

PrimeVOLT

USER MANUAL

Three Phase Grid-tied PV String Inverter

Natural cooling series

PV 5KTL-D3/G2
PV 6KTL-D3/G2
PV 8KTL-D3/G2
PV 10KTL-D3/G2
PV 10KTL-D3/G2P
PV 12KTL-D3/G2
PV 15KTL-D3/G2

Fan cooling series

PV 15KTL-D3/G2P
PV 17KTL-D3/G2
PV 20KTL-D3/G2

Fan cooling series

PV 22KTL-D3/G2
PV 25KTL-D3/G2



History

| VERSION | ISSUED | COMMENTS |
|---------|------------|---------------|
| 1.0 | 01-Mar.-23 | First release |

Preface

About This Manual

This manual describes the installation, connection, the use of APP, commissioning and maintenance etc. of the inverter. Please first read the manual and related documents carefully before using the product and store it in a place where installation, operation and maintenance personnel can reach it at any time. The illustrations in this user manual are for reference only. This user manual is subject to change without prior notice. (Specific please in kind prevail.)

Target Group

Inverters must be installed by professional electrical engineers who have obtained relevant qualifications.

Scope

Natural cooling series

PV 5KTL-D3/G2
 PV 6KTL-D3/G2
 PV 8KTL-D3/G2
 PV 10KTL-D3/G2
 PV 10KTL-D3/G2P
 PV 12KTL-D3/G2
 PV 15KTL-D3/G2

Fan cooling series






PV 15KTL-D3/G2P
 PV 17KTL-D3/G2
 PV 20KTL-D3/G2

Fan cooling series

PV 22KTL-D3/G2
 PV 25KTL-D3/G2

Conventions

The following safety instructions and general information are used within this user manual.

| | |
|--|---|
|  DANGER | Indicates an imminently hazardous situation which, if not correctly followed, will result in serious injury or death. |
|  WARNING | Indicates a potentially hazardous situation which, if not correctly followed, will result in serious injury or death. |
|  CAUTION | Indicates a potentially hazardous situation which, if not correctly followed, could result in moderate or minor injury |
|  NOTICE | Indicates a potentially hazardous situation which, if not correctly followed, could result in equipment failure to run, or property damage. |
|  NOTE | Call attention to important information, best practices and tips: supplement additional safety instructions for your better use of the inverter to reduce the waste of you resource |

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1 Safety

Before using the inverter, please read all instructions and cautionary markings on the unit and in the manual. Put the instructions to a place where you can take them easily. Our inverter strictly conforms to related safety rules in design and test. And follow the local laws and regulations during installation, operation and maintenance. Incorrect operation may cause injury or death to the operator or a third party, and damage to the inverter and other properties belonging to the operator or a third party.

1.1 Symbol used

The sign of caution sticks on inverter.

| Safety Symbol | Description |
|---|--|
|  | Danger of high voltage and electric shock! Only qualified personnel may perform work on the inverter. |
|  | Residual voltage exists after the inverter is powered off. It takes 5 minutes for system to discharge to a safe voltage. |
|  | Danger of hot surface |
|  | Do not disconnect under load! (Fire danger) |
|  | Environmental Protection Use Period |
|  | Refer to the operating instructions |
|  | Product should not be disposed as household waste. |
|  | Grounding terminal |
|  | The PV inverter is compliant with TUV. |

1.2 Safety Instruction

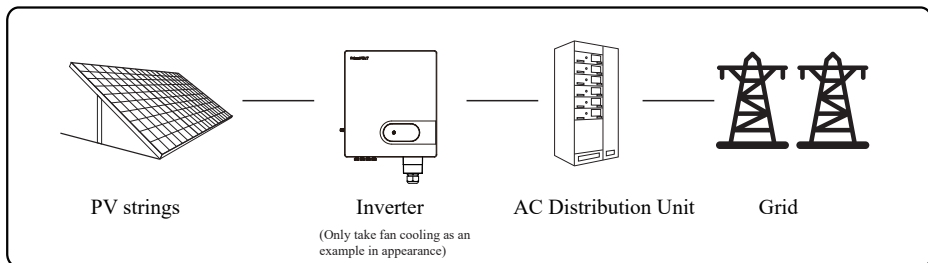
- Installation, maintenance and connection of inverters must be performed by qualified personnel, in compliance with local electrical standards, wiring rules and requirements of local power authorities and/or companies (for example: AS 4777 and AS/NZS 3000 in Australia).
- To avoid electric shock, DC input and AC output of the inverter must be terminated at least 10 minutes before performing any installation or maintenance.
- The temperature of some parts of the inverter may exceed 60°C during operation. Do not touch the inverter during operation to avoid being burnt.
- Ensure children are kept away from inverters.
- Take appropriate measures to avoid electric shock.
- Don't open the front cover of the inverter. Apart from performing work at the wiring terminal, touching or changing components without authorization may cause injury to people, damage to inverters and annulment of the warranty.
- Ensure the output voltage of the proposed PV array is lower than the maximum rated input voltage of the inverter; otherwise the inverter may be damaged and the warranty annulled.
- When exposed to sunlight, the PV array generates dangerous high DC voltage. Please operate according to our instructions, or it will result in danger to life.
- Prohibit inserting or pulling the AC and DC terminals when the inverter is running.

2 Product Introduction

2.1 Overview

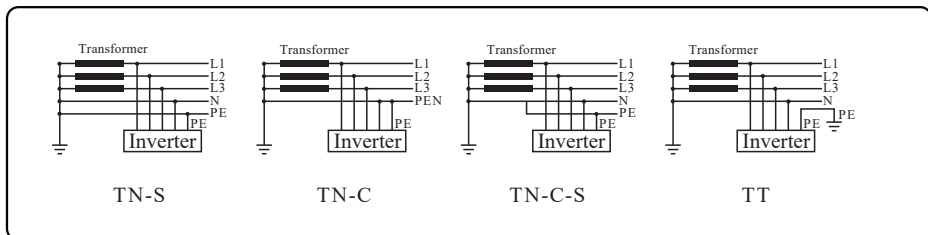
The three-phase grid-tied PV inverter converts the DC generated by PV panels into three-phase alternating current and is delivered to the grid.

This series inverter is an important part of PV system and it is suitable for household use, commercial roof, fishing light, and agricultural light and more scenarios.



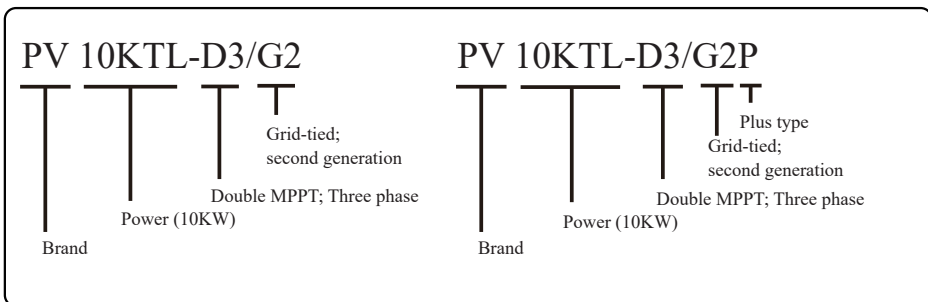
Inverters have been tested as per AS/NZS 4777.2:2020 for three phase combinations.

This series inverter is suitable for TN-S, TN-C, TN-C-S and TT grid system, Refer to the following figures:



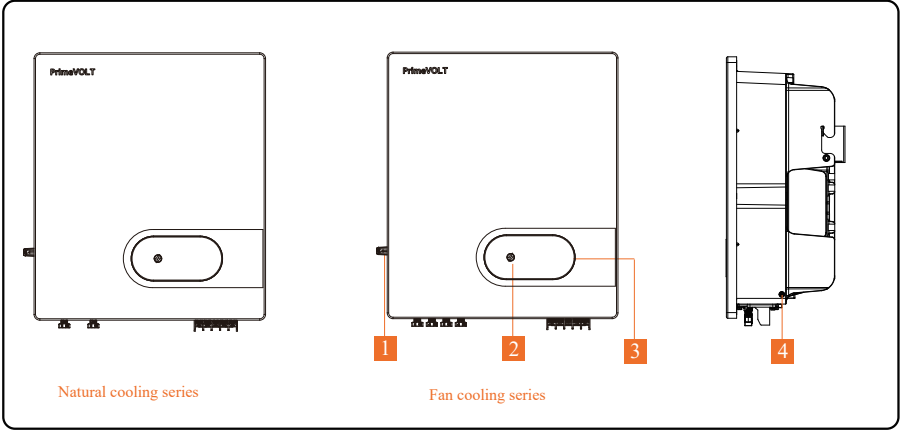
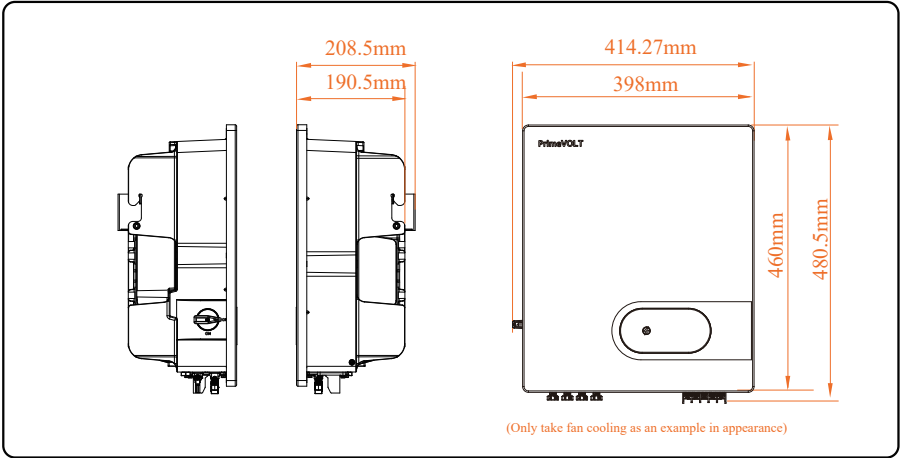
2.2 Model Definition

Model number descriptions (using PV 10KTL-D3/G2 and PV 10KTL-D3/G2P as examples):

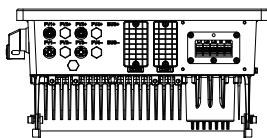


2.3 Product Appearance

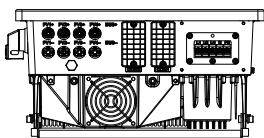
The following is only for reference, specific please in kind prevail.



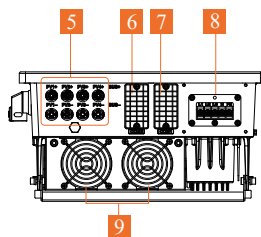
| Number | Description |
|--------|--------------------------|
| 1 | DC Switch |
| 2 | LED Indicators |
| 3 | LCD Screen (Optional) |
| 4 | External ground terminal |



Natural cooling series



Fan cooling series 1



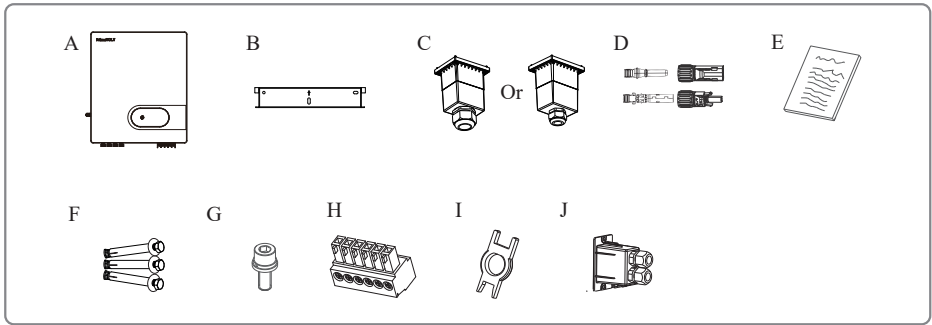
Fan cooling series 2

| Number | Description |
|--------|---|
| 5 | PV terminal |
| 6 | RS485 communication port |
| 7 | WIFI/GPRS model communication port (Optional) |
| 8 | AC output port |
| 9 | External fan (It is only suitable for Fan cooling series) |


3 Unpacking and Storage

3.1 Unpacking and Check

Complete test and strict inspection before the inverter is sent out.
When receiving the inverter, check that the packing materials are intact.
After unpacking, examine the PV inverter and its fittings for damage and check that the deliverables are complete.



| Number | Description | Quantity |
|--------|----------------------------------|--------------|
| A | The Inverter | 1 |
| B | Bracket | 1 |
| C | AC shield (4xM4 security screws) | 1 |
| D | PV connectors | 2 or 4 |
| E | File package | 1 |
| F | Expansion screws groups | 3 |
| G | M6 Security screw | 2 |
| H | 6-Pin terminal | 2 |
| I | Remove tool for PV connector | 1 (Optional) |
| J | RS485 cover | 1 |

**NOTICE**

Contact your dealer immediately, if there is any issue found during operation.

