

# Model 209 Pressure Transducer

## Applications

- Industrial OEM Equipment
- Hydraulic Systems
- Compressor Control
- HVAC/R Equipment
- Industrial Engines
- Process and Containerized Refrigeration Systems

## Benefits

- High Over Pressure Option Available on Selected Ranges
- Rugged Design Survives Harsh Environments
- Operates Over a Wide Temperature Band
- Compatible with Wide Range of Gases and Liquids
- Operates on Low Cost Unregulated DC Power
- Suitable for High Shock and Vibration Applications
- No Seals or "O" Rings to Cause Leakage
- No Brazed Joints Susceptible to Corrosion Problems
- 3 to 5 Day Shipment for Small Quantities, Standard Configurations



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Setra Systems' Model 209 pressure transducers are designed specifically for industrial applications with demanding price and performance requirements. The 209 offers exceptional reliability in typical industrial grade environments. Standard features tailor the Model 209 for applications with more extreme environmental conditions or more stringent performance needs. The Model 209 offers unparalleled performance in a configurable transducer designed specifically for the budget conscious OEM.

Setra's proven center mount electrode configuration is the heart of this simple, yet industrialized, design. A 17-4 PH stainless steel sensor and a rigid stainless steel electrode form the variable capacitor.

Setra 209 transducers are packaged in rugged stainless steel/Valox housings, which are small and lightweight for optimum compatibility with system designs. As a totally self-contained electronic package, the 209 stainless steel capacitance sensing element, coupled with a high level output IC-based circuit, assures excellent accuracy and long term stability.

*When it comes to a product to rely on - choose the Model 209.  
When it comes to a company to trust - choose Setra*



## Model 209 Specifications

### Performance Data

Accuracy RSS* (at constant temperature)	±0.25% FS
Non-Linearity (BFSL)	±0.22% FS
Hysteresis	0.10% FS
Non-Repeatability	0.05% FS
<b>Thermal Effects</b>	
Compensated Range °F(°C)	-4 to +176 (-20 to +80)
Zero Shift %FS/100°F(%FS/50°C)	±2.0 (±1.8)
Span Shift %FS/100°F(%FS/50°C)	±1.5 (±1.3)
Warm-up Shift	±0.1% FS total
Response Time	5 milliseconds
Stability	0.5% FS/Year

\*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)
Vibration*	20g
Shock**	200g
Environmental Protection	Weather Resistant

\*MIL-STD 202, Method 204, Cond. C

\*\*MIL-STD 202, Method 213B, Cond. C

### Physical Description

Case	Stainless Steel & Valox
Sensor	17-4 PH Stainless Steel
Electrical Connection	2 ft. multiconductor cable
Pressure Fitting*	1/4" -18 NPT external, 17-4 PH Stainless Steel
Vent	Through cable
Weight (approx.)	2.3 ounces (65 grams)

\*See ordering information for other fittings available (minimum quantities apply).

### Electrical Data (Voltage)

Circuit	3-Wire (Com, Out, Exc)
Excitation	9 to 30 VDC
Output*	0.5 to 5.5 VDC**
Output Impedance	10 ohms
*Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.	
**Zero output factory set to within ±50mV.	
**Span (Full Scale) output factory set to within ±50mV.	
Note: Other outputs are available with 9 to 30 VDC excitation.	
An output of 0.5 to 4.5 VDC output is available with 5 VDC excitation.	

### Electrical Data (Current)

Circuit	2-Wire
Output*	4 to 20 mA**
External Load	0 to 800 ohms
Minimum supply voltage (VDC) = 9 + 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 ±0.16mA.	
**Span (Full Scale) output factory set to within ±0.16mA.	

### Pressure Media

Liquids or gases compatible with 17-4 PH or 17-7 PH Stainless Steel\*.  
\*Note: Hydrogen not recommended for use with 17-4 PH Stainless Steel.

Specifications are subject to change without notice.

NOTE: Setra quality standards are based on ANSI-Z540-1.

The calibration of this product is NIST traceable.

U.S. Patent Nos. 409315, and other Patents Pending.

