

## Model 239R

### High Accuracy/Low Range Pressure

Differential Pressure: 0 -  $\pm 0.25$  in. W.C. to 0 - 10 psid  
Pressure Media Air or Other Gases



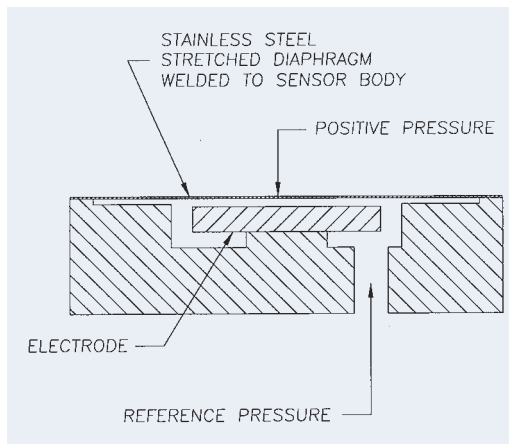
Setra's Model 239R series of pressure transducers are specifically designed for very low pressure applications that require high accuracy.

Setra's variable capacitance sensor is designed to be simple and reliable. A stainless steel diaphragm and an insulated electrode form a variable capacitor. As pressure increases or decreases, the capacitance changes. This change in capacitance is detected and converted to a linear D.C. electric signal

by Setra's unique electronic circuit. The Model 239R provides a high level voltage output (eg. 0 to 5 VDC). High positive overpressure protection is achieved by the sensor electrode acting as a stop for the diaphragm. The high level output signals, excellent long term stability and fast dynamic response make these transducers ideal for a wide range of industrial, laboratory and aerospace applications.

#### Full Scale Ranges

Pressure Range Unidirectional Pressure	Proof Pressure	
	Positive	Negative
0 to 0.5 in. WC	5 PSI	2.5 in. WC
0 to 1 in. WC	7 PSI	5 in. WC
0 to 2.5 in. WC	10 PSI	12.5 in. WC
0 to 5 in. WC	20 PSI	25 in. WC
0 to 15 in. WC	50 PSI	75 in. WC
0 to 30 in. WC	50 PSI	150 in. WC
0 to 5 PSID	75 PSI	25 PSI
0 to 10 PSID	100 PSI	50 PSI
Bidirectional Pressure		
0 to $\pm 0.25$ in. WC	5 PSI	2.5 in. WC
0 to $\pm 0.5$ in. WC	7 PSI	5 in. WC
0 to $\pm 1$ in. WC	10 PSI	12.5 in. WC
0 to $\pm 2.5$ in. WC	20 PSI	25 in. WC
0 to $\pm 7.5$ in. WC	50 PSI	75 in. WC
0 to $\pm 15$ in. WC	50 PSI	150 in. WC
0 to $\pm 2.5$ PSID	75 PSI	25 PSI
0 to $\pm 5$ PSID	100 PSI	50 PSI



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

U.S. Patent nos. 4093915

#### Applications

- High Accuracy/General Purpose
- HVAC Control
- Leak Detection
- Environmental Testing
- Medical Instrumentation
- Energy Management
- Clean Rooms
- R & D Test and Measurement

#### Features

- $\pm 0.14\%$  FS Accuracy
- Fast Warm-up
- Low Thermal Effects
- Fast Response, Less Than 10 Milliseconds
- Withstands High Overpressure
- *Multiconductor 22 AWG Cable for easier installation*
- *Etched Stainless Steel Cover*
- *RoHS Compliant*
- *Meets New CE Conformance Standards*

When it comes to a product to rely on - choose the Model 239R. When it comes to a company to trust - choose Setra.

ISO  
9001:  
2008  
Certified

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<http://www.setra.com>

**setra**  
800-257-3872

# Model 239R Specifications

## Performance Data

Accuracy RSS at constant temp.*	±0.14% FS
Non-Linearity, BFSL	±0.10% FS
Hysteresis	0.10% FS
Non-Repeatability	0.02% FS
Thermal Effects**	
Compensated Range °F(°C)	+30 to +150 (-1 to +65)
Zero shift %FS/100°F(50°C)	<±1 (<±0.9)
Span Shift %FS/100°F(50°C)	<±1 (<±0.9)
Acceleration Response	<0.0002 psi/g
Natural Frequency	2000 Hz nominal
Settling Time	<100 milliseconds
Warm-up Shift	< ±0.1% FS total
Operable Line Pressure	Vacuum to maximum 250 psig
Line Pressure Effect	2%/100 PSI
Proof Pressure	Listed on front page
Internal Volumes	Positive port 0.03 cu. in. Reference port 0.1 cu. in.
Maximum Volume Change at FS	0.001 cu. in.

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

\*\*Units calibrated at nominal 70 °F. Maximum thermal error computed from this datum. x 2 for 0.5 and ±0.25 in. WC ranges.

## 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
Acceleration	10g Maximum
Shock	50g Operating
Pressure Fittings	1/8" -27 NPT internal
Electrical Connection	2-foot Multiconductor 22 AWG Cable
Weight (approx.)	8 ounces

## Electrical Data (Voltage Output)

Circuit	4-Wire (+Exc, -Exc, +Out, -Out)
Excitation*	22 to 30 VDC
	Reverse Excitation Protected
Output**	0-5 VDC*** (for unidirectional ranges)
	±2.5 VDC (for bidirectional ranges)
	0-10 VDC (for unidirectional ranges)
	±2.5 VDC (for bidirectional ranges)
Output Impedance	< 10 ohms
Output Noise	< 200 microvolts RMS (in band, 0 Hz to 10 KHz)

\*Internal regulation minimizes effect of excitation variation, with < ± 0.005% FS output change. Will operate on 28 VDC aircraft power per MIL-STD-704A and not be damaged by emergency power conditions.

