

# 6020

# ASSEMBLY INSTRUCTIONS

Multiplexer Enclosure and Cabling

December 2008



*Figure 1 - Trase Unit and Multiplexer Enclosure*

**SOILMOISTURE EQUIPMENT CORP.**

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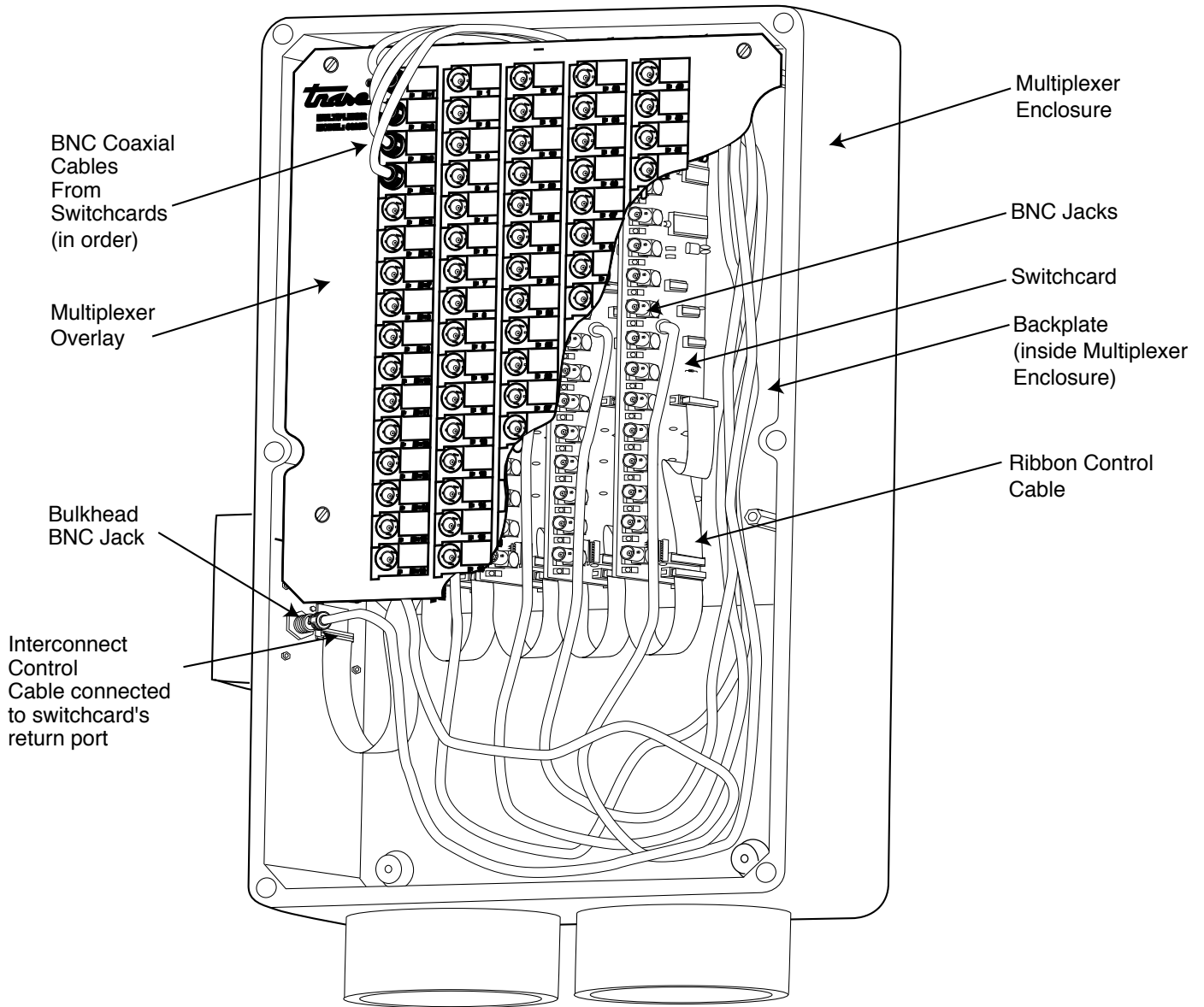


Figure 2 - Multiplexer Enclosure Parts

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## **IMPORTANT INFORMATION BEFORE YOU START ASSEMBLY OF YOUR MULTIPLEXER UNPACKING**

Remove all items from their shipping containers/boxes. DO NOT remove switchcards from their anti-static bags at this time. Be sure to check each item off against the packing list enclosed with your shipment. Any damage found upon receipt should be reported immediately to the transport carrier for claim. It is important that you save the shipping containers and all evidence to support your claim.

