



Grid-connected PV Inverter

SUN-9K-G02P1-AU-AM2

SUN-10K-G02P1-AU-AM2

SUN-10.5K-G02P1-AU-AM2

User Manual



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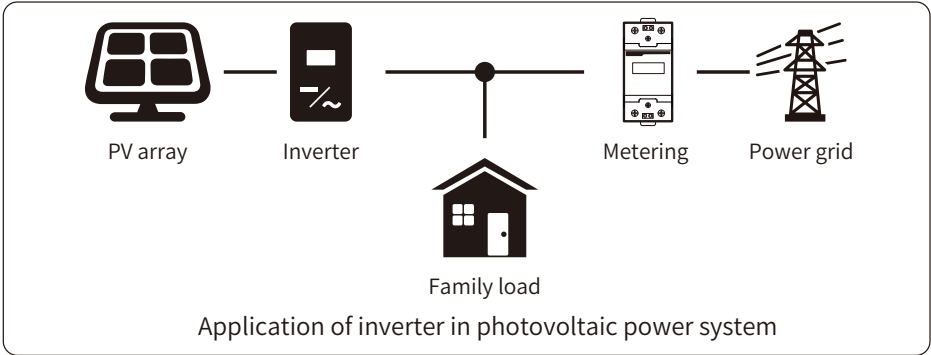
About This Manual

The manual mainly describes the product information, guidelines for installation, operation and maintenance. The manual cannot include complete information about the photovoltaic (PV) system.

How to Use This Manual

Read the manual and other related documents before performing any operation on the inverter. Documents must be stored carefully and be available at all times. **Contents may be periodically updated or revised due to product development. The information in this manual is subject to change without notice.**The latest manual can be acquired via service@deye.com.cn

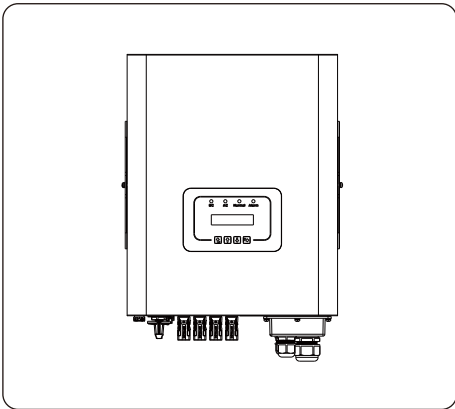
Photovoltaic Grid-connected System



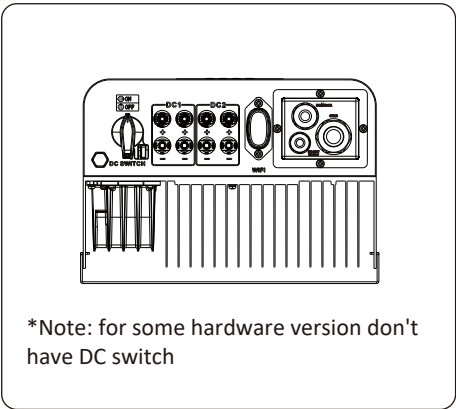
1. Introduction

1.1 Appearance Introduction

Single Phase String Power Inverter can convert solar panel DC power into AC power which can directly input to the grid. Its appearance is shown below. These models contain SUN-9K-G02P1-AU-AM2, SUN-10K-G02P1-AU-AM2, SUN-10.5K-G02P1-AU-AM2. The following is collectively referred to as “inverter” .

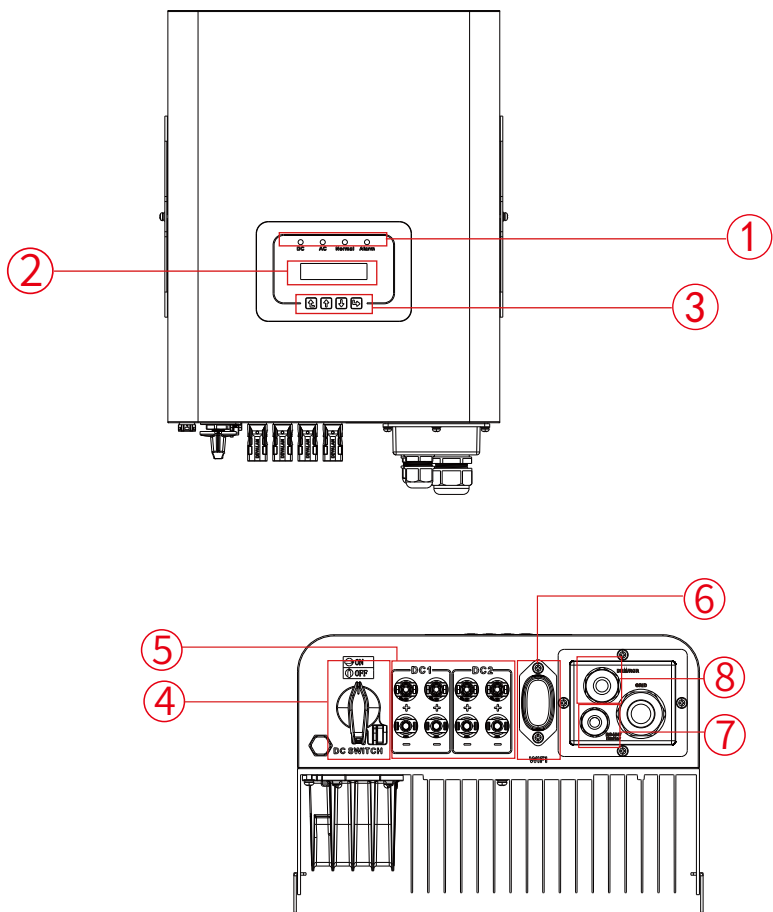


Pic 1.1 Front view



*Note: for some hardware version don't have DC switch

Pic 1.2 Bottom view



1: Inverter Indicators

2: LCD display

3: Function Buttons

4: DC switch

5: PV input with two MPPT

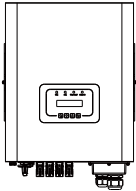
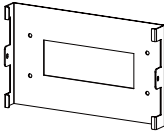

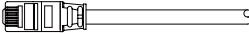
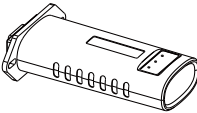
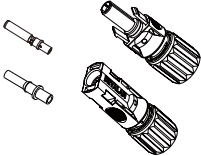
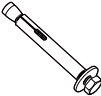

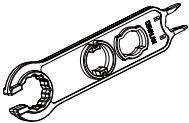

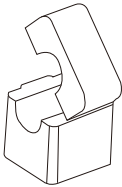
6: WiFi Interface

7: RS485 Port

8: DRM Port

1.2 Parts list

Please check the following table, to see whether all the parts are included in the package:

 <p>Grid-tied PV String Inverter x1</p>	 <p>Wall mounting bracket x1</p>	 <p>Stainless steel screws M4×12 x3</p>
 <p>DRM connector x 1</p>	 <p>Datalogger (optional) x1</p>	 <p>DC+/DC- Plug connectors including metal terminal xN</p>
 <p>Stainless steel anti-collision bolt M6×60 x4</p>	 <p>User manual User manual x1</p>	 <p>Solar Photovoltaic Connector Special Spanner x1</p>
 <p>Meter(optional) x1</p>	 <p>Sensor Clamp(optional) x1</p>	

2. Safety warnings and instructions

Improper use may result in potential electric shock hazards or burns. This manual contains important instructions that should be followed during installation and maintenance. Please read these instructions carefully before use and keep them for future reference.

2.1 Safety signs

Safety symbols used in this manual, which highlight potential safety risks and important safety information, are listed as follows:



Warning:

Warning symbol indicates important safety instructions, which if not correctly followed, could result in serious injury or death.



Shock Hazard:

Caution, risk of electric shock symbol indicates important safety instructions, which if not correctly followed, could result in electric shock.



Safety Hint:

Note symbol indicates important safety instructions, which if not correctly followed, could result in some damage or the destruction of the inverter.



High Temperature Hazard:

Caution, hot surface symbol indicates safety instructions, which if not correctly followed, could result in burns.

2.2 Safety instructions



Warning:

Electrical installation of the inverter must conform to the safety operation rules of the country or local area.

**Warning:**

Inverter adopts non-isolated topology structure, hence must insure DC input and AC output are electrical isolated before operating the inverter.

**Shock Hazard:**

Prohibit disassembling inverter case, there existing shock hazard, which may cause serious injury or death, please ask qualified person to repair.

**Shock Hazard:**

When PV module is exposed to sunlight, the output will generate DC voltage. Prohibit touching to avoid shock hazard.

**Shock Hazard:**

While disconnect the input and output of the inverter for maintenance, please waits for at least 5 mins until the inverter discharge the remnant electricity.

**High Temperature Hazard:**

Local temperature of inverter may exceed 80°C while under operating. Please do not touch the inverter case.

2.3 Notes for using

The single phase string power inverter is designed and tested under related safety regulations. It can ensure the personal safety of the user. But as a electric device, it may cause shock or injury by incorrect operation. Please operate the unit under below requirements:

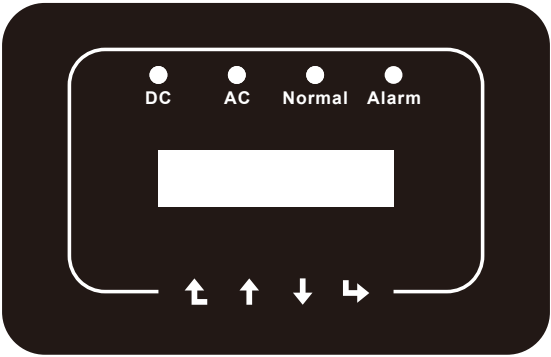
1. Inverter should be installed and maintained by qualified person under local standard regulations.
2. Must disconnect the AC side first, then disconnect DC side while doing installation and maintenance, after that, please wait at least 5 mins to avoid getting shocked.
3. Local temperature of the inverter may exceed 80 °C while under operating. Do not touch to avoid getting injured.
4. All electrical installation must be in accord with local electrical standards, and after obtaining the permission of the local power supply department, the professionals can connect the inverter to the grid.
5. Please take appropriate anti-static measure.
6. Please install where children can not touch.
7. The steps to start the inverter: 1) switch on the AC side circuit breaker, 2) Switch on the DC side circuit breaker of the PV panel. 3) Turn on the DC switch of the inverter. The steps to stop the inverter: 1) switch off the AC side circuit breaker, 2) switch off the DC side circuit breaker of the PV panel. 3) Turn off the DC switch of the inverter.
8. Don't insert or remove AC and DC terminals when the inverter is in normal operation.
9. The DC input voltage of the inverter must not exceed the maximum value of the model.

2.4 Maintenance of the System

The inverter is low maintenance, however, it is important that at least twice a year (for dusty environments this may need to be carried out weekly) all the cooling fans, air ducts are cleaned and dust free. Check if there are no fault codes.

3. Operation Interface

3.1 Interface View



Pic 3.1 Front panel display

3.2 Status Indicator

There are four LED status indicator lights in the front panel of the inverter. Please see table 3.1 for details.

Indicator	status	Explanation
● DC	on	Inverter detects DC input
	off	Low DC input voltage
● AC	on	Grid Connected
	off	Grid Unavailable
● NORMAL	on	Under normal operating
	off	Stop operating
● ALARM	on	Detected faults or report faults
	off	Under normal operating

Table 3.1 Status indicator lights

3.3 Buttons

There are four keys in the front panel of the Inverter(from left to right): Esc, Up, Down and Enter keys. The keypad is used for:

- Scrolling through the displayed options (the Up and Down keys);
- Access to modify the adjustable settings (the Esc and Enter keys).



3.4 LCD Display

The two-line Liquid Crystal Display (LCD) is located on the front panel of the Inverter, which shows the following information:

- Inverter operation status and data;
- Service messages for operator;
- Alarm messages and fault indications.

4. Product installation

4.1 Select installation location

To select a location for the inverter, the following criteria should be considered:

WARNING: Risk of fire

- Do not install the inverter in areas containing highly flammable materials or gases.
- Do not install the inverter in potentially explosive atmospheres.
- Do not install in small closed spaces where air can not circulate freely. To avoid overheating, always make sure the flow of air around the inverter is not blocked.
- Exposure to direct sunlight will increase the operational temperature of the inverter and may cause output power limiting. It is recommended that inverter installed to avoid direct sunlight or raining.
- To avoid overheating ambient air temperature must be considered when choosing the inverter installation location. It is recommended that using a sun shade minimizing direct sunlight when the ambient air temperature around the unit exceeds 104°F/40°C.



