

Model 224 Ultra High Purity Flow-Through Pressure Transducers

Gauge, Compound and Absolute PSI and Bar Ranges



Setra's Model 224 ultra-high purity pressure transducer is designed for the most demanding specialty gas monitoring and control applications, where construction integrity, purity and performance cannot be sacrificed.

The 224 has a small, streamlined sensor chamber for easy purgeability. The sensor is designed to provide superior mechanical and thermal stability, especially in transient temperature conditions resulting from flowing gases. Isolation of the sensing element from the pressure fitting virtually eliminates any torque effect.

This superior mechanical and thermal stability is achieved through Setra's patented variable

capacitance sensor. Its fundamentally simple design features VAR 316L SS wetted parts, passivated to 5 Ra (7 Ra. max.) finish for system continuity, and an insulated electrode plate fastened to the center of the sensor diaphragm, which forms a variable capacitor. As pressure increases or decreases, the capacitance changes. This change in capacitance is detected and converted to a linear analog signal by Setra's unique electronic circuit.

Various tube diameters are available with optional face seal fittings. Sturdy construction allows for trouble-free installation and high tolerance of system torsion and welding effects, providing confident installations.

Model 224 transducers are able to endure bakeout to 185°F (85°C), without affecting calibration. Every sensor is mass spectrometer helium leak tested to 1×10^{-9} ATM.CC/sec.

This ultra-high purity series is based on Setra's proven capacitive sensing technology and the highly accurate and stable voltage or current output signals are virtually EMI/RFI immune.

NOTE: Setra quality standards are based on ANSI-Z540-1. The calibration of this product is NIST traceable.

Patents Pending.

Applications

- High Purity Gas Delivery Systems
- Semiconductor Process Tools
- Pharmaceutical & Biotech Process
- Gas Cabinets

Benefits

- Superior Stability Avoids Downtime
- EMI/RFI Immunity Prevents False Shutdown
- Sturdy Design Allows Trouble-Free Installations
- Minimal Torque Effect
- High Burst Pressure Ratings
- Easy Purgeability
- Virtually Insensitive to Thermal Transients in Flow Stream
- Optional ETL Certified as Conforming to UL-1604 and ATEX 94/9/EC Approval Available for 4 to 20 mA Output Units
- CE and RoHS Compliant

When it comes to a product to rely on - choose the Model 224. When it comes to a company to trust - choose Setra.

Pressure Ranges

0 psig, 0 psia or -14.7 psig to:	Bar Ranges -1 or 0 to:	Proof Pressure (psi)	Burst Pressure (psi)
25	1.7	40	1500
50	3.4	75	3000
100	7	150	3000
250	17	350	5000
500	35	650	7500
1000	70	1250	7500
3000	200	3500	10,000
-14.7 to 85.3	----	150	3000
-14.7 to 235.3	----	350	5000
-14.7 to 985.3	----	1250	7500
-14.7 to 2985.3	----	3500	10,000

setra
ISO-9001 Certified

800-257-3872
Visit Setra Online:
<http://www.setra.com>

Model 224 Specifications

Performance Data

Accuracy RSS* (at constant temp)	±0.25% FS or ±1.0% of Reading
Non-Linearity, (BFSL)	±0.15% FS
Hysteresis	0.20% FS
Non-Repeatability	0.02% FS

Thermal Effects

Compensated Range °F(°C)	+15 to +150 (-9 to +65)
Zero Shift %FS/100°F(%FS/50°C)	2.0 (1.8)
Span Shift %FS/100°F(%FS/50°C)	2.0 (1.8)
Warm-up Shift	0.1% FS Total

* RSS of Non-Linearity, Non-Repeatability and Hysteresis.

Environmental Data

Temperature	
Operating* °F (°C)	-40 to +185 (-40 to +85)
Storage °F (°C)	-40 to +185 (-40 to +85)
Current Unit Ordered w/Option N1	
Operating °F (°C)	-22 to +176 (-30 to +80)
Storage °F (°C)	-22 to +176 (-30 to +80)

*Operating temperature limits of the electronics only.

Pressure media temperature may be considerably higher or lower.

Physical Description

Case	Stainless Steel
Electrical Connection	6ft. Multiconductor Cable, Bayonet Connector or D-Sub Connectors.
Pressure Fittings	See Ordering Matrix Below
Zero/Span Adjustments	Top Access
Weight (Approx.)	6 ounces (170 grams)

Electrical Data (Voltage)

Circuit	3-Wire (Exc, Out, Com)
Excitation	10 to 30 VDC for 5V FSO 13 to 30 VDC for 10V FSO
Output*	0 to 5VDC or 0.2 to 5.2VDC** 0 to 10VDC or 0.2 to 10.2VDC**

Current Consumption

<8 mA
*Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.
**Zero output factory set to within ±25mV (for 5 VDC output) or ±50mV (for 10 VDC output).
***Span (Full Scale) output factory set to within ±25mV (for 5 VDC output) or ±50mV (for 10 VDC output).

Specifications subject to change without notice.

Electrical Data (Current)

Circuit	2-Wire
Output*	4 to 20 mA**
External Load	0 to 800 ohms
Minimum supply voltage (VDC) = 10 + 0.02 x	(Resistance of receiver plus line).
Maximum supply voltage (VDC) = 30 + 0.004 x	(Resistance of receiver plus line).

*Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
**Zero output factory set to within ±0.08mA.
***Span (Full Scale) output factory set to within ±0.08mA.

Pressure Media

Liquids or gases compatible with 316L Stainless Steel.

