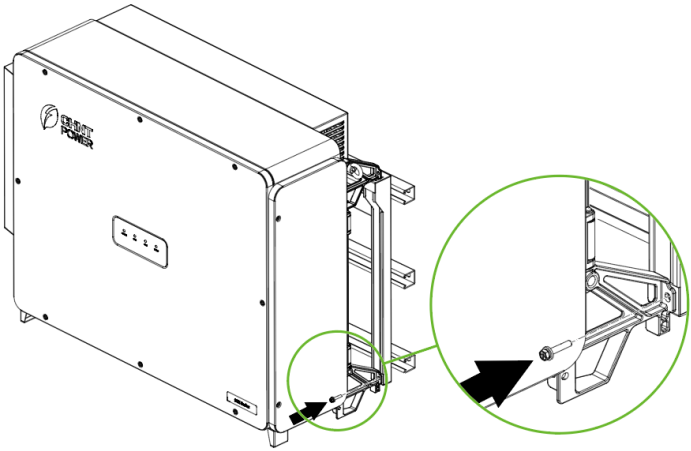


Figure 3-11 Inverter fixed on backplane bracket

3.6 Installation Check

1. Ensure that the supporting points (On the rear side of the inverter) align with the mounting holes of the support.
2. Ensure that the inverter is well fixed.
3. Ensure that the inverter is locked on the support and an antitheft 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.

4.1 Cable Specification

Cable	Type	Outer dia. (mm)	Conductor CSA (mm^2)
DC cable	PV cables that meet 1500V standard	6~9	4~6
PE cable	Outdoor copper wire	/	⩾Phase wire diameter/2
AC cable	Outdoor single-core copper/ aluminum wire	16~36	Copper core cable: L1, L2, L3: 95~400; Aluminum alloy cable: L1, L2, L3: 120~400; PE: ⩾ Phase wire diameter/2
	Outdoor three-core copper/ aluminum wire	36~75	
	Outdoor four-core copper/ aluminum wire		
Comm	Communication cable UTP CAT-5e	4.5~6	3*0.2~0.75
	Shielded twisted pair		3*1~1.5

Table 4-1 Cable specifications

4.2 Tools Required and Torque Values

No	Tools	Usages	Torque
1	5mm hex. wrench	Fixing upper cover of wire box	30 kgf.cm
2	4mm hex. wrench	Fixing AC sealing plate	14 kgf.cm
2	No.19 hex. socket wrench	Fixing AC output terminal	320 kgf.cm
3	No.10 hex. socket wrench	Fixing external grounding terminal and internal grounding terminal	60 kgf.cm
4	1.5mm flat-blade screwdriver	Fixing RS485 and CAN terminal	2.0 kgf.cm
5	Diagonal pliers	Cutting cables	-
6	Wire stripper	Stripping wires	-
7	Crimping Tool	Crimping cables	-

Table 4-2 Tools Required and Torque Values

4.3 External Interfaces and Internal Connection Points

You will find the external connection interfaces, internal connection points, as well as their names, positions etc. as shown in Figure 4-1a, Figure 4-1b, Figure 4-2, and Table 4-3.

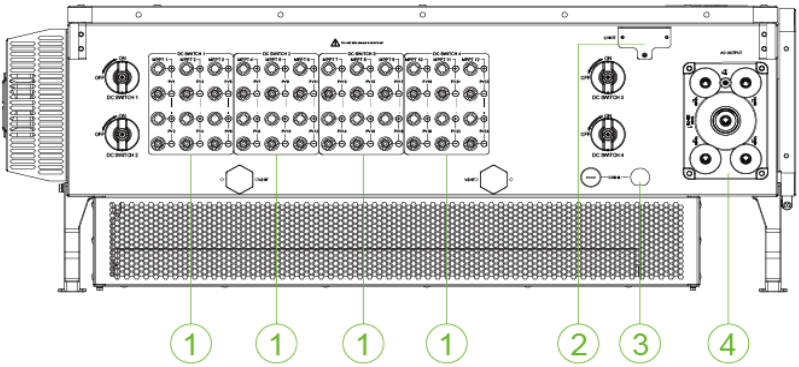


Figure 4-1a External connection interfaces of 12MPPT inverter

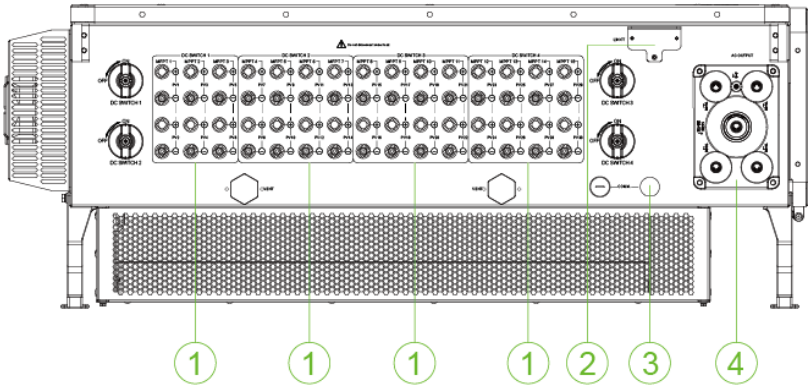


Figure 4-1b External connection interfaces of 15MPPT inverter

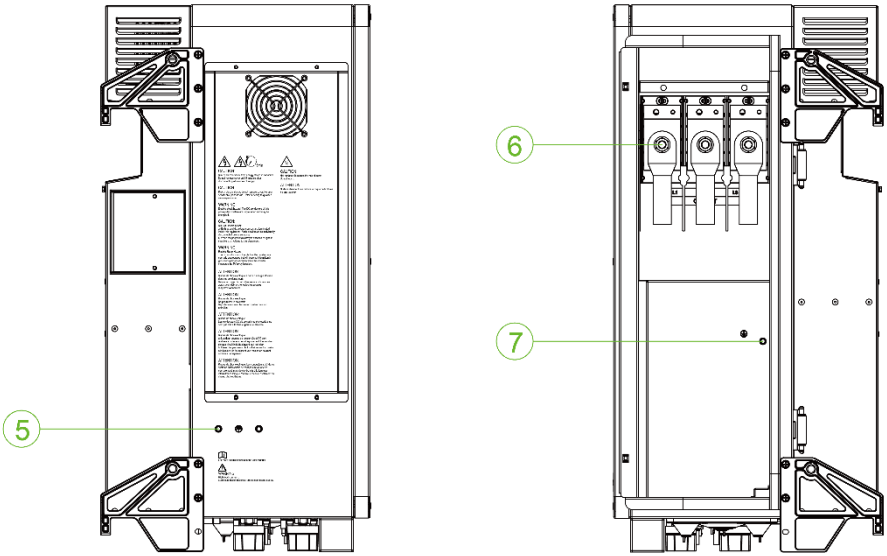


Figure 4-2 External grounding point and AC Wiring terminal block

No.	Names	No.	Names
1	DC Input (male & female) quick-plug connector	2	LINKIT interface
3	RS485 and CAN Communication interface	4	AC sealing plate
5	External ground point (PE point)	6	AC Output terminal block
7	Internal ground point		

Table 4-3 External Interfaces and Internal Connection Points

4.4 Electrical Cable Connection

NOTICE!

Please read carefully and refer to Chapter 9 Technical Data before wiring.

Ensure inverter cover is securely closed and attached after wiring is completed to avoid water condensation inside unit.

Before the first power-on operation or before running inverter after a long period of non-operation (6-12 months), check if the water-sensitive label in the bottom left corner of the AC wire box and on the capacitive plate have turned red. Never power on the inverter if any water-sensitive label has turned red.

Never damage or tamper with the vent valve.

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.

Wiring preparation:

1. First, loosen the 2 captive screws to open side cover of AC wire box.

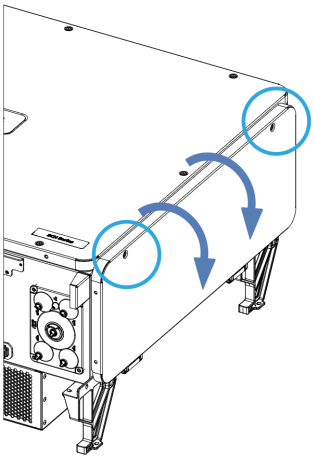


Figure 4-3 Open side cover of AC wire box

2. Then, pull out the free end of support rod which are built in the side cover, rotate and insert it into the fixing hole, to ensure the side cover will not swing during wiring operation.

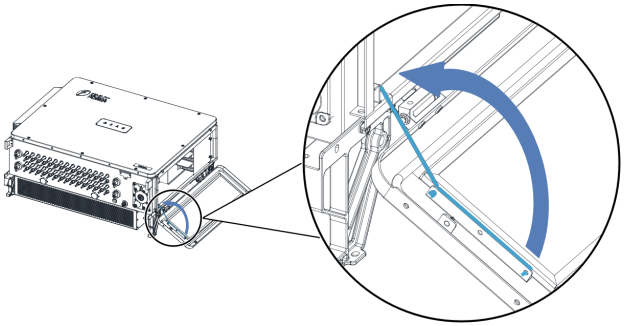


Figure 4-4 support the cover of wire box

IMPORTANT!

It is important to use hand tools (e.g. hex wrench) instead of power drivers or other types of screw drivers.

Captive screws can not be removed in order to prevent the screws go missing.

4.4.1 Grounding(Protection Earthing)

There are two kinds of grounding methods for this inverter: internal ground and external ground. You shall choose at least one way:

a) Internal grounding: connect PE wire to internal grounding hole located on the lower right side of the AC terminal, as shown in Figure 4-5 on the left (refer to section 4.4.2).

b) External grounding: connect PE cable to external PE point located at the bottom of the machine next to the AC port, as shown in Figure 4-5 on the right. **Note**: After wiring, external grounding position needs to be coated with glue or paint, to improve corrosion resistance.

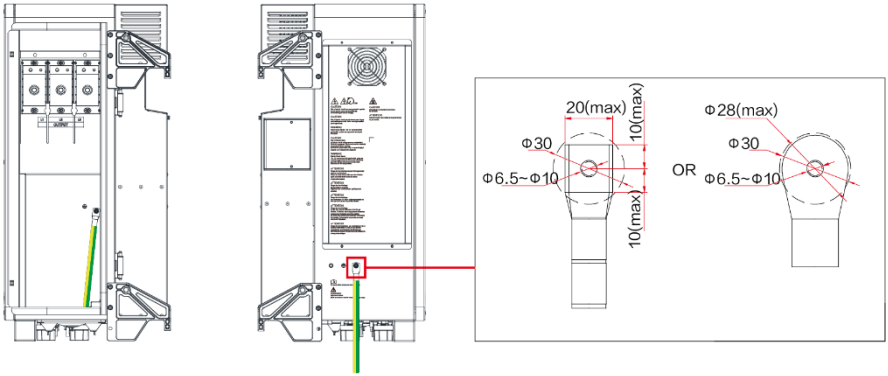


Figure 4-5 Grounding Methods

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.

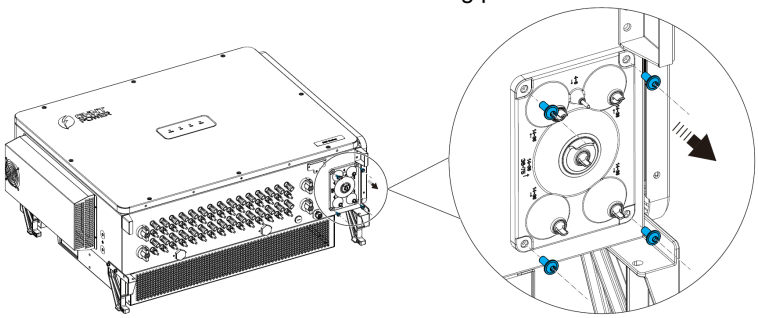


Figure 4-6 Remove AC sealing plate

2. According to cable types, pull off ring tab with hand or piler, then route cable through the seal ring.
   - For single-core outdoor cable, refer to Figure 4-7a. Note: When using the middle seal ring for routing, route grounding wire through it rather than L1, L2, or L3 wire.

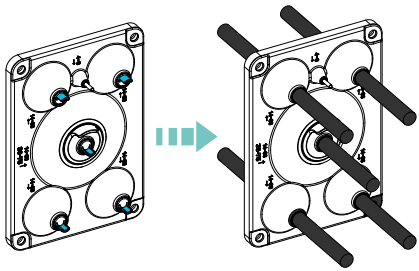


Figure 4-7a Route single-core outdoor wire

   - For three-core or four-core outdoor cable, refer to Figure 4-7b.

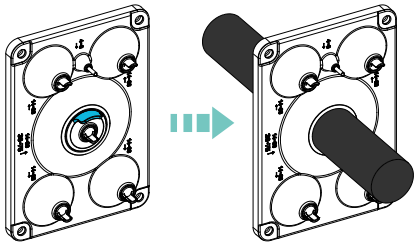


Figure 4-7b Route 3-core or 4-core outdoor wire

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 layer from the AC output cable. Insert the exposed core wires into the crimp area of the OT terminal, then wrap the wire crimp area with heat shrink tubing or insulation tape, and crimp them using hydraulic pliers.

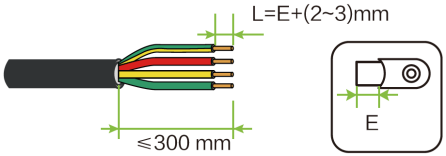


Figure 4-8 AC wire stripping

4. Unplug the rubber plug of transparent protection cover above the AC terminal block to remove the transparent protection cover.

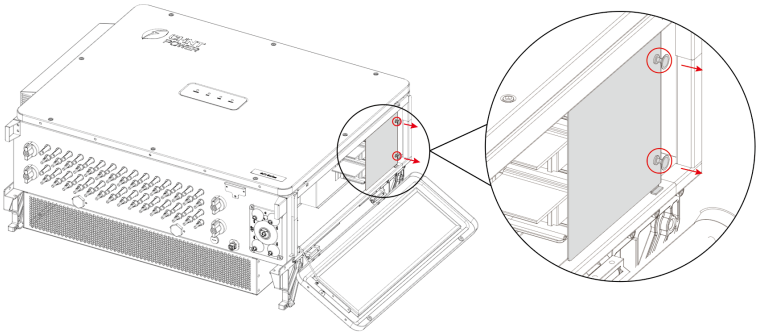
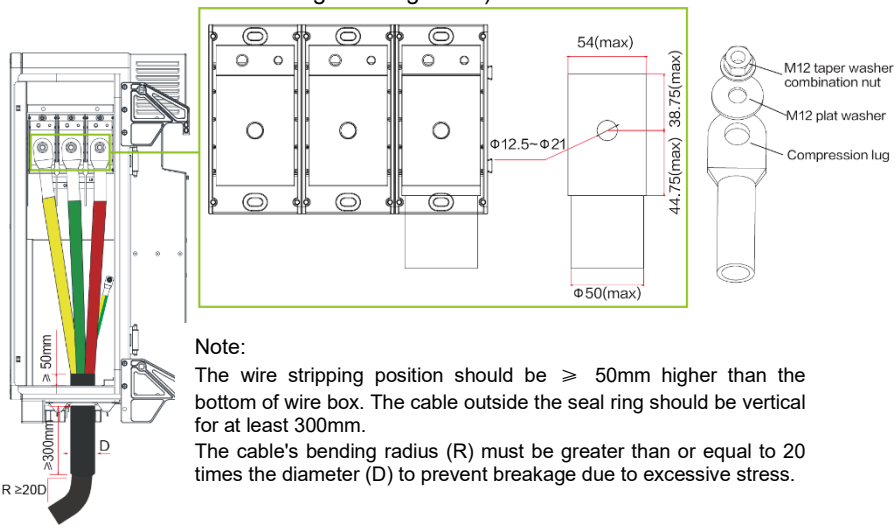


Figure 4-9 Remove the transparent protection cover

5. Connect the OT terminals of AC wires to L1, L2, L3 terminal and fasten them with M12 flat washers and M12 tapered washer combination nut. Connect OT terminals of PE wire to grounding terminal and fasten it with screw M6x16 (skip this step if you choose to connect external grounding cable).



Note:

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.

Figure 4-10 Connect the OT terminals to AC terminal block

NOTICE!

- Use copper compression lugs to match L1, L2, L3 copper wires.
- Use Cu-Al bimetallic compression lug or aluminum compression lugs to match L1, L2, L3 aluminum wires.
- M12 flat washer shall be used if inner hole diameter of compression lug is >14mm; while it's unnecessary if inner hole diameter is ⩽14mm.

6. Plug the rubber plug to fix the transparent protective cover to prevent touching AC terminal block or busbar.
7. Secure the AC sealing plate to inverter using its original screws.

After completing all wiring steps, restore the support rod of side cover to its original position, and recover the side cover of wire box and tighten its captive screws.

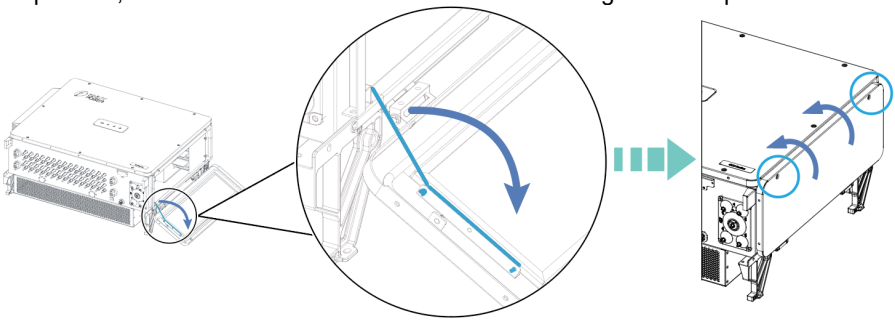


Figure 4-11 Recover side cover of AC wire box

The inverter's AC nominal operating voltage is 800VAC. If another voltage/configuration is needed, a transformer may be necessary.

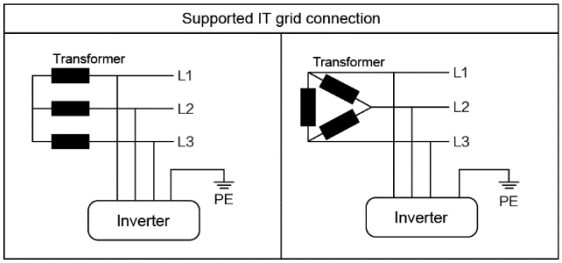


Figure 4-12a Supported IT power grid

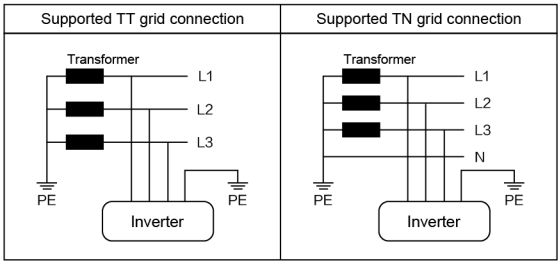


Figure 4-12b Supported TT and TN power grid

Transformer configurations: 3W Wye and 4W Wye are recommended. 3W Delta Configuration is acceptable, but the Delta can't connect with ground as following Figure. Other configurations are incompatible with SCH350KTL, such as those shown in figure 4-13:

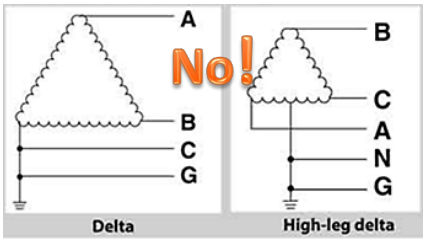


Figure 4-13 Incompatible configurations

IMPORTANT!