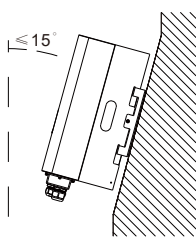
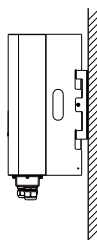
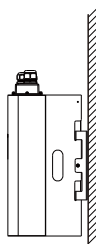
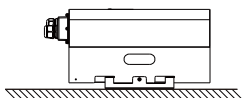
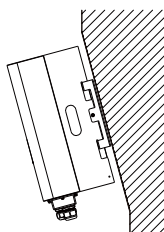
Pic 4.1 Recommended installation place

- Install on a wall or strong structure capable of bearing the weight.
- Install vertically with a maximum incline of $+15^{\circ}$. If the mounted inverter is tilted to an angle greater than the maximum noted, heat dissipation can be inhibited, and may result in less than expected output power.
- If install more than one inverter, must leave at least 500mm gap between each inverter. And two adjacent inverters are also separated by at least 500 mm. And must install the inverter at the place where children cannot touch. Please see picture 4.3.
- Consider whether the installation environment is helpful to see the inverter LCD display and indicator status clearly.
- Must offer a ventilate environment if inverter installed in the airtight house.

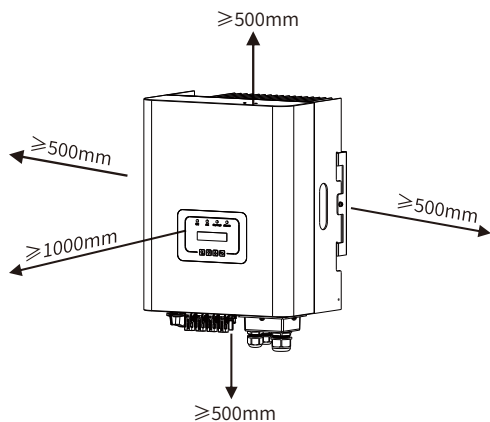


Safety Hint:

Do not place or store any items next to the inverter.



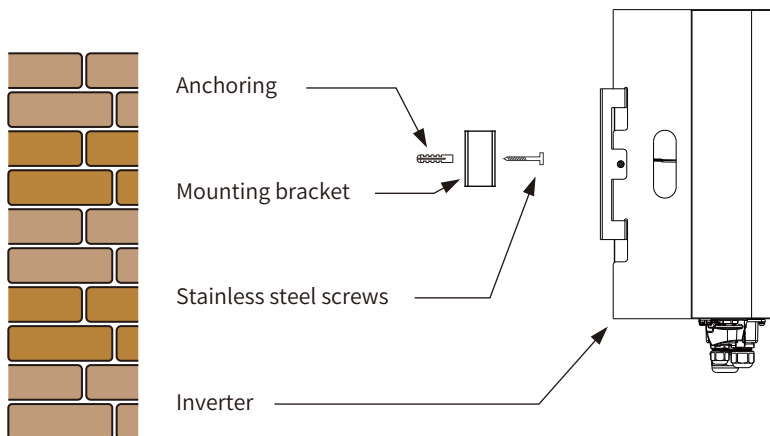
Pic 4.2 Installation Angle



Pic 4.3 Installation Gap

4.2 Inverter Installation

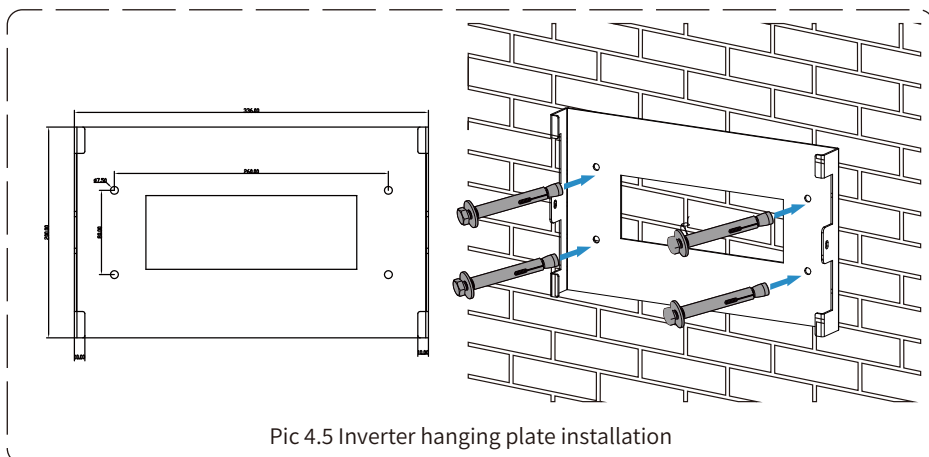
The inverter is designed according to the wall mounted type installation, please use the wall mounted (the brick wall of the expansion bolt) when installing.



Pic 4.4 Inverter Installation

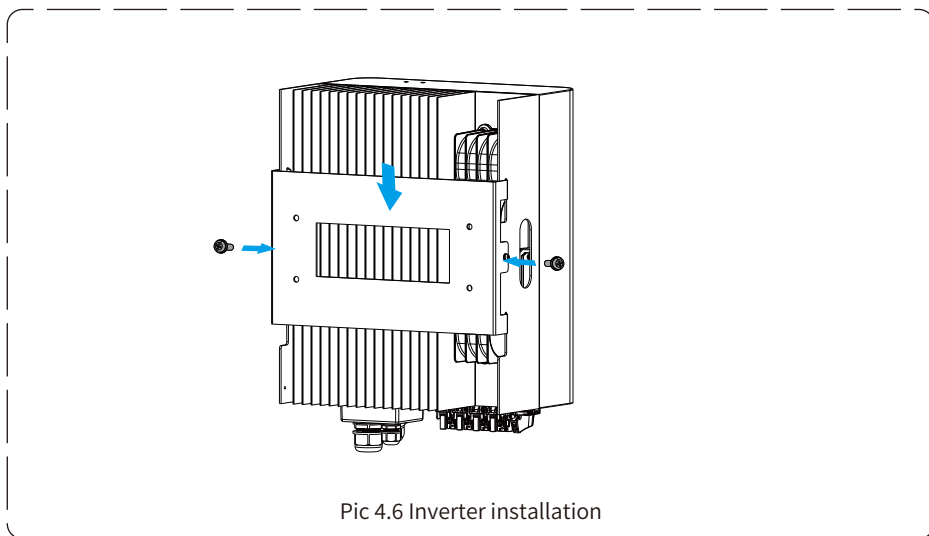
Procedure shows below:

1. Locate on the appropriate wall according to the bolt position on the mounting bracket, then mark the hole. On the brick wall, the installation must be suitable for the expansion bolt installation.



Pic 4.5 Inverter hanging plate installation

2. Ensure that the position of the installation holes on the wall is in accordance with the mounting plate, and the mounting rack is vertically placed.
3. Hang the inverter to the top of the mounting rack and then use the M4 screw in the accessory to lock inverter heat sink to the hanging plate, to ensure that the inverter will not move.



Pic 4.6 Inverter installation

5.Electrical Connection

5.1 DC input terminal connection

1. Switch the Grid Supply Main Switch(AC)OFF.
2. Switch the DC Isolator OFF.
3. Assemble PV input connector to the inverter.



Warning:

When using PV modules, please ensure the PV+ & PV- of solar panel is not connected to the system ground bar.



Safety Hint:

Before connection, please make sure the polarity of the output voltage of PV array matches the “DC+” and “DC-” symbols.



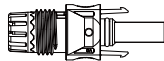
Warning:

Before connecting inverter, please make sure the PV array open circuit voltage is within the 550V of the inverter.

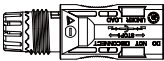


Warning:

Before the inverter starts to connect to the grid, the inverter will first detect the impedance of PV + to ground, and the impedance of PV- to ground. If any of these impedance values is less than 33 kΩ, the inverter will not connect to the grid and will report an error F04 on its LCD.At the same time, the buzzer will sound.For the machine installed with Wi-Fi/GPRS, the alarm information can be seen on the corresponding monitoring website, and can also be received by the APP on the mobile phone.



Pic 5.1 DC+ male connector



Pic 5.2 DC- female connector



Safety Hint:

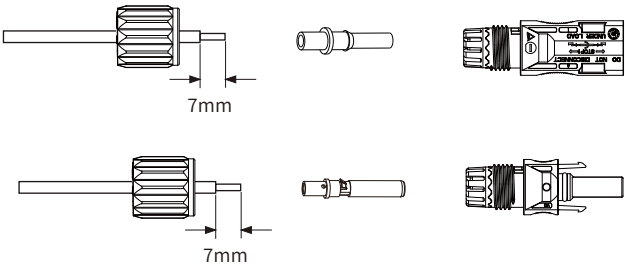
Please use approved DC cable for PV system.

Cable type	Cross section (mm ²)	
	Range	Recommended value
Industry generic PV cable (model: PV1-F)	2.5-4 (12-10AWG)	2.5(12AWG)

Table 5.1 DC Cable Specifications

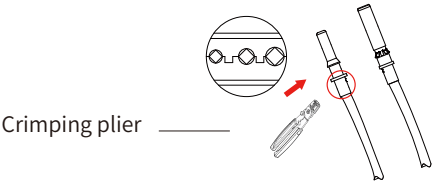
The steps to assemble the DC connectors are listed as follows:

a) Strip off the DC wire about 7mm, disassemble the connector cap nut (see picture 5.3).



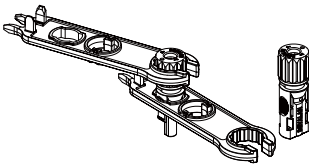
Pic 5.3 Disassemble the connector cap nut

b) Crimping metal terminals with crimping pliers as shown in picture 5.4.



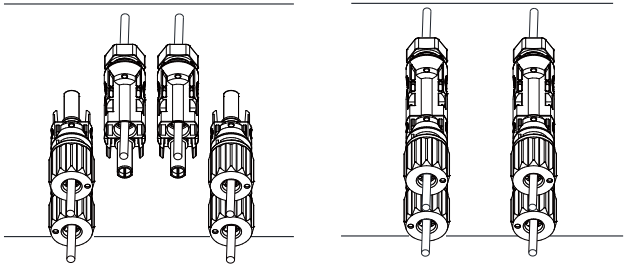
Pic 5.4 Crimp the contact pin to the wire

c) Insert the contact pin to the top part of the connector and screw up the cap nut to the top part of the connector. (as shown in picture 5.5).



Pic 5.5 connector with cap nut screwed on

d) Finally insert the DC connector into the positive and negative input of the inverter , shown as picture 5.6.



Pic 5.6 DC input connection



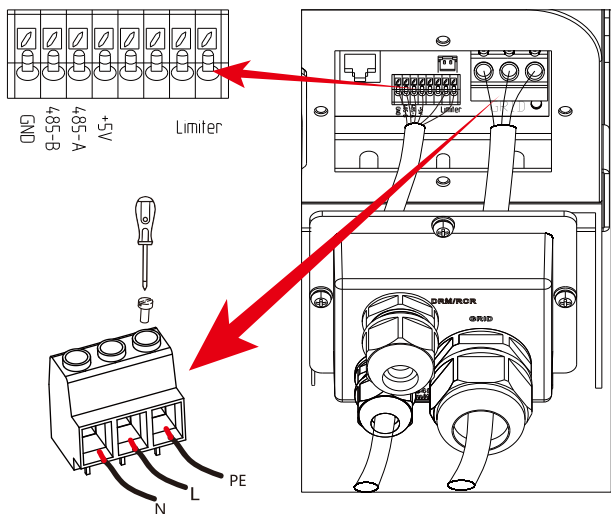
Warning:
Sunlight shines on the panel will generate voltage, high voltage in series may cause danger to life. Therefore, before connecting the DC input line, the solar panel needs to be blocked by the opaque material and the DC switch should be 'OFF', otherwise, the high voltage of the inverter may lead to life-threatening conditions.



Warning:
Please use its own DC power connector from the inverter accessories. Do not interconnect the connectors of different manufacturers. Max. DC input current should be 20A. if exceeds, it may damage the inverter and it is not covered by Deye warranty.

5.2 AC input terminal connection

Do not close the DC switch immediately after the DC terminal has been connected. Connect the AC wires to the AC terminals on the AC side of the inverter. Flexible wires are recommended for easy installation, as shown in Table 5.2.



Pic 5.6 AC input connection

step 1 Before making Grid port connection, disconnect the AC circuit breaker and secure it against reconnection.

step 2 Unscrew the protective cover with a cross screwdriver

step 3 Then, insert AC output wires according to polarities indicated on the terminal block and tighten terminal. Be sure to connect corresponding, N/L and PE wires to related terminals as well(as shown in picture pic 5.6).

step 4 Insert RS485A,RS485B,GND,VCC 5V wires to the correct teminal(as shown in picture pic 5.6).

step 5 Make sure all wires are firmly installed via the right torque tool or dragging the cables slightly.



Warning:

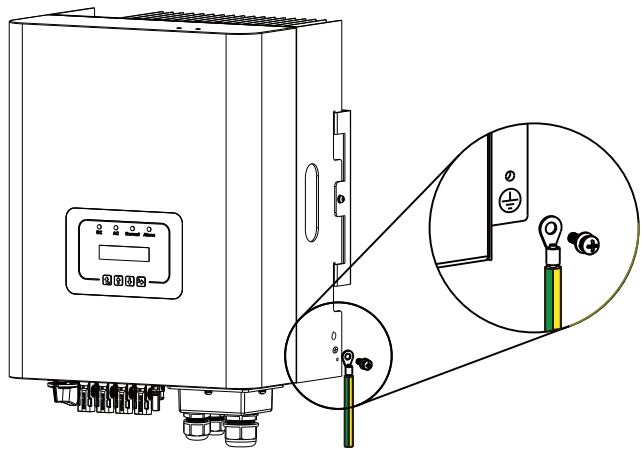
Prohibit using a single circuit breaker for multiple inverters, prohibit the connection of load between inverter circuit breakers.

