



A MISSION CRITICAL ELECTRONICS BRAND



## Owner's Guide

### 125Ah Battery with Integrated Battery Management System

880-0125-12

880-0125-12-03

880-0125-12-01

880-0125-12-04

880-0125-12-02



#### HAZARD OF FIRE, ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

This Xantrex 125Ah Battery with BMS Owner's Guide is in addition to, and incorporates by reference, the relevant product manuals for each product in the power system. After reviewing this guide you must read the relevant product manuals; Unless specified, information on safety, specifications, installation, and operation is as shown in the primary documentation received with the product. Ensure you are familiar with that information before proceeding.

**Failure to follow these instructions will result in death or serious injury.**

#### Exclusion for Documentation

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**NOTE:** Visit <http://www.xantrex.com>, click Products, select a Product category, select a Product, and search the Product Documents panel for a translation of the English guide, if available.

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# Important Safety Information

## READ AND SAVE THESE INSTRUCTIONS

Electrical equipment shall be installed, operated, serviced, and maintained only by qualified personnel. Certain configuration tasks shall only be performed by qualified personnel in consultation with your local utility and/or an authorized dealer. Servicing of batteries and the BMS shall only be performed or supervised by qualified personnel with knowledge of lithium-ion batteries and their required precautions. Qualified personnel have training, knowledge, and experience in:

- Installing electrical equipment
- Applying applicable installation codes
- Analyzing and reducing the hazards involved in performing electrical work
- Installing and configuring lithium-ion batteries
- Selecting and using Personal Protective Equipment (PPE)

No responsibility is assumed by Xantrex LLC for any consequences arising out of the use of this material.



### HAZARD OF FIRE, ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462.
- Equipment must only be installed and serviced by qualified electrical personnel.
- In case of fire, use only a Class ABC type (dry chemical) fire extinguisher. Water can be a dangerous extinguishing medium for energized equipment because of the risk of electrical shock.
- Always use a properly rated voltage sensing device to confirm all circuits are de-energized.
- Do not short-circuit the battery.
- Do not expose the battery to flames.
- Do not attempt to open or dismantle the lithium-ion battery. If the battery is damaged, do not touch the corrosive electrolyte or powder. In case battery content comes in contact with skin or eyes, immediately flush the affected area with large amount of clean water and seek medical help.
- Do not crush, puncture, or drop the battery.
- Do not install in environments where the ambient temperature exceeds 113°F (45°C).
- Refer to the Safety Data Sheet when transporting this battery.

**Failure to follow these instructions will result in death or serious injury.**

# WARNING

## **HAZARD OF FIRE, ELECTRIC SHOCK, EXPLOSION, BURN, OR PERSONAL INJURY**

- Do not connect other battery types to the system DC load or the system DC bus.
- Do not expose any of the equipment to rain, snow, or liquids of any type. Products are designed for indoor use only.
- Battery is heavy. Employ precautions and appropriate lifting techniques when handling.
- Do not operate the battery or other equipment with damaged or substandard wiring.
- Do not replace the battery fuses or any other fuses in the system by yourself. Seek qualified assistance.
- Do not obstruct the air ventilation openings on the system devices. Do not install or operate any of the system devices in compartment containing flammable materials or in locations that require ignition-protected equipment.
- If the lithium-ion battery becomes damaged, it can release harmful gases. In such a case, ventilate the area whenever possible but evacuate the vicinity immediately.

**Failure to follow these instructions can result in death or serious injury.**

# **NOTICE**

## **RISK OF EQUIPMENT DAMAGE**

- Only charge the Xantrex Battery with an approved charger. Contact Xantrex for details.
- Do not physically modify the system devices, wiring harness, and accessories.
- Do not stand on the battery.
- Do not alter the factory settings on any of the system devices including the BMS.
- Do not disassemble the Xantrex Battery or the BMS. They contain non-serviceable parts.
- Do not operate or store the battery outside of the specified environmental limits.
- Do not charge the battery in ambient temperature below freezing.
- Do not charge the battery above the recommended voltage.
- Do not allow the battery to be completely depleted.
- Do not disconnect the battery while it is being charged.
- Components which can be recycled must be recycled and those that cannot be recycled must be disposed of according to local, regional, and national environmental regulations.

