SERIES 637S SANITARY PRESSURE TRANSMITTER

Specifications – Installation and Operating Instructions

The 637S Sanitary Transmitter is designed to meet 3A standards allowing it to be used in most food, beverage and pharmaceutical applications. Calibration is quick and easy with field accessible zero and span adjustments. All stainless steel construction resists the corrosive effects of caustic washes used in most food processing applications. 1½" Tri-Clover process connection is suitable for Clean-in Place (CIP) applications, eliminating the need for expensive by-pass piping, valving or removal requirements for steam cleaning.

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>STOCK RANGE, PSI (BAR)</th>
<th>MINIMUM RANGE, PSI (BAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>637S-0</td>
<td>0-15 (0-1)</td>
<td>0-6 (0-0.4)</td>
</tr>
<tr>
<td>637S-1</td>
<td>0-30 (0-2)</td>
<td>0-15 (0-1)</td>
</tr>
<tr>
<td>637S-2</td>
<td>0-100 (0-7)</td>
<td>0-20 (0-1.4)</td>
</tr>
<tr>
<td>637S-3</td>
<td>0-300 (0-20)</td>
<td>0-60 (0-4)</td>
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</tbody>
</table>

WIRING

CAUTION: Power must be off while connections are made to the field terminals.

There are two field terminals, + signal and – signal, located on the terminal board in the field terminal compartment. The circuit is protected from reversed polarity.

1. To wire the transmitter to receiver and power supply, install wire between the negative terminal of the transmitter and the positive terminal of the power supply. See Fig. A.

2. Install wire between the positive terminal of the transmitter and the negative terminal of the receiver. See Fig. A.

3. Install wire between the positive terminals of the power supply and receiver. See Fig. A.

4. The field terminals will accept stripped wire leads from No. 14-22 AWG.

5. The transmitter is normally grounded. If the signal circuit must be grounded, use the ground position on the terminal provided for this purpose. See Fig. A.

NOTE: In order to avoid "Ground Loop" conditions, there should be only one earth ground in a loop.

6. Seal wires entering the housing with sealing compound to prevent water from entering the field wiring compartment.

There are two test terminals (TP+ and TP-) located on the terminal board in the field wiring compartment. The terminals have the same output signal, (4-20 mA DC) as the signal terminals and are provided as an in-circuit monitor. See Fig. A.

NOTE: The cover must be closed tightly to ensure explosion-proof design integrity.

SPECIFICATIONS

Service: liquid, gas or vapor
Output: 4-20 mA DC, max. 30 mA DC (2 wire)
Power Supply: 12 to 40 VDC with reverse polarity protection
Loop Resistance: 600 Ω @ 24 VDC; max. Ω = (supply voltage – 12) × 50
Turndown: 5:1
Zero and Span Adjust: ±10% each
Temperature Limits: Process Interface −40°F to 212°F (−40°C to 100°C)
Overrange: 300% upper range limit
Humidity Limits: 0-100% RH
Accuracy: ±0.25% of calibrated span
Response Time: Time constant of 20 ms.
Stability: ±0.5% of upper range limit for six months
Thermal Effect: Includes zero and span ±1% of upper range limit per 50°F (30°F to 130°F); ±1.6% of upper range limit per 50°F (10°F to 180°F)
Power Supply Effect: ±0.005% of full span per volt
Surge Protection: Standard
Vibration Effect: ±0.1% of upper range limit for 3g to 200 Hz
Position Effect: 0.05%/90° tilt
Overrange Effect: ±0.15% FS per 300% of maximum range
Materials of Construction:
- Process wetted parts: 316L stainless steel
- Diaphragm: 316L SS
- Non-wetted parts: 316 stainless steel
- Cast Head: CF-8M (316 cast stainless steel)
- O-Ring: Buna-N
- Fill fluid: mineral oil
Electrical Connection: 1/2" NPT(F)
Process Connection: 1½" NPT(F)
Weight: 1.67 lbs. (752 grams)

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ADJUSTMENTS
There are three adjustment potentiometers located in the Field Terminal compartment; zero, span and turndown.

Zero Adjustment (Z) Offsets due to elevation or suppression of approximately 10% of full span can be adjusted using the zero adjustment terminal (potentiometer).

Span Adjustment (S) Span can be adjusted approximately 10% of full span using the span adjustment terminal (potentiometer). The span adjustment is used as a fine span adjustment.

8:1 Turndown Adjustment (T) Range turndown of approximately 80% of full span can be achieved using the turndown (T) adjustment terminal. For example, a transmitter with a full span pressure range of 100 psi can be "turndown" to 20 psi and still produce a 4-20 mA output. The turndown adjustment is used as a course span adjustment.

CALIBRATION
Series 637S Transmitters are factory calibrated at maximum range and ambient temperatures unless otherwise indicated.

CAUTION – Power must be off while connections are made to the field terminals.

Transmitter can be calibrated as shown in Fig. C which shows an in-system piping arrangement which includes a tee for calibration. The bleeder valve should be used to block the process.

CALIBRATION INSTRUMENT
NOTE: Calibration instrumentation should be five times the accuracy of the transmitter being calibrated.

The Series 637S Transmitter can be calibrated using an ammeter or voltmeter as shown in Fig. C. Use an ammeter with internal shunt impedance less than 10 ohms. An impedance greater than 10 ohms will produce erroneous readings. Use a voltmeter with a 10 ohm precision resistor connected as shown in Fig. C.

CALIBRATION PROCEDURE
The transmitter can be calibrated using the test terminals or field terminals. Outputs using an ammeter are in mA with a resolution of 0.01 mA. Outputs using a voltmeter and a 10 ohm resistor are in mV with a resolution of 0.1 mV.

With the system set up as shown in Fig. C, proceed with calibration as follows:
1. Apply 0 psi pressure to input.
2. Adjust zero (Z) pot to obtain 4 mA (40 mV)* output.
3. Apply full span pressure to input.
4. Adjust span (S) pot to obtain 20 mA (200 mV)* output.
5. Repeat steps 1 through 4 until output values of 4-20 mA or 40-200 mV are consistently produced.
6. If span setting being used differs from previous span by more than 10%, adjust turndown (T) pot prior to span pot and proceed to step 4.

*Using 10 ohm resistor as shown in Fig. C.

MAINTENANCE
Following final installation of the Series 637S Transmitter and its companion receiver, no routine maintenance is required. A periodic check of zero and span following the procedure under Calibration is recommended. If unit needs repair, return it to the factory, freight prepaid. Be sure to include a clear description of the problem plus any application information available.

TROUBLESHOOTING
The Series 637S Transmitter is an all welded unit. There is no access to the electronic circuitry. The zero, span and turndown potentiometers are connected to shafts which are sealed by O-Rings. If turning shafts in either direction does not change output, proceed as follows:

With a small screwdriver under the head of the shaft, pry it upward slightly. Turn shaft with a slight downward pressure to re-engage it into potentiometer. If no output, check wires in terminal strip.

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