Meaningful Innovation.

WEEE Number: 80133970

INSTRUCTION MANUAL

SOLAR INVERTER WITH LCD DISPLAY & DC SWITCH -THREE PHASE

MODEL	SKU
VT-6605305	11371
VT-6608305	11372
VT-6610305	11373



03 YEAR WARRANTY*

INTRODUCTION

Thank you for selecting and buying V-TAC Product. V-TAC will serve you the best. Please read these instructions carefully & keep this user manual handy for future reference. If you have any another query, please contact our dealer or local vendor from whom you have purchased the product. They are trained and ready to serve you at the best.

Multi-Language Manual QR CODE

Please scan the QR code to access the manual in multiple languages.

WARNING

1. Please make sure to turn off the power before starting the installation.
2. Installation must be performed by a qualified electrician.
3. Proper grounding should be ensured throughout the installation.



This marking indicates that this product should not be disposed of with other household wastes.



Caution, risk of electric shock.









SAFETY PRECAUTIONS

The series grid-tied solar inverters are designed and tested strictly in accordance with relevant international safety standards. As an electrical and electronic device, all relevant safety regulations must be strictly complied during installation, operation, and maintenance. Incorrect use or misuse may result in:

- Injury to the life and personal safety of the operator or other people.
- Damage to the inverter or other property belonging to the operator or other people.

In order to avoid personal injury, damage to the inverter or other devices, please strictly observe the following safety precautions.
This chapter mainly describes various warning symbols in operation manual and provides safety instructions for the installation, operation, maintenance and use of the series grid-tied solar inverters.

ICONS

This manual provides relevant information with icons to highlight the physical and property safety of the user to avoid device damage and physical injury.
The icons used in this manual are listed below:

Icons	Name	Instruction	Abbreviation
 Danger	Danger	Serious physical injury or even death may occur if not follow the relative requirements	
 Warning	Warning	Physical injury or damage to the devices may occur if not follow the relative requirements	
 Do not	Electrostatic sensitive	Damage may occur if not follow the relative requirements	
 Hot sides	Hot sides	Sides of the device may become hot. Do not touch.	
Note	Note	The procedures taken for ensuring proper operation.	Note

SAFETY GUIDELINES

	● After receiving this product, first make sure that the product is well packaged. If you have any questions, please contact the shipping company or local distributor immediately. ● Installation of PV inverters must be performed by professional technician who has been specially trained, thoroughly read and familiar with all the contents of this manual and familiar with the safety requirements of the electrical system. ● Do not carry out any wiring and inspection or changing components when the power supply is applied.
	● Ensure that there is no electromagnetic interference from other electrical and electronic equipment on the installation site. ● Do not refit the inverter unauthorized. ● All the electric installation needs to be compliance with the national or local laws and standards.
	● The temperature of individual parts or the enclosure of the inverter– especially the heat sink may become hot in normal operation. There is a danger of burning. Do not touch.
	● It must be reliably grounded before operation.
	● Do not open the cover of inverters unauthorized. The electrical parts and components inside the inverter are electrostatic. Take measurements to avoid electrostatic discharge during relevant operation.
	● The inverter must be reliably grounded.
	● Ensure that DC and AC side circuit breakers have been disconnected and wait at least 5 minutes before wiring and checking.

Note: Technical personnel who can perform installation, wiring, commissioning, maintenance, troubleshooting and replacement of the series grid-tied solar inverters must meet the following requirements:

- Operators need professional training.
- Operators must read this manual completely and master the related safety precautions.
- Operators need to be familiar with the relevant safety regulations for electrical systems.
- Operators need to be fully familiar with the composition and operating principle of the entire grid-tied photovoltaic power generation system and related standards of the countries/regions in which the project is located.
- Operators must wear personal protective equipment.

WHAT TO DO AFTER SCRAPPING



- Do not dispose of the inverter together with household waste. The user has the responsibility and obligation to send it to the designated organization for recycling and disposal.

DELIVERY AND INSTALLATION



- Keep the package and unit complete, dry and clean during storage and delivery.
- Please remove and install the inverter with two or more people, because of the inverter is heavy.
- Remove and instal l the inverter with appropriate tools to ensure safe and normal operation and avoid physical injury or death. The people also need mechanical protective measures, such as protective shoes and work clothes.
- Only qualified electricians are allowed to install the inverter.
- Do not put and install the inverter on or close to combustible materials.
- Keep the installation site away from children and other public places.
- Remove the m etal jewelry such as ring and bracelet before installation and electrical connection to avoid electric shock.
- Do cover solar modules with light-tight materials before electrical connection. Exposed to sunlight, solar modules will output dangerous voltage.
- The inverter input voltage cannot exceed the maximum input voltage; otherwise inverter damage may occur.
- The positive and negative pole of solar module s cannot be grounded, otherwise irrecoverable damage may occur.
- Ensure the proper grounding of the inverter, otherwise, improper connection or no grounding may cause stop of the in verter.
- Ensure reliable installation and electrical connection.

GRID-TIED OPERATION



- Only qualified electricians are allowed to operate the inverter under the permission of local power departments.
- All electrical connections must meet the electrical standards of the countries/regions in which the project is located.
- Ensure reliable installation and electrical connection before operation.
- Do not open the cover of inverter during operation or voltage is present.

MAINTENANCE AND INSPECTION

	● Only qualified electricians are allowed to perform the maintenance, inspection, and components replacement of the inverter. ● Contact with the local dealer or supplier for maintenance. ● In order to avoid irrelevant personnel from entering the maintenance area during maintenance, temporary warning labels must be placed to warn non-professionals to enter or use fence for isolation. ● Firstly disconnect all power supplies of the grid to the inverter before any maintenance, and then disconnect the DC breakers and wait for at least 5 minutes until the inverter is discharged before maintenance. ● Please follow electrostatic protection norms and take correct protective measures because of the electrostatic sensitive circuits and devices in the inverter. ● Do not use parts and components not provided by our company during maintenance. ● Restart the inverter after settling the fault and problem which may affect the safety and performance of the inverter. ● Do not get close to or touch any metal conductive part of the grid or inverter, otherwise electric shock, physical injury or death and fire may occur. Please do not ignore the warning icons and instructions with "electric shock".

SOLAR GRID-TIED POWER GENERATION SYSTEM

APPLICATION

The photovoltaic grid-tied power generation system consists of solar modules, grid-tied inverter, metering devices and public grid.

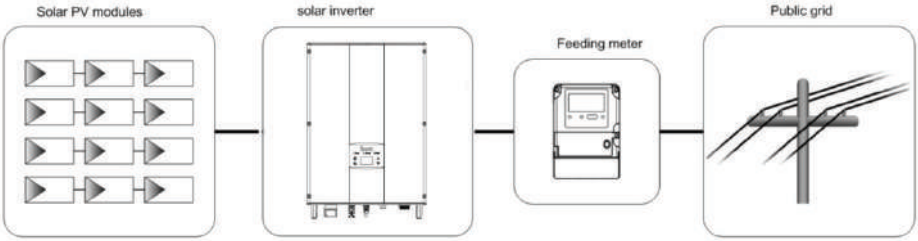


Figure 1 Application of the series grid-tied solar inverters

Grid-tied solar inverter is the core of photovoltaic power generation system. The solar energy can be converted into DC electric energy through solar modules and then be changed into sinusoidal AC energy which has the same frequency and phase with the public grid by grid-tied solar inverters, and then be fed to the grid.

The series grid-tied solar inverters are only applied in solar grid-tied power generation system and its DC input are only composed of crystalline silicon solar modules whose negative and positive poles are not grounded.

	● The recommended solar modules need to comply with IEC61730 Class A standard.

SUPPORTED GRID CONNECTION STRUCTURE

The series grid-tied solar inverters support TN-S, TN-C, TN-C-S and TT grid connection. When applied to the TT connection, the N-to-PE voltage should be less than 30V.

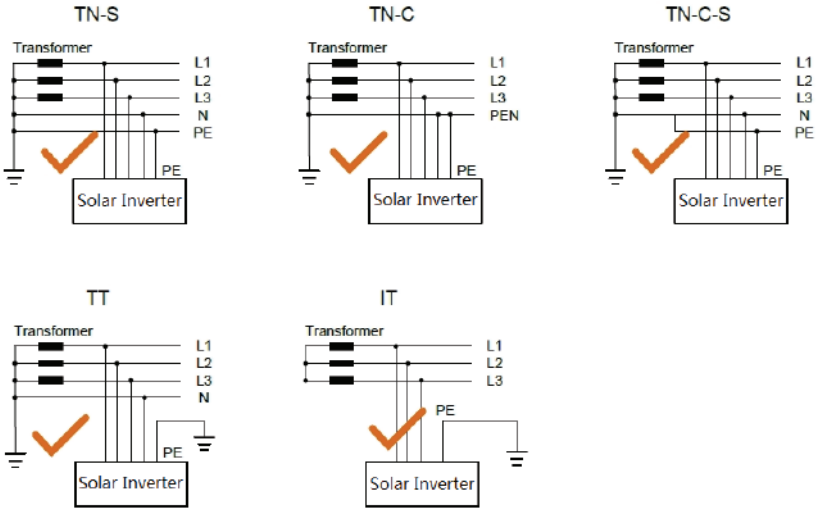


Figure 2 Type of grid

PRODUCT APPEARANCE

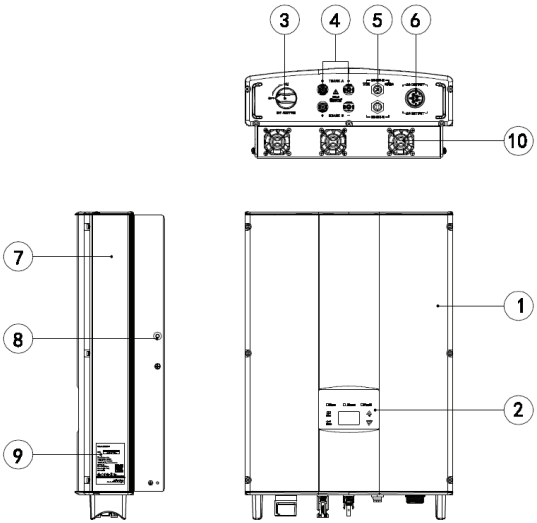
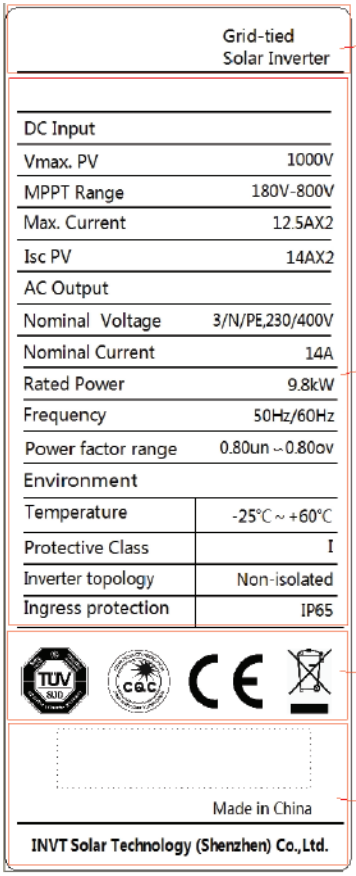


Figure 3 Products appearance

PARTS INSTRUCTION

No.	Name	Instruction
1	Cover	
2	Operational panel	LED status light, LCD display, keypad
3	DC switch	On–off of the DC input (optional)
4	DC input port	For the connection of solar modules
5	Communication port	RS485 and EXT communication port
6	AC terminal	For the connection of AC output
7	Cooling chamber	
8	Back panel mounting screws	
9	Name plate	For rated parameters and safety precautions of the inverter
10	FAN	4-6kW(NO FAN), 8~10kW(Air cooling)

NAMEPLATE



1. Trademark and product type

2. Model and important technical parameters

3. Certification system of the inverter confirming

4. Serial number, company name and country of origin.

Figure 4 Inverter nameplate

ICONS CERTIFICATION

Icons	Instruction
	● TUV certification mark. The inverter is certified by TUV.
	● CE certification mark. The inverter complies with the CE directive.
	● CQC certification mark. The inverter is certified by CQC.
	● EU WEEE mark. Cannot dispose of the inverter as household waste.

PRODUCTS MODULES

Table of the grid-tied solar inverter

Product name	Model	Rated output power （W）
Three-phase (L1,L2,L3,N,PE)		
Three-phase grid-tied solar inverter	4kW	4000
Three-phase grid-tied solar inverter	4kW-S	4000
Three-phase grid-tied solar inverter	5kW	5000
Three-phase grid-tied solar inverter	5kW-S	5000
Three-phase grid-tied solar inverter	6kW	6000
Three-phase grid-tied solar inverter	8kW	8000
Three-phase grid-tied solar inverter	10kW	10000

Note: The technical parameters of grid-tied solar inverter refer to the appendix

DIMENSIONS AND WEIGHT

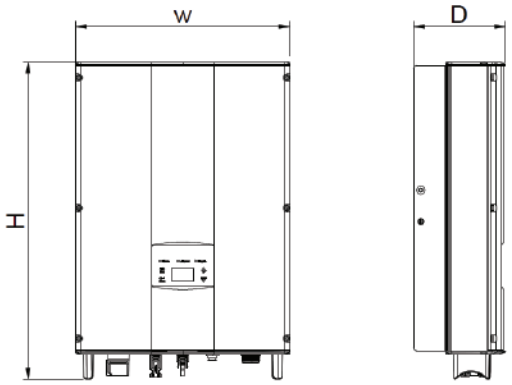


Figure 5 Inverter dimensions

Table of inverter dimension and net weight

Model	H (mm)	W (mm)	D (mm)	Net weight (kg)
4kW / 4kW–S / 5kW / 5kW-S / 6kW	530	360	150	20
8kW / 10kW	575	360	150	23

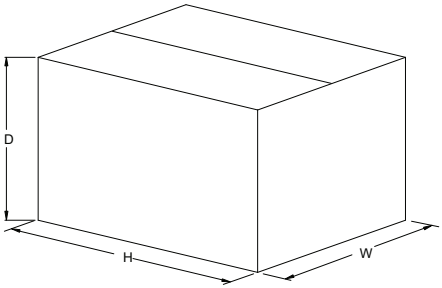


Figure 6 Paper packages dimension

Table of packages dimension and gross weight

Model	H (mm)	W (mm)	D (mm)	Weight (kg)	Packaging Material
4kW / 4kW–S / 5kW / 5kW-S / 6kW	630	470	284	22	Paper
8kW / 10kW	675	470	284	25	Paper

STORAGE

If the inverter is not put into use immediately, the storage of inverter should meet the following requirements:

- Do not remove the outer packing.
- The inverter needs to be stored in a clean and dry place, and prevent the erosion of dust and water vapor.
- The storage temperature should be kept at -40°C~+70°C, and the relative humidity should be kept at 5%RH~95%RH.
- The stacking of inverters is recommended to be placed according to the number of stacking layers in the original shipment. Place the inverter carefully during stacking to avoid personal injury or equipment damage caused by the falling of equipment.
- Keep away from chemically corrosive substances that may corrode the inverter.
- Periodic inspections are required. If damages are found by worms and rats, or packaging are found to be damaged, the packaging materials must be replaced in time.

After long-term storage, inverters need to be inspected and tested by qualified personnel before put into use.

INSTALLATION

This chapter describes how to install the inverter and connect it to the grid-tied solar system (including the connection between solar modules, public grid and inverter). Read this chapter carefully and ensure all installation requirements are met before installation. Only qualified electricians are allowed to install the inverter.

UNPACKING INSPECTION

The inverter has been thoroughly tested and rigorously checked before delivery, but damage may still occur during transportation. Before unpacking, check carefully whether the product information in the order is consistent with that on the nameplate of the package box and whether the product package is intact. If any damage is detected, please contact the shipping company or the supplier directly. Please also provide photos of the damage to get our fastest and best service.

Store the idled inverter in its original package and take anti-moisture and anti-dust measures.

After taking the inverter out of the box, check the following items:

(1) Confirm the main body of the inverter is intact and free from any damage;

(2) Confirm there is operation manual, interface accessories and installation accessories inside the package box;

(3) Confirm the deliverables inside the package box are intact and complete;

(4) Check whether the product information in the order is consistent with that on the inverter nameplate;

(5) The standard delivery list is shown below

Standard deliverables of inverter:

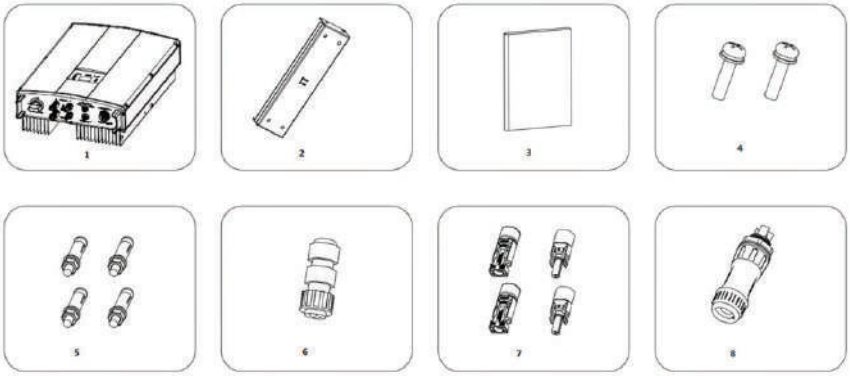


Figure 7 Delivery content

Table of detailed delivery list of single-phase inverter

No.	Name	Quantity
1	4kW / 4kW-S / 5kW / 5kW-S / 6kW / 8kW / 10kW inverter	1
2	Installation bracket	1
3	Operation manual	1
4	Assembling bolts M5*20	2
5	Expansion bolts M6*50	4
6	Communication connector	1
7	DC connector	2 pairs / 1pair（4kW-S、5kW-S）
8	AC connector	1

BEFORE INSTALLATION

Installation tools

Table of tools list

No.	Installation tools	Instruction
1	Marker	Mark the installation hole
2	Electric drill	Drill holes on the bracket or on the wall
3	Hammer	Knock on the expansion bolt
4	Adjustable wrench	Fix the installation bracket
5	Inner hex screwdriver	Tighten the anti-theft screw and disassemble AC junction box
6	“Slotted” or “cross-head” screwdriver	AC wiring
7	Megameter	Measure the insulation performance and grounding impedance
8	Multimeter	Check the circuit and measure AC/DC voltage
9	Electric soldering iron	Solder the communication cable
10	Wire crimper	Crimp DC terminal

INSTALLATION PLACE

Select installation site according to below requirements:

(1) The height of the installation position should ensure that the line of sight is on the same level as the LCD for viewing the parameters inverter conveniently.

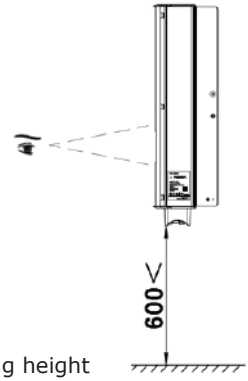


Figure 8 Optimal mounting height

(2) The installation site must be well ventilated and away from raindrops or direct sunlight.
(3) There must be enough pre-reserved space around the installation site for convenient disassemble of the inverter and air convection

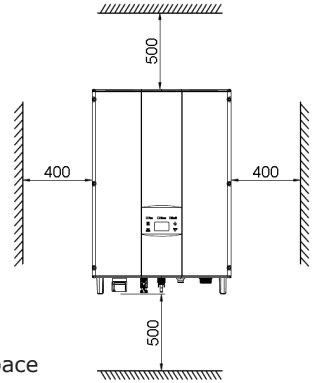


Figure 8 Installation space

(4) The ambient temperature of installation should be -25°C~60°C.
(5) The installation site should be away from electronic devices which can generate strong electromagnetic interference.
(6) The inverter should be installed on firm and solid surface such as wall surface and metal bracket.
(7) The installation surface should be vertical to the horizontal line.
(8) The installation should ensure that the inverter is reliably grounded, and the material of grounded metal conductor should be consistent with the metal material reserved for the grounding of the inverter.
Install the inverter vertically or backward ≤ 15° to facilitate heat dissipation.
Do not tilt the inverter forward, horizontal, upside down, over- backward, and roll when install the inverter.

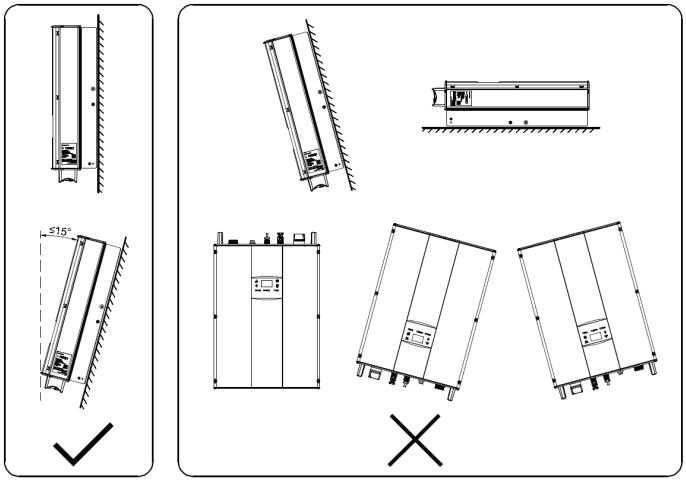


Figure 9 Installation position

	● Do not open the cover of the inverter or replace any part as incomplete inverter may cause electric shock and damage the device during operation.

CABLE SPECIFICATION

In order to regulate and compatible with the inverter AC/DC connector or terminal block specifications, below requirements on the AC/DC cable connected to corresponding inverter should be fulfilled:

Table of cable specifications

Inverter model	DC side		AC side	
	Min cross-section area mm²(length≤50m)	Min cross section area mm² (Length>50m)	Min cross section areamm² (Length≤50m)	
			L	N/PE
4kW / 4kW-S / 5kW / 5kW-S / 6kW / 8kW / 10kW	4	6	4	4

MICRO BREAKER

In order to ensure safe operation of the inverter and circuits, it is recommended to configure corresponding micro breaker or fuse on the DC input side and AC output side of the inverter. Table below is the requirements recommended for micro breaker:

Table of specifications of micro breaker

Inverter model	DC side	AC side
	Recommended breaker specification	Recommended breaker specification
4kW / 4kW-S / 5kW / 5kW-S / 6kW	DC1000V, C16A, 2P	AC400V, C16A, 4P
8kW / 10kW	DC1000V, C25A, 2P	AC400V, C25A, 4P

MECHANICAL INSTALLATION

The material for fixing the inverter and the installation mode vary with the different installation sites. It is recommended to install the inverter vertically to the firm wall or metal bracket. Here we take wall installation as an example to introduce the installation matters of the inverter.

As shown in the Fig 10, the overall installation of the inverter should be vertical to the horizontal surface.

INSTALLATION OF INVERTER

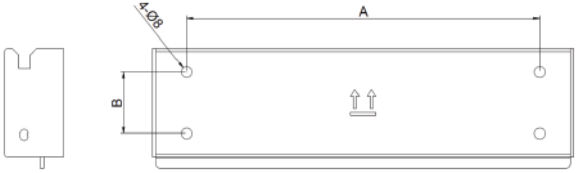


Figure 10 Installation bracket of inverter

Table of size of installation bracket

Inverter model	Spacing of installation hole
	A(mm)*B(mm)
4kW / 4kW-S / 5kW / 5kW-S / 6kW / 8kW / 10kW	260*45

The procedures for installation of inverter are listed below:
(1) Use the punch positioning plate in the packaging box to determine the punch position. As shown in Figure 10 Level the holes with a level ruler and mark it with a marking pen.

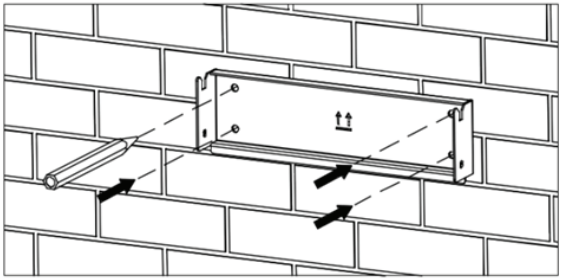


Figure 10 Determine the punch position

(2) Drill 4 installation holes on the wall with electric drill. As shown in Figure 11

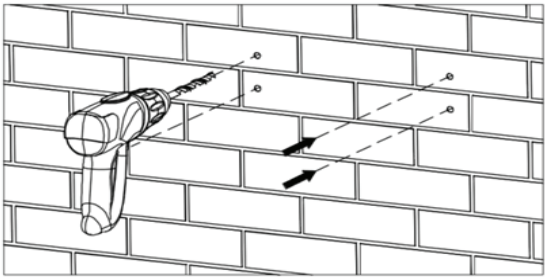


Figure 11 Drilling

(3) Fix the expansion bolts to the 4 installation holes with hammer, as shown in Figure 12.

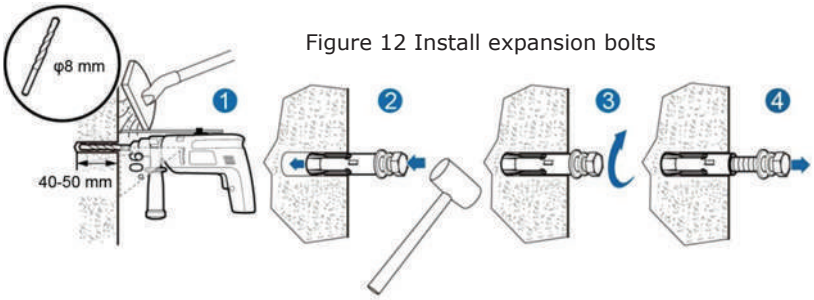


Figure 12 Install expansion bolts

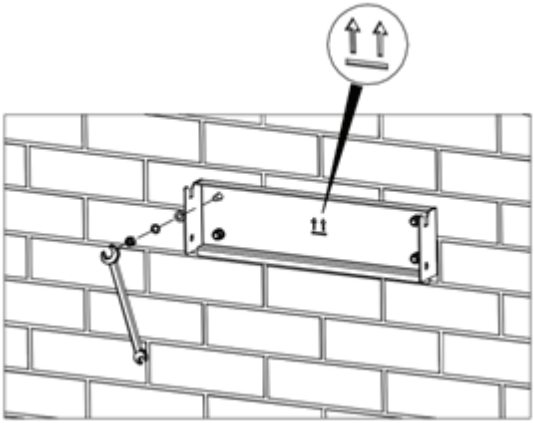


Figure 13 Fix the installation bracket

(4) Fix the installation bracket onto the expansion bolts and ensure the installation is firm enough(tightening torque is 13N•m) . As shown in Figure 13.

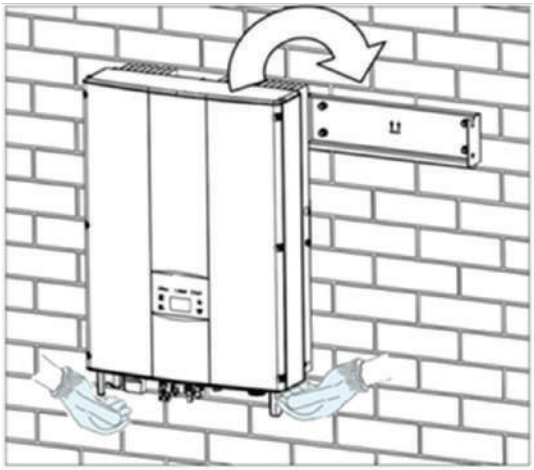


Figure 14 Installation of inverter

(5) Hang the inverter onto the installation bracket and ensure the installation is firm enough. As shown in Figure 14.

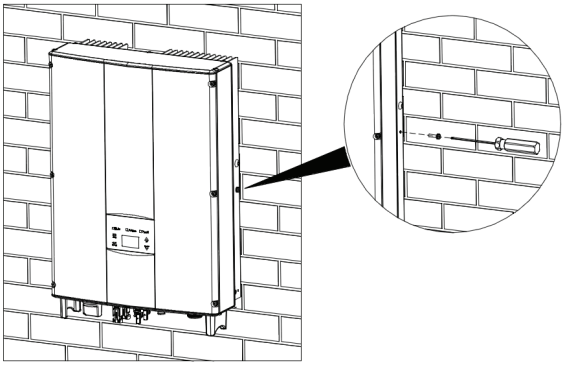


Figure 15 Installation of M5X20 bolts

(6) Ensure the inverter is installed properly and tighten the M5X20 bolts into the screw holes on the left and right side of inverter (tightening torque is 3N•m). As shown in Figure 15.

WIRING INSTALLATION

This section presents the detailed contents and safety precautions related to electrical connection. Fig 16 is the connection diagram for PV grid-connected system.

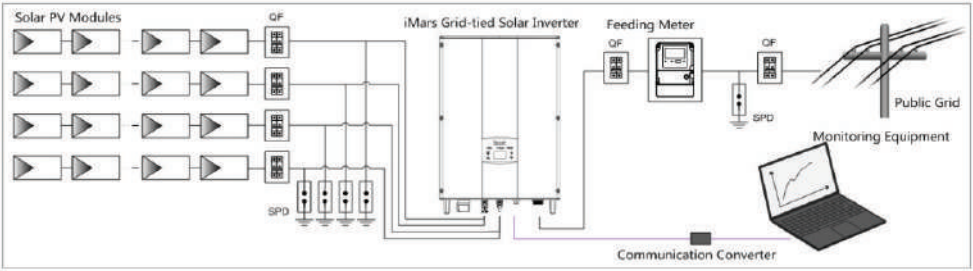


Figure 16 PV grid-connected system diagram

⚠	● Electrical connection must be carried out by professional technicians as wrong operation may cause damage to the device, physical injuries or even death during system operation. ● All the electrical installation must conform to the national and local electrical safety regulations. ● Ensure all the cables are installed firmly according to the specified safety requirements and free from any damage. ● It is not allowed to close the AC and DC breakers before the inverter is electrically connected.
Note	● Read and follow the instructions provided in this section . Strictly follow the requirements when operating. ● Always note the rated voltage and current defined in this manual. Never exceed the limits.

WIRING INSTALLATION

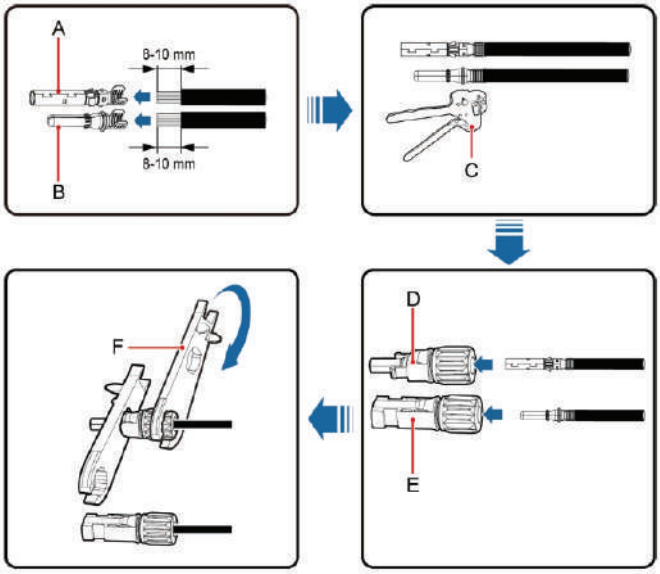


Figure 17 MC4 DC connector and PV string connection

The procedures for connecting PV string t to the inverter DC input are shown below:
(1) Before connecting PV string to inverter, ensure proper measures against lightening and short circuit have been taken;

⚠	● PV strings can be connected to inverter only after protection measures which conform to local electrical regulations are taken and the technical parameters in this manual are fulfilled.

(2) Connect the output cables of solar modules to the DC connector of inverter as Figure 17 shows. Remove the isolation layer of the DC cable for about 8-10mm. Insert the conductor part into the appropriate position of the connector, crimp the MC4 DC terminal and tighten the nut with a torque of 2.5-3Nm. Ensure the poles of solar modules are correctly and well connected with the connectors
(3) After the DC connector is connected, use a multimeter to measure the voltage of the DC input string, verify the polarity of the DC input cable, and ensure that the voltage of each string is within the allowable range of the inverter, as shown in Figure 18.

⚠	● The PV string connected to the series inverter must adopt the DC connector configured especially for the inverter, do not use other connection devices without authorization from our company, otherwise damage to the device, unstable operation or fire may occur and our company will not undertake quality assurance or assume any direct or joint liability thereof.

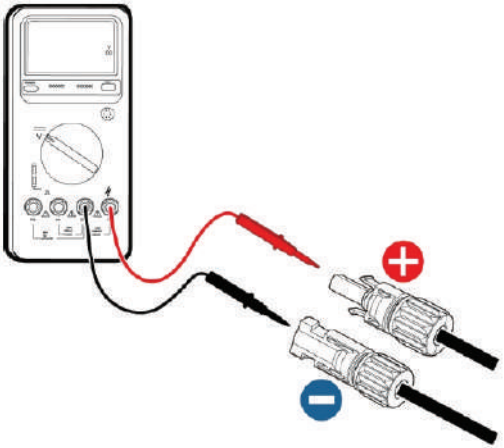


Figure 18 DC input voltage measuring

(4) Connect PV string to the inverter and ensure tightly-fastened
(5) When removing the DC connector from the inverter, insert the head of the straight screwdriver into the raised hole in the middle of the connector, and force the movable end of the connector to exit.

GRID CONNECTION

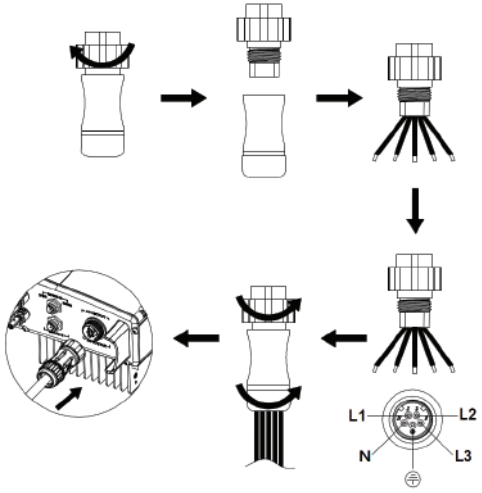


Figure 19 AC connection of single-phase inverter

Table of description of AC connector.

Inverter AC connector	Three phase grid	Note
1	L1（A）	
2	L2（B）	
3	L3（C）	
N	N	
⏚	PE	Must be connected

(1) Before connect the three-phase AC grid cable to the inverter, take lightning and short circuit protection measures in accordance with the local electrical safety codes
(2) Connect and fasten L1, L2, L3, N and PE conductors of the three-phase grid to AC terminal with 0.5 Nm torque. Tighten the terminal with tightening torque of 2.5-3 Nm, and then connect the terminal to the AC port of the inverter.

⚠	• Only qualified cables under the local electrical safety laws and regulations and comply with the technical parameters of this manual are allowed to connect to the inverter. • Only with the permission of the local electric power company can the inverter be connected to the utility grid.

OPERATION

INSPECTION BEFORE OPERATION

The following items must be checked strictly before running the PV grid-connected inverter (including but not limited to the following items):
(1) Ensure the installation site meet the requirement mentioned in "before installation" for easy installation, removing, operation and maintenance.
(2) Ensure the mechanical installation meet the requirement.
(3) Ensure the electrical installation meet the requirement.
(4) Ensure all switches are "off".
(5) Ensure the open-circuit voltage of PV module conforms to the parameter requirements of inverter DC side in Technical parameters;
(6) Ensure all electrical safety precautions are clearly-identified on the installation site.

	● In order to ensure a safe, normal and stable operation of the PV power generation system, all the newly installed, renovated and repaired PV grid - connected power generation system and its grid -connected inverter must undergo inspection before running.

INVERTER GRID-CONNECTED RUNNING

Start the inverter according to below steps to achieve grid-connected operation of the inverter:

Note	● Must to select the country to set grid-connected standard during the initial operation of the inverter ● Keep the power-on state of the inverter for at least 30 minutes, and complete the charging of built-in clock battery of the inverter to ensure the clock can run normally!

(1) Confirm the requirements in inspection before operation are fulfilled;
(2) Close the breaker on inverter public grid AC side;
(3) Close the integrated DC switch of the inverter;
(4) Close the circuit switch on PV string DC input side;
(5) Observe the LED indicator state of the inverter and the information displayed by LCD. Refer to "Operation" for LED state indicator and LCD display information.
(6) Set the inverter time according to local time, refer to section parameter settings to complete time setup.
(7) The default DC input mode of inverter is "independent" mode; refer to section parameter settings to check and set DC input mode.

Run Green indicator flickers, other indicators are off: Inverter is powered on and under self-inspection, wait for enough light to fulfill grid -connected condition;
Run Green indicator on, others off: The inverter is in power generation after self-inspection----successful commissioning.
"Warn" or "Fault" indicator is on or flickers: inverter is powered on but system fault occur. Refer to LCD screen to check the fault code in LCD display, stop the inverter as per STOPPING, and rule out faults according to TROUBLESHOOTING. After all the faults are removed, repeat the operations

STOPPING

When it is necessary to carry out power-off maintenance, inspection and fault elimination on the inverter, stop the inverter according to the following steps:
(1) Disconnect the breaker on inverter public grid AC side;
(2) Disconnect the integrated DC switch of the inverter;
(3) Disconnect the switch on PV string DC input side;
(4) Wait for at least 5 minutes until the internal parts of the inverter are fully discharged, and complete the stop operation.

DAILY MAINTENANCE

In solar PV grid-connected power generation system, the series grid-connected solar inverter can realize grid-connected power generation and stop/start operations automatically day and light in whatever seasons. In order to safeguard and prolong the service life of the inverter, it is necessary to carry out daily maintenance and inspection on the inverter besides using the inverter strictly according to this manual.

PERIODIC MAINTENANCE ON THE INVERTER

Item	Inspection mode	Maintenance period
Save the inverter running data	Adopt monitoring software to read the inverter data in real time, and backup the data recorded by monitoring software periodically. Save the inverter running data, parameters and logs into the file, check the monitoring software and various parameter setup of the inverter.	Once per quarter
Inverter running state	Observe whether the inverter is installed firmly, damaged or deformed. Listen for abnormal noise during inverter operation. Check the variables during system grid-connected running. Check whether the temperature of inverter enclosure is normal and monitor the heating condition with thermal imager.	Once per half a year
Clean the inverter	Check the RH and dust around the inverter, and clean the inverter when necessary.	Once per half a year
Electrical connection	Check whether system cable connection and inverter terminal block are loosened, if yes, secure them again in the manner specified in section "Installation". Check whether the cable is damaged, and whether the cable skin touched by the metal surface is cut.	Once per half a year
Maintenance and replacement of cooling fan	Observe whether the air inlet/outlet is normal; check whether there are cracks on the fan leaf. Listen for abnormal noise during fan rotation. Clean the air inlet/outlet if necessary; If any abnormity occurred to the fan, replace the fan immediately.	Once per half a year
Safety function	Check the inverter LCD and stop function of the system. Simulate stop operation and check the stop signal communication. Check the warning marks and replace them if necessary.	Once per half a year

MAINTENANCE GUIDE

CLEAN THE INVERTER

Cleaning procedure is as follows:
(1) Disconnect the input and output switches.
(2) Wait ten minutes.
(3) Clean the surface and air inlet/outlet of the inverter with soft brush or vacuum cleaner;
(4) Repeat inspection before operation - operating content.
(5) Restart the inverter.

CLEAN THE FAN (FOR 8KW AND 10KW INVERTER)

The cleaning steps are listed below:
(1) Disconnect the connection on input and output side;
(2) Wait for ten minutes;
(3) Disassemble the inverter in the same process with the installation procedures in section Instalaltion, but in reverse order;
(4) Remove the screws and covers of cooling bin or fan box

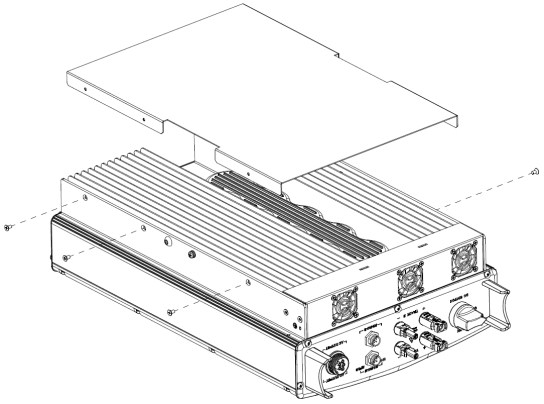


Figure 20 Disassemble the cooling bin

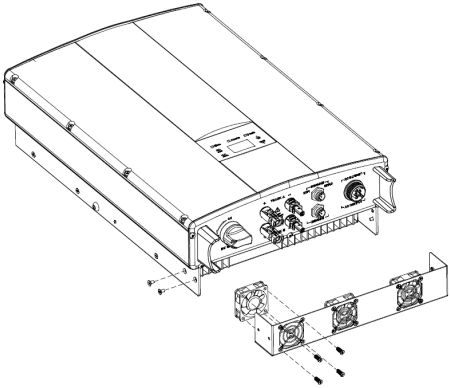


Figure 21 Disassemble the fan box

(5) Clean the inverter cooling bin and fan with soft brush or vacuum cleaner.
(6) Install the screws and covers of cooling bin or fan box to their original place.
(7) Install the inverter to its original place again according to section installation.
(8) Repeat the operations in section inspection before operation.
(9) Restart the inverter.

FAN REPLACEMENT

If high temperature occurred to the inverter or abnormal noise occurred during fan rotating, replace the fan. Note that the fan should be replaced by professionals only.

	● Stop the inverter before maintenance operation, and disconnect all the power inputs of the inverter. ● Before carrying out maintenance operation, wait for at least 10 minutes until the internal capacitors of the inverter are fully discharged, ● The fan can be maintained and replaced by professional electricians only.

How to replace the fan:
(1) Disconnect AC breaker;
(2) Turn the DC switch to "OFF" position;
(3) Wait for at least 10 minutes;
(4) Disconnect all the electrical wirings at the bottom of the inverter;
(5) Lift up the inverter with the help of others and take the inverter off the wall;
(6) Place the inverter on the operation platform;
(7) Disassemble the fan box as shown in Fig 21;
(8) Disassemble the damaged inverter fan as shown in Fig 22, then install the new fan back to its original position, and connect the fan power and control cable;

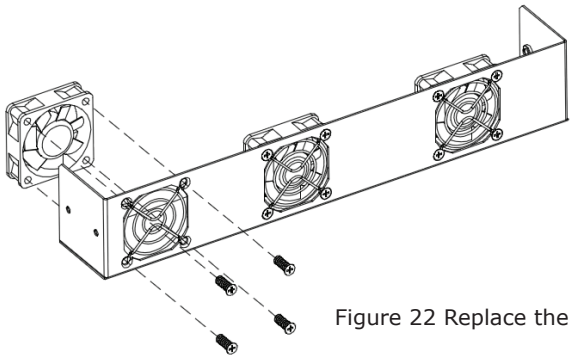


Figure 22 Replace the fan

(9) Install the screws and covers of cooling bin or fan box to their original position;
(10) Install the inverter to its original position again according to section 4;
(11) Repeat the operations in section inspection before operation;
(12) Restart the inverter

Note	● Do not start the inverter immediately if it alarms and stops. Figure out the cause according and confirm all the faults are removed before starting again. Inspections should be carried out in strict accordance with the procedures.

DISPLAY AND OPERATION PANEL

This chapter describes the panel displaying and how to operate on the panel, which involves the LCD display, LED indicators and operation panel.

LED INDICATORS

There are three LED indicators on the panel:
(1) "Run", operation indicator, green;
(2) "Warn" recoverable fault indicator, yellow;
(3) "Fault", unrecoverable fault indicator, red.

The inverter state includes 6 states of stand-by, self-inspection, power generation, recoverable fault and unrecoverable fault; LED indicators are on, off and blinking. Please refer to the table below for detailed state of inverter and LED indicators state.

"○": LED indicator is off;

"◐" (green), "◐" (yellow), "◐" (red): LED indicator is blinking at every 0.25S or 0.5S;

"●(Green), "●" (yellow), "●" (red): LED indicator is on.

Table of inverter state and LED indicators

Inverter state	LED indicators	Description
Stand-by	○ Run ○ Warn ○ Fault	No power on. All indicators off.
Self-inspection	◐ Run ○ Warn ○ Fault	Green indicator blinks in every 0.25s, others off. Power on and ready for self-inspection
Power generation	● Run ○ Warn ○ Fault	Green indicator keeps on, others off. Grid-tied power generation.
	● Run ● Warn ○ Fault	(1) Grid-tied power generation, but clock fault (A007); (2) Grid-tied power generation, but DC input fault (A001 or E001); (3) Grid-tied power generation，but fan fault(E006 or E012); Green and yellow indicator keeps on, others off.

fault	◯ Run ◐ Warn ◯ Fault	Inverter stand-by. The public grid fault(A001, A003, A004, A005or A006); Yellow indicator blinks in every 0.5s, others off
	◯ Run ● Warn ◯ Fault	(1) Inverter stand-by. Temperature abnormal(E006); (2) Recoverable Inverter stand-by. DC input fault (E001); Yellow indicator keeps on, others off
Unrecoverable fault	◯ Run ◯ Warn ◐ Fault	Hardware or software fault (E003, E004, E005, E008, E009, E011, E013 or E015). De-couple the inverter from the system before maintenance. Red indicator blinks in every 0.5s, others off
	◯ Run ◯ Warn ● Fault	Current-leakage or unqualified output power energy of the inverter (E007, E010, E014, E017, E018 or E020). De-couple the inverter from the system before maintenance. Red indicator keeps on, others off
Artificial turned off	● Run ● Warn ● Fault	Stop after the communication or panel command. All indicators are on.
Note	Please refer to detailed fault information and troubleshooting for more info.	