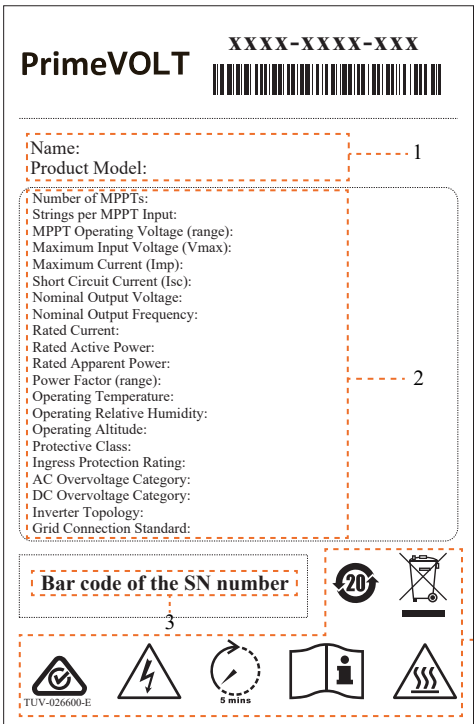
3.2 Storage Inverter

If the inverter is not used immediately, please keep the inverter in a specific environment according to the following:

- Do not unpack the inverter and put desiccant in the original box if the PV inverter is unpacked.
- Store temperature range: -25°C ~ +60°C; Relative humidity range: 0~100%.
- When the inverter is placed multi-layered, it can be folded up to four layers.
- Do not position the inverter at a front tilt, excessive back tilt, or side tilt, or upside down.
- Ensure that qualified personnel inspect and test the inverter before use if it has been stored for a long time.

3.3 Identify Inverter



Inverter body label. The following is only for reference, specific please in kind prevail!



| Number | Description |
|--------|-----------------------------------|
| 1 | Product name and model |
| 2 | Product technical parameters |
| 3 | SN Barcode |
| 4 | Approve and Safety identification |

4 Installation

After checking the outer packing, move the PV inverter to the designated installation position horizontally.

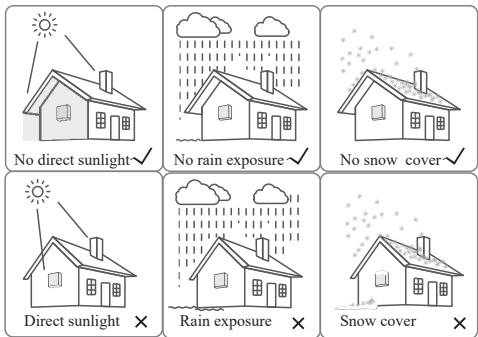
| | |
|--|--|
|  CAUTION | <ol style="list-style-type: none">1. Please place the inverter horizontally on the foam or other soft pads and ensure that the ports are free of load-bearing pressure to avoid inverter damages or scratches.2. The inverter is heavy, be careful to prevent the inverter from slipping and hurting the operator when moving the inverter. |
|  DANGER | Ensure there is no electrical connections around ports of the PV inverter before installation. |

Inverters have been tested as per AS/NZS 4777.2:2020 for three phase combinations.

4.1 Selecting the Mounting Location

4.1.1 Installation Environment Requirements

- a. With an IP66 protection rating, the inverter can be mounted indoors or outdoors.
- b. To ensure optimum operation and long service life, the ambient temperature must be below 50°C.
- c. Do not install the inverter in a rest area since it will cause noise during operation.
- d. The carrier where the inverter is mounted must be fire-proof. Do not mount the inverter on flammable building materials.
- e. Ensure that the wall meets the requirements of the inverter installation.
- f. Product label and warning symbols shall be clear to read after installation.
- g. The installation height should be reasonable, and make sure it is easy to operate and view the display.
- h. Please avoid direct sunlight, rain exposure, snow cover.



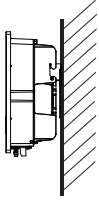
4.1.2 Mounting Requirements

Mount the inverter vertically or tilted backward by max 15°. In order to facilitate the heat dissipation of the inverter.

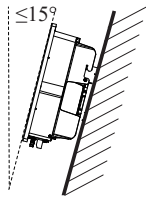


NOTICE

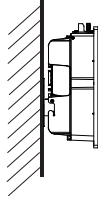
The wrong installation mode causes the inverter to be damaged or unable to work properly.



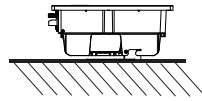
Upright ❌



Lean back $\leq 15^\circ$ ❌



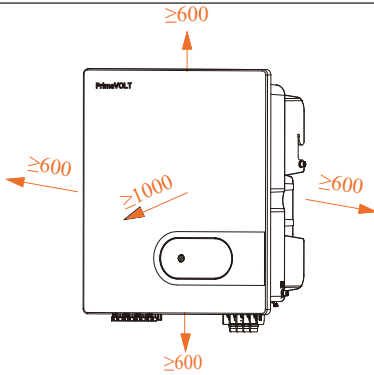
Upside-down ❌



Horizontally ❌

4.1.3 Installation Space Requirements

To ensure the inverter normally and easy to operate, there are requirements on available spaces of the inverter, e.g. to keep enough clearance. Refer to the following figures.



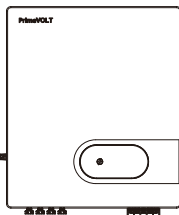
Above: 600

Below: 600

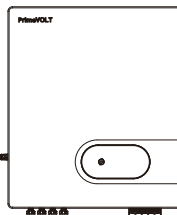
Front: 1000

Both sides: 600

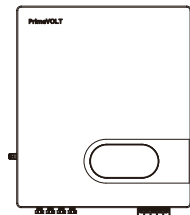
Unit: mm



600



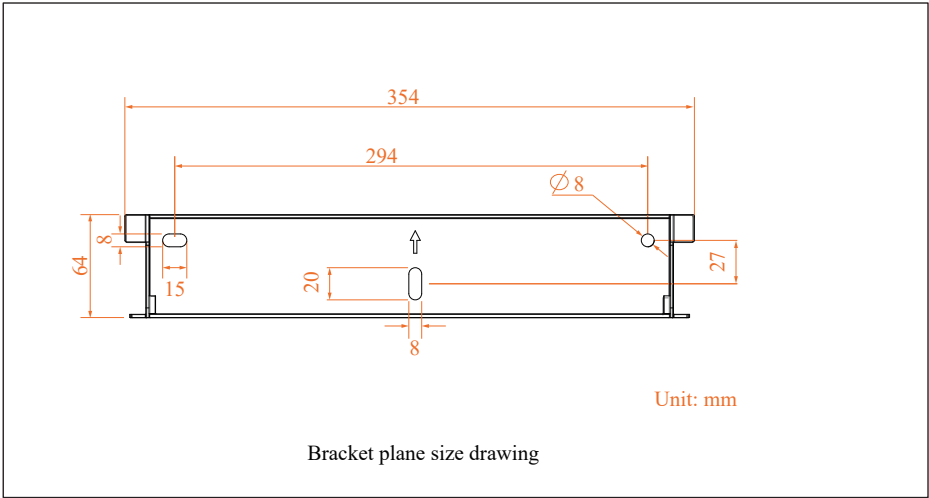
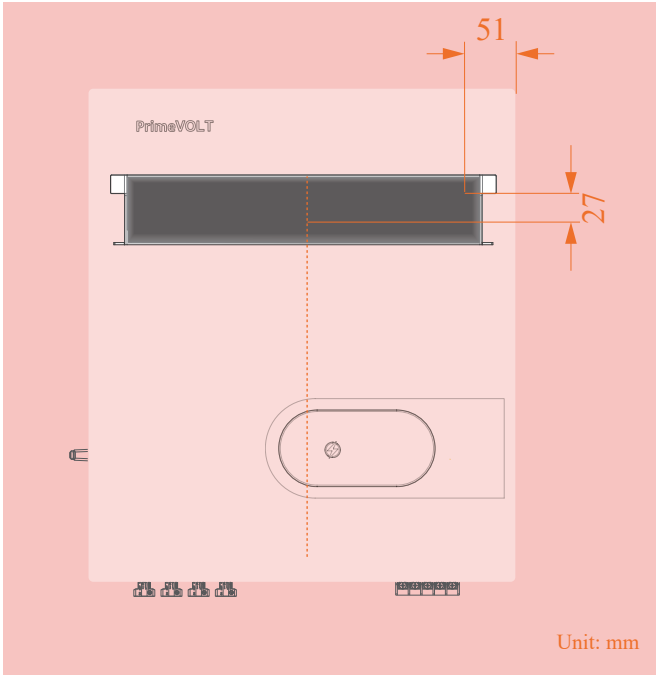
600



Installation along the same line for multiple inverter
(Only take fan cooling as an example in appearance)

Unit: mm

Installation perspective schematic



4.2 Mounting

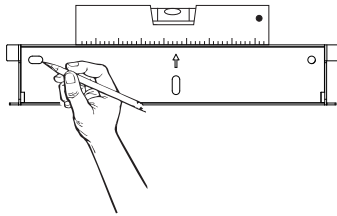
Step 1. Install the mounting bracket



DANGER

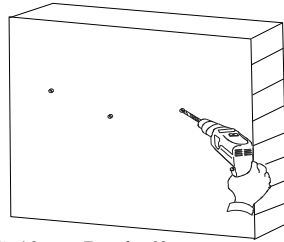
1. The walls must be fireproof and non-flammable materials, otherwise there is a fire risk.
2. Before drilling holes, check whether there are electric power pipes buried in the walls to avoid risks.

- 1) Use a horizontally ruler to mark the position of the 3 holes on the wall. Refer to Step 1. And drill 3 holes, 10mm in diameter and 60 mm in deep. Refer to Step 1 and Step 2.
- 2) Knock the expansion screw kit into the hole together with a hammer. Refer to Step 3.
Note: Do not remove the nut unit.
- 3) After tightening 2-3 buckles, the expansion bolts are tight and not loose, and then unscrew the bolts, spring washer, gasket. Refer to Step 3.
- 4) Install the bracket on the wall, the bracket screw is pointed at the expansion tube on the wall, then install the gasket and tighten screw. Refer to Step 4.



Set bracket horizontally.

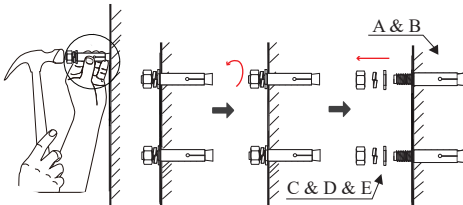
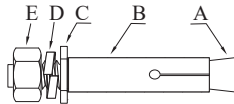
- 1** Mark the holes position on the wall.



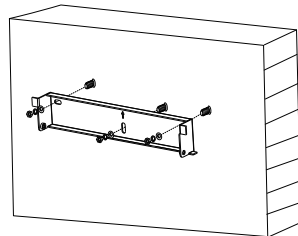
Ø: 10mm; Depth: 60mm

- 2** Drill the holes.

Expansion screw group
(M6; 3 sets)



- 3** Install the expansion screw



M6 Expansion screws; 2.5N·m

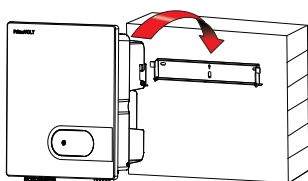
- 4** Install bracket.

