MEDALPOWER

# INVERTER

## 15KW

## On-Grid Inverter

## MPiO15000W3#1000VPVM


www.medal-power.com

# CONTENTS

## 1.Notes on this manual

### 1.1 Validity and information

This manual describe the assembly, installation, commissioning, communication, trouble shooting and maintenance of the following MPiO15000W3#1000VPVM inverter. The manual and other documents must be stored in a convenient place and be available at all times. For possible changes in this manual, we accepts no responsibilities to inform the users.

### 1.2 Target Group

This manual is for qualified personnel. Qualified personnel have received training and have demonstrated skills and knowledge in the construction and operation of this device. Qualified Personnel are trained to deal with the dangers and hazards involved in installing electric devices.

Any trouble in the installation, you can contact the supplier .

### 1.3 Symbols in this document

1.3.1 Warning in this document

A warning describes a hazard to equipment or personnel. It calls attention to a procedure or practice, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the MPiO15000W3#1000VPVM equipment and/or other equipment connected to the MPiO15000W3#1000VPVM equipment or personal injury.

| Symbol | description |
|---|---|
|  | **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury. |
|  | **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury. |
|  | **CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. |
|  | **NOTICE** is used to address practices not related to personal injury. |
|  | **Information** that you must read and know to ensure optimal operation of the system. |

### 1.3.2 Markings on this product

| Symbol | description |
|---|---|
|  | **Electrical voltage!**<br>Danger of high voltage and electric shock. |
|  | **Risk of burns!**<br>Danger of hot surface. |
|   | **Operation after 5 minutes**<br>Signals danger due to electrical shock and indicates the time(5 minutes) to allow after the inverter has been turned off and disconnected to ensure safety in any installation operation . |
|  | **CE mark.**<br>The inverter complies with the requirements of the applicable EC guidelines. |
|  | **Point of connection for grounding protection** |
|  | **Direct Current (DC)** |
|  | **Alternating Current (AC)** |
|  | **The inverter has no transformer.** |
|  | **Read the manual** |

### 1.4 Glossary

**AC**
Abbreviation for "Alternating Current"

**DC**
Abbreviation for "Direct Current"

**Energy**
Energy is measured in Wh (watt hours), kWh (kilowatt hours) or MWh (megawatt hours). The energy is the accumulation of power over time. for example, your inverter operates at a constant power of 5000 W for half an hour and then at a constant power of 2500 W for another half an hour, it has fed 3750Wh of energy into the power distribution grid within that hour.

**Power**
Power is measured in W (watts), kW (kilowatts) or MW (megawatts). Power is an instantaneous value. It displays the power your inverter is currently feeding into the power distribution grid.

**Power rate**
Power rate is the radio of current power feeding into the power distribution grid and the maximum power of the inverter that can feed into the power distribution grid.

**Power Factor**
Power factor is the ratio of real power and apparent power.

**PV**
Abbreviation for photovoltaic

**wireless communication**
The external wireless communication technology is a radio technology that allows the inverter and other communication products to communicate with each other. The external wireless communication does not require line of sight between the devices and it is selective purchasing.

## 2.Safety

### 2.1 Intended Use

The unit converts the DC current generated by the photovoltaic (PV modules to grid-compliant alternating current and performs three-phase feed-in into the electricity Grid.
MPiO15000W3#1000VPVM inverter is built according to all required safety rules. Nevertheless, improper use may cause lethal hazards for the operator or third parties, or may result in damage to the units and other property.

**Principle of a PV plant with this MPiO15000W3#1000VPVM three-phase inverter**

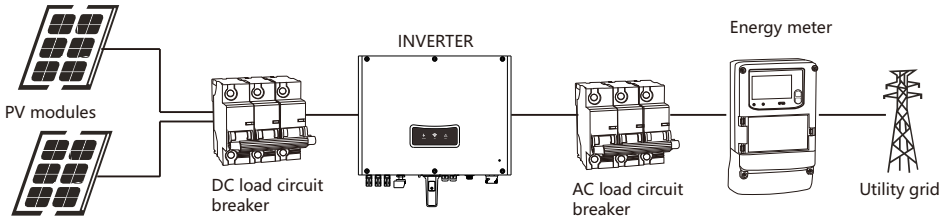



Fig1.1

The inverter may only be operated with a permanent connection to the public power grid. The inverter is not intended for mobile use. Any other or additional use is not considered the intended use. The manufacturer/supplier is not liable for damage caused by such unintended use. Damage caused by such unintended use is at the sole risk of the operator.

**PV modules Capacitive Discharge Currents**
PV modules with large capacities relative to earth, such as thin-film PV modules with cells on a metallic substrate, may only be used if their coupling capacity does not exceed 2.2uF. During feed-in operation, a leakage current flows from the cells to earth, the size of which depends on the manner in which the PV modules are installed (e.g. foil on metal roof) and on the weather (rain, snow). This "normal" leakage current may not exceed 100mA due to the fact that the inverter would otherwise automatically disconnect from the electricity grid as a protective measure.

### 2.2 Qualification of skilled person

This grid-tied inverter system operates only when properly connected to the AC -distribution network. Before connecting the MPiO15000W3#1000VPVM to the power distribution grid, contact the local power distribution grid company. This connection must be made only by qualified technical personnel to connect, and only after receiving appropriate approvals, as required by the local authority having jurisdiction.

### 2.3 Safety instruction

MPiO15000W3#1000VPVM Inverters is designed and tested according to international safety requirements; however, certain safety precautions must be observed when installing and operating this inverter. Read and follow all instructions, cautions and warnings in this installation manual. Any questions, please contact the supplier .

### 2.4 Assembly Warnings

| | |
|---|---|
| warning | ▶ Before installation, inspect the unit to ensure absence of any transport or handling damage, which could affect insulation integrity or safety clearances; otherwise it could result in safety hazards.<br>▶ Assemble each inverter the instructions in this manual. Be Careful when choosing installation location and according to specified cooling requirements.<br>▶ Unauthorized remove the necessary protections, improper use, incorrect installation and operation may result the serious safety and shock hazards or equipment damage.<br>▶ In order to minimize the potential of a shock hazard due to hazardous voltages, cover the entire solar array with dark material prior to connecting the array to any equipment. |
| caution | ▶ Grounding the PV modules: MPiO15000W3#1000VPVM is a high frequency inverter(without transformer). That is why it has no galvanic separation. Do not ground the DC circuits of the PV modules when connected to the MPiO15000W3#1000VPVM Only ground the mounting frame of the PV modules. If you connect grounded PV modules to the MPiO15000W3#1000VPVM, that will show error message "PV ISO Low".<br>▶ Follow the local requirements for grounding the PV modules and the PV generator. We recommend connecting the generator frame and other electrically conductive surfaces in a manner which ensures continuous conduction with ground in order to have optimal protection of the system and personnel. |

