SEMS Portal App LinkedIn Offical Website

GOODWE (China)

No. 90 Zijin Rd., New District, Suzhou, 215011, China
sales@goodwe.com (sales)
service@goodwe.com (service)

GOODWE (Germany)

Fürstenrieder Str. 279a 81377 München, Germany
sales.de@goodwe.com
service.de@goodwe.com

GOODWE (Brazil)

Rua Abelardo 45, Recife/PE, 52050-310
sergio@goodwe.com
servico.br@goodwe.com

GOODWE (Netherlands)

Franciscusdreef 42C, 3565AC Utrecht, the Netherlands
sales@goodwe.com
service.nl@goodwe.com

GOODWE (UK)

6 Dunhams Court, Dunhams Lane, Letchworth
Garden City, SG6 1WB UK
enquiries@goodwe.com.uk / service@goodwe.com.uk

GOODWE (India)

1202, G-Square Business Park, Sector 30A, Opp. Sanpada
Railway Stn., Vashi, Navi Mumbai- 400703
sales@goodwe.com / service.in@goodwe.com

GOODWE (Italy)

Via Cesare Braico 61, 72100 Brindisi, Italy
valter.pische@goodwe.com (sales)
operazioni@topsenergy.com; goodwe@arsimp.it (service)

GOODWE (Turbutton)

Adalet Mah. Megapol Tower K: 9 No: 110 Bayraklı - Izmir
info@goodwe.com.tr
service@goodwe.com.tr

GOODWE (Australia)

Level 14, 380 St. Kilda Road, Melbourne,
Victoria, 3004, Australia
sales@goodwe.com / service.au@goodwe.com

GOODWE (Mexico)

Oswaldo Sanchez Norte 3615, Col. Hidalgo, Monterrey,
Nuevo Leon, Mexico, C.P. 64290
sales@goodwe.com / soporte.latam@goodwe.com

GOODWE (Korea)

8F Invest Korea Plaza, 7 Heoleung-ro
Seocho-gu Seoul Korea (06792)
sales@goodwe.com / Larry.Kim@goodwe.com

Note: The information above is subject to change without prior notice, for details refer to www.goodwe.com

GOODWE
YOUR SOLAR ENGINE

NS.DNS SERIES USER MANUAL

GOODWE
YOUR SOLAR ENGINE

SOLAR INVERTER

Version 1.0.5

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1 Symbols

	Failure to observe a warning indicated in this manual may result in injury.
	Recyclable materials
	Danger of high voltage & electric shock
	This side up - The package must always have the arrows point up
	Don't touch, hot surface!
	No more than six (6) identical packages be stacked on each other.
	Special disposal instructions
	Fragile
	Keep Dry
	Refer to operation instructions
	Wait at least 5 minutes after disconnecting the inverter before touching internal parts
	CE mark.

2 Safety Measures & Warning

The NS/DNS series inverter of Jiangsu GOODWE Power Supply Technology Co, Ltd. (hereinafter referred to as GOODWE) strictly conforms to related safety rules in design and test. Safety regulations relevant to the location shall be followed during installation, commissioning, operation and maintenance. Improper operation pose a risk of electric shock or damage to equipment and property. (NS: Single-MTTP, Single-Phase, DNS Dual-MPPT, Single-Phase)

- Installation and connection of inverters must be performed by qualified personnel, in compliance with local electrical standards, regulations and the requirements of local power authorities and/or companies.
- To avoid electric shock, Dc input and AC output of the inverter must be disconnected for at least 5 minutes before performing any installation or maintenance.
- The temperature of some parts of the inverter may exceed 60c during operation. To avoid being burnt do not touch the inverter during operation. Let it cool before touching it.
- Keep children away from inverter.
- Do not open the front cover of the inverter. Apart from performing work at the wiring terminal (as instructed in this manual), touching or changing components without authorization may cause injury to people, damage to inverters and annulment of the warranty.
- Static electricity may damage electronic components. Appropriate methods must be adopted to prevent such damage to the inverter; otherwise the inverter may be damaged and the warranty annulled.
- Ensure the output voltage of the proposed PV array is lower than the maximum rated inut 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.
- PV modules should have an IEC61730 class A rating.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment's design may be impaired.
- To completely isolate the equipment: switch off the DC switch, disconnect the DC terminal, and disconnect the AC terminal or AC breaker.
- Prohibit inserting or pulling the AC and DC terminals when the inverter is powered on.
- If there are more than 3 PV strings on input side, and additional fuse installation will be suggested.
- An earthing photovoltaic system requires the connection of an Arc fault detector on DC side.
- The inverter can exclude the possibility of DC residual currents to 6mA in the system, where an external RCD is required in addition to the build=in RCMU, type A RCD must be used to avoid tripping.

• The PV- is not grounded as default configuration.

To ensure IP64, inverters must be sealed well, please install the inverters within one day after unpacking, otherwise please seal all used terminals / holes, any unused terminals / holes are not allowed to be kept open, confirm that there is no risk of water or dust entering terminals / holes.

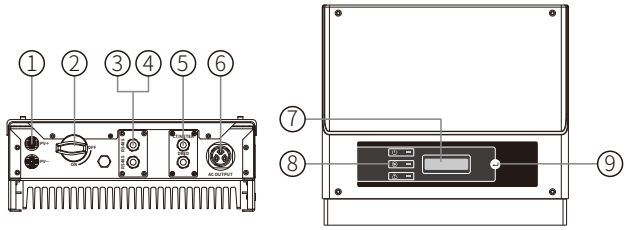
To our inverter product, GOODWE provides standard manufacture warranty which comes with the product and prepaid warranty extension solution to our customer. You can find the details about the terms and solution from below linkage.

https://en.goodwe.com/warranty.asp

3 Product Introduction

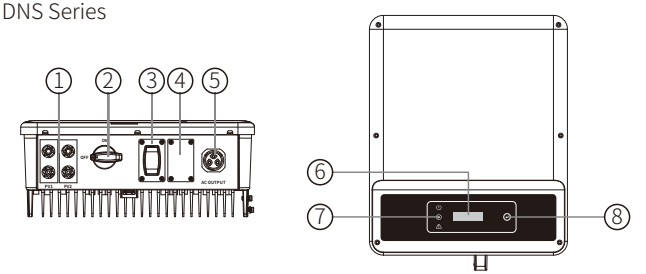
3.1 Inverter Overview

NS Series



1. PV Input Terminal
2. DC Switch (Optional)
3. RS485/USB Port
4. WiFi Module (Optional)
5. CT & DRED/Remote Shutdown Port (Optional)
6. AC Output Termial
7. LCD
8. Indicator Lights
9. Button

DNS Series



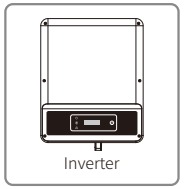
1. PV Input Terminal
2. DC Switch (Optional)
3. RS485 / USB Port
4. CT & DRED/Remote Shutdown Port (Optional)
5. AC Output Termial
6. LCD
7. Indicator Lights
8. Buttons

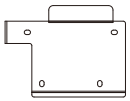
Item	Name	Description
1	PV Input Terminal	For PV string connection
2	DC Switch (Optional)	During normal operation it is in "on" state, it can shut down the inverter after it is disconnected from the grid by the AC breaker.
3	RS485/USB Port	For RS485 or USB communication
4	WiFi Module (Optional)	For WiFi communication
5	CT & DRED/Remote Shutdown Communication Port	For CT and DRED Communication
6	AC Output Terminal	For AC cable connection
7	LCD	Inverter operation data viewing and parameter configuration.
8	Indicator Light	Display the state of the inverter
9	Button	For configuration and viewing parameters.

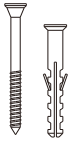
3.2 Package

The unit is thoroughly tested and strictly inspected before delivery. Damage may still occur during shipping.

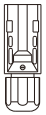
1. Check the package for any visible damage upon receiving.
2. Check the inner contents for damage after unpacking.
3. Check the package list below.

