



Powertronics Inc.
370 Mountain St.
Willimantic, CT 06226
844-241-1046
www.powertronics.us



User Manual



PT-3000

Dear Customers:

Thank you very much for purchasing Powertronic's PT-3000. Before use of this product, please read the user manual fully. Please feel free to contact our customer service department if you have any questions. It is also suggested you keep this user manual in the event more detailed information is needed in the future.

Catalogue

1、 Product Features	1
2、 Installation and storage Guide.....	1
3、 Equipment diagram, operation instructions.....	2
4、 Unit connection icon	11
5、 Power ON/RUN	18
6、 Maintenance	21
7、 Simple fault diagnosis and troubleshooting.....	22
8、 Technical data sheet	23

1 Product Features

- Double CPU intelligent control technology.
- 2 programmable working modes, Grid power & battery power.
- Smart fan control.
- Pure sine wave output for clean and reliable power.
- Wide input voltage range, high-precision automatic voltage output.
- LCD real-time display featuring running status at a glance.
- Battery over-voltage and low-voltage protection, overload protection, short circuit protection, over-temperature protection
- Intelligent MPPT solar controller with over-charge & over-discharge protection and current limiting charging protections.

2 Installation & Storage Instructions

2.1 Out of Package Inspection

2.1.1 Open and inspect the equipment for damage, please ensure the Quick Start and user manual are present.

2.1.2 If the equipment is damaged in transit, such as damaged or missing parts, do not power on, report the damage to carrier and dealer.

2.2 Installation, Storage Precautions

2.2.1 Installation of equipment should be conducted by a qualified technician.

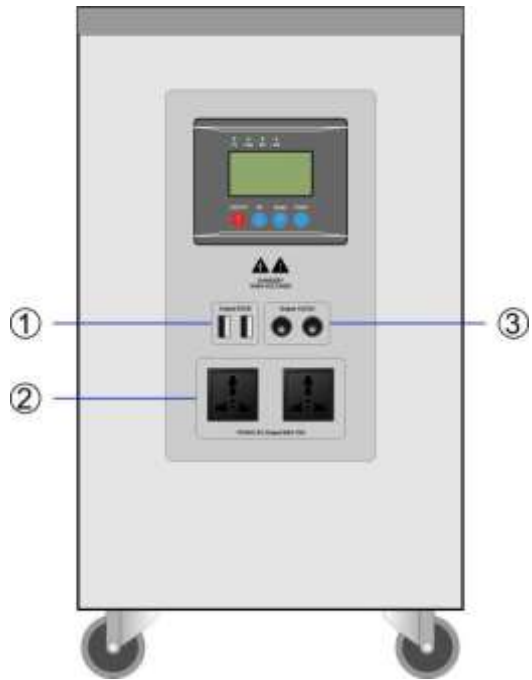
2.2.2 Transport of equipment, from low temperature to high temperature environments may cause condensation, before using, equipment must be completely dry to ensure safety.

2.2.3 Do not expose the equipment to wet, flammable, explosive or a high dust accumulation environment; do not cover or block the vents, 4 inches of air circulation space required for peripheral equipment in order to have proper heat dissipation.