OPERATION PANEL

There are 4 buttons on the panel:
(1) "ESC", exit and return ;
(2) "∧", back to the front page and data increasing;
(3) "∨", to the next page and data decreasing;
(4) "ENT", enter.

LCD SCREEN

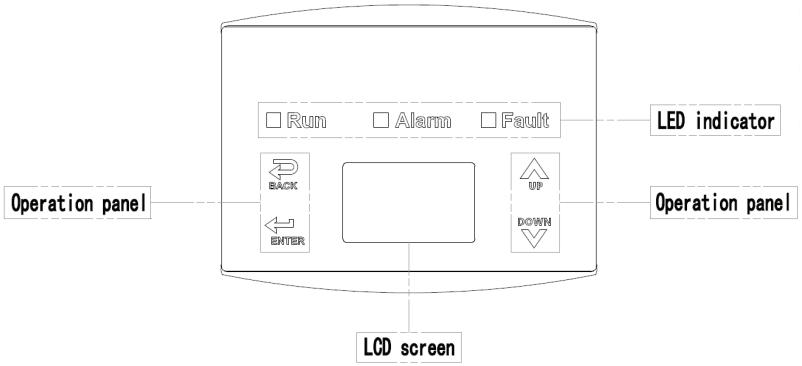


Figure 23 Operation panel

All information is displayed on the LCD screen. The background illumination of LCD screen will go out to save power if there is not button operation in 15 seconds. But it can be activated by pressing any button. Press "ENT" to enter into the main interface if the background illumination is on. All parameters can be viewed and set on the interface.

There are main interface and menu interfaces on the LCD screen, of which the main interface is the default one after power on, while the menu interfaces are used to watch and set parameters or other manual operation, such as viewing the monitoring parameters, history record, system information, statistics and fault information and setting the displayed language, time, communication address, password and factory defaults.

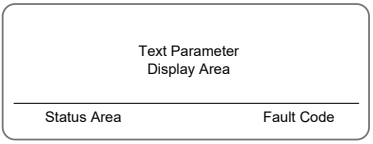


Figure 24 Main interface

The main interface of the LCD screen is shown as the Figure 24:
(1) The curve displays the power changing at the current day;
(2) The words on the screen display the current key parameters of the inverter. Three lines of words are displayed at a time, but if the inverter is in operation or stand-by state, the words are rolling forward at every 3s. And the user can press "∧" or "∨" to look up the information freely;
(3) State display area displays current running state of the inverter, which can display "self-inspection", "grid-connected power generation", "alarm", "fault" and "OFF" state;
(4) Dynamic fault code and menu entrance. When the state display area displays "alarm" or "fault", the dynamic fault code area will display corresponding fault code (display up to 8 fault codes).

FUNCTIONS OPERATION

Most of the parameters can be viewed and set through the LCD screen and operation panel.

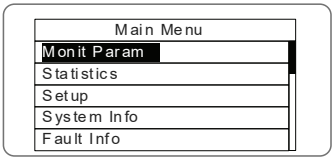


Figure 25 Main interface

MONITORING PARAMETERS

Press "∧" and "∨" in the main interface to select "Monit Param", and then press "ENT" to view the parameters which is shown in Figure 26. Go the front or next page through "∧" and "∨" and return through "ESC".

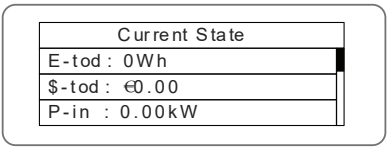


Figure 26 Monitoring parameters

HISTORY

Press "∧" and "∨" in the main interface to select "History", and then press "ENT" to view the parameters which is shown in Figure 27.

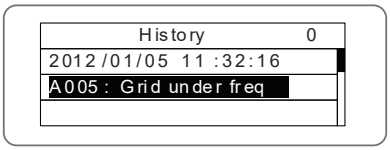


Figure 27 History parameters

"Historical record" can display 32 pieces of historical information, press "∧" or "∨" key to look through the historical information, press "ESC" to return. The number on the upper right corner of the first row is the number of historical record, the 2nd row (as shown in Fig 27) displays the date and time when fault occurred or restored, and the 3rd row displays detailed information of fault code. When the 3rd row displays in inverse color, it indicates fault occurred, otherwise it is fault restored.

STATISTICS

Press "∧" and "∨" in the main interface to select "Statistics", and then press "ENT" to view the parameters which is shown in Figure 28 .

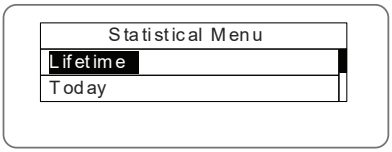


Figure 28 Statistic information

The information in table below can be viewed in the statistical menu.

Table of statistic information

Content	Detailed
Lifetime	Total operation time, total power produced, total power saved, total CO_2 reduction in lifetime
Day statistics	Total power produced, total power saved, peak power and total CO_2 reduction in current day

PARAMETER SETTINGS

Press "∧" and "∨" in the main interface to select "Setup Menu", and then press "ENT" to view the parameters which is shown in Figure 29.

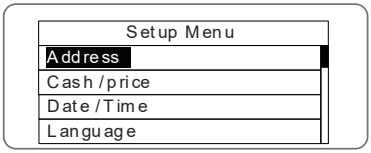
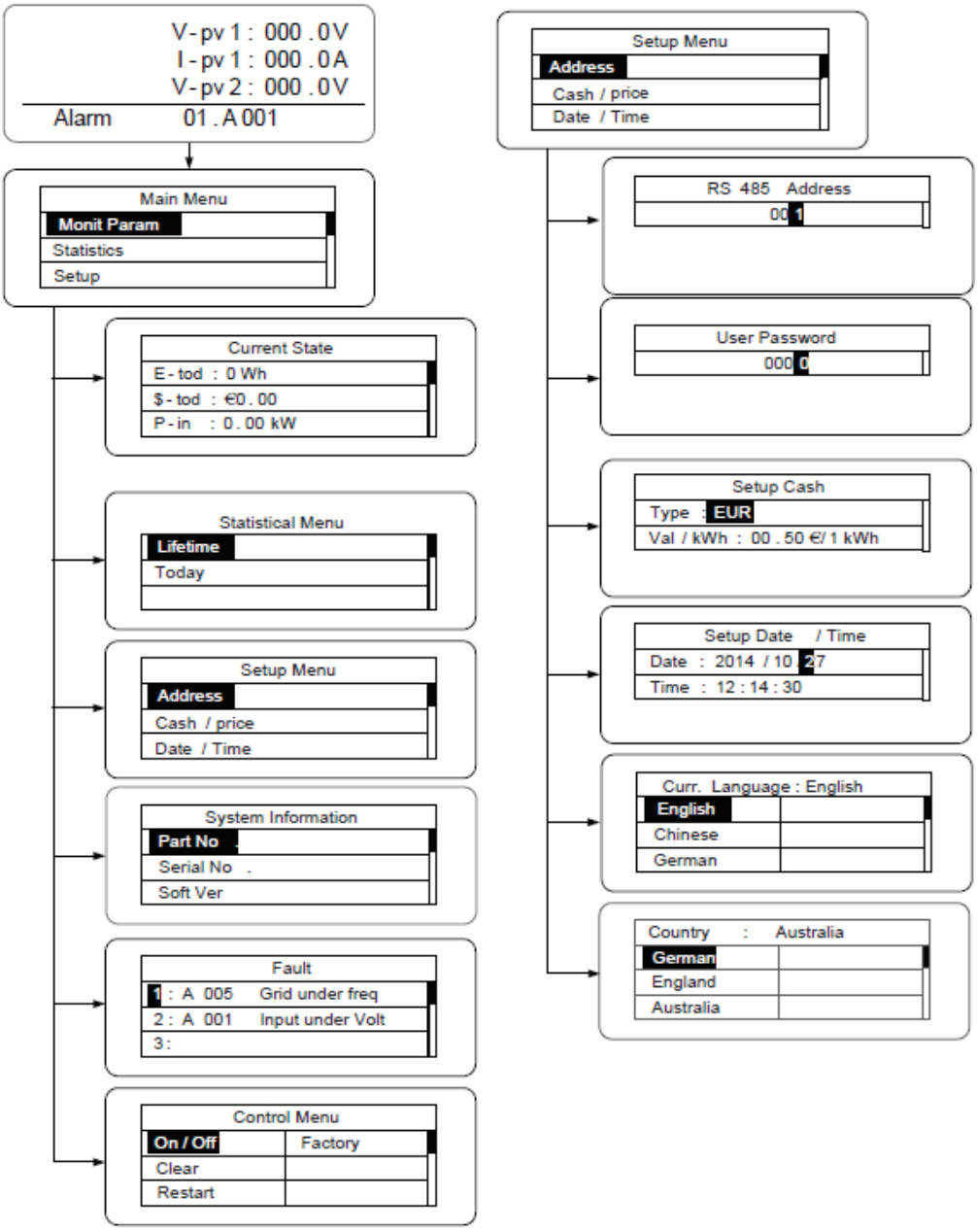


Figure 29 Setting information

"Setup menu" can realize parameter setup shown in table of parameters setting.

LCD MENUS:



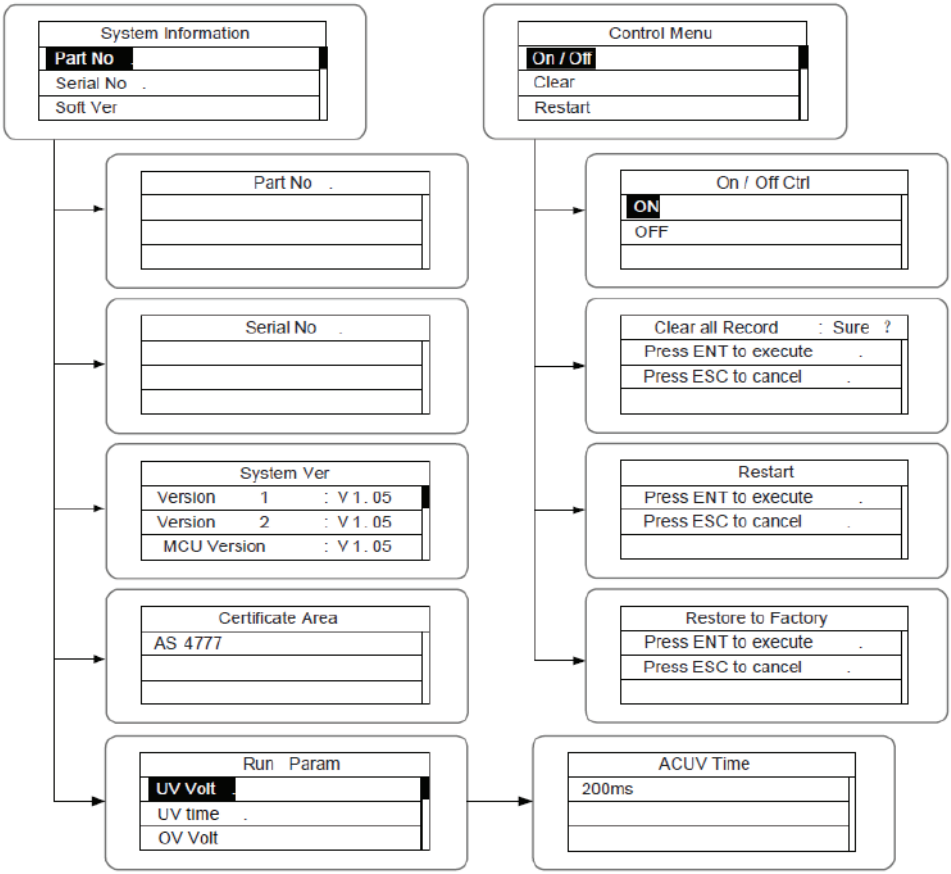
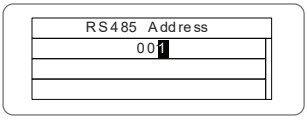
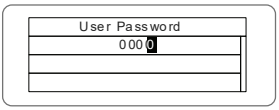
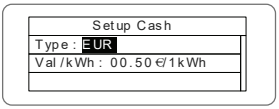
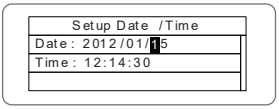
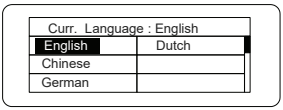
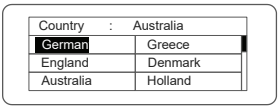
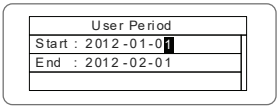
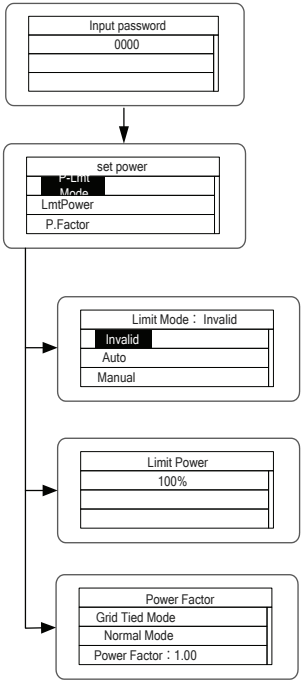
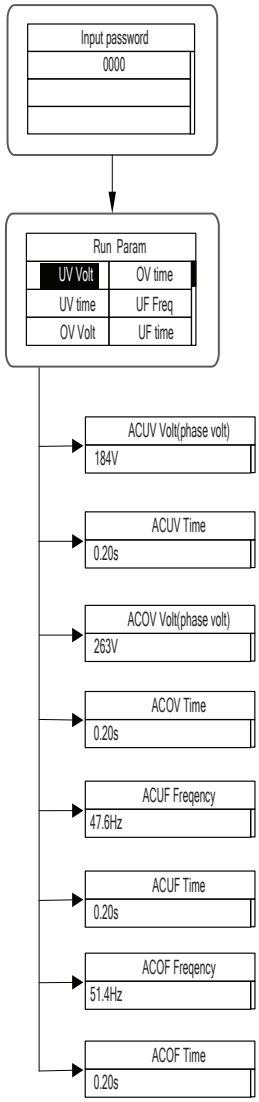


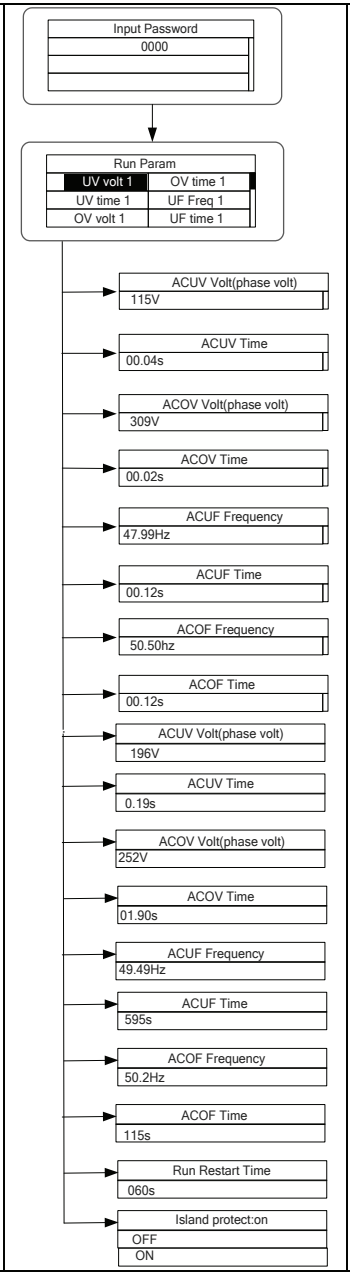
Table 6-3 Parameters setting

Setting item	LCD display	Instruction
RS485 Address		Enter into the interface and edit the data through "∧" or "∨". And then press "ENT" again to the next bit. After editing the three bits, press "ENT" to save the edition and press "ESC" to exit.

User password		Enter into the interface and edit the data through "∧" or "∨". And then press "ENT" again to the next bit. After editing the four bits, press "ENT" to save the edition and press "ESC" to exit. The default password is "0000"; the user can enter into the setting interface without password. If the password is not "0000", the user can enter into the setting interface with password.
Setup Cash		Enter into the interface and edit the currency type and cash through "∧" or "∨". And then press "ENT" again to the next line. After editing the four bits, press "ENT" to save the edition and press "ESC" to exit. The currency types include EUR, POD, CNY and USD.
Setup Date/Time		Enter into the interface and edit the date and time through "∧" or "∨". And then press "ENT" again to the next line. After editing the four bits, press "ENT" to save the edition and press "ESC" to exit.，
Language		Enter into the interface and edit the language through "∧" or "∨". And then press "ENT" again to save the edition and press "ESC" to exit. The default language is English.
Select Country		Enter into the interface and select country through "∧" or "∨". And then press "ENT" again to save the edition and press "ESC" to exit.

User period		Enter into the interface and edit the user period through "∧" or "∨". And then press "ENT" again to the next bit. After editing, press "ENT" to save the edition and press "ESC" to exit. Of which, the setting time and date needs to be later than the system setting, and the start time needs to be earlier than the end time. The setting date and time is used for the statistical information.
Set power		The password is needed when enter into the interface of "Set power". Get the password from the supplier if necessary. There are 3 submenus: ①P-Lmt Mode: invalid (limited power function is invalid),auto (special for single phase) ,manual (set the limit of output value manually); ② LmtPower: this function is only valid when the P-Lmt Mode is manual, the percentage is that of the rated power and the setting range is from 10% to 100%; ③Power factor: includes normal model (default value "1"), current advanced mode and current hysteresis mode and the setting rage is -0.9-0.99.

Run Param		Password is required when enter into the interface of "Run Param". Get the password from the supplier if necessary. Set ACUV Volt, ACUV time and others under the related submenus, and then press "∧" and "∨" to modify, and finally press "ENT" to confirm.

Run Param		There are 2 protections under G83/G59(UK) and PEA(Thailand) standards, and there is only one protection under other grid tied standard. Set ACUV Volt, ACUV time and others under the related submenus, and then press "∧" and "∨" to modify, and finally press "ENT" to confirm. Generally, it is only necessary to set ACUV2, ACOV2 and ACUF2 value for ACUV, ACOV and ACUF protection. And it is necessary to set ACOF1 and ACOF2 together for ACOF protection.

SYSTEM INFORMATION

Press "∧" and "∨" in the main interface to select "System Information", and then press "ENT" to view the parameters which is shown in Figure 30.

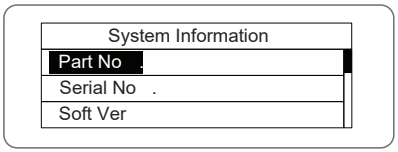


Figure 30 System information

The system information include "product model", "serial No.", "software version" and "certificate version". If select "Software Version" in the "System Version", can view the inverter Version 1, Version2, MCU Software Version, RS485 protocol and other information, as shown in Figure 31.

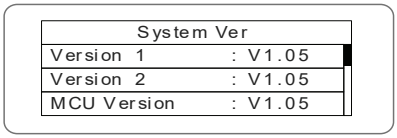


Figure 31 System version

FAULTS

Press "∧" and "∨" in the main interface to review the fault history, and then press "ENT" to view the sub-menu which is shown in Figure 32.

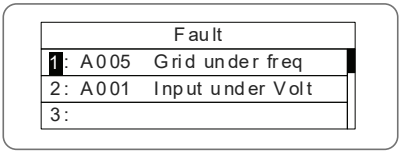


Figure 32 Fault information

User can press "∧" or "∨" key in the "fault information" interface to view the fault records. "Fault information" records the latest 8 pieces of fault information of the inverter, as shown in fig 26. When there is no fault currently, it will display "No fault!". See history for more information on fault records or fault time.

INVERTER CONTROL

Press "∧" and "∨" in the control interface, and then press "ENT" to view the sub-menu which is shown in Figure 33.

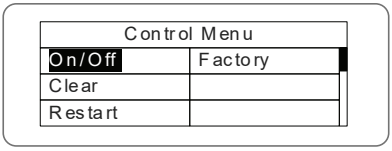
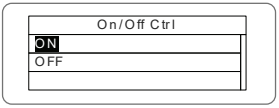
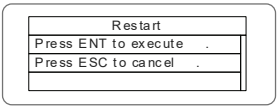
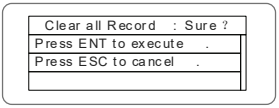
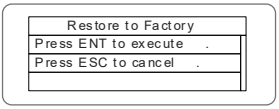


Figure 33 Control interface

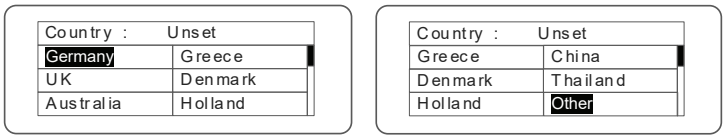
Refer to the table below for detailed information.

Table of inverter control

Control item	LCD display	Instruction
On/Off control		Control the "On/Off" through the panel. Press "∧" and "∨" in the control interface to select the operation. Press "ENT" to ensure the operation and press "ESC" to return.
Restart		Restart the inverter through the panel. And save the all settings and operation record. Press "ENT" to ensure restarting and the inverter will begin to self-inspect or press "ESC" to return.
Record clear		Press "ENT" to ensure clear all records or press "ESC" to return. "Record clear" is to clear all setting parameters through the panel, restore to the factory setting and save all history operation records.
Restore to factory		"Restore to factory" is to clear all setting parameters and history operation records through the panel, restore to the factory setting. Press "ENT" to ensure clear or press "ESC" to return.

GRID CERTIFICATION CHOICE

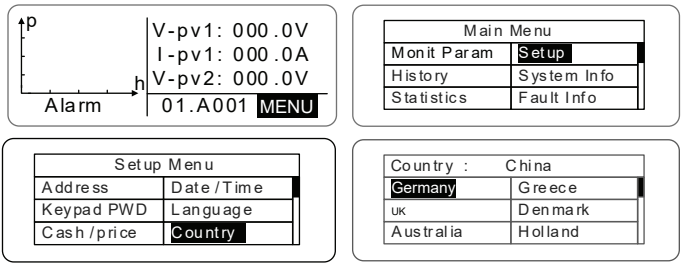
Power on the inverter by DC input for the first time or after restore factory settings, the LCD screen will appear a list of countries, requiring the user to choose what country of use. As shown below:



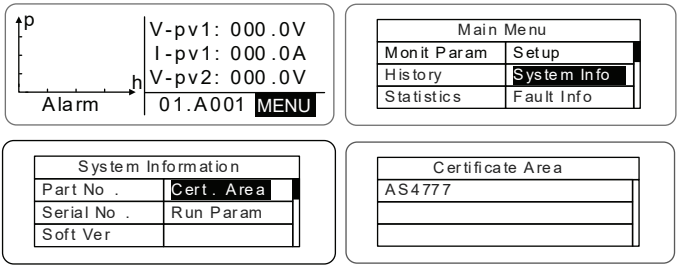
Press the "∧" or "∨" button to select the country (refer to the below table), press the ENT button to complete the setting.

13	Australia	AS4777.2&AS4777.3 AS/NZS3100	400~415V	50Hz
14	Singapore			
15	New Zealand			
16	Belgium	C10/C11	380~400V	50Hz
17	Luxembourg			
18	Holland			
19	Denmark	TF3.2.1	380~400V	50Hz
20	Thailand	PEA	380V	50Hz
21	China	CGC/CF001	380V	50Hz
22	Italy	ENEL	400V	50Hz

The user can change the country setting through the following ways:
LCD screen:MENU→Main Menu: Setup→Setup Menu: Country→Country:



The user can query the grid certification which has been set through the following ways:
LCD Screen:MENU→Main Menu: System Info→System Information: Cert. Area→Certificate Area



MONITORING COMMUNICATION

This chapter describes the communication connection of inverter and monitoring system (Industrial master, private computers, smart phones and so on).

The standard communication mode of grid-tied solar inverter is RS485 which includes "RS485-M" and "RS485-S" ports. The RS485-M ports can communicate with private computers, smart phones and so on. The system monitoring solution is shown as Figure below:

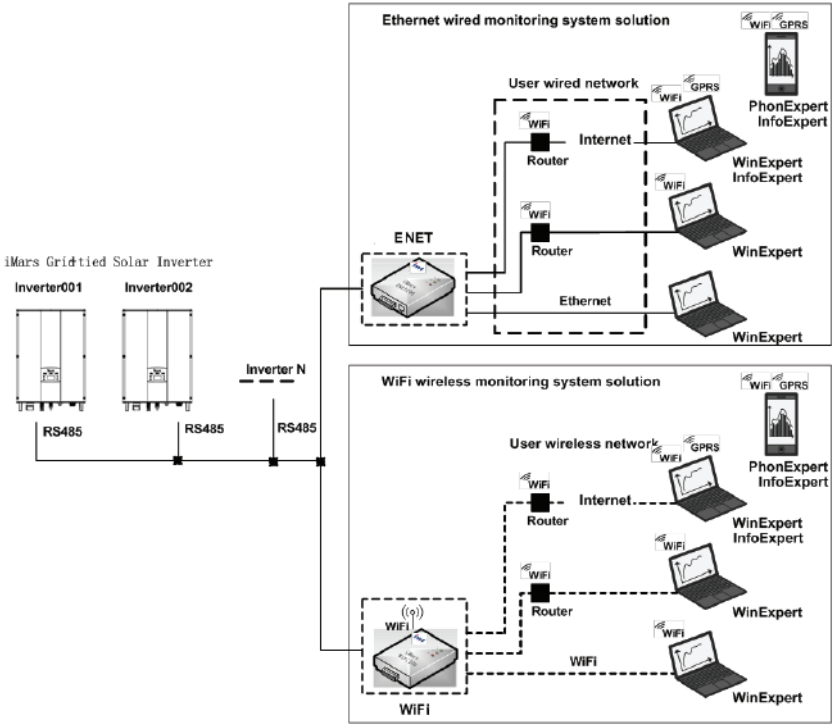


Figure 34 Monitoring system of inverter

STANDARD COMMUNICATION

Table of pins on inverter instruction

Pin on inverter	Definition
1(Red)	+5VDC
2(Orange)	A (RS485+)
3(Brown)	B (RS485-)
4(Black)	GND

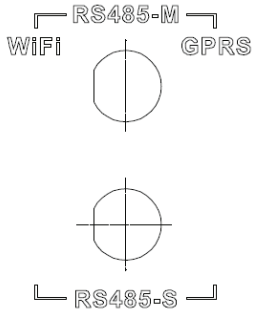


Figure 35 RS485 pin on inverter



Figure 36 Communication connector

CONNECTION STEPS:

(1) Connect the communication connector configured for the inverter to the RS485 terminal of the inverter, as shown in Fig 37;

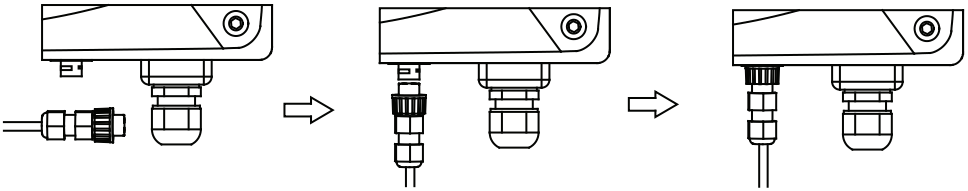


Figure 37 Detailed connectiona

(2) According to the table of Optional communication accessories, connect the communication connector pinout and the user's device, make sure the connection is correct.
(3) Please download the monitoring software "WinExpert" and its operation instruction from our website.

OPTIONAL COMMUNICATION

The optional communication modes include Ethernet and WIFI, which also need corresponding communication parts and components as shown in Table below All operation parameters of the inverter are output from port "RS485-M" to the communication devices, finally transmitted to the monitoring system as standard Ethernet and WIFI signal.

Table of Optional communication accessories

Optional accessories	Inverter port	Port of upper PC
Ethernet convert	RS485-M	RJ45 pin
WiFi converter	RS485-M	WiFi signal
GPRS converter	RS485-M	GPRS signal
ENET converter	RS485-M	Ethernet port

Please download the connection instruction, operation manual and commissioning tools on website.
Note: the optional accessories are not standard-configured, need to buy separately.

TROUBLESHOOTING

Table of0 Fault code

Fault code	Message	Instruction	Fault analysis
A			
A001	Input UV	Input undervoltage	PV1 undervoltage PV2 undervoltage
A002	Bus UV	Bus undervoltage	DC input
A003	Grid UV	AC undervoltage	Low voltage of the public grid
A004	Grid OV	AC overvoltage	High voltage of the public grid
A005	Grid UF	AC underfrequency	Low frequency of the public grid
A006	Grid OF	AC overfrequency	High frequency of the public grid
A007	Clock Fail	Clock alarm	Wrong setting
A009	Cmd Shut	Manual stutdown	Stop by the operation panel or upper PC
A011	Grid Loss	The public grid disconnects.	Check if inverter AC connection is well
A030	Lost Box	Box lost connection	The communication is faulty between combiner box and inverter
A031	BoxSPD1	Lighting protector1	Lighting protector1 faulty
A032	BoxSPD2	Lighting protector2	Lighting protector2 faulty
E			
E001	Input OV	Input overvoltage	DC input overvoltage
E003	Bus OV	Bus overvoltage	Internal bus voltage
E004	Boost Fail	Voltage-boost fault	Voltage-boost fault of the inverter
E005	Grid OC	AC overcurrent	Internal AC overcurrent
E006	OTP	Overtemperature	Internal overtemperature
E007	Riso Low	Low isolation impedance	Low isolation impedance of the external port system
E008	IGBT drv	IGBT drive protection	IGBT drive protection of the inverter

E015	OutputShort	Output short-circuit	Output short-circuit
E018	Input OC	Input overcurrent	DC input overcurrent
E019	Incnst	Data consistency fault	Inconsistent grid voltage, frequency, leakage current or AC/DC injection
E020	PowerReversed	DC power reversed	DC power reversed
E021	Meter commErr	Power meter communication is faulty	The communication between smart meter and inverter is faulty (when anti-feedback function is enable)
E022	FreqChg	Frequency is changed	Fluctuation of grid voltage is over inverter normal sustainable range
E023	PE Loss	PE wire not connected	The PE wire is unconnected (this error code only available under AS4777 safety)
E024	MeterLoss	The smart meter not connected	The smart meter not connected
E025	Locking	The inverter is locked	The inverter is locked
E026	Run Limit	Light load	Light load (when anti-feedback function is enable)
E028	DRM0 Loss	The DEM0 box not connected	The DRM0 box is unconnected (this error code only available under AS4777 safety)

TECHNICAL PARAMETERS

Table of technical parameters

Model		Three-phase						
		BG4KTR	BG4KTR-S	BG5KTR	BG5KTR-S	BG6KTR	BG8KTR	BG10KTR
Input (DC)	Max. DC voltage (V)	900	900	900	900	1000	1000	1000
	Starting voltage (V)	200	200	200	200	200	200	200
	MPPT voltage range(V)	200-800	200-800	200-800	200-800	180-800	180-800	180-800
	Rated DC input voltage range(V)	220-800	360-800	260-800	430-800	300-800	300-800	320-800
	Number of MPPT/string per MPPT	2/1	1/1	2/1	1/1	2/1		
	Max. DC input power (W)	4200	4200	5200	5200	6300	8400	10400
	Max. DC current (A) X	10x2	12	10×2	12	11x2	14x2	19x2
	Number of MPPT							
	Isc PV (A)	11x2	13	11×2	13	12.5x2	15.5x2	21x2
	Maximum backflow current (inverter backflow to PV array)	0	0	0	0	0	0	0
	DC switch	Optional						

Output (AC)	Rated output power(W)	4000	4000	5000	5000	6000	8000	10000
	Voltage(V)/ frequency(Hz) range	320~460Vac, 50Hz(47~51.5Hz) / 60Hz(57~61.5Hz)						
	Maximum output current(A)	6.4		8		9.6	12.8	16.1
	Maximum output fault current	265A @34ms						
	AC inrush current	Less than 10 A						
	Maximum output overcurrent protection(A)	12.7		15.8		19	25.3	31.8
	Power factor	-0.80~+0.80(Adjustable)						
	Harmonic distortion	<3%(rated power)						
System	Cooling method	Natural cooling					Air cooling	
	Maximum efficiency	97.20%	97.30%	97.30%	97.40%	97.50%	97.60%	98.20%
	European efficiency	97.00%	97.00%	97.00%	97.00%	97.00%	97.00%	97.60%
	MPPT efficiency	99.90%						
	Protection degree	IP65						
	Power consumption at night	<1W						
	Isolation mode	Transformerless						
	Safety class	I						
	Overvoltage protection class	AC:III,PV:II						
	Inverter topology	Non-isolated						
	Pollution degree	300.00%						
	Operation temperature	(-25 ~+60), (Derate after 45)						
	Relative humidity	4~100%, Condensation						
	Max. altitude(m)	≤2000, (Derate if the altitude > 2000)						
	Display	LED/ LCD, backlit display						
	System language	English, Chinese, German, Dutch						
	Communication	RS485 (standard), Ethernet, WiFi (optional)						
	DC terminal	BC03A / BC03B						
	Noise dB(A)	≤30					<50	
	Installation mode	Wall installation						
Others	Grid standard	DIN VDE 0126-1-1：2013, VDE-AR-N 4105：2011, DIN VDE V 0124-100：2012, IEC 61727（IEC 62116）, AS/NZS 4777.2：2015, NB/T 32004-2013, IEC 60068-2-1：2007, IEC 60068-2-2：2007, IEC 60068-2-14：2009, IEC 60068-2-30：2005, IEC 61683：1999, C10/11：2012						
	Safe certificate / EMC category	IEC 62109-1：2010, IEC 62109-2：2011, EN 61000-6-2: 2005 / EN 61000-6-3:2007/ A1:2011						
Protection	Input overvoltage protection, input overcurrent protection, DC isolation monitoring, DC monitoring, grounding fault current monitoring, grid monitoring, island protection, short circuit protection, overheating protection etc.							

Meaningful Innovation.

WEEE Number: 80133970

MANUALE DI ISTRUZIONI

INVERTER SOLARE FOTOVOLTAICO CON DISPLAY LCD E INTERRUTTORE CC (IN CORRENTE CONTINUA) - TRIFASE

MODEL	SKU
VT-6605305	11371
VT-6608305	11372
VT-6610305	11373



5 YEARS WARRANTY*

INTRODUZIONE

Grazie per aver scelto e acquistato il prodotto della V-TAC. La V-TAC Le servirà nel miglior modo possibile. Si prega di leggere attentamente queste istruzioni prima di iniziare l'installazione e di conservare questo manuale a portata di mano per riferimenti futuri. In caso di qualunque altra domanda si prega di contattare il nostro rivenditore o il distributore locale da chi è stato acquistato il prodotto. Loro sono addestrati e pronti a servirla nel miglior modo possibile.

AVVERTIMENTO:

1. Spegnere l'elettricità prima di iniziare.
2. Installazione soltanto da parte di un elettricista certificato.
5. Durante l'installazione, deve essere garantita una messa a terra adeguata.



Questo marchio indica che il prodotto non deve essere smaltito con altri rifiuti domestici.



Attenzione, rischio di scossa elettrica.









PRECAUZIONI DI SICUREZZA

Gli inverter solari fotovoltaici collegati alla rete della serie sono progettati e testati rigorosamente in conformità con gli standard di sicurezza internazionali. Trattandosi di un dispositivo elettrico ed elettronico, durante l'installazione, il funzionamento e la manutenzione è necessario osservare scrupolosamente tutte le norme di sicurezza. L'uso scorretto o improprio può provocare:

- Lesioni, rischi per la vita e la sicurezza personale dell'operatore o di altre persone.
- Danni all'inverter o ad altri beni dell'operatore o di altre persone.

Per evitare lesioni personali, danni all'inverter o ad altri dispositivi, osservare scrupolosamente le precauzioni di sicurezza descritte di seguito. Questo capitolo descrive principalmente i vari simboli di avvertenza presenti nel manuale d'uso e fornisce istruzioni di sicurezza per l'installazione, il funzionamento, la manutenzione e l'uso degli inverter solari fotovoltaici collegati alla rete di serie.

ICONE

Questo manuale fornisce informazioni rilevanti con icone per evidenziare la sicurezza fisica e dei beni dell'utente, al fine di evitare danni al dispositivo e lesioni fisiche.
Le icone utilizzate in questo manuale sono elencate di seguito:

icone	Denominazione	Istruzione	Abbreviazione
 Danger	Pericolo	Se non vengono rispettati i relativi requisiti, si possono verificare gravi lesioni fisiche o addirittura la morte.	
 Warning	Attenzione	Se non vengono rispettati i relativi requisiti, si possono verificare lesioni fisiche o danni ai dispositivi.	
 Do not	Sensibile alle cariche elettrostatiche	Se non vengono rispettati i relativi requisiti, si possono verificare danni.	
 Hot sides	Lati caldi	I lati del dispositivo potrebbero surriscaldarsi. Non toccarli.	
Note	Nota	Le procedure adottate per garantire il corretto funzionamento.	Nota

SAFETY GUIDELINES

	● Dopo aver ricevuto il prodotto, accertarsi che sia ben imballato. In caso di domande, contattare immediatamente lo spedizioniere o il distributore locale. ● L'installazione degli inverter fotovoltaici deve essere eseguita da tecnici professionisti che abbiano ricevuto una formazione specifica, che abbiano letto attentamente e familiarizzato con l'intero contenuto del presente manuale e che siano a conoscenza dei requisiti di sicurezza dell'impianto elettrico. ● Non eseguire il cablaggio, l'ispezione o la sostituzione di componenti quando l'alimentazione è attiva.
	● Assicurarsi che non vi siano interferenze elettromagnetiche da parte di altre apparecchiature elettriche ed elettroniche nel luogo di installazione. ● Non reinstallare l'inverter non autorizzato. ● Tutte le installazioni elettriche devono essere conformi alle leggi e agli standard nazionali o locali.
	● La temperatura dei singoli componenti o dell'alloggiamento dell'inverter, in particolare del dissipatore di calore, può aumentare durante il normale funzionamento. Esiste il pericolo di bruciature. Non toccare.
	● Prima del funzionamento, l'inverter deve essere messo a terra in modo affidabile.
	● Non aprire il coperchio degli inverter senza autorizzazione. Le parti e i componenti elettrici all'interno dell'inverter sono elettrostatici. Effettuare misure per evitare scariche elettrostatiche durante il funzionamento.
	● L'inverter deve essere messo a terra in modo affidabile.
	● Assicurarsi che gli interruttori automatici lato corrente continua e lato corrente alternata siano stati scollegati e attendere almeno 5 minuti prima di effettuare il cablaggio e il controllo.

Nota: Il personale tecnico che può eseguire l'installazione, il cablaggio, la messa in esercizio, la manutenzione, la risoluzione dei problemi e la sostituzione degli inverter solari fotovoltaici collegati alla rete della serie deve soddisfare i seguenti requisiti:

- Gli operatori devono aver ricevuto una formazione professionale.
- Gli operatori devono aver letto integralmente il presente manuale e conoscere le relative precauzioni di sicurezza.
- Gli operatori devono conoscere le norme di sicurezza relative agli impianti elettrici.
- Gli operatori devono conoscere a fondo la composizione ed il principio di funzionamento dell'intero sistema di generazione di energia fotovoltaica collegato alla rete, nonché i relativi standard dei Paesi/regioni in cui è situato il progetto.
- Gli operatori devono indossare i dispositivi di protezione individuale.

COSA FARE DOPO LA ROTTAMAZIONE



- Non smaltire l'inverter insieme ai rifiuti domestici. L'utente ha la responsabilità e l'obbligo di inviarlo all'organizzazione designata per il riciclaggio e lo smaltimento.

CONSEGNA ED INSTALLAZIONE



- Mantenere l'imballaggio e l'unità completi, asciutti e puliti durante lo stoccaggio e la consegna.
- Si prega di rimuovere ed installare l'inverter con due o più persone, perché l'inverter è pesante.
- Rimuovere e installare l'inverter utilizzando gli strumenti appropriati per garantire un funzionamento sicuro e normale ed evitare lesioni fisiche o morte. Le persone devono inoltre adottare misure di protezione dai rischi meccanica, ad esempio indossare scarpe e abiti da lavoro protettivi.
- L'inverter può essere installato soltanto da elettricisti qualificati.
- Non collocare e non installare l'inverter sopra o vicino a materiali combustibili.
- Il luogo di installazione deve essere inaccessibile ai bambini e lontano da altri luoghi pubblici.
- Togliere i gioielli di metallo, come anelli e braccialetti, prima dell'installazione e del collegamento elettrico per evitare scosse elettriche.
- Prima del collegamento elettrico, coprire i moduli solari fotovoltaici con materiali a tenuta di luce. Se esposti alla luce del sole, i moduli solari fotovoltaici emettono una tensione pericolosa.
- La tensione di ingresso dell'inverter non può superare la tensione di ingresso massima; in caso contrario, l'inverter potrebbe danneggiarsi.
- I poli positivo e negativo dei moduli solari fotovoltaici non possono essere messi a terra, altrimenti si possono verificare danni irreparabili.
- Assicurare la corretta messa a terra dell'inverter; in caso contrario, un collegamento non corretto o l'assenza di messa a terra potrebbero causare l'arresto dell'inverter.
- Provvedere ad effettuare un'installazione ed un collegamento elettrico affidabili.

FUNZIONAMENTO IN RETE



- L'inverter può essere utilizzato soltanto da elettricisti qualificati, previa autorizzazione dei dipartimenti locali per l'energia elettrica.
- Tutti i collegamenti elettrici devono essere conformi agli standard elettrici dei Paesi/regioni in cui è situato il progetto.
- Assicurarsi che l'installazione ed il collegamento elettrico siano affidabili prima del funzionamento.
- Non aprire il coperchio dell'inverter durante il funzionamento o in presenza di tensione.

MANUTENZIONE ED ISPEZIONE

	● La manutenzione, l'ispezione e la sostituzione dei componenti dell'inverter devono essere eseguite soltanto da elettricisti qualificati. ● Per la manutenzione, rivolgersi al rivenditore o al fornitore locale. ● Per evitare che personale non pertinente o persone estranee accedano all'area di manutenzione durante gli interventi di manutenzione, è necessario apporre cartelli di divieto temporanei per vietare l'ingresso ai non addetti ai lavori o installare una recinzione apposita. ● Prima di qualsiasi intervento di manutenzione, scollegare l'alimentazione di rete dell'inverter, quindi disattivare gli interruttori in corrente continua e attendere almeno 5 minuti affinché l'inverter si scarichi. ● Attenersi alle norme sulla protezione dai fenomeni elettrostatici ed adottare le misure di protezione appropriate a causa della presenza di circuiti e dispositivi sensibili alle cariche elettrostatiche presenti nell'inverter. ● Per la manutenzione, non utilizzare parti e componenti non forniti dalla nostra azienda. ● Riavviare l'inverter dopo aver risolto i guasti e i problemi che possono compromettere la sicurezza e le prestazioni dell'inverter. ● Non avvicinarsi o non toccare parti metalliche conduttrici della rete o dell'inverter, per evitare scosse elettriche o lesioni fisiche o morte e incendi. Non ignorare le icone di avvertimento e le istruzioni con la dicitura "scossa elettrica".

SISTEMA DI GENERAZIONE DI ENERGIA FOTOVOLTAICA COLLEGATO ALLA RETE

APPLICAZIONE

Il sistema di generazione di energia fotovoltaica collegato alla rete è costituito da moduli solari fotovoltaici, inverter collegato alla rete, dispositivi di misurazione e rete pubblica.

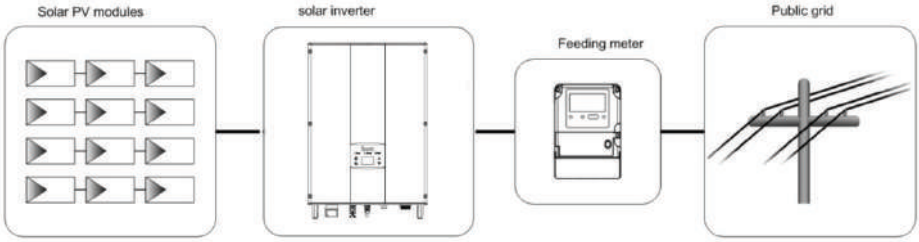


Figura 1 Applicazione degli inverter fotovoltaici collegati alla rete in serie

L'inverter fotovoltaico collegato alla rete è il cuore del sistema di generazione di energia fotovoltaica. L'energia solare può essere trasformata in energia elettrica trasmessa sotto forma di corrente continua attraverso i moduli solari fotovoltaici e quindi trasformata in energia elettrica trasmessa sotto forma di corrente alternata sinusoidale con la stessa frequenza e fase a quella della rete pubblica, dagli inverter solari fotovoltaici collegati alla rete, per essere poi immessa nella rete.