**Failure to follow these instructions can result in damage to equipment and may void the warranty.**

# 1

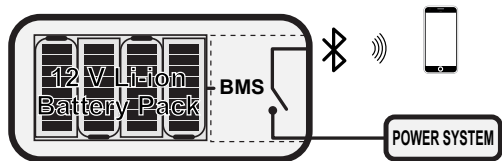
## Introduction

### **IMPORTANT**

**ON FIRST USE:** Perform a full charge, discharge, and charge cycle to ensure maximum battery life. For information, see the *Battery Storage Guide (doc number 975-1005-01-01)*.

The Xantrex 125Ah Battery is a lithium iron phosphate (LiFePO<sub>4</sub>) chemistry battery with an integrated Battery Management System (BMS).

The BMS monitors voltage, current, state-of-charge (SoC), and temperature inside the battery and primarily protects the battery by disconnecting it from the rest of the power system when it detects any potentially harmful conditions. It collects data from the battery and sends this data for analysis via a digital interface.



Information from the battery is displayed in real time through Bluetooth wireless communication.

The BMS transmits monitoring data over the integrated Bluetooth interface, allowing users to check the battery data on their mobile phones or tablets.

You may download the Xantrex Battery app from Google Play or the App Store.

The battery also features a 10% Reserve Voltage. This 10% reserve can be activated by a single press of the Power button, if necessary.

# 2

## Installation

### ***NOTICE***

#### **RISK OF EQUIPMENT DAMAGE**

- Do not connect multiple batteries in series. Parallel connection is permitted.
- The battery must be installed upright with the cable/terminal side up.

**Failure to follow these instructions can result in damage to equipment and may void the warranty.**

1. Check the battery for visible damage including cracks, dents, and deformations on the body. The top surface and the battery terminals must be clean, dry, and free of dirt and corrosion.
2. Make sure the 125Ah Battery is turned off. If the Power button LED is illuminated, press and hold the Power button for three seconds until the LED turns off.
3. Select and place the battery in a clean, cool, and dry location.
4. Prepare the following:
  - terminal bolts sized M8 1.25x12mm (supplied)
  - lock washers (supplied)
  - flat washers (supplied)
  - battery cables terminated with M8 (or 5/16") cable ring lugs (do not use stainless steel lugs)
  - DC fuse (100A, 32V) and fuse holder

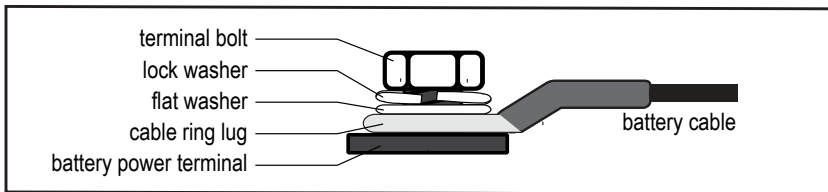
### **WARNING**

#### **HAZARD OF FIRE**

Use only stranded, copper wire rated 75°C minimum. Make sure battery connections are tightened to a torque of 106 in-lb (12 Nm) of force. Loose connections will overheat.

**Failure to follow these instructions can result in death or serious injury.**

- Attach the neg(-) battery cable to the neg(-) battery power terminal. See the illustration below for proper stacking of terminal connections. Torque terminal bolt to 106 in-lb (12 N-m).
- Install a DC fuse and fuse holder on a short battery cable that will be used for the positive side of the DC circuit. The fuse must: (a) be as close to the pos(+) battery power terminal as possible; (b) be rated for DC circuits; (c) be a Class T fuse.
- Attach the fused battery cable to the pos(+) battery power terminal. See the illustration below for proper stacking of terminal connections. Torque terminal bolt to 106 in-lb (12 N-m).

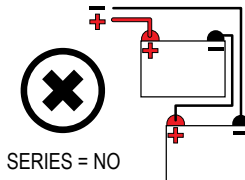
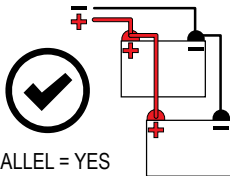


## **⚠ WARNING**

### **HAZARD OF FIRE AND EQUIPMENT DAMAGE**

- Do not place washers in between the battery's power terminal and the battery cable's ring lug. Doing so may cause excessive heating due to high resistance.
- Do not connect multiple batteries in series to get higher voltage as it will damage the internal BMS. Parallel connection is permitted.