2.2.4 When the equipment is not in use, turn off all the breakers.

3 Unit Diagram/Operation Instructions

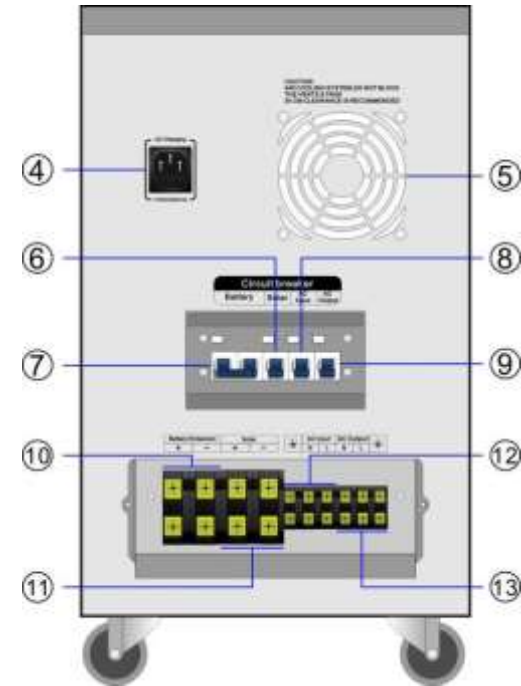
3.1 Front panel icons



Guide

- ①— 5VDC Output (USB sockets)
- ②— AC Outlets
- ③— 12VDC Output

3.2 Side Panel Icons

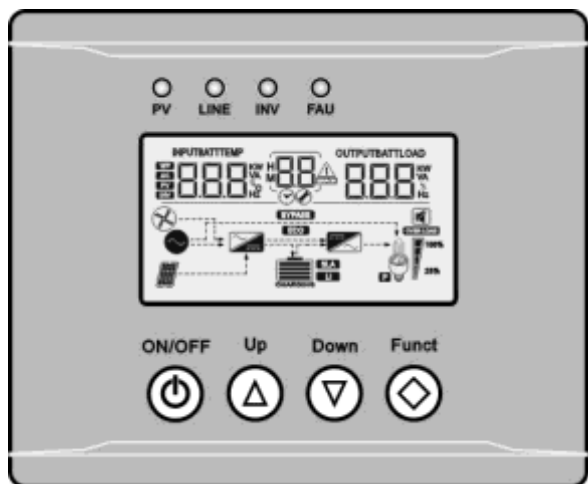


Guide

- ④— AC Input Socket (AC charger)
- ⑤— Cooling Fan
- ⑥— Solar Input Breaker
- ⑦— Battery Input Breaker
- ⑧— AC Input Breaker
- ⑨— AC Output Breaker
- ⑩— External Battery Input Terminals
- ⑪— Solar Input Terminals (Solar Charger)
- ⑫— AC Input Terminals
- ⑬— AC Output Terminals

3.3 Front Panel Instructions

3.3.1 LCD display and operation interface, displays the working status of the equipment, including Input/output voltage, frequency, main mode, inverter mode, battery capacity, charge current, total charge load capacity and warnings.



3.3.2 Keys Description

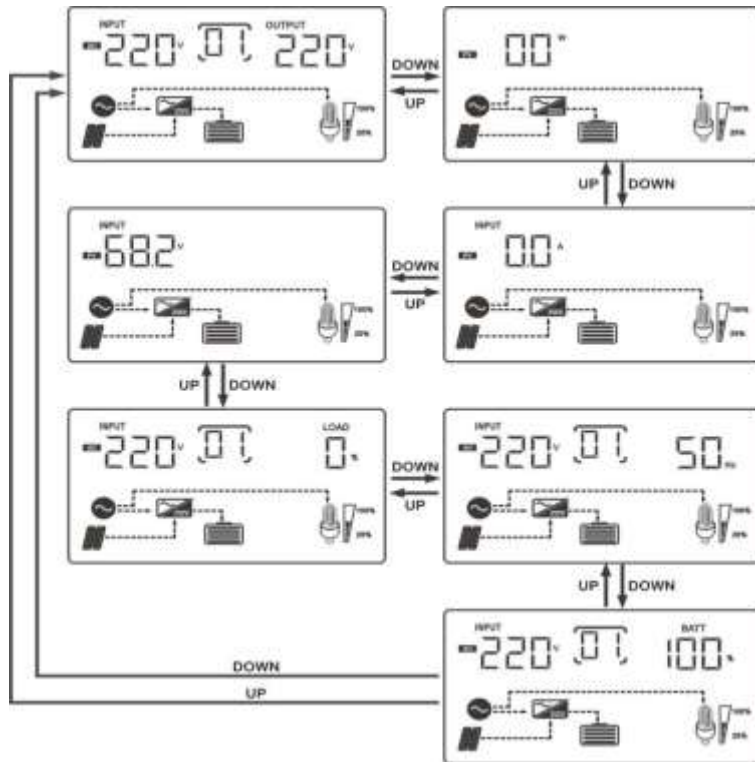
Function keys		Description
	Power ON/ OFF	Press and hold for 2s to switch between ON and OFF.
	Page up/set key	Under the main screen, click to view the unit parameters and set increments
	Scroll down/set key	Under the main screen, click to view the unit parameters and set the decrements
	Function keys	Press and hold to enter unit mode settings. Under settings screen, press to confirm the parameters and return to the main screen.

3.3.3 LED Status Description

LED display			Description
PV	Green	Light	PV start charging
		OFF	PV stop charging
LINE	Green	Light	AC is connected and the output is bypassed
		OFF	No input AC power is connected or the unit is under inversion mode.
INV	yellow	Light	The unit is under inversion mode.
		OFF	The unit is not under inversion mode.
FAU	red	Light	AC output overload or Inverter fault
		OFF	The unit is working normally.