Gli inverter fotovoltaici collegati alla rete in serie vengono applicati soltanto nei sistemi di generazione di energia fotovoltaica collegati alla rete e l'ingresso della corrente continua dell'inverter è costituito soltanto da moduli solari fotovoltaici in silicio cristallino i cui poli negativi e positivi non sono collegati a terra.

	● I moduli solari fotovoltaici consigliati devono essere conformi alla classe A della norma IEC 61730.

CONFIGURAZIONE SUPPORTATA DI COLLEGAMENTO ALLA RETE

Gli inverter fotovoltaici collegati alla rete in serie supportano le connessioni alla rete TN-S, TN-C, TN-C-S e TT. Quando viene utilizzata la connessione TT, la tensione N-to-PE deve essere inferiore a 30 V.

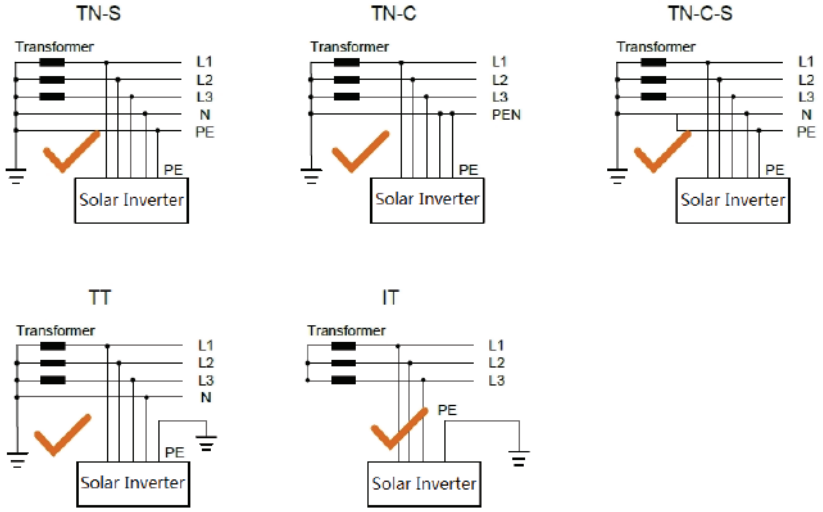


Figura 2 Tipo di rete

ASPETTO DEL PRODOTTO

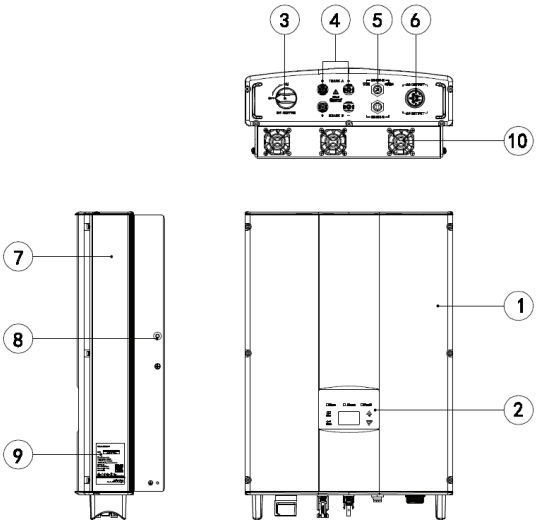
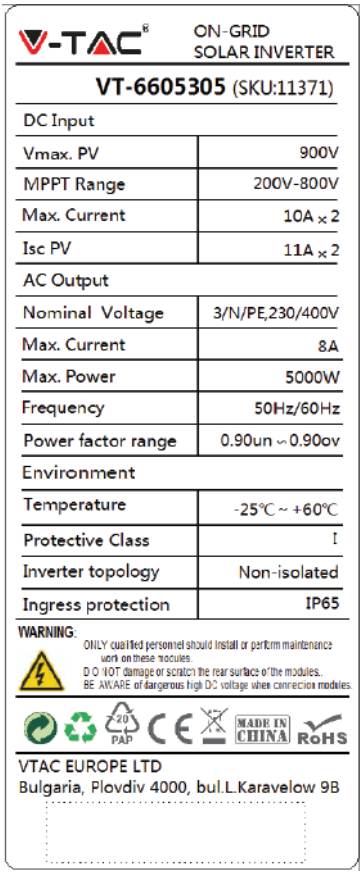


Figura 3 Aspetto dei prodotti

DESCRIZIONE DELLE PARTI

N.	Denominazione	Descrizione
1	Coperchio	
2	Pannello di controllo	Indicatore luminoso LED, display LCD, tastiera
3	Interruttore di corrente continua	Attivazione-disattivazione dell'ingresso della corrente continua (opzionale)
4	Porta di ingresso della corrente continua	Per il collegamento di moduli solari fotovoltaici
5	Porta di comunicazione	Porta di comunicazione RS485 e EXT
6	Terminale di corrente alternata	Per il collegamento dell'uscita in corrente alternata
7	Camera di raffreddamento	
8	Viti per il montaggio del pannello posteriore	
9	Targhetta di identificazione	Per i parametri nominali e le misure di sicurezza dell'inverter
10	Ventilatore	4~6 kW (SENZA VENTILAZIONE), 8~10 kW (raffreddamento ad aria)

TARGHETTA DI IDENTIFICAZIONE



1. Marchio e tipo di prodotto

2. Modello e parametri tecnici importanti

3. Sistema di certificazione e di attestazione dell'inverter

4. Numero di serie, denominazione dell'azienda e paese di origine.

Figura 4 Targhetta di identificazione dell'inverter

ICONE DI CERTIFICAZIONE

Icone	Descrizione
	● Il marchio WEEE UE. Non è possibile smaltire l'inverter con i rifiuti domestici.
	● Marchio di certificazione CE. L'inverter è conforme alla direttiva CE.

MODELLI DI PRODOTTO

Tabella dell'inverter fotovoltaico collegato alla rete

Denominazione del prodotto	Modello	Potenza nominale in uscita (W)
Trifase (L1, L2, L3, N, PE)		
Inverter fotovoltaico trifase collegato alla rete	4kW	4000
Inverter fotovoltaico trifase collegato alla rete	4kW-S	4000
Inverter fotovoltaico trifase collegato alla rete	5kW	5000
Inverter fotovoltaico trifase collegato alla rete	5kW-S	5000
Inverter fotovoltaico trifase collegato alla rete	6kW	6000
Inverter fotovoltaico trifase collegato alla rete	8kW	8000
Inverter fotovoltaico trifase collegato alla rete	10kW	10000

Nota: I parametri tecnici dell'inverter fotovoltaico collegato alla rete sono riportati nell'appendice.

DIMENSIONI E PESO

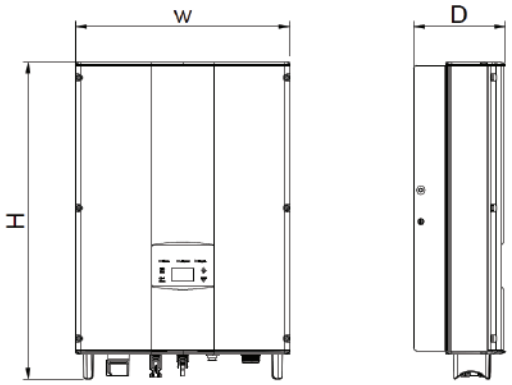


Figura 5 Dimensioni dell'inverter

Tabella delle dimensioni e del peso netto dell'inverter

Modello	H (mm)	W (mm)	D (mm)	Peso netto (kg)
4kW / 4kW–S / 5kW / 5kW-S / 6kW	530	360	150	20
8kW / 10kW	575	360	150	23

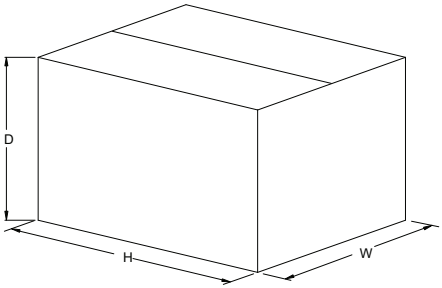


Figura 6 Dimensioni degli imballaggi in carta

Tabella delle dimensioni e del peso lordo degli imballaggi

Model	H (mm)	W (mm)	D (mm)	Peso (kg)	Materiale dell'imballaggio
4kW / 4kW–S / 5kW / 5kW-S / 6kW	630	470	284	22	Paper
8kW / 10kW	675	470	284	25	Paper

STOCCAGGIO

Le seguenti istruzioni per lo stoccaggio devono essere seguite se l'inverter non viene utilizzato immediatamente:

• Non rimuovere l'imballaggio esterno.

• L'inverter deve essere conservato in un luogo pulito e asciutto, protetto dalla polvere e dal vapore acqueo che può causare corrosione.

• La temperatura di stoccaggio deve essere compresa nell'intervallo -40°C~+70°C e l'umidità relativa nell'intervallo 5% RH~95% RH.

• Si consiglia di impilare gli inverter in base al numero di strati di impilamento presenti nella spedizione originale. Posizionare l'inverter con attenzione durante l'impilamento per evitare lesioni personali o danni alle apparecchiature causati dalla caduta delle stesse.

• Tenere lontano da sostanze chimicamente aggressive che potrebbero corrodere l'inverter.

• Sono necessarie ispezioni periodiche. Se si riscontrano danni causati da vermi e topi o se l'imballaggio risulta danneggiato, è necessario sostituire tempestivamente i materiali d'imballaggio.

Dopo lo stoccaggio a lungo termine, gli inverter devono essere ispezionati e collaudati da personale qualificato prima di essere messi in esercizio.

INSTALLAZIONE

Questo capitolo descrive come installare l'inverter e collegarlo al sistema di generazione di energia fotovoltaica collegato alla rete (compreso il collegamento tra i moduli solari fotovoltaici, la rete pubblica e l'inverter).

Leggere attentamente questo capitolo e assicurarsi che tutti i requisiti di installazione siano soddisfatti prima dell'installazione. L'installazione dell'inverter deve essere eseguita soltanto da elettricisti qualificati.

ISPEZIONE DEL DISIMBALLAGGIO

L'inverter è stato accuratamente testato e rigorosamente ispezionato prima della consegna, tuttavia è possibile che si verifichino danni durante il trasporto. Prima di disimballare l'inverter, verificare attentamente che le informazioni relative al prodotto, riportate nell'ordine, corrispondano a quelle riportate sulla targhetta di identificazione dell'imballaggio e che l'imballaggio del prodotto sia intatto. Se si riscontrano dei danni, si prega di contattare direttamente lo spedizioniere o il fornitore. Si prega inoltre di fornire anche le foto del danno per ottenere il nostro servizio più veloce e migliore. Conservare l'inverter inattivo nell'imballaggio originale proteggerlo dall'umidità e dalla polvere.

Dopo aver rimosso l'inverter dall'imballaggio, controllare i seguenti elementi:

(1) Verificare che il corpo principale dell'inverter sia intatto e non presenti danni;

(2) Verificare la presenza all'interno della scatola da imballaggio del manuale di istruzioni, degli accessori di interfaccia e degli accessori di installazione;

(3) Verificare che i materiali forniti nella scatola da imballaggio siano integri e completi;

(4) Verificare che le informazioni relative al prodotto, riportate nell'ordine, corrispondano a quelle riportate sulla targhetta di identificazione dell'inverter;

(5) L'elenco standard dei componenti consegnati è stato riportato di seguito.

L'elenco standard dei componenti contenuti nella consegna dell'inverter:

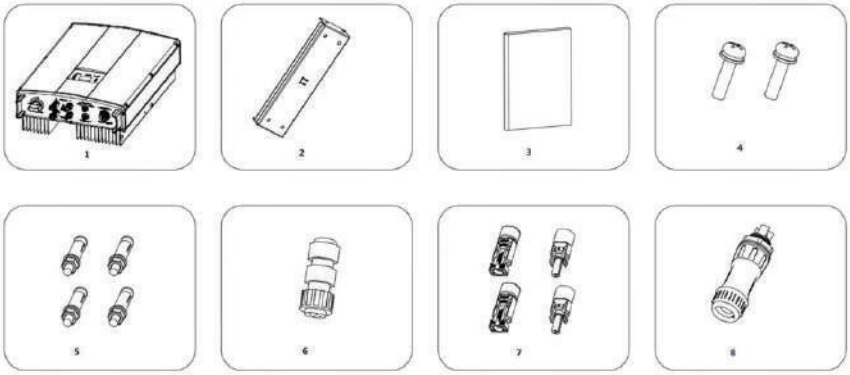


Figura 7 Contenuto della consegna

Tabella con l'elenco dettagliato dei componenti contenuti nella consegna dell'inverter monofase

N.	Denominazione	Quantità
1	4kW / 4kW-S / 5kW / 5kW-S / 6kW / 8kW / 10kW inverter	1
2	Staffa di montaggio	1
3	Manuale di istruzioni	1
4	Bulloni di montaggio M5*20	2
5	Bulloni ad espansione M6*50	4
6	Connettore di comunicazione	1
7	Connettore di corrente continua	2 pairs / 1pair（4kW-S、5kW-S）
8	Connettore di corrente alternata	1

PRIMA DELL'INSTALLAZIONE

Strumenti per l'installazione

Tabella dell'elenco degli strumenti

N.	Strumenti per l'installazione	Descrizione
1	Marker	Segnare la posizione del foro per l'installazione
2	Trapano elettrico	Eseguire i fori nella staffa o nella parete
3	Martello	Inserire il bullone ad espansione
4	Chiave regolabile	Fissare la staffa di montaggio
5	Cacciavite ad esagono interno	Serrare la vite antifurto e smontare la scatola di giunzione corrente alternata
6	Cacciavite a taglio o a croce	Collegare i cavi della corrente alternata
7	Megaohmmetro	Misurare le prestazioni di isolamento e l'impedenza di messa a terra
8	Multimetro	Controllare il circuito e misurare la tensione CA/CC
9	Saldatore elettrico	Saldare il cavo di comunicazione
10	Pinza crimpatrice	Crimpare il terminale di corrente continua

LUOGO E POSIZIONE DI INSTALLAZIONE

Selezionare il luogo di installazione in base ai seguenti requisiti:

(1) L'altezza della posizione di installazione deve garantire che il display LCD è al livello degli occhi per visualizzare comodamente i parametri dell'inverter.

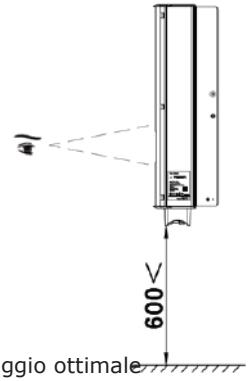


Figura 8 Altezza di montaggio ottimale

(2) Il luogo di installazione deve essere ben ventilato e protetto dalla pioggia o dalla luce solare diretta.
(3) Lo spazio attorno al luogo di installazione deve essere sufficiente per consentire un comodo smontaggio dell'inverter e la convezione dell'aria.

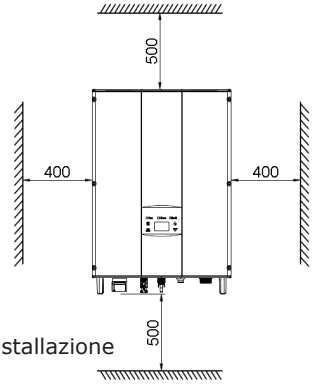


Figura 8 Spazio per l'installazione

(4) La temperatura ambiente di installazione deve essere compresa tra -25°C e 60°C.
(5) Il luogo di installazione deve essere lontano da dispositivi elettronici che possono generare forti interferenze elettromagnetiche.
(6) L'inverter deve essere installato su una superficie solida e stabile, come per esempio su una parete o una staffa metallica.
(7) La superficie di installazione deve essere verticale rispetto alla orizzontale.
(8) L'installazione deve garantire una messa a terra affidabile dell'inverter e il materiale del conduttore metallico di terra deve essere compatibile con il materiale metallico destinato alla messa a terra dell'inverter.
Installare l'inverter in posizione verticale o con un angolo massimo di inclinazione all'indietro di 15° per facilitare la dissipazione del calore.
Quando si installa l'inverter, non inclinarlo in avanti, in orizzontale, capovolto, all'indietro e non farlo ruotare.

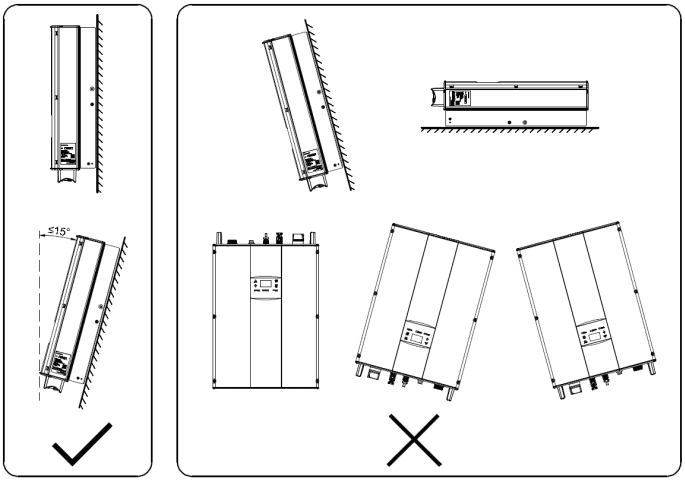


Figura 9 Posizione di installazione

	● Non aprire il coperchio dell'inverter e non sostituire nessuna parte, poiché un inverter incompleto potrebbe causare scosse elettriche e danneggiare il dispositivo durante il funzionamento.

SPECIFICHE TECNICHE DEI CAVI

Al fine di regolare e renderlo compatibile con il connettore di corrente alternata/corrente continua o con le specifiche tecniche della morsettiera dell'inverter, è necessario soddisfare i seguenti requisiti del cavo della corrente alternata/corrente continua collegato all'inverter corrispondente:

Tabella delle specifiche tecniche dei cavi

Modello dell'inverter	Lato corrente continua		Lato corrente alternata	
	Area della sezione trasversale minima in mm² (Lunghezza ≤ 50 m)	Area della sezione trasversale minima in mm² (Lunghezza < 50 m)	Area della sezione trasversale minima in mm² (Lunghezza ≤ 50 m)	
			L	N/PE
4kW / 4kW-S / 5kW / 5kW-S / 6kW / 8kW / 10kW	4	6	4	4

MICROINTERRUTTORE

Per garantire un funzionamento sicuro dell'inverter e dei circuiti, si raccomanda di configurare un microinterruttore o un fusibile appropriato sul lato di ingresso della corrente continua e sul lato di uscita in corrente alternata dell'inverter. La tabella seguente riporta i requisiti consigliati per i microinterruttori:

Tabella delle specifiche tecniche del

Modello dell'inverter	DC side	AC side
	Recommended breaker specification	Recommended breaker specification
4kW / 4kW-S / 5kW / 5kW-S / 6kW	DC1000V, C16A, 2P	AC400V, C16A, 4P
8kW / 10kW	DC1000V, C25A, 2P	AC400V, C25A, 4P

MECHANICAL INSTALLATION

The material for fixing the inverter and the installation mode vary with the different installation sites. It is recommended to install the inverter vertically to the firm wall or metal bracket. Here we take wall installation as an example to introduce the installation matters of the inverter.

As shown in the Fig 10, the overall installation of the inverter should be vertical to the horizontal surface.

INSTALLATION OF INVERTER

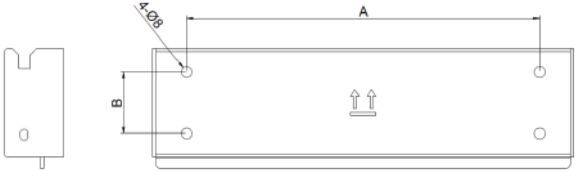


Figure 10 Installation bracket of inverter

Table of size of installation bracket

Inverter model	Spacing of installation hole
	A(mm)*B(mm)
4kW / 4kW-S / 5kW / 5kW-S / 6kW / 8kW / 10kW	260*45

Le procedure di installazione dell'inverter sono elencate di seguito:
(1) Utilizzare il pannello di posizionamento dei fori, fornito in dotazione, per determinare la posizione dei fori. Come illustrato nella Figura 10, allineare la posizione dei fori con una livella e segnare la posizione con un pennarello.

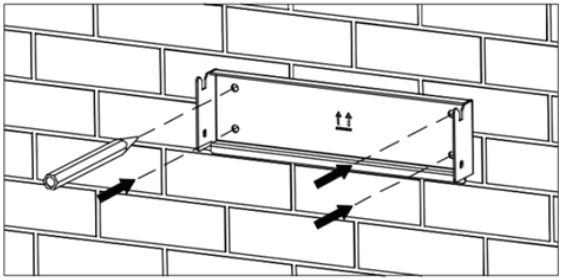


Figura 10 Determinazione della posizione dei fori

(2) Eseguire 4 fori nella parete utilizzando un trapano elettrico, come illustrato nella Figura 11.

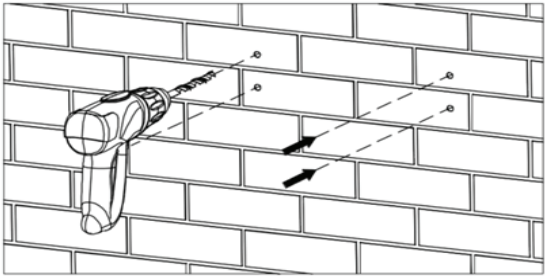


Figura 11 Foratura

(3) Inserire i bulloni ad espansione nei 4 fori per l'installazione con il martello, come illustrato nella Figura 12.

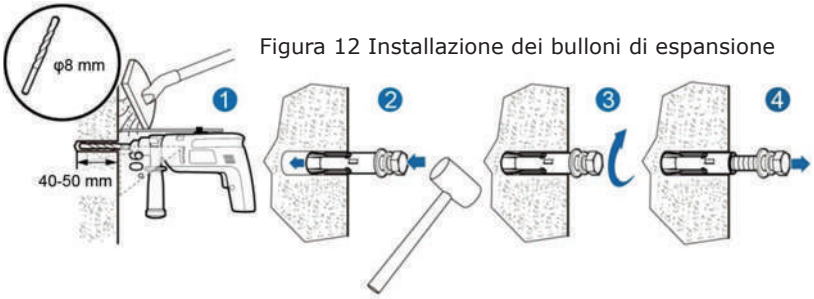


Figura 12 Installazione dei bulloni di espansione

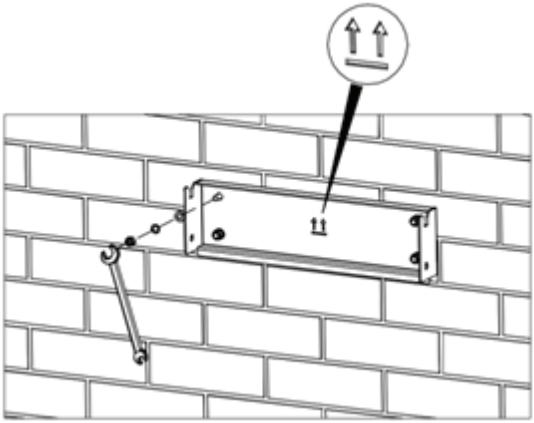


Figura 13 Fissare la staffa di montaggio

(4) Fissare la staffa di montaggio sui bulloni ad espansione e assicurarsi che l'installazione sia sufficientemente sicura (la coppia di serraggio è di 13 N•m), come illustrato nella Figura 13.

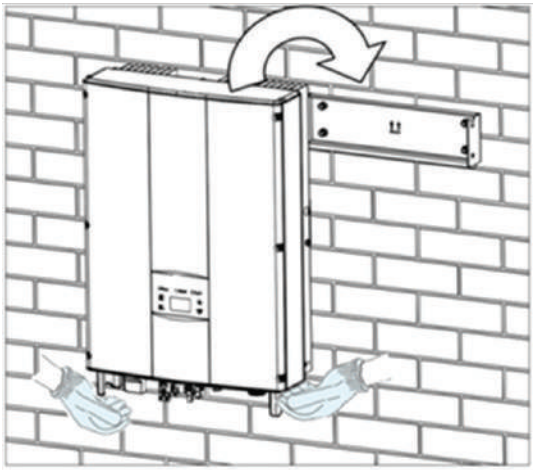


Figura 14 Installazione dell'inverter

(5) Fissare l'inverter alla staffa di montaggio e assicurarsi che l'installazione sia sufficientemente sicura. Come illustrato nella Figura 14.

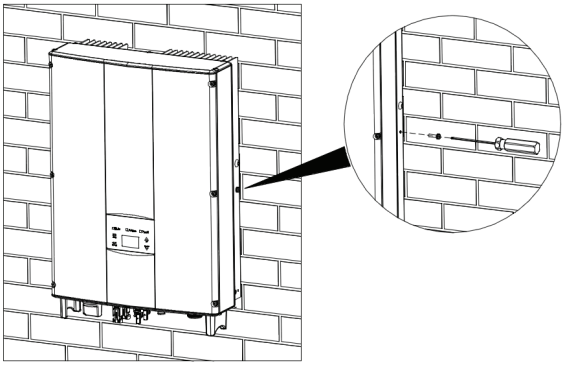


Figura 15 Installazione dei bulloni M5X20

(6) Assicurarsi che l'inverter sia installato correttamente e serrare i bulloni M5X20 nei fori a sinistra e a destra dell'inverter (la coppia di serraggio è di 3 N•m). Come illustrato nella Figura 15.

INSTALLAZIONE DEI CAVI

Questa sezione fornisce istruzioni dettagliati e precauzioni di sicurezza relative al all'esecuzione dei collegamenti elettrici. La Figura 16 rappresenta lo schema di collegamento del sistema fotovoltaico collegato alla rete.

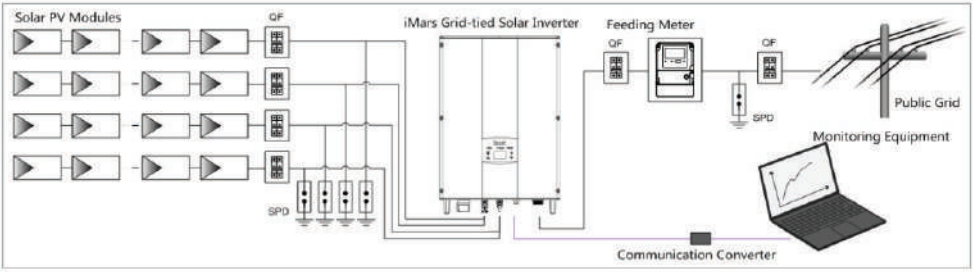


Figura 16 Schema del sistema fotovoltaico connesso alla rete

⚠	● Il collegamento elettrico deve essere eseguito da tecnici professionisti, in quanto un'installazione errata può causare danni al dispositivo, lesioni fisiche o addirittura la morte durante il funzionamento del sistema. ● Tutte le installazioni elettriche devono essere conformi alle normative nazionali e locali in materia di sicurezza elettrica. ● Assicurarsi che tutti i cavi siano installati in modo sicuro, in conformità ai requisiti di sicurezza specificati e, e che non siano danneggiati. ● Non è consentito chiudere gli interruttori in corrente alternata ed in corrente continua prima di aver eseguito i collegamenti elettrici dell'inverter.
Nota	● Leggere e seguire le istruzioni fornite in questa sezione. Osservare scrupolosamente i requisiti i requisiti durante il funzionamento. ● Rispettare sempre la tensione e la corrente nominale indicate nel presente manuale. Non superare mai i limiti.

INSTALLAZIONE DEI CAVI

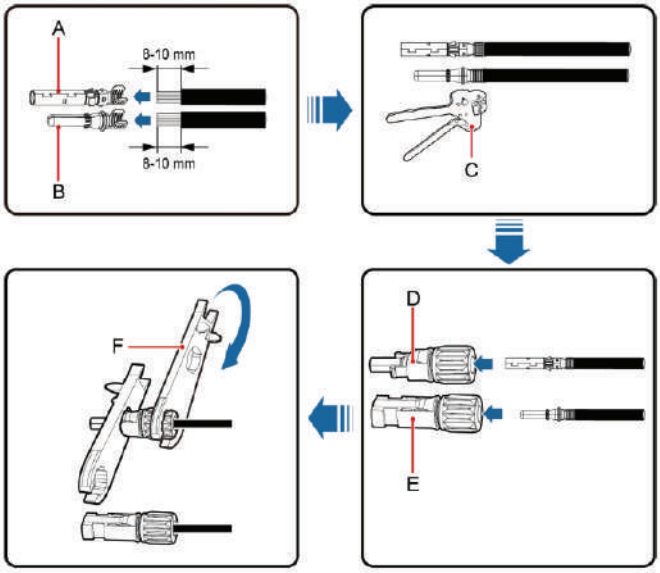


Figura 17 Connettore di corrente continua MC4 e collegamento della stringa fotovoltaica

Di seguito sono riportate le procedure per il collegamento della stringa fotovoltaica all'ingresso della corrente continua dell'inverter.

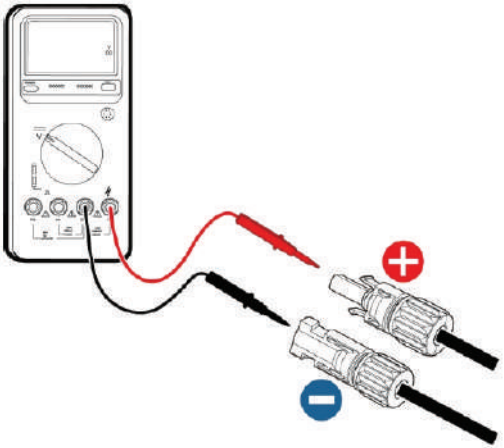
(1) Prima di collegare la stringa fotovoltaica all'inverter, assicurarsi che siano state adottate misure adeguate di protezione contro i fulmini ed i cortocircuiti;

⚠	● Le stringhe fotovoltaiche possono essere collegate all'inverter soltanto dopo aver adottato le misure di protezione conformi alle normative elettriche locali ed aver rispettato i parametri tecnici indicati nel presente manuale.

(2) Collegare i cavi di uscita dei moduli solari fotovoltaici al connettore di corrente continua dell'inverter, come illustrato nella Figura 17. Rimuovere lo strato di isolamento del cavo della corrente continua a circa 8-10 mm. Inserire la parte conduttrice nella posizione appropriata del connettore, crimpare il terminale di corrente continua MC4 e serrare il dado con una coppia di 2,5-3 Nm. Assicurarsi che i poli dei moduli solari fotovoltaici siano correttamente e ben collegati ai connettori.

(3) Dopo aver collegato il connettore di corrente continua, utilizzare un multimetro per misurare la tensione della stringa di ingresso della corrente continua, verificare la polarità del cavo di ingresso della corrente continua ed assicurarsi che la tensione di ogni stringa rientri nell'intervallo consentito dall'inverter, come illustrato nella Figura 18.

⚠	● La stringa fotovoltaica collegata all'inverter di serie deve adottare il connettore di corrente continua configurato appositamente per l'inverter; non devono essere utilizzati altri dispositivi di collegamento senza l'autorizzazione della nostra azienda, altrimenti si potrebbero verificare danni al dispositivo, funzionamento instabile o incendi, per i quali la nostra azienda non si impegna a garantire la qualità né si assume alcuna responsabilità diretta o congiunta.



(4) Collegare la stringa fotovoltaica all'inverter e assicurarsi che sia fissata saldamente.
(5) Quando si rimuove il connettore di corrente continua dall'inverter, inserire la testa del cacciavite diritto nel foro rialzato al centro del connettore e premere l'estremità mobile del connettore per farla uscire.

Figura 18 Misurazione della tensione di ingresso di corrente continua

COLLEGAMENTO ALLA RETE

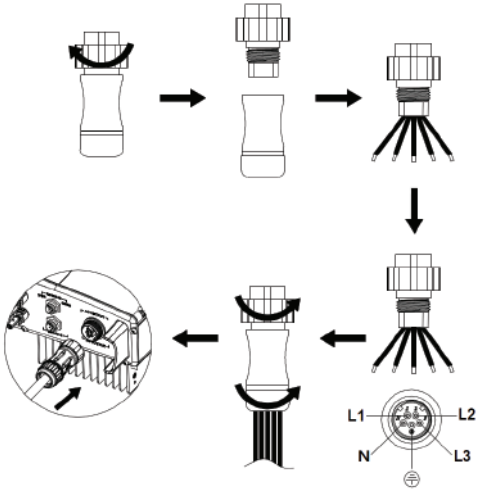


Tabella di descrizione del connettore di corrente alternata

Inverter AC connector	Three phase grid	Note
1	L1 (A)	
2	L2 (B)	
3	L3 (C)	
N	N	
⏚	PE	Must be connected

(1) Prima di collegare il cavo della corrente alternata della rete trifase all'inverter, adottare misure di protezione contro i fulmini ed i cortocircuiti in conformità ai regolamenti ed alle norme locali in materia di sicurezza elettrica.
(2) Collegare e fissare i conduttori L1, L2, L3, N e PE della rete trifase al terminale di corrente alternata con una coppia di 0,5 Nm. Serrare il terminale con una coppia di serraggio di 2,5-3 Nm, quindi collegare il terminale alla porta CA dell'inverter.

Figura 19 Collegamento del cavo di alimentazione di corrente alternata dell'inverter monofase

⚠	• All'inverter è possibile collegare soltanto cavi conformi ai regolamenti ed alle norme locali in materia di sicurezza elettrica e conformi ai parametri tecnici del presente manuale. • L'inverter può essere collegato alla rete elettrica soltanto con l'autorizzazione dell'azienda elettrica locale.

MESSA IN ESERCIZIO

ISPEZIONE PRIMA DELLA MESSA IN ESERCIZIO

Prima della messa in esercizio dell'inverter fotovoltaico collegato alla rete, è necessario controllare rigorosamente i seguenti elementi (compresi, ma non solo, i seguenti):
(1) Assicurarsi che il luogo di installazione sia conforme ai requisiti riportati nei "Prima dell'installazione" per facilitare l'installazione, la disinstallazione, la messa in esercizio, il funzionamento e la manutenzione;
(2) Assicurarsi che l'installazione meccanica sia conforme ai requisiti;
(3) Assicurarsi che l'installazione elettrica sia conforme ai requisiti;
(4) Assicurarsi che tutti gli interruttori siano "disattivati";
(5) Assicurarsi che la tensione a circuito aperto dei moduli fotovoltaici sia conforme ai requisiti dei parametri del lato corrente continua dell'inverter riportati nei "Parametri tecnici";
(6) Assicurarsi che tutte le precauzioni di sicurezza elettrica siano chiaramente identificate nel luogo di installazione.

	● Per garantire un funzionamento sicuro, normale e stabile del sistema di generazione di energia fotovoltaica, tutti i sistemi di generazione di energia fotovoltaica collegati alla rete di nuova installazione, rinnovati e riparati ed i relativi inverter collegati alla rete devono essere sottoposti a un'ispezione prima della messa in esercizio.

FUNZIONAMENTO DELL'INVERTER COLLEGATO ALLA RETE

Avviare l'inverter seguendo i passaggi indicati di seguito per ottenere il funzionamento dell'inverter connesso alla rete:

Nota	● Al primo avvio dell'inverter è necessario selezionare il Paese in cui deve essere impostato lo standard di connessione alla rete. ● Mantenere lo stato di alimentazione dell'inverter per almeno 30 minuti e completare la carica della batteria dell'orologio integrata nell'inverter per garantire il normale funzionamento dell'orologio!

(1) Confermare che i requisiti dell'ispezione prima della messa in esercizio siano soddisfatti;
(2) Chiudere l'interruttore sul lato corrente alternata della rete pubblica dell'inverter;
(3) Chiudere l'interruttore in corrente continua integrato dell'inverter;
(4) Chiudere l'interruttore di circuito sul lato di ingresso della corrente continua della stringa fotovoltaica;
(5) Observe the LED indicator state of the inverter and the information displayed by LCD. Refer to "Operation" for LED state indicator and LCD display information.
(5) Osservare lo stato degli indicatori LED dell'inverter e le informazioni visualizzate sul display LCD. Per informazioni sullo stato degli indicatori LED e sul display LCD, consultare la sezione "Messa in esercizio".
(6) Impostare l'ora dell'inverter in base all'ora locale; fare riferimento alla sezione "Impostazioni dei parametri" per completare l'impostazione dell'ora.
(7) La modalità predefinita di ingresso della corrente continua dell'inverter è la modalità "indipendente"; fare riferimento alla sezione "Impostazioni dei parametri" per verificare e impostare la modalità di ingresso della corrente continua.

Run Funzionamento - L'indicatore verde lampeggia, gli altri indicatori sono spenti: L'inverter è attivato ed è in fase di autotest, attendere il tempo necessario per soddisfare le condizioni di collegamento alla rete;
Run Funzionamento - L'indicatore verde è acceso, gli altri sono spenti: L'inverter è in fase di generazione di energia dopo l'autotest---- messa in funzione con successo.
L'indicatore "Attenzione" o "Guasto" è acceso o lampeggia: L'inverter è attivato, ma si è verificato un errore di sistema. Consultare il display LCD per controllare il codice di guasto visualizzato sul display LCD, arrestare l'inverter secondo le istruzioni nella sezione ARRESTO ed escludere i guasti come indicato nella sezione RISOLUZIONE DEI PROBLEMI. Dopo aver eliminato tutti i guasti, ripetere le operazioni.

ARRESTO

Quando è necessario eseguire interventi di manutenzione, di ispezione e di eliminazione dei guasti dell'inverter, arrestare l'inverter seguendo le seguenti istruzioni:
(1) Scollegare l'interruttore sul lato corrente alternata della rete pubblica dell'inverter;
(2) Scollegare l'interruttore in corrente continua integrato dell'inverter;
(3) Scollegare l'interruttore sul lato di ingresso della corrente continua della stringa fotovoltaica;
(4) Attendere almeno 5 minuti fino alla completa scarica delle parti interne dell'inverter e completare l'operazione di arresto.

MANUTENZIONE GIORNALIERA

Nel sistema di generazione di energia fotovoltaica collegato alla rete, l'inverter fotovoltaico collegato alla rete in serie può realizzare la generazione di energia elettrica collegata alla rete e arrestare/avviare automaticamente il funzionamento durante il giorno e quando la luce solare è disponibile in qualsiasi stagione. Per preservare e prolungare la durata di vita dell'inverter, è necessario eseguire la manutenzione e l'ispezione giornaliera dell'inverter, oltre all'obbligo di utilizzare l'inverter seguendo rigorosamente le istruzioni del presente manuale.

MANUTENZIONE PERIODICA DELL'INVERTER

Elemento	Modalità di ispezione	Periodo di manutenzione
Salvataggio dei dati di funzionamento dell'inverter	Utilizzare un software di monitoraggio per leggere i dati dell'inverter in tempo reale ed eseguire periodicamente il backup dei dati registrati dal software di monitoraggio. Salvare i dati di funzionamento dell'inverter, i parametri e i file di log, controllare il software di monitoraggio e la configurazione dei vari parametri dell'inverter.	Una volta ogni tre mesi
Stato di funzionamento dell'inverter	Verificare se l'inverter sia stato installato in modo sicure, non sia stato danneggiato o deformato. Verificare la presenza di eventuali rumori anomali durante il funzionamento dell'inverter. Controllare le variabili di funzionamento del sistema collegato alla rete. Verificare se la temperatura dell'involucro dell'inverter sia normale e monitorare la condizione di riscaldamento con una termocamera.	Una volta ogni sei mesi
Pulizia dell'inverter	Controllare l'umidità relativa e la presenza di polvere intorno all'inverter e, se necessario, pulirlo.	Una volta ogni sei mesi
Collegamenti elettrici	Verificare se il collegamento del cavo di sistema e la morsettiera dell'inverter siano stati allentati; in caso affermativo, ricollegarli nel modo specificato nella sezione "Installazione". Verificare se il cavo non sia stato danneggiato e se il rivestimento del cavo a contatto con una superficie metallica non sia stato tagliato.	Una volta ogni sei mesi
Manutenzione e sostituzione del ventilatore di raffreddamento	Verificare se l'ingresso/uscita dell'aria sia normale; controllare se non vi siano crepe sulle alette del ventilatore. Verificare la presenza di eventuali rumori anomali durante la rotazione del ventilatore. Pulire l'ingresso/uscita dell'aria se necessario; se si verificano anomalie nel ventilatore, sostituirlo immediatamente.	Una volta ogni sei mesi
Funzione di sicurezza	Controllare il display LCD dell'inverter e la funzione di arresto del sistema. Simulare il funzionamento dell'arresto e controllare la trasmissione del segnale di arresto. Controllare le tabelle di avvertimento e sostituirle se necessario.	Una volta ogni sei mesi

MANUALE DI MANUTENZIONE

PULIZIA DELL'INVERTER

La procedura di pulizia è la seguente:
(1) Scollegare gli interruttori di ingresso e di uscita.
(2) Attendere dieci minuti.
(3) Pulire la superficie e l'ingresso/uscita dell'aria dell'inverter con una spazzola morbida o un’aspirapolvere;
(4) Ripetere l'ispezione prima della messa in funzione – contenuto operativo.
(5) Riavviare l'inverter.

PULIZIA DEL VENTILATORE (PER INVERTER DA 8 KW E 10 KW)

Le fasi di pulizia sono elencate di seguito:
(1) Scollegare i collegamenti del lato di ingresso e di uscita;
(2) Attendere dieci minuti;
(3) Smontare l'inverter seguendo la stessa procedura di installazione descritta nella sezione "Installazione", ma in ordine inverso;
(4) Rimuovere le viti ed i coperchi del contenitore di raffreddamento e della scatola del ventilatore.

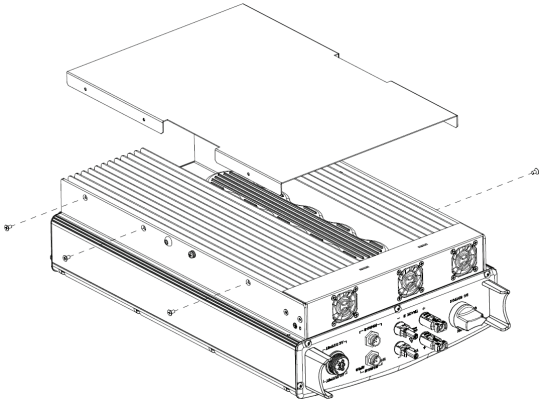


Figura 20 Smontaggio del contenitore di raffreddamento

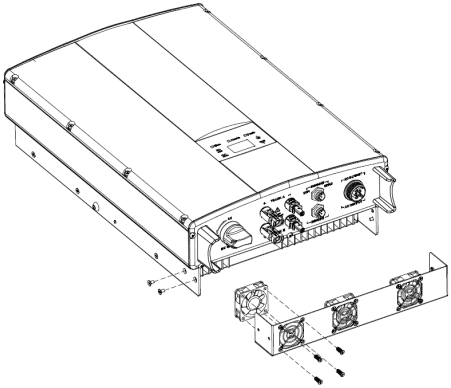


Figura 21 Smontaggio della scatola del ventilatore

(5) Pulire il contenitore di raffreddamento e la scatola del ventilatore dell'inverter con una spazzola morbida o un'aspirapolvere.
(6) Installare le viti ed i coperchi del contenitore di raffreddamento e della scatola del ventilatore nella loro posizione originale.
(7) Reinstallare l'inverter nella sua posizione originale come indicato nella sezione "Installazione".
(8) Ripetere le operazioni descritte nella sezione "Installazione" prima dell'avviamento.
(9) Riavviare l'inverter.

SOSTITUZIONE DEL VENTILATORE

Se l'inverter si scalda eccessivamente o se si sente un rumore anomalo durante la rotazione del ventilatore, sostituire il ventilatore. Si noti che il ventilatore deve essere sostituito soltanto da elettricisti professionisti.

	● Prima delle operazioni di manutenzione, arrestare l'inverter e scollegare tutti gli ingressi di alimentazione dell'inverter. ● Prima di eseguire l'operazione di manutenzione, attendere almeno 10 minuti fino alla completa scarica dei condensatori interni dell'inverter, ● La manutenzione e la sostituzione del ventilatore possono essere eseguite soltanto da elettricisti professionisti.

