Enerdrive

DRIVING YOUR ENERGY NEEDS

ePOWER 300W

MODIFIED SINE WAVE INVERTERS

ePOWER 500W

MODIFIED SINE WAVE INVERTERS

Owner's Guide

Table of Contents

1.	Introduction	Page 4
2.	Safety	Page 4
	Warnings And Cautions	Page 4
3.	Features	Page 7
4.	Installation	Page 8
5.	Unit Operation	Page 12
6.	Specifications 300w	Page 15
7.	Specifications 500w	Page 16
8.	Warranty	Page 17

WARNING: For safe and optimum performance, the Enerdrive ePOWER Inverter must be used properly.

Carefully read and follow all instructions and guidelines in this manual and give special attention to the CAUTION and WARNING statements.

PLEASE KEEP THIS MANUAL FOR FUTURE REFERENCE

Disclaimer

While every precaution has been taken to ensure the accuracy of the contents of this guide, Enerdrive assumes no responsibility for errors or omissions. Note as well that specifications and product functionality may change without notice.

Important

Please be sure to read and save the entire manual before using your Enerdrive ePOWER Inverter. Misuse may result in damage to the unit and/or cause harm or serious injury. Read the manual in its entirety before using the unit and save the manual for future reference.

Product Numbers

Modified Sine Wave Series

EN20300 ePOWER Inverter 12V 300W 230VAC

EN20500 ePOWER Inverter 12V 500W 230VAC

Document Part Number

ePOWER 300 Rev 1

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1. INTRODUCTION

Thank you for purchasing the Enerdrive ePOWER Inverter. With our state of the art, easy to use design, this product will offer you reliable service for providing AC power for your home, boat, caravan, 4WD or commercial vehicle. The Enerdrive ePOWER Inverter can run many AC powered appliances when you need AC power anywhere. This manual will explain how to use this unit safely and effectively. Please read and follow these instructions and precautions carefully.

2. IMPORTANT SAFETY INFORMATION

This section contains important safety information for the Enerdrive ePOWER Inverter. Each time, before using the Enerdrive ePOWER Inverter, **READ ALL** instructions and cautionary markings on or provided with the inverter, and all appropriate sections of this guide. The Enerdrive ePOWER Inverter contains no user serviceable parts. See Warranty section for how to handle product issues.

WARNINGS AND CAUTIONS

WARNING statements identify potential personal injury or loss of life situations.

CAUTION statements identify potential damage to equipment situations.

Both types of statements are denoted by the WARNING / CAUTION symbol and are placed on the left of the statement.

WARNING: FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN DEATH OR SERIOUS INJURY

- When working with electrical equipment or lead acid batteries, have someone nearby in case of an emergency.
- Study and follow all the battery manufacturer's specific precautions when installing, using and servicing the battery connected to the inverter.
- Wear eye protection and gloves.
- Avoid touching your eyes while using this unit.

- Keep fresh water and soap on hand in the event battery acid comes in contact with eyes. If this occurs, cleanse right away with soap and water for a minimum of 15 minutes and seek medical attention.
- Batteries produce explosive gases. DO NOT smoke or have an open spark or fire near the system.
- Keep unit away from moist or damp areas.
- Avoid dropping any metal tool or object on the battery. Doing so could create a spark or short circuit which goes through the battery or another electrical tool that may create an explosion.

WARNING: FIRE AND/OR CHEMICAL BURN HAZARD

- Do not cover or obstruct any air vent openings and/or install in a zero-clearance compartment.

WARNING: SHOCK HAZARD. KEEP AWAY FROM CHILDREN

- Avoid moisture. Never expose unit to snow, water, etc.
- Unit provides 230 VAC, treat the AC output socket the same as regular wall AC sockets at home.

WARNING: EXPLOSION HAZARD

- DO NOT use the Enerdrive ePOWER Inverter in the vicinity of flammable fumes or gases (such as gas bottles or large engines).
- AVOID covering the ventilation openings. Always operate unit in an open area.
- Prolonged contact to high heat or freezing temperatures will decrease the working life of the unit.

WARNING: LIMITATIONS ON USE

Do not use in connection with life support systems or other medical equipment or devices.

WARNING: Enerdrive recommends that all wiring be done by a certified technician or electrician to ensure adherence to the applicable electrical safety wiring regulations and installation codes. Failure to follow these instructions can damage the unit and could also result in personal injury or loss of life.