Model	Cable CSA	AWG	Breaker	Max cable length
SUN-9K-G02P1-AU-AM2	10mm ²	6	60A/400V	Outside cable (L+N+PE)20m
SUN-10K-G02P1-AU-AM2	10mm ²	6	60A/400V	
SUN-10.5K-G02P1-AU-AM2	10mm ²	6	60A/400V	

Table 5.2 Cable information

5.3 The connection of the ground line

Good grounding is good for resisting surge voltage shock and improving EMI performance. Therefore, before connecting AC, DC and communication cables, you need to ground the cable firstly. For a single system, just ground the PE cable. For multiple machine systems, all PE cables of the inverter need to be connected to the same grounding copper platoon to ensure the equipotential connection. The installation of the shell ground wire is shown as picture 5.11.



Pic 5.11 The installation of the shell ground wire

Model	Wire Size	Cable(mm²)	Torque value(max)
SUN-9/10/10.5-G02P1-AU-AM2	6AWG	10mm²	8.5Nm



Warning:

Inverter has built-in leakage current detection circuit, If an external leakage current protection device is connected, its operating current must be greater than 300 mA or higher, otherwise inverter may not work properly.



Warning:

This inverter complies with IEC 62109-2 clause 13.9 for earth fault alarm monitoring. If an Earth Fault Alarm occurs, the inverter will not connect to the grid and will report an error F04 on its LCD. At the same time, the buzzer will sound.

5.4 Max. over current protection device

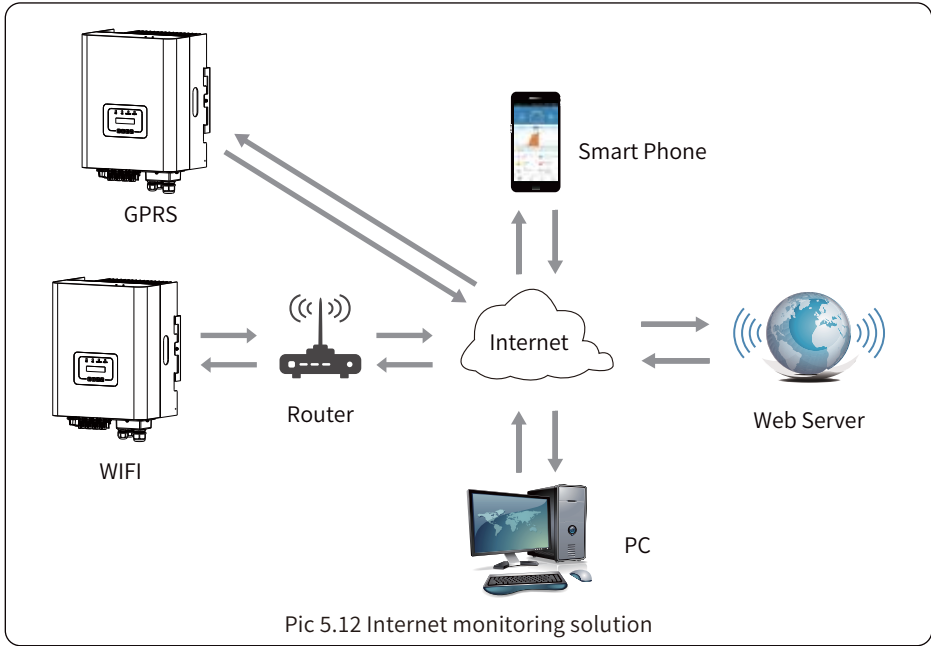
In order to protect the inverter AC connection, it is recommended to install a circuit breaker to prevent overcurrent. See table 5.3 below.

Inverter	Rated output voltage(V)	Rated output current(A)	Current for protection device(A)
SUN-9K-G02P1-AU-AM2	230	39.2A	60
SUN-10K-G02P1-AU-AM2	230	43.5A	60
SUN-10.5K-G02P1-AU-AM2	230	45.7A	60

Table 5.3 Recommended current protector specifications

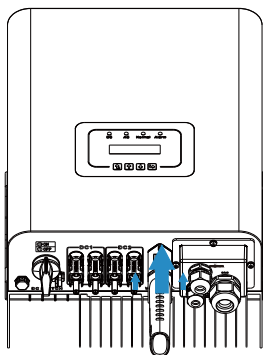
5.5 Inverter monitoring connection

Inverter has the function of wireless remote monitoring. The inverter with Wi-Fi function is equipped with Wi-Fi Plug to connect the inverter and network. Wi-Fi Plug's operation, installation, Internet access, APP downloading and other processes are detailed in the instructions.



5.6 Installation of datalogger

When the inverter is out of the factory, the installation location of datalogger is sealed by a plate as shown in Picture 5.13. When installing the datalogger, remove the sealing plate, insert the datalogger into the interface and fix it with screws. The configuration of the datalogger needs to be performed after various electrical connections have been completed and the inverter is powered on by DC power. When the inverter has been powered on by DC power, it's able to check whether the datalogger is normally electrified or not through the status of LED light(The LED light shines out of the shell).



Pic 5.13 Datalogger installation diagram

5.7 Configuration of datalogger

For the configuration of datalogger, please refer to illustrations of the datalogger.

5.8 Grid Setup Menu

5.8.1 Commissioning Procedure

If all physical connection is checked ok, please follow the steps below.

1. Turn on AC circuit breaker.
2. Turn on DC circuit breaker on PV strings and battery.
3. Turn on circuit breaker on battery pack.
4. Turn on DC switch on the inverter
5. Check the inverter status by inverter indicators and battery status by battery indicators.



Warning:

Inverters cannot be installed in multiple combinations.

6. Startup and Shutdown

Before starting the inverter, make sure that the inverter can meet the following conditions, otherwise it may result in fire or damage to the inverter. In this case, we do not undertake any responsibility. At the same time, to optimize the system configuration, it is recommended that the two inputs be connected to the same number of photovoltaic modules.

- a). The maximum open circuit voltage of each set of photovoltaic modules shall not exceed 550Vdc under any conditions.
- b). Each input of the inverter better use the same type of photovoltaic module in series.
- c). Total output power of PV shall not exceed the maximum input power of inverter, each photovoltaic modules shall not exceed the rated power of each channel.

6.1 Start up the inverter

When start up the single phase string inverter, should follow below steps:

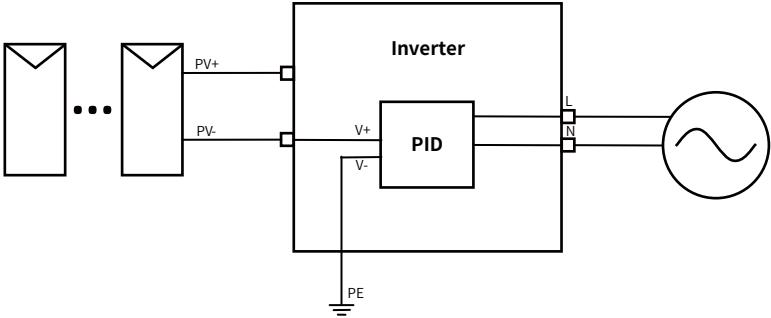
1. First switch on the AC breaker.
2. Turn on the DC switch of the PV module, and if the panel provides sufficient starting voltage and power, the inverter will start.
3. NOTE: Choose the correct country code. (refer to section 8.5 of this manual)
Notice: Different distribution network operators in different countries have different requirements regarding grid connections of PV grid connected inverters. Therefore, it's very important to make sure that you have selected the correct country code according to requirements of local authority. Please consult qualified electrical engineer or personnel from electrical safety authorities about this.
4. When the AC voltage and DC voltage are normal, the start-up is ready to begin. The inverter will first check the internal parameters and the grid parameters, while the liquid crystal will show that the inverter is self-checking.
5. If the parameter is within acceptable range, the inverter will generate energy. NORMAL indicator light is on.

6.2 Inverter Shutdown

Must follow below steps while shutting down the inverter:

1. Switch off the AC breaker.
2. Wait for 30 seconds, turn off the DC switch (if any). The inverter will close the LCD and all indicators within two minutes.

6.3 Anti-PID Function(optional)



The Anti-PID module repairs the PID effect of the PV module at night. The PID module always runs when connected to AC.

If maintenance is required and turn off the AC switch can disable the Anti-PID function.



WARNING:

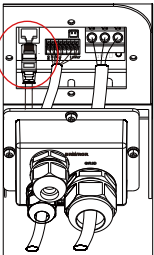
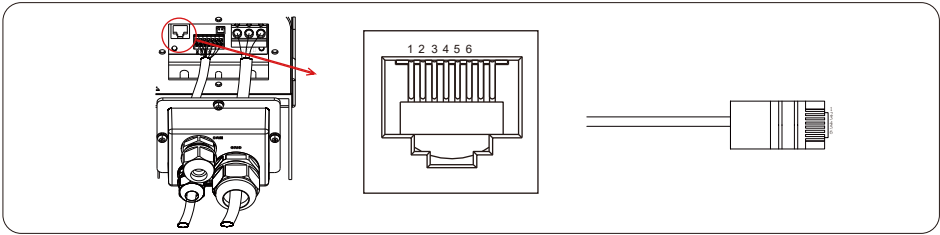
The PID functionality is automatic. When the DC bus voltage is below 50VDC, the PID module will create 450VDC between the PV and ground. No control and equipment are required.



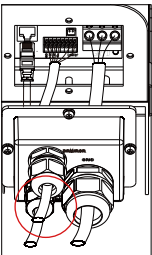
WARNING:

If you need to maintain the inverter, Please turn off the AC switch first, then turn off the DC switch, and wait 5 minutes before you do other operations.

6.4 DRM(RCR) wiring diagram



Step 1



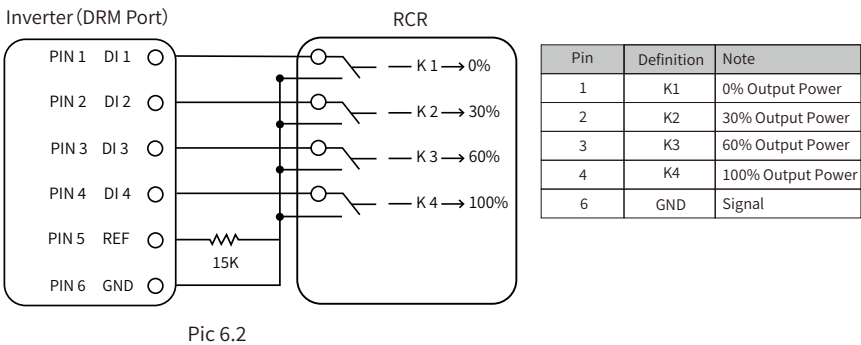
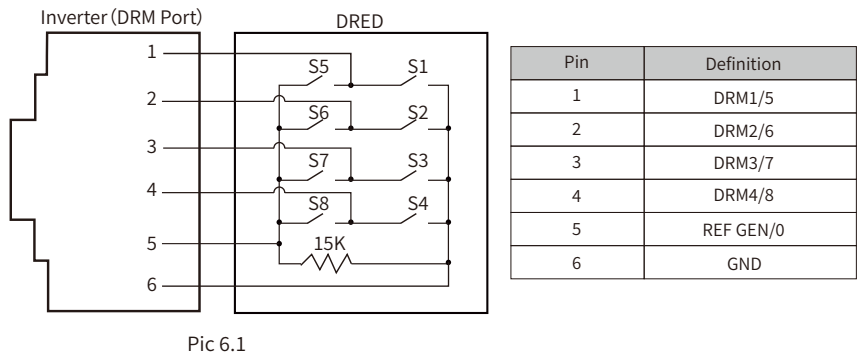
Step 2

Step 1: Thread the DRM connector inside the accessory through the waterproof gland and leave its cable end outside.

Step 2: Insert the RJ45 connector of the DRM connector into the DRM interface of the inverter, and then tighten the waterproof gland clockwise.

Step 3: Connect the cable end of the DRM connector to the cable of the DRED, as shown in Pic 6.1.

"AU"/"NZ": Demand Response Modes(Only DRM0 is available)
In Australia and New Zealand, the inverter supports the demand response modes as specified in the standard AS/NZS 4777.2 as shown in Pic 6.1.
"DE": Ripple Control Receiver (RCR)
In Germany, the grid company uses the Ripple Control Receiver to convert the grid dispatching signal and send it as a dry contact signal.The inverter can control power output according to the local preset instructions as shown in Pic 6.2.



6.5 LCD night power supply(optional)

Add a PCB board which uses AC power to supply the LCD screen and data logger , and then the inverter can upload consumption power data to the cloud platform during night. This feature is optional.