Come sostituire il ventilatore:
(1) Scollegare l'interruttore in corrente alternata;
(2) Portare l'interruttore in corrente continua in posizione "Disattivato";
(3) Attendere almeno 10 minuti;
(4) Scollegare tutti i cavi elettrici nella parte inferiore dell'inverter;
(5) Sollevare l'inverter con l'aiuto di altre persone e rimuoverlo dalla parete;
(6) Posizionare l'inverter su un tavolo da lavoro;
(7) Smontare la scatola del ventilatore come illustrato nella Figura 21;
(8) Smontare il ventilatore danneggiato dell'inverter come illustrato nella Figura 22, quindi installare il nuovo ventilatore nella posizione originale e collegare i cavi di alimentazione e di controllo del ventilatore;

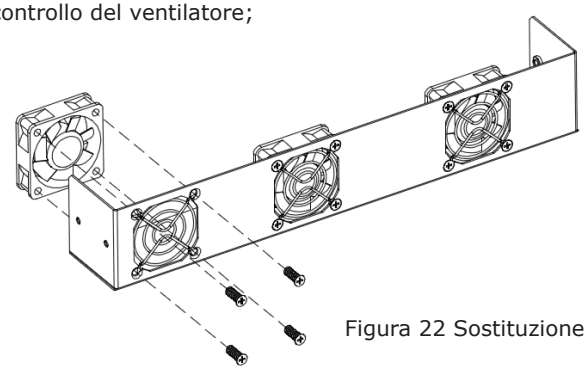


Figura 22 Sostituzione del ventilatore

(9) Installare le viti ed i coperchi del contenitore di raffreddamento e della scatola del ventilatore nella loro posizione originale;
(10) Reinstallare l'inverter nella sua posizione originale come indicato nella sezione 4;
(11) Ripetere le operazioni descritte nella sezione "Installazione" prima dell'avviamento;
(12) Riavviare l'inverter.

Nota	● Non avviare immediatamente l'inverter in caso di allarme ed arresto. Individuare la causa e verificare che tutti i guasti siano stati eliminati prima di riavviarlo. Le ispezioni devono essere eseguite in stretta conformità alle procedure.

DISPLAY E PANNELLO DI CONTROLLO

Questo capitolo descrive il display del pannello di controllo e le modalità di funzionamento, che comprende il display LCD, gli indicatori LED ed il pannello di controllo.

INDICATORI LED

Sul pannello di controllo sono presenti tre indicatori LED:
(1) "Funzionamento", indicatore di funzionamento, verde;
(2) "Attenzione", indicatore di guasto riparabile, giallo;
(3) "Guasto", indicatore di guasto irreparabile, rosso.

Lo stato dell'inverter comprende 6 stati: stand-by, autotest, generazione di energia, guasto riparabile e guasto irreparabile; gli indicatori LED sono accesi, spenti e lampeggianti. Per una descrizione dettagliata dello stato dell'inverter e degli indicatori LED, consultare la tabella seguente.

"○": LED indicator is off;

"◐" (green), "◐" (yellow), "◐" (red): LED indicator is blinking at every 0.25S or 0.5S;

"●(Green), "●" (yellow), "●" (red): LED indicator is on.

Table of inverter state and LED indicators

Stato dell'inverter	Indicatori LED	Descrizione
Stand-by	○ Funzionamento ○ Attenzione ○ Guasto	Non viene fornita nessuna alimentazione. Tutti gli indicatori sono spenti.
Autotest	◐ Funzionamento ○ Attenzione ○ Guasto	L'indicatore verde lampeggia ad intervalli di 0,25 secondi, gli altri sono spenti. Alimentato e pronto per l'autotest.
Produzione di energia	● Funzionamento ○ Attenzione ○ Guasto	L'indicatore verde rimane acceso, gli altri sono spenti. Generazione di energia collegata alla rete.
	● Funzionamento ● Attenzione ○ Guasto	(1) Generazione di energia collegata alla rete, ma guasto all'orologio (A007); (2) Generazione di energia collegata alla rete, ma gua all'ingresso della corrente continua (A001 o E001); (3) Generazione di energia collegata alla rete, ma guasto al ventilatore (E006 o E012); Gli indicatori verde e giallo sono accesi, gli altri sono spenti.

Guasto	◯ Funzionamento ◐ Attenzione ◯ Guasto	Stand-by dell'inverter. Guasto alla rete pubblica (A001, A003, A004, A005 o A006); L'indicatore giallo lampeggia ad intervalli di 0,5 secondi, gli altri sono spenti.
	◯ Funzionamento ● Attenzione ◯ Guasto	(1) Stand-by dell'inverter. Temperatura anomala (E006); (2) Stand-by dell'inverter riparabile. Guasto all'ingresso della corrente continua (E001); L'indicatore giallo rimane acceso, gli altri sono spenti
Guasto irreparabile	◯ Funzionamento ◯ Attenzione ◐ Guasto	Malfunzionamento del hardware o del software (E003, E004, E005, E008, E009, E011, E013 o E015). Disaccoppiare l'inverter dal sistema prima di eseguire gli interventi della manutenzione. L'indicatore rosso lampeggia ad intervalli di 0,5 secondi, gli altri sono spenti.
	◯ Funzionamento ◯ Attenzione ● Guasto	Perdita di corrente o energia di uscita non qualificata dell'inverter (E007, E010, E014, E017, E018 o E020). Disaccoppiare l'inverter dal sistema prima di eseguire gli interventi della manutenzione. L'indicatore rosso rimane acceso, gli altri sono spenti
Arresto forzato	● Funzionamento ● Attenzione ● Guasto	Arresto dopo la comunicazione o il comando del pannello. Tutti gli indicatori sono accesi.
Nota	Per ulteriori informazioni, consultare le informazioni dettagliate sui guasti e la risoluzione dei problemi.	

PANNELLO DI CONTROLLO

Sul pannello sono presenti 4 tasti:
(1) "ESC", per uscita e ritorno;
(2) "∧", per tornare alla pagina iniziale e aumentare i valori;
(3) "∨", per passare alla pagina successiva e diminuire i valori;
(4) "ENT", per inserimento/accedere.

DISPLAY LCD

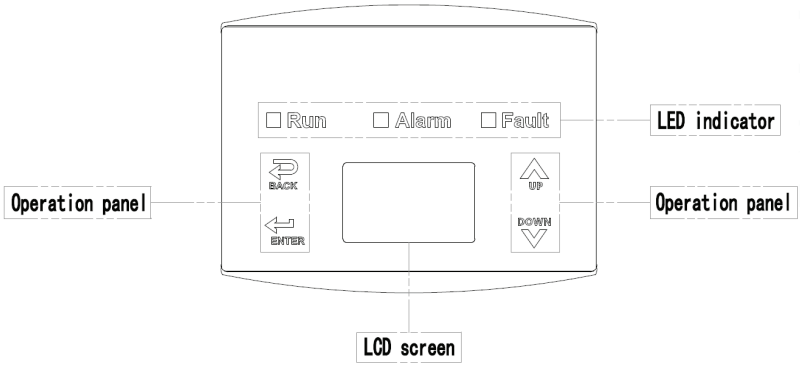


Figura 23 Pannello di controllo

Tutte le informazioni vengono visualizzate sul display LCD. Se non si preme nessun pulsante entro 15 secondi, la retroilluminazione dello schermo LCD si spegne per risparmiare energia. Tuttavia, può essere attivato premendo qualsiasi tasto. Se la retroilluminazione è accesa, premere "ENT" per accedere all'interfaccia principale. Tutti i parametri possono essere visualizzati e impostati nell'interfaccia.

Il display LCD visualizza l'interfaccia principale e le interfacce di menu; l'interfaccia principale è quella predefinita per la visualizzazione dopo l'accensione, mentre le interfacce di menu vengono utilizzate per monitorare ed impostare i parametri o altre per operazioni manuali, come la visualizzazione dei parametri di monitoraggio, della cronologia, delle informazioni del sistema, delle statistiche e delle informazioni sui guasti, nonché per l'impostazione della lingua del display, dell'ora, dell'indirizzo di comunicazione, della password e delle impostazioni predefinite.

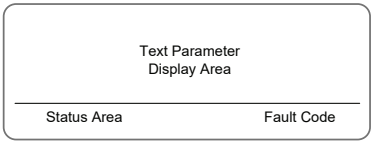


Figura 24 Interfaccia principale

L'interfaccia principale del display LCD è illustrata nella Figura 24:
(1) La curva visualizza la variazione di potenza nel giorno corrente;
(2) Il testo sullo schermo visualizzano i parametri chiave attuali dell'inverter. Vengono visualizzate contemporaneamente tre righe di testo, ma se l'inverter è in modalità di funzionamento o in modalità di stand-by, il testo scorre in avanti ogni 3 secondi. L'utente può premere "Λ" o "V" per cercare liberamente le informazioni;
(3) L'area di visualizzazione dello stato mostra lo stato di funzionamento attuale dell'inverter, che può essere "autotest", "generazione di energia collegata alla rete", "allarme", "guasto" e "disattivato";
(4) Codice di guasto dinamico e accesso al menu. Quando l'area di visualizzazione dello stato visualizza "allarme" o "guasto", nell'area del codice di guasto dinamico viene visualizzato il codice di guasto corrispondente (vengono visualizzati fino a 8 codici di guasto).

ESECUZIONE DELLE FUNZIONI
Most of the parameters can be viewed and set through the LCD screen and operation panel.

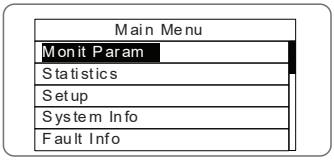


Figura 25 Interfaccia principale

PARAMETRI DI MONITORAGGIO

Premere "Λ" e "V" nell'interfaccia principale per selezionare "Parametri di monitoraggio", quindi premere "ENT" per visualizzare i parametri, come illustrato nella Figura 26. Passare alla pagina precedente o successiva con "Λ" e "V" e tornare indietro con "ESC".

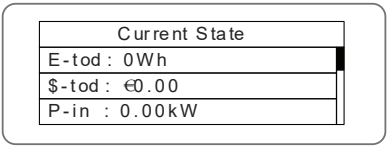


Figura 26 Parametri di monitoraggio

HISTORY

Premere "^" e "v" nell'interfaccia principale per selezionare "Cronologia", quindi premere "ENT" per visualizzare i parametri, come illustrato nella Figura 27.

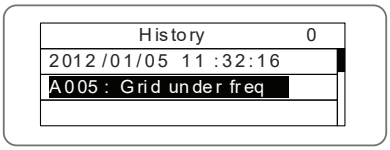


Figura 27 Parametri della cronologia

"Registrazione nella cronologia" può visualizzare 32 elementi di informazioni della cronologia; premere il tasto " " o " " per visualizzare le informazioni della cronologia, premere "ESC" per tornare indietro. Il numero nell'angolo superiore destro della prima riga è il numero di registrazione nella cronologia, la seconda riga (come illustrato nella Fig. 27) visualizza la data e l'ora in cui si è verificato il guasto o è stato riparato e la terza riga visualizza le informazioni dettagliate del codice di guasto. Quando la terza riga viene visualizzata in colore inverso/negativo, indica che si è verificato un guasto, altrimenti che il guasto è stato riparato.

STATISTICHE

Premere "^" e "v" nell'interfaccia principale per selezionare "Statistiche", quindi premere "ENT" per visualizzare i parametri, come illustrato nella Figura 28.

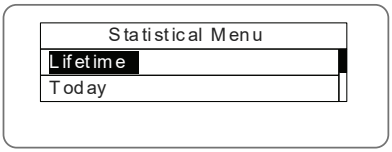


Figura 28 Informazioni statistiche

Le informazioni riportate nella tabella seguente possono essere visualizzate nel menu "Statistiche".

Tabella delle informazioni statistiche

Contenuto	Informazioni dettagliate
Vita utile	Tempo totale di funzionamento, energia elettrica totale prodotta, energia elettrica totale risparmiata, riduzione totale di CO2 nell'arco della vita utile
Statistiche giornaliere	Energia elettrica totale prodotta, energia elettrica totale risparmiata, potenza di picco e riduzione totale di CO2 nel giorno corrente

IMPOSTAZIONI DEI PARAMETRI

PPremere "^" e "v" nell'interfaccia principale per selezionare "Menu impostazioni", quindi premere "ENT" per visualizzare i parametri, come illustrato nella Figura 29.

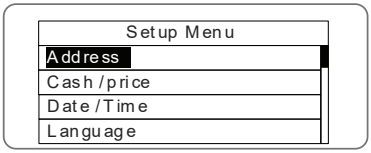
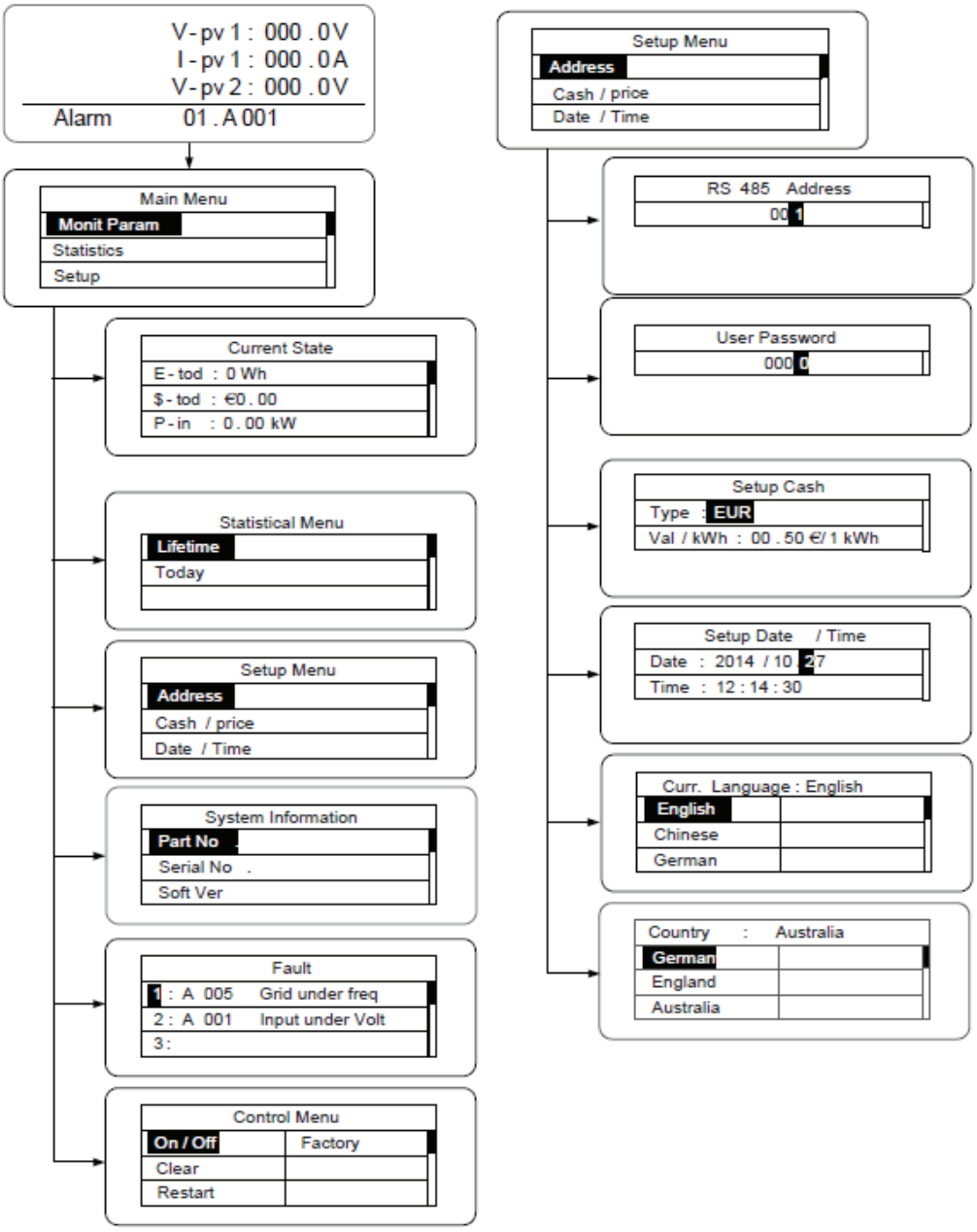


Figura 29 Informazioni sulle impostazioni

Il "Menu di impostazione" consente l'impostazione dei parametri illustrati nella tabella di Impostazioni dei parametri.

MENU DEL DISPLAY LCD:



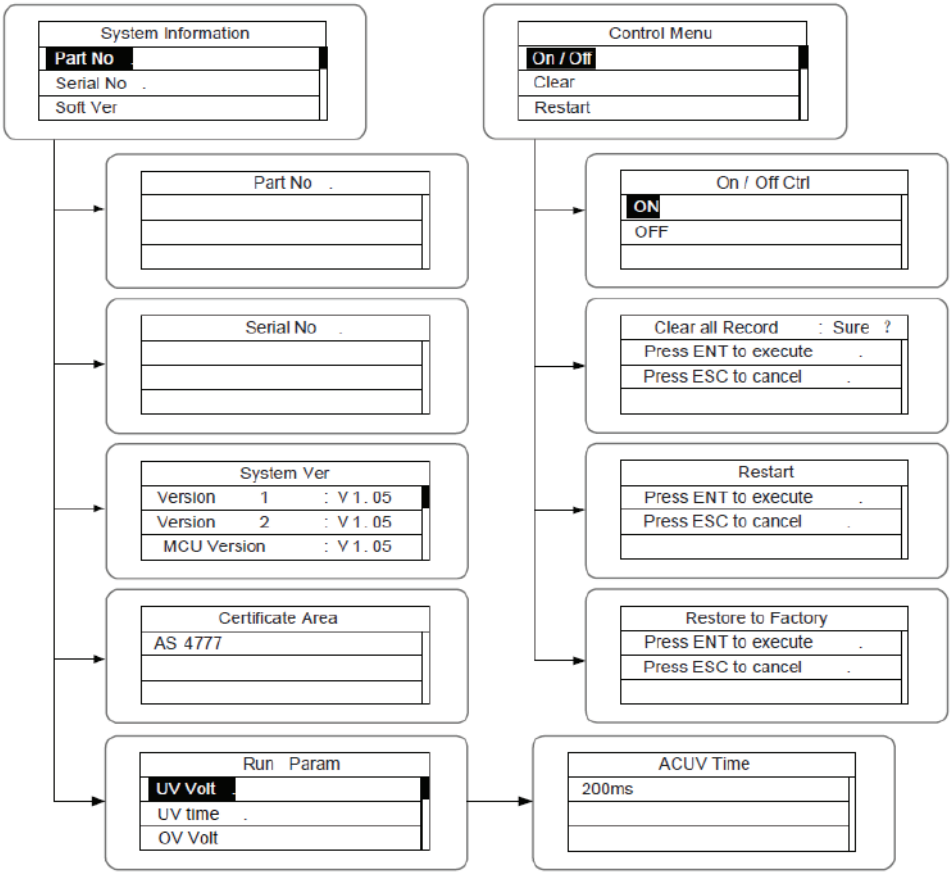
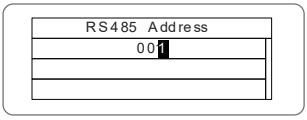
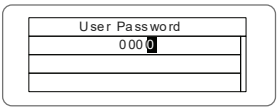
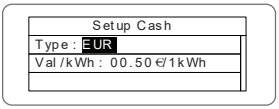
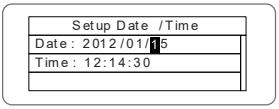
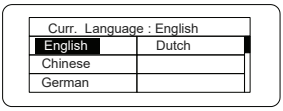
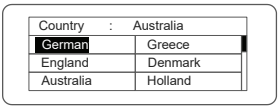
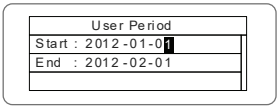
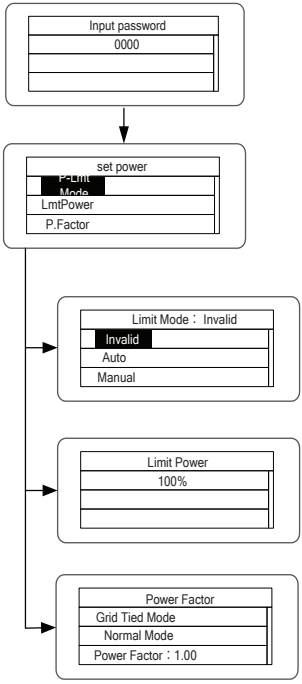
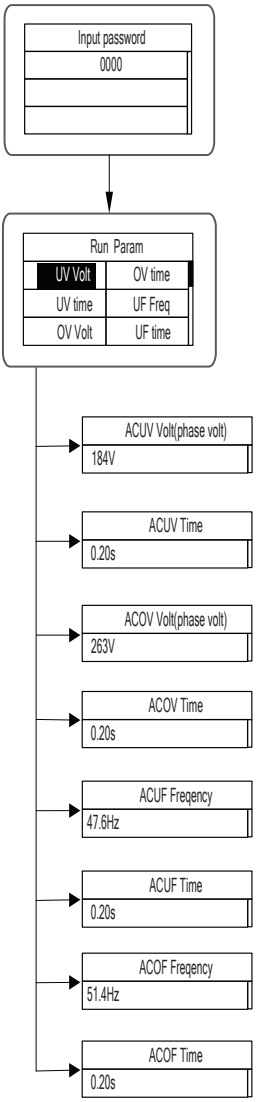


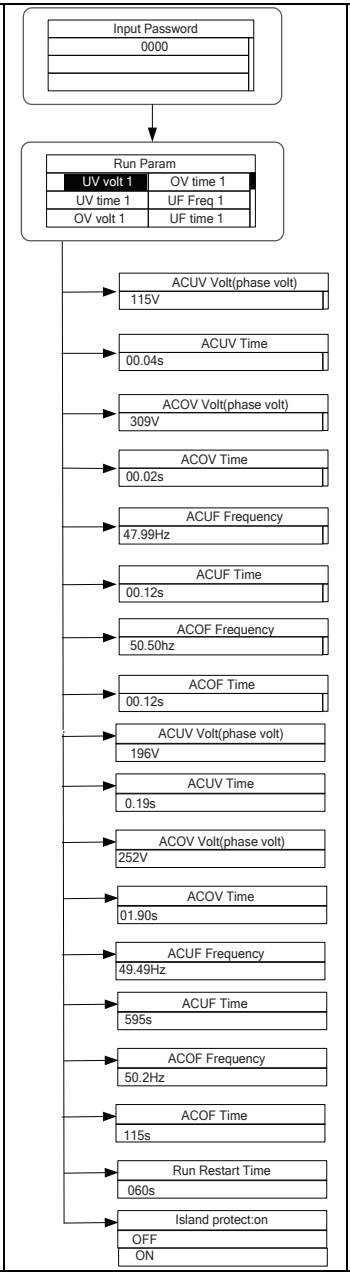
Tabella 6-3 Impostazioni dei parametri

Impostazione	Display LCD	Descrizione
Indirizzo RS485		Accedere all'interfaccia e modificare i dati con "^" o "v". Quindi premere nuovamente "ENT" per passare al bit successivo. Dopo aver modificato i tre bit, premere "ENT" per salvare le modifiche e "ESC" per uscire.

Password utente		Accedere all'interfaccia e modificare i dati con "∧" o "∨". Quindi premere nuovamente "ENT" per passare al bit successivo. Dopo aver modificato tutti e quattro i bit, premere "ENT" per salvare le modifiche e "ESC" per uscire. La password predefinita è "0000"; l'utente può accedere all'interfaccia delle impostazioni senza password. Se la password non è "0000", l'utente può accedere all'interfaccia delle impostazioni con una password.
Impostazioni monetarie		Accedere all'interfaccia e modificare il tipo di valuta e il valore monetario con "∧" o "∨". Quindi premere nuovamente "ENT" per passare alla riga successiva. Dopo aver modificato i quattro bit, premere "ENT" per salvare le modifiche e "ESC" per uscire. I tipi di valuta comprendono EUR, nPOD, CNY e USD.
Impostazioni di data/ora		Accedere all'interfaccia e modificare la data e l'ora con "∧" o "∨". Quindi premere nuovamente "ENT" per passare alla riga successiva. Dopo aver modificato i quattro bit, premere "ENT" per salvare le modifiche e "ESC" per uscire.
Lingua		Accedere all'interfaccia e modificare la lingua con "∧" o "∨". Quindi premere nuovamente "ENT" per salvare le modifiche e "ESC" per uscire.
Selezione del Paese		Accedere all'interfaccia e selezionare il Paese con "∧" o "∨". Quindi premere nuovamente "ENT" per salvare le modifiche e "ESC" per uscire.

Periodo dell'utente		Accedere all'interfaccia e modificare il periodo dell'utente tramite "Λ" o "V". Quindi premere nuovamente "ENT" per passare al bit successivo. Al termine della modifica, premere "ENT" per salvare le modifiche e "ESC" per uscire. La data e l'ora di impostazione devono essere successive all'impostazione del sistema e l'ora di inizio deve essere precedente all'ora di fine La data e l'ora di impostazione vengono utilizzate per le informazioni statistiche.
Impostazione della potenza		Per accedere all'interfaccia "Impostazione della potenza" è necessaria una password. Se necessario, richiedere la password al fornitore. Sono disponibili tre sottomenu: ① Modalità P-Lmt: non valida (la funzione Potenza limitata non è valida), modalità automatica (speciale per la fase singola), modalità manuale (impostazione manuale del limite del valore di uscita); ② LmtPower: questa funzione è valida soltanto quando la modalità P-Lmt è in modalità manuale, la percentuale si riferisce alla percentuale della potenza nominale e l'intervallo di impostazione è compreso tra il 10% e il 100%; ③ Fattore di potenza: include il modello normale (valore predefinito "1"), la modalità avanzata di corrente e la modalità corrente a isteresi, e l'intervallo di impostazione è -0. 9 - 0.99.

Parametri di funzionamento		Per accedere all'interfaccia "Parametri di funzionamento" è necessaria una password. Se necessario, richiedere la password al fornitore. Impostare ACUV Volt, ACUV time ed altri parametri nei relativi sottomenu, quindi premere "^" e "v" per modificare ed infine premere "ENT" per confermare.

Parametri di funzionamento		Secondo gli standard G83/G59 (Regno Unito) e PEA (Tailandia), sono previste due protezioni, mentre secondo gli altri standard di rete è prevista una sola protezione. Impostare ACUV Volt, ACUV time ed altri parametri nei relativi sottomenu, quindi premere "^" e "v" per modificare ed infine premere "ENT" per confermare. In generale, per la protezione ACUV, ACOV e ACUF è necessario impostare soltanto i valori di ACUV2, ACOV2 e ACUF2. Per la protezione ACOF è necessario impostare congiuntamente i valori ACOF1 e ACOF2.

INFORMAZIONI DEL SISTEMA

Premere "^" e "v" nell'interfaccia principale per selezionare "Informazioni del sistema", quindi premere "ENT" per visualizzare i parametri, come illustrato nella Figura 30.

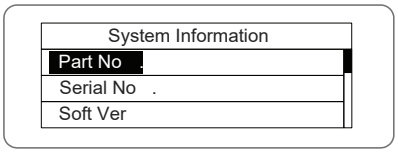


Figura 30 Informazioni sul sistema

Le informazioni del sistema includono "modello del prodotto", "numero di serie", "versione del software" e "versione del certificato". Se si seleziona "versione software" in "Versione del sistema", è possibile visualizzare la versione 1 e la versione 2 dell'inverter, la versione del software del microcontrollore, il protocollo RS485 ed altre informazioni, come illustrato nella Figura 31.

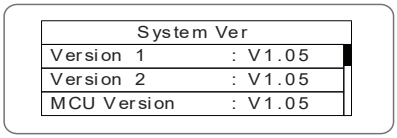


Figura 31 Versione del sistema

GUASTI

Premere "^" e "v" nell'interfaccia principale per visualizzare la cronologia dei guasti, quindi premere "ENT" per visualizzare il sottomenu, illustrato nella Figura 32.

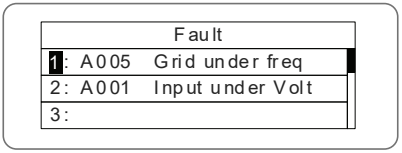


Figura 32 Informazioni sui guasti

L'utente può premere i tasti "^" o "v" nell'interfaccia "Informazioni sui guasti" per visualizzare le registrazioni dei guasti. In "Informazioni sui guasti" vengono registrate le informazioni relative agli ultimi 8 guasti dell'inverter, come illustrato nella Figura 26. Quando non è attivo nessun guasto, viene visualizzato "Nessun guasto!". Per ulteriori informazioni sulle registrazioni relativi ai guasti o alla durata dei guasti, consultare la cronologia.

CONTROLLO DELL'INVERTER

Premere "^" e "v" nell'interfaccia di controllo, quindi premere "ENT" per visualizzare il sottomenu, come illustrato nella Figura 33.

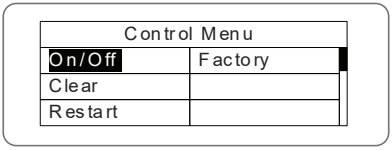
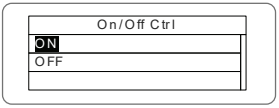
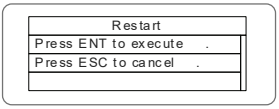
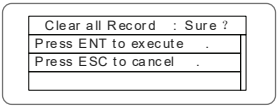
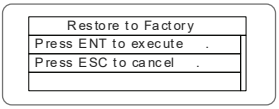


Figura 33 Interfaccia di controllo

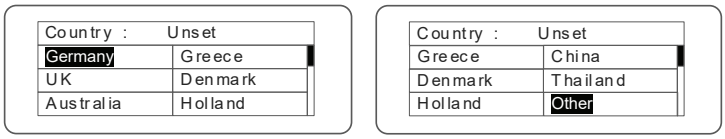
Per informazioni dettagliate, consultare la tabella seguente.

Tabella di controllo dell'inverter

Elemento di controllo	Display LCD	Descrizione
Controllo attivazione/ disattivazione		Controllo "attivazione/disattivazione" dal pannello. Premere "^" e "v" nell'interfaccia di controllo per selezionare l'operazione. Premere "ENT" per confermare l'operazione, quindi premere "ESC" per tornare indietro.
Riavvio		Riavviare l'inverter dal pannello. Salvare tutte le impostazioni e le registrazioni di funzionamento. Premere "ENT" per riavviare e l'inverter inizierà l'autotest, oppure premere "ESC" per tornare indietro.
Cancellazione delle registrazioni		Premere "ENT" per cancellare tutte le registrazioni, oppure premere "ESC" per tornare indietro. "Cancellazione delle registrazioni" significa cancellare tutti i parametri di impostazione attraverso il pannello, ripristinare le impostazioni di fabbrica e salvare tutte le registrazioni della cronologia di funzionamento.
Ripristino delle impostazioni di fabbrica		"Ripristino delle impostazioni di fabbrica" significa cancellare tutte le impostazioni dei parametri e le registrazioni della cronologia di funzionamento attraverso il pannello e a ripristinare le impostazioni di fabbrica. Premere "ENT" per cancellare o premere "ESC" per tornare indietro.

SCELTA DELLA CERTIFICAZIONE DI RETE

Se l'inverter viene alimentato dall'ingresso della corrente continua per la prima volta o dopo il ripristino delle impostazioni di fabbrica, sul display LCD viene visualizzato un elenco di Paesi e l'utente deve selezionare il Paese di utilizzo. Come illustrato di seguito:`



Premere il tasto "^" o "v" per selezionare il Paese (fare riferimento alla tabella seguente) e premere il tasto "ENT" per completare l'impostazione.

N.	Paese	Certificazione	Commenti
1	Germany	VDE0126& AR-N4105	
2	UK	G83/G59	
3	Australia	AS4777	
4	Greece	VDE0126	
5	Denmark	TF3.2.1	
6	Holland	C10/C11	
7	China	CQC	
8	Thailand	PEA	
9	Other	VDE0126	

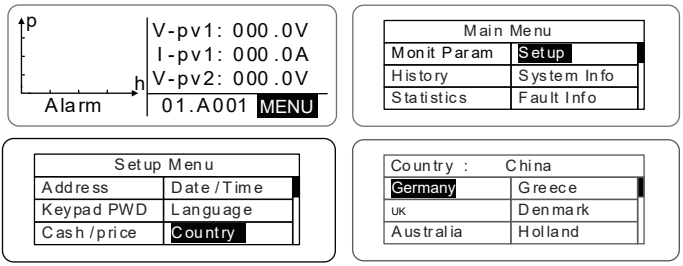
Tabella di riferimento: Certificazione di rete e tensione e frequenza di rete in alcuni Paesi

N.	Paese	Certificazione	Tensione trifase	Frequenza di rete
1	Germany	VDE0126& AR-N4105	380~400V	50Hz
2	France			
3	Greece			
4	Turkey			
5	Romania			
6	Slovakia			
7	Portugal			
8	Poland			
9	Hungary			
10	Switzerland			
11	Austria			
12	UK	G83-2/G59-3	415V	50Hz
13	Australia	AS4777.2&AS4777.3 AS/NZS3100	400~415V	50Hz
14	Singapore			
15	New Zealand			
16	Belgium	C10/C11	380~400V	50Hz

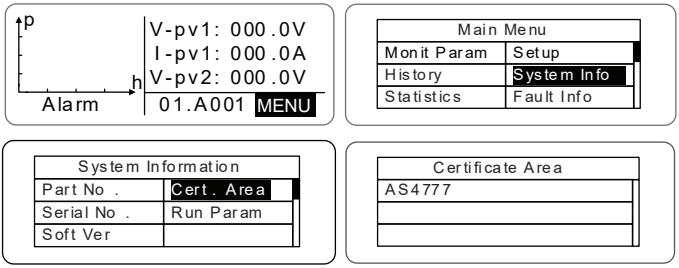
13	Australia	AS4777.2&AS4777.3 AS/NZS3100	400~415V	50Hz
14	Singapore			
15	New Zealand			
16	Belgium	C10/C11	380~400V	50Hz
17	Luxembourg			
18	Holland			
19	Denmark	TF3.2.1	380~400V	50Hz
20	Thailand	PEA	380V	50Hz
21	China	CGC/CF001	380V	50Hz
22	Italy	ENEL	400V	50Hz

L'utente può modificare l'impostazione del Paese nei seguenti modi:

Display LCD: MENU > Menu principale: Impostazioni > Menu Impostazioni: Paese > Paese:



L'utente può cercare la certificazione di rete impostata nei seguenti modi:
Display LCD: MENU > Menu principale: Informazioni del sistema > Informazioni del sistema: Area di certificazione > Area di certificazione



COMUNICAZIONE DI MONITORAGGIO

Questo capitolo descrive il collegamento di comunicazione tra l'inverter ed il sistema di monitoraggio (dispositivo di controllo industriale, computer personale, smartphone, ecc.).

La modalità di comunicazione standard dell'inverter fotovoltaico collegato alla rete è RS485, che comprende le porte "RS485-M" e "RS485-S". Le porte RS485-M possono comunicare con computer personali, smartphone, ecc. La soluzione di monitoraggio del sistema è stata illustrata nella Figura seguente.

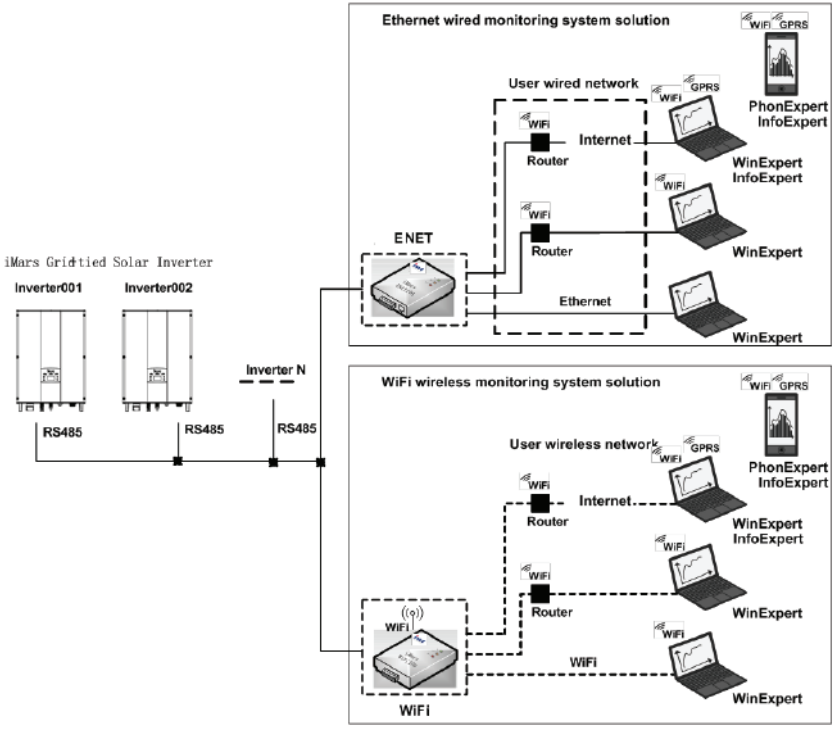


Figure 34 Monitoring system of inverter

COMUNICAZIONE STANDARD

Tabella di descrizione dei pin dell'inverter

Pin dell'inverter	Definizione
1(Red)	+5VDC
2(Orange)	A (RS485+)
3(Brown)	B (RS485-)
4(Black)	GND

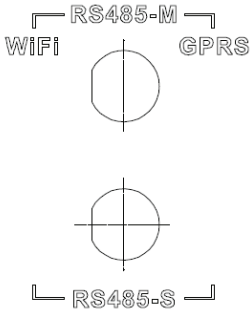


Figura 35 Pin RS485 dell'inverter



Figura 36 Connettore di comunicazione

FASI DI COLLEGAMENTO:

(1) Collegare il connettore di comunicazione configurato per l'inverter al terminale RS485 dell'inverter, come illustrato nella figura 37;

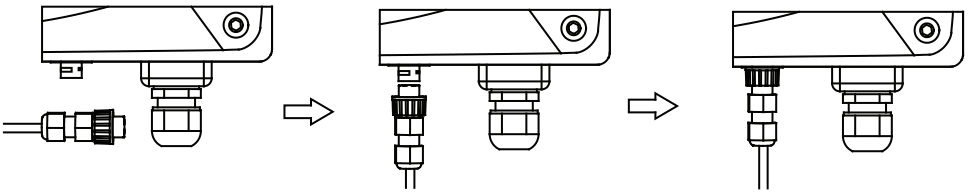


Figura 37 Collegamento dettagliato

(2) In base alla tabella degli accessori di comunicazione opzionali, collegare il pim del connettore di comunicazione ed il dispositivo dell'utente, verificando che il collegamento sia corretto.

(3) Scaricare il software di monitoraggio "WinExpert" e le relative istruzioni per l'uso dal nostro sito web.

COMUNICAZIONE OPZIONALE

Le modalità di comunicazione opzionali includono Ethernet e WIFI, che necessitano anche dei rispettivi componenti e parti di comunicazione, come illustrato nella tabella seguente Tutti i parametri di funzionamento dell'inverter vengono inviati dalla porta "RS485-M" ai dispositivi di comunicazione ed infine trasmessi al sistema di monitoraggio come segnale standard Ethernet e WIFI.

Tabella degli accessori di comunicazione opzionali

Accessori opzionali	Porta dell'inverter	Porta PC principale
Convertitore Ethernet	RS485-M	RJ45 pin
Convertitore WiFi	RS485-M	Segnale WiFi
Convertitore GPRS	RS485-M	Segnale GPRS
Convertitore ENET	RS485-M	Porta Ethernet

Scaricare le istruzioni per il collegamento, manuale d'uso e gli strumenti per la messa in funzione dal sito web.

Nota: gli accessori opzionali non sono inclusi nella configurazione standard, ma possono essere acquistati separatamente.

RISOLUZIONE DEI PROBLEMI

Tabella dei codici di guasto

Codice di guasto	Messaggio	Descrizione	Analisi del guasto
A			
A001	Input UV	Input undervoltage	Sottotensione PV1 Sottotensione PV2
A002	Bus UV	Bus undervoltage	Ingresso della corrente alternata
A003	Grid UV	AC undervoltage	Bassa tensione della rete pubblica
A004	Grid OV	AC overvoltage	Alta tensione della rete pubblica
A005	Grid UF	AC underfrequency	Bassa frequenza della rete pubblica
A006	Grid OF	AC overfrequency	Alta frequenza della rete pubblica
A007	Clock Fail	Clock alarm	Impostazione errata
A009	Cmd Shut	Arresto manuale	Arresto dal pannello di controllo o dal PC principale
A011	Grid Loss	The public grid disconnects.	Controllare se il collegamento CA dell'inverter è corretto
A030	Lost Box	Box lost connection	Errore di comunicazione tra la scatola combinatore e l'inverter
A031	BoxSPD1	Lighting protector1	Guasto nella protezione contro i fulmini 1
A032	BoxSPD2	Lighting protector2	Guasto nella protezione contro i fulmini 2
E			
E001	Input OV	Input overvoltage	Sovratensione dell'ingresso della corrente continua
E003	Bus OV	Bus overvoltage	Tensione interna del bus
E004	Boost Fail	Voltage-boost fault	Errore di aumento della tensione dell'inverter
E005	Grid OC	AC overcurrent	Sovraccarico di corrente alternata interno
E006	OTP	Overtemperature	Temperatura interna elevata
E007	Riso Low	Low isolation impedance	Bassa impedenza di isolamento Bassa impedenza di isolamento del sistema di porte esterne
E008	IGBT drv	IGBT drive protection	Protezione IGBT dell'inverter

E015	OutputShort	Output short-circuit	Cortocircuito in uscita
E018	Input OC	Input overcurrent	Sovracorrente dell'ingresso della corrente continua
E019	Incnst	Data consistency fault	Tensione di rete, frequenza, corrente di dispersione o iniezione corrente alternata/corrente continua incoerenti
E020	PowerReversed	DC power reversed	Alimentazione in corrente continua invertita
E021	Meter commErr	Power meter communication is faulty	Errore di comunicazione tra il contatore intelligente e l'inverter (quando la funzione anti-feedback è stata abilitata)
E022	FreqChg	Frequency is changed	La fluttuazione della tensione di rete supera il normale intervallo stabile dell'inverter
E023	PE Loss	PE wire not connected	Il cavo PE non è collegato (questo codice di errore è disponibile soltanto per gli standard di sicurezza AS4777)
E024	MeterLoss	The smart meter not connected	Il contatore intelligente non è collegato
E025	Locking	The inverter is locked	The inverter is locked
E026	Run Limit	Light load	Carico leggero (quando la funzione anti-feedback è stata abilitata)
E028	DRM0 Loss	The DEM0 box not connected	La scatola DRM0 non è collegata (questo codice di errore è disponibile soltanto per gli standard di sicurezza AS4777)

PARAMETRI TECNICI

Tabella dei parametri tecnici

Model		Three-phase						
		BG4KTR	BG4KTR-S	BG5KTR	BG5KTR-S	BG6KTR	BG8KTR	BG10KTR
Input (DC)	Max. DC voltage (V)	900	900	900	900	1000	1000	1000
	Starting voltage (V)	200	200	200	200	200	200	200
	MPPT voltage range(V)	200-800	200-800	200-800	200-800	180-800	180-800	180-800
	Rated DC input voltage range(V)	220-800	360-800	260-800	430-800	300-800	300-800	320-800
	Number of MPPT/string per MPPT	2/1	1/1	2/1	1/1	2/1		
	Max. DC input power (W)	4200	4200	5200	5200	6300	8400	10400
	Max. DC current (A) X	10x2	12	10×2	12	11x2	14x2	19x2
	Number of MPPT							
	Isc PV (A)	11x2	13	11×2	13	12.5x2	15.5x2	21x2
	Maximum backflow current (inverter backflow to PV array)	0	0	0	0	0	0	0
	DC switch	Optional						

Output (AC)	Rated output power(W)	4000	4000	5000	5000	6000	8000	10000
	Voltage(V)/ frequency(Hz) range	320~460Vac, 50Hz(47~51.5Hz) / 60Hz(57~61.5Hz)						
	Maximum output current(A)	6.4		8		9.6	12.8	16.1
	Maximum output fault current	265A @34ms						
	AC inrush current	Less than 10 A						
	Maximum output overcurrent protection(A)	12.7		15.8		19	25.3	31.8
	Power factor	-0.80~+0.80(Adjustable)						
	Harmonic distortion	<3%(rated power)						
System	Cooling method	Natural cooling					Air cooling	
	Maximum efficiency	97.20%	97.30%	97.30%	97.40%	97.50%	97.60%	98.20%
	European efficiency	97.00%	97.00%	97.00%	97.00%	97.00%	97.00%	97.60%
	MPPT efficiency	99.90%						
	Protection degree	IP65						
	Power consumption at night	<1W						
	Isolation mode	Transformerless						
	Safety class	I						
	Overvoltage protection class	AC:III,PV:II						
	Inverter topology	Non-isolated						
	Pollution degree	300.00%						
	Operation temperature	(-25 ~+60), (Derate after 45)						
	Relative humidity	4~100%, Condensation						
	Max. altitude(m)	≤2000, (Derate if the altitude > 2000)						
	Display	LED/ LCD, backlit display						
	System language	English, Chinese, German, Dutch						
	Communication	RS485 (standard), Ethernet, WiFi (optional)						
	DC terminal	BC03A / BC03B						
	Noise dB(A)	≤30					<50	
	Installation mode	Wall installation						
Others	Grid standard	DIN VDE 0126-1-1：2013, VDE-AR-N 4105：2011, DIN VDE V 0124-100：2012, IEC 61727（IEC 62116）, AS/NZS 4777.2：2015, NB/T 32004-2013, IEC 60068-2-1：2007, IEC 60068-2-2：2007, IEC 60068-2-14：2009, IEC 60068-2-30：2005, IEC 61683：1999, C10/11：2012						
	Safe certificate / EMC category	IEC 62109-1：2010, IEC 62109-2：2011, EN 61000-6-2: 2005 / EN 61000-6-3:2007/ A1:2011						
Protection	Input overvoltage protection, input overcurrent protection, DC isolation monitoring, DC monitoring, grounding fault current monitoring, grid monitoring, island protection, short circuit protection, overheating protection etc.							

