

Model 204/C204

High Accuracy Pressure Transducers

for Corrosive Liquids or Gases
Gauge, Vacuum and Absolute Pressures



Setra's Model 204 pressure transducers are intended for accurate pressure measurements of gas or liquid media compatible with 17-4 PH stainless steel. The high level output signal and excellent stability, combined with fast dynamic response, make this unit ideal for industrial, laboratory and aerospace applications.

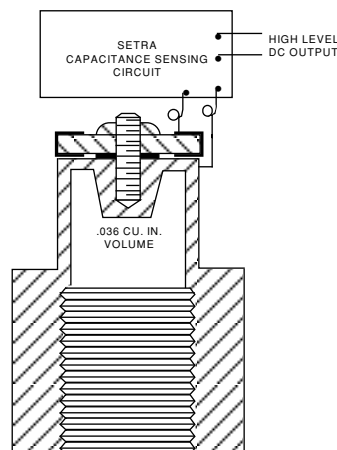
The exceptional accuracy is achieved by combining Setra's unique electronic circuitry with its patented variable capacitance sensor. This unit is compensated for both zero and sensitivity shifts due to environmental

temperature variations. The Model 204, with a high-level 0-5 VDC output, and the Model C204, with a high-level 4-20 mA output, require no additional signal conditioning. The sensor features a one-piece 17-4 PH stainless steel pressure sensor and an insulated electrode, which form a variable capacitor. As the pressure increases, the capacitance decreases. This change in capacitance is detected and converted to a linear DC electric signal. On absolute pressure units, the reference side of the diaphragm is sealed by electron beam welding under high vacuum.

Pressure Ranges

Pressure Ranges 0 psia or 0 psig to:	Proof Pressure (psi)	Burst Pressure Rating (psi)	Approximate Natural Frequency (KHz)
25	50	150	2.0
50	75	200	2.5
100	150	500	3.5
250	375	1000	5.0
500	750	1500	8.0
1000	1250	3000	11.0
3000	3750	4500	15.0
5000	6000	7500	25.0
10,000 psig only	11,000	12,500	30.0
0-14.7 psi vac	50	150	2.0

NOTE: Setra adheres to strict quality standards including ISO 9001 and ANSI-Z540-1. The calibration of this product is NIST traceable.



Extremely low hysteresis and very stable operation under extreme temperature conditions are inherent in this sensor design.

U.S. Patent nos. 3859575, 4093915

Applications

- High Accuracy General Purpose
- R&D Test and Measurement
- Vacuum Systems
- Dynamometers
- Engine Test Cells

Features

- Fast Warm-Up
- 0-5 VDC or 4-20 mA Output
- 0.11% FS Accuracy
- Excellent Thermal Effects
- Low Output Noise
- Fast Response, Less than 1 Millisecond
- Solid One-Piece Stainless Steel Sensor
- FM Approved Intrinsically Safe (Option)
- Meets CE Conformance Standards

When it comes to a product to rely on, choose the Model 204. When it comes to a company to trust, choose Setra.



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Model 204/C204 Specifications

Performance Data

Accuracy RSS* (at constant temperature)	±0.11% FS
	±0.14% for 10,000 PSIG
Non-Linearity, BFSL	±0.07% FS
Hysteresis	0.08% FS
	0.1% for 10,000 PSIG
Non-Repeatability	0.02% FS
Thermal Effects**	
Comp Range °F(°C)	+30 to +150 (-1 to +65)
Zero Shift***%FS/100°F(%FS/50°C)	<±0.4 (<±0.36)
Span Shift %FS/100°F(%FS/50°C)	<±0.3 (<±0.27)
Static Acceleration Effect	<0.05 PSI/G (Typ.) (Pressure Port Axis)
Volume Increase Due to FS Pressure	5 x 10 ⁻⁵ cu. in.
Warm-up Shift	±0.5% Total (±0.1% Residual Shift After 5 Minutes.)