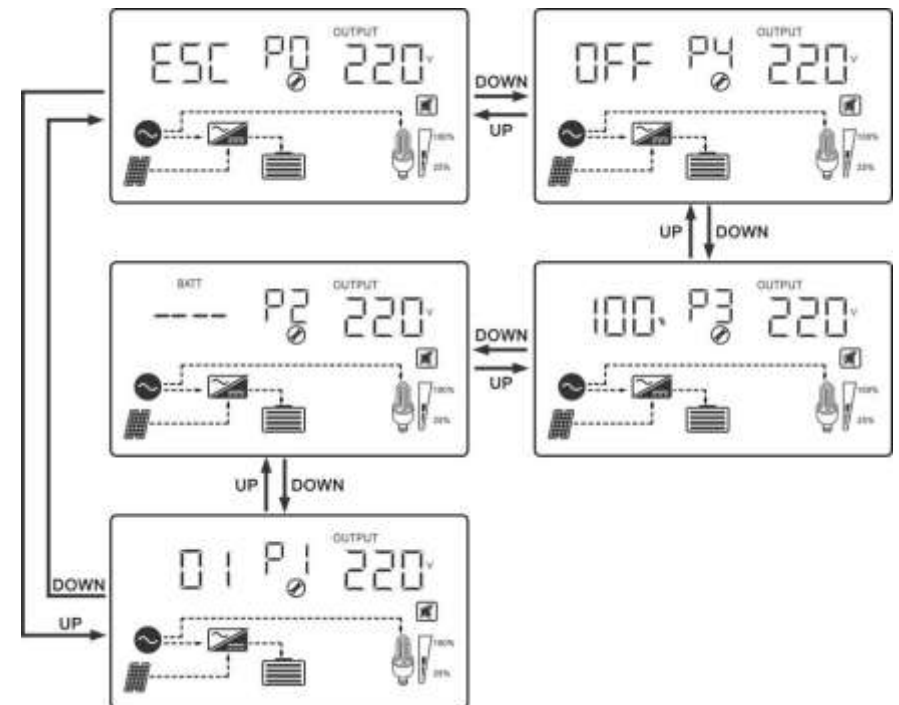
3.3.4 LCD Display Instruction

3.3.4.1 View the main screen: press DOWN or UP to scroll through the screens.



3.3.4.2 Main Menu: From the main screen, press and hold Function key for 5 seconds to enter the main menu, press DOWN or UP to view the sub-menu. The function of P0/P1/P2/P3/P4 when flashing is as follows:

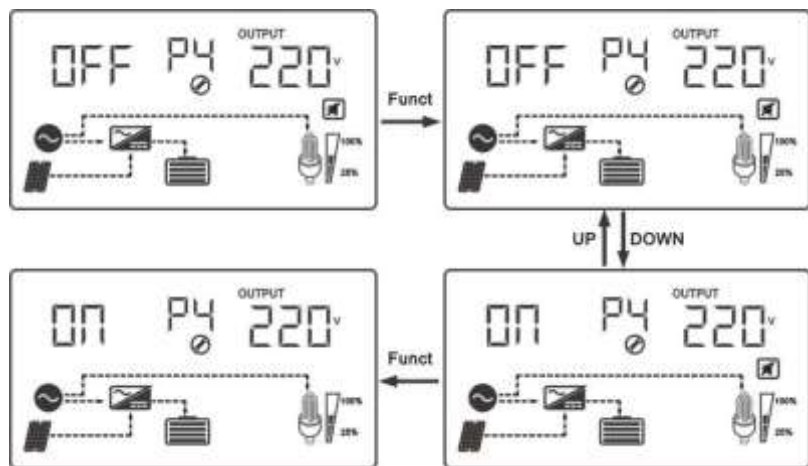
Main Menu	Functions
P4	Buzzer mode
P3	Inverter charging current
P2	-----
P1	Inverter operating mode
P0	Save & Exit



