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## Model 18-268B

### TWO WIRE PRESSURE TRANSMITTER





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# 1. General Description

The DEVAR Model 18-268B is a two-wire pneumatic to current transmitter. It accepts a pneumatic input and provides a proportional 4 to 20-milliamp output. The Model 18-268B features piezoresistive silicon and a pressure transducer, which provides excellent signal conversion and long-term stability. The transducer includes laser-trimmed resistors, which provide temperature compensation over a range of 0 to 50°C as well as interchangeability of  $\pm 1\%$ . The pressure transducer is unaffected by vibration and does not consume signal air. All internal parts, which come in contact with the input media, are either silicon or gold plated kovar. The 18-268B provides easily accessible span and zero pots for calibration as well as a linearity pot, which is used to calibrate out any nonlinearity, which might be present in the pressure transducer. Other features of the 18-268B include effective RFI protection in the 20 to 500 MHz frequency range and a rugged die cast aluminum NEMA-4X enclosure.

The 18-268B provides a test point terminal, which can be used to monitor the current in a working 4 to 20-milliamp loop. By connecting a milliamp meter between the test point and the + out terminal (see Fig. 1) the current in the loop can be monitored without having to disconnect any of the loop wiring.

The Model 18-268B is primarily used for converting 3 to 15 psi inputs to proportional 4 to 20 milliamp outputs. By connecting the 18-268B transmitter to existing tubing runs pneumatic field devices can be easily interfaced with modern electronic instrumentation. The 18-268B is a two-wire transmitter. A two-wire transmitter is a device in which the output signal and input power are transmitted over the same pair of wires. The 18-268B requires an external DC power supply. The power supply sources the current to the loop while the 18-268B controls the amount of current that is flowing through the loop as a function of the input pressure. Because the 18-268B is also deriving its power from the loop it requires a certain amount of loop voltage to operate. The 18-268B typically puts a 9 volt drop on the loop (9 Volts  $\times$  4 milliamps = 36 milli-watt operating power). By subtracting the voltage used by the 18-268B from the supply voltage, the amount of voltage remaining to drive a load can be determined. For example if you have a 24 Volt power supply and use 9 Volts in the transmitter you have 15 Volts available to drive the loop. The maximum load which can be placed into this loop is calculated by dividing 15 Volts by 20 milliamps ( $15 \div 0.02 = 750$  Ohms).

## 2. Installation

Attach the pneumatic signal tubing with an appropriate fitting to the 1/8" NPT female, brass fitting, which has been threaded into the cast aluminum housing. Hold the 7/8" brass fitting to prevent it from turning in the housing while tightening the tubing connection. Connect an appropriate DC power source in series with the load to the + out and - out terminals on the 18-268B (see fig. 1). Notice that a spare terminal has been provided which can be used as a tie point when two of the conductors forming the loop need to be tied together.

