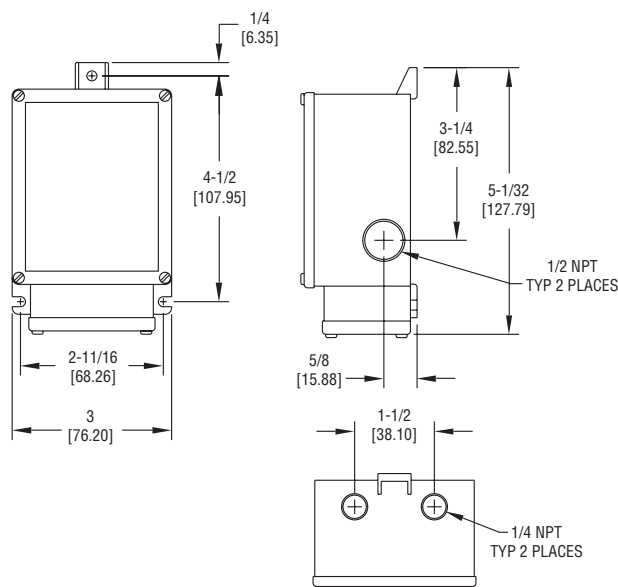




Series 608 Differential Pressure Transmitter

Specifications - Installation and Operating Instructions



The Dwyer Series 608 Differential Pressure Transmitter converts positive, negative (vacuum), or differential pressures of clean, dry air or other non-conductive, non-corrosive gases into a standard two wire, 4-20 mA output signal. Several factory calibrated models are available with ranges from 0-0.1" (0-2.5 mm) w.c. up to 0-25" (0-634.4 mm) w.c. All models employ a variable capacitance transducer with a micro-machined, ultra thin silicon diaphragm enabling precision measurement and control of very low differential pressures while withstanding a high static working pressure of 100 psig (6.89 bar). The Series 608 is FM approved intrinsically safe for use in the specified hazardous locations when used with an approved intrinsic safety barrier. It also features a NEMA 4X enclosure that allows for indoor and outdoor installations. This rugged housing design makes this transmitter ideal for use in industrial and process plant environments.

INSTALLATION

1. Location: Select a clean location free of excess vibration where the temperature of the unit will be between 0°F (-18°C) and 160°F (71°C). Distance from the receiver is limited only by total loop resistance. See "Electrical Connections". The tubing supplying pressure to the transmitter can be run practically any distance. Long tubing lengths will not affect accuracy but response time will be increased slightly.

SPECIFICATIONS

Service: Clean/dry air and compatible gases.

Wetted Materials: Consult factory.

Accuracy: ±0.5% or ±0.25% full scale.

Stability: ±0.5% F.S./year.

Pressure Limits: 100 psig (6.89 bar); 15 psid (1.03 bar).

Temperature Limits: -20 to 185°F (-28 to 85°C).

Compensated Temperature Range: 0 to 160°F (-18 to 71°C).

Thermal Effect: 0.5% Accuracy: ±0.02% F.S./°F;
0.25% Accuracy: ±0.01% F.S./°F.

Power Requirements: 12 to 36 VDC (2-wire).

Output Signal: 4-20 mA DC.

Zero and Span Adjustments: Potentiometers for zero and span.

Response Time: 250 ms.

Loop Resistance: DC: 0-1045 ohms maximum.

Current Consumption: 4-20 mA.

Electrical Connections: Screw terminal: Two 1/2" female NPT conduit.

Process Connections: Two 1/4" female NPT.

Enclosure Rating: NEMA 4X (IP65).

Mounting Orientation: Not position sensitive.

Weight: 2 lb (0.9 kg).

Agency Approvals: FM approved intrinsically safe for use in Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III, Div. 1 when wired with approved intrinsically safe barrier. Entity parameters: V_{max} = 36 VDC; I_{max} = 250 mA; C_i = 12 nF; L_o = 0 mH.

2. Position: The Series 608 Transmitter is not position sensitive. However, it is recommended that you avoid mounting with pressure connections pointing up because of the chance of condensed moisture entering the interior. Moisture can also be avoided by routing tubing with a low point just ahead of the transmitter.