*RSS of Non-Linearity, Hysteresis and Non-Repeatability.
 **Units calibrated at nominal 70°F.
 *** Approximately 50% higher for 0-14.7 psiv range.

Pressure Media

Gases or liquids compatible with 17-4 PH stainless steel.
 Note: Hydrogen not recommended for use with 17-4 PH stainless steel.

Environmental Data

Temperature	
Operating °F (°C)	0 to +175 (-18 to +80)
Storage °F (°C)	-65 to +250 (-55 to +120)
Vibration	2g from 5 Hz to 500 Hz
Shock	50g
Acceleration	10g Maximum

Physical Description

Pressure Fitting	1/4" - 18 NPT Internal
Electrical Connection	2 ft. Multiconductor Cable
Weight	10 ounces

Electrical Data (Model 204 Voltage)

Circuit	4-Wire (+Exc, -Exc, +Out, -Out)
Excitation	22 to 30 VDC, 24 VDC (Nominal) Reverse Excitation Protected
Output*	0 to 5 VDC **
Power Consumption	10 mA (0.25 Watts)
Output Impedance	<10 Ohms
Output Noise	<100 Microvolts RMS (0 Hz to 10 KHz)

*Calibrated into 50K ohm load. Operable into 5000 ohms or greater.
 **Zero output factory set to within ±10 mV.
 Span (Full Scale) output factory set to within ±10 mV.
 NOTE: Both output leads are nominally 1.6 VDC above the negative excitation lead at zero pressure. Either negative excitation or negative output should be connected to case (ground). But both leads cannot be connected to case (ground). Unit is calibrated at the factory with the negative excitation connected to case (ground).

Electrical Data (Model C204)

Circuit	2-Wire
Output*	4 to 20 mA**
External Load	0 to 1000 Ohms
Minimum supply voltage (VDC) = 17 + 0.02 x	(Resistance of receiver plus line).
Maximum supply voltage (VDC) = 42 + 0.004 x	(Resistance of receiver plus line).
Effect of Power Supply	
Variations	<0.003 mA/Volt
Output Noise	<10 Microamperes RMS (0 Hz to 10 KHz)

*Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
 **Zero output factory set to within ±0.03 mA. Span (Full Scale) output factory set to within ±0.03 mA.

Specifications subject to change without notice.

Available Options

Electrical Options Model 204 Only

602-606	Special Outputs: 1 to 5, 1 to 6, 0 to 10, 1 to 10, 0 to 2.5 VDC.
621	Special Excitation: ±24 VDC
622	Special Excitation: ±15 VDC
640	Intrinsic Safe Design FM Approved for class I, II, III, Division 1, Groups A, B, C, D, E, F, G hazardous locations. For standard catalog products without other electrical options or remote controls options.
642	Remote Sensitivity (Not Available with Options 621, 622.)
643	Remote Calibration (adjustable)
644	Remote Calibration (fixed)

Performance Options Model 204 or C204

702	Compensated Temperature, -65°F to +250°F; (Doubled the Standard Thermal Effect Specification)
710	0.073% FS (RSS) Accuracy (not available on 10,000 PSIG ranges).

Mechanical Options Model 204 or C204

803-825	Up to 25 ft. of cable can be supplied on your order; please specify cable length when ordering (eg. 805 for 5ft. cable). Consult factory for cables longer than 25 ft.
865	NEMA 4 Weather Proof Enclosure
866	Explosion Proof PT Housing, FM approved for: CL. I, Div 1 & 2, GP. B, C, D; CL. II. Div 1 & 2, GP. E, F, G; CL. III, Div 1 & 2 and NEMA 4 weatherproof when factory installed in this enclosure.
904	Cleaning for Oxygen Service
911	Etched Metal Stainless Steel Tags

Ordering Information

Order as Model 204 for voltage output or Model C204 for current output. Specify pressure range and options.

Outline Drawings