### 2.5 Electrical Connection Warnings

| | |
|---|---|
| danger | ▶ The components in the inverter are mobilizable. Touching mobilizable components can result in serious injury or death.<br>● Do not open the inverter except the wire box by qualified persons.<br>● Electrical installation, repairs and conversions may only be carried out by electrically qualified persons.<br>● Do not touch damaged inverter.<br>▶ Danger to life due to high voltages in the inverter.<br>● There has residual voltage in the inverter. The inverter takes 20 minutes to discharge.<br>● Wait 20 minutes before you open the wire box.<br>▶ Persons with limited physical or mental abilities may only work with the MPiO15000W3#1000VPVM inverter following proper instruction and under constant supervision. Children are forbidden to play with the MPiO15000W3#1000VPVM inverter. keep the MPiO15000W3#1000VPVM inverter away from children. |

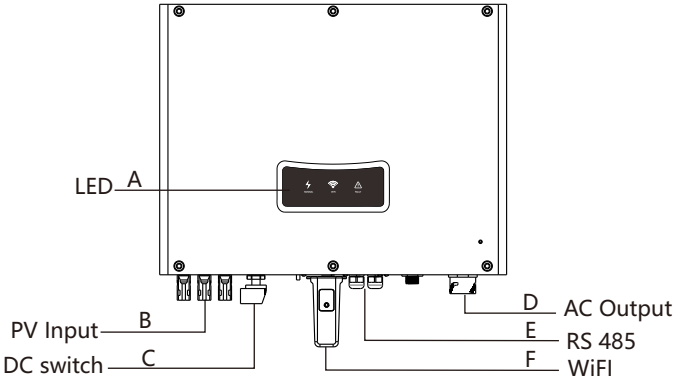
<table>
<tr><td>warning</td><td>▶ Make all electrical connections (e.g. conductor termination, fuses, PE connection, etc.) in accordance with prevailing regulations. When working with the inverter, adhere to all prevailing safety regulations to minimize risk of accidents.<br>▶ Systems with inverters typically require additional control (e.g., switches, disconnects) or protective devices (e.g., fusing circuit breakers) depending on the prevailing safety rules.</td></tr>
<tr><td>caution</td><td>▶ The MPiO15000W3#1000VPVM Inverter converts DC Current from PV generator into AC current. The inverter is suitable for mounting indoors and outdoors.<br>▶ You can use the AC current generated as follows:<table><tr><td>House grid:</td><td>Energy flows into the house grid. The consumers connected, for example, household devices or lighting, consume the energy. The energy left over is fed into the public grid. When the MPiO15000W3#1000VPVMis not generating any energy, e.g., at night, the consumers which are connected are supplied by the public grid. MPiO15000W3#1000VPVM does not have its own energy meter. When energy is fed into the public grid, the energy meter spins backwards.</td></tr><tr><td>Public grid:</td><td>Energy is fed directly into the public grid. The MPiO15000W3#1000VPVM is connected to a separate energy meter. The energy produced is compensated at a rate from the electric power company.</td></tr></table></td></tr>
</table>

**2.6 Operation Warnings**

<table>
<tr><td>warning</td><td>▶ Make sure all covers and doors closed and secure during operation.<br>▶ Although designed meeting all safety requirements, some parts and surfaces of Inverter are still hot during operation. To reduce the risk of injury, do not touch the heat sink at the back of the PV-Inverter or nearby surfaces while Inverter is operating.<br>▶ Incorrect sizing of the PV plant may result in voltages which could destroy the inverter.<br>● Switch the rotary DC Disconnect to the Off position immediately.<br>● Contact installer.</td></tr>
<tr><td>caution</td><td>▶ All operations regarding transport, installation and start-up, including maintenance must be operated by qualified, trained personnel and in compliance with all prevailing codes and regulations.<br>▶ Anytime the inverter has been disconnected from the power network, please be much careful as some components can retain charge sufficient to create a shock hazard; to minimize occurrence of such conditions, please comply with all corresponding safety symbols and precautions and present on the unit and in this manual.<br>▶ In particular cases, there may still be interference for the specified application area despite maintaining standardized emission limit values (e.g. when sensitive equipment is located at the setup location or when the setup location is near radio or television receivers).In this case, the operator is obliged to take proper action to rectify the situation.<br>▶ Do not stay closer than 20 cm to the inverter for any length of time.</td></tr>
</table>

## 3. Product description

### 3.1 MPiO15000W3#1000VPVM Overview




| Position | Description |
|---|---|
| A | LED |
| B | PV Input |
| C | DC switch |
| D | AC Output |
| E | RS 485 |
| F | WiFI |

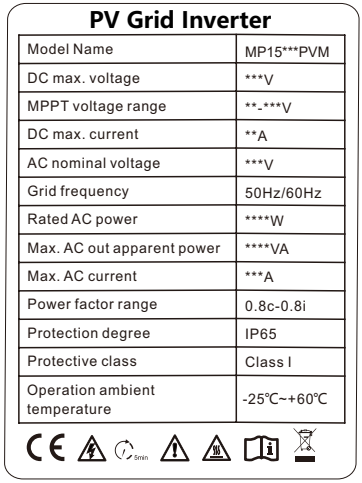
| | |
|---|---|
| information | The MPiO15000W3#1000VPVM inverter can choose whether to bring a DC switch depending on customers' need. |

**Symbol on the inverter**

| Symbol | Description | Explanation |
|---|---|---|
|  | Inverter status symbol | Indicates inverter operation status |

### 3.2 Inverter label

The inverter can be identified by the label on the left side of inverter. It shows the Products type,the inverter specific features and the parameter on the label.




| Model Name | MPiO15000W3#1000VPVM |
|---|---|
| Max input DC voltage | 1000V |
| MPPT voltage range | 200V-1000V |
| DC max.current | 21A/11A |
| AC nominal voltage | 230V/400V |
| Grid frequency | 50HZ/60HZ |
| Rated AC power | 15000W |
| Max.AC out apparent power | 16500VA |
| Max.AC current | 23.8A |
| Communications Ports | USB |
| Protective class | Class I |
| Protection degree | IP65 |
| Operation ambient temperature | -25℃-60℃ |

### 3.3 Inverter Dimensions

Dimensions and weight:

| Model | Height (H) | Width (W) | Depth (D) | Weight |
|---|---|---|---|---|
| MPiO15000W3#1000V PVM | 428mm 16.85inch | 500mm 19.69inch | 200mm 7.87inch | 24.8kg |

### 3.4 Storage environment of Inverter

If you want to storage the inverter in the warehouse, Please select a suitable place to storage.

