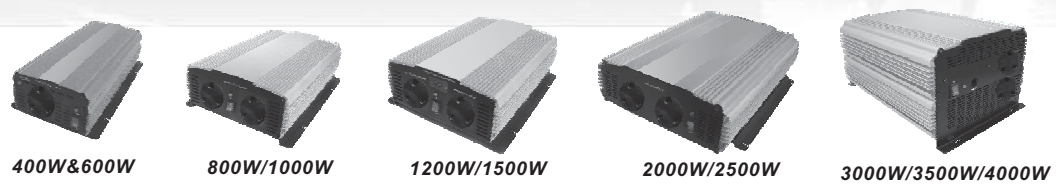


- 400W
- 600W
- 800W
- 1000W
- 1200W
- 1500W
- 2000W
- 2500W
- 3000W
- 3500W
- 4000W

User Manual

Modifed Sine Wave Power Inverter



IMPORTANT SAFETY INFORMATION, SAVE THESE INSTRUCTIONS

TO REDUCE THE RISK OF INJURY, USER MUST READ AND UNDERSTAND THIS INSTRUCTIONAL MANUAL. THIS MANUAL CONTAINS IMPORTANT INFORMATION REGARDING THE OPERATION OF PRODUCT. PLEASE RETAIN FOR FUTURE REFERENCE.

DC To AC POWER INVERTER

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How Power Inverters Work

Power inverters convert low voltage DC (direct current) power to 220/230-volt AC (alternating current) household power. This conversion process thereby allows you to use household products, power tools, and other electronic products away from normal AC power sources (standard 220/230V wall outlets). Depending on the model and its rated capacity, inverters can draw power either from standard 12-volt automobile and marine batteries or from portable high power 12-volt power sources.

The waveform that is generated by this conversion is a “modified sine wave”. The modified sine wave produced by our inverters has a root square mean (RMS) voltage of 220/230 volts, which is the same as standard household power. The majority of AC voltmeters are calibrated for RMS voltage under the assumption that the measured waveform will be a pure sine wave. Therefore, these meters will not read the RMS modified sine wave voltage correctly. They will read about 20 to 30 volts too low. To accurately measure the output voltage of the inverter, use a true RMS reading voltmeter such as a Fluke 87, Fluke 8060A, Beckman 4410, Triplet 4200 or any voltmeter identified as a “true RMS”.



Warning! **Warranty will be void if you do not follow the instructions below:**
With our highly trained staff it will be possible to determine the cause of the problem.

CAUTION

- The inverter is designed to operate from a 12-volt power source only. The unit will not operate from a 6-volt battery or a 24-volt battery. Do not attempt to connect the inverter to any other power source other than a battery with a nominal output voltage of 12 volts or damage to the unit may occur and will void the warranty.
- Do not attempt to extend or otherwise modify the supplied 12-volt power cord, battery cable or clips.
- 220/230 volts can inflict serious injury, damage or death. Improper use of the inverter may result in property damage, personal injury or loss of life.

Connecting the Inverter

1. Make sure the ON/OFF power switch located on the front panel of the inverter is in the OFF(O) position.
2. Unscrew the red and black caps from the power input terminals located on the rear of the inverter.
3. Connect the battery-clip cables to the power input terminals making sure to match the color coded cables to the color coded terminals on the inverter (RED=Positive, BLACK=Negative). Hand-tighten the red and black caps back on the power input terminals. Do not over tighten these caps.
4. Connect the cable from the Negative (-) terminal (BLACK) on the inverter to the Negative terminal on the 12-volt power source. Double check that the connection is secure.
5. Connect the cable from the Positive (+) terminal (RED) on the inverter to the Positive terminal on the power source. Double check that the connection is secure.
6. Turn the inverter power switch to the ON(I) position. The GREEN LED Indicator Light should illuminate to confirm that power is running to the inverter.
7. Turn the inverter power switch to the OFF(O) position. (The GREEN LED Indicator Light may "blink" briefly and/or the internal audible alarm may make a momentary "chirp." This is normal).
8. Make sure that the device you intend to operate is turned OFF. Plug the cord from the equipment you wish to operate into one of the AC outlets located on the front panel of the inverter. Do not connect the output terminals of the inverter to an incoming AC source.

9. Do NOT connect the inverter 220V output to another power source!



10. Turn the inverter power switch to the ON(I) position. Then turn the equipment on.

11. Do not parallel or serie connect the output of two inverter.
The output waveform will not be in phase with another.

Notes

- Loose connections can result in a severe decrease in voltage, which may cause damage to the component or the product you wish to operate.
- Failure to make a proper connection between the inverter and the power source may result in reverse polarity. Reverse polarity will blow the internal fuses in the inverter and may cause permanent damage to the inverter. Damage caused by reverse polarity is not covered under the warranty.
- The audible alarm may make a momentary “chirp” when the inverter is turned ON(I) or OFF(O). This same alarm may also sound when the inverter is being connected to or disconnected from the 12-volt power source. This is normal.
- If the GREEN LED Indicator Light blinks when you first turn the inverter ON(I), this may indicate an interruption of the power supply. Simply turn the inverter OFF(O) and try removing and reconnecting the clamps. If this does not fix the problem, try using a different 12-volt power source.