### **Precautions**

Some of the components of the switchcards are sensitive to static electricity. Take reasonable precautions to protect the boards from static electric discharge.

The Multiplexer involves proprietary electronic circuits and hardware. Tampering with the Multiplexer switchcards in any manner will void warranty and make user liable for costs of repair. Soilmoisture Equipment Corp. is not responsible for any damage, actual or inferred, for misuse or improper handling of this equipment. The Multiplexer is designed to be used solely as directed under normal conditions in the applications intended for this instrument.

### **ASSEMBLY**

The weather-tight Multiplexer Enclosure, made of fiber-reinforced plastic, has a removable front cover held on with 6 screws. Using a standard blade screwdriver, remove the screws and cover (Fig. 1).

When shipped, the Overlay will cover the backplate and interconnect control cable (located on the bottom left interior of the Enclosure (Fig. 2). Remove the screws that hold the Overlay in position and the Overlay itself. Your switchcards can now be mounted on the backplate.

The standard Multiplexer Enclosure, Model No. 6020B05, holds up to 5 switchcards. The larger Multiplexer Enclosure, Model No. 6020B17, can hold up to 17 switchcards.

Each switchcard comes individually wrapped in anti-static material. Remove the switchcard and cable from its anti-static bags carefully, handling only the edges. (REMEMBER: Static charge may exist on the outside of the anti-static bag; DO NOT lay the switchcard on top of the anti-static bag).

Each switchcard has 16 BNC jacks on the front, a BNC coaxial cable and a ribbon control cable. The pins on the back side of the switchcard mounting rail are used for alignment to the backplate inside the Multiplexer Enclosure. (Fig 3.)



## CONNECTING THE SWITCHCARDS

The channel numbering scheme shown in Figs. 5a, 5b and 5c must be used, as this is how your Trase Unit Multiplexing software will automatically configure the channel numbers in a Multiplexer array.

Read "General Switchcard Installation" instructions FIRST. Then, depending on how many cards you are installing, follow specific switchcard Installation instructions for the appropriate number of cards being installed.

### General Switchcard Installation

Holding the switchcard vertically with the 16 BNC jacks facing out (the BNC coaxial cable and ribbon control cable should now be hanging down from the switchcard), align the pins on the back of the switchcard to the holes on the backplate (Fig. 3). Tighten the 2 mounting screws with a screwdriver to securely attach the switchcard. Repeat this procedure for all switchcards to be installed.

