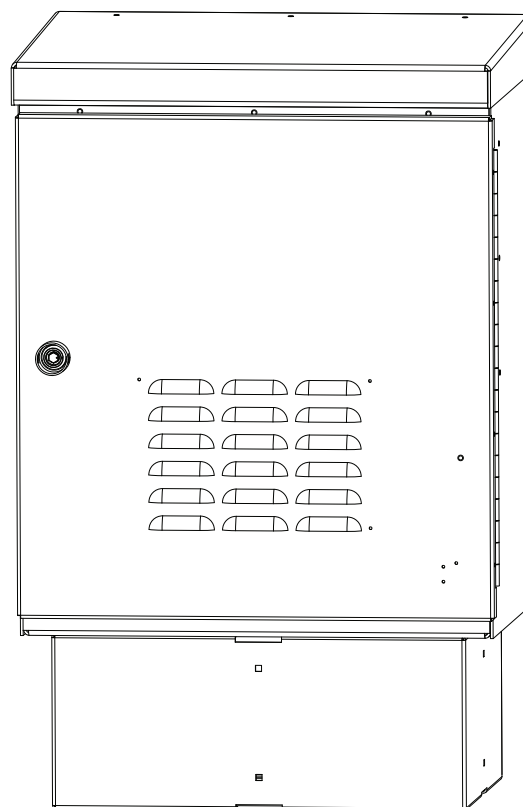




Multi-Mount Outdoor Enclosure

Installation & Operation Manual

Part # 030-117-B0
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Notice

Rev B

Doc# 030-117-B0

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About Us

The Alpha Group represents an alliance of independent companies who share a common philosophy – to create world class powering solutions. Collectively, Alpha Group members develop and manufacture AC and DC power conversion, protection and standby products. Applications for these products include broadband, telecom, AC/UPS, commercial, industrial, and distributed generation for a worldwide customer base. In addition, our companies provide a range of installation and maintenance services.

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1. Product Safety Information

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS: This manual contains important safety instructions that must be followed during the installation, servicing and maintenance of the product. Keep it in a safe place.

General Warnings and Cautions



WARNING

You must read and understand the following warnings before installing the enclosure and its component. Failure to do so could result in personal injury or death.

- Read and follow all instructions included in this manual.
- Only trained and qualified personnel should be allowed to install or replace this equipment and its components.
- Use proper lifting techniques whenever handling equipment, parts, or batteries.
- The enclosure which contains the Uninterruptible Power Supply (UPS) and associated equipment must remain locked at all times, except when authorized service personnel are present.
- Always assume electrical connections or conductors are live. Turn off all circuit breakers and double-check with a voltmeter before performing installation or maintenance.
- Place a warning label on the utility panel to tell emergency personnel a UPS is installed.
- The UPS has more than one live circuit. AC power may be present at the outputs even if the UPS is disconnected from line or battery power.
- At high ambient temperature conditions, the UPS's surface can be very hot to the touch.
- There is a lithium battery inside the UPS. There is a danger of an explosion if it is incorrectly replaced. Replace it only with the same type or an equivalent battery as recommended by the manufacturer. Dispose of the old battery as instructed by the manufacturer.

- Never transport the Multi-Mount Outdoor Enclosure with batteries installed. Batteries must ONLY be installed after the Multi-Mount Outdoor Enclosure has been securely set in place at its permanent installation location. Transporting the unit with batteries installed may cause a short circuit, fire, explosion, and/or damage to the battery pack, enclosure and installed equipment. The batteries used in this application may vary slightly depending upon optional configurations, battery types, or customer requirements. The batteries are typically gelled-electrolyte, valve-regulated such as the Alpha Cell. Should a battery be found damaged, refer to the battery manufacturer's documentation regarding the safe handling of the battery.
- Batteries contain dangerous voltages, currents and corrosive material. Battery installation, maintenance, service and replacement must be performed by authorized personnel only.
- Use special caution when connecting or adjusting battery cabling. An improperly connected battery cable or an unconnected battery cable can result in arcing, a fire, or possible explosion.
- A battery that shows signs of cracking, leaking or swelling must be replaced immediately by authorized personnel using a battery of identical type and rating.
- Keep the chassis area clear and dust-free during and after installation.
- Keep tools away from walk areas where you or others could fall over them.
- Wear safety glasses when working under any conditions that might be hazardous to your eyes.
- Do not work on the system or connect or disconnect cables during periods of lightning activity.
- Do not smoke or introduce sparks in the vicinity of a battery.
- Never open or damage the batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic and hazardous to the environment.
- A battery can present a risk of electrical shock and high short-circuit current. The following precautions should be observed when working on batteries:
 - Remove watches, rings, or other metal objects.
 - Use tools with insulated handles.
 - Wear rubber gloves and boots.
 - Do not lay tools or metal parts on top of batteries.
 - Disconnect charging source prior to connecting or disconnecting battery terminals.
 - Determine if the battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to

equipment and remote battery supplies not having a grounded supply circuit).

- Never let live battery wires touch the UPS, the enclosure or any other metal objects. This can cause a fire or explosion.



Caution:

You must read and understand the following caution before installing the enclosure and its components. Failure to do so could result in damage to the unit or other equipment.

- Before installation, verify the input voltage and current requirements of the load are met by the UPS's output. Verify the line voltage and current meet the UPS's input requirements.
- When selecting an installation site for the Multi-Mount Outdoor Enclosure, choose a location that avoids direct sunlight, excessive heat or moisture, dust, or chemical exposure. Such exposure greatly reduces the product's longevity and might void your warranty.
- Electronic modules, batteries or other components (with the exception of factory installed components) must not be installed into the enclosure until the enclosure is securely set in place at its permanent location. Failure to do so may cause damage to the equipment (e.g. by vibration in transit) and void your warranty.

Certifications and Compliances

- The Multi-Mount Outdoor Enclosure has been designed, manufactured, and tested to the requirements of the following national and international standards:
 - ☑ NEMA 3R
 - ☑ GR-13-CORE – General Requirements for Pedestal Terminal Closures
- The AC Distribution Panel has been designed, manufactured, and tested to the requirements of the following national and international safety standards:
 - ☑ CAN/CSA-C22.2 No. 107.1-01 – General Use Power Supplies
 - ☑ UL 1778 (2nd Edition) – Uninterruptible Power Supply Equipment
 - ☑ FCC CFR47 Part 15 Class A – This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equip-

ment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

- The FXM UPS Modules have been designed, manufactured, and tested to the requirements of the following national and international safety standards:
 - ☑ CAN/CSA-C22.2 No. 107.3-05 – Uninterruptible Power Systems
 - ☑ UL 1778 (4th Edition) – Uninterruptible Power Systems
 - ☑ CAN/CSA-C22.2 No. 60950-1-03 – Information Technology Equipment - Safety - Part 1: General Requirements
 - ☑ UL 60950-1 (1st Edition) – Information Technology Equipment - Safety - Part 1: General Requirements
 - ☑ FCC CFR47 Part 15 Class A – This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2. Introduction

What This Manual Covers

This manual provides full procedures for the safe and proper installation, operation, maintenance, and troubleshooting of the Multi-Mount Outdoor Enclosure. It contains the following chapters and appendices:

- “Product Safety Information” on page 5: Draws your attention to product safety and encourages you to think “Safety First!”
- “Introduction” on this page: Provides information about the manual and explains the meaning of each safety symbol that appears throughout the manual and on the labels of the device.
- “Overview” on page 13: Describes the intended use of the Multi-Mount Outdoor Enclosure and its major features.
- “Site Planning” on page 17: Describes the site-preparation requirements and basic safety requirements for the installation and use of the Multi-Mount Outdoor Enclosure.
- “Unpacking the Multi-Mount Outdoor Enclosure” on page 21: Describes the procedure of unpacking and checking the contents of the Multi-Mount Outdoor Enclosure from its shipping packaging.
- “Installation” on page 23: Describes the required protection for the enclosure, the procedures of mounting the pedestal and the enclosure, and the tools you would need for the job.
- “Maintenance” on page 43: Describes how to perform general maintenance and repair on the enclosure.
- Appendix A: “Specifications” on page 45: Contains detailed specifications (physical, environmental and electrical) of the enclosure and its components.
- Appendix B: “Parts List” on page 47: Contains a table of field-replaceable parts and their part numbers.
- Appendix C: “Wiring Diagrams” on page 49 provides typical examples of how you would connect various equipment inside the enclosure.
- “Warranty Information” on page 53: Provides a detailed description of the terms of the product warranty.

Who Should Read This Manual

This manual is intended for qualified installers – trained electricians or technicians who are fully educated on the hazards of installing electrical equipment such as uninterruptible power supplies and their associated batteries. It contains sufficient information for the qualified installer to install the enclosure and its internal components.

How to Use This Manual

Before you begin installing the enclosure, please ensure that you are familiar with all the warnings and cautions described in this manual (see “Product Safety Information” on page 5). Once you are aware of all the safety issues, then you can start planning and preparing the installation site before transporting the enclosure on site.

Symbols Used in This Manual

This section explains the warning, caution and information symbols used in this manual.



WARNING

Warnings draw special attention to anything that could injure or kill you (the operator) or somebody else, and explain how to avoid these situations. They are placed before the step in the procedure to which they apply. Warnings display the “attention” icon, followed by the word “WARNING” (in bold uppercase) highlighted in gray as shown in this example.



Caution

Cautions draw special attention to anything that could damage equipment or cause the loss of data, and provide information on how to avoid these situations. They are placed before the step in the procedure to which they apply. Cautions display the “attention” icon, followed by the word “Caution” in bold title case as shown in this example.



Note

Notes contain information or options you should remember for future use – something that may seem minor or inconsequential but will be important in the future. Notes display the “push pin” icon, followed by the word “Note” in title case as shown in this example.

Symbols Used on The Product

The following symbol appears on various internal components of the Multi-Mount Outdoor Enclosure:



Risk of electric shock. Observe all warnings and cautions described in “Product Safety Information” on page 5.