Meaningful Innovation.

WEEE Number: 80133970

INSTRUCTION MANUAL

SAULES INVERTORS AR LCD DISPLEJU UN LĪDZSTRĀVAS SLĒDZI - TRĪSFĀŽU

MODEL	SKU
VT-6605305	11371
VT-6608305	11372
VT-6610305	11373



5 YEARS WARRANTY*

INTRODUCTION

Thank you for selecting and buying V-TAC Product. V-TAC will serve you the best. Please read these instructions carefully & keep this user manual handy for future reference. If you have any another query, please contact our dealer or local vendor from whom you have purchased the product. They are trained and ready to serve you at the best.

Multi-Language Manual QR CODE

Please scan the QR code to access the manual in multiple languages.

WARNING

1. Please make sure to turn off the power before starting the installation.
2. Installation must be performed by a qualified electrician.
3. Proper grounding should be ensured throughout the installation.



This marking indicates that this product should not be disposed of with other household wastes.



Caution, risk of electric shock.







DROŠĪBAS PASĀKUMI

Šīs sērijas tīkla saules enerģijas invertori ir izstrādāti un testēti stingri saskaņā ar attiecīgajiem starptautiskajiem drošības standartiem. Tā kā šī ir elektriska un elektroniska ierīce, tās uzstādīšanas, ekspluatācijas un apkopes laikā ir stingri jāievēro visi attiecīgie drošības noteikumi. Nepareiza lietošana var izraisīt:

- operatora vai citu cilvēku dzīvības un personiskās drošības apdraudējumu.
- invertora vai cita operatoram vai citiem cilvēkiem piederošā īpašuma bojājumu.

Lai izvairītos no miesas bojājumiem, invertora vai citu ierīču bojājumiem, stingri ievērojiet norādītos drošības pasākumus. Šajā nodaļā galvenokārt aprakstīti dažādi ekspluatācijas rokasgrāmatā lietotie brīdinājuma simboli un sniegti drošības norādījumi par sērijveida tīkla saules invertoru uzstādīšanu, ekspluatāciju, apkopi un lietošanu.

IKONAS

Šajā rokasgrāmatā ir sniegta attiecīga informācija ar ikonām, lai uzsvērtu lietotāja fizisko un īpašuma drošību un izvairītos no ierīces bojājumiem un fiziskām traumām.
Šajā rokasgrāmatā izmantotās ikonas ir uzskaitītas turpmāk:

Ikonas	Nosaukums	Instrukcija	Saīsinājums
 Danger	Danger	Ja netiek ievērotas attiecīgās prasības, var rasties nopietni miesas bojājumi vai pat iestāties nāve.	
 Warning	Brīdinājums	Ja netiek ievērotas attiecīgās prasības, var rasties miesas bojājumi vai ierīce var tikt sabojāta.	
 Do not	Elektrostatiski jutīgs	Ja netiek ievērotas attiecīgās prasības, var rasties bojājumi.	
 Hot sides	Karstas virsmas	Ierīces sāni var sakarst. Nepieskarieties.	
Note	Note	Procedūras, kas veiktas, lai nodrošinātu pareizu darbību.	Note

SAFETY GUIDELINES

	● After receiving this product, first make sure that the product is well packaged. If you have any questions, please contact the shipping company or local distributor immediately. ● Installation of PV inverters must be performed by professional technician who has been specially trained, thoroughly read and familiar with all the contents of this manual and familiar with the safety requirements of the electrical system. ● Do not carry out any wiring and inspection or changing components when the power supply is applied.
	● Ensure that there is no electromagnetic interference from other electrical and electronic equipment on the installation site. ● Do not refit the inverter unauthorized. ● All the electric installation needs to be compliance with the national or local laws and standards.
	● The temperature of individual parts or the enclosure of the inverter– especially the heat sink may become hot in normal operation. There is a danger of burning. Do not touch.
	● It must be reliably grounded before operation.
	● Do not open the cover of inverters unauthorized. The electrical parts and components inside the inverter are electrostatic. Take measurements to avoid electrostatic discharge during relevant operation.
	● The inverter must be reliably grounded.
	● Ensure that DC and AC side circuit breakers have been disconnected and wait at least 5 minutes before wiring and checking.

Note: Technical personnel who can perform installation, wiring, commissioning, maintenance, troubleshooting and replacement of the series grid-tied solar inverters must meet the following requirements:

- Operators need professional training.
- Operators must read this manual completely and master the related safety precautions.
- Operators need to be familiar with the relevant safety regulations for electrical systems.
- Operators need to be fully familiar with the composition and operating principle of the entire grid-tied photovoltaic power generation system and related standards of the countries/regions in which the project is located.
- Operators must wear personal protective equipment.

WHAT TO DO AFTER SCRAPPING



- Do not dispose of the inverter together with household waste. The user has the responsibility and obligation to send it to the designated organization for recycling and disposal.

DELIVERY AND INSTALLATION



- Keep the package and unit complete, dry and clean during storage and delivery.
- Please remove and install the inverter with two or more people, because of the inverter is heavy.
- Remove and instal l the inverter with appropriate tools to ensure safe and normal operation and avoid physical injury or death. The people also need mechanical protective measures, such as protective shoes and work clothes.
- Only qualified electricians are allowed to install the inverter.
- Do not put and install the inverter on or close to combustible materials.
- Keep the installation site away from children and other public places.
- Remove the m etal jewelry such as ring and bracelet before installation and electrical connection to avoid electric shock.
- Do cover solar modules with light-tight materials before electrical connection. Exposed to sunlight, solar modules will output dangerous voltage.
- The inverter input voltage cannot exceed the maximum input voltage; otherwise inverter damage may occur.
- The positive and negative pole of solar module s cannot be grounded, otherwise irrecoverable damage may occur.
- Ensure the proper grounding of the inverter, otherwise, improper connection or no grounding may cause stop of the in verter.
- Ensure reliable installation and electrical connection.

GRID-TIED OPERATION



- Only qualified electricians are allowed to operate the inverter under the permission of local power departments.
- All electrical connections must meet the electrical standards of the countries/regions in which the project is located.
- Ensure reliable installation and electrical connection before operation.
- Do not open the cover of inverter during operation or voltage is present.

MAINTENANCE AND INSPECTION

	● Only qualified electricians are allowed to perform the maintenance, inspection, and components replacement of the inverter. ● Contact with the local dealer or supplier for maintenance. ● In order to avoid irrelevant personnel from entering the maintenance area during maintenance, temporary warning labels must be placed to warn non-professionals to enter or use fence for isolation. ● Firstly disconnect all power supplies of the grid to the inverter before any maintenance, and then disconnect the DC breakers and wait for at least 5 minutes until the inverter is discharged before maintenance. ● Please follow electrostatic protection norms and take correct protective measures because of the electrostatic sensitive circuits and devices in the inverter. ● Do not use parts and components not provided by our company during maintenance. ● Restart the inverter after settling the fault and problem which may affect the safety and performance of the inverter. ● Do not get close to or touch any metal conductive part of the grid or inverter, otherwise electric shock, physical injury or death and fire may occur. Please do not ignore the warning icons and instructions with "electric shock".

SOLAR GRID-TIED POWER GENERATION SYSTEM

APPLICATION

The photovoltaic grid-tied power generation system consists of solar modules, grid-tied inverter, metering devices and public grid.

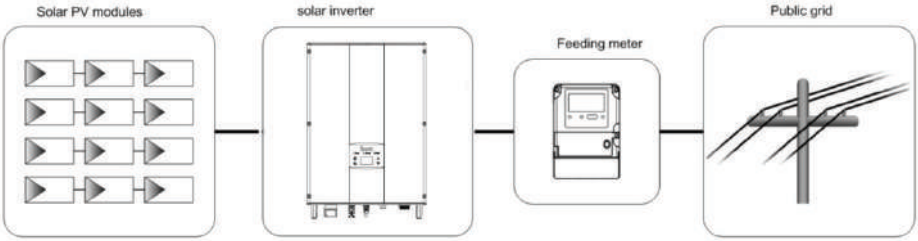


Figure 1 Application of the series grid-tied solar inverters

Grid-tied solar inverter is the core of photovoltaic power generation system. The solar energy can be converted into DC electric energy through solar modules and then be changed into sinusoidal AC energy which has the same frequency and phase with the public grid by grid-tied solar inverters, and then be fed to the grid.

The series grid-tied solar inverters are only applied in solar grid-tied power generation system and its DC input are only composed of crystalline silicon solar modules whose negative and positive poles are not grounded.

	● The recommended solar modules need to comply with IEC61730 Class A standard.

SUPPORTED GRID CONNECTION STRUCTURE

The series grid-tied solar inverters support TN-S, TN-C, TN-C-S and TT grid connection. When applied to the TT connection, the N-to-PE voltage should be less than 30V.

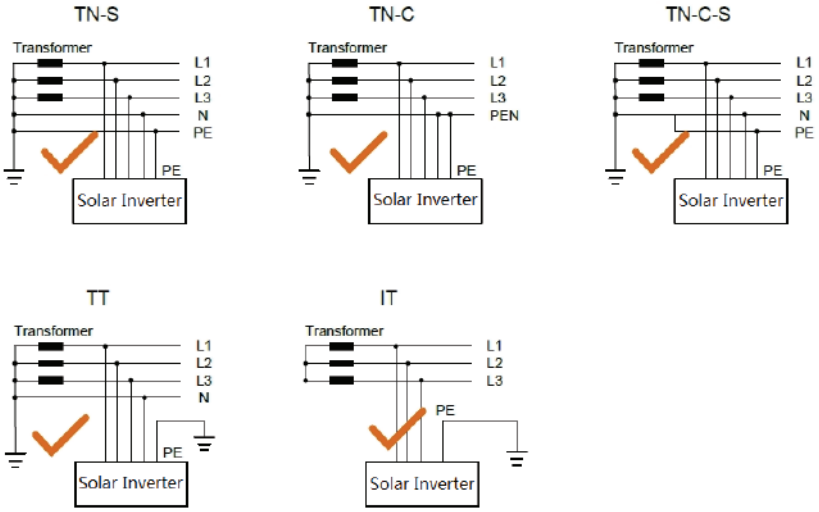


Figure 2 Type of grid

PRODUCT APPEARANCE

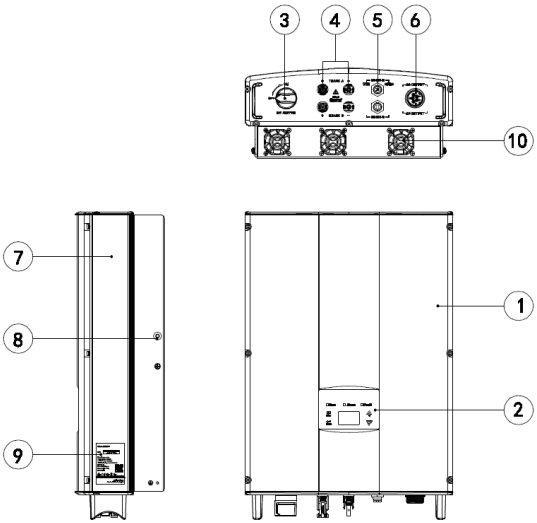
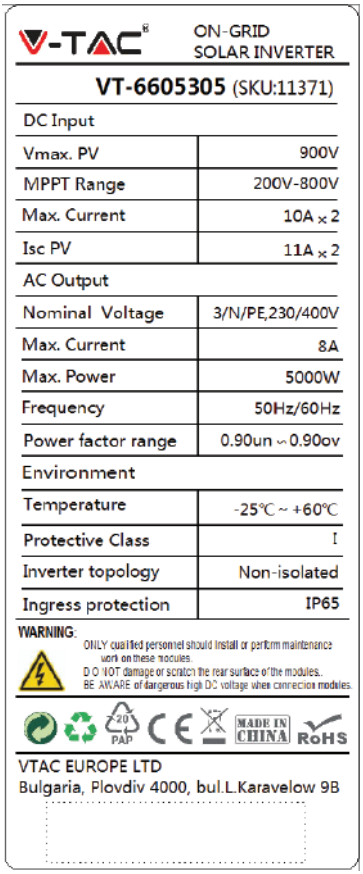


Figure 3 Products appearance

PARTS INSTRUCTION

No.	Name	Instruction
1	Cover	
2	Operational panel	LED status light, LCD display, keypad
3	DC switch	On–off of the DC input (optional)
4	DC input port	For the connection of solar modules
5	Communication port	RS485 and EXT communication port
6	AC terminal	For the connection of AC output
7	Cooling chamber	
8	Back panel mounting screws	
9	Name plate	For rated parameters and safety precautions of the inverter
10	FAN	4-6kW(NO FAN), 8~10kW(Air cooling)

NAMEPLATE



1. Trademark and product type

2. Model and important technical parameters

3. Certification system of the inverter confirming

4. Serial number, company name and country of origin.

Figure 4 Inverter nameplate

ICONS CERTIFICATION

Icons	Instruction
	● EU WEEE mark. Cannot dispose of the inverter as household waste.
	● CE certification mark. The inverter complies with the CE directive.

PRODUCTS MODULES

Table of the grid-tied solar inverter

Product name	Model	Rated output power （W）
Three-phase (L1,L2,L3,N,PE)		
Three-phase grid-tied solar inverter	4kW	4000
Three-phase grid-tied solar inverter	4kW-S	4000
Three-phase grid-tied solar inverter	5kW	5000
Three-phase grid-tied solar inverter	5kW-S	5000
Three-phase grid-tied solar inverter	6kW	6000
Three-phase grid-tied solar inverter	8kW	8000
Three-phase grid-tied solar inverter	10kW	10000

Note: The technical parameters of grid-tied solar inverter refer to the appendix

DIMENSIONS AND WEIGHT

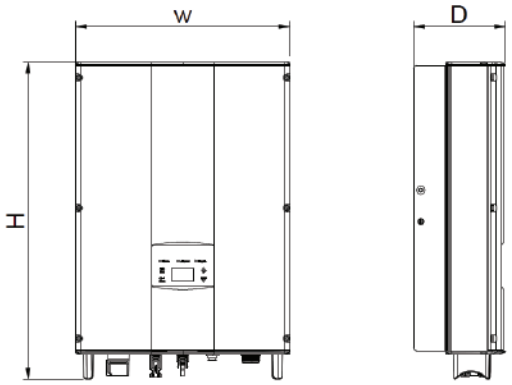


Figure 5 Inverter dimensions

Table of inverter dimension and net weight

Model	H (mm)	W (mm)	D (mm)	Net weight (kg)
4kW / 4kW–S / 5kW / 5kW-S / 6kW	530	360	150	20
8kW / 10kW	575	360	150	23

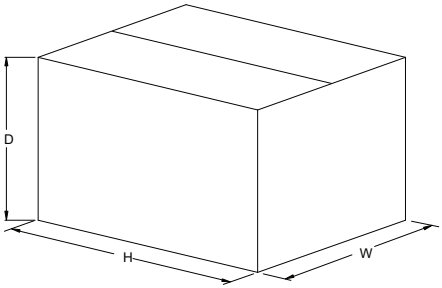


Figure 6 Paper packages dimension

Table of packages dimension and gross weight

Model	H (mm)	W (mm)	D (mm)	Weight (kg)	Packaging Material
4kW / 4kW–S / 5kW / 5kW-S / 6kW	630	470	284	22	Paper
8kW / 10kW	675	470	284	25	Paper

STORAGE

If the inverter is not put into use immediately, the storage of inverter should meet the following requirements:

- Do not remove the outer packing.
- The inverter needs to be stored in a clean and dry place, and prevent the erosion of dust and water vapor.
- The storage temperature should be kept at -40°C~+70°C, and the relative humidity should be kept at 5%RH~95%RH.
- The stacking of inverters is recommended to be placed according to the number of stacking layers in the original shipment. Place the inverter carefully during stacking to avoid personal injury or equipment damage caused by the falling of equipment.
- Keep away from chemically corrosive substances that may corrode the inverter.
- Periodic inspections are required. If damages are found by worms and rats, or packaging are found to be damaged, the packaging materials must be replaced in time.

After long-term storage, inverters need to be inspected and tested by qualified personnel before put into use.

INSTALLATION

This chapter describes how to install the inverter and connect it to the grid-tied solar system (including the connection between solar modules, public grid and inverter). Read this chapter carefully and ensure all installation requirements are met before installation. Only qualified electricians are allowed to install the inverter.

UNPACKING INSPECTION

The inverter has been thoroughly tested and rigorously checked before delivery, but damage may still occur during transportation. Before unpacking, check carefully whether the product information in the order is consistent with that on the nameplate of the package box and whether the product package is intact. If any damage is detected, please contact the shipping company or the supplier directly. Please also provide photos of the damage to get our fastest and best service.

Store the idled inverter in its original package and take anti-moisture and anti-dust measures.

After taking the inverter out of the box, check the following items:

(1) Confirm the main body of the inverter is intact and free from any damage;

(2) Confirm there is operation manual, interface accessories and installation accessories inside the package box;

(3) Confirm the deliverables inside the package box are intact and complete;

(4) Check whether the product information in the order is consistent with that on the inverter nameplate;

(5) The standard delivery list is shown below

Standard deliverables of inverter:

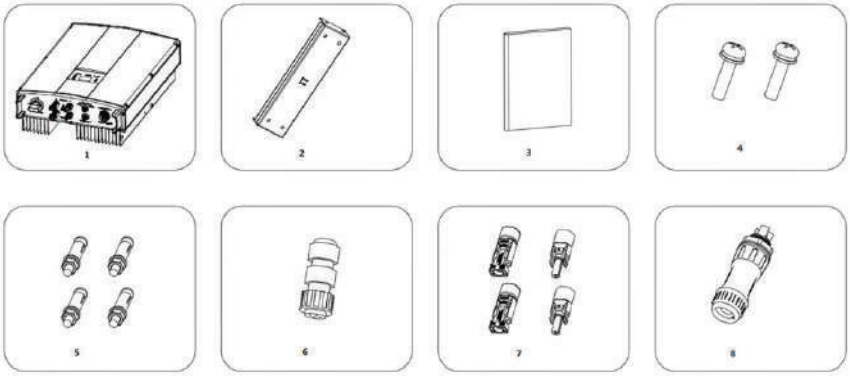


Figure 7 Delivery content

Table of detailed delivery list of single-phase inverter

No.	Name	Quantity
1	4kW / 4kW-S / 5kW / 5kW-S / 6kW / 8kW / 10kW inverter	1
2	Installation bracket	1
3	Operation manual	1
4	Assembling bolts M5*20	2
5	Expansion bolts M6*50	4
6	Communication connector	1
7	DC connector	2 pairs / 1pair（4kW-S、5kW-S）
8	AC connector	1

BEFORE INSTALLATION

Installation tools

Table of tools list

No.	Installation tools	Instruction
1	Marker	Mark the installation hole
2	Electric drill	Drill holes on the bracket or on the wall
3	Hammer	Knock on the expansion bolt
4	Adjustable wrench	Fix the installation bracket
5	Inner hex screwdriver	Tighten the anti-theft screw and disassemble AC junction box
6	“Slotted” or “cross-head” screwdriver	AC wiring
7	Megameter	Measure the insulation performance and grounding impedance
8	Multimeter	Check the circuit and measure AC/DC voltage
9	Electric soldering iron	Solder the communication cable
10	Wire crimper	Crimp DC terminal

INSTALLATION PLACE

Select installation site according to below requirements:

(1) The height of the installation position should ensure that the line of sight is on the same level as the LCD for viewing the parameters inverter conveniently.

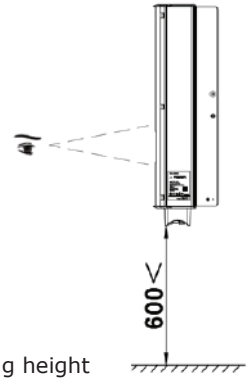


Figure 8 Optimal mounting height

(2) The installation site must be well ventilated and away from raindrops or direct sunlight.
(3) There must be enough pre-reserved space around the installation site for convenient disassemble of the inverter and air convection

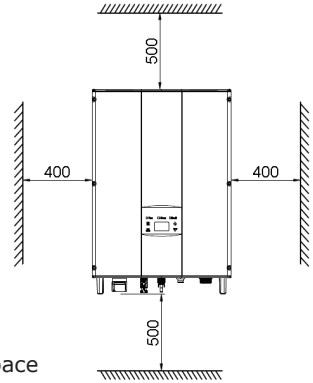


Figure 8 Installation space

(4) The ambient temperature of installation should be -25°C~60°C.
(5) The installation site should be away from electronic devices which can generate strong electromagnetic interference.
(6) The inverter should be installed on firm and solid surface such as wall surface and metal bracket.
(7) The installation surface should be vertical to the horizontal line.
(8) The installation should ensure that the inverter is reliably grounded, and the material of grounded metal conductor should be consistent with the metal material reserved for the grounding of the inverter.
Install the inverter vertically or backward ≤ 15° to facilitate heat dissipation.
Do not tilt the inverter forward, horizontal, upside down, over- backward, and roll when install the inverter.

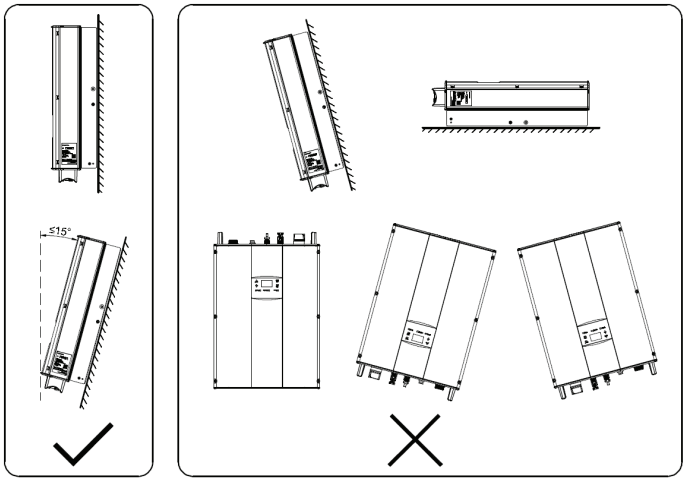


Figure 9 Installation position

	● Do not open the cover of the inverter or replace any part as incomplete inverter may cause electric shock and damage the device during operation.

CABLE SPECIFICATION

In order to regulate and compatible with the inverter AC/DC connector or terminal block specifications, below requirements on the AC/DC cable connected to corresponding inverter should be fulfilled:

Table of cable specifications

Inverter model	DC side		AC side	
	Min cross-section area mm²(length≤50m)	Min cross section area mm² (Length>50m)	Min cross section areamm² (Length≤50m)	
			L	N/PE
4kW / 4kW-S / 5kW / 5kW-S / 6kW / 8kW / 10kW	4	6	4	4

MICRO BREAKER

In order to ensure safe operation of the inverter and circuits, it is recommended to configure corresponding micro breaker or fuse on the DC input side and AC output side of the inverter. Table below is the requirements recommended for micro breaker:

Table of specifications of micro breaker

Inverter model	DC side	AC side
	Recommended breaker specification	Recommended breaker specification
4kW / 4kW-S / 5kW / 5kW-S / 6kW	DC1000V, C16A, 2P	AC400V, C16A, 4P
8kW / 10kW	DC1000V, C25A, 2P	AC400V, C25A, 4P

MECHANICAL INSTALLATION

The material for fixing the inverter and the installation mode vary with the different installation sites. It is recommended to install the inverter vertically to the firm wall or metal bracket. Here we take wall installation as an example to introduce the installation matters of the inverter.

As shown in the Fig 10, the overall installation of the inverter should be vertical to the horizontal surface.

INSTALLATION OF INVERTER

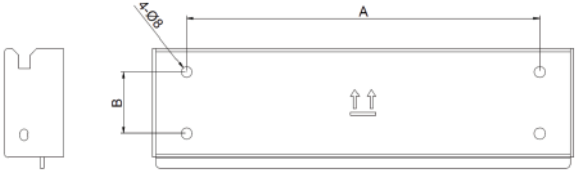


Figure 10 Installation bracket of inverter

Table of size of installation bracket

Inverter model	Spacing of installation hole
	A(mm)*B(mm)
4kW / 4kW-S / 5kW / 5kW-S / 6kW / 8kW / 10kW	260*45

The procedures for installation of inverter are listed below:
(1) Use the punch positioning plate in the packaging box to determine the punch position. As shown in Figure 10 Level the holes with a level ruler and mark it with a marking pen.

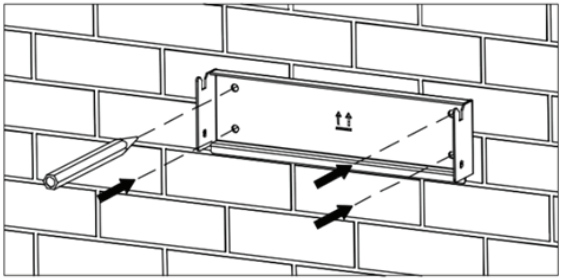


Figure 10 Determine the punch position

(2) Drill 4 installation holes on the wall with electric drill. As shown in Figure 11

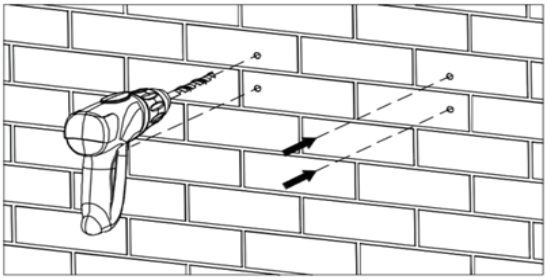


Figure 11 Drilling

(3) Fix the expansion bolts to the 4 installation holes with hammer, as shown in Figure 12.

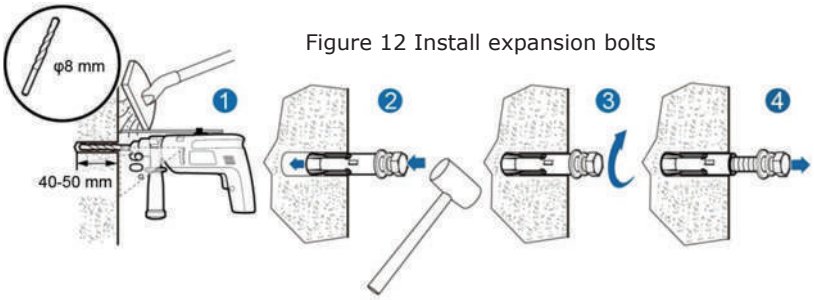


Figure 12 Install expansion bolts

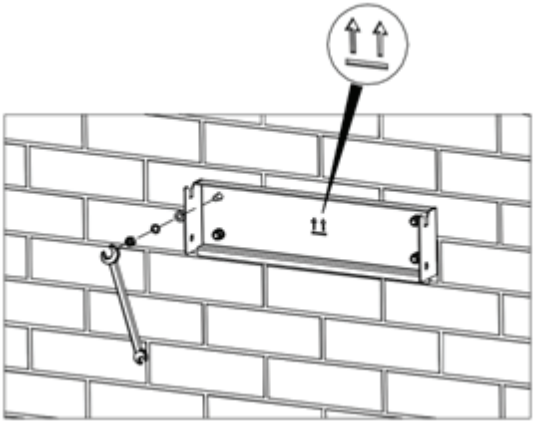


Figure 13 Fix the installation bracket

(4) Fix the installation bracket onto the expansion bolts and ensure the installation is firm enough(tightening torque is 13N•m) . As shown in Figure 13.

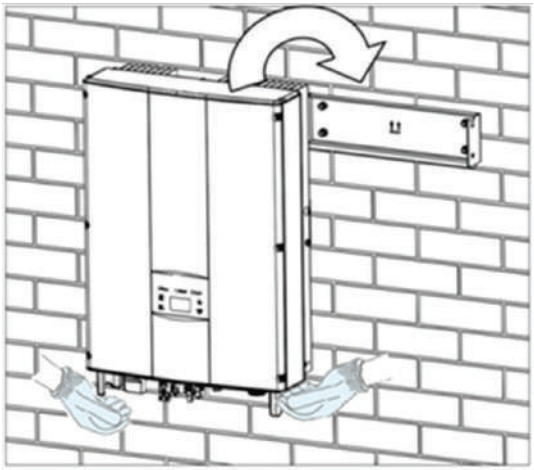


Figure 14 Installation of inverter

(5) Hang the inverter onto the installation bracket and ensure the installation is firm enough. As shown in Figure 14.

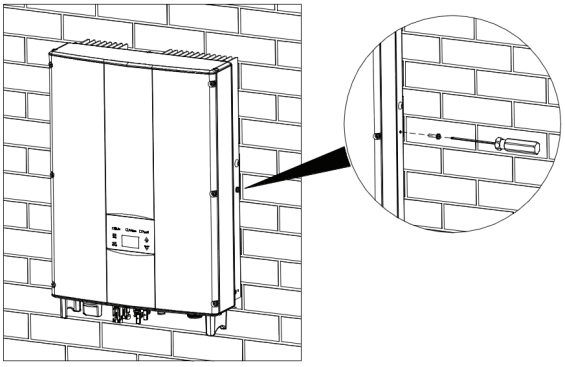


Figure 15 Installation of M5X20 bolts

(6) Ensure the inverter is installed properly and tighten the M5X20 bolts into the screw holes on the left and right side of inverter (tightening torque is 3N•m). As shown in Figure 15.

WIRING INSTALLATION

This section presents the detailed contents and safety precautions related to electrical connection. Fig 16 is the connection diagram for PV grid-connected system.

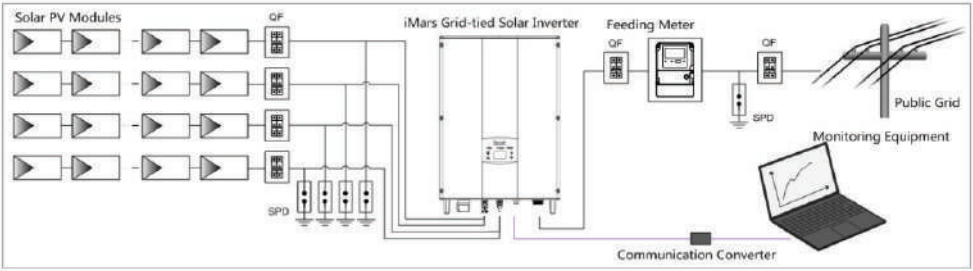


Figure 16 PV grid-connected system diagram

⚠	● Electrical connection must be carried out by professional technicians as wrong operation may cause damage to the device, physical injuries or even death during system operation. ● All the electrical installation must conform to the national and local electrical safety regulations. ● Ensure all the cables are installed firmly according to the specified safety requirements and free from any damage. ● It is not allowed to close the AC and DC breakers before the inverter is electrically connected.
Note	● Read and follow the instructions provided in this section . Strictly follow the requirements when operating. ● Always note the rated voltage and current defined in this manual. Never exceed the limits.

WIRING INSTALLATION

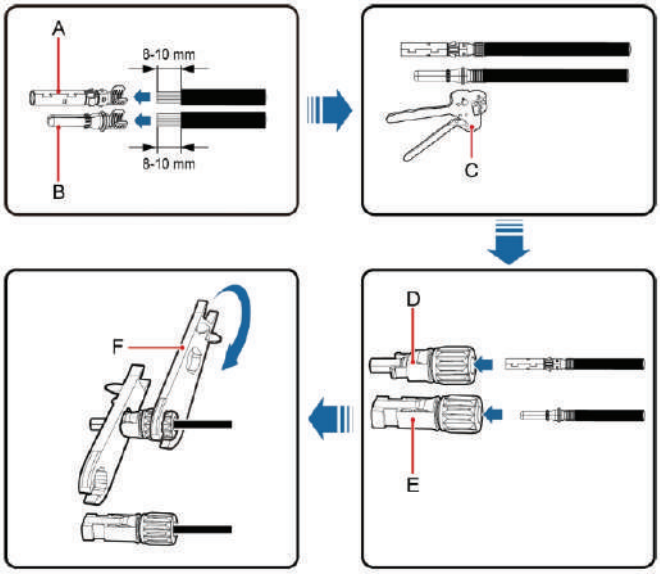


Figure 17 MC4 DC connector and PV string connection

The procedures for connecting PV string t to the inverter DC input are shown below:
(1) Before connecting PV string to inverter, ensure proper measures against lightening and short circuit have been taken;

⚠	● PV strings can be connected to inverter only after protection measures which conform to local electrical regulations are taken and the technical parameters in this manual are fulfilled.

(2) Connect the output cables of solar modules to the DC connector of inverter as Figure 17 shows. Remove the isolation layer of the DC cable for about 8-10mm. Insert the conductor part into the appropriate position of the connector, crimp the MC4 DC terminal and tighten the nut with a torque of 2.5-3Nm. Ensure the poles of solar modules are correctly and well connected with the connectors
(3) After the DC connector is connected, use a multimeter to measure the voltage of the DC input string, verify the polarity of the DC input cable, and ensure that the voltage of each string is within the allowable range of the inverter, as shown in Figure 18.

⚠	● The PV string connected to the series inverter must adopt the DC connector configured especially for the inverter, do not use other connection devices without authorization from our company, otherwise damage to the device, unstable operation or fire may occur and our company will not undertake quality assurance or assume any direct or joint liability thereof.

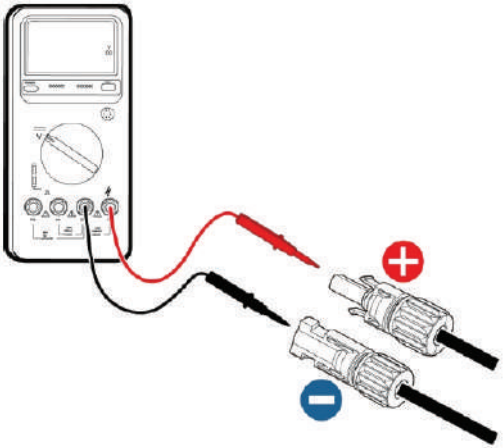


Figure 18 DC input voltage measuring

(4) Connect PV string to the inverter and ensure tightly-fastened
(5) When removing the DC connector from the inverter, insert the head of the straight screwdriver into the raised hole in the middle of the connector, and force the movable end of the connector to exit.

GRID CONNECTION

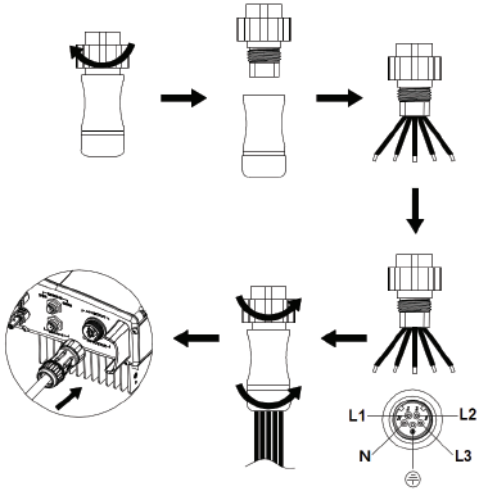


Figure 19 AC connection of single-phase inverter

Table of description of AC connector.

Inverter AC connector	Three phase grid	Note
1	L1（A）	
2	L2（B）	
3	L3（C）	
N	N	
⏚	PE	Must be connected

(1) Before connect the three-phase AC grid cable to the inverter, take lightning and short circuit protection measures in accordance with the local electrical safety codes
(2) Connect and fasten L1, L2, L3, N and PE conductors of the three-phase grid to AC terminal with 0.5 Nm torque. Tighten the terminal with tightening torque of 2.5-3 Nm, and then connect the terminal to the AC port of the inverter.

⚠	• Only qualified cables under the local electrical safety laws and regulations and comply with the technical parameters of this manual are allowed to connect to the inverter. • Only with the permission of the local electric power company can the inverter be connected to the utility grid.

OPERATION

INSPECTION BEFORE OPERATION

The following items must be checked strictly before running the PV grid-connected inverter (including but not limited to the following items):
(1) Ensure the installation site meet the requirement mentioned in "before installation" for easy installation, removing, operation and maintenance.
(2) Ensure the mechanical installation meet the requirement.
(3) Ensure the electrical installation meet the requirement.
(4) Ensure all switches are "off".
(5) Ensure the open-circuit voltage of PV module conforms to the parameter requirements of inverter DC side in Technical parameters;
(6) Ensure all electrical safety precautions are clearly-identified on the installation site.

	● In order to ensure a safe, normal and stable operation of the PV power generation system, all the newly installed, renovated and repaired PV grid - connected power generation system and its grid -connected inverter must undergo inspection before running.

INVERTER GRID-CONNECTED RUNNING

Start the inverter according to below steps to achieve grid-connected operation of the inverter:

Note	● Must to select the country to set grid-connected standard during the initial operation of the inverter ● Keep the power-on state of the inverter for at least 30 minutes, and complete the charging of built-in clock battery of the inverter to ensure the clock can run normally!

(1) Confirm the requirements in inspection before operation are fulfilled;
(2) Close the breaker on inverter public grid AC side;
(3) Close the integrated DC switch of the inverter;
(4) Close the circuit switch on PV string DC input side;
(5) Observe the LED indicator state of the inverter and the information displayed by LCD. Refer to "Operation" for LED state indicator and LCD display information.
(6) Set the inverter time according to local time, refer to section parameter settings to complete time setup.
(7) The default DC input mode of inverter is "independent" mode; refer to section parameter settings to check and set DC input mode.

Run Green indicator flickers, other indicators are off: Inverter is powered on and under self-inspection, wait for enough light to fulfill grid -connected condition;
Run Green indicator on, others off: The inverter is in power generation after self-inspection----successful commissioning.
"Warn" or "Fault" indicator is on or flickers: inverter is powered on but system fault occur. Refer to LCD screen to check the fault code in LCD display, stop the inverter as per STOPPING, and rule out faults according to TROUBLESHOOTING. After all the faults are removed, repeat the operations

STOPPING

When it is necessary to carry out power-off maintenance, inspection and fault elimination on the inverter, stop the inverter according to the following steps:
(1) Disconnect the breaker on inverter public grid AC side;
(2) Disconnect the integrated DC switch of the inverter;
(3) Disconnect the switch on PV string DC input side;
(4) Wait for at least 5 minutes until the internal parts of the inverter are fully discharged, and complete the stop operation.

DAILY MAINTENANCE

In solar PV grid-connected power generation system, the series grid-connected solar inverter can realize grid-connected power generation and stop/start operations automatically day and light in whatever seasons. In order to safeguard and prolong the service life of the inverter, it is necessary to carry out daily maintenance and inspection on the inverter besides using the inverter strictly according to this manual.

PERIODIC MAINTENANCE ON THE INVERTER

Item	Inspection mode	Maintenance period
Save the inverter running data	Adopt monitoring software to read the inverter data in real time, and backup the data recorded by monitoring software periodically. Save the inverter running data, parameters and logs into the file, check the monitoring software and various parameter setup of the inverter.	Once per quarter
Inverter running state	Observe whether the inverter is installed firmly, damaged or deformed. Listen for abnormal noise during inverter operation. Check the variables during system grid-connected running. Check whether the temperature of inverter enclosure is normal and monitor the heating condition with thermal imager.	Once per half a year
Clean the inverter	Check the RH and dust around the inverter, and clean the inverter when necessary.	Once per half a year
Electrical connection	Check whether system cable connection and inverter terminal block are loosened, if yes, secure them again in the manner specified in section "Installation". Check whether the cable is damaged, and whether the cable skin touched by the metal surface is cut.	Once per half a year
Maintenance and replacement of cooling fan	Observe whether the air inlet/outlet is normal; check whether there are cracks on the fan leaf. Listen for abnormal noise during fan rotation. Clean the air inlet/outlet if necessary; If any abnormity occurred to the fan, replace the fan immediately.	Once per half a year
Safety function	Check the inverter LCD and stop function of the system. Simulate stop operation and check the stop signal communication. Check the warning marks and replace them if necessary.	Once per half a year

MAINTENANCE GUIDE

CLEAN THE INVERTER

Cleaning procedure is as follows:
(1) Disconnect the input and output switches.
(2) Wait ten minutes.
(3) Clean the surface and air inlet/outlet of the inverter with soft brush or vacuum cleaner;
(4) Repeat inspection before operation - operating content.
(5) Restart the inverter.

CLEAN THE FAN (FOR 8KW AND 10KW INVERTER)

The cleaning steps are listed below:
(1) Disconnect the connection on input and output side;
(2) Wait for ten minutes;
(3) Disassemble the inverter in the same process with the installation procedures in section Instalaltion, but in reverse order;
(4) Remove the screws and covers of cooling bin or fan box

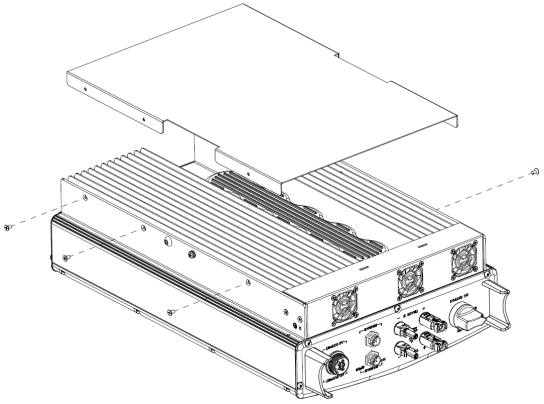


Figure 20 Disassemble the cooling bin

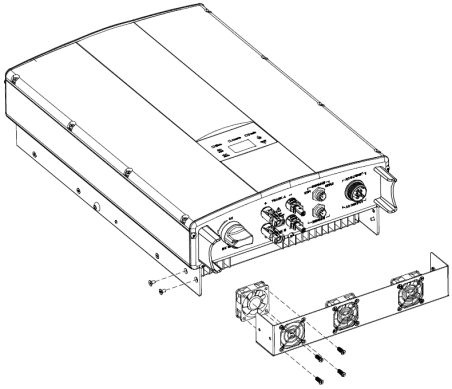


Figure 21 Disassemble the fan box

(5) Clean the inverter cooling bin and fan with soft brush or vacuum cleaner.
(6) Install the screws and covers of cooling bin or fan box to their original place.
(7) Install the inverter to its original place again according to section installation.
(8) Repeat the operations in section inspection before operation.
(9) Restart the inverter.

FAN REPLACEMENT

If high temperature occurred to the inverter or abnormal noise occurred during fan rotating, replace the fan. Note that the fan should be replaced by professionals only.

	● Stop the inverter before maintenance operation, and disconnect all the power inputs of the inverter. ● Before carrying out maintenance operation, wait for at least 10 minutes until the internal capacitors of the inverter are fully discharged, ● The fan can be maintained and replaced by professional electricians only.

How to replace the fan:
(1) Disconnect AC breaker;
(2) Turn the DC switch to "OFF" position;
(3) Wait for at least 10 minutes;
(4) Disconnect all the electrical wirings at the bottom of the inverter;
(5) Lift up the inverter with the help of others and take the inverter off the wall;
(6) Place the inverter on the operation platform;
(7) Disassemble the fan box as shown in Fig 21;
(8) Disassemble the damaged inverter fan as shown in Fig 22, then install the new fan back to its original position, and connect the fan power and control cable;

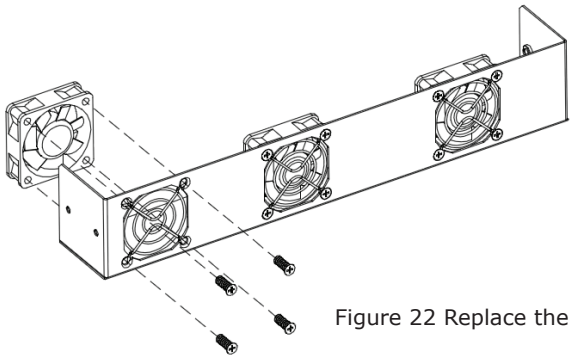


Figure 22 Replace the fan

(9) Install the screws and covers of cooling bin or fan box to their original position;
(10) Install the inverter to its original position again according to section 4;
(11) Repeat the operations in section inspection before operation;
(12) Restart the inverter

Note	● Do not start the inverter immediately if it alarms and stops. Figure out the cause according and confirm all the faults are removed before starting again. Inspections should be carried out in strict accordance with the procedures.

