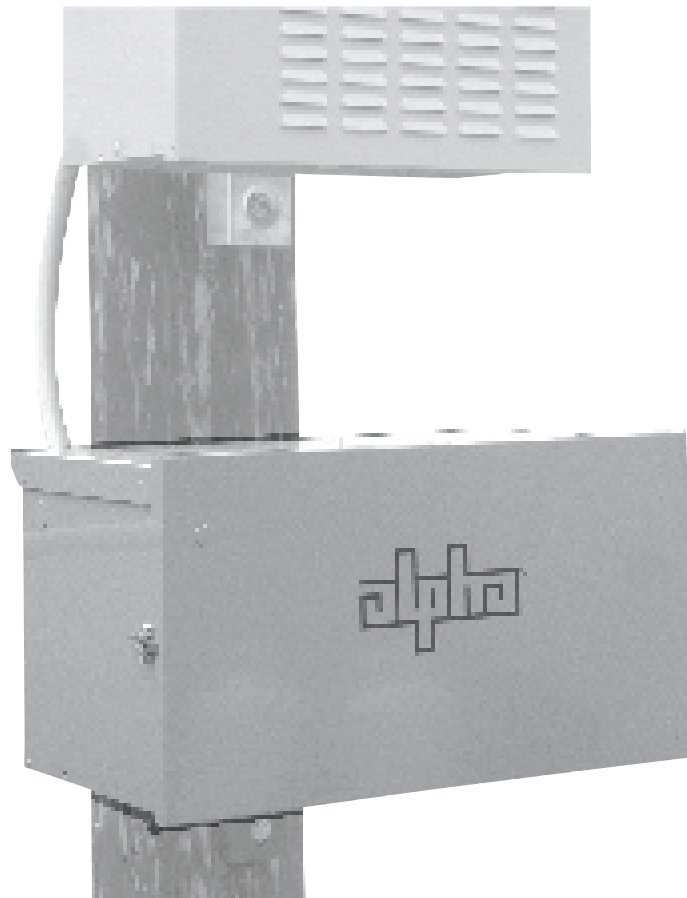




PWE-SG Series

Pole Mount Battery Expansion Enclosure



Installation Manual

Pole Mount Battery Expansion Enclosure

Effective: April 2006

Alpha Technologies  *Power*

PWE-SG Series Battery Expansion Pole Mount Enclosure

Installation Manual

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 **NOTE:**

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

 **NOTE:**

Operator is cautioned to review the drawings and illustrations contained in this manual before proceeding. If there are questions regarding the safe operation of this product, please contact Alpha Technologies or your nearest Alpha representative.

 **NOTE:**

Alpha shall not be held liable for any damage or injury involving its enclosures, power supplies, generators, batteries, or other hardware if used or operated in any manner or subject to any condition not consistent with its intended purpose, or is installed or operated in an unapproved manner, or improperly maintained.

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Safety Notes

Review the drawings and illustrations contained in this manual 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:

The use of ATTENTION is only for specific regulatory/code requirements that may affect the placement of equipment and installation procedures.



NOTE:

A NOTE gives readers additional information to help them complete a specific task or procedure.



CAUTION!

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



WARNING!

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

Important Safety Instructions



WARNING!

- The temperature of the batteries located in the PWE-SG may differ from those located in the legacy enclosure containing the power supply. The design of the PWE-SG minimizes this difference when the two enclosures are subjected to the same ambient. Always place the battery temperature sensor, controlling the battery temperature charge compensation, on the hottest battery. This is typically the center battery located directly below the power supply in the legacy enclosure.
- Lead-acid batteries generate explosive gases. To prevent arcing or burning near batteries, do not disconnect DC charging cord from batteries when the charger is operating. Switch the AC breaker and the DC breaker to the "OFF" position before disconnecting the DC output cord from the batteries.
- Always shield eyes when working near batteries. Do not put wrenches or other metal objects across the battery terminal or battery top. Arcing or explosion of the battery can result.
- Batteries produce hydrogen gas, which explodes if ignited. Never smoke, use an open flame, or create sparks near the battery. Ventilate the area when the battery is charging in an enclosed place.
- Lead-acid batteries contain sulfuric acid, which may cause burns. Do not get acid in eyes, on skin, or clothing. If contact with the eyes occur, flush immediately with clean water for 15 minutes and seek medical attention.

1.0 Introduction

The PWE-SG is a stand-alone pole mount battery enclosure that supports several battery configurations and increases the capacity of your existing enclosure systems.

The PWE-SG is a flexible and complementary addition to your legacy enclosure and comes with a full range of options, including a battery drawer, battery heater mat, and a tamper switch.

1.1 PWE-SG Enclosure Description

The enclosure specifications vary depending on the battery configurations used in the PWE-SG. See Table 1-2.