Step 2. Install the inverter.

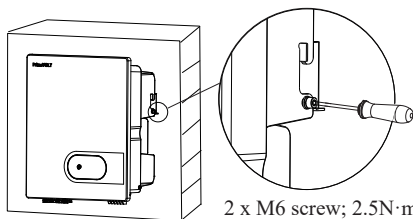
Install the inverter on the bracket accurately and tighten the screws at both sides, as shown in Step 5 and Step 6.

**CAUTION**

To prevent damage of the inverter, please hang the inverter on the bracket and confirm the reverse, do not loosen the handle until the inverter is fixed.



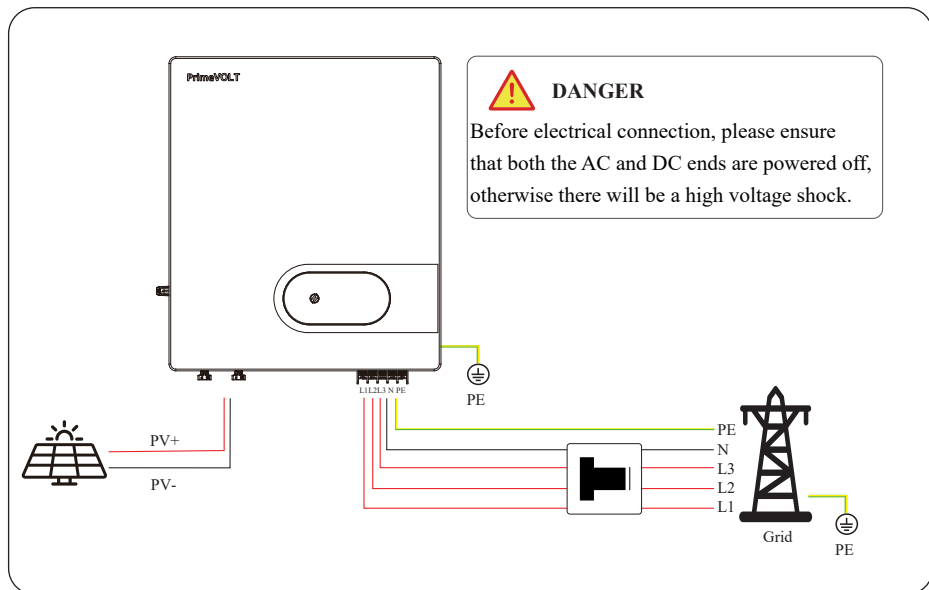
5 Install the inverter.



6 Tighten the screws at both sides.

5 Electrical Connections

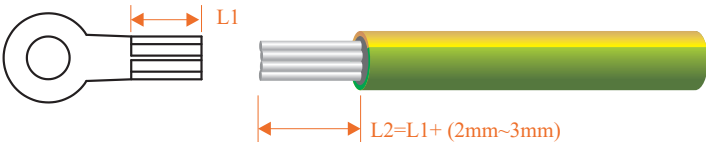
System Connection



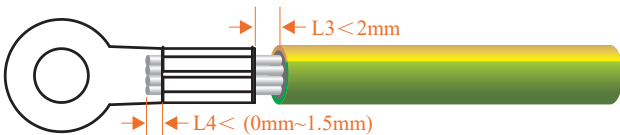
5.1 Grounding

According to the EN50178 requirement, the right side of the device has a protective grounding connection. Be sure to connect the protection ground cable to this port when installing the inverter. The user can perform the ground connection according to the on-site condition.

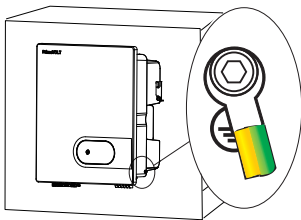
Step1 Remove an appropriate length using a wire Stripper.



Step2 Insert the exposed core wires into the crimping areas of the OT terminal and crimp them using hydraulic pliers.



Step3 Remove the ground screws from the ground points.



| Items | Remark |
|--|--|
| Screw | M6 × 12mm; 3 N·m |
| OT Terminal | OT6-6 (5K-15K); OT16-6 (17K-25K) |
| Yellow green lines | S (Yellow green lines) ≥ S (PE line of DC cable) S is the cross-sectional area. |
| Ensure that the grounding resistance is less than 10Ω. | |



WARNING

According to regulations, the secondary protection grounding can't replace the PE terminal connection of the AC cable. Ensure that both are grounded reliably; otherwise, fatal injury can occur due to the high voltage.



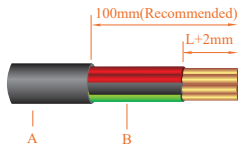
CAUTION

If the positive pole or negative pole of the PV array is required to be grounded, then the inverter output (to AC grid) must be isolated by transformer in accordance with IEC63109-1,-2 standards.

5.2 AC Connection

5.2.1 AC cable connection

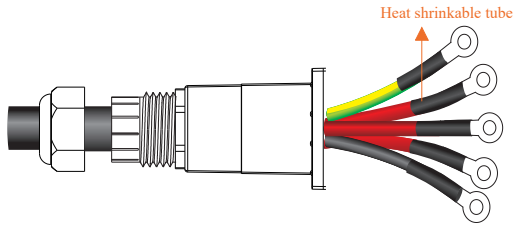
1. Measure and access the voltage and frequency of the point to ensure that it meets the grid-tied specifications of the inverter.
2. PE wire(GND) must be well grounded to ensure that impedance between Neutral wire and Earth wire be less than 10Ω .
3. Disconnect the circuit breaker or fuse from the inverter and grid-connected access point.
4. Use the copper wire.
5. Follow these steps.



| No. | Name | Model | 5K-15K | 17K-20K | 22K-25K |
|-----|--|-------------|--------|---------|---------|
| A | Wire outer diameter(mm) | | 11-18 | 24-32 | 24-32 |
| B | Cross-sectional area(mm ²) | Range | 4-6 | 6-16 | 10-16 |
| | | Recommended | 6 | 10 | 16 |

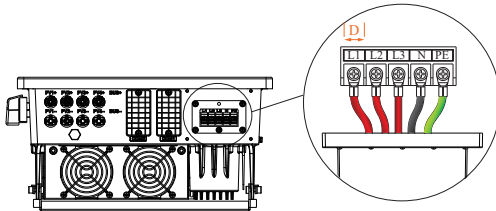
Note: It is recommended to use outdoor dedicate cables with multiple copper cores.

- 1 Select proper AC cables and OT terminals (5 wires).



Unscrew the nut of the cover and thread the AC cable (5 wires) cross the nut, threaded sleeve and the cover. Then crimp the OT terminal and use heat shrink tubing or insulation tape for protection.

- 2 Wires threading and pressing.

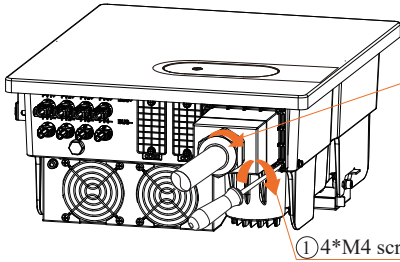


(Only take PV 25KTL-D3/G2 model as an example)

| | Screw | Torque | D |
|---------|-------|--------|--------|
| 5K-15K | M4 | 1.2N·m | 10mm |
| 17K-25K | M5 | 2N·m | 12.5mm |

- 3 Lock the AC cable to the corresponding AC terminals.

The RCD used on the main solar supply circuit should be Type A 100mA. This and all associated wiring must be installed in accordance with AS /NZS 4777.1



| | Nut | Torque |
|---------|-----|--------|
| 5K-15K | M25 | 5.5N·m |
| 17K-25K | M40 | 12N·m |

① 4*M4 screws; 1.2N·m


4

① Align the AC cover with the 4 holes and tighten it firmly with 4×M4 screws.

② Fasten the nut (waterproof cap).

5.2.2 AC Breaker and Leakage current protector

To ensure that the inverter disconnect from the grid of safely, the independent AC breaker must be configured for each inverter as a protective device.






WARNING

- Multiple inverters are not allowed to share a circuit breaker.
- Load is not allowed to connect between the inverter and the AC breaker.

| Inverter Model | Recommended Value |
|---|-------------------|
| PV 5KTL-D3/G2,PV 6KTL-D3/G2, PV 8KTL-D3/G2 | 20A |
| PV 10KTL-D3/G2,PV 10KTL-D3/G2P, PV 12KTL-D3/G2, | 32A |
| PV 15KTL-D3/G2, PV 15KTL-D3/G2P PV 17KTL-D3/G2 | 40A |
| PV 20KTL-D3/G2 | 50A |
| PV 22KTL-D3/G2, PV 25KTL-D3/G2 | 63A |

Internal current detection equipment for inverter, the inverter detects the leakage of the power grid that is greater than the reduced value, and will be disconnected quickly from the power grid. If the external installation leakage protection device is installed, its action current must be greater than equal to 300mA.

5.3 PV Connection

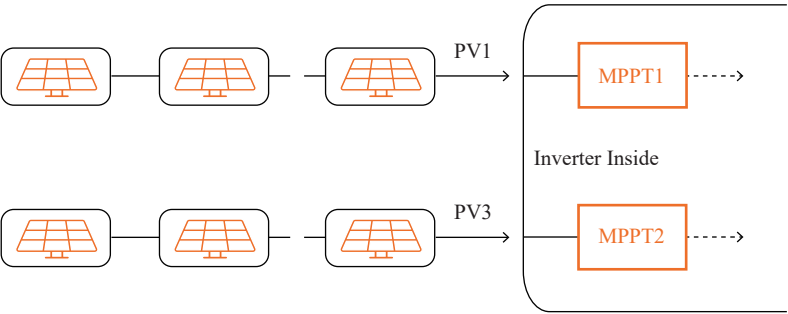
| | |
|--|---|
|  DANGER | <ul style="list-style-type: none"> PV modules generate electric energy when exposed to sunlight and can create an electrical shock hazard. Therefore, when connecting the PV modules, shield them with opaque cloth and ensure that DC switches are OFF. To avoid electric shock, don't touch the charge part and connect the terminals carefully. Before connecting power cables, ensure the AC/DC switches are OFF. When the inverter is connected to the grid, don't plug in or plug out the PV strings. Don't perform any operation until the inverter is shut down. |
|  WARNING | <ul style="list-style-type: none"> PV modules connected in series in each PV string must be of the same specifications. The maximum open-circuit voltage of each PV string must be always lower than or equal to its permitted range. The maximum short circuit current of each PV string must be always lower than or equal to its permitted range. Ensure that the positive and negative terminals of each PV strings connected to the inverter correctly. The positive or negative terminals of PV strings can't be connected with short circuit. The total output power of all PV strings can't exceed the maximum input power of the inverter. |
|  NOTICE | <ul style="list-style-type: none"> The positive and negative terminals of PV modules can't connect to PE wire (GND), otherwise, the inverter will be damaged. Ensure that the voltage of each PV string doesn't exceed 1100V under any circumstances. When the input voltage is 1000V to 1100V, the inverter will enter the standby state. When the voltage returns to the MPPT operating voltage, namely 160V-1000V, the inverter will return to the normal state. |

5.3.1 Preparation

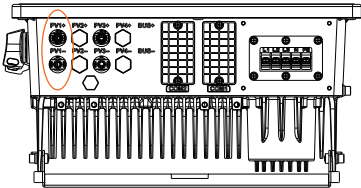
Different PV module input configuration module table

| Inverter models | PV 5KTL-D3/G2 | PV 6KTL-D3/G2 | PV 8KTL-D3/G2 | PV 10KTL-D3/G2 |
|-----------------|-------------------|-------------------|-------------------|-------------------|
| PV Strings | 2 | 2 | 2 | 2 |
| MPPT current | 15A/15A | 15A/15A | 15A/15A | 15A/15A |
| 166 panel | 1 input | 1 input | 2 inputs | 2 inputs |
| 182 panel | 1 input | 1 input | 1 input | 2 inputs |
| 210 panel | Y-type wire input | Y-type wire input | Y-type wire input | Y-type wire input |