3. Mounting: Attach to mounting surface with two #8 or #10 screws in the mounting slots provided.

4. Pressure Connections: The 608 series transmitter is shipped with the "HIGH" and "LOW" pressure ports plugged to avoid debris entering the unit. The plugs should be left in place until the tubing and fittings are connected. For gage pressures, connect positive (above atmospheric) pressure to the port marked "HIGH" and vent the "LOW" port. To monitor vacuum, connect negative (vacuum) pressure to port marked "LOW" and vent the "HIGH" port. For differential pressure, connect the higher one to the "HIGH" port and the lower one to the "LOW" port.

ELECTRICAL CONNECTION

Use in hazardous location: The Series 608 transmitter is FM approved intrinsically safe for use in hazardous locations. See specifications for details. Intrinsically safe approved devices require the use of an approved intrinsic safety barrier when applied in hazardous locations. The barrier limits the amount of electrical or thermal energy in the instrument loop, to the level which would not cause ignition in the hazardous location for which it is rated. The barrier must be installed outside of the hazardous area and properly wired to the transmitter according to Figure B.

CAUTION: Do not exceed the specified supply voltage rating. Permanent damage, not covered by warranty, may result. This unit is not designed for AC voltage operation.

The terminal connections can be accessed by unscrewing the four cover screws and removing the terminal block access cover. Bring cable wires in through one of the 1/2" female NPT conduit connections, plugging the unused entry. Attach the cable wires to the appropriate terminals. If polarity is inadvertently reversed, the loop will not function properly but no damage will be done to the transmitter because of internal circuit protection. The power required to generate the 4-20 mA output signal depends on the loop resistance of the circuit and is proportional to the resistance according to the graph and formula in Figure C. The maximum length that can be used in the current loop is a function of wire size and receiver resistance. A shielded two conductor cable is recommended for control loop wiring. Make sure total loop resistance is within the operating region as shown in Figure C.

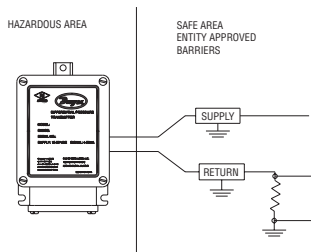
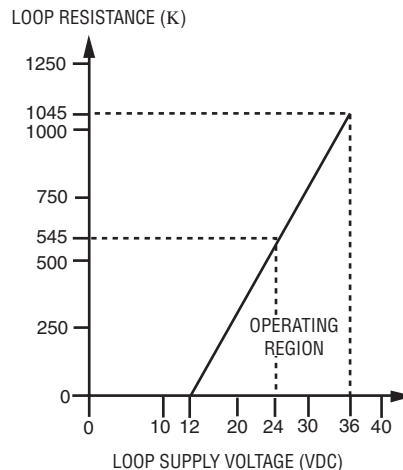


Fig. B

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Load Limitations 4-20 mA Output Only



$V_{min} = 12V + (.022A \times R_L)$
 $R_L = R_s + R_w$
 $R_L = \text{Loop Resistance (ohms)}$
 $R_s = \text{Sense Resistance (ohms)}$
 $R_w = \text{Wire Resistance (ohms)}$

Fig. C

CALIBRATION

Each Series 608 Transmitter is factory calibrated to the range listed in the model number chart. Range is defined as that pressure which when applied to the transmitter will produce a 20 milliamp current in the loop. Zero pressure will produce 4 milliamps. If fine adjustment of calibration is required, use the following procedure:

1. With the transmitter connected to its companion receiver, insert a milliammeter in series with the current loop. A controllable pressure source should be tied to the high pressure port of the transmitter and to an accurate pressure gage or manometer.
2. Apply electrical power to the system and allow 15 seconds for components to stabilize.
3. With no pressure applied to the transmitter remove cover and adjust "zero" control so loop current is at 4 mA.
4. Apply full span pressure and adjust loop current to 20 mA using "span" control.
5. Remove the milliammeter from the circuit, replace cover, and place system in service.

MAINTENANCE

After final installation of the Series 608 Differential Pressure Transmitter, no routine maintenance is required. A periodic check of system calibration is suggested. These devices are not field repairable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

Printed in U.S.A. 8/05

FR# R1-443350-00