Powerhouse Inverters

DC to AC Modified Sine Wave Power Inverters

Operating Instructions

Instructions apply to the following models:

M 8050 - 12V 150W

M 8051 - 12V 300W

M 8054 - 12V 600W

M 8056 - 12V 1000W

M 8057 - 12V 1500W

Overview

Our range of modified sine wave inverters are ideal for providing AC power to appliances whilst away from mains power. They connect to your vehicle or auxiliary battery and provide AC power for appliances such as laptop chargers, stereos, phone chargers and other low wattage mains appliances. This range has been designed with operational safety in mind and is protected against over voltage, over load, over temperature, reverse polarity and short circuit conditions. Each model is housed in a robust aluminium extruded case.

Features

- Isolated design for maximum electrical safety
- Modified sine wave output
- Certified to Australian Standard AS/NZS 4763.2011
- DC/AC isolated design
- Safety authority tested for reliable & safe operation
- Over temperature, over voltage, over load and short circuit protection
- Low voltage cut off
- Excellent voltage regulation
- Binding post connection to battery
- Temperature controlled cooling fan.

Important Safety Instructions

To ensure reliable service, your power inverter must be installed and used properly. Please read the installation and operating instructions thoroughly prior to installation and use. Pay particular attention to the WARNING and CAUTION statements in this manual. The CAUTION statements advise against certain conditions and practices that may result in damage to your inverter. The WARNING statements identify conditions or practices that may result in personal injury.

WARNINGS:

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, EXPLOSION OR INJURY:

1. Do not connect to AC distribution wiring.
2. Remove appliance plug from outlet strip or turn off inverter before working on the appliance. Multiple outlet power strips with switches and circuit breakers only interrupt power to the “hot” receptacle terminals. The “neutral” terminals remain powered with respect to the “ground” terminals.
3. Do not make any electrical connections or disconnections in areas designated as IGNITION PROTECTED.
4. This is not a toy - keep away from children.
5. DO NOT install object into air vents.

CAUTIONS:

1. Grounding the neutral will cause the inverter to shut down. Do not operate this inverter if it is wet. Do not install in engine compartment – please install in a well ventilated area.
2. This inverter is not tested for use with medical devices.

Important Cable Information

Substantial power loss and reduced battery operating time results from inverters installed with cables that are not able to supply full power. Symptoms of low battery power can result from cables that are either excessively long or an insufficient gauge. The installer/operator should be especially aware of the requirements to maintain secure, tight, water-resistant electrical connections and to provide for strain relief for DC cables and appliance wiring. Cable insulation must be the appropriate type for the environment.

Operation

The inverter converts low voltage DC (Direct Current) from a battery or other power source to standard 115/230 volt AC (Alternating Current) household power.

