



# USER MANUAL

## 1.5KVA-10KVA OGM Series Hybrid Inverter



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# ABOUT THIS MANUAL

## Purpose

The purpose of this manual is to provide explanations and procedures for installing, operating and troubleshooting for the unit. This manual should be read carefully before installations and operations. Please retain this manual for future reference.

## Scope

This document defines the functional requirements of the unit, intended for worldwide use in electronic processing equipment. All manuals are applicable under all operating conditions when installed in the End Use system, unless otherwise stated.

# IMPORTANT SAFETY INSTRUCTIONS



**WARNING:** This chapter contains important safety and operating instructions. Read and keep this User Guide for future reference.

## General Precautions

1. Before using the unit, read all instructions and cautionary marking:
  - (1) The unit (2) the batteries (3) all appropriate sections of this manual.
2. **CAUTION** --To reduce risk of injury, charge only deep-cycle lead acid type rechargeable batteries. Other types of batteries may burst, causing personal injury and damage.
3. Do not expose the unit to rain, snow or liquids of any type. The unit is designed for indoor use only. Protect the unit from splashing if used in vehicle applications.
4. Do not disassemble the unit. Take it to a qualified service center when service or repair is required. Incorrect re-assembly may result in a risk of electric shock or fire.
5. To reduce risk of electric shock, disconnect all wiring before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.

6. **CAUTION** --Battery are not already installed by the supplier only a qualified professional (e.g. service person) may install the Inverter.
  
7. **WARNING: WORKING IN VICINITY OF A LEAD ACID BATTERY IS DANGEROUS.**  
**BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL OPERATION.** Provide ventilation to outdoors from the battery compartment. The battery enclosure should be designed to prevent accumulation and concentration of hydrogen gas in “pockets” at the top of the compartment. Vent the battery compartment from the highest point. A sloped lid can also be used to direct the flow to the vent opening location.
  
8. **NEVER** charge a frozen battery.
  
9. **No terminals or lugs are required for hook-up of the AC wiring. AC wiring must be no less than 8 AWG gauge copper wire.** Battery cables must be rated for 35mm or higher and should be no less than table 1. Crimped and sealed copper ring terminal lugs with a HRNB38-8 hole should be used to connect the battery cables to the DC terminals of the unit. Soldered cable lugs are also acceptable.
  
10. Be extra cautious when working with metal tools on, or around batteries. The potential exists to drop a tool and short-circuit the batteries or other electrical parts resulting in sparks that could cause an explosion.
  
11. No AC or DC disconnects are provided as an integral part of this unit. Both AC and DC disconnects must be provided as part of the system installation. See INSTALLATION section of this manual.
  
12. Fuses are provided as the over current protection of the battery supply.
  
13. When PV module or panel is exposed to light, it starts to supply high DC voltage, be sure to turn off DC switch before commencing the maintenance, and make sure the cables from PV panel are properly sealed after disconnection.
  
14. **GROUNDING INSTRUCTIONS** -This battery charger should be connected to a grounded permanent wiring system. For most installations, the Ground Lug should be bonded to the grounding system at one (and only one point) in the system. All installations should comply with all national and local codes and ordinances.

15. **AVOID** AC output short-circuit; avoid DC input short-circuit and not connect the mains while DC input short-circuit
  
16. **Warning:** The maintenance information is only to service persons, If the product is used in a manner which is not covered by the scope of warranty, the protection provided by the product maybe impaired.

## Personal Precautions

1. Someone should be within range of your voice to come to your aid when you work near batteries.
  
2. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
  
3. Wear complete eye protection and clothing protection. Avoid touching eyes while working near batteries. Wash your hands when done.
  
4. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eyes, immediately flood eyes with running cool water for at least 15 minutes and get medical attention immediately.
  
5. Baking soda neutralizes lead acid battery electrolyte. Keep a supply on hand in the area of the batteries.
  
6. NEVER smoke or allow a spark or flame in vicinity of a battery or generator.
  
7. Be extra cautious when working with metal tools on, and around batteries. Potential exists to short-circuit the batteries or other electrical parts which may result in a spark which could cause an explosion.
  
8. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with battery. Battery can produce short-circuit current high enough to weld a ring, or the like, to metal causing severe burns.

9. If a remote or automatic generator start system is used, disable the automatic starting circuit and/or disconnect the generator from its starting battery while servicing to prevent accidental starting during servicing.

# INSTALLATION

## Unpacking and Inspection

Carefully unpack the inverter/charger from its shipping carton.

Verify all of items list below are present. Please call customer service if any items are missing.

- The unit
- 1 user manual

## Basic Configuration

1.5KVA-10KVA OGM Series hybrid Inverter is designed to serve as a backup power supply for AC loads. The input power of 1.5KVA-10KVA OGM Series hybrid Inverter comes from PV system and AC grid which not only supply power to AC loads but also charge the battery bank when the power from AC grid or AC generator is present (also known as Line Mode).

In the event of AC grid (or AC generator) outage, the AC loads can be alternatively powered by PV system (if the illumination is sufficient) and battery bank.

The following illustrations show basic applications for 1.5KVA-10KVA OGM Series hybrid Inverter.

Figure 1. Typical Application of 1.5KVA-10KVA OGM series  
hybrid Inverter

PV System



AC Generator



Note: Appliances like Air conditioner needs at least 3 minutes to restart in case of a power shortage occurs in a way that the power turns off then back on again rapidly (time is required to balance the refrigerant gas in inside circuit); so in order to protect your Air conditioner, please consult the Air conditioner manufacturer whether they have already provided time delay function before installing. Otherwise, Inverter will trig overload fault and shut off its output to protect your appliance but sometimes it is not enough and your Air conditioner can be damaged internally beyond repair.

## Batteries

The unit support 12volt,24volt or 48vlot battery bank. Please wire battery correctly. Before proceeding, ensure you have appropriate size batteries for this inverter. The unit can use flooded lead-acid, or sealed GEL/AGM lead-acid batteries so ensure that your batteries are in one of these categories. 1.5KVA-10KVA OGM inverter with built-in MPPT solar controller, for the battery and solar panel connection please refer to figure 2, figure3 and figure4. If with the built-in 48 MPPT 40A solar charge controller, then please configure solar panels more than 2350W, otherwise it can not reach the maximum charge current, if with the built-in48MPPT60A solar charge controller, then please configure solar panels more than 3500W, otherwise it can not reach the maximum charge current.