3.3.5 Parameters Setting

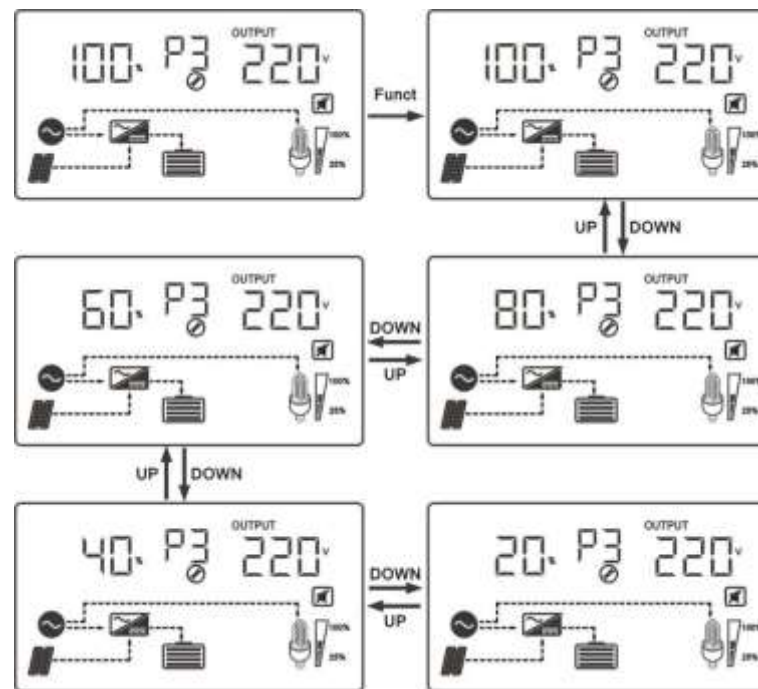
3.3.5.1 Buzzer Settings

Under the main screen, Press and hold the Function button for 5 seconds to enter the main menu, press the DOWN button to select the buzzer information P4, press the Function button to enter the setting interface, turn on/off the buzzer state through DOWN or UP key, and press the Function key to save and exit. ON Indicates that the buzzer is on, OFF Indicates that the buzzer is off.



3.3.5.2 Inverter AC Charging Settings

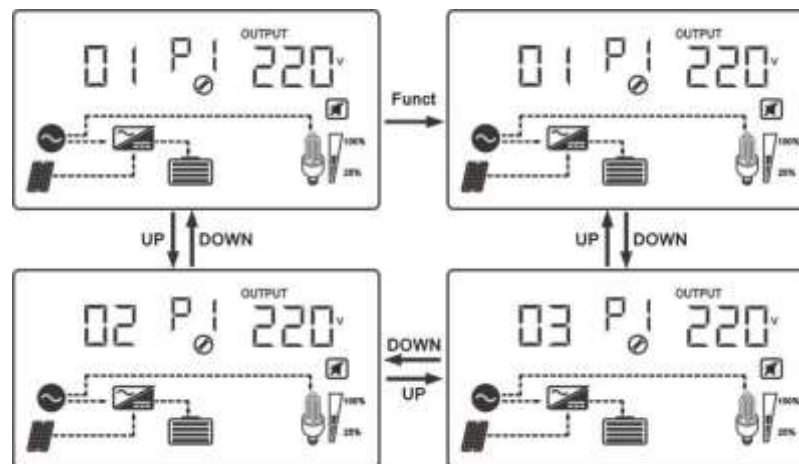
In the main screen, press and hold the Function button for 5 seconds to enter the main menu. Press the DOWN button to select inverter charging information P3. Press the Function button to enter the setting interface through DOWN or UP keys, increase/decrease the charge current of the inverter (100%-80%-60%-40%-20%). Press Function to save and exit.



3.3.5.3 Inverter Working Mode Settings

Under the main screen, press and hold the Function key for 5 seconds or less to enter the main menu, press the DOWN key to select the inverter work mode information P1, press the Function key to enter the setting interface, adjust the inverter work mode (01-03) through DOWN or UP key, press the Function key to save and exit.

con	Working mode	Running state
01	The grid priority mode (Default)	Under working mode 01, grid power bypasses the inverter to the load while also charging the battery. When the grid is over-voltage, low-voltage or has serious distortion, the unit will transfer to battery power supply. When the grid power is back to normal, the unit will transfer back to grid power bypassing.
03	Battery priority mode	Under working mode 03, grid power is not charging the battery. The unit can be charged via Solar charger only as Solar and battery are the main power sources. Solar charge the batteries and supply the power to the loads through the inverter. When the battery is discharged to the low-voltage protection threshold, the unit will transfer to grid power bypassing (if grid power is available). When the battery is fully charged, the unit will transfer back to battery power supply.



4 Unit connection icon

4.1 Recommended Line Diameter

Battery, AC input / output connecting wire diameter recommendations.:
(1mm 2 copper wire is calculated by current 4-5A)

$\text{The battery connecting wire diameter} = \frac{\text{Power rating(W)}}{\text{Rated battery voltage(V)} * 5\text{A/mm}^2}$
$\text{AC connection wire diameter} = \frac{\text{Power rating(W)}}{\text{Rated AC voltage} * 5\text{A/mm}^2}$

For example: 5000W/48VDC/220VAC equipment connecting wire diameter are as follows

