# ePOWER 400W

SINE WAVE INVERTERS


## 230VAC Power Inverter 400W

# 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
EN1104s ePOWER Inverter 12V 400W 230VAC

Document Part Number
ePOWER 400W 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 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.

**LIMITATIONS OF 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
- Owner's manual
- DC Input cable accessories

## 3. INSTALLATION

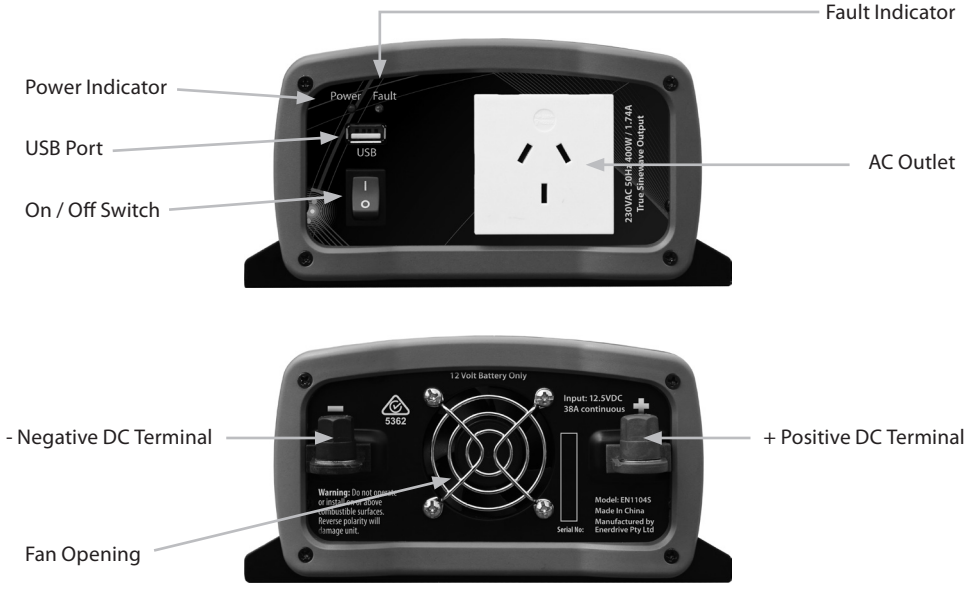
**WARNING:** Enerdrive recommends that all wiring be done by a certified technician or electrician to ensure adherence to the applicable electrical safety wiring regulations and installation codes. Failure to follow these instructions can damage the unit and could also result in personal injury or loss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

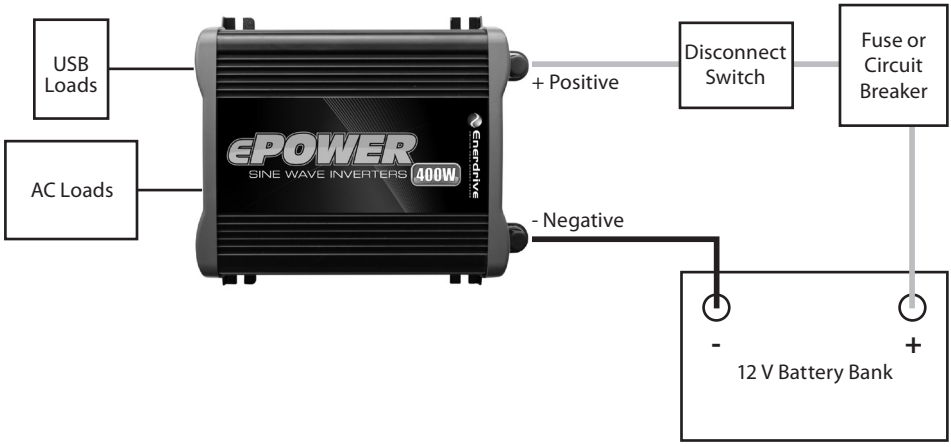
**Understanding the unit features**

Image below shows 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.
- Select a fuse or circuit breaker with a minimum of 60 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.
- Uses minimum #10 AWG wire with maximum cable length of 5 feet.

**Installing the Enerdrive ePOWER Inverter System**

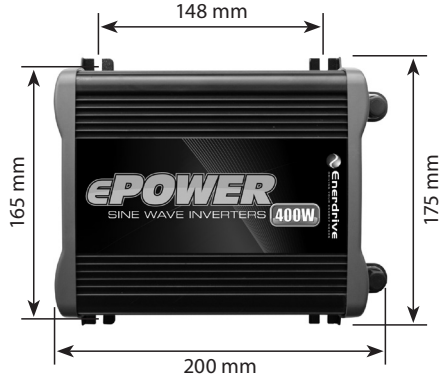
**WARNING: Electrical Shock Hazard**

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.