Related Documents

- FXM UPS Operator's Manual (Doc# 017-201-B0)

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3. Overview

Introduction

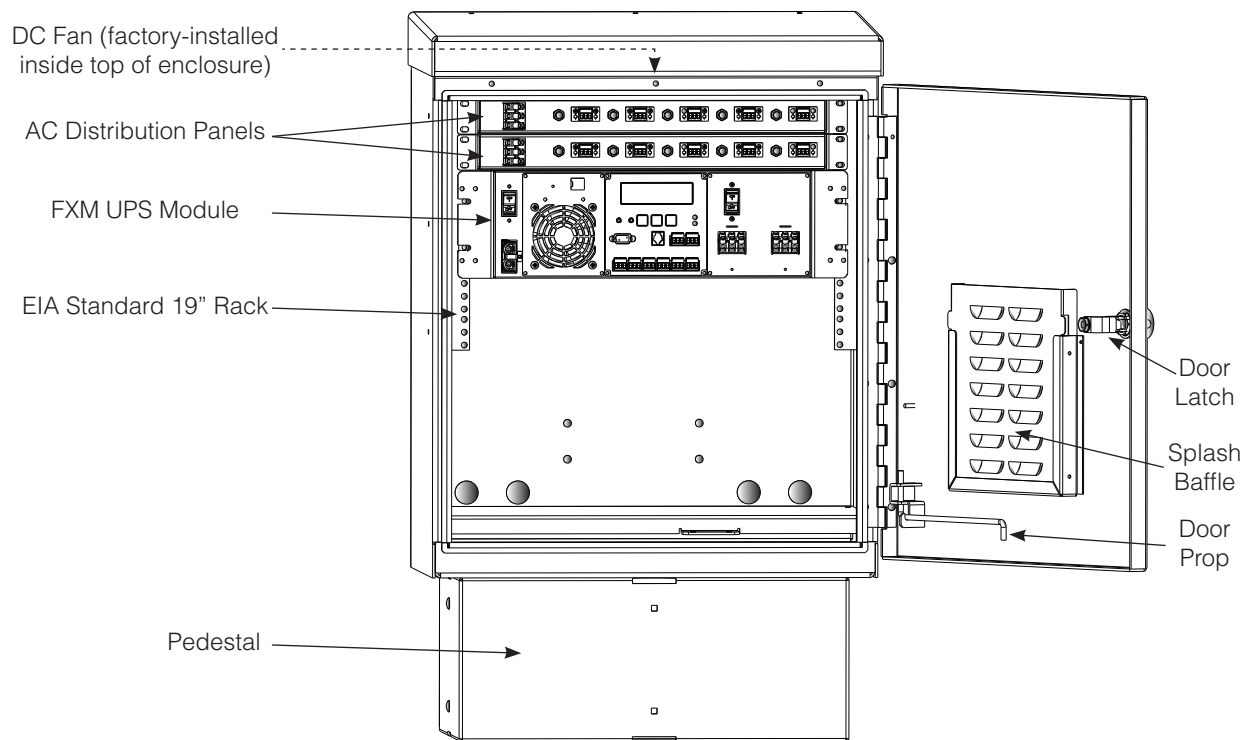
The Multi-Mount Outdoor Enclosure is a durable, multi-purpose NEMA 3R rated cabinet. It is designed to provide protection to the electrical equipment inside from most weather conditions. It is constructed of aluminum with stainless steel hardware. See “Specifications” on page 45 for more details.

The enclosure is provided with 19-inch wide rack-mounting rails and accommodates up to 7 vertical rack units of equipment. Figure 3.1 shows the enclosure with some typical equipment configurations using the AC distribution panels, an Uninterruptible Power Supply and an Automatic/Generator Transfer Switch.

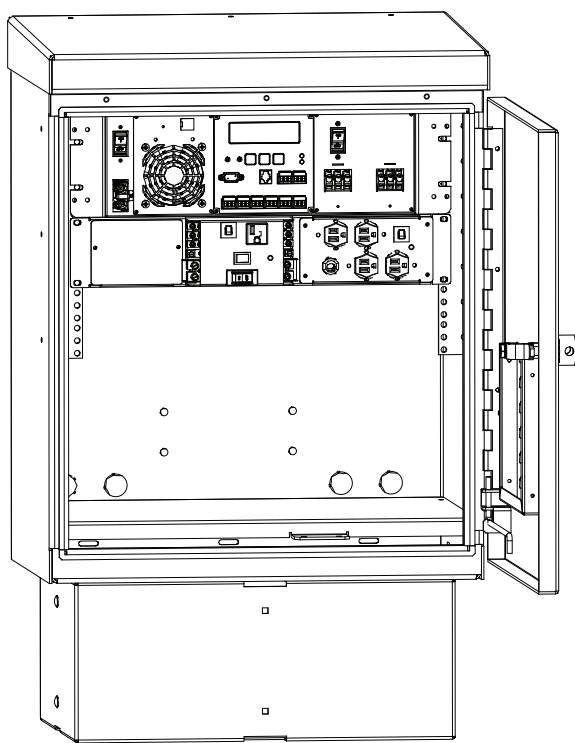
The Multi-Mount Outdoor Enclosure is intended to be mounted on its own pedestal, but can also be pole or wall mounted with optional mounting brackets. See “Installation” on page 23 for details.

Features

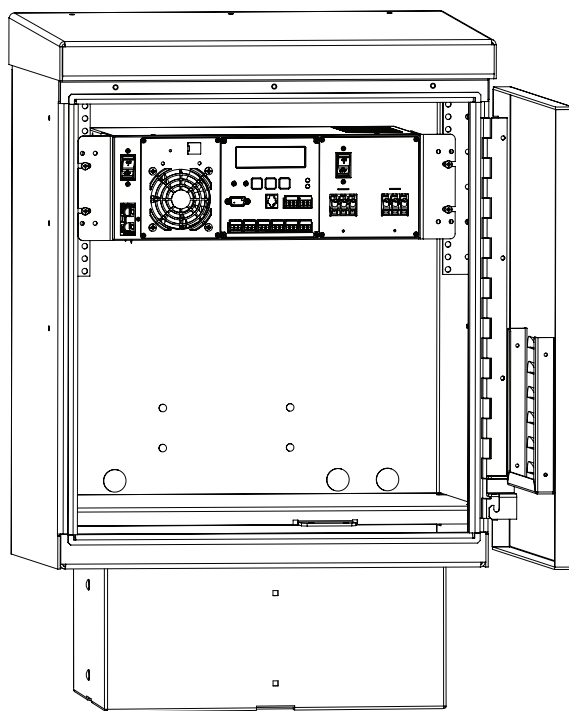
- Designed for mounting to the floor or ground, to a pole or to a wall
- Large front door for easy interior accessibility
- Durable NEMA 3R all-aluminum cabinet with stainless steel hardware for long life in harsh environments
- Houses multiple battery sizes for maximum run-time flexibility
- Standard field replaceable internal fan reduces costly maintenance
- Sturdy locking system for security



(a) With 2 AC Distribution Panels and FXM UPS Module



(b) With FXM UPS and ATS/GTS option



(c) MMOE-FXM2000-48-120-LN with FXM UPS

Figure 3.1 - Multi-Mount Outdoor Enclosure

Field-Replaceable Units (FRUs)

This section describes the FRUs contained in the Multi-Mount Outdoor Enclosure. Replacement part numbers are listed on page 47.

Enclosure Fan

This is a DC 48V fan, 100 CFM or better. It is controlled by a thermostat to turn ON at 49°C and OFF at 32°C.

Enclosure Low Noise Fan

This is a DC 48V fan, 93 CFM. It is controlled by a thermostat to turn ON at 42°C and OFF at 32°C.

AC Distribution Panel

This AC Distribution Panel is specifically designed for use with a Uninterruptible Power Supply (UPS) in the Multi-Mount Outdoor Enclosure. Reliable power from the UPS output is fed into the input of the panel and then distributed to the loads from the 5 output terminals. More than one AC Distribution Panels can be installed in the Multi-Mount Outdoor Enclosure if you have more than 5 loads.

UPS Module

The FXM Series of Uninterruptible Power Supplies (UPS) are line-interactive power supplies that employ a linear transformer and pulse width modulation (PWM) technology to provide AC Sine Wave output power during a utility power failure. Under normal operating mode the UPS provides conditioned sine wave output. In the event of a utility power failure the UPS automatically and rapidly switches over to inverter operating mode, maintaining an uninterrupted flow of conditioned AC power. Refer to the FXM UPS Operator's Manual for more information.

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4. Site Planning

Safety Precautions

Observe the following safety precautions when setting up the enclosure:

- Follow all cautions and instructions marked on the equipment.
- The shipping weight of the Multi-Mount Outdoor Enclosure is more than 80 lbs. To avoid injury, use proper lifting techniques and at least two installation personnel to handle the enclosure.
- Perform a site survey before installation. Clearly identify any underground utility power supply lines and hidden rocks before planting the stakes into the ground.
- Do not block or cover the ventilation openings on the front of the Multi-Mount Outdoor Enclosure. Failure to do so can cause overheating and product malfunction.
- Do not install the Multi-Mount Outdoor Enclosure within 10 feet of a water sprinkler to prevent water from entering the enclosure through the ventilation openings.

Environmental Requirements

Observe the following environment requirements when setting up the enclosure. See “Specifications” Section on page 45 for more details.

- The site must be planned so that the enclosure will receive good air flow. If possible, in areas of extreme heat, it is best to position the enclosure so that it will be shaded from the afternoon sun. In areas of prevailing winds, it is best that the enclosure be located so that the sides of the cabinet face the winds instead of the front door. This will greatly reduce the buildup of dust, sand or snow against the enclosure's air vents.
- In areas of potential flooding, the geographical site and concrete pad must be located above the 100 year flood plain.
- The enclosure must be placed where it will be free of obstructions, allowing easy access to the front door for service or equipment access. For ventilation and maintenance, allow a minimum space of 36 inches in the front between the enclosure and other solid structures.
- Place the enclosure well away from sources of forced water, such as underground sprinkler systems and direct roadway splash.

Electromagnetic Compatibility (EMC) Requirements

Observe the following EMC requirements when setting up the Multi-Mount Outdoor Enclosure and its internal equipment:

- All AC mains and external supply conductors must be enclosed in a metal conduit or raceway when specified by local, national, and/or other applicable government codes and regulations.
- The Multi-Mount Outdoor Enclosure must be properly grounded.
- The customer facilities must provide suitable surge protection.

Electrical and Power Specifications

Enclosure Grounding: Ground Mount



Note

Alpha Technologies recommends using the grounding method illustrated in Figure 4.1 below. The grounding method for a particular site will depend on the soil type, available space, local codes, NEC (National Electric Code), and other site-specific characteristics.

Alpha Technologies recommends 5 ohms minimum ground resistance between enclosure and ground rods, in accordance with IEEE 1100-1999: Powering and Grounding Electronic Equipment.

