

PORTAWATTZ™

150
DC to AC
POWER INVERTER

Owner's Manual

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1.0 Introduction

Thank you for purchasing the PORTAWATTZ 150 Power Inverter. The PORTAWATTZ 150 is part of an advanced family of high performance power inverters from Xantrex, the leader in the field of high frequency inverter design. From the 12 Volt outlet in your vehicle or boat, the PORTAWATTZ 150 will efficiently and reliably power a wide variety of household AC products, such as compact TVs and VCRs, laptop computers, camcorder and cellphone chargers, fluorescent lights, soldering irons, etc. The PORTAWATTZ 150 employs reliable solid state power electronics for years of safe, trouble free operation and includes automatic safety monitoring circuitry to protect it, and your battery, from inadvertent overload conditions.

Read this manual before installing or using the PORTAWATTZ 150 and save it for future reference.

The following main topics are covered in this manual:

- Important safety information
- Installation and operating instructions
- General principles of operation
- Warranty and service information

2.0 Safety First ... Before You Use the PORTAWATTZ 150

Incorrect installation or misuse of the PORTAWATTZ 150 may result in danger to the user or hazardous conditions. We urge you to pay special attention to all **CAUTION** and **WARNING** statements. **CAUTION** statements identify conditions or practices that may result in damage to the PORTAWATTZ 150 or to other equipment. **WARNING** statements identify conditions that may result in personal injury or loss of life.

WARNING! Shock hazard. Keep away from children.

- The PORTAWATTZ 150 generates the same potentially lethal AC power as a normal household wall outlet. Treat it with the same respect that you would any AC outlet.
- Do not insert foreign objects into the PORTAWATTZ 150's AC outlet.
- Do not expose the PORTAWATTZ 150 to water, rain, snow or spray.
- Do not, under any circumstances, connect the PORTAWATTZ 150 to power utility AC distribution wiring.
- Failure to follow the above safety instructions may result in personal injury and/or damage to the PORTAWATTZ 150.

WARNING! Heated surface.

- The PORTAWATTZ 150's housing may become uncomfortably warm, reaching 140°F (60°C) under extended high power operation. Ensure at least 2 in. (5 cm) air space is maintained on all sides of the PORTAWATTZ 150. During operation, keep away from materials that may be affected by high temperatures.

CAUTION!

- Do not connect any AC product to the PORTAWATTZ 150, whose neutral conductor is connected to ground.
- Do not expose the PORTAWATTZ 150 to temperatures in excess of 100°F (40°C).

3.0 Quick Start Guide

3.1 Overview

These basic instructions are intended to provide a brief overview of the PORTAWATTZ 150's key features. For complete information about the PORTAWATTZ 150, it is important to read this manual fully. The diagram below shows the PORTAWATTZ 150's key features.

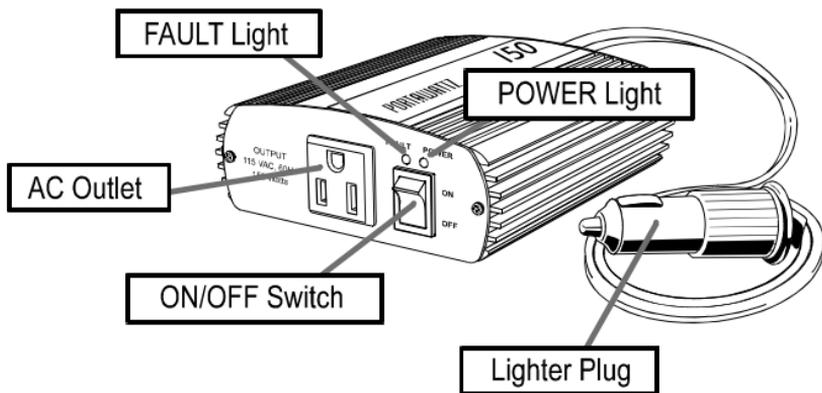


Figure 1. Key Features

3.2 Operating 115 VAC Products

1. Plug the PORTAWATTZ 150 DC lighter plug into a vehicle's cigarette lighter or 12 Volt outlet.
2. Turn the PORTAWATTZ 150 ON/OFF switch ON. The green POWER light indicates AC power is available at the AC outlet.
3. Plug the AC products you wish to operate into the AC outlet and switch it on.
4. In the event of an overload, low battery voltage or overheating, the PORTAWATTZ 150 will automatically shut down. (See section 7.0)

4.0 Design Features

4.1 Switchmode Power Conversion Technology

The PORTAWATTZ 150 employs advanced high frequency switchmode power conversion circuitry. This results in a smaller, lighter, more efficient and completely silent inverter.

