BSM-4 Battery Side Module

BSM-4 Battery Side Module with Corbin Lock For Traffic Backup Systems

Field Upgrade Installation Manual

Effective: June, 2003

Alpha Technologies

BSM-4

Battery Side Module with Corbin Lock for Traffic Backup Systems

Installation Manual

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Battery Safety Notes

Lead-acid batteries contain dangerous voltages, currents and corrosive material. Battery installation, maintenance, service and replacement must be performed by authorized personnel only.

Chemical Hazards

NOTE: Any gelled or liquid emissions from a Valve-Regulated lead-acid (VRLA) battery contain dilute sulfuric acid, which is harmful to the skin and eyes. Emissions are electrolytic, which are electrically conductive and corrosive.

To avoid injury:

- Wear protective clothing (insulated gloves, eye protection, etc) whenever installing, maintaining, servicing, or replacing batteries.
- If any battery emission contacts the skin, wash immediately and thoroughly with water. Follow your company's approved chemical exposure procedures.
- If any battery emission contacts the eye, wash immediately and thoroughly with water for 10 minutes with pure water or a special neutralizing eye wash solution and seek immediate medical attention. Follow your company's approved chemical exposure procedures.
- Neutralize any spilled battery emission with the special solution contained in an approved spill kit or with a solution of 1 lb. bicarbonate of soda to 1 gal. of water. Report chemical spill using your company's spill reporting structure and seek medical attention if necessary.
- Always replace batteries with those of an identical type and rating. Never install old or untested batteries.
- Do not charge batteries in a sealed container. Each individual battery should have at least 0.5 inches of space between it and all surrounding surfaces to allow for convection cooling.
- All battery compartments must have adequate ventilation to prevent an accumulation of potentially dangerous gas.

1.1 BSM Installation

Overview

BSM-4 Provides an additional 48 Volt battery pack.

Upon receipt, the enclosure should be unpacked and inspected for shipping damage. The following items should be inclosed:

1. BSM-4 Enclosure, door, and two sets of keys.

2. 6 aluminum rivets and 2 sets of #10 nuts and bolts for mounting the BSM.

3. Battery cable conduit, consisting of a close nipple, lock washer and bushing.

4. Battery Cable Kit.

1.1 BSM Installation, *continued*

1.1.1. Enclosure Preparation

Tools and Materials Needed:

Center Punch or Permanent Marker
Electric or pneumatic drill
No. 7 drill bit (.203")
#2 Phillips screw driver
Hand operated rivet gun with .188" nosepiece
Drill-stop collar for No. 7 drill bit
Hole saw or hydraulic punch for 1.375" hole
Wet-dry vacuum
Utility knife
1" Close nipple (supplied)
1" locknut (supplied)
1" plastic bushing (supplied)
6 aluminum rivets (supplied)
2 #10-32 x 3/4" pan-head screws (supplied)
2 #10-32 Nuts (supplied)
4 #10 Paint-Break washers (supplied)

Procedure:

NOTE: Metal shavings will enter the Traffic enclosure during this procedure. Before proceeding, verify that the power supply, CB box, service entrance and batteries are disconnected or protected.

WARNING: Follow all manufacturer's operating and safety instructions for the use of power tools and punch drivers.

1. Place the Battery Side Module (BSM) on the pad beside the Traffic enclosure (Fig. 1-1). Slide the BSM against the side of the enclosure.

2. Using the holes in the inside flange of the BSM as a template, mark the eight rivet holes on the Traffic enclosure with a punch or marker.

3. Set the BSM aside.

4. Mark hole location for 1.375" conduit hole.

1.1 BSM Installation, *continued*

1.1.1 Enclosure Preparation, *continued*

5. Using No. 7 drill bit, set the Drill-Stop collar at 1" from the drill tip, drill the rivet holes marked in step 2.

6. Using a hole saw or punch driver, drill the 1.375" hole for the cable conduit marked in step 4.

7. Use a utility knife or de-burring tool to remove any sharp edges from around rivet and conduit holes.

8. Place the BSM into position and align the rivet holes.

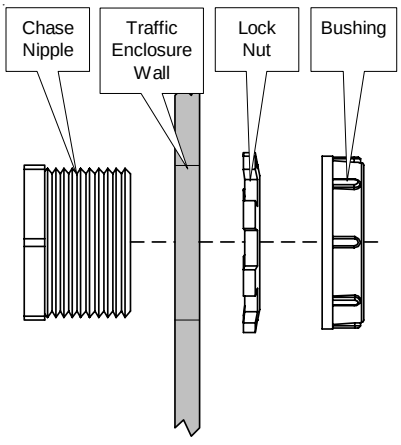
NOTE: To provide proper grounding, two of the rivet holes must be filled with stainless steel screws and nuts with paint-break washers against the enclosures, as shown below. Any two accessible rivet holes may be used.