Note: If you are using a gel battery or a deep cycle battery, please do not use ordinary lead-acid batteries for use in solar energy systems. This is likely to damage the lead acid battery or to reach the desired effect.The battery must be wired to match with the DC input voltage. Recommend to use battery capacity more than 200AH .

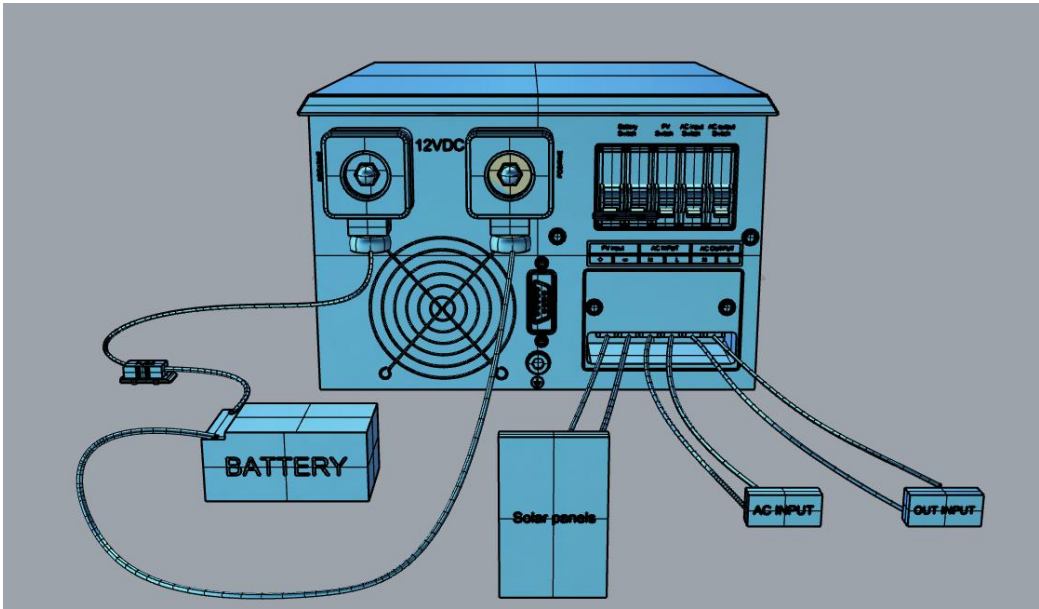


Figure 2. 1.5KVA OGM 12V solar inverter system- the connection diagram of solar panel and batter

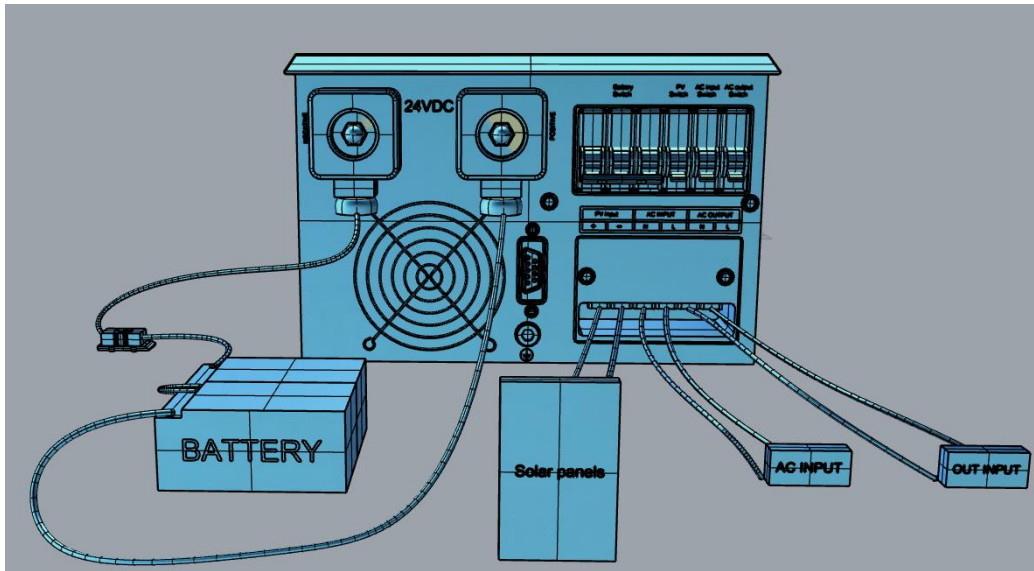


Figure3. 2.5-3.5KVA OGM 24Vsolarinvertersystem-theconnectiondiagram of solar panel and battery

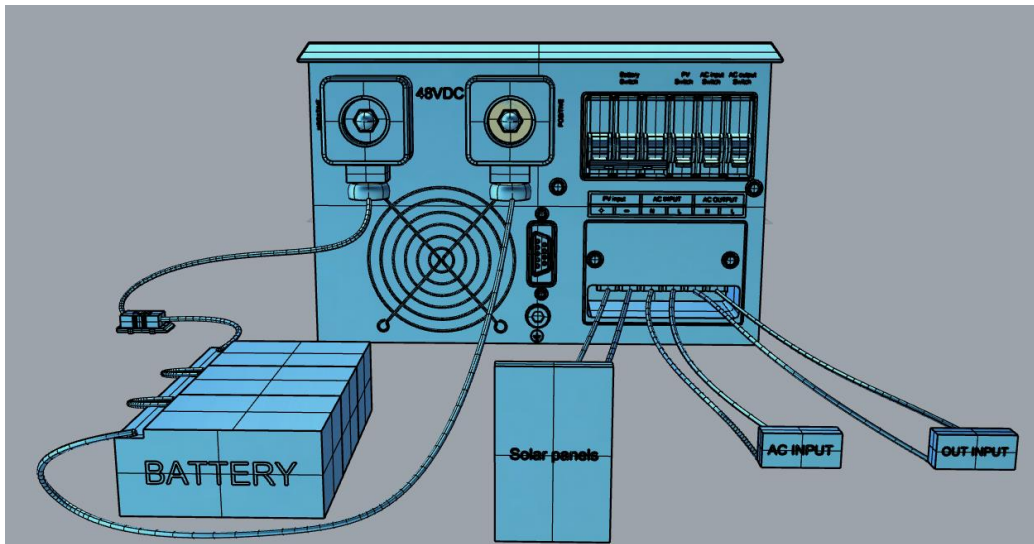


Figure4. 6-10KVA OGM 48Vsolarinvertersystem-theconnectiondiagram of solar panel and battery

## Battery Cable Size

Below table 1 you can find information for recommended battery cable and terminal.

