

Pure Sine Wave MPPT Solar Regulator

Operating Instructions



Applications

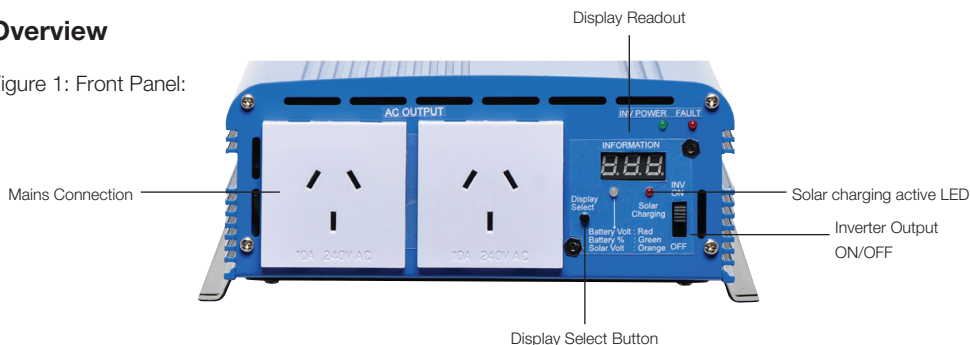
- Power Tools - Circular saws, drills, grinders, sanders, buffers, weed and hedge trimmers, air compressors.
- Office equipment – Personal computers, printers, monitors, facsimile machines, scanners.
- Household items - Vacuum cleaners, fans, fluorescent and incandescent lights, shavers, sewing machines.
- Kitchen appliances - Coffee makers, blenders, ice makers, toasters.
- Industrial equipment - Metal halide lamps, high-pressure sodium lamps.
- Home entertainment electronics - Televisions, video games, stereos, musical instruments, satellite equipment.

Thank you for purchasing M 8133 - PURE SINE WAVE DC TO AC POWER INVERTER WITH MPPT SOLAR CHARGER . Properly used, this product will provide years of reliable service. Please read this manual carefully, understand and comply with all instructions before use. Retain the instruction for reference.

Powerhouse® M 8133 Pure Sine Wave MPPT Solar Regulator

Overview

Figure 1: Front Panel:



*Display select switch: Press panel button and the display will show the following...

- Battery voltage (e.g. 12.5, means 12.5V) when inverter is turned on, LED (Red) lights up.
- Battery capacity (e.g. 83, means 83%) when you push the switch, LED (Green) lights up.
- Solar voltage (e.g. 20.0, means 20.0V) when you push the switch again, LED (Orange) lights up.

Display Indication codes

Condition	Display Indicator code
Battery Full	FUL
High Battery Voltage	OBV
Low Battery Voltage	uBV
Over Temp. Protection	OTP
High Solar Voltage	OSV
Low Solar Voltage	uSV

Figure 2: Rear Panel:



WARNING! To avoid over discharging the battery, it is advisable to let your engine run for 10 to 20 minutes after every 2-3 hours of using the AC inverter. This allows your battery to recharge.

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MPPT Solar Charger	
PV Input Voltage Range	18~32V
PV Input Power Max.	360W
Battery Charge Current	20A
Battery Charge Mode	3 Stage (CC,CV, Floating)
MPPT Solar Charger Efficiency	98%
General	
Operating Temperature Range	-10~40°C
Storage Temperature Range	-20~65°C
Dimension	465x197x82mm
Weight	4.2kgs

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Problem	Possible Cause	Solution
Display shows “uBU”	Low Battery Voltage	• Replace or recharge the batteries
Display shows “OBU”	High Battery Voltage	• Check the battery voltage
Display shows “uSU”	Low Solar Voltage (<DC17V)	• Check the solar voltage
Display shows “OSU”	High Solar Voltage (>DC32V)	• Check the solar voltage
Display shows “OTP”	Charger overheat	• Check the fan and cool inverter

Specifications

Inverter	
AC Output Waveform	Pure Sine Wave
AC Output Power	Rated Power = 1500W; Surge Power = 3000W
AC Output Voltage	240VAC
AC Output Frequency	50Hz
Regulation	6%
THD	<5%
Efficiency (Inverter)	88%
Input Voltage Range	DC11~15V
Low Battery Alarm Trigger Voltage	10.5 ± 0.5V
Low Battery Shutdown Voltage	10.0 ± 0.5V
High Battery Shutdown Voltage	>15V
Input No-load Current Draw	<1.8A
Protection	AC Output Over Load/Over Temperature/ Reverse Polarity(Fuses = 5 x 40A internal)
Overload Level	<1500W