\*\*Calibrated into 50K ohm load. Operable into 5000 ohms or greater.

\*\*\* Zero output factory set to within ±5 mV.

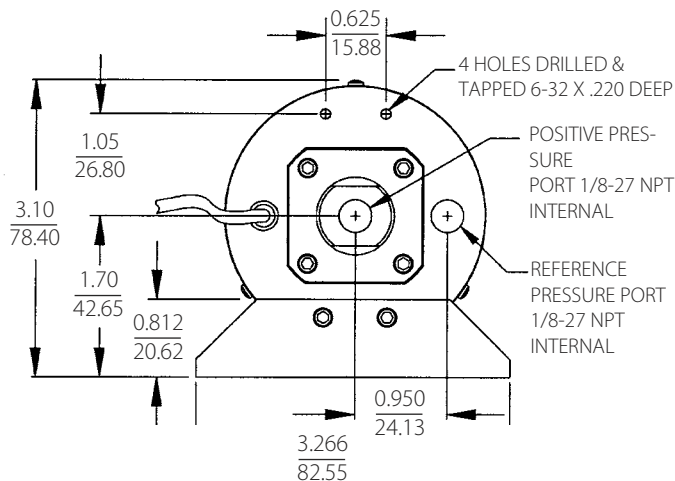
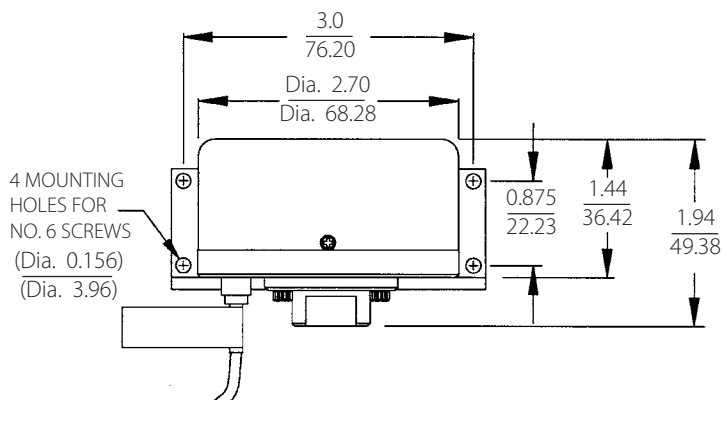
Span (Full Scale) output factory set to within ±5 mV.

## Pressure Media

Positive Pressure Media	Gases compatible with stainless steel, hard anodized 6061 aluminum (Buna-N "O" ring)
Reference Pressure Media	Clean dry air or other gases (Non-corrosive, Non-condensable)

Specifications subject to change without notice.

## Outline Drawings



SSP239/C239 Rev.F 1/09

## ORDERING INFORMATION

2 3 9 R	[ ] [ ] [ ] [ ] [ ]	2 F	[ ] [ ]	[ ] [ ]																		
<b>Model</b> 239R	<b>Pressure Ranges</b>	<b>Pressure Fitting</b>	<b>Output</b>	<b>Electrical Termination</b>																		
	<table border="0"> <tr> <td><u>Unidirectional</u></td> <td><u>Bidirectional</u></td> </tr> <tr> <td>0R5WD = 0 to 0.5 in. WC</td> <td>R25WB = 0 to ±0.25 in. WC</td> </tr> <tr> <td>001WD = 0 to 1 in. WC</td> <td>0R5WB = 0 to ±0.5 in. WC</td> </tr> <tr> <td>2R5WD = 0 to 2.5 in. WC</td> <td>001WB = 0 to ±1 in. WC</td> </tr> <tr> <td>005WD = 0 to 5 in. WC</td> <td>2R5WB = 0 to ±2.5 in. WC</td> </tr> <tr> <td>015WD = 0 to 15 in. WC</td> <td>7R5WB = 0 to ±7.5 in. WC</td> </tr> <tr> <td>030WD = 0 to 30 in. WC</td> <td>015WB = 0 to ±15 in. WC</td> </tr> <tr> <td>005PD = 0 to 5 PSID</td> <td>2R5PB = 0 to ±2.5 PSID</td> </tr> <tr> <td>010PD = 0 to 10 PSID</td> <td>005PB = 0 to ±5 PSID</td> </tr> </table>	<u>Unidirectional</u>	<u>Bidirectional</u>	0R5WD = 0 to 0.5 in. WC	R25WB = 0 to ±0.25 in. WC	001WD = 0 to 1 in. WC	0R5WB = 0 to ±0.5 in. WC	2R5WD = 0 to 2.5 in. WC	001WB = 0 to ±1 in. WC	005WD = 0 to 5 in. WC	2R5WB = 0 to ±2.5 in. WC	015WD = 0 to 15 in. WC	7R5WB = 0 to ±7.5 in. WC	030WD = 0 to 30 in. WC	015WB = 0 to ±15 in. WC	005PD = 0 to 5 PSID	2R5PB = 0 to ±2.5 PSID	010PD = 0 to 10 PSID	005PB = 0 to ±5 PSID	2F = 1/4" NPT Female (Process Port) 1/8" NPT Female (Ref. Port Differential Units)	2B = 0 to 5 VDC 2C = 0 to 10 VDC 2Y = 0 to ±5.0 VDC 2X = 0 to ±2.5 VDC	02 = 2 ft. Standard Cable XX = Custom Cable (ie., 10 ft. = 10) up to 25 ft.
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NOTE: Standard configuration consists of: in.WC Range, 1/4" NPT Fitting and 2 feet of cable. Consult a Setra Applications Engineer for assistance on other configurations or units with multiple options.																						

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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