The inverter is only compatible with Wye Floating and Delta Floating transformer winding configurations. External AC Ground Fault detection is required by code NEC 2017/2020 Section 250.21 when inverters are connected to Wye Floating or Delta Floating transformer windings. The inverter will provide DC Ground Fault detection

NOTICE!
To ensure convenience and safety, it is recommended to use multi-core cables, crimp terminals and proper crimping tool to crimp the cables before wiring.

4.4.3 DC Wiring

4.4.3.1 DC Cable Connection

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 1500VDC under any conditions;
- Check the polarity before terminating the DC cables of PV strings according to the following steps, as shown in figure 4-15:
  i. Use a multi-meter to measure the PV strings' cable ends and check the polarity.
  ii. The positive (+) terminal of cable should match the positive (+) terminal of inverter's DC input.
  iii. The negative (-) terminal of cable should match the negative (-) terminal of inverter's DC input.

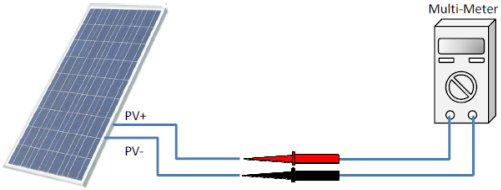


Figure 4-14 Polarity Check

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 a blown fuse when the irradiation is high.
The voltage across the blown fuse will be 2x Voc and could prevent proper fuse operation resulting in a fire.
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 per the following steps:

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

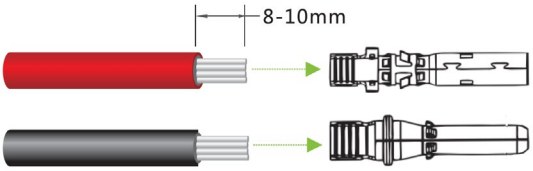


Figure 4-15 DC Wire stripping

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).

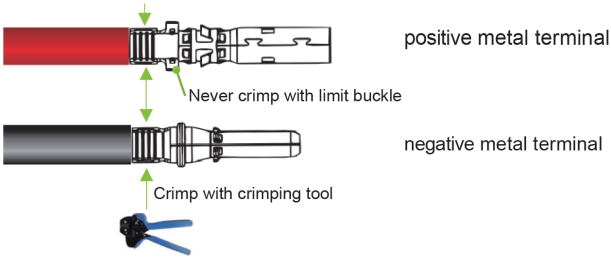


Figure 4-16 Crimp power cables

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.

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

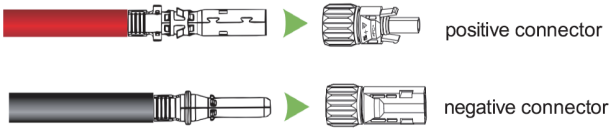


Figure 4-17 Insert power cables to connectors

NOTICE!
The grounding wire must be connected well.
The DC switch should be in the OFF state.

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

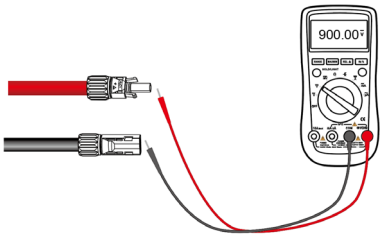


Figure 4-18 Ensure the polarities of the DC cables

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

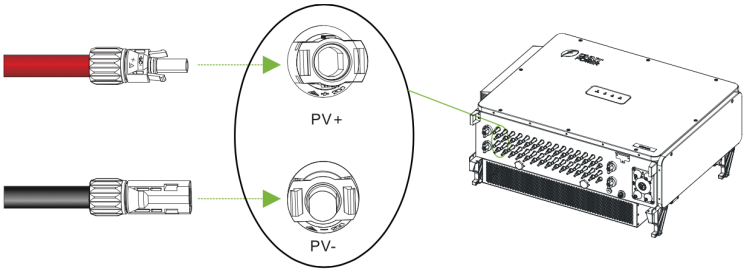


Figure 4-19 Insert connectors into corresponding terminals

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.
- 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.

4.5 Communication Connection

The inverter supports industry standard PLC, Modbus RS485, as well as CAN communication modes. We will introduce most commonly used RS485 and CAN communication methods in detail.

4.5.1 RS485 and CAN Cable Connection

1. Unscrew the locking nut ① of 8-pin connector and press down both buckles ② of connector, to take out the cable seal ring.

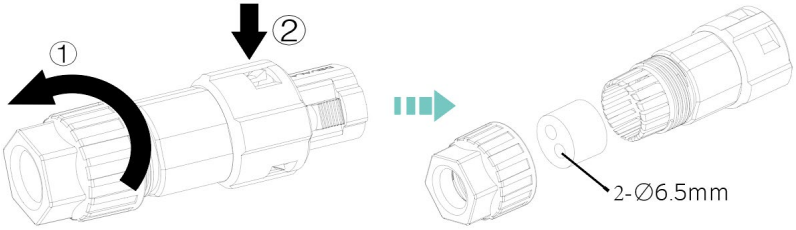


Figure 4-20 take out the cable seal ring

2. Route cable through locking nut, seal ring and connector. Remove an appropriate length of the jacket and insulation layer from communication cable.

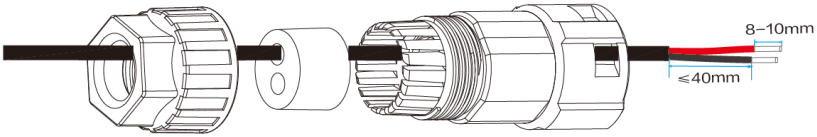


Figure 4-21 Route cable and stripping

3. Connect RS485 and/or CAN cable to their terminal according to the definition of terminals block.

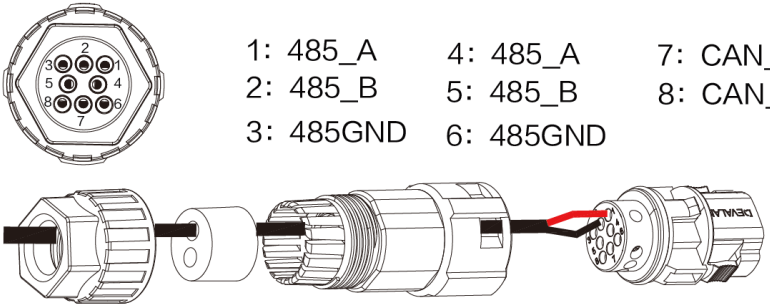


Figure 4-22 Connect RS485 and/or CAN cable to their terminal

4. Adjust the cable length, insert terminals block ① into connector and lock the locking nut ②. Plug any spare sear hole with watertight plug ③.

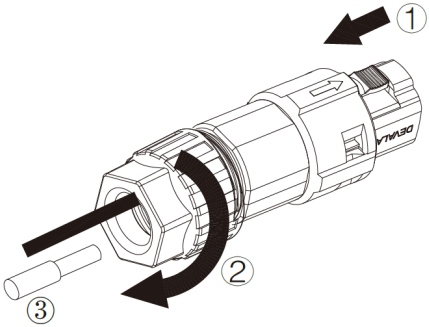


Figure 4-23 combine the connector

5. Remove watertight cover from communication connector of inverter.

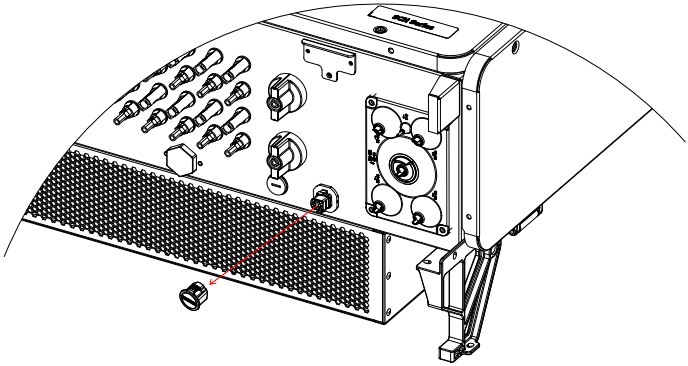


Figure 4-24 Remove watertight cover

6. Connect 8-pin connector into communication connector of inverter.

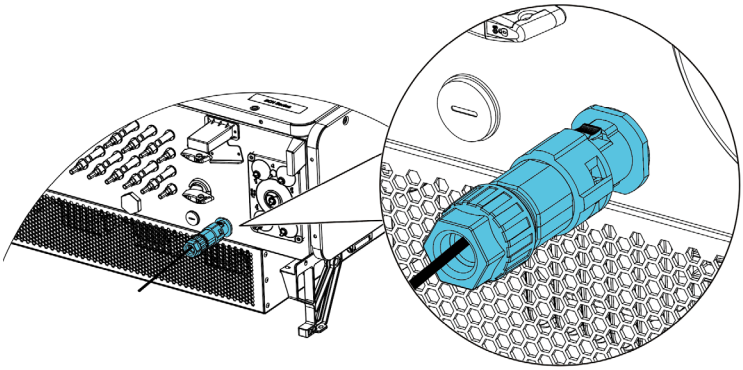


Figure 4-25 Connect 8-pin connector

4.5.2 RS485/CAN Network Connection

NOTICE!

When connecting multiple inverters in a daisy chain, it is necessary to open the front cover of each inverter to perform wiring and establish networking.

When the inverters are monitored via the RS485/CAN communication, a unique RS485/CAN address for each inverter can be set up through the APP interface.

Up to 32 inverters can be connected in a serial fashion in the RS485/CAN communication network. Therefore, the daisy-chain topology shown as below is recommended for the RS485/CAN network connection, which can minimize the noise and bus reflections. Other communication topologies, such as the star networks, are not recommended.

(1) If there are multiple inverters in the RS485/ CAN network (daisy chain) and the last inverter is more than 200 m and less than 1000m distant from data logger, the DIP switch S2 / left switch S150 of the last inverter in the daisy-chain should be in ON position to enable the 120ohm terminal resistance. While those DIP switches S2/ left switch S150 of all other inverters should keep as OFF position to disable the terminal resistance.

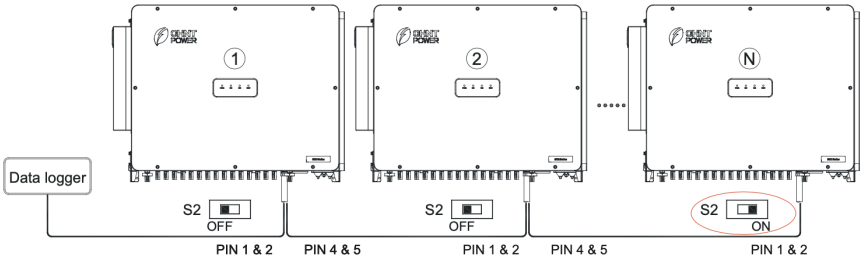


Figure 4-26 RS485 network connection

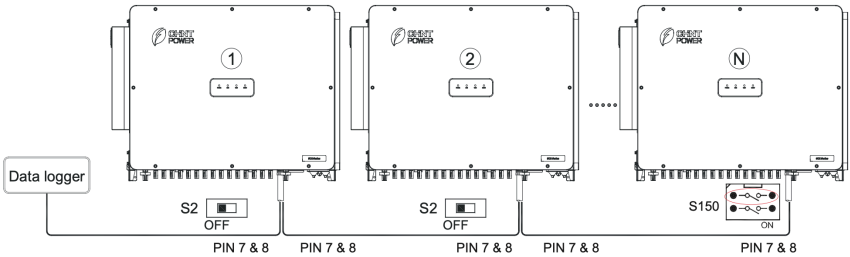


Figure 4-27 CAN network connection

(2) 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.

(3) Locate the DIP switch S2 or left switch S150 on the communication board in the lower right corner of the inverter, as shown below.

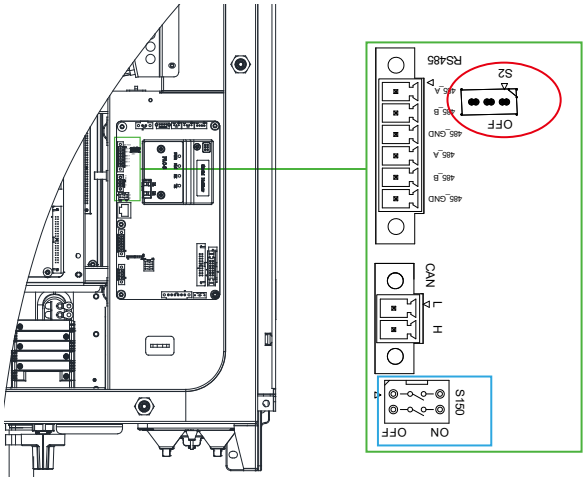


Figure 4-28 DIP switch

NOTICE!

- When the neutral point of the transformer is grounded, PID cannot be enabled.
- PV panel side (inverter DC input side) is energized when PidNight repair function is enabled. Therefore, before performing any maintenance or overhaul, disable the PidNight repair function and then wait at least 5 minutes to ensure the system is completely de-energized and to avoid electric shock.

4.5.3 PLC Communication Connection

The communication board includes a built-in PLC (Power Line Communication) module. This PLC module transmits communication signals through the AC cables of the inverters.

The inverters can be connected to a double-split transformer and a double-winding transformer. The PLC wiring diagrams of these two application scenarios are illustrated as below:

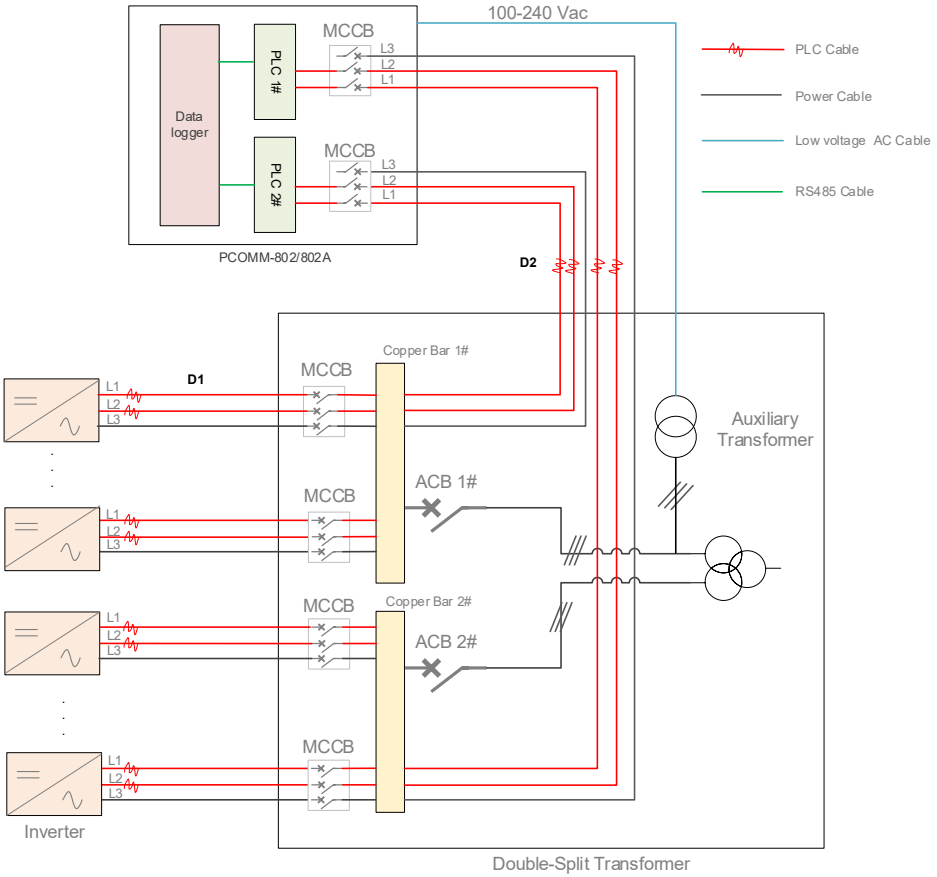


Figure 4-29 PLC wiring diagram for a double-split transformer

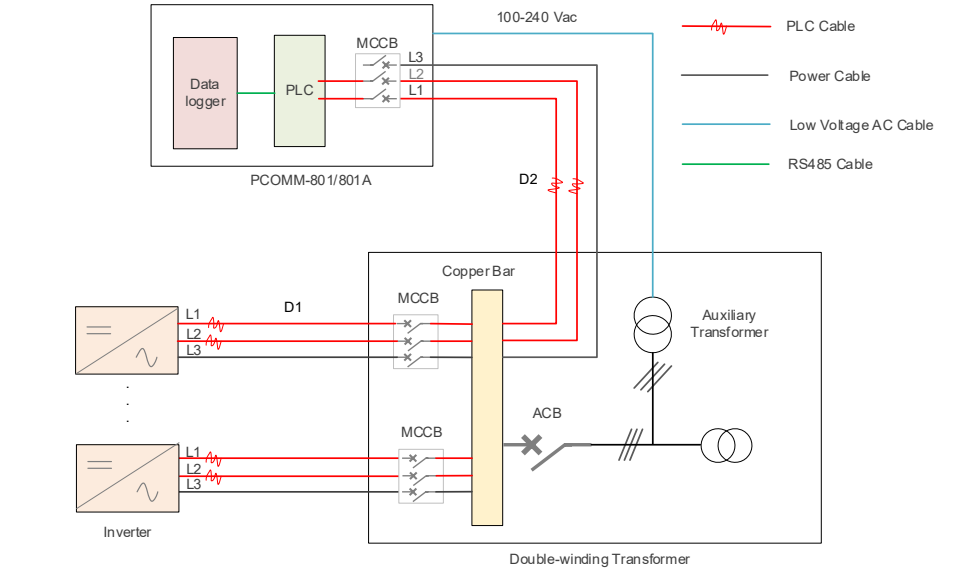


Figure 4-30 PLC wiring diagram for a double-winding transformer

Labels	Cable specification and Requirements
D1 (PLC cable length from inverter to transformer)	• Multi-core AC cable (Recommended): ○ (D1+D2) ⩽1000m. • Single-core AC cable: ○ (D1+D2) ⩽300m. ○ Bundle cables every 1m. ○ Switch to RS485 communication if (D1+D2) ＞300m.
D2 (PLC cable length from transformer to communication box)	• D2⩽10m (The shorter the cable, the better the communication quality). • Use outdoor UV-resistant multi-core copper AC cable with a core diameter of 2.5mm^2 ~10mm^2 • Cable isolation voltage >1000V

Table 4-4 Cable specification and wiring requirements

Note: When wiring, lay the AC cables flat in cable trenches or ducts, ensuring they are not bent or twisted.