Inverter Protection Features

- **Short Circuit Protection.** The inverter will automatically shut down until short is removed.
- **Low Voltage Alarm.** An alarm will sound when the voltage from the battery discharges to 10.5 +/- 0.5 volts DC. This is an indication that the battery needs to be recharged.
- **Over Voltage Protection.** The RED LED Indicator Light will illuminate and the inverter will automatically turn itself off when the input exceeds 16.5 +/- 1 volt DC.
- **Under Voltage Protection.** The RED LED Indicator Light will illuminate and the inverter will automatically turn itself off when the input is less than 10.0 +/- 0.5 volts DC.

- **Overload Protection.** The RED LED Indicator Light will illuminate and the inverter will automatically turn itself off when the continuous draw of the equipment being operated exceeds 800 watts or the surge draw of the equipment exceeds 1600 watts.
- **Thermal Protection.** The RED LED Indicator Light will illuminate and the inverter will automatically turn itself off when the circuit temperature exceeds 55°C.

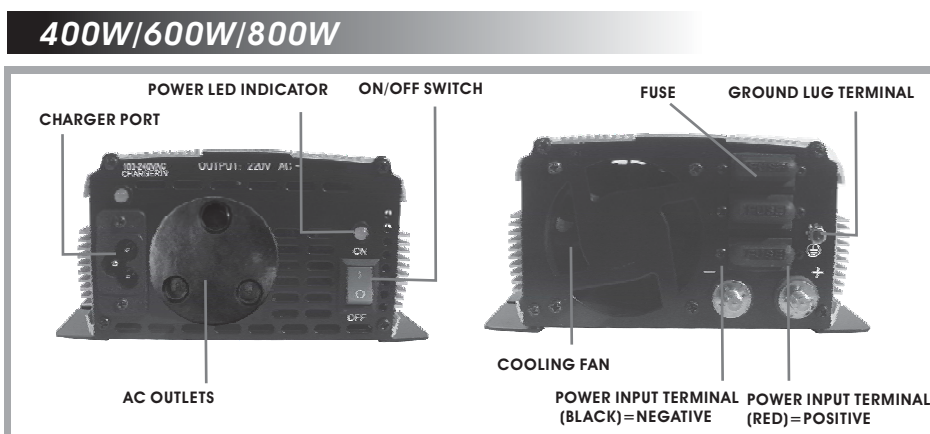
3. Modified sine wave graph

2-1. Features:

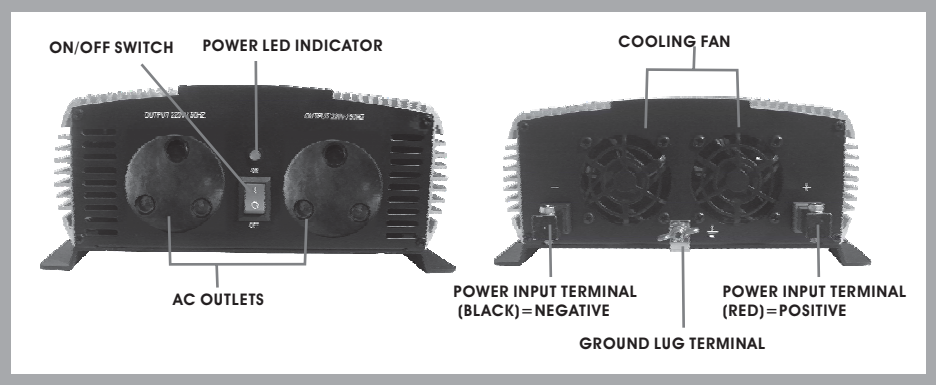
- Modified sine wave output (<2% thd).
- input & output fully isolation design.
- high efficiency 87%~90%.
- high surge in motor start capacity.
- 5-stage thermal control fan.
- auto restart function.

2-2 Suitable Appliances:

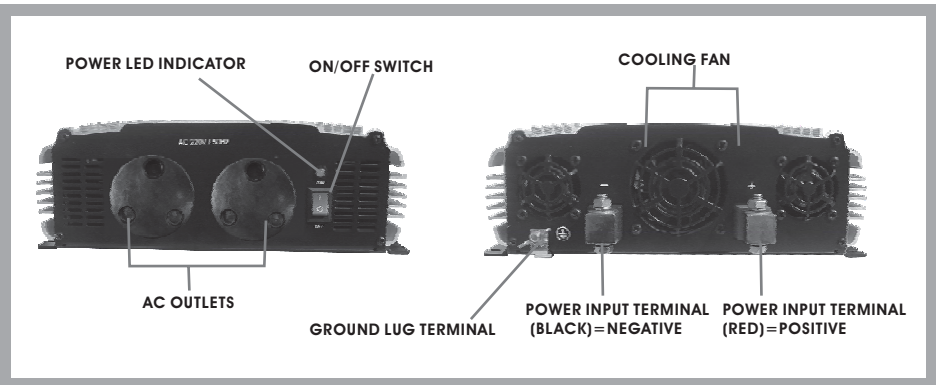
- power tools-circular saws, drills, grinders, sanders, buffers, weed and hedge trimmers, air compressors.
- office equipment-computer, printers, monitors, facsimile machines, scanner.
- kitchen appliances-microwave ovens, refrigerators and freezers, coffee makers, blenders, ice makers, toasters.
- industrial equipment-metal halide lamp, high-pressure sodium lamp.
- household items-vacuum cleaners, fans, fluorescent and incandescent lights, sewing machines.
- home entertainment electronics-tv, vcr, video games, stereos, musical instruments, satellite equipment.