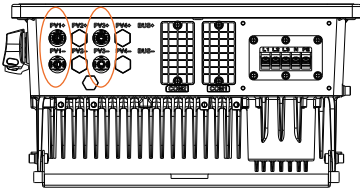
PV Strings configuration (for PV 5KTL-D3/G2, PV 6KTL-D3/G2, PV 8KTL-D3/G2 and PV 10KTL-D3/G2)



166 panel input configuration

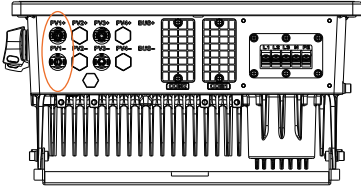


1 input: using PV1

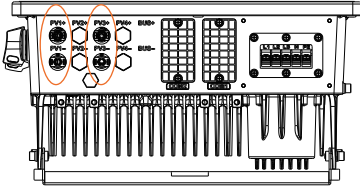


2 inputs: using PV1 and PV3

182 panel input configuration

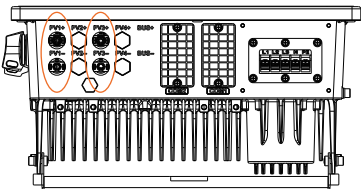


1 input: using PV1

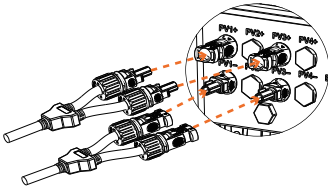


2 inputs: using PV1 and PV3

210 panel input configuration



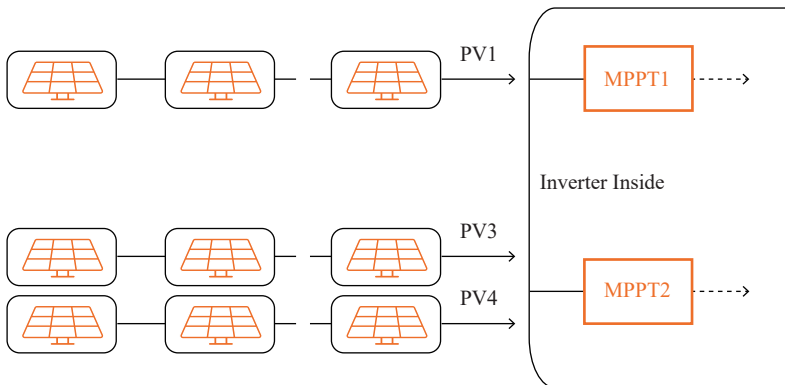
Y-type wire input: using PV1 and PV3



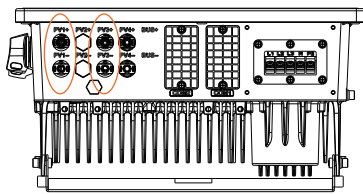
Y-type wire connection diagram

| Inverter models | PV 10KTL-D3/G2P | PV 12KTL-D3/G2 | PV 15KTL-D3/G2 |
|-----------------|-----------------|---|----------------|
| PV Strings | 3 | 3 | 3 |
| MPPT current | 15A/30A | 15A/30A | 15A/30A |
| 166 panel | 2 inputs | 3 inputs | 3 inputs |
| 182 panel | 2 inputs | 2 inputs | 2 inputs |
| 210 panel | 1 input | 1 input (nonsupport over configuration) | NA |

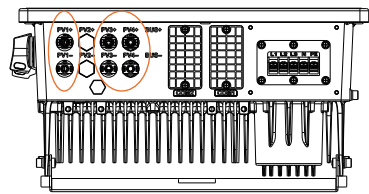
PV Strings configuration (for PV 10KTL-D3/G2P, PV 12KTL-D3/G2 and PV 15KTL-D3/G2)



166 panel input configuration

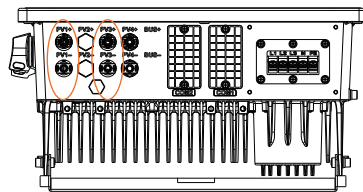


2 inputs: using PV1 and PV3



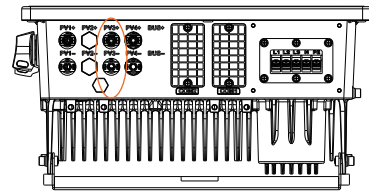
3 inputs: using PV1, PV3 and PV4

182 panel input configuration



2 inputs: using PV1 and PV3

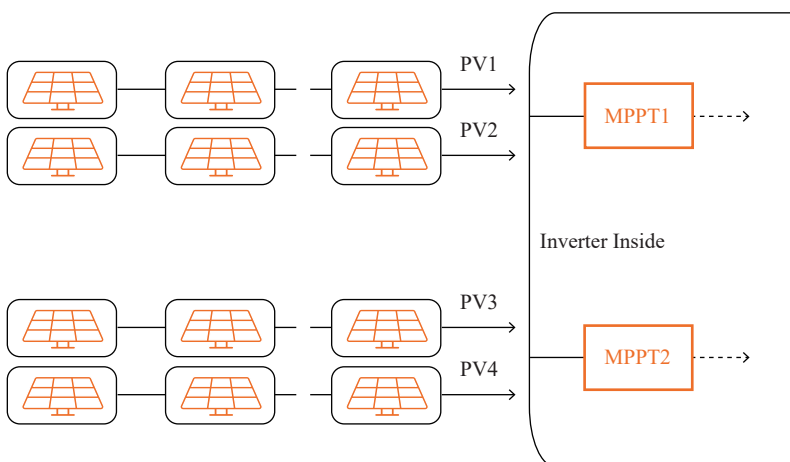
210 panel input configuration



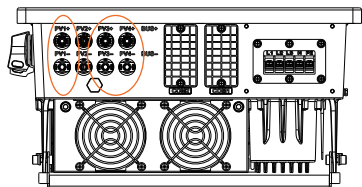
1 input: using PV3

| Inverter models | PV 15KTL-D3/G2P | PV 17KTL-D3/G2 | PV 20KTL-D3/G2 | PV 22KTL-D3/G2 | PV 25KTL-D3/G2 |
|-----------------|-----------------|----------------|----------------|----------------|---|
| PV Strings | 4 | 4 | 4 | 4 | 4 |
| MPPT current | 30A/30A | 30A/30A | 30A/30A | 30A/30A | 30A/30A |
| 166 panel | 3 inputs | 3 inputs | 4 inputs | 4 inputs | 4 inputs |
| 182 panel | 2 inputs | 3 inputs | 3 inputs | 4 inputs | 4 inputs |
| 210 panel | 2 inputs | 2 inputs | 2 inputs | 2 inputs | 2 inputs (nonsupport over configuration) |

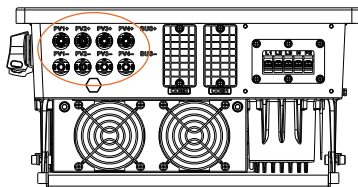
PV Strings configuration (for PV 15KTL-D3/G2P, PV 17KTL-D3/G2, PV 20KTL-D3/G2, PV 22KTL-D3/G2 and PV 25KTL-D3/G2)



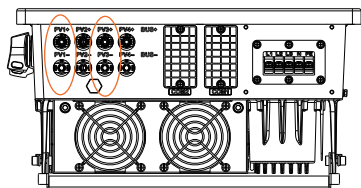
166 panel input configuration



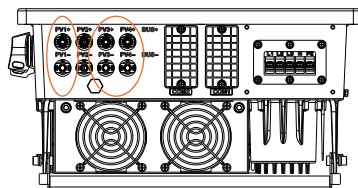
3 inputs: using PV1, PV3 and PV4



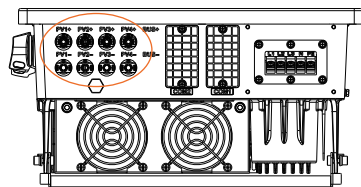
4 inputs: using PV1, PV2, PV3 and PV4

182 panel input configuration

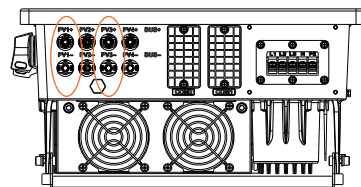
2 inputs: using PV1 and PV3



3 inputs: using PV1, PV3 and PV4



4 inputs: using PV1, PV2, PV3 and PV4

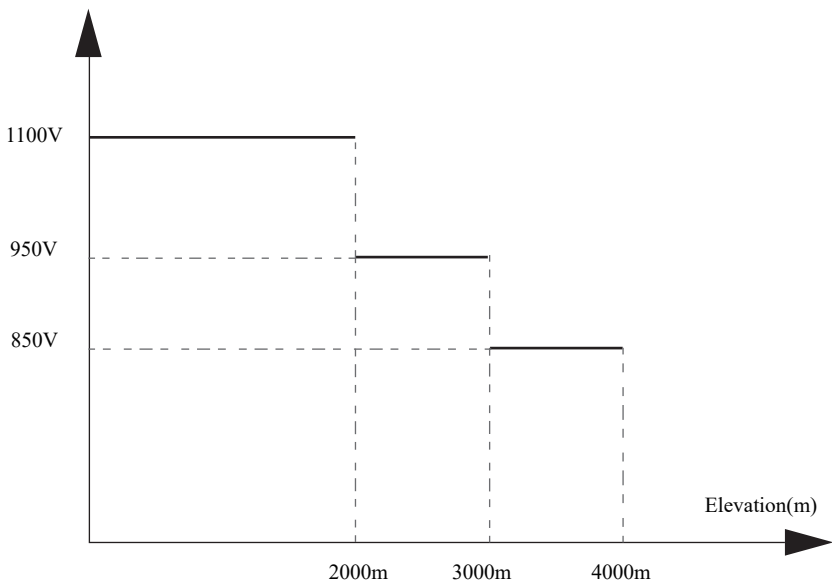
210 panel input configuration

2 inputs: using PV1 and PV3

Before connecting the PV input to the inverter, ensure that the package meets the following electrical specifications.

| Inverter module | Limit of each input open-circuit voltage | Maximum allowable input terminal current |
|-----------------|--|--|
| All | 1100V | 20A |

Open-circuit voltage altitude derating curve of the inverter as shown in the following figure.



Open-circuit voltage altitude derating curve of the inverter

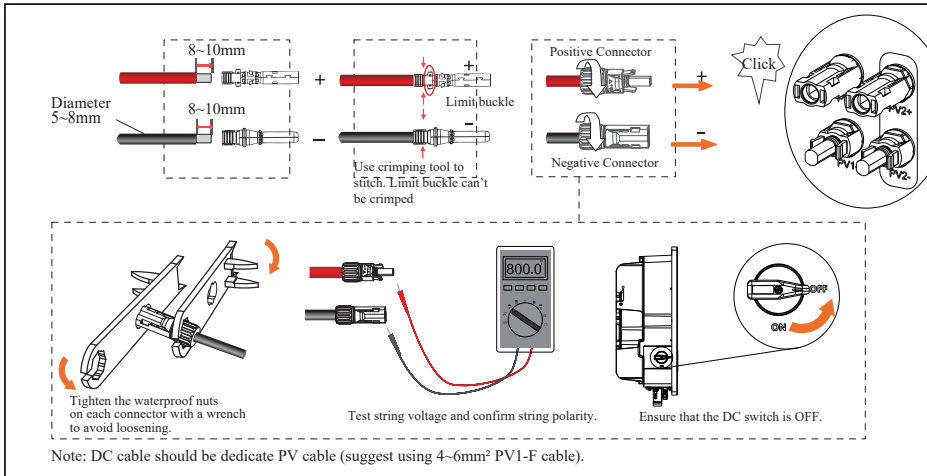


NOTE

To ensure that the inverter reaches the enclosure of IP66, it can only use the connector provided by supply.

5.3.2 Connection

PV connection please refer to below.



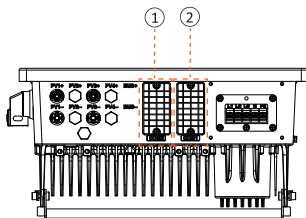
5.4 Communication Connection

5.4.1 Communication Mode Description

You can use the following communication modes to implement communication:

Bluetooth, WIFI, GPRS and RS485 all of which are described as follows.

