



Owner's Manual for N-Verter™ Models NVC250 – 250 Watt NVC450D – 450 Watt

Mobile DC - AC Power Inverter Units

Read Carefully and Completely Before Using

Efficient, Quiet and Portable
Compact Light Weight Design
Auto Low Battery Shutdown to Prevent Battery Damage

Lenmar Battery Solutions offers innovative products for consumers and encourages the safe and proper use of each power accessory to achieve the maximum performance of the product and the devices it powers. Read these instructions carefully to safely use your new N-Verter product.

Lenmar's N-Verter is an electronic device that converts low voltage DC (direct current) electricity from a battery to 110/120VAC (alternating current) standard household power. The AC output of this product is a modified sine wave with a voltage of 110/120 volts. With your Lenmar N-Verter you can power your laptops, computerized games, cell phones, camcorders, power tools, reading lamps, fans, and more.

Important: Before using your N-Verter, read and understand this owner's guide. Save these instructions—this owner's guide contains important safety instructions.

Safe Operating Guidelines

WARNING! Shock hazard The N-Verter generates the same AC power as a normal household wall outlet.

- Operate only in ventilated area away from flammables, flames and accumulating dangerous or explosive fumes
- Do not expose unit to water, rain or snow
- Always turn OFF unit by removing it from the DC cigarette lighter outlet when not in use
- Avoid exposure to direct sunlight and extreme temperatures (60-80°F or 15-25°C)
- Do not insert foreign objects into the outlet.
- Do not open the unit: no replaceable parts inside
- Consult motor vehicle's manual to determine cigarette lighter socket's maximum power rating and fuse rating before attempting use in vehicle.
- Unit will not and should not operate heat-generating appliances such as hair-dryers, microwave ovens, electric blankets, toasters, etc.
- Compatible only with vehicles that have 12VDC Negative Ground electrical systems

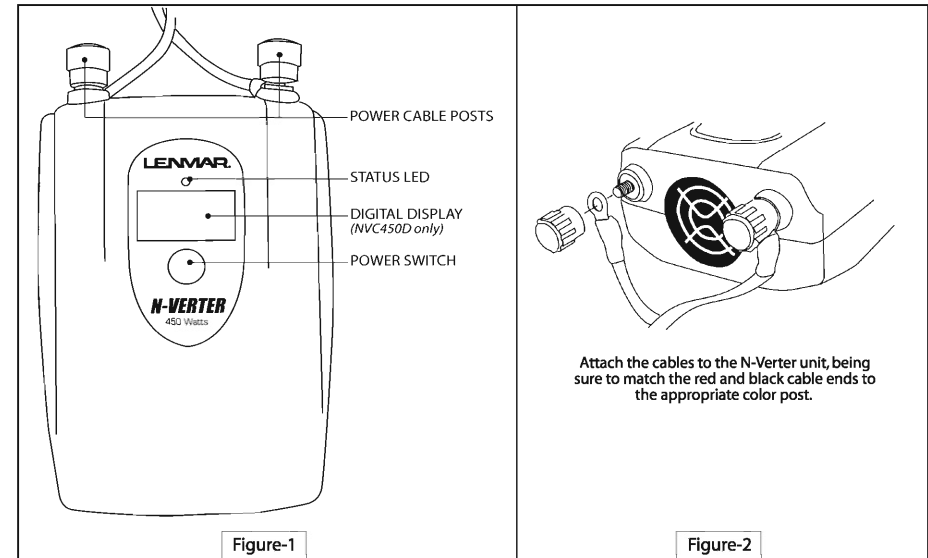
Failure to follow the above may result in personal injury or damage to the N-Verter.

Special Features:

NVC450D – A versatile built-in digital display shows incoming voltage, output power level, and error codes so there is no guessing required as to any problems that may occur. Also, comes with both cigarette lighter adapter cable for convenience and usage below 300W, as well as clip-leads to attach direct to the battery terminals for higher power usage from 300W up to the maximum.