4.2 High Surge Power Capability

High performance Power FETs (Field Effect Transistors) are employed for high surge power capability.

4.3 Safety Features

These advanced safety features are built into the PORTAWATTZ 150.

- Electronic overload protection with automatic shutdown.
- Automatic low voltage shutdown.
- Overheat shutdown protection.
- High input voltage protection.
- Manual reset eliminates unexpected restarting.

5.0 Placement Guidelines

For optimum operation, the PORTAWATTZ 150 should be placed on a flat surface such as the floor or seat of a vehicle. The location should be...

- ...dry. Do not expose to water drip or spray.
- ...cool. Operate only in ambient temperatures between 32°F (0°C) and 100°F (40°C). Keep away from heating vents.
- ...well ventilated. Allow at least 2 inches (5 cm) clearance above and on all sides of the PORTAWATTZ 150 for proper cooling.

6.0 Operating 115 Volt AC Products and Equipment

6.1 General Information

The PORTAWATTZ 150 is capable of powering most 115 Volt AC products that use 150 Watts or less. Its AC output waveform, called “modified-sine wave” is designed to function similarly to the sine wave shape of utility power. Most AC products rated for 150 Watts or less will operate normally with the PORTAWATTZ 150.

CAUTION: Do not use the PORTAWATTZ 150 with the following:

- Small battery operated appliances such as rechargeable flashlights, some rechargeable shavers and night lights that are plugged directly into an AC receptacle to recharge.
- Battery chargers used with certain power tool battery packs. These chargers will have a warning label stating that dangerous voltages are present at the charger’s battery terminals.

The power, or “wattage”, rating of AC products is the average power they use. When many AC products are first switched on, they initially consume more power than their power rating. TVs, monitors, and electric motors are examples of products that have

high “surge” requirements at start up. Although the PORTAWATTZ 150 can supply momentary surge power as high as 400 Watts, occasionally some products rated less than 150 Watts may exceed its surge capabilities and trigger its safety overload shutdown feature.

6.2 Interference with Electronic Equipment

Generally, most AC products operate with the PORTAWATTZ 150 just as they would with household AC power. Below is information concerning two possible exceptions.

6.2.1 Buzzing Sound in Audio Systems.

Some inexpensive stereo systems and “boom boxes” have inadequate internal power supply filtering and “buzz” slightly when powered by the PORTAWATTZ 150. Generally, the only solution is an audio system with a higher quality filter.

6.2.2 Television Interference.

The PORTAWATTZ 150 is shielded to minimize interference with TV signals. However, with weak TV signals interference may be visible in the form of lines scrolling across the screen. The following should minimize or eliminate the problem:

- Use an extension cord to increase the distance between the PORTAWATTZ 150 and the TV, antenna and cables.
- Adjust the orientation of the PORTAWATTZ 150, television, antenna and cables.
- Maximize TV signal strength by using a better antenna and use shielded antenna cable where possible.
- Try a different TV. Different models of televisions vary considerably in their susceptibility to interference.

7.0 Using the PORTAWATTZ 150

Refer to Figure 1 in section 3.1 for location of the items identified below.

7.1 Indicators, Controls and Connectors

- An AC outlet is provided on one end of the PORTAWATTZ 150. A 115 Volt AC product with a power consumption of 150 Watts or less, may be plugged in.
- The PORTAWATTZ 150 receives its operating power through its DC lighter plug that fits standard vehicle cigarette lighter sockets and DC power outlets.
- The ON/OFF switch enables output AC power at the AC outlets when switched ON. It also acts as a manual reset for overload, low battery voltage and overheat fault conditions. Reset occurs by switching OFF for 5 seconds, then back ON again.
- The green POWER light indicates AC power is present at the AC outlet and the PORTAWATTZ 150 is operating normally.
- The red FAULT light indicates inverter shutdown caused by low or high battery voltage, overload or excessive temperature.

