

INSTRUCTION MANUAL



AM-ENCT **Analog Multiplexer Enclosure**

Revision: 12/91

Copyright (c) 1989-1991
Campbell Scientific, Inc.

Warranty and Assistance

The AM-ENCT ANALOG MULTIPLEXER ENCLOSURE is warranted by CAMPBELL SCIENTIFIC, INC. to be free from defects in materials and workmanship under normal use and service for twelve (12) months from date of shipment unless specified otherwise. Batteries have no warranty. CAMPBELL SCIENTIFIC, INC.'s obligation under this warranty is limited to repairing or replacing (at CAMPBELL SCIENTIFIC, INC.'s option) defective products. The customer shall assume all costs of removing, reinstalling, and shipping defective products to CAMPBELL SCIENTIFIC, INC. CAMPBELL SCIENTIFIC, INC. will return such products by surface carrier prepaid. This warranty shall not apply to any CAMPBELL SCIENTIFIC, INC. products which have been subjected to modification, misuse, neglect, accidents of nature, or shipping damage. This warranty is in lieu of all other warranties, expressed or implied, including warranties of merchantability or fitness for a particular purpose. CAMPBELL SCIENTIFIC, INC. is not liable for special, indirect, incidental, or consequential damages.

Products may not be returned without prior authorization. The following contact information is for US and International customers residing in countries served by Campbell Scientific, Inc. directly. Affiliate companies handle repairs for customers within their territories. Please visit www.campbellsci.com to determine which Campbell Scientific company serves your country. To obtain a Returned Materials Authorization (RMA), contact CAMPBELL SCIENTIFIC, INC., phone (435) 753-2342. After an applications engineer determines the nature of the problem, an RMA number will be issued. Please write this number clearly on the outside of the shipping container. CAMPBELL SCIENTIFIC's shipping address is:

CAMPBELL SCIENTIFIC, INC.

RMA# _____

815 West 1800 North

Logan, Utah 84321-1784

CAMPBELL SCIENTIFIC, INC. does not accept collect calls.

AM-ENCT ANALOG MULTIPLEXER ENCLOSURE

1. DESCRIPTION

The AM-ENCT (Analog Multiplexer ENClosure for Thermocouples) consists of a white fiberglass box, external mounting brackets with U-bolts, specialized cable conduits, foam insulation, and aluminum plates for minimization of thermal gradients, lead wire routing and multiplexer mounting (Figure 1). These components are shipped pre-assembled from Campbell Scientific. If the AM-ENCT is ordered with an AM416 or AM32 multiplexer, the multiplexer is mounted in the AM-ENCT at the factory. If the AM-ENCT and multiplexer are

ordered separately, some user assembly is required.

The AM-ENCT protects the multiplexer from windblown dust, rain, and sleet.

The AM-ENCT's insulation and internal aluminum plates reduce temperature gradients across the multiplexer terminal strips. Smaller thermal gradients within the enclosure reduce thermocouple effects at the thermocouple-multiplexer junctions and reference temperature error.