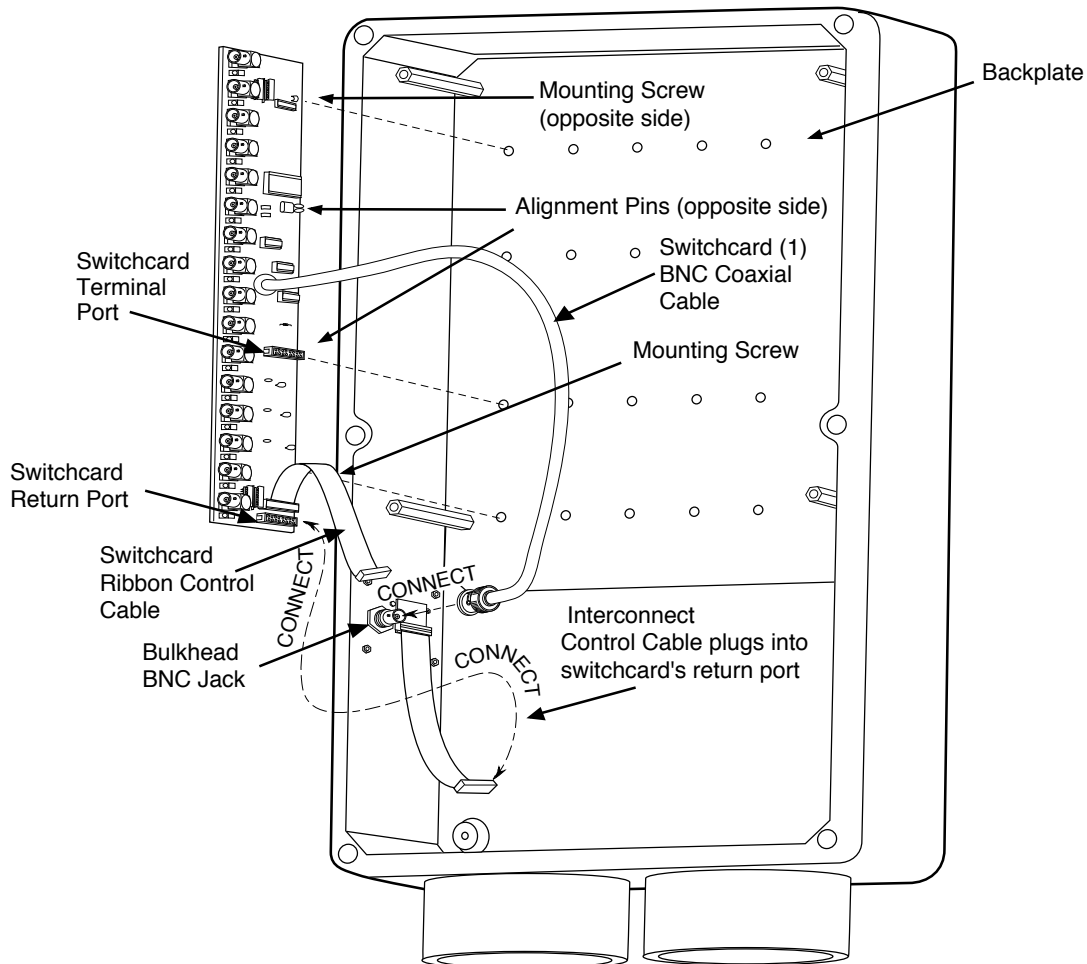


Figure 3 - Switchcard Installation

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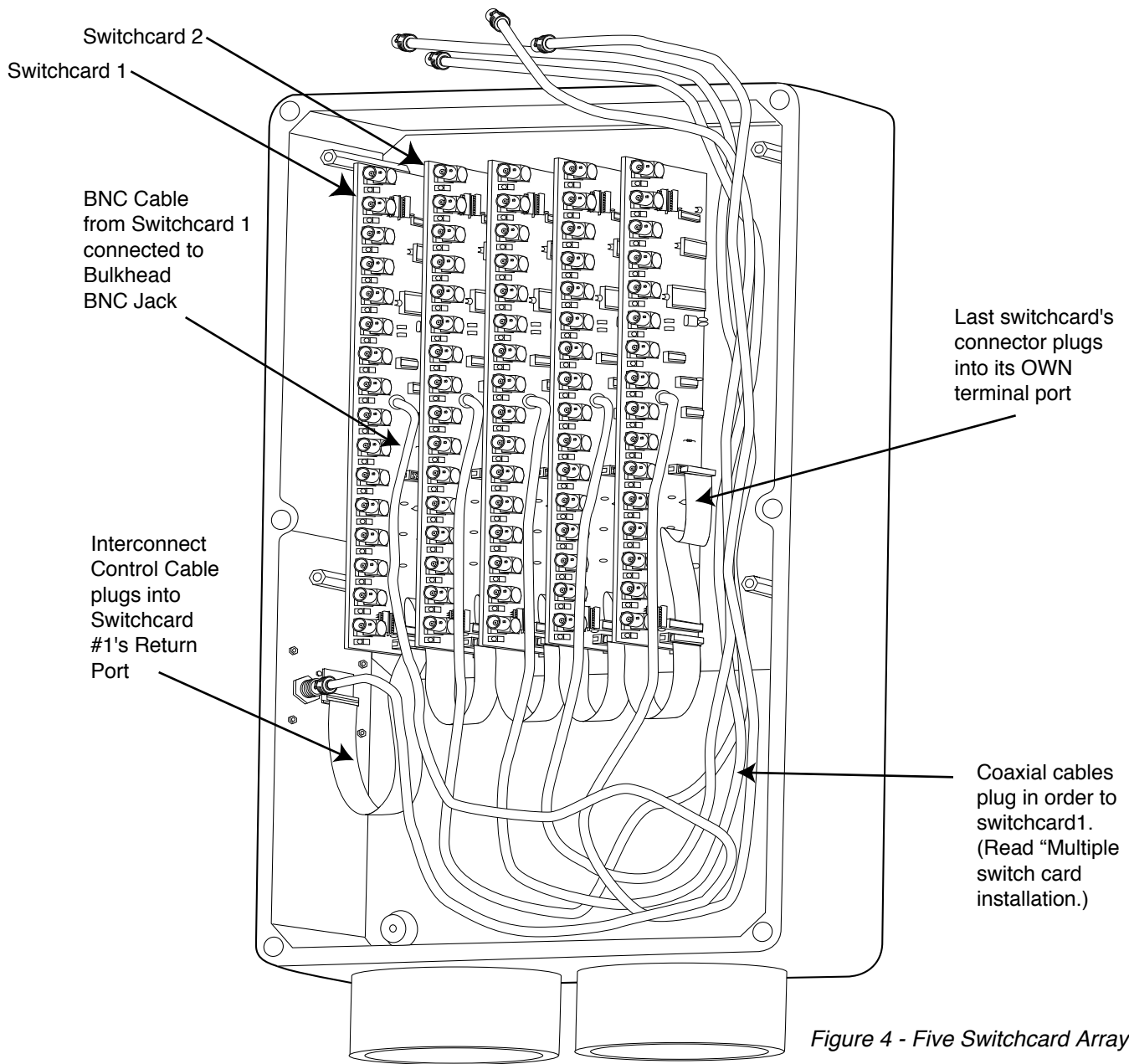


