

# **ePOWER**

**600W**

**TRUE SINE WAVE INVERTER**



## **User Manual**

**ePOWER 12V 600W INVERTER**

Rev. 1.7



**Enerdrive**  
DRIVING YOUR ENERGY NEEDS

## Please Keep This Manual For Future Reference

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.

### 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 - ePOWER Inverter Series

EN1106S-12V	ePOWER Inverter 600W 12V
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ePOWER Inverter Owners Manual Rev. 1.7

### Service Contact Information

ENERDRIVE PTY LTD  
Unit 3, 11 Millennium Place, Tingalpa  
Queensland, Australia 4173  
Ph: 1300 851 535 / Fax: 07 3390 6911  
Email: sales@enerdrive.com.au | Web: www.enerdrive.com.au

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Reminds you that if this manual is in any language other than English although steps have been taken to maintain the accuracy of the translation, the accuracy cannot be guaranteed

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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 cooling fins and/or install in a zero-clearance compartment.

 **WARNING**

### SHOCK HAZARD. KEEP AWAY FROM CHILDREN!

- Avoid moisture ingress. Never expose the 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**

### 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.

 **LIMITATIONS OF USE**

- Do not use in connection with life support systems or other medical equipment or devices.
- Inverter is not to be used by persons with reduced physical or mental capabilities or lack of knowledge and experience. Not to be operated or used by children.

## 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. Features

#### WARNING

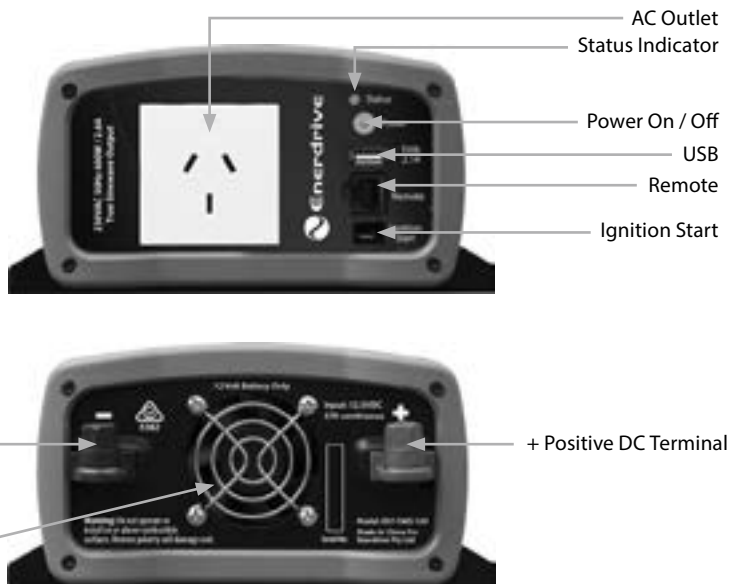
- Enerdrive recommends that all wiring be done by a certified technician or electrician to ensure adherence to the applicable electrical safety wiring regulations and installation codes. Failure to follow these instructions can damage the unit and could also result in personal injury or loss of life.

#### CAUTION

- Before Beginning Your Unit Installation, Please Consider The Following:
- The unit should be used or stored in an indoor area away from direct sunlight, heat, moisture or conductive contaminants. Do not install the ePOWER Inverter in corrosive environments.
- 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:



### 4. Installing the ePOWER Inverter System

#### WARNING: ELECTRICAL SHOCK HAZARD

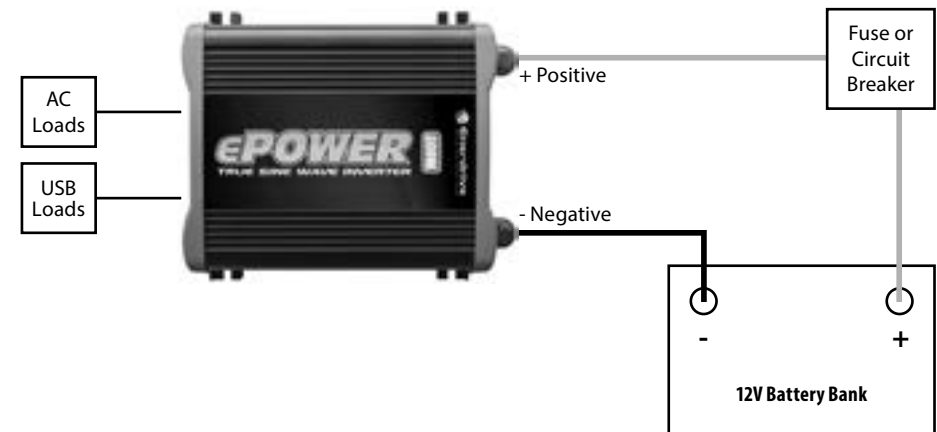
- The unit 'On/Off' switch does not disconnect the DC power from the battery. To turn off the DC power to the inverter either remove the main DC fuse or switch off the circuit breaker to disconnect the DC power from the inverter before working on any circuits connected to the unit. Failure to follow these instructions can result in death or serious injury.

#### 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.

#### Material Preparation for Installation:

Typical Wiring block diagram of the Enerdrive ePOWER Inverter:



### Battery Bank:

- The use of deep cycle battery is highly recommended for power inverter application
- For battery size, you need to identify how long you wish to operate the load(s). Enerdrive does recommend that you purchase as much battery capacity as possible. See more on “Estimated Run time and Load” in Section 6.
- Please use 12V Battery Bank system for 12V DC Input Inverter (EN1106S-12V). **Using 12V DC Input Inverter on 24V Battery System will damage the inverter and may catch fire.**

### Fuse or Circuit Breaker:

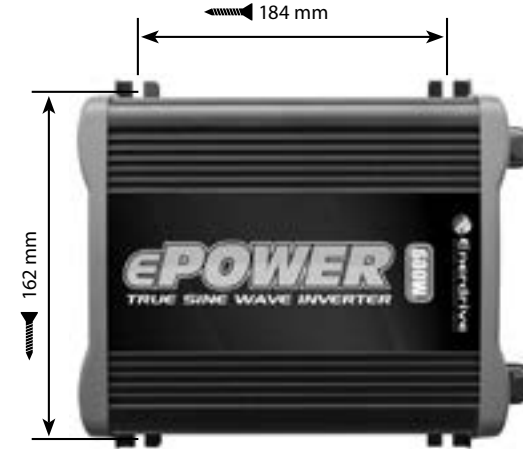
- DC-rated fuse or DC-rated circuit breaker connected along the DC positive line is required.
- Select a fuse or circuit breaker with 70A/16V minimum rating for the 12V DC Input Inverter.
- Based on the size of the battery bank chosen, determine the overall short circuit current rating of the battery 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.

### DC Input Cable:

- Use of low resistance wire is required for all the DC connections between the inverter and the battery bank.
- Use minimum 16mm<sup>2</sup> cable with a maximum length of 1.5m for 12VDC inverter.

### 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.

### Hardwired Direct Connection:

- Make sure the main fuse is not connected or breaker is switched off.
- Attach a positive (+) DC terminal (red) cable on the power inverter.
- Attach a negative (-) DC terminal (black) cable on the power inverter.
- Tighten the nut on each DC terminal.
- Connect the other end of the positive DC input cable to one of the terminals of the fuse holder or circuit breaker switch.
- Connect a DC positive input cable between the other terminals of the fuse holder or circuit breaker switch to the battery positive terminal.
- Connect the DC negative cable from the inverter to the Negative BUS of your DC System.
- Install the selected fuse to the fuse holder or switch on the circuit breaker.
- Unit is ready for use.



## CAUTION

- Please be sure all the connections are tight before the use of the unit.

## 5. 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.

## 6. Unit Operation



### WARNING: RISK OF EQUIPMENT DAMAGE

- Do not connect an AC power source like utility power or generator to the unit AC outlets.