7.2 Inverter Operation

1. When connected to a vehicle's 12 Volt outlet, turning the ON/OFF switch ON, will illuminate the green POWER light and AC power will be delivered to the AC outlet.
2. As the battery charge is used up, battery voltage begins to fall. When the PORTAWATTZ 150 senses the voltage at its DC input has dropped to 10.0 Volts, it will automatically shut down to prevent battery damage. The green POWER light is switched off, and the red FAULT light illuminates.
3. If an AC product rated higher than 150 Watts (or which draws excessive surge power) is connected, the PORTAWATTZ 150 will shut down. The green POWER light will turn off and the red FAULT light will turn on.
4. If the PORTAWATTZ 150 exceeds a safe operating temperature, due to insufficient ventilation or a high temperature environment, it will automatically shut down. The green POWER light will turn off and the red FAULT light will turn on.
5. Should a defective battery charging system cause the battery voltage to rise to dangerously high levels, the PORTAWATTZ 150 automatically shuts down. The green POWER light will turn off and the red FAULT light will turn on.

6. To reset the PORTAWATTZ 150 after automatic shutdown, the OFF/ON switch must be switched OFF for 5 seconds, then ON again. This manual reset feature prevents unexpected or hazardous restarting of connected AC loads.

7.3 Battery Operating Time

When using the PORTAWATTZ 150, operating time will vary depending on the charge level of the battery, its capacity and the power level drawn by the particular AC load. With a typical vehicle battery and a 150 Watt load (such as a small TV-VCR combo), an operating time of 2-3 hours or more can be expected.

Vehicle batteries are designed to provide brief periods of very high current needed for engine starting. They are not intended for constant deep discharge. Regularly operating the PORTAWATTZ 150 from a vehicle battery until low voltage shutdown occurs will shorten the battery's life. When using a vehicle battery as a power source, it is strongly recommended to start the vehicle every hour or two to recharge the battery before its capacity drops too low. The PORTAWATTZ 150 can operate while the engine is running, but the normal voltage drop that occurs during starting may trigger the PORTAWATTZ 150's low voltage shutdown feature.

Because the PORTAWATTZ 150 draws less than 0.1 Amps with the ON/OFF switch in the ON position and with no AC products connected, it has minimal impact on battery operating times.

8.0 Troubleshooting

Problem: AC product will not operate, red FAULT light ON.

<u>Possible Cause</u>	<u>Suggested Remedy</u>
<i>AC product connected is rated at more than 150 Watts; overload shutdown has occurred.</i>	<i>Use product with a power rating less than 150 Watts (or 120 Volts/1.25 Amps).</i>
<i>AC Product is rated less than 150 Watts; high starting surge has caused overload shutdown.</i>	<i>Product exceeds inverter's surge capability. Use a product with starting surge power within the PORTAWATTZ 150's capability.</i>
<i>Battery is discharged.</i>	<i>Recharge battery.</i>
<i>Excessive battery voltage</i>	<i>Check charging system</i>
<i>PORTAWATTZ 150 has overheated due to poor ventilation</i>	<i>Switch PORTAWATTZ 150 OFF and allow to cool for 15 minutes. Remove objects covering unit, then restart.</i>

Problem: AC product will not operate, no inverter lights are on.

<u>Possible Cause</u>	<u>Suggested Remedy</u>
<i>Poor contact with lighter socket or 12 Volt outlet.</i>	<i>Press plug firmly into socket. Clean plug or socket if necessary.</i>
<i>Lighter socket or 12 Volt outlet may require ignition to be switched on.</i>	<i>Turn key to accessory position.</i>
<i>Cigarette lighter or 12 Volt outlet fuse is blown.</i>	<i>Check vehicle fuses and replace blown fuse with correct value.</i>
<i>Inverter has been connected with reverse DC input polarity.</i>	<i>Probable inverter damage has occurred. Have unit repaired.</i>

Problem: Measured inverter output is too low.