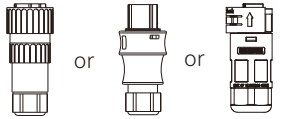

Inverter


Wall-Mounted Bracket

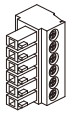

Expansion Bolts


Positive DC Plug [1]


Negative DC Plug [1]


AC Plug

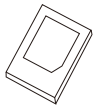

2-Pin Terminal


6-Pin Terminal


PE Terminal


Fixed Screw


Quick Installation Instruction


WiFi Configuration Instruction

[1]Positive & Negative Plug:

NS series 1 pair;

DNS series 2 pairs.

4 Installation

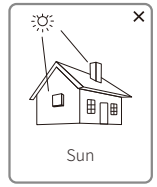
4.1 Mounting Instructions

1. In order to achieve optimal performance, the ambient temperature should be lower than 45°C.
2. For easy maintenance, we suggest to install the inverter at eye level.
3. Inverters should not be installed near flammable and explosive items. Strong electro-magnetic charges should be kept away from installation site.
4. Product label and warning symbols should be placed at a location that is easy to read by the users.
5. Make sure to install the inverter at a place where it is protected from direct sunlight, rain and snow.

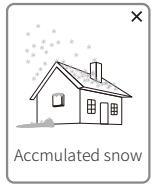

Keep away from sunlight


Keep dry


Keep it clear of snow


Sun


Rain

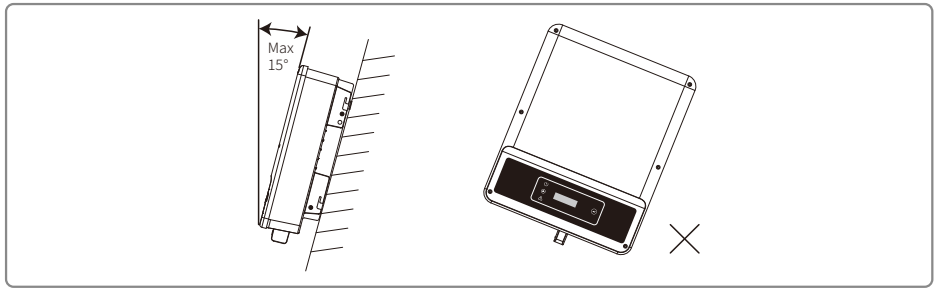

Accmulated snow

4.2 Equipment Installation

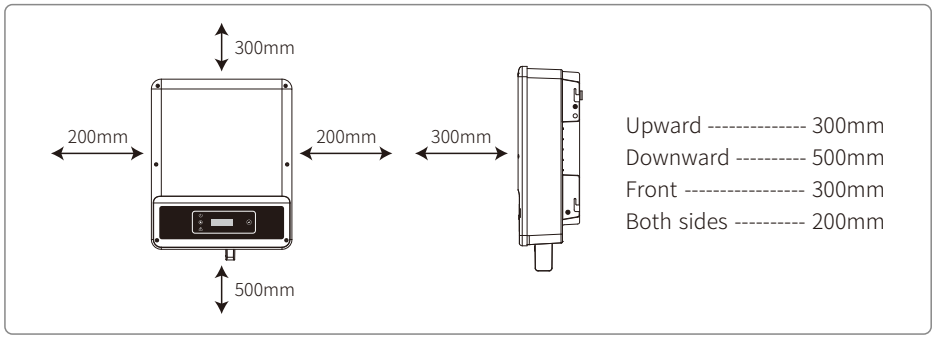
4.2.1 Select Installation Location

Please take the following points into consideration when you are selecting a proper location to install inverter.

- Please choose appropriate mounting methods and installation location in terms of weight and dimension of inverter.
- The location must be well ventilated and sheltered from direct sunlight.
- Install inverter vertically or with a backward tilt within 15 degrees. No lateral tilt is allowed. The area of the connectors should point downwards.



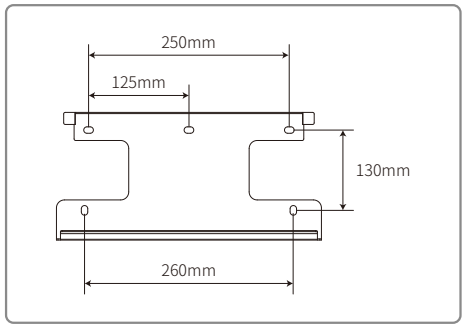
To allow for dissipation of heat, and for convenience of dismantling, clearance around the inverter must follow the below diagram.
The installation position shall not prevent access to the disconnection means.

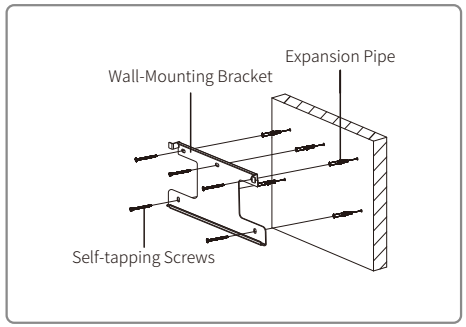


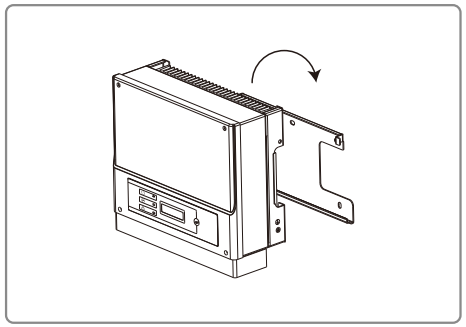
4.2.2 Mounting Procedure

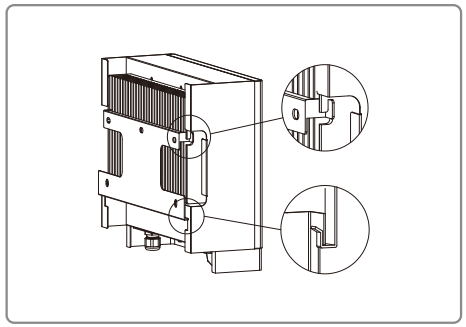
1. Use the wall-mount bracket as a template and drill holes with 10mm in diameter and 80 mm in depth on the wall.
2. Fix the wall-mount bracket on the wall with the expansion bolts in the accessories bag.
3. Hold the inverter by the side groove.
4. Mount the inverter onto the wall-mount bracket.