CE EMC INFORMATION

This equipment has been tested and found to comply with the limits for CE EMC standard. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

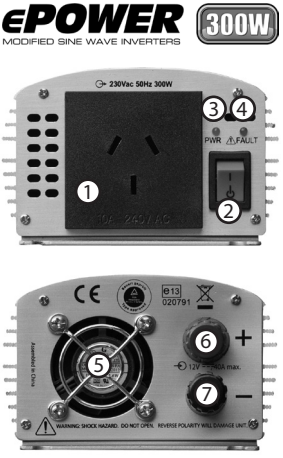
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

3. ePOWER INVERTER FEATURES

The Enerdrive ePOWER Inverter package includes the items list below.

ePOWER Inverter base unit (one of the following models):

- EN20300 ePOWER Inverter 12V 300W 230VAC
- EN20500 ePOWER Inverter 12V 500W 230VAC
- Owner's manual



1: AC Output

2: On/Off Switch

3: Green Power LED

4: Red Fault LED

5: Fan Opening

6: Positive

7: Negative

WARNING: Enerdrive recommends that all wiring be done by a certified technician or electrician to ensure adherence to the applicable electrical safety wiring regulations and installation codes.

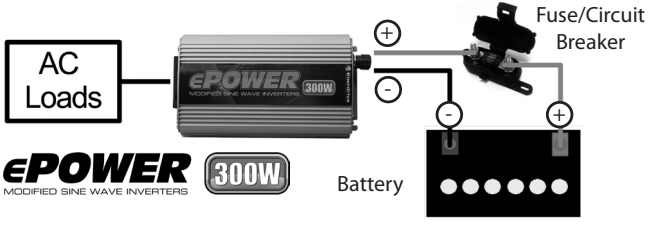
Failure to follow these instructions can damage the unit and could also result in personal injury or loss of life.

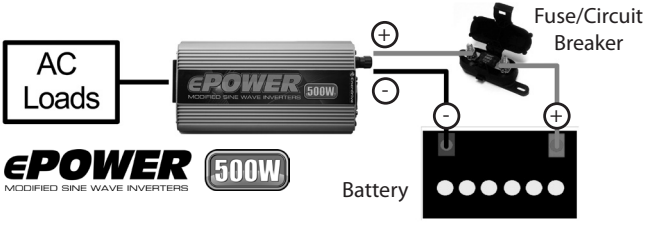
CAUTION: Before beginning your Enerdrive ePOWER Inverter installation, please consider the following:

- The Enerdrive ePOWER Inverter base unit should be used or stored in an indoor area away from direct sunlight, heat, moisture or conductive contaminants.
- When placing the unit, allow a minimum of 75mm of space around the unit for optimal ventilation.

Material Prepare for Installation

Typical Wiring block diagram of the Enerdrive ePOWER Inverter:





12V Battery Bank:

- The use of deep cycle battery is highly recommended for power inverter application.
- For battery size, you need to identify how much you will be using them between charges. Enerdrive recommends you purchase as much battery capacity as possible. See more on Battery Run time and Load in Section 4.

Fuse or Circuit Breaker:

- DC rated fuse or DC rated circuit breaker connected along the DC positive line is required.
- For EN20300, select a fuse or circuit breaker with a minimum of 40 Adc
- For EN20500, select a fuse or circuit breaker with a minimum of 80 Adc
- Based on the size of the battery bank chosen on the 12V Battery Bank above, determine the overall short circuit current rating of the battery bank from the battery manufacturer. The fuse or circuit breaker chosen has to be able to withstand the short circuit current that may be generated by the battery bank.

Disconnect Switch:

- Select a Disconnect Switch with the same or higher the rating of the selected fuse or circuit breaker from the above.
- The Disconnect Switch is used to disconnect the DC power between the ePOWER inverter and the battery bank during service, maintenance or trouble shooting.

DC Input and Grounding Cable:

- Use of low resistance wire is required for all the DC connections between the inverter and the battery bank.
- For EN20300, uses minimum 4mm2 wire with maximum cable length of 1.5 meters.
- For EN20500, use minimum 8mm2 wire with maximum cable length of 1.5 meters.

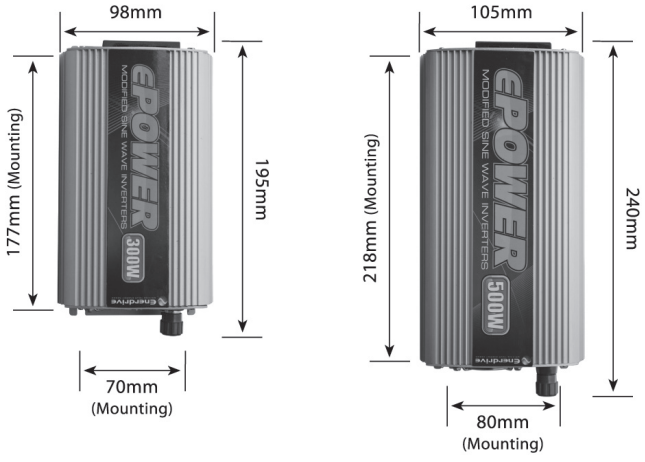
Installing the Enerdrive ePOWER Inverter System