4.6 Install the LINKIT Module

Follow the following steps to install LINKIT module:

1. Remove the two fixing screws on the connector cover, then rotate the cover to its opposite side.

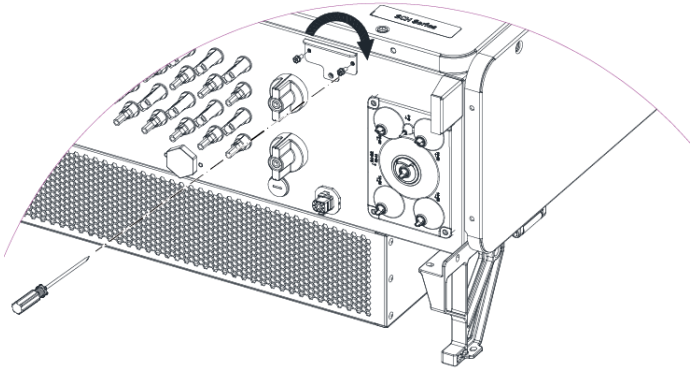


Figure 4-32 Remove the two fixing screws

2. Fasten LINKIT module with the two screws just removed (Indicators face front cover). Fasten the module firmly to ensure that the seal watertight.
   Tool: No.2 Phillips head screwdriver, torque: 16.0 kgf.cm

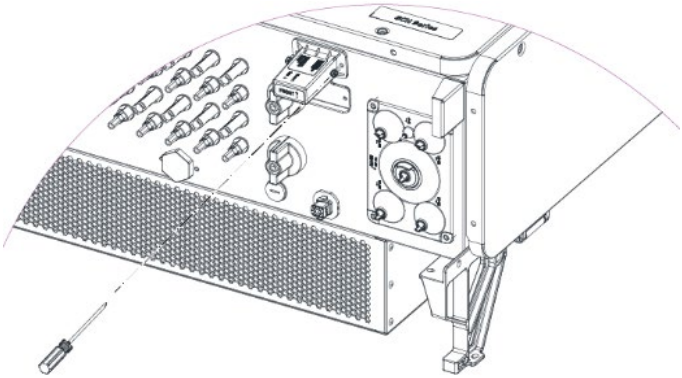


Figure 4-33 Install LINKIT

5 Inverter Commissioning

WARNING!
Please follow the guidelines below before performing any on-grid operation to eliminate possible dangers.

5.1 Pre-commissioning Checks

5.1.1 Mechanical Installation

Perform the following inspections by referring to chapter 3 Mechanical 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 1500V.

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.

- Turn on the AC side circuit breaker or fuse switch disconnector.
- Turn on the DC side circuit breaker. (Start from step 3 if no circuit breakers are available.)
- 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.
- Perform APP setting acc. to the procedures introduced in section 6.1 and 6.2 to ensure the inverter can generate power successfully.

6 APP Setting and Interface Introduction

6.1 APP Download

The inverter conducts human-computer interaction through the "ChintPower 2.0" mobile 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 Setting

Once powered, the inverter will 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, set connection environment for preparation and open wireless connection function.

1. Click "**Connect inverter**" to enter connect inverter interface.

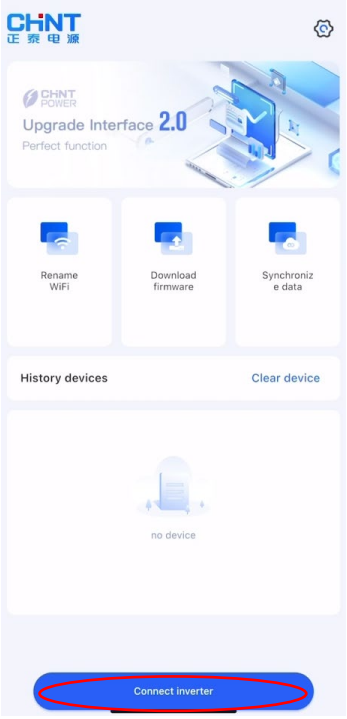


Figure 6-1 Connect Inverter

2. Click  in main interface and go to setting interface.
3. Click “**language setting**” to set language environment and “**Sync Cloud Data**” to synchronize data from cloud as necessary. Platform and App version information can be read from this interface.

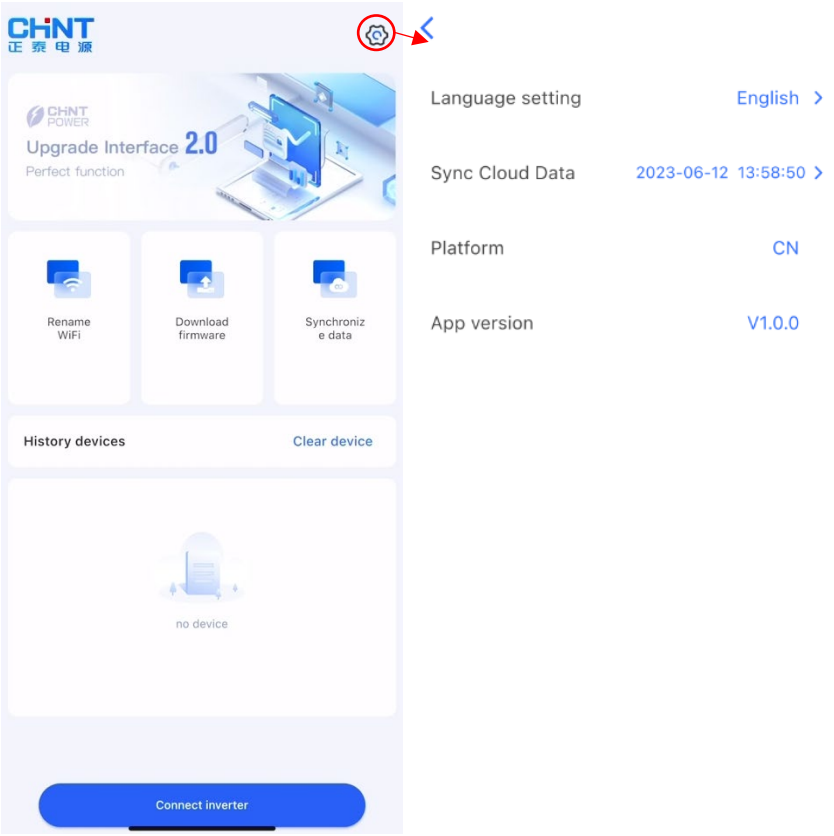


Figure 6-2 APP Environment Configuration

4. You can view user connection information listed in below interface. Click “**Connect**” and select connect type (**Connect With BLE/Connect with WIFI**), it will go to connection page.

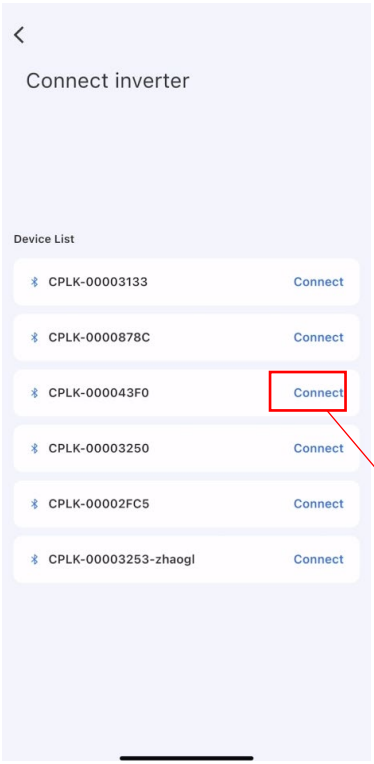


Figure 6-3 Device List

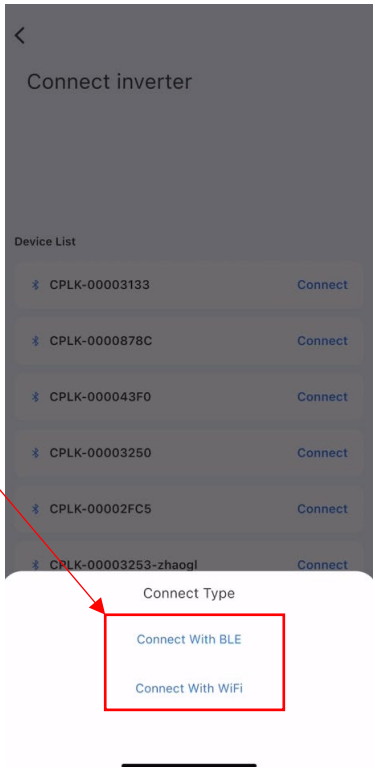


Figure 6-4 Connect Type

5. If the connection is successful, it goes to main interface.

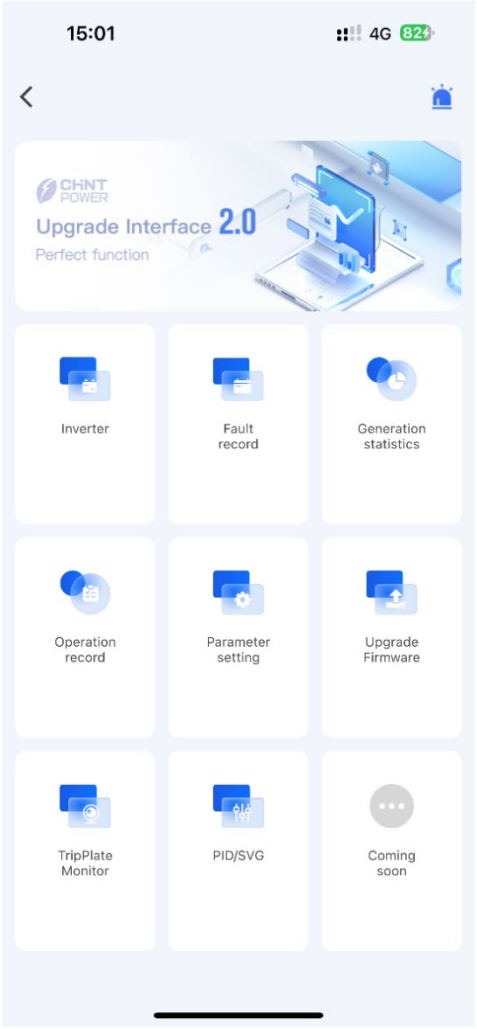


Figure 6-5 Main Interface

Note: Click “**Connect With WIFI**”, and input password “**1111**”, it also goes to main interface.

6. If the connection fails, click “**Retry connect**” icon in the connect device interface.

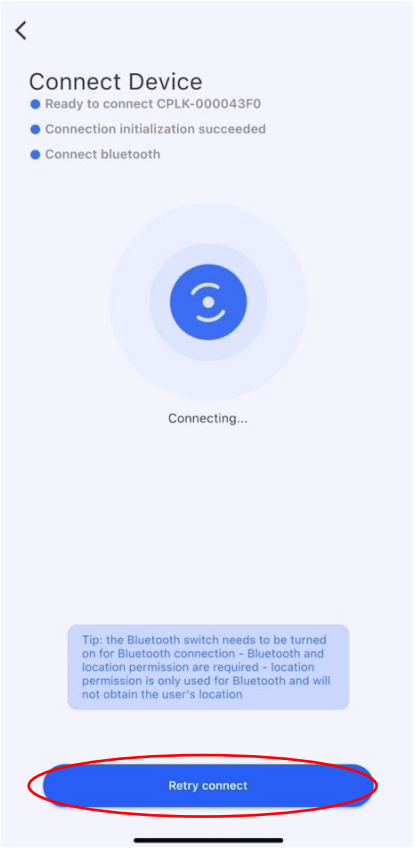


Figure 6-6 Connecting device

6.3 Main Interface Functional Operation

6.3.1 Inverter

1. On main functional interface, click “**Inverter**” to enter inverter page.

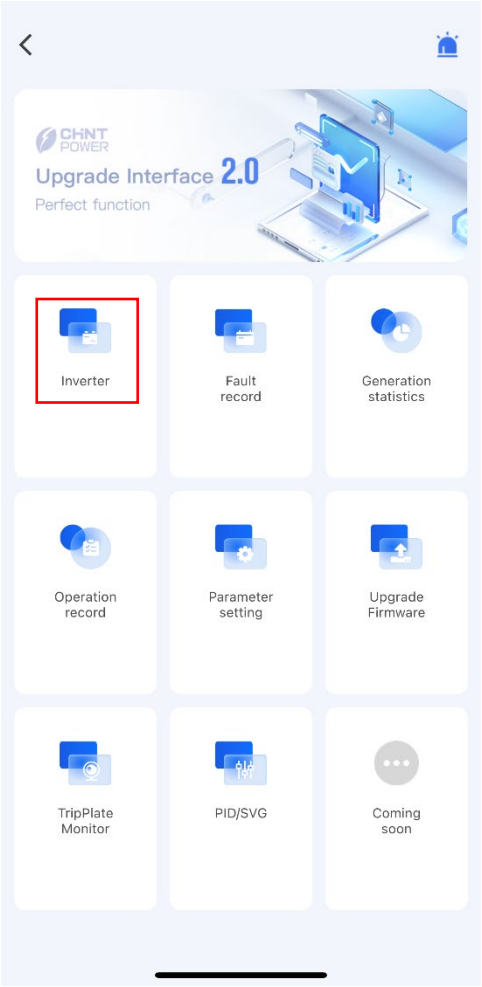


Figure 6-7 Main Interface

2. On inverter page, click ▼ to get detail parameters of related properties. Information is listed after expansion. Read Generation statistics/Direct current/Alternation current/Version/Other information as below:

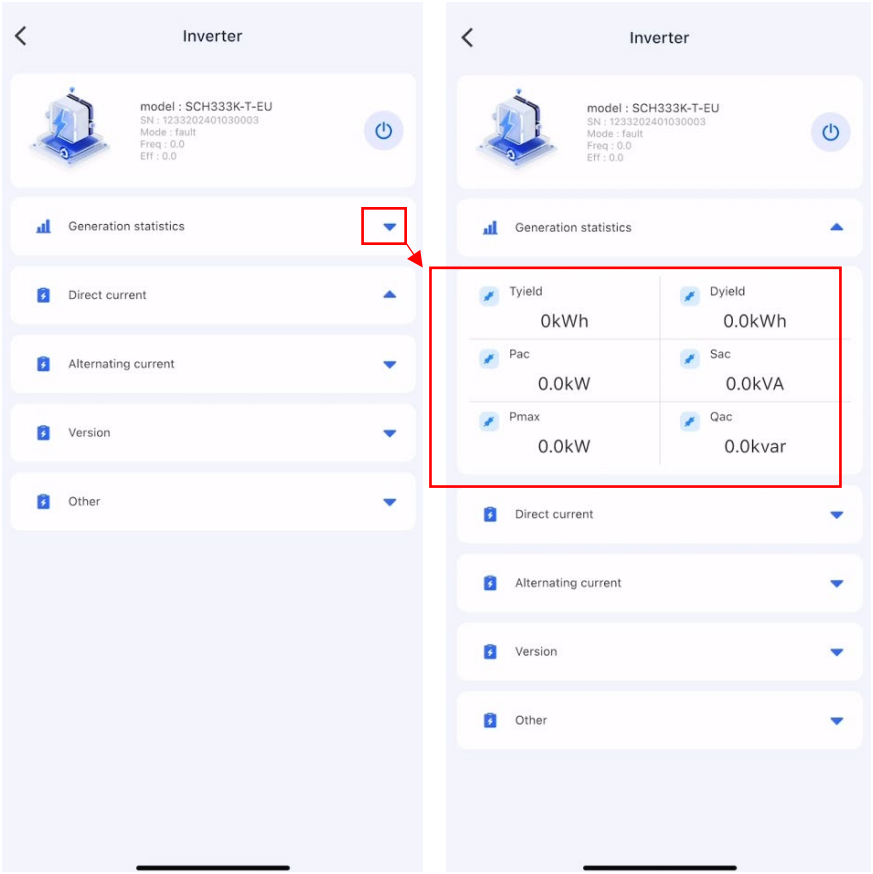


Figure 6-8 Generation statistics

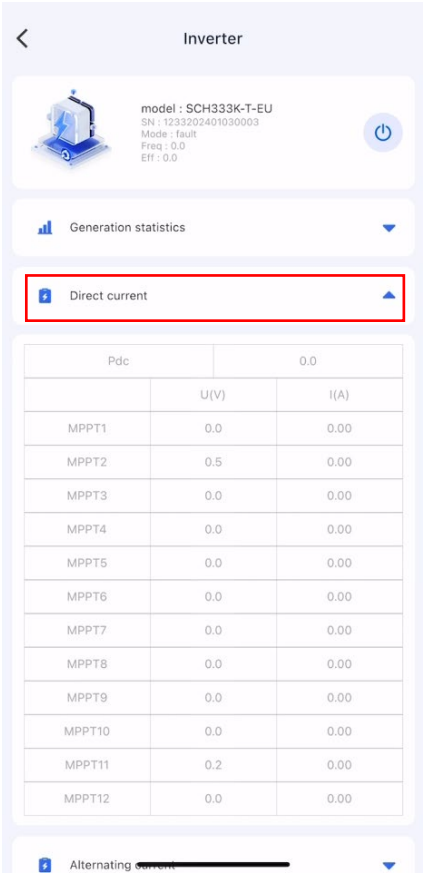


Figure 6-9 Direct current

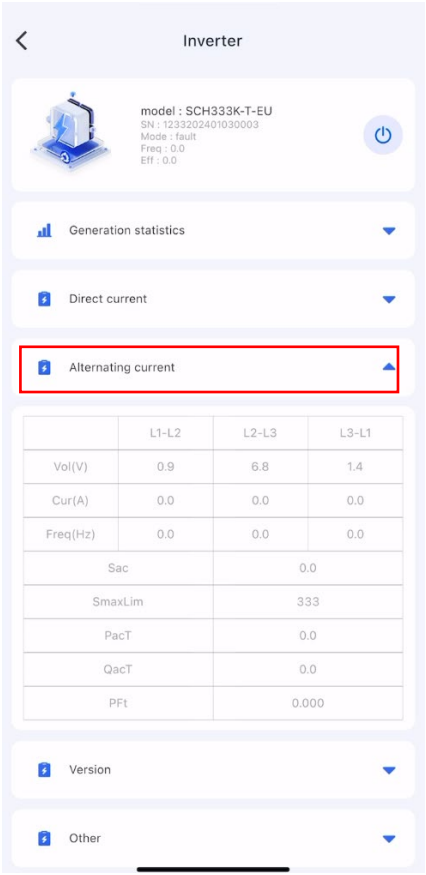


Figure 6-10 Alternating current

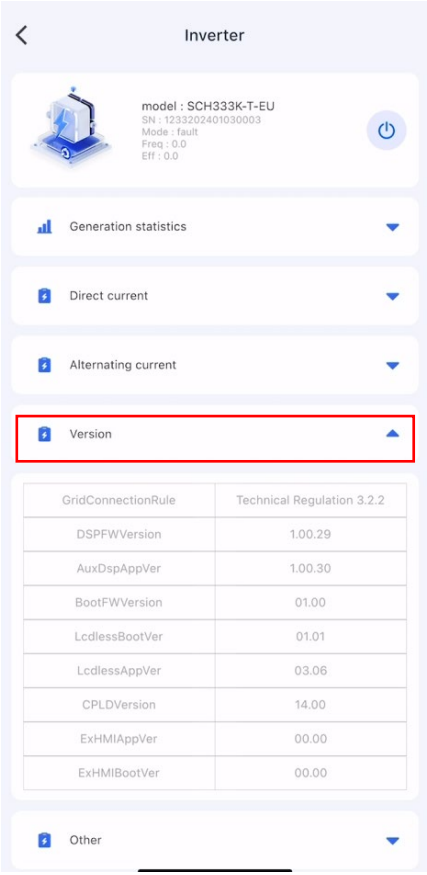


Figure 6-11 Version

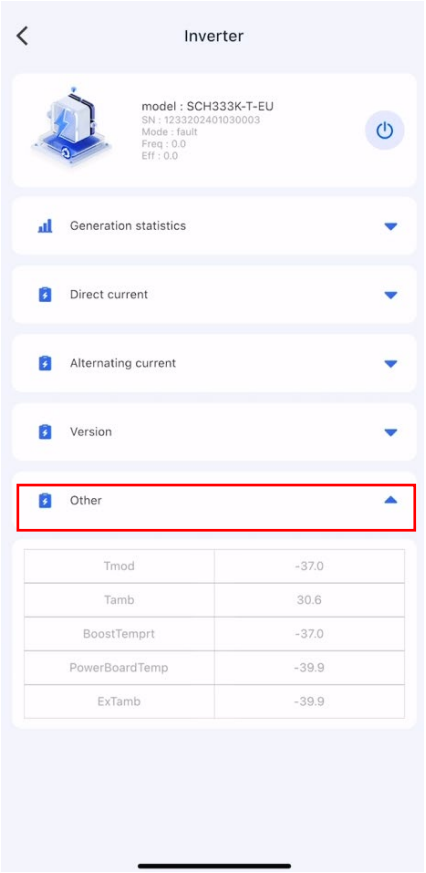


Figure 6-12 Other

3. Click to power on/power off the inverter.

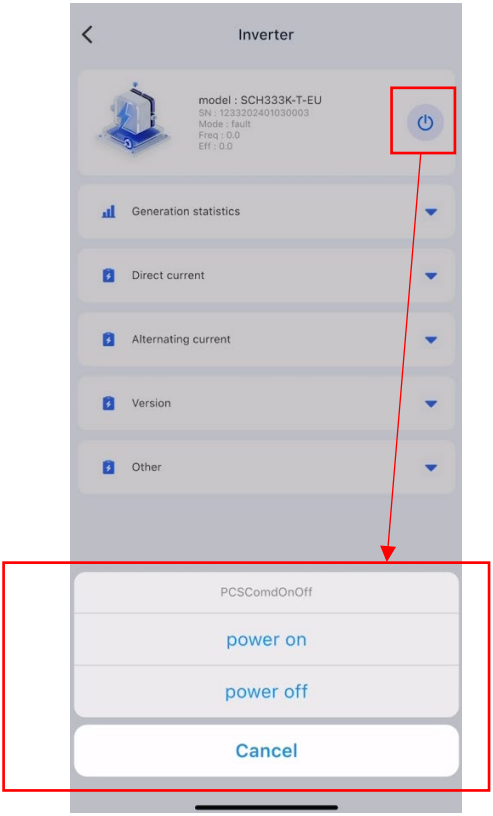


Figure 6-13 Power On/Power Off Inverter Connection

6.3.2 Fault Record

1. Click “**Fault record**” to enter “Fault record” interface then select “**Current fault record**” and “**Historical fault record**” to view current fault record/historical fault record information.

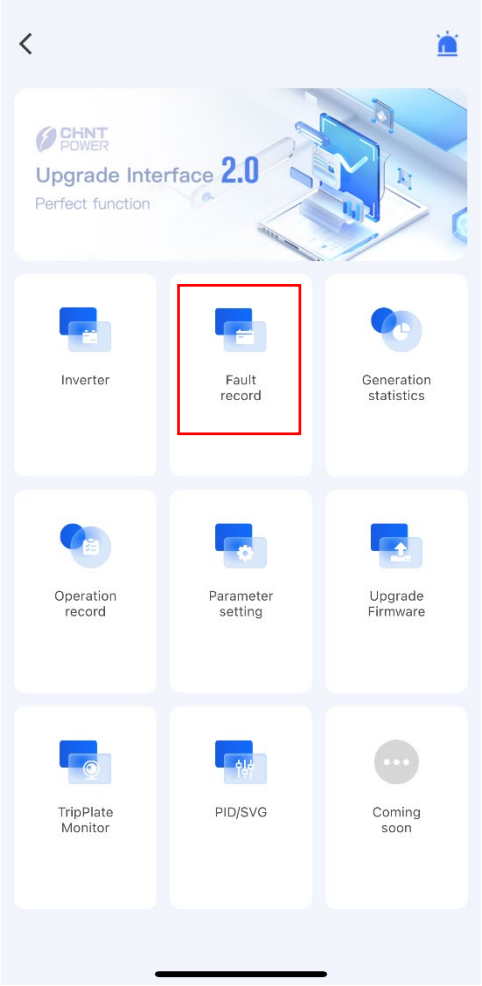


Figure 6-14 Click Fault Record

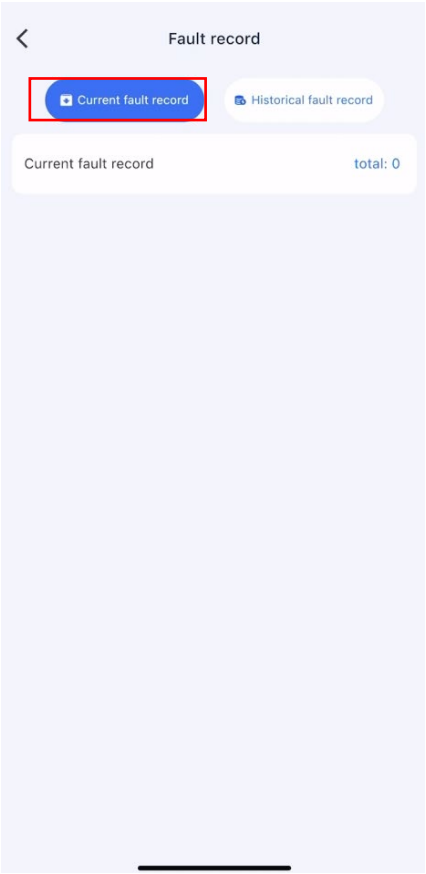


Figure 6-15 Current Fault Record

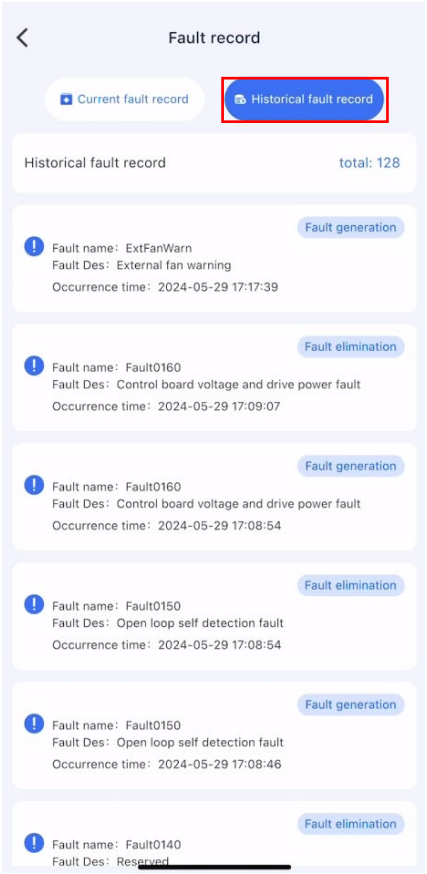


Figure 6-16 Historical Fault Record

2. You can click “Fault generation” or “Fault elimination” to generate or delete fault record.

6.3.3 Generation Statistics

1. Tap “**Generation statistics**” to enter “Generation statistics” interface and you can get electricity generation summary in dimensions of hour/day/month.

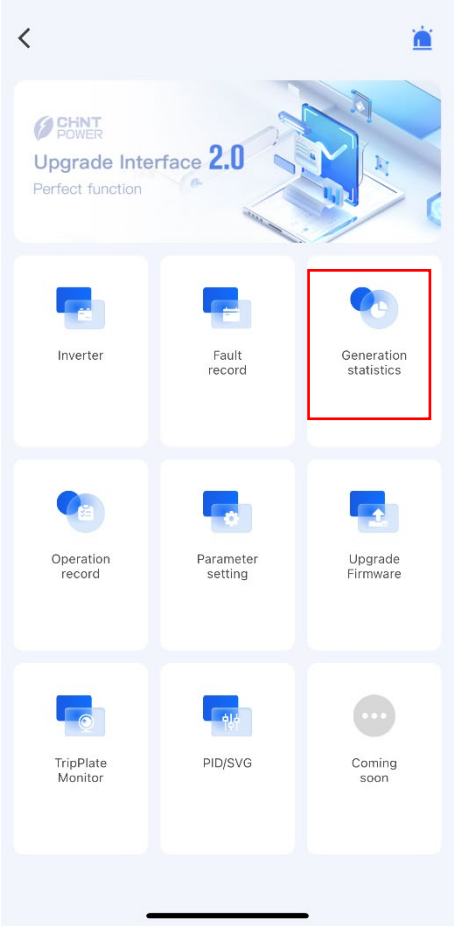


Figure 6-17 Main Functional Interface

A. Generation statistics by hour

Figure 6-18 Generation Statistics by Hour

B. Generation statistics by day

Figure 6-19 Generation Statistics by Day

C. Generation statistics by month

Figure 6-20 Generation Statistics by Month

6.3.4 Operation Record

1. Click “**Operation record**” to view running status information (CHECK/Fault).

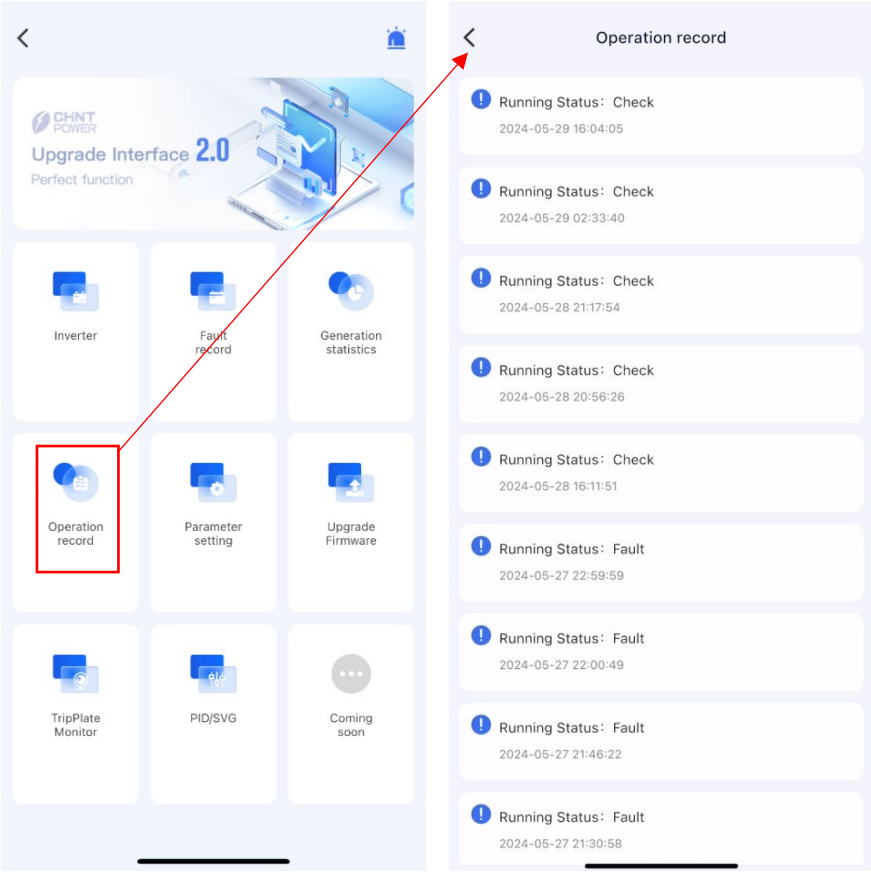


Figure 6-21 View Operation Record

6.3.5 Parameter Setting

1. Click “**Parameter setting**” and insert the password **1111** to view parameter settings.

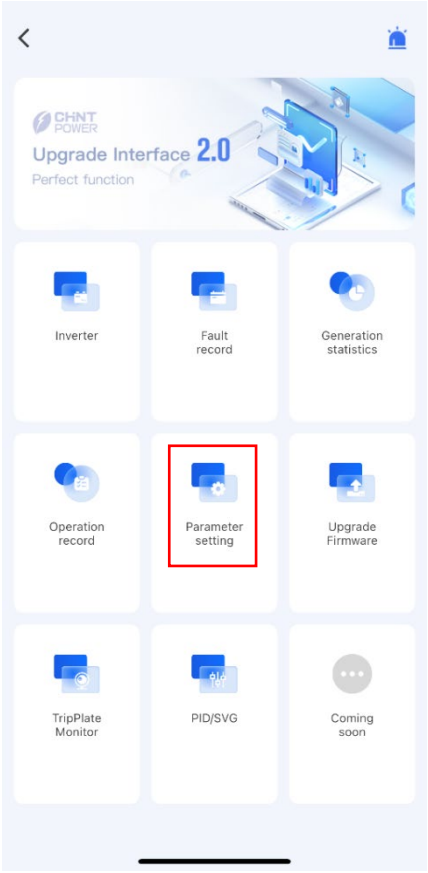


Figure 6-22 Click Parameter Setting

2. Click ▶ to expand detail information of each parameter settings. In below interface you can click ✎ to configure each parameters.

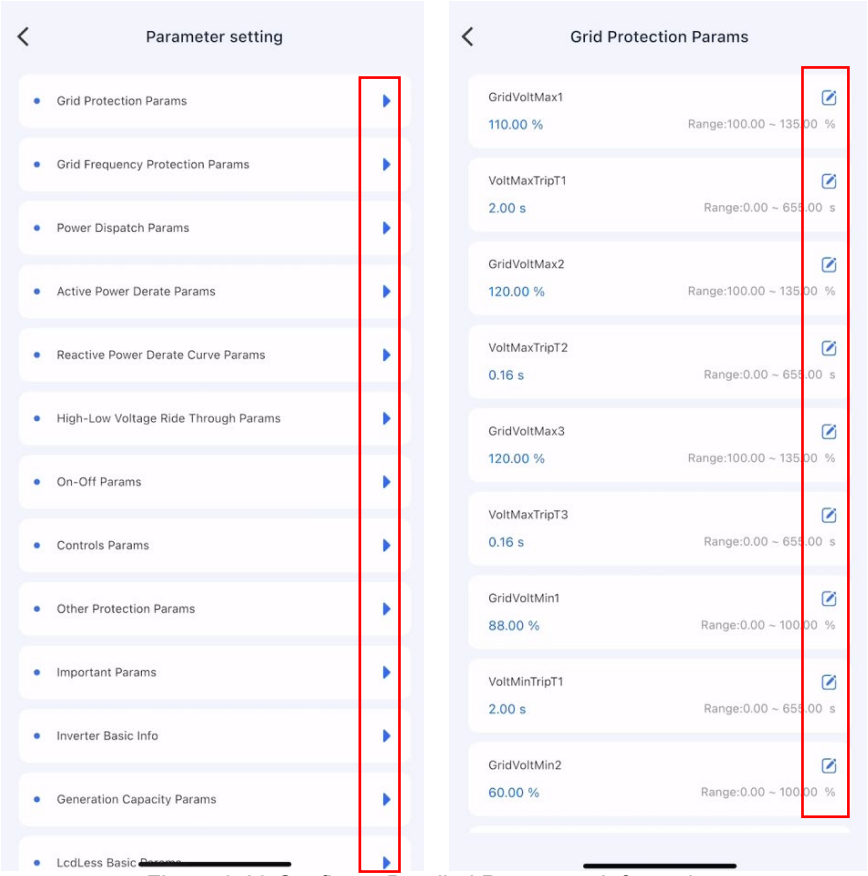
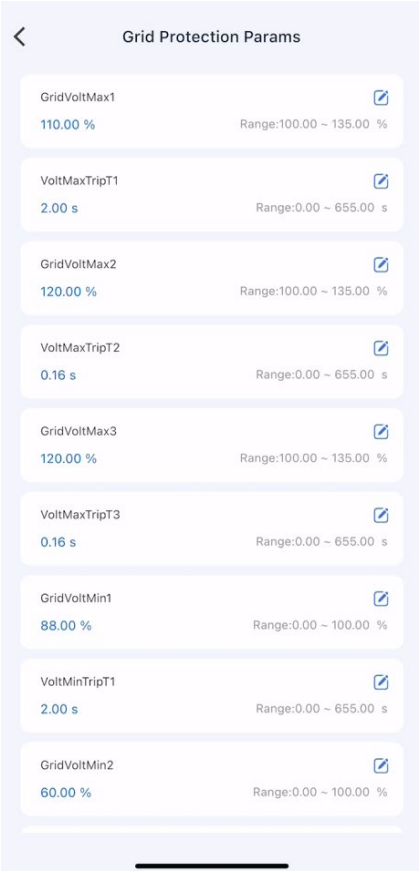
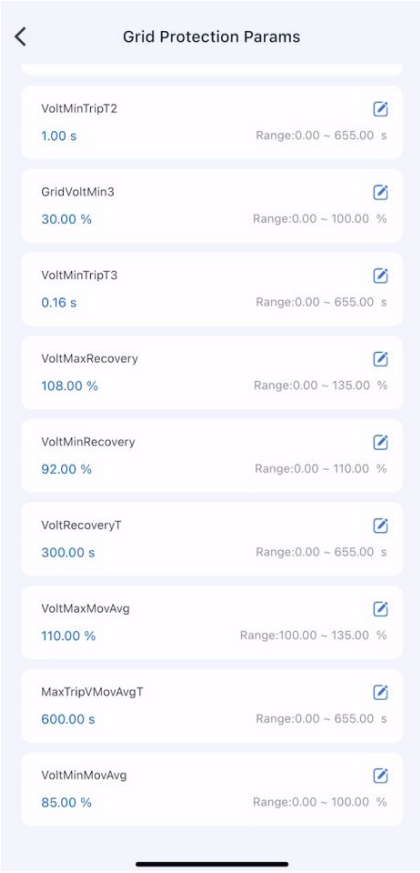


Figure 6-23 Configure Detailed Parameter Information

6.3.5.1 Grid Protection Parameters

Click ▶ to expand detail information of each power grid protection parameters. In below interface you can click ✎ to configure each parameters.





