

## Overview

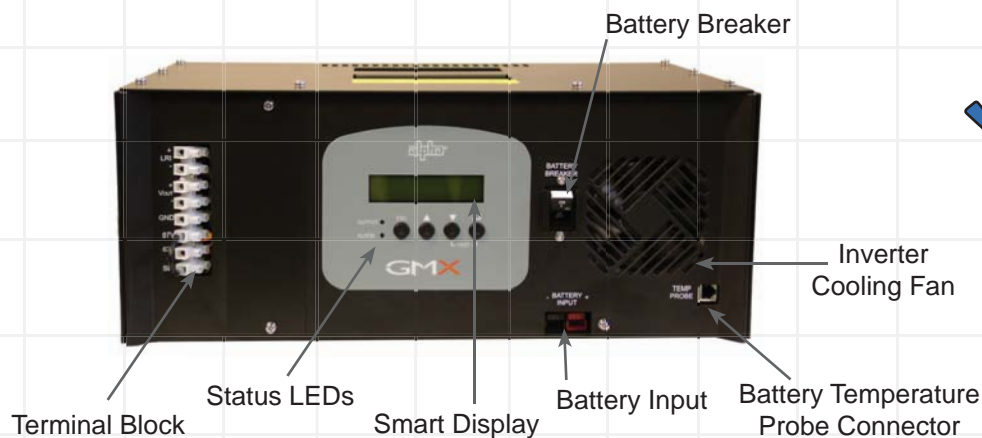
Alpha GMX Uninterruptible Power Supplies are designed to power signal processing equipment in cable television and broadband LAN distribution systems.

During AC line operation, AC power is converted into a *quasi* square wave and regulated by a ferroresonant transformer at the selected output voltage. The regulated voltage is connected to the load via  $V_{OUT} \pm$  terminal block connections, and some power is directed to the battery charger to maintain a float charge on the batteries.

When the incoming AC line voltage significantly deviates from normal, the GMX Power Supply automatically switches from the AC line to Standby mode, maintaining power to the load.

Key components include:

- Line Interactive Ferro Technology (LIFT)
- Wide input voltage range of  $\pm 30\%$
- Compact packaging with light-weight ferro
- Field programmable flash memory
- Built-in battery circuit breaker
- IEC style line cord



## Pre-installation Checklist

### To Ensure Operator Safety:

- Only qualified personnel should install the power supply in accordance with all applicable electrical codes.
- Use eye protection whenever working with batteries.
- Use only sealed, lead-acid type batteries with a minimum rating of 55Ah (gelled-electrolyte or equivalent).

### Unpacking and Inspection:

- Remove the GMX Power Supply from the shipping container. Verify that the power supply (including Remote Temperature Sensor) and any other ordered options have been included.
- Carefully inspect the contents of the shipping container. If any items are damaged or missing, contact Alpha Technologies or the shipping company immediately. Most shipping companies only have a short claim period.

### Preinstallation Inspection:

- During shipping, movement of components may occur. Inspect the power supply for possible shipping-related failures, such as loosened or damaged connectors. If needed, inspect the interior for loose or damaged connectors. Correct any discrepancies before proceeding with the power supply installation.
- Do not install the power supply without performing a complete preinstallation inspection and start-up test.



### NOTE:

To download the latest revision of the GMX Technical Manual, Alpha P/N 017-932-B0, visit [www.alpha.com](http://www.alpha.com).

Or, call 1-800-863-3930 for assistance.  
(7:00 AM to 5:00 PM Pacific Time)

## Installation

### NOTE:

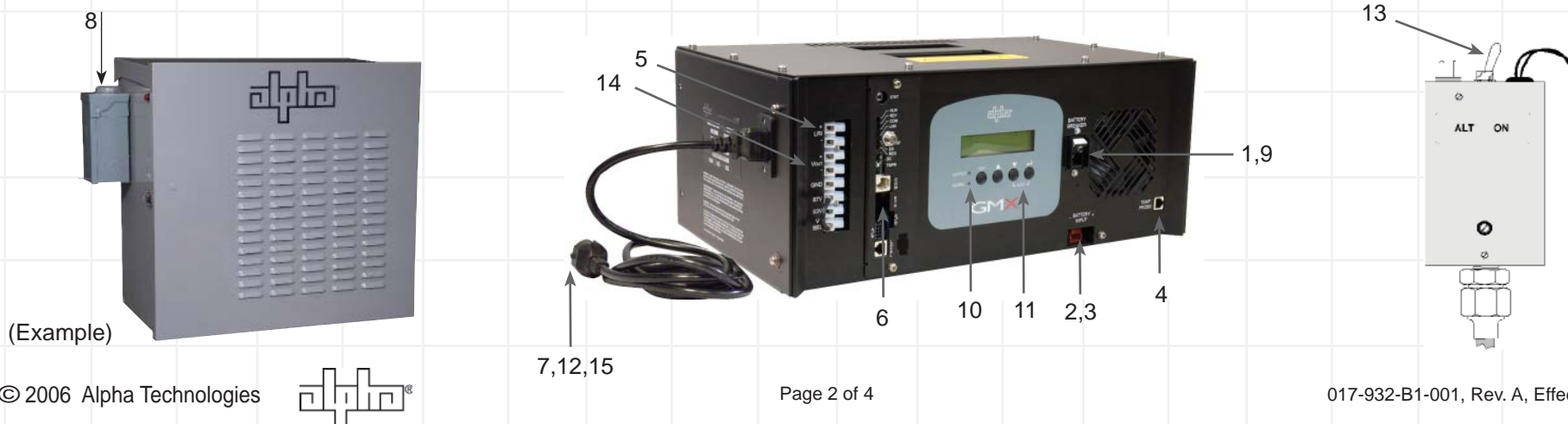
Before applying power, verify AC input utility. Verify a low-resistance ground is installed in accordance with applicable regional standards.