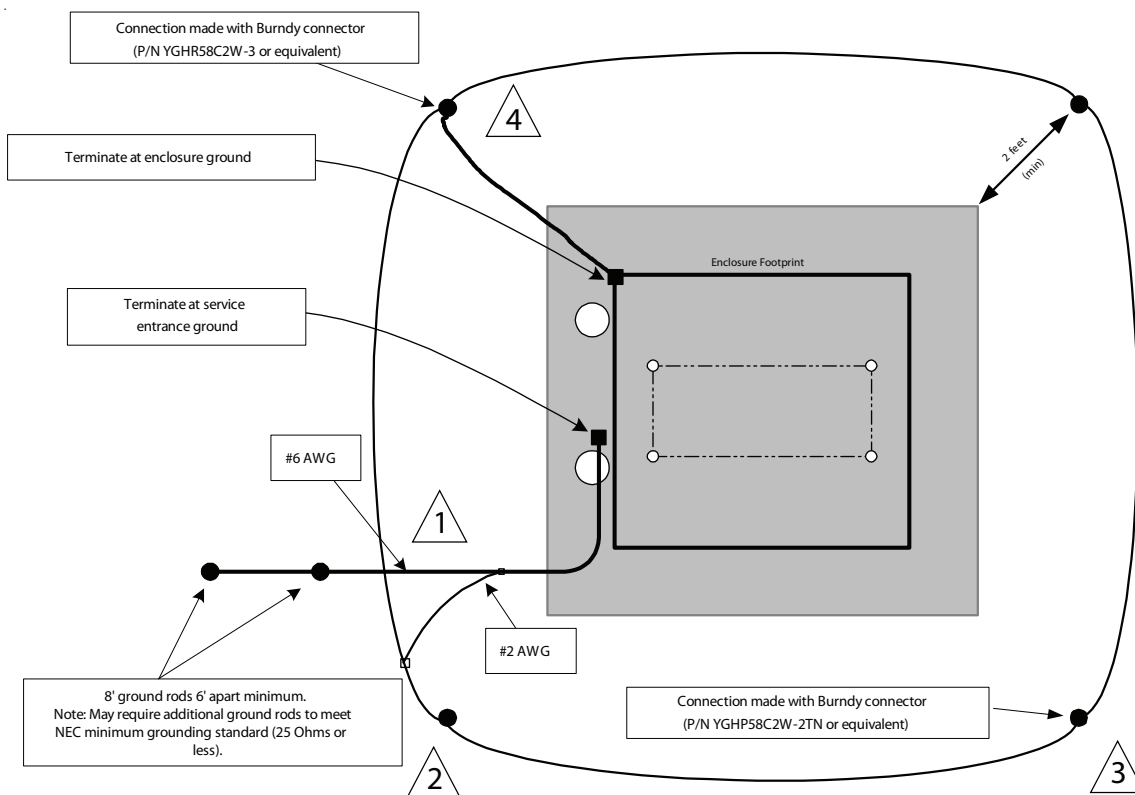
Alpha Technologies assumes no responsibility or liability for failure of the installer to comply with the requirements of all applicable local and national codes. Where allowed, exothermic welding may be used as an alternative to Burndy clamps and connectors.

TVSS Surge Protection

In addition to lightning, transient voltage surge can also be caused by other elements that create a sudden variation of the load, such as the switching of circuit breakers, transformers and motors. When a transient surge occurs, the voltage peak amplitude can reach 12 times the nominal voltage in less than a millisecond. The effect of this surge can usually result in costly damages to electric and electronic equipment. To suppress this destructive surge, Alpha recommends using a Transient Voltage Surge Suppressor (TVSS) or a Surge Protection Device (SPD). This is a device designed to limit transient voltages and divert surge currents to the ground. The response time of a TVSS is typically 3 to 100 nanoseconds.

Physical Specifications

See "Specifications" on page 45 to plan the location of the Multi-Mount Outdoor Enclosure.



Service Grounding (required)



#6 bare copper wire from Service Neutral / Ground Bar with 2 ground rods located 6' apart.

Lightning Protection (optional)



1/2" x 8' copper ground rod, four places, driven about 2 feet (typical) from the corners of the pad.



#6 bare copper wire loop terminated to each ground rod and buried below grade 30 inches min. Corrosion-proof connections (25+ year life-span) and hardware suitable for direct burial MUST be used.



#6 bare copper wire from loop to the enclosure

Figure 4.1 – Enclosure Grounding

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5. Unpacking the Enclosure

Opening the Package

Follow these guidelines for unpacking the Multi-Mount Outdoor Enclosure.



Caution: To avoid personal injury or damage to the equipment, always use two installation personnel to remove the Multi-Mount Outdoor Enclosure from its container.

1. Select a suitable area for unpacking.
2. Store all packing material and boxes for possible equipment returns.
3. Check the contents in your product package. See “Checking the Package Contents” on this page.
4. Compare the packing slip and the list of parts with the items you received. If the list of parts on your packing slip does not match the items you received, or any items appear damaged, immediately notify your carrier agent and the supplier who prepared your shipment.

Checking the Package Contents

Before you begin installation, inspect the package contents and make sure the following standard items as well as purchased options are included. See “Parts List” on page 47 for a list of part numbers.

Standard items	
Qty	Item
1	Multi-Mount Outdoor Enclosure
1	Multi-Mount Outdoor Enclosure Operator's and Installation Manual
12	Rack mounting screws #10-32 x 1/2"
12	Rack mounting nut and retainer assembly #10-32
4	Bushing, snap, 1.125"
4	Plug, dome, 1.125"
6	8" Cable tie
6	Cable tie mount

Table 5.1 – Standard package contents

Optional items (if ordered from factory to be installed or packaged inside the Multi-Mount Outdoor Enclosure)

AC distribution panel (020-152-25)

Stake mount kit (see Table 5.3 below)

Pole mount - Wood kit (see Table 5.4 below)

Pole mount - Steel/Concrete kit (see Table 5.5 below)

Wall mount kit (see Table 5.6 below)

Accessory kit (see contents in Table 5.7 below)

Battery heater mat, 120VAC, model BHM-A31-120 (189-062-10)

ATS and Receptacle Plate with Rack Mount Rail – 120VAC (020-163-27)

Batteries, if ordered from Alpha, will be shipped separately.

Table 5.2 – Optional items

Stake Mount Kit (optional), p/n: 740-760-21

Qty	Item	Qty	Item
1	Pedestal	8	Fender washer 1/4"
2	Mounting stake	8	Lock washer 1/4"
4	Carriage bolt 1/4"-20 x 3/4"	4	Hex nuts 1/4"-20
4	Hex cap screw 1/4"-20 x 3/4"		

Table 5.3 – Stake mount kit contents

Pole Mount - Wood Kit (optional), p/n: 740-765-21 & 744-670-20

Qty	Item	Qty	Item
1	Pole mount strap kit (740-765-21, includes 2 pole mount straps and hardware)	1	Wood pole mount kit (744-670-20, includes 2 pole mount brackets for wooden pole)

Table 5.4 – Pole mount - wood kit contents

Pole Mount - Steel/Concrete Kit (optional), p/n 740-765-21 & 591-557-20

Qty	Item	Qty	Item
1	Pole mount strap kit (740-765-21, includes 2 pole mount straps and hardware)	1	Steel/Concrete pole mount kit (591-557-20, includes 2 pole mount brackets for steel/concrete pole)

Table 5.5 – Pole mount - concrete kit contents

Wall Mount Kit (optional), p/n 740-765-21 & 744-800-20

Qty	Item	Qty	Item
1	Pole mount strap kit (740-765-21, includes 2 pole mount straps and hardware)	1	Wall mount kit (744-800-20, includes 2 wall mount brackets)

Table 5.6 – Wall mount kit contents

Accessory Kit (optional), p/n: 740-766-21

Qty	Item	Qty	Item
8	Screw assembly SEMS #10-32 x 1/2"	8	Washer, lock, Hlcl Spr, for 1/4" bolt, sst
8	Nut & retainer assembly	4	Bolt, carriage, 1/4-20 X 1", sst
4	Bushing, snap, 1.125"	4	Screw, cap, 1/4-20 X 1", hex, sst
4	Plug, dome, 1.125"	6	Cable tie mount
4	Nut, 1/4-20 hex sst	12	Cable tie, nylon, 8" long
8	Washer, flat, 1/4 bolt 1"OD		

Table 5.7 – Accessory kit contents

6. Installation

Once the site has been planned and prepared, you are ready to install the Multi-Mount Outdoor Enclosure.

There are 4 steps to setting up the Multi-Mount Outdoor Enclosure:

1. Installing the Enclosure on page 24.
2. Installing the AC Distribution Panel on page 35.
3. Installing the UPS Module on page 36.
4. Wiring the Multi-Mount Outdoor Enclosure on page 39.

Tools and Equipment Required for Installation

- Ratchet set with 6" extension
- #2 Phillip screw driver
- 1/8" Slot screw driver
- 5/16" Slot screw driver
- 16 oz. hammer
- 8 lb sledge hammer (for stake mounting)
- 5" long punch or chisel to remove knock-out

Transporting and Lifting



WARNING

To avoid personal injury or damage to the equipment, always use at least two installation personnel to remove the unit from its container.



WARNING

Electronic modules, batteries or other components (with the exception of factory-installed components such as the AC Distribution Panel) must not be installed until the Multi-Mount Outdoor Enclosure has been securely set in place at its permanent location. Transporting the unit with batteries installed may cause a short circuit, fire, explosion, and/or damage to the battery pack, enclosure and installed equipment. Damage caused by improper shipping or transporting a unit with batteries installed is not covered by the warranty.



Caution

Enclosure must always remain in the upright position during the shipping, storage and installation process. Damage may result from enclosure being shipped or stored on its side.

A safe means of transportation to the site and a safe procedure for unloading the enclosure is necessary. The shipping weight of the Multi-Mount Outdoor Enclosure is approximately 55 lbs (empty) to 80 lbs (with factory options). At least two installation personnel are required to lift and handle it. Installation team must assess the transport path for all obstructions. An obstruction free path should be selected for transport. Use safe lifting practice at all times.

Installing the Enclosure

There are 3 stages in installing the enclosure:

1. Mounting the enclosure – choose any one of following five options:
 - a) Mounting to the pedestal staked to the ground (page 25)
 - b) Mounting to the pedestal bolted to the ground (page 29)
 - c) Mounting to a wooden pole (page 31)
 - d) Mounting to a steel/concrete pole (page 33)
 - e) Mounting to a wall (page 34)
2. Installing the AC distribution panel and UPS module.
3. Wiring the enclosure and the installed equipment.



Note

Options c, d and e require additional mounting brackets and hardware. See Table 5.2 on page 22.

Mounting the enclosure

a) Mounting to the pedestal staked to the ground



WARNING

Perform a site survey before installation. The supplied stakes are driven 24 inches deep into the ground when installed. Clearly identify any underground utility power supply lines and hidden rocks before you plant the stakes.



WARNING

Always wear eye protection when hammering the stakes or knock-outs.



Note

If the ground is soft, you have the option of using two additional stakes to secure the pedestal. See “Parts List” on page 47.

Tools required

- Mallet or hammer and slot Screwdriver to remove knockouts from the rear of the enclosure
- Assorted sockets or wrenches with 6” extension
- 8 lb sledge hammer

Materials required

- **1** Stake mount kit

Procedure

1. Remove the stakes and pedestal from the inside of the enclosure or from its shipping container.
2. If used, place the vapor barrier material on the site.
3. Position the pedestal box over the site. See Figure 6.1.

