UPE Series Enclosures

Installation and Operation Manual
UPE-4 and UPE-8

Effective: September, 2002

Power

Alpha Technologies. Protecting The Power in Communications.

UPE-4, UPE-8
Enclosure Installation Manual

031-165-C0-001, Rev A
Effective Date: September, 2002

Alpha Technologies, Inc.

NOTE: Photographs contained in this manual are for illustrative purposes only. These photographs may not exactly match your installation.

NOTE: Review the drawings and illustrations contained in this manual before proceeding. If there are questions regarding the safe operation of this powering system, please contact Alpha Technologies or your nearest Alpha representative.

Contacting Alpha Technologies:

For general **product information and customer service**

1-800-863-3930

(7:00 AM to 5:00 PM Pacific Time)

For complete **technical support**

1-800-863-3364

(7:00 AM to 5:00 PM Pacific Time, or 24/7 emergency support)

UPE Series Enclosures

Overview: The purpose of the UPE Series Enclosure Installation Manual is to provide a high-level overview of the system and to detail the installation procedure for the enclosures.

Audience: This manual intended for the installers of the system.

About this manual:

Contents: This Installation Manual is comprised of two sections.

Section 1 Pre-Installation. This section describes site selection, pad layout, and enclosure grounding.

Section 2 Installation. This section describes the installation of the enclosure to the pad, and the installation of batteries and power supplies

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Important Safety Instructions Contained in This Manual

CAUTION

HAZARDOUS CONDITION

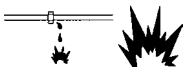
To reduce the risk of electrical shock, injury or death caused by explosion of fuel or moving parts, and to ensure the safe operation of this unit, the following symbols have been placed throughout the manual. Where these symbols appear, servicing should be performed only by qualified personnel.

DANGEROUS VOLTAGE
This symbol indicates a “dangerous voltage” exists in this area of the product. Use caution whenever working in the area to prevent electrical shock.

INHALATION HAZARD - DON’T BREATHE VAPORS
This symbol indicates an “inhalation hazard” exists in this area of the product. Use caution whenever working in the area to prevent possible inhalation of harmful (fuel or exhaust) vapors.

NO MATCHES OR OPEN FLAMES
This symbol indicates a fire or explosive hazard exists in this area of the product. Use caution whenever working in the area to prevent possible combustion fuel vapors.

MECHANICAL OR MOVING PARTS HAZARD
These symbols indicate the presence of a “mechanical or moving parts hazard” in this area of the product. Use caution whenever working in the area to prevent possible injury to the operator or service personnel.



LEAK HAZARD
This symbol indicates a “leak hazard” exists in this area of the product. Use caution whenever working in the area to prevent and correct any leaks detected.

CRUSH HAZARD
This symbol indicates the presence of crushing hazard in this area. Keep hands clear of areas under extended battery trays and equipment drawers.

ATTENTION
This symbol indicates important installation, operation or maintenance instructions. Always follow these instructions closely.

Safety Precautions

- The system must be serviced only by qualified personnel.
- Remove all rings, watches and other jewelry before servicing batteries or servicing the system.
- 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.
- The utility service panel must be equipped with a properly rated circuit breaker for use with this power supply.
- When connecting the load, DO NOT exceed the output rating of the system.
- Always use proper lifting techniques whenever handling units, modules or batteries.
- If batteries are being stored prior to installation, they should be charged at least once every three months to ensure optimum performance and maximum battery service life.
- The battery pack, used to provide backup power, contains dangerous voltages. Battery inspection and replacement must be performed by qualified personnel.
- 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.
- Batteries must be inspected every three to six months and replaced immediately if any signs of cracking, leaking or swelling are present.
- 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.
- Spent or damaged batteries are considered environmentally unsafe. Always recycle used batteries or dispose of in accordance with all Federal, State, and local regulations.
- Clean up any electrolyte spills in accordance with all Federal, State, and Local regulations and codes.

Battery Safety Notes

Chemical Hazards

Any gelled or liquid emissions from a Valve-Regulated Lead-Acid (VRLA) battery is electrolyte which contains dilute sulfuric acid which is harmful to the skin and eyes; is electrically conductive; and is corrosive.

If electrolyte contacts the skin, wash immediately and thoroughly with water.

If electrolyte enters the eyes, wash thoroughly for 10 minutes with clean water or a special neutralizing eye wash solution and seek immediate medical attention.

Neutralize any spilled electrolyte with the special solutions contained in a “spill kit” or with a solution of 1 lb. Bicarbonate of soda to 1 gal. of water. Report accident, and seek medical attention if necessary.

Fire, Explosion, and Heat hazards

Lead acid batteries can contain an explosive mixture of hydrogen gas which can vent under overcharging conditions.

Do not smoke or introduce sparks in the vicinity of the battery.

Prior to handling the batteries, touch a grounded metal object, such as the rack, to dissipate any static charge that may have developed in your body.

Do not charge batteries in a sealed container. The individual batteries should have 0.5 inches of space between them to allow for convection cooling. If contained, assure the container or cabinet and room have adequate ventilation to prevent an accumulation of potentially dangerous gas.

Important Installation Notes

The system must be installed ONLY by qualified service personnel.

Consult local utility codes for additional cabinet grounding and utility requirements.

ALPHA TECHNOLOGIES is not responsible for broken welds or other damage to the cabinet caused by improper installation.

All dimensions are given in inches.

For further information regarding this installation, contact ALPHA TECHNOLOGIES or your nearest ALPHA representative.

For general product information and Customer Service
7:00AM to 5:00PM Pacific Time
1-800-863-3930

To obtain complete Technical Support,
7:00AM to 5:00PM Pacific Time
or
For after-hours Emergency support
7 days per week, 24 hours a day
1-800-863-3364

NOTE: Alpha Technologies' products are subject to change through continual improvement processes. Therefore, specifications and/or design layouts may vary slightly from descriptions included in this manual. Updates to the manual will be issued when changes affect form, fit or function.

Save these instructions for future reference

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1.1 Site considerations

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 doors. This will greatly reduce the buildup of 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 flood plain.

The enclosure must be placed where it will be free of obstructions, allowing easy access to the doors for service or equipment access. For ventilation and maintenance, allow a minimum space of 36 inches in the front and 36 inches in the rear, 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.

The concrete pad drawing provided in this manual contains all of the required mounting details, including electrical service and cable plant entrances.

For ease of installation, lightweight polymer concrete pads are available from Alpha Technologies for all UPE series enclosures.

The vapor barrier material (such as 30 lb. felt, neoprene pond liner, or heavy grade tar paper) must initially extend at least 6" in all directions around the perimeter of the enclosure and be trimmed closer to the enclosure.

WARNING: **Never transport the unit with batteries installed**. Batteries must ONLY be installed after the unit is transported to the site and secured to the pad. 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.

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.

1.2 Enclosure dimensions

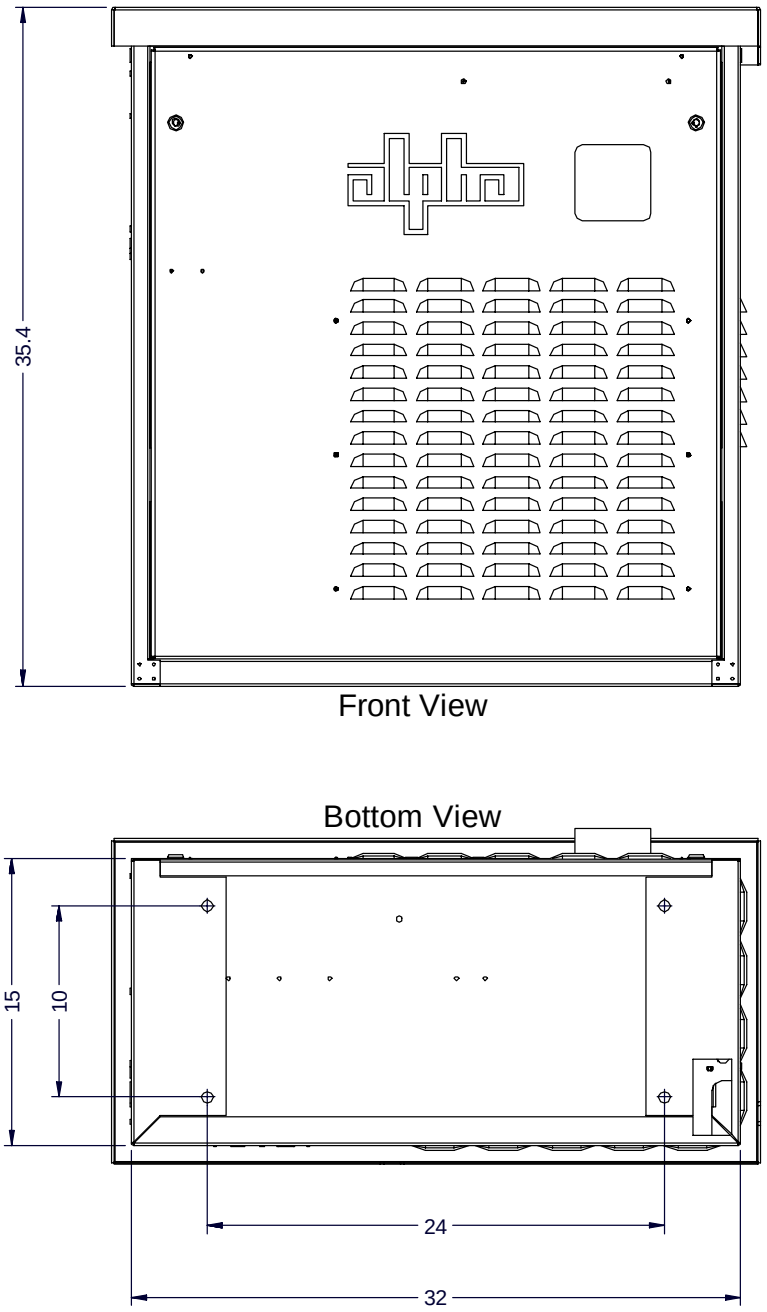
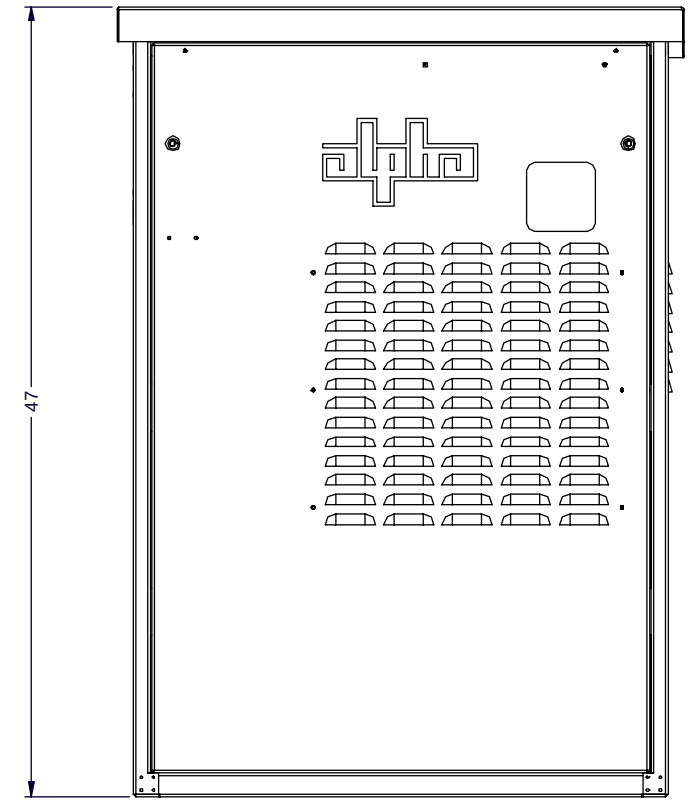


