

ePOWER

SINE WAVE INVERTERS

1000w

2000w



230VAC Power Inverter 1000
230VAC Power Inverter 2000

Owner's Manual



Enerdrive
DRIVING YOUR ENERGY NEEDS

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 manual in its entirety before using the unit and save manual for future reference.

Product Numbers

True Sine Wave Series

EN1110s ePOWER Inverter 12V 1000W 230VAC

EN1120s ePOWER Inverter 12V 2000W 230VAC

Document Part Number

ePOWER Rev 1

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Table of Contents

1. INTRODUCTION	4
2. PRODUCT DESCRIPTION	5
3. INSTALLATION	5
4. UNIT OPERATION	8
5. TROUBLESHOOTING	10
6. SPECIFICATIONS	11
7. WARRANTY	11



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 and 5V USB 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. The 5V USB power can charge many USB powered devices. This manual will explain how to use this unit safely and effectively. Please read and follow these instructions and precautions carefully.

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.

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: 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: 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.

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.

LIMITATIONS ON USE

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

2. PRODUCT DESCRIPTION

The Enerdrive ePOWER Inverter package includes the items list below.

- ePOWER Inverter base unit (one of the following models)
 - EN1110s Power Inverter 12V 1000W 230VAC
 - EN1120s Power Inverter 12V 2000W 230VAC
- Owner's manual

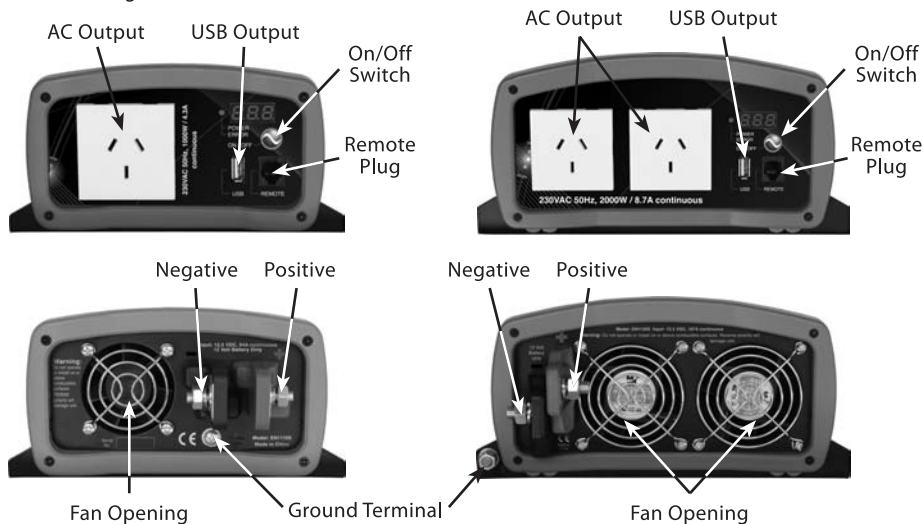
3. INSTALLATION

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:

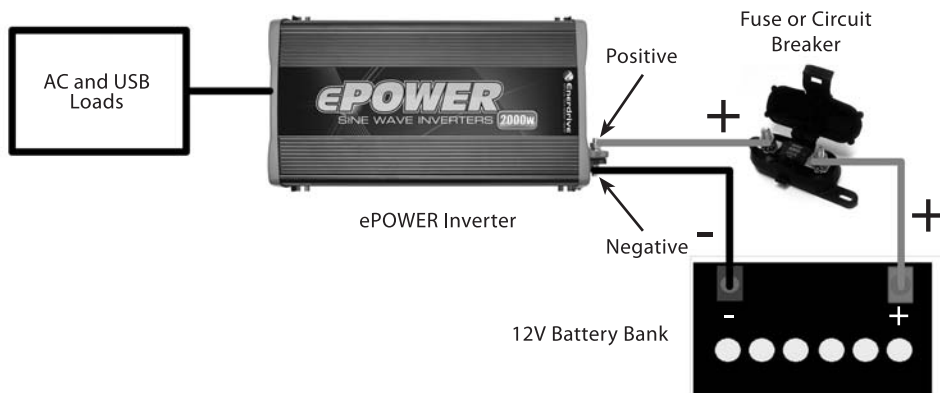
- The Enerdrive ePOWER Inverter base unit should be used or stored in an indoor area away from direct sunlight, heat, moisture or conductive contaminants.
- When placing the unit, allow a minimum of 75mm of space around the unit for optimal ventilation.

Understanding the unit features



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 EN1110s, select a fuse or circuit breaker with a minimum of 150 Adc
- For EN1120s, select a fuse or circuit breaker with a minimum of 250 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 EN1110s, uses minimum 35mm² wire with maximum cable length of 1.5 meters.
 - For EN1120s, use minimum 70mm² wire with maximum cable length of 1.5 meters.
- Important: The unit is grounded through the ground stud of the unit located near the DC Input terminal.

- For the grounding cable connected between the ePOWER inverter chassis to the earth ground, use a matching cable size as used on the DC Input Cable section.

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 Chassis Grounding Connection:

DANGER: The ePOWER Inverter chassis is to be grounded properly. Never operate the ePOWER Inverter without proper grounding. Failure to do so will result in death or serious injury.

- Connect the grounding cable's ring terminal to the unit ground screw.
- Connect the other side of the cable to the common grounding point.

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.

Remote Switch (optional) Connection:

- Insert the Remote Switch to the RJ11 Remote Port located at the Front AC panel of the ePOWER inverter. Please note polarity.