### Turn ON and OFF the unit:

- Press and hold the Green On/Off button for 1-2 seconds to turn ON the inverter. The status indicator will turn ON to indicate the unit is powered up.
- AC Output is available at the AC output socket and 5V USB port.
- Press the Green On/Off button to turn OFF the inverter. The status indicator will turn OFF to indicate the unit is powered down on the AC output.

### Understanding the 'Power Save' function

The unit can be pre-set with the 'Power Save' function ON or OFF. If the unit is turned ON with 'Power Save' function pre-set to ON, with any AC load greater than >10W connected to the unit, the unit will provide continuous AC Output.

With any AC load less than <10W connected to the unit or with AC Load changing from >10W to < 5W, the AC Output will change from continuous to pulsing the AC Output every 5 seconds.

The unit is default set to 'Power Save' OFF. To change the 'Power Save' function from OFF to ON or switch back from ON to OFF, press and hold the green 'On/Off' button for more than 5 second until the 'Status' light quickly flashes three times and the alarm beeps for more than 2 seconds.

## Understanding the 'Status' indicator

Function	'Status' Indicator	Condition
Power Save Function 'OFF'	Solid Green	Unit is normal and continuous AC Output is available
	Solid Green with alarm beep every 2 seconds	Unit is detected with either DC Over/Under Voltage or Over Temperature warning and continuous AC Output is still available
Power Save Function 'ON'	Flashing Green	Unit is normal and AC Load connected is >10W
	Flashing between Amber and Red	Unit is normal and AC Load connected is <10W or AC Load connected is reduced from >10W to < 5W
	Flashing Green and alarm beep every 2 seconds	Unit is detected with either DC Over/Under Voltage or Over Temperature warning and AC Load connected is > 10W
Power Save Function is either 'ON' or 'OFF'	Flashing between Amber and Red and alarm beep every 2 seconds	Warning detected with either DC Over/Under Voltage or Over Temperature AC Load connected is <10W or AC Load connected is reduced from >10W to <5W
	Solid Red with alarm beep every second	No AC Output as unit had shutdown due to either DC Over/Under Voltage or AC Output Overload or Over Temperature occurs. See more details on "Understanding the Warning and Shutdown Condition" in this manual

### Understanding the fan operation:

The fan on the unit is AC load and internal temperature activated. It will automatically turn on when AC output power exceeds the pre-set values (~ 200W) and turn off when AC output power is reduced to 150W. It will also automatically turn on when it senses the internal components have reached approximately 80°C and turn off when temperature drops below 60°C.

### Use of the Ignition Start Function on unit:

An 'Ignition Start' port is located on the Front AC Panel of the unit using a ¼" width spade terminal. This port is used for turning the unit On and OFF using a +12V signal. An insulated female connector is required to connect to the port.

Connecting to +12V will turn ON the unit and removing the +12V signal will turn OFF the unit.

### Understanding the Warning and Shutdown Condition

- **Over Temperature Warning:** Unit internal temperature is high. Unit requires better ventilation.
- **DC Over Voltage Warning:** DC Input Voltage is high and close to the over-voltage shutdown limit. Check the battery voltage.

- **DC Under Voltage Warning:** DC Input Voltage is low and is close to the under-voltage shutdown limit. Check battery voltage or battery connection.
- **Over Temperature Shutdown:** Reduce the AC load and provide more ventilation to the unit. Unit will automatically restart when the internal temperature of the unit cools down.
- **DC Over Voltage Shutdown / DC Under Voltage Shutdown:** Check the battery voltage. In the first 30 seconds, AC Output will resume when battery voltage is within the unit's operating range. If the battery voltage shutdown condition is ignored, the unit will switch OFF completely after 30 seconds
- **AC Output Overload Shutdown:** Check AC Load connected to the unit. AC Output is short circuited or AC Power draw by the load is beyond the unit's limit. The indicator and alarm will beep for approx 30 seconds before it switched OFF completely. Restart the unit using the green 'On/Off' button is required after the AC Load condition is corrected.