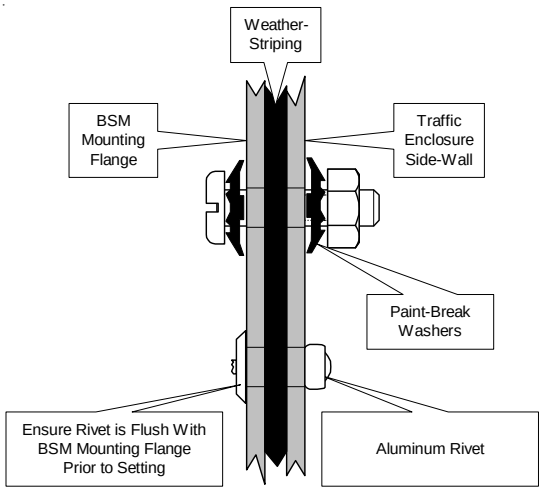
NOTE: If the BSM will be in contact with the pad, place a vapor barrier between the enclosure and the pad (30# felt or tar paper).

9. Rivet and bolt the BSM into place using the aluminum rivets and stainless steel hardware provided. See diagram below.

10. Install the 1" close nipple, locknut and bushing in the 1.375" conduit hole, as shown below.

11. Vacuum the metal shavings out of the Traffic enclosure and the BSM.





1.2 Drill Guide

1.2.1 Traffic Enclosure

Traffic enclosure may vary.