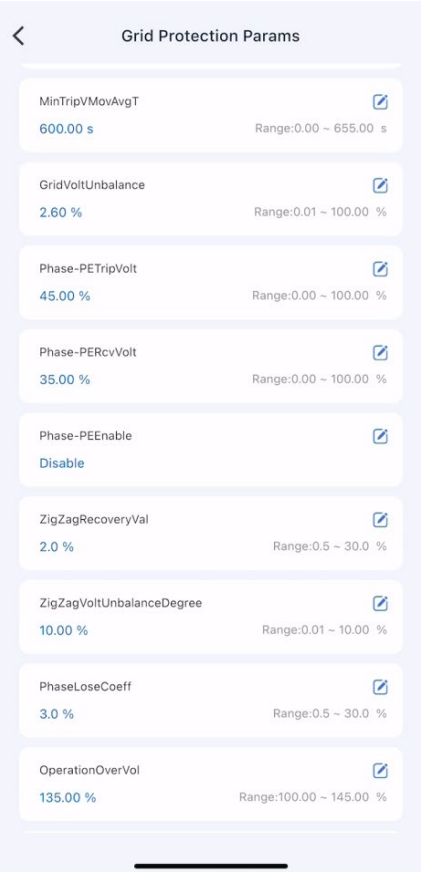


Figure 6-24 Configure Power Grid Protection Parameters

6.3.5.2 Grid Frequency Protection Parameters

In the grid frequency protection parameters interface, you can set the parameters such as over and under frequency protection thresholds, protection and recovery times, and various other criteria crucial for maintaining grid integrity.

Note: These parameters are factory default settings and users are not allowed to modify them without authorization. If modification is required, please contact after-sales support or proceed under the guidance of technical personnel.

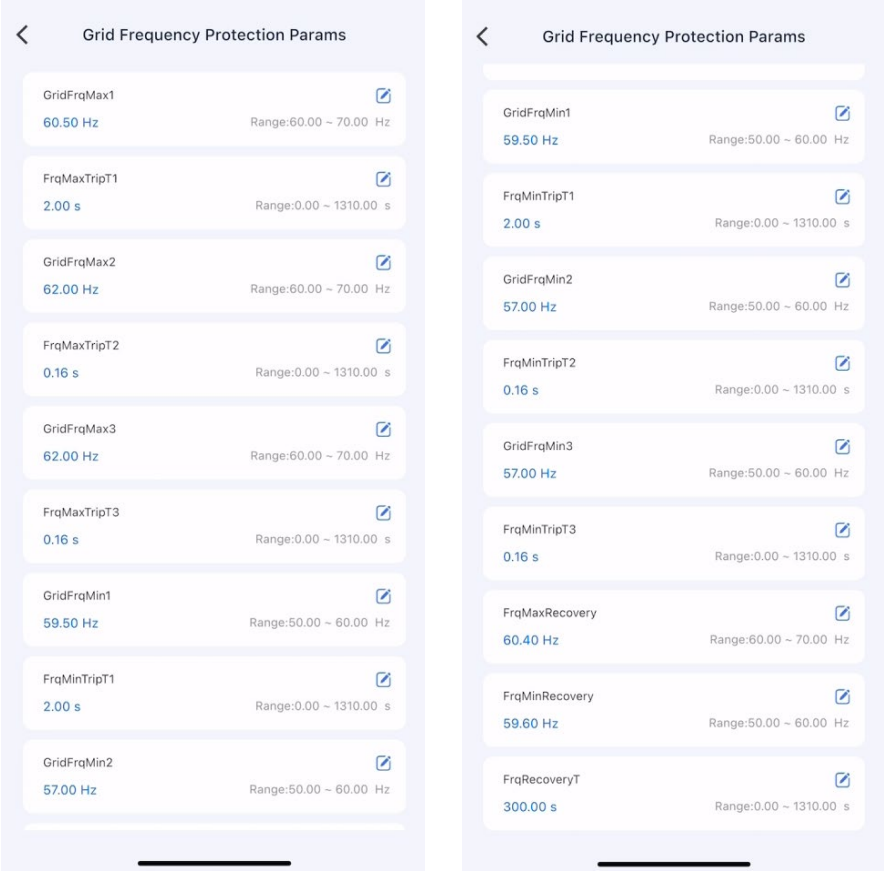


Figure 6-25 Configure Grid Frequency Protection Parameters

6.3.5.3 Power Dispatch Parameters

The Power Dispatch Parameters are used to control and manage the distribution of electrical power within a power system, including power factor, active/reactive power control, static VAR control, and other paramete3rs.

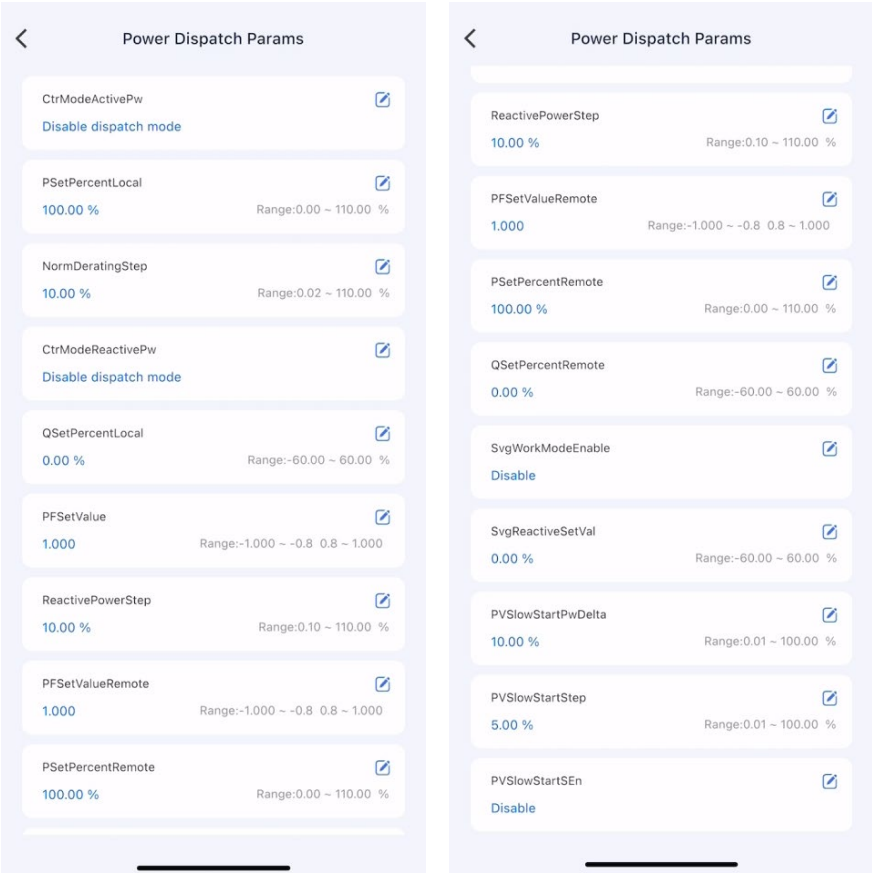


Figure 6-26 Configure Power Dispatch Parameters

6.3.5.4 Active power derate parameters

Click ▶ to expand detail information of each active power derate parameters. In below interface you can click ✎ to configure each parameters.

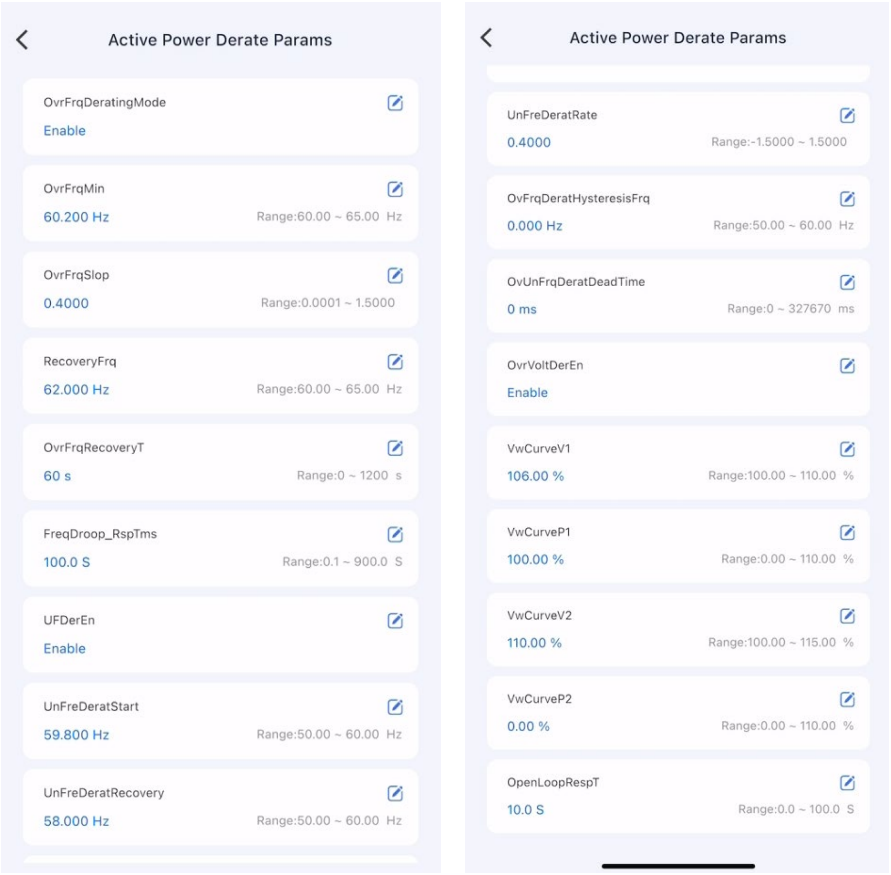


Figure 6-27 Configure Active Power Derate Parameters

Refer to the over-voltage derating curve in Figure 6-28 and over-frequency derating curve in Figure 6-29.

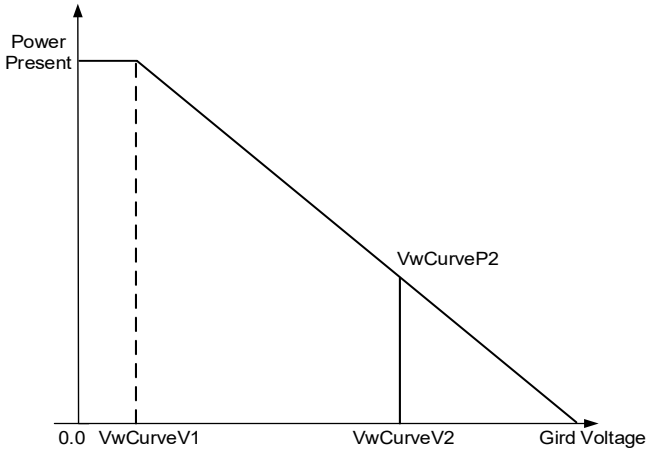


Figure 6-28 Curve of over voltage derating

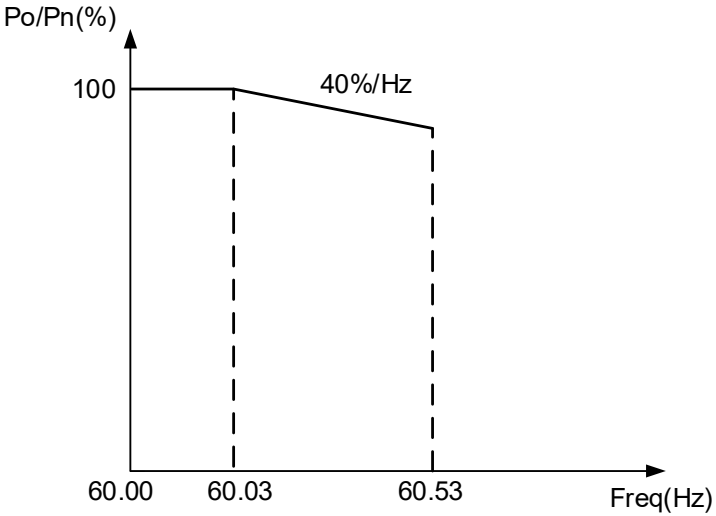
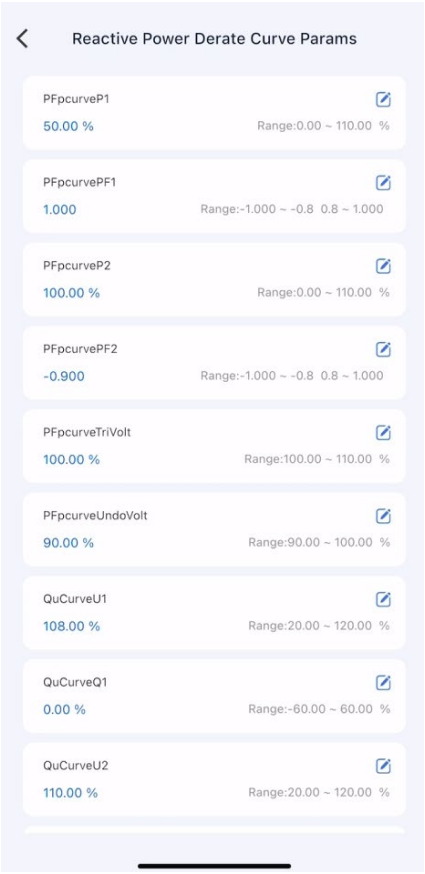
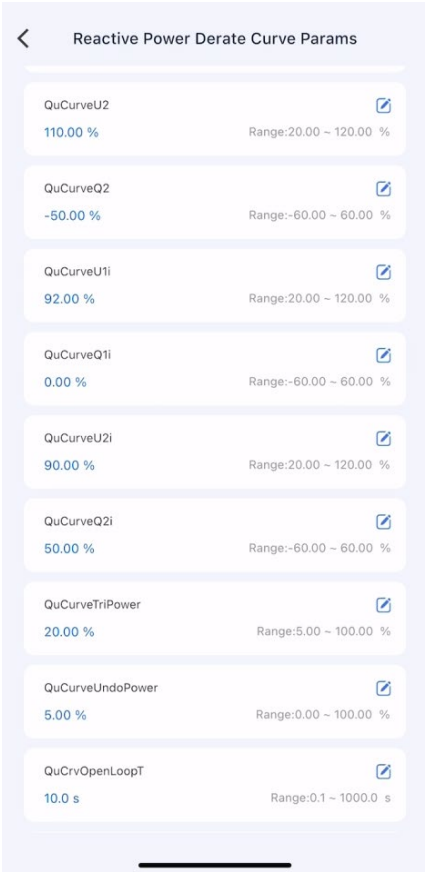


Figure 6-29 Curve of over frequency derating

6.3.5.5 Reactive Power Derate Curve Parameters

Click ▶ to expand detail information of each no active power derate parameters. In below interface you can click ✎ to configure each parameters.





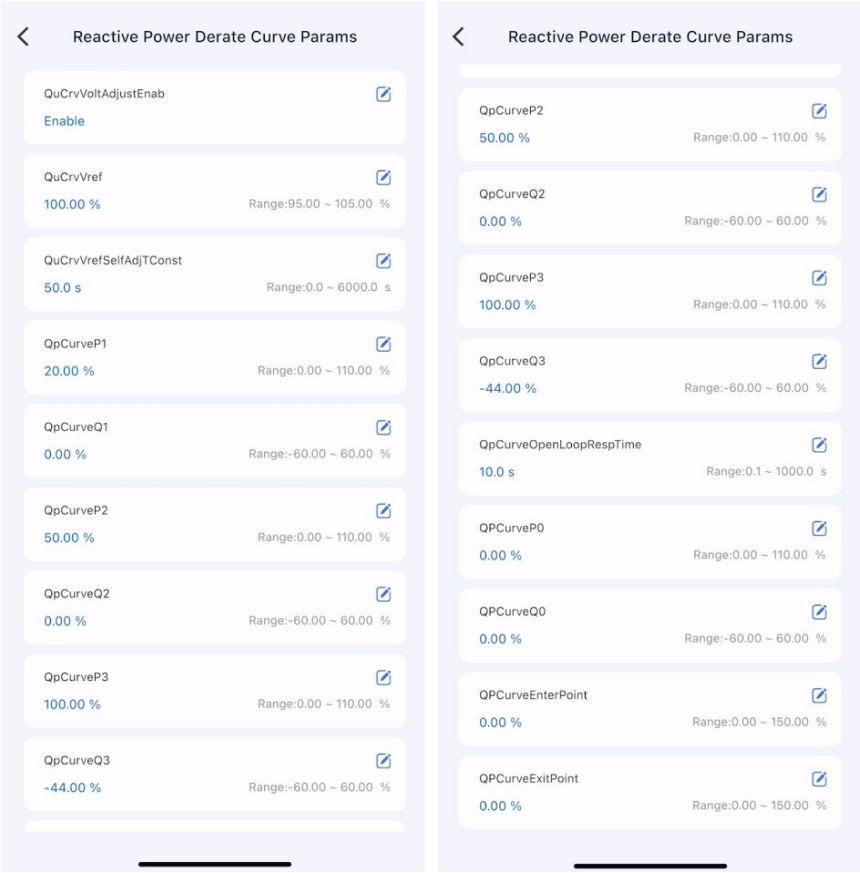


Figure 6-30 Configure Reactive Power Derate Curve Parameters

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 6-31.

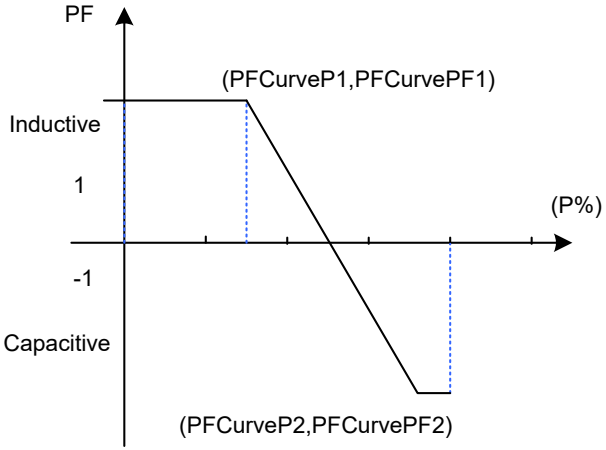


Figure 6-31 PF(P) Curve Mode

- Q(u) Curve: Q(u) curve mode.

Note: The reactive compensation changes according to the grid voltage change, as shown in Figure 6-31.