Table 1. Recommended battery cable and terminal size

| Model | DC | Typical | Battery | 1~3 m | 0.5 m | Cable Terminal |
|-------|----|---------|---------|-------|-------|----------------|
|-------|----|---------|---------|-------|-------|----------------|

| Number | Voltage | Amperage | Capacity | one-way           | one-way           |          |
|--------|---------|----------|----------|-------------------|-------------------|----------|
| 1.5KVA | 12V     | 100A     | 200AH    | 25mm <sup>2</sup> | 25mm <sup>2</sup> | RNBS16-8 |
| 2.5KVA | 24V     | 100A     | 400AH    | 25mm <sup>2</sup> | 25mm <sup>2</sup> | RNBS16-8 |
| 3.5KVA | 24V     | 150A     | 400AH    | 35mm <sup>2</sup> | 35mm <sup>2</sup> | RNBS16-8 |
| 6KVA   | 48V     | 125A     | 800AH    | 35mm <sup>2</sup> | 35mm <sup>2</sup> | RNBS16-8 |
| 10KVA  | 48V     | 200A     | 800AH    | 50mm <sup>2</sup> | 50mm <sup>2</sup> | RNBS25-8 |
|        |         |          |          |                   |                   | RNBS25-8 |

## DC Disconnect and Over-Current Protection

For safety and to comply with regulations, battery over-current protection and disconnect devices are required. Fuses and disconnects must be sized to protect the DC cables is used, and must be rated for DC operation. Do not use devices rated only for AC service – they will not function properly.

Note that some installation requirements may not require a disconnect device, although over-current protection is still required.


## Battery Cable Connection

Observe Battery Polarity! Place the ring terminal of DC cable over the bolt and directly against the unit's battery terminal. Tighten the M8 screw with 6-10 Nm. Do not place anything between the flat part of the Backup System terminal and the battery cable ring terminal or overheating may occur.

**DONOTAPPLYANYTYPEOFANTI-OXIDANTPASTETOTERMINALSUNTILAFTERTHEBATTERY CABLE WIRING ISTORQUED!!**

### **WARNING: Shock Hazard**

Installation must be performed with care for the high battery voltage in series.

 **Caution!!** Do NOT place anything between battery cable ring terminals and terminals on the inverter. The terminal screw is not designed to carry current.

Apply Anti-oxidant paste to terminals AFTER terminals have been screwed.

Verify that cable lugs are flush with the battery terminals. Tighten battery cables to terminals (6-10 Nm).

## AC Cable Size

Before wiring the input and output of inverter, refer to table 2 for minimum recommended cable size and torque value

Table 2. Recommended cable size and torque value for AC wire

| Model Number | Typical | AC Input | AC Output | Torque value |
|--------------|---------|----------|-----------|--------------|
|--------------|---------|----------|-----------|--------------|

|                   | <b>Amperage</b> |       |        |            |
|-------------------|-----------------|-------|--------|------------|
| 1.5KVA OGM 230Vac | 10A             | 12AWG | 14AWG  | 1.5~2.0 Nm |
| 2.5KVA OGM 230Vac | 15A             | 12AWG | 12AWG  | 1.5~2.0 Nm |
| 3.5KVA OGM 230Vac | 20A             | 12AWG | 12AWG  | 1.5~2.0 Nm |
| 6KVA OGM 230Vac   | 40A             | 12AWG | 12AWG  | 1.5~2.0 Nm |
| 10KVA OGM 230Vac  | 60A             | 10AWG | 10 AWG | 2.0~2.5 Nm |

## AC Connections

Installation should be done by a qualified electrician. Consult local code for the proper wire sizes, connectors and conduit requirements.

On the left of the AC hard wire cover. Two three-station terminal block is provided to make the AC connections. The terminal block is used to hard wire the AC input, AC output, and ground. The National Electrical Code requires that an external disconnect switch be used in the AC input wiring circuit. The AC breakers in a sub panel will meet this requirement.

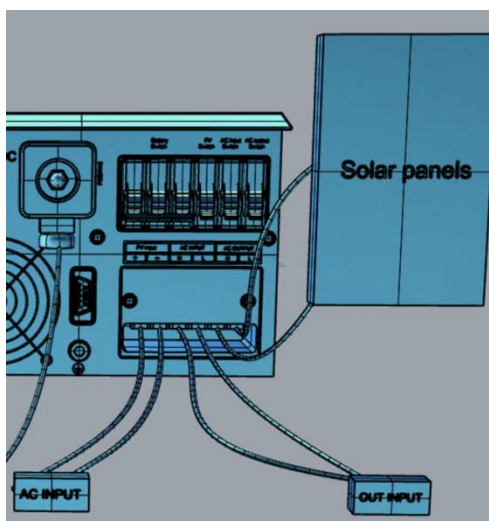


Figure 5. AC Cable Connect to unit

Step 1: Disconnect the unit from the battery by removing the battery cables. Turning off the unit before disconnect from the battery.

Step2: Following the wiring guide located in the AC input wiring compartment as figure5, connect the GND (green/yellow), Line (brown), and neutral (blue) wires from the AC input (utility, generator etc) to the terminal block.

**⚠ Caution!!** Be sure that AC source is disconnected before attempting to hardwire it to the unit.

Step 3: Connect the AC Line output wiring to the terminal marked AC Line (output), following the wiring guide inside the compartment. Torque the wires into the terminal block.

Step 4: Lock the AC covers.