Mounting procedure for NS

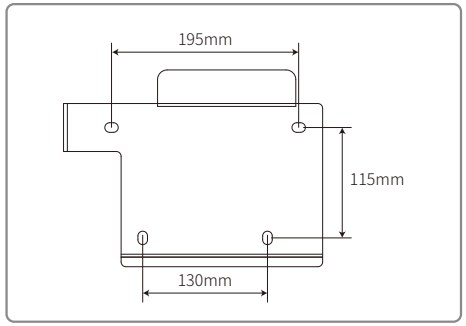


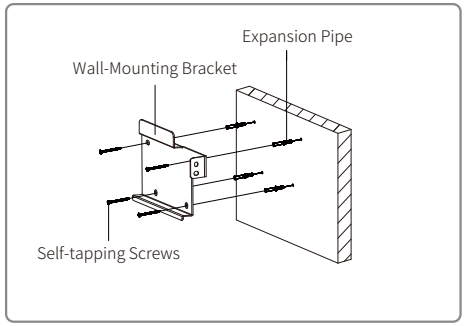


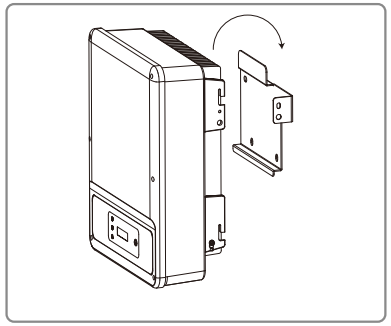


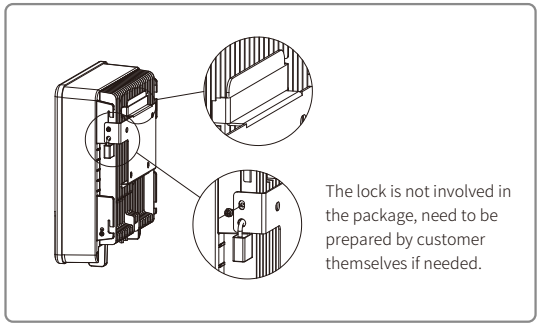


Mounting procedure for DNS









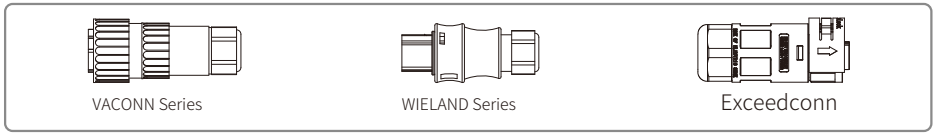
4.3 Electrical Connection

4.3.1 Connection To Grid (AC Side Connection)

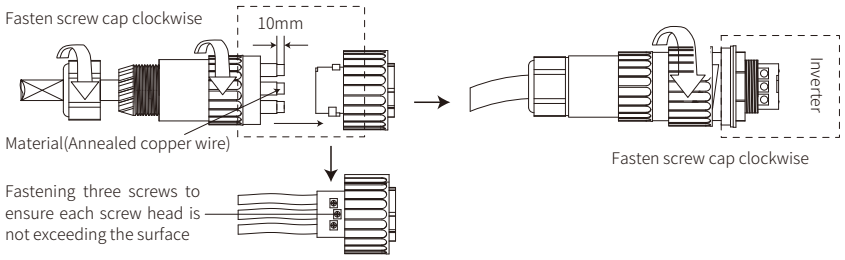
1. Check the grid voltage and frequency for whether it complies with the required voltage and frequency of inverter connection.
2. Add breaker or fuse to AC side, the specification should be more than 1.25 times of rated AC output current.
3. The PE line of inverter should be connected to the earth, make sure the impedance of the neutral wire and earth wire is less than 10 ohm.
4. Disconnect the breaker or fuse between the inverter and the utility.
5. Connect the inverter to the grid as follows:

There are 3 AC connector brands for inverter, VACONN, WIELAND and Exceedconn.

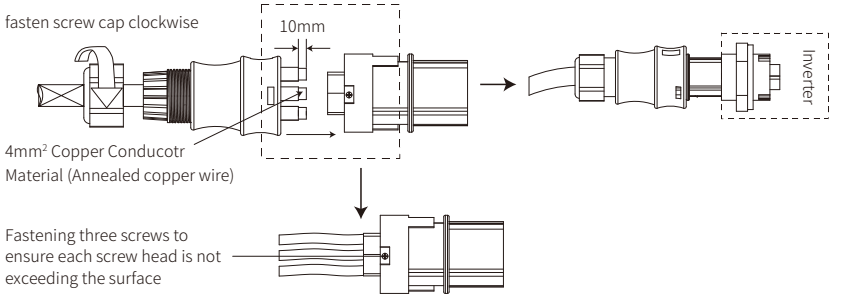
6. The AC line construction shall be such that if the cord should slip from its anchorage, placing a strain on conductors, the protective earthing conductor will be the last to take the strain. As such, the PE line is longer than L and N.



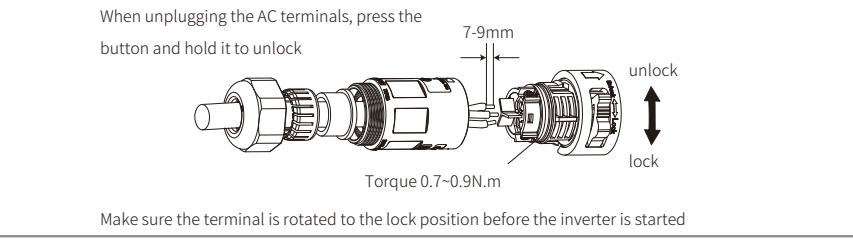
Installation instruction of VACONN series



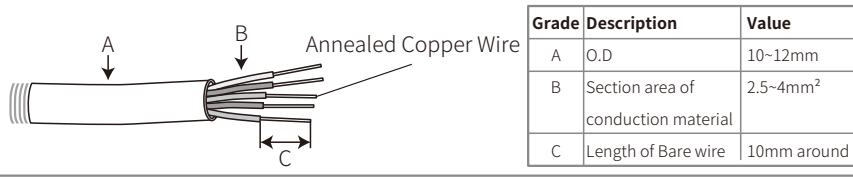
Installation instruction of WELAND series



Exceedconn connectors installation instruction



AC cable illustration :



Grade	Description	Value
A	O.D	10~12mm
B	Section area of conduction material	2.5~4mm²
C	Length of Bare wire	10mm around

Note:

1. Neutral conductor shall be blue, line conductor shall be black or brown (preferred), protective earth bonding line shall be yellow-green.
2. Fix (moment: 0.6N.m) the connector of AC cable to the corresponding terminals.

4.3.2 AC Circuit Breaker And Residual Current Protection Device

In order to ensure that the inverter can be safe and reliable to disconnect from the power grid please install an independent two pole circuit breaker to protect the inverter.

The inverter can exclude the possibility of DC residual currents to 6mA in the system, where an external RCD is required in addition to the build-in RCMU, type A can be used, type B or type A must be used to avoid tripping.

Inverter model	Recommended circuit breaker specifications
GW1000-NS / GW1500-NS / GW2000-NS / GW2500-NS	16A
GW3000D-NS / GW3600D-NS	25A
GW4200D-NS / GW5000D-NS	32A
GW6000D-NS	40A

⚠ Note: Multiple inverter are not allowed to share a circuit breaker.

The integrated leakage current detection device of the inverter can detect can detect external leakage current in real time. When the detected current exceeds the limit value, inverter will quickly disconnect from the grid, if the leakage current protection device is installed externally, the action current should be 300mA or higher.

4.3.3 Earth Terminal Connection

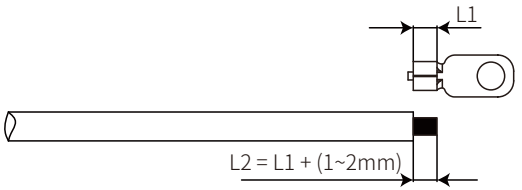
The inverter is equipped with earth terminal according to the requirement of EN 50178.

All non-current carrying exposed metal parts of the equipment and other enclosures in the PV power system must be grounded.

Please follow the steps below to connect "PE" cable to ground.

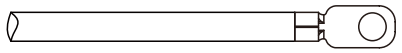
Step 1

Strip the wire insulation sheet of a suitable length with a wire stripper.



Step 2

Insert the stripped wire into the terminal and compress it tightly by crimping pliers.

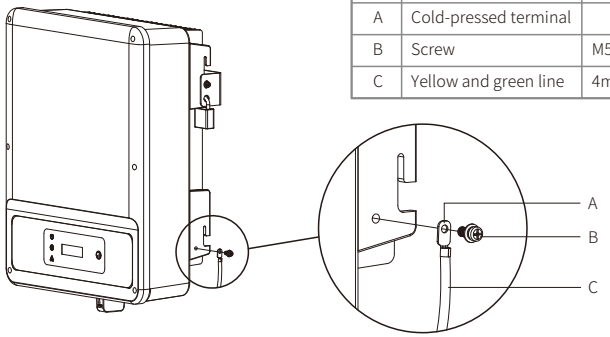


Step 3

Fix the earth wire on the machine.

In order to improve the corrosion resistance of the terminal, it is recommended to apply silica gel on the earth terminal for corrosion protection after the grounding cable assembly is completed.

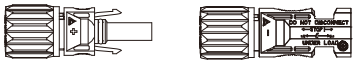
NO.	Name	Explanation
A	Cold-pressed terminal	
B	Screw	M5*14
C	Yellow and green line	4mm² / 10AWG



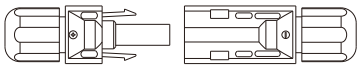
4.3.4 DC side connection

1. Before connecting the PV strings, please ensure the plug connectors have the correct polarity. Incorrect polarity could permanently damage the unit
2. The open circuit voltage of the PV strings cannot exceed the maximum input voltage of the inverter.
3. Only DC connectors provided by the manufacturer are permitted for use.
4. The positive and negative pole is forbidden from connecting to the PE wire (Ground wire), otherwise, it will damage the unit.
5. Don't connect positive or negative pole of PV string to PE wire. Otherwise it will cause damage to inverter.
6. Positive wire shall be red, negative wire shall be black.
7. The minimum insulation resistance to ground of the PV panels for DNS series must exceed 19.3K ohms (R = 58-/30 mA) , there is a risk of shock hazard if the requirement of minimum resistance is not met.