WARNING: Electrical Shock Hazard

The unit 'On/Off' switch does not disconnect the DC power from the battery. Use the DC Disconnect Switch or disconnect the DC input cables connection to disconnect the DC power from the battery before working on any circuits connected to the unit. Failure to follow these instructions can result in death or serious injury.

ePOWER Inverter Installation:

- Choose an appropriate mounting location.
- For indoor use, the orientation of the unit can be mounted in any direction except with the DC Input panel facing downwards.
- For RV installation, the unit has to be mounted horizontally.
- Use mounting template below to mark the positions of the mounting screws.
- Drill the 4 mounting holes and place the inverter in position and fasten the inverter to the mounting surface.



ePOWER Inverter DC Input Connection:

CAUTION: Reversing the DC Input terminal will damage the unit and cannot be repaired. Damage caused by reverse polarity connection is not covered by the warranty.

- Connect one end of the negative DC input cable to the ePOWER Inverter DC negative terminal. Connect the other end of the negative DC input cable to the battery negative terminal.
- Make sure the Disconnect Switch is in the OFF position.
- Connect one end of the positive DC input cable to the ePOWER Inverter DC positive terminal. Connect the other end of the positive DC input cable to one of the terminal of the Disconnect Switch.
- Connect a DC input cable between the other terminal of the Disconnect Switch and one side of the terminal of the fuse holder.
- Connect a DC input cable between the other terminal of the fuse holder and the battery positive terminal.

- Install the selected fuse to the fuse holder.
- Turn Disconnect Switch to ON position.

Test the ePOWER Inverter connection:

- Turn unit on by switching the On/Off button on the main unit to On. The green 'Status' light turns on indicating the Enerdrive ePOWER Inverter is ON.
- Plug in a small AC load like a 40W table lamp or small appliance to the AC socket to verify AC is available.
- The unit is successfully installed and functioning properly.
- be sure to turn off inverter whenever unit is not in use.

5. UNIT OPERATION

Inverter should only be left on while AC power is required as the inverter will continue to draw power from your battery bank while in the On position.

Turn On/Off switch to On and green PWR light will illuminate. While the On/Of switch is in the On position, there is available AC power to the units ratings.

- The ePOWER 300w inverter has 300w of available AC power, with a surge rating capable of 600w.
- The ePOWER 500w inverter has 500w of available AC power, with a surge rating capable of 1000w.

The surge rating within the ePOWER inverter is only for a limited time, and in the event of the load exceeding the continuous power rating, the inverter will emit a loud beep and shut down. Within a few seconds the unit will reset and attempt to power the load. Should the unit keep cycling on then off with the beep emitting, you should remove appliances or use a larger inverter.

Under normal operation, the only sound you should hear from your ePOWER inverter is that of the cooling fan cycling on and off relative to the AC load and heat of unit.

Other Warning Alarm Scenarios:

The most common cause of inverter error is that of low battery voltage, this is due that as the inverters load increases, the battery voltage decreases. As the battery capacity gradually decreases, the voltage present at the inverter also decreases. To warn you of an impending flat battery, the inverter sounds an alarm once the battery voltage reaches a point of 10.7vdc. Should you choose to ignore this alarm, the inverter will continue to operate until a final shutdown voltage of 10.0vdc is reached. At this point in time, the green PWR light will still be illuminated, but the FAULT light will also be illuminated. Should a low battery event occur, you should immediately recharge your battery to avoid the risk of premature battery failure.

Other Causes of Low Battery Shutdown

Low battery shutdown need not always be as a result of a discharged battery. Other common causes you should check are:

- Under sized battery cables, or excessively long runs from battery to inverter.
- Loose terminal connections on either battery or back of inverter (be sure at all times that the DC terminals on the inverter are tight).
- Starting events on the main battery (these can be common when you start your engine as this draws the battery voltage down low for a moment).

Other fault conditions

The red **FAULT** led may illuminate under the following causes:

- High DC battery voltage as a result of a defective battery charging system.
- High internal heat (common if the cooling fans and vents are blocked)
- Running devices well in excess of the inverters rated capacity.

The ePOWER inverter is designed to simply reset and restart once the fault condition is removed. Should you continue to have a FAULT led show during operation, please contact Enerdrive.

Caution on Rechargable devices with ePOWER modified sine wave inverters.

The ePOWER 300 & 500 inverters output a modified sine wave AC power. This particular waveform is not as clean as conventional household AC power and has been know to possibly damage rechargable battery packs, or devices with inbuilt batteries that plug directly into an AC source with frequent use on modified sine wave.

There is typically no risk associated with any battery packs charged from a DC powerpack (i.e. A small device that plugs into the AC source, and converts power down to DC low voltage).