- Bluetooth Module**
 You can turn on the Bluetooth function of the mobile phone, and set parameters and monitor data of the inverter through the mobile APP.
- WIFI/GPRS/RS485 Modules**
 Through DB9 communication interface is transferred to other communication modules to monitor the inverter.

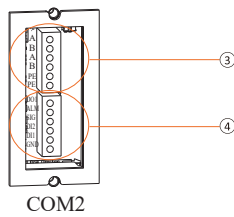


Natural cooling series

(Only take the Natural cooling as an example in appearance)

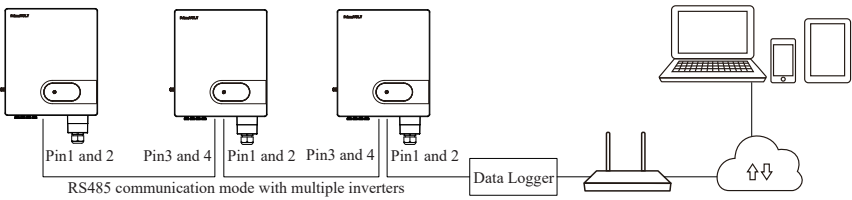
| Number | Description |
|--------|--|
| ① | COM2 (for RS485 communication) |
| ② | COM1 (for WIFI/GPRS model communication) |

5.4.2 RS485 Installation



| Number | Description |
|--------|--|
| ③ | For RS485 connection |
| ④ | For DRM (Demand response mode for Australia application) |

The multiple inverter network and RS485 communication is as follows:



Install RS485 following this steps:

Step1 Loosen screws and remove the cover plate.

Step2 Wires making, threading and wiring.

Step3 Insert the 6-Pin terminal into the RS485 communication port.

Step4 Install the RS485 cover.

Step5 RS485 communication address setting.

1

3

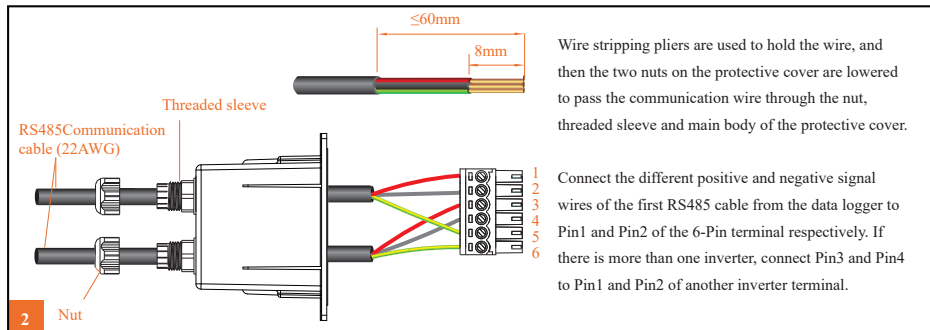
| | |
|---|----|
| 1 | A |
| 2 | B |
| 3 | A |
| 4 | B |
| 5 | PE |
| 6 | PE |

| | |
|---|---------|
| 1 | DO1 |
| 2 | ALM |
| 3 | EXT_SIG |
| 4 | DI2 |
| 5 | DI1 |
| 6 | GND |

2 × M4 screw; 0.8N·m

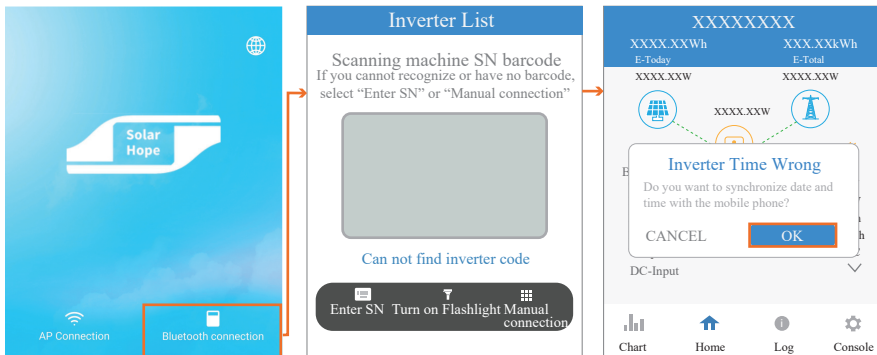
0.8~1.5N·m

4

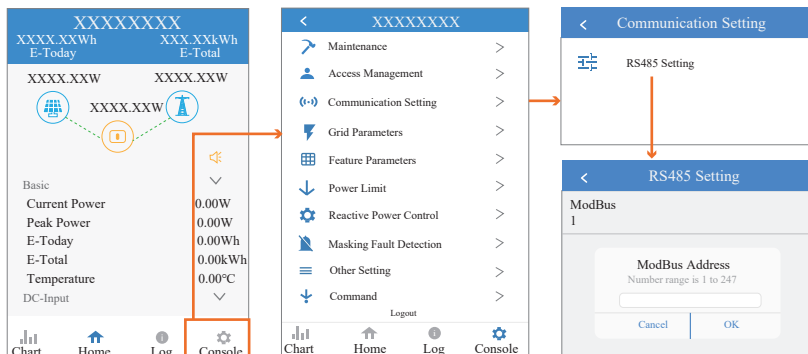


- ① Download the APP in either of the following ways
 - Scan the QR code on the inverter to download the APP
 - Download the APP from the APP store or Google Play.

Note: You need to grant all access rights in all pop-up windows when installing the APP or setting your phone.
 - ② Power on the inverter.
 - ③ Connect the inverter. Open the bluetooth on your phone, then open the APP.
- Then follow the instructions below:

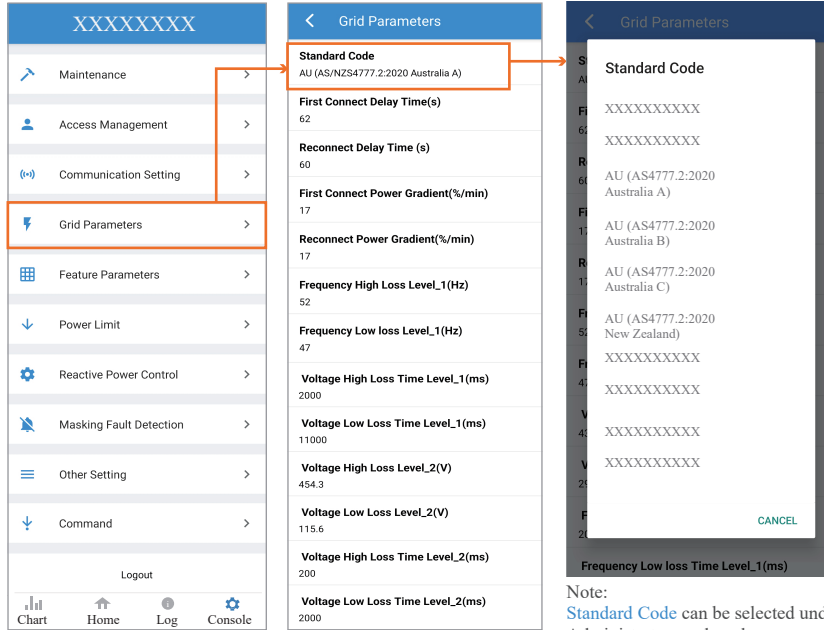


- ④ Go to **Console > Communication Setting > RS485 Setting > Modbus** page, check the Modbus address (the default value is 1), and click to modify the address as required if necessary.



5.4.3 Country code configuration (only for Administrator)

Go to [Console > Grid Parameters](#) page. Follow the steps below to configure the country code for Australia only for Administrator status.



Note:

For Australian Market: Region settings must be selected during commissioning. To comply with AS/NZS 4777.2:2020. Please contact your local electricity grid operator on which region to select.

• Note on Regional Safety Settings

Regional Safety Setting is a mandatory selection when configuring the system—the system will not operate if it is not selected. You may be prompted to update the inverter software. Do this if requested. For convenience the Regional Safety Settings are set by selecting the Region from the list provided in the app. The list is maintained with the latest settings required by AS4777.2:2020. Selection of a region automatically selects Power Quality Response Mode settings, including:

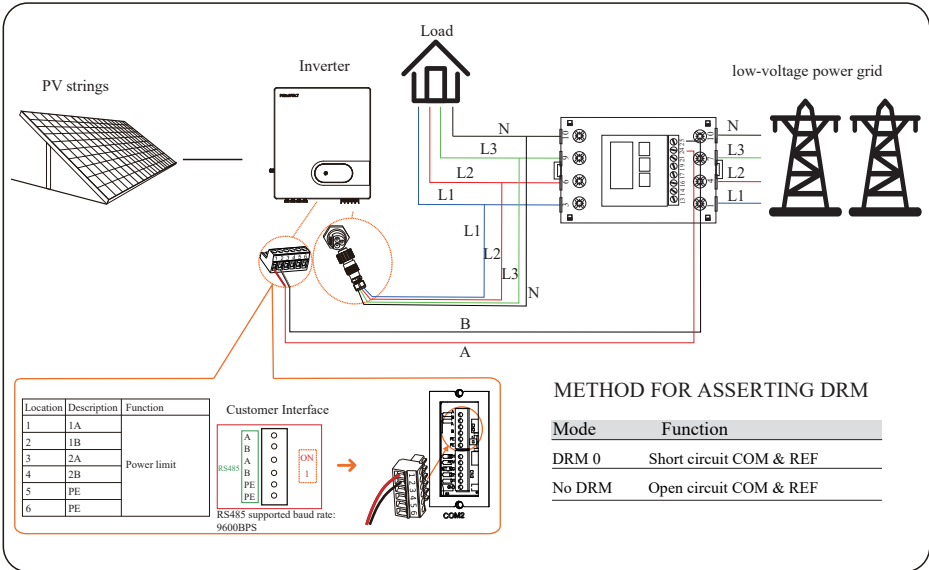
- Voltage balance mode (where available)
- Voltage and frequency limits
- Sustained operation for frequency variations
- Grid Protection
- Power Rate Limits
- Frequency Response Limits
- Voltage Disturbance Withstand
- Volt-Var response
- Volt-Watt response
- Fixed Power Factor Mode
- Reactive Power mode

Note

The local grid operator may request a non-standard safety setting for an installation. If no, contact our company for assistance in changing settings.

5.5 Power limit (optional)

5.5.1 Wiring diagram of Inverter+Meter



- Set the “Power control” function to “Digital Power Meter”
 - Set “Meter location” function to “On Grid”
 - Set “Meter Type”
 - Set “Power flow direction” function to “From grid to inverter”
 - Set “Digital meter Modbus address”
 - Set “Maximum feed-in grid power” if needed
- When “Power Control” is set to “Digital Power Meter”, the RS485 of inverter will change to a Host that will communicate with digital meter using ModbusRTU Protocol (9600 BPS, 8 data bit, 1 stop bit, no parity data format) through communication address 1. Please make sure that the meter is set to Modbus-RTU, 9600, 8-N-1 with address 1. For details of digital meter setting operation, please refer to the meter user manual.

<

Power Limit

Power control

Digital Power Meter

Meter location

On Grid

Meter Type

CHINT/DDSU666

Power flow direction

From grid to inverter

Digital meter Modbus address

1

Maximum feed in grid power(W)

0

5.6 GPRS/WIFI/LAN Module Connection

For details, please refer to the corresponding Module Installation Guide in the packing.