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

**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.

**Connect unit with optional accessories using the Lighter plug cable:**

**CAUTION:** Due to the limitations of the 12V lighter plug socket in vehicles, the unit should be used with the DC cable with lighter plug only to supply AC power to products that require 150W (120VAC/1.3 A or 230V 0.65A) or less. If the appliance requires more than 150W, use the optional DC cable clips for battery connection.

- Attach the red ring-type connector to the positive (+) DC terminal (red) on the power inverter and connect the black ring type connector to the negative (-) DC terminal (black) on the Power inverter.
- Tighten the nut on each DC terminal.
- Insert the light plug of this cable to the fused 12V lighter plug socket.
- Unit is ready for use.

**Connect unit with optional accessories using the Battery clips cable:**

**CAUTION:** Please be sure all the connections are tight before the use of the unit.

- Attach the red ring-type connector to the positive (+) DC terminal (red) on the power inverter and connect the black ring type connector to the negative (-) DC terminal (black) on the Power inverter.
- Attach the negative (black) clip to the negative (-) battery terminal.
- Attach the positive (red) clip to the fuse or circuitry breaker of the 12V battery bank as indicated on 'Typical Wiring block diagram of the Power Inverter' on page 5.
- Unit is ready for use.

**Testing the Power Inverter:**

- Turn unit on by using the On/Off button on the unit. The 'Power' light turns on indicating the Enerdrive Power Inverter is ON. AC output is now available.
- Plug in a small AC load like a 25W 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

**WARNING: RISK OF EQUIPMENT DAMAGE**

- Do not plug surge-protected power bars into the unit's AC outlets. The surge protected components on the surge-protected power bar may not like the modified sine wave output generate by the inverter.
- Do not connect an AC power source like utility power or generator to the unit AC outlets.
- **Turn ON and OFF the unit**
- Toggle the On/Off switch to 'ON' position to turn unit ON.
- 'Power' indicator will turn green.
- AC Output is available at the AC output socket and 5V USB port.
- Toggle the On/Off switch to 'Off' position to turn unit off. 'Power' indicator will turn off.

**Understanding the LED indicators**

- Power indicator: Indicator turn on indicate unit is ON.
- Fault indicator: Indicator turns on indicate fault was detected. Unit has shutdown. To reset the unit, remove the fault condition and reset unit by using the toggle switch and turn unit off and on again.

**Understanding the fan operation**

The fan on the unit will automatically turns on when it sense the internal temperature of the unit reach to its preset level.

**AC Load on Power Inverter**

Although the Power 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-120AH battery bank for reference. Actual run time may vary.

| Load | Consumption | Estimate Run time |
|---|---|---|
| Cordless Phone | 5W | 150 hrs |
| Clock/Radio | 8W | 100 hrs |
| Table Lamp | 40W / 60W | 27 hrs/ 18 hrs |
| Freezer (249 Litre) | 80W | 15 hrs |
| 20" LCD TV | 100W | 11.5 hrs |
| Sump Pump (1/2 hp) | 350W | Not applicable (surge too high) |

## 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 AC output and 'Power' indicator is off. | The unit is off | Turn unit ON using the toggle switch |
| | No power to inverter | Check fuse or the Disconnect switch (if installed) is either blown or turn OFF |
| No AC output. 'Fault' indicator is ON | Unit detect fault and has shutdown | Verify the error condition and make correction and reset unit |

## 6. SPECIFICATIONS

Note: Specifications are subject to change without notices.

| **ePOWER 400W Specification** | |
|---|---|
| Inverter Model Number | EN1104S |
| AC Output Power | 400W |
| AC Output Current | 1.74A |
| AC Surge Power (Peak) | 800W |
| AC Output Voltage / Frequency | 230Vac / 50Hz |
| AC Output Waveform | True Sine Wave |
| Nominal DC Input Voltage | 12.5 Vdc |
| No Load battery draw | < 0.8 ADC |
| DC Input Voltage operating range | 10.5 – 15.5 Vdc |
| Under Voltage Alarm | 11.0Vdc |
| Under Voltage Shutdown | 10.5 Vdc |
| Under Voltage Recovery | 11.3 Vdc |
| Over Voltage Shutdown | 15.5 Vdc |
| AC Output socket | 1 |
| **DC Output** | |
| USB Output | 5V / 1A |
| **Safety and Environmental** | |
| Agency Markings | RCM 5362 |
| Operating Temperature | 0°C to 40°C |
| Relative Humidity | 5-90% noncondensing |
| Operating Altitude | Up to 3000 meters above sea level |
| **Weights and Dimensions** | |
| Weights | 1.73 kg |
| Dimensions (W x L x H) | 175 x 200 x 89 mm |

## 7. 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.