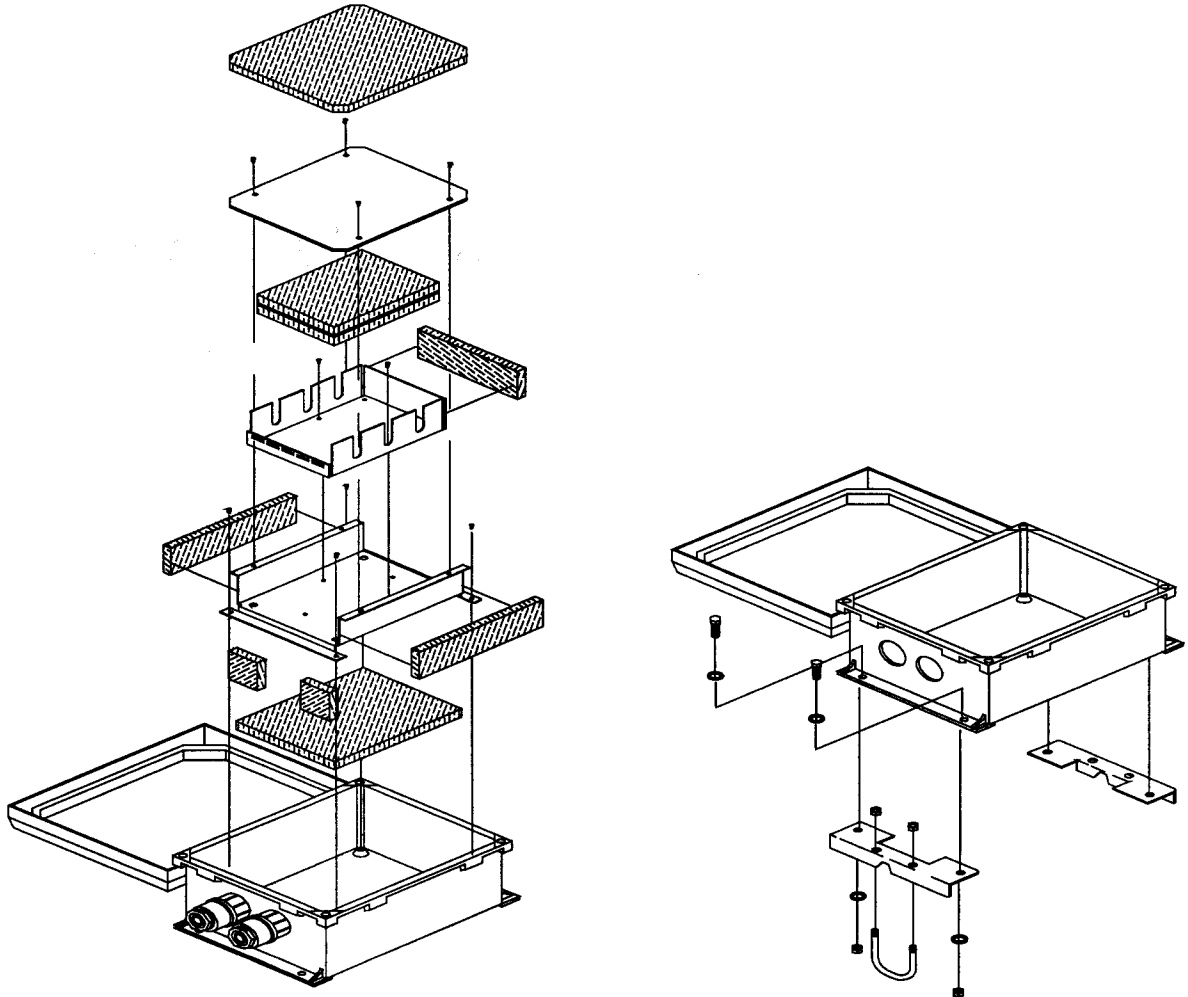


FIGURE 1. The AM-ENCT Enclosure Showing Internal Aluminum Plates and Insulation (Cross-Hatched)

AM-ENCT ANALOG MULTIPLEXER ENCLOSURE

2. SPECIFICATIONS

Dimensions:

External: 11.3" W x 13.5" L x 5.56" D

Internal: 10" W x 12" L x 5.25" D

Weight: approx. 12.6 lbs.

with AM416 installed: approx. 14.2 lbs.

with AM32 installed: approx. 14.0 lbs.

shipping: approx. 18.0 lbs.

NEMA Rating: Prior to modification--
3,3R,3S,4,4X,6,6P,12,13.

Lid attachment: Hinged; sealed with poured-in-place internal gasket. Un-hinged side secured with two captive screws.

Conduit diameter:

with reducing plug: 0.5"

without reducing plug: 1.25"

3. INSTALLATION

If the multiplexer was not installed at the factory, the enclosure will contain a small plastic bag with the following parts:

- (4) 3/8" screws
- (4) #6 washers
- (4) 3/8" spacers

3.1 AM416

The AM416 requires two 3/8" screws to attach it to the mounting plate. The additional enclosed hardware is not required for AM416 installation.

Tools required: #1 Phillips screwdriver, flat-bladed screwdriver

1. Remove the four phillips screws at the corners of the AM416 and remove the cover plate. Care must be taken when removing the upper plate of the multiplexer. It is generally easiest to lift the edge opposite the strain relief flange up first, then slide the plate out. Make sure to clear the terminal strips.
2. Remove the two screws at the center of the printed circuit board and then remove the printed circuit board. Place the board on a clean, dry surface.

