

## **About Xantrex**

Xantrex Technology Inc. is a world-leading supplier of advanced power electronics and controls with products from 50 watt mobile units to one MW utility-scale systems for wind, solar, batteries, fuel cells, microturbines, and backup power applications in both grid-connected and stand-alone systems. Xantrex products include inverters, battery chargers, programmable power supplies, and variable speed drives that convert, supply, control, clean, and distribute electrical power.

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XPower Pocket Inverter 175W Owner's Guide

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## **Part Number**

975-0304-01-01

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# 1 Introduction

Thank you for purchasing the XPower Pocket Inverter 175W. The XPower inverter is part of a family of advanced high-performance power inverters.

Connected to the 12 volt outlet in your vehicle, or directly to a 12 volt battery, the XPower inverter efficiently and reliably powers a wide variety of loads through both the AC outlet and USB port.

The XPower inverter uses 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 guide before connecting or using the XPower inverter, and save it for future reference. The main topics in the guide are:

- Safety information (page 3)
- Inverter features (page 9)
- Instructions for connecting the inverter (page 10)
- Operating guidelines (page 15)
- Troubleshooting information (page 19)

- Specifications (page 22)
- Warranty and service information (page 24)

## 2 Important Safety Information

Misusing or incorrectly connecting the XPower inverter may damage the equipment or create hazardous conditions for users. Read the following safety instructions and pay special attention to all Caution and Warning statements in the guide.

**Warnings** identify conditions that may result in personal injury or loss of life.

**Cautions** identify conditions or practices that may damage the unit or other equipment.

### Warnings and Cautions

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#### **WARNING**

Keep children away from the XPower inverter. The inverter generates the same potentially lethal AC power as a normal household wall outlet. Treat the outlet with respect!

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## **WARNING**

The XPower inverter housing may become uncomfortably warm, reaching 140° F (60° C) under extended high power operation. During operation, keep it away from materials that may be affected by high temperatures.

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## **WARNING**

Do not use the XPower inverter in the presence of flammable fumes or gases, such as in the bilge of a gasoline powered boat, or near propane tanks. Do not use the XPower inverter in an enclosure containing automotive-type, lead-acid batteries. These batteries, unlike sealed batteries, vent explosive hydrogen gas, which can be ignited by sparks from electrical connections.

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## **WARNING: Shock hazard**

Use caution when inserting an AC plug into the three-prong AC outlet. The prongs of an AC plug can become bent from misuse. If an AC plug is improperly inserted into the AC outlet, a bent prong can slip outside the inverter and become a shock hazard.



## **WARNING: Shock hazard**

Grip the inverter carefully when inserting or removing an AC plug. Keep your fingers clear of the AC outlet. Ensure that your fingers do not contact the prongs of an AC plug when the plug is partially inside the inverter.

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## **CAUTION: Output non-sinusoidal**

Some chargers for small nickel-cadmium batteries can be damaged if connected to the XPower inverter. Do not use the inverter with the following appliances:

- Small battery-operated appliances like rechargeable flashlights, some rechargeable shavers, and night lights that are plugged directly into an AC receptacle to recharge.
- Battery chargers used in hand power tools. These chargers display a warning label stating that dangerous voltages are present at the charger battery terminals.



## **CAUTION**

Do not connect live AC power to the XPower inverter's AC outlets. This will damage the inverter, and the damage is not covered by warranty. Do not connect any AC load that has its neutral conductor connected to ground to the XPower inverter.

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## Additional Safety Guidelines

- Do not insert foreign objects in the XPower inverter outlets or other openings.
- Never connect the inverter to power utility AC distribution wiring.
- Do not use the XPower inverter in temperatures over 100° F (40° C).
- Do not expose the XPower inverter to water, rain, snow, or spray.

Failure to follow these safety guidelines may cause personal injury and/or damage to the XPower inverter. It may also void your product warranty.