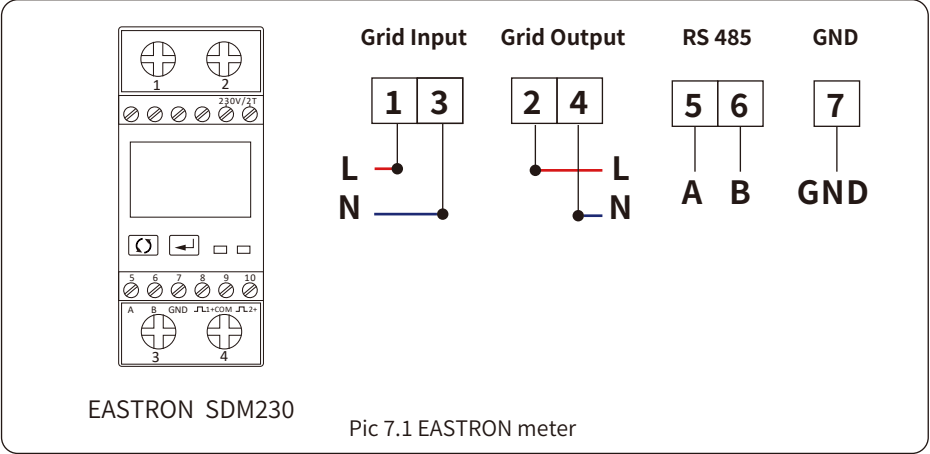
7. Zero-export function via energy meter

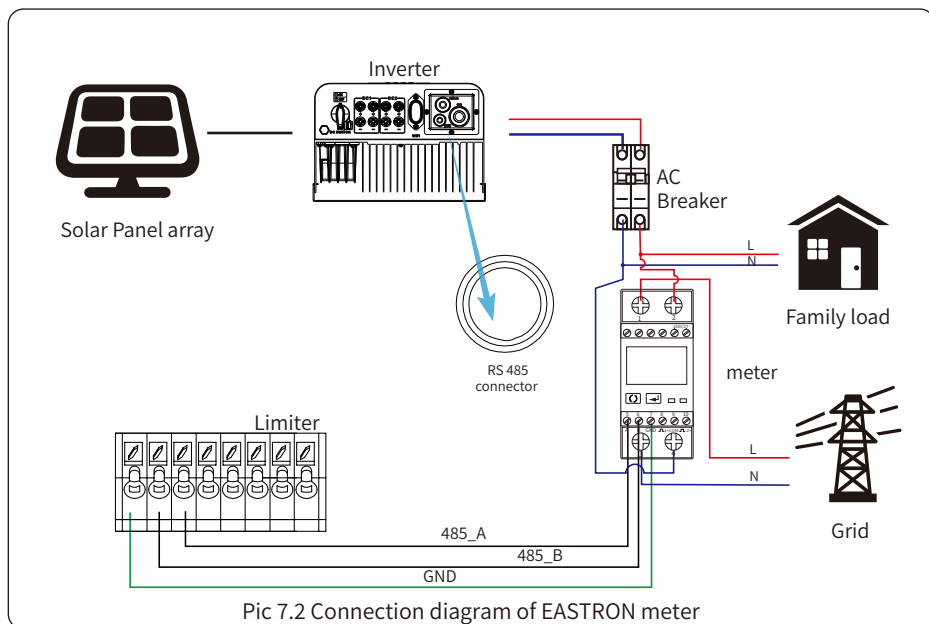
When you are reading this, we believe that you have completed the connection according to the requirements of chapter 5, if you have been running your inverter at this time, and you want to use the zero-export function, please turn off AC and DC switch of the inverter, and wait for 5 minutes until the inverter completely discharged. Please follow below Pic 7.1 & Pic 7.18 to connect the energy meter.

For system wiring diagram, the red line refers to L line (L), the blue line refers to the neutral line (N), green line refers to ground wire (PE). Connecting energy meter RS485 cable to inverter's RS485 port. It's recommended to install an AC switch between the inverter and the utility grid, the specs of the AC switch are determined by the power of load.

The AC switch we recommend to connect to the inverter output can refer to Table 5.2. The voltage and current of the switch depend on the PV array you access.

System connection diagram for the Eastron meter





Pic 7.2 Connection diagram of EASTRON meter



Pic 7.3 Parameter setting

When the EASTRON meter connected successfully, it will shows SN: 2



Safety Hint:

Ensuring grid input cables connect 1&3 port of energy meter, and inverter AC output cables connect 2&4 port of energy meter when connecting.



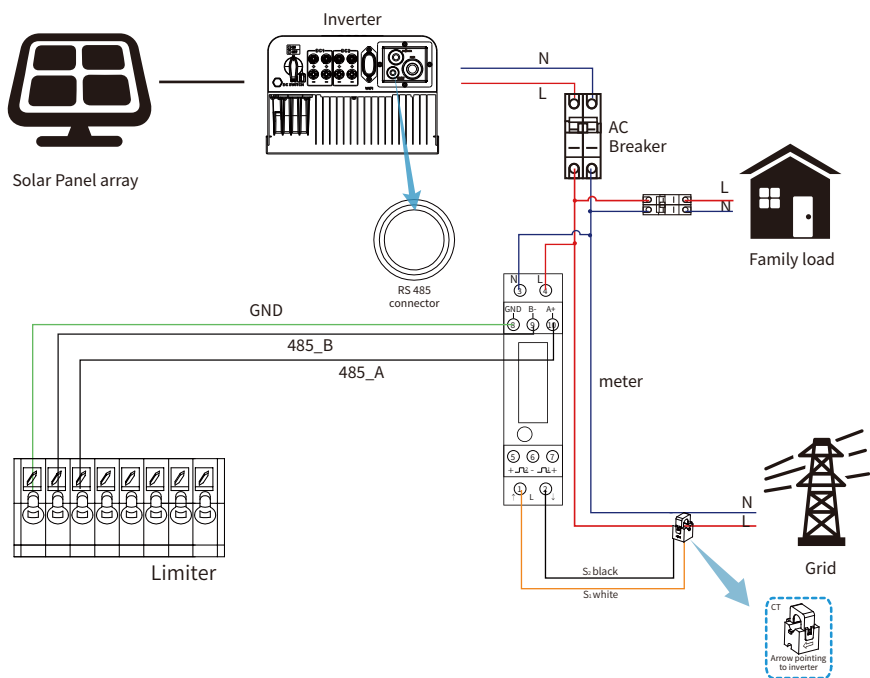
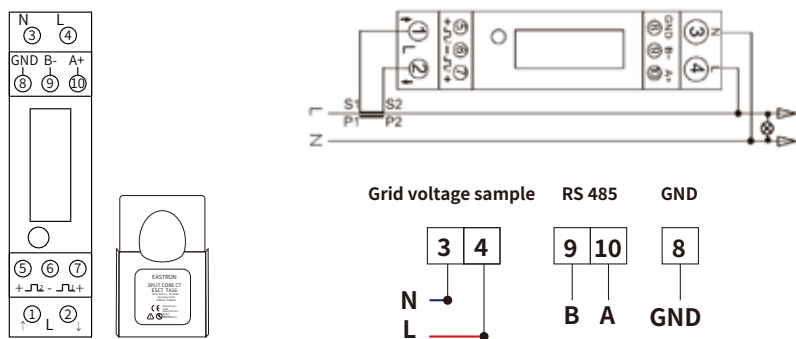
Warning:

In final installation, breaker certified according to AS60947.3 shall be installed with the equipment.

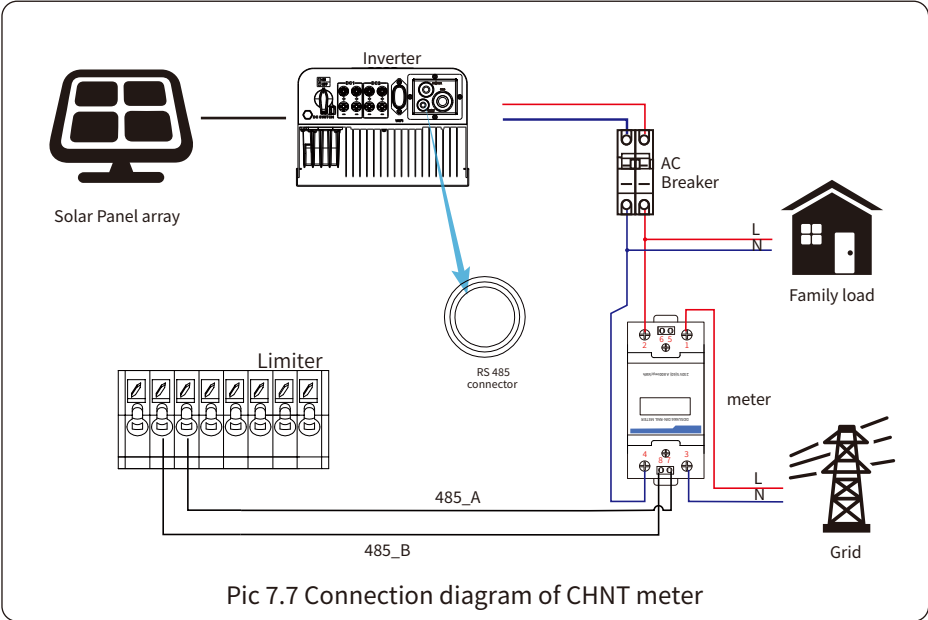
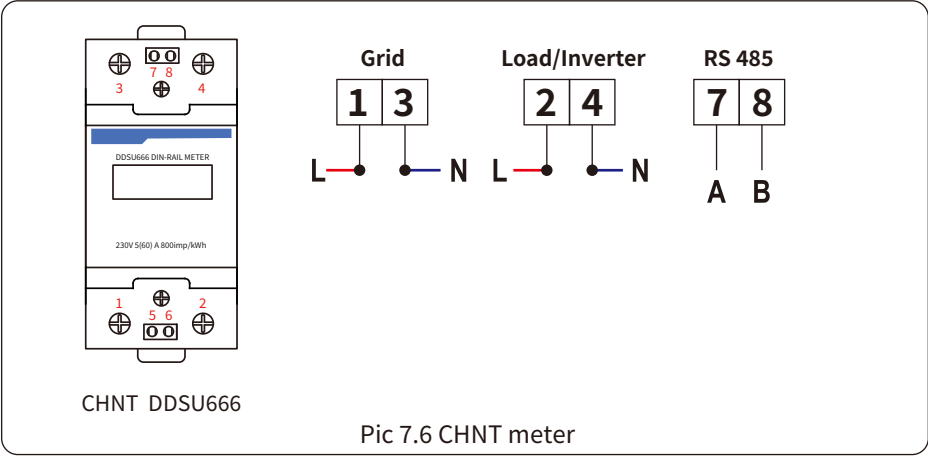


Warning:

Inverter has built-in leakage current detection circuit, If an external RCD is required, a type-A RCD with rated residual current of 300mA or higher is suggested. Otherwise inverter may not work properly.

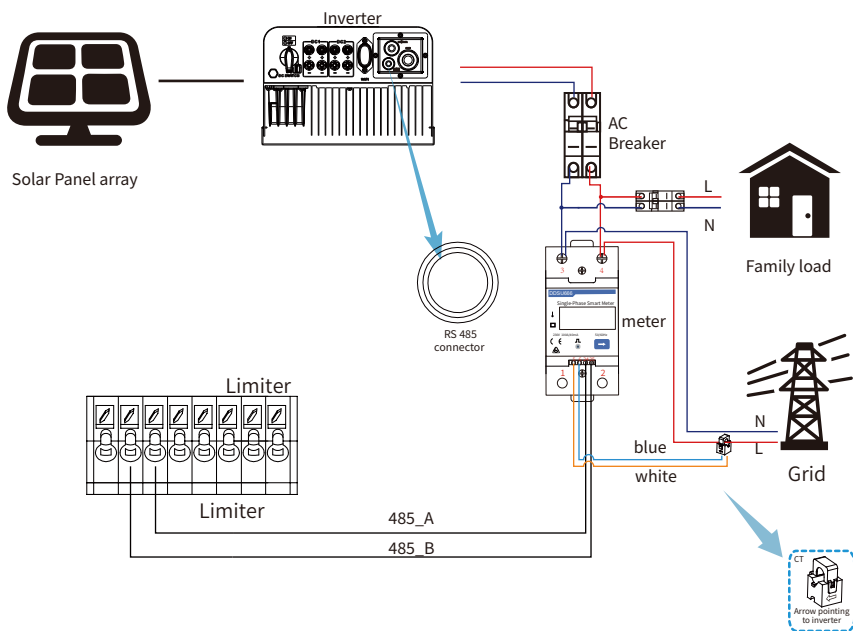
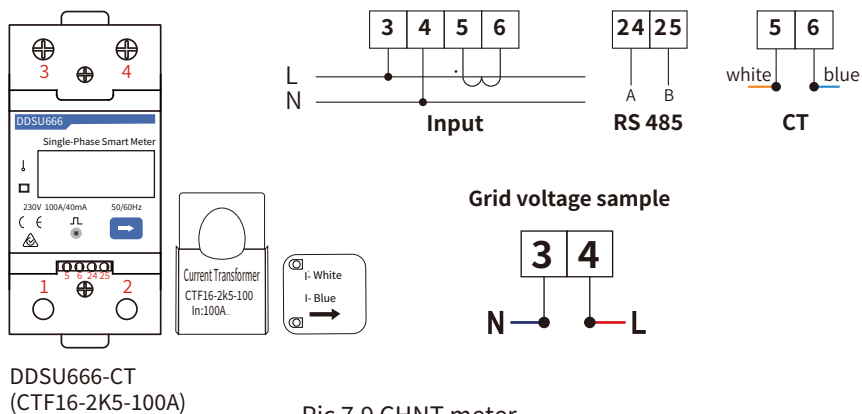


System connection diagram for the CHNT meter



Pic 7.8 Parameter setting

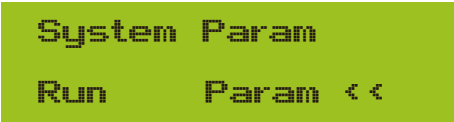
When the CHNT meter connected successfully, it will shows SN: 1



7.1 Use of zero-export function

When the connection is completed, the following steps should be referred to use this function:

1. Turn on the AC switch.
2. Turn on the DC switch, waiting for the inverter's LCD is turned on.
3. Press Enter button on the LCD panel in the main interface into the menu options, select [parameter setting] to enter setup submenu, and then select [running parameters] as shown in picture 7.19, at this time please input the default password 1234 through pressing the button [up down, enter], enter the operation parameter setting interface, shown as picture 7.20.