<u>Possible Cause</u>	<u>Suggested Remedy</u>
<i>Standard “average-reading” AC voltmeter used to measure output voltage, resulting in an apparent reading 5 to 15 Volts too low.</i>	<i>Inverter’s “modified sine wave” output requires “true RMS” voltmeter, such as Fluke 87 series multimeter, for accurate measurement.</i>
<i>Battery voltage is too low.</i>	<i>Recharge battery.</i>

Problem: Battery run time is less than expected.

Possible Cause

Suggested Remedy

AC product power consumption is higher than rated.

Use a larger battery to make up for increased power requirement.

Battery is old or defective.

Replace battery.

Battery is not being properly charged.

Have vehicle electrical system checked by a qualified technician.

9.0 Limited Warranty and Performance Guarantee (USA and Canada Only), and Out-of-Warranty Service Information

What Does This Warranty Cover? Xantrex manufactures its products from parts and components that are new or equivalent to new, in accordance with industry standard practices. This warranty covers any defects in workmanship or materials.

How Long Does The Coverage Last? This warranty lasts for 6 months from the date of purchase. Implied warranties of merchantability and fitness for a particular purpose are limited to six months from date of purchase. Some jurisdictions do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

What Does This Warranty Not Cover? This warranty will not apply where the product has been misused, neglected, improperly installed, physically damaged or altered, either internally or externally, or damaged from improper use or use in an unsuitable environment. Xantrex does not warrant uninterrupted operations of its products. Xantrex shall not be liable for damages, whether direct, incidental, special, or consequential, or economic loss even though caused by the negligence or fault of Xantrex. Some jurisdictions do not allow the

exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

What Will Xantrex Do? At its option, Xantrex will repair or replace the defective product free of charge. Xantrex will, also at its option, use new and/or reconditioned parts made by various manufacturers in performing warranty repair and building replacement products. If Xantrex repairs or replaces a product, its warranty term is not extended. Xantrex owns all parts removed from repaired products.

Service During Warranty. In order to qualify for the warranty, dated proof of purchase must be provided and the product must not be disassembled or modified without prior authorization by Xantrex. If your product requires warranty service, please return it to the place of purchase along with a copy of your dated proof of purchase. If you are unable to contact your merchant, or the merchant is unable to provide service, contact Xantrex directly:

BY PHONE: (604) 420-1585
(toll free) 1-800-670-0707

BY FAX: (604) 420-1591
(toll free) 1-800-994-7828

BY EMAIL: support.portawattz@xantrex.com

You must obtain a Return Material Authorization (RMA) number from Xantrex before returning a product directly to Xantrex. Do not return a product to Xantrex without first obtaining an RMA number. When you contact Xantrex to obtain service, be prepared to supply the serial

number of your product and its date of purchase as well as information about the installation or use of the unit.

If you are returning a product from the USA or Canada, follow this procedure:

1. Obtain an RMA number and a shipping address from Xantrex.
Product(s) returned without an RMA number or shipped collect, will be refused.
2. Package the unit safely, preferably using the original packing materials. Include the RMA number, a copy of your dated proof of purchase, a return address where the repaired unit can be shipped, a contact telephone number, and a brief description of the problem.
3. Ship the unit to the address provided in Step 1, freight prepaid. Obtaining proof of delivery is recommended.

The Performance Guarantee. Xantrex guarantees the PORTAWATTZ 150 will run any 13 inch television or Xantrex will replace your unit with another inverter (selected at Xantrex's option) that will run your particular television model. This performance guarantee is offered because we are confident you will find the PORTAWATTZ 150's performance superior to any other brand with similar power ratings.

Conditions That Apply To The Performance Guarantee. This guarantee is valid only if your PORTAWATTZ 150 is installed to a properly functioning power source and according to guidelines in this manual. Your PORTAWATTZ 150 must be within the warranty period

and all conditions that apply to the Warranty also apply to the Performance Guarantee. In addition, the television must be an AC powered consumer model designed for use in the USA or Canada, in proper working condition, and have a screen size of 13 inches or less as specified by the television's manufacturer, and may not be altered in any way or used in an unsuitable environment.

