



# 221

## BARATRON® GENERAL PURPOSE DIFFERENTIAL PRESSURE TRANSDUCER

The 221 Baratron® General Purpose Differential Transducer offers a reliable, accurate, inexpensive solution to measuring low differential pressures.

Operating on the variable capacitance technique, the 221 all-metal sensor contains a tensioned metal diaphragm, one side of which is exposed to the gas whose pressure is to be measured (Px side). The other side (reference, or Pr, side) is adjacent to an electrode assembly which is terminated in another like port. The diaphragm deflects with changing differential pressure, causing a capacitance change between the diaphragm and the adjacent electrode assembly. The capacitance change with pressure generates an AC voltage which is amplified, demodulated, and converted into a high level DC voltage output, linear with pressure, and calibrated against a pressure standard.

The electronics of the 221 are housed remotely from the sensor, allowing it to be baked at 200°C (with interconnecting cable removed). An MKS or user-supplied power supply/readout is required to operate the 221.

### Features & Benefits

- All-metal sensor eliminates handling problems associated with glass, mercury, and liquid gauges
- Useable resolution of 1 part in 10,000
  - minimizes the number of transducers required to cover a wide range of pressures
- Remote electronics allow sensor to operate at temperatures up to 150°C (bakeable to 200°C with cable removed)
- Sensor is capable of handling any corrosive gases compatible with Inconel on high pressure side and Inconel, Ceramic, Palladium, Glass and Stainless Steel on reference side

# Specifications and Ordering Information

## Full Scale Ranges

10, 100, 1000, 5000, 10000, 15000, 20000, 25000 mmHg

## Resolution

0.01% of F.S.

## Accuracy

0.5% of Rdg. ( $\pm$  temperature coefficients)

## Temperature Coefficients

Zero

0.02% of F.S./ $^{\circ}$ C

Span

0.04% of Rdg./ $^{\circ}$ C

## Ambient Operating Temperature

Sensor

0 $^{\circ}$  to 150 $^{\circ}$ C (bakeable to 200 $^{\circ}$ C with cable removed)

Preamp

0 $^{\circ}$  to 50 $^{\circ}$ C

## Maximum Overpressure

120% of F.S. or 20 psi (140 kPa), whichever is greater

*(For Full Scale ranges less than 1000 mmHg, the following restrictions apply: if high pressure is on the Px side of the sensor, the maximum differential overpressure allowable is 120% of F.S. or 20 psi, whichever is greater; if high pressure is on the Pr side of the sensor, the maximum differential overpressure allowable is 120% of F.S. Consult factory for higher Pr overpressure protection.)*

## Maximum Line Pressure

40 psig (275 kPa)

## Materials Exposed to Gases

Px side

Inconel

Pr side

Inconel, Ceramic, Palladium, Stainless Steel, Glass

## Volume

Px side: 7.9 cc Pr side: 19.0 cc

## Fittings

Standard

$\frac{1}{2}$ " (12.7 mm) tubulation

Optional

Swagelok<sup>®</sup> 8 VCR<sup>®</sup> female, NW 16 KF, mini-CF rotatable *(High pressure units, 5000 to 25000 mmHg F.S., supplied with 8 VCR fittings only.)*

## Power Required

$\pm$ 15 VDC @ 35 mA regulated  $\pm$ 2%

## Output

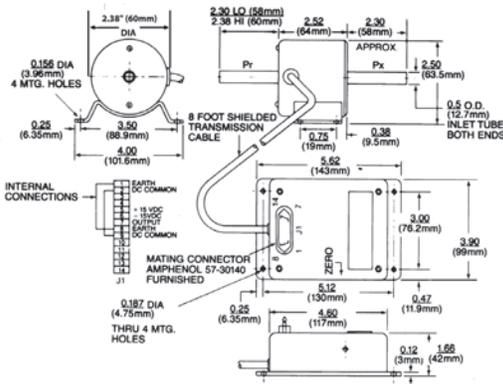
0 to 10 VDC into  $>$  10K  $\Omega$  load

## Electrical Connector

AMP 14-pin ribbon connectors; MKS Connector Kit, 221B-K1

## Ordering Code Example: 221BD00100A

221BD	Code	Configuration
221BD	221BD	221BD
<b>Pressure Range Full Scale</b>		
10	00010	00100
100	00100	
1000	01000	
5000	05000	
10,000	10000	
15,000	15000	
20,000	20000	
25,000	25000	
<b>Fittings</b>		
$\frac{1}{2}$ " OD (12.7 mm) diameter tube	A	A
Swagelok 8 VCR female	B	
Mini-CF, rotatable	C	
NW 16 KF	D	



## Dimensional Drawing —

Note: Unless otherwise specified, dimensions are nominal values in inches (mm referenced).



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