Installation

1. Environment Requirement:

- Ventilate - Make sure the fan is not blocked in order to avoid poor ventilation. Minimum 50cm separation from any enclosure wall.
- Keep Dry - Do not place in an area where water can drip or splash on/into the inverter.
- Proximity - Avoid excessive cable lengths. Do not install the inverter in the same compartment as a battery or in any compartment that contains flammable liquids such as gasoline. Also do not mount the Inverter where it will be exposed to the gases produced by the battery. These gases are very corrosive and prolonged exposure also will damage the inverter.
- Dust - Do not install the inverter in a dusty environments where are dust, wood particles or other filings/shavings are present. The dust can be pulled into the unit when the cooling fan is operating.

Battery Capacity Recommended	200AH minimum
Battery Cable Requirement	4 AWG minimum cable size
Solar Cable Requirement	12 AWG minimum cable size

2. Steps to install inverter:

- Connect the battery cables with the power input positive (+) and negative (-) on the rear panel in the inverter. The red terminal is positive (+) and black is negative (-). Please insert the cables into the terminals and fasten the binding post properly.
- Connection to the solar panel: Connect the solar cables with the solar input positive (+) and negative (-) on the rear panel in the inverter. The terminal “+” is positive and “-“ is negative. Please insert the cables into the terminals and fasten the connectors properly.

WARNING! If you connect the wires to the incorrect terminals, the polarity will be reversed and the fuse will likely be damaged. Reversed polarity should be avoided. Loose terminal connections could result overheating, which is a potential hazard.

Inverter Operation

1. How to operate inverter:

- Plug in electrical appliance to the Inverter AC socket.
- Turn on the inverter power switch (front Panel). Check if the “POWER” LED (green) light up.
- If “POWER” LED lights up, it means inverter has started to operate normally. Then you can turn on the electrical appliance for use.
- When the inverter is working, the display shows the battery voltage, battery capacity or solar voltage (selected by display select button).

The cooler fan will start working once the inverter needs heat radiation.

2. How to operate after use:

- Turn off the electrical appliance, and unplug it from the inverter AC socket.
- Turn off the inverter power switch.
- Disconnect the inverter cables from the battery.

Solar Charger Operation

1. How to charge a battery using solar power panels:

- Connect the solar cables and check if the “Solar Charging” LED (red) lights up.
- When the charger is working, the display shows battery voltage and solar voltage (press the display select button to toggle between the two voltages).

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• If the “Solar Charging” LED (red) light is extinguished and the display shows “FUL”, then the battery is fully charged.

* Use the inverter in battery charging mode. It will reduce battery charging speed. This means that if the inverter is running loaded while the solar panel array is charging the battery, the inverter will use solar power to run the device thereby slowing the battery charge rate. *

NOTE: Ensure the power switch is in “OFF” position if M 8133 is only in solar charging mode, without using AC power to save power.

Protection

a. Battery Low Voltage Protection -The alarm will turn on whenever the voltage is below 10.5V. The user needs to replace the battery with a new one, or charge the battery to keep on using the inverter. If the user fails to notice the low battery condition when it is beeping, once the battery voltage has dropped to an even lower threshold, the inverter will eventually automatically shut down and cut off the AC output. At this moment, the fault/red LED on the panel will illuminate and the display will show “uBU”

b. Battery High Voltage Protection –The inverter will cut off the output once the battery voltage is higher than a certain level and the fault/red LED will be light up and the display will show “OBU”. The charger will automatically return to normal operation as soon as the DC input voltage is less than 15V.

c. Output Overload Protection -The inverter will shut down automatically if the load exceeds 1500W. The fault/red LED will glow.

d. Reverse Polarity - Protected by fuses against reverse battery connection. Fuses must be replaced to resume normal operation.

e. Over Temp Protection -The inverter will be shut down once the temperature is too high and the fault/red LED will be illuminated.

f. Solar low Voltage Protection -The charger will stop charging once the solar voltage is lower than a certain level and display will show “uSU”. The charger will automatically return to normal operation as soon as the solar voltage is higher than 18V.

g. Solar high Voltage Protection -The charger will stop charging once the solar voltage is higher than a certain level and the display will show “OSU”. The charger will automatically return to normal operation as soon as the solar voltage is lower than 32V.

h. Solar Reverse Polarity Protection - The charger will stop charging if the solar polarity is reversed.