6 Startup/Shutdown Procedure

6.1 Check before startup/shutdown Procedure

Check following this steps after installation.

| No. | Items |
|-----|---|
| 1 | The inverter is firmly installed. |
| 2 | There is enough heat dissipation space, no external objects or parts left on the inverter. |
| 3 | It is convenient for operation and maintenance. |
| 4 | The wiring of the system is correct and firm. |
| 5 | Check whether the DC and AC connections are correct with a multimeter, and whether there is a short circuit, break, or wrong connection. |
| 6 | Check whether the waterproof nuts of each part are tightened. |
| 7 | The vacant ports have been sealed; all gaps at the cable inlet and outlet holes have been plugged with fireproof/waterproof materials, such as fireproof mud. |
| 8 | All safety labels and warning labels on the inverter are complete and without occlusion or alteration. |

6.2 Startup Procedure

Startup procedure following the procedures :

Supply Main Switch

See if there's any on site
(The figure is only for reference)

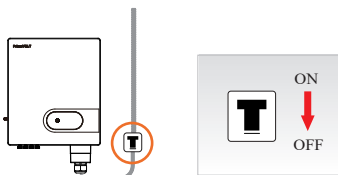
①



AC Circuit Breaker

Switch to ON
(The figure is only for reference)

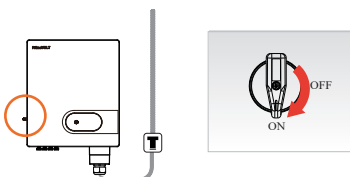
②



PV Switch

Switch to ON

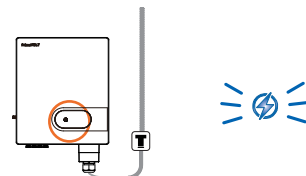
③



LED icon

Blue on (normal status)

④



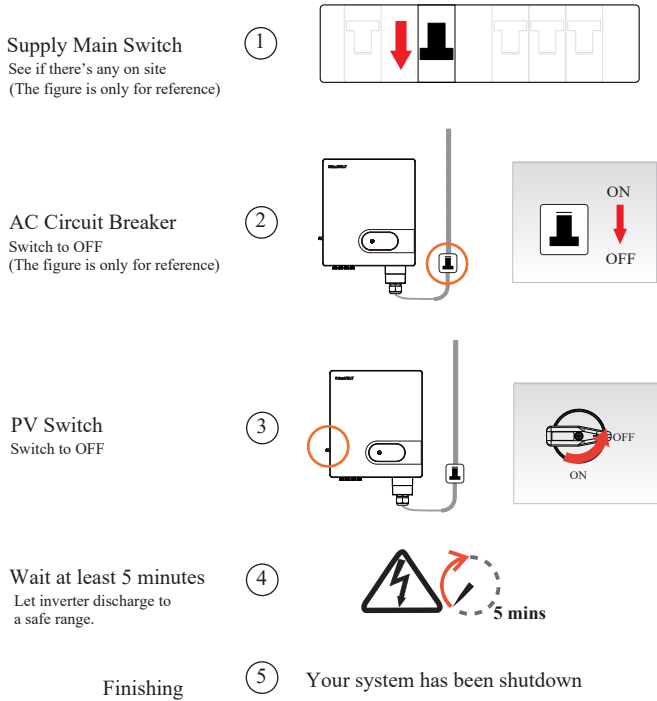
Finishing

⑤

Your system has been started up

6.3 Shutdown Procedure

It may be necessary to shut down the inverter sometimes during the daily use. If necessary, please follow the procedures:

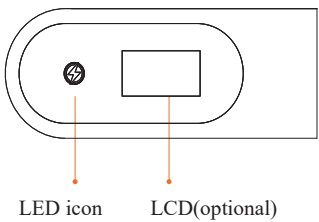


WARNING

After the inverter is powered off, the heat sink generates heat and there is excess electricity in the inverter. To avoid electric shocks and burns, powered off inverter for at least 10 minutes before performing operations.

7 User Interface

Inverter display panel is consisted of LED icon and LCD (optional).



7.1 LED

| LED status | Descriptions | LED status | Descriptions |
|-------------------------------|--|---|--|
| Blue led blink slowly 1s/time | Standby or startup state (not connected to the grid) | Red led blink slowly 1s/time | Output side fault |
| Blue on | Grid-tied status | Red led blink quickly 0.25s/time | Input side fault |
| Green on | Power limited status | Red led on | System internal fault |
| | | Red/Green/Blue light alternately (1 color /0.25s) | Burning code(Master/Slave) Control power set up (lasts 1second) |

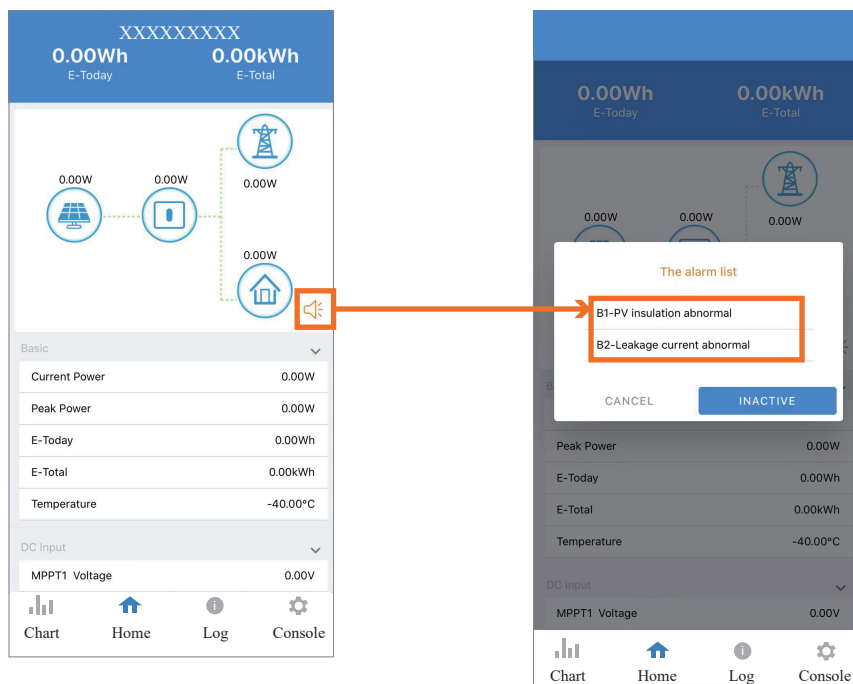
Warning Table

| Status | Details | Warning code | Status | Details | Warning code |
|---|--|--------------|------------|----------------------------------|--------------|
| Red led blink (slowly) 1s every times | Grid over voltage | A0 | Red led on | DC link voltage unbalance | C9 |
| | Grid under voltage | A1 | | DC-link over voltage | CA |
| | Grid absent | A2 | | Internal communication error | CB |
| | Grid over frequency | A3 | | Software version incompatibility | CC |
| | Grid under frequency | A4 | | EEPROM fault | CD |
| | Grid unbalance | A6 | | Sampling inconsistency | CE |
| | Grid over mean voltage | A7 | | Invert circuit abnormal | CF |
| | Grid N abnormal | A8 | | Boost circuit abnormal | CG |
| Red led blink (quickly) 0.25s every times | PV over voltage | B0 | / | Data logger lost | CH |
| | Insulation resistance abnormal (Earth Fault) | B1 | | Meter lost | CJ |
| | Leakage current abnormal (Earth Fault) | B2 | | Fan abnormal | C8 |
| | PV Strings reverse | B7 | | Remote off | CN |
| | PV under voltage PV | B4 | | | |
| Red led on | Control power abnormal | C0 | | | |
| | Electric arc abnormal | C1 | | | |
| | DC bias current abnormal | C2 | | | |
| | Inverter relay abnormal | C3 | | | |
| | Inverter over temperature | C5 | | | |
| | Leakage current HCT abnormal | C6 | | | |
| | System fault | C7 | | | |

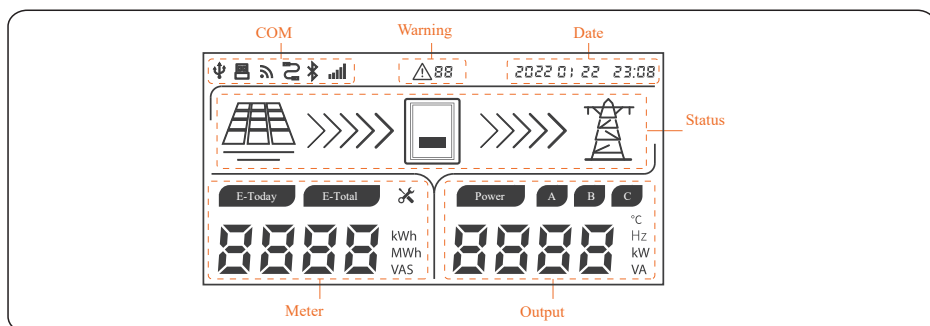
Note: If you select a machine with an LCD screen, the warning code will be displayed on the LCD screen.

Non-LCD screen models need to enter the app to view the corresponding warning code.



Error warning will be reported and displayed on APP as well, customers can connect to inverter and check warning details on APP.



7.2 LCD



COM

When WIFI/GPRS/Bluetooth is transferring data, icon  will be ON, while no data transmission, the icon will be off after 10s. When RS485 is transferring data, icon  will be ON, while no data transmission, the icon will be off after 10s.


Warning


When warning is triggered, icon will be illuminated: from left to right the first bit could be A/ B/ C, it stands for warning type, and the second bit is warning code, please refer to warning code in table for details.


Date

When external communications are normal and time zone is set correctly, the built-in clock of inverter will be synchronized with server's time. Without external communications, it is recommended to use the mobile app to set up time through connecting Bluetooth to the inverter.





Status

Icon  stands for PV strings, when inverter is standby status, MPPT voltage of the PV string will be displayed in Meter zone.




Icon  stands for grid, when voltage and frequency of power grid is in normal range, the icon keeps on, or else, it blinks; when there is no voltage, the icon will be off.

Icon  stands for energy flow, when inverter is in normal status, the icon will be on, or else it will be off.

Meter

| | |
|---|---|
| Normal status: today and total energy, MPPT voltage and current are showed in turn. |  |
| Standby status: counter down value before inverter start up. |  |
| Any status: setting parameters via APP, the screen keeps for 5 seconds. |  |
| Normal status: output power, grid voltage and current are showed in turn. |  |

8 Troubleshooting and Maintenance

| | |
|--|---|
|  WARNING | <p>Before maintaining and commissioning inverter and its peripheral distribution unit, switch off all the charged terminals of the inverter and wait at least 10 minutes after the inverter is powered off. Otherwise there will be a high voltage shock.</p> |
|  DANGER | <ul style="list-style-type: none"> Wrong maintenance will result in personnel injury or equipment damage! Before performing any maintenance operations, you must follow these steps: First, disconnect the AC circuit breaker on the grid side, and then disconnect the DC switch. Wait at least 10 minutes after the inverter is powered off, otherwise there will be a high voltage shock. Use testing equipment to make sure there no voltage or current. |
|  NOTICE | <ul style="list-style-type: none"> Comply with ESD protection specifications and power distribution ESD bracelets. Avoid unnecessary contact with the circuit board. Touching printed circuit boards or other electrostatic sensitive components may cause damage during the process. |

8.1 Troubleshooting

When the inverter has an exception, its basic common warning and exception handling methods are shown below.