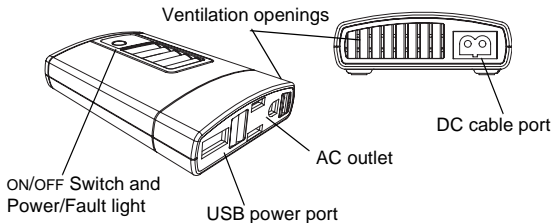
## 3 Safety Features

These advanced safety features are built into the XPower inverter:

- Electronic overload protection with automatic shutdown
- Non-user-replaceable 25 A fuse
- Low battery voltage shutdown
- High-input voltage protection with automatic shutdown
- Overheat protection with automatic shutdown
- Output short circuit protection.

# 4 Inverter Features

## XPower Pocket Inverter 175W



## DC Cables

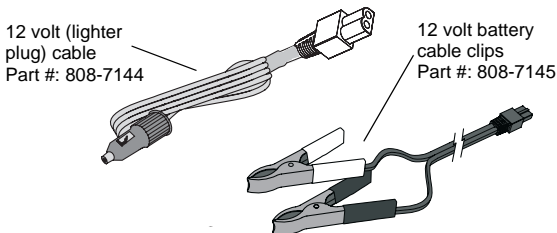


Figure 1 Features and Accessories

## 5 Using the Inverter

The XPower inverter is capable of powering most 120 V AC products that use 130 W or less. The XPower inverter can also power or charge most consumer electronics that have USB power ports. For loads less than 130 watts, use the lighter plug; for loads greater than 130 watts use the 12 volt cable clips to connect the XPower inverter directly to a 12 volt battery. See Figure 1, “Features and Accessories” on page 9.

The XPower inverter’s AC output waveform, called “modified sine wave,” is designed to function similarly to the sine wave shape of utility power.

### Using the DC Cable with Cigarette Lighter Plug

Due to the limitations of 12 V (lighter plug) outlets in vehicles or boats, the lighter plug (Xantrex part number: 808-7144) should only be used to supply AC power to products that require 130 W (about 1.15 A) or less.

1. Plug the DC cable into the DC cable port on the XPower inverter. Observe correct polarity. See Figure 2.

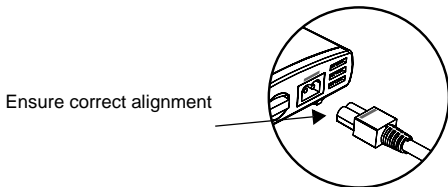


## **CAUTION: Reverse polarity damage**

When plugging in the DC cable, ensure that the plug aligns with the DC cable port. Failure to do so will result in reverse polarity and a blown fuse.

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2. Insert the cigarette lighter plug into the 12 V outlet.
3. Plug the device you want to operate into the XPower inverter. See “Inverter Operation” on page 15.
4. Press the ON/OFF switch.
5. When the power inverter is not in use, unplug it from the 12 V outlet to prevent slight discharge of the battery.



**Figure 2** Connecting the Inverter and DC Cable

# Using the DC Cable with 12 volt Cable Clips

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## **WARNING: Corrosive materials**

To reduce the risk of irritation and burns, wear protective eyewear and clothing when you work with batteries. Take special care to ensure that metal tools or personal objects like rings or watches do not contact the battery terminals.

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## **WARNING: Fire hazard**

The wires in most 12 volt sockets or power outlets are not large enough for loads greater than 150 watts: they will overheat and present a fire hazard. For loads greater than 150 watts, connect the inverter directly to the battery and use appropriately sized wires like those in the battery clip wire assembly provided with the inverter.

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## CAUTION

Reversing the positive and negative battery cables will damage the inverter and void your warranty. When you connect the inverter to the battery, double check the connections. The red wire must be connected to the red (+) terminal on the inverter and the positive (+) terminal on the battery. The black wire must be connected to the black (–) terminal on the inverter and the negative (–) terminal on the battery.

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The battery cable clips (Xantrex part number: 808-7145) should be used to supply AC power to products that require 130 W (about 1.15 A) or greater.

1. Attach the red clip to the red (positive +) battery terminal.
2. Attach the black clip to the black (negative –) battery terminal.
3. Check that both clips are securely connected to the battery terminals. A loose connection will cause excessive voltage drop and may cause the cables to overheat. This could result in equipment damage or fire.

4. Plug the DC cable into the DC cable port on the XPower inverter. Observe correct polarity. See Figure 2.
- 



### **CAUTION: Reverse polarity damage**

When plugging in the DC cable, ensure that the plug aligns with the DC cable port. Failure to do so will result in reverse polarity and a blown fuse.