Test the ePOWER Inverter connection:

- Turn unit on by pressing and holding the On/Off button on the main unit for about a second until two beep sounds occur. The 'Status' light turns on indicating the Enerdrive ePOWER Inverter is ON. Check the digital display shows measured battery voltage and output power alternatively. AC output and 5V USB is now available. If the display shows USB, only the 5V USB is on. Read Operation section to learn how to turn unit ON in detail.
- 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.

4. UNIT OPERATION

Turn ON & OFF the USB only (if AC power is not required)

- Press and hold the "Power/Select" button for 1 second until a single beep is sound. Display will show USB. Status LED will turn green. 5V is available at the USB port and AC is not available at the AC socket. This mode is used to save battery power if AC power is not required.
- Press "Power/Select" button to turn unit off.

Turn ON and OFF the 230 VAC and USB

- Press and hold the "Power/Select" button for 2 seconds until the two beeps are sounded. Display will show the measured battery voltage and output power alternatively. Status LED will turn green. 5V USB and 230 VAC is available at the AC socket.
- Press "Power/Select" button to turn unit off.

Remote ON /OFF (Optional)

- If optional remote is used, the Remote ON/OFF momentary switch connected in parallel with the

“Power/Select” button on the unit. Same procedure applies to ON and OFF the unit.

Understanding the Display & Status LED

Display:

USB	Indicate only the USB is ON and 230 VAC is not available at the AC socket
12.5	Display shows measured battery voltage
0.80	Display shows total output AC power in kW (800W as shown)
E01	Display shows error or warning code. See trouble shooting section in details

Status LED:

Green:	Unit operation is normal
Amber:	Warning is detected. Unit will shutdown at any time. Please check error code to troubleshoot the unit.
Red:	Error is detected and unit has shutdown. Please check error code to troubleshoot the unit.

Understanding the Error Code

Code	Condition	Corrective Action
E01	Unit has sensed input under voltage and has shutdown	Recharge battery immediately and restart unit
E02	Unit has sensed input over voltage and has shutdown	Check battery voltage or if any external charger is connected to the battery bank
E03	Unit output has sensed overload or short circuit and has shutdown	Check load connected to the output. Reduce load and restart the unit
E04	Unit has sensed internal temperature was high and has shutdown	Turn unit off and wait for 15 minutes before restarting. Check if any object has blocked the air flow of the unit
E05	Unit has sensed input voltage is low and warning occurs	Recharge battery as unit will shutdown shortly
E06	Unit has sensed load connected is close to overload shutdown limit	Reduce load
E07	Unit has sensed internal temperature is high and is close to thermal shutdown limit	Reduce load and check if any ventilation of the unit is blocked

AC Load on the ePOWER Inverter

Although the ePOWER Inverter can provide high surge power up to two times the rated output power, some appliances may still trigger on the inverter protection system. A higher power inverter is required for those appliances.

Estimate Run Time On Load

Following run time is an estimate based on using a 12V-240AH battery bank for reference (Depth of discharge to 50%). Actual run time may vary.

Load	Consumption	Estimate Run time
Cordless Phone	5W	80 hrs
Clock/Radio	8W	65 hrs
Table Lamp	40W/60W	22 hrs/ 15 hrs
Freezer (8.8 cu. ft.)	80W	12 hrs
20" LCD TV	100W	10.5 hrs
Refrigerator (18 cu. ft.)	120W	8.3 hrs
Microwave (mid-size)	1000W	44 min
Coffee Maker	1200W	35 min
Vacuum Cleaner	1400W	28 min

5. TROUBLESHOOTING

To trouble shoot the unit, please note the error code display on the main unit and review the "Understanding the Error Codes" in section 4.

Problem	Symptom	Solution
No output voltage. And Status LED is off.	The unit is off	Turn unit ON by following the instruction in Section 4 to turn unit ON
	No power to inverter	Check fuse or the Disconnect switch (if installed) is either blown or turn OFF
No AC output. Status LED is Green	Display shows USB	Only the USB output is turned ON. Follow instruction in Section 4 to turn AC power ON
No Output. Status LED is in Amber	Check error code on display	Verify the error condition and make correction

6. SPECIFICATIONS

Note: Specifications are subject to change without notice.

Specifications: ePOWER True Sine Wave Series		
Inverter	ePOWER 1000	ePOWER 2000
AC Output Power	1000W	2000W
AC Output Current	4.3A	8.7A
AC Surge Power (Peak)	2000W	4000W
AC Output Voltage	230 VAC / 50 Hz	230 VAC / 50 Hz
AC Output Waveform	True Sine Wave	True Sine Wave
AC Output Socket	1 outlet	2 outlets
Nominal DC Input Voltage	12.5 VDC	12.5 VDC
No Load battery draw	< 1.2 ADC	< 1.2 ADC
DC Input Voltage operating range	10.5 – 15.5 VDC	10.5 – 15.5 VDC
Under Voltage Alarm	11.2 VDC	11.2 VDC
Under Voltage Shutdown	10.5 VDC	10.5 VDC
Under Voltage Recovery	11.8 VDC	11.8 VDC
Over Voltage Shutdown	15.5 VDC	15.5 VDC
USB	5V, 750 mA	5V, 750 mA
Safety and Environmental		
Conformance	All required Australian Standards	
Agency Markings	RCM	
Operating Temperature	0°C to 40°C	
Storage Temperature	-20°C to 60°C	
Relative Humidity	5-90% non-condensing	
Operating Altitude	Up to 3000 meters above sea level	
Weights and Dimensions		
Weight	2.9kg	5.5kg
Dimensions (W x L x H)	185 x 319 x 90mm	240 x 420 x 115mm
Warranty	2 Years	2 Years

7. WARRANTY

Two Year Limited Warranty

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.

Enerdrive will not be responsible for any amount of damage in excess of the retail purchase price of the unit under any circumstances. Incidental and consequential damages are specifically excluded from coverage under this warranty.

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.