Calibrate Honeywell Model SC2000 Signal Conditioner and Display

Tank Farm Maintenance Procedure

MAINTENANCE

USQ # GCX-2

CHANGE HISTORY (≤ LAST 5 REV-MODS)

<table>
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<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
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<td>B-1</td>
<td>10/26/2017</td>
<td>Inconsequential change generated from Periodic Review</td>
<td>Update Records Section.</td>
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<td>B-0</td>
<td>10/20/2014</td>
<td>Periodic Review</td>
<td>Removed CHAMPS information from Records Section.</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for calibrating Honeywell Model SC2000 Signal Conditioner and Display.

1.2 Scope

This procedure pertains to the calibration of Honeywell Model SC2000 Signal Conditioner and Display.

2.0 INFORMATION

2.1 General Information

**Honeywell SC2000 Navigation Instructions**

- Press [UP] + [DOWN] to enter the SETUP menu mode
- Press [UP] to move up
- Press [DOWN] to move down
- Press [ENTER] to select an item
- Press [EXIT] to re-start the instrument.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

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

3.1.2 IF working around live circuits, extreme caution should be used. Failure to follow electrical safety practices as outlined in TFC-ESHQ-S-STD-03 could result in serious injury.

3.2 Radiation and Contamination Control

Work in radiological areas will be performed using a radiological work permit following review by Radiological Control per ALARA Work Planning procedure, TFC-ESHQ-RP_RWP-C-03.
4.0 PREREQUISITES

4.1 Special Tools, Equipment and Supplies

The following equipment or supplies may be needed to perform this procedure:

- Digital Multimeter (DMM)
- Calibrated Pressure Source (i.e. Druck)
- Lever operated hydro pump (optional)
- Calibrated pressure gauge (optional)
- Test Rig Mock-up for Honeywell SC2000 with pressure transducer(s)
- 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:

- DOE-0336, Hanford Site Lockout/Tagout Program
- Honeywell Series SC1000, 2000, 2001 and 3004 instruction manual, Document number: 008-0608-00
- Instrument Tech Standing JHA: SJHA-0061.

4.3 Field Preparation

4.3.1 NOTIFY Operations to configure system to allow performance of this procedure.

4.3.2 IF Lockout/Tagout is required, ENSURE lockout/tagout and overlocking requirements have been satisfied per DOE-0336, Hanford Site Lockout/Tagout Procedure.
5.0 PROCEDURE

5.1 Obtain As-Found Values

5.1.1 CONFIRM with operations that system has been configured to allow calibration.

5.1.2 REFER to Figure 1 for instrument layout.

5.1.3 IF Lockout/Tagout is required, CONFIRM lockout/tagout and overlocking requirements have been satisfied per DOE-0336, Hanford Site Lockout/Tagout Procedure.

5.1.4 CONNECT “Transducer Test Rig” to Honeywell SC2000 signal converter per Figure 2.

5.1.5 CONNECT DMM in series with the negative output signal, at PIN 5 for milliamp output per Figure 2.

5.1.6 IF power was turned off to unit, TURN-ON power.

5.1.7 IF unit was turned off, ALLOW a minimum of twenty (20) minutes of warm-up with the excitation voltage applied to the transducer prior to continuing.

5.1.8 APPLY input values per Data Sheet AND RECORD As-Found values on Data Sheet.

5.1.9 IF As-Found display and/or milliamp values are not within specified tolerance per Data Sheet, GO TO Calibration Section 5.2, OR

IF As-Found display and/or milliamp values are within specified tolerance, but deemed marginal, and optimization is desired, GO TO Calibration Section 5.2, OR

IF As-Found display and milliamp values are within specified tolerance, RECORD As-Found values in As-Left column of Data Sheet AND GO TO Restoration Section 5.3.
5.2 Calibrate Signal Conditioner

NOTE - The Calibration Type is named: “3-Point Known Displacement Calibration”.

5.2.1 USING the front panel push-buttons, SELECT the “Calibration Type” and the display will read “DOING 3POINT CAL”.

5.2.2 WHEN prompted, APPLY the minimum (0%) input value per Data Sheet AND PRESS ENTER.

5.2.2.1 CHECK output value(s) for tolerance

5.2.3 WHEN the Display reads “WORKING” APPLY the mid-range (50%) value per Data Sheet AND PRESS ENTER.

5.2.3.1 CHECK output value(s) for tolerance

5.2.4 WHEN the Display reads “WORKING” APPLY the maximum (100%) value per Data Sheet AND PRESS ENTER.

5.2.4.1 CHECK output value(s) for tolerance

NOTE - Upon completion of 3-Point Cal, the display will indicate “DONE” and the instrument will return to the “RUN” mode.

5.2.5 IF values are within tolerance per Data Sheet, RECORD As-Left values on Data Sheet AND GO TO Restoration, Section 5.3.

5.2.6 IF values are not within tolerance per Data Sheet, REPEAT Steps 5.2.1 through 5.2.5 until values are within tolerance

OR

IF unable to bring values into tolerance NOTIFY FWS for resolution.
5.3 Restoration

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

5.3.2 DISCONNECT AND REMOVE Test Equipment.

5.3.3 IF a Lockout/Tagout was applied, REMOVE Lockout/Tagout and overlocking requirements in accordance with the DOE-0336, Hanford Site Lockout/Tagout Procedure.

5.3.4 RECORD the Test Equipment information and calibration status on Data Sheet.

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

5.3.6 NOTIFY Operations that testing is complete and system may be returned to desired configuration.
5.4 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.

5.5 Review

5.5.1 INFORM FWS test is complete.

5.5.2 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, as applicable.

5.6 Records

This procedure is performed within a work package, as such, the procedure in its entirety will be maintained as a record per the Work Control process.

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 – Honeywell SC2000 Front and Rear View
Figure 2 – “Bi-polar Voltage Amp” Connection to High-Level Input Channel

Amplified Transducer OR In-Line Amplifier

Device With Voltage Output Bi-Polar Power Supply

Note: Shunt Calibration Not Available on all Devices

Instrument Connections

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<td>2</td>
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CABLE

Note Keyed Connector

Cable Shield Connection Screw (Connect to Cable Shield)