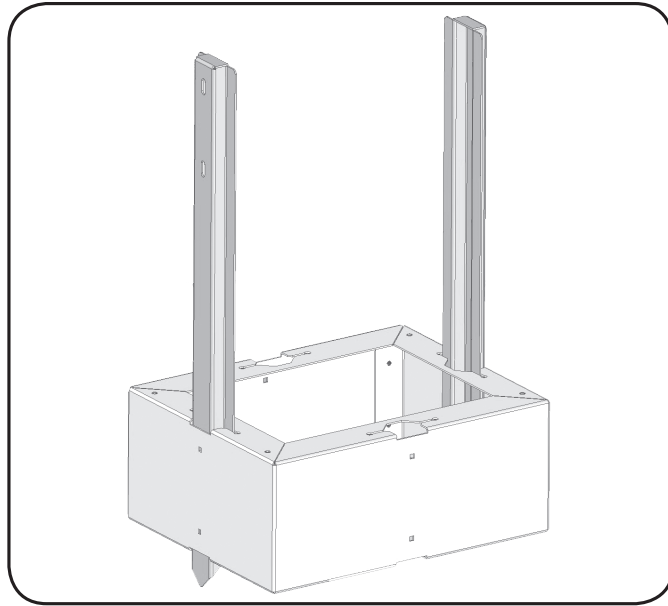


Figure 6.1

4. Insert the stakes through the slots as shown in Figure 6.1.
5. Hammer the stakes into the ground until their top ends are flushed with the top of the pedestal. See Figure 6.2.

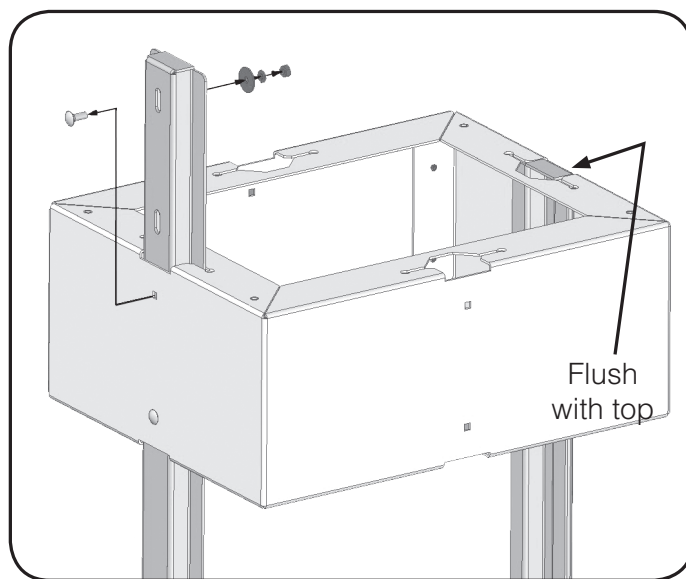


Figure 6.2

6. Secure the pedestal to the stakes with the supplied carriage bolts, fender washers, spring washers and hex nuts as shown in Figure 6.3. Torque to 65 in-lb (7 N-m). (4 sets are provided, 2 sets for each stake).

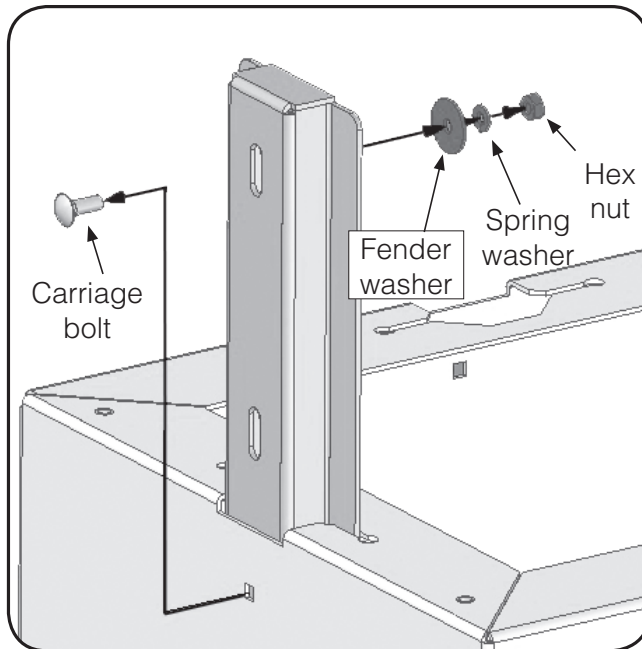


Figure 6.3



Note

Knock-outs are provided on the bottom panel for utility wiring. You must remove the knockouts that you will use before mounting the Multi-Mount Outdoor Enclosure. Otherwise, it would not be possible to remove the knock-outs from underneath the enclosure without dismounting the enclosure from the pedestal



Note

If the battery shelf is installed, you must remove it to access the mounting holes.

7. Remove the four 3/8" diameter knockouts on the bottom panel of the Multi-Mount Outdoor Enclosure with a hammer and punch. See Figure 6.4.
8. With at least 2 installation personnel, lift and position the Multi-Mount Outdoor Enclosure onto the pedestal box.
9. Secure the Multi-Mount Outdoor Enclosure to the pedestal with the supplied hex screws, spring and plain washers. Torque to 65 in-lb (7 N-m). Note that PEM nuts are fitted to the pedestal to accept the supplied hex screws.
10. Trim the vapor barrier material if necessary.
11. To allow easy access, do not replace the battery shelf until you have finished connecting the utility wiring.

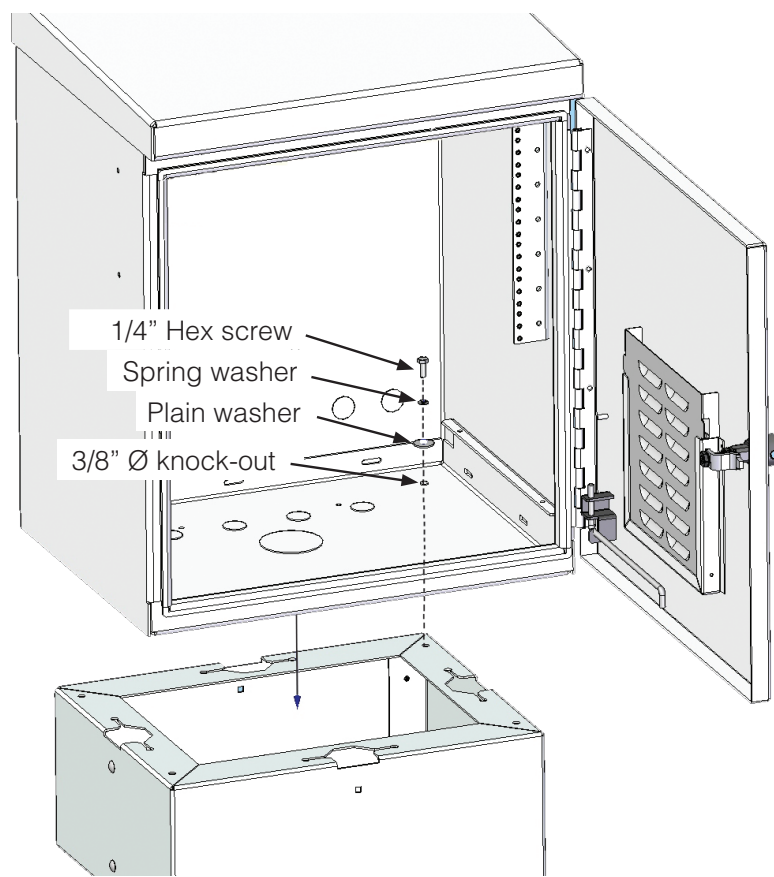
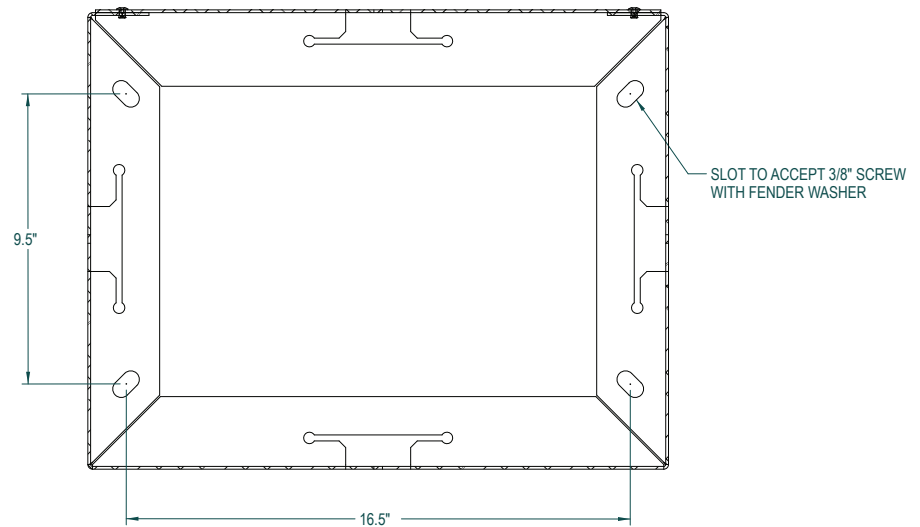


Figure 6.4

b) Mounting to the pedestal bolted to the ground

This mounting option assumes that a concrete pad has been prepared at the installation site. Figure 6.5 gives the dimensions for the pedestal mounting holes.



PEDESTAL MOUNTING HOLE PATTERN

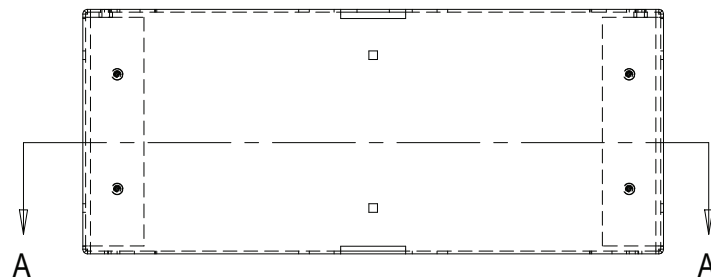


Figure 6.5

Procedure

1. Remove the pedestal from the inside of the enclosure or from its shipping container.
2. If used, place the vapor barrier material on the site.
3. Mount the pedestal box onto the four installed mounting screws on the concrete pad.
4. Secure the pedestal with four 3/8" hex nuts, flat and lock washers (to be supplied by the installer).
5. Go to Step 7 on page 27 to continue installing the enclosure.

If you are mounting the enclosure to a wood, steel/concrete pole or directly to a wall, you need to install two optional pole mount strap kits to the rear panel of the enclosure according to the following instructions. When this is done, you can install the appropriate mounting brackets to the pole or wall.

Installing the pole mount strap kit

Tools required

- Mallet or hammer and slot Screwdriver to remove knockouts from the rear of the enclosure
- Assorted sockets or wrenches

Materials required

- **1** pole mount strap kit (provided); includes 2 pole mount straps, 8 sets of 1/4-20 x 1" S/S carriage bolts 4PL, 1/4" S/S flat washers 4PL & 1/4" S/S Nylock nut 4PL and 1 3/8-16 x 1" cap screw.