Figure 1-1 UPE-4 Enclosure Dimensions

1.2 Enclosure dimensions, *continued*



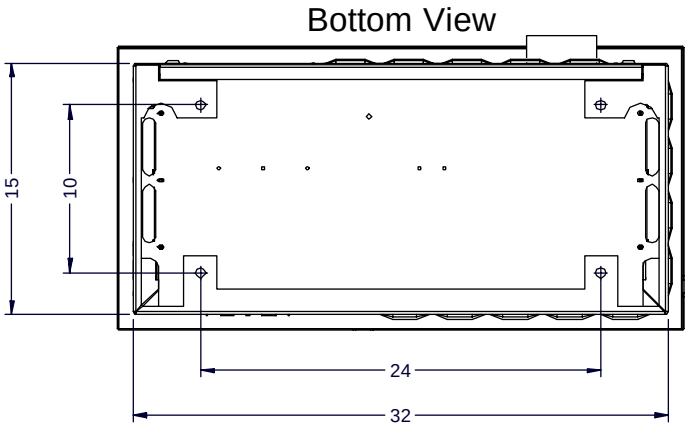
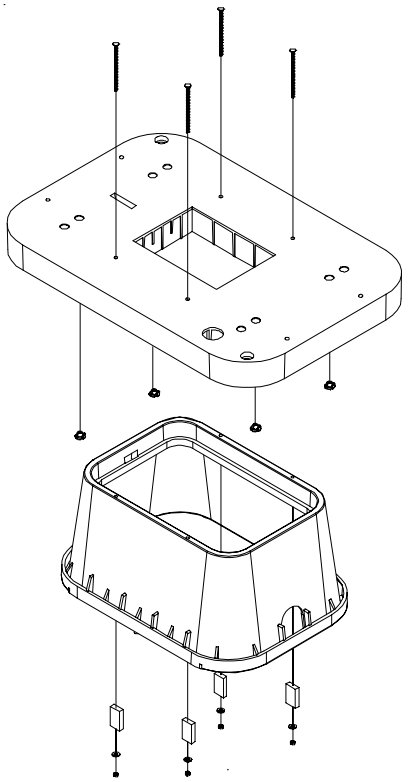


Figure 1-2 UPE-8 Enclosure Dimensions

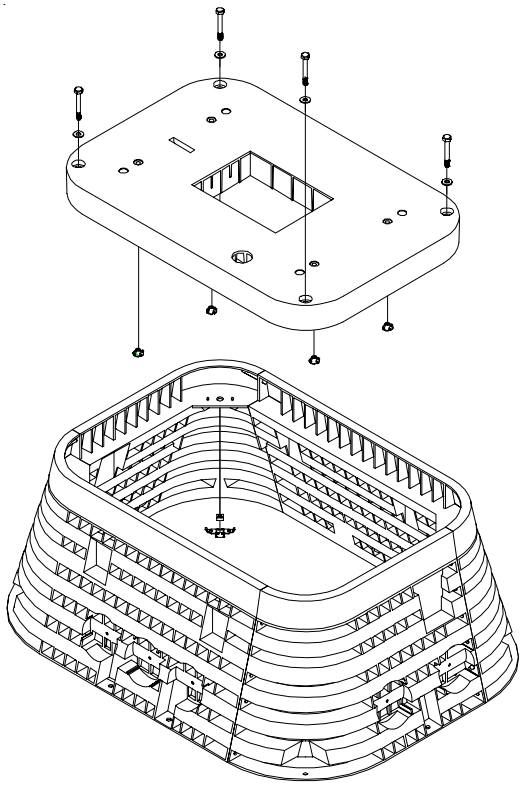
1.3 Precast Enclosure Pedestal Support

Alpha's precast pedestal support system provides a quick, one-step solution for installing the UPE series enclosures.

Contact Alpha Technologies Customer Service (1-800-863-3930) to determine which Pedestal Support is needed for your installation.



Standard Pedestal



XL Pedestal

Pedestal Model Number	UPE-4	UPE-8
Model PS-2	✓	
Model PS-2XL	✓	✓
Model PS-2-ECR	✓	
Model PS-2XL-ECR	✓	✓
ECR models are for enclosures with an ***E***xternal ***C***oax ***R***aceway		

1.3 Precast Enclosure Pedestal Support, *continued*

For detailed installation instructions, refer to the Manufacturer's Installation Documentation included with the Pedestal Support Package.

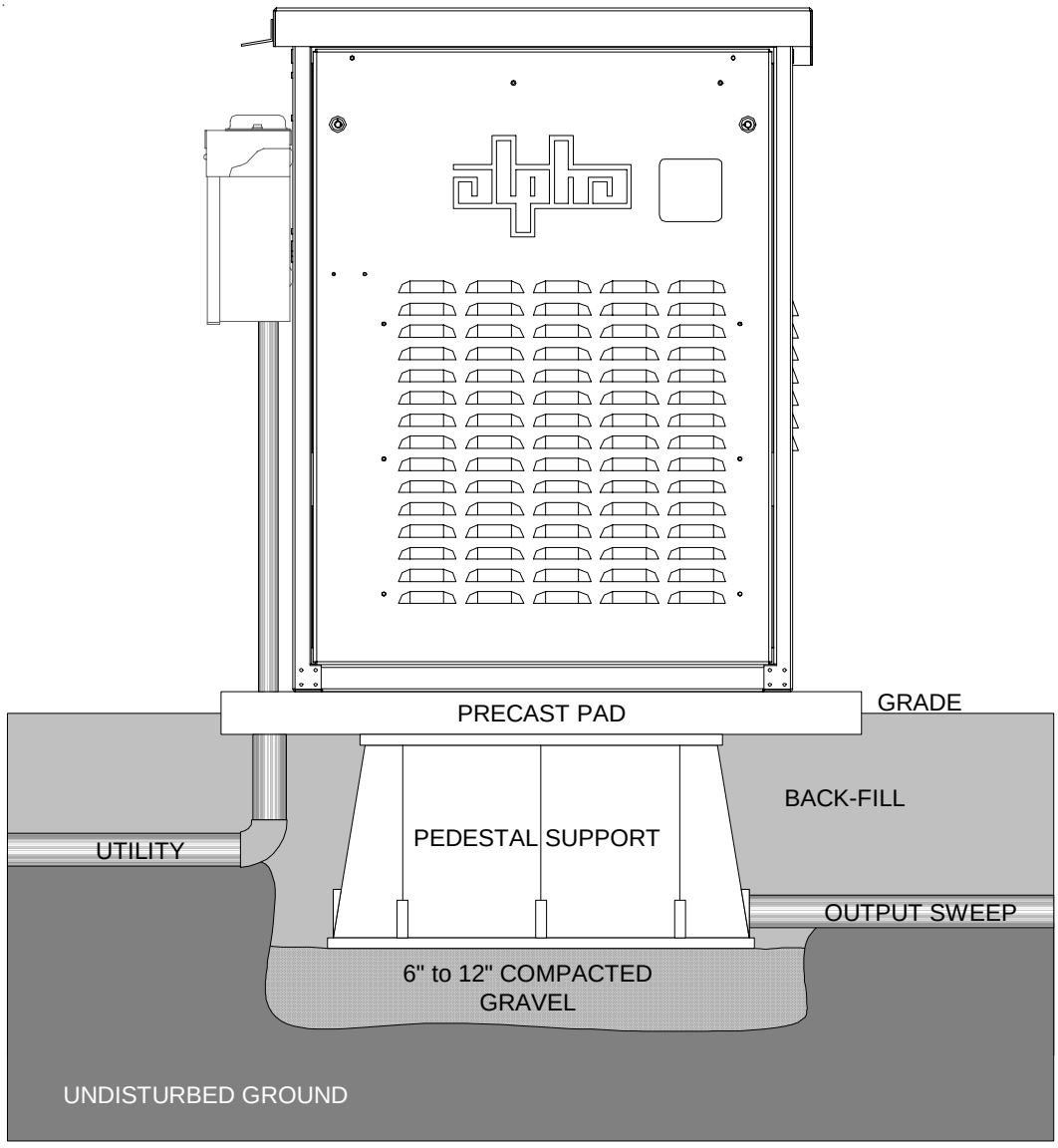


Fig. 1-3 Enclosure installed on a model PS2 support

1.4 Enclosure Grounding

NOTE: Alpha Technologies recommends using the grounding method illustrated below. The grounding method for a particular site will be dependant upon soil type, available space, local codes, NEC (National Electric Code), and other site-specific characteristics.