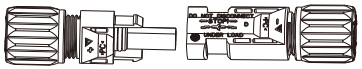
There are four types of DC connectors, DEVALAN, MC4, AMPHENDL H4 and QC4.10 series



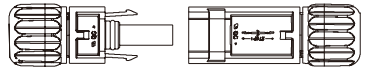
DEVALAN SERIES



MC4 SERIES



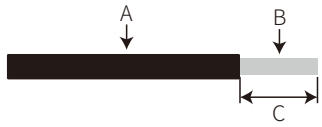
AMPHENOL SERIES



QC4.10 SERIES

Note: The actual DC connector used is as shown in the accessory box.

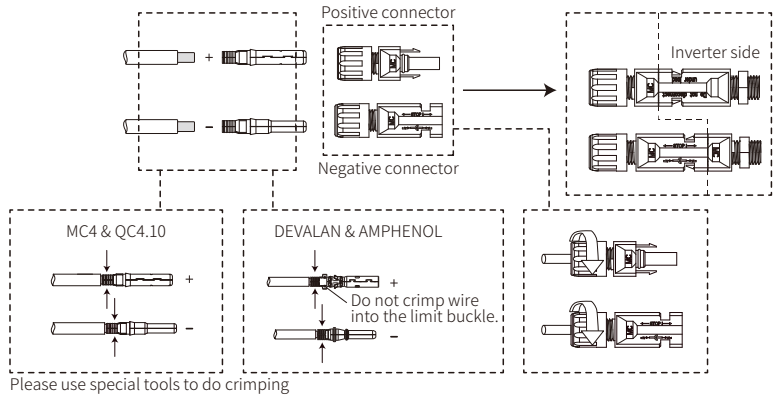
DC cable specification:



Label	Description	Value
A	External diameter of wire stock	4~5mm
B	Cross-sectional area of conductor material	2.5~4mm²
C	Length of bare wire	About 7mm

Note: DC Cable should be use dedicated PV cable.

The installation method of DC connector.

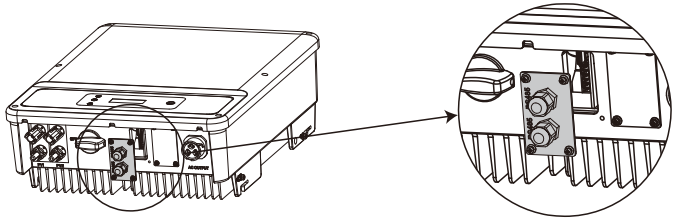


4.4 Communication Connection

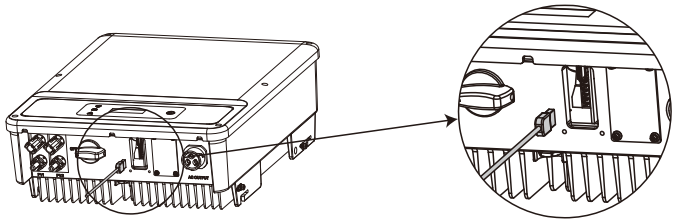
4.4.1 USB Connection

USB interface is only used for after-sales service team to repair inverter, Not allowed for any other purposes.

Step 1: Screw this plate off from inverter.



Step.2: Insert the USB data cable

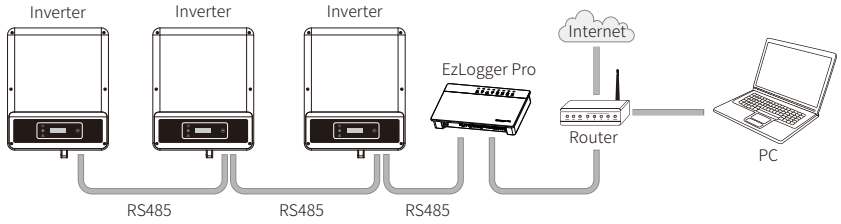


4.4.2 RS485 Communication

This function is only applied to inverters with RS485.

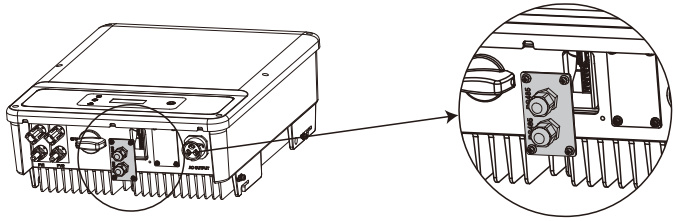
The RS485 interface us used to connect EzLogger Pro and the maximum total length of all connecting cables should not exceed 800m.

Communication lines must be separated from other power lines to prevent interference to the communication. RS485 connection are shown as below.



Please follow the steps below to complete RS485 communication connection.

Step 1: Screw this plate off from inverter.

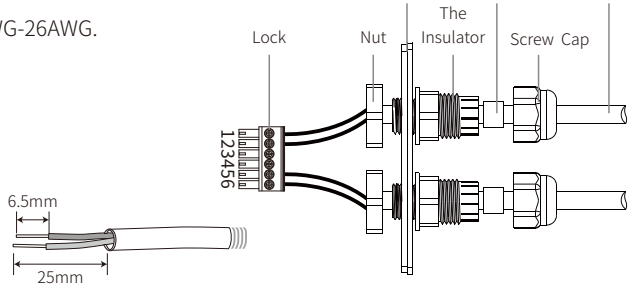


Step 2:

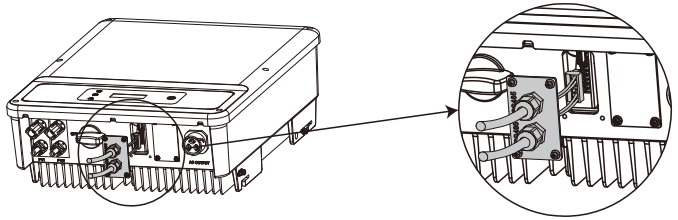
Put the cable through the plate, and connect RS485 cable on the 6-pin terminal.

Advise to use cable 16AWG-26AWG.

No.	Function
1	RS485+
2	RS485-
3	Reserved
4	Reserved
5	RS485+
6	RS485-



Step 3: Connect the terminal to the right position onto the inverter and screw the plate.



Connect the inverter to Ezlogger Pro through communication cables of RS485.Connect the Ezlogger Pro to the interchanger or the router through UTP (Unshielded Twisted Pair).

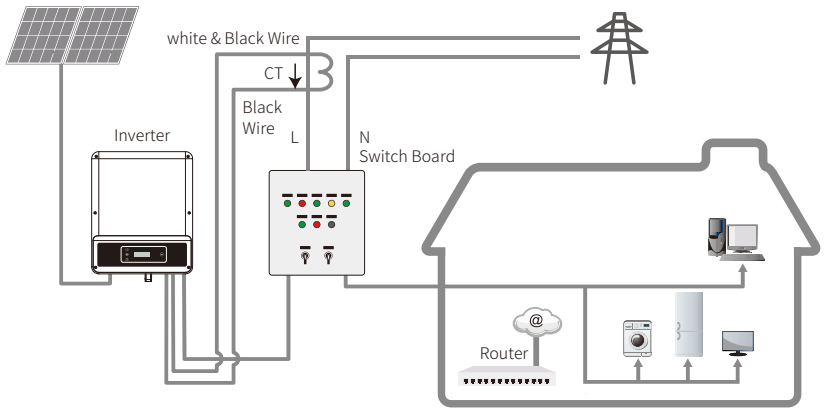
4.4.3 Wi-Fi Communication

The Wi-Fi Communication function is only applied for WIFi Module, for detailed configuration instruction refer to "Wi-Fi Configuration Instruction" in the accessory box.

After configuration, please borrow the monitoring portal website to create PV station.

4.4.4 Export Power Limit Connection Diagram

The methods of connecting the Power Limiting device CT is shown below.