## Machine panel introduction

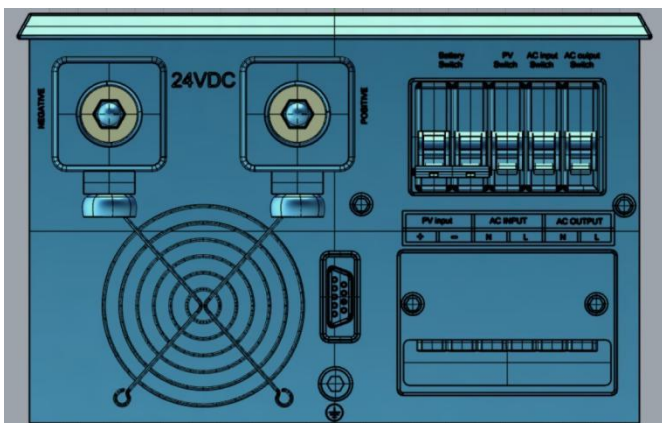


Figure 6. 1.5KVA Front panel

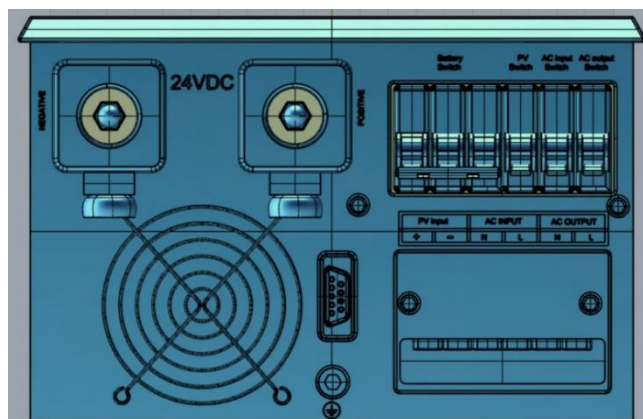


Figure 7. 2.5-10KVA Front panel

## OPERATION

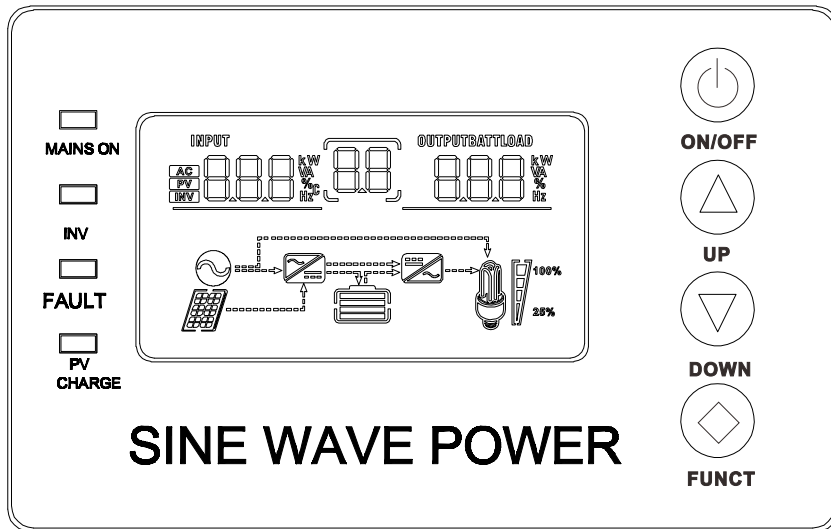


Table 3. configuration button function

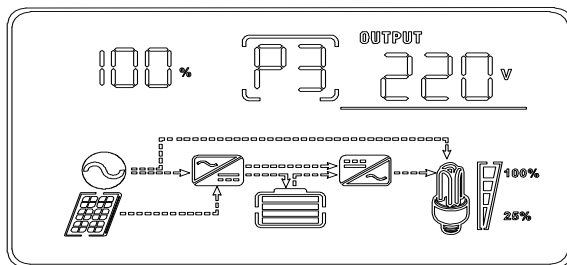
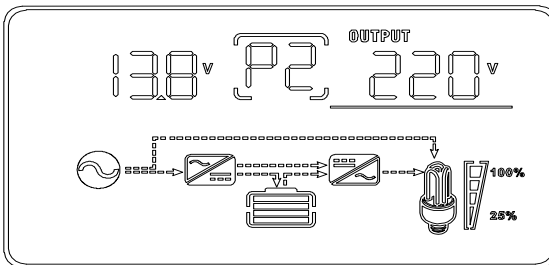
| Switch        | Description  |
|---------------|--|
| <b>ON/Off</b> | Long press 3 seconds to hear a beep to turn on,<br>press 5 seconds to turn off |
| <b>UP</b>     | Page up, data increment  |
| <b>DOWN</b>   | Page down, data is decreasing  |
| <b>FUNCT</b>  | Function setting   |

| LED Indicator    |  |
|------------------|--|
| LED              | Description  |
| <b>MAINS ON</b>  | Mains input indication, the inverter is working in bypass, and the mains is charging the battery |
| <b>INV</b>       | Battery inverter status indication   |
| <b>FAULT</b>     | Inverter overload indication   |
| <b>PV CHARGE</b> | PV Input and charging indication   |

C

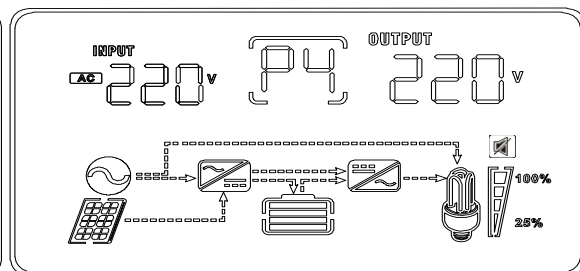
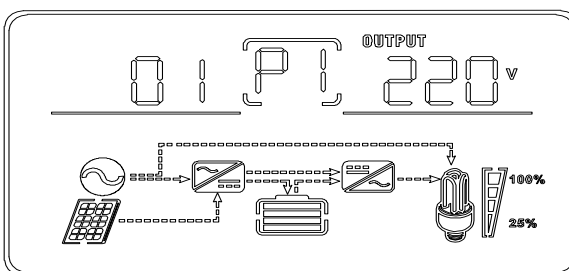
1. Charging voltage regulation