It is the responsibility of the installer to ensure the requirements of all applicable national and local codes are met. Alpha Technologies assumes no responsibility or liability for failure of the installer to comply with the requirements of all applicable local and national codes.

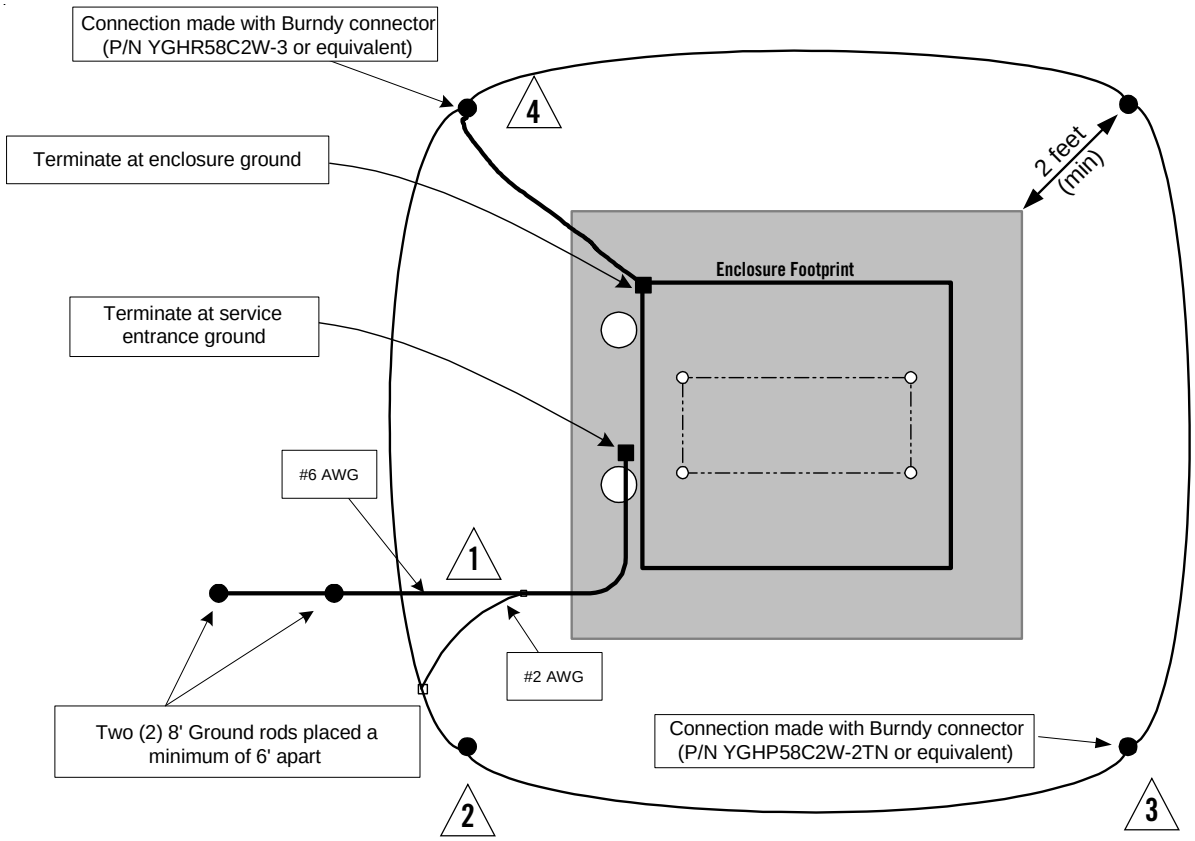


Fig. 1-4 Enclosure Grounding

Service Grounding (minimum required)

1 #6 bare copper wire from Service Neutral / Ground Bar with 2 ground rods located 6' apart.

Lightning Protection (optional)

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

3 #6 bare copper wire loop terminated to each ground rod and buried below grade 2 to 12 inches. Corrosion-proof connections (25+ year life-span) and hardware suitable for direct burial MUST be used

4 #6 bare copper wire from loop to the enclosure

2.1 Enclosure Protection

Alpha Technologies, Inc. cannot anticipate all of the ways a vehicle may potentially threaten an installed system or the specific type of protection that is appropriate for a particular location. The determination of the threat to the equipment and the means of protection are the responsibility of the end user of the equipment and the authority having jurisdiction. The following installation drawing for Alpha's Standby Power systems are general recommendations and not intended to be a specific guideline for protecting the equipment. The numbers of Bollard posts (or other protection devices) depend upon equipment locations, site surveys, traffic patterns and local codes.

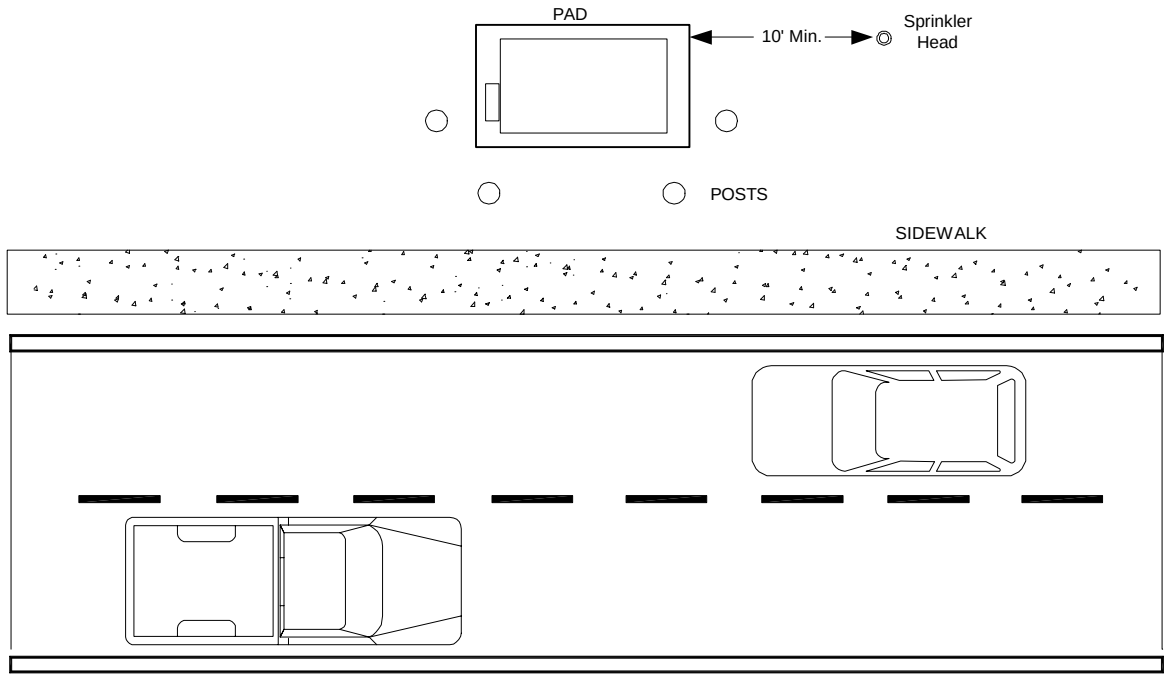


Fig. 2-1 Post placement

2.2 Transportation and Lifting

A safe means of transportation to the site and a safe procedure for unloading the enclosure is necessary. At least **two installation personnel** are required to place the enclosures on the pad.

Approximate shipping weight:

Enclosure	Approximate Shipping Weight
UPE-4	70 Pounds
UPE-8	121 Pounds

NOTE: 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.

NOTE: Electronic modules, batteries or other components must not be installed until the enclosure is securely set in place at its permanent location.

NOTE: DO NOT lift the enclosure by the cover.

2.3 Enclosure Installation

2.3.1 Attaching enclosure to the Pedestal Support or Pad

Tools Required:

Ratchet set with 6” extension.
Vapor Barrier
Utility Knife

Procedure:

NOTE: A 25+ year *continuous vapor barrier* must be used between the enclosure and pad to prevent moisture ingress and possible corrosion caused by metal to concrete contact. The vapor barrier material (such as 30 lb. felt, neoprene pond liner, or heavy grade tar paper) should initially extended at least 6" in all directions around the perimeter of the enclosure and later be trimmed closer to the enclosure.