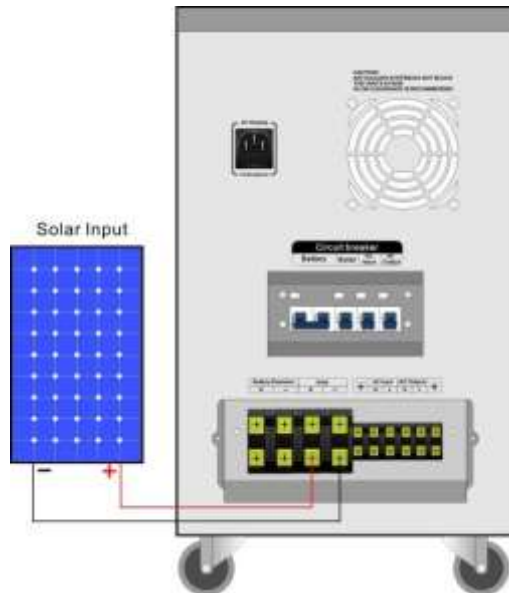
$\text{The battery connecting wire diameter} = \frac{5000\text{W}}{48\text{VDC} * 5\text{A/mm}^2} \approx 20(\text{mm}^2)$
$\text{AC connection wire diameter} = \frac{\text{Power rating(W)}}{\text{Rated AC voltage} * 5\text{A/mm}^2} \approx 6(\text{mm}^2)$

4.2 System working diagram



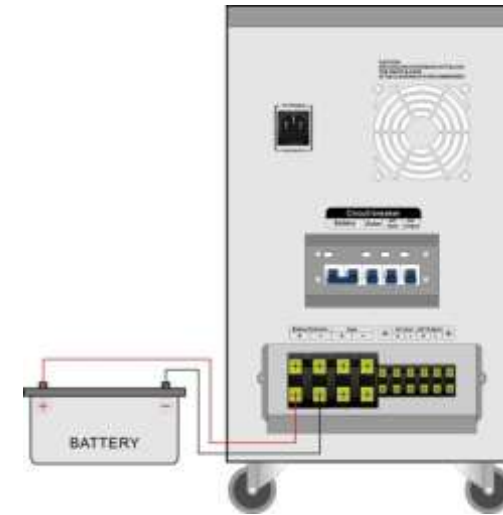
4.3 Instructions for Solar Power Input

Use the correct size of PV cable, make sure the solar power voltage and wattage are in range of unit allowance. Wire solar to the "⑪-Solar input terminals". Make sure the positive (+) and negative (-) of the solar are wired correctly. Wrong polarity may cause the unit damage. Turn on the "⑥--Solar Input Breaker"



4.4 Instructions for Connecting Expansion Battery

The external battery's voltage must be consistent with the unit's internal battery voltage: 51.2V. Make sure the positive (+) and negative (-) terminals are wired correctly. Reversing polarity may damage the unit.



4.5 Instructions for AC Input



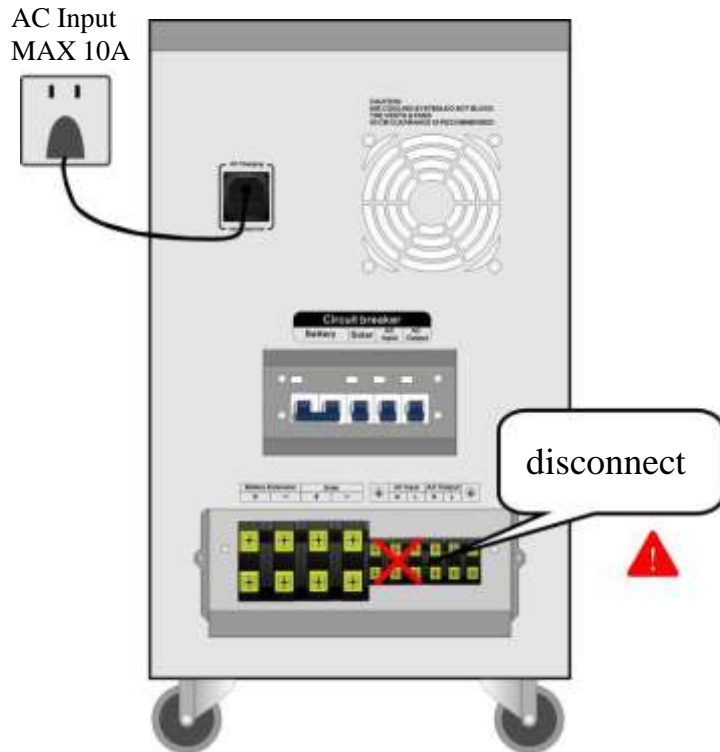
WARNING!!! VERY IMPORTANT!!!

DO NOT connect "④-AC Input Socket" and "⑫AC input terminals" at same time! It may cause a short circuit and damage the unit.