Procedure

1. Remove the 8 knockouts on the rear panel of the enclosure. (Figure 6.6).
2. Secure the two pole mount straps to the enclosure with the supplied carriage bolts, nuts and flat washers. (Figure 6.7).
3. Install the cap screw loosely into the bottom pole mount strap. Do not tighten until after the enclosure has been seated onto the pole/wall mounting brackets.

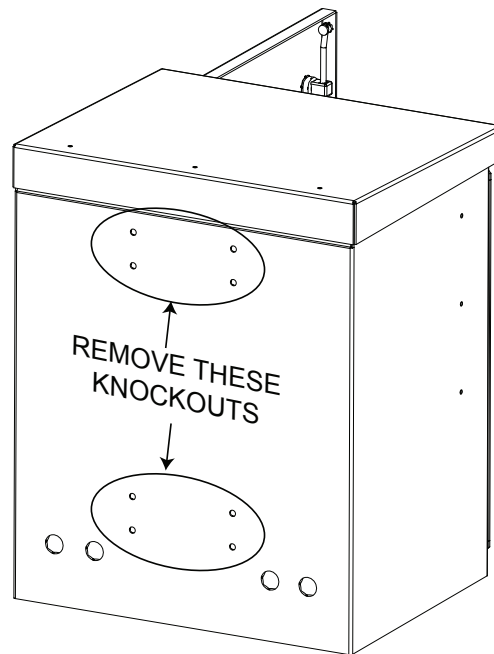


Figure 6.6 - Removing the knockouts

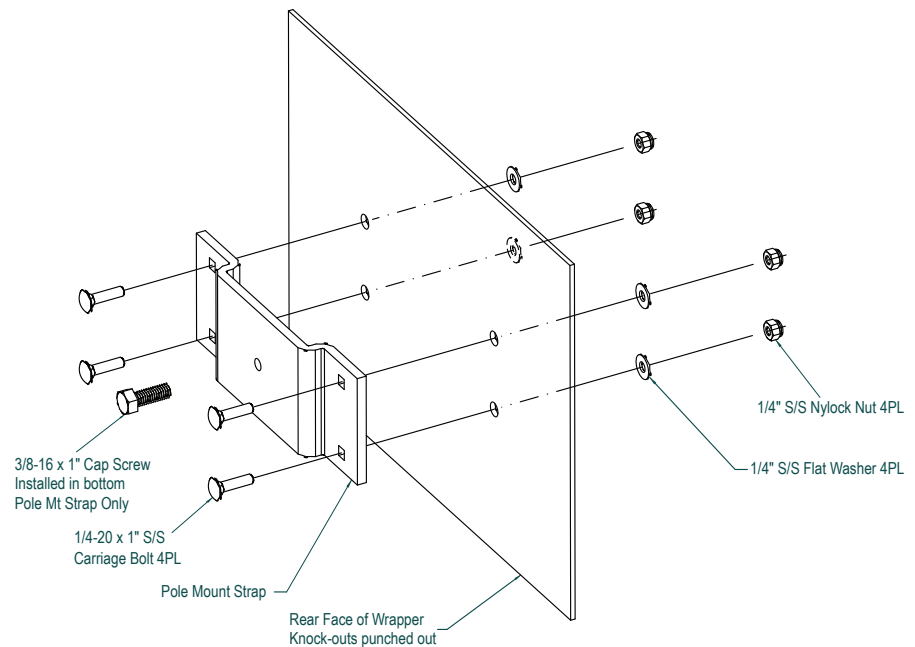


Figure 6.7 - Attaching the strap mount brackets

c) Mounting to a wooden pole

Tools required

- Auger or drill for boring 3/4" diameter holes in the wooden pole
- Assorted sockets or wrenches

Materials required

- **2** wood pole mount brackets (provided in the kit)
- **2** 5/8" diameter machine bolts (UNC threaded), SAE (Grade 5 or better), length to suit pole
- **2** 5/8" diameter zinc-plated flat washers
- **2** 5/8" diameter hex nuts (UNC threaded)



WARNING

Alpha recommends positioning the enclosure on the opposite side of the pole from oncoming traffic in order to reduce the danger caused by falling equipment in the event that a pole is struck by an automobile.

Procedure

1. Install the two pole mount straps on the rear panel of the enclosure. Refer to the instructions given on page 30.

2. Mark drilling locations for the upper and lower mounting brackets on the utility pole. Use a plumb line to check for plumbness. Their centres should be 15.75 inches apart.
3. Drill two 3/4" diameter holes completely through the pole at the marked locations.

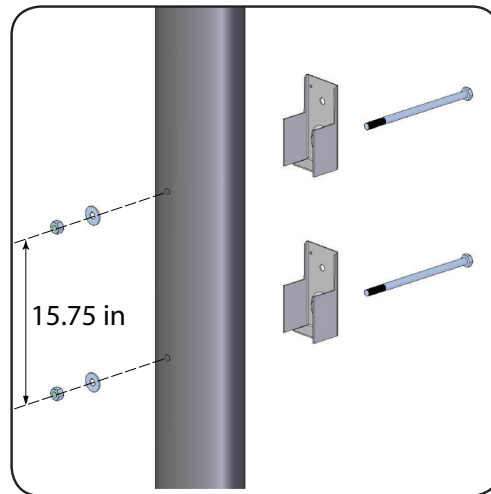


Figure 6.8 - Installing the mounting brackets

4. Secure each bracket to the pole with a 5/8" machine bolt, washer and nut (Figure 6.8) (to be supplied by the installer). Do not fully tighten the bolts at this time.
5. Position the enclosure so that the upper and lower straps are aligned to be seated onto the mounting brackets. It may be necessary to slightly rock the enclosure and pull downward to properly seat it onto the brackets (Figure 6.9).
6. Tighten the machine bolts to secure the enclosure to the pole.

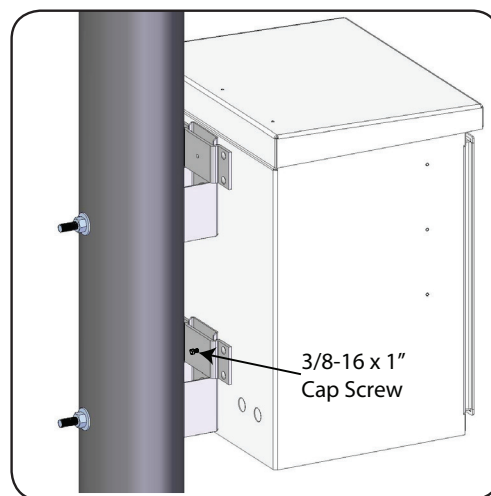


Figure 6.9 - Completed installation

7. Tighten the cap screw at the lower pole mount strap to secure the enclosure to the pole mount bracket.

d) Mounting to a steel or concrete pole

Tools required

- Assorted sockets or wrenches

Materials required

- **2** steel/concrete pole mount brackets (provided in the kit)
- **2** steel bands (to be supplied by the installer)



WARNING

Alpha recommends positioning the enclosure on the opposite side of the pole from oncoming traffic in order to reduce the danger caused by falling equipment in the event that a pole is struck by an automobile.

Procedure

1. Install the two pole mount straps to the rear panel of the enclosure. Refer to the instructions given on page 30.
2. Mark the locations for the upper and lower mounting brackets on the utility pole. Use a plumb line to check for plumbness. Their centres should be 15.75 inches apart.
3. Loosely attach the mounting brackets with steel bands to the pole at the marked locations. Do not fully tighten the steel bands at this time (Figure 6.10).
4. Position the enclosure so that the upper and lower straps are aligned to be seated onto the mounting brackets. It may be necessary to slightly rock the enclosure and pull downward to properly seat it onto the brackets.
5. Tighten the steel bands to secure the enclosure to the pole.

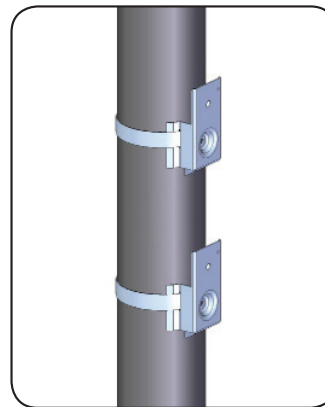


Figure 6.10 – Steel pole mounting brackets

6. Tighten the cap screw at the lower pole mount strap to secure the enclosure to the pole mount bracket.

e) Mounting to a wall

Tools required

- Auger or drill for boring 3/4" diameter holes into the wall
- Assorted sockets or wrenches

Materials required

- **2** wall mount brackets with 1/2" hole (provided in the kit)
- **2** wall screws and flat washers (to be supplied by installer)

Procedure:

1. Install the two pole mount straps to the rear panel of the enclosure. Refer to the instructions given on page 30.



Caution

Make sure that the wall is able to support the total weight of the final enclosure assembly. If the mounting brackets cannot be secured directly to the wall structure (due to the location and size of the wall studs), Alpha recommends pre-installing a 3/4" plywood back board on the wall to provide additional support.

2. Mark drilling locations for the upper and lower mounting brackets on the wall. Use a plumb line to check for plumbness. Their centres should be 15.75 inches apart.
3. Drill two holes into the wall at the marked locations.
4. Secure each bracket to the wall with a wall screw and washer (to be supplied by the installer).
5. Position the enclosure so that the upper and lower straps are aligned to be seated onto the mounting brackets. It may be necessary to slightly rock the enclosure and pull downward to properly seat it onto the brackets.
6. Tighten the cap screw at the lower pole mount strap to secure the enclosure to the pole mount bracket.

Installing an AC Distribution Panel (if not factory installed)



Note: Determine the mounting position for each component and allocate the necessary space accordingly. There is NO AC Distribution Panel installed for MMOE-FXM2000-48-120-LN model.

1. Install four retaining clips at the desired mounting position on the mounting rails. An example is shown in Figure 6.11 below.
2. Push a cable tie holder from behind the mounting rail into an available opening for tying loose wiring together at a later stage.
3. Align the mounting ear holes of the AC distribution panel in front of the retaining clip holes.
4. Secure the panel to the rails with the four supplied hex screw as shown in Figure 6.12. Torque to 65 in-lb (7 N-m).