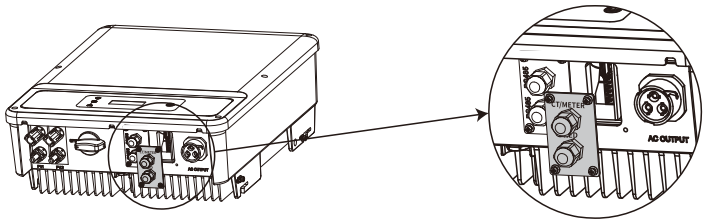
4.4.5 DRED / Remote Shutdown / CT (Power Limit Device) Connection

DRED (Demand response enabling device) is only for Australian and New Zealand installations, in compliance with Australian and New Zealand safety requirements. And DRED is not provided by manufacturer.

Remote shutdown is only for Europe installations, in compliance with European safety requirements. And Remote shutdown device is not provided by manufacturer.

Please follow the steps below to complete the connection.

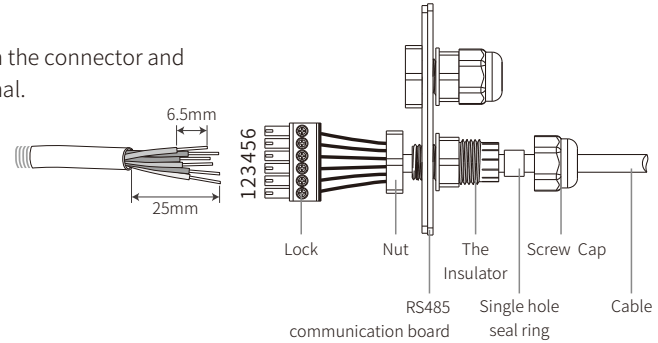
Step 1: Screw this plate off from inverter.



Step 2-1 For DRED:

Put the cable through the connector and connect to the terminal.

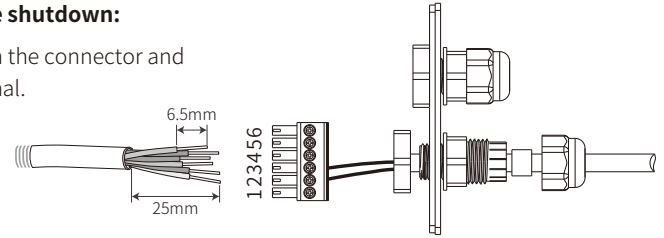
No.	Function
1	COM/DRM0
2	REFGEN
3	DRM4/8
4	DRM3/7
5	DRM2/6
6	DRM1/5



Step 2-2 For remote shutdown:

Put the cable through the connector and connect to the terminal.

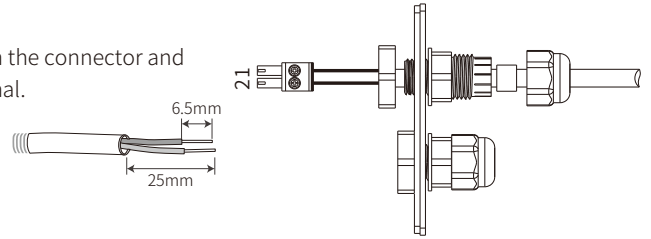
No.	Function
2	REFGEN
3	DRM4/8



Step 2-3 For CT:

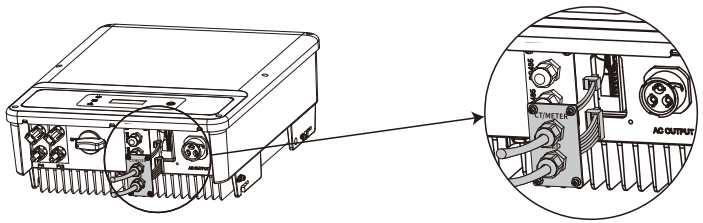
Put the cable through the connector and connect to the terminal.

No.	Function
1	CT-
2	CT+



Step 3:

Connect the terminal to the right position onto the inverter.



Note:

1. Compatible DRED commands are DRM0, DRM5, DRM6, DRM7, DRM8.
2. Please set up power limit function at local setting page once all connection steps are done.
3. CT is directional. Please make sure CT+ is properly connected to white & black wire and CT- to black wire. Please make sure the limit buckle is connected to the output live wire (L) of inverter.
4. If CT is not well connected, it will display "CT disconnected" on the inverter. If CT is reversely connected, it will display "CT Reverse" on the inverter when connected to grid.

4.4.6 Earth Fault Alarm

In compliance with the section 13.9 of IEC62109-2, the NS/DNS series inverter is equipped with an earth fault alarm. When earth fault occurs, the fault indicator at the front LED screen will light up. On inverters with Wi-Fi communication, the system sends an email with the fault notification to the customer. For inverters without Wi-Fi, the buzzer of the inverter will keep ringing for one minute and ring again after half an hour until the fault is resolved. (This function is only available in Australia and New Zealand).

4.4.7 SEMS Portal

SEMS Portal is an online monitoring system. After completing the installation of communication connection, you can access www.semsportal.com or download the App by scanning the QR code to monitor your PV plant and device.

Please contact the after-sales for more operation of SEMS Protal.

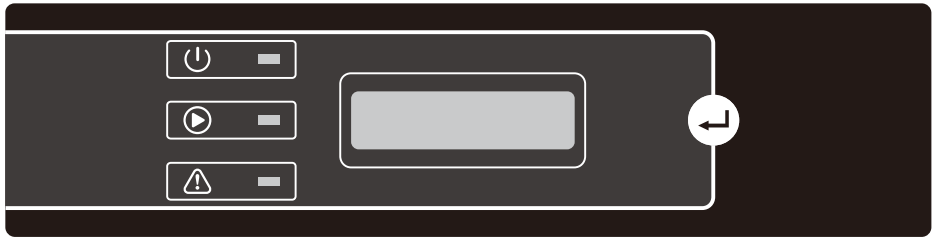
SEMS Portal App

5 System Operation

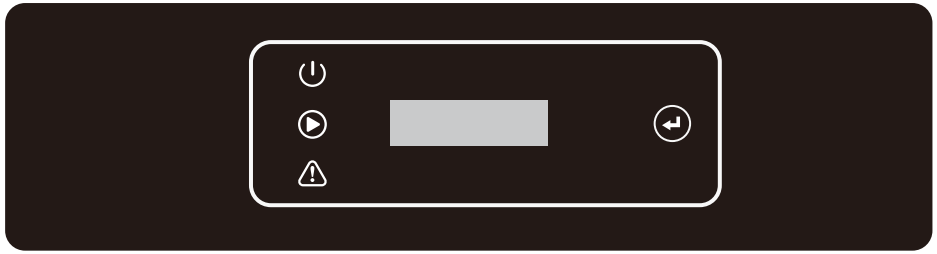
5.1 LCD Panel And LED

5.1.1 Indicator Lights

NS series.



DNS series.



Indicator lights in Yellow/Green/Red correspondently refer to: ⏻ / ▶ / ⚠

Indicator	Status	Explanation
⏻ Power		ON = WiFi connected/active
		BLINK 1 = WiFi system resetting
		BLINK 2 = Not connect to router
		BLINK 3 = WiFi server problem
		BLINK = RS485 connected
		OFF = WiFi not active
▶ Run		On = Inverter is feeding power
		OFF = Inverter is not feeding power at the moment
⚠ Fault		On = Fault occurred
		OFF = No fault

5.2 User Interface And Syetem Configuration

5.2.1 Operation Method

There are two modes of button operation: Short press the button and long press the button.

In all levels of menu, if no action is taken, the backlight of the LCD will switch off, the LCD will automatically revert to the first item of the first level menu, and any modifications made to the data will be stored into internal memory.

5.2.2 Set Safety Country

If LCD displays "Configure Safety", then long press the button to enter the second level menu. Short press to browse the safety country available. Choose suitable safety country according to the location of installation.

5.2.3 LCD

A schematic of the LCD is shown as below:

Normal Pac=XXXX.XW

Display area is divided as follows:

Line ① Line ②

5.2.4 Display Area

Line 1 --- Working status information

Line 2---Diaplays of the real-time power generated by the inverter.