Pic 7.19 Parameter setting



Pic 7.20 Meter switch

4. Operate the button [up down], move setting cursor to energy meter and press the button [enter]. At this time you can turn on or turn off the energy meter by choosing [up down] button, please press [enter] button to confirm when setting done.
5. Move the cursor to [OK], press [enter] to save the settings and exit the running parameters page, otherwise the settings are invalid.
6. If set up successfully, you can return to the menu interface, and display the LCD to [home page] by press the [up down] button. If it displays [meter power XXW], the zero-export function setting is completed. Shown as picture 7.21.



Pic 7.21 Zero-export function via energy meter turn on

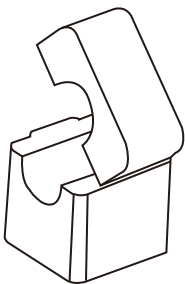
7. Meter power XXW shows positive means grid is supplying the load, and no power fed into grid. if meter power shows negative, it means PV energy is being sold to grid.
8. After properly connection is done, wait for inverter starting. If the power of the PV array meets the current power consumption, the inverter will keep a certain output to counteract the power of the grid without backflow .

7.2 Sensor Clamp(optional)

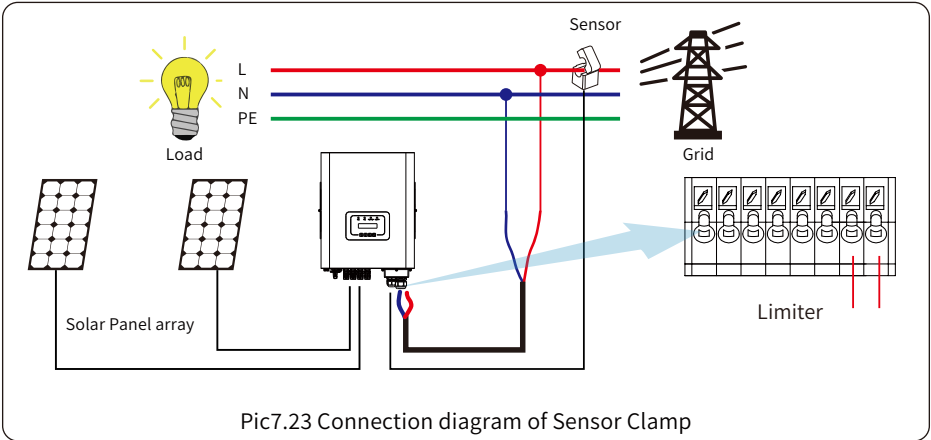
The inverter has integrated export limitation function.The function is to adjust the output of inverter quickly according to the power of the user and solar panels, prevent the output of the inverter from being fed to the power grid. This limiter function is optional. If you buy the inverter with limiter, a current sensor will be included in the package which is necessary for limiter function.

7.2.1 Zero-export function via CT

When you are reading this, we believe that you have completed the connection according to the requirements of chapter 5, if you has been running your inverter at this time, and you want to use the limiter function, please turn off AC and DC switch of the inverter, and wait for 5 minutes until the inverter completely discharged. Then connect the current sensor to the inverter limiter interface. Make sure they are reliably connected, and the current sensor should clamp to the live wire of the incoming line. In order to make it easier for you to use the built-in limiter function of the inverter, we have specifically given the wiring diagram, as shown in Picture 7.23, the red lines connected to the utility grid said wire (L), blue line shows the zero line (N), yellow green line shows the ground wire (PE). We recommend installing a AC switch between the inverter outlet and the utility grid, the specs of the AC switch is determined according to the load capacity. The AC switch we recommend to connect to the inverter output can refer to Table 5.1. The voltage and current of the switch depends on the PV array you access.



Pic 7.22 Sensor Clamp (The arrow of current sensor points to the grid)



Pic7.23 Connection diagram of Sensor Clamp

7.3 Use of limiter function

When the connection is completed, the following steps should be referred to use this function:

1. Turn on the AC switch.
2. Turn on the DC switch, waiting for the inverter's LCD is turned on.
3. Press Enter button on the LCD panel in the main interface into the menu options, select [parameter setting] to enter setup submenu, and then select [running parameters] as shown in picture 7.24, at this time please input the default password 1234 through pressing the button [up down, enter], enter the operation parameter setting interface, shown as picture 7.25.



Pic 7.24 Parameter setting



Pic 7.25 Limit switch

4. Operate the button [up down], move setting cursor to limit function and press the button [enter]. At this time you can turn on or turn off the limit function by choosing [up down] button, please press [enter] button to confirm when setting done.
5. Move the cursor to [confirm] , press ENTER to save the settings and exit the running parameters page, otherwise the settings are invalid.
- 6.If set up successfully, you can return to the menu interface, and display the LCD to [home page] by press the [up down] button. If it displayed as [utility power], the limiter function settings will be completed. Shown as picture 7.26.



*** This item is not available for some FW version**

Pic 7.26 Limiter function turn on

7. [utility power] showing positive means grid power is consuming energy, and there is no backflow. If [utility power] shows negative, which means there' s excess PV energy flows to grid or current transformer arrow direction is in wrong direction. Please read more on chapter 7.
8. After properly connection is done, wait for inverter starting. If the power of the PV array meets the current power consumption, the inverter will maintain a certain output to counteract the power of the grid without backflow .

7.4 Notes while using zero export function

For your safety and the operation of limiter function of the inverter, we put forward the following suggestions and precautions:



Safety Hint:

Under zero export mode we strongly recommend that the two PV arrays are formed by the same number of PV panels of the same size, which will make the inverter more responsive to limit the power.



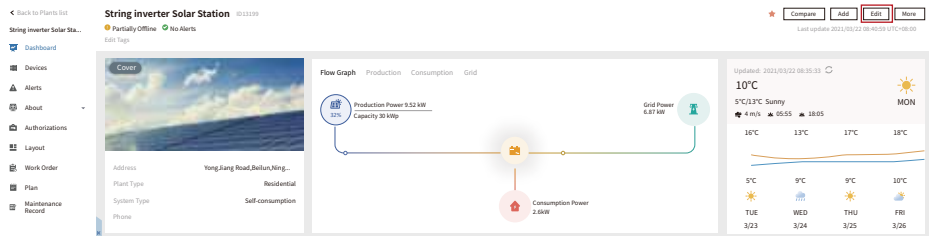
Safety Hint:

While the utility power is negative and inverter has no output power, that means the orientation of the current sensor is wrong, please turn off the inverter and change orientation of the current sensor.

7.5 How to browse the load power of your PV grid-tie plant on monitoring platform?

If you want to browse load power of the system and how much energy (KWH) does it export to grid(inverter output power is used to power the load firstly and then the surplus energy will feed into grid). You also need to connect the meter according to Pic 7.12. After the connection completed successfully, the inverter will show the load power on the LCD. **But please don't setup "Meter ON"**. Also, you will be able to browse the load power on the monitoring platform. The plant setting method as below description.

Firstly, go to the solarman platform(<https://pro.solarmanpv.com>, this link is for solarman distributor account; or <https://home.solarmanpv.com>, this link is for solarman end user account;) plant home page and click “edit” .



And then choose your system type as “Self-consumption”

Edit Plant

Basic Info

System Info

Yield Info

Owner Info

*Address:

Yongjiang Road, Beilun, Ningbo, 315806, China

*Coordinates:

Longitude: 121 46 39.03 Latitude: 29 53 36.11

Time Zone:

(UTC+08:00) Beijing,Chongqing,Hong Kong,Usung

Creation Time:

2020/04/08

System Info

Plant Type:

Residential

System Type:

Self-consumption

*Capacity(kWp):

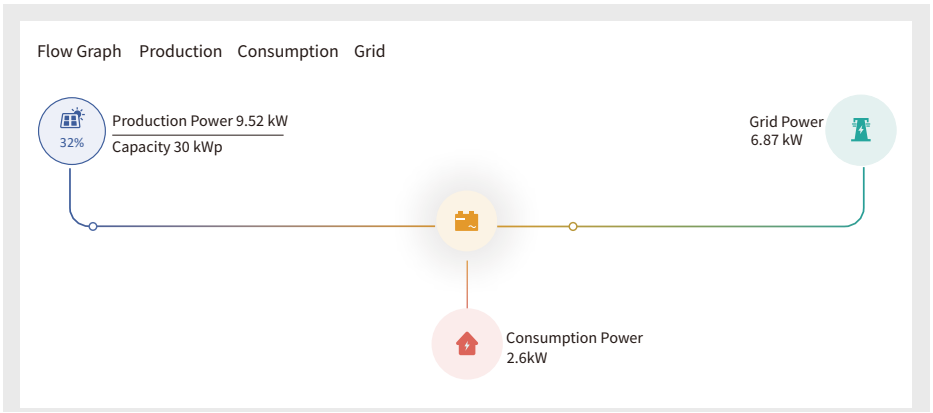
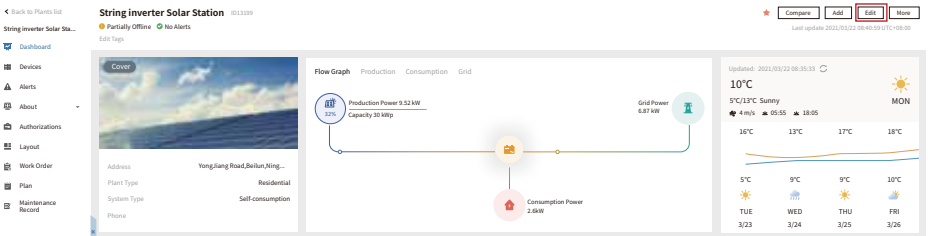
30

Address:

3-303

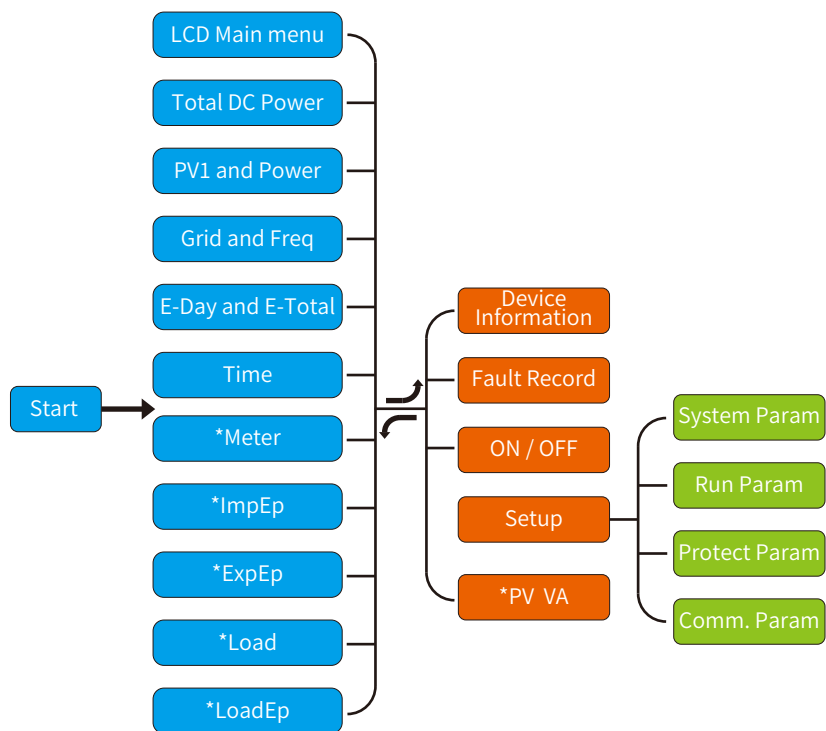
Collaps

Secondly, go to plant page, if it shows the PV power, load power and grid power, which means the configuration is correct.