Submitting Performance Guarantee Claims. If your PORTAWATTZ 150 fails to run any television up to 13 inches and all conditions stated above apply, contact Xantrex Customer Service directly at the telephone number listed above. Do not return your unit for upgrade to the retailer where purchased.

In order to process your claim, you will need to provide dated proof of purchase confirming your PORTAWATTZ 150 is within the warranty period and the model, size, manufacturer and serial number of the television that the inverter will not run. In most cases you will receive a Return Material Authorization (RMA) number and return shipping instructions from Customer Service, which allows you to return your PORTAWATTZ 150 for an upgraded model. However, Xantrex reserves the right to conduct an independent test to verify whether or not the PORTAWATTZ 150 will operate your particular television model.

How Other Laws Apply: This warranty gives you specific legal rights, and you may also have other rights which vary from jurisdiction to jurisdiction.

For Our Canadian Customers: When used herein “implied warranties of merchantability and fitness for a particular purpose” includes all warranties and conditions, express or implied, statutory or otherwise, including without limitation implied warranties and conditions of merchantability and fitness for a particular purpose.

Service Out Of Warranty: If the warranty period for your PORTAWATTZ 150 has expired, if the unit was damaged due to misuse, incorrect installation or if other conditions of the warranty have not been met, or if no dated proof of purchase is available, your unit may be serviced/replaced for a minimum flat fee of \$30.00 US (\$45.00 CDN). To return your PORTAWATTZ 150 for out of warranty service, contact Xantrex customer service for a Return Material Authorization (RMA) number and follow the other steps outlined in the section “Service During Warranty” above. Options for payment (e.g. credit card or money order) will be explained by the customer service representative. In cases where the minimum flat fee does not apply (e.g. incomplete units or units with excessive damage), and additional fee will be charged. If applicable, you will be contacted by customer service once your unit is received. The minimum flat fee is subject to change without notice.

10.0 Specifications

AC output voltage (nominal)	115 Volts AC
DC input voltage range	10 – 15 Volts DC
Maximum Continuous AC output power	150 Watts
Maximum AC output surge power	400 Watts
AC output frequency	60 ± 4 Hz
AC output waveform	modified sine wave
Battery drain with no AC load (at 12V input)	0.1 Amps
Efficiency (maximum)	90%
Ambient operating temperature range	0°C - 40°C 32°F- 100°F
Low battery shut down point (nominal)	10.0 Volts
High battery shut down point (nominal)	15 Volts
Dimensions (L x W x H)	135mm x 120mm x 45mm 5.125" x 4.75 " x 1.75 "
Weight	575 grams / 1lb 4oz

Specifications subject to change without notice.

11.0 Other Products from Xantrex

The PORTAWATTZ 150 is part of the PORTAWATTZ family of DC to AC power inverters. Other members of this family are:

PORTAWATTZ 300 Inverter The PORTAWATTZ 300 delivers 300 Watts of AC power yet is still small enough to hold in the palm of a hand. Ideal for small power tools, full size TV sets, desktop computers and similar medium power applications.

PORTAWATTZ 600 Inverter Designed for recreational and industrial applications, the PORTAWATTZ 600 produces 600 Watts of AC power, and can run loads ranging from power tools to bread makers to computers.

PORTAWATTZ 1000 Inverter A 1000 Watt inverter designed for installation in trucks, vans, boats and RV's. This inverter can operate more powerful tools and equipment, and even many smaller microwave ovens.

PORTAWATTZ 1750 Inverter A 1750 Watt inverter designed for installation in a boat, vehicle, or remote home for operating power tools, kitchen appliances, and a wide range of other equipment.

PORTAWATTZ 3000 Inverter A heavy duty 3000 Watt inverter perfect for running multiple higher power loads simultaneously, or for starting tough motor-driven loads.

Xantrex also designs and manufactures the **PROsine** line of high tech, high performance sine wave inverters and inverter-chargers, and the **TRUECHARGE** line of “smart” battery chargers.

Contact your Xantrex retailer for more information or visit our web site at <http://www.Xantrex.com>.

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