

Technical Note

EMS/HD 1800 and 2800

512-0083-01-01 Rev 1

Troubleshooting Guide, EMS and HD Models

Overview

This is a general guide for troubleshooting inverters, battery chargers, transfer switches and remote controls for Xantrex models **EMS/HD 1800** and **2800**.

EMS units are equipped with a battery charger and HD units are inverter-only models.

The purpose of this guide is to simplify the installation by separating the component parts involved in a certain function, make measurements and observations of each part and determine what is causing the problem.

Inverters

Equipment required:

- Multimeter, true RMS is preferred
- Trouble light with 100 watt light bulb
- A short battery cable (2 feet) terminated with standard ring terminals

The inverter is a device that changes the DC power stored in the batteries to AC power that is distributed to various appliances. The requirements for proper inverter operation are batteries with a voltage greater than 10.5 VDC and less than 16 VDC, good connections to the batteries and good connections to the AC distribution system.

Using a voltmeter, verify battery voltage as close to the battery input to the inverter as possible. Verify that any fuses and/or switches that are between the batteries and the inverter are intact and operating properly. If you have any doubts that the fuse or battery switches are OK, you can verify it with an ohmmeter or use a short length of battery cable to temporarily bypass it.

Once the battery voltage and the connections are verified to be OK, disconnect the inverter output from the power distribution system and connect a trouble light to the output. Also, disconnect the remote control to eliminate it as a possible problem. Turn the inverter on using the front panel or power/reset switch. The 100-watt light should illuminate. If it does not, there is a problem with the inverter and you should contact Xantrex for assistance.

Battery Charger

Equipment required:

- Multimeter
- Freedom Remote panel

The battery charger function requires AC input power from a generator or shorepower. The voltage should be greater than 115 VAC and of the proper polarity, and a good connection to the batteries is necessary. The first step for verification is to measure the battery voltage on the battery terminals. We would like the battery voltage to be about 12 VDC or slightly less to make sure the charger will detect that the batteries need to be charged. Connect the unit to AC power. The AC input voltage should be verified with a voltmeter at the input to the inverter and the wiring should be checked for proper color-coding (i.e. black to black, white to white, green to green). If you are testing an EMS unit check the AC input LED—it should change from RED to GREEN and then to AMBER. Measure the batteries again. The voltage should be gradually increasing. It should peak at approximately 14.2 VDC and then after a period of time drop to approximately 13.2 VDC and hold at this voltage indefinitely. If any of these steps fail to operate properly contact Xantrex for assistance.

Transfer Switch

Equipment required:

- Multimeter or a trouble light with a 100-watt light bulb

The transfer function on the EMS models simply transfers whatever source of AC power is connected to the input to the output at a maximum of 30 amps. The transfer switch requires that the AC input voltage be greater than 90 VAC and of the proper polarity. The inverter will transfer power whether they are turned on or off. To test the transfer function, disconnect shorepower and turn the inverter off. Connect your meter or trouble light to the black and white wires on the AC output. Plug the shorepower in. After approximately 9 seconds you should hear a relay click inside the unit, measure or observe AC voltage. If you do not get these indications, check for the presence of AC power on the input.

Remote Panel

Equipment required:

- Small jumper wire

The remote control turns the inverter/charger on and off and provides a convenient display of the inverter/charger modes of operation.

The EMS remote control emulates the front panel operation of the unit with the following exceptions: It has an AC power out indicator that tells the user the switch on the remote control is in the ON position. The shutdown and high temperature indicators consist of two separate LEDs on the remote and one LED (shutdown) on the front panel.

SHUTDOWN:

This indicator will illuminate blinking RED alternating with a blinking green AC indicator if the unit shuts down from overload caused by too much AC draw. To reset, disconnect the offending loads and turn the unit off and on.

This indicator will illuminate steady RED if the unit shuts down from high (over 16 VDC) or low battery (less than 10.5 VDC). The unit can be reset by beginning the charge mode or resetting the unit.

HIGH TEMP:

This indicator will come on a steady RED if the thermal switch inside the unit detects a high internal temperature in the transformer. The LED must turn off before the unit can be reset.

BATTERY STATUS:

This indicator is a voltmeter and measures ranges of battery voltage:

Green	Greater than 13 VDC
Off	12 to 13 V
Amber	10.5 to 12 VDC
Red	Less than 10.5 VDC and about to shut down
AC INPUT	This indicator displays the presence of AC power on the input to the inverter
Blinking Red	Reverse polarity
Steady Red	AC applied and sensing
Green	AC applied and transferred from input to output
Amber	AC applied, transferred and charger is engaged

CHARGE RATE:

The charge status indicator is an ammeter for the charger.

Red	Greater than 30-amp DC charge, unit is in hard charge mode
Amber	20 to 30-amp DC charge, unit is in absorption charge
Green	10 to 20-amp DC charge, unit is in absorption charge
Off	less than 10-amp DC charge and the unit is in float charge

If this indicator is blinking from Red to Amber, Amber to Green or Green to Off it is going through the current thresholds. If it is blinking Red to Off or Amber to Off it is in an equalize charge mode.

If the remote control doesn't turn the inverter off, verify that the front panel switch is in the off position.

If the remote panel doesn't turn the inverter on, disconnect the remote connector from the front of the unit, turn the power reset switch off (the down position) and connect a small wire jumper between pins 3 and 4 of the DB 9 connector (a paper clip will work). The unit should turn on. If it does not, contact Xantrex for assistance.

Xantrex is a registered trademark of Xantrex International.
© 2003 Xantrex International. All rights reserved.

Technical Note: *Troubleshooting Guide, EMS and HD Models* © February 1996 Xantrex International

UNLESS SPECIFICALLY AGREED TO IN WRITING, XANTREX TECHNOLOGY INC. ("XANTREX"):

(a) MAKES NO WARRANTY AS TO THE ACCURACY, SUFFICIENCY OR SUITABILITY OF ANY TECHNICAL OR OTHER INFORMATION PROVIDED IN ITS MANUALS OR OTHER DOCUMENTATION.

(b) ASSUMES NO RESPONSIBILITY OR LIABILITY FOR LOSS OR DAMAGE, WHETHER 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.

Part number: 512-0083-01-01 Rev 1

Contact information:

Phone: 1-800-670-0707 (toll-free in North America)

Fax: 1-604-420-2145 (outside North America)

Email: CustomerService@xantrex.com

Web: www.xantrex.com