1. Unwrap the enclosure and inspect the contents. If items are missing or damaged, contact Alpha Technologies and the shipper immediately.

2. Place the vapor barrier material on the pad.

3. Unbolt the enclosure from the shipping pallet.

4. With no less than 2 installation personnel, lift the enclosure off the shipping pallet, and place over the mounting studs on the pad.

5. Secure the enclosure to the pad using the hardware supplied with the Precast Pad or Pedestal Support.

6. Trim the vapor barrier material.

2.4 Utility Power Connection

CAUTION: The "Utility Power Connection" 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.

Wiring the Utility Service

Utility power enters the enclosure through the side or bottom of the UPE. The enclosure accepts a standard electrical fitting. The UPE Series can be equipped with an optional circuit breaker assembly located in the enclosure's module compartment.

NOTE: A "high-magnetic" trip circuit breaker must be used in order to accommodate the high-inrush currents normally associated with the start-up of ferroresonant transformers (400 Amp, no-trip, first-half cycle). Do not replace this circuit breaker with a conventional service entrance circuit breaker. Alpha recommends Square D circuit breakers ONLY, because of increased reliability in this powering application.

Alpha Technologies offers a high-magnetic Square D circuit breaker, meter, and a BBX option. Contact your local sales representative for more information.

Wiring: (from duplex receptacle to service disconnect)

In most cases, the following configurations (see next page) qualify for service entrance use, however, other codes may apply. Always contact your local utility to verify that the wiring conforms to applicable codes.

2.4 Utility Power Connection, *continued*

240VAC Service (XM Series 2 915-240 Power Supply; XM Series 2 922-48 for UPE-4 and UPE-8): Enclosures used with the XM Series 2 915-240, 1350-48, or 922-48 are equipped with one or two 240VAC duplex receptacles to provide power to the power supply and peripheral equipment. The receptacle, NEMA 6-15R, is protected by a single, 2-pole, common trip 15 Amp circuit breaker located inside the service entrance. Wiring is typically 14AWG per NEC code, a grounding clamp, located on the enclosure, facilitates dedicated grounding.

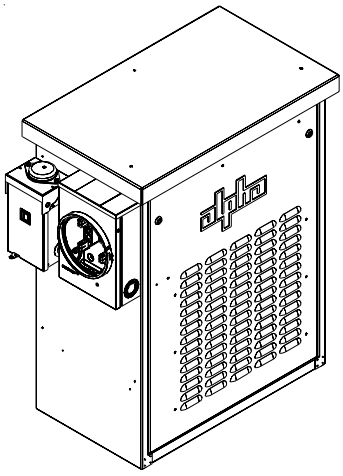
120VAC 20A Service (XM Series 2 915-120 Power Supply):
Enclosures used with the XM Series 2 915-120 are equipped with one or two 120VAC duplex receptacles to provide power to the power supply and peripheral equipment. The receptacle, NEMA 5-20R, is protected by a single pole 20 Amp circuit breaker located inside the service entrance. Wiring is typically 12AWG per NEC code, a grounding clamp, located on the enclosure, facilitates dedicated grounding.

120VAC 15A Service (XM Series 2 615):
Enclosures used with the XM Series 2 615 are equipped with one or two 120VAC duplex receptacle to provide power to the power supply and peripheral equipment. The receptacle, NEMA 5-15R, is protected by a single-pole, 15 Amp High Magnetic circuit breaker located inside the service entrance. Wiring is typically 14AWG per NEC code, a grounding clamp, located on the enclosure, facilitates dedicated grounding.

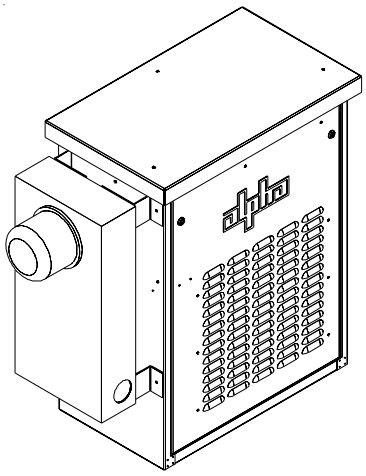
NOTE: Alpha recommends wiring with 12AWG, in case the enclosure is to be upgraded to use 90V power supplies.

2.4 Utility Power Connection, *continued*

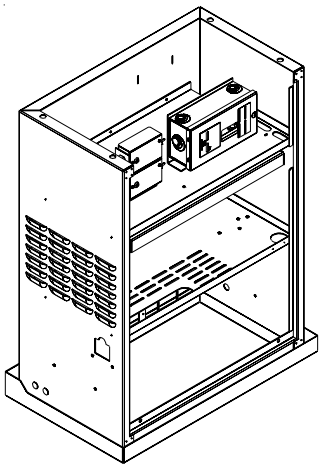
The UPE Series enclosures may be configured with the following service options. Please contact your Alpha Technologies representative for assistance selecting the configuration that best suits your requirements.



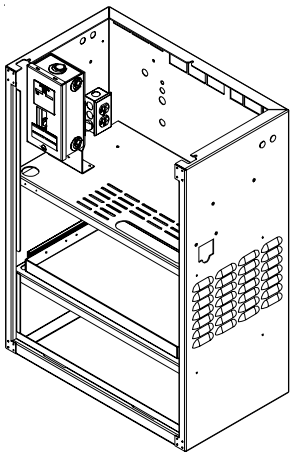
Standard Meter / BBX



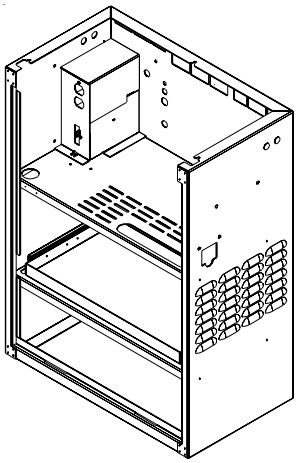
EUSERC Meter Base



Bottom Mount BBX / SPI
Enclosure shown inverted



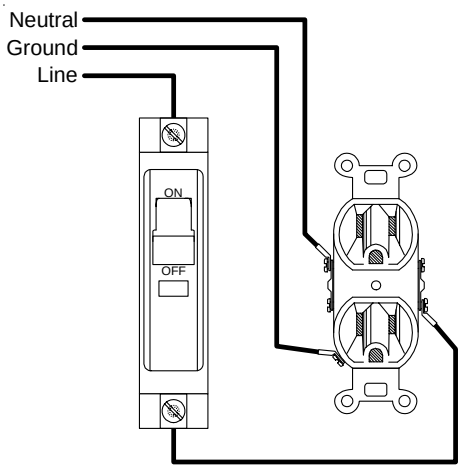
Internal BBX
Top Lid Removed



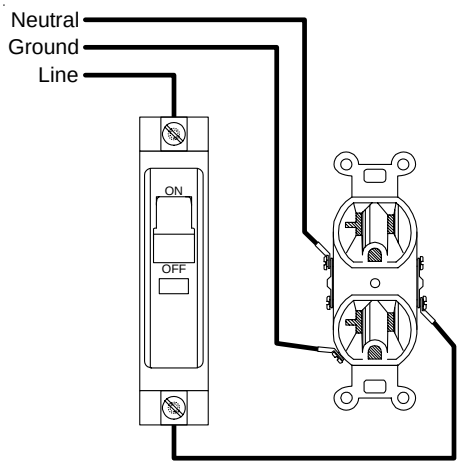
Internal Service Entrance
Top Lid Removed

2.4 Utility Power Connection, *continued*

ISE 120 VAC 15 Amp



ISE 120 VAC 20 Amp



ISE 240 VAC 15 Amp

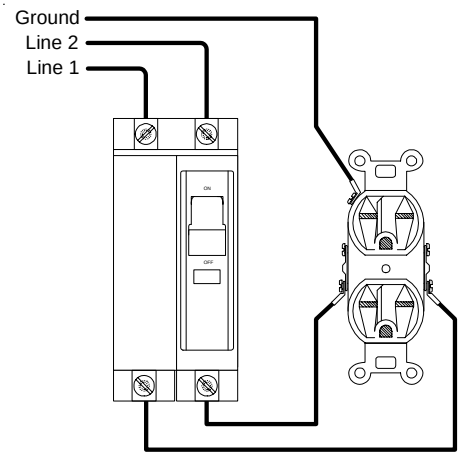
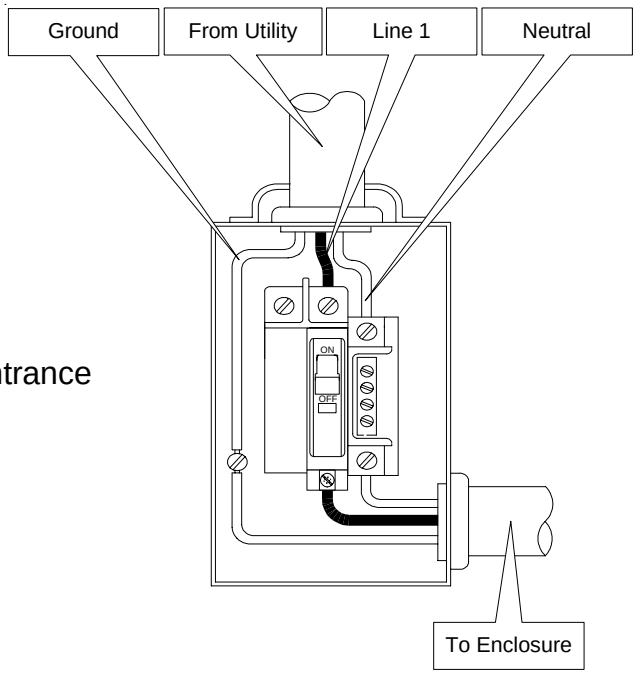