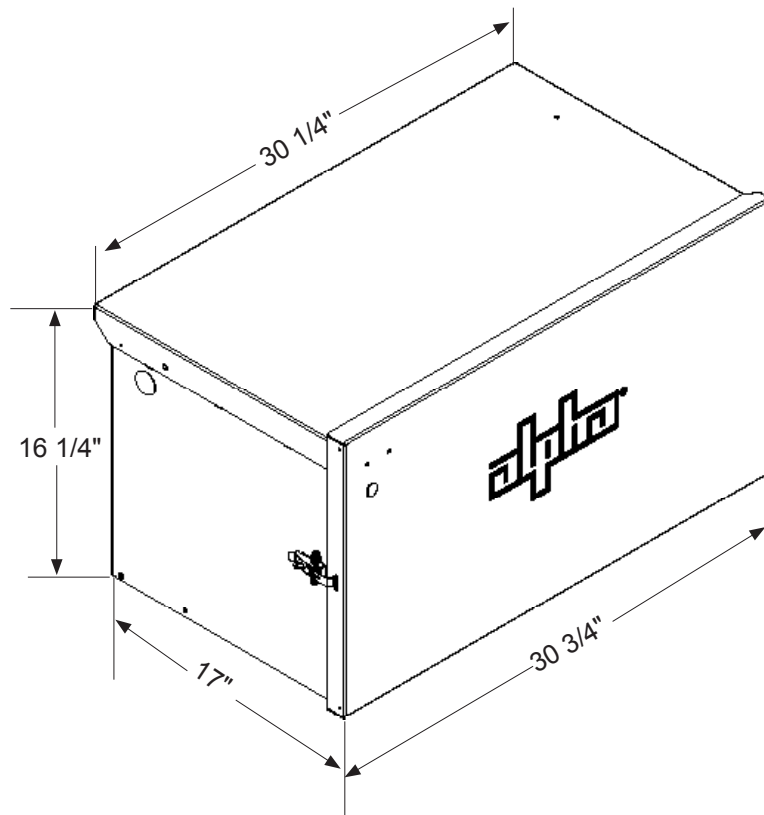


Fig. 1-1, PWE-SG Dimensions

1.0 Introduction, continued

1.2 Enclosure Specifications

PWE-SG Component	Description
Enclosure	PWE-SG: 30.25" (76.83cm) W x 16.25" (41.27cm) H x 17.0" (43.18cm) D, Weight: 31.0 lbs (14.1 Kg) (Alpha P/N 033-090-20)
Material	Powder-coated aluminum
Hardware	Stainless steel (excluding optional GemLocks)
Color	Gray (Custom colors available)
Tamper Switch	Optional <ul style="list-style-type: none"> NC, with Printed Circuit Board (PCB) jumper (Alpha P/N 745-851-20) NO, with PCB jumper (Alpha P/N 745-851-21)
Safety Ground	Bronze stud (Alpha P/N 744-422-20). Optional stainless steel ground available
Lid	Removable lift off
Doors	Hinged lift-off removable with stainless steel spring latch. Available with optional door-open prop rod (Alpha P/N 745-857-20); Gemlock options
Sliding Battery Drawer	Aluminum. Two available options with lock in and lock out slides <ul style="list-style-type: none"> Standard option (Alpha P/N 745-088-24) Select if battery weight is less than 300 lbs. Heavy duty option (Alpha P/N 745-088-23) Select if battery weight is more than 300 lbs and less than 420 lbs.
Enclosure Mounting	Galvanized steel brackets for wall, wood and concrete pole mount. <ul style="list-style-type: none"> 2 Pole mount brackets (PMB) concrete (Alpha P/N 591-557-20) Single 2-point PMB (Alpha P/N 605-352-N2) 8 inch extension 2-point PMB (Alpha P/N 605-360-N2) 2 PMB wooden (Alpha P/N 744-670-20) 2 Wall mount brackets (Alpha P/N 744-800-20)
Gem Lock Kit	Provides additional security for enclosure (Alpha P/N 744-229-20)
Conduit Collocation Kit	6" to 24" separation, 48" uncut length of conduit (Alpha P/N 745-853-20)
Enclosure Environmental Ratings	NEMA 3R
Battery Configurations	<ul style="list-style-type: none"> 165/185/210 AlphaCell (3 or 4 with or without sliding drawer) 195/255 AlphaCell FT (3, 4 or 6 without sliding drawer) Tel12-125 (3 or 4 with or without sliding drawer) Other configurations can be supported All AlphaGuard battery configurations
Battery Retaining Bar	Secures batteries within the enclosure. (Alpha P/N 745-154-20)
Battery Cable Kits	Optional <ul style="list-style-type: none"> 7' extension with all Battery Cable Kits (BCK) (Alpha P/N 875-584-20) Heavy Duty (HD), Fused (F), 1 x 36/1 x 48 AlphaCell FT (195/225) 3 or 4 batteries installed (Alpha P/N 745-759-20) HD/F 2 x 36 AlphaCell FT (195/22) (Alpha P/N 745-759-21) HD 1 x 36 AlphaCell (165/180/210) (Alpha P/N 874-202-20) HD/F 1 x 36 AlphaCell (165/180/210) (Alpha P/N 874-202-21) HD/F 1 x 48 AlphaCell (165/180/210) (Alpha P/N 874-845-20) HD 1 x 48 AlphaCell (165/180/210) (Alpha P/N 874-845-21)
Battery Heater Mats	Optional <ul style="list-style-type: none"> 120VAC with slide tray (Alpha P/N 189-031-10) 240VAC with slide tray (Alpha P/N 189-031-11) 120VAC no slide tray (Alpha P/N 189-072-10) 240VAC no slide tray (Alpha P/N 189-072-11) 8' line cord extension for 120VAC battery heater mat (BHM) (Alpha P/N 745-854-20) 8' line cord extension for 240VAC BHM (Alpha P/N 745-854-21)
Regulatory	CSA C22.2 No. 107.1-01, CSA C22.2 No. 0-M91, CSA C22.2 No. 0.4-04, CSA C22.2 No. 94-M91, UL 50, UL 1778

Table 1-2, Enclosure Specifications

1.0 Introduction, continued

1.3 Accessing the Enclosure

1.3.1 Removing the Enclosure Lid

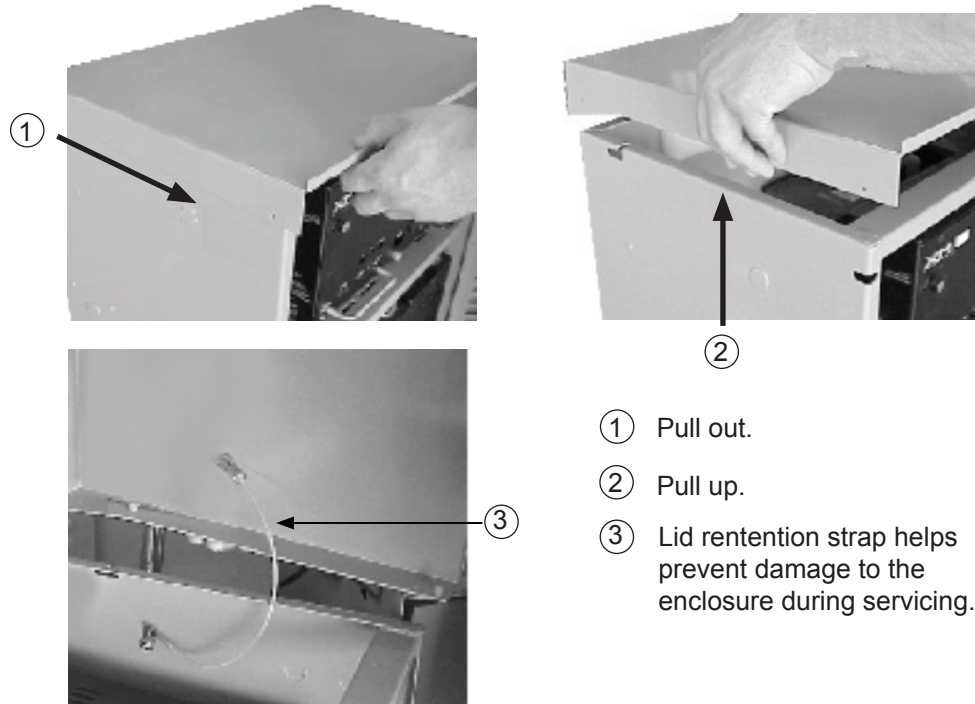


Fig. 1-2, Removing the Enclosure Lid

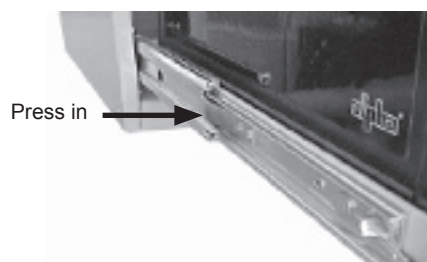
1.3.2. Operating the Optional Battery Trays

Opening the tray:



To open, push tray latch in and pull tray out. Tray automatically locks in the “open” position.

Closing the tray:



To unlock and close tray, press lock in toward tray and push tray closed.

When returned to the “closed” position, tray automatically locks back into place.

Fig. 1-3, Operating the Optional Battery Tray

1.0 Introduction, continued

1.4 Optional Features

Options are either factory installed or can be easily installed in the field.