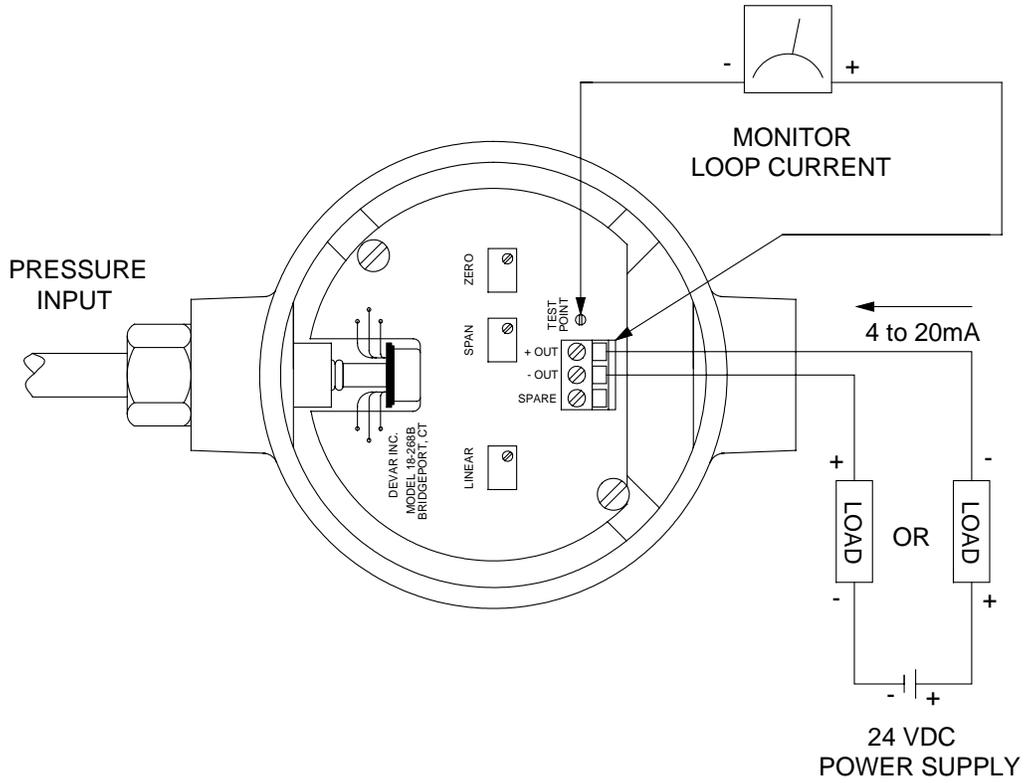


Figure 1. External Wiring

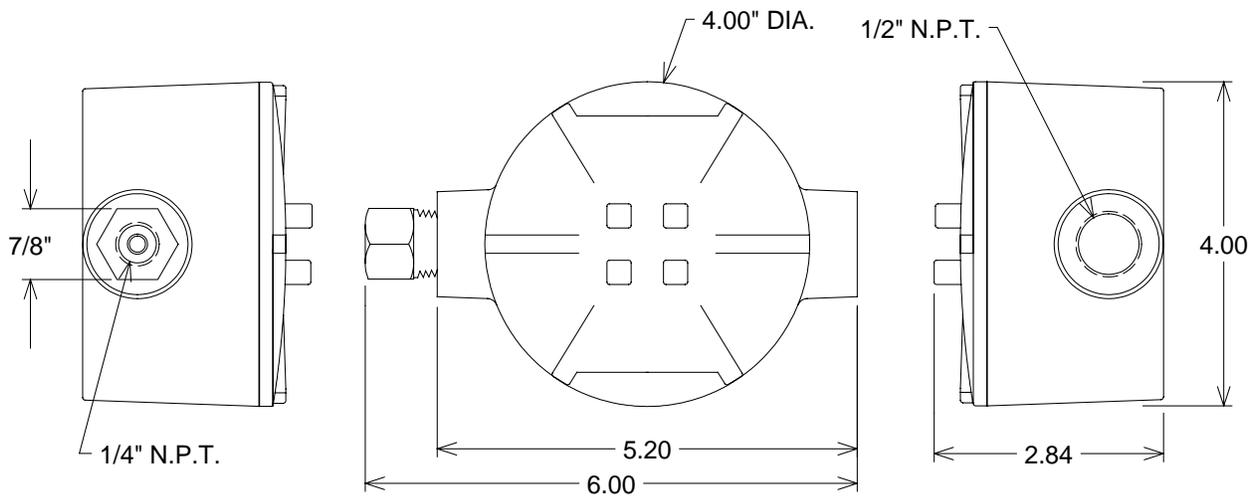


Figure 2. General Dimensions

### 3. Specifications

#### 3.1 General

a. Calibration Accuracy .....	0.1% of span
b. Repeatability .....	0.1% of span
c. Hysteresis .....	0.01% of span
d. Operating Temperature Range .....	-40 to 80°C
e. Thermal Zero Shift .....	0.01% of span per °C
f. Thermal span Shift .....	0.01% of span per °C
g. Vibration Effect .....	Negligible
h. Mounting Position .....	Any plane

#### 3.2 Input

a. Pressure Median .....	non-corrosive gas
b. Input Range.....	3 to 15 PSIG standard
c. Non-standard Inputs.....	2 PSIG min., 50 PSIG max.
d. Maximum Input Pressure.....	3 × Full Scale
e. Burst Pressure.....	500 PSI, Input Range > 10 PSI 20 PSI, Input Range < 10 PSI

#### 3.3 Output

a. Output Current.....	4 to 20 milliamps
b. Operating Voltage.....	10 Volts max., 9 Volts Typ.
c. Power Supply Requirements.....	24 Volts Standard 10 Volts min., 42 Volts max.
d. Maximum Output Load.....	700Ω with 24V power supply

#### 3.4 Mechanical

a. Housing.....	Die Cast Aluminum
b. Pressure Fitting.....	¼" NPT, female, brass, 7/8" Hex
c. Conduit Fitting.....	½" NPT
d. Electrical Connection.....	Top Access, compression type 22 to 14 AWG Wire Range
e. Weight. ....	1.8 lbs

## 4. Calibration

The 18-268B is provided with three pots for calibration. The zero pot is used to set the bottom of the range or the starting point, the span pot is used to set the overall range of the instrument and the linearity pot is used to adjust out any nonlinearities which may be present in the pressure transducer. To calibrate the 18-268B you will need a calibrated air supply, a 24 Volt DC power supply, and a milliamp meter. Following the instructions in section 2 of this manual, connect the air supply to the brass fitting and then attach the power supply and the milliamp meter in series with the "+" and "-" terminals of the 18-268B. Apply pressure to the unit and adjust the pots as follows.

- a. Input start of range (3 PSI) and adjust the zero pot for 4 milliamps out.
- b. Input center of range (9 PSI) and adjust the span pot for 12 milliamps out.
- c. Input top of range (15 PSI) and adjust the linearity pot for 20 milliamps out.
- d. Repeat steps a, b, and c as required.