Figure 2-2 Typical ISE Receptacle Wiring

2.4 Utility Power Connection, *continued*

120 VAC Service Entrance



240 VAC Service Entrance

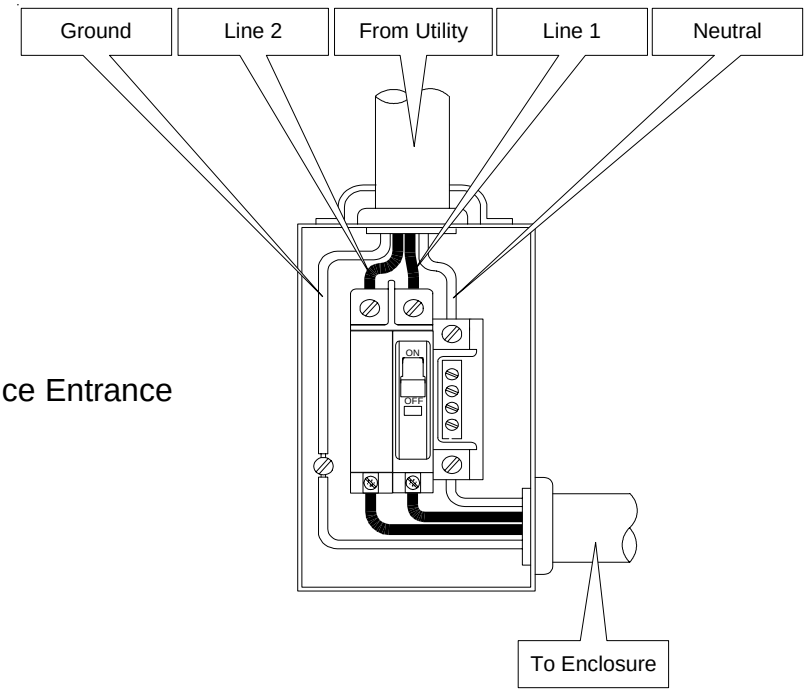
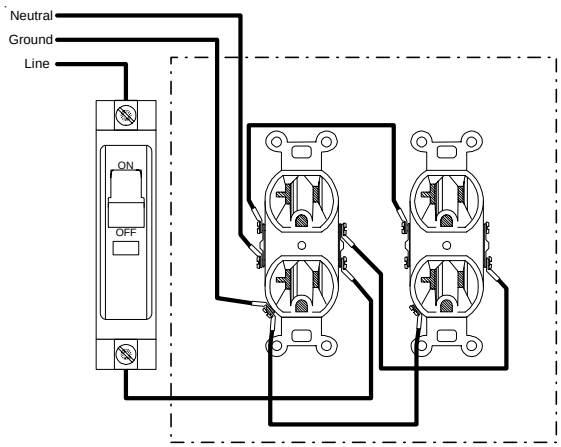
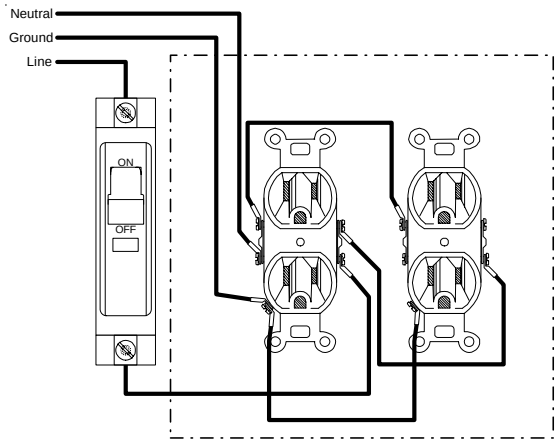


Figure 2-3 Typical Service Entrance Wiring

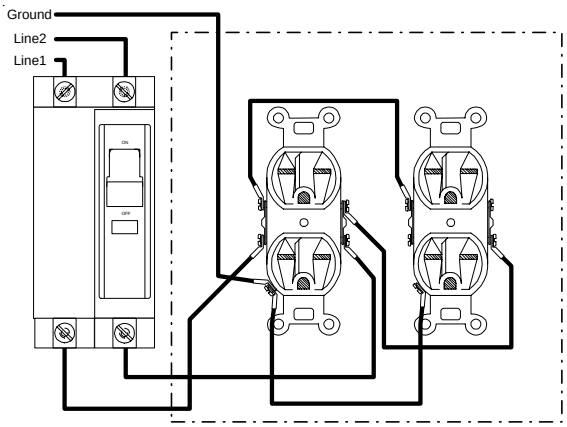
2.4 Utility Power Connection, *continued*



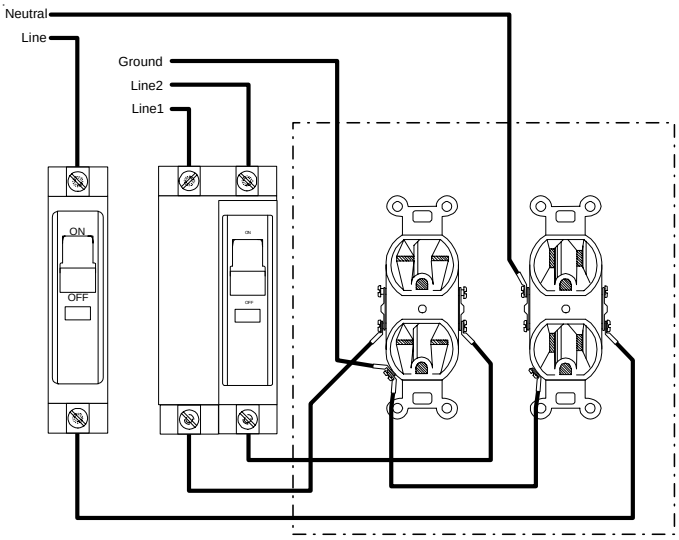
BQO, 120 VAC 20 Amp Circuit



BQO, 120 VAC 15 Amp Circuit



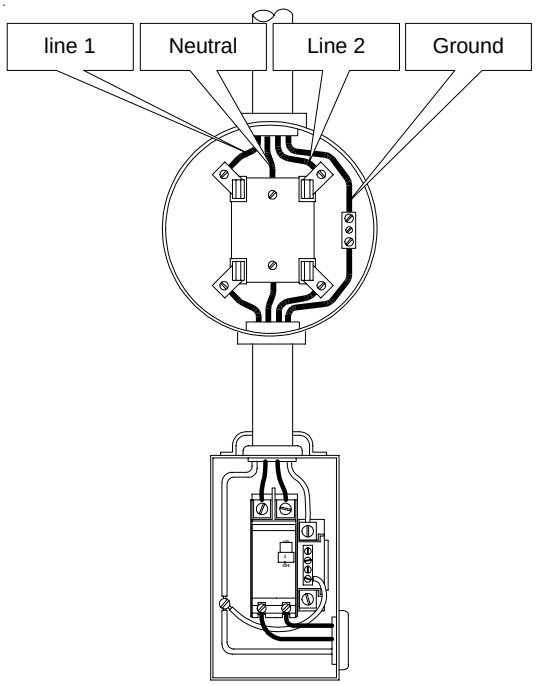
BQO, 240 VAC 15 Amp Circuit



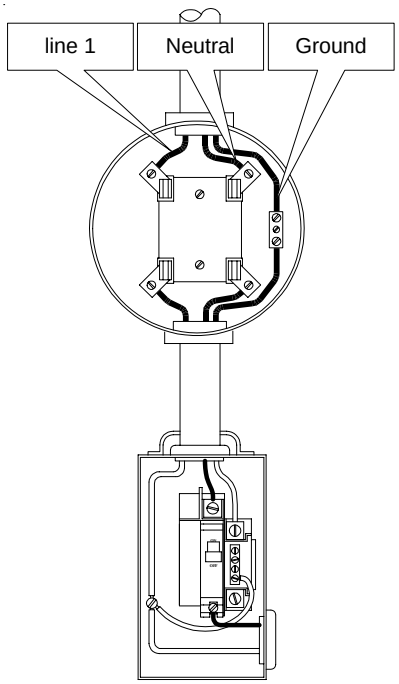
BQO, 120 / 240 VAC 15 Amp Circuit

Figure 2-4 Breaker-Quad-Option Wiring

2.4 Utility Power Connection, *continued*



240 VAC Meter Base



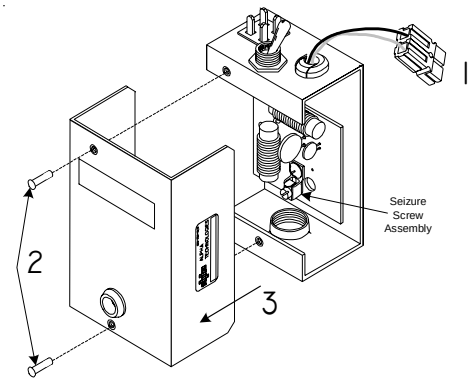
120 VAC Meter Base

Figure 2-5 120 and 240VAC UL Wiring

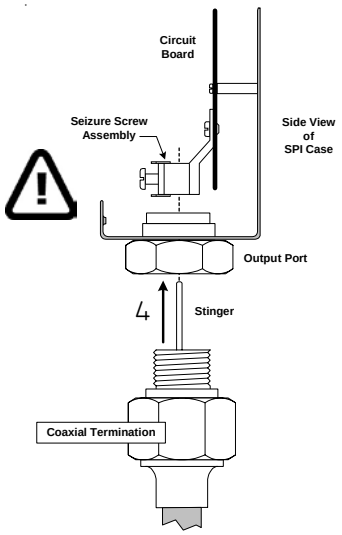
2.4 Utility Power Connection, *continued*

Coaxial Cable Connection

1. DO NOT remove SPI cover until all sources of power have been removed. Verify SPI IS NOT connected to power supply
2. Remove the two screws holding the cover onto the SPI's chassis.
3. Remove the SPI's cover, exposing the circuit board and seizure screw assembly.