NOTE:

A detailed list of all options, including their Alpha part numbers are listed in Table 1-2, Enclosure Specifications.

Battery Heater Mat

The battery heater mat is an AC line operated 150W heater mat which turns on at 40°F to increase battery capacity in cold environments. Battery mats are available in 120VAC and 240VAC versions.

Tamper Switch (NC/NO)

The Tamper Switch provides a magnetic door switch that plugs into the USM option for XM power supplies and USM2 for XM Series 2 power supplies. Most status monitoring systems provide an alarm if the enclosure door is opened. Tamper Switches are available either as normally open (NO) or normally closed (NC).

Gemlock Kit

Additional security option for the enclosure.

Sliding Battery Trays

There are two types of sliding battery trays available:

- Standard slide tray for weights no greater than 300 lbs. See Fig. 1-2 for operation instructions.
- Heavy duty slide tray for weights greater than 300 lbs and less than 420 lbs.

As an added safety precaution, the PWE-SG series battery drawer latch holds the battery tray securely in place in both closed and open positions. The latch automatically locks in place when the tray is returned to the enclosure.

Battery Cable Kits

A variety of cable kits are available to fit your specific application. See Table 1-2 for a complete list of available kits.

Two Point Mounting Bracket

An optional two point mounting bracket is available to replace the two single galvanized pole mounting brackets. There is an 8 inch extension bracket also available.

Battery Retaining Bar

The Battery Retaining Bar secures the batteries within the enclosure.

2.0 Installation



CAUTION!

Do not install the batteries before you mount the enclosure. Transporting the unit with the batteries in place may cause injury or damage to the enclosure and to the installed equipment.



NOTE:

The majority of poles are the property of the local utility. Have the location and method of mounting approved before proceeding with the installation. Also, since most local codes require the base of the enclosure to be located a minimum distance from the ground, verify any height restrictions before installing the enclosure.

Installation Overview:

Mounting the enclosure involves these basic steps:

1. Attaching the brackets. The procedure varies depending on whether you are installing the enclosure on a concrete or wooden pole.
2. Mounting the enclosure.
3. Grounding the enclosure.
4. Placing the wiring in the conduit and attaching the conduit between the enclosures.
5. Installing and wiring the batteries.
6. Installing any optional features, such as a tamper switch or battery heater mat.

2.1 Wooden Pole Installation, Attaching the Brackets



NOTE:

The optimal distance between the enclosures is between 6 and 24 inches. Do not mount the enclosures more than 2 feet apart.

Materials required:

- Two 5/8" diameter machine bolts (UNC thread); SAE (Grade 5 or better) length to suit pole.
- Two 5/8" diameter zinc-plated flat washers
- Two 5/8" diameter hex nuts (UNC thread)

Tools required:

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

2.0 Installation, continued

2.1 Wooden Pole Installation, continued

Procedure:

1. Unpack the enclosure and galvanized brackets; turn the enclosure facedown on a soft surface.
2. Slide one bracket up through the lower mounting straps on the rear of the enclosure. The bracket's flanges face away from the enclosure. Secure the lower mounting brackets using the 3/8" x 3/4" hex bolt. See Fig. 2-1.
3. Mark the position for the upper mounting bracket on the utility pole. Drill a 3/4" hole completely through the pole. Secure the bracket with a 5/8" machine bolt, washer, and nut. Do not fully tighten the bolt at this time. See Fig. 2-2.
4. Position the enclosure on the upper mounting bracket. It may be necessary to slightly rock the enclosure and pull downward to properly seat it on the bracket. Center the enclosure on the pole. See Fig. 2-3.
5. Mark the hole for the lower mounting brackets. Lift the enclosure off the top bracket and drill the lower hole.
6. Slide the enclosure back into place over the top bracket. Align the lower bracket with the hole and secure it with a 5/8" machine bolt, washer, and nut. Both enclosure mounting straps must rest securely on the brackets. Tighten both brackets until the flanges seat into the wood. See Fig. 2-3.
7. The next step is assembling and attaching the conduit to connect the new PWE-SG enclosure to the legacy enclosure.



Fig. 2-1, Insert bracket into mounting strap



Fig. 2-2, Secure upper bracket



Fig. 2-3, Positioning the enclosure on the pole



NOTE:

Mounting bolts must go completely through the wooden pole and be secured from the back with a large washer and nut.

2.0 Installation, continued

2.1 Wooden Pole Installation, continued

2.1.1 Using Optional Brackets

There are two bracket variations available:

- The two point bracket (p/n 605-352-N2)*
- The two point 8" extended bracket (p/n 605-360)

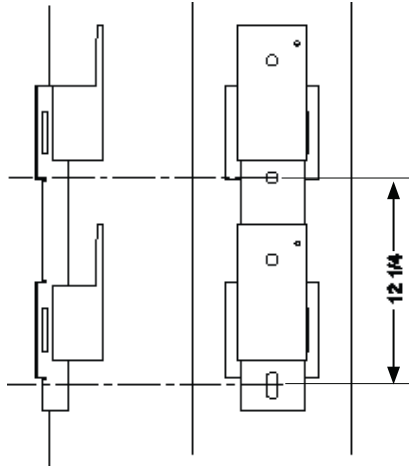


Fig. 2-4, The two point bracket for both concrete and wood poles

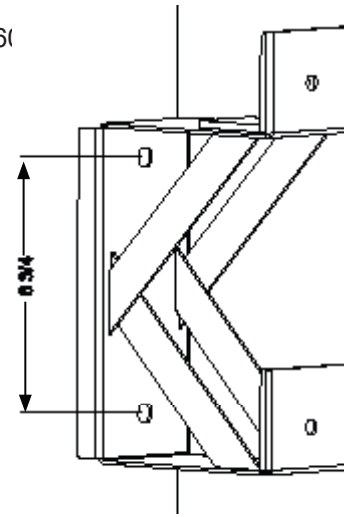


Fig. 2-5, The two point extended bracket for wood pole mount enclosures

*This bracket can be used for both wooden and concrete poles. It provides additional flexibility and, because utility companies often charge to drill holes in local utility poles, you can save costs by using both bolts and straps to attach the enclosure. Follow the directions for wooden and concrete pole installation to install these brackets.

NOTE:

There must be no more than two feet separating the stand-alone generic enclosure from the existing enclosure. The recommended optimal distance between enclosures is between 6 and 24 inches.

2.2 Steel/Concrete Pole Installation

Materials required:

Two customer-supplied pole straps to fit pole. Straps must be stainless, galvanized, or the equivalent.

Tools required:

Assorted sockets and wrenches

Procedure:

1. Follow Steps 1 and 2 in the wooden pole mounting instructions.
2. Position the upper mounting bracket on the pole and secure using a pole strap.
3. Lift the enclosure on the upper mounting bracket and pull downward to properly seat it. Center the enclosure on the pole. See Fig. 2-3.
4. Secure the lower mounting brackets on the pole using a pole strap. Both enclosure mounting straps must rest securely on the brackets.
5. The next step to connect the new enclosure to the existing enclosure is assembling and running the conduit to connect the new enclosure to the primary battery enclosure.