### Gauge, Compound, and Vacuum Pressure Ranges\* (Sealed ranges available on 200 PSI and above)

Full Scale Range (PSI)	STANDARD		OPTION	
	Proof Pressure (PSI)	Burst Pressure (PSI)	High Proof Pressure (PSI)	High Burst Pressure (PSI)
1	2	250	N/A	N/A
2	4	250	N/A	N/A
5	10	250	N/A	N/A
10	20	500	N/A	N/A
25	50	500	N/A	N/A
50	100	750	800	5000
100	200	1000	1000	5000
200	400	2000	1500	5000
250	500	2000	2000	8000
500	1000	3000	2500	10,000
1000	2000	5000	4000	10,000
1500	2500	6000	5000	12,000
2000	3000	6500	N/A	N/A
3000	4500	7500	N/A	N/A
5000	7500	10,000	N/A	N/A
10,000	12,500	20,000	N/A	N/A
-14.7 (Vacuum)	10	15	N/A	N/A

\*Also available in Bar ranges. Consult Factory.

Gauge Pressure: Pressure measured relative to ambient atmospheric pressure. Referred to as pounds per square inch (gauge) or psig.

Proof Pressure: The maximum pressure that may be applied without changing performance beyond specifications (±0.5% FS zero shift).

Burst Pressure: The maximum pressure that may be applied to the positive pressure port without rupturing the sensing element.

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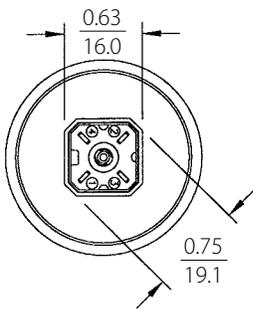
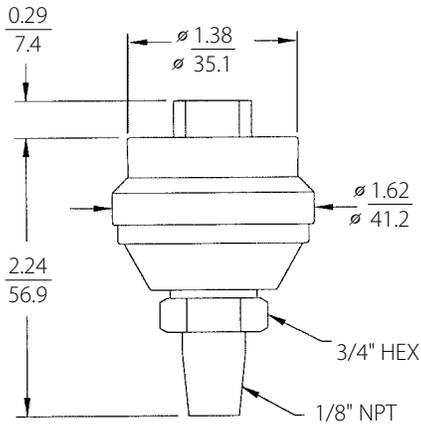
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# Outline Drawings

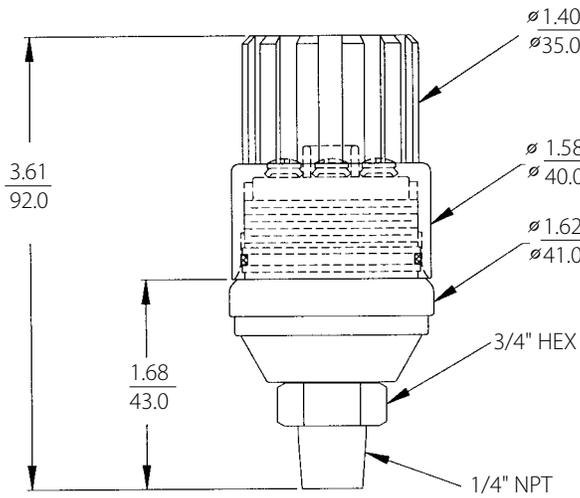
## OPTIONAL HIRSCHMANN CONNECTOR Type: G4A1M #931807-106



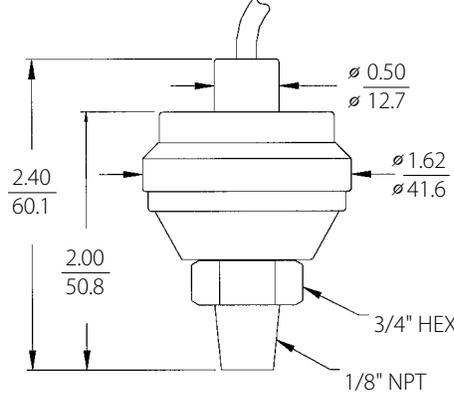
Top View

Mating Hirschmann Connector G4WIF available. See table below to order.