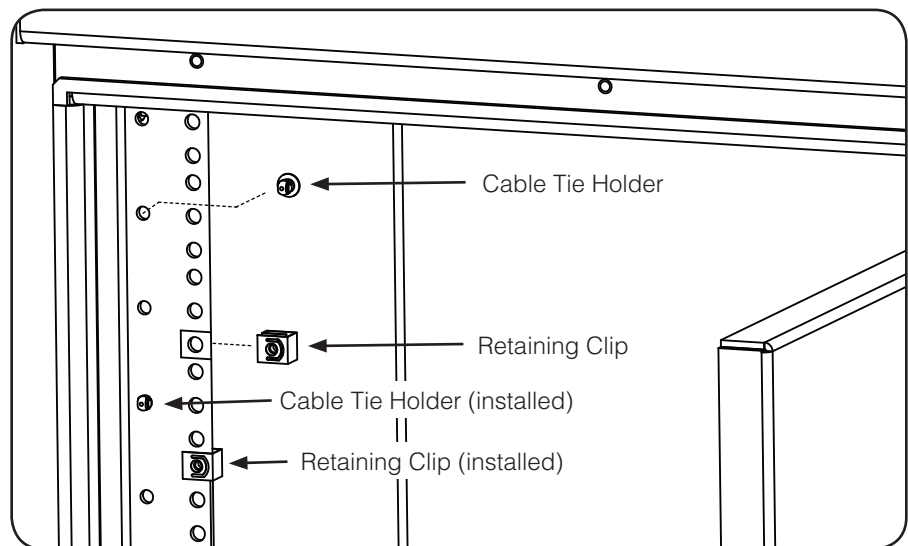


Figure 6.11 - Retaining Clips and Cable Tie Locations

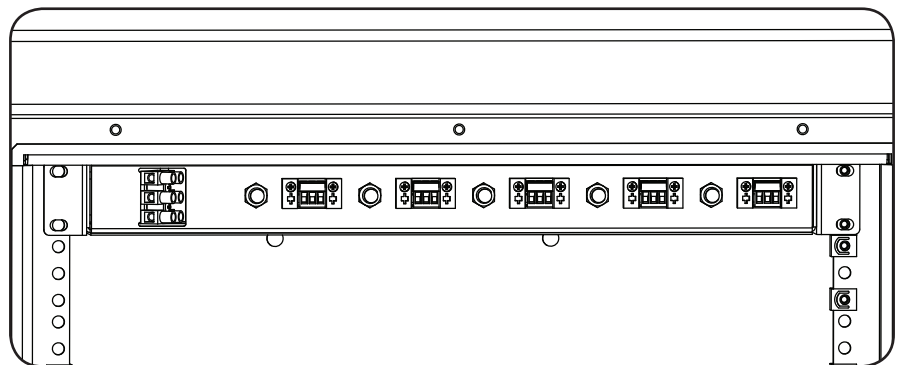


Figure 6.12 - AC Distribution Panel (factory-installed location, except for MMOE-FXM2000-48-120-LN model)



Note: If you need to use an additional AC Distribution Panel, install it directly below the first one.

Installing the UPS Module

There are two steps in this procedure:

1. Attaching the mounting ears to the UPS module.
2. Mounting the UPS module into the enclosure.



Caution: The UPS module must not be installed until the Multi-Mount Outdoor Enclosure is securely installed at its permanent location. Failure to do so may cause damage to the equipment.



Note: To meet NEBS Level 1 requirements when you are installing this unit in a rack or frame, you **MUST**:

- Before installation, clean all attachment points on the UPS, rack and mounting brackets to ensure proper grounding continuity. Then coat them with an anti-oxidant (such as Sanchem Inc.'s No-Ox ID "A-Special Electrical Grade" or equivalent).
- Use the supplied screws (with paint-piercing tooth washers) to ensure adequate grounding between the UPS's chassis and the rack.

Attaching the mounting ears to the UPS module

The supplied mounting ears can be mounted to the FXM UPS module to fit a standard 19" (or 23") rack provided in the Multi-Mount Outdoor Enclosure

1. Attach the mounting ears to the side panels of the UPS module with the narrow side facing the same direction as the front panel of the UPS module. (See Figure 6.13)
2. Secure the mounting ears to the chassis with the provided nuts and washers. Torque to 31 in-lb (3.5 N-m).

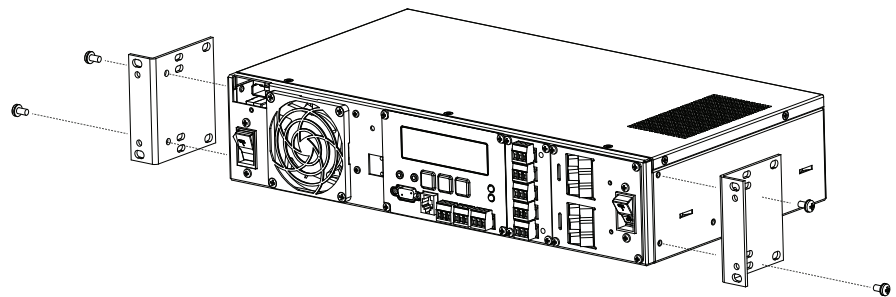


Figure 6.13 - Attaching the mounting ears to the UPS

Mounting the UPS module into the enclosure

1. Install four retaining clips at the desired mounting position on the mounting rails.
2. Align the mounting ear holes of the UPS module in front of the mounting rail holes. (See Figure 6.14)
3. Secure the UPS module to the rails with the four supplied hex screws. Torque to 31 in-lb (3.5 N-m).

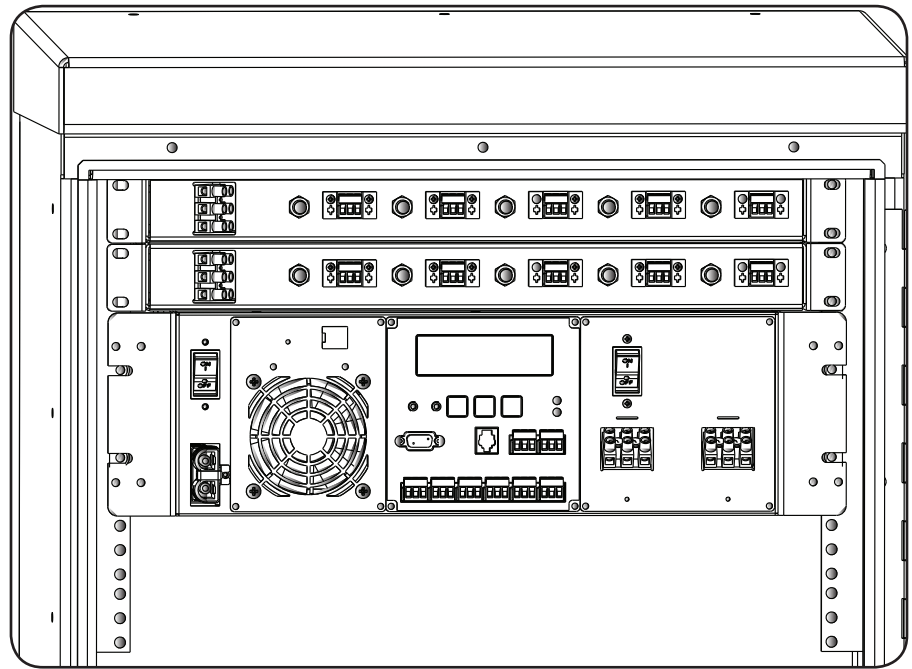


Figure 6.14 - UPS Module (installed)

Mounting the UPS module into the MMOE-FXM2000-48-120-LN enclosure

1. Install four retaining clips 1RU lower on the 5RU mounting rails.
2. Align the mounting ear holes of the UPS module in front of the mounting rail holes. (See Figure 6-15).
3. Secure the UPS module to the rails with the four supplied hex screws. Torque to 31 in-lb (3.5 N-m).

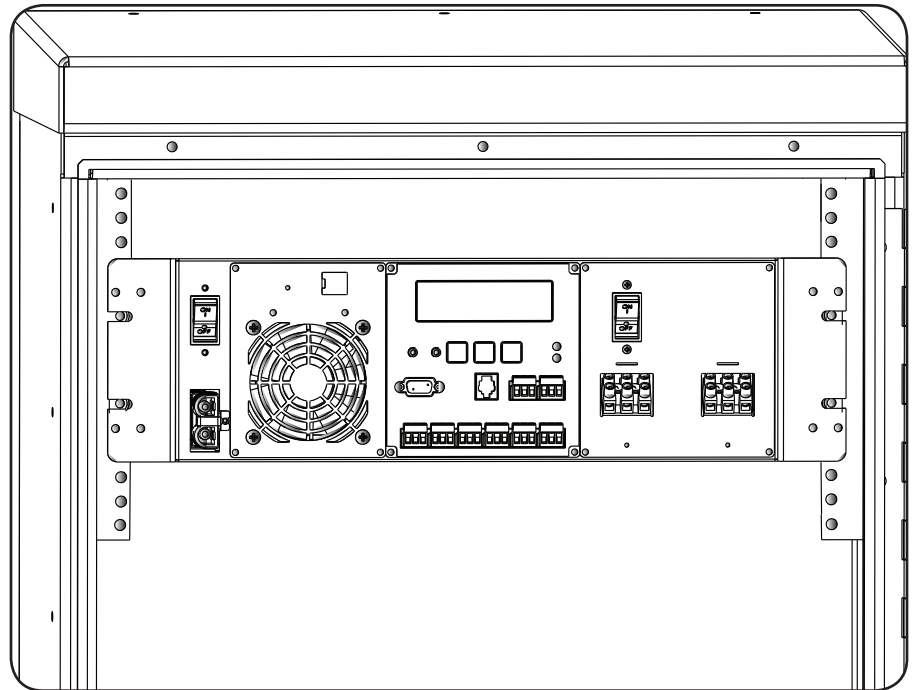


Figure 6.15 - UPS Module (installed in MMOE-FXM2000-48-120-LN)

Wiring the Multi-Mount Outdoor Enclosure



WARNING

The following procedure must ONLY be performed by qualified service personnel and in compliance with local electrical codes and common safety practices. Connection to utility power must be approved by the local utility before installing the power supply.



Note: CSA and NEC require that a service disconnect switch 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.

Utility power enters the Multi-Mount Outdoor Enclosure through the knock-outs provided on the bottom panel. See Figure 6.16 below. A protective earthing terminal is provided for a reliable connection to the utility ground. Several other bonding terminals (#10 studs) are also provided for grounding the internal electronic components. The enclosure door is reliably grounded through a #6 AWG stranded ground wire to one of the #10 studs.

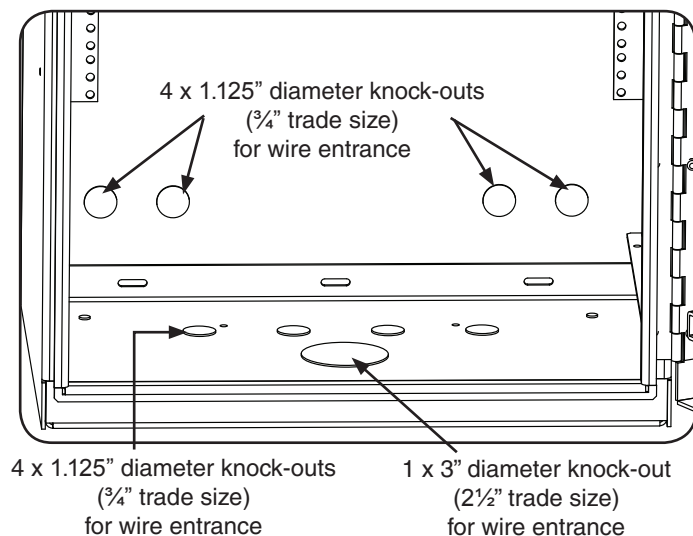


Figure 6.16 - Locations of wire entrance

Connecting the ground wiring

1. Connect the utility ground electrode to the protective earthing terminal of the Multi-Mount Outdoor Enclosure. (See Figure 6.17)




Note: The protective earthing terminal is marked with the symbol  and is constructed of two 1/4" studs spaced for a dual-hole lug (with 5/8" hole spacing) The lower stud also has a ground screw terminal which can accept a #6 AWG wire.