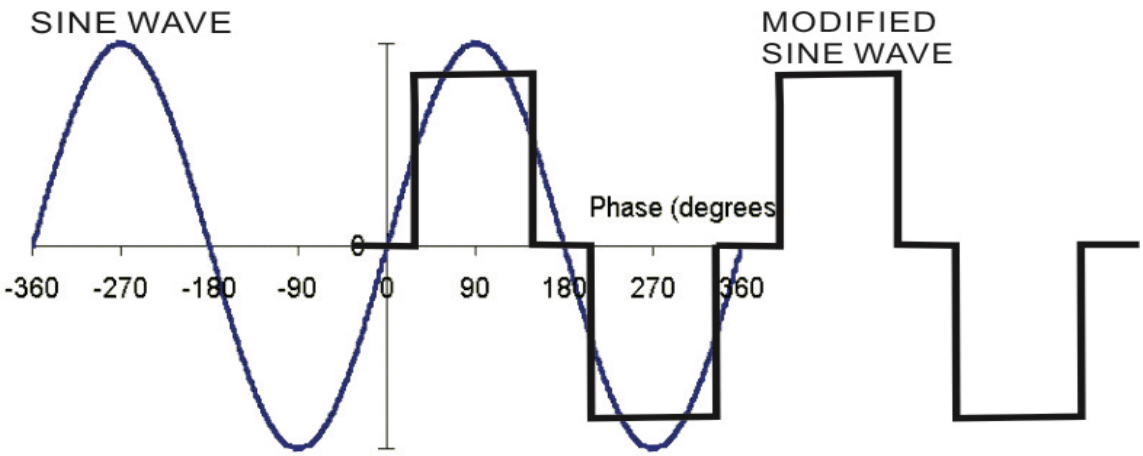
Principal Of Operation

The inverter converts power in two stages. The first stage is a DC to DC conversion process that raises the low voltage DC at the inverter input to high volts DC. The second stage is the actual inverter stage that converts the high voltage DC into AC. The DC-to-DC converter stage uses modern high frequency power conversion techniques that have replaced the bulky transformers found in less technologically-advanced models. The inverter stage uses advanced power MOSFET transistors in a full bridge configuration.

The Output Waveform

The AC output waveform of the New-series inverter is known as "modified sine wave". It is a waveform that has characteristics similar to the sine wave shape of utility power. This type of waveform is suitable for most AC loads, including linear and switching power supplies used in electronic equipment, transformers, and motors. (See Figure 1). The modified sine wave produced by the New-series inverter has an RMS (root mean square) voltage of 115/230 volts, which is the same as standard household power. Most AC voltmeters (both digital and analog) are sensitive to the average value of the waveform rather than the RMS value. They are calibrated for RMS voltage under the assumption that the waveform measured will be a pure sine wave. These meters will not read the RMS voltage of a modified sine wave correctly. They will read about 20 to 30 volts low when measuring the output of the inverter. For accurate measurement of the output voltage of this unit, use a true RMS reading voltmeter such as a Fluke 87III, Fluke 8060A, Fluke 77/99 series or Beckman 4410.

FIGURE 1: Modified Sine Wave and Sine Wave Comparison



Specifications

	M 8050	M 8051	M 8054	M 8056	M 8057
Output power	150W	300W	600W	1000W	1500W
Surge power	300W	600W	1200W	2000W	3000W
DC input voltage (nominal)	12V DC				
Output voltage	230V AC @ 50Hz				
Output wave form	Modified Sine Wave				
Efficiency (typical)	88%				
No-load current draw	0.25A	0.3A	0.4A	0.45A	0.5A
Low battery shutdown	10V				
High battery shutdown	15.5V				
Alarm & thermal shutdown	75°C				
Size (L x W x Hmm inc terminals.)	130 x 97 x 45	165 x 117 x 50	187 x 157 x 60	255 x 157 x 60	290 x 170 x 74
Net weight	0.5kg	0.5kg	0.7kg	1.8kg	2.1kg

Power Source Requirements

The power source must able to supply the necessary current to operate the load. The power source may be a battery or a well-regulated DC power supply.

WARNING: Keep ventilation when using batteries. Batteries may generate flammable gas during charging or discharging. The inverter can be operated in any position, however, if it is to be mounted on a wall, mount it horizontally so that indicators, switches, outlets and terminal blocks located on the front panel are visible and accessible. If inverter is to be installed in a moving vehicle, we strongly recommends that the inverter be shock-mounted either on the floor (in a clear, safe area) or on a secure flat surface.

CAUTION: The unit must be connected only to batteries with a nominal output voltage of 12/24volts. The unit will sustain permanent damage if connected to a over volt battery.

CAUTION: Loose connectors may cause overheated wires and melted insulation. Check to make sure you have not reversed the polarity. Reverse polarity connection will result in a blown fuse and may cause permanent damage to the inverter.

CONNECTION TO LOAD

The inverter is equipped with universal AC power receptacles. Plug the cord from the equipment you wish to operate into the AC receptacle. The green LED indicator lights to indicate that the inverter is functioning. Make sure the combined load requirement of your equipment does not exceed inverter's output rating.

The inverter is engineered to be connected directly to standard electrical and electronic equipment in the manner described above. Do not connect the power inverter to household or RV AC distribution wiring. Do not connect the power inverter to any AC load circuit in which the neutral conductor is connected to ground (earth) or to the negative of the DC (battery) source.