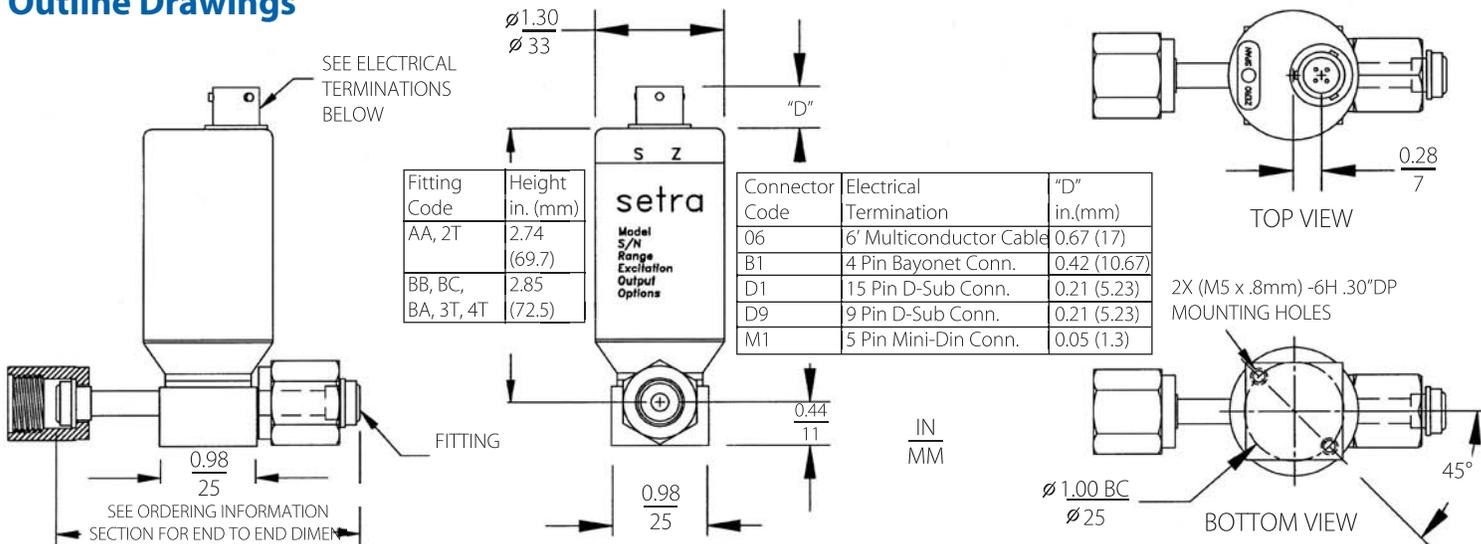
Approvals

Non-Incendive: Certified for use in potentially hazardous locations:

North America: ETL certified as conforming to UL 1604 available for units ordered with 4 to 20 mA current output. (Select N1 Option)

Europe: Optional ATEX 94/9/EC approval available for units ordered with 4 to 20 mA current output. (Select N1 Option)

Outline Drawings



ORDERING INFORMATION

Code all blocks in table.

Example: Part No. 224G30CPGAA11B1F for a 224 Transducer 0 to 3000 PSIG Range, #4 M/M Fixed Face Seals, 4 to 20 mA Output, 4 pin Bayonet Connector, and ±0.25% FS Accuracy.

Model	Range	Pressure	Pressure Fittings	Output	Elec. Termination	Accuracy
224G = 224	025P = 25 PSI 050P = 50 PSI 100P = 100 PSI 250P = 250 PSI 500P = 500 PSI 10CP = 1000 PSI 30CP = 3000 PSI Z01 = -14.7 to 85.3 PSI Z02 = -14.7 to 235.3 PSI Z03 = -14.7 to 985.3 PSI Z05 = -14.7 to 2985.3 PSI	1R7 = 1.7 BAR 3R4 = 3.4 BAR 007B = 7 BAR 017B = 17 BAR 035B = 35 BAR 070B = 70 BAR 200B = 200 BAR	A = Absolute C = Compound G = Gauge AA = #4 M/M Fixed Face Seals (2.24" end to end) BB = #4 F/F Swivel Face Seals (3.05" end to end) BC = #4 M/F Swivel Face Seals (3.65" end to end) BA = #4 M/M Swivel Face Seals (4.25" end to end) 2T = 1/4" Tube stubs (1.85" end to end) 3T = 3/8" Tube stubs (2.25" end to end) 4T = 1/2" Tube stubs (2.25" end to end)	11 = 4-20mA 2B = 0-5 VDC 2C = 0-10VDC 33 = 0.2-5.2VDC 59 = 0.2-10.2VDC N1 = 4-20 mA*	06 = 6 ft. Multiconductor Cable B1 = 4 pin Bayonet Connector D1 = 15 pin D-sub Connector D9 = 9 pin D-sub Connector M1 = 5 pin Mini DIN Connector*	F = ±0.25% FS w/Cal. Cert. J = ±1.0% of Reading w/Cal. Cert.

*[ETL certified as conforming to UL-1604 for Class 1, Groups A, B, C, D, Division 2 Locations and ATEX approved for EN50021 Ex nA IICT4X-30°C < Ta < +80°C]

*Note: Unit is not certified for UL 1604 or ATEX 94/9/EC for use in hazardous locations when ordered with Option M1.

See Setra's Model 223 for smaller diameter housing with side access zero and span potentiometers.
Please contact factory for configurations not shown.

While we provide application assistance on all Setra products both personally and through our literature, it is the customer's responsibility to determine the suitability of the product in the application.

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