- This area displays the status information. "Waiting" indicates the inverter is standing by for power generation; "Checking **S" (checking time is based on safety, and varies from country to country) indicates is self-checking, counting down and preparing for power generation. "Normal" indicates the inverter is generating power. If any condition of the system is abnormal, the screen will display an error message.
- Through button operation, the screen can display different information such as operation parameters and power generation status is in this area. There are two levels of menus, and the flow chart of first level menu is shown below:

5.2.5 Use Of The LCD

The display allows accessing the configuration of the basic parameters. All the language, time and country settings can be configured by buttons. The menu, shown in the LCD displays area has two levels of menu. Short or long press the button will take you between menus and through each menu. Items in the first level menu that have no second level are locked. For these items, when the button is pressed for two seconds, the LCD will display the word "Lock" followed by data relating to the first level menu item. The locked menu can only be unlocked under system mode switch ing, fault occurrence or button operation.

5.2.6 Menu Introduction

- When the PV panel is feeding power to the inverter, the LCD displays the first-level menu.
- The initial display is the first item to the first level menu, and the interface displays the current status of the system. It shows "Waiting" in the initial state; its display "Normal" during power generation mode; if there is something wrong with the system, an error message is displayed. Please refer to "5.3 Error Message".

View PV voltage, PV current, grid voltage, current and frequency:

- Short press the button to enter the "E-Today" menu which displays the total power generation for today.
- Short press the button to enter the "E-Today" menu which displays the total power generation until today.
- Short press the button to enter the "Vpv" menu which displays the PV voltage in "V".
- Short press the button to enter the "Ipc" menu which displays the PV current in "A".
- Short Press the button to enter the "Vac" menu which displays the grid voltage in "V".
- Short Press the button to once more to enter the "Iac" menu which display the grid current in "A".
- Short Press the button to once more to enter the "Frequency" menu which displays the grid frequency in "Hz".
- View error code

  Short press the button once more to enter the "Error Code history" menu.

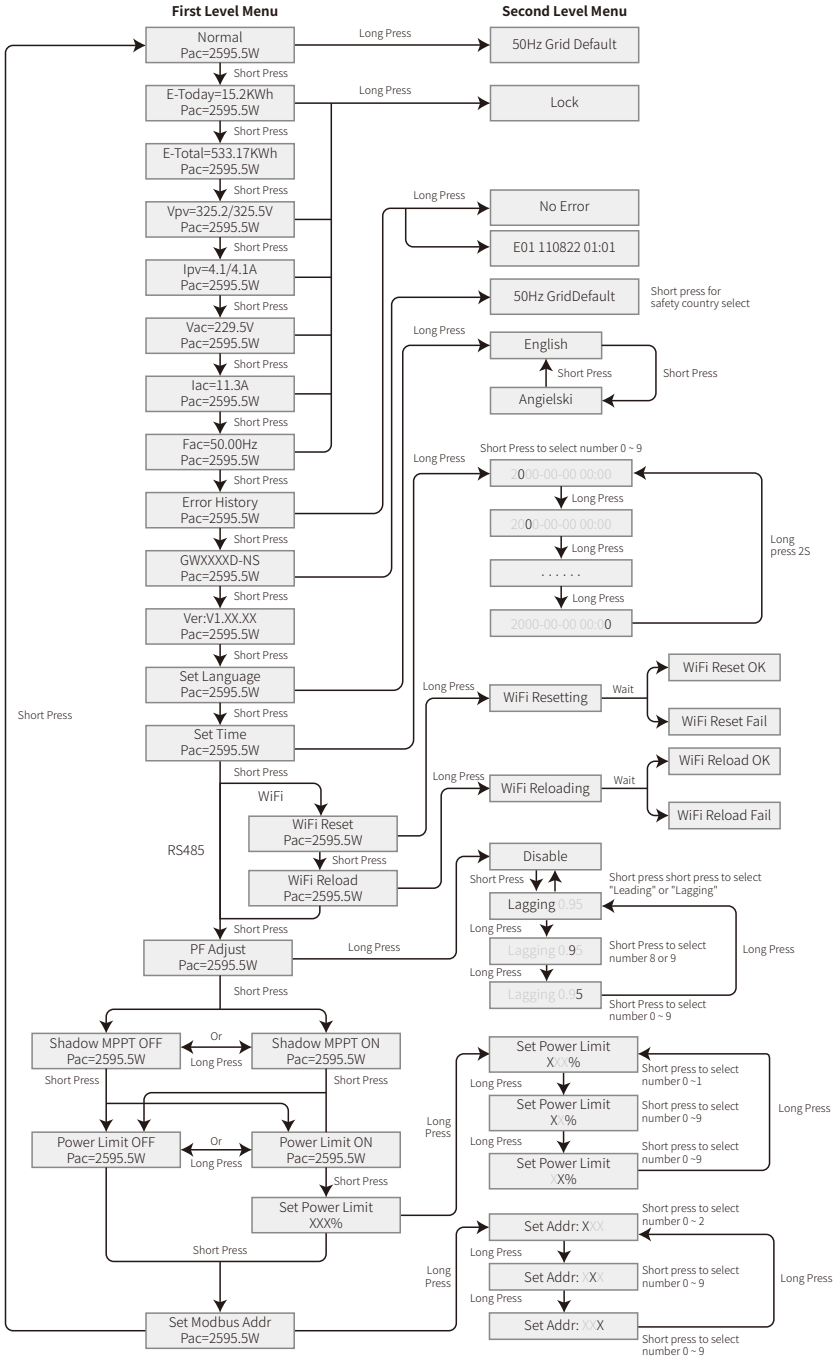
  Long press the button to enter the second level menu of error detection. The newest three inverter records will be shown by short pressing the button in this second level menu. The records include error codes (EXX) and error times (110316 15:30).
- View model name and reconfigure safety country:

  From the error code history item in the first level menu, short press the button to see model name. If you want to change the safety country, please long press the button, then LCD will enter the second level menu. In the second level menu, short pressing the button can change the safety country.

  After choosing the suitable safety country, the inverter will store the chosen safety country if there is no input for 20 seconds. If there is no exact proper country code, please choose "50Hz Grid Default" or "60Hz Grid Default" accordingly.
- View software version

  From the model name item in the first level menu, short press the button to see the software version. The current software version can be shown in this menu.

5.2.7 Basic Setting



• Set language

Short press the button to enter the "Set Language" menu. Long press the button to enter the second level menu. Short press the button to browse the languages available.

• Set time

From the first level "Set Language" menu, short press the button to enter the "Set Time" menu.

Long press the button to enter the second level menu. The initial display is "2000-00-00 00:00", in which the first four numbers represent the year (e.g. 2000~2099); the fifth and sixth numbers represent the month (e.g. 01~12); the seventh and the eighth numbers represent the date (e.g. 01~31). The remaining numbers represent the time.

Short press the button to increase the number in current location, and press to move the cursor to next position.

• Set protocol:

The function is only used for service personnel, setting a wrong protocol could lead to communication failure. From the first level "Set Time" menu, short press the button to enter "Set Protocol Display" menu. Long press the button to enter sub menu. The circulatory sub menu including two protocols can be found. The protocol can be chosen by short pressing the button.

• MPPT function for shadow:

The default setting for shadow optimizer is disabled.

Please enable shadow optimizer when there is shadow on PV panel. The function could help the system generate more power under shadow condition. Please do not enable the function when there's no shadows being casted onto the panel. Otherwise it could lead to lesser generated power. Press the button until it enters the shadow optimize menu. When LCD displays "Shadow MPPT OFF", it means the MPPT function for shadow is switched off. Long press the button to enable the function. If LCD displays "Shadow MPPT ON" it means the shadow optimizer is on. Long press the button to disable the function.

• 70% rated power limit

The function is only available for inverters in Germany. It can only be used by network operators. Otherwise it will cause a loss of power generated from the PV plant.