8. General Operation

During normal operation, the LCD shows the current status of the inverter, including the current power, total generation, a bar chart of power operation and inverter ID, etc. Press the Up key and the Down key to see the current DC voltage, DC current, AC voltage, AC current, inverter radiator temperature, software version number and Wifi connection state of the inverter.



***Note:** These parameters will be available after the meter is connected successfully. Otherwise, it won't show.

Pic 8.1 LCD operation flow chart

8.1 The initial interface

From the initial interface, you can check PV power, PV voltage, grid voltage, inverter ID, model and other infomation.



Pic 8.2 The initial interface

Press UP or Down, you can check inverter DC voltage, DC current, AC voltage, AC current and inverter temperature.



Pic 8.3 PV input voltage and current information

Pic 8.4 Load power



Pic 8.5 Grid voltage and current information

Pic 8.6 Grid voltage and frequency



Pic 8.7 PV generation

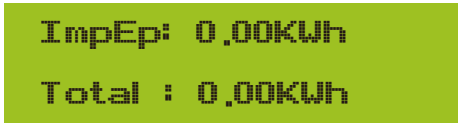


Pic 8.8 Time

Pic 8.9 Meter power



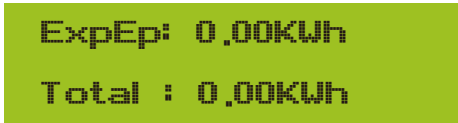
Pic 8.10 Load consumption



ImpEp: 0.00KWh
Total : 0.00KWh

ImpEp: Daily energy purchased from grid;
Total: Total energy purchased from grid.

Pic 8.11 Electrical energy



ExpEp: 0.00KWh
Total : 0.00KWh

ExpEp: Daily energy sold to grid;
Total: Total energy sold to grid.

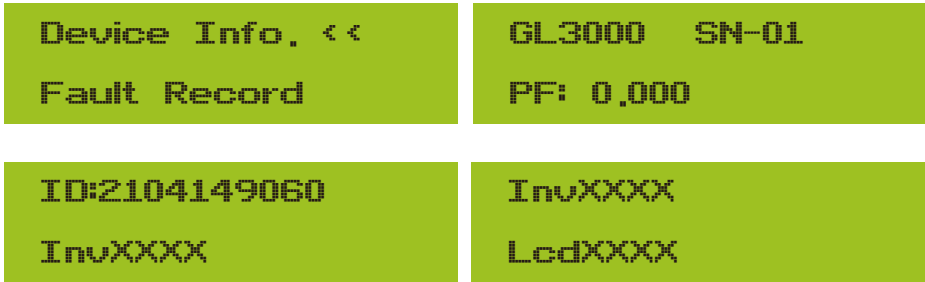
Pic 8.12 Electrical energy

8.2 Submenus in the Main Menu

There are five submenus in the Main Menu.

8.2.1 Device information

You can see the LCD software VerXXXX and control board software VerXXXX. In this interface, there are parameters such as rated power communication addresses.

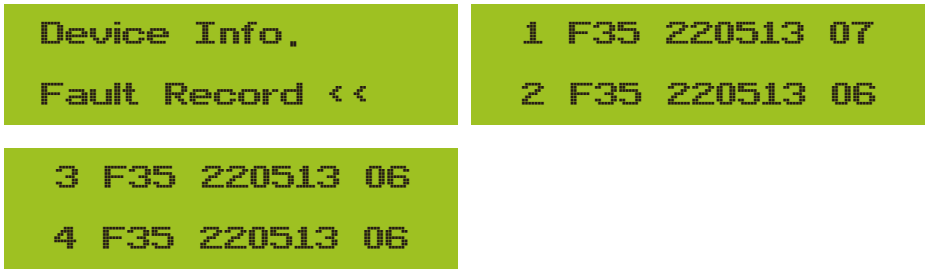


Device Info. <<
Fault Record
GL3000 SN-01
PF: 0.000
ID:2104149060
InvXXXX
LcdXXXX

Pic 8.13 Device information

8.2.2 Fault Record

It can keep Eight fault records in the menu including time, customer can deal with it depends on the error code.



Device Info.
Fault Record <<
1 F35 220513 07
2 F35 220513 06
3 F35 220513 06
4 F35 220513 06

Pic 8.14 Fault Record

8.2.3 ON/OFF setting



Pic 8.15 ON/OFF setting

When the inverter is turned off, it stops working immediately, and go to standby mode and then will go to self-test program again. If it passed the self-test, it will start to work again.

8.2.4 Parameter setting

There are five submenus in the setup. Setting includes system param, run param, protect param, comm: param. All of these information for maintenance reference.



Pic 8.16 Submenus of the parameter setup

8.3 System param setting

System Param includes time set, language set, display set and factory reset.



Pic 8.17 System Param



Pic 8.18 Time



Pic 8.19 Language

Pic 8.20 LCD Screen settings



Pic 8.21 Delay time set

Pic 8.22 Reset to factory setting



Pic 8.23 Set Restore

8.4 Running param set



Warning:
Password required-- only for access-authorized engineer. Un-authorized access may avoid the warranty. The initial password is 1234.

ActiveP	0%	Uref	0.0V
Q-Mode	OFF <<	ReactP	0.0% <<

PF	-1.000	Fun_RCD	OFF <<
Fun-ISO	OFF <<	SelfCheck	0S

Island	OFF <<	Limiter	OFF
Meter	OFF	Feed-in	0% <<

MPPT Num	0	ARC	ON
WindTurbine	<<	OF-Derate	OFF <-

UF-Uprate	OFF <-	WGra	0.0% <<
WGra	0.000%	WGraStr	0.0%

PU	ON	LVRT	OFF
PowerLim	<<	HVRT	OFF <<

DRM	OFF	Sunspec	OFF <<
Sunspec	OFF <<	ZURT	<<

OK	Cancel <<	PassWord	
		* * * *	

Pic 8.25

Pic 8.24 Password

**Note:**

The softlimitation and hardlimitation in Pic 8.27 correspond to the Export limit control function in AS4777.2, and the Feed-in function in Pic 8.24 corresponds to the Generation limit control function in AS4777.2.

**Warning:**

Password required-- only for access-authorized engineer. Un-authorized access may avoid the warranty. If the engineer does not know the password, please contact your distributor or Deye.

Name	Description	Range
ActiveP	Adjust the output active power in %	0-110%
Q-Mode	Multiple reactive power control modes	OFF/Q(P)/PF(P)/Q(U)/PF/Q(%)
Vref	Grid reference voltage for functions including Q(U),PF(P),P(U)etc.	80-260V
ReactP	Adjust reactive power output in %	-100%~+100%
PF	Power Fator	-1-0.8~+0.8-1
Fun_ISO	Insulation resistance detection	ON/OFF
Fun_RCD	Residual current detection	ON/OFF
Self-check	Inverter's self-check time.The default value 60s	0-1000s
Island	Anti-islanding protection	ON/OFF
Meter	If you want to use zero output mode,please set Meter to ON and select OFF to view data only	ON/OFF
Feed_IN %	It is used to deploy how much power can be feed in to grid when the inverter works under zero export mode.(For example,Feed_in=50% of the 12KW model and load power is 5KW. which means Max 6KW power can be feed into grid after inverter providing 5Kw to the load firstly.	0-100%

Pic 8.26

Name	Description	Range
ARC	Arc-fault detection function	ON/OFF/CLR
OF-Derate	Active power response to over-frequency	ON/OFF/HYS
UF-Uprate	Active power response to under-frequency	ON/OFF
PU	power response to grid voltage deviation	ON/OFF
LVRT	voltage ride through function	ON/OFF
HVRT	voltage ride through function	ON/OFF
PowerLim	Hard/soft export limit control	ON/OFF
DRM	Demand Response Modes	ON/OFF
Sunspec	Sunspec Function	ON/OFF
WGraStr	Percentage of Nominal Power per second	0.1%~10%
WGra	percentage of Nominal Power per second	0.1%~10%
ZVRT	Zero Current Mode	ON/OFF

Pic 8.27



Pic 8.28 FUN_ISO

RCD SEN MIN <<
Back

ARC SEN HIG <<
Back

ARC SEN MID <<
Back

Pic 8.29 FUN_RCD

Island SEN MIN <<
Back

Island SEN HIG <<
Back

Island SEN MID <<
Back

Pic 8.30 Island

ARC SEN HIG <<
Back

ARC SEN MID <<
Back

ARC SEN MIN <<
Back

Pic 8.31 ARC

Over-frequency Response

This series inverter provides “over-frequency response” function.
Long pressing the “OFD Mode” to enter the “over-frequency response” setting menu.

ARC ON

OF-Derate ON < -

ARC ON

OFDMode HYS < -

ARC ON

OF-Derate OFF < -

Tab. 8-1 Definition of Over-frequency Response Parameters

Parameter	Range	Description
Fstr	45HZ-65HZ	The Start frequency value for overfrequency response.
Fstop	45HZ-65HZ	The Stop frequency value for overfrequency response.
RecGra	[3,500] 0.01%Pmax/s	Rate of Power recovery(Percentage of active power)

For example, StrtPT: 50.5Hz, StopPT: 51.5Hz, RecPT: 50.1Hz, when the grid frequency increases beyond Start: 50.5Hz, the inverter will linearly reduce the power output with a gradient of 100% Pmax/Hz until it reaches StopPT: 51.5Hz.

Fstr 50.50Hz

Fstop 51.50Hz <<

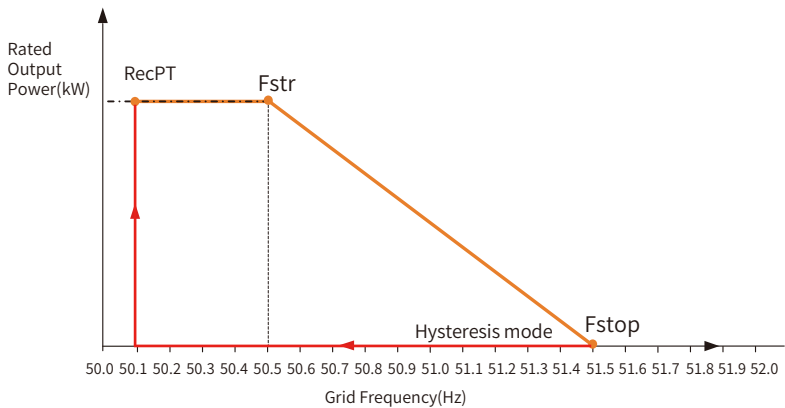


Fig. 8-1 Frq-Watt Mode for Over-frequency Conditions

HardLimitation	
Enable	OFF <<

HardLimitation	
Point	0,0% <<

SoftLimitation	
Enable	OFF <<

SoftLimitation	
Point	0,0% <<

PTD_H	0,0S
M_OFF	0,0%<<

OK	<< Cancel
----	-----------

Pic 8.32 PowerLim

Vstart	0,0%
Vsop	0,0% <<

OK	Cancel <<
----	-----------

Pic 8.33 LVRT

When the frequency exceeds Fstop: 51.5Hz, the inverter output should stop (ie 0 W).
When the frequency is lower than Fstop: 51.5 Hz, the inverter will linearly increase the power output with a gradient of 100% Pmax/Hz until it reaches Fstr: 50.5 Hz.
In the hysteresis mode, when the frequency is lower than Fstop: 51.5 Hz, the inverter will not increase the power output until it is lower than RecPT: 50.1 Hz.



The inverter provides a reactive power regulation function.
Tap **Reactive Power Regulation Mode** to select proper regulation mode and set the corresponding parameters.

Pic 8.34 OF-Derate



Pic 8.35

● **"OFF" Mode**

The reactive power regulation function is disabled. The PF is fixed at +1.000

● **Q(%)**

Adjust reactive power output in %.

● **"PF" Mode**

The power factor (PF) is fixed and the reactive power is regulated by the parameter PF. The PF ranges from 0.8 leading to 0.8 lagging.

- Leading: the inverter is absorbing reactive power from the Grid.
- Lagging: the inverter is injecting reactive power into the grid.

● **"Q(U)" Mode**

The reactive power output of the inverter varies in response to the grid voltage.

● **"Q(P)" Mode**

The reactive power output by the inverter is controlled by the active power of the inverter.

● **"PF(P)" Mode**

The PF is controlled by the active power of the inverter.

"PU" Mode

The active power output of the inverter varies in response to the grid voltage.