| Alarm Information | Measures Recommended |
|-----------------------|---|
| A0-Grid over voltage | <ol style="list-style-type: none"> If the alarm occurs accidentally, possibly the power grid is abnormal accidentally. No extra action is needed. If the alarm occurs repeatedly, contact the local power station. After receiving approval of the local power bureau, revise the electrical protection parameter settings on the inverter through APP. If the alarm persists for a long time, please confirm that: <ol style="list-style-type: none"> The AC circuit breaker is not tripping frequently (generating an instantaneous high voltage); The wiring of AC cable is followed by the guide in user manual, and high cable impedance can cause a voltage rise on the grid; The voltage of three-phase inverter between the neutral wire and the ground line exceeds 30V; and please correct the grid wiring if it exceeds; <p>If the above problems are excluded, please contact customer service to report a repair.</p> |
| A1-Grid under voltage | <ol style="list-style-type: none"> If the alarm occurs accidentally, possibly the power grid is abnormal temporarily. No extra action is needed. If the alarm occurs repeatedly, contact the local power station. After receiving approval of the local power bureau, revise the electrical protection parameter settings on the inverter through APP. If the alarm persists for a long time, please confirm that: <ol style="list-style-type: none"> The AC circuit breaker is disconnected; The AC circuit breaker is damaged (under closed status, please check that the voltage of the inlet is consistent with that of the outlet); The AC terminals are in good contact. <p>If the actual measuring voltage is within the specified range, please contact customer service to report a repair.</p> |

| | |
|---|--|
| A2-Grid absent | <p>1. If the alarm occurs accidentally, possibly the power grid is abnormal temporarily. No extra action is needed.</p> <p>2. If the alarm occurs repeatedly, contact the local power station. After receiving approval of the local power bureau, revise the electrical protection parameter settings on the inverter through APP.</p> <p>3. If the alarm persists for a long time, please confirm:</p> <ol style="list-style-type: none"> 1) The AC circuit breaker is disconnected; 2) The AC circuit breaker is damaged (under closed status, please check that the voltage of the inlet is consistent with that of the outlet); 3) The AC terminals are in good contact; 4) Whether the power supply line failure. <p>If exclude all possibilities, please contact customer service to report a repair.</p> |
| A3-Grid over frequency | <p>1. If the alarm occurs accidentally, possibly the power grid is abnormal temporarily. No extra action is needed.</p> <p>2. If the alarm occurs repeatedly, contact the local power station. After receiving approval of the local power bureau, revise the electrical protection parameter settings on the inverter through APP.</p> |
| A4-Grid under frequency | <p>1. If the alarm occurs accidentally, possibly the power grid is abnormal temporarily. No extra action is needed.</p> <p>2. If the alarm occurs repeatedly, contact the local power station. After receiving approval of the local power bureau, revise the electrical protection parameter settings on the inverter through APP.</p> <p>3. If the alarm persists for a long time, please contact the customer service.</p> |
| A6-Grid abnormal (Only for three-phase inverter) | <p>1. If the alarm occurs accidentally, possibly the power grid is abnormal temporarily. No extra action is needed.</p> <p>2. If the alarm occurs repeatedly, please:</p> <ol style="list-style-type: none"> 1) Measuring three-phase voltages (L1-N, L2-N, L3-N) and check whether the imbalance is more than 30%. If yes, please contact energy company. 2) Measuring three-phase voltages at input and output sides of AC circuit breaker to check whether breaker is damaged. If yes, please replace a new breaker. 3) Short circuit input and output ports of neutral wire on AC breaker, then check the alarm status. If it returns normal, please replace a 3-pole breaker and keep neutral wire shorting. If not, please contact customer service. |
| A7-Grid over mean voltage | <p>1. If the alarm occurs occasionally, the inverter can be automatically recovered. No extra action is needed.</p> <p>2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service.</p> |
| A8-Grid N abnormal | <p>1. If the alarm occurs occasionally, the inverter can be automatically recovered. No extra action is needed.</p> <p>2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact the customer service center.</p> |
| B0-PV over voltage | Check whether the maximum input voltage of a single PV string exceeds the MPPT working voltage. If yes, modify the number of PV module connection strings. |
| B1-PV insulation abnormal | <p>1. If the alarm occurs accidentally but the inverter can generate power, check whether the installation environment of cables and the components are damp. Please improve the installation environment.</p> <p>2. If the alarm occurs repeatedly and the inverter can generate electricity occasionally, check whether the positive and negative polarity of the PV component are short-circuited to ground. And check if the component is damaged or the connection cable is broken.</p> <p>3. If the alarm continues and equipment cannot generate power, please contact customer service to report a repair.</p> |
| B2-Leakage current abnormal | <p>1. If the alarm occurs accidentally but the inverter can generate power, probably the power grid causes. inverter can be automatically recovered. No extra action is needed.</p> <p>2. If the alarm occurs frequently and is accompanied by an insulation impedance alarm. Check for the abnormal alarm of the insulation.</p> <p>3. If the alarm continues and the equipment cannot generate electricity, please contact customer service to export a repair.</p> |
| B4-PV under voltage | <p>1. If occurs when the light is weak (such as the early morning or evening, rainy weather and dust storms), the component voltage is lower than normal. No extra action is needed.</p> <p>2. If not related to light intensity, please check whether the string has a short circuit or open circuit.</p> |
| B7-PV string reverse | Check and modify the positive and negative polarity of the input string. |

| | |
|-----------------------------------|---|
| C0-Internal power supply abnormal | <p>1. If the alarm occurs occasionally, the inverter can be automatically recovered. No extra action is needed.</p> <p>2. If the alarm occurs repeatedly, please contact customer service.</p> |
| C1-Electric arc abnormal | <p>If the alarm occurs, the inverter cannot work properly. Please contact customer service.</p> |
| C2-Inverter over dc-bias current | <p>1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required.</p> <p>2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service.</p> |
| C3-Inverter relay abnormal | <p>1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required.</p> <p>2. If the alarm occurs repeatedly, for single-phase inverter, check whether the live line and neutral line on the AC side is reversed. For three-phase inverter, check the voltage of the live line and neutral line to the ground. If the grid side is normal, please contact customer service to report a repair.</p> |
| C5-Inverter over temperature | <p>1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required.</p> <p>2. If the alarm occurs repeatedly, please check whether the installation site has direct sunlight, bad ventilation, or high ambient temperature (such as installed on the parapet). Yet, if the ambient temperature is lower than 45° C and the heat dissipation and ventilation is good, please contact customer service.</p> |
| C6-GFCI abnormal | <p>1. If the alarm occurs occasionally, it could have been an occasional exception to the external wiring. The inverter can be automatically recovered. No action is required.</p> <p>2. If it occurs repeatedly or cannot be recovered for a long time, please contact customer service.</p> |
| C7-System type error | <p>If the alarm occurs, and the inverter cannot work, please restart the inverter. If the alarm continues, please contact customer service.</p> |
| C9-Unbalance Dc-link voltage | <p>1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required.</p> <p>2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service.</p> |
| CA-Dc-link over voltage | <p>1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required.</p> <p>2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service.</p> |
| CB-Internal communication error | <p>1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required.</p> <p>2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service.</p> |
| CC-Software incompatibility | <p>1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required.</p> <p>2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service.</p> |
| CD-Internal storage error | <p>1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required.</p> <p>2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service.</p> |
| CE-Data inconsistency | <p>1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required.</p> <p>2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service.</p> |

| | |
|----------------------|---|
| CF-Inverter abnormal | 1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service. |
| CG-Boost abnormal | 1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service. |
| CH-Data logger lost | 1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service. |
| CJ-Meter lost | If the alarm occurs, please check the RS485 connection. If it is abnormal, please revise the connection; if it is normal, please contact customer service. |
| C8-Fan abnormal | 1. If the alarm occurs occasionally, please restart the inverter. 2. If it occurs repeatedly or cannot be recovered for a long time, check whether the external fan is blocked by other objects. Otherwise, please contact customer service. |

8.2 Maintenance

Routine Maintenance of inverter

| Check Item | Check Content | Maintain content | Maintenance Interval |
|---------------------------------|--|--|----------------------|
| Inverter output status | Statistically maintain the status of electrical yield, and remotely monitor its abnormal status. | NA | Weekly |
| Inverter appearance | Check periodically and ensure that the heat sink is free from dust and blockage. | Clean periodically the heat sink. | Yearly |
| Inverter running status | a. Check that the inverter is not damaged or deformed. b. Check for normal sound emitted during inverter operation. c. Check and ensure that all inverter communications are running well. | If there is any abnormal phenomenon, replace the relevant parts. | Monthly |
| Inverter Electrical Connections | a. Check and ensure that AC, DC, and communication cables are securely connected; b. Check and ensure that PGND cables are securely connected; c. Check and ensure that cables are intact and free from aging; | If there is any abnormal phenomenon, replace the cable or re-connect it. | Semiannually |

Fan Maintenance

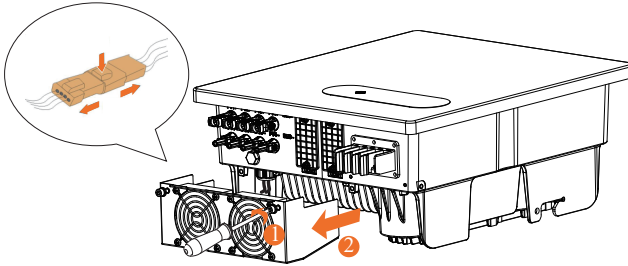
When the external fan of the inverter can't work normally, the inverter may not cool effectively. It may affect the efficiency of the inverter or cause derating operation. Keep the fan clean and replace the damaged fan in time.

Step1 Shutdown the inverter.

Step2 Refer to electrical connection installation and disconnect the inverter in the opposite steps.

Step3 Refer to mechanical installation and remove the inverter in the opposite steps.

Step4 Screw down two security screws anticlockwise which on the inverter fan bracket .



(Only take PV 25KTL-D3/G2 model as an example)

Step5 Use a soft brush to clean the fan. If you need to replace the fan, use a screwdriver to unscrew the fan bracket and remove the fan.



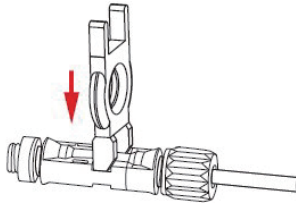
Step6 Install the new fan in the opposite steps, and then power on the system.

-----Ending

Inverter Uninstall

Inverter uninstall requires below procedure:

Step1: Disconnection all electric connections including these of communications cables, DC input cables, AC output cables and the PGND cables.



Note:

When uninstalling DC input connectors, insert removal wrench into the bayonet shown in Figure, press the wrench down, and take out the connector.

Step2: Remove the inverter from its rear panel.

Step3: Remove the rear panel.



WARNING

Before uninstalling all electric connections, DC input connector, AC output cables and the PGND cables, please ensure that both the AC terminal and the DC terminal are powered off. And the DC switch is OFF to avert equipment damage or personal injury.

Appendix

| MODEL | PV 5KTL-D3/G2 | PV 6KTL-D3/G2 | PV 8KTL-D3/G2 | PV 10KTL-D3/G2 |
|---|--|-------------------|-------------------|-------------------|
| Input(PV) | | | | |
| Max. PV configuration (STC ¹) | 133% | | | |
| Max. PV power voltage (V) | 1100V | | | |
| Rated input voltage (V) | 620V | | | |
| Max. input current Imp(A) | 15A/15A | 15A/15A | 15A/15A | 15A/15A |
| Max. short-circuit current Isc(A) | 20A/20A | 20A/20A | 20A/20A | 20A/20A |
| Starting voltage/Min. operating voltage | 180V/160V | | | |
| MPPT operating voltage range | 160V-1000V | | | |
| MPPT voltage range @full load (V) | 170V-850V | 210V-850V | 270V-850V | 340V-850V |
| Max. numbers of input strings | 2 (1/1) | | | |
| Numbers of MPPT input | 2 | | | |
| Maximum Feedback Current(A) | 0A | | | |
| Output(Grid) | | | | |
| Rated output power | 5KW | 6KW | 8KW | 10KW |
| Rated output apparent power | 5KVA | 6KVA | 8KVA | 10KVA |
| Max. apparent power | 5.5KVA | 6.6KVA | 8.8KVA | 11.2KVA |
| Max. active power | 5.5KW | 6.6KW | 8.8KW | 11.2KW |
| Max. output current | 3*8.4A | 3*10.1A | 3*13.4A | 3*17A |
| Rated output current | 3*7.6/7.2/6.9A | 3*9.1/8.7/8.3A | 3*12.1/11.6/11.1A | 3*15.2/14.5/13.9A |
| Inrush Current | 40A | 40A | 40A | 40A |
| Maximum Output Overcurrent Protection | 40A | 40A | 40A | 40A |
| Maximum Output Fault Current | 60A | 60A | 60A | 60A |
| Rated output voltage (V) | 380V/400V/415V 3W+N+PE | | | |
| AC voltage range | 260V-510V(Adjustable) | | | |
| Rated grid frequency | 50Hz/60Hz | | | |
| Grid frequency range | 45Hz-55Hz/55Hz-65Hz | | | |
| THDI | <3% Rated power | | | |
| Current DC off-sets | <0.5%In or 50mA | | | |
| Adjustable power factor range | >0.99@full load power (adjustable 0.8LG-0.8LD) | | | |
| Protection | | | | |
| DC switch | Support | | | |
| Anti-islanding protection | Active Frequency Drift | | | |
| AC Overcurrent protection | Support | | | |
| AC short circuit protection | Support | | | |
| DC reverse connection | Support | | | |
| Surge Arrester | DC Type II/III (Optional); AC Type II/III (Optional) | | | |
| Insulation impedance detection | Support | | | |
| Leakage current protection | Support | | | |
| General | | | | |
| Topology | Support | | | |
| Protection grade | IP66 | | | |
| Power consumption at night | <1W | | | |
| Cooling type | 5~15K(natural-cooling)/15~25K(air-cooling) | | | |
| Operating temperature range | -25°C-60°C(Maximum 45°C without derating) | | | |
| Operating relative humidity range | 0~100% | | | |
| Max. operation altitude | 4000m | | | |
| Noise emission | <30dB representative value (natural-cooling) | | | |
| Dimensions (W*H*D) | (398*460*190) mm | | | |
| Weight (kg) | 16.8 | | | |
| Display & Communication | | | | |
| Display | LED/LCD(Optional) | | | |
| Communication | Bluetooth&WiFi,RS485/GPRS/4G(Optional) | | | |
| Protective Class | class I | class I | class I | class I |
| AC Overvoltage Category | Category III | Category III | Category III | Category III |
| DC Overvoltage Category | Category II | Category II | Category II | Category II |
| Inverter Topology | Non-isolated | Non-isolated | Non-isolated | Non-isolated |
| Grid Connection Standard | AS/NZS4777.2-2020 | AS/NZS4777.2-2020 | AS/NZS4777.2-2020 | AS/NZS4777.2-2020 |