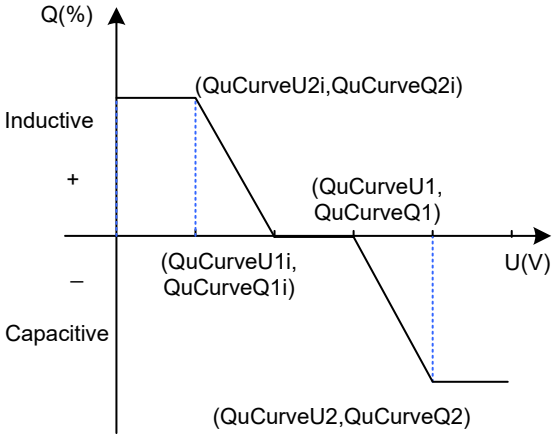


Figure 6-32 Q(u) Curve Mode

6.3.5.6 High-Low Voltage Ride Throughout Parameters

The High-Low Voltage Ride Throughout parameters include over-voltage, under-voltage protection settings, and so on.

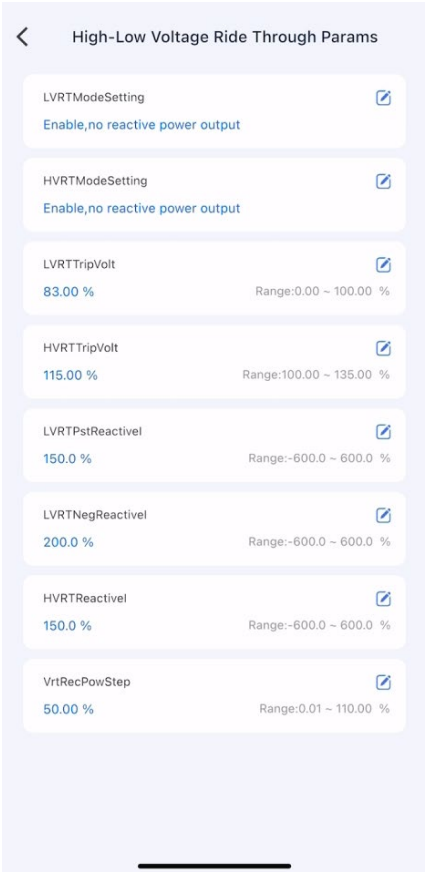


Figure 6-33 Configure High-Low Voltage Ride Throughout Parameters

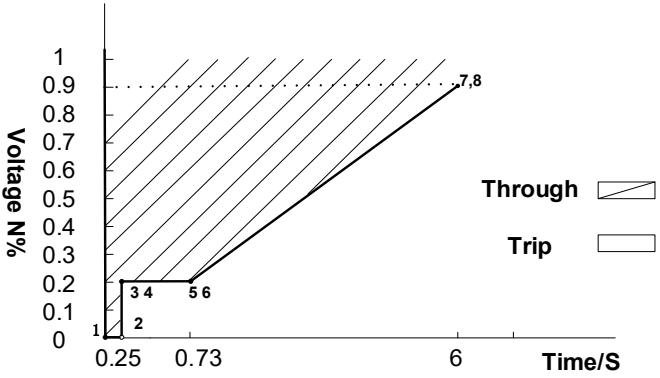


Figure 6-34 LVRT Curve (Just for Reference)

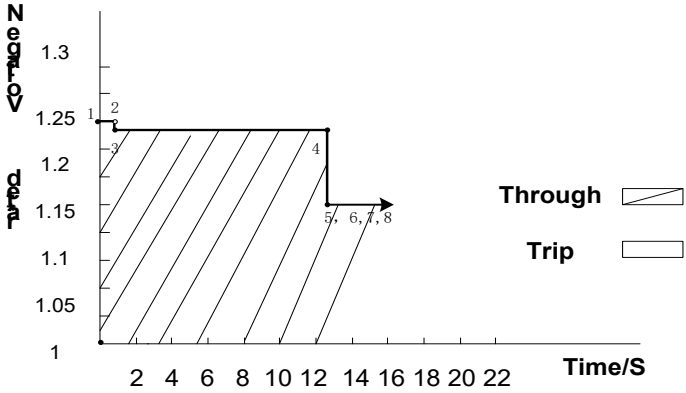
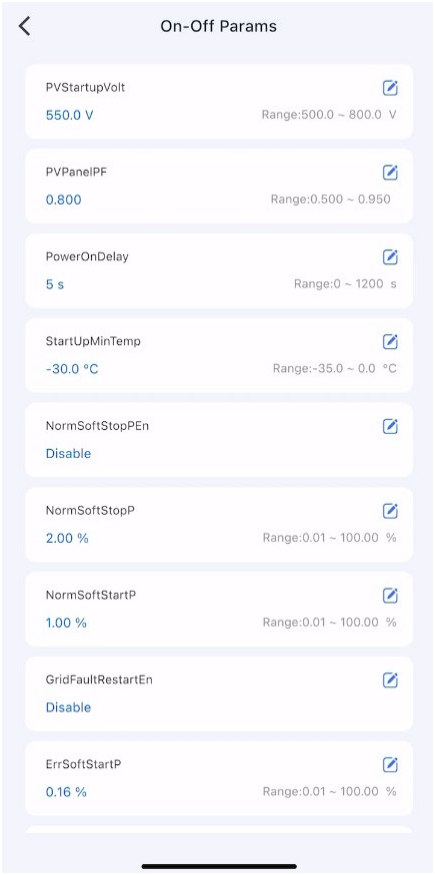
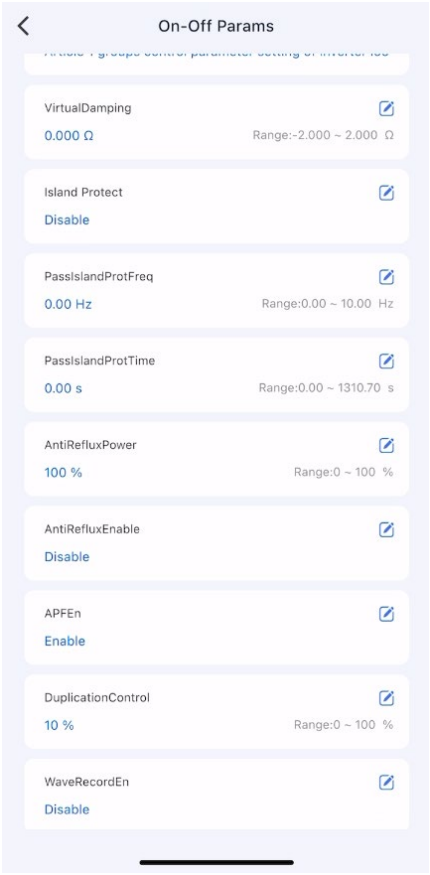


Figure 6-35 HVRT Curve (Just for Reference)

6.3.5.7 On-off Parameters

The On-off parameters are used to set the parameters about power on or off the inverter.


On-Off Params
PVStartupVolt
550.0 V
Range:500.0 ~ 800.0 V
PVPanelPF
0.800
Range:0.500 ~ 0.950
PowerOnDelay
5 s
Range:0 ~ 1200 s
StartUpMinTemp
-30.0 °C
Range:-35.0 ~ 0.0 °C
NormSoftStopPEn
Disable
NormSoftStopP
2.00 %
Range:0.01 ~ 100.00 %
NormSoftStartP
1.00 %
Range:0.01 ~ 100.00 %
GridFaultRestartEn
Disable
ErrSoftStartP
0.16 %
Range:0.01 ~ 100.00 %


On-Off Params
VirtualDamping
0.000 Ω
Range:-2.000 ~ 2.000 Ω
Island Protect
Disable
PassIslandProtFreq
0.00 Hz
Range:0.00 ~ 10.00 Hz
PassIslandProtTime
0.00 s
Range:0.00 ~ 1310.70 s
AntiRefluxPower
100 %
Range:0 ~ 100 %
AntiRefluxEnable
Disable
APFEn
Enable
DuplicationControl
10 %
Range:0 ~ 100 %
WaveRecordEn
Disable

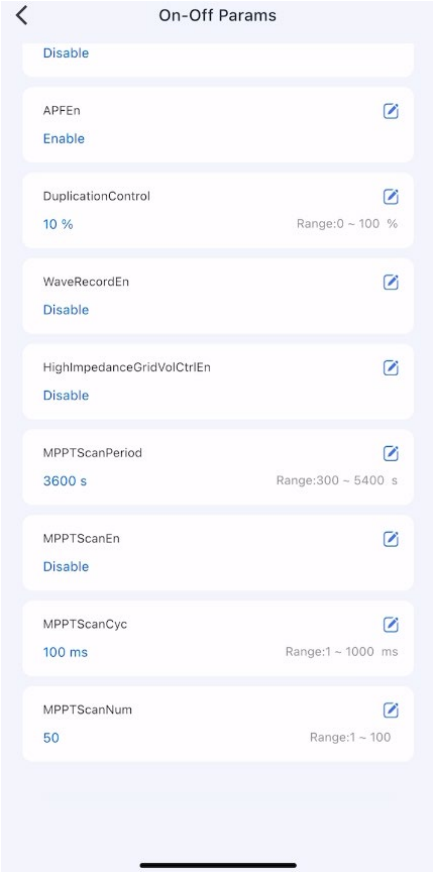


Figure 6-36 Configure On-Off Params

6.3.5.8 Control Parameters

Click ▶ to expand detail information of control commands. In below interface you can click ✎ to configure each parameters and click "**Start**" to execute ForceRestart/FactoryDefaults/IVScanCure/FanDetect operation.

Note: 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.

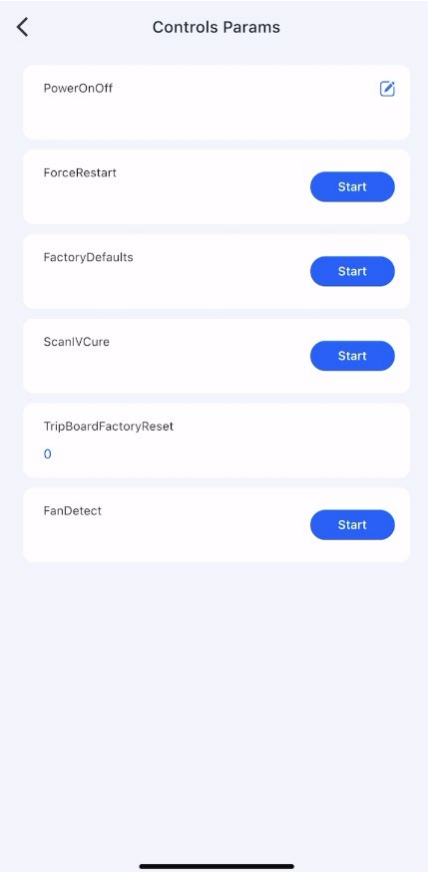


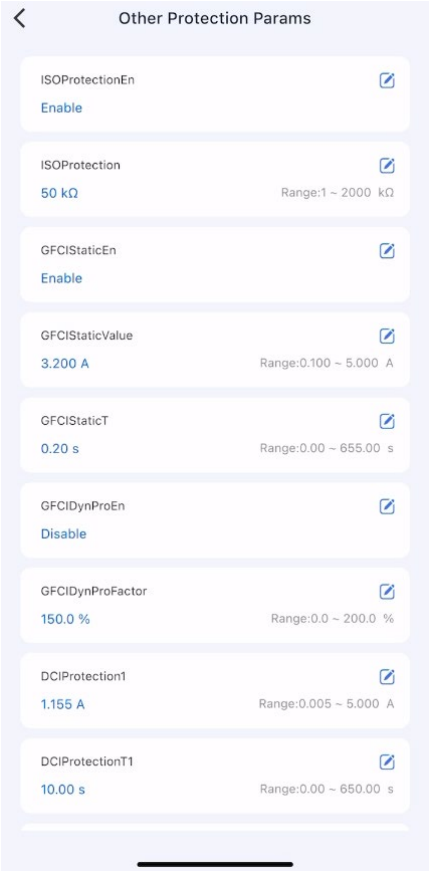
Figure 6-37 Start and Configure Control commands

- **PowerOnOff**: Users can use this function to remotely control the device's power status from their mobile phone.
- **ForceRestart**: If a fault shutdown happens, a severe fault may have occurred inside the inverter. The user can perform a force reboot for one time per Power on in this menu if the user needs to restart the inverter.
- **FactoryrDefaults**: The manufacturer's parameter default values can be restored when the inverter is not in operation mode. Otherwise "Fault Operated" will be reported.
- **ScanIVCure:** Start to scan IV curve.
- **FanDetect:** Detect operating status.
- **TripBoardFactoryReset:** Reset trip board to its original factory settings.

6.3.5.9 Other Protection Parameters

The Other Protection Parameters include settings for insulation impedance detection, arc detection, bus voltage monitoring, MPPT data detection, and other relevant parameters

crucial for maintaining the safety and efficiency of the power system.




Other Protection Params
OptiVoltMinMppt1
500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMaxMppt1
1500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMinMppt2
500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMaxMppt2
1500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMinMppt3
500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMaxMppt3
1500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMinMppt4
500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMaxMppt4
1500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMinMppt5
500.0 V
Range:500.0 ~ 1500.0 V


Other Protection Params
OptiVoltMinMppt6
500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMaxMppt6
1500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMinMppt7
500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMaxMppt7
1500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMinMppt8
500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMaxMppt8
1500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMinMppt9
500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMaxMppt9
1500.0 V
Range:500.0 ~ 1500.0 V
OptiVoltMinMppt10
500.0 V
Range:500.0 ~ 1500.0 V

Figure 6-38 Other Protection Parameters

6.3.5.10 Important Parameters

The Important Parameters include setting for grid connection rule.

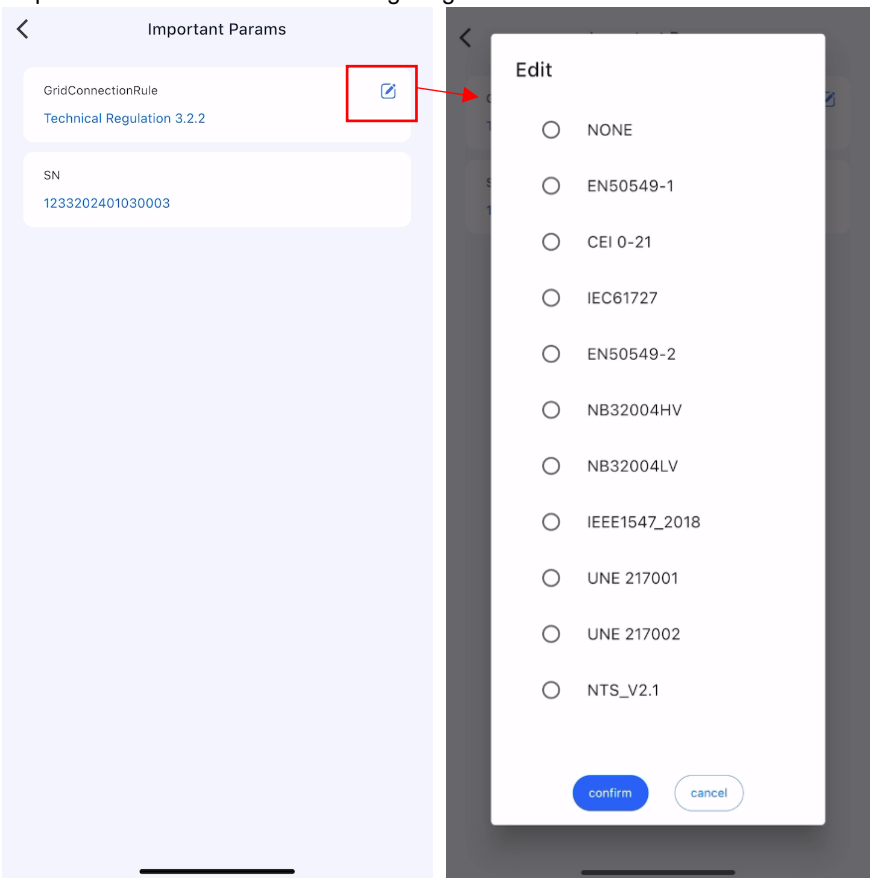


Figure 6-39 Important Parameters

6.3.5.11 Inverter Basic Info

You can view basic information about the inverter on this interface.

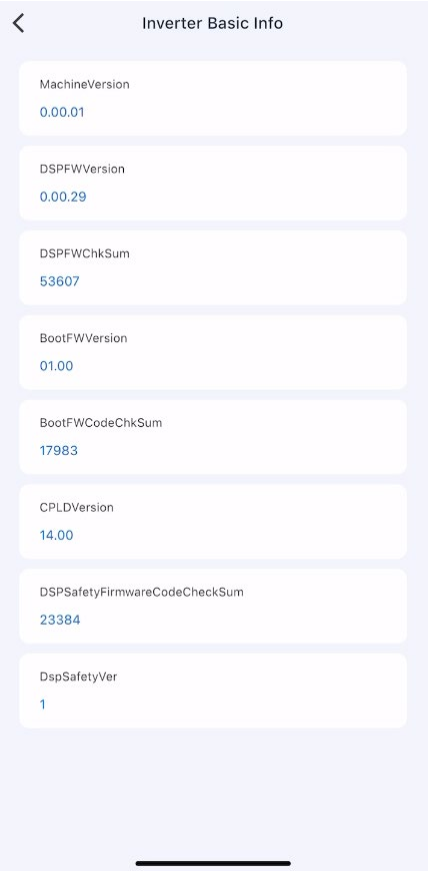


Figure 6-40 Inverter Basic Information

6.3.5.12 Generation Capacity Params

You can view and edit parameters related to power generation.

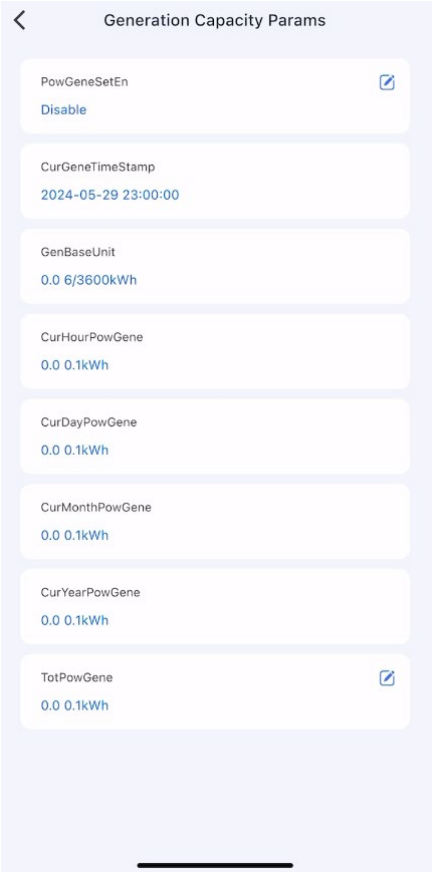


Figure 6-41 Generation Capacity Parameters

6.3.5.13 LcdLess Basic Parameters

Click ▶ to expand detailed information about LcdLess parameters. In the interface below, you can click ✎ to configure each parameter, such as time synchronization.

