

Smart choice for power

xantrex



Installation Guide

Fuse Block

TFB110/TFB110C
TFB200/TFB200C
TFB300/TFB300C
TFB350/TFB350C
TFB400/TFB400C

www.xantrex.com

About Xantrex

Xantrex Technology Inc., is a world-leading supplier of advanced power electronics and controls with products from 50 watt mobile units to 1 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.

Trademarks

Trace and Xantrex are registered trademarks of Xantrex International.

Notice of Copyright

Fuse Block Installation Guide ©June 2002 Xantrex Technology Inc. All rights reserved.

Disclaimer

Since the use of this guide and the conditions or methods of installation, operation, use and maintenance of the unit are beyond the control of Xantrex Technology Inc., the company does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of or any way connected with such installation, operation, use, or maintenance.



See pages 12 through 18 in this guide for specific warranty information.

Date and Revision

June 2002, Revision A

Document Number

973-0019-01-02

Contact Information

Web: www.xantrex.com
Phone: 1.888.608.0721
Fax: 360.435.2229

Table of Contents

About Xantrex	2
Trademarks	2
Notice of Copyright	2
Disclaimer	2
Date and Revision	2
Document Number	2
Contact Information	2
Introduction	5
Tools/Materials Required	5
Installation	6
Mounting	6
Cable Installation into Fuse Block	7
For Fuse Blocks designed for Series-C Battery Cables	7
For Fuse Blocks designed for Ring-lugged Battery Cables	8
Wiring TFBs to the Battery, DC Disconnect, and Inverter	9
Care and Maintenance	10
Fuse Replacement	10
Replacement Fuses	11
Limited Warranty	12
What does this warranty cover and how long does it last?	12
What will Xantrex do?	12
How do you get service?	13
What does this warranty not cover?	14
DISCLAIMER	15
Product	15
Exclusions	16
Information	16
WARNING: LIMITATIONS ON USE	17
Return Material Authorization Policy	17
Shipping Instructions	18
If you are returning a product from outside of the USA or Canada	18
If you are returning a product to a Xantrex Authorized Service Center (ASC)	18
Service Information	19

List of Figures

Figure 1	Fuse Block for Type-C Battery Cables (TFBxxxC)	5
Figure 1a	Fuse Block for Ring-lugged Battery Cables(TFBxxx)	5
Figure 2	Fuse Block Dimensional Drawing	6
Figure 3	Installation for Type-C Battery Cables.....	7
Figure 4	Installation for Ring-lugged Battery Cables	8
Figure 5	Wiring TFB's to the Battery, DC Disconnect, and Inverter	9
Figure 6	Remove the Two Nuts and Washers and Replace Fuse	10

List of Tables

Table 1	Bolt and Nut Sizes	6
Table 2	Replacement Fuses and Cable Sizes	11

Introduction

NOTE: These fuse blocks meet the National Electrical Code requirements for overcurrent protection. Xantrex offers the DC175 and DC250 in an enclosure for applications requiring NEC compliance for both overcurrent protection and a DC disconnect.

The Trace™ brand fuse block (TFB) protects the power system's DC wiring should an overcurrent condition occur. The fuse block is placed between the battery's ungrounded conductor (usually the positive cable) and the DC input terminal of the inverter.

The TFBs include a fast acting, current limiting class-T fuse providing extremely fast protection when a short circuit occurs. When the fuse is properly matched to the system current, its time delay allows the inverter to surge to full power without blowing the fuse. A plastic cover prevents accidental short circuits to the fuse terminals. Fuse sizes include 110, 200, 300, 350 and 400 amps.

There are two types of fuse blocks available. The TFBxxxC fuse block has "set" screw lugs for cables with no terminal connector's on the ends (hereto referred to as C-type battery cables). The TFBxxx fuse block has stainless steel bolt connections for cables with ring terminals (hereto referred to as ring-lugged battery cables). Both fuse blocks include a black polycarbonate, fiberglass reinforced base and a clear polycarbonate snap-on cover.

Tools/Materials Required

- 4 screws (type depending on mounting material)
- 5/16 inch allen wrench (for C-type fuse blocks only)
- 9/16 inch socket for 3/8" hex nuts
- 1/2 inch socket for 5/16" hex nuts
- assorted screwdrivers
- knife

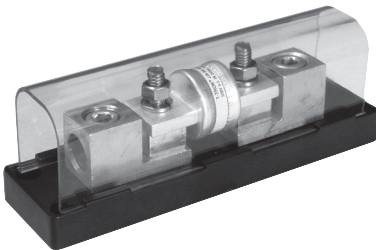


Figure 1
Fuse Block for C-type
Battery Cables (TFBxxxC)

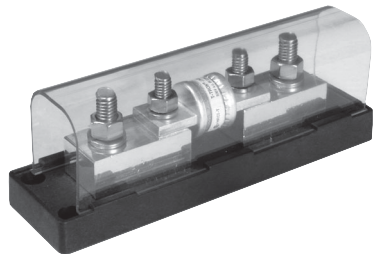


Figure 1a
Fuse Block for Ring-lugged
Battery Cables (TFBxxx)

Installation

Mounting

NOTE: It is not recommended to locate the fuse block inside the enclosure with the batteries where explosive gases may exist.