WGraStr	0.0%
PU	OFF < -

WGraStr	0.0%
PU	ON < -

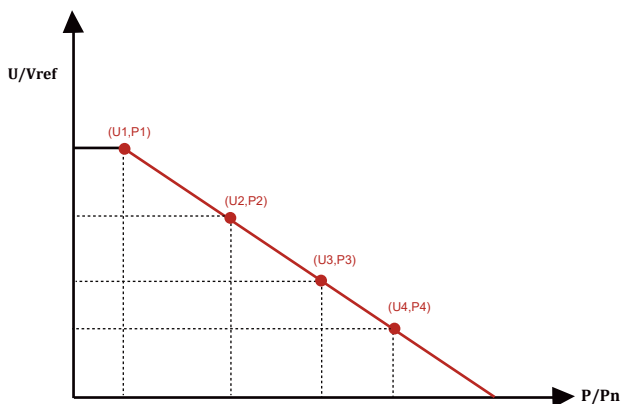
V1	0.0% < <
P1	0.0%

V2	0.0% < <
P2	0.0%

V3	0.0% < <
P3	0.0%

V4	0.0% < <
P4	0.0%

Ti	0s
OK	Cancel < <



Pic 8.36 Active Power Regulation Curve in PU Curve

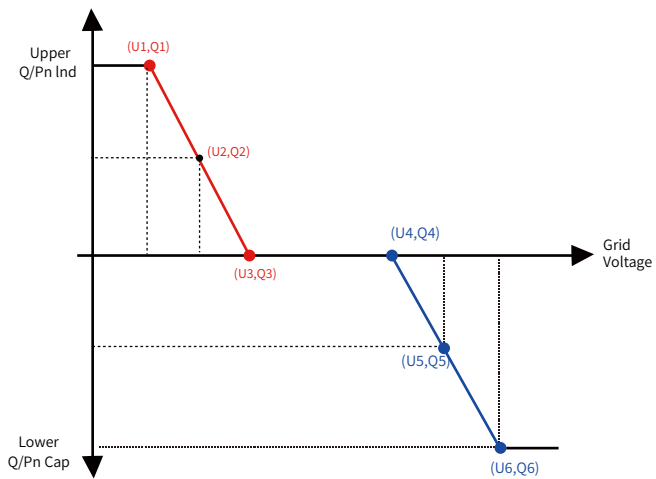
Parameter	Range	Description
P1	0%-110% Pn	Value of P/P_n at point (P1,U1) on the PU mode curve
U1	0% -150% Vref	Grid voltage limit at point (P1,U1) on the PU mode curve
P2	0%-110% Pn	Value of P/P_n at point (P2,U2) on the PU mode curve
U2	0% -150% Vref	Grid voltage limit at point (P2,U2) on the PU mode curve
P3	0%-110% Pn	Value of P/P_n at point (P3,U3) on the PU mode curve
U3	0% -150% Vref	Grid voltage limit at point (P3,U3) on the PU mode curve
P4	0%-110% Pn	Value of P/P_n at point (P4,U4) on the PU mode curve
U4	0% -150% Vref	Grid voltage limit at point (P4,U4) on the PU mode curve
Ti	0-1000s	The adjustment time of PU Curve in seconds (time to accomplish a change of 95%).

"PU" Mode Parameters Explanation

“Q(U)” Mode

ActiveP	0%	Pstart	0,0% <<
QMode	Q(U) < -	Pstop	20,0%
RmpTime	0s	UrefAuto	0s
RmpUref	0 <<	PtUsed	0 <<
U1	0,0% <<	U2	0,0% <<
Q1	0,0%	Q2	0,0%
U3	0,0% <<	U4	0,0% <<
Q3	0,0%	U4	0,0%
U5	0,0% <<	U6	130,0% <<
Q5	0,0%	Q6	30,0%
Q6	0,0%		
OK	Cancel <<		

Pic 8.37



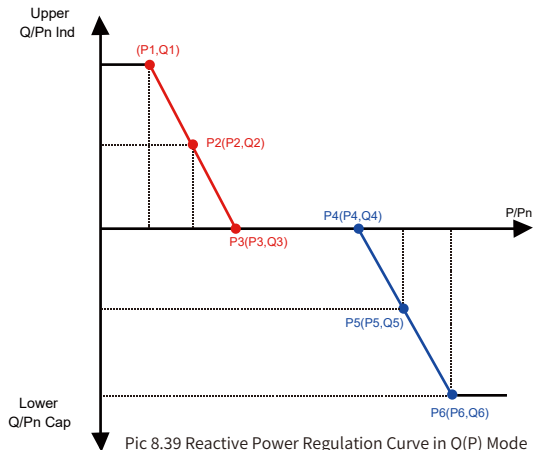
Pic 8.38 Reactive Power Regulation Curve in Q(U) Curve

Parameter	Range	Description
Pstart	0%-130% Rate out power	The QU mode starts when the active power is greater than this value
Pstop	0%-130% Rate out power	The QU mode stops when the active power is less than this value
Q1	-60% -60% Q/Pn	Value of Q/Pn at point (U1,Q1) on the Q(U) mode curve
V1	0-110% VRated	Grid voltage limit at point (U1,Q1) on the Q(U) mode curve
Q2	-60% -60% Q/Pn	Value of Q/Pn at point (U2,Q2) on the Q(U) mode curve
V2	0-110% VRated	Grid voltage limit at point (U2,Q2) on the Q(U) mode curve
Q3	-60% -60% Q/Pn	Value of Q/Pn at point (U3,Q3) on the Q(U) mode curve
V3	0-110% VRated	Grid voltage limit at point (U3,Q3) on the Q(U) mode curve
Q4	-60% -60% Q/Pn	Value of Q/Pn at point (U4,Q4) on the Q(U) mode curve
V4	0-110% VRated	Grid voltage limit at point (U4,Q4) on the Q(U) mode curve
Q5	-60% -60% Q/Pn	Value of Q/Pn at point (U5,Q5) on the Q(U) mode curve
V5	0-110% VRated	Grid voltage limit at point (U5,Q5) on the Q(U) mode curve
Q6	-60% -60% Q/Pn	Value of Q/Pn at point (U6,Q6) on the Q(U) mode curve
V6	0-110% VRated	Grid voltage limit at point (U6,Q6) on the Q(U) mode curve
RMpTime	0-1000s	Increase or decrease the time required for the reactive power to reach the specified value of the curve.

"Q(U)" Mode Parameters Explanation

“Q(P)” Mode

The reactive power output by the inverter is controlled by the active power of the inverter.



Pic 8.39 Reactive Power Regulation Curve in Q(P) Mode

ActiveP	20.0%	P1	0.0%	<<	
QMode	QP < -	Q1	0.0%		
P2	0.0%	<<	P3	0.0%	<<
Q2	0.0%		Q3	0.0%	
P4	0.0%	<<	P5	0.0%	<<
Q4	0.0%		Q5	0.0%	
P6	0.0%	<<	OK	<<	Cancel
Q6	0.0%				

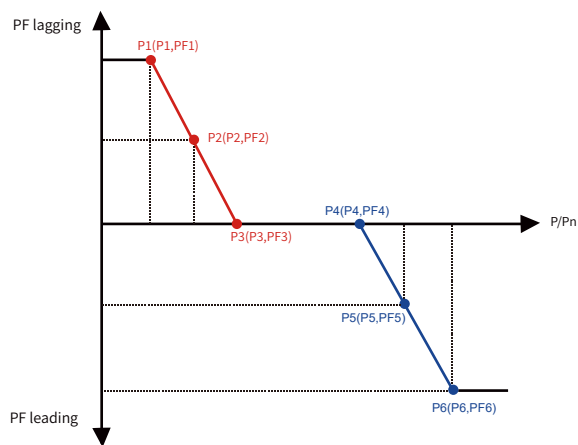
Parameter	Range	Description
P1	0%-100% Pn	Power value/Pn at point (P1,Q1) on the Q(P) mode curve
Q1	-60% -60% Q/Pn	Reactive power value at point (P1,Q1) on the Q(P) mode curve
P2	0%-100% Pn	Power value/Pn at point (P2,Q2) on the Q(P) mode curve
Q2	-60% -60% Q/Pn	Reactive power value at point (P2,Q2) on the Q(P) mode curve
P3	0%-100% Pn	Power value/Pn at point (P3,Q3) on the Q(P) mode curve
Q3	-60% -60% Q/Pn	Reactive power value at point (P3,Q3) on the Q(P) mode curve
P4	0%-100% Pn	Power value/Pn at point (P4,Q4) on the Q(P) mode curve
Q4	-60% -60% Q/Pn	Reactive power value at point (P4,Q4) on the Q(P) mode curve
P5	0%-100% Pn	Power value/Pn at point (P5,Q5) on the Q(P) mode curve
Q5	-60% -60% Q/Pn	Reactive power value at point (P5,Q5) on the Q(P) mode curve
P6	0%-100% Pn	Power value/Pn at point (P6,Q6) on the Q(P) mode curve
Q6	-60% -60% Q/Pn	Reactive power value at point (P6,Q6) on the Q(P) mode curve

"Q(P)" Mode Parameters Explanation

"PF(P)" Mode

The output power factor is controlled by the active power of the inverter.

<div>Ustart0.0%</div> <div>Ustop0.0%</div>	<div>P10.0%</div> <div>PF1-1.000<<</div>
<div>P20.0%</div> <div>PF2-1.000<<</div>	<div>P30.0%</div> <div>PF3-1.000<<</div>
<div>P40.0%</div> <div>PF4-1.000<<</div>	<div>P50.0%</div> <div>PF5-1.000<<</div>
<div>P60.0%</div> <div>PF6-1.000<<</div>	<div>RmpTime0s</div> <div>OKCancel<<</div>



Pic 8.40 Power factor Regulation Curve in PF(P) Mode

Parameter	Range	Description
Vstart	0-150% Vref	The PFP mode is enable when grid voltage is greater than Vstart
Vstop	0-150% Vref	The PFP mode is disable when grid voltage is less than Vstop
P1	0-110% Pn	Power value at point (PF1,P1) on the PF(P) Curve
PF1	0.8 leading - 0.8 lagging	PF value at point (PF1,P1) on the PF(P) Curve
P2	0-110% Pn	Power value at point (PF2,P2) on the PF(P) Curve
PF2	0.8 leading - 0.8 lagging	PF value at point (P2,PF2) on the PF(P) Curve
P3	0-110% Pn	Power value at point (P3,PF3) on the PF(P) Curve
PF3	0.8 leading - 0.8 lagging	PF value at point (P3,PF3) on the PF(P) Curve
P4	0-110% Pn	Power value at point (P4,PF4) on the PF(P) Curve
PF4	0.8 leading - 0.8 lagging	PF value at point (P4,PF4) on the PF(P) Curve
P5	0-110% Pn	Power value at point (P5,PF5) on the PF(P) Curve
PF5	0.8 leading - 0.8 lagging	PF value at point (P5,PF5) on the PF(P) Curve
P6	0-110% Pn	Power value at point (P6,PF6) on the PF(P) Curve
PF6	0.8 leading - 0.8 lagging	PF value at point (P6,PF6) on the PF(P) Curve
RmpTime	0-1000s	The time of the PFF Curve in seconds (time to accomplish a change of 95%).

"PF(P)" Mode Parameters Explanation

8.5 Protect Param



Warning:

Engineer Only.

We will set the param depends on the safety requirements, so customers don't need to reset it. The password is same as 8.4 Running param



Warning:

For compliance with AS/NZS 4777.2:2020 please select from Regions Australia A/B/C and New Zealand. Please contact your local grid operator on which region to select.

GridStanderd << Advanced	Back <<
PassWord	
* * * *	

Pic 8.41 Password

Braszil EN50549-1-PL <<	EN50549-1 IEC61727 <<
CUSTOM UDE4105 <<	UDE0126 Spain <<
CEI_0-21 G98 <<	G99 NBT32004-B <<
Australia-A Australia-B <<	Australia-C New Zealand <<
MEA PEA <<	Norway Switzerland <<
R25 OK Cancel <<	

Pic 8.42 GridStanderd

OverVolt Lv3 Point 240,0V <<	OverVolt Lv3 Delay 1000ms <<
OverVolt Lv2 Point 240,0V <<	OverVolt Lv2 Delay 1000ms <<
OverVolt Lv1 Point 240,0V <<	OverVolt Lv1 Delay 1000ms <<
UnderVolt Lv1 Point 235,0V <<	UnderVolt Lv1 Delay 1000ms <<
UnderVolt Lv2 Point 235,0V <<	UnderVolt Lv2 Delay 1000ms <<
UnderVolt Lv3 Point 235,0V <<	UnderVolt Lv3 Delay 1000ms <<
OverFreq Lv3 Point 52,00Hz <<	OverFreq Lv3 Delay 1000ms <<
OverFreq Lv2 Point 52,00Hz <<	OverFreq Lv2 Delay 1000ms <<
OverFreq Lv1 Point 52,00Hz <<	OverFreq Lv1 Delay 1000ms <<
UnderFreq Lv1 Point 48,00Hz <<	UnderFreq Lv1 Delay 1000ms <<

UnderFreq Lv2 Point 48.00Hz <<	UnderFreq Lv2 Delay 1000ms <<
UnderFreq Lv3 Point 48.00Hz <<	UnderFreq Lv3 Delay 1000ms <<
Reconnection Uup 0.0V <<	Reconnection Udown 0.0V <<
Reconnection Fup 0.00Hz <<	Reconnection Fdown 0.00Hz <<
OV 10 Minutes Enable OFF <<	OV 10 Minutes Point 0.0% <<
Point 0.0% Grid --- <<	OK Cancel <<

Pic 8.43 “CUSTOMIZED”

Please set the proper grid parameters according to the requirements of your current country's grid regulations.If you are not clear about it, please consult your installer.