- The inverter must be stored in original package and please keep stored in a dry environment
- The storage temperature should be always between -25°C and +60°C. And the storage relative humidity should be always between 0 and 95%.(Recommend storage environment)
- If there are a batch of inverters need to be stored, the maximum layers for original carton is four.
- After long term storage, The local installer or Service centre should perform a comprehensive test before installation the inverter&system;

### 3.5 Advantage of the inverter:

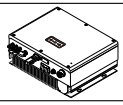
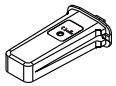
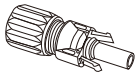
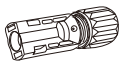
- Wide input voltage range from 160V-1000Vdc
- IP65 protection degree
- Integrated DC switch
- DSP controller
- The maximum efficiency is 98.4%
- Multi MPP controller
- Easy installation

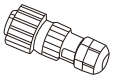
## 4.Installation

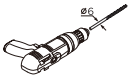
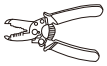
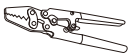
### 4.1 Unpacking and inspection

After opening the package, please check the contents of the box. It should contain the following, Please check all of the accessories in carton. If anything missing, please contact your dealer at once.

Shows the components and mechanical parts that should be delivered

| NO. | Pictures | description | Quantity |
|---|---|---|---|
| 1 |  | MPiO15000W3#1000VPVM | 1PCS |
| 2 |  | WiFi | 1PCS |
| 3 |  | PV+ input terminal | 3PCS |
| 4 |  | PV- input terminal | 3PCS |
| 5 |  | RJ-45 | 2PCS |
| 6 |  | Metal terminals securedto PV+ input power cables | 3PCS |
| 7 |  | Metal terminals secured to PV- input powercables | 3PCS |

| | | | |
|---|---|---|---|
| 8 |  | Blasting screws | 4PCS |
| 9 |  | Output terminals | 1PCS |
| 10 |  | Certificate | 1PCS |
| 11 |  | Manual | 1PCS |
| 12 |  | Wi-Fi Plug14 Quick Installation Guideline | 1PCS |

| NO. | Tool | Model | Function |
|---|---|---|---|
| 1 |  | Hammer drill<br>Recommend drill dia. 6mm | To drill holes on the wall |
| 2 |  | Removal tool | Remove PV terminal |
| 3 |  | Wire stripper | Strip wire |
| 4 |  | Wrench | Turn the screw to connect rear panel with inverter |
| 5 |  | Crimping tools | To crimp power cables |

### 4.3 Safety instruction

| | |
|---|---|
|  | **Danger to life due to fire or explosion**<br>▶ Despite careful construction, electrical devices can cause fires.<br>▶ Do not install the inverter on easily flammable materials and where flammable materials are stored. |
|  | **Risk of burns due to hot enclosure parts**<br>▶ Mount the inverter in such a way that it cannot be touched inadvertently |
|  | **Possible damage to health as a result of the effects of radiation!**<br>In special cases, there may still be interference for the specified application area despite maintaining standardized emission limit values (e.g. when sensitive equipment is located at the setup location or when the setup location is near radio or television receivers).In this case, the operator is obliged to take proper action to rectify the situation.<br>Never install the inverter near the sensitive equipment(e.g. Radios, telephone, television, etc)<br>Do not stay closer than 20 cm to the inverter for any length of time unless it is absolutely necessary.<br>We assumes no responsibility for compliance to EMC regulations for the complete system. |

- ▶ All electrical installations shall be done in accordance with the local and national electrical codes. Do not remove the casing. Inverter contains no user serviceable parts. Refer servicing to qualified service personnel. All wiring and electrical installation should be conducted by a qualified service personnel.
- ▶ Carefully remove the unit from its packaging and inspect for external damage. If you find any imperfections, please contact your local dealer. Be sure that the inverters connect to the ground in order to protect property and personal safety.
- ▶ The inverter must only be operated with PV generator. Do not connect any other source to it.
- ▶ Both AC and DC voltage sources are terminated inside the PV Inverter. Please disconnect these circuits before servicing.
- ▶ This unit is designed to feed power to the public power grid (utility) only.
- ▶ Do not connect this unit to an AC source or generator. Connecting Inverter to external devices could result in serious damage to your equipment.
- ▶ When a photovoltaic panel is exposed to light, it generates a DC voltage. When connected to this equipment, a photovoltaic panel will charge the DC link capacitors.
- ▶ Energy stored in this equipment's DC link capacitors presents a risk of electric shock. Even after the unit is disconnected from the grid and photovoltaic panels, high voltages may still exist inside the PV-Inverter. Do not remove the casing until at least 5 minutes after disconnecting all power sources.
- ▶ Although designed to meet all safety requirements, some parts and surfaces of Inverter are still hot during operation. To reduce the risk of injury, do not touch the heat sink at the back of the PV-Inverter or nearby surfaces while Inverter is operating.

### 4.4 Selecting the installation location

- This is guidance for installer to choose a suitable installation location, to avoid potential damages to device and operators.
- The installation location must be suitable for the inverter's weight and dimensions for a long period time.
- Select the installation location so that the status display can be easily viewed.
- Do not install the inverter on structures constructed of flammable or thermolabile materials.
- Never install the inverter in environment of little or no air flow, nor dust environment. That may derate the efficiency of the cooling fan of the inverter.
- The Ingress Protection rate is IP65 which means the inverter can be installed outdoors and indoors.
- The humidity of the installation location should be 0~95% without condensation.
- The installation location must be freely and safely to get at all times.
- Vertically installation and make sure the connection of inverter must be downwards. Never install horizontal and avoids forward and sideways tilt.

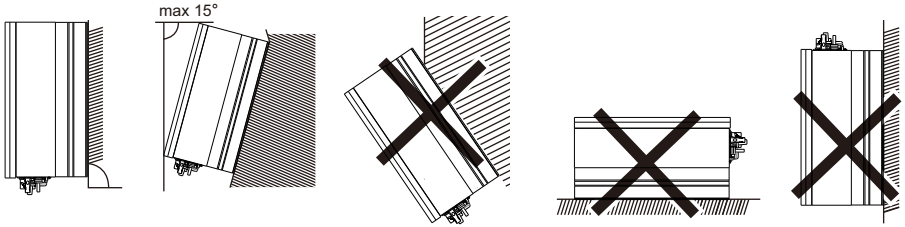
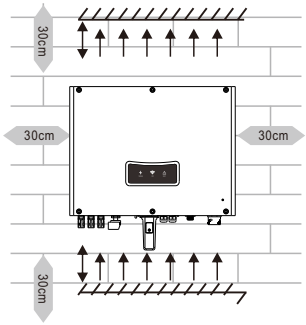