## CONDUIT VERSION

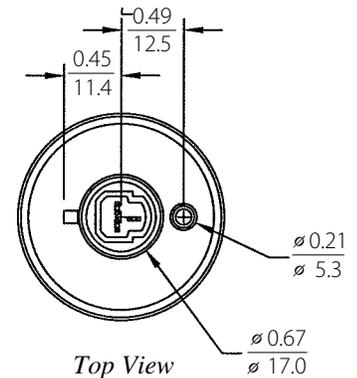
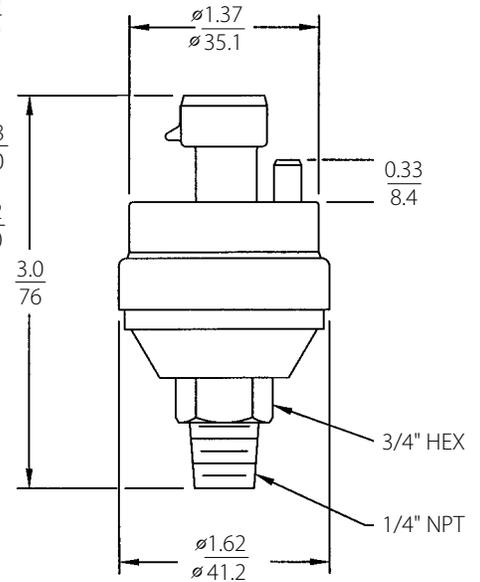


## CABLE ANCHOR



IN  
MM

## OPTIONAL 3-Pin PACKARD CONNECTOR Type: P2S Series 150



Top View

Mating Packard Connectors available. See table below to order.

## ORDERING INFORMATION Model 209 Pressure Transducer Code all blocks in table.

Example: Part No. 2091050PG2M1102 for a 209 Transducer 0 to 50 PSIG Range, 1/4" NPT Male Pressure Fitting, 4 to 20 mA Output, and 2 Feet of Cable.

Model	Pressure Ranges	Type	Pressure Fitting	Output	Electrical Termination	Options
2091	PSI	G = Gauge C = Compound S = Sealed (Sealed Version Available on 200 PSI Range & Above.) V = Vacuum (Z01 Range Code Only)	2M = 1/4" NPT Male J7 = 7/16" SAE Male 1M = 1/8" NPT Male L4 = 1/4 Female SAE G4 = 1/2" A Male P1 = 1/8" NPT Female Bulkhead (Available on Ranges >50 P.SI)	11 = 4 to 20 mA 24 = 0.5 to 5.5 VDC 28 = 1 to 6 VDC 45 = 0.5 to 4.5 VDC (5 VDC Excitation)	XX = Cable length in feet (i.e., 2 feet = 02) P1 = Packard (3-Pin)* P3 = Packard (4-Pin)** H2 = Hirschmann, ("Mini")** A1 = Terminal Block w/Conduit Cover	H = High Overpressure Capability (Only Available on 50 PSI up to 1500 PSI Pressure Ranges)
2091 = 209	001P = 0 to 1 PSI 002P = 0 to 2 PSI 005P = 0 to 5 PSI 010P = 0 to 10 PSI 025P = 0 to 25 PSI 050P = 0 to 50 PS 100P = 0 to 100 PSI 200P = 0 to 200 PSI 250P = 0 to 250 PSI 500P = 0 to 500 PSI 10CP = 0 to 1000 PSI 15CP = 0 to 1500 PSI 20CP = 0 to 2000 PSI 30CP = 0 to 3000 PSI 50CP = 0 to 5000 PSI 10KP = 0 to 10000 PSI Z01P = 0 to -14.7 PSI				*Order Setra Part #577 for Mating Connector **Order Setra Part #857 for Mating Connector **Order Setra Part #590 for Mating Connector Note: Order mating connectors direct from manufacturers: Mfr. Part #12103881-L/#12065287/#1203-4413 = Setra's Part #577 Mfr. Part #12065298/#12066176/#12048086 = Setra Part #857 Mfr. Part #932157-106 = Setra Part #590	

**NOTE: Standard configuration consists of: PSI Range, 1/4" NPT Fitting and 2 feet of cable. Minimum quantities apply for all other configurations. Consult a Setra Applications Engineer for assistance.**

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

159 Swanson Road, Boxborough, Massachusetts 01719/Tel: 800-257-3872;  
Fax: 978-264-0292; Email: sales@setra.com; Web: www.setra.com