2.0 Installation, continued

2.3 Grounding the Enclosure

Alpha Technologies recommends using the grounding method illustrated here. The grounding method for a particular site is dependent upon available space, local codes, the National Electric Code (NEC), and other site-specific characteristics.

ATTENTION:

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

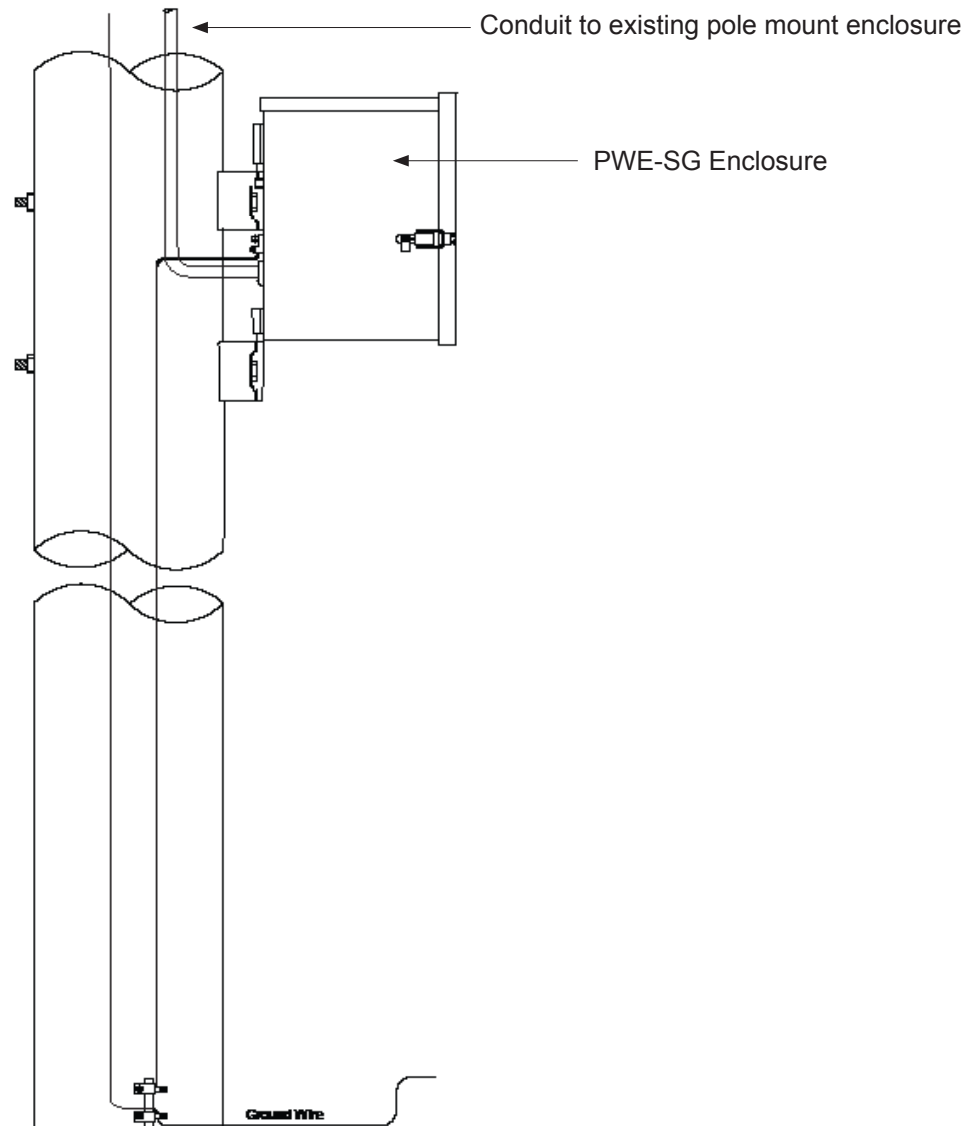


Fig.2-6, Enclosure Grounding

2.0 Installation, continued

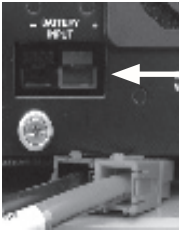
2.4 Assembling the Conduit

The conduit contains the battery cables and the wiring for other optional features, such as the tamper switch or battery heater mat. It is used to connect the stand-alone enclosure to the power supply located in the existing enclosure.

The conduit kit, supplied with the PWE-SG, consists of a sufficient length of weather-sealed flexible conduit and two connectors.



WARNING!



Before proceeding with the placement and wiring of the batteries and optional features, turn off the battery breaker and remove all battery connections from the power supply. Use insulated tools and secure all loose cable ends to prevent inadvertent unattended connections.

Procedure:

1. Locate the knockout in the the upper left corner of the PWE-SG enclosure. Using a rubber mallet, clear the hole for the conduit.
2. Drill a similar hole in the legacy enclosure:
 - a. Remove the far left battery to provide access
 - b. Place the hole in the upper left corner of the legacy enclosure, below the equipment tray, and clearing both the tray and any wiring already in place. See Fig. 2-7
 - c. Using a 1 3/8" hole saw, drill a hole that will accommodate 1 inch conduit.
3. Measure the distance between the drilled and knockout holes, adding 6 inches to the measurement to account for needed flexibility, and cut conduit to size.



Fig. 2-7, Conduit Placement, Upper Enclosure Interior View

2.0, Installation, continued

2.4 Assembling the Conduit, continued



NOTE:

Always run the lines and battery cables from the top end of the conduit toward the end which will be connected to the PWE-SG (bottom) enclosure.

4. Install a conduit connector to the end of the conduit which will be installed in the legacy (upper) enclosure. Remove the plastic locknut. See Fig. 2-8.
 - a. Cut conduit to length
 - b. Insert conduit through plastic screw ring
 - c. Insert conduit into connector. Tighten with the plastic screw ring.
 - d. Before you can proceed to step 5, threading the battery cables and additional wiring through the connector, you must first remove the plastic locknut.

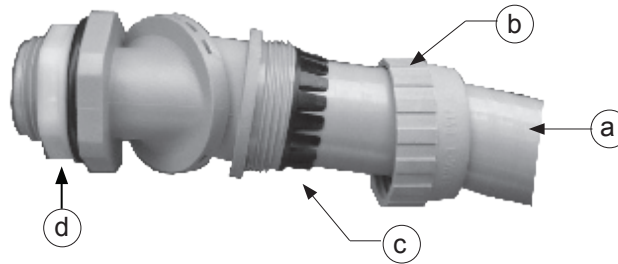


Fig.2-8, Conduit Connector

5. If you are not installing optional features, thread the battery cables through the conduit starting at the end of the conduit which will be attached to the legacy enclosure. If you are installing a tamper switch or battery heater mat, you must add those wires to the conduit before you insert the battery cable. It is important to thread the other optional wires and battery cables through the conduit in the proper order.
 - ◇ **First to install a tamper switch**, insert the magnet end of the tamper switch line into the conduit.
 - ◇ **Second to install a battery heater mat**, insert the un-terminated end of the line cord for the battery heater mat into the conduit.
 - ◇ **Next**, insert the end of the battery cables containing the contacts for the Anderson connectors into the conduit.
6. Remove the plastic locknut and attach the lower conduit connector (Fig. 2-8) at the knockout hole. On the inside of the lower enclosure, thread the plastic locknut through the wiring and using channel locks carefully tighten the plastic locknut, sealing the black rubber O-ring securely against the enclosure. (Fig. 2-11)