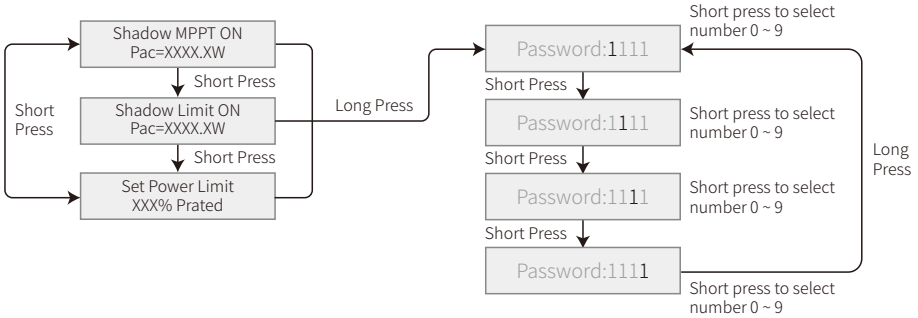
Press the button till LCD displays the 70% rated power menu. If LCD displays 70% rated enable it means the function to limit the inverter working under 70% of rated output is switched off. Long press the button will switch this function on. If LCD displays recover rated power it means the inverter is working under 70% of rated output power. Long press the button to recover inverter to 100% of its rated output power.

5.2.8 Power Limiting Function Setting

• Enter Password:

Please enter the password (valid for 10 minutes) before changing the power limiting state (the

default is OFF) and the power limiting setting (the default is 2% rated power): Long press the button to enter password input menu. The initial display "1111" is the default password. Short press the button to increase the number in current location and long press to move to the cursor to next position. The operations are shown as below.

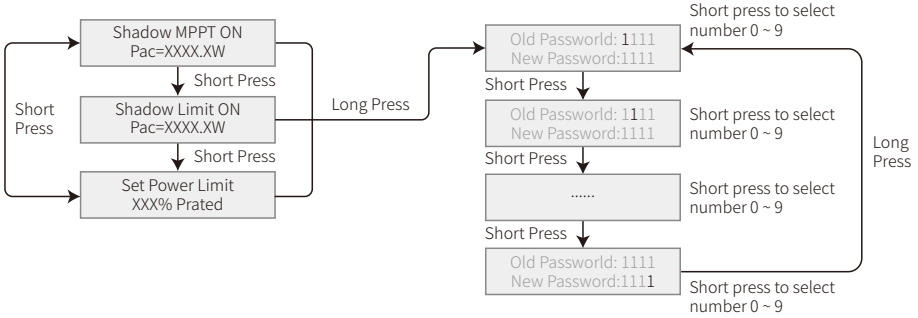


• Modify Password:

Long press the button to enter password change menu. Short press to increase the number in current location, long press to move the cursor to next position. If the old password is right, the new password will be stored after 20 seconds without any input.

Note: You can only enter the new password if the login is within the effective time period (10 minutes).

The operation are shown as below.



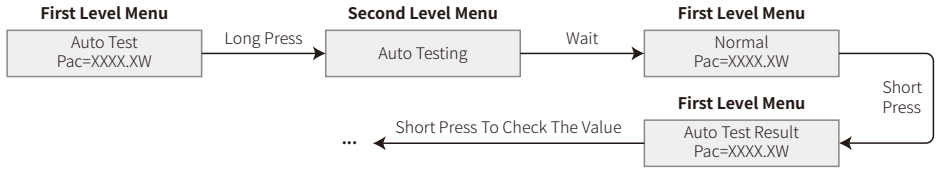
• Power limiting function setting

If the power limiting function is ON, the maximum output power of the inverter will be limited at the power limit setting value while the inverter is without power limiting device (such as a CT/Meter) or when the power limiting device is out of order.

5.2.9 Auto-Test

The default setting of this function is disabled which can only be available in Italy safety. Short press the button until LCD displays "Auto Test", and long press the button to start this function.

if auto test is finished, short press the button until LCD displays "Auto Test Result", and long press the button to check the result.



Auto test types will be chosen by "Remote" and "Local" before starting the test. "Remote" default setting is 1, unable to be modified. "Local" default setting is 0, which can be set to 0 or 1 by calibrating the software. If set "Local" to 1, testing order will be 59.S1, 59.S2, 27.S1, 81>S1, 81<S1. Otherwise, testing order will be 59.S1, 59.S2, 27.S1, 81>S2, 81<S2.

Connect AC, auto tests will begin after the inverter relays close successfully: output power is zero and LCD will show the information about testing.

If sub test finishes and LCD displays "Test ***** Ok", inverter relay breaks off and reconnect to grid automatically according to CEI 0-21 requirement. Then the next test starts.



If sub test fails, inverter relay breaks off and enter wait mode. To retry, the inverter needs to be totally powered off and be restarted.

5.2.10 Operation Of Display When Commissioning

When the input voltage reaches the inverter's turn-on voltage, the LCD starts to work, the yellow lights is turned on and the LCD displays "Waiting". More information will be displayed within a few seconds. If the inverter is connected to the grid, "Checking 30" will be displayed and a countdown of 30 seconds will commence. When the countdown reaches "00S" you will hear the relay trigger 4 times. The LCD will then display "Normal". The instant power output will be shown at the left bottom of the LCD.

5.3 Error Message

An error message will be displayed on the LCD is a fault occurs.

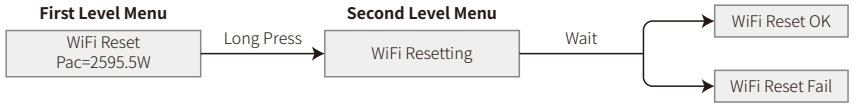
Error code	Error message	Description
03	Fac Fail	Grid frequency out of permissible range
14	Isolation Fail	Grund insulation impedance is too low
15	Vac Failure	Grid voltage out of permissible range
17	PV Over Voltage	Overvoltage at DC input
19	Over Temperature	Over Temperature on the case
23	Utility Loss	Utility is unavailable

5.4 Wi-Fi Reset & Wi-Fi Reload

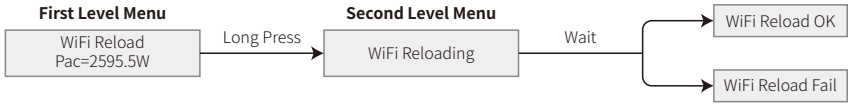
These functions are only available for Wi-Fi model inverters.

Wi-Fi reload function is used to change the Wi-Fi configuration to default value. Please configure the Wi-Fi again after using the function.

Short press the button until the LCD displays "Wi-Fi Reset", then long press the button until the LCD displays "Wi-Fi Resetting…". Stop pressing and wait for the screen to display "Wi-Fi Reset OK" or "Wi-Fi Reset Failed".



Short press the button until the LCD displays "Wi-Fi Reload", then long press the button until the LCD displays "Wi-Fi Reloading…". Stop pressing and wait for the screen to display "Wi-Fi Reload OK" or "Wi-Fi Reload Failed".



5.5 Precaution For Initial Startup

1. Make sure the AC circuit is connected and AC breaker is turned off.
2. Make sure the DC cable between inverter and PV string is connected, and the PV voltage is normal.
3. Turn on the DC switch, and set safety country according to the local regulation.
4. Turn on the AC breaker. Check the inverter work normal.

5.6 Special Adjustable Setpoints

The inverter has a field where the user could set functions, such as trip points, trip times, reconnect time,active and inactive of QU curve and PU curve. It is adjustable through special software, if you want to use it, please contact with after sales.

To achieve manuals for using the software, you can download them from official website or contact with after-sales.

6 Troubleshooting

In most situations, the inverter requires very little maintenance. However, if the inverter is not working properly, please try the following troubleshooting solutions:

- When a problem occurs, the red (fault) LED indicator on the front panel will light up and the LCD screen will display the type of fault. The following table lists error messages and solutions for associated faults.