Locate the fuse block within 18 inches (45 cm) of the battery. It should be placed in a location where it is easily accessible should the fuse need replacing.

1. Squeeze the clear plastic protective cover and remove it from the fuse block base.
2. Use the fuse block base as a template for location of the four mounting holes. The fuse block should be mounted to a secure surface. Allow at least 6 inches (15 cm) from the fuse contacts to allow for removal without shorting to a grounded object.
3. Use appropriate hardware (not supplied) to mount the fuse block.

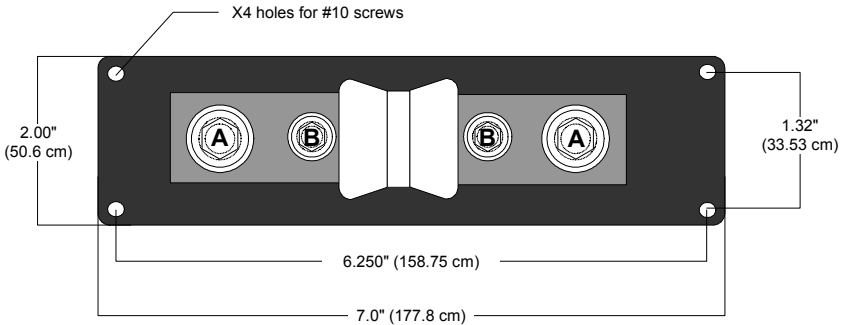


Figure 2
Fuse Block Dimensional Drawing
(Not to scale)

Fuse Block Type TFBxxx (bolt/nut) TFBxxxC (set screw)	Bolt/Lug Size	
	A	B
TFB 110, 200	3/8-18 bolt with hex nut	5/16-10 bolt with hex nut
TFB 300, 350, 400	3/8-18 bolt with hex nut	3/8-18 bolt with hex nut
TFB 110C, 200C	#2/0 lugs for #4-2/0 cut cables	5/16-10 bolt with hex nut
TFB 300C, 350C, 400C	250 MCM lugs for #4-250 MCM cut cables	3/8-18 bolt with hex nut

Table 1
Bolt and Nut Sizes

Cable Installation into Fuse Block

For Fuse Blocks designed for C-Type Battery Cables (TFBxxxC)

1. Strip back 1 inch (2.5 cm) of the insulation on the battery cable.
2. Insert the cable into the terminal block (ensure *all* conductor strands are in the block)



See Figure 3.

3. Tighten the hex screws to 10-15 ft/lbs.
4. Repeat Steps 2 and 3 for the connection to the other end of the fuse block.

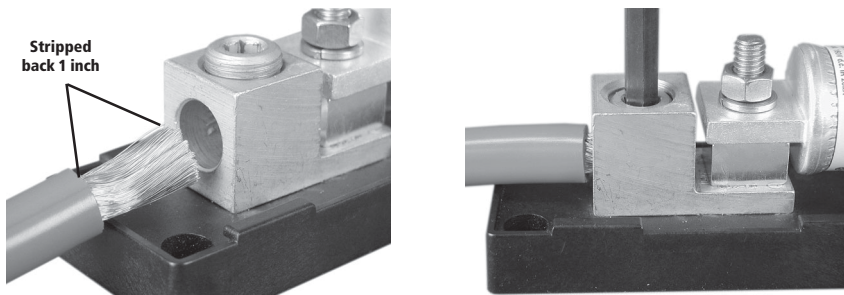


Figure 3
Installation for C-Type Battery Cables

Cable Installation into Fuse Block (continued)

For Fuse Blocks designed for Ring-lugged Battery Cables (TFBxxx)

NOTE: Do not place anything between the ring-lug on the battery cable and the terminal surface.

- A. If necessary, install the ring-lugs (not supplied) onto the battery cables. Ensure the terminal connector's have a 3/8" diameter opening for placement over the stud connector on the fuse block.
1. Remove the 3/8" hex nut and split washers from the fuse block.
2. Place the cable ring lugs over the 3/8-18 bolt on the fuse block assembly and reinstall the split washer and hex nut.



See Figure 4.