2.0, Installation, continued

2.4 Assembling the Conduit, continued

7. In the PWE-SG enclosure, using the provided Anderson connectors, terminate the battery cable. See Fig. 2-9.
8. If you are installing a battery heater mat, terminate the battery heater mat line cord with the receptacle provided. See. Fig. 2-10

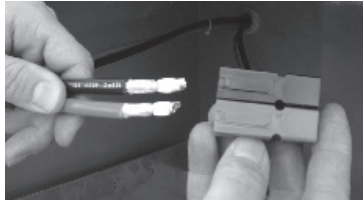


Fig. 2-9, Attaching Anderson Connectors to Battery Cables

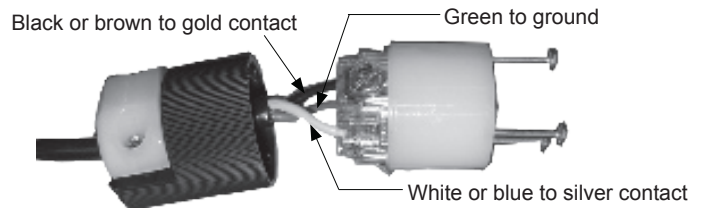


Fig. 2-10, Receptacle for Battery Heater Mat Line Cord

9. Carefully run the upper wires through the drilled hole in the legacy enclosure.
10. Using the plastic locknut, attach the upper conduit connector. Use channel locks to carefully tighten the connector, sealing the black rubber O-ring securely against the enclosure. See Fig. 2-11
11. The conduit is in place. Optimally, the conduit connectors should be swiveled to 45°F. See Fig. 2-12.

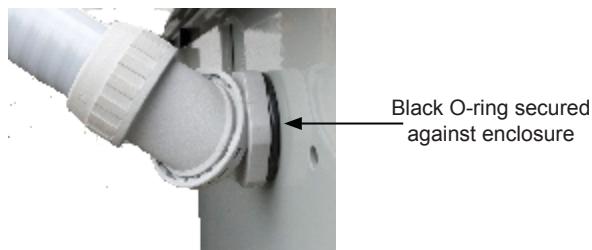


Fig. 2-11, Attaching Connector



Fig. 2-12, Conduit in Place

2.0 Installation, continued

2.5 Connecting to the Legacy (Upper) Enclosure

Replace the battery you removed in Section 2.4, Step 2. Referring to Fig. 2-13, hook up the battery strings.

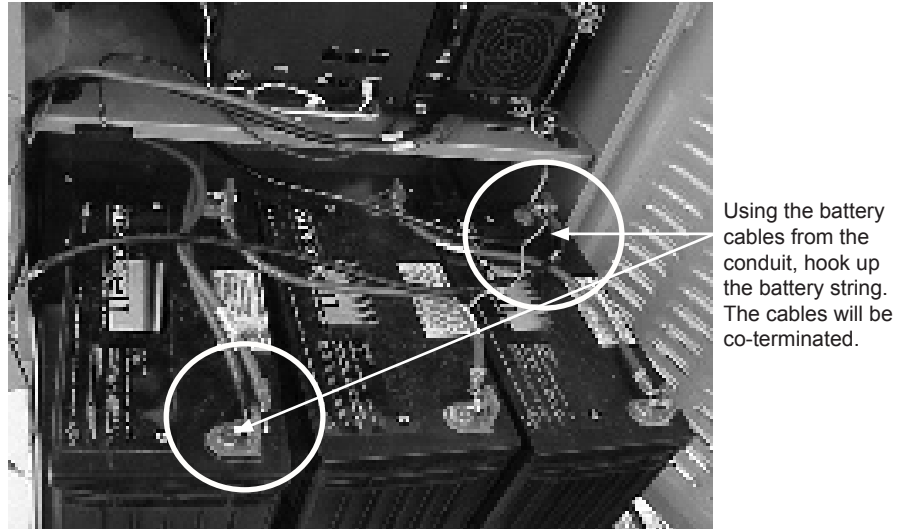


Fig. 2-13, Legacy Enclosure Battery Wiring

Close the battery tray, keeping the wires clear. To install a tamper switch, see Section 2.8 for instructions.

2.0 Installation, continued

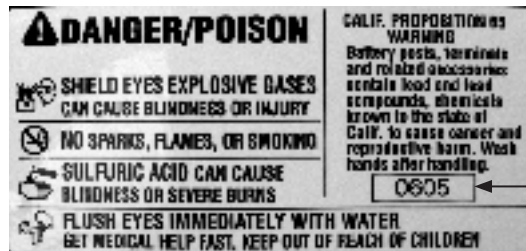
2.6 Installing PWE-SG Enclosure Batteries



CAUTION!

Before you install batteries, please read the Safety Notes at the beginning of this manual.

Each battery contains a date code, which is usually located near the positive (+) terminal of the battery. Record this code in the maintenance log. If batteries, other than those supplied by Alpha are used, consult the manufacturer's documentation of the date code type and placement.



Month: June. (06)
Year: 2005 (05)

Fig. 2-14, Date Code for Alpha Batteries after September 2001.



NOTE:

The date code label format and location may vary depending on the age of the battery being used.



CAUTION!

If you are installing a battery heater mat, it must be installed prior to the batteries. See Section 2.7 for instructions on installing the heater mat.

2.6.1 Battery Terminal Connections

Always refer to the battery manufacturer's instructions for correct mounting hardware and torque requirements for installation as well as maintenance specifications.



NOTE:

While the use of an in-line fuse is optional, Alpha recommends the use of the fuse in all installations.

Mounting hardware requirements vary with different manufacturers. Use the appropriate hardware for your battery type. The following photo and drawing are for illustrative purposes only.

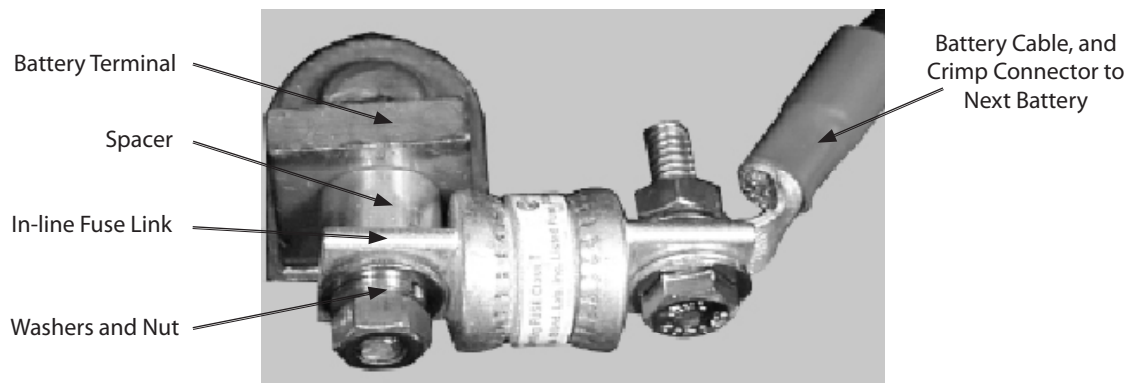


Figure 2-15, In-line Fuse Link Mounting

2.0 Installation, continued

2.6 Battery Installation, continued

2.6.2 Battery Assembly for Vertical Terminal Battery Posts

This is the typical battery terminal assembly for vertically mounted battery posts. Refer to the battery manufacturers' specifications for tightening torque.