Figure 4 - Five Switchcard Array

The switchcards must be connected to each other by their ribbon control cables in order to complete the circuit. Starting with the switchcard on the far left, take its ribbon control cable and insert the connector into the "return port" of the switchcard to its immediate right. Repeat this procedure for all switchcards in the array, except the last. Because the connector of the last switchcard cannot be inserted into any other switchcard, the connector must be plugged into ITS OWN terminal port to complete the control circuit (Fig. 4).

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## Installation of a Single Switchcard

A single switchcard is installed in the second slot from the left, rather than the first slot (Fig. 5a). The reason for this is so that the channels indicated on the Multiplexer Overlay will indicate the correct channels being used. The interconnect control cable from the Enclosure plugs into the return port of the switchcard and the switchcard's BNC coaxial cable is attached to the bulkhead BNC jack located on the lower left interior of the Multiplexer Enclosure (Fig. 2). The Multiplexer Overlay may now be reattached by aligning the holes in the four corners of the Overlay with the four stand-off posts. Proceed with "Connecting Waveguide Cables " instructions below.

## Installation of Two Switchcards

Follow instructions under "General Switchcard Installation", using slots 1 and 2 for placement of the switchcards.

Install the Overlay and then take the BNC control cable from switchcard #1 and connect it to the bulkhead BNC jack (lower left interior of the Enclosure (Fig. 2). The BNC cable from switchcard #2 (Fig. 5b) is routed behind and over the top of the Overlay and is inserted into Conn 1 of switchcard #1(Fig.5b). Proceed with "Connecting Waveguide Cables" instructions below.

## Multiple Switchcard Installation

Install all switchcards as described under "General Switchcard Installation". For installation of 5 switchcards, your Multiplexer Enclosure should look like Fig. 2 & Fig.4.

After reattaching the Overlay, connect all BNC coaxial cables from all switchcards to switchcard #1 in order, routing them from behind and over the top of the Overlay, starting at "CONN 1" port from switchcard #2's coaxial cable.(Fig. 5c).