Figure 6.17 - Protective Earthing Terminal

2. If you use the dual-hole lug connection, secure with the supplied nuts and spring washers. Torque to 65 in-lb (7 N-m). Otherwise, use the screw terminal connection and torque to 45 in-lb (5 N-m).
3. Connect the UPS input ground terminal to the #10 ground stud on the enclosure. Torque to 35 in-lb (4 N-m). (See Figure 6.18)



Caution:

This step is a Safety Requirement.



Figure 6.18 - Grounding the UPS

Wiring the UPS and the AC Distribution Panel



WARNING

Turn off all input and output circuit breakers on the UPS and the AC Distribution Panel (if applicable) before making any electrical connections.

1. Connect the UPS output to the AC Distribution Panel input, if applicable.



Note: If you are using two AC Distribution Panels, use the supplied custom wiring harness.

2. Connect the outputs of the AC Distribution Panel to the loads. (Load wiring are not provided).

Connect the DC Fan to the UPS

1. Connect the black (common) wire of the DC fan to the center (common) terminal of the dry contact connector as shown in Figure 6.19.
2. Connect the red (positive) wire of the DC fan to the left terminal of the connector.

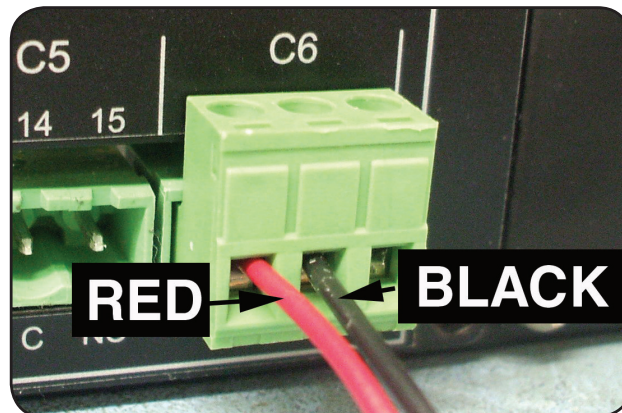


Figure 6.19 - Connecting the DC fan to contact C6 on the UPS

3. Plug the connector into dry contact C6.

Typical wiring diagrams are provided in Appendix C on page 49.

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7. Maintenance

Maintenance Information

The Multi-Mount Outdoor Enclosure does not require any special maintenance. Depending on the operating condition, the bug screens in the ventilation openings and louvers may need to be cleaned on an as-needed basis.

For maintenance of the UPS module, refer to the *FXM UPS Operator's Manual*.

Repair Information

Fan Replacement

To replace the DC Fan inside the Multi-Mount Outdoor Enclosure, do the following:

1. Remove the AC Distribution Panel(s), if used, to gain access to the DC fan.
2. Disconnect fan wire #1. (See Figure 7.1)

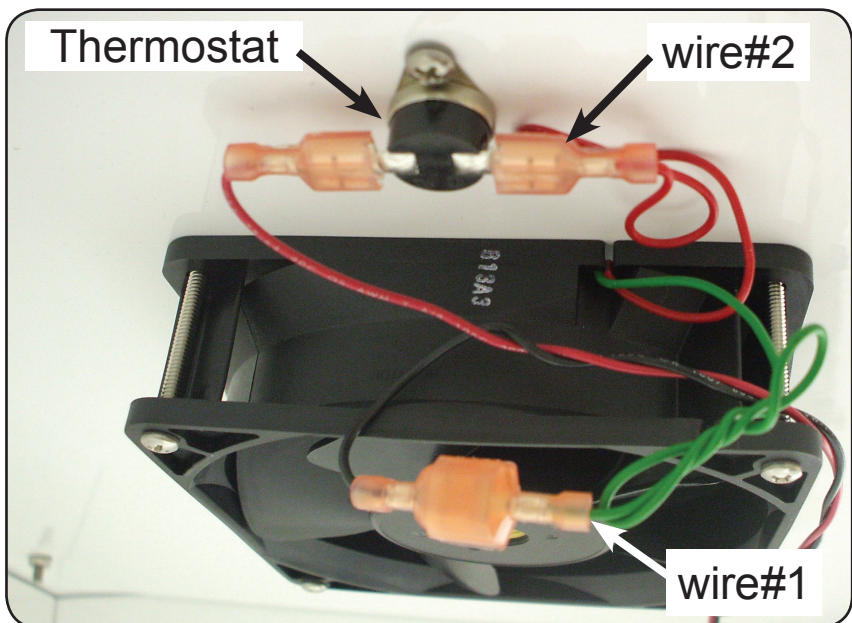


Figure 7.1 - DC Fan Replacement

3. Disconnect fan wire #2 from the thermostat.
4. Remove the four fan screws and take out the fan.

5. Replace the fan and reconnect the wires.
6. Reinstall the AC Distribution Panel(s), if used.

Service and Technical Support

Alpha Technologies is committed to the support of Alpha products throughout their life. Alpha provides a full range of service products including extended warranties, on-site service plans and battery renewal programs. Parts, supplies and replacement or upgraded battery packs are also available. To discuss any of your after-sales needs, please call 1-888-462-7487 and ask for Service.

Appendix A: Specifications

Due to ongoing product improvements, specifications are subject to change without notice.

Physical Specifications	
Dimensions, in (cm)	27 x 22 x 18 (69 x 56 x 46) enclosure only
H x W x D	35 x 22 x 18 (89 x 56 x 46) with pedestal
Weight, lb (kg)	<ul style="list-style-type: none"> Enclosure only: 55 (25) Stake mount pedestal: 16 (7.3)
Material	Aluminum (1/8 inch thick 5052 aluminum)
Mounting	<ul style="list-style-type: none"> Stake pedestal mount - aluminum pedestal with 2 hot-dip galvanized steel stakes (2 optional stakes can be added for more secure installation) Bolt mount - the pedestal can be directly bolted to a prepared concrete pad. Pole/wall mount (requires optional pole mount straps and brackets) (See "Mounting the enclosure" on page 24 for details.)
Maximum Ambient Temperature	<ul style="list-style-type: none"> MMOE-FXM350-48-120 42°C MMOE-FXM650-48-120 42°C MMOE-FXM1100-48-120 42°C MMOE-FXM2000-48-120 42°C MMOE-FXM2000-48-120-LN 46°C
Cooling	<ul style="list-style-type: none"> Thermostat controlled 48V DC fan, 100 CFM or better. (Turns On at 49°C, Off at 32°C) Thermostat controlled 48V DC fan, 93 CFM (turns ON at 42°C and OFF at 32°C) only for MMOE-FXM2000-48-120-LN model.
Hinges	Stainless steel piano hinge
Door Latch	Bellcore 216 compression lock with pad lock bracket
Door Louver	Equipped with splash baffle
Door Prop	1/4" aluminum rod, two positions.
Equipment Space	EIA standard 19", 7RU space with one battery shelf 8"(H) x 21"(W) x 15.5"(D).
Wire Entrance	<ul style="list-style-type: none"> Bottom of enclosure: 1 x 3" diameter knock-out (2½" trade size) 4 x 1½" diameter knock-out (¾" trade size) Back of enclosure: 4 x 1½" diameter knock-out (¾" trade size)

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Appendix B: Parts List

Consult www.alpha.com for the latest information or call customer service at 1-888-462-7487.

Description	Part Number
Multi-Mount Outdoor Enclosure	030-117-xx
Stake mount kit*	740-760-21
Mounting kit, wooden pole (consists of the following 2 parts):	
- Pole mount strap kit, and	740-765-21
- Wood pole mount kit (includes 2 brackets)	744-670-20
Mounting kit, steel or concrete pole (consists of the following 2 parts):	
- Pole mount strap kit, and	740-765-21
- Steel/Concrete pole mount kit (includes 2 brackets)	591-557-20
Mounting kit, wall (consists of the following 2 parts):	
- Pole mount strap kit, and	740-765-21
- Wall mount kit (includes 2 brackets)	744-800-20
AC distribution panel, 120V	020-152-25
Fan replacement kit, MMOE	740-762-21
Fan replacement kit, MMOE Low Noise	740-762-31
Fan replacement kit, FXM Series	740-763-21
Accessory kit, MMOE	740-766-21

*Contact customer service at 1-888-462-7487 for bulk ordering of additional mounting stakes.