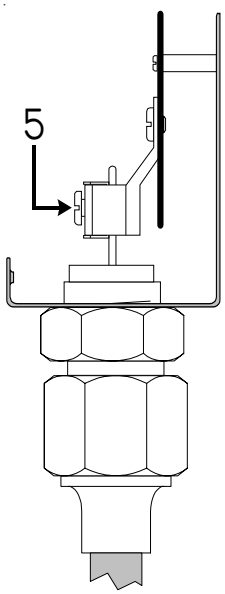


4. Insert the Coaxial Termination into the Output Port on the bottom of the SPI.

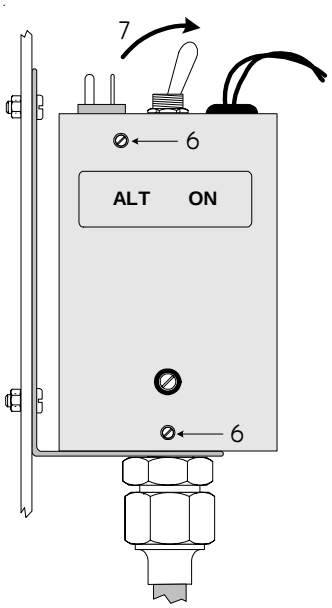


NOTE: To prevent arcing, and failure of the unit, the center conductor (stinger) of the coaxial termination must go fully **inside** the seizure screw assembly.

5. Tighten the Seizure Screw to 35 Inch-Pounds.



6. Replace the SPI's cover and reinstall the screws.
7. Verify the switch on the top of the SPI is in the ON position.



2.5 XM Series 2 Power Supply Placement

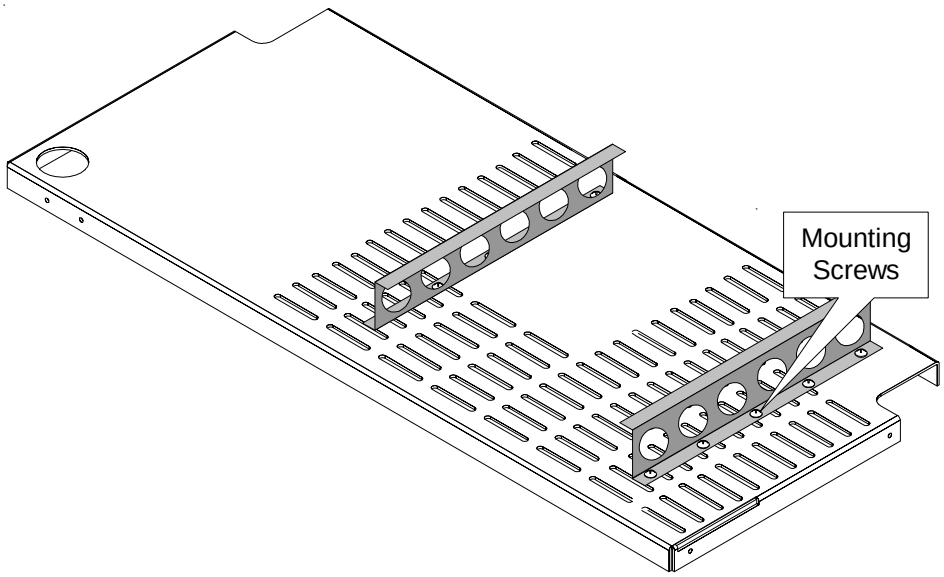
Tools Needed:

Phillips Screwdriver

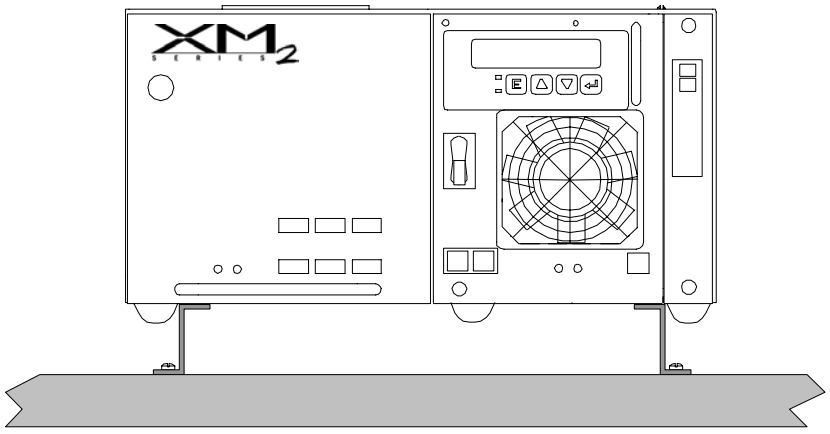
Procedure:

1. When using an XM Series 2 power supply, rails may be installed to aid ventilation.

   The rails are held into place with 5 screws (each). Ensure that the screws are on the OUTSIDE of the rail, as shown below.



2. Place the power supply on the top tray, ensure that the feet are OUTSIDE the rails and the power supply rests level.



2.6 Battery Installation

2.6.1. Battery Safety

WARNING: Battery systems represent a risk of electrical shock and high short circuit currents. The following precautions must be observed when maintaining batteries:

- Remove all personal metal objects (watches, rings, etc.)
- Use insulated tools.
- Wear eye protection and rubber gloves.
- Observe circuit polarities.
- Do not make or break live circuits.
- Do not lay metal tools and hardware on top of the batteries.

The battery is enclosed in cabinets with limited access. Again, extreme caution must be exercised when maintaining and collecting data on the battery system.

2.6.2 Battery Identification

Each battery contains a DATE CODE usually located near the positive (+) terminal of the battery. This date code must be recorded in the maintenance log (*MAINTENANCE* manual). If batteries other than those installed by Alpha are used, consult the battery's manufacturers' documentation for date code type and placement.

2.6 Battery Installation, *continued*

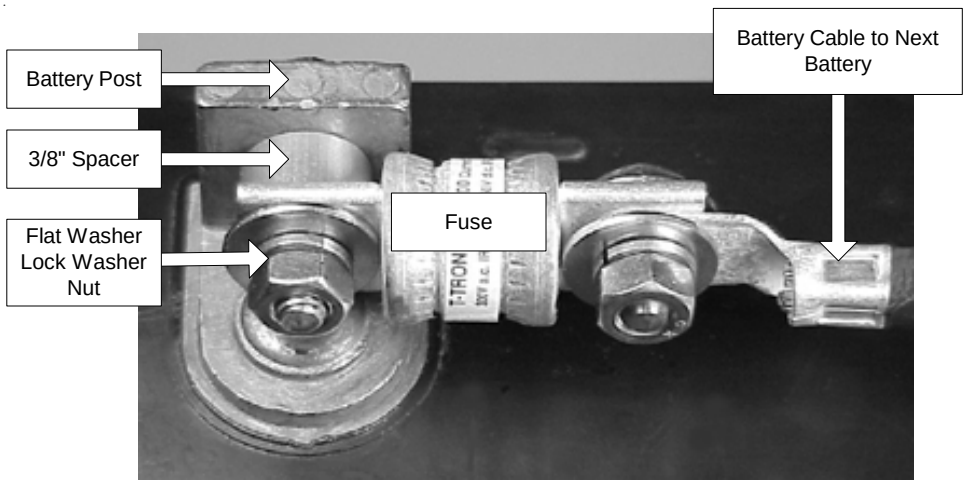
3.6.3 Battery Terminal Connections

The accompanying drawings are for *illustrative* purposes only. Various types of batteries with different mounting styles and hardware may be shipped with the system. ALWAYS refer to the battery manufacturers' specifications for correct mounting hardware and torque requirements. During maintenance procedures, refer to the manufacturers' specifications for the maintenance torque requirements.

For AlphaCell batteries, use 65 Inch-Pounds upon installation, torque to 50 Inch-Pounds during maintenance.

A corrosion inhibitor should be used on all bare metal connections and crimps

Mounting hardware requirements may vary with battery manufacturers. Use only the hardware recommended by your particular battery manufacturer.



2.6 Battery Installation, *continued*

2.6.4. Battery Connection

Tools Needed:

Two 7/16" open end wrenches
DC Voltmeter

Procedure:

For UPE-4:

1. Slide the battery tray out to the stops.
2. Install four batteries, position batteries as shown in Fig. 2-6.
3. Wire in accordance with Fig. 2-6.

DANGER: Battery drawer slides may be damaged if drawer is forced into enclosure while slide latch is engaged.

4. Unlatch and slide the tray evenly into the enclosure.
5. Using a DC Meter, measure the voltage at the power supply connector, verify that the voltage is between 36 and 40.5 VDC for UPE3 or 48 and 54 VDC for UPE-4.
6. DO NOT connect the battery pack to the power supply at this time.

For UPE-8:

1. Slide the upper battery tray out to the stops.
2. Install four batteries, position batteries as shown in Fig 2-7
3. Wire in accordance with Fig. 2-7.