3. Tighten the hex nuts to 10-15 ft/lbs.
4. Repeat Steps 2, 3, and 4 for connection to the other end of the fuse block.

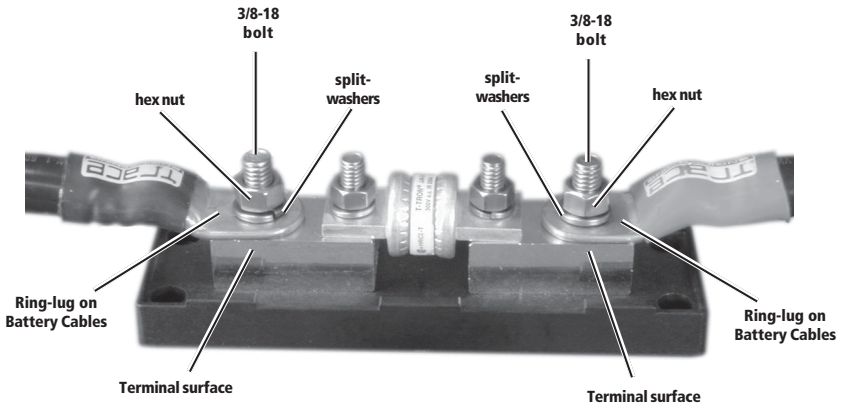


Figure 4
Installation for Ring-lugged Battery Cables

Wiring TFBs to the Battery, DC Disconnect, and Inverter

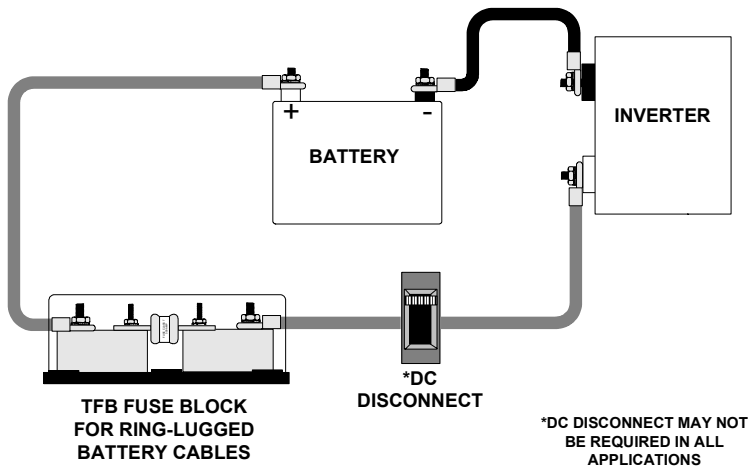
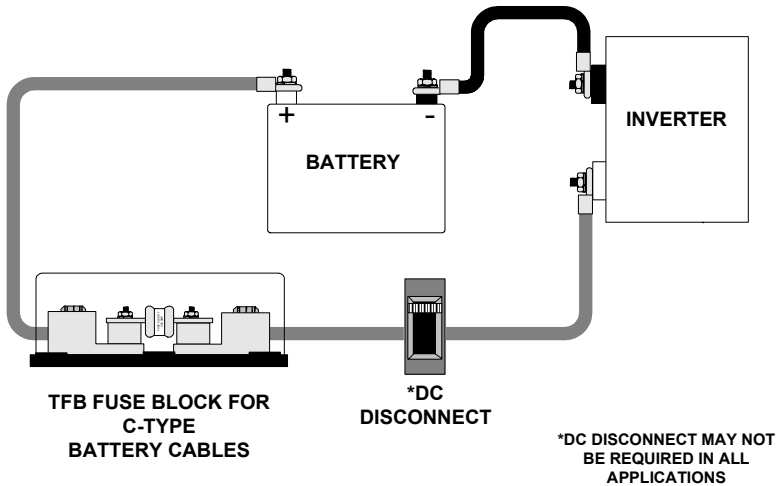


Figure 5
Wiring TFBs to the Battery, DC Disconnect, and Inverter

Fuse Replacement



WARNING:
BEFORE
REPLACING
THE FUSE,
DISCONNECT ALL
POWER SOURCES
AND TURN OFF
ALL LOADS.

NOTE: If the system also contains a DC disconnect, switch it to OFF before replacing the fuse.

NOTE: Fuses are NOT covered under the limited warranty.

Before replacing the fuse, determine and correct the cause of the overcurrent condition.

1. Use a hex socket and remove the two nuts (and split washers) securing the fuse. Note the hardware installed and the order of how it is stacked. This is important to prevent excess heat which can cause the fuse to open again.
2. Remove the open fuse and replace it with a known good one.
3. Reinstall the hardware as it was originally stacked on the fuse.
4. Tighten the hex nuts securing the fuse to 10-15 ft/lbs.
5. Double-check the battery cable connections and verify all connections are properly tightened .