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5. Plug the device you want to operate into the XPower inverter. See “Inverter Operation” on page 15.
6. Press the ON/OFF switch.
7. When the power inverter is not in use, unplug it from the 12 V outlet to prevent slight discharge of the battery.

## 6 Inverter Operation

1. When properly connected to a 12 volt outlet, and when the ON/OFF switch is in the ON position, the light will glow blue, indicating that the XPower inverter is ready.
2. Plug the product(s) you want to operate into the AC outlet or USB port and switch them on (if necessary)

### Operating Guidelines

- As the battery is used, its voltage begins to fall. When the XPower inverter senses that the voltage at its DC input has dropped to 10.5 V, the inverter automatically shuts down and the light glows red, indicating a fault. This prevents the battery from being damaged. Turn off any devices that the XPower inverter is powering.

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**Important:** 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 XPower inverter from a vehicle battery until low-voltage shutdown occurs will shorten the life of the battery.

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- If an AC product rated higher than 175 W is plugged into the XPower inverter, the inverter will shut down. The red fault light comes on.
  - If the XPower inverter exceeds a safe operating temperature, due to insufficient ventilation or a high-temperature environment, it automatically shuts down. The red fault light comes on.
  - Should a defective battery charging system cause the battery voltage to rise to dangerously high levels, the XPower inverter automatically shuts down. The red fault light comes on.
- 



## CAUTION

Although the XPower inverter incorporates protection against over-voltage, it may still be damaged if the input voltage exceeds 16 V.

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- In the event of an overload, low battery voltage or overheating, the XPower inverter automatically shuts down.

## **Battery Operating Time**

Operating time will vary depending on the charge level of the battery, its capacity and the power level drawn by the particular AC load, USB load, or combination of both. With a typical vehicle battery and a 130 W load, an operating time of 2 to 2.5 hours or more can be expected.

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 XPower inverter can operate while the engine is running, but the normal voltage drop that occurs during starting of the engine may trigger the inverter's low voltage shutdown feature.

## **Interference with Electronic Equipment**

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

## **Buzzing sound in audio systems and radios**

Some inexpensive stereo systems and AM-FM radios have inadequate internal power supply filtering and “buzz” slightly when powered by the XPower inverter. Generally, the only solution is an audio product with a higher quality filter.

## **Television interference**

The XPower inverter is shielded to minimize its 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:

- Increase the distance between the XPower inverter and the TV, antenna and cables.
- Adjust the orientation of the XPower inverter, television, antenna and cables.
- Maximize TV signal strength by using a better antenna and use shielded antenna cable where possible.

# 7 Troubleshooting

**PROBLEM:** AC product will not operate, no inverter lights are ON.

Possible cause	Remedy
Battery is defective.	Check battery and replace if required.
Loose connections.	Check connections.

**PROBLEM:** Measured inverter output is too low.

Possible cause	Remedy
Standard “average-reading” AC voltmeter used to measure output voltage, resulting in an apparent reading 5 to 15 V too low.	Inverter’s “modified sine wave” output requires “true RMS” voltmeter for accurate measurements.
Battery voltage is too low.	Recharge battery.

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

Possible cause	Remedy
AC product(s) connected are rated at more than the inverter's continuous power rating; overload shutdown has occurred.	Use a product with a power rating less than the inverter's continuous power rating.
AC product is rated less than the inverter's continuous power rating; high starting surge has caused overload shutdown.	Product exceeds inverter's surge capability. Use a product with starting surge power within the inverter's capability.
Battery is discharged.	Recharge battery.



Possible cause	Remedy
The inverter has overheated due to poor ventilation and has shut down.	Unplug inverter from DC socket and allow to cool for 15 minutes. Remove objects covering unit. Move the inverter to a cooler place. Reduce load if continuous operation is required. Restart.

# 8 Specifications

Specifications are subject to change without notice.