DANGER: Battery drawer slides may be damaged if drawer is forced into enclosure while slide latch is engaged.

4. Unlatch and slide the upper battery tray evenly into the enclosure.
5. Slide the lower battery tray out to the stops.
6. Install three or four batteries, position batteries as shown in Fig 2-6 or Fig 2-7.
7. Wire in accordance with Fig. 2-6 or Fig. 2-7.
8. Unlatch and slide the lower battery tray evenly into the enclosure.
9. Using a DC Meter, measure the voltage at the power supply connector, verify that the voltage is between 36 and 40.5 VDC for UPE6 or 48 and 54 VDC for UPE-8.
10. DO NOT connect the battery pack to the power supply at this time.

2.6 Battery Installation, *continued*

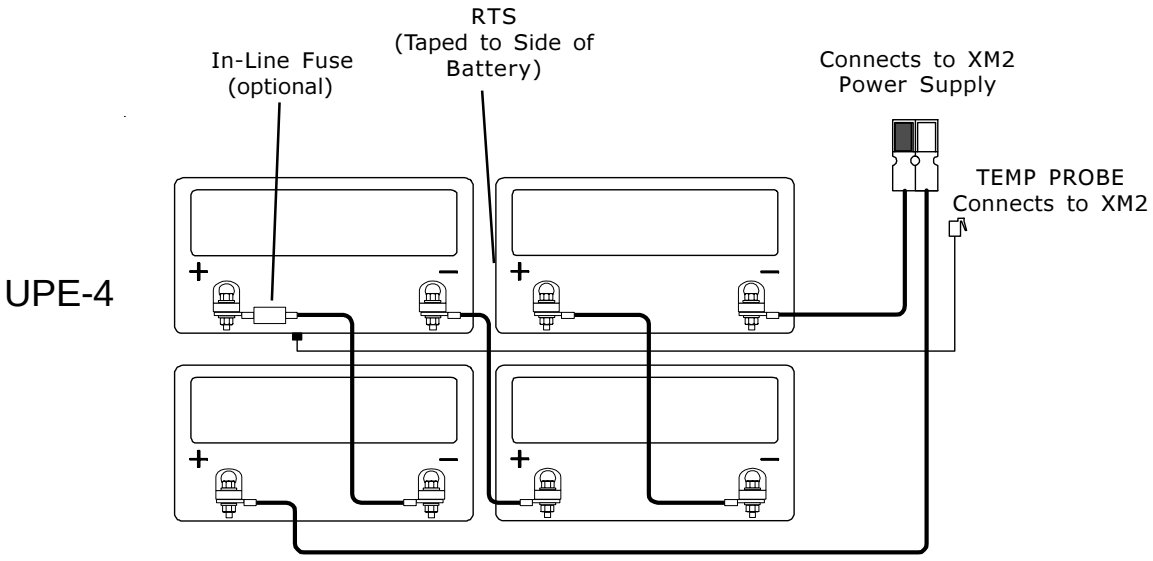


Fig. 2-6 UPE-4 Battery Placement

2.6 Battery Installation, *continued*

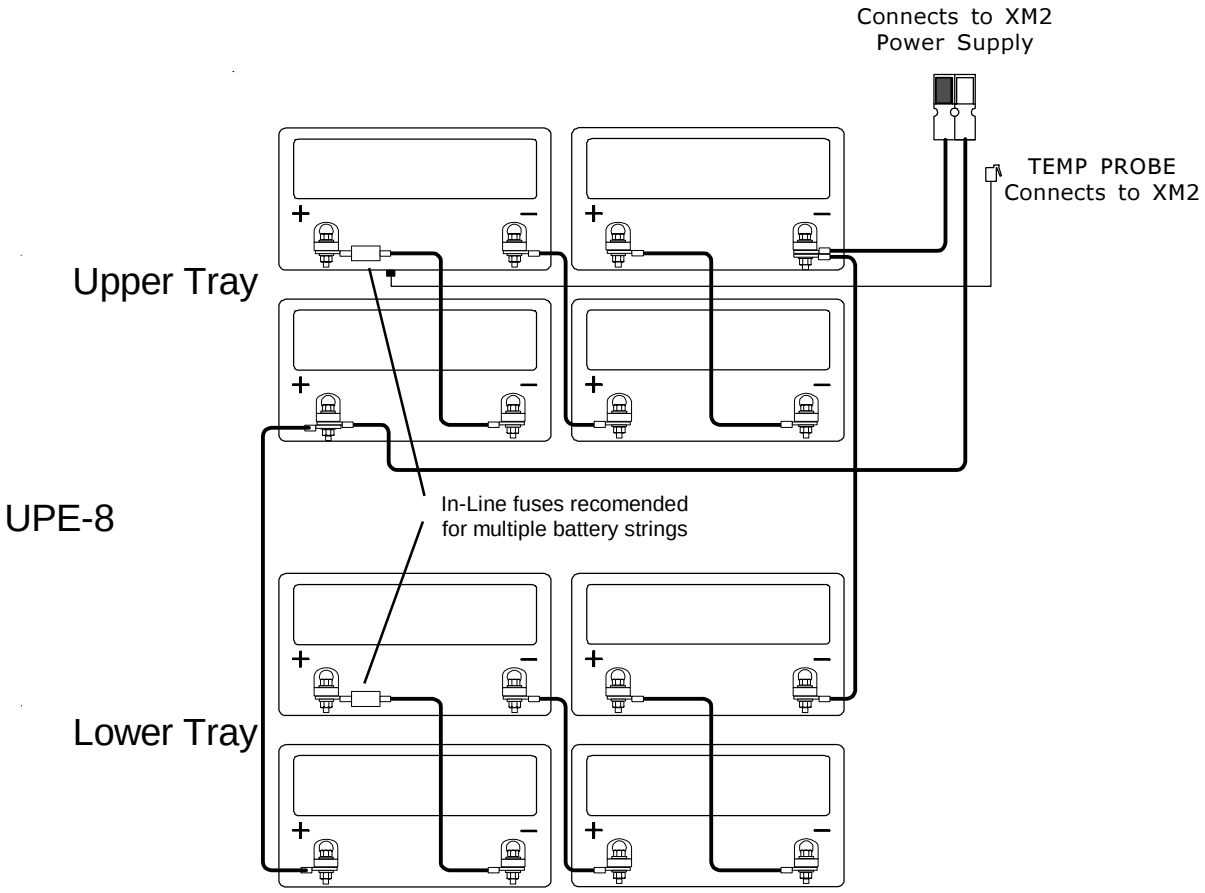


Fig. 2-7 UPE-8 Battery Placement

2.7 Battery Temperature Sensor

Tools Needed:

Adhesive Tape

Procedure:

NOTE: For enclosures with multiple battery strings, the RTS must be located with the warmest (normally the topmost) battery string. This ensures proper operation of the battery charger's temperature compensation circuit. Failure to locate the RTS with the warmest battery string could result in overcharging and premature battery failure.

1. Attach the RTS Probe to the inner side of battery #3 (Fig. 2-6), or battery #4 (Fig. 2-7) on the upper tray, with adhesive tape.

2. The other side of the RTS Probe is attached to the front panel of the XM2 power supply, in the jack labeled TEMP PROBE.

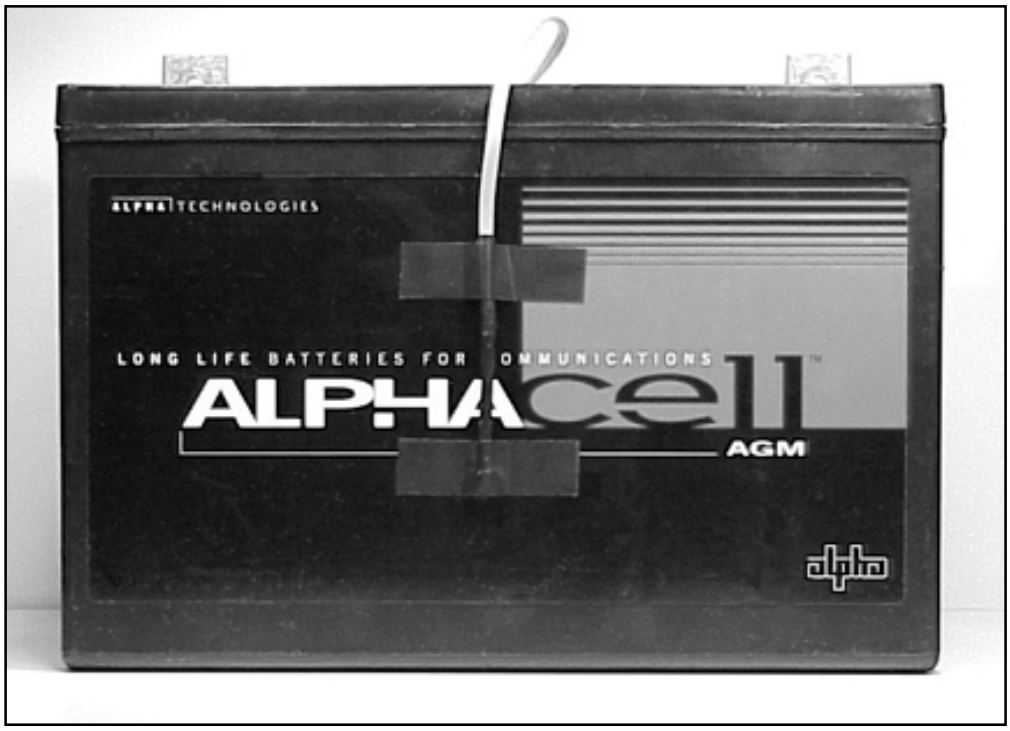
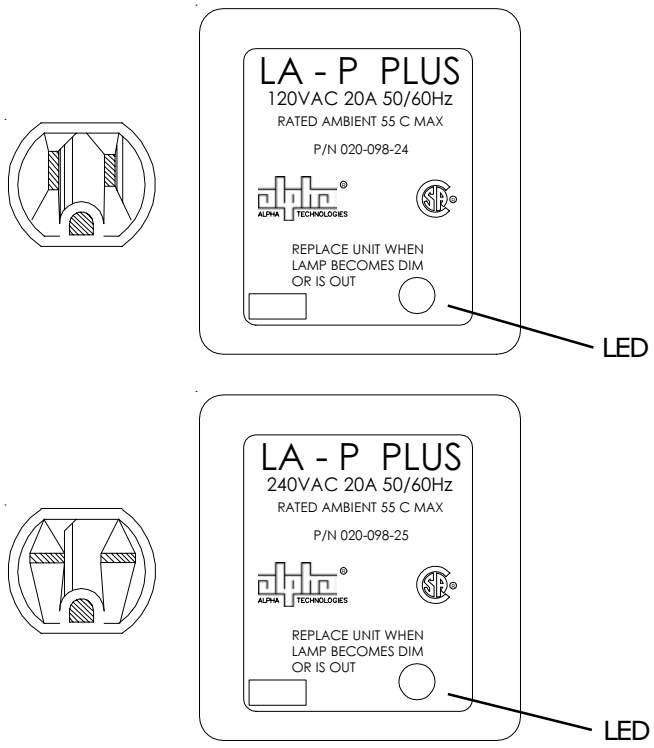