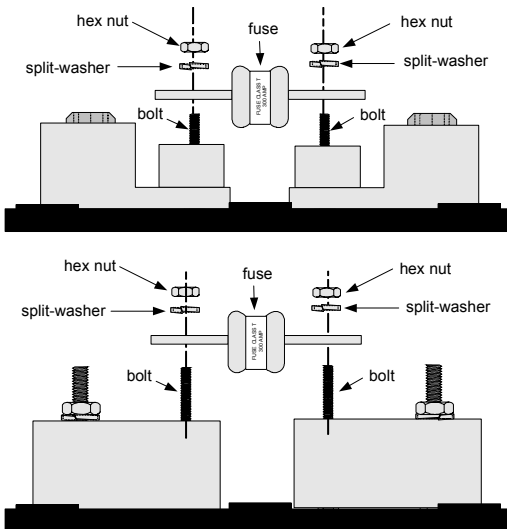


Figure 6
Remove the Two Nuts and Washers and Replace Fuse

Replacement Fuses



WARNING:
REPLACE FUSE
WITH ONLY THE
SAME TYPE
(CLASS T) AND
RATING
(AMPERAGE/
VOLTAGE).

Replacement fuses are available from Xantrex Technology Inc. These fuses fit either the TFBxxx or TFBxxxC models (of the same rating only).



See Table 2 for part numbers for replacement fuses.

NOTE: The temperature rating of the cable sizes specified in Table 2 are 75 °C in free-air based on an ambient air temperature of 30 °C (86 °F).

TFB #	Amperage	Replacement Fuse	Cable Size
TFB110/TBF110C	110 amps	TF110	#4 AWG/21.2 mm ²
TFB200/TBF200C	200 amps	TF200	#2/0 AWG/67.4 mm ²
TFB300/TBF300C	300 amps	TF300	#4/0 AWG/107 mm ²
TFB350/TBF350C	350 amps	TF350	#4/0 AWG/107 mm ²
TFB400/TBF400C	400 amps	TF400	#4/0 AWG/107 mm ²

Table 2
Replacement Fuses and Cable Sizes

What does this warranty cover and how long does it last?

NOTE: Fuses are NOT covered under the limited warranty.

This Limited Warranty is provided by Xantrex Technology, Inc. (“Xantrex”) and covers defects in workmanship and materials in your **Fuse Block**. This warranty lasts for a Warranty Period of **two years** from the date of purchase at point of sale to you, the original end user customer.

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

Phone: 360.435.8826

Fax: 360.474.0616

Email: Tracewarranty@xantrex.com

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.

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?

NOTE: Fuses are NOT covered under the limited warranty.

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 (trademark, 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, DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSSES, COSTS OR EXPENSES HOWEVER ARISING WHETHER IN CONTRACT OR TORT INCLUDING WITHOUT RESTRICTION ANY ECONOMIC LOSSES OF ANY KIND, ANY LOSS OR DAMAGE TO PROPERTY, ANY PERSONAL INJURY, ANY DAMAGE OR INJURY ARISING FROM OR AS A RESULT OF MISUSE OR ABUSE, OR THE INCORRECT INSTALLATION, INTEGRATION OR OPERATION OF THE PRODUCT.

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.

Information

WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, UNLESS SPECIFICALLY AGREED TO BY IT IN WRITING, XANTREX

(a) MAKES NO WARRANTY AS TO THE ACCURACY, SUFFICIENCY OR SUITABILITY OF ANY TECHNICAL OR OTHER INFORMATION PROVIDED IN MANUALS OR OTHER DOCUMENTATION PROVIDED BY IT IN CONNECTION WITH THE PRODUCT; AND

(b) ASSUMES NO RESPONSIBILITY OR LIABILITY FOR LOSSES, DAMAGES, COSTS OR EXPENSES, WHETHER SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL OR INCIDENTAL, WHICH MIGHT ARISE OUT OF THE USE OF SUCH INFORMATION.

THE USE OF ANY SUCH INFORMATION WILL BE ENTIRELY AT THE USER'S RISK.

WARNING: LIMITATIONS ON USE

NOTE: DO NOT RETURN PRODUCTS TO THIS ADDRESS. Please call your Xantrex Customer Service Representative for return mailing instructions.

The Fuse Block is not intended for use in connection with life support systems and Xantrex makes no warranty or representation in connection with any use of the product for such purposes.

Xantrex Technology, Inc.
8999 Nelson Way
Burnaby, British Columbia
Canada
V5A 4B5

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 part 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

Shipping Instructions

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, and
 - 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.

Service Information

Part Number: _____

Purchase Date: _____

Problem: _____

Include a telephone number where you can be reached during business hours and a complete return shipping address (P.O. Box numbers are not acceptable).

Name: _____

Address: _____

City: _____

State / Province: _____

Zip / Postal Code: _____

Country: _____

Phone: _____

FAX: _____

Email Address: _____

Xantrex Technology Inc.

1 888 608 0721 Phone

1 360 435 2229 Fax

www.xantrex.com