DISPLAY AND OPERATION PANEL

This chapter describes the panel displaying and how to operate on the panel, which involves the LCD display, LED indicators and operation panel.

LED INDICATORS

There are three LED indicators on the panel:
(1) "Run", operation indicator, green;
(2) "Warn" recoverable fault indicator, yellow;
(3) "Fault", unrecoverable fault indicator, red.

The inverter state includes 6 states of stand-by, self-inspection, power generation, recoverable fault and unrecoverable fault; LED indicators are on, off and blinking. Please refer to the table below for detailed state of inverter and LED indicators state.

"○": LED indicator is off;

"◐" (green), "◐" (yellow), "◐" (red): LED indicator is blinking at every 0.25S or 0.5S;

"●(Green), "●" (yellow), "●" (red): LED indicator is on.

Table of inverter state and LED indicators

Inverter state	LED indicators	Description
Stand-by	○ Run ○ Warn ○ Fault	No power on. All indicators off.
Self-inspection	◐ Run ○ Warn ○ Fault	Green indicator blinks in every 0.25s, others off. Power on and ready for self-inspection
Power generation	● Run ○ Warn ○ Fault	Green indicator keeps on, others off. Grid-tied power generation.
	● Run ● Warn ○ Fault	(1) Grid-tied power generation, but clock fault (A007); (2) Grid-tied power generation, but DC input fault (A001 or E001); (3) Grid-tied power generation，but fan fault(E006 or E012); Green and yellow indicator keeps on, others off.

fault	◯ Run ◐ Warn ◯ Fault	Inverter stand-by. The public grid fault(A001, A003, A004, A005or A006); Yellow indicator blinks in every 0.5s, others off
	◯ Run ● Warn ◯ Fault	(1) Inverter stand-by. Temperature abnormal(E006); (2) Recoverable Inverter stand-by. DC input fault (E001); Yellow indicator keeps on, others off
Unrecoverable fault	◯ Run ◯ Warn ◐ Fault	Hardware or software fault (E003, E004, E005, E008, E009, E011, E013 or E015). De-couple the inverter from the system before maintenance. Red indicator blinks in every 0.5s, others off
	◯ Run ◯ Warn ● Fault	Current-leakage or unqualified output power energy of the inverter (E007, E010, E014, E017, E018 or E020). De-couple the inverter from the system before maintenance. Red indicator keeps on, others off
Artificial turned off	● Run ● Warn ● Fault	Stop after the communication or panel command. All indicators are on.
Note	Please refer to detailed fault information and troubleshooting for more info.	

OPERATION PANEL

There are 4 buttons on the panel:
(1) "ESC", exit and return ;
(2) "∧", back to the front page and data increasing;
(3) "∨", to the next page and data decreasing;
(4) "ENT", enter.

LCD SCREEN

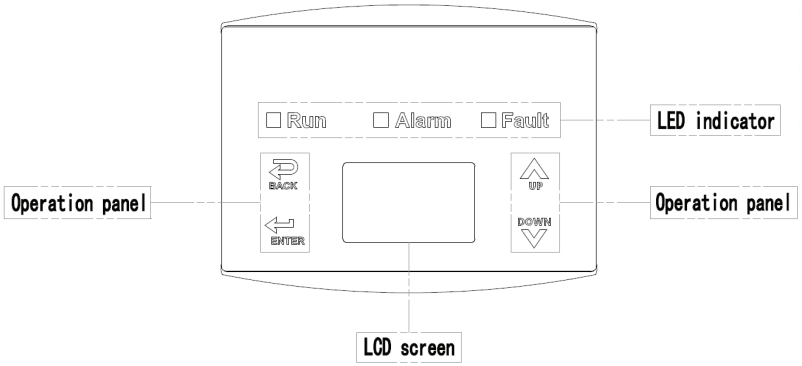


Figure 23 Operation panel

All information is displayed on the LCD screen. The background illumination of LCD screen will go out to save power if there is not button operation in 15 seconds. But it can be activated by pressing any button. Press "ENT" to enter into the main interface if the background illumination is on. All parameters can be viewed and set on the interface.

There are main interface and menu interfaces on the LCD screen, of which the main interface is the default one after power on, while the menu interfaces are used to watch and set parameters or other manual operation, such as viewing the monitoring parameters, history record, system information, statistics and fault information and setting the displayed language, time, communication address, password and factory defaults.

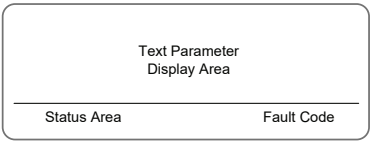


Figure 24 Main interface

The main interface of the LCD screen is shown as the Figure 24:
(1) The curve displays the power changing at the current day;
(2) The words on the screen display the current key parameters of the inverter. Three lines of words are displayed at a time, but if the inverter is in operation or stand-by state, the words are rolling forward at every 3s. And the user can press "∧" or "∨" to look up the information freely;
(3) State display area displays current running state of the inverter, which can display "self-inspection", "grid-connected power generation", "alarm", "fault" and "OFF" state;
(4) Dynamic fault code and menu entrance. When the state display area displays "alarm" or "fault", the dynamic fault code area will display corresponding fault code (display up to 8 fault codes).

FUNCTIONS OPERATION

Most of the parameters can be viewed and set through the LCD screen and operation panel.

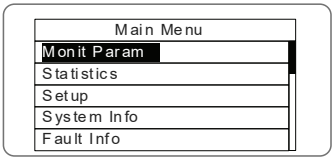


Figure 25 Main interface

MONITORING PARAMETERS

Press "∧" and "∨" in the main interface to select "Monit Param", and then press "ENT" to view the parameters which is shown in Figure 26. Go the front or next page through "∧" and "∨" and return through "ESC".

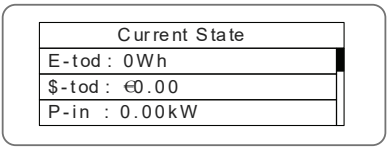


Figure 26 Monitoring parameters

HISTORY

Press "∧" and "∨" in the main interface to select "History", and then press "ENT" to view the parameters which is shown in Figure 27.

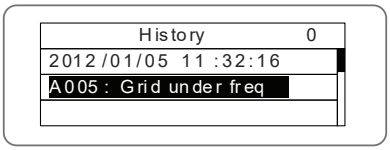


Figure 27 History parameters

"Historical record" can display 32 pieces of historical information, press "∧" or "∨" key to look through the historical information, press "ESC" to return. The number on the upper right corner of the first row is the number of historical record, the 2nd row (as shown in Fig 27) displays the date and time when fault occurred or restored, and the 3rd row displays detailed information of fault code. When the 3rd row displays in inverse color, it indicates fault occurred, otherwise it is fault restored.

STATISTICS

Press "∧" and "∨" in the main interface to select "Statistics", and then press "ENT" to view the parameters which is shown in Figure 28 .

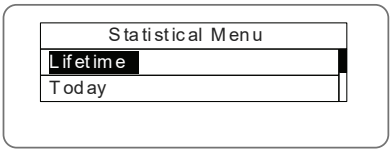


Figure 28 Statistic information

The information in table below can be viewed in the statistical menu.

Table of statistic information

Content	Detailed
Lifetime	Total operation time, total power produced, total power saved, total CO_2 reduction in lifetime
Day statistics	Total power produced, total power saved, peak power and total CO_2 reduction in current day

PARAMETER SETTINGS

Press "∧" and "∨" in the main interface to select "Setup Menu", and then press "ENT" to view the parameters which is shown in Figure 29.

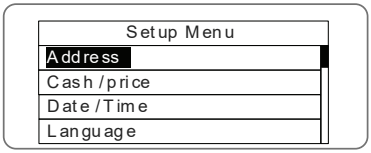
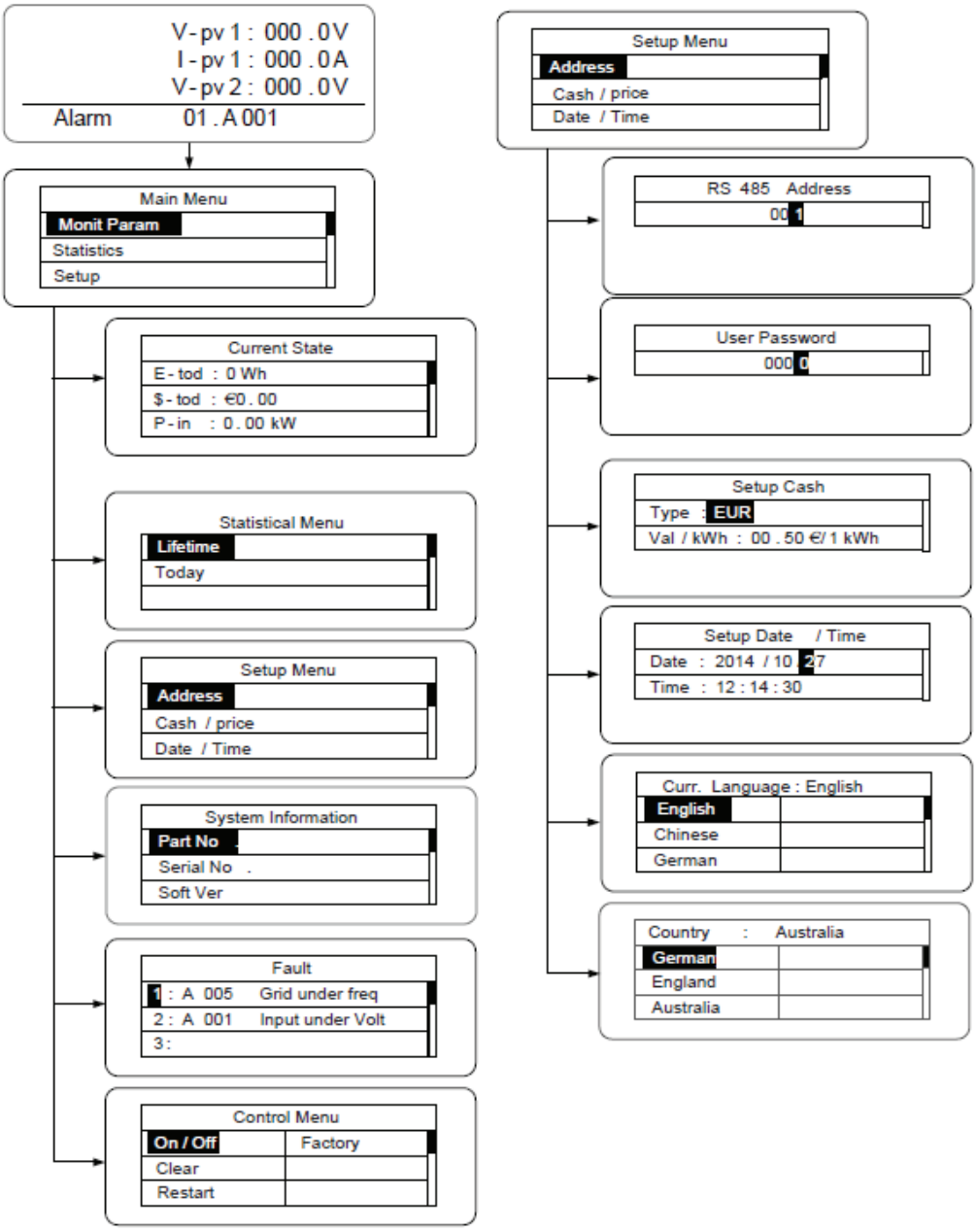


Figure 29 Setting information

"Setup menu" can realize parameter setup shown in table of parameters setting.

LCD MENUS:



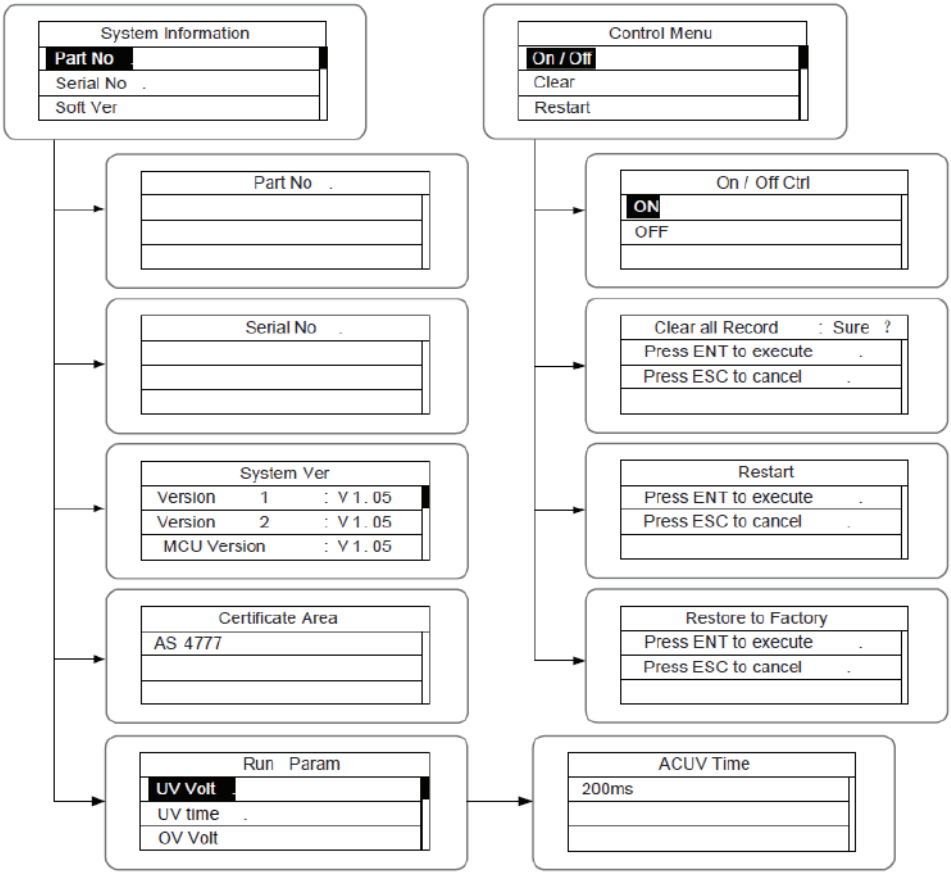
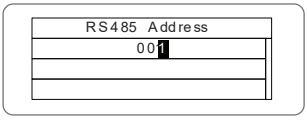
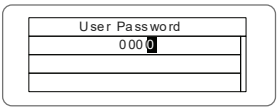
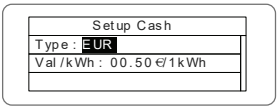
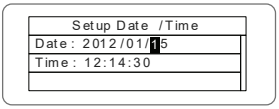
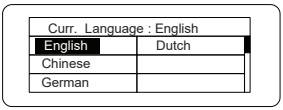
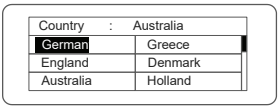
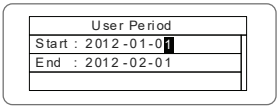
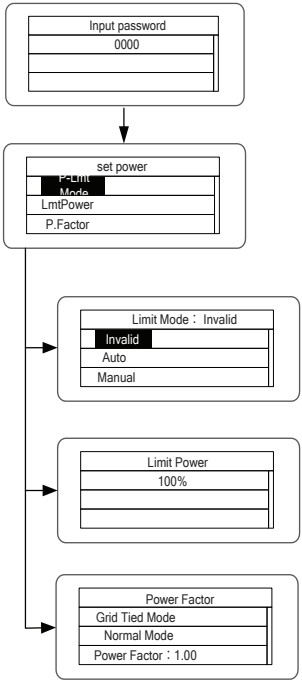
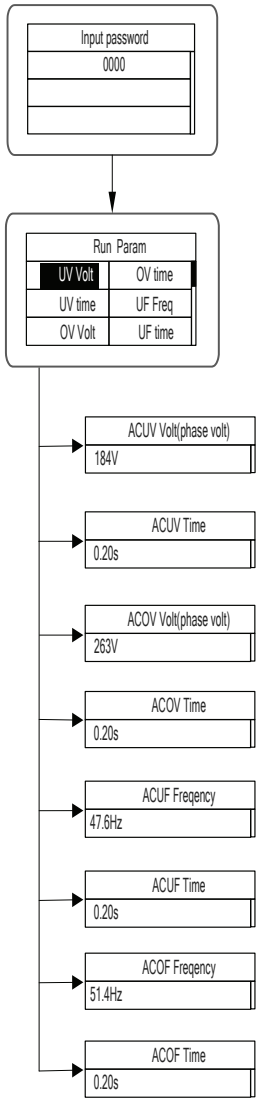


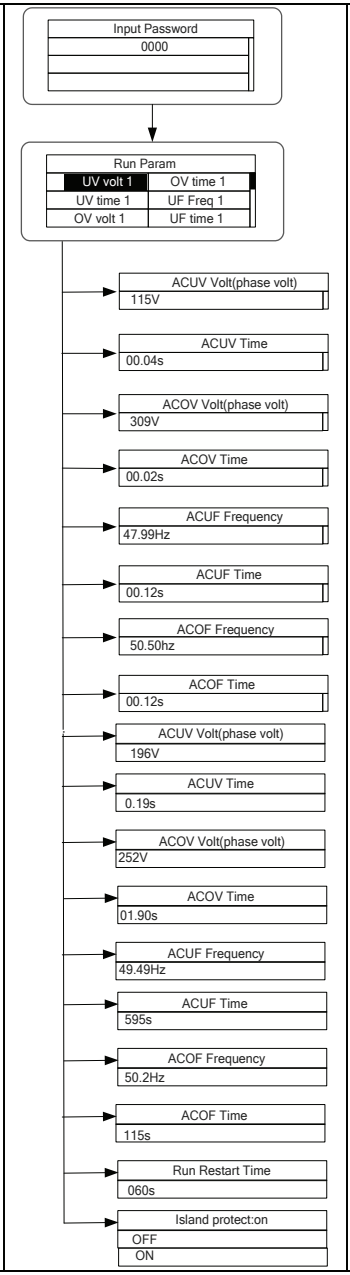
Table 6-3 Parameters setting

Setting item	LCD display	Instruction
RS485 Address		Enter into the interface and edit the data through "∧" or "∨". And then press "ENT" again to the next bit. After editing the three bits, press "ENT" to save the edition and press "ESC" to exit.

User password		Enter into the interface and edit the data through "∧" or "∨". And then press "ENT" again to the next bit. After editing the four bits, press "ENT" to save the edition and press "ESC" to exit. The default password is "0000"; the user can enter into the setting interface without password. If the password is not "0000", the user can enter into the setting interface with password.
Setup Cash		Enter into the interface and edit the currency type and cash through "∧" or "∨". And then press "ENT" again to the next line. After editing the four bits, press "ENT" to save the edition and press "ESC" to exit. The currency types include EUR, POD, CNY and USD.
Setup Date/Time		Enter into the interface and edit the date and time through "∧" or "∨". And then press "ENT" again to the next line. After editing the four bits, press "ENT" to save the edition and press "ESC" to exit.，
Language		Enter into the interface and edit the language through "∧" or "∨". And then press "ENT" again to save the edition and press "ESC" to exit. The default language is English.
Select Country		Enter into the interface and select country through "∧" or "∨". And then press "ENT" again to save the edition and press "ESC" to exit.

User period		Enter into the interface and edit the user period through "∧" or "∨". And then press "ENT" again to the next bit. After editing, press "ENT" to save the edition and press "ESC" to exit. Of which, the setting time and date needs to be later than the system setting, and the start time needs to be earlier than the end time. The setting date and time is used for the statistical information.
Set power		The password is needed when enter into the interface of "Set power". Get the password from the supplier if necessary. There are 3 submenus: ①P-Lmt Mode: invalid (limited power function is invalid),auto (special for single phase) ,manual (set the limit of output value manually); ② LmtPower: this function is only valid when the P-Lmt Mode is manual, the percentage is that of the rated power and the setting range is from 10% to 100%; ③Power factor: includes normal model (default value "1"), current advanced mode and current hysteresis mode and the setting rage is -0.9-0.99.

Run Param		Password is required when enter into the interface of "Run Param". Get the password from the supplier if necessary. Set ACUV Volt, ACUV time and others under the related submenus, and then press "∧" and "∨" to modify, and finally press "ENT" to confirm.

Run Param		There are 2 protections under G83/G59(UK) and PEA(Thailand) standards, and there is only one protection under other grid tied standard. Set ACUV Volt, ACUV time and others under the related submenus, and then press "∧" and "∨" to modify, and finally press "ENT" to confirm. Generally, it is only necessary to set ACUV2, ACOV2 and ACUF2 value for ACUV, ACOV and ACUF protection. And it is necessary to set ACOF1 and ACOF2 together for ACOF protection.

SYSTEM INFORMATION

Press "∧" and "∨" in the main interface to select "System Information", and then press "ENT" to view the parameters which is shown in Figure 30.

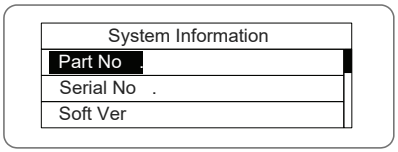


Figure 30 System information

The system information include "product model", "serial No.", "software version" and "certificate version". If select "Software Version" in the "System Version", can view the inverter Version 1, Version2, MCU Software Version, RS485 protocol and other information, as shown in Figure 31.

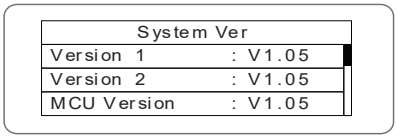


Figure 31 System version

FAULTS

Press "∧" and "∨" in the main interface to review the fault history, and then press "ENT" to view the sub-menu which is shown in Figure 32.

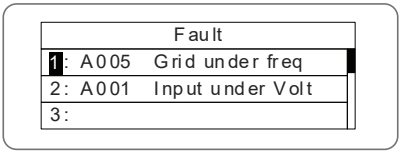


Figure 32 Fault information

User can press "∧" or "∨" key in the "fault information" interface to view the fault records. "Fault information" records the latest 8 pieces of fault information of the inverter, as shown in fig 26. When there is no fault currently, it will display "No fault!". See history for more information on fault records or fault time.

INVERTER CONTROL

Press "∧" and "∨" in the control interface, and then press "ENT" to view the sub-menu which is shown in Figure 33.

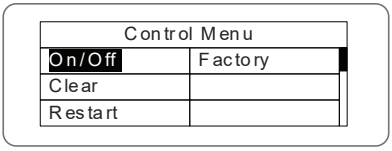
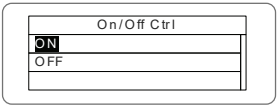
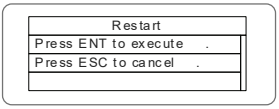
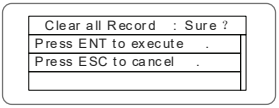
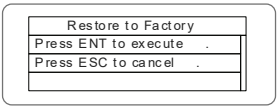


Figure 33 Control interface

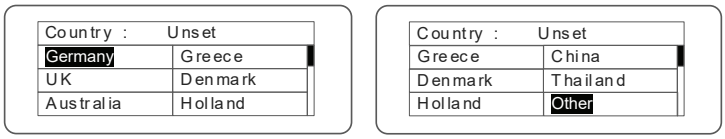
Refer to the table below for detailed information.

Table of inverter control

Control item	LCD display	Instruction
On/Off control		Control the "On/Off" through the panel. Press "∧" and "∨" in the control interface to select the operation. Press "ENT" to ensure the operation and press "ESC" to return.
Restart		Restart the inverter through the panel. And save the all settings and operation record. Press "ENT" to ensure restarting and the inverter will begin to self-inspect or press "ESC" to return.
Record clear		Press "ENT" to ensure clear all records or press "ESC" to return. "Record clear" is to clear all setting parameters through the panel, restore to the factory setting and save all history operation records.
Restore to factory		"Restore to factory" is to clear all setting parameters and history operation records through the panel, restore to the factory setting. Press "ENT" to ensure clear or press "ESC" to return.

GRID CERTIFICATION CHOICE

Power on the inverter by DC input for the first time or after restore factory settings, the LCD screen will appear a list of countries, requiring the user to choose what country of use. As shown below:



Press the "∧" or "∨" button to select the country (refer to the below table), press the ENT button to complete the setting.

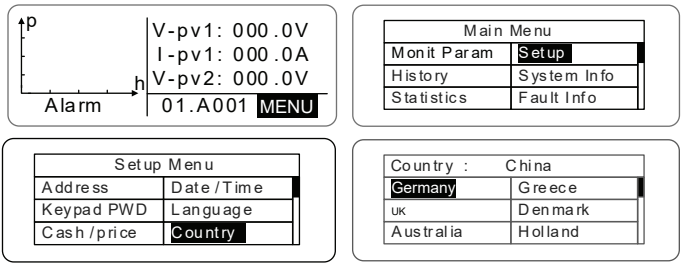
No.	Country	Certification	Remark
1	Germany	VDE0126& AR-N4105	
2	UK	G83/G59	
3	Australia	AS4777	
4	Greece	VDE0126	
5	Denmark	TF3.2.1	
6	Holland	C10/C11	
7	China	CQC	
8	Thailand	PEA	
9	Other	VDE0126	

Reference Table: Grid certification and grid voltage and frequency of some countries

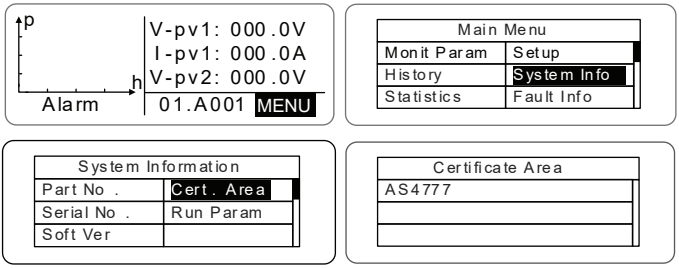
No.	Country	Certification	Three-phase voltage	Grid frequency
1	Germany	VDE0126& AR-N4105	380~400V	50Hz
2	France			
3	Greece			
4	Turkey			
5	Romania			
6	Slovakia			
7	Portugal			
8	Poland			
9	Hungary			
10	Switzerland			
11	Austria			
12	UK	G83-2/G59-3	415V	50Hz
13	Australia	AS4777.2&AS4777.3 AS/NZS3100	400~415V	50Hz
14	Singapore			
15	New Zealand			
16	Belgium	C10/C11	380~400V	50Hz

13	Australia	AS4777.2&AS4777.3 AS/NZS3100	400~415V	50Hz
14	Singapore			
15	New Zealand			
16	Belgium	C10/C11	380~400V	50Hz
17	Luxembourg			
18	Holland			
19	Denmark	TF3.2.1	380~400V	50Hz
20	Thailand	PEA	380V	50Hz
21	China	CGC/CF001	380V	50Hz
22	Italy	ENEL	400V	50Hz

The user can change the country setting through the following ways:
LCD screen:MENU→Main Menu: Setup→Setup Menu: Country→Country:



The user can query the grid certification which has been set through the following ways:
LCD Screen:MENU→Main Menu: System Info→System Information: Cert. Area→Certificate Area



MONITORING COMMUNICATION

This chapter describes the communication connection of inverter and monitoring system (Industrial master, private computers, smart phones and so on).

The standard communication mode of grid-tied solar inverter is RS485 which includes "RS485-M" and "RS485-S" ports. The RS485-M ports can communicate with private computers, smart phones and so on. The system monitoring solution is shown as Figure below:

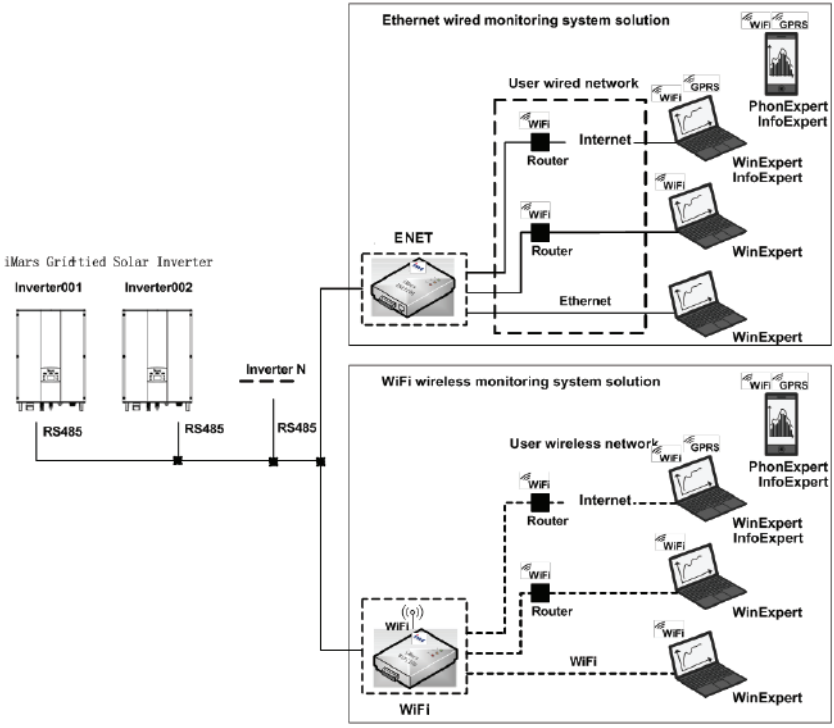


Figure 34 Monitoring system of inverter

STANDARD COMMUNICATION

Table of pins on inverter instruction

Pin on inverter	Definition
1(Red)	+5VDC
2(Orange)	A (RS485+)
3(Brown)	B (RS485-)
4(Black)	GND

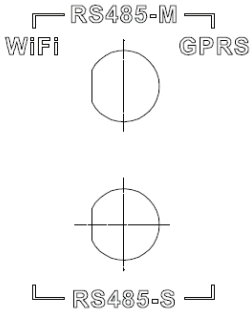


Figure 35 RS485 pin on inverter



Figure 36 Communication connector

CONNECTION STEPS:

(1) Connect the communication connector configured for the inverter to the RS485 terminal of the inverter, as shown in Fig 37;

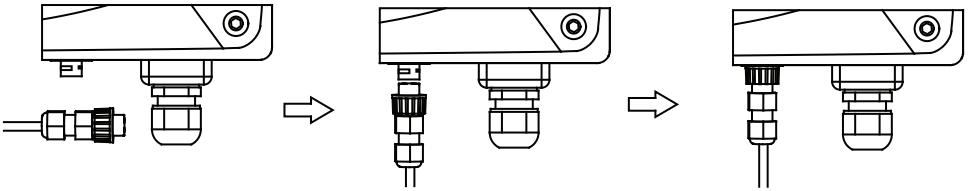


Figure 37 Detailed connectiona

(2) According to the table of Optional communication accessories, connect the communication connector pinout and the user's device, make sure the connection is correct.
(3) Please download the monitoring software "WinExpert" and its operation instruction from our website.

OPTIONAL COMMUNICATION

The optional communication modes include Ethernet and WIFI, which also need corresponding communication parts and components as shown in Table below All operation parameters of the inverter are output from port "RS485-M" to the communication devices, finally transmitted to the monitoring system as standard Ethernet and WIFI signal.

Table of Optional communication accessories

Optional accessories	Inverter port	Port of upper PC
Ethernet convert	RS485-M	RJ45 pin
WiFi converter	RS485-M	WiFi signal
GPRS converter	RS485-M	GPRS signal
ENET converter	RS485-M	Ethernet port

Please download the connection instruction, operation manual and commissioning tools on website.
Note: the optional accessories are not standard-configured, need to buy separately.

TROUBLESHOOTING

Table of0 Fault code

Fault code	Message	Instruction	Fault analysis
A			
A001	Input UV	Input undervoltage	PV1 undervoltage PV2 undervoltage
A002	Bus UV	Bus undervoltage	DC input
A003	Grid UV	AC undervoltage	Low voltage of the public grid
A004	Grid OV	AC overvoltage	High voltage of the public grid
A005	Grid UF	AC underfrequency	Low frequency of the public grid
A006	Grid OF	AC overfrequency	High frequency of the public grid
A007	Clock Fail	Clock alarm	Wrong setting
A009	Cmd Shut	Manual stutdown	Stop by the operation panel or upper PC
A011	Grid Loss	The public grid disconnects.	Check if inverter AC connection is well
A030	Lost Box	Box lost connection	The communication is faulty between combiner box and inverter
A031	BoxSPD1	Lighting protector1	Lighting protector1 faulty
A032	BoxSPD2	Lighting protector2	Lighting protector2 faulty
E			
E001	Input OV	Input overvoltage	DC input overvoltage
E003	Bus OV	Bus overvoltage	Internal bus voltage
E004	Boost Fail	Voltage-boost fault	Voltage-boost fault of the inverter
E005	Grid OC	AC overcurrent	Internal AC overcurrent
E006	OTP	Overtemperature	Internal overtemperature
E007	Riso Low	Low isolation impedance	Low isolation impedance of the external port system
E008	IGBT drv	IGBT drive protection	IGBT drive protection of the inverter

E015	OutputShort	Output short-circuit	Output short-circuit
E018	Input OC	Input overcurrent	DC input overcurrent
E019	Incnst	Data consistency fault	Inconsistent grid voltage, frequency, leakage current or AC/DC injection
E020	PowerReversed	DC power reversed	DC power reversed
E021	Meter commErr	Power meter communication is faulty	The communication between smart meter and inverter is faulty (when anti-feedback function is enable)
E022	FreqChg	Frequency is changed	Fluctuation of grid voltage is over inverter normal sustainable range
E023	PE Loss	PE wire not connected	The PE wire is unconnected (this error code only available under AS4777 safety)
E024	MeterLoss	The smart meter not connected	The smart meter not connected
E025	Locking	The inverter is locked	The inverter is locked
E026	Run Limit	Light load	Light load (when anti-feedback function is enable)
E028	DRM0 Loss	The DEM0 box not connected	The DRM0 box is unconnected (this error code only available under AS4777 safety)

TECHNICAL PARAMETERS

Table of technical parameters

Model		Three-phase						
		BG4KTR	BG4KTR-S	BG5KTR	BG5KTR-S	BG6KTR	BG8KTR	BG10KTR
Input (DC)	Max. DC voltage (V)	900	900	900	900	1000	1000	1000
	Starting voltage (V)	200	200	200	200	200	200	200
	MPPT voltage range(V)	200-800	200-800	200-800	200-800	180-800	180-800	180-800
	Rated DC input voltage range(V)	220-800	360-800	260-800	430-800	300-800	300-800	320-800
	Number of MPPT/string per MPPT	2/1	1/1	2/1	1/1	2/1		
	Max. DC input power (W)	4200	4200	5200	5200	6300	8400	10400
	Max. DC current (A) X	10x2	12	10×2	12	11x2	14x2	19x2
	Number of MPPT							
	Isc PV (A)	11x2	13	11×2	13	12.5x2	15.5x2	21x2
	Maximum backflow current (inverter backflow to PV array)	0	0	0	0	0	0	0
	DC switch	Optional						

Output (AC)	Rated output power(W)	4000	4000	5000	5000	6000	8000	10000
	Voltage(V)/ frequency(Hz) range	320~460Vac, 50Hz(47~51.5Hz) / 60Hz(57~61.5Hz)						
	Maximum output current(A)	6.4		8		9.6	12.8	16.1
	Maximum output fault current	265A @34ms						
	AC inrush current	Less than 10 A						
	Maximum output overcurrent protection(A)	12.7		15.8		19	25.3	31.8
	Power factor	-0.80~+0.80(Adjustable)						
	Harmonic distortion	<3%(rated power)						
System	Cooling method	Natural cooling					Air cooling	
	Maximum efficiency	97.20%	97.30%	97.30%	97.40%	97.50%	97.60%	98.20%
	European efficiency	97.00%	97.00%	97.00%	97.00%	97.00%	97.00%	97.60%
	MPPT efficiency	99.90%						
	Protection degree	IP65						
	Power consumption at night	<1W						
	Isolation mode	Transformerless						
	Safety class	I						
	Overvoltage protection class	AC:III,PV:II						
	Inverter topology	Non-isolated						
	Pollution degree	300.00%						
	Operation temperature	(-25 ~+60), (Derate after 45)						
	Relative humidity	4~100%, Condensation						
	Max. altitude(m)	≤2000, (Derate if the altitude > 2000)						
	Display	LED/ LCD, backlit display						
	System language	English, Chinese, German, Dutch						
	Communication	RS485 (standard), Ethernet, WiFi (optional)						
	DC terminal	BC03A / BC03B						
	Noise dB(A)	≤30					<50	
	Installation mode	Wall installation						
Others	Grid standard	DIN VDE 0126-1-1：2013, VDE-AR-N 4105：2011, DIN VDE V 0124-100：2012, IEC 61727（IEC 62116）, AS/NZS 4777.2：2015, NB/T 32004-2013, IEC 60068-2-1：2007, IEC 60068-2-2：2007, IEC 60068-2-14：2009, IEC 60068-2-30：2005, IEC 61683：1999, C10/11：2012						
	Safe certificate / EMC category	IEC 62109-1：2010, IEC 62109-2：2011, EN 61000-6-2: 2005 / EN 61000-6-3:2007/ A1:2011						
Protection	Input overvoltage protection, input overcurrent protection, DC isolation monitoring, DC monitoring, grounding fault current monitoring, grid monitoring, island protection, short circuit protection, overheating protection etc.							

WEEE Number: 80133970

Manuel d'instructions

ONDULEUR SOLAIRE AVEC AFFICHAGE LCD ET INTERRUPTEUR DC -TRI-PHASÉ

MODEL	SKU
VT-6605305	11371
VT-6608305	11372
VT-6610305	11373



5 YEARS WARRANTY*

INTRODUCTION

Merci d'avoir choisi et acheté un produit à V-TAC. V-TAC vous offrira le meilleur. Veuillez lire attentivement ces instructions avant de commencer l'installation et conservez ce manuel à portée de main pour référence ultérieure. Si vous avez d'autres questions, veuillez contacter notre distributeur ou le fournisseur local auprès duquel vous avez acheté le produit. Ils sont formés et prêts à vous servir au mieux.

AVERTISSEMENT

1. Veuillez mettre hors tension et lire ces instructions avant de commencer l'installation.
2. Installation par électricien certifié.
5. Une mise à terre appropriée doit être assurée au cours de l'installation.



Ce marquage indique que ce produit ne doit pas être éliminé avec d'autres déchets ménagers.



Attention, risque de choc électrique.









PRÉCAUTIONS DE SÉCURITÉ

Les onduleurs solaires connectés au réseau de la série sont conçus et testés en stricte conformité avec les normes de sécurité internationales pertinentes. En tant qu'appareil électrique et électronique, toutes les règles de sécurité pertinentes doivent être strictement respectées pendant l'installation, l'utilisation et la maintenance. Une utilisation incorrecte ou une mauvaise utilisation peut avoir les conséquences suivantes:

• Des risques pour la vie et la sécurité personnelle de l'opérateur ou d'autres personnes.
• Des dommages à l'onduleur ou à d'autres biens appartenant à l'opérateur ou à d'autres personnes.

Afin d'éviter toute blessure corporelle, tout dommage à l'onduleur ou à d'autres appareils, veuillez respecter strictement les mesures de sécurité suivantes. Ce chapitre décrit principalement divers symboles d'avertissement dans le manuel d'utilisation et fournit des instructions de sécurité pour l'installation, le fonctionnement, la maintenance et l'utilisation des onduleurs solaires connectés au réseau de série.

ICÔNES

Ce manuel fournit des informations pertinentes à l'aide d'icônes pour mettre en évidence la sécurité physique et matérielle de l'utilisateur afin d'éviter tout dommage à l'appareil et toute blessure physique.
Les icônes utilisées dans ce manuel sont énumérées ci-dessous :

Icônes	Nom	Instruction	Abréviation
 Danger	Danger	Des blessures physiques graves, voire mortelles, peuvent survenir si les exigences correspondantes ne sont pas respectées.	
 Warning	Avertissement	Des blessures physiques ou des dommages aux appareils peuvent se produire si les exigences relatives ne sont pas respectées.	
 Do not	Ne pas faire	Des dommages peuvent se produire si les exigences relatives ne sont pas respectées.	
 Hot sides	côtés chauds	Les côtés de l'appareil peuvent devenir chauds. Ne pas toucher.	
Note	Remarque	Les procédures prises pour assurer un fonctionnement correct.	Note

GUIDES DE PRÉCAUTION

	● Après avoir reçu ce produit, assurez-vous d'abord qu'il est bien emballé. Si vous avez des questions, veuillez contacter immédiatement la société d'expédition ou le distributeur local. ● L'installation des onduleurs photovoltaïques doit être effectuée par un technicien professionnel spécialement formé, ayant lu attentivement le contenu de ce manuel et connaissant les exigences de sécurité du système électrique. ● Ne pas effectuer de câblage, d'inspection ou de changement de composants lorsque l'alimentation électrique est appliquée.
	● Assurez-vous qu'il n'y a pas d'interférences électromagnétiques provenant d'autres équipements électriques et électroniques sur le site d'installation. ● Ne pas remonter l'onduleur sans autorisation. ● Toute l'installation électrique doit être conforme aux lois et normes nationales ou locales.
	● La température des pièces individuelles ou du boîtier de l'onduleur, en particulier le dissipateur thermique, peut devenir élevée en fonctionnement normal. Il y a un risque de brûlure. Ne pas toucher.
	● Il doit être mis à la terre de manière fiable avant de fonctionner.
	● N'ouvrez pas le couvercle des onduleurs sans autorisation. Les pièces et composants électriques à l'intérieur de l'onduleur sont électrostatiques. Prenez des mesures pour éviter toute décharge électrostatique pendant le fonctionnement de l'onduleur.
	● L'onduleur doit être mis à la terre de manière fiable.
	● S'assurer que les disjoncteurs des côtés DC et AC ont été déconnectés et attendre au moins 5 minutes avant de câbler et de vérifier.

Remarque : Le personnel technique pouvant effectuer l'installation, le câblage, la mise en service, la maintenance, le dépannage et le remplacement des onduleurs solaires de série reliés au réseau doit répondre aux exigences suivantes :

- Les opérateurs doivent recevoir une formation professionnelle.
- Les opérateurs doivent lire entièrement ce manuel et maîtriser les mesures de sécurité correspondantes.
- Les opérateurs doivent connaître les règles de sécurité applicables aux systèmes électriques.
- Les opérateurs doivent connaître parfaitement la composition et le principe de fonctionnement de l'ensemble du système de production d'énergie photovoltaïque relié au réseau et les normes correspondantes des pays/régions dans lesquels le projet est situé.
- Les opérateurs doivent porter des équipements de protection individuelle.

CE QU'IL FAUT FAIRE APRÈS LA MISE AU REBUT



- Ne pas jeter l'onduleur avec les déchets ménagers. L'utilisateur a la responsabilité et l'obligation de l'envoyer à l'organisme désigné pour le recyclage et l'élimination.

LIVRAISON ET INSTALLATION



- Conservez l'emballage et l'appareil complet, sec et propre pendant le stockage et la livraison.
- Veuillez retirer et installer l'onduleur avec deux personnes ou plus, car l'onduleur est lourd.
- Retirez et installez l'onduleur avec des outils appropriés pour garantir un fonctionnement sûr et normal et éviter les blessures physiques ou la mort. Les personnes ont également besoin de mesures de protection mécanique, telles que des chaussures et des vêtements de travail.
- Seuls des électriciens qualifiés sont autorisés à installer l'onduleur.
- Ne placez pas et n'installez pas l'onduleur sur ou à proximité de matériaux combustibles.
- Maintenez le site d'installation à l'écart des enfants et des autres lieux publics.
- Enlevez les bijoux métalliques tels que les bagues et les bracelets avant l'installation et le raccordement électrique afin d'éviter tout choc électrique.
- Couvrez les modules solaires avec des matériaux étanches à la lumière avant le raccordement électrique.
- La tension d'entrée de l'onduleur ne peut pas dépasser la tension d'entrée maximale, sinon l'onduleur risque d'être endommagé.
- Les pôles positif et négatif des modules solaires ne peuvent pas être mis à la terre, sinon des dommages irrémédiables peuvent se produire.
- Assurez-vous que la mise à la terre de l'onduleur est correcte, sinon une connexion incorrecte ou l'absence de mise à la terre peut entraîner l'arrêt de l'onduleur.
- Assurez une installation et un raccordement électrique fiables.

FONCTIONNEMENT SUR LE RÉSEAU



- Seuls des électriciens qualifiés sont autorisés à faire fonctionner l'onduleur avec l'autorisation des services d'électricité locaux.
- Toutes les connexions électriques doivent être conformes aux normes électriques des pays/régions dans lesquels le projet est situé.
- Assurez-vous de la fiabilité de l'installation et du raccordement électrique avant de mettre l'onduleur en service.
- Ne pas ouvrir le couvercle de l'onduleur pendant le fonctionnement ou la présence de tension.