1 STC : Standard Test Conditions.

| MODEL | PV 10KTL-D3/G2P | | PV 12KTL-D3/G2 | PV 15KTL-D3/G2 |
|--|---|-------------------|-------------------|----------------|
| Input(PV) | | | | |
| Max. PV configuration(STC ¹) | 133% | | | |
| Max. PV power voltage (V) | 1100V | | | |
| Rated input voltage (V) | 620V | | | |
| Max. input current Imp(A) | 15A/30A | 15A/30A | 15A/30A | |
| Max. short-circuit current Isc(A) | 20A/40A | 20A/40A | 20A/40A | |
| Starting voltage/Min. operating voltage | 180V/160V | | | |
| MPPT operating voltage range | 160V-1000V | | | |
| MPPT voltage range @full load (V) | 510V-850V | 270V-850V | 340V-850V | |
| Max. numbers of input strings | 3 (1/2) | | | |
| Numbers of MPPT input | 2 | | | |
| Maximum Feedback Current(A) | 0A | | | |
| Output(Grid) | | | | |
| Rated output power | 10KW | 12KW | 15KW | |
| Rated output apparent power | 10KVA | 12KVA | 15KVA | |
| Max. apparent power | 11KVA | 13.2KVA | 16.7KVA | |
| Max. active power | 11KW | 13.2KW | 16.7KW | |
| Max. output current | 3*16.8A | 3*20.2A | 3*25.3A | |
| Rated output current | 3*15.2/14.5/13.9A | 3*18.2/17.4/16.7A | 3*22.7/21.7/20.8A | |
| Inrush Current | 40A | 55A | 55A | |
| Maximum Output Overcurrent Protection | 40A | 55A | 55A | |
| Maximum Output Fault Current | 60A | 82.5A | 82.5A | |
| Rated output voltage (V) | 380V/400V/415V 3W+N+PE | | | |
| AC voltage range | 260V-510V(Adjustable) | | | |
| Rated grid frequency | 50Hz/60Hz | | | |
| Grid frequency range | 45Hz-55Hz/55Hz-65Hz | | | |
| THDI | <3% Rated power | | | |
| current DC off-sets | <0.5%In or 50mA | | | |
| Adjustable power factor range | >0.99@full load power (adjustable 0.8LG-0.8LD) | | | |
| Protection | | | | |
| DC switch | Support | | | |
| Anti-islanding protection | Active Frequency Drift | | | |
| AC Overcurrent protection | Support | | | |
| AC short circuit protection | Support | | | |
| DC reverse connection | Support | | | |
| Surge Arrester | DC Type II/III(Optional); AC Type II/III (Optional) | | | |
| Insulation impedance detection | Support | | | |
| Leakage current protection | Support | | | |
| General | | | | |
| Topology | Support | | | |
| Protection grade | IP66 | | | |
| Power consumption at night | <1W | | | |
| Cooling type | 5~15K(natural-cooling)/15~25K(air-cooling) | | | |
| Operating temperature range | -25°C-60°C(Maximum 45°C without derating) | | | |
| Operating relative humidity range | 0~100% | | | |
| Max. operation altitude | 4000m | | | |
| Noise emission | <30dB representative value (natural-cooling) | | | |
| Dimensions (W*H*D) | (398*460*190) mm | | | |
| Weight (kg) | 18.7 | | | |
| Display & Communication | | | | |
| Display | LED/LCD(Optional) | | | |
| Communication | Bluetooth&WiFi,RS485/GPRS/4G(Optional) | | | |
| Protective Class | class I | class I | class I | |
| AC Overvoltage Category | Category III | Category III | Category III | |
| DC Overvoltage Category | Category II | Category II | Category II | |
| Inverter Topology | Non-isolated | Non-isolated | Non-isolated | |
| Grid Connection Standard | AS/NZS4777.2-2020 | AS/NZS4777.2-2020 | AS/NZS4777.2-2020 | |

1 STC : Standard Test Conditions.

| MODEL | PV 15KTL-D3/G2P | PV 17KTL-D3/G2 | PV 20KTL-D3/G2 |
|---|---|-------------------|-------------------|
| Input(PV) | | | |
| Max. PV configuration (STC ¹) | 133% | | |
| Max. PV power voltage (V) | 1100V | | |
| Rated input voltage (V) | 620V | | |
| Max. input current Imp(A) | 30A/30A | 30A/30A | 30A/30A |
| Max. short-circuit current Isc(A) | 40A/40A | 40A/40A | 40A/40A |
| Starting voltage/Min. operating voltage | 180V/160V | | |
| MPPT operating voltage range | 160V-1000V | | |
| MPPT voltage range @full load (V) | 380V-850V | 290V-850V | 340V-850V |
| Max. numbers of input strings | 4 (2/2) | | |
| Numbers of MPPT input | 2 | | |
| Maximum Feedback Current(A) | 0A | | |
| Output(Grid) | | | |
| Rated output power | 15KW | 17KW | 20KW |
| Rated output apparent power | 15KVA | 17KA | 20KA |
| Max. apparent power | 16.5KVA | 18.7KVA | 22KVA |
| Max. active power | 16.5KW | 18.7KW | 22KW |
| Max. output current | 3*25.3A | 3*28.6A | 3*33.7A |
| Rated output current | 3*22.7/21.7/20.8A | 3*25.8/24.6/23.6A | 3*30.3/29/27.8A |
| Inrush Current | 55A | 98A | 98A |
| Maximum Output Overcurrent Protection | 55A | 98A | 98A |
| Maximum Output Fault Current | 82.5A | 147A | 147A |
| Rated output voltage (V) | 380V/400V/415V 3W+N+PE | | |
| AC voltage range | 260V-510V(Adjustable) | | |
| Rated grid frequency | 50Hz/60Hz | | |
| Grid frequency range | 45Hz-55Hz/55Hz-65Hz | | |
| THDI | <3% Rated power | | |
| current DC off-sets | <0.5%In or 50mA | | |
| Adjustable power factor range | >0.99@full load power (adjustable 0.8LG-0.8LD) | | |
| Protection | | | |
| DC switch | Support | | |
| Anti-islanding protection | Active Frequency Drift | | |
| AC Overcurrent protection | Support | | |
| AC short circuit protection | Support | | |
| DC reverse connection | Support | | |
| Surge Arrester | DC Type II/III(Optional); AC Type II/III (Optional) | | |
| Insulation impedance detection | Support | | |
| Leakage current protection | Support | | |
| General | | | |
| Topology | Support | | |
| Protection grade | IP66 | | |
| Power consumption at night | <1W | | |
| Cooling type | 5~15K(natural-cooling)/15~25K(air-cooling) | | |
| Operating temperature range | -25℃-60℃ (Maximum 45℃ without derating) | | |
| Operating relative humidity range | 0~100% | | |
| Max. operation altitude | 4000m | | |
| Noise emission | <45 dB(air-cooling) | | |
| Dimensions (W*H*D) | (398*460*190) mm | | |
| Weight (kg) | 20.1 | | |
| Display & Communication | | | |
| Display | LED/LCD(Optional) | | |
| Communication | Bluetooth&WiFi,RS485/GPRS/4G(Optional) | | |
| Protective Class | class I | class I | class I |
| AC Overvoltage Category | Category III | Category III | Category III |
| DC Overvoltage Category | Category II | Category II | Category II |
| Inverter Topology | Non-isolated | Non-isolated | Non-isolated |
| Grid Connection Standard | AS/NZS4777.2-2020 | AS/NZS4777.2-2020 | AS/NZS4777.2-2020 |

1 STC : Standard Test Conditions.

| MODEL | PV 22KTL-D3/G2 | PV 25KTL-D3/G2 |
|---|-------------------|--|
| Input(PV) | | |
| Max. PV configuration (STC ¹) | | 133% |
| Max. PV power voltage (V) | | 1100V |
| Rated input voltage (V) | | 620V |
| Max. input current Imp(A) | 30A/30A | 30A/30A |
| Max. short-circuit current Isc(A) | 40A/40A | 40A/40A |
| Starting voltage/Min. operating voltage | | 180V/160V |
| MPPT operating voltage range | | 160V-1000V |
| MPPT voltage range @full load (V) | 380V-850V | 430V-850V |
| Max. numbers of input strings | | 4 (2/2) |
| Numbers of MPPT input | | 2 |
| Maximum Feedback Current(A) | | 0A |
| Output(Grid) | | |
| Rated output power | 22KW | 25KW |
| Rated output apparent power | 22KA | 25KA |
| Max. apparent power | 24.2KVA | 27.5KVA |
| Max. active power | 24.2KW | 27.5KW |
| Max. output current | 3*37A | 3*39.8A |
| Rated output current | 3*33.3/31.9/30.6A | 3*37.9/36.2/34.7A |
| Inrush Current | 98A | 98A |
| Maximum Output Overcurrent Protection | 98A | 98A |
| Maximum Output Fault Current | 147A | 147A |
| Rated output voltage (V) | | 380V/400V/415V 3W+N+PE |
| AC voltage range | | 260V-510V(Adjustable) |
| Rated grid frequency | | 50Hz/60Hz |
| Grid frequency range | | 45Hz-55Hz/55Hz-65Hz |
| THDI | | <3% Rated power |
| current DC off-sets | | <0.5%In or 50mA |
| Adjustable power factor range | | >0.99@full load power (adjustable 0.8LG-0.8LD) |
| Protection | | |
| DC switch | | Support |
| Anti-islanding protection | | Active Frequency Drift |
| AC Overcurrent protection | | Support |
| AC short circuit protection | | Support |
| DC reverse connection | | Support |
| Surge Arrester | | DC Type II/III (Optional); AC Type II/III (Optional) |
| Insulation impedance detection | | Support |
| Leakage current protection | | Support |
| General | | |
| Topology | | Support |
| Protection grade | | IP66 |
| Power consumption at night | | <1W |
| Cooling type | | 5~15K(natural-cooling)/15~25K(air-cooling) |
| Operating temperature range | | -25°C-60°C(Maximum 45°C without derating) |
| Operating relative humidity range | | 0~100% |
| Max. operation altitude | | 4000m |
| Noise emission | | <45 dB(air-cooling) |
| Dimensions (W*H*D) | | (398*460*190) mm |
| Weight (kg) | | 20.3 |
| Display & Communication | | |
| Display | | LED/LCD(Optional) |
| Communication | | Bluetooth& WiFi,RS485/GPRS/4G(Optional) |
| Protective Class | class I | class I |
| AC Overvoltage Category | Category III | Category III |
| DC Overvoltage Category | Category II | Category II |
| Inverter Topology | Non-isolated | Non-isolated |
| Grid Connection Standard | AS/NZS4777.2-2020 | AS/NZS4777.2-2020 |

1 STC : Standard Test Conditions.