"④-AC Input Socket" and "⑫AC input terminals" are designed as an either-or and are for different purposes of use.

The unit has 2 ways for AC input wiring, "④-AC Input Socket" and "⑫AC input terminals". Please check below for details.

When you want to use wall power to charge the unit, Turn on “⑧-AC input breaker” and battery breaker THEN plug the AC power cord into ”④-AC Input Socket” and plug the other end into the wall outlet or a generator.



VERY IMPORTANT NOTE:

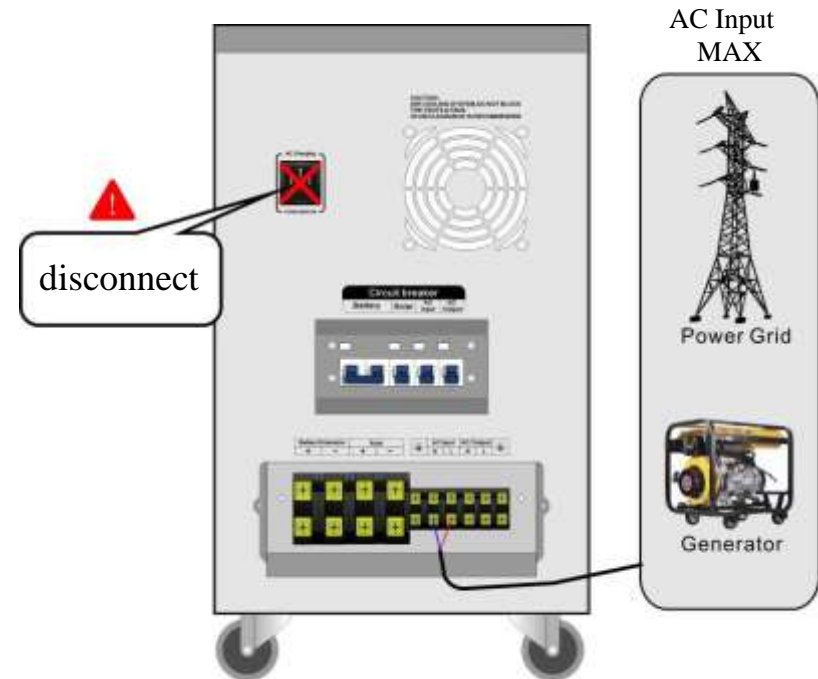
DO NOT connect “④-AC Input Socket” and “⑫-AC input terminals” at same time! It may cause short circuit and damage the unit.

④ and ⑫ are the EITHER-OR option for AC input.

The “④-AC Input Socket” and “⑫-AC input terminals” are in parallel.

Maximum current of “④-AC Input Socket” is 10A. Maximum current of “⑫-AC input terminals” is 30A.

When you want to use the unit as an uninterrupted backup power to your loads, you are suggested to wire the AC input with terminals. Use the correct size of AC power cable (2.5mm² or bigger), make sure the AC power voltage is in the range of unit allowance. Turn on “⑧-AC input breaker” and battery breaker THEN wire AC power source to the “⑫-AC input terminals” .



VERY IMPORTANT NOTE:

DO NOT connect “④-AC Input Socket” and “⑫-AC input terminals” at same time! It may cause the short circuit and damage the unit.

④ and ⑫ are the EITHER-OR option for AC input.

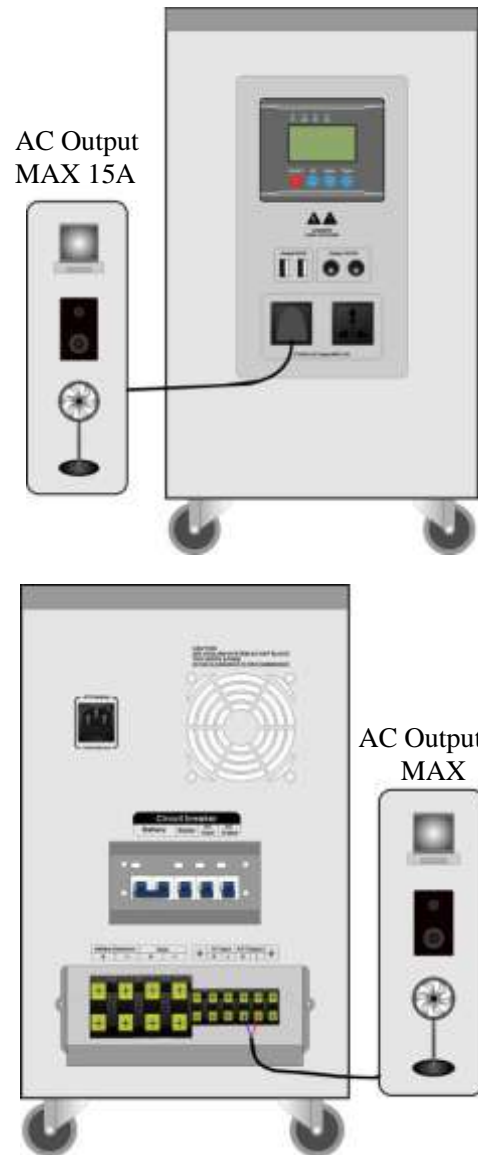
The “④-AC Input Socket” and “⑫-AC input terminals” are in parallel.