## AC Power Output

AC output voltage (nominal)	120 V AC
Continuous AC output power	130 W
Peak AC output power	175 W
Maximum AC output surge power	260 W
AC output frequency	$60 \pm 1$ Hz
AC output waveform	Modified sine wave

## USB Power Output

DC output voltage	5 V DC
DC output current (max.)	0.5 A DC

## DC Power Specifications

DC input voltage range	10.5–15.5 VDC
Battery drain with no AC load (at 12 V input)	<0.4 A
Efficiency (maximum)	85%
Low battery shutdown point (nominal)	10.5 V
High battery shutdown point (nominal)	15.5 V

## Physical Specifications

Ambient operating temperature range	0 °C–40 °C (32 °F–104 °F)
Dimensions (L × W × H)	5 1/8 × 3 3/16 × 23/32 in. (130 × 81 × 18 mm )
Weight	¼ lb. (113 g)

# 9 Warranty and Return

## Warranty

**What does this warranty cover?** This Limited Warranty is provided by Xantrex Technology, Inc. ("Xantrex") and covers defects in workmanship and materials in your XPower inverter. This warranty period lasts for 1 year from the date of purchase at the point of sale to you, the original end user customer. You require proof of purchase to make warranty claims.

**What will Xantrex do?** Xantrex will, at its option, repair or replace the defective product free of charge, provided that you notify Xantrex of the product defect within the Warranty Period, and provided that Xantrex through inspection establishes the existence of such a defect and that it is covered by this Limited Warranty.

Xantrex will, at its option, use new and/or reconditioned parts in performing warranty repair and building replacement products. Xantrex reserves the right to use parts or products of original or improved design in the repair or replacement. If Xantrex repairs or replaces a product, its warranty continues for the remaining portion of the original Warranty Period or 90 days from the date of the return

shipment to the customer, whichever is greater. All replaced products and all parts removed from repaired products become the property of Xantrex.

Xantrex covers both parts and labor necessary to repair the product, and return shipment to the customer via a Xantrex-selected non-expedited surface freight within the contiguous United States and Canada. Alaska and Hawaii are excluded. Contact Xantrex Customer Service for details on freight policy for return shipments outside of the contiguous United States and Canada.

### **How do you get service?**

**If your product requires troubleshooting or warranty service, contact your dealer.**

If you are unable to contact your dealer, or the dealer is unable to provide service, contact Xantrex directly at:

Phone: 1 360-925-5059

Fax: 1 360-925-5143

Website: [www.xantrex.com/support](http://www.xantrex.com/support)

Direct returns may be performed according to the Xantrex Return Material Authorization Policy described in your product manual. For some products, Xantrex maintains a network of regional Authorized Service Centers. Call Xantrex or check our website to see if your product can be repaired at one of these facilities.

**What proof of purchase is required?** In any warranty claim, dated proof of purchase must accompany the product and the product must not have been disassembled or modified without prior written authorization by Xantrex.

Proof of purchase may be in any one of the following forms:

- The dated purchase receipt from the original purchase of the product at point of sale to the end user, or
- The dated dealer invoice or purchase receipt showing original equipment manufacturer (OEM) status, or
- The dated invoice or purchase receipt showing the product exchanged under warranty

**What does this warranty not cover?** This Limited Warranty does not cover normal wear and tear of the product or costs related to the removal, installation, or troubleshooting of the customer's electrical systems. This warranty does not apply to and Xantrex will not be responsible for any defect in or damage to:

- a) the product if it 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;
- b) the product if it has been subjected to fire, water, generalized corrosion, biological infestations, or input voltage that creates operating conditions beyond the maximum or minimum limits listed in the Xantrex product specifications including high input voltage from generators and lightning strikes;
- c) the product if repairs have been done to it other than by Xantrex or its authorized service centers (hereafter "ASCs");
- d) the product if it is used as a component part of a product expressly warranted by another manufacturer;
- e) the product if its original identification (trade-mark, serial number) markings have been defaced, altered, or removed.