Fig. 2-8 RTS Placement

2.8 Lightning Arrester Option

Alpha's LA Series voltage suppressors provide reliable protection of power supplies and related equipment from the damaging powerline disturbances common to cable TV and broadband applications. The LA Series incorporates MOV's that effectively limit voltage surges and absorb excessive energy levels. Housed in a durable polymer casings with standard electrical plugs, the LA Series plugs directly into any electrical outlet.



NOTE: LED On - Operation Normal
LED Off - LAP has failed, Replace LAP

2.9 Battery Heater Mat, and LRI-ACI Lamp Option

Battery Heater Mat Option

Battery Heater Mats are designed to increase battery capacity in cold environments. To install the mats:

1. Remove the batteries from the tray(s).
2. Place the heater mat in the bottom of the tray(s).
3. Replace the batteries.
4. Plug the AC line cord into the closest receptacle.

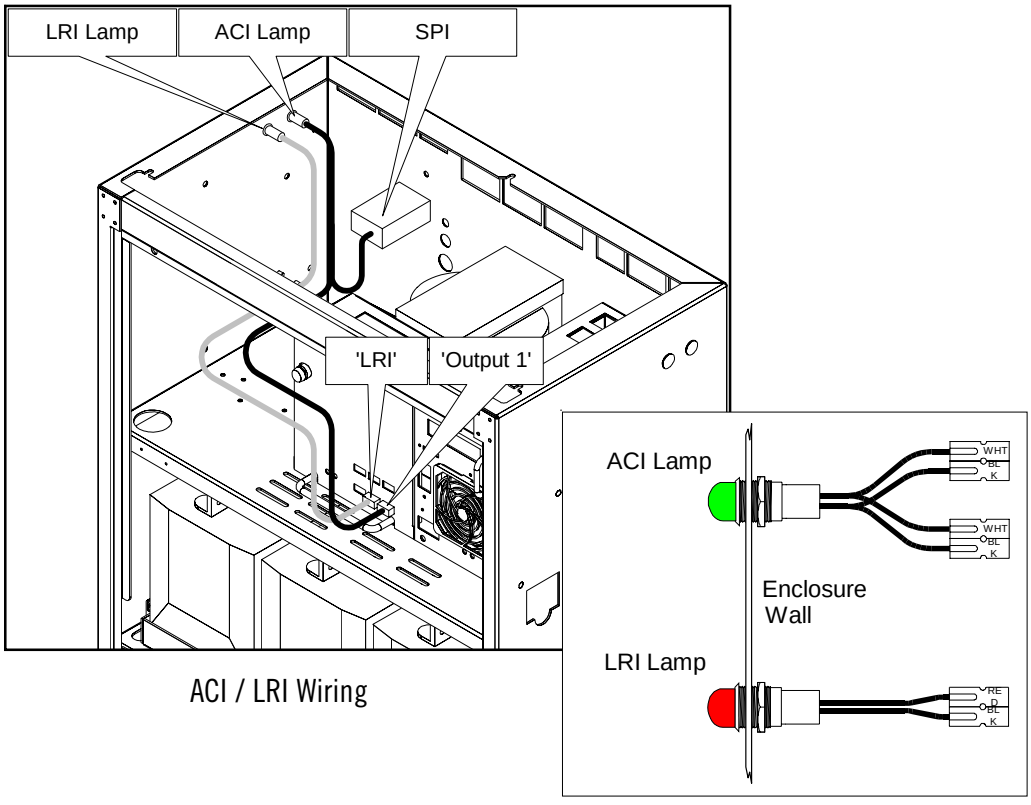
The heater mat is thermally fused at 180° F. The thermostat is set to open on rise at 50° F, and close at 40° F.

LRI Option

The LRI lamp (red lamp) is located on the outside, on either the right or left side of the enclosure. The lamp comes ON only when the power supply is running on backup power (STANDBY). During normal AC line operation, the lamp remains OFF. Whenever a fault is detected, the lamp flashes to indicate that service is required. The LRI can be used as a simple form of status monitoring by allowing cable technicians to check the operational status of the power supply without having to climb the pole and open the enclosure. Connect the LRI lamp to the jack on the front of the power supply labeled LRI.

ACI Option

The AC indicator (green lamp) is located on the outside, on either the right or left of the enclosure. When the lamp is ON, it indicates AC power is available at the power supply output. This allows a cable technician to drive by and determine the status of the power supply without having to climb the pole. Connect one connector of the ACI lamp to the OUTPUT 1 jack on the front of the power supply, and the other to the SPI.

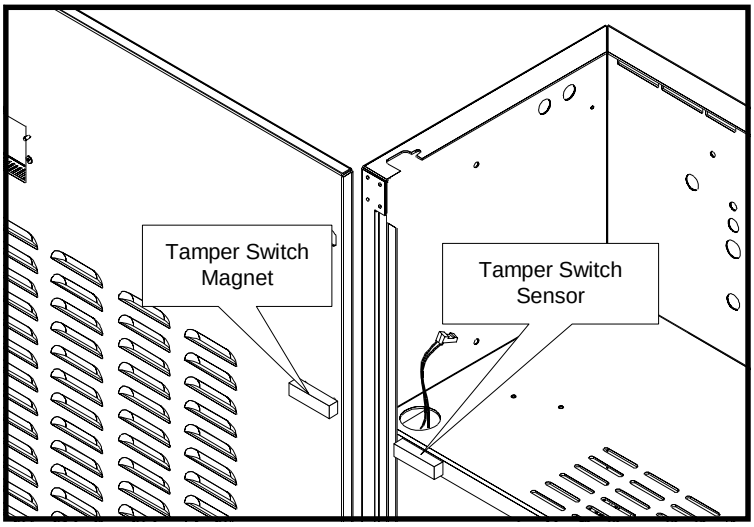


ACI / LRI Wiring

2.10 Enclosure Door Tamper Switch and Rain Deflector Options

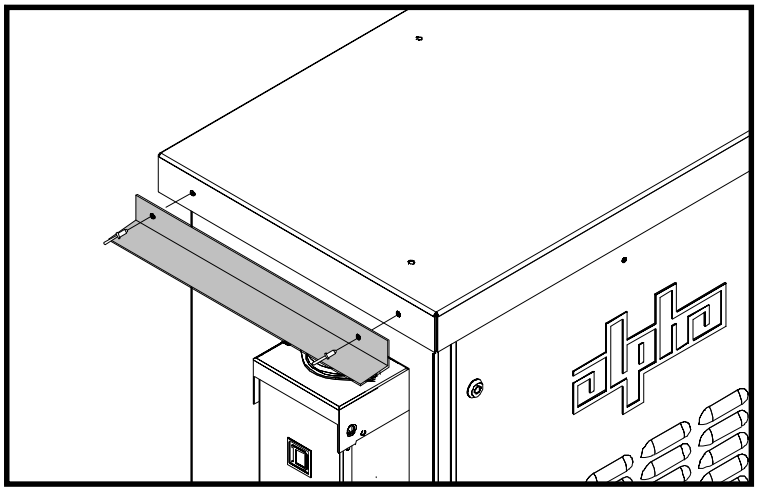
Tamper Switch

The Tamper Switch is located on the edge of the power supply shelf, opposite the power supply. The switches are available in Normally Closed (P/N 740-216-21) and Normally Open (740-216-26). The USM2, USM-2.5, or DSM options are required to monitor the Tamper Switch.



Rain Deflector

A rain deflector must be installed when using an external service entrance to prevent water intrusion. Two center punch 'dimples' are located on the left side of the lid rim. REMOVE LID prior to drilling to prevent shavings from entering enclosure. Using a #7 (.203") drill bit, drill out the dimples, and rivet the rain deflector in place with the included rivets, as shown below.



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