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Appendix C: Wiring Diagrams

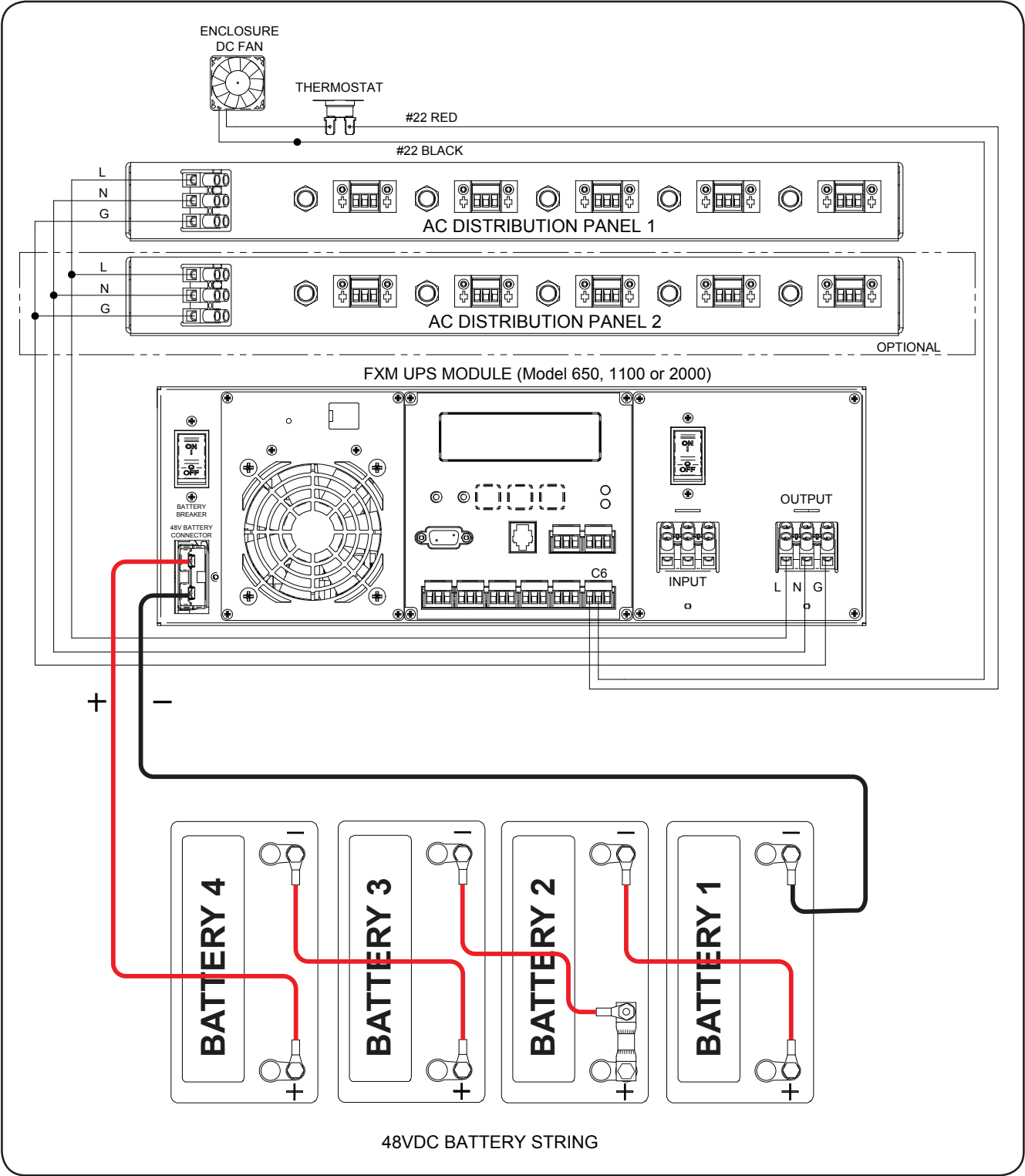


Figure C1 – FXM UPS module and 2 AC distribution panels

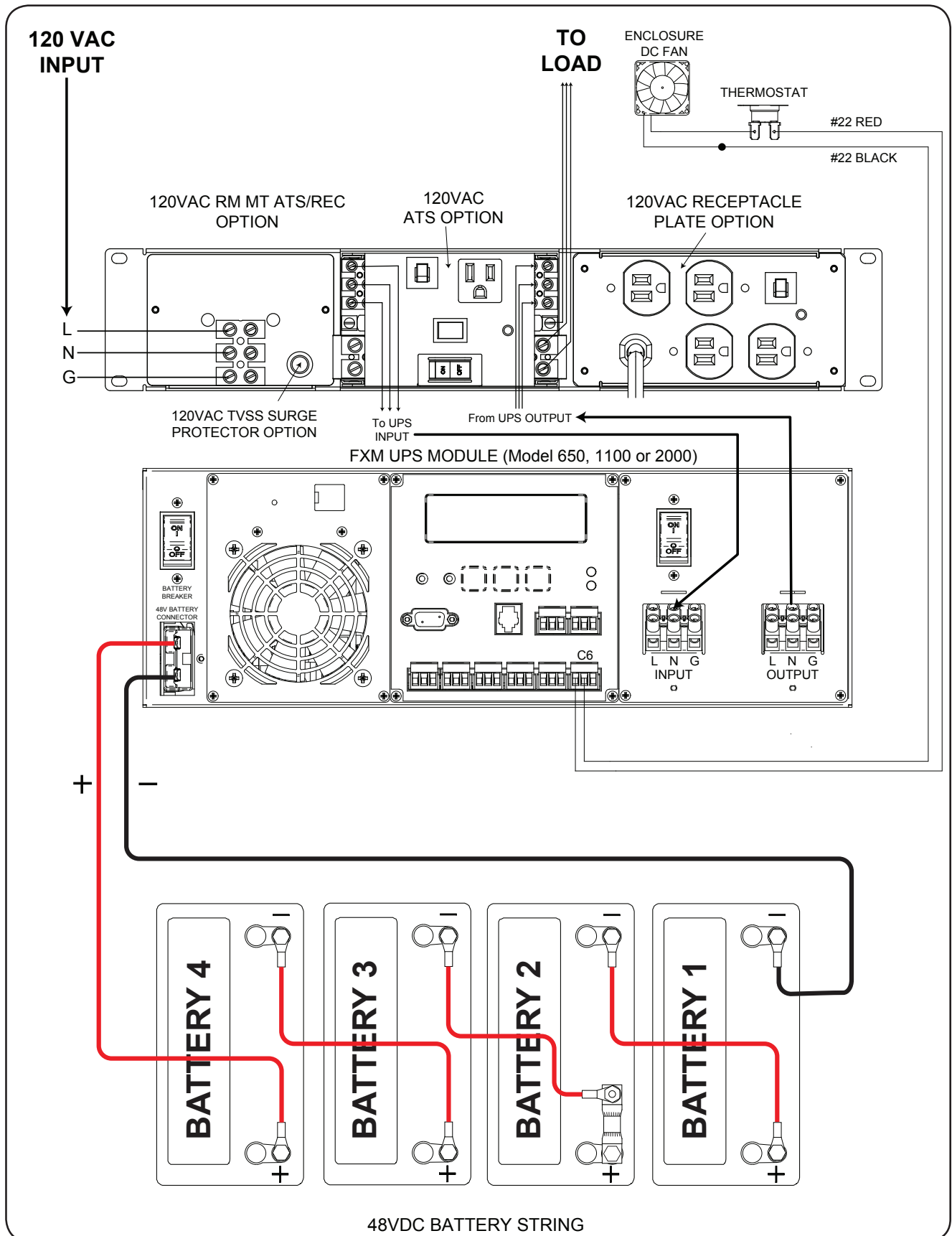


Figure C2 – FXM UPS module and ATS option

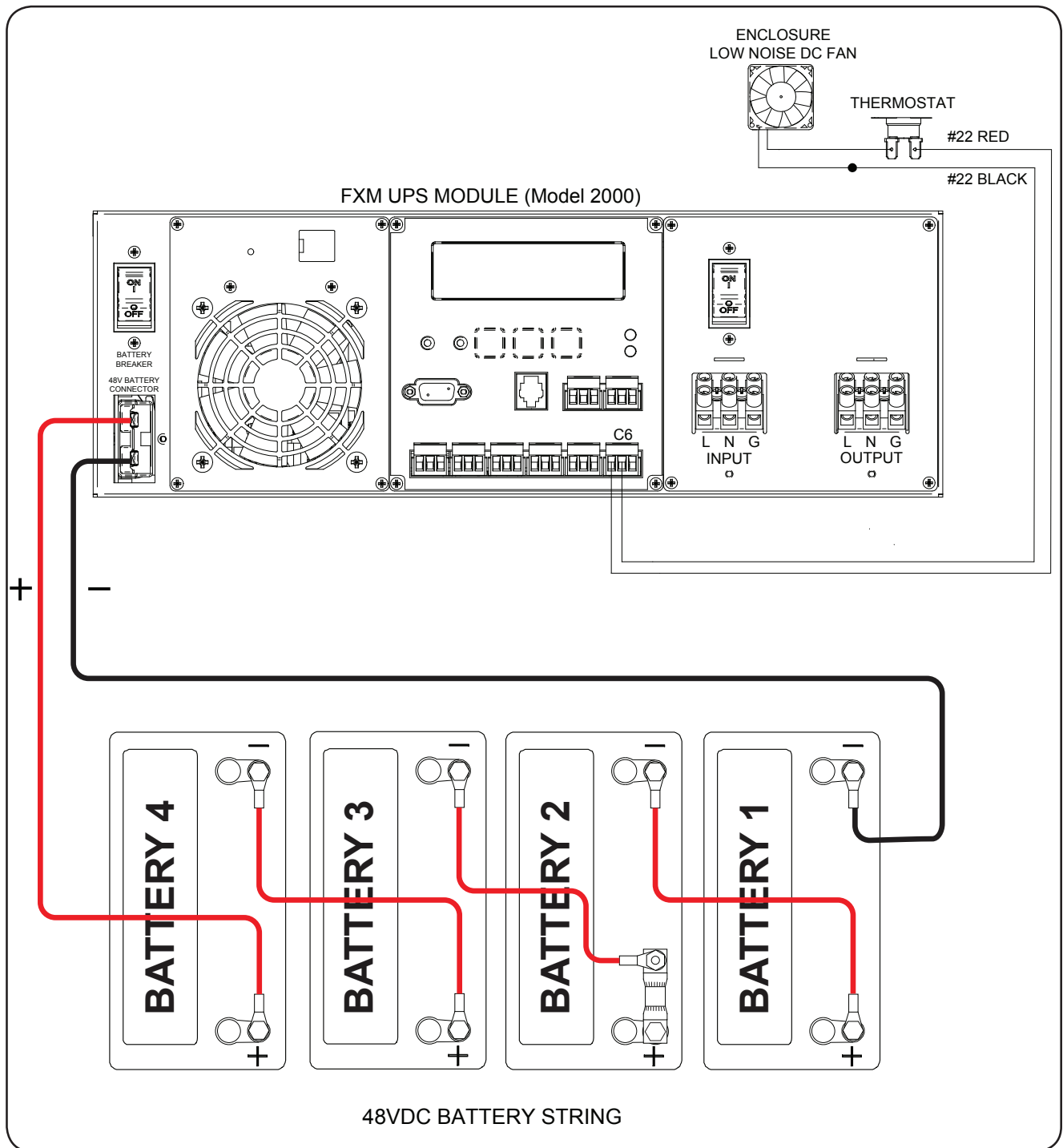


Figure C3 – MMOE-FXM2000-48-120-LN UPS module

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WARRANTY

AC PRODUCTS

Alpha Technologies Ltd warrants all equipment manufactured by it to be free from defects in parts and labor, for a period of two years from the date of shipment from the factory. The warranty provides for repairing, replacing or issuing credit (at Alpha's discretion) for any equipment manufactured by it and returned by the customer to the factory or other authorized location during the warranty period. There are limitations to this warranty coverage. The warranty does not provide to the customer or other parties any remedies other than the above. It does not provide coverage for any loss of profits, loss of use, costs for removal or installation of defective equipment, damages or consequential damages based upon equipment failure during or after the warranty period. No other obligations are expressed or implied. Warranty also does not cover damage or equipment failure due to cause(s) external to the unit including, but not limited to, environmental conditions, water damage, power surges or any other external influence.

The customer is responsible for all shipping and handling charges. Where products are covered under warranty Alpha will pay the cost of shipping the repaired or replacement unit back to the customer.

For details see the Alpha website www.alpha.ca.

Note: Listings in **BOLD ALL UPPER CASE** are entries as displayed on the LCD panel

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For emergency technical support 7 days a week/24 hours a day, call:

Canada/USA: 1 888 462 7487

Complete the following for your records:

Serial # _____

Options _____

Purchase Date _____

This unit was purchased from:

Dealer _____

City _____

State/Province _____

Zip/Postal Code _____

Country _____

Telephone # _____

Fax # _____

E Mail Address _____

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