### Installation Procedure

1. Turn Battery Breaker OFF.
2. Check battery cables for correct polarity (Red +, Black -).
3. Connect battery cables to battery input connector (observe color/polarity).
4. Connect the Temperature Probe.
5. Connect the Local/Remote Indicator (LRI) to the terminal block (if applicable).
6. Connect status monitoring connectors, including Tamper Switch (if applicable).
7. Connect the GMX to the utility outlet.
8. Switch enclosure AC breaker ON; measure and verify correct AC voltage at utility outlet.
9. Switch Battery Breaker ON.
10. Verify no alarms are present (it may take up to 60 seconds for the NO BATTERIES alarm to clear).
11. Initiate a self-test by simultaneously pressing the DOWN arrow key and ENTER key. Using a true RMS multimeter, verify  $V_{OUT}$  voltage. Verify no alarms are present. Abort the self-test by simultaneously pressing the DOWN arrow key and ENTER key.
12. Unplug the GMX line cord and turn OFF the battery breaker.
13. Verify Service Power Inserter (SPI) toggle switch in ON position (not ALT).
14. Connect the SPI (network load) to the terminal block. If you are not using an SPI, connect the load directly to the  $V_{OUT}$  terminals on the terminal block. Observe proper polarity.
15. Plug in the GMX line cord and switch the Battery Breaker ON.
16. Perform live inverter test.
  - Turn AC input breaker OFF.
  - Verify GMX transfers to "Inverter" mode.
  - Turn AC input breaker ON.
  - Verify GMX transfers back to Utility.

### CONGRATULATIONS!

The self-test and live-inverter tests have been successfully completed, the unit is ready to be placed into service.



## Safety Notes

Review the drawings and illustrations contained in this guide before proceeding. If there are any questions regarding the safe installation or operation of the system, contact Alpha Technologies or the nearest Alpha representative. Save this document for future reference.

To reduce the risk of injury or death, and to ensure the continued safe operation of this product, the following symbols have been placed throughout this manual. Where these symbols appear, use extra care and attention.

### **ATTENTION:**

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The use of ATTENTION indicates specific regulatory/code requirements that may affect the placement of equipment and /or installation procedures.



### **NOTE:**

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A NOTE provides additional information to help complete a specific task or procedure.



### **CAUTION!**

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The use of CAUTION indicates safety information intended to PREVENT DAMAGE to material or equipment.



### **WARNING!**

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A WARNING presents safety information to PREVENT INJURY OR DEATH to the technician or user.-

### **ATTENTION:**

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Connecting to the utility should be performed only by qualified service personnel and in compliance with local electrical codes. Connection to utility power must be approved by the local utility before installing the power supply.

### **ATTENTION:**

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UL and NEC require that a service disconnect switch (UL listed) be provided by the installer and be connected between the power source and the Alpha power supply. Connection to the power supply must include an appropriate service entrance weather head.



### **NOTE:**

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In order to accommodate the high-inrush currents normally associated with the start-up of ferroresonant transformers (400A, no-trip, first-half cycle), either a "high-magnetic" or an HACR (Heating, Air Conditioning, Refrigeration) trip breaker must be used. Do not replace these breakers with a conventional service entrance breaker. Alpha recommends ONLY Square D breakers because of increased reliability in this powering application. High-magnetic Square D circuit breakers and a BBX option (UL Listed service entrance) are available from Alpha Technologies.



### **NOTE:**

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Always verify proper polarity of cables before connecting the batteries to the power module. The batteries are clearly marked for polarity. If the cables become interchanged at the batteries the battery breaker will trip.

- Only qualified personnel may service the GMX Power Supply.
- Verify the voltage requirements of the equipment to be protected (load), the AC input voltage to the power supply (line), and the output voltage of the system prior to installation.
- Equip the utility service panel with a properly rated circuit breaker for use with this power supply.
- When connecting the load, DO NOT exceed the output rating of the power supply.
- Always use proper lifting techniques whenever handling units, modules or batteries.
- The GMX Power Supply contains more than one live circuit! Even though AC voltage is not present at the input, voltage may still be present at the output.
- If batteries are being stored prior to installation, charge at least once every three months to ensure optimum performance and maximum battery service life.
- Reduce the chance of spark and wear on the connectors; always switch the inverter's battery circuit breaker off before connecting or disconnecting the battery pack
- The battery pack, which provides backup power, contains dangerous voltages. Only qualified personnel should inspect or replace batteries.
- In the event of a short-circuit, batteries present a risk of electrical shock and burns from high current . Observe proper safety precautions.
- Always wear protective clothing, insulated gloves and eye protection (i.e. safety glasses or a face shield) whenever working with batteries.
- Always carry a supply of water, such as a water jug, to wash the eyes or skin in the event of exposure to battery electrolyte.
- Do not allow live battery wires to contact the enclosure chassis. Shorting battery wires can result in a fire or possible explosion.
- Always replace batteries with those of an identical type and rating. Never install old or untested batteries.
- Avoid using uninsulated tools or other conductive materials when handling batteries or working inside the enclosure.
- Remove all rings, watches and other jewelry before servicing batteries.
- Spent or damaged batteries are environmentally unsafe. Always recycle used batteries. Refer to local codes for proper disposition of batteries