MAINTENANCE ET INSPECTION

	● Seuls des électriciens qualifiés sont autorisés à effectuer la maintenance, l'inspection et le remplacement des composants de l'onduleur. ● Contacter le revendeur ou le fournisseur local pour l'entretien. ● Afin d'éviter que du personnel non concerné ne pénètre dans la zone d'entretien pendant la maintenance, des étiquettes d'avertissement temporaires doivent être placées pour avertir les non-professionnels d'entrer ou d'utiliser une clôture pour l'isolation. ● Avant toute maintenance, déconnectez d'abord toutes les alimentations du réseau vers l'onduleur, puis déconnectez les disjoncteurs CC et attendez au moins 5 minutes que l'onduleur soit déchargé avant la maintenance. ● Veuillez respecter les normes de protection électrostatique et prendre les mesures de protection appropriées en raison des circuits et des dispositifs sensibles à l'électricité statique dans l'onduleur. ● N'utilisez pas de pièces et de composants non fournis par notre société pendant la maintenance. ● Redémarrez l'onduleur après avoir résolu le défaut et les problèmes qui peuvent affecter la sécurité et les performances de l'onduleur. ● Ne vous approchez pas et ne touchez pas les parties métalliques conductrices du réseau ou de l'onduleur, sous peine d'électrocution, de blessure physique ou de mort et d'incendie. Veuillez ne pas ignorer les icônes d'avertissement et les instructions avec "choc électrique".

SYSTÈME DE PRODUCTION D'ÉNERGIE SOLAIRE RELIÉ AU RÉSEAU

APPLICATION

Le système de production d'électricité photovoltaïque relié au réseau se compose de modules solaires, d'un onduleur relié au réseau, de dispositifs de mesure et d'un réseau public.

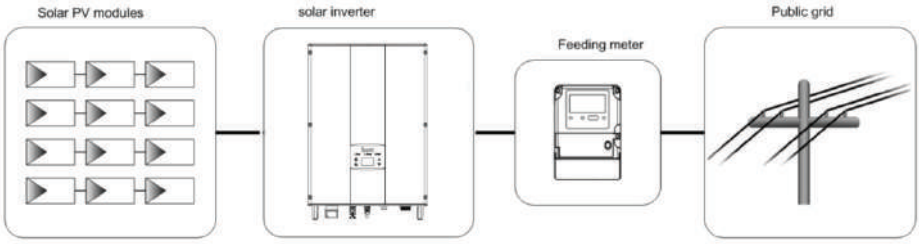


Figure 1: Application des onduleurs solaires connectés au réseau en série

L'onduleur solaire relié au réseau est le cœur du système de production d'énergie photovoltaïque. L'énergie solaire peut être convertie en énergie électrique continue par des modules solaires, puis transformée en énergie alternative sinusoïdale ayant la même fréquence et la même phase que le réseau public par des onduleurs solaires reliés au réseau, et enfin alimentée au réseau.

Les onduleurs solaires connectés au réseau en série ne sont appliqués que dans les systèmes de production d'énergie solaire connectés au réseau et leur entrée CC n'est composée que de modules solaires en silicium cristallin dont les pôles négatifs et positifs ne sont pas mis à la terre.

	● Les modules solaires recommandés doivent être conformes à la norme IEC61730 Classe A.

STRUCTURE DE CONNEXION AU RÉSEAU SUPPORTÉE

Les onduleurs solaires reliés au réseau de la série prennent en charge les connexions au réseau TN-S, TN-C, TN-C-S et TT. Lorsqu'ils sont appliqués à la connexion TT, la tension N-à-PE doit être inférieure à 30V.

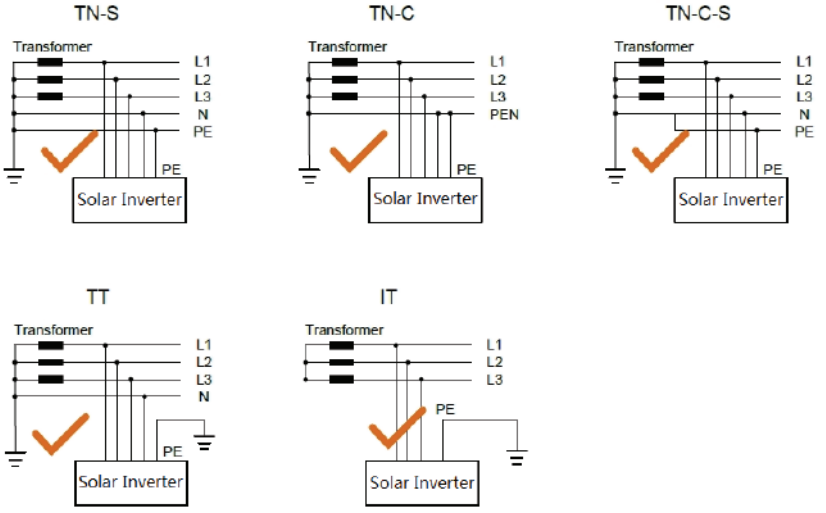


Figure 2: Type de réseau

APPARENCE DU PRODUIT

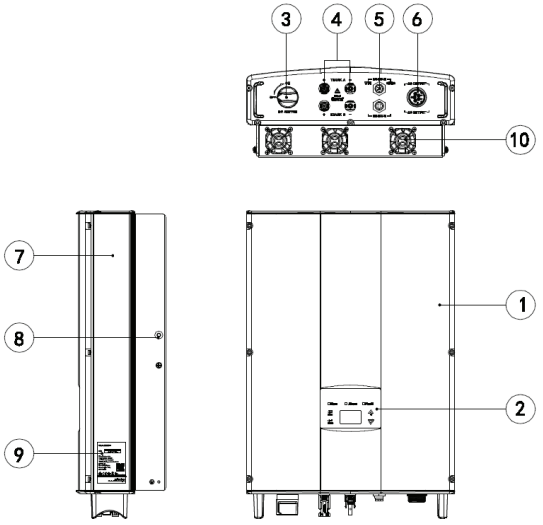
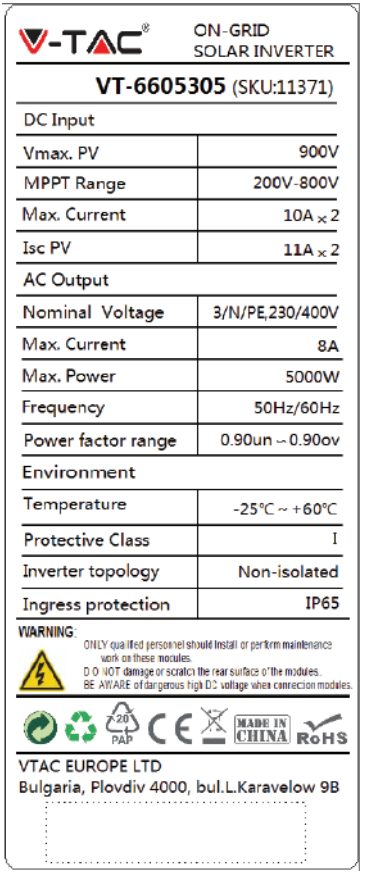


Figure 3: Apparence des produits

INSTRUCTIONS SUR LES PIÈCES

N°.	Nom	Instruction
1	Couvercle	
2	Panneau opérationnel	Voyant d'état LED, écran LCD, clavier
3	Interrupteur CC	Mise hors tension de l'entrée CC (en option)
4	Port d'entrée CC	Pour la connexion des modules solaires
5	Port de communication	Port de communication RS485 et EXT
6	Terminal CA	Pour la connexion de la sortie CA
7	Chambre de refroidissement	
8	Vis de fixation du panneau arrière	
9	Plaque signalétique	Pour les paramètres nominaux et les précautions de sécurité de l'onduleur
10	VENTILATEUR	4~6kW(SANS VENTILATEUR) , 8~10kW(Refroidissement par air)

PLAQUE DU NOM



1. Marque et type de produit

2. Modèle et paramètres techniques importants

3. Système de certification de l'onduleur confirmant

4. Numéro de série, nom de la société et pays d'origine.

Figure 4: Plaque signalétique de l'onduleur

ICÔNES DE CERTIFICATION

Icônes	Instruction
	● Marque EU WEEE. Impossible de jeter l'onduleur avec les déchets ménagers.
	● Marque de certification CE. L'onduleur est conforme à la directive CE. .

PRODUITS MODULES

Tableau de l'onduleur solaire raccordé au réseau

Produit nom	Modèle	Puissance nominale de sortie (W)
Triphasé (L1,L2,L3,N,PE)		
Convertisseur solaire triphasé relié au réseau	4kW	4000
Convertisseur solaire triphasé relié au réseau	4kW-S	4000
Convertisseur solaire triphasé relié au réseau	5kW	5000
Convertisseur solaire triphasé relié au réseau	5kW-S	5000
Convertisseur solaire triphasé relié au réseau	6kW	6000
Convertisseur solaire triphasé relié au réseau	8kW	8000
Convertisseur solaire triphasé relié au réseau	10kW	10000

Remarque : les paramètres techniques de l'onduleur solaire raccordé au réseau sont indiqués dans l'annexe.

DIMENSIONS ET POIDS

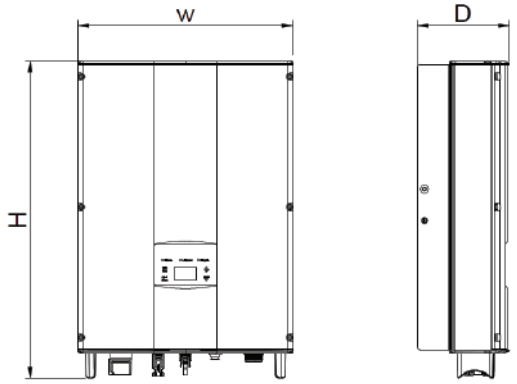


Figure 5: Dimensions de l'onduleur

Tableau des dimensions et du poids net de l'onduleur

Modèle	H (mm)	W (mm)	D (mm)	Poids net (kg)
4kW / 4kW–S / 5kW / 5kW-S / 6kW	530	360	150	20
8kW / 10kW	575	360	150	23

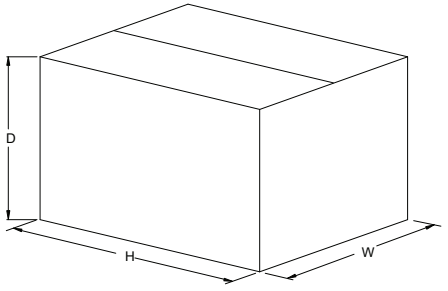


Figure 6: Dimensions des paquets de papier

Tableau des dimensions et du poids brut des paquets

Modèle	H (mm)	W (mm)	D (mm)	Poids (kg)	Matériau d'emballage
4kW / 4kW–S / 5kW / 5kW-S / 6kW	630	470	284	22	Paper
8kW / 10kW	675	470	284	25	Paper

STOCKAGE :

Si l'onduleur n'est pas utilisé immédiatement, le stockage de l'onduleur doit répondre aux exigences suivantes :

- Ne pas retirer l'emballage extérieur.
- l'onduleur doit être stocké dans un endroit propre et sec, et empêcher l'érosion de la poussière et de la vapeur d'eau.
- La température de stockage doit être maintenue à -40°C~+70°C, et l'humidité relative doit être maintenue à 5%RH~95%RH.
- Il est recommandé d'empiler les onduleurs en fonction du nombre de couches d'empilage dans l'envoi d'origine. Placez l'onduleur avec précaution pendant l'empilage afin d'éviter les blessures ou les dommages matériels causés par la chute de l'équipement.
- Tenir à l'écart des substances chimiquement corrosives qui peuvent corroder l'onduleur.
- Des inspections périodiques sont nécessaires. Si des dommages sont constatés par des vers et/ou des rats, ou si l'emballage est endommagé, les matériaux d'emballage doivent être remplacés à temps.

Après un stockage de longue durée, les onduleurs doivent être inspectés et testés par du personnel qualifié avant d'être mis en service.

INSTALLATION

Ce chapitre décrit comment installer l'onduleur et le connecter au système solaire relié au réseau (y compris la connexion entre les modules solaires, le réseau public et l'onduleur). Lisez attentivement ce chapitre et assurez-vous que toutes les conditions d'installation sont assurées avant de procéder à l'installation. Seuls des électriciens qualifiés sont autorisés à installer l'onduleur.

INSPECTION AU DÉBALLAGE

L'onduleur a été soigneusement testé et rigoureusement contrôlé avant la livraison, mais des dommages peuvent tout de même survenir pendant le transport. Avant le déballage, vérifiez soigneusement si les informations sur le produit figurant dans la commande correspondent à celles de la plaque signalétique du carton d'emballage et si l'emballage du produit est intact. Si vous constatez un dommage quelconque, veuillez contacter la société de transport ou le fournisseur directement. Veuillez également fournir des photos du dommage pour bénéficier de notre service le plus rapide et le meilleur. Stocker le convertisseur à l'arrêt dans son emballage d'origine et prendre des mesures anti-humidité et anti-poussière.

Après avoir sorti l'onduleur de son emballage, vérifier les éléments suivants :

(1) Confirmer que le corps principal de l'onduleur est intact et ne présente aucun dommage ;

(2) Vérifier la présence du manuel d'utilisation, des accessoires d'interface et des accessoires d'installation dans le carton d'emballage ;

(3) Confirmer que les éléments livrables à l'intérieur de la boîte d'emballage sont intacts et complets ;

(4) Vérifier que les informations sur le produit figurant dans la commande sont conformes à celles de la plaque signalétique de l'onduleur ;

(5) La liste des livraisons standard est indiquée ci-dessous

Livraisons standard de l'onduleur :

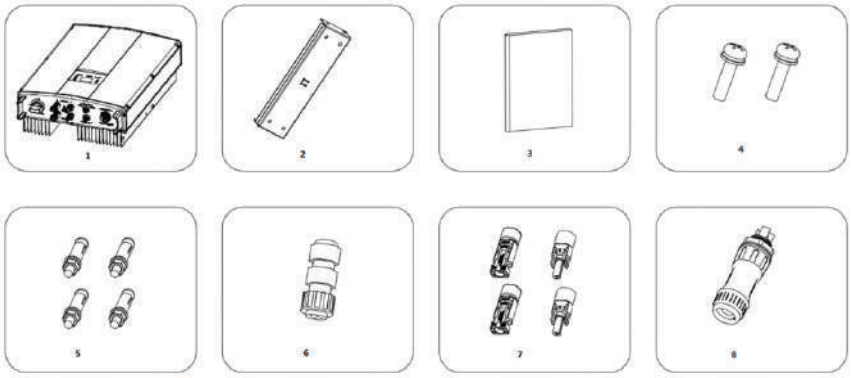


Figure 7: Contenu de la livraison

Tableau de la liste de livraison détaillée de l'onduleur monophasé

N°	Nom	Quantité
1	4kW / 4kW- S / 5kW / 5kW- S / 6kW / 8kW / 10kW Onduleur	1
2	Support d'installation	1
3	Manuel d'utilisation	1
4	Boulons d'assemblage M5*20	2
5	Boulons d'expansion M6*50	4
6	Connecteur de communication	1
7	Connecteur CC	2 pairs / 1pair（4kW- S、5kW- S）
8	Connecteur CA	1

AVANT L'INSTALLATION

Outils d'installation

Tableau de la liste des outils

N°.	Outils d'installation	Instruction
1	Marqueur	Mark the installation hole
2	Perceuse électrique	Percez des trous sur le support ou sur le mur.
3	Marteau	Frapper sur le boulon d'expansion
4	Clé à molette	Fixez le support d'installation
5	Tournevis hexagonal intérieur	Serrez la vis antivol et démontez la boîte de jonction CA.
6	Tournevis à tête fendue ou cruciforme	Câblage CA
7	Mégamètre	Mesurez la performance d'isolation et l'impédance de mise à la terre.
8	Multimètre	Vérifiez le circuit et mesurez la tension CA/CC
9	Fer à souder électrique	Soudez le câble de communication
10	Sertisseur de fil	Sertir la borne CC

LIEU D'INSTALLATION

Sélectionnez le site d'installation en fonction des exigences ci-dessous :

(1) La hauteur du lieu d'installation doit garantir que la ligne de vue est au même niveau que l'écran LCD pour visualiser les paramètres de l'onduleur de façon pratique.

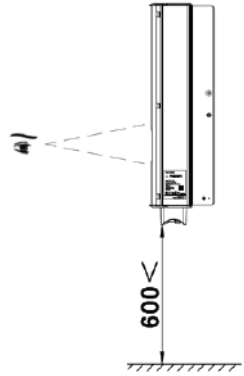


Figure 8: Hauteur de montage optimale

(2) Le site d'installation doit être bien ventilé et éloigné des gouttes de pluie ou de la lumière directe du soleil.
(3) Il doit y avoir un espace suffisant autour du site d'installation pour faciliter le démontage de l'onduleur et la convection de l'air.

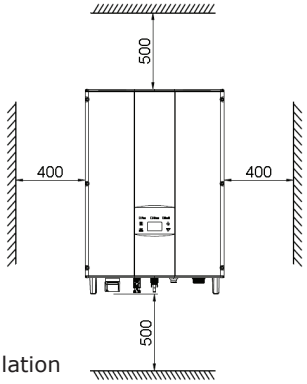


Figure 8 Espace d'installation

(4) La température ambiante de l'installation doit être de -25°C~60°C.
(5) Le site d'installation doit être éloigné des appareils électroniques qui peuvent générer de fortes interférences électromagnétiques.
(6) L'onduleur doit être installé sur une surface ferme et solide telle qu'un mur ou un support métallique.
(7) La surface d'installation doit être verticale par rapport à la ligne horizontale.
(8) L'installation doit garantir une mise à la terre fiable de l'onduleur, et le matériau du conducteur métallique de mise à la terre doit correspondre au matériau métallique réservé à la mise à la terre de l'onduleur.
Installez l'onduleur verticalement ou en arrière ≤ 15° pour faciliter la dissipation de la chaleur. Ne pas incliner l'onduleur vers l'avant, à l'horizontale, à l'envers, par-dessus l'arrière et rouler lors de l'installation de l'onduleur.

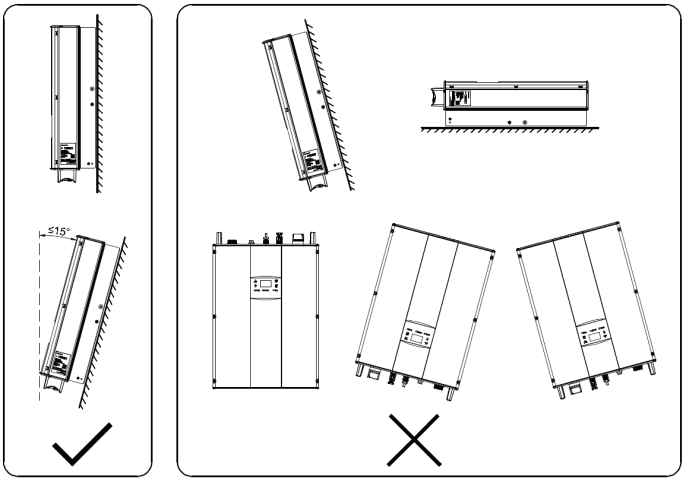


Figure 9: Position d'installation

	● N'ouvrez pas le couvercle de l'onduleur et ne remplacez aucune pièce, car un onduleur incomplet peut provoquer un choc électrique et endommager l'appareil pendant son fonctionnement.

SPÉCIFICATION DES CÂBLES

Afin de réguler et d'être compatible avec les spécifications du connecteur CA/CC ou du bornier de l'onduleur, les exigences ci-dessous concernant le câble CA/CC connecté à l'onduleur correspondant doivent être respectées :

Tableau des spécifications du câble

Modèle d'onduleur	Côté CC		Côté CA	
	Section minimale mm² (longueur≤50m)	Section minimale mm² (Longueur>50m)	Section minimale mm² (Longueur≤50m)	
			L	N/PE
4kW / 4kW-S / 5kW / 5kW-S / 6kW / 8kW / 10kW	4	6	4	4

MICRO-DISJONCTEUR

Afin d'assurer un fonctionnement sûr de l'onduleur et des circuits, il est recommandé de configurer un micro-disjoncteur ou un fusible correspondant sur le côté entrée CC et le côté sortie CA de l'onduleur. Le tableau ci-dessous présente les spécifications recommandées pour le micro disjoncteur :

Tableau des spécifications du micro disjoncteur

Modèle d'onduleur	Côté CC	Côté CA
	Spécifications recommandées pour les disjoncteurs	Spécifications recommandées pour les disjoncteurs
4kW / 4kW-S / 5kW / 5kW-S / 6kW	DC1000V, C16A, 2P	AC400V, C16A, 4P
8kW / 10kW	DC1000V, C25A, 2P	AC400V, C25A, 4P

INSTALLATION MÉCANIQUE

Le matériel de fixation de l'onduleur et le mode d'installation varient selon les différents sites d'installation. Il est recommandé d'installer l'onduleur verticalement sur un mur solide ou un support métallique. Nous prenons ici l'exemple d'une installation murale pour présenter les questions d'installation de l'onduleur.

Comme le montre la figure 10, l'installation globale de l'onduleur doit être verticale par rapport à la surface horizontale.

INSTALLATION DES ONDULEURS

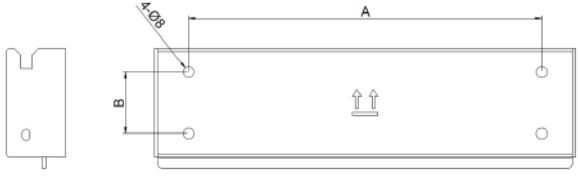


Figure 10 : Support d'installation de l'onduleur

Tableau des spécifications du micro disjoncteur

Modèle d'onduleur	Espacement du trou d'installation
	A(mm)*B(mm)
4kW / 4kW-S / 5kW / 5kW-S / 6kW / 8kW / 10kW	260*45

Les procédures d'installation de l'onduleur sont indiquées ci-dessous :
(1) Utilisez la plaque de positionnement du poinçon dans la boîte d'emballage pour déterminer la position du poinçon.

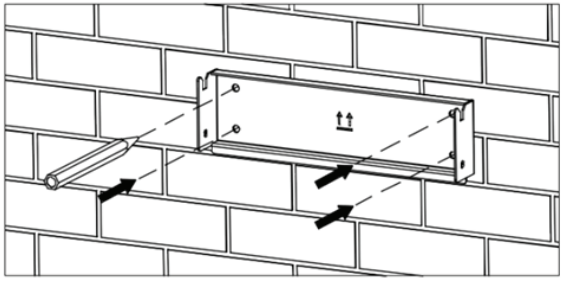


Figure 10: Détermination de la position du poinçon

(2) Percez 4 trous d'installation sur le mur avec une perceuse électrique.
Comme le montre la figure 11

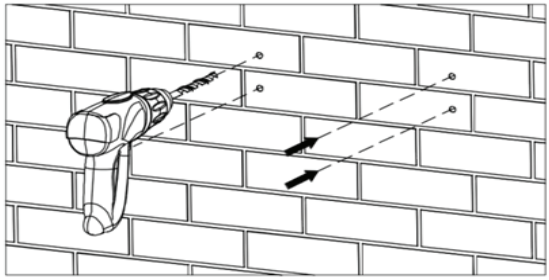


Figure 11: Perçage

(3) Fix the expansion bolts to the 4 installation holes with hammer, as shown in Figure 12.

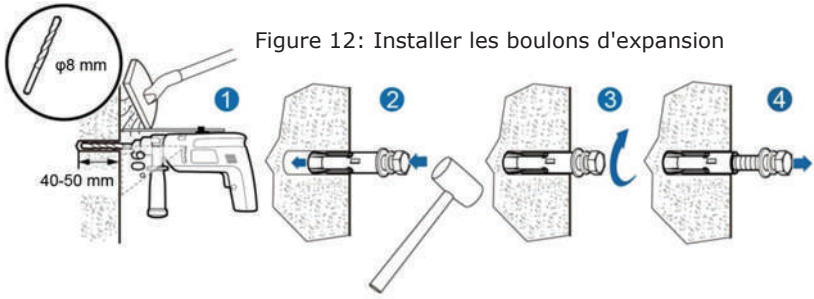


Figure 12: Installer les boulons d'expansion

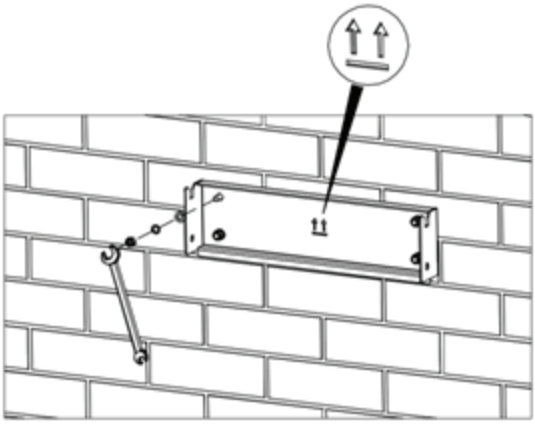


Figure 13: Fixer le support d'installation

(4) Fix the installation bracket onto the expansion bolts and ensure the installation is firm enough(tightening torque is 13N•m). As shown in Figure 13.

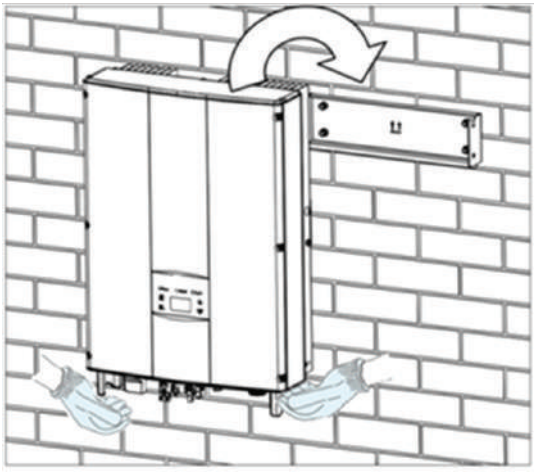


Figure 14: Installation de l'onduleur

(5) Accrochez l'onduleur sur le support d'installation et assurez-vous que l'installation est suffisamment solide. Comme le montre la Figure 14.

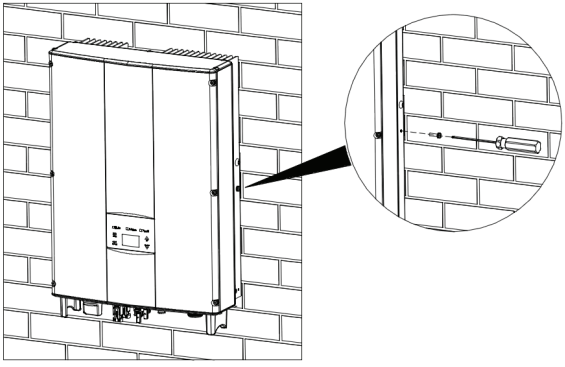


Figure 15: Installation des boulons M5X20

(6) S'assurer que l'onduleur est correctement installé et serrer les boulons M5x20 dans les trous de vis sur les côtés gauche et droit de l'onduleur (le couple de serrage est de 3N-m). Comme indiqué sur la Figure 15.

INSTALLATION DU CÂBLAGE

Cette section présente le contenu détaillé et les précautions de sécurité liées au raccordement électrique. La figure 16 est le schéma de connexion du système PV connecté au réseau.

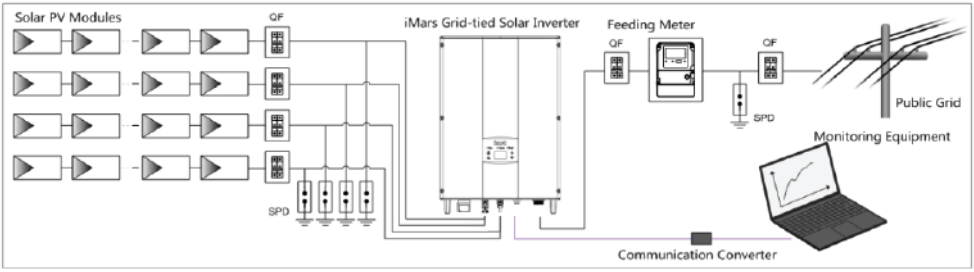


Figure 16: Schéma du système PV connecté au réseau

⚠	● Le raccordement électrique doit être effectué par des techniciens professionnels car une mauvaise opération peut entraîner des dommages à l'appareil, des blessures physiques ou même la mort pendant le fonctionnement du système. ● Toute l'installation électrique doit être conforme aux réglementations nationales et locales en matière de sécurité électrique. ● Assurez-vous que tous les câbles sont fermement installés conformément aux exigences de sécurité spécifiées et qu'ils sont exempts de tout dommage. ● Il est interdit de fermer les disjoncteurs CA et CC avant que l'onduleur ne soit connecté électriquement.
Remarque	● Lire et suivre les instructions fournies dans cette section. Respecter strictement les exigences lors de l'utilisation. ● Toujours respecter la tension et le courant nominaux définis dans ce manuel. Ne dépassez jamais ces limites.

INSTALLATION DU CÂBLAGE

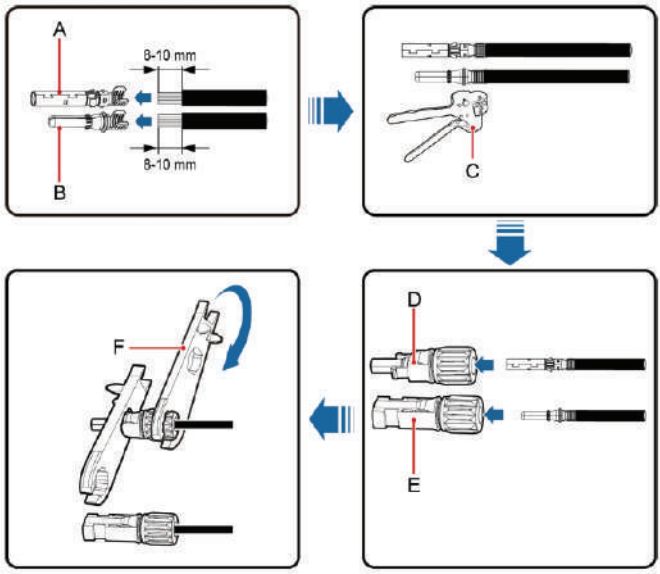


Figure 17: Connecteur MC4 CC et connexion de la chaîne PV

Les procédures de connexion de la chaîne PV à l'entrée CC de l'onduleur sont présentées ci-dessous.

⚠	● Les chaînes PV ne peuvent être connectées à l'onduleur qu'après la prise de mesures de protection conformes aux réglementations électriques locales et le respect des paramètres techniques de ce manuel.

(2) Connectez les câbles de sortie des modules solaires au connecteur CC de l'onduleur comme le montre la Figure 17. Retirez la couche d'isolation du câble CC sur environ 8-10 mm. Insérez la partie conductrice dans la position appropriée du connecteur, sertissez la borne CC MC4 et serrez l'écrou avec un couple de 2,5-3Nm. Assurez-vous que les pôles des modules solaires sont correctement et bien connectés aux connecteurs.
(3) Une fois le connecteur CC connecté, utilisez un multimètre pour mesurer la tension de la chaîne d'entrée CC, vérifiez la polarité du câble d'entrée CC et assurez-vous que la tension de chaque chaîne se situe dans la plage autorisée par l'onduleur, comme indiqué sur la Figure 18.

⚠	● La chaîne PV connectée à l'onduleur série doit adopter le connecteur CC configuré spécialement pour l'onduleur, ne pas utiliser d'autres dispositifs de connexion sans l'autorisation de notre société, sinon des dommages à l'appareil, un fonctionnement instable ou un incendie peuvent se produire et notre société ne s'engage pas à assurer la qualité ni à assumer une quelconque responsabilité directe ou conjointe à cet égard.

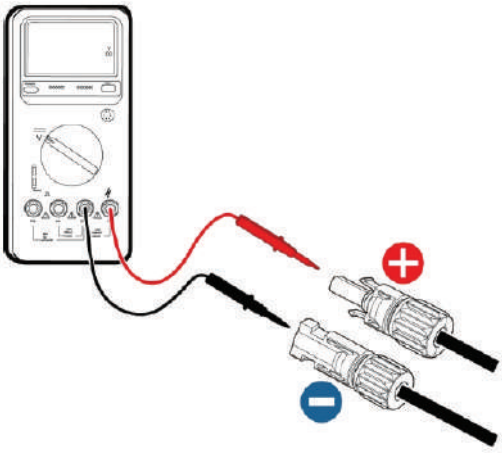


Figure 18: Mesure de la tension d'entrée CC

(4) Connectez la chaîne PV à l'onduleur et assurez-vous qu'elle est bien fixée.
(5) Lorsque vous retirez le connecteur CC de l'onduleur, insérez la tête du tournevis droit dans le trou en relief au milieu du connecteur, et forcez l'extrémité mobile du connecteur à sortir.

CONNEXION AU RÉSEAU

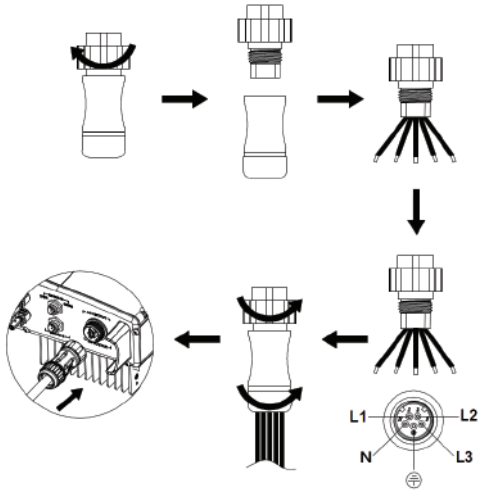


Figure 19: Connexion CA de l'onduleur monophasé

Tableau de description du connecteur CA

Inverter AC connector	Three phase grid	Note
1	L1 (A)	
2	L2 (B)	
3	L3 (C)	
N	N	
⏚	PE	Must be connected

(1) Avant de connecter le câble de réseau CA triphasé CA à l'onduleur, prenez des mesures de protection contre la foudre et les courts-circuits conformément aux codes de sécurité électrique locaux.
(2) Connectez et fixez les conducteurs L1, L2, L3, N et PT du réseau triphasé à la borne CA avec un couple de 0,5 Nm. Serrez la borne avec un couple de serrage de 2,5-3 Nm, puis connectez la borne au port CA de l'onduleur.

⚠	• Seuls les câbles qualifiés selon les lois et règlements locaux en matière de sécurité électrique et conformes aux paramètres techniques de ce manuel sont autorisés à se connecter à l'onduleur. • L'onduleur ne peut être connecté au réseau électrique qu'avec l'autorisation de la compagnie d'électricité locale.

FONCTIONNEMENT
INSPECTION AVANT L'UTILISATION

Les éléments suivants doivent être strictement vérifiés avant de faire fonctionner l'onduleur PV connecté au réseau (y compris, mais sans s'y limiter, les éléments suivants) :
(1) S'assurer que le site d'installation répond aux exigences mentionnées dans la section "avant l'installation" pour faciliter l'installation, la dépose, le fonctionnement et la maintenance.
(2) S'assurer que l'installation mécanique est conforme aux exigences.
(3) Assurez-vous que l'installation électrique est conforme aux exigences.
(4) Assurez-vous que tous les interrupteurs sont éteints.
(5) S'assurer que la tension en circuit ouvert du module PV est conforme aux exigences des paramètres du côté CC de l'onduleur dans le tableau suivant : Paramètres techniques
(6) Assurez-vous que toutes les précautions de sécurité électrique sont clairement identifiées sur le site d'installation.

	● Afin d'assurer un fonctionnement sûr, normal et stable du système de production d'énergie PV, tous les systèmes de production d'énergie PV connectés au réseau nouvellement installés, rénovés et réparés, ainsi que leur onduleur connecté au réseau, doivent être inspectés avant de fonctionner.

ONDULEUR CONNECTÉ AU RÉSEAU EN FONCTIONNEMENT

Démarrez l'onduleur en suivant les étapes ci-dessous pour obtenir un fonctionnement de l'onduleur connecté au réseau :

Note	● Il est nécessaire de sélectionner le pays pour définir la norme de connexion au réseau pendant le fonctionnement initial de l'onduleur. ● Maintenir l'état de mise sous tension de l'onduleur pendant au moins 30 minutes, et terminer la charge de la batterie de l'horloge intégrée de l'onduleur pour s'assurer que l'horloge peut fonctionner normalement !

(1) Confirmez que les exigences de l'inspection avant le fonctionnement sont remplies ;
(2) Fermez le disjoncteur du côté AC du réseau public de l'onduleur ;
(3) Fermez l'interrupteur CC intégré de l'onduleur ;
(4) Fermez l'interrupteur du côté de l'entrée CC de la chaîne PV ;
(5) Observer l'état des indicateurs LED de l'onduleur et les informations affichées sur l'écran LCD. Se reporter à la section "Fonctionnement" pour connaître l'état de l'indicateur LED et les informations affichées par le LCD.
(6) Réglez l'heure de l'onduleur en fonction de l'heure locale, reportez-vous à la section Paramètres pour terminer la configuration de l'heure.
(7) Le mode d'entrée CC par défaut de l'onduleur est le mode "indépendant" ; se reporter à la section Paramètres pour vérifier et régler le mode d'entrée CC.

◐ Le voyant vert clignote, les autres voyants sont éteints : L'onduleur est sous tension et en cours d'auto-inspection, attendez une lumière suffisante pour remplir les conditions de connexion au réseau ;
● L'indicateur vert de fonctionnement est allumé, les autres indicateurs sont éteints : L'onduleur est en cours de production d'énergie après une auto-inspection: mise en service réussie.
L'indicateur "Warn" ou "Fault" est allumé ou clignote : l'onduleur est sous tension mais un défaut du système se produit. Se reporter à l'écran LCD pour vérifier le code d'erreur sur l'affichage LCD, arrêter l'onduleur conformément à la procédure d'arrêt et éliminer les défauts.

ARRÊTER

Lorsqu'il est nécessaire d'effectuer une maintenance hors tension, une inspection et une élimination des défauts sur l'onduleur, arrêter l'onduleur en suivant les étapes suivantes :
(1) Débrancher le disjoncteur du côté CA du réseau public de l'onduleur ;
(2) Déconnecter l'interrupteur CC intégré de l'onduleur ;
(3) Déconnecter l'interrupteur du côté entrée CC de la chaîne PV ;
(4) Attendre au moins 5 minutes jusqu'à ce que les parties internes de l'onduleur soient complètement déchargées, puis effectuer l'opération d'arrêt.

ENTRETIEN QUOTIDIEN

Dans un système de production d'énergie solaire PV connecté au réseau, l'onduleur solaire connecté au réseau de série peut réaliser une production d'énergie connectée au réseau et des opérations d'arrêt/démarrage automatiquement de jour comme de nuit, quelle que soit la saison.

ENTRETIEN PÉRIODIQUE DE L'ONDULEUR

Rubrique	Mode d'inspection	Période de maintenance
Sauvegarder les données de fonctionnement de l'onduleur	Adopter un logiciel de surveillance pour lire les données de l'onduleur en temps réel, et sauvegarder périodiquement les données enregistrées par le logiciel de surveillance. Enregistrez les données de fonctionnement de l'onduleur, les paramètres et les journaux dans le fichier, vérifiez le logiciel de surveillance et la configuration des différents paramètres de l'onduleur.	Une fois par trimestre
État de fonctionnement de l'onduleur	Observez si l'onduleur est bien installé, s'il est endommagé ou déformé. Écouter les bruits anormaux pendant le fonctionnement de l'onduleur. Vérifier les variables pendant le fonctionnement du système connecté au réseau. Vérifier si la température du boîtier de l'onduleur est normale et surveiller les conditions de chauffage à l'aide d'une caméra thermique.	Une fois par semestre
Nettoyer l'onduleur	Vérifier l'humidité relative et la poussière autour de l'onduleur, et nettoyer l'onduleur si nécessaire.	Une fois par semestre
Raccordement électrique	Vérifier si la connexion du câble du système et le bornier de l'onduleur sont desserrés, si oui, les fixer à nouveau de la manière spécifiée dans la section "Installation". Vérifiez si le câble est endommagé et si la peau du câble en contact avec la surface métallique est coupée.	Une fois par semestre
Maintenance et remplacement du ventilateur de refroidissement	Observez si l'entrée/sortie d'air est normale ; vérifiez s'il n'y a pas de fissures sur les pales du ventilateur. Écoutez si un bruit anormal se produit pendant la rotation du ventilateur. Nettoyez l'entrée/sortie d'air si nécessaire ; si le ventilateur présente une anomalie, remplacez-le immédiatement.	Une fois par semestre
Fonction de sécurité	Vérifiez l'écran LCD de l'onduleur et la fonction d'arrêt du système.	Une fois par semestre

GUIDE D'ENTRETIEN

NETTOYER L'ONDULEUR

La procédure de nettoyage est la suivante :
(1) Déconnecter les interrupteurs d'entrée et de sortie.
(2) Attendre dix minutes.
(3) Nettoyer la surface et l'entrée/sortie d'air de l'onduleur avec une brosse douce ou un aspirateur ;
(4) Répétez l'inspection avant le fonctionnement * contenu du fonctionnement.
(5) Redémarrez l'onduleur.

NETTOYAGE DU VENTILATEUR (POUR LES ONDULEURS 8KW ET 10KW)

Les étapes de nettoyage sont indiquées ci-dessous :
(1) Débranchez la connexion du côté de l'entrée et de la sortie ;
(2) Attendez dix minutes ;
(3) Démonter l'onduleur en suivant les mêmes procédures que celles de la section Installation, mais dans l'ordre inverse ;
(4) Retirez les vis et les couvercles du bac de refroidissement ou du boîtier du ventilateur.

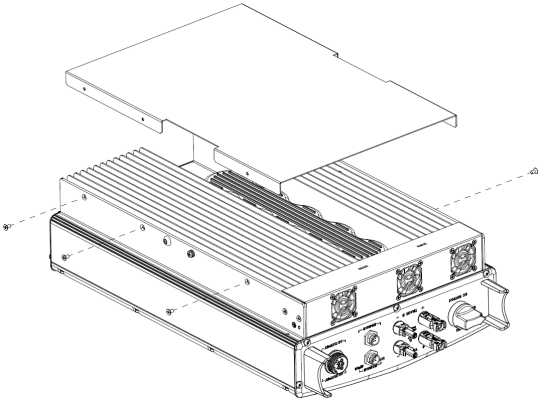


Figure 20: Démontage du bac de refroidissement

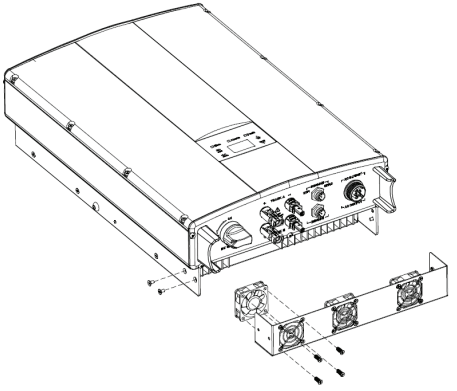


Figure 21: Démontage du boîtier du ventilateur

(5) Nettoyer le bac de refroidissement et le ventilateur de l'onduleur avec une brosse douce ou un aspirateur.
(6) Installez les vis et les couvercles du bac de refroidissement ou du boîtier du ventilateur à leur emplacement d'origine.
(7) Réinstallez l'onduleur à son emplacement d'origine conformément à la section d'installation.
(8) Répétez les opérations de la section Inspection avant fonctionnement.
(9) Redémarrez l'onduleur.

REMPLACEMENT DU VENTILATEUR

Si l'onduleur subit une température élevée ou si un bruit anormal se produit pendant la rotation du ventilateur, remplacez le ventilateur. Notez que le ventilateur ne doit être remplacé que par des professionnels.

	● Arrêtez l'onduleur avant toute opération de maintenance et déconnectez toutes les entrées d'alimentation de l'onduleur. ● Avant d'effectuer l'opération de maintenance, attendez au moins 10 minutes que les condensateurs internes de l'onduleur soient complètement déchargés, ● Le ventilateur ne peut être entretenu et remplacé que par des électriciens professionnels.

Comment remplacer

(1) Débranchez le disjoncteur CA ;
(2) Mettez l'interrupteur CC en position "OFF" ;
(3) Attendez au moins 10 minutes ;
(4) Débranchez tous les câbles électriques au bas de l'onduleur ;
(5) Soulevez l'onduleur avec l'aide d'autres personnes et retirez l'onduleur du mur ;
(6) Placez l'onduleur sur la plate-forme de travail ;
(7) Démontez le boîtier du ventilateur comme indiqué sur la figure 21 ;
(8) Démonter le ventilateur endommagé de l'onduleur comme indiqué à la Fig 22, puis installer le nouveau ventilateur à sa position d'origine, et connecter le câble d'alimentation et de commande du ventilateur ;

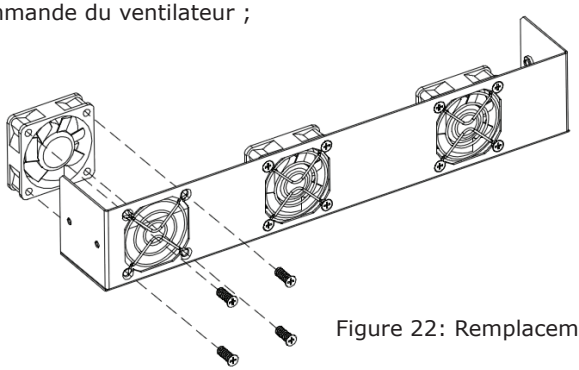


Figure 22: Remplacement du ventilateur

(9) Installez les vis et les couvercles du bac de refroidissement ou du boîtier du ventilateur dans leur position d'origine ;
(10) Réinstallez l'onduleur de vitesse dans sa position d'origine conformément à la section 4 ;
(11) Répétez les opérations de la section d'inspection avant la mise en service ;
(12) Redémarrez l'onduleur.