2. Charging current regulation

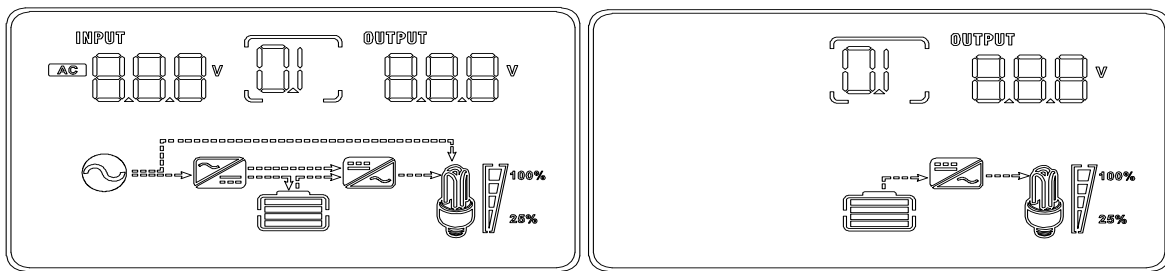


3. Buzzer on & off

4. Mode selection

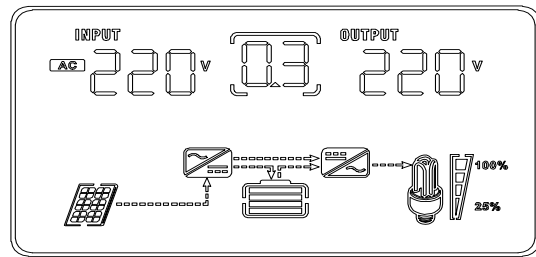
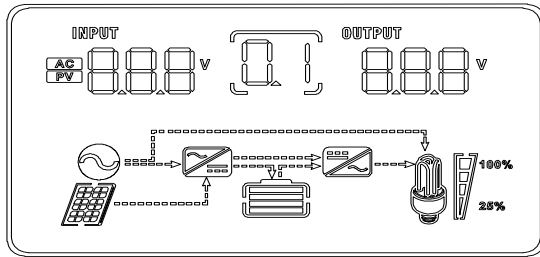


## 5. DC/AC/ Intelligent mode selection setting



### 6.AC mode priority

### DC mode priority

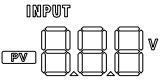
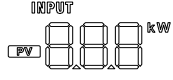
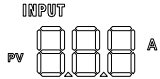
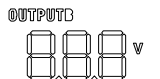
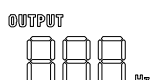
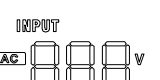

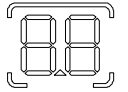


### Intelligent mode




### LCD display meaning

**Table 5. display meaning**

|  |   |
|--|---|
|  | Grid input icon   |
|  | AC-DC icon  |
|  | DC-AC icon  |
|  | PV -icon  |
|  | Bypass Icon   |
|  | AC Voltage and Frequency display  |
|  | The load icon and level bar indicates the loading level (0~100%), Loading display |
|  |   |









|   |   |
|---|---|
|   | Level of remaining battery capacity, Battery voltage  |
|    | PV (Solar system)   |
|    | PV (Solar system) power generation display  |
|    | Pv charging current   |
|    | Output voltage  |
|    | Output frequency  |
|  | AC input voltage  |
|  | Light on - prohibit the buzzer, light off – allow the buzzer tweets                               |
|  | inverter working mode selection:<br>01 mains priority, 02 energy saving mode, 03 battery priority |

## Inverter working mode LCD setting instructions :

Long press the function key for 5 seconds  , the inverter enters the function parameter setting state, P0 Flashing, press  /  key respectively P0, P1, P2, P3, P4 flashing,

P1-P4 represent the four functional parameters of the inverter, and they are set as follows :

| Display code | Description   |
|--------------|---|
| P0           | Exit settings ; After setting the required parameters, press ▲/▼ to P0 flashing, press ⬡, P0 no flashing, press ⬡ again to exit settings  |
| P1           | Long press the function key for 5 seconds ⬡ enter setting state, press ⬡ to P1 flashing, press ⬡ again 01、 02、 03 flashing, press ▲/▼ can choose, 01 Mains priority, 02 is energy saving mode, 03 is battery priority mode  |
| P2           | Long press the function key for 5 seconds ⬡ enter setting state, press ▲/▼ to p2 flashing, press ⬡ again, has a value representing the charging voltage flashing, press ▲/▼ can choose the required charging voltage.   |
| P3           | Long press the function key for 5 seconds ⬡ enter setting state, press ▲/▼ to p3 flashing, press ⬡ again, 20%、 40%、 60%、 80%、 100% flashing, Each percentage corresponds to 10A、 15A、 20A, 25A、 30A charging current, press ▲/▼ can choose the required charging current. |

|     |  |
|-----|--|
| P 4 | <p>Long press the function key for 5 seconds  enter setting state, press / to p 4 flashing, press / can choose "ON" icon</p> <p> Buzzer on,  light one,  Buzzer off</p> |
|-----|--|

### Description of Buzzer alarm

|                                |  |  |
|--------------------------------|--|--|
| Inverter is operating normally | Buzzer prohibited  | By default, the buzzer does not sound  |
|                                | Buzzer on  | The buzzer beeps 4 times every 15 seconds to indicate that the inverter is in the battery - inverter state |
| Battery high voltage alarm     | The buzzer beeps 4 times per second, indicating that the battery voltage is too high |  |
| Battery low voltage alarm      | The buzzer beeps twice per second to indicate that the battery voltage is too low    |  |
| Over temperature alarm         | Buzzer beeps for 2 seconds, stop for 1 second  |  |

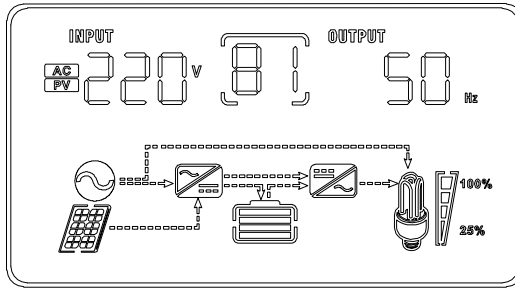
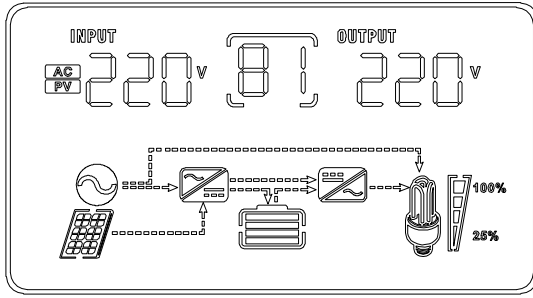
### Operating Indicators

#### DC Mode:

Voltage and Frequency exchange every 5 seconds.  
every 5 seconds.