Display		Troubleshooting
System Failure	Isolation Failure	1. Check the impedance between ground and PV (+) & PV (-) . The impedance value must be greater than 100kΩ. Make sure the inverter is earthed. 2. Contact local service office for help if the problem still persist.
	Ground I Failure	1. The ground current is too high. 2. Unplug the inputs from the PV generator and check the peripheral AC system. 3. When the problem is cleared, reconnect the PV panel and check the Inverter status. 4. Contact local service office for help if the problem still persist.
	Vac Failure	1. The PV Inverter will automatically restart within 5 minutes if the grid returns to normal. 2. Make sure grid voltage conforms with the specification. 3. Make sure neutral (N) wire and PE wire are connected well. 4. Contact local service office for help if the problem still persist.
	Fac Failure	1. Grid is not connected. 2. Check grid connection cables. 3. Check availability of grid.
	Utility Loss	1. Not connect to the grid. 2. Check if the power grid is connected to cable. 3. Check the availability of power grid.
	PV Over Voltage	1. Check if the PV open circuit voltage is higher or too close to the maximum input voltage or not. 2. If the problem still persist when PV voltage is less than the maximum input voltage, contact local service office for help.
	Over Temperature	1. The internal temperature is higher than normal value specified. 2. Reduce ambient temperature. 3. Move the inverter to a cool place. 4. If the problem still exists, contact local service office for help.

Type of fault		Troubleshooting
Inverter Failure	Relay-Check Failure	1. Turn off DC switch of the inverter. 2. Wait till the inverter's LCD light is off. 3. Turn on DC switch and make sure it is connected. 4. If the problem still exists, contact local service office for help.
	DCI Injection High	
	EEPROM R/W Failure	
	SPI Failure	
	DC BUS High	
	GFCI Failure	
Others	No display	1. Turn off DC switch, take off DC connector, measure the voltage of PV array. 2. Plug in DC connector, and turn on DC switch. 3. If PV array voltage is lower than 250V , please check configuration of inverter module. 4. If voltage is higher than 250V , please contact local office.

Note:

When sunlight is insufficient, the PV inverter may continuously start up and shut down automatically due to insufficient power generation from the PV panels, which would not lead to inverter damage.

7 Technical Parameters

Technical Data	GW1000-NS	GW1500-NS	GW2000-NS
PV String Input Data			
Max. DC Input Power (W)	1300	1950	2600
Max. DC Input Voltage (V)	500	500	500
MPPT Range (V)	80~450	80~450	80~450
Start-up Voltage (V)	80	80	80
Min. Feed-in Voltage(V)	80	80	80
Nominal DC Input Voltage (V)	360	360	360
Max. Input Current (A)	10	10	10
Max. Short Current (A)	12.5	12.5	12.5
No. of MPP Trackers	1	1	1
No. of Input Strings per Tracker	1	1	1
AC Output Data			
Nominal Output Power (W) **[1]**	1000	1500	2000
Max. Output Apparent Power (VA)	1000	1500	2000
Nominal Output Voltage (V)	220/230	220/230	220/230
Nominal Output Frequency (Hz)	50/60	50/60	50/60
Max. Output Current (A)	5	7.5	10
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)		
Output THDi (@Nominal Output)	<3%	<3%	<3%
Efficiency			
Max. Efficiency	96.5%	97.0%	97.0%
Europe Efficiency	96.0%	96.0%	96.0%
Protection			
Anti-islanding Protection	Integrated		
Input Reverse Polarity Protection	Integrated		
Insulation Resistor Detection	Integrated		
Residual Current Monitoring Unit	Integrated		
Output Over Current Protection	Integrated		
Output Short Protection	Integrated		
Output Over Voltage Protection	Integrated		
AC SPD Protection	Integrated(Type III)		
General Data			
Operating Temperature Range (°C)	-25~60		
Relative Humidity	0~100%		
Operating Altitude (m)	⩽4000		
Cooling	Natural Convection		
User Interface	LCD & LED		
Communication	RS485 or WiFi or LAN		
Weight (kg)	7.5		
Size (Width*Height*Depth mm)	344*274.5*128		
Protection Degree	IP65		
The Decisive Voltage Class (DVC)	DVC- C		
Night Self Consumption (W)	<1		
Topology	Transformerless		
Certifications & Standards			
Grid Regulation	Visit homepage to achieve information.		
Safety Regulation			
EMC			

Technical Data	GW2500-NS	GW3000-NS	GW2900-NS
PV String Input Data			
Max. DC Input Power (W)	3250	3900	4000
Max. DC Input Voltage (V)	500	500	535
MPPT Range (V)	80~450	80~450	80~435
Start-up Voltage (V)	80	80	80
Nominal DC Input Voltage (V)	360	360	230
Max. Input Current (A)	18	18	12.5
Max. Short Current (A)	22.5	22.5	15.6
No. of MPP Trackers	1	1	2
No. of Input Strings per Tracker	1	1	1
AC Output Data			
Nominal Output Power (W) **[1]**	2500	3000	2900
Max. Output Apparent Power (VA)	2500	3000	2900
Nominal Output Voltage (V)	220/230	220/230	127
Nominal Output Frequency (Hz)	50/60	50/60	60
Max. Output Current (A)	12.5	13.5	22.9
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)		
Output THDi (@Nominal Output)	<3%	<3%	<3%
Efficiency			
Max. Efficiency	97.5%	97.5%	96.0%
Europe Efficiency	97.0%	97.0%	95.6%
Protection			
Anti-islanding Protection	Integrated		
Input Reverse Polarity Protection	Integrated		
Insulation Resistor Detection	Integrated		
Residual Current Monitoring Unit	Integrated		
Output Over Current Protection	Integrated		
Output Short Protection	Integrated		
Output Over Voltage Protection	Integrated		
General Data			
Operating Temperature Range (°C)	-25~60		
Relative Humidity	0~100%		
Operating Altitude (m)	⩽4000		
Cooling	Natural Convection		
User Interface	LCD & LED		
Communication	RS485 or WiFi or LAN		
Weight (kg)	7.5		
Size (Width*Height*Depth mm)	344*274.5*128		354*433*147
Protection Degree	IP65		
The Decisive Voltage Class (DVC)	DVC-C		
Night Self Consumption (W)	<1		
Topology	Transformerless		
Certifications & Standards			
Grid Regulation	Visit homepage to achieve information.		
Safety Regulation			
EMC			

[1] For CEI 0-21 Nominal Output Power GW1000-NS is 900, GW1500-NS is 1350, GW2000-NS is 1800, GW2500-NS is 2250, GW3000-NS is 2700 .

[1] For CEI 0-21 Nominal Output Power GW3000D-NS is 2700, GW3680D-NS is 3350, GW4200D-NS is 3800, GW5000D-NS is 4540, GW6000D-NS is 5450.

Note:

Overvoltage Category Definition

Category I: applies to equipment connected to a circuit where measures have been taken to reduce transient overvoltage to a low level.

Category II: applies to equipment not permanently connected to the installation. For example, appliances, portable tools and other plug-connected equipment;

Category III: applies to fixed downstream equipment, including the main distribution board. For example,switchgear and other equipment in an industrial installation;

Category IV: applies to equipment permanently connected at the origin of an installation (upstream of the main distribution board).For example, electricity meters, primary overcurrent protection equipment and other equipment connected directly to outdoor open lines.

Moisture Location Category Definition

Moisture parameters	Level		
	3K3	4K2	4K4H
Temperature Range	0~+40°C	-33~+40°C	-20~+55°C
Humidity Range	5%～85%	15%～100%	4%～100%

Environment Category Definition

Outdoor : the ambient air temperature is -20~50°C. Relative humidity range is from 4% to 100%, applied to PD3.

Indoor unconditioned: the ambient air temperature is -20~50 °C. Relative humidity range is from 5% to 95%, applied to PD3.

Indoor conditioned: the ambient air temperature is 0~40 °C. Relative humidity range is from 5% to 85%, applied to PD2.

Pollution Degree Definition

Pollution degree 1: No pollution or only dry, non-conductive pollution occurs. The pollution has no influence.

Pollution degree 2: Normally only non-conductive pollution occurs. However, a temporary conductivity occasionally caused by condensation must be expected.

Pollution degree 3: Conductive pollution occurs. Or dry, non-conductive pollution becomes conductive due to condensation, which is expected.

Pollution degree 4: Persistent conductive pollution occurs. For example, the pollution cause by conductive dust, rain and snow.

8 Caution

Regular maintenance ensures a long operating life and optimal efficiency of the entire PV plant.

Caution: Before maintenance, please disconnect the AC breaker first and then disconnect DC breaker. Wait 5 minutes until the residual voltage has been released.