Maximum current of “④-AC Input Socket” is 10A. Maximum current of “⑫-AC input terminals” is 30A.

4.6 Outputs

4.6.1 AC outputs

The AC loads are connected to the “②/⑬-- AC Output” outlets on the front panel. The total AC loads power should be no more than the inverter rated power.

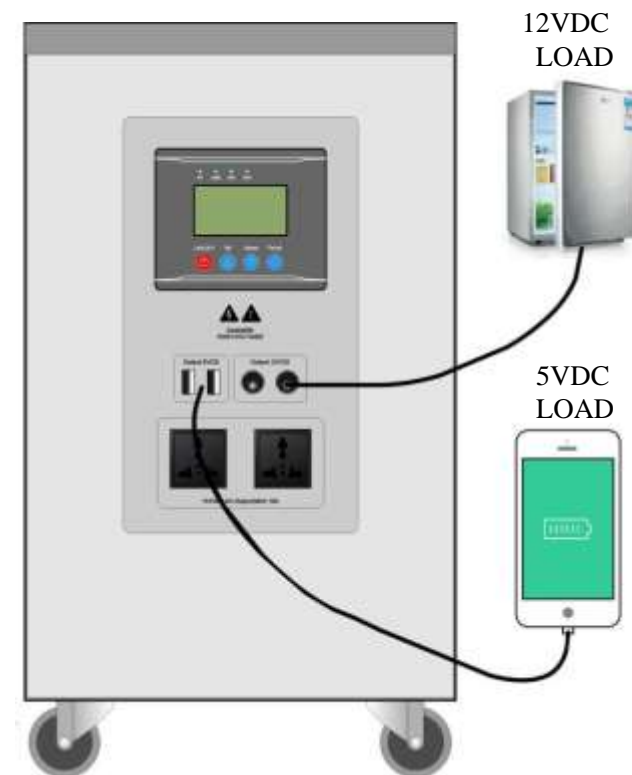


4.6.2 DC outputs

The 5VDC loads are connected to the “①- 5VDC Output”(USB sockets) on the front panel. The total 5VDC USB output current is 2A.

The 12VDC loads is connected to the “③- 12VDC Output” on the front panel. The total 12VDC output current is 2A.

Make sure the positive (+) and negative (-) of the DC loads are wiring correctly before plug in. DC output short circuit may cause the unit damage.



5 Power ON/RUN

Note: Check and make sure the voltage and polarity of battery and solar panels are connected correctly.

5.1 Inverter Power ON/RUN

5.1.1 Battery starting

Turn on the battery breaker, press and hold the "ON / OFF" button on the operation panel for 2 seconds, release it after the buzzer beeps. The "INV" indicator light lights, turn on the A/C out breaker.

5.1.2 AC Input Power-on

Connect AC input (Utility or Generator), the "LINE" indicator light turns on, turn on the A/C input breaker.

5.2 Solar Charge Controller

Make sure the solar power voltage and wattage are in range of unit design. Wire solar panels to the "Solar Input Terminals", turn on the "Solar Input Breaker". When the solar panels are exposed to sunlight, the "PV" indicator light on. The solar power is charging the batteries through the MPPT solar charge controller.

5.3 Shutdown

Shutdown: Turn off the loads, disconnect the mains input, and then press the "power on / off button" for 2 seconds, release after the internal relay action, the unit AC output is off, LCD screen turned off, turn off all the breakers;

OPERATION PRECAUTIONS: To start the unit, do it according to the following steps: Turn on the battery circuit breaker, then turn on the solar input breaker. To shut down the unit, turn off the solar input breaker, then turn off the battery breaker

Caution: If the unit is idle for long time, please turn off the battery breaker to avoid the battery deep discharging unless the solar power or AC charger is connected to maintain the battery.

5.4 Battery protection table

When the AC output is turned on, the relevant protections must be executed when the battery voltage reaches the value in the table below.