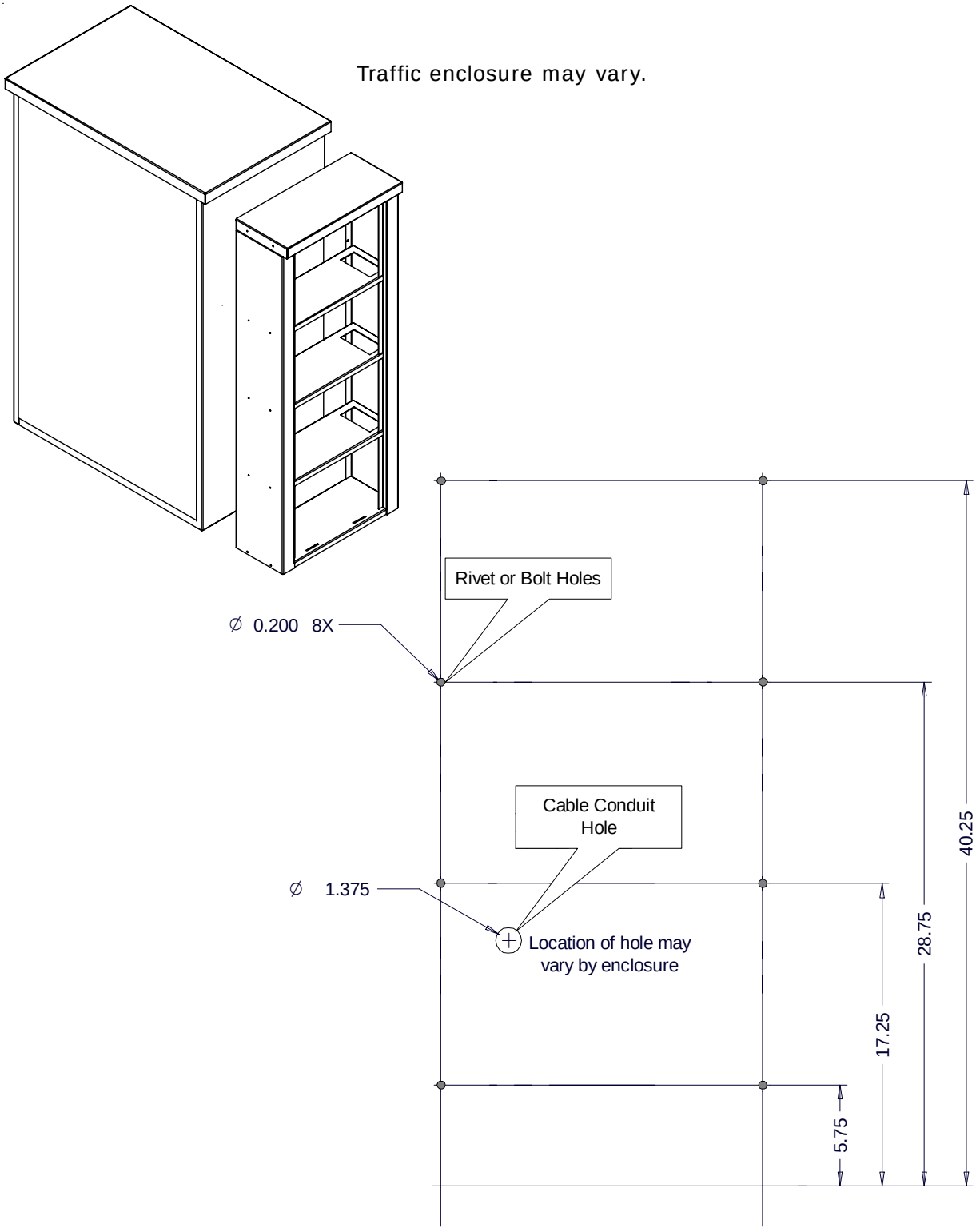
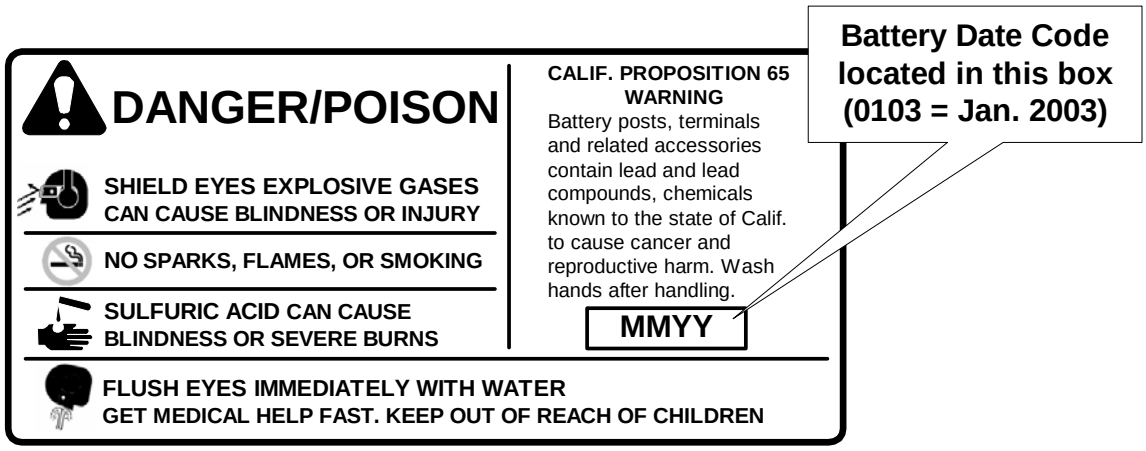


Fig 1-1 Traffic enclosure and BSM-4

1.3 Battery Installation

Battery Identification

Each battery contains a DATE CODE usually located on a sticker near the center of the battery or stamped in white ink near the POS terminal. This date code must be recorded in the battery's maintenance log. If batteries other than those installed by Alpha are used, consult the battery's manufacturers' documentation for date code type and placement.

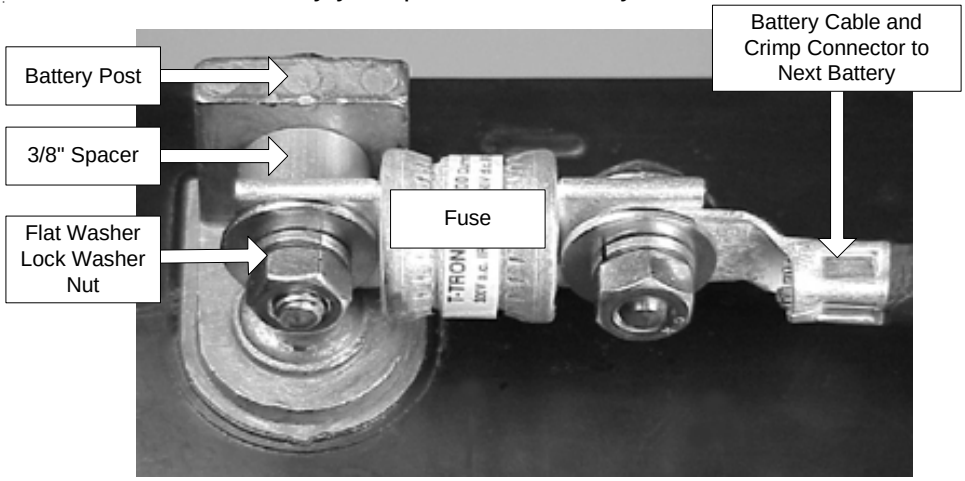


Battery Terminal Connections

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, then re-torque to 50 Inch-Pounds.