OPERATING ENVIRONMENT

For best operating results, the inverter should be placed on flat surface, such as the ground, car floor, or other solid surface. The power cord allows easy positioning of the inverter. The inverter should only be used in locations that meet the following criteria:

DRY – Do not allow water and/or other liquids to come into contact with the power inverter. In all marine applications, do not install the inverter below or near the waterline and keep the inverter away from moisture or water.

COOL – Ambient air temperature should be between 30 degrees F (-1 degree C) non-condensing, and 105 degrees F (40 degrees C). Do not place the inverter on or near a heating vent or any piece of equipment which is generating heat above room temperature. Keep the inverter away from direct sunlight, if at all possible.

SAFE – Do not use the inverter near flammable materials or in any locations that may accumulate flammable fumes of gases.

Fuse Replacement

This inverter is protected by our integral electronic circuit.

More than that, this inverter is equipped with a fuse that is located inside the inverter. Normally, this fuse will not blow unless there is a serious problem occurs.

Please DO NOT replace the fuse yourself, we recommend you contact technician to find and fix the problems. High voltage inside!

CAUTION: NO USER-SERVICEABLE COMPONENTS INSIDE. DO NOT ATTEMPT TO OPEN THE INVERTER.

Protective Features

Your inverter monitors the following potentially hazardous conditions:

OVER TEMPERATURE PROTECTION – If the temperature inside the inverter is too high, the unit will automatically shut down. Allow the unit to cool for at least 15 minutes before restarting after a heat-related shutdown. Unplug unit while cooling.
LOW BATTERY VOLTAGE PROTECTION - This condition is not harmful to the inverter but could damage the power source. The inverter automatically shuts down when input voltage drops to 10/20 volts. When the condition is corrected, the unit may be restarted.
OVER VOLTAGE PROTECTION – The inverter will automatically shut down when the input voltage exceeds 15/30 volts DC. Input voltage exceeds 16/32 volts could damage the inverter.
OVERLOAD PROTECTION – The inverter will automatically shut down when the continuous draw exceeds rated watts.
SHORT CIRCUIT PROTECTION – The inverter will shut down. Remove the short circuit and restart the inverter after 5 minutes.
LOW BATTERY ALARM – An alarm will sound when the voltage from the battery drops to 10.6/21.0 volts. This is an indication that the battery needs to be recharged. The user should stop operation of the electronic device at this time since the inverter will shut down automatically shortly thereafter, when the battery voltage drops to 10/20 volts. Start your engine to recharge the battery.
The alarm will sound when the inverter is overloaded, in thermal shutdown, or if there is an excessive voltage drop between the battery and inverter.

NOTE: It is normal for the alarm to sound while the unit is being connected to, or disconnected from, the power source. This is not indicative of a problem.

Troubleshooting

• **Power Tools and Microwave Ovens Won't Start**
Read the information panel on each power tool carefully to accurately determine the tool's input wattage. The wattage output is sufficient to operate most power tools and microwave ovens but remember that the power needed to start the power tool may be as much as 2 to 8 times its continuous wattage requirements.

• **"Buzzing" Sound in Audio Systems**
Some inexpensive stereo systems and "boom boxes" emit a buzzing sound from their speakers when operated from the power inverter. This occurs because the power supply in the electronic device does not adequately filter the modified sine wave produced by the inverter. The only solution to this problem is to use a higher quality sound system that incorporates a higher quality power amplified supply.

• **Television Interference**
The inverter is shielded to minimize interference with TV signals. The problem may not be with the inverter. However, in some instances, some interference may still be visible, particularly with weak TV signals.

Try the following corrective measures:
- Position the inverter as far as possible from the television, the antenna and the antenna cables. Use an extension cable, if necessary.
- Adjust the orientation of the inverter, the antenna cables and the TV power cord to minimize interference.
- Make sure that the antenna feeding the television provides an adequate ("snow free") signal and that high quality, shielded antenna cable is used.
- Do not operate high-power appliances or tools when you are watching TV.

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 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) Calling your nearest store location 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 customers 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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