The BNC coaxial cable from switchcard #1 is inserted into the bulkhead BNC jack

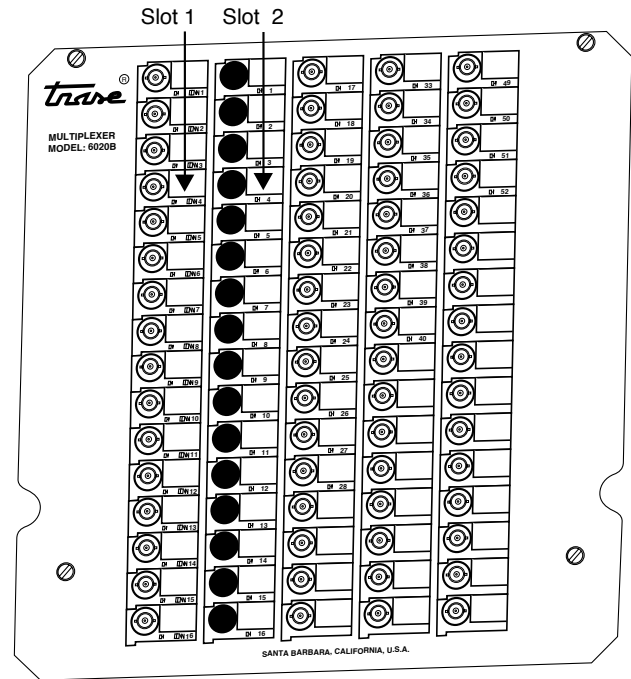


Figure 5a - One switchcard installed

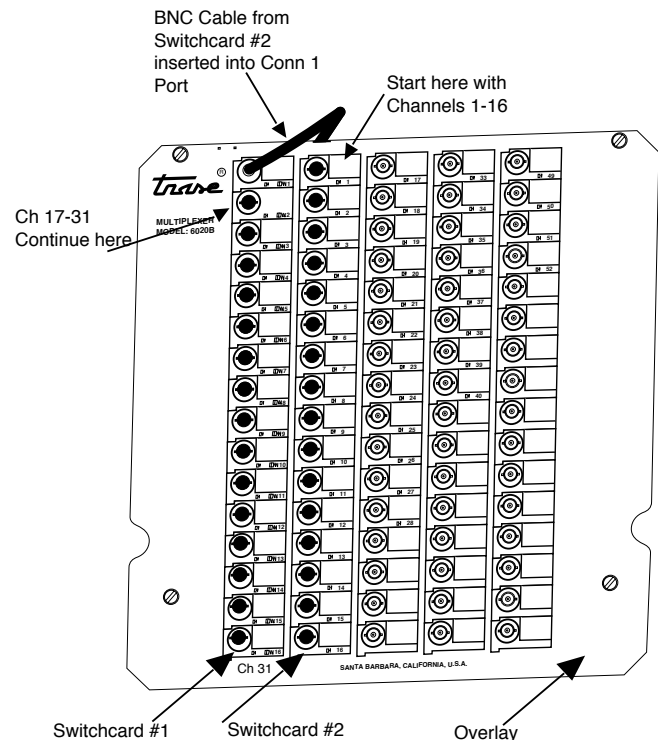


Figure 5b - Two switchcards installed

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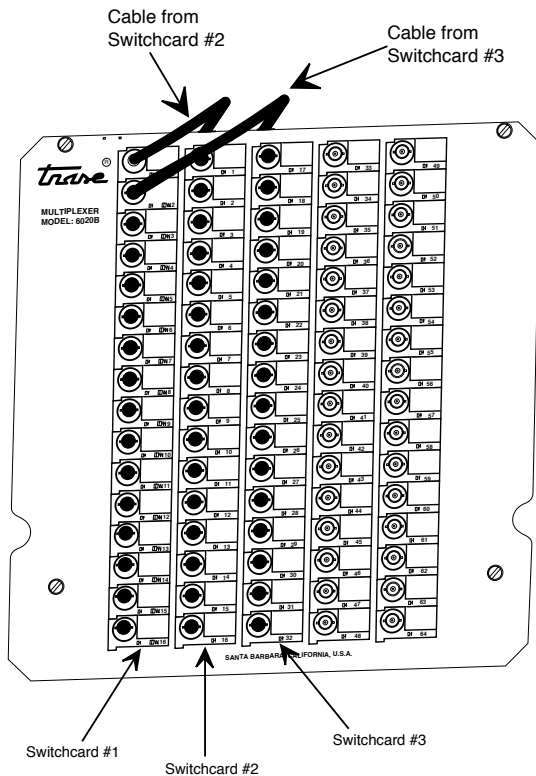


Figure 5C - Three switchcards installed

located on the lower left interior of the Enclosure, as indicated in fig.3).