Possible Interference.

The modified sine wave may also create a small level of interference on devices such as AC radio's and small televisions. Although no damage will occur to these devices, if the image is undesirable you should consider using a pure sine wave inverter to remove any issues.

AC Voltage Irregularities.

Sometimes you may have the need to check AC voltage using a multimeter. Whenever you test an ePOWER 300 or 500w inverter using a conventional multimeter, the reading will probably show around 180vac ouptut. **THERE IS NO FAULT WITH THE INVERTER**, and in fact the problem exists with the multimeter. Standard multimeters do not read TRUE RMS, which results in a false reading on the display. Please do not be concerned should this occur.

ePOWER
MODIFIED SINE WAVE INVERTERS
300W

6. Specifications (300w)

Electrical Specifications

Part Number	EN20300
Output power (continuous)	300W
Surge capacity (peak)	600W
Output voltage	230 VAC +/- 5%
Output frequency	50 +/- 3Hz
Output waveform	Modified Sine Wave
Peak efficiency	90%
No load current draw	<0.2A
Input voltage range	10 - 15VDC

General Specifications

Operating temperature range	0ºC to 40ºC
Display	Power ON + Fault LED
Battery connection	DC lighter or cable clamps
Mounting bracket	Built in
Dimensions	65(H) x 105(W) x 195(L) mm
Weight	0.79kg
Warranty	Two year

Regulatory Approvals

ePOWER Inverter 300	CE. e-mark

Note 1: Specifications subject to change without notice.

Note 2: Specifications are based on as 12 volt DC nominal input.

Note 3: When operating products that require high surge or continuous power over 150 watts with the ePOWER inverter 300 or 500, we recommend hard wiring the inverter directly to the battery.

ePOWER
MODIFIED SINE WAVE INVERTERS
500W

7. Specifications (500w)

Electrical Specifications

Part Number	EN20500
Output power (continuous)	500W
Surge capacity (peak)	1000W
Output voltage	230 VAC +/- 5%
Output frequency	50 +/- 3Hz
Output waveform	Modified Sine Wave
Peak efficiency	90%
No load current draw	<0.3A
Input voltage range	10 - 15VDC

General Specifications

Operating temperature range	0ºC to 40ºC
Display	Power ON + Fault LED
Battery connection	Cable clamps
Mounting bracket	Built in
Dimensions	65(H) x 105(W) x 240(L) mm
Weight	1.2kg
Warranty	Two year

Regulatory Approvals

ePOWER Inverter 300	CE. e-mark

Note 1: Specifications subject to change without notice.

Note 2: Specifications are based on as 12 volt DC nominal input.

Note 3: When operating products that require high surge or continuous power over 150 watts with the ePOWER inverter 300 or 500, we recommend hard wiring the inverter directly to the battery.

WARRANTY

Two Year Limited 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.

The limited warranty program is the only one that applies to this unit, and it sets forth all the responsibilities of Enerdrive. There is no other warranty, other than those described herein. Any implied warranty of merchantability of fitness for a particular purpose on this unit is limited in duration to the duration of this warranty.

This unit is warranted, to the original purchaser only, to be free of defects in materials and workmanship for two years from the date of purchase without additional charge. The warranty does not extend to subsequent purchasers or users other than OEM applications.

This unit is not intended for commercial use. This warranty does not apply to damage to units from misuse or incorrect installation/ connection. Misuse includes wiring or connecting to improper polarity power sources.

RETURN/REPAIR POLICY:

If you are experiencing any problems with your unit, please contact our customer service department at support@enerdrive.com.au or Phone 1300 851 535 before returning product to retail store. After speaking to a customer service representative, if products are deemed non-working or malfunctioning, the product may be returned to the purchasing store within 30 days of original purchase. Any defective unit that is returned to Enerdrive within 30 days of the date of purchase will be replaced free of charge.

If such a unit is returned more than 30 days but less than two years from the purchase date, Enerdrive will repair the unit or, at its option, replace it, free of charge. If the unit is repaired, new or reconditioned replacement parts may be used, at manufacturer's option. A unit

may be replaced with a new or reconditioned unit of the same or comparable design. The repaired or replaced unit will then be warranted under these terms for the remainder of the warranty period. The customer is responsible for the shipping charges on all returned items back to Enerdrive.

LIMITATIONS:

This warranty does not cover accessories, such as adapters and batteries, damage or defects result from normal wear and tear (including chips, scratches, abrasions, discoloration or fading due to usage or exposure to sunlight), accidents, damage during shipping to our service facility, alterations, unauthorized use or repair, neglect, misuse, abuse, failure to follow instructions for care and maintenance, fire and flood.

If your problem is not covered by this warranty, call our Support Team at support@enerdrive.com.au or phone 1300 851 535 for general information if applicable.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