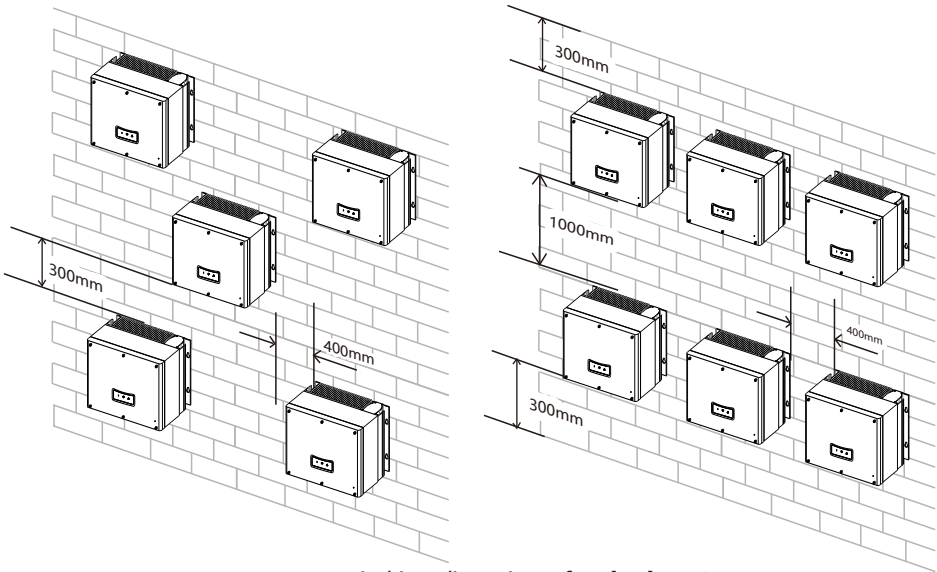

Fig 4.1

- Be sure that the inverter is out of the children's reach.
- Don't put any things on the inverter. Do not cover the inverter.
- Do not install the inverter near television antenna or any other antennas and antenna cables.
- Inverter requires adequate cooling space. Providing better ventilation for the inverter to ensure the heat escape adequately. The ambient temperature should be below 40°C to ensure optimum operation.
- Do not expose the inverter to direct sunlight, as this can cause excessive heating and thus power reduction.
- Observe the Min. clearances to walls, other inverters, or objects as shown in the diagram:

| Direction | Min. clearance (cm) |
|---|---|
| above | 30 |
| below | 50 |
| sides | 30 |
| front | 30 |



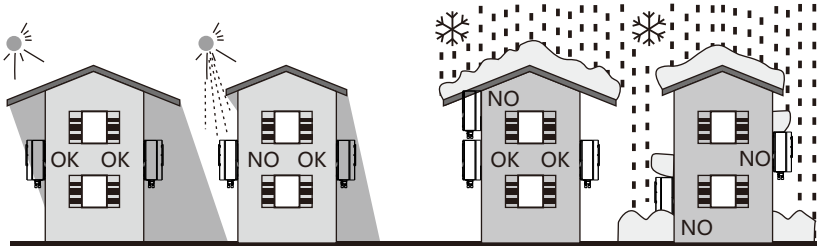

Ambient dimensions of **one inverter**




Ambient dimensions of **series inverters**

- ▶ There must be sufficient clearance between the individual inverters to ensure that the cooling air of the adjacent inverter is not taken in.
- ▶ If necessary, increase the clearance spaces and make sure there is enough fresh air supply to ensure sufficient cooling of the inverters.

The inverter can't install to solarization, drench, firn location. We suggest that the inverters should be installed at the location with some cover or protection.




- ▶ Recommend awning installation,t he purpose is to extend the inverter service life and reduce the power derating of the inverter .The dimension of the awning, refer to fig4.5

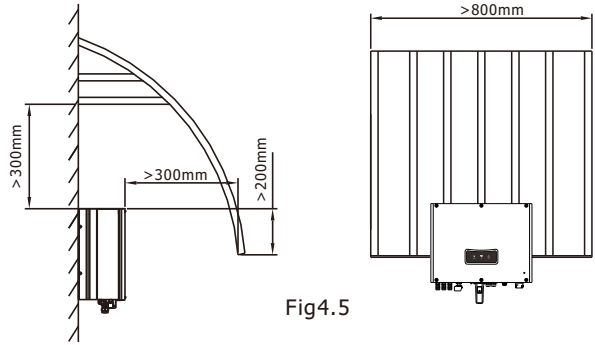



Fig4.5

▶ Please make sure the inverter is installed at the right place.The inverter can't install close to trunk.

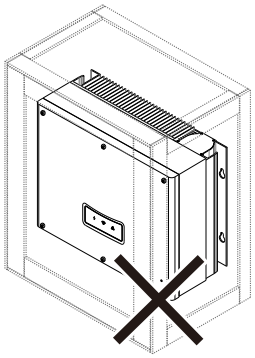


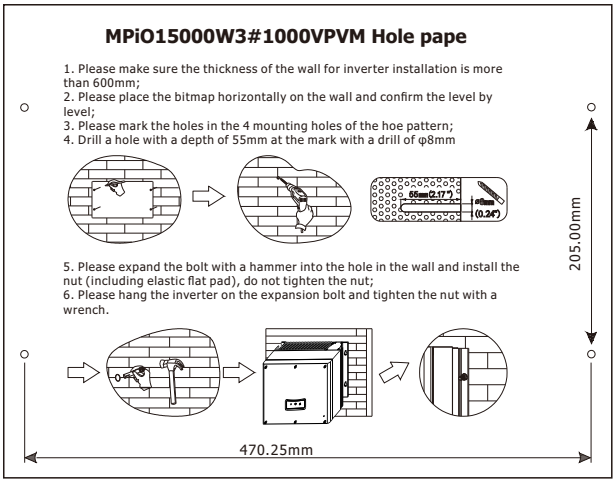
Fig4.6

### 4.5 Installation the Inverter

#### 4.5.1 Mounting Expansion Bolt

| | |
|---|---|
| danger | In order to avoid electrical shock or other injury, inspect existing electronic or plumbing installations before drilling holes. |

● To mount the inverter on the wall, we should mount expansion bolt to the wall firmly first.




Steps:

▶ Drill four holes for expansion bolt use the fix hole paper as template

▶ Fix the mounting expansion bolt on the wall as the figures shown below. combine four expansion bolt with four M6 Nuts. Refer to Fig4.7

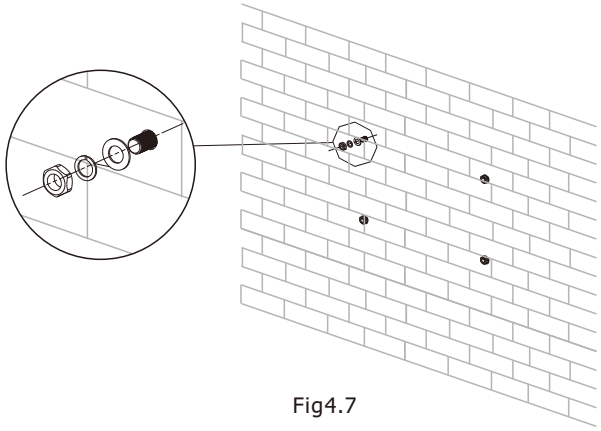


Fig4.7

## 5.Electrical connection

### 5.1 safety

| | |
|---|---|
| ⚠ | Danger to life due to lethal voltages!<br>High voltages which may cause electric shocks are present in the conductive parts of the inverter. Prior to performing any work on the inverter, disconnect the inverter on the AC and DC sides |
| ⚠ warning | Danger of damage to electronic components due to electrostatic discharge.<br>Take appropriate ESD precautions when replacing and installing the inverter. |

### 5.2 Wiring AC Output

| | |
|---|---|
| ⚠ notice | ▶ You must comply with the connection requirements of your utility operator. All usages must comply with the regulations.<br>The inveter have the residual current detect and protect function, if you have device the AC breaker have the residual current detect function, you must choice breaker the rating residual current more than 300mA. |

You must install a separate three-phase circuit-breaker or other load disconnection unit for each inverter in order to ensure that the inverter can be safely disconnected under load.