Safety Precautions

WARNING! This inverter carries high voltage the same as the electrical outlets in your home. Failure to observe these safety precautions may result in electric shock and or death.

This appliance is not intended for use by young children or infirm persons without supervision. Your children should be supervised to ensure they do not play with the appliance.

- Do not open the case of the inverter.
- Do not operate the inverter in or around water
- Do not operate the inverter or any appliance with wet hands.
- Do not connect the inverter to another ac source.
- Use in a well ventilated location.
- Keep away from flammable substances.
- Unplug the inverter when not in use.

Maintenance

Very little maintenance is required to keep your inverter operating properly. You should clean the exterior of the unit periodically with a damp cloth to prevent accumulation of dust and dirt. At the same time, tighten the screws on the DC input terminals.

Trouble Shooting

Problem	Possible Cause	Solution
POWER (GREEN) LED is not lit after main switch is turned on	Battery Defective Incorrect Battery Connection Fault Fuse	<ul style="list-style-type: none"> • Change to the correct battery • Check the cables • Check and replace the fuses
FAULT(RED) LED is lit up after connecting to the load	The appliance is overloaded The appliance is short circuited	<ul style="list-style-type: none"> • Reduce the load. Check if the appliance is more than the rated output capacity of the inverter • Check if the appliance is working
POWER (GREEN) LED is alight but Buzzer sounds after load is connected	Low Battery Voltage Low Battery Capacity Battery cable is too long or thin The appliance is overloaded	<ul style="list-style-type: none"> • Replace / recharge the batteries • Replace with a larger Ah battery • Replace the battery cable with one matching specifications • Reduce the load. Check if the appliance rated capacity is greater than the rated output capacity of the inverter. Use a larger inverter for the appliance
POWER(GREEN) and FAULT(RED) LED are both illuminated, and Buzzer sounds when main switch turned on	Low Battery Voltage Battery Defective	<ul style="list-style-type: none"> • Replace or recharge the batteries • Replace with a correct battery
The inverter shuts down after normal use for a while and FAULT(RED) LED lights up	Over-temp. Protection	<ul style="list-style-type: none"> • Please check if the environmental temperature is too high

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Altronic Distributors warrants this product for one year from date of purchase from Altronics or its resellers to the consumer. If this item is part of an installation or another product, please contact the installer or supplier for your warranty.

During the warranty period, we undertake to repair or replace your product at no charge if found to be defective due to a manufacturing fault. The warranty excludes damage by misuse or incorrect installation (i.e. failure to install and operate device according to specifications in the supplied instruction manual), neglect, shipping accident, or no fault found, nor by use in a way or manner not intended by the supplier. For speakers, misuse includes burnt out voice coils.

For repair or service please contact your PLACE OF PURCHASE.

If this item was purchased directly from Altronics please make a warranty claim by:

1. FOR MAIL ORDER CUSTOMERS (includes school and trade orders),

- a) Ringing us on 1300 797 007 and quoting your tax invoice number.
- b) Upon contacting Altronics, we will issue an R.A. (Return Authorisation). As Altronics have a number of service agents throughout Australia, a copy of the R.A. will be emailed, faxed or mailed to you with full instructions of how and where to send the goods. The freight for shipping goods back to Altronics for all repairs is at the customer's expense.
- c) A copy of the R.A. form, (or at the very minimum, the R.A. number) must accompany the goods to effect the repair.
- d) Altronics will pay the return freight to the customer where the warranty claim has been accepted.
- e) Please quote the R.A. number in any correspondence to us.

2. FOR OVER THE COUNTER PURCHASES; to make a warranty claim, please return the goods to us in any of our stores, with a copy of your proof of purchase (tax invoice).

- a) Upon leaving the goods at one of our stores, an R.A. number will be issued to you.
 - b) Once repaired, you will be contacted, advising that the goods are ready to be collected from the store.
- It is at Altronics discretion as to whether the goods will be repaired or replaced (whilst under warranty); and as to whether identical goods will be used to replace the item due to changes of models / products.

Note: Under no circumstances should you attempt to repair the device yourself or via a non-authorised Altronics service centre, as this will invalidate the warranty!

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

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