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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for calibrating a 4-20 mA signal isolator or V/I converter (0-10 VDC input with 4-20 mA output).

1.2 Scope

This procedure involves 4-20 mA signal isolators Q403-1L04, supplied by Action Instruments respectively, having a 0-10 VDC input and a 4-20 mA output, M System model B3FV, or an Air Monitor Corporation V/I converter with similar input/output.

2.0 INFORMATION

NONE

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Use safe electrical practice when disconnecting/connecting an item from terminal strips or working in the vicinity of live electrical circuits. Comply with DOE–0359, Hanford Site Electrical Safety Program.

3.1.2 Job specific protective equipment requirements should be addressed during the pre-job brief and be in accordance with NFPA70E.

3.1.3 If a lock and tag is required during the performance of this procedure, comply with the DOE-0336, Hanford Site Lockout/Tagout Procedure.

3.2 Radiation and Contamination Control

Work in Radiological Areas will be performed using a Radiological Work Permit following review by Radiological Control per the ALARA Work Planning procedure TFC-ESHQ-RP_RWP-C-03.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies will be needed to perform this procedure:

- Voltage source, 0 to 10 VDC, with accuracy as specified by the data sheet
- Milli-ammeter (calibrated), capable of monitoring 4 to 20 mA
- Other tools, equipment and supplies as identified by Shift Manager/OE/FWS/User.

4.2 Performance Documents

The following documents may be needed to perform this procedure:

- Vendor Information File #22525, supplement 70 & 102
- Drawing H-14-020107, Sheet 6
- Drawing H-14-021307, Sheet 3
- Air Monitor Corporation drawing W22896BC
5.0 PROCEDURE

5.1 Calibration

Special Instructions
Refer to Figure 1 through Figure 3 while performing Steps 5.1.1 through 5.1.3.

NOTE - Special care must be taken for source voltage transmitters, to maintain electrical isolation of transmitter leads when disconnected from the Isolator/Converter”.

5.1.1 LIFT field connections to Isolator/Converter.
5.1.2 CONNECT test equipment to Isolator/Converter.
5.1.3 APPLY test INPUT signals specified on Data Sheet.
5.1.4 RECORD OUTPUT values in As Found section of Data Sheet.
5.1.5 IF Isolator/Converter As-Found values are within tolerance range specified by Data Sheet, RECORD in As-Left column on Data Sheet AND GO TO Restoration, Section 5.2.

5.1.6 IF Isolator/Converter As-Found data is out of tolerance, proceed as follows:

5.1.6.1 ADJUST input source to its minimum value.
5.1.6.2 ADJUST corresponding ZERO adjustment until the Output reads the Output value listed on the Data Sheet.
5.1.6.3 APPLY full scale INPUT specified on the Data Sheet.
5.1.6.4 ADJUST corresponding SPAN adjustment until the Output reads the specified Output listed on the Data Sheet.

5.1.7 APPLY test INPUT signals specified on Data Sheet.
5.1 Calibration (Cont.)

5.1.8 IF values are within tolerance per Data Sheet, RECORD As-Left values on Data Sheet AND

GO TO Restoration, Section 5.2.

5.1.9 IF values are not within tolerance per Data Sheet, REPEAT Step 5.1.6 through 5.1.8,

OR

IF unable to bring values into tolerance, NOTIFY FWS for resolution AND STOP WORK.
5.2 Restoration

5.2.1 IF any problems were encountered with calibration, INFORM FWS.

5.2.2 DISCONNECT AND REMOVE Test Equipment.

5.2.3 RECORD Test Equipment information and calibration status on Data Sheet.

5.2.4 CHECK equipment system restoration by observing indications are consistent with expected conditions.

5.2.5 NOTIFY Operations that testing is complete and system may be returned to desired configuration.

5.3 Acceptance Criteria

Acceptance Criteria has been met when Steps in this procedure have been satisfactorily performed and As-Left values meet the specifications and tolerance(s) per the Data Sheet.

5.4 Review

5.4.1 INFORM FWS test is complete.

5.4.2 FWS REVIEW AND ENSURE the following:
   - Completed Data Sheets meet the acceptance criteria.
   - Comments sections are filled out appropriately.
   - Work requests needed as a result of this procedure are identified and generated.
   - Work request number(s) of any work documents generated as a result of this procedure, are recorded in the Comments/Remarks section of the Data Sheet.

5.5 Records

The performance of this procedure generates no records. However, PM Data Sheets associated with the procedure, are records and are maintained in the work package as record material.

The record custodian identified in the Company-level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
Figure 1 - Air Monitor Corporation V/I Converter
Figure 2 - Action Instruments Signal Isolator
Figure 3 - M System Model B3FV Isolator/Converter

CONNECTION DIAGRAM