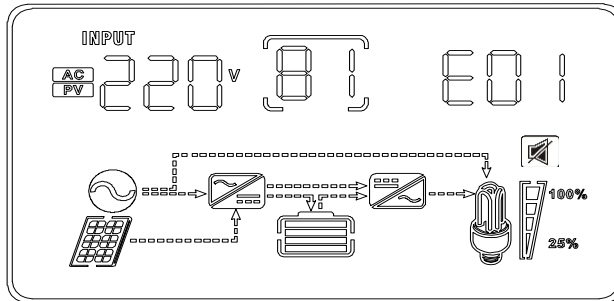
#### PV Mode:

Voltage and Frequency exchange



**Fault Mode:**

The upper left corner of the LCD shows the fault code and buzzer ringing.



|                          |                         |                                      |                           |
|--------------------------|-------------------------|--------------------------------------|---------------------------|
| E01                      | E02                     | E03                                  | E04                       |
| Power tube over current  | Output short circuit    | Overload                             | Over temperature          |
| E05                      | E06                     | E07                                  | E08                       |
| Battery voltage too high | Battery voltage too low | The power amplifier wire is reversed | Output voltage is too low |

# SPECIFICATIONS

**Table 7. Line Mode Specifications**

| Model                  | 1.5KVA OGM  | 2.5KVA OGM | 3.5KVA OGM | 6KVA OGM | 10KVA OGM |
|------------------------|---|------------|------------|----------|-----------|
| Rated power            | 1KW   | 2KW        | 3KW        | 5KW      | 8KW       |
| Input Voltage Waveform | Sine wave(Utility or Generator)   |            |            |          |           |
| Nominal Input Voltage  | 220Vac  |            |            |          |           |
| Low Line Disconnect    | 176Vac±4%(NOR)  |            |            |          |           |
|                        | 130Vac±4%(WID)  |            |            |          |           |
| Low Line Re-connect    | 185Vac±4%(NOR)  |            |            |          |           |
|                        | 138Vac±4%(WID)  |            |            |          |           |
|                        | Note: 1.NOR setting can be used for general electrical appliance<br>2. WID setting can be used only for some special load, Such as lamp, fan. |            |            |          |           |

|  |                                      |
|--|--------------------------------------|
| <b>High Line Disconnect</b>              | 251Vac±4%(NOR)                       |
|  | 251Vac±4%(WID)                       |
| <b>High Line Re-connect</b>              | 242Vac±4%(NOR)                       |
|  | 242Vac±4%(WID)                       |
| <b>Max AC Input Voltage</b>              | 258VAC                               |
| <b>Nominal Input Frequency</b>           | 50Hz / 60Hz (Auto detection)         |
| <b>Low Line Frequency Disconnect</b>     | 40+0.3Hz for 50Hz, 50+0.3Hz for 60Hz |
| <b>Low Line Frequency Re-connect</b>     | 41+0.3Hz for 50Hz, 51+0.3Hz for 60Hz |
| <b>High Line Frequency Disconnect</b>    | 55+0.3Hz for 50Hz, 65+0.3Hz for 60Hz |
| <b>High Line Frequency Re-connect</b>    | 54+0.3Hz for 50Hz, 64+0.3Hz for 60Hz |
| <b>Output Voltage Waveform</b>           | As same as Input Waveform            |
| <b>Output Short Circuit Protection</b>   | Air switch                           |
| <b>Efficiency (Line Mode)</b>            | >97%                                 |
| <b>Transfer Time</b>                     | 15ms (typical) 20ms max(WID)         |
| <b>Bypass charger enable in off mode</b> | Yes                                  |

Note: NOR – Normal range; WID-Wide range

**Table 8. Invert Mode Specifications**

| Model | 1.5KVA OGM | 2.5KVA OGM | 3.5KVA OGM | 6KVA OGM | 10KVA OGM |
|-------|------------|------------|------------|----------|-----------|
|-------|------------|------------|------------|----------|-----------|

|   |  |                    |                   |
|---|--|--------------------|-------------------|
| <b>Output Voltage Waveform</b>                    | Pure Sine Wave   |                    |                   |
| <b>Rated Output Power</b>                         | 1 ~ 8KW(220VAC)  |                    |                   |
| <b>Power Factor</b>                               | 0.9 - 1.0  |                    |                   |
| <b>Nominal Output voltage</b>                     | 220Vac   |                    |                   |
| <b>Minimum Peak Output Voltage at Rated Power</b> | >191V  |                    |                   |
| <b>Output Frequency (Hz)</b>                      | 50Hz / 60Hz $\pm$ 0.3Hz  |                    |                   |
| <b>Output Voltage Regulation</b>                  | $\pm$ 10%  |                    |                   |
| <b>Nominal Efficiency</b>                         | >87% (@Normal DC Input; >60% R load)   |                    |                   |
| <b>Over-Load Protection</b>                       | 105% <load<150%, beeps 0.5s every 1s, and Fault after 60s.<br><br>Load>150%, beeps 0.5s every 1s, and Fault after 20s. |                    |                   |
| <b>Capable of starting electric motor</b>         | YES  |                    |                   |
| <b>Output Short Circuit Protection</b>            | Current limit (Fault after 10s), Air switch  |                    |                   |
| <b>Power saver</b>                                | Load $\leq$ 25 $\pm$ 5W (Enabled on "P/S auto" setting of Remote control)  |                    |                   |
| <b>DC voltage</b>                                 |  |                    |                   |
| <b>Nominal DC Input Voltage</b>                   | 12VDC  | 24VDC              | 48VDC             |
| <b>Min DC start voltage</b>                       | 10.5Vdc  | 21Vdc              | 42Vdc             |
| <b>Low DC Alarm</b>                               | 10.5Vdc $\pm$ 0.2Vdc   | 21Vdc $\pm$ 0.4Vdc | 42.0 $\pm$ 0.8Vdc |
| <b>Low DC Shut-down</b>                           | 10.5Vdc $\pm$ 0.2Vdc   | 20Vdc $\pm$ 0.4Vdc | 40.0 $\pm$ 0.8Vdc |
| <b>High DC Shut-down</b>                          | 16.0Vdc $\pm$  | 32Vdc $\pm$ 0.4Vdc | 64.0 $\pm$ 0.8Vdc |

|                                   |                  |                |               |
|-----------------------------------|------------------|----------------|---------------|
|                                   | 0.2Vdc           |                |               |
| <b>High DC Shut-down Recovery</b> | 15.5Vdc ± 0.2Vdc | 31Vdc ± 0.4Vdc | 62.0 ± 0.8Vdc |