### CONNECTING WAVEGUIDE CABLES

Cables from installed waveguides should be routed to the Multiplexer Enclosure as directly as possible. The cables may be run in conduits above or below ground or buried directly. When installing the cables be sure to account for any hazards in the area that may be present. The cables should be introduced into the Multiplexer Enclosure through the PVC Tube ports located at the bottom of the Multiplexer Enclosure. Each cable may now be connected to the proper port on the switchcard array (Fig. 1). When all cables have been connected to the switchcards, the cables may be bundled together with cable ties and the PVC tube ports can be sealed with putty or silicone rubber compound.

Incoming waveguide cables should be connected, starting with Channel 1 (see Overlay) and continuing until all needed Channels are filled sequentially.

If, in your multiple switchcard setup, all channels are filled, any OPEN "Conn" ports on Switchcard #1 may serve as Channels if you require additional waveguide connections (Fig. 1).

### CONNECTING YOUR TRASE UNIT TO THE MULTIPLEXER ENCLOSURE

All Multiplexer Enclosures are shipped with 2 cables for connection to a Trase unit. One is a BNC coaxial cable and the other a Multiplexer Control Cable (DB15 cable).

Locate the two connectors on the outside of the Multiplexer Enclosure (Fig. 6). Take one end of your BNC coaxial cable and insert it into the BNC jack on the Multiplexer enclosure; the other end of the BNC coaxial cable is plugged into the Trase unit.

Next, take the Multiplexer Control Cable and connect one end to the Multiplexer Enclosure and the other end to the Multi-

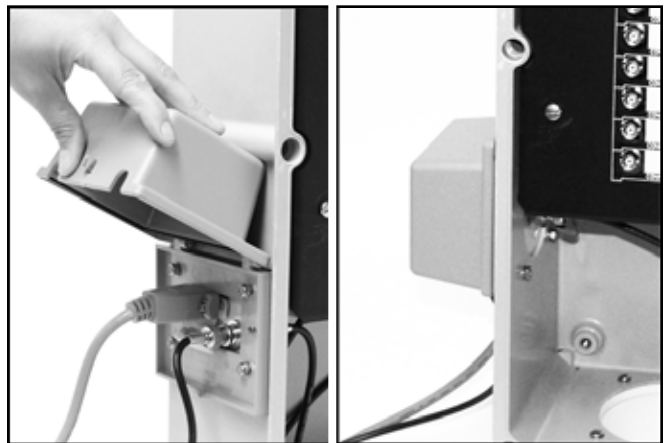


Figure 6. Side View of Multiplexer Enclosure

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plex Port on the Trase unit. Tighten screws on both ends of the Multiplexer Control Cable to ensure a proper connection. To read one channel in Wintrase, you can select "Mux channel" (see the Measure screen). To autolog, see Trase manual and WinTrase "Multiplexer screen" to set or scan all available channels.

### **ENCLOSURE MOUNTING**

Provisions are made for mounting the Multiplexer Enclosure to best suit your requirements. The Enclosure may be mounted by the 4" PVC pipe couplings attached to the bottom of the enclosure. These couplings are also the entrance path for waveguide cables, so provisions should be made to allow the cables to enter the couplings.

The rear of the Enclosure also has 4 mounting holes so that the Enclosure may alternatively be attached to a wall or posts.

### **NOTE:**

When the Multiplexer Enclosure's cover is in place and the cables are sealed in the PVC tube ports, the Multiplexer Enclosure is environmentally sealed against dust and moisture.

However, if you will be leaving your Trase unit in the field, remember that the seals on the Trase unit itself and the battery pack are NOT watertight. The Trase unit should be adequately sheltered to ensure that water does not damage the electronics of the instruments.

### **OPERATION OF THE MULTIPLEXER SYSTEM**

To verify proper operation of both Trase and Multiplexer systems, please refer to your Trase Operating Instructions Manual.