We suggest you choose the AC breaker rating current in this table:

| | |
|---|---|
| MPiO15000W3#1000VPVM | 32A/400V |

We recommend electrical connection as below.Refer to fig5.1

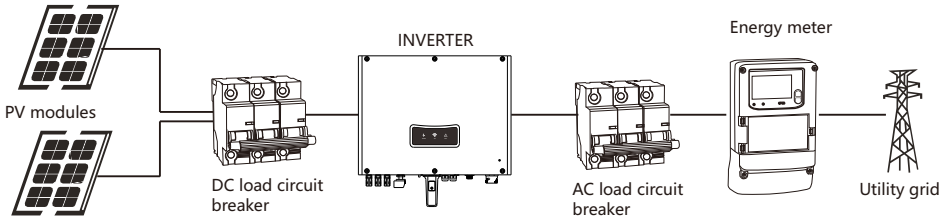
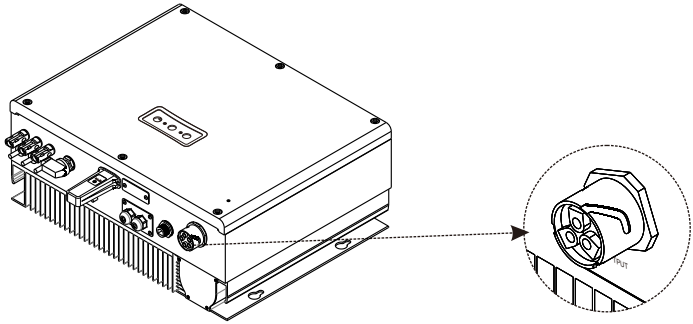


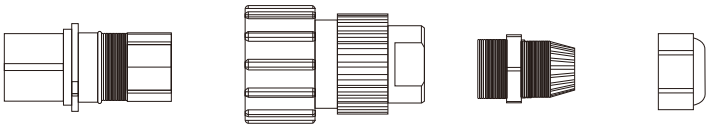

Fig5.1

**The AC wiring steps:**

1.The grid connection is contains using 5 conductors (L1,L2,L3, N, and PE).

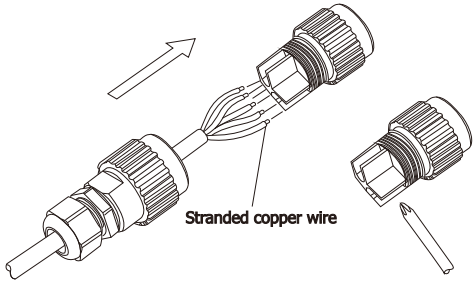


2.Remove the parts of the AC connection plug from the accessory bag. Prepare the pressure screw, sealing ring, threaded sleeve over the AC cable.



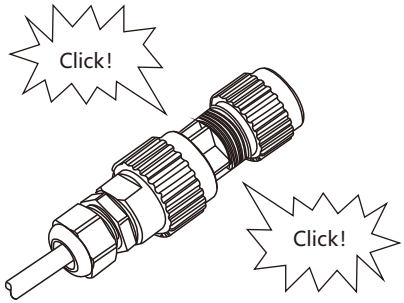
socket element　　threaded sleeve　　sealing ring　　pressure screw

3.Insert the stripped and bared conductors L1,L2,L3,N,PE into the screw terminals with sign L1,L2,L3, N,PE(⏚) on the socket element and tighten the screws firmly.

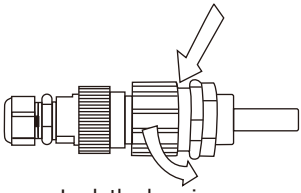



| | |
|---|---|
| notice | Note that the polarity of the connection line matches the terminal tag to avoid incorrect connection. |

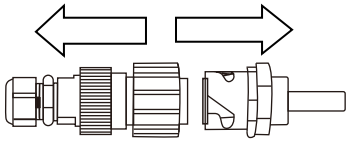
4.Push the threaded sleeve into the socket element; screw the pressure screw tightly onto the threaded sleeve;



5.Finally, insert the AC connection plug into the AC connection receptacle on the inverter.



Lock the housing



Unlock the housing

**Wire suggestion length:**

| **Conductor cross section** | **Max. cable length** |
|---|---|
| | MPiO15000W3#1000VPVM |
| 3.3mm² 12AWG | / |
| 5.2mm² 10AWG | 29m |
| 6.6mm² 9AWG | 37m |

**5.3 Protect the earth**

In some installation countries, a second protective conductor is required to prevent a touch current in the event of a malfunction in the original protective conductor.

For installation countries falling within the scope of validity of IEC standard 62109, you must install the protective conductor on the AC terminal with a conductor cross-section of at least 10 mm² Cu.

Or install a second protective conductor on the earth terminal with the same cross-section as the original protective conductor on the AC terminal. This prevents touch current if the original protective conductor fails.

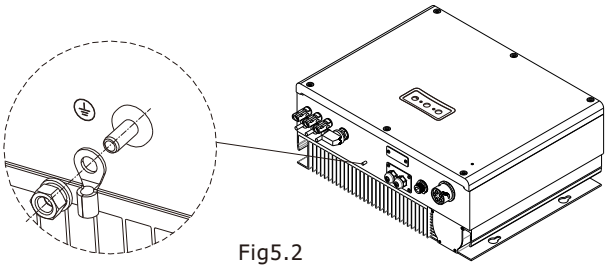


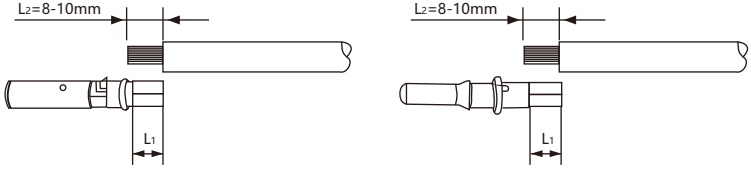
Fig5.2

**5.4 Wiring DC Input**

5.4.1 Connecting DC Input Power Cables

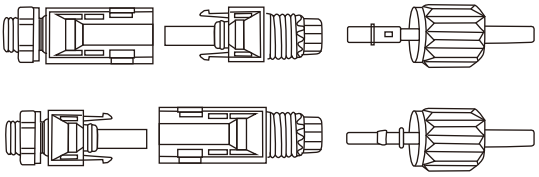
**Step1** Remove cable glands from the positive and negative connectors.