Inverter protection voltage parameters			
Overvoltage protection	Overvoltage recovery	Low-voltage alarm	Low-voltage protection
71.6VDC	68.2VDC	46.0VDC	44.8VDC
Disconnect the AC output	Restore AC output	Keep AC output	Disconnect battery output. Transfer to Utility power if applicable.

5.5 Audio alarm reminder instruction

Equipment running normal	Buzzing prohibit	Buzzer is no tweet under default status.
	Buzzer starts	Buzzer tweet 4 times every 15s, indicate the equipment operated under battery inverter status.
Battery high voltage alarm	Buzzer tweets 4 times per second, alarms high voltage	
Battery low voltage alarm	Buzzer tweets 2 times per second, alarms low voltage	
Over temperature alarm	Buzzer alarm 2 seconds pause 1 second	

5.6 Electric Generator Connection Announcements:

When connecting an electric generator:

5.6.1 Make sure the generator output voltage is matched to the MPS unit AC input range. Turn off all the AC switches, wire the generator output to MPS unit AC input terminals according to the instructions. Start the generator and have it running stable. Then make sure the unit output has no-loads connected. Then start the unit.

5.6.2 After the unit is started, connect the loads one by one.

5.6.3 We suggested generator capacity be 2~3 times that of this unit.

6 Maintenance

6.1 This series of product requires little maintenance, battery only needs to maintain its charge for full life expectancy.

6.2 If you do not use the equipment for a long period of time, it is recommended it be charged every 4-6 months. Under normal circumstances, the battery's life will be 3-5 years, if found in poor condition, you must replace the battery early. Replacement of the battery must be carried out by qualified personnel. Battery should not be individually replaced; the overall replacement should follow the battery supplier's instructions.

6.3 In moderate climates every 4 to 6 months the battery must be discharged to shut down and recharged to full capacity. In high temperature regions the battery discharge and charge should be done every 2 months.

6.4 Before replacing the battery, turn off the device and disconnect it from the main and close the battery switch. Remove all metal objects such as rings and watches. Use insulated handles and screwdrivers, do not put tools or other metal objects on the battery pack.

6.5 When connecting the battery cable, it is normal for small sparks to appear which will not cause any harm to equipment or the personal safety and the operator. Do not cross connect the battery terminals.

7 Simple Fault Diagnosis and Trouble Shooting

WARNING: There is high voltage inside the machine! Do not open and try to repair or maintenance, high voltage may cause shock or death!

Failure	Possible reason	solution
unit won't charge	A/C in breaker not on	Make sure that the Breaker is fully on
	Fuse Blown	Change fuse in 10A port
	Improper charge procedure	Ensure to turn on battery and A/C breakers and power on unit before plugging in
Won't Power on	The mains input cable or the battery cable is poorly connected	Check and reconnect
Boot alarm	The battery is low	Make sure that the battery is fully charged
	Load overload	Removal of noncritical loads
The buzzer buzzes for 2seconds then 1 second	The internal temperature is too high alarm	Check the fan and cooling holes are blocked
Short Run Time	Battery not charged or overloaded	Make sure battery is fully charged and does not have too high of load
The "PV" indicator does not light when there is a sun-lit PV module	Solar cable connection	Please check whether the wiring of the Solar array is correct and the contact is reliable

When you contact the service staff, please provide the following information:
Type of unit / date of issue / complete description of the problem (including the relevant indicator display status, battery configuration, connection).

8 Technical Data Sheet

Model		3KW
Battery rated voltage (vdc)		51.2
Inverter	Rated power (w)	3000
	Input voltage range (vac)	85-138VAC
	Input frequency (Hz)	45-65
	Output voltage (vac)	110
	Output frequency (Hz)	50/60
	Output wave	Pure Sine Wave
	Specification of built-in battery	1*100Ah
MPPT Solar input	MPPT Voltage Range	60V~150VDC
	PV Power	2600W
	Rated charge current	50A(Max)
	MPPT efficiency	≥99%
	Floating charge voltage	56.8VDC
DC output	Low voltage recovery voltage	53.6VDC
	Low voltage protection voltage	44.8VDC
	5VDC USB output	2 units / MAX 2A
	12VDC output ports	2 units /MAX 10A
Heat dissipation/Cooling		Temperature control by intelligent exhaust fan
Operating ambient temperature		-20 - +50°C
Storage ambient temperature		-25 - +55°C
Operating/Storage ambient		0-90% No condensation
External size: W*D*H (mm)		613*275*511
Package size: W*D*H (mm)		730*710*670

Note: We reserve the right of modifying this user manual without any notification.