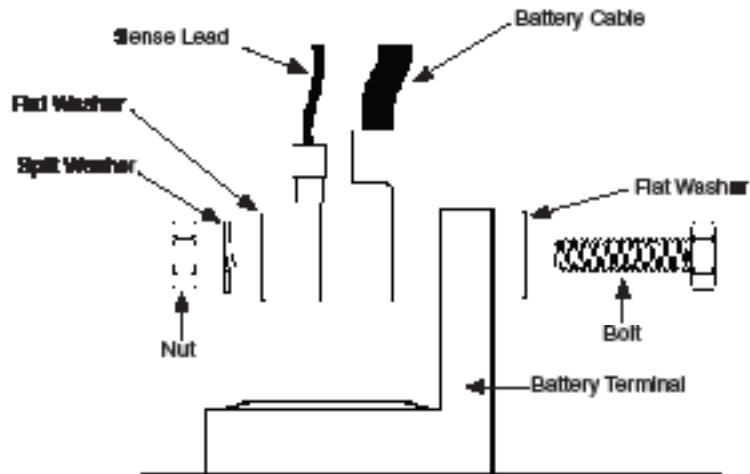


Figure 2-16, Vertically Mounted Battery Post

2.6.3 Installation Procedure



CAUTION!

Do not let live battery cables contact the chassis when you are making or breaking battery connections. If necessary, wrap the lugs with electrical tape to prevent arcing and temporarily disconnect one of the leads from the center battery. Ensure the battery string voltage and polarity are correct.

1. Place the batteries, with the positive terminals oriented toward the front of the enclosure, on the battery slide tray or shelf. Maintain as much ventilation space between batteries as possible.
2. Number each battery and record the number and date code in the maintenance log. This aids in identification and future record keeping.
3. Connect the batteries in series to achieve the correct voltage. See the battery wiring diagrams on page 22. If you are using the optional in-line fuse, connect it to the positive terminal of the battery located farthest to the right. For AlphaCell batteries, terminal connectors must be torqued to approximately 65 inch/pounds at installation and then re-torqued to 50 inch/pounds during routine maintenance.
4. Use a voltmeter to verify polarity and DC voltage at the module's battery connector.
5. Plug the battery cable connector into the battery cable connector from the conduit kit.



NOTE:

The cables have a red sleeve to denote the (+) positive battery terminal. When using multiple battery strings, the in-line fuse is recommended.

2.0 Installation, continued

2.6 Battery Installation, continued

2.6.4 Battery Assembly for Front Terminal Battery Posts

Below is the typical battery terminal assembly for front terminal battery posts. Torque rating for all terminals in 60-in-lbs (6.5nM).

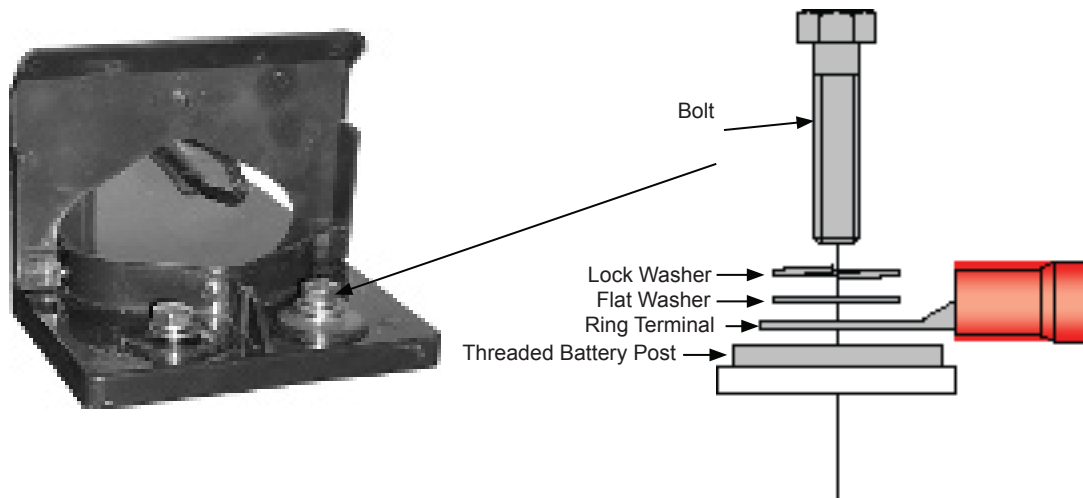


Fig. 2-17, Typical Ring Lug Assembly for Front Terminal Batteries, Single Lug

2.6.5 Battery Installation for Front Terminal Batteries

1. Place the batteries, with the terminals oriented toward the front of the enclosure. Use the battery manufacturer's recommended spacing between batteries for maximum ventilation.
2. Number the batteries using labels or masking tape and record each battery's number and date code in the maintenance log. This helps in future record keeping and identification.
3. Connect the batteries in series to achieve 36VDC or 48VDC.
4. Verify battery polarity and install battery jumper bars after attaching all terminals to respective terminal posts. Use a voltmeter to verify polarity and DC voltage at the module's battery connector.
5. Plug the battery cable connector into the battery cable connector from the conduit kit. See page 23 for battery wiring diagrams.



NOTE:

The cables are marked with a RED sleeve to indicate the (+) positive battery terminal.