**Step2** Take out metal terminals from accessory package, Wiring as illustrated in image.

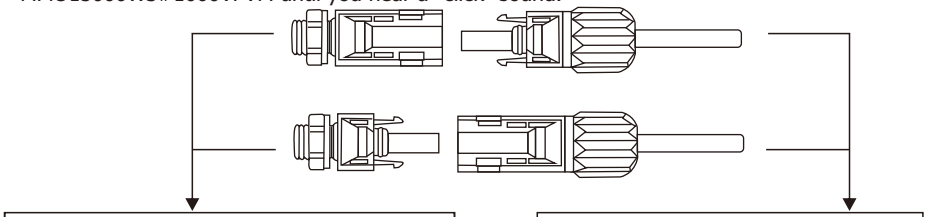



**Step3** Insert the positive and negative power cables into corresponding cable glands.

**Step4** Insert the stripped positive and negative power cables into the positive and negative metal terminals respectively and crimp them using a clamping tool. Ensure that the cables are crimped until they cannot be pulled out by force less than 400 N, as shown in image.

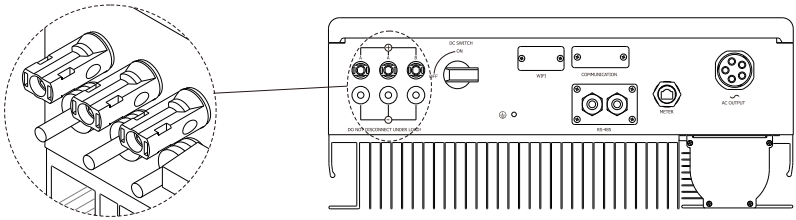


**Step5** Insert the positive and negative connectors into corresponding DC input terminals of the MPiO15000W3#1000VPVM until you hear a "click" sound.




### 5.4.2 Conditions for DC Connection

The MPiO15000W3#1000VPVM three-phase inverter has two independent input : input A and input B.



The diagram drawing of DC side is shown as below, notice that the connectors are in paired (male and female connectors). The connectors for PV arrays and inverters are H4 (yunfan) connectors;

Suggestions for the PV modules of the connected strings:

- Same type
- Same quantity of PV modules connected in series

caution

If the inverter is not equipped with a DC switch but this is mandatory in the country of installation, install an external DC switch.
The following limit values at the DC input of the inverter must not be exceeded:

| Model name | Max.current input A | Max.current input |
|---|---|---|
| MPiO15000W3#1000VPVM | 21A | 11A |

### 5.4.3 Connecting the PV Array (DC input)

| | |
|---|---|
| danger | Before connecting the PV array, ensure that the DC switch and AC breaker are disconnect from the inverter. **NEVER** connect or disconnect the DC connectors under load.<br>Make sure the maximum open circuit voltage(Voc) of each PV string is less than 1000Vdc.<br>Check the design of the PV plant. The Max. open circuit voltage, which can occur at solar panels temperature of -10°C, must not exceed the Max. input voltage of the inverter. |
| warning | Improper operation during the wiring process can cause fatal injury to operator or unrecoverable damage to the inverter. Only qualified personnel can perform the wiring work. |

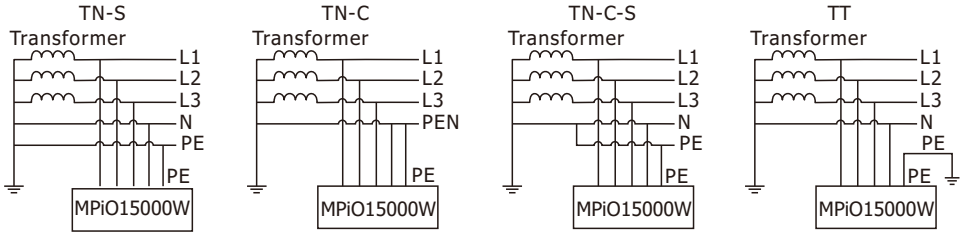
### 5.5 Grounding the inverter

The inverter must be connected to the AC grounding conductor of the power distribution grid via the ground terminal (PE)⏚.

| | |
|---|---|
| warning | 1.Because of the transformerless design, the DC positive pole and DC negative pole of PV arrays are not permitted to be grounded. |

### 5.6 Grid Type

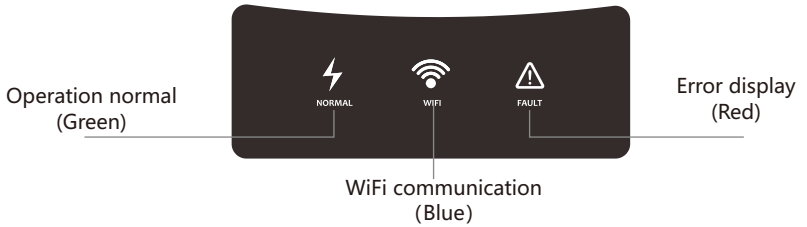
Based on the local GRID standards, it may select different connection types. In the following you will find an overview of the most common type of grid structure.




**Note:** For TT grid structure , RMS voltage between neutral wire and earth wire must be less than 20V.

### 6.Commissioning

### 6.1 LED display



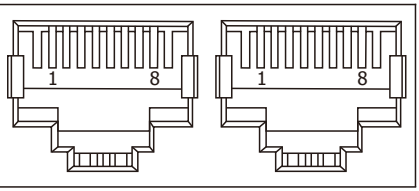

| | | |
|---|---|---|
| Green LED | Continuous light | Normal status |
| | Flicker | Waiting status |
| Blue LED | Flicker | Wifi normal communication |
| Red LED | Continuous light | Fault status |
| | Flicker | Program of procedure or give an alarm |

### 6.2 WIFI Communication Connection

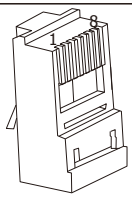
Please refer to the Wi-Fi Plug14 Quick Installation Guideline.