3. Remove and dispose the four rubber feet from the back panel of the AM416.
4. Open the AM-ENCT enclosure and remove the cover plate and foam insulation (Figure 1). The multiplexer mounts to the backplate labeled "1A" in Figure 1.
5. Align the two holes through the back panel of the multiplexer with the holes on the mounting plate. Attach the back plate of the AM416 to the mounting plate with two 3/8" screws from the plastic bag.
6. Reassemble the multiplexer.
7. Re-insert the insulating foam and attach the AM-ENCT cover plate.

3.2 AM32

The AM32 requires four 3/8" screws, four spacers, and four washers to attach it to the internal mounting plate.

Tools required: flat-bladed screwdriver

1. Assembly of the AM32 and AM-ENCT is the same as the AM416 except that disassembly of the multiplexer is not required.
2. Install the four 3/8" spacers in the enclosure base mounting plate.
3. Attach the AM32 to the base mounting plate with the four 3/8" screws and washers.
4. Re-insert the insulating foam and attach the AM-ENCT cover plate.

3.3 MOUNTING ENCLOSURE

Two 1.25" x 5/16" U-bolts (provided) attach the enclosure to a 1.25" schedule 40 pipe. The U-bolts and brackets can be removed to mount the enclosure against a flat surface. Four user-supplied 5/16" diameter screws or bolts can be used for this purpose. The type and length of the screws or bolts depends on the composition of the supporting surface. To prevent damage to the fiberglass enclosure, use the washers from the U-bolt bracket and do not over-tighten the mounting screws (bolts).

4. CABLE ROUTING AND DESICCANT USE

All sensor and datalogger connection cables should be routed through the conduits on the lower surface of the enclosure (Figure 1). Each conduit port includes a two-piece bushing set and a slip-in reducing plug which seats inside the external female bushing. The internal diameter of the bushings is 1.25 inches and the internal diameter of the reducing plugs is 0.5 inches. The reducing plugs may be removed to accommodate large diameter cables.

The slip-in reducing plug has a smaller external orifice that restricts air movement. Sealing the port after cable installation with a non-permanent foam or putty is recommended.

Desiccant should be used inside the AM-ENCT to help reduce water vapor. Desiccant should be replaced regularly. Desiccant life is

prolonged by plugging the cable entry port with electrician's putty or foam.

NOTE: Because lead-acid batteries may emit explosive hydrogen gas, DO NOT seal an enclosure containing lead-acid batteries.

Aluminum Plate A (Figure 1) provides a framework for thermocouple lead wire routing. Leads should be attached to the strain relief flange on Plate A then routed around the outside of the plate to one of the u-shaped slots opposite an input terminal. Leads should be routed at least half-way around the enclosure (Figure 2) to dissipate heat/cold introduced through conduction along the lead wires.

Sensor, datalogger, and battery cables that enter the AM-ENCT should be strain-relieved. The AM416 contains a flange to tie the wires to for strain relief.