8.6 Comm. param set

Address: 01 << BaudRate: 9600	Func: Meter Address1: 01 <<
----------------------------------	--------------------------------

Pic 8.44 Comm. Param

9. Repair and Maintenance

String type inverter doesn't need regular maintenance. However, debris or dust will affect heat sink's thermal performance. It is better to clean it with a soft brush. If the surface is too dirty and affect the reading of LCD and LED lamp, you can use wet cloth to clean it up.



High Temperature Hazard:

When the device is running, the local temperature is too high and the touch can cause burns. Turn off the inverter and wait for it cooling, then you can clean and maintain.



Safety Hint:

No solvent, abrasive materials or corrosive materials can be used for cleaning any parts of the inverter.

10. Error information and processing

Inverter has been designed in accordance with international grid tied standards for safety, and electromagnetic compatibility requirements. Before delivering to the customer the inverter has been subjected to several tests to ensure its optimal operation and reliability.

10.1 Error code

If there is any failure, the LCD screen will display an alarm message. In this case, the inverter may stop feeding energy into the grid. The alarm description and their corresponding alarm messages are listed Table 10.1.

Error code	Description	Ongrid - Single Phase
F01	DC input polarity reverse fault	Check the PV input polarity.
F02	DC insulation impedance permanent fault	Check the grounding cable of inverter.
F03	DC leakage current fault	Hardly appear the code. Never ever happened so far.
F04	Ground fault GFDI	Check the solar panel output connection.
F05	Read the memory error	Failure in reading memory (EEPROM). Restart the inverter if the fault still exists, contact your installer or Deye service.
F06	Write the memory error	Failure in writing memory (EEPROM). Restart the inverter if the fault still exists, contact your installer or Deye service.
F07	GFDI blown fuse	Hardly appear the code. Never ever happened so far.
F08	GFDI grounding touch failure	Hardly appear the code. Never ever happened so far.
F09	IGBT damaged by excessive drop voltage	Hardly appear the code. Never ever happened so far.

Error code	Description	Ongrid - Single Phase
F10	Auxiliary switch power supply failure	Hardly appear the code. Never ever happened so far.
F11	Ac main contactor errors	Hardly appear the code. Never ever happened so far.
F12	AC auxiliary contactor errors	Hardly appear the code. Never ever happened so far.
F13	Working mode changed/Grid mode changed	Hardly appear the code. Never ever happened so far.
F14	DC firmware over current	Hardly appear the code. Never ever happened so far.
F15	AC firmware over current	<ol style="list-style-type: none"> 1. The internal AC sensor or detection circuit on control board or connection wire may loose. 2. Restart the inverter, if the error still exists, please contact your installer or Deye service.
F16	GFCI(RCD) Ac leakage current fault	<ol style="list-style-type: none"> 1. This fault means the average leakage current is over 300mA. Check whether DC power supply or solar panels is ok, then check 'Test data'-> 'diL' value is about 120; Then check the leakage current sensor or circuit(the following picture). Checking test data needs using big LCD. 2. Restart the inverter, if the error still exists, please contact your installer or Deye service.
F17	Three phase current, over-current fault	Hardly appear the code. Never ever happened so far.
F18	AC over current fault of hardware	<ol style="list-style-type: none"> 1. Check AC sensor or detection circuit on control board or connection wire. 2. Restart the inverter or factory reset, if the error still exists, please contact your installer or Deye service.
F19	All hardware failure synthesis	<ol style="list-style-type: none"> 1. When inverter is running, wifi plug plugin, will occur F19. 2. Restart the inverter or factory reset, if the error still exists, please contact your installer or Deye service.
F20	DC over current fault of the hardware	Not available.
F21	DC leakage flow fault	Hardly appear the code. Never ever happened so far.
F22	Crash stop (if there is a stop button)	Contact your installer for help.
F23	AC leakage current is transient over current	<ol style="list-style-type: none"> 1. This fault means the leakage current is above 30mA suddenly. Check whether DC power supply or solar panels is ok, then check 'Test data'-> 'diL' value is about 120; Then check the leakage current sensor or circuit. Check test data needs using big LCD. 2. Restart the inverter, if the fault still exists, contact your installer or Deye service.
F24	DC insulation impedance failure	<ol style="list-style-type: none"> 1. Check Vpe resistance on main board or detection on control board. Check PV panels is OK. Many times this issue is the PV problem. 2. Check whether the PV panel (aluminum frame) is grounded well and inverter is grounded well. Open the cover of inverter and then check the inside ground cable is fixed well on the shell. 3. Check if the AC/DC cable, terminal block are shorted to ground or the insulation is damaged. 4. Restart the inverter, if the fault still exists, contact your installer or Deye service.
F25	DC feedback fault	Hardly appear the code. Never ever happened so far.
F26	The DC busbar is unbalanced	Hardly appear the code. Never ever happened so far.

Error code	Description	Ongrid - Single Phase
F27	DC end insulation error	Hardly appear the code. Never ever happened so far.
F28	Inverter 1 DC high fault	Hardly appear the code. Never ever happened so far.
F29	AC load switch failure	Hardly appear the code. Never ever happened so far.
F30	AC main contactor failure	1. Check relays and AC voltage of relays. 2. Check relays driver circuit. 3. Check if the software is not suitable for this inverter. (Old inverter not have relays detection function) 4. restart the inverter, if the fault still exists, contact your installer or Deye service.
F31	Dc boost soft start	Not available.
F32	Inverter 2 dc high fault	Hardly appear the code. Never ever happened so far.
F33	AC over current	AC current sensor or its circuit have issue. Check if the inverter type is not right.
F34	AC current over load	Hardly appear the code. Never ever happened so far.
F35	No AC grid	1. Check AC grid voltage. Check AC voltage detection circuit. Check if the AC connector in good condition. Check whether the AC grid is normal in voltage. 2. Restart the inverter, if the fault still exists, contact your installer or Deye service.
F36	AC grid phase error	Hardly appear the code. Never ever happened so far.
F37	AC three-phase voltage unbalance failure	Hardly appear the code. Never ever happened so far.
F38	AC three-phase current unbalance failure	Hardly appear the code. Never ever happened so far.
F39	AC over current(one cycle)	1. Check AC current sensor and its circuit. 2. Restart the inverter, if the fault still exists, contact your installer or Deye service.
F40	DC over current	Hardly appear the code. Never ever happened so far.
F41	AC Line W,U over voltage	Check the AC voltage protection setting. And Check if the AC cable is too thin. Check the voltage difference between LCD and meter.
F42	AC Line W,U low voltage	Check the AC voltage protection setting. Check the voltage difference between LCD and meter. Also need to check whether AC cables are all firmly and correctly connected.
F43	AC Line V,W over voltage	Not available.
F44	AC Line V,W low voltage	Not available.
F45	AC Line U,V over voltage	Not available.
F46	AC Line U,V low voltage	Not available.
F47	AC Over frequency	Check the frequency protection setting.
F48	AC lower frequency	Check the frequency protection setting.
F49	U phase grid current DC component over current	Hardly appear the code. Never ever happened so far.
F50	V phase grid current DC component over current	Hardly appear the code. Never ever happened so far.

Error code	Description	Ongrid - Single Phase
F51	W phase grid current DC component over current	Hardly appear the code. Never ever happened so far.
F52	AC inductor A, phase current DC current high	Hardly appear the code. Never ever happened so far.
F53	AC inductor B, phase current DC current high	Hardly appear the code. Never ever happened so far.
F54	AC inductor C, phase current DC current high	Hardly appear the code. Never ever happened so far.
F55	DC busbar voltage is too high	1. Check PV voltage and Ubus voltage and its detection circuit. If the PV input voltage exceeds the limit, please reduce the number of solar panels in series. 2. For Ubus voltage, please check the LCD display.
F56	DC busbar voltage is too low	1. It tells the PV input voltage is low and it always happens in the early morning. 2. Check PV voltage and Ubus voltage. When inverter is running, then showing F56, maybe Loss of driver or need update firmware. 3. Restart the inverter, if the fault still exists, contact your installer or Deye service.
F57	AC reverse irrigation	AC reverse irrigation.
F58	AC grid U over current	Hardly appear the code. Never ever happened so far.
F59	AC grid V over current	Hardly appear the code. Never ever happened so far.
F60	AC grid W over current	Hardly appear the code. Never ever happened so far.
F61	Reactor A phase over current	Hardly appear the code. Never ever happened so far.
F62	Reactor B phase over current	Hardly appear the code. Never ever happened so far.
F63	ARC fault	1. Check PV module cable connection and clear the fault; 2. Seek help from us, if can not go back to normal state.
F64	IGBT heat sink high temperature	1. Check temperature sensor; Check if firmware is suitable for the hardware. Check if the inverter is its right model. 2. Restart the inverter, if the fault still exists, contact your installer or Deye service.

Table10.1 Error codes and their solutions



Safety Hint:

If your string inverter has any of the fault information shown in Table 10-1, and when you reset the machine and still don't solve the problem, please contact our distributor and provide the below details:

1. Serial number of the inverter;
2. The distributor/dealer of the inverter(if available);
3. Installation date;
4. The discription of problem(include LCD'error code and LED starus indicator lights);
5. Your contact details.

11.Specification

Model	SUN-9K-G02P1 -AU-AM2	SUN-10K-G02P1 -AU-AM2	SUN-10.5K-G02P1 -AU-AM2
PV String Input Data			
Max. PV Input Power(kW)	13.5	15	15.75
Max. PV Input Voltage(V)		550	
Start-up Voltage(V)		80	
MPPT Voltage Range(V)		70-500	
Rated PV Input Voltage(V)		360	
Full Load MPPT Voltage Range(V)	225-500	250-500	265-500
Max. Operating PV Input Current(A)		26+26	
Max. Input Short Circuit Current (A)		39+39	
No. of MPP Trackers/No. of Strings per MPP Tracker		2/2+2	
Max. Inverter Backfeed Current To the Array		0	
PV Connection		VP-D4	
AC Output Data			
Rated AC Output Active Power(kW)	9	9.999	10.5
Max. AC Output Apparent Power(kVA)	9	9.999	10.5
Rated AC Output current (A)	39.2	43.5	45.7
Max. AC Output Current(A)	39.2	43.5	45.7
Max. Output Fault Current(A)	78.4	87	91.4
Max. Output Overcurrent Protection(A)		110	
Rated Output voltage/range (V)		230V 0.85Un-1.1Un	
Grid Connection Form		L+N+PE	
Rated Output Grid Frequency/range(Hz)		50Hz/45Hz-55Hz	
Power Factor Adjustment Range		0.8 leading-0.8lagging	
Total Current Harmonic Distortion THDi		<3%	
DC Injection Current		<0.5%In	
Efficiency			
Max.Efficiency		97.7%	
Euro Efficiency		97.2%	
MPPT Efficiency		>99%	
Equipment Protection			
DC Polarity Reverse Connection Protection		yes	
AC Output Overcurrent Protection		yes	
AC Output Overvoltage Protection		yes	
AC Output Short Circuit Protection		yes	
Thermal Protection		yes	
DC Terminal Insulation Impedance Monitoring		yes	
DC component monitoring		yes	
Ground fault current monitoring		yes	
Arc fault circuit interrupter (AFCI)		Optional	
Power Network Monitoring		yes	
Island protection monitoring		yes	
Earth Fault Detection		yes	
DC Input Switch		yes	
Overvoltage Load Drop Protection		yes	
Residual Current (RCD) Detection		yes	
Anti-islanding Protection		yes (Active Frequency Shift)	
Surge Protection Level		TYPE II(DC),TYPE II(AC)	

Interface	
LCD/LED display	LCD1602
Communication Interface	RS485/RS232 /WiFi/LAN
General Data	
Operating Temperature Range (°C)	-25 to +60°C, >45°C derating
Permissible Ambient Humidity	0-100%
Permissible Altitude (m)	3000m
Noise (dB)	≤ 35dB
Ingress Protection(IP) Rating	IP 65
Inverter Topology	Non-Isolated
Over Voltage Category	OVC II(DC),OVC III(AC)
Cabinet Size (W*H*D) [mm]	330*410*213.5 (Excluding connectors and brackets)
Weight [kg]	14.8
Warranty [year]	10 Years
Type Of Cooling	Natural cooling
Grid Regulation	AS/NZS 4777.2
Safety EMC/Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2

12.Package and transport inverter

Usually placed inverter in the packing box with tape sealing, if the inverter cannot reoccupy, you can choose a cheap carton for packaging. Carton requirements must meet the size of the inverter and can support inverter machine overall weight.

Series frequency converter in the process of moving, please note: handle with care, do not touch the inverter, put as flat as possible.

13.Disposing of the inverter

Do not dispose of inverter together with household waste. Please accordance with the disposal regulations for electronic waste which apply at the installation site at that time. Ensure that the old unit and, where applicable, any accessories are disposed of in a proper manner.

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