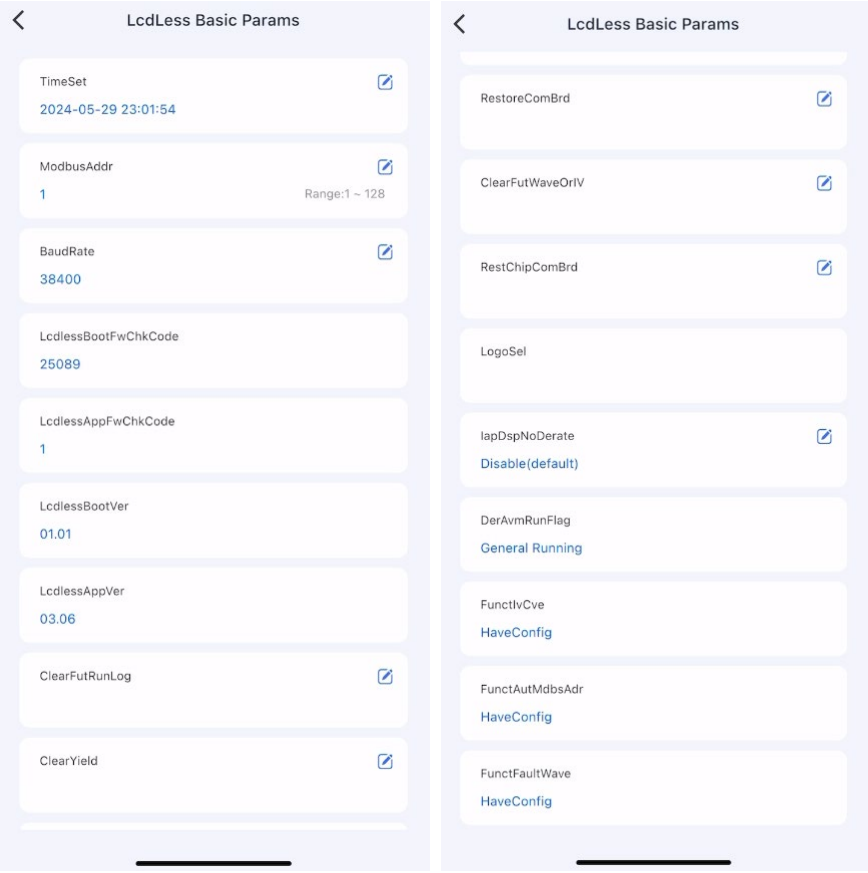


Figure 6-42 LcdLess Basic Parameters

6.3.5.14 LcdLess Parameters 2nd Area

In the LcdLess Parameters 2nd Area interface, you can view information such as the host name, MAC address enablement, DHCP enablement, IP address, subnet mask, default gateway, DNS, and port number.

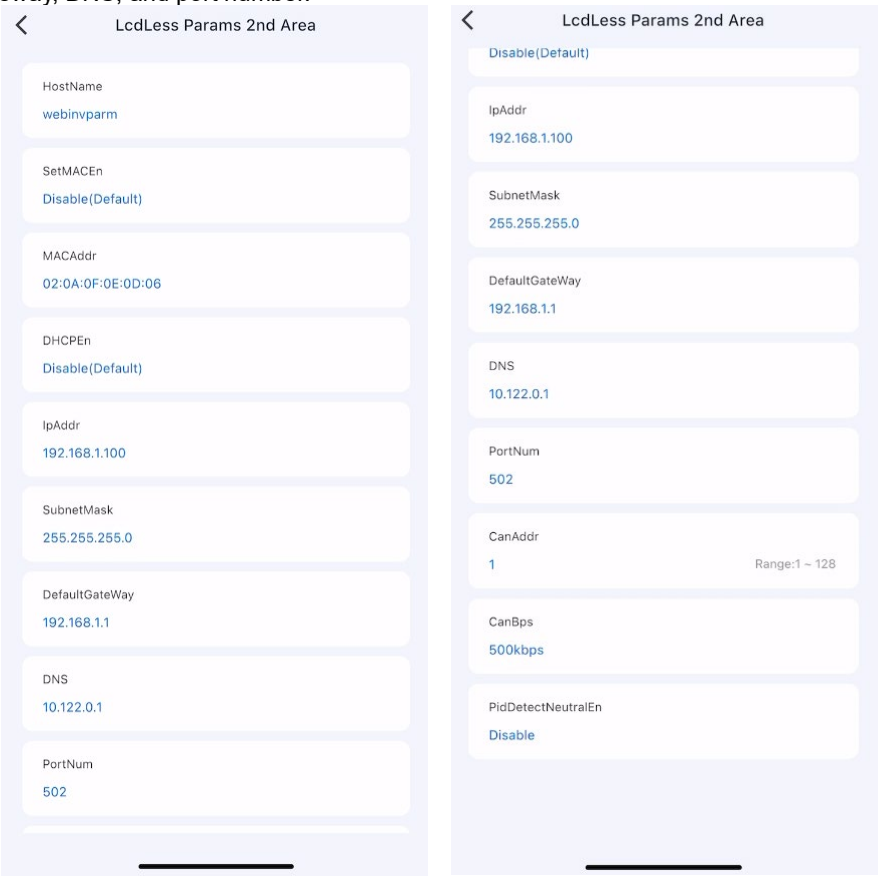


Figure 6-43 LcdLess Parameters 2nd Area

6.3.5.15 PID Parameters

In the PID parameters interface, you can view information about PID related parameters.

Figure 6-44 PID Parameters

6.3.6 Upgrade Firmware

Click the “ Upgrade Firmware” to see upgrade interface. To upgrade firmware, please contact service personnel.

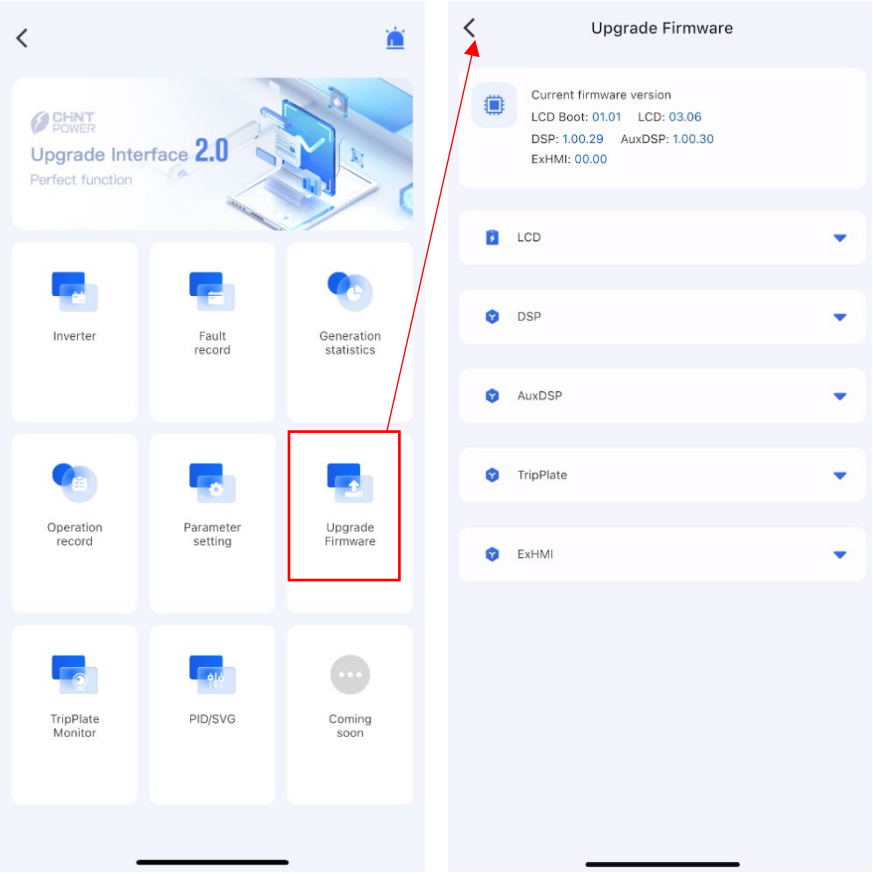


Figure 6-45 Upgrade Firmware

6.3.7 Trip Plate Monitor

When the DC switch trips, click the “Trip Plate Monitor” and input password “1111” for more information. If the state of DC switch shows “Trip”, it means DC switch has been disconnected. You can click the warning icon in the right top corner to view the fault record of trip plate. Do not reset and turn on the DC switch by yourself, please contact the after-sales for support.

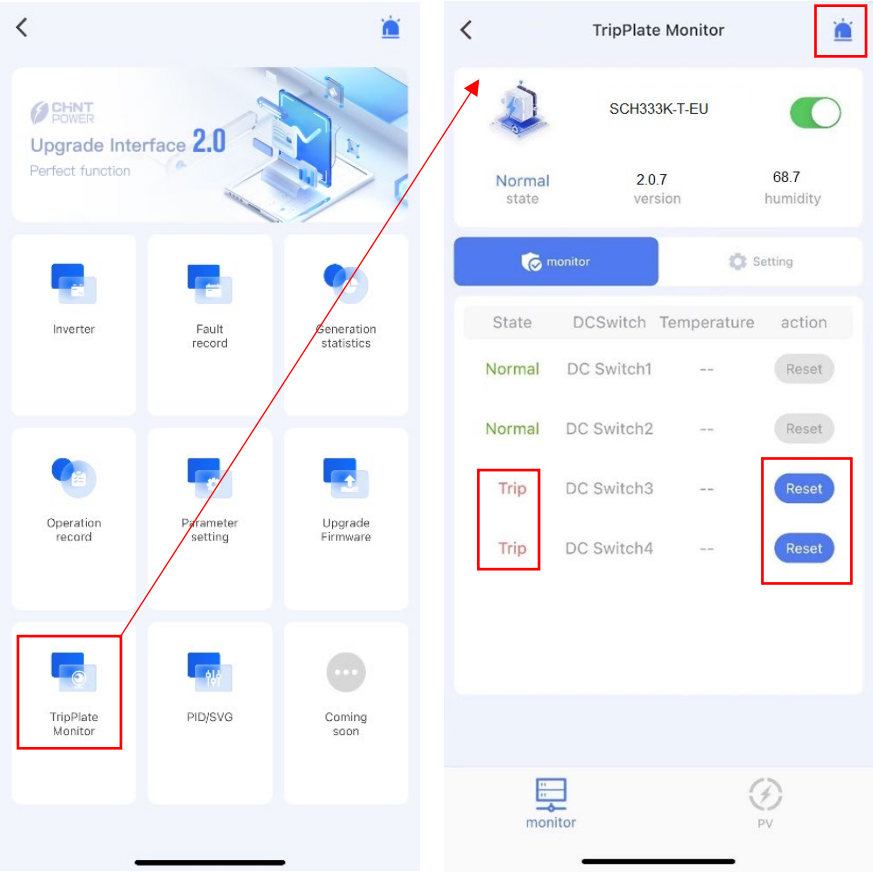


Figure 6-46 Trip Plate Monitor

Click “Setting” button to set up every tripping protection parameters, such as reverse overcurrent trip protection, back overcurrent trip protection, short circuit trip protection, over temperature trip protection, and over voltage trip protection.

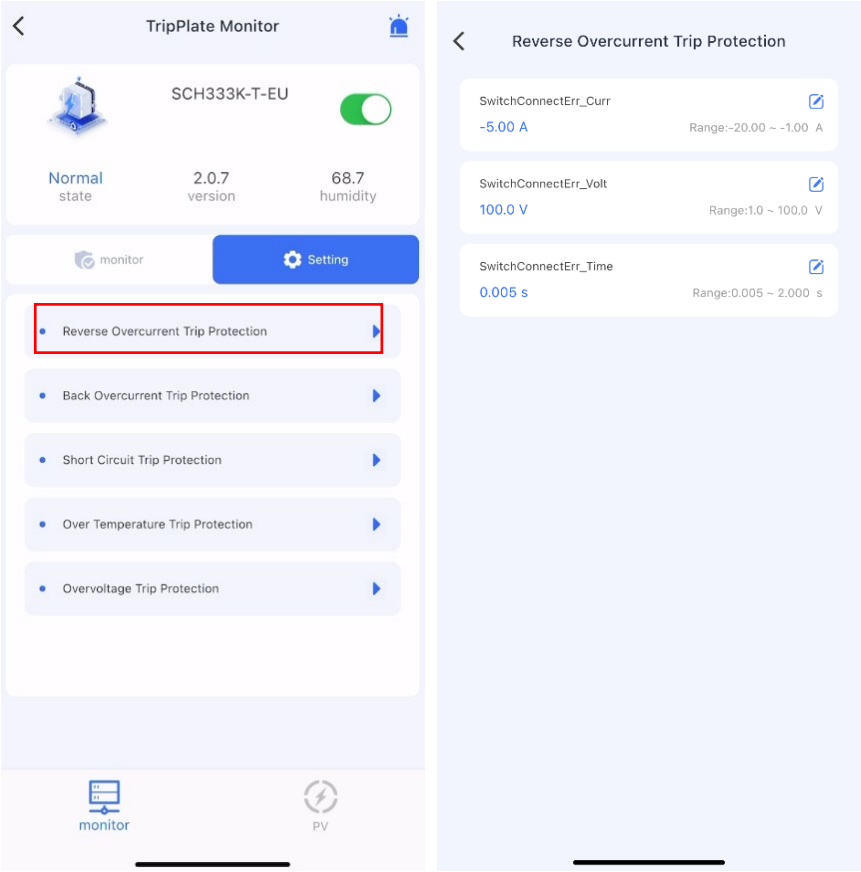


Figure 6-47 Reverse Overcurrent Trip Protection

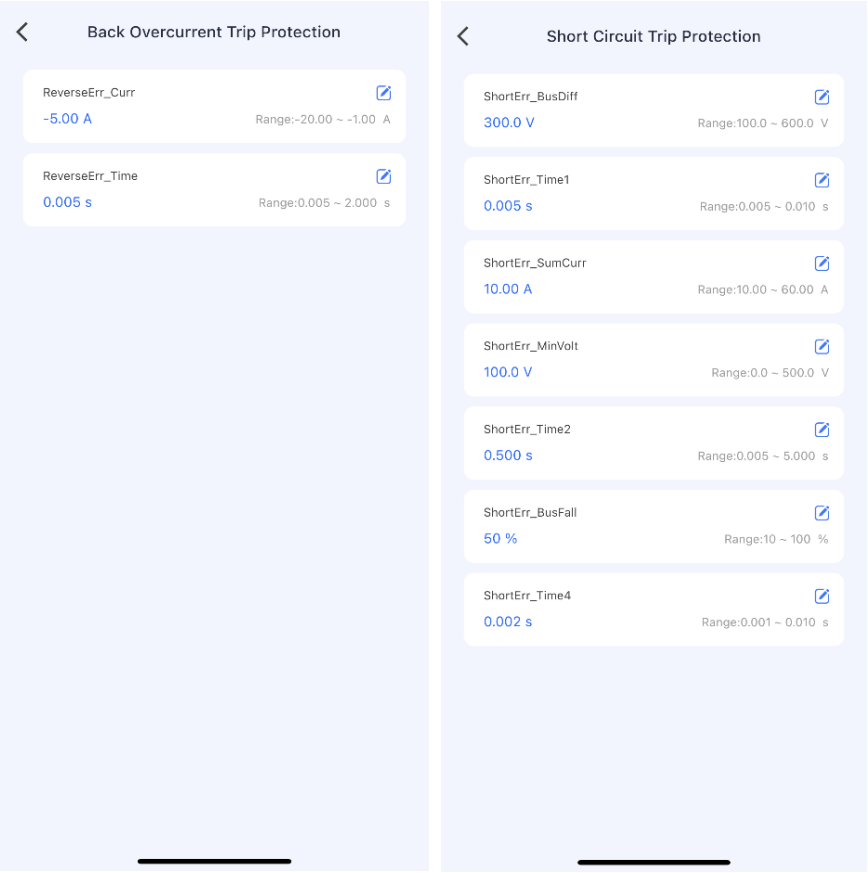


Figure 6-48 Reverse Overcurrent Trip Protection and Short Circuit Trip Protection

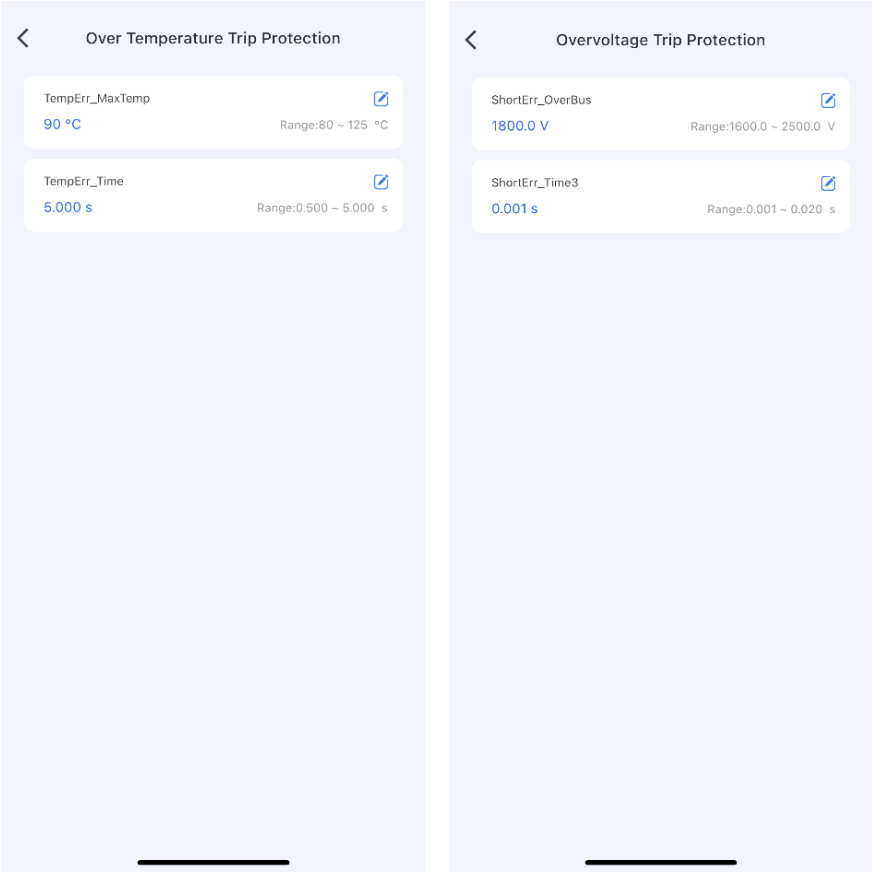


Figure 6-49 Over Temperature Trip Protection and Overvoltage Trip Protection

You can also click “PV” button to read current and voltage value of each PV string, as below.