**Table 9. AC Charger Mode specification:**

|                                |                                     |
|--------------------------------|-------------------------------------|
| <b>Nominal Input Voltage</b>   | 220Vac                              |
| <b>Input Voltage Range</b>     | 185V -242Vac(NOR) 153V -242Vac(WID) |
| <b>High Voltage Disconnect</b> | 242Vac±4%(NOR) 242Vac±4%(WID)       |
| <b>High Line Re-connect</b>    | 237Vac±4%(NOR) 237Vac±4%(WID)       |
| <b>Low Voltage Disconnect</b>  | 185Vac±4%(NOR) 153Vac±4%(WID)       |
| <b>Low Line Re-connect</b>     | 191Vac±4%(NOR) 157Vac±4%(WID)       |
| <b>Nominal Output Voltage</b>  | According to the battery type       |
|                                | 12VDC model: Max 20A                |
|                                | 24VDC model: Max 20A                |
|                                | 48VDC model: Max 20A                |

|                                 |  |
|---------------------------------|--|
| <b>Nominal Charge Current</b>   | 96VDC model: Max 20A   |
| <b>Charge current tolerance</b> | ±1A  |
| <b>Charge Algorithm</b>         | <b>Three stage:</b><br><br><b>Boost CC</b> (constant current stage)<br><br><b>Boost CV</b> (constant voltage stage)<br><br><b>Float</b> (constant voltage stage) |

Note: NOR – Normal range;  
WID-Widerange

| <b>Rated Battery voltage</b>              | <b>12VDC</b> | <b>24VDC</b> | <b>48VDC</b> | <b>96VDC</b> |
|---|--------------|--------------|--------------|--------------|
| <b>Rated charge current</b>               | 30A          | 50A          | 60A          | 60A          |
| <b>Input voltage range</b>                | 18-150Vdc    | 34-150Vdc    | 65-150Vdc    | 144-180Vdc   |
| <b>Max. PV open circuit array voltage</b> | 170Vdc       | 170Vdc       | 170Vdc       | 234Vdc       |
| <b>Max. recommended input power (W)</b>   | 360W         | 1200W        | 2880W        | 4800W        |

**Table 10. Solar Charger Mode Specifications**

**Table 11. General Specifications**

| <b>MODEL</b> | <b>1.5KVA OGM</b> | <b>2.5KVA OGM</b> | <b>3.5KVA OGM</b> | <b>6KVA OGM</b> | <b>10KVA OGM</b> |
|--------------|-------------------|-------------------|-------------------|-----------------|------------------|
|--------------|-------------------|-------------------|-------------------|-----------------|------------------|

|                                    |  |                       |                       |                     |                      |
|------------------------------------|--|-----------------------|-----------------------|---------------------|----------------------|
| <b>Indicators</b>                  | LED+LCD Display  |                       |                       |                     |                      |
| <b>Protections</b>                 | Low battery, over charging, over load , over temp.   |                       |                       |                     |                      |
| <b>Remote control</b>              | YES  |                       |                       |                     |                      |
| <b>Operating Temperature Range</b> | 0°C ~ 40°C   |                       |                       |                     |                      |
| <b>Storage temperature</b>         | -15°C ~ 60°C   |                       |                       |                     |                      |
| <b>Operation humidity</b>          | 5% ~ 95% (non-condensing)  |                       |                       |                     |                      |
| <b>Earthing(ABYC standard)</b>     | Follow customer requirement:<br>Inverter mode: the neutral and the earth joined ;<br>Line mode: the neutral and the earth separated.<br>Use a Relay to realize the function. |                       |                       |                     |                      |
| <b>Audible Noise</b>               | 65dB max   |                       |                       |                     |                      |
| <b>Cooling</b>                     | Forced air, variable speed fan   |                       |                       |                     |                      |
| <b>Size (L*W*H mm)</b>             | 370*310*150  | 485*350*170           |                       |                     |                      |
| <b>MODEL</b>                       | <b>1.5KVA<br/>OGM</b>  | <b>2.5KVA<br/>OGM</b> | <b>3.5KVA<br/>OGM</b> | <b>6KVA<br/>OGM</b> | <b>10KVA<br/>OGM</b> |
| <b>Net weight (Kg)</b>             |  |                       |                       |                     |                      |

Product specifications are subject to change without further notice

## APPENDIX A

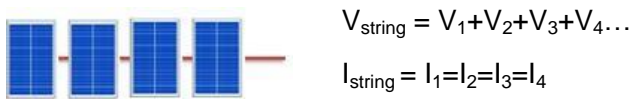
### How to Select and Configure PV Panels

The following parameters can be found in each PV panel's specification:

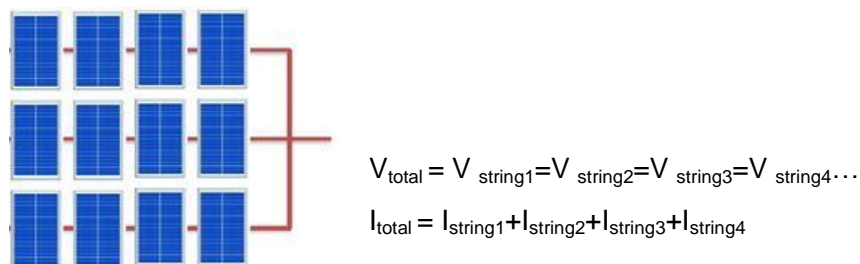
- $P_{max}$ : Max output power(W)
- $V_{mp}$ : max power voltage(V)
- $V_{oc}$ : open-circuit voltage(V)
- $I_{mp}$ : max power current(A)
- $I_{sc}$ : short-circuit current(A)

PV panels can be connected in series or parallel in order to obtain the desired output voltage and current which meets the inverter's allowed range.