Operating your N-Verter

1. The NVC250 comes with a cigarette lighter adapter cable only, and the NVC450D comes with both a cigarette lighter adapter cable for powering devices under 300W, and a clip lead set for all loads up to 450W. According to your unit and the power you will require, connect the appropriate cable to the power cable posts on the N-Verter as shown in figure-2. Be sure to match the color of the cable ends to the color of the post (red to red and black to black) and make sure that the post caps are screwed down tightly.



2. If you are using the cigarette lighter adapter, plug it into your vehicle's 12VDC power socket. If you are using the clip leads with the NVC450D, carefully attach them to the vehicle's battery terminals, being very careful not to let the red clip lead touch any metal other than the battery terminal, and also making sure to observe correct polarity (red to red, black to black).

DANGER! – Do not create a short circuit when working with your vehicle's power system. Damage to your vehicle's internal electronics, explosion of the battery and personal injury may occur. NEVER test for the presence of power by "sparking" or shorting two wires together.

3. After the power connection is made, if the unit's status LED is not already green, momentarily press the power switch on the unit and the LED will light up and turn quickly from red to green if power is present. The green LED indicates the N-Verter is powered on and running with power available at the AC outlet(s).

Note: Many vehicles remove power from the cigarette lighter outlet when the ignition key is turned off!

4. Plug an AC device into the three-prong AC receptacle and then turn it on. Ensure your device draws less than the continuous power rating of your N-Verter. The N-Verter's internal cooling fan will come on for loads over 80W. To avoid discharging the battery, always disconnect the N-Verter from power when not in use.

Using the Digital Display (NVC450D only)

This model has a digital display which will give detailed information about the operating conditions of the unit such as the input voltage of the N-Verter, the output wattage being demanded and if an error condition exists, the display will show an error code that will specifically tell the problem that was encountered. When the status LED is green, the digital display will continuously alternate between showing the input voltage and showing the output power level. When showing the voltage the display will indicate "-U-" followed by the measured voltage. Next, the display will show the power output by indicating "-P-" followed by the estimated power output, in Watts, from 30W to the maximum 450Watts. Wattages below 30 Watts will indicate as "0"; if the device fluctuates in the amount of power that it uses over a given time, then the displayed power output will vary with each cycle as well.

If the status LED is red, an error condition exists and a corresponding error code will appear on the digital display. See the Troubleshooting section for the meanings of the error codes.

Warning - When using you N-Verter with the vehicle's engine turned off, the battery is being drained. Be careful to re-start the engine or otherwise recharge the battery periodically to avoid draining the battery too deeply. The internal "low voltage shut-off" of the N-Verter does not guarantee that the remaining power left in the battery is enough to start the vehicle.

Warning - Hot surface! The N-Verter housing may become uncomfortably warm, reaching 65°C (150°F) under extended high power operation. During operation, keep the N-Verter from materials that may be affected by high temperatures.

Modified Sine-Wave Output

THE OUTPUT OF THE N-VERTER IS NON-SINUSOIDAL. This type of output can typically be incompatible with small battery-operated products such as rechargeable flashlights, some rechargeable shavers, and nightlights that plug directly into an AC receptacle to recharge as well as certain battery chargers for battery packs used with power tools. If you wish to use one of these types of items with the N-Verter, monitor its temperature for the first ten minutes to insure excessive heat is not produced. The production of excessive heat indicates the device is not suitable for use with the N-Verter. The overheating does not occur with most devices which use their own AC adapters. The N-Verter is compatible with most of these chargers and AC adapters.