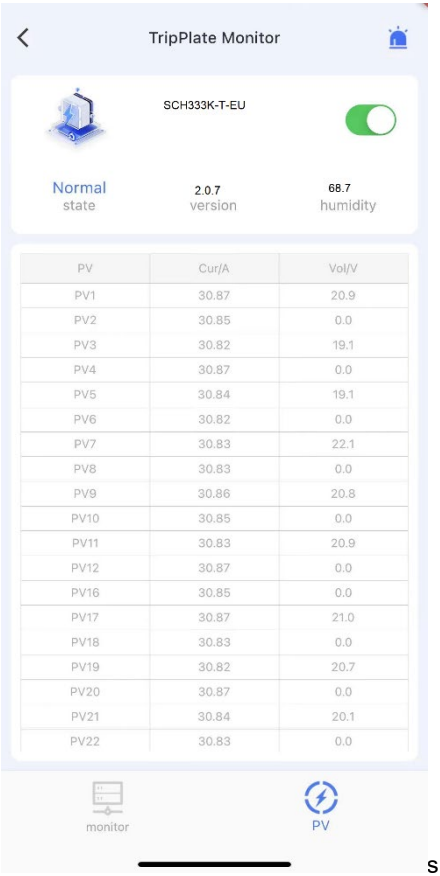


Figure 6-50 Current and Volatage Value of Each PV string

6.3.8 PID/SVG

Click “PID/SVG” item to go to “system choice” interface. You can choose IT system (default) or TN-C/TN-C-S/TT system.

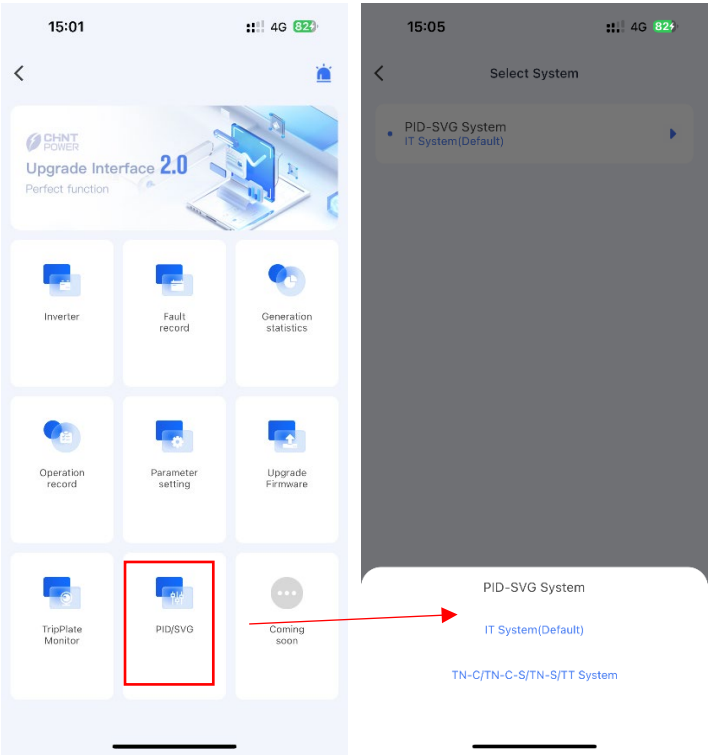


Figure 6-51 PID/SVG

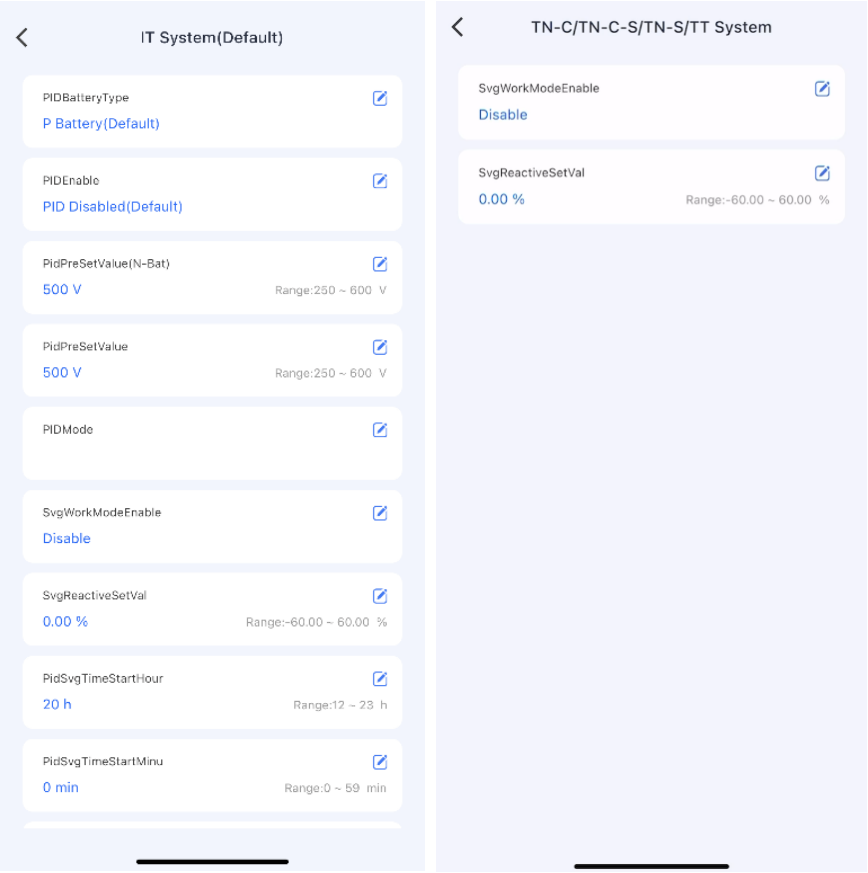


Figure 6-52 PID/SVG System Settings

7 Maintenance and Replace

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.

These servicing instructions are for use by qualified personnel only.

To reduce the risk of electrical shock, do not perform other servicing other than those specified in the operation instructions unless you are qualified to do so.

7.1 Check Electrical Connections

- 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 section 4.5 Electrical Cable 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 screws fixing the fan tray as shown in Figure 7-1.

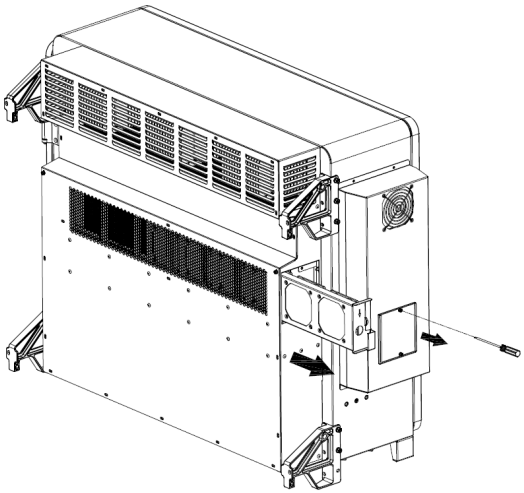


Figure 7-1 Remove the fan tray and fan

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

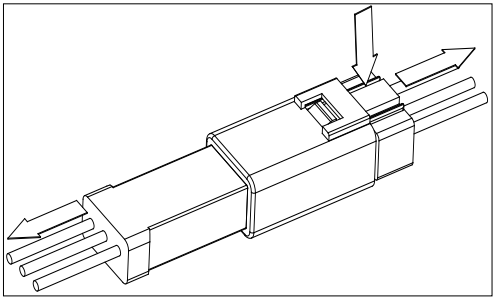


Figure 7-2 Disconnect the watertight cable connector

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

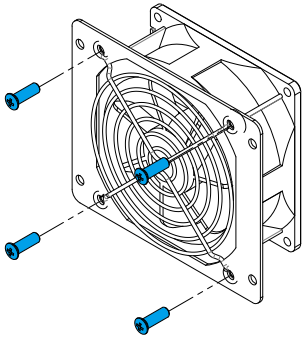


Figure 7-3 Replace cooling fans

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 3.5 Installation Check.

1. Use a No3. Philips head screwdriver to remove the two M6X16 screws.
2. Remove the inverter from its mounting bracket with the coordination of 3 people.
3. Replace the new inverter on the mounting bracket and fasten it.

8 Troubleshooting

8.1 LED Indicator Troubleshooting

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

LED status	Solutions
Neither the Power LED nor the LCD screen lights up.	Turn off the external AC breaker. Switch the DC switch to OFF position. Check the PV input voltage and polarity.
The GRID LED is blinking.	Turn off the external AC breaker. Switch the DC switch to OFF position. Check if the grid voltage is normal. Check if the cable connection of AC side is correct and secure.
The RUN LED lights off or FAULT LED lights up.	Refer to Table 8-2, 8-3 and 8-4 for troubleshooting.

Table 8-1 Troubleshooting based on LED Lights

8.2 Common Fault and 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.

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 faults: warning, protection and hardware fault. Proper analysis is recommended before contacting after-sales service.

Fault Codes	Solutions
CommErr	Definition: Communication inside inverter fails
	Possible causes: Terminal block connecters of internal communication wires have poor contact

	Recommended solutions: 1. Observe for 5 minutes and see whether the alarm will be eliminated automatically; 2. Switch off 3-phase working power supply and then reboot the system; 3. Contact after-sales service personnel.
ExtFanErr	Definition: Cooling fan failure by visual check
	Possible causes: 1. Fan is blocked; 2. Fan service life has expired; 3. Fan socket connecter has poor contact.
	Recommended solutions: 1. Observe for 5 minutes and see whether the alarm will be eliminated automatically; 2. Check for foreign objects on fan blades; 3. Switch off 3-phase work power supply and then reboot the system; 4. Contact after-sales service personnel.
IntFanErr	Recommended solutions: 1. Observe for 5 minutes and see whether the alarm will be eliminated automatically; 2. Check for foreign objects on fan blades; 3. Switch off 3-phase work power supply and then reboot the system; 4. Contact after-sales service personnel.
Warn0030 (EepromErr)	Definition: Internal alarm
	Recommended solutions: 1. Observe for 5 minutes and see whether the alarm will be eliminated automatically; 2. Contact after-sales service personnel.
Warn0040 (DC SPD fault)	Recommended solutions: The alarm is reserved now. The alarms in field can be ignored.
Warn0050 (TempSensorErr)	Recommended solutions: 3. Observe temperature display; 4. Switch off 3-phase working power supply and then reboot the system; 5. Contact after-sales service personnel.
Warn0100 (AC SPD fault)	Recommended solutions: The alarm is reserved now. The alarms in field can be ignored.

Table 8-2 Troubleshooting list of warning faults

Fault Codes	Solutions
Protect0090 (Bus over voltage)	1. Restart inverter by recycle both AC and DC switches. 2. Wait for 1 minute between OFF and ON for all energy to discharge. 3. If inverter cannot clear fault, replace inverter.

Protect0070 (Bus imbalance)	1. Raise limit of IDCmax (for example, 400mA) to allow inverter more room to adjust in transient condition to cope with imbalance of impedance and voltage between Grid phases 2. If after adjustment, alarm still occurs, replace inverter
Protect0030 (Inverter Over Current)	1. Restart inverter by recycle both AC and DC switches. 2. Wait for 1 minute between OFF and ON for all energy to discharge. 3. If inverter cannot clear fault, replace inverter.
GridV.OutLim	1. Make sure the grid connection is good. 2. Restart the inverter again.
GridF.OutLim	1. Check the AC wires connection and AC frequency is in range; 2. Check the measurement value in LCD, if the grid frequency is in limit, restart the inverter.
Protect0020 (Grid relay error)	1. Restart inverter by recycle both AC and DC switches. 2. Wait for 1 minute between OFF and ON for all energy to discharge. 3. If inverter cannot clear fault, replace inverter.
TempOver (Over-temperature protection)	1. Confirm that external ambient temperature is within the specified range of operating temperature; 2. Check whether air inlet is blocked; 3. Check whether fan is blocked; 4. Check whether the location of installation is appropriate or not; 5. Observe for 30 minutes and see whether the alarm will be eliminated automatically; 6. Contact after-sales service personnel.
Protect0180 (The sampling offset of DCI)	1. If the inverter can start up, then recalibrate. 2. If the inverter always report this alarm and cannot start up, then replace inverter.
Protect0170 (DCI high)	1. Raise limit of DCImax (for example, 400mA) to allow inverter more room to adjust in transient condition to cope with imbalance of impedance and voltage between Grid phases 2. After raising limit, if inverter cannot clear fault, replace inverter.
IsolationErr (Insulation resistance low)	Check wires of PV and ground: 1. Turn OFF AC switch to disconnect inverter from Grid. 2. Open fuse drawers to de-couple PV strings from each other. Test strings with string test set. 3. Add one PV string at a time, and start up inverter to see if alarm occurs. 4. If there is no alarm, turn OFF AC switches to disconnect from Grid and add in the next string. Startup inverter again. 5. Continue until you can find the string that triggers the alarm. Trace wirings of faulted string to find any leakage to Earth Ground. 6. The parameter ISOResist in hidden menu can be adjusted a bit.
GFCIErr (leakage current high)	Check wires of PV and ground: 1. Turn OFF AC switch to disconnect inverter from Grid. 2. Open fuse drawers to de-couple PV strings from each other. Test strings with string test set.

	3. Add one PV string at a time, and startup inverter to see if alarm occurs. 4. If there is no alarm, turn OFF AC switches to disconnect from Grid and add in the next string. Startup inverter again. 5. Continue until you can find the string that triggers the alarm. Trace wirings of faulted string to find any leakage to Earth Ground.
Protect0150 (Mini MCU Fault)	1. Restart inverter by recycle both AC and DC switches. 2. Wait for 1 minute between OFF and ON for all energy to discharge. 3. If inverter cannot clear fault, replace inverter.
Protect0110 (BUS over voltage (firmware))	1. Restart inverter by recycle both AC and DC switches. 2. Wait for 1 minute between OFF and ON for all energy to discharge. 3. If inverter cannot clear fault, replace inverter.
Protect0100 (The sensor fault of leakage current)	1. Restart inverter by recycle both AC and DC switches. 2. Wait for 1 minute between OFF and ON for all energy to discharge. 3. If inverter cannot clear fault, replace filter board or inverter.
Reverse PVx electrode (x=1,2…24 / 30)	1. Turn DC Switch OFF 2. Open Fuse holder to isolate PV strings 3. Use meter to find out which PV string is connected in reverse polarity. 4. Correct PV string connection. 5. Contact after-sales service personnel.
High PVx Input current (x=1,2…24 / 30)	1. Restart inverter by recycle both AC and DC switches. 2. Wait for 1 minute between OFF and ON for all energy to discharge. 3. Contact after-sales service personnel.
High PVx Input voltage (x=1,2…24 / 30)	1. Check if its input voltage is within 1100V; 2. Restart inverter by recycle both AC and DC switches. 3. Wait for 1 minute between OFF and ON for all energy to discharge. 4. Contact after-sales service personnel.
PVVoltOver	1. Measure voltage at DC terminals in wiring box and compare with reading in Measurement menu. PV voltage must be less than 1000V in open circuit condition. 2. If display reading is not within 2% of meter reading, replace inverter. 3. If display reading is within 2% of meter reading, adjust number of panels in the string.
Protect0230 (Inverter open-loop self-test fault)	1. Restart inverter by recycle both AC and DC switches. 2. Wait for 1 minute between OFF and ON for all energy to discharge. 3. If inverter cannot clear fault, replace inverter.

Table 8-3 Troubleshooting list of Protection faults

Fault Codes	Solutions

Fault0130 (Bus over total voltage)	1. Restart inverter by recycle both AC and DC switches. 2. Wait for 1 minute between OFF and ON for all energy to discharge. 3. If inverter cannot clear fault, replace inverter.
Fault0110 (Bus imbalance)	1. Raise limit of IDCmax (for example, 400mA) to allow inverter more room to adjust in transient condition to cope with imbalance of impedance and voltage between Grid phases 2. If after adjustment, alarm still occurs, replace inverter.
Fault0100 (Grid relay fault)	1. Restart inverter by recycle both AC and DC switches. 2. Wait for 1 minute between OFF and ON for all energy to discharge. 3. If inverter cannot clear fault, replace inverter.
Fault0090 (Static leakage current high)	Check wires of PV and ground: 1. Turn OFF AC switch to disconnect inverter from Grid. 2. Open fuse drawers to de-couple PV strings from each other. Test strings with string test set 3. Add one PV string at a time, and startup inverter to see if alarm occurs. 4. If there is no alarm, turn OFF AC switches to disconnect from Grid and add in the next string. Startup inverter again. 5. Continue until you can find the string that triggers the alarm. Trace wirings of faulted string to find any leakage to Earth Ground.
Fault0060 (CPLD Fault)	1. Restart inverter by recycle both AC and DC switches. 2. Wait for 1 minute between OFF and ON for all energy to discharge. 3. If inverter cannot clear fault, replace Control Board or inverter.
Fault0020 (Bus over volt Hardware)	4. Restart inverter by recycle both AC and DC switches. 5. Wait for 1 minute between OFF and ON for all energy to discharge. 6. If inverter cannot clear fault, replace inverter.
Fault0150 (Open-loop self-check failure)	1. Restart inverter by recycle both AC and DC switches. 2. Wait for 1 minute between OFF and ON for all energy to discharge. 3. If inverter cannot clear fault, replace inverter.

Table 8-4 Troubleshooting list of hardware faults

9 Technical Data

Model Name	SCH320K-T- EU		SCH333K-T- EU		SCH350K-T- EU	
DC Input						
Max DC input voltage	1500Vdc					
MPPT operating voltage range	500-1500Vdc					
Start Voltage/Power	550V					
Rated DC Voltage	1190V					
Number of MPPT	12	15	12	15	12	15
Number of DC Connection Sets per MPPT	2	2	2	2	2	2
Max DC Current per MPPT	40A					
Max. DC short-circuit current per MPPT	60A					
DC Disconnection Type	Integrated Switch					
AC Output						
Rated AC Power	320kW		333kW		350kW	
Maximum AC power	352kVA		333kVA		350kVA	
Rated AC voltage	800V					
Rated AC voltage range	680-880Vac					
Grid Connection Type	3Φ / PE					
Maximum AC current	254A		241A		253A	
Grid Frequency	50Hz/60Hz					
Grid Frequency Range	45-55Hz/55-65Hz					
Power factor (cosφ)	>0.99(±0.8 adjustable)					
Current THD	<3%					
AC disconnect type	-					
System parameters						
Topology	Transformerless					
Max. Efficiency	99.0%					
Euro Efficiency	98.5%					
Consumption at night	<5W					
Environmental parameters						
Ingress Protection	IP66					
Cooling Method	Cooling Fans					
Operating temperature	-30°C - +60°C (Derate from +45°C)					
Operating humidity	0-100%					
Operating altitude	4000m					
Display and communication						
Display	LED+APP (Bluetooth)					
Communication	RS485/Ethernet/PLC/CAN					
Structural parameters						
Dimensions (WxHxD) (mm)	1057 * 810 * 400					
Weight (kg)	143					
Safety						
Safety and EMC standards	IEC61000, IEC 62109					
Grid-tied specification	IEC61727/62116, EN50549, NC RFG, CEI 0-16, UNE 217002, NTS_V2.1, VDE-AR-N 4110, VDE-AR-N 4120, UTE-C15, Technical regulation 3.2.2, Guide for connection of power-generating plants to the high-voltage grid (> 1kV)					

Table 9-1 Datasheet

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. Incorrect or inappropriate use of the product (including installation and use).
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.

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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