2.0 Installation, continued

2.6 Battery Installation, continued

2.6.6 Battery Installation Wiring Diagrams

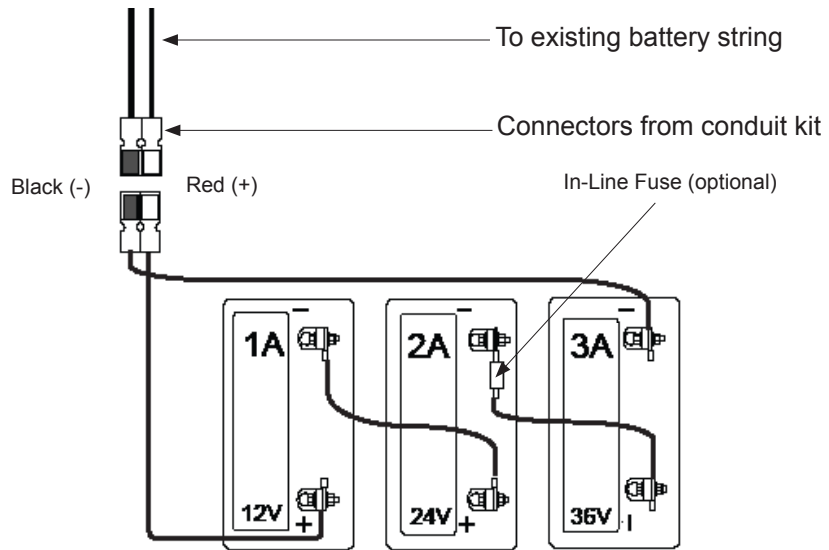


Fig.2-18, 36V Battery Wiring Diagram

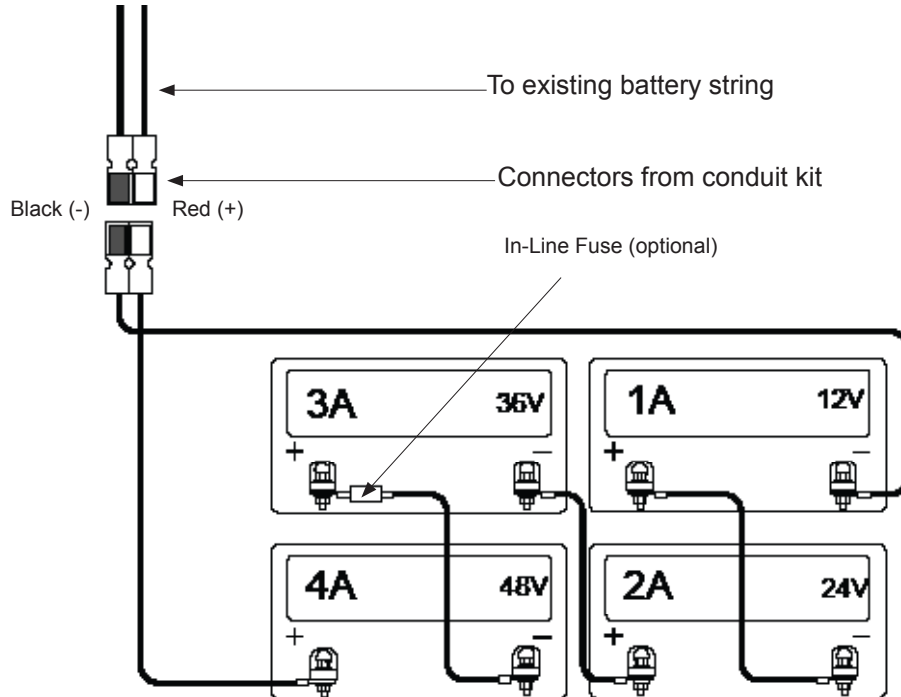


Fig. 2-19, 48V Battery Wiring Diagram

2.0 Installation, continued

2.6 Battery Installation, continued

2.6.6 Battery Installation Wiring Diagrams, continued

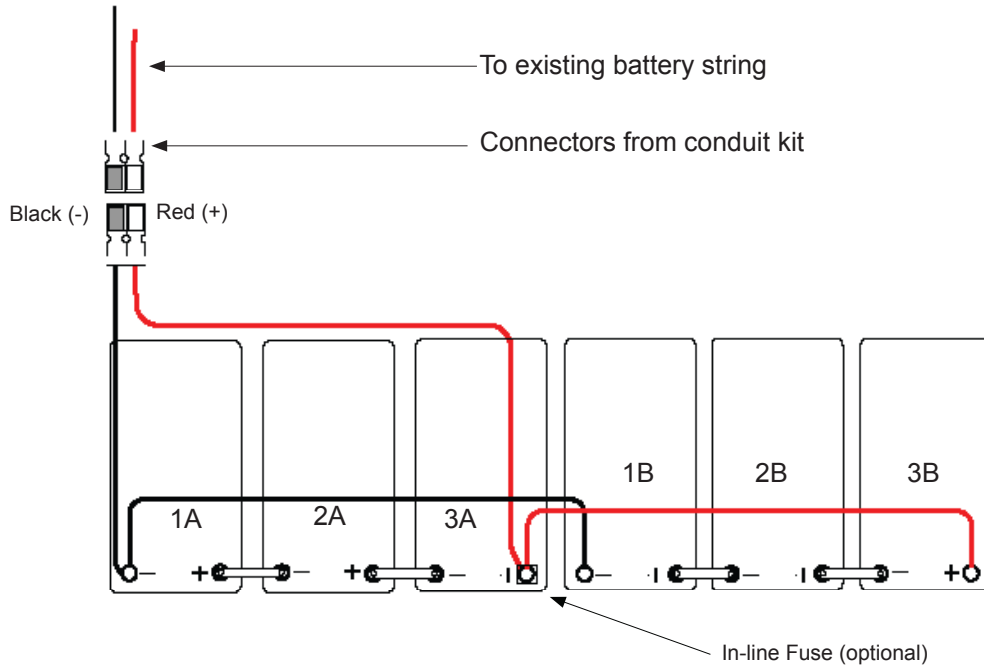


Fig. 2-20, 2X 36VFT Battery Wiring Diagram

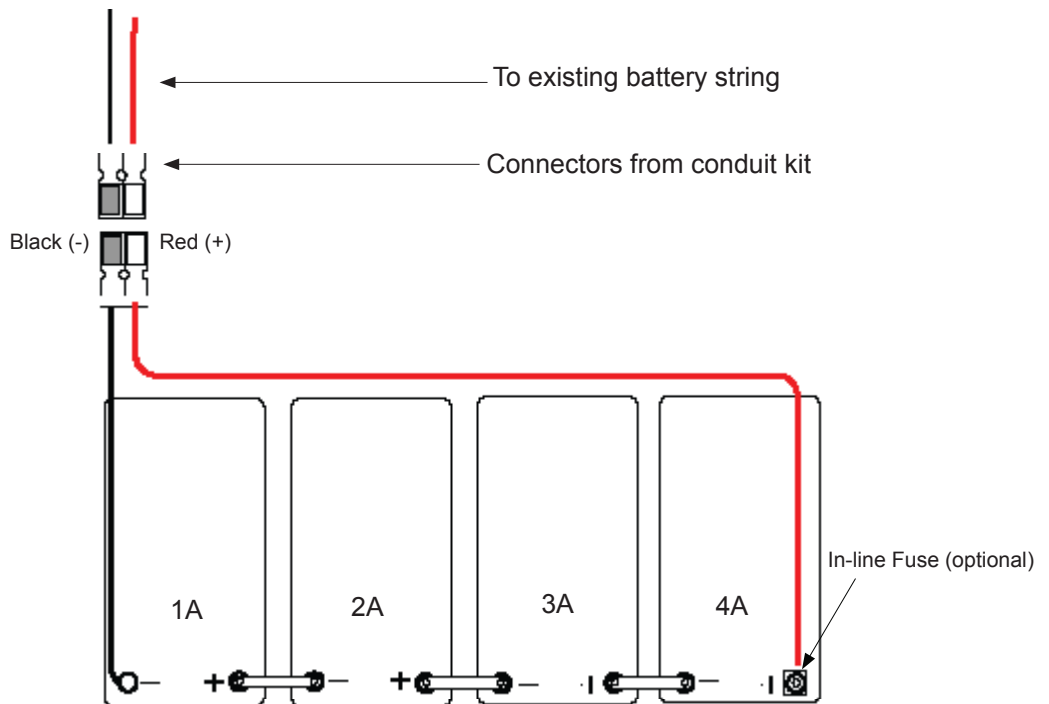


Fig. 2-21, 1X 48VFT Battery Wiring Diagram

2.0 Installation, continued

2.7 Installing Optional Features



NOTE:

The instructions in this section presuppose that you have already placed the appropriate lines in the conduit. This is a pre-requisite for installing these features. See Section 2.4 for information on assembling the conduit.