Troubleshooting

| NVC250 | NVC450D | Problem / Solution |
|---|-----------------------------|--|
| Status LED is RED | Error Code - E01 on display | Low Voltage Shutdown - Battery voltage has gone too low. Recharge the vehicle's battery before using the N-Verter. |
| | Error Code - E02 on display | Over Voltage Shutdown - The input voltage has gone over 14.5VDC and the N-Verter has turned off to protect itself. The vehicle's charging system may have a problem. |
| | Error Code - E03 on display | Continuous power rating has been exceeded - The AC device has higher wattage demands than the N-Verter's maximum rating can allow. The N-Verter unit is too small for that particular device. A higher rated N-Verter is needed to deliver the power that the AC device demands. Otherwise, use only lower power AC devices. |
| | Error Code - E04 on display | Overheated - some of the units ventilation slots may be blocked or the outside air temperature is too high to allow the unit to cool itself properly. Turn the unit off and allow the unit to cool for at least 15 minutes. Make sure that ventilation slots are unobstructed and/or air temperature is cooler before restarting. |
| | Error Code - E05 on display | The AC device has higher start-up or surge current than the N-Verter's maximum rating can allow. The N-Verter unit is too small for this particular device. A higher rated N-Verter is needed to deliver the power that the AC device demands. Otherwise, use only lower power AC devices. |
| Green LED on the N-Verter unit does not light and/or the AC device does not operate | | On many vehicles, the ignition key must be "on" for power to be present at the cigarette lighter socket. Make sure the key is on. |
| | | The cigarette lighter adapter or clip leads may not be making proper connection. Check the tightness of the connections at the power cable posts on the N-Verter, the connection at the vehicle's 12VDC power socket and/or the connection of the clip leads at the battery posts. |
| | | Battery voltage may be too low. Recharge the vehicle's battery and attempt again. |
| | | Vehicle fuse may be blown. Replace the vehicle's fuse with the same type and rating. Make sure you are not overloading the socket or the fuse will blow again. |
| Buzzing sound in audio systems | | Many inexpensive stereos or portable players will buzz when connected to the N-Verter because the modified sine wave of the N-Verter is not properly filtered by the electronic device's power supply. Higher quality devices will not buzz with the N-Verter. |
| Television interference | | If the television signal is weak, the use of the N-Verter will cause a visual disturbance. Move the N-Verter away from the TV, antennae and/or the antennae cables. You may attempt to merely adjust the placement of the antennae or cables. Inferior antennae and cables will also cause TV interference during operation of the N-Verter. |

Specifications

NVC250 - 250W

Maximum output power 250W (5 min.)
 Surge output power 500W (10 sec.)
 Continuous output power 200W (4 hr.)
 Output frequency 60+/-2HZ
 Output voltage range 105V-125V AC, Modified Sine Wave
 Input voltage range 11.5-15V DC
 AC receptacle 1x 3 Prong Socket
 Dimensions 6 x 3.25 x 2 inches

NVC450D - 450W

Maximum output power 450W (5 min.)
 Surge output power 800W (1 sec.)
 Continuous output power 400W (4 hr.)
 Output frequency 60+/-2HZ
 Output voltage range 105V-125V AC, Modified Sine Wave
 Input voltage range 11.5V-15V DC
 AC receptacle 2x 3 Prong Socket
 Dimensions 6 x 3.25 x 2 inches

All units also incorporate low voltage shut-off, over voltage shut-off, over-heat protection and short-circuit protection.

Limited 3 Year Warranty

This limited warranty starts from the date of original purchase and expires three years thereafter. If, during this period, any part, because of manufacturing defects or workmanship, fails to function properly under normal use it will be repaired at no charge for parts and labor or, at our option, the product will be replaced. The following is excluded: damages from delay or loss of use of equipment or damaged batteries, malfunctions resulting from misuse, tampering, unauthorized repairs, modifications or accident.

Package the unit and its accessories carefully using ample padding material to prevent damage in transit and ship it prepaid and insured to:

LENMAR ENTERPRISES, INC.
 4035 Via Pescador
 Camarillo, CA 93012

When sending in product for service, your package should include evidence of date and place of purchase. Enclose \$10.00 for shipping and handling for addresses in the U.S. and \$15.00 in Canada. For outside the U.S. and Canada, freight will vary depending upon ship-to address.

Proposition 65 Notice (California)

The following statement is required in the state of California pursuant to the settlement of an action brought by the Mateel Environmental Justice Foundation against multiple electronics and appliance manufacturers

WARNING: Handling the cord on this product will expose you to lead, a chemical known to the state of California to cause birth defects or other reproductive harm. Wash hands after handling.

For additional questions, comments or to explore other Lenmar battery solutions, visit our web site at: www.lenmar.com or call 805/384-9600