When connecting PV panels in series, the max voltage and current of the string is



When connecting the above PV string in parallel, the max voltage and current of the total string is



In either case, the total output power is  $P_{total} = P_{panel}$

X Number of PV panel The guideline to select and configure PV string is

- $P_{total}$  shall be equal or slightly larger than the max. capacity of solar battery charger (900W for 3000VA model and 2600W for 5000VA model). Surplus capacity of PV string does not help the solar charger's capacity and only result in higher installation cost.
- Total  $V_{mp}$  of the string shall be within the operating voltage range of solar battery charger (60~72V for 3000VA model and 120~144V for 5000VA model are recommended).

- Total  $I_{mp}$  of the string shall be less than the max. input charging current of the solar battery charger (20A for 3000VA and 30A for 5000VA model)
- Total  $V_{oc}$  of the string shall be less than the max. PV input voltage of the solar battery charger (75V for 3000VA and 150V for 5000VA model).

**Example 1 - How to connect 4000VA model to PV panels with the following parameters?**

- $P_{max}$ :260W
- $V_{mp}$ :30.9V
- $V_{oc}$ :37.7V
- $I_{mp}$ :8.42A
- $I_{sc}$ :8.89A

(1) The max. PV input power for 3500VA model is 1200W,

$1200W / 260W = 4.6 \Rightarrow$  min. 4 PV panels shall be connected.

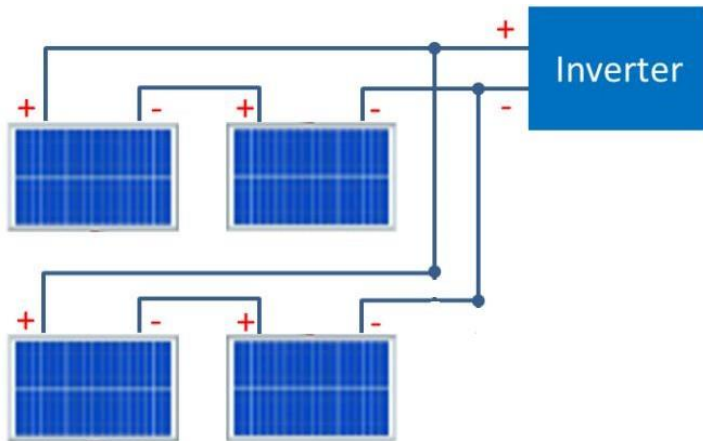
(2) Best Operating Voltage Range is 60~72

$72V/30.9V = 2.33 \Rightarrow$  max. number of PV panel in series is 2.

(3) Max. input charging current is 20A,

$20A/8.42A=2.37 \Rightarrow$  max. number of PV panel in parallel is 2.

(4) Taking (1)~(3) into consideration, the optimized configuration is 2 PV panels in series and 2 strings in parallel, as shown below.



(5) Check again the  $V_{oc}$  and  $I_{sc}$  of PV string,

$V_{oc}$  of string is  $61.8V < 75V$  (Max. PV Input Voltage)  $\Rightarrow$ OK

$I_{sc}$  of string is  $2 \times 8.89A = 17.78A < 20A$  (Max. PV Input Current)  $\Rightarrow$ OK

**Example 2 - How to connect 5000VA model to PV panels with the following parameters?**

- $P_{max}$ :260W
- $V_{mp}$ :30.9V
- $V_{oc}$ :37.7V
- $I_{mp}$ :8.42A
- $I_{sc}$ :8.89A

(1) The max. PV input power for 5000VA

model is 2600W,  $2600W / 260W =$

$10 \Rightarrow$ min. 10 PV panels shall be

connected.

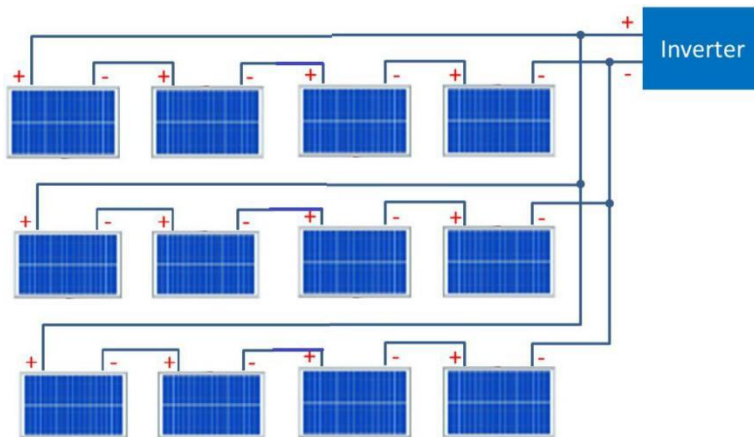
(2) Best Operating Voltage Range is 110~144V,

$144V/30.9V = 4.66 \Rightarrow$ max. number of PV panel in series is 4.

(3) Max. input charging current is 30A,

$30A/8.42A=3.56 \Rightarrow$ max. number of PV panel in parallel is 3.

- (4) Taking (1)~(3) into consideration, the optimized configuration is 4 PV panels in series as a string, and 3 strings in parallel (as shown below).



- (5) Check again the  $V_{oc}$  and  $I_{sc}$  of PV string,

$V_{oc}$  of string is  $4 \times 30.9V = 123.6V < 150V$  (Max. PV Input Voltage)  $\Rightarrow$ OK

$I_{sc}$  of string is  $3 \times 8.89A = 26.67A < 30A$  (Max. PV Input Current)  $\Rightarrow$ OK

## DISPOSAL

In the event the product reaches the end of its service life, please contact the local dealer for disposal instructions.



**The product must not be disposed of with the household waste.**

Disposal of the product at the end of its service life shall be done in accordance with applicable disposal regulations for electronic waste.



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