### 6.3 RS485 Cable Connection

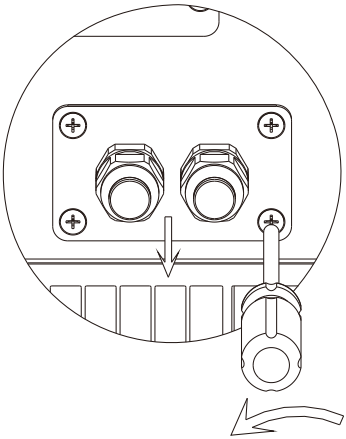
**Rs485 cable connection**

| | |
|---|---|
| PIN 1,2 RS485+ |   |
| PIN 5,7 RS485- | |
| PIN 3,4,6,8 Shielding layer or no connection | |

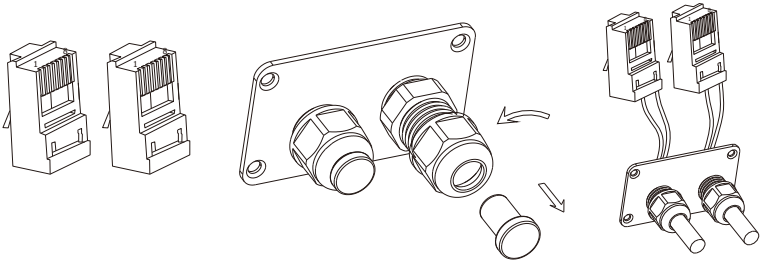
**Definitions of RS485 PLUG(standard) as follows**

| | |
|---|---|
| PIN 1,2 RS485+ |   |
| PIN 5,7 RS485- | |
| PIN 3,4,6,8 Shielding layer or no connection | |

1.Please loosen four screws, take down the RS485 waterproof cover from inverter. If you do not choose RS485 as communication method, keep it on the inverter.



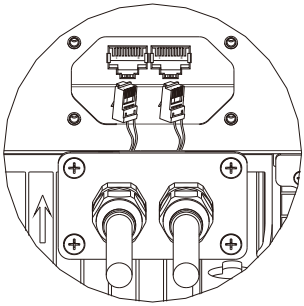
2.Slightly loosen the swivel nut,remove the filler-plug from the M20 cable gland.

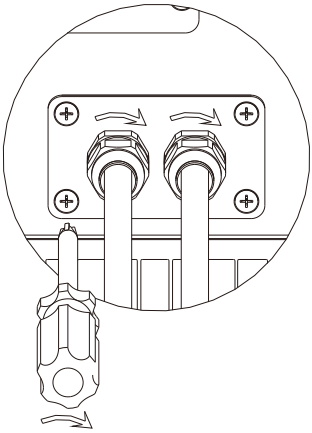


3.Make the cable through the hole of cable gland and put the cable into the Rs485 terminals, fix all cable with screwdriver(‘1’and‘2’ to ‘RS485+’,‘5’and‘7’ to ‘RS485-’,‘3’‘4’‘6’‘8’to the shielding layer or no connection.)The type of cable is recommended as STP, FTP, ASTP.

| | |
|---|---|
| information | Pull cables outwards to confirm whether they are installed firmly. |

4.Plug in two terminals.Cover the fix board



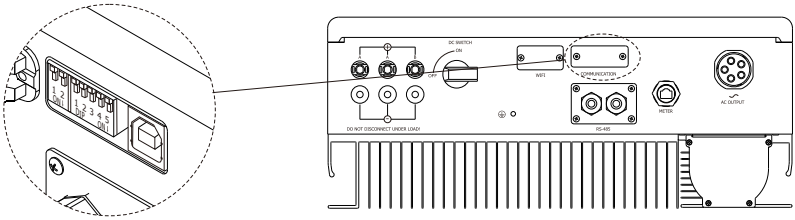


| | |
|---|---|
| information | Tighten 4 pcs screws first, then tighten cable gland. |

| | |
|---|---|
| notice | As to the connection one inverter, please connect one cable. |

**6.4 USB communication**

The purpose of USB communication is just to update the software and debug the inverter. If you need to monitor the inverter data, please use WiFi or RS485. Only one of WIFI communication, RS485 communication and USB communication can be selected for connection.



## 7.Start-Up and shut down the inverter

### 7.1 Start-Up the inverter

1. Connect the AC breaker of the inverter.
2. Turn on the dc switch, and the inverter will start automatically when the input voltage is higher than 200V.

### 7.2 Turn-off the Inverter

| | |
|---|---|
| danger | Do not disconnect the DC connectors under load. |

Turn –off the inverter step:

1. Disconect the line circuit breaker from three-phases grid and prevent it from being reactivated.
2. Turn off the dc switch.
3. Check the inverter operating status.
4. Waiting until LED, display have go out, the inverter is shut down.

## 8.Maintenance and Cleaning

### 8.1 Checking Heat Dissipation

If the inverter regularly reduces its output power due to high temperature, please improve the heat dissipation condition. Maybe you need to clean the heat sink.

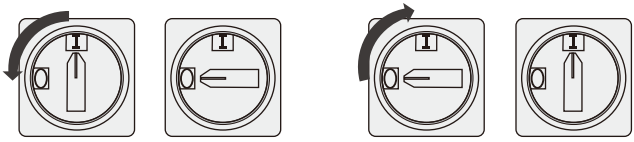
8.2 Cleaning the Inverter

If the inverter is dirty, turn-off the AC breaker and DC switch ,waiting the inverter shut down , then clean the enclosure lid, the display, and the LEDs using only a wet cloth. Do not use any cleaning agents (e.g. solvents or abrasives).

### 8.3 Checking the DC Disconnect

Check for externally visible damage and discoloration of the DC Disconnect and the cables at regular intervals. If there is any visible damage to the DC Disconnect, or visible discoloration or damage to the cables, contact the installer.

Once a year, turn the rotary switch of the DC Disconnect from the On position to the Off position 5 times in succession. This cleans the contacts of the rotary switch and prolongs the electrical endurance of the DC Disconnect.



## 9.Trouble shooting

Sometimes, the PV inverter does not work normally, we recommend the following solutions for common troubleshooting. The following table can help the technician to understand the problem and take action.

| Error message | Description | Suggestion |
|---|---|---|
| NO Utility | No utility grid connected or utility grid power failure. | 1.Check AC wiring, especially the ground wire<br>2.Contact the installation contractor or supplier |
| Inverter temperature fault | NTC error | 1.Restart inverter.<br>2.If error message still exists, contact the installation contractor or supplier. |
| PV High fault | The DC input voltage is exceeding the Maximum tolerable value. | 1.Disconnect the DC switch immediately. |
| Grid voltage fault | Utility grid voltage is out of permissible range. | 1.Check grid voltage.<br>2.If the error message still exists despite the grid voltage being within the tolerable range, contact the installation contractor or supplier. |
| Grid frequency fault | Utility grid Frequency out of permissible range. | 1.Check grid frequency.<br>2.If the error message is displayed despite the grid frequency being within the tolerable range, contact the installation contractor or supplier. |
| PV ISO fault | Insulation problem | 1.Check if panel enclosure ground properly.<br>2.Check if inverter ground properly.<br>3.Check if the DC breaker gets wet.<br>4.If the error message is displayed despite the above checking passed, contact the installation contractor or supplier. |
| DCI High | Output current DC offset too high | 1.Restart inverter.<br>If error message still exists, contact the installation contractor or supplier. |
| GFCI damage | GFCI Device Damage | 1.Restart inverter.<br>2.If error message still exists, contact the installation contractor or supplier. |
| Hall sensor fault | HCT fault | 1.Restart inverter.<br>2.If error message still exists, contact the installation contractor or supplier. |
| Rely fault | Rely error | 1.Restart inverter.<br>2.If error message still exists, contact the installation contractor or supplier. |
| Communication fault | CPU communication fault | 1.Restart inverter.<br>2.If error message still exists, contact the installation contractor or supplier. |
| Soft FW fault | Soft FW Don't match | 1.Restart inverter.<br>2.If error message still exists, contact the installation contractor or supplier. |
| PE fault | No grounding wire or poor contact. | 1.check PE<br>If error message still exists, contact theinstallation contractor or supplier. |