**Failure to follow these instructions can damage the unit and/or equipment.**



# NOTICE

## REVERSE POLARITY DAMAGE

Check cable polarity before making the final DC connection. Positive must be connected to positive; negative must be connected to negative. Reversing the positive and negative battery cables may damage the battery and void your warranty.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

8. Attach the pos(+) battery cable to the fused battery cable.  
**NOTE:** When attaching more than one lug to each terminal, make sure at least 1/4" or 6mm of thread is available to secure the connection. Additionally, the ring terminal lugs need to be "clocked" in such a way that they do not interfere with their flat conducting surfaces. Acquire and use longer M8x1.25mm terminal bolts if necessary.
9. Turn the battery on and verify the voltage on the DC bus is approximately 12VDC (nominal).



# 3

## Operation

### Power Button and LED Indicator

The Xantrex 125Ah Battery has an LED indicator integrated into the Power button on the unit itself.



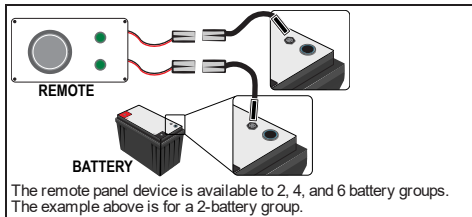
**Power** button for On/Off/Alarm

- The LED is off when the unit is turned off and battery power is disabled.
- The LED is on when the unit is on and battery power is enabled.

Battery State	LED Behavior	
Battery is discharging.	Steady on	
Battery is being charged.	Slowly blinking	
Battery power is disabled.	Off	
Low battery condition	Short flash	
Alarm condition	Rapid flashing	


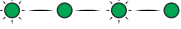



# Remote Panel

The Xantrex 125Ah Battery has a remote panel port next to the Power button on the unit.



## Remote Panel device

- Connects to a compatible battery or batteries.
- It is used to turn the battery on and off.
- It is equipped with LEDs that mimic the behavior of the LED on the battery.

Battery State	LED Behavior	
Battery is discharging.	Steady on	
Battery is being charged.	Slowly blinking	
Battery power is disabled.	Off	
Low battery condition	Short flash	
Alarm condition	Rapid flashing	

# Battery Charging

When the battery's SoC is greater than 10% and while battery power is still engaged, you may charge the battery by engaging power from the charging source.

When SoC is less than 10% but greater than 3%, and the reserve shutdown event has occurred, press the Power button on the unit. While battery power is engaged, start charging the battery from the charging source.

**NOTE:** When charging, avoid using heavy loads to prevent prolonged charging time. Also, avoid using heavy DC loads during charging to prevent the system from transitioning to thermal protection mode.

To stop charging, disengage the power from any and all charging sources. Do not turn off the unit to disconnect the battery while the system is charging.

**IMPORTANT:** Perform a weekly full charge cycle to bring the battery SoC to 100% to maintain accuracy.

## ***NOTICE***

### **RISK OF EQUIPMENT DAMAGE**

- Do not disconnect battery while the system is charging.
- Fully charge the battery and turn off the BMS when the system is not in use for less than a month.
  - Observe proper storage instructions from the battery manufacturer for long-term storage.
- Do not charge Lithium batteries in sub-freezing temperatures. They are not designed for it.
- Do not charge Lithium batteries above 14.6V.

**Failure to follow these instructions can result in damage to equipment or battery.**

# Low Battery Recovery

## ***NOTICE***

### **RISK OF BATTERY DAMAGE**

Turn off (or disconnect) all loads completely before performing a Low Battery Recovery procedure.

**Failure to follow these instructions can result in damage to battery.**

When SoC is less than 3% and the low voltage shutdown event has occurred, charge the battery immediately through a charging source. Follow the steps below.

1. Turn off (or disconnect) all DC and AC loads completely.
2. Start charging.

**NOTE:** If charging does not commence, then it is possible that the battery has been completely depleted. The battery including the entire power system has to be serviced by a qualified person such as an authorized technician. Contact your dealer for service.