### USB Port

- With the inverter on, the USB port can provide up to 2.1A, 5V output. This can be use to charge 5V USB powered devices.

### Remote Switch (optional) Connection:

The unit comes with a Remote port and an optional 'Remote Switch' accessory (EN1104-REM) can be used to turn unit On and OFF remotely. To install the 'Remote Switch', just connect the switch's RJ12 plug to the RJ12 'Remote' port located on the Front AC panel of the inverter. Please note polarity when connecting the plug.

- The Power On/Off push button on the remote shares the same function as the green 'On/Off' button on the main unit.
- With 'Power Save' Function set to OFF, the 'Power' indicator will remain solid ON when AC Output Power is available and will be OFF when the unit has shutdown.
- With 'Power Save' Function set to ON, the 'Power' indicator will be flashing when AC Output Power is available and will be OFF when the unit has shutdown.

### 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:

The following run times are an estimate based on using a 12V-120AH battery bank for 12V systems. 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
Flooded Light	500W	1hr
Sump Pump (1/2 hp)	350W	Not applicable (surge too high)

## 7. Troubleshooting

Problem	Symptom	Solution
No AC output and 'Power' indicator is off.	The unit is off	Turn on the unit using the Green power button
	No power to inverter	Check fuse or the Disconnect switch (if installed) is either blown or turn OFF
'Status' indicator is in green or flashing between amber and red (alarm beeps every 2 seconds)	The unit has detected a warning and is going to shutdown	Verify the warning condition and make adjustment. See "Understanding the 'Status' indicator" in this manual
'Status' indicator is in red (alarm beeps)	Unit has shutdown	Check unit condition and make correction. See "Understanding the 'Status' indicator" in this manual



## 8. Specifications

Note: Specifications are subject to change without notices.

Specifications	EN1106S-12V
AC Output Power	600 Watt
AC Output Current	2.6A
AC Output Voltage	230Vac 50Hz
AC Output Waveform	True Sinewave (<5% THD)
DC Input Voltage	12.5 VDC
No Load Current	<0.8A
DC Operating Range	10.5 – 15.9VDC
Under Voltage Alarm	11.0 VDC
Under Voltage Alarm Recovery	11.3 VDC
Under Voltage Shutdown	10.5 VDC
Under Voltage Recovery	12.0 VDC
Over Voltage Shutdown	15.9 VDC
Over Voltage Recovery	15.0 VDC
<b>Display</b>	
Power Indicator	Yes (Green)
Warning and Fault Indicator	Yes (Red)
USB Output Power	2.1A
Recommended Minimum Battery Cable Size	16mm <sup>2</sup> 1.5m
<b>Environmental</b>	
Operating Temp.	0°C to 40°C
Storage Temp.	-20°C to 60°C
Relative Humidity	5 - 90% non-condensing
<b>Weights and Dimensions</b>	
Weights	2.0 kg
Dimensions	237 x 175 x 89mm

Note: Specifications are subject to change without notice.



## 9. Warranty



### 2 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 warranty that applies to all Enerdrive products, 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 of the Enerdrive product is limited in duration to the duration of this warranty.

This Enerdrive product is warranted, to the original purchaser only (proof of purchase is required), 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 Enerdrive product 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.



### 3 Year Pro Rata Support Program:

In addition to our standard 2 years warranty, we offer a further 3 years of support with our pro-rata service program. In the event of an out of warranty product issue we can upgrade you with a new product for a fraction of the new price. With repair on many products becoming harder and harder these days, this program provides our customers with the greatest peace of mind possible.

### Return and/or 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, discolouration 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, contact our Support Team at support@enerdrive.com.au or phone 1300 851 535 for general information if applicable.





**ENERDRIVE PTY LTD**

Unit 3, 11 Millennium Place, Tingalpa, Queensland, Australia 4173

Ph: 1300 851 535 / Fax: 07 3390 6911

Email: [support@enerdrive.com.au](mailto:support@enerdrive.com.au)

Web: [www.enerdrive.com.au](http://www.enerdrive.com.au)