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



1.3 Battery Installation, *continued*

1.3.1 Battery Connection

Tools and Materials Needed:

Two 7/16” open end wrenches
Battery Cable Kit: BSM-4

Procedure:

WARNINGS: Set the BATTERY BREAKER on the power supply to OFF.

To prevent short circuits, route only ONE wire at a time through the cable conduit. Attach the cable at both ends before routing the second cable through.

Follow all safety precautions listed on the instructions contained in the Battery Cable Kit.

1. Install and connect 4 batteries, in accordance with the Battery Cable Kit Installation Guide, included with the Battery Cable Kit.

1.3 Battery Installation, *continued*

Battery Remote Temperature Sensor (RTS)

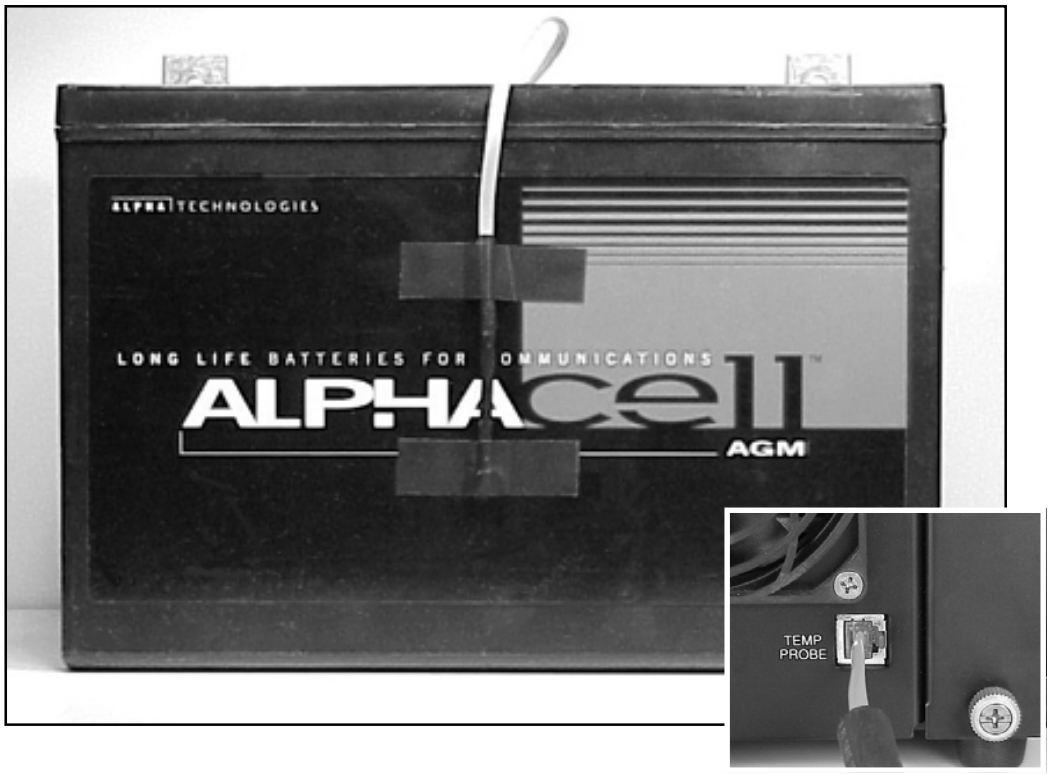
Tools Needed:

Adhesive Tape

Procedure:

1. For enclosures with multiple battery strings, the RTS must be attached to the WARMEST battery string. This ensures proper operation of the battery charger's temperature compensation circuit. Failure to attach the RTS to the warmest battery string could result in overcharging and premature battery failure.

2. The other side of the RTS Probe is attached to the front panel of the Novus power supply, in the Traffic enclosure. Refer to the Novus operator's manual for detailed instructions.



Battery Remote Temp Sensor (RTS) placement

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