## ***NOTICE***

### **RISK OF BATTERY DAMAGE**

Do not perform the low battery recovery procedure repeatedly. Contact customer service so they can refer you to an authorized technician for service.

**Failure to follow these instructions can result in damage to battery.**

## 4

# Troubleshooting

PROBLEM	CAUSE	SOLUTION
Battery is turned off	Battery is low (reserve shutdown).	Follow the steps in <i>Battery Charging</i> and charge the battery immediately.
	Battery is critically low (low voltage shutdown).	Follow the steps in <i>Low Battery Recovery</i> and charge the battery immediately.
The battery will not turn on.	Battery temperature is outside normal range.	Apply proper ventilation and make sure ambient temperature is not too hot or too cold.
	Battery is critically low.	Follow the steps in <i>Low Battery Recovery</i> and charge the battery immediately. See <i>Specifications</i> .
Battery SoC on Xantrex Battery app is inaccurate.	Battery is consistently left in a partially discharged state causing SoC reading to gradually drift.	Perform a full charge cycle to bring battery SoC to 100% to allow readings to recalibrate. Perform weekly to maintain accuracy.
<b>NOTE:</b> Refer to your equipment's troubleshooting tips for specific information.		

# 5

## Specifications

**NOTE:** Specifications are subject to change without prior notice.

<b>Electrical Overview</b>	<b>Nominal Voltage</b>	12.8VDC
	<b>Nominal Capacity</b>	125Ah
	<b>Internal Resistance</b>	$\leq 4\text{m}\Omega$
<b>Physical Features</b>	<b>L x W x H</b>	318 x 165 x 215mm (12.52 x 6.5 x 8.46in)
	<b>Weight</b>	15.1kg (33.4lbs)
<b>Major Features</b>	Reserve Power, High and Low Voltage Cutoff, High and Low Temperature Cutoff, Short Circuit Protection, Bluetooth App Support,	
<b>Charging Features</b>	<b>Temperature range</b>	0 – 45 °C (32 – 113 °F)
	<b>Charge voltage</b>	14.4 V recommended (14.6 V max)
	<b>Charge voltage (solar charge controller)</b>	14.2–14.4 V (30 minutes max absorption time)
	<b>Float voltage (for standby use)</b>	13.4 V
	<b>Charge current</b>	$\leq 50\text{A}$ (recommended)
	<b>Max charge current</b>	100A with starting temp of 77°F (25°C)

<b>Discharging Features</b>	<b>Temperature range</b>	-20 – 55 °C (-4 – 131 °F)
	<b>Output voltage</b>	11.2 to 14.6V
	<b>Discharge current</b>	≤80A (recommended)
	<b>Max discharge current</b>	100A with starting temp of 77°F (25°C) (continuous)
	<b>Surge discharge current</b>	<400A for 30s max with starting temp of 77°F (25°C)
	<b>Pulse discharge current</b>	<1000A for 1s max with starting temp of 77°F (25°C)
	<b>Reserve cut-off voltage</b>	12.0V ±0.05V
	<b>Discharge cut-off voltage</b>	11.2 ±0.1V
<b>Self-discharge rate</b>	<b>Residual capacity</b>	≤3% per month; ≤15% per year
	<b>Reversible capacity</b>	≤1.5% per month; ≤8% per year
<b>Storage</b>	<b>Recommended temperature and humidity</b>	15 to 35°C (59 to 95°F), 45 to 75 % RH
	<b>Temperature range</b>	< 1 Month, -20 to 35°C (-4 to 95°F) < 3 Months, 10 to 30°C (14 to 86°F) For long term storage, see the <i>Battery Storage Guide (doc number 975-1005-01-01)</i> .
<b>Others</b>	Battery cells are recognized components under UL 1642 standard and representative cells have been evaluated to IEC 62619 standard.	

# Battery Disposal

At the end of the battery's useful life, proper disposal is required. Do not dispose the battery with ordinary household waste. Refer to your local codes for proper disposal of lithium-ion batteries.



**HAZARD OF FIRE, ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Upon disposal, do not crush, puncture, drop, disassemble, dispose of in fire, or similar actions.

**Failure to follow these instructions will result in death or serious injury.**