2.7.1 Installing the Tamper Switch

The tamper switch provides a magnetic door switch which plugs into the power supply. Most status monitoring systems provide an alarm if the enclosure door is opened. Tamper switches are available as normally open (NO) or normally closed (NC). See Table 1-2 for part numbers and additional information.

In the legacy enclosure:

1. Using the velcro provided, attach the tamper switch jumper board to the right wall of the enclosure. See Fig. 2-22.
2. Unplug the existing tamper switch from the power supply and plug it into the tamper switch jumper board.
3. Plug in the new tamper switch extension (coming from the conduit) into the tamper switch jumper board. Make sure to coil and zip-tie excess wire.
4. Plug the new tamper switch jumper cable into both the tamper switch jumper board and the power supply.

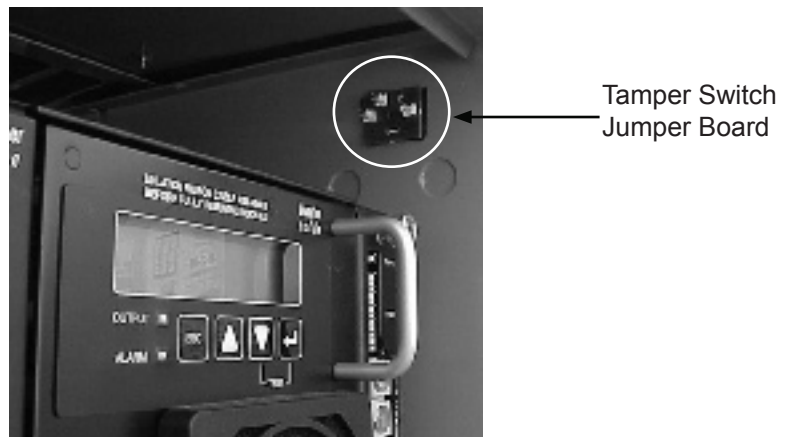


Fig. 2-22, Tamper Switch Jumper Board, Legacy Enclosure

2.0 Installation, continued

2.7 Installing Optional Features, continued

2.7.1 Installing the Tamper Switch, continued

In the PWE-SG enclosure:

1. Using a hand rivet gun with 5/32" nosepiece, attach the tamper switch bracket to the left front flange of the enclosure. See. Fig. 2-23.
2. Screw the new tamper switch (from the conduit) to the bracket, using the screws provided.
3. Attach the magnet to the door of the enclosure using the nuts provided.

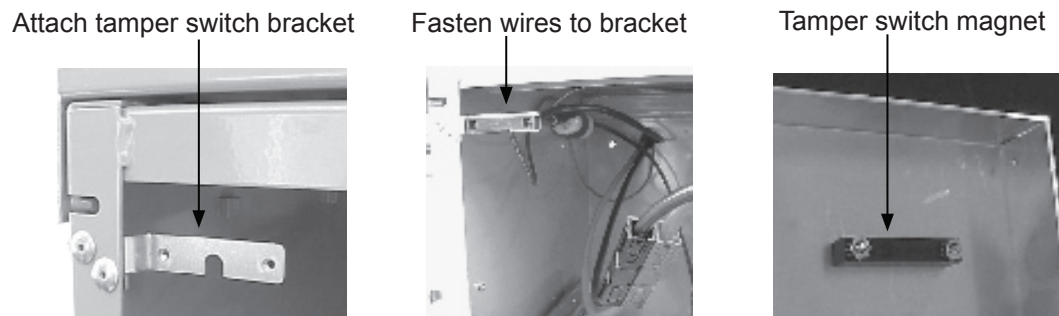


Fig. 2-23, Tamper Switch Installation

2.7.2 Installing the Battery Heater Mat to the PWE-SG Enclosure



NOTE:

You must install the battery heater mat before placing the batteries in the enclosure.

1. If necessary, extend battery tray and add the heater mat to the bottom of the tray or the enclosure.
2. Replace the battery tray and plug in the line cord to the cord/receptacle from the conduit kit.
3. Using tie straps, secure the line cord to the upper left side of the enclosure to avoid moisture.



CAUTION!

Take care to attach the battery heater mat line cord to the side of the enclosure with tie straps. It is important to avoid moisture. See Fig. 2-24.

Line cord secured to side of enclosure.

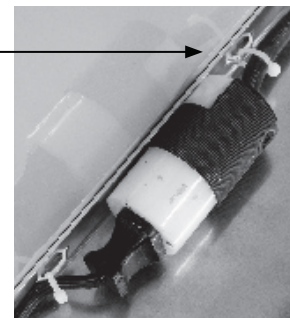


Fig.2-24, Attaching Battery Heating Mat Line Cord to Side of Enclosure

3.0 Maintenance

Establishing a routine of regular, preventative maintenance ensures the pole mount enclosure will function for many trouble-free years.

Every three to six months:

- **Inspect the enclosure.**

Check for signs of rust and corrosion, paying particular attention to the battery trays. Clean any rust or corrosion immediately.

- **Inspect the mounting brackets and hardware.**

Carefully check for signs of unusual wear and loose hardware. Correct any deficiencies immediately.

- **Check battery terminals and connecting wires.**

Care of the batteries is essential to any maintenance program. In addition to voltage checks, visually inspect the batteries for signs of cracking, leaking, or swelling. To aid in quick identification and tracking of voltages in the maintenance log, use labels to number the batteries inside the enclosure. Batteries are temperature sensitive and susceptible to overcharging and undercharging. Since batteries behave differently in winter than in summer, Alpha's battery chargers automatically compensate for changes in temperature by adjusting float and accept charge voltages.

See the power supply's maintenance manual for instructions on maintaining the power supply.

Check each battery terminal and connection. Verify the posts are clean and the crimped connectors are tight. Terminal connectors must be torqued to specification at installation and then re-torqued to 50 inch/pounds during routine maintenance. If there is an "in-line" fuse in the battery cable, check the fuse holder and fuse. Verify terminals are properly greased with an approved battery terminal corrosion inhibitor such as NCP-2. Record date of maintenance in the maintenance log.

- **Check battery open circuit voltage.**

Switch the power supply's battery breaker to the OFF position. Disconnect the battery connector from the inverter module and measure the individual voltage across each battery. The difference between any battery in the string must not be greater than 0.3 VDC. Defective or marginal batteries must be replaced with an identical type of battery. Record the unloaded battery voltages in the maintenance log.



NOTE:

Whenever the power supply's battery breaker is turned OFF or the batteries are disconnected, the power supply will not operate in inverter mode in the event of a utility power failure.

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