# Disclaimer

## Product

THIS LIMITED WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY PROVIDED BY XANTREX IN CONNECTION WITH YOUR XANTREX PRODUCT AND IS, WHERE PERMITTED BY LAW, IN LIEU OF ALL OTHER WARRANTIES, CONDITIONS, GUARANTEES, REPRESENTATIONS, OBLIGATIONS AND LIABILITIES, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE IN CONNECTION WITH THE PRODUCT, HOWEVER ARISING (WHETHER BY CONTRACT, TORT, NEGLIGENCE, PRINCIPLES OF MANUFACTURER'S LIABILITY, OPERATION OF LAW, CONDUCT, STATEMENT OR OTHERWISE), INCLUDING WITHOUT RESTRICTION ANY IMPLIED WARRANTY OR CONDITION OF QUALITY, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE TO THE EXTENT REQUIRED UNDER APPLICABLE LAW TO APPLY TO THE PRODUCT SHALL BE LIMITED IN DURATION TO THE PERIOD STIPULATED UNDER THIS LIMITED WARRANTY.

IN NO EVENT WILL XANTREX BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSSES, COSTS OR EXPENSES HOWEVER



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## Exclusions

If this product is a consumer product, federal law does not allow an exclusion of implied warranties. To the extent you are entitled to implied warranties under federal law, to the extent permitted by applicable law they are limited to the duration of this Limited Warranty. Some states and provinces do not allow limitations or exclusions on implied warranties or on the duration of an implied warranty or on the limitation or exclusion of incidental or consequential damages, so the above limitation(s) or exclusion(s) may not apply to you. This Limited Warranty gives you specific legal rights. You may have other rights which may vary from state to state or province to province.

## **Warning: Limitations On Use**

Please refer to your product manual for limitations on uses of the product.

SPECIFICALLY, PLEASE NOTE THAT THE XPOWER INVERTER SHOULD NOT BE USED IN CONNECTION WITH LIFE SUPPORT SYSTEMS OR OTHER MEDICAL EQUIPMENT OR DEVICES. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, XANTREX MAKES NO REPRESENTATIONS OR WARRANTIES REGARDING THE USE OF THE XANTREX XPOWER INVERTER IN CONNECTION WITH LIFE SUPPORT SYSTEMS OR OTHER MEDICAL EQUIPMENT OR DEVICES.

Please note that the XPower inverter is not intended for use as an uninterruptible power supply and Xantrex makes no warranty or representation in connection with any use of the product for such purposes.

# Return Material Authorization Policy

Before returning a product directly to Xantrex you must obtain a Return Material Authorization (RMA) number and the correct factory "Ship To" address. Products must also be shipped prepaid. Product shipments will be refused and returned at your expense if they are unauthorized, returned without an RMA number clearly marked on the outside of the shipping box, if they are shipped collect, or if they are shipped to the wrong location.

When you contact Xantrex to obtain service, please have your instruction manual ready for reference and be prepared to supply:

- The serial number of your product
- Information about the installation and use of the unit
- Information about the failure and/or reason for the return
- A copy of your dated proof of purchase

## Return Procedure

1. Package the unit safely, preferably using the original box and packing materials. Please ensure that your product is shipped fully insured in the original packaging or equivalent. This warranty will not apply where the product is damaged due to improper packaging.
2. Include the following:
  - The RMA number supplied by Xantrex Technology, Inc. clearly marked on the outside of the box.
  - A return address where the unit can be shipped. Post office boxes are not acceptable.
  - A contact telephone number where you can be reached during work hours.
  - A brief description of the problem.
3. Ship the unit prepaid to the address provided by your Xantrex customer service representative.

**If you are returning a product from outside of the USA or Canada** In addition to the above, you **MUST** include return freight funds and are fully responsible for all documents, duties, tariffs, and deposits.

**If you are returning a product to a Xantrex Authorized Service Center (ASC)** A Xantrex return material authorization (RMA) number is not required. However, you must contact the ASC prior to returning the product or presenting the unit to verify any return procedures that may apply to that particular facility.

## **Out of Warranty Service**

If the warranty period for your XPower inverter has expired, if the unit was damaged by misuse or incorrect installation, if other conditions of the warranty have not been met, or if no dated proof of purchase is available, your inverter may be serviced or replaced for a flat fee.

To return your XPower inverter for out of warranty service, contact Xantrex Customer Service for a Return Material Authorization (RMA) number and follow the other steps outlined in “Return Procedure” on page 32.

Payment options such as credit card or money order will be explained by the Customer Service Representative. In cases where the minimum flat fee does not apply, as with incomplete units or units with excessive damage, an additional fee will be charged. If applicable, you will be contacted by Customer Service once your unit has been received.