**Note:** If the suggestions do not work, please connect to the installation contractor or supplier.

## 10.Decommissioning

### 10.1 Dismantling the Inverter

1 Disconnect the inverter as described in section 7.

2 Remove all connection cables from the inverter.

| | |
|---|---|
| caution | **Danger of burn injuries due to hot enclosure parts!**<br>Wait 20 minutes before disassembling until the housing has cooled down. |

3 Screw off all projecting cable glands.

4 Lift the inverter off the bracket and unscrew the bracket screws.

### 10.2 Packing the Inverter

If possible, always pack the inverter in its original carton and secure it with tension belts. If it is no longer available, you can also use an equivalent carton. The box must be capable of being closed completely and made to support both the weight and the size of the inverter.

### 10.3 Storing the Inverter

Store the inverter in a dry place where ambient temperatures are always between -25°C and +60°C.

### 10.4 Disposing of the Inverter

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

| Model | MPiO15000W3#1000VPVM |
|---|---|
| Input data | |
| Max.DC power | 18000W |
| Max.DC voltage | 1000V |
| Start voltage | 160V |
| PV voltage range | 160V-1000V |
| MPP voltage rang | 200V-1000V |
| Full load voltage range | 510V-850V |
| Max.input current | 21A/11A |
| Number of independent MPP trackers /strings per MPP tracker | 2/2+1 |
| DC connection | H4/MC4 |
| **Output (AC)** | |
| Rated AC output power | 15000W |
| Max.AC apparent power | 16500VA |
| Max.output current | 23.8A |
| Nominal AC Voltage | 230V/400V |
| AC Voltage range | 184Vac-300Vac |
| AC grid frequency range | 50±5Hz |
| | 60±5Hz |
| Power factor at Rated power | 1 |
| Adjustable displacement power factor | 0.8leading...0.8lagging |
| THDi @ Full load%THDv <1% | < 3% |
| AC grid connection type | 3W+N+PE |
| **Efficiency** | |
| Max.efficiency | 98.4% |
| Euro weighted efficiency | 98% |
| MPPT efficiency | 99.5% |

| | |
|---|---|
| **Protection devices** | |
| DC reverse polarity protection | yes |
| Output over current protection | yes |
| Output overvoltage protection-varistor | yes |
| DC reverse polarity protection | yes |
| DC switch rating for each MPPT | yes(opt.) |
| Ground fault monitoring | yes |
| Integrated all-pole sensitive leakage current monitoring unit | yes |
| **General Data、Features** | |
| Dimension(W/H/D)(mm) | 500*428*200 |
| weight (kg) | 24.8 |
| Operation temperature range | -25℃-+60℃ with derating above 45℃ |
| Noise emission(typical) | ≤35dB(A) |
| Altitude | 3000m |
| Self-consumption night | < 1W |
| Topology | transformerless |
| Cooling concept | Natural |
| Environmental protection Rating | Ip65 |
| Relative humidity | 100% |
| **Features** | |
| AC connection | connector |
| Display | LED |
| Interfaces:USB/WI-FI/ GPRS/ RS485 | YES/YES /Opt/YES |
| Warranty | Standard 5 years/10 years (opt.) |
| Certificates and approvals | CE/IEC62109 |

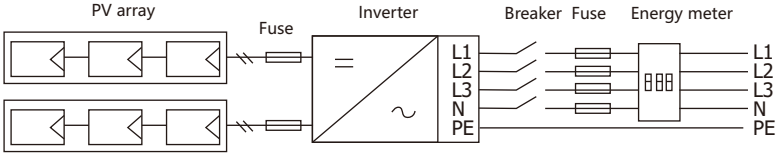
**11.2 Accessories**

We offers 1 years product warranty for MPiO15000W3#1000VPVM inverter from date of installation. However the warranty period can't exceed 12 months from the date of delivery of the inverter. During the warranty period, We guarantees normal operation of the inverter. During the warranty period, if the inverter is defective or faulty, please contact your installation contractor or supplier. If the fault is PMPiO15000W3#1000VPVM's responsibility, we will provide service and maintenance free of charge.

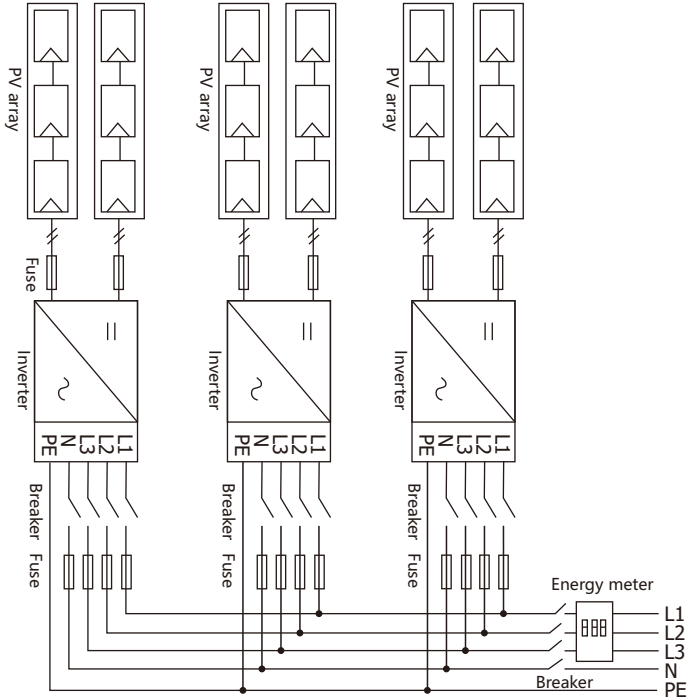
**12.PV system installation**

Installation with multiple inverters on three phase system

(A) Single inverter




(B) Multi inverter




**13 Contact**

If you have technical problems about our products, contact the installation contractor or supplier .

- ▶ We need the following information in order to provide you with the necessary assistance:
- ▶ Inverter type
- ▶ Inverter error messages
- ▶ Inverter LED display
- ▶ Type and number of PV modules connected
- ▶ Optional equipment

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