Note	● Ne pas démarrer l'onduleur immédiatement s'il se met en alarme et s'arrête. Déterminez la cause et confirmez que tous les défauts ont été éliminés avant de redémarrer. Les inspections doivent être effectuées dans le strict respect des procédures.

PANNEAU D'AFFICHAGE ET DE COMMANDE

Ce chapitre décrit l'affichage du panneau et la manière d'opérer sur le panneau, ce qui implique l'écran LCD, les indicateurs LED et le panneau de commande.

INDICATEURS LED

Il y a trois indicateurs LED sur le panneau :
(1) "Run", indicateur de fonctionnement, vert ;
(2) "Warn", indicateur de défaut récupérable, jaune ;
(3) "Fault", indicateur de défaut irrécupérable, rouge.

L'état de l'onduleur comprend 6 états : veille, auto-inspection, production d'énergie, défaut récupérable et défaut irrécupérable ; les indicateurs LED sont allumés, éteints et clignotants. Veuillez vous référer au tableau ci-dessous pour connaître l'état détaillé de l'onduleur et des indicateurs LED.

"○": LED indicator is off;

"◐" (green), "◐" (yellow), "◐" (red): LED indicator is blinking at every 0.25S or 0.5S;

"●(Green), "●" (yellow), "●" (red): LED indicator is on.

Tableau de l'état du variateur et des indicateurs LED

État de l'onduleur	Indicateurs LED	Description
État de Veille	○ Exécuter ○ Avertir ○ Défaut	Pas d'alimentation. Tous les indicateurs sont éteints.
Inspection automatique	◐ Exécuter ○ Avertir ○ Défaut	Pas d'alimentation. Tous les indicateurs sont éteints.
Production d'énergie	● Exécuter ○ Avertir ○ Défaut	Le voyant vert clignote toutes les 0,25 sec., les autres sont éteints.
	● Exécuter ● Avertir ○ Défaut	(1) Production d'énergie reliée au réseau, mais défaut d'horloge (A007) ; (2) Production d'électricité raccordée au réseau, mais défaut d'entrée CC (A001 ou E001) ; (3) Production d'énergie reliée au réseau, mais défaut du ventilateur (E006 ou E012) ; Les indicateurs vert et jaune restent allumés, les autres sont éteints.

Défaut	◯ Exécuter ◐ Avertir ◯ Défaut	Onduleur en veille. Défaut du réseau public (A001, A003, A004, A005ou A006) ; Le voyant jaune clignote toutes les 0,5 sec., les autres sont éteints.
	◯ Exécuter ● Avertir ◯ Défaut	(1) Onduleur en veille. Température anormale (E006) ; (2) Onduleur En Veille Récupérable. Défaut de l'entrée CC (E001) ; Le voyant jaune reste allumé, les autres sont éteints
Défaut irrécupérable	◯ Exécuter ◯ Avertir ◐ Défaut	Défaut matériel ou logiciel (E003, E004, E005, E008, E009, E011, E013 ou E015). Désaccoupler l'onduleur du système avant la maintenance.
	◯ Exécuter ◯ Avertir ● Défaut	Fuite de courant ou puissance de sortie non qualifiée de l'onduleur (E007, E010, E014, E017, E018 ou E020). Le voyant rouge clignote toutes les 0,5 sec., les autres sont éteints.
Arrêt de l'artificiel	● Exécuter ● Warn ● Défaut	Arrêt après la communication ou la commande du panneau. Tous les indicateurs sont allumés.
Note	Veuillez vous référer aux informations détaillées sur les pannes et le dépannage pour plus d'informations.	

PANNEAU DE COMMANDE

Il y a 4 boutons sur le panneau :
(1) "ESC", sortie et retour ;
(2) "∧", retour à la première page et augmentation des données ;
(3) "∨" pour passer à la page suivante et diminuer les données ;
(4) "ENT", entrée.

LCD SCREEN

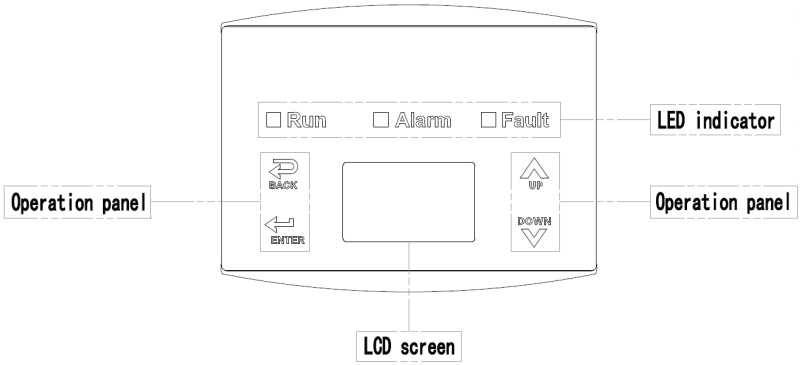


Figure 23: Panneau de commande

Toutes les informations sont affichées sur l'écran LCD. L'éclairage de fond de l'écran LCD s'éteint pour économiser l'énergie si aucun bouton n'est actionné pendant 15 secondes. Mais il peut être activé en appuyant sur n'importe quel bouton. Appuyez sur "ENT" pour accéder à l'interface principale si le rétro-éclairage est activé. Tous les paramètres peuvent être visualisés et réglés sur l'interface.

Il y a une interface principale et des interfaces de menu sur l'écran LCD, dont l'interface principale est l'interface par défaut après la mise sous tension, tandis que les interfaces de menu sont utilisées pour regarder et régler les paramètres ou d'autres opérations manuelles, telles que la visualisation des paramètres de surveillance, l'enregistrement de l'historique, les informations du système, les statistiques et les informations sur les défauts et le réglage de la langue affichée, de l'heure, de l'adresse de communication, du mot de passe et des valeurs par défaut.

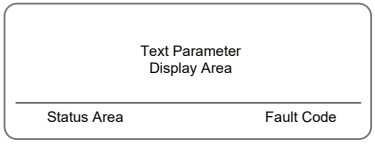


Figure 24: Interface principale

L'interface principale de l'écran LCD est illustrée à la Figure 24 :
(1) La courbe affiche la variation de puissance à la date du jour ;
(2) Les mots sur l'écran affichent les paramètres clés actuels de l'onduleur. Trois lignes de mots sont affichées à la fois, mais si l'onduleur est en fonctionnement ou en état de veille, les mots avancent toutes les 3 secondes. L'utilisateur peut appuyer sur " ^ " ou " v " pour rechercher librement les informations ;
(3) La zone d'affichage de l'état affiche l'état de fonctionnement actuel de l'onduleur, qui peut afficher l'état " auto-inspection ", " production d'énergie connectée au réseau ", " alarme ", " défaut " et " arrêt " ;
(4) Code de défaut dynamique et entrée de menu. Lorsque la zone d'affichage de l'état affiche "alarme" ou "défaut", la zone de code de défaut dynamique affiche le code de défaut correspondant (jusqu'à 8 codes de défaut).

FONCTIONNEMENT DES FONCTIONS

La plupart des paramètres peuvent être visualisés et réglés sur l'écran LCD et le panneau de commande.

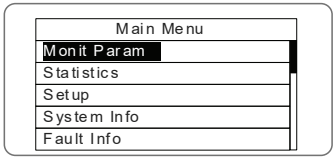


Figure 25: Interface principale

PARAMÈTRES DE SURVEILLANCE

Appuyez sur "^" et "v" dans l'interface principale pour sélectionner "Monit Param", puis appuyez sur "ENT" pour afficher les paramètres illustrés à la Figure 26. Passez à la page précédente ou suivante en appuyant sur "^" et "v" et revenez en appuyant sur "ESC".

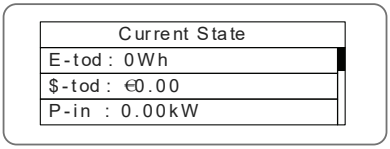


Figure 26: Paramètres de surveillance

HISTOIRE

Appuyez sur "∧" et "∨" dans l'interface principale pour sélectionner "History", puis appuyez sur "ENT" pour afficher les paramètres illustrés à la Figure 27.

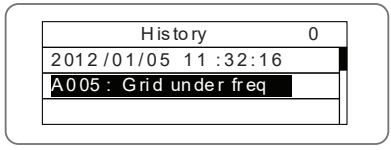


Figure 27: Paramètres d'historique

L'enregistrement historique peut afficher 32 informations historiques, appuyez sur les touches "∧" ou "∨" pour consulter les informations historiques, appuyez sur "ESC" pour revenir. Le numéro dans le coin supérieur droit de la première ligne est le numéro de l'enregistrement historique, la deuxième ligne (comme indiqué sur la figure 27) affiche la date et l'heure de l'apparition ou du rétablissement du défaut, et la troisième ligne affiche des informations détaillées sur le code du défaut. Lorsque la troisième ligne affiche la couleur inverse, cela indique que le défaut s'est produit, sinon il s'agit du rétablissement du défaut.

STATISTIQUES

Appuyez sur "∧" et "∨" dans l'interface principale pour sélectionner "Statistiques".

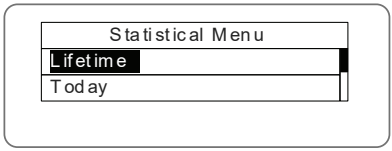


Figure 28: Informations statistiques

Les informations du tableau ci-dessous peuvent être consultées dans le menu statistique.

Tableau des informations statistiques

Contenu	Détails
Durée de vie	Durée totale de fonctionnement, puissance totale produite, puissance totale économisée, réduction totale de CO2 pendant la durée de vie.
Statistiques journalières	Puissance totale produite, puissance totale économisée, puissance de pointe et réduction totale de CO2 pour la journée en cours.

RÉGLAGES DES PARAMÈTRES

Appuyez sur "∧" et "∨" dans l'interface principale pour sélectionner le "Menu de configuration", puis appuyez sur "ENT" pour afficher les paramètres illustrés dans la Figure 29.

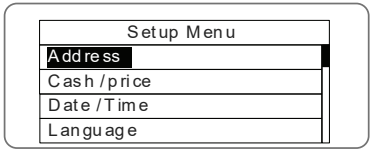
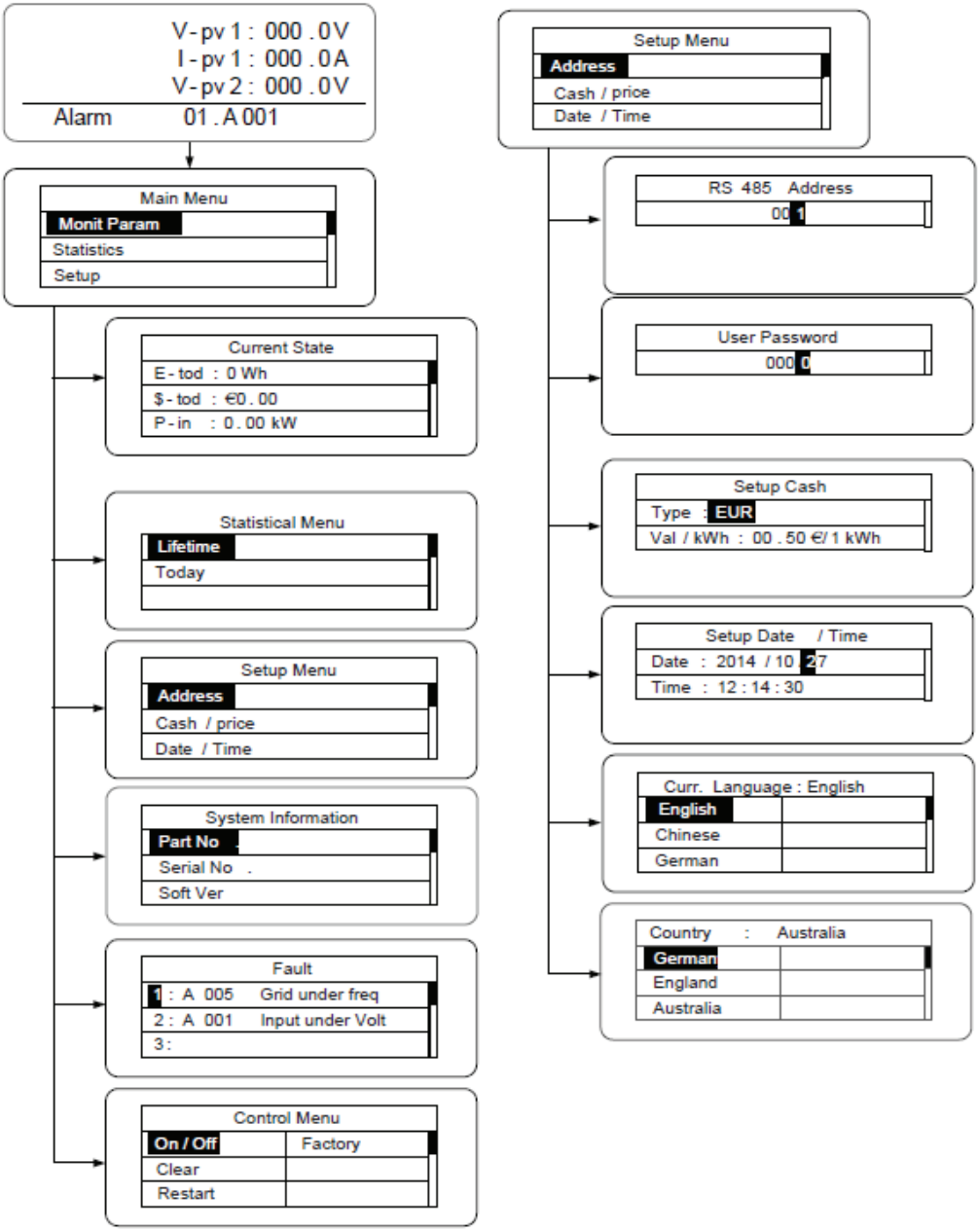


Figure 29: Informations sur les paramètres

Le "Menu de configuration" permet de régler les paramètres indiqués dans le tableau des paramètres.

MENUS LCD :



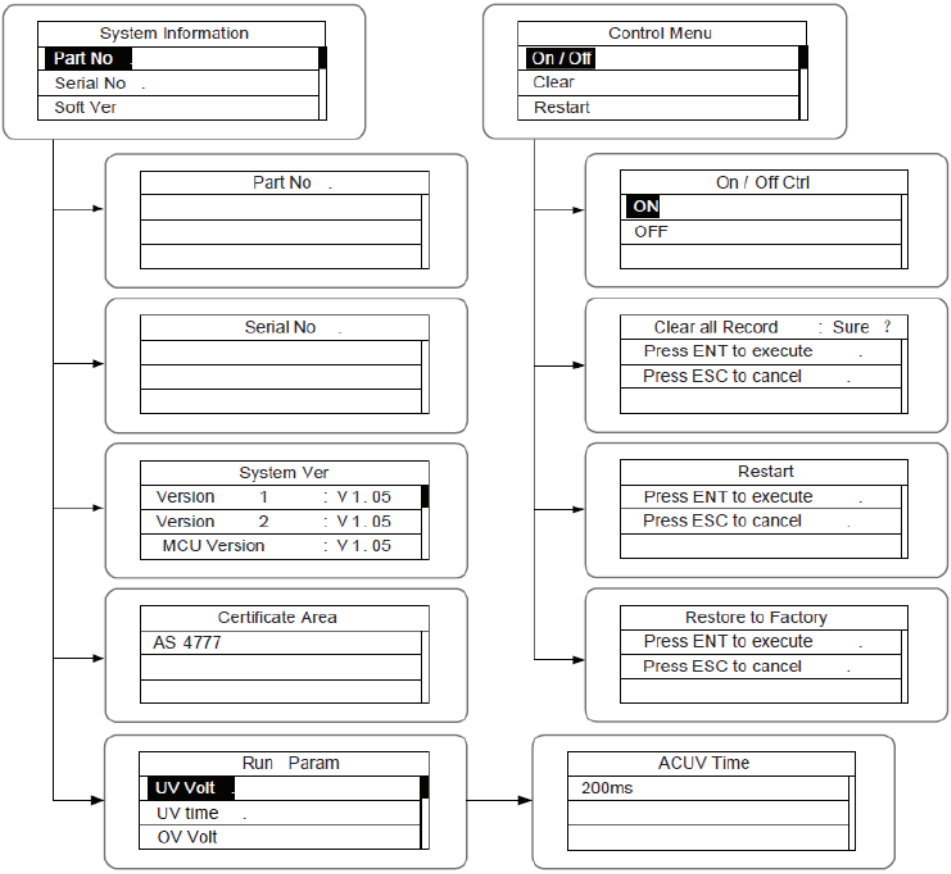
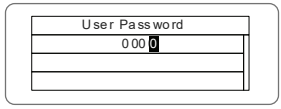
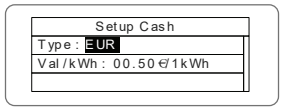
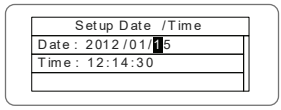
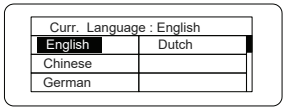
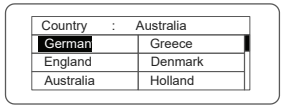
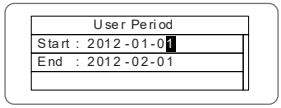
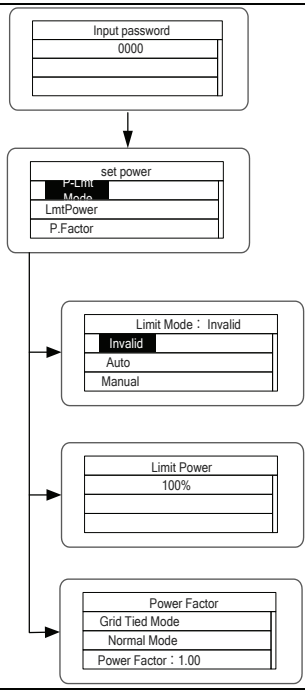
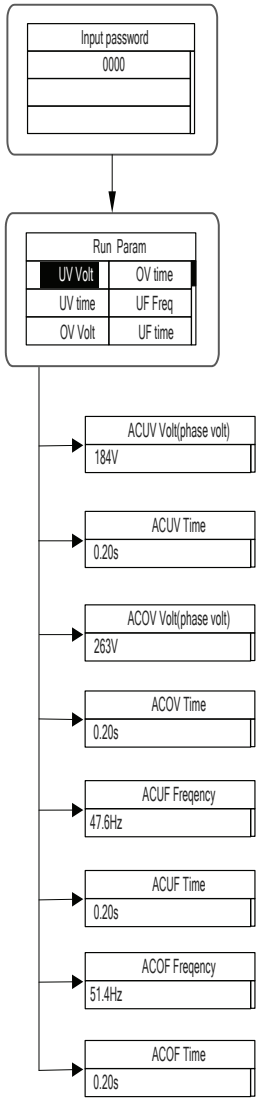


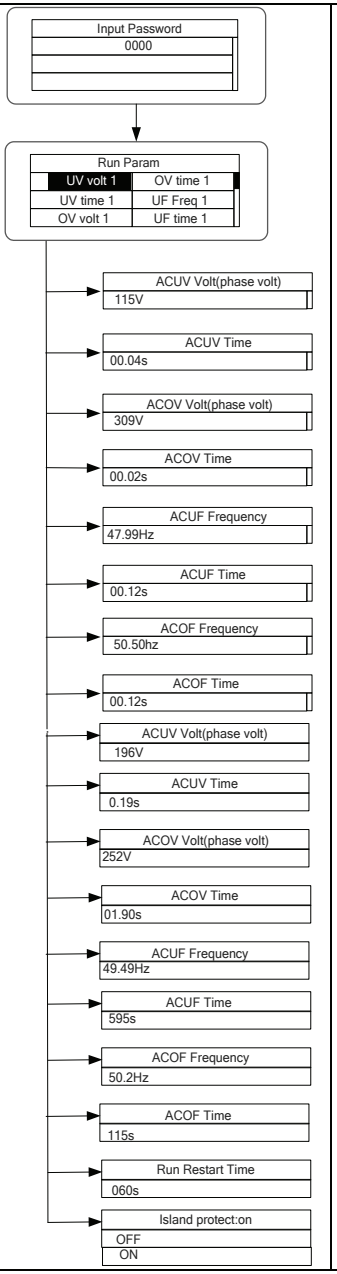
Tableau 6-3: Paramètres de réglage

Élément de réglage	Affichage LCD	Instruction
Adresse RS485	RS485 Address 0011	Entrez dans l'interface et modifiez les données en appuyant sur "^" ou "v". Appuyez ensuite sur "ENT" pour passer au bit suivant. Après avoir édité les trois bits, appuyez sur "ENT" pour sauvegarder l'édition et appuyez sur "ESC" pour sortir.

Mot de passe utilisateur		Entrez dans l'interface et éditez les données par "∧" ou "∨". Puis appuyez sur "ENT" pour passer au bit suivant. Après avoir modifié les quatre bits, appuyez sur "ENT" pour sauvegarder l'édition et appuyez sur "ESC" pour sortir. Le mot de passe par défaut est "0000" ; l'utilisateur peut entrer dans l'interface de réglage sans mot de passe. Si le mot de passe n'est pas "0000", l'utilisateur peut entrer dans l'interface de paramétrage avec un mot de passe.
Configuration de la monnaie		Entrez dans l'interface et modifiez le type de devise et l'argent en appuyant sur "∧" ou "∨". Appuyez ensuite sur "ENT" pour passer à la ligne suivante. Après avoir modifié les quatre bits, appuyez sur "ENT" pour enregistrer l'édition et appuyez sur "ESC" pour quitter. Les types de devises comprennent EUR, nPOD, CNY et USD.
Configuration de la date et de l'heure		Entrez dans l'interface et modifiez la date et l'heure en appuyant sur "∧" ou "∨". Appuyez ensuite sur "ENT" pour passer à la ligne suivante. Après avoir modifié les quatre bits, appuyez sur "ENT" pour enregistrer l'édition et appuyez sur "ESC" pour quitter.,
Langue		Entrez dans l'interface et éditez la langue par "∧" ou "∨". Ensuite, appuyez sur "ENT" pour enregistrer l'édition et appuyez sur "ESC" pour quitter.
Sélectionner le pays		Entrez dans l'interface et sélectionnez le pays par "∧" ou "∨". Ensuite, appuyez sur "ENT" pour sauvegarder l'édition et appuyez sur "ESC" pour sortir.

Période de l'utilisateur		Entrez dans l'interface et éditez la période de l'utilisateur par "^" ou "v". Appuyez ensuite sur "ENT" pour passer à l'étape suivante. Après l'édition, appuyez sur "ENT" pour enregistrer l'édition et appuyez sur "ESC" pour sortir. L'heure et la date de réglage doivent être postérieures au réglage du système, et l'heure de début doit être antérieure à l'heure de fin. La date et l'heure de réglage sont utilisées pour les informations statistiques.
Régler la puissance		Le mot de passe est nécessaire pour entrer dans l'interface de "Set power". Obtenez le mot de passe auprès du fournisseur si nécessaire. Il y a 3 sous-menus : ①P-Lmt Mode : invalide (la fonction de puissance limitée est invalide), auto (spécial pour monophasé), manuel (définir la limite de la valeur de sortie manuellement); ② LmtPower : cette fonction est seulement valide lorsque le P-Lmt Mode est manuel, le pourcentage est celui de la puissance nominale et la gamme de réglage est de 10% à 100% ; ③Power factor : comprend le modèle normal (valeur par défaut "1"), le mode avancé actuel et le mode de puissance.

Exécuter un paramètre		Le mot de passe est nécessaire pour entrer dans l'interface de "Run Param". Obtenez le mot de passe auprès du fournisseur si nécessaire. Réglez le Volt ACUV, le temps ACUV et d'autres paramètres dans les sous-menus correspondants, puis appuyez sur "∧" et "∨" pour modifier, et enfin appuyez sur " ENT " pour confirmer.

Paramètres de fonctionnemer		Réglez ACUV Volt, ACUV time et autres dans les sous-menus correspondants, puis appuyez sur "^" et "v" pour modifier, et enfin appuyez sur "ENT" pour confirmer. En général, il est seulement nécessaire de régler les valeurs ACUV2, ACOV2 et ACUF2 pour la protection ACUV, ACOV et ACUF. Et il est nécessaire de régler ACOF1 et ACOF2 ensemble pour la protection ACOF.

INFORMATIONS SUR LE SYSTÈME

Appuyez sur "∧" et "∨" dans l'interface principale pour sélectionner "Informations système", puis appuyez sur "ENT" pour afficher les paramètres illustrés à la Figure 30.

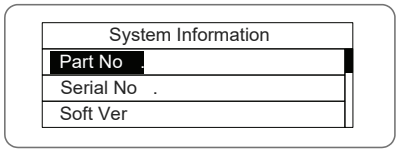


Figure 30: Informations sur le système

Les informations du système comprennent le "modèle du produit", le "numéro de série", la "version du logiciel" et la "version du certificat". Si vous sélectionnez "Version du logiciel" dans "Version du système", vous pouvez afficher la version 1 ou 2 de l'onduleur, la version du logiciel de l'unité centrale, le protocole RS485 et d'autres informations, comme le montre la Figure 31.

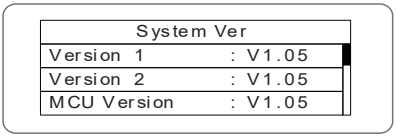


Figure 31: Version du système

DÉFAUTS

Appuyez sur "∧" et "∨" dans l'interface principale pour consulter l'historique des défauts, puis appuyez sur "ENT" pour afficher le sous-menu illustré à la Figure 32.

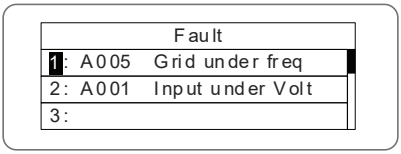


Figure 32: Informations sur les défauts

L'utilisateur peut appuyer sur les touches "∧" ou "∨" dans l'interface "informations sur les défauts" pour afficher les enregistrements des défauts. Les "informations sur les défauts" enregistrent les 8 derniers éléments d'information sur les défauts de l'onduleur, comme indiqué sur la figure 26. S'il n'y a pas de défaut actuellement, l'écran affiche "Pas de défaut". Voir l'historique pour plus d'informations sur les enregistrements de défauts ou la durée des défauts.

CONTRÔLE DE L'ONDULEUR

Appuyez sur "∧" et "∨" dans l'interface de commande, puis appuyez sur " ENT " pour afficher le sous-menu illustré à la figure 33.

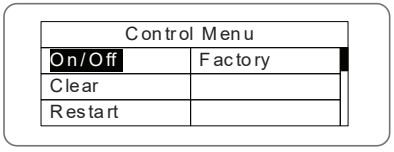
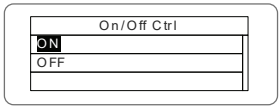
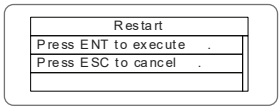
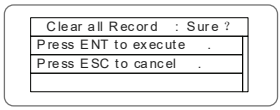
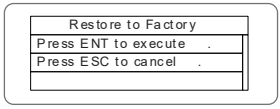


Figure 33: Interface de commande

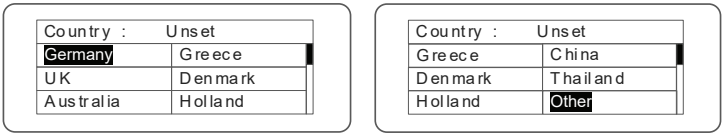
Se reporter au tableau ci-dessous pour des informations détaillées.

Tableau de contrôle de l'onduleur

Élément de commande	Affichage LCD	Instruction
Commande de marche/arrêt		Contrôlez la fonction "On/Off" par le biais du panneau. Appuyez sur "∧" et "∨" dans l'interface de commande pour sélectionner l'opération. Appuyez sur "ENT" pour valider l'opération et appuyez sur "ESC" pour revenir.
Redémarrage		Redémarrez l'onduleur à l'aide du panneau. Et sauvegardez tous les paramètres et l'enregistrement des opérations. Appuyez sur "ENT" pour assurer le redémarrage et l'onduleur commencera à s'auto-inspecter ou appuyez sur "ESC" pour revenir.
Effacement des données		Appuyez sur "ENT" pour effacer tous les enregistrements ou appuyez sur "ESC" pour revenir. L'option "Effacement des enregistrements" permet d'effacer tous les paramètres de réglage du panneau, de rétablir les réglages d'usine et de sauvegarder tous les enregistrements de l'historique des opérations.
Retour à l'usine		"Restore to factory" permet d'effacer tous les paramètres de réglage et les enregistrements de l'historique des opérations par le biais du panneau, et de restaurer les réglages d'usine. Appuyez sur "ENT" pour assurer l'effacement ou sur "ESC" pour revenir.

CHOIX DE LA CERTIFICATION DU RÉSEAU

Mettez l'onduleur sous tension par l'entrée CC pour la première fois ou après avoir restauré les paramètres d'usine, l'écran LCD affichera une liste de pays, demandant à l'utilisateur de choisir le pays d'utilisation. Comme indiqué ci-dessous :



Appuyez sur le bouton "∧" ou "∨" pour sélectionner le pays (voir le tableau ci-dessous), appuyez sur le bouton ENT pour terminer le réglage.

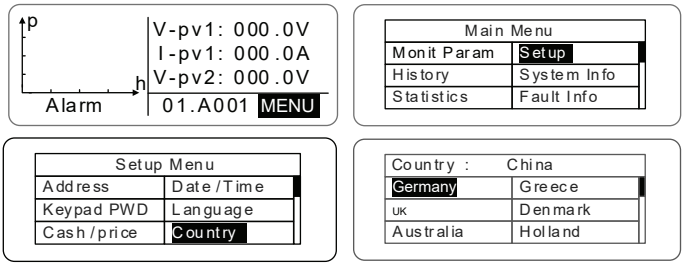
N°.	Pays	Certification	Remarques
1	Germany	VDE0126& AR-N4105	
2	UK	G83/G59	
3	Australia	AS4777	
4	Greece	VDE0126	
5	Denmark	TF3.2.1	
6	Holland	C10/C11	
7	China	CQC	
8	Thailand	PEA	
9	Other	VDE0126	

Tableau de référence : Certification du réseau et tension et fréquence du réseau de certains pays

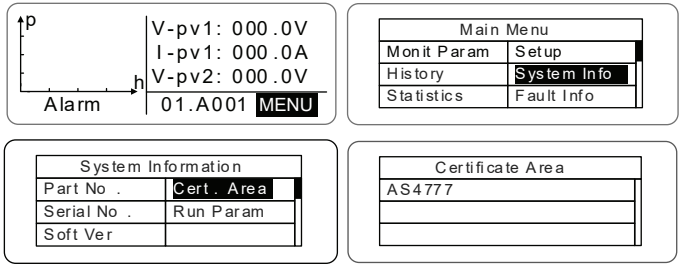
N°.	Pays	Certification	Tension triphasée	Fréquence du réseau
1	Germany	VDE0126& AR-N4105	380~400V	50Hz
2	France			
3	Greece			
4	Turkey			
5	Romania			
6	Slovakia			
7	Portugal			
8	Poland			
9	Hungary			
10	Switzerland			
11	Austria			
12	UK	G83-2/G59-3	415V	50Hz
13	Australia	AS4777.2&AS4777.3 AS/NZS3100	400~415V	50Hz
14	Singapore			
15	New Zealand			
16	Belgium	C10/C11	380~400V	50Hz

13	Australia	AS4777.2&AS4777.3 AS/NZS3100	400~415V	50Hz
14	Singapore			
15	New Zealand			
16	Belgium	C10/C11	380~400V	50Hz
17	Luxembourg			
18	Holland			
19	Denmark	TF3.2.1	380~400V	50Hz
20	Thailand	PEA	380V	50Hz
21	China	CGC/CF001	380V	50Hz
22	Italy	ENEL	400V	50Hz

L'utilisateur peut modifier le réglage du pays de la manière suivante :
LCD screen: MENU > Main Menu: Setup > Setup Menu: Country > Country:



L'utilisateur peut demander la certification de la grille qui a été définie par les moyens suivants :



COMMUNICATION DE SURVEILLANCE

Ce chapitre décrit la connexion de communication de l'onduleur et du système de surveillance (maître industriel, ordinateurs privés, téléphones intelligents, etc.)

Le mode de communication standard de l'onduleur solaire relié au réseau est le RS485 qui comprend les ports "RS485-M" et "RS485-S". Les ports RS485-M peuvent communiquer avec des ordinateurs privés, des téléphones intelligents, etc. La solution de surveillance du système est présentée dans la figure ci-dessous.

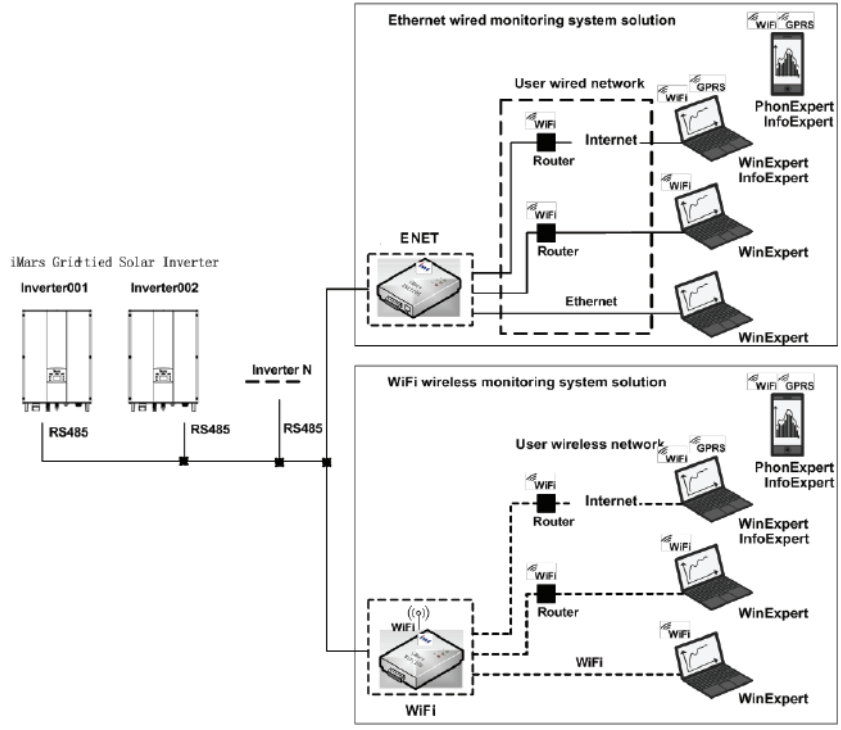


Figure 34 : Système de surveillance de l'onduleur

COMMUNICATION STANDARD

Tableau des broches de l'instruction de l'onduleur

Broche sur l'onduleur	Définition
1(Red)	+5VDC
2(Orange)	A (RS485+)
3(Brown)	B (RS485-)
4(Black)	GND

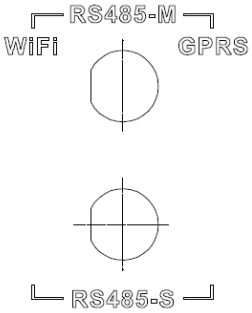


Figure 35: Broche RS485 sur l'onduleur

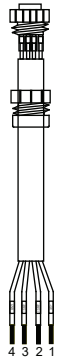


Figure 36: Connecteur de communication

ÉTAPES DE CONNEXION :

(1) Connectez le connecteur de communication configuré pour l'onduleur à la borne RS485 de l'onduleur, comme indiqué sur la Figure 37

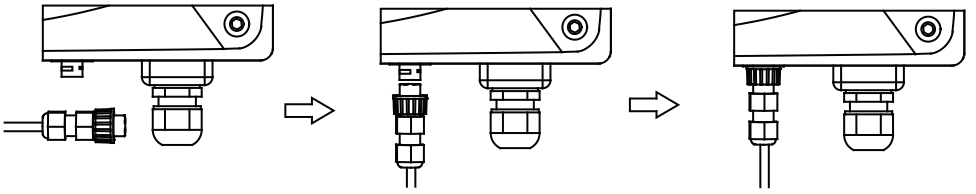


Figure 37: Connexion détaillée

(2) Selon le tableau des accessoires de communication en option, connectez le brochage du connecteur de communication et l'appareil de l'utilisateur, assurez-vous que la connexion est correcte.

(3) Veuillez télécharger le logiciel de surveillance "WinExpert" et son mode d'emploi sur notre site Web.

COMMUNICATION EN OPTION

Les modes de communication optionnels comprennent Ethernet et WIFI, qui nécessitent également des pièces et des composants de communication correspondants, comme indiqué dans le tableau ci-dessous. Tous les paramètres de fonctionnement de l'onduleur sont émis par le port "RS485-M" vers les dispositifs de communication, puis transmis au système de surveillance sous forme de signal Ethernet et WIFI standard.

Tableau des accessoires de communication en option

Accessoires en option	Port de l'onduleur	Port du PC supérieur
Conversion Ethernet	RS485-M	RJ45 pin
Convertisseur WiFi	RS485-M	Signal WiFi
Convertisseur GPRS	RS485-M	Signal GPRS
Convertisseur ENET	RS485-M	Port Ethernet

Veuillez télécharger les instructions de connexion, le manuel d'utilisation et les outils de mise en service sur le site Web.

Remarque : les accessoires en option ne sont pas configurés en standard, ils doivent être achetés séparément.

DÉPANNAGE

Tableau des codes d'erreur

Code d'erreur	Message	Instruction	Analyse de la défaillance
A			
A001	Input UV	Input undervoltage	Sous-tension PV1 Sous-tension PV2
A002	Bus UV	Bus undervoltage	Entrée DC
A003	Grid UV	AC undervoltage	Basse tension du réseau public
A004	Grid OV	AC overvoltage	Haute tension du réseau public
A005	Grid UF	AC underfrequency	Haute fréquence du réseau public
A006	Grid OF	AC overfrequency	High frequency of the public grid
A007	Clock Fail	Clock alarm	Mauvais réglage
A009	Cmd Shut	Arrêt manuel	Arrêt par le panneau de commande ou le PC supérieur
A011	Grid Loss	The public grid disconnects.	Vérifier si la connexion AC de l'onduleur est bonne
A030	Lost Box	Box lost connection	La communication est défectueuse entre les co
A031	BoxSPD1	Lighting protector1	Protecteur de l'éclairage 1 défectueux
A032	BoxSPD2	Lighting protector2	Protecteur de l'éclairage 2 défectueux
E			
E001	Input OV	Input overvoltage	Surtension de l'entrée CC
E003	Bus OV	Bus overvoltage	Tension interne du bus
E004	Boost Fail	Voltage-boost fault	Défaut de surtension de l'onduleur
E005	Grid OC	AC overcurrent	Surintensité CA interne
E006	OTP	Overtemperature	Surchauffe interne
E007	Riso faible	Faible isolation impédance	Faible impédance d'isolement du système de port externe
E008	IGBT drv	IGBT drive protection	Protection de l'entraînement IGBT de l'onduleur

E015	OutputShort	Court-circuit de sortie	Surintensité de l'entrée CC
E018	Input OC	Input overcurrent	Surintensité de l'Entrée CC
E019	Incnst	Data consistency fault	Tension, fréquence, courant de fuite ou injection CA/CC incohérents du réseau
E020	PowerReversed	DC power reversed	Inversion de l'alimentation CC
E021	Meter commErr	Power meter communication is faulty	La communication entre le compteur intelligent et l'onduleur est défectueuse (lorsque la fonction anti-retour est activée).
E022	FreqChg	Frequency is changed	La fluctuation de la tension du réseau est supérieure à la plage durable normale de l'onduleur.
E023	PE Loss	PE wire not connected	Le fil PE n'est pas connecté (ce code d'erreur n'est disponible que sous la sécurité AS4777)
E024	MeterLoss	The smart meter not connected	Le compteur intelligent n'est pas connecté
E025	Locking	The inverter is locked	Le variateur est verrouillé
E026	Run Limit	Light load	Charge légère (lorsque la fonction anti-feedback est activée)
E028	DRM0 Loss	The DEM0 box not connected	Le boîtier DRM0 n'est pas connecté (ce code d'erreur n'est disponible que dans le cadre de la sécurité AS4777).

PARAMÈTRES TECHNIQUES

Tableau des paramètres techniques

Modèle		Triphasé						
		BG4KTR	BG4KTR-S	BG5KTR	BG5KTR-S	BG6KTR	BG8KTR	BG10KTR
Entrée (CC)	Max. Tension CC (V)	900	900	900	900	1000	1000	1000
	Tension de démarrage (V)	200	200	200	200	200	200	200
	Plage de tension MPPT (V)	200-800	200-800	200-800	200-800	180-800	180-800	180-800
	Rated DC input voltage range(V)	220-800	360-800	260-800	430-800	300-800	300-800	320-800
	Plage de tension d'entrée CC nominale (V)	2/1	1/1	2/1	1/1	2/1		
	Nombre de MPPT / chaîne par MPPT	4200	4200	5200	5200	6300	8400	10400
	Courant CC max.	10x2	12	10×2	12	11x2	14x2	19x2
	Nombre de MPPT							
	Isc PV(A)	11x2	13	11×2	13	12.5x2	15.5x2	21x2
	Courant de retour maximal (reflux de l'onduleur vers le générateur PV)	0	0	0	0	0	0	0
	Interrupteur CC	Optional						

Sortie (CC)	Puissance de sortie nominale (W)	4000	4000	5000	5000	6000	8000	10000
	Plage de tension (V)/ fréquence (Hz)	320~460Vac, 50Hz(47~51.5Hz) / 60Hz(57~61.5Hz)						
	Courant de sortie maximum (A)	6.4		8		9.6	12.8	16.1
	Courant de défaut de sortie maximum	265A@34ms						
	Courant d'appel CA	Less than 10A						
	Surintensité maximale de sortie Protection (A)	12.7		15.8		19	25.3	31.8
	Facteur de puissance	-0.80~+0.80(Adjustable)						
	Distorsion harmonique	<3%(rated power)						
Système	Méthode de refroidissement	Refroidissement naturel					Refroidissement par air	
	Rendement maximal	97.20%	97.30%	97.30%	97.40%	97.50%	97.60%	98.20%
	Rendement européen	97.00%	97.00%	97.00%	97.00%	97.00%	97.00%	97.60%
	Rendement MPPT	99.90%						
	Degré de protection	IP65						
	Consommation électrique la nuit	<1W						
	Mode d'isolation	Sans transformateur						
	Classe de sécurité	I						
	Classe de protection contre les surtensions	AC:III,PV:II						
	Topologie de l'onduleur	Non-isolé						
	Degré de pollution	300.00%						
	Température de fonctionnement	(-25 ~+60),(Derate after 45)						
	Humidité relative	4~100%, Condensation						
	Altitude Maximale (m)	≤2000, (Diminuer si l'altitude > 2000)						
	Affichage	Affichage LED/ LCD, rétro-éclairé						
	Langue du système	English, Chinese, German, Dutch						
	Communication	RS485(standard),Ethernet,WiFi(en option)						
	Borne CC	BC03A / BC03B						
	Bruit dB (A)	≤30					<50	
	Mode d'installation	Installation murale						
Autres	Standard de grille	DIN VDE 0126-1-1 : 2013, VDE-AR-N 4105 : 2011, DIN VDE V 0124-100 : 2012, IEC 61727 (IEC 62116), AS/NZS 4777.2 : 2015, NB/T 32004-2013, IEC 60068-2-1 : 2007, IEC 60068-2-2 : 2007, IEC 60068-2-14 : 2009, IEC 60068-2-30 : 2005, IEC 61683 : 1999, C10/11 : 2012						
	Certificat de sécurité / catégorie EMC	IEC 62109-1 : 2010, IEC 62109-2 : 2011, EN 61000-6-2: 2005 / EN 61000-6-3:2007/A1:2011						
Protection	Protection contre les surtensions d'entrée, protection contre les surintensités d'entrée, surveillance de l'isolation CC,surveillance CC, surveillance du courant de défaut de mise à la terre, surveillance du réseau, protection contre les îlots, protection contre les courts-circuits, protection contre la surchauffe, etc.							