AM-ENCT ANALOG MULTIPLEXER ENCLOSURE

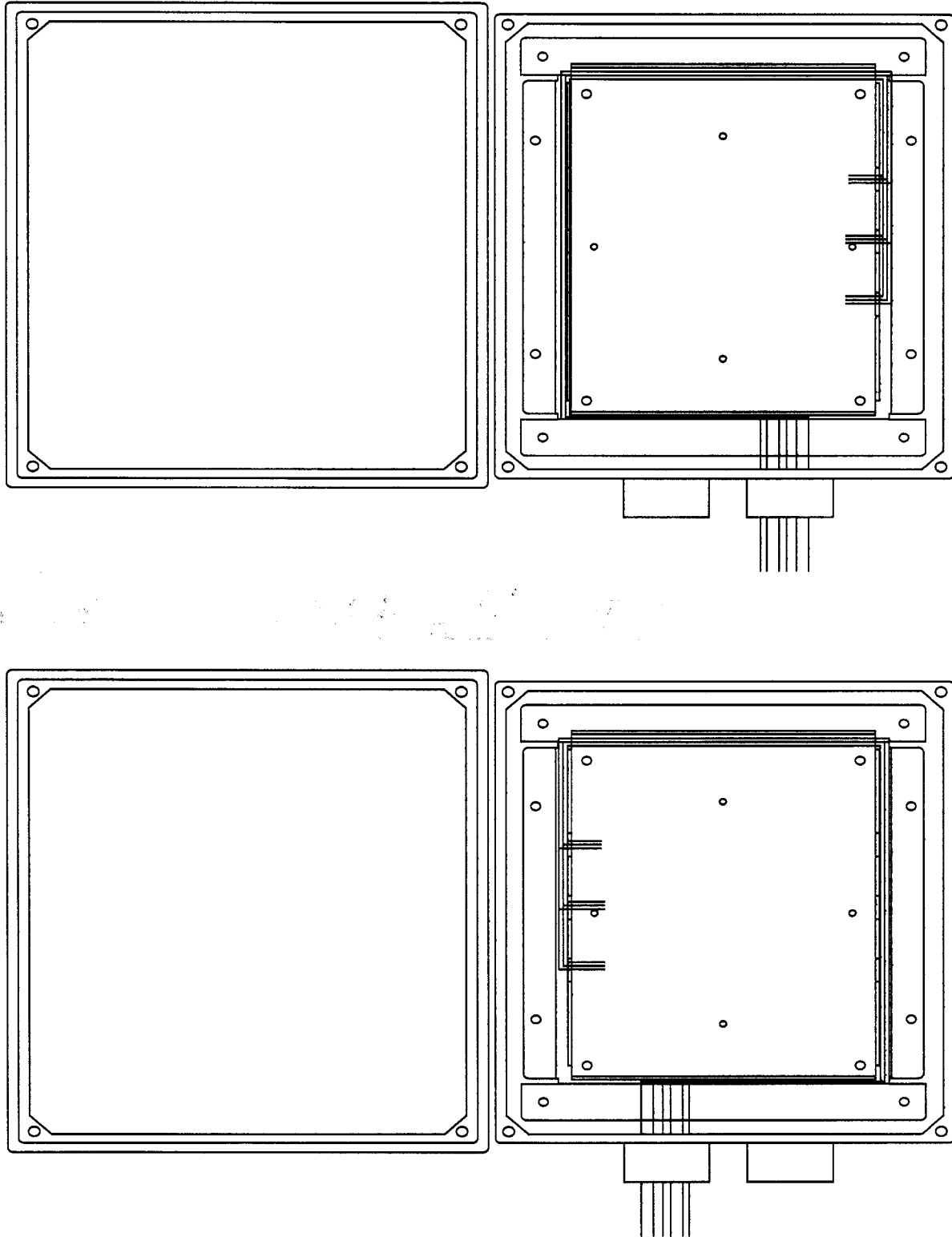


FIGURE 2. Thermocouple Lead Wire Routing

Campbell Scientific Companies

Campbell Scientific, Inc. (CSI)

815 West 1800 North
Logan, Utah 84321
UNITED STATES
www.campbellsci.com
info@campbellsci.com

Campbell Scientific Africa Pty. Ltd. (CSA)

PO Box 2450
Somerset West 7129
SOUTH AFRICA
www.csafrica.co.za
sales@csafrica.co.za

Campbell Scientific Australia Pty. Ltd. (CSA)

PO Box 444
Thuringowa Central
QLD 4812 AUSTRALIA
www.campbellsci.com.au
info@campbellsci.com.au

Campbell Scientific do Brazil Ltda. (CSB)

Rua Luisa Crapsi Orsi, 15 Butantã
CEP: 005543-000 São Paulo SP BRAZIL
www.campbellsci.com.br
suporte@campbellsci.com.br

Campbell Scientific Canada Corp. (CSC)

11564 - 149th Street NW
Edmonton, Alberta T5M 1W7
CANADA
www.campbellsci.ca
dataloggers@campbellsci.ca

Campbell Scientific Ltd. (CSL)

Campbell Park
80 Hathern Road
Shephed, Loughborough LE12 9GX
UNITED KINGDOM
www.campbellsci.co.uk
sales@campbellsci.co.uk

Campbell Scientific Ltd. (France)

Miniparc du Verger - Bat. H
1, rue de Terre Neuve - Les Ulis
91967 COURTABOEUF CEDEX
FRANCE
www.campbellsci.fr
campbell.scientific@wanadoo.fr

Campbell Scientific Spain, S. L.

Psg. Font 14, local 8
08013 Barcelona
SPAIN
www.campbellsci.es
info@campbellsci.es

Please visit www.campbellsci.com to obtain contact information for your local US or International representative.