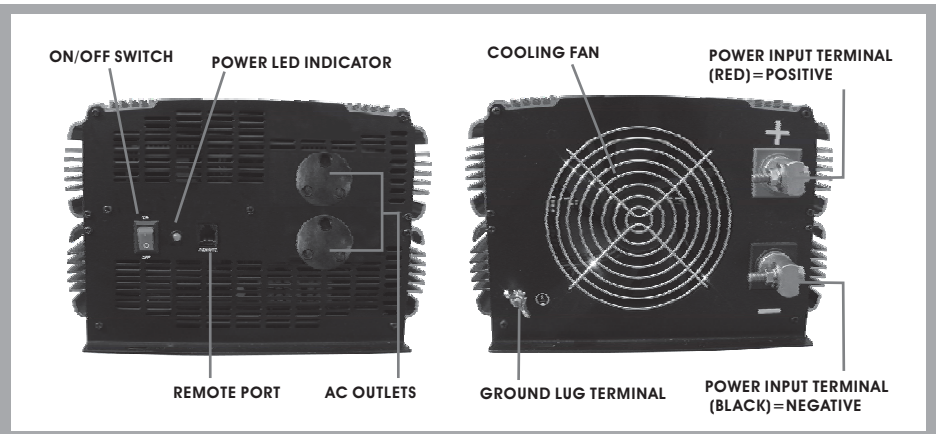
1000W/1200W




1500W/2000W/2500W



3000W/3500W/4000W



Modified sine wave spec.

SPECIFICATIONS											
Model No.	8ES40	8ES60	8ES80	8ESA0	8DSA2	8DSA6	8ESB0	8ESB6	8ESCO	8ESC6	8ESDO
Continuous power	400W	600W	800W	1000W	1200W	1500W	2000W	2500W	3000W	3500W	4000W
Max surge power	800W	1200W	1600W	2000W	2400W	3000W	4000W	5000W	6000W	7000W	8000W
AC Output Voltage	220V ± 10% RMS										
DC input Voltage	11-15V										
Output wave form	 ~ ~ Modified Sine Wave ~ ~										
Frequency	50Hz ± 3Hz										
Efficiency	> 80%										
Temperature protection	< 65 °C										
Input low volt alarm	10.5 ± 0.5V										
Input low volt shut-down	10 ± 0.5V										
Input high volt protection	> 15V										
Output short circuit protection	Auto Shut-down										
THD (Distortion)	< 2%										
Dimensions (L*W*H)/mm	400W					163*98*48mm					
	600W					163*98*48mm					
	800W					286*147*74mm					
	1000W					286*147*74mm					
	1200W					290*210*89mm					
	1500W					290*210*89mm					
	2000W					342*260*86mm					
	2500W					342*260*86mm					
	3000W					417*230*158mm					
	3500W					417*230*158mm					
	4000W					457*230*158mm					
	800W(with charger)					286*147*74mm					
	1500W(with charger)					375*210*99mm					
2000W(with charger)					432*260*86mm						

Troubleshooting guide

Problem	Possible cause	Solution
No output power	You have connected the inverter's 220V output to another power source	Warranty void! Send back to supplier for charged repairs
Low output voltage	Using a voltmeter which can not read the RMS voltage	Use a true RMS voltmeter
Low input voltage and watts LED turns to be red.	Poor battery condition Overload Improper Installation	Check the batteries and the vehicle alternator condition Reduce load Check each inverter'ss installation steps
No output voltage and volt indicator in lower red zone	Low input voltage	Recharge the battery, check the connections and cables.
No output voltage and no voltage indication	Inverter off No DC power to the inverter Reverse DC polarity	Turn the inverter on Check the wiring Check battery fuse and the installation Replace the inverter. Damage caused by reversed polarity is not covered by the warranty
Low battery alarm on continuously	Poor battery condition Poor DC wiring Poor DC terminal connections	Charge or change battery Use proper cables and check connection Use proper tool
No output voltage and overtemp indicator on	Thermal shutdown Improper installation	Reduce load Allow inverter to cool off Improve ventilation Install properly
No output voltage and overload indicator	Short circuit or wiring error Inverter overload Improper installation	Check AC wiring Remove or reduce load, switch the inverter OFF at least 5 seconds and restart the inverter Check the AC wires and improper polarity

LIMITED ONE YEAR WARRANTY

N.P. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of one year from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

