

Model 239

High Accuracy Low Differential Pressure Transducer

Setra's Model 239 is the "standard" for measuring low differential pressure in the Test & Measurement industry. Decades worth of installations have helped the 239 build a reputation of reliability and remains the trusted choice for critical installations. The 239 delivers an optional high performance 0.073% FS accuracy over a wide temperature range which outperforms competitive transducers in the low pressure market. The 239 offers multiple options to meet both simple and demanding application requirements that are not provided on competitive transducers.

Long-Term Reliability

The Model 239 differential pressure transducer uses a simple and reliable variable capacitance sensor design. The 239 provides repeatable and dependable readings in rugged applications through its efficient sensor design.

Accuracy & Performance For Low Pressure Ranges

The Model 239 is a Test & Measurement grade transducer for extremely low pressure ranges. The 239 covers a large selection of pressure ranges with a $\pm 0.073\%$ FS accuracy option over a wide temperature range. The Model 239 provides the fastest response time compared to its competitors.

Customization is Standard

Unlike many competitors, the 239 offers many mechanical and electrical options that can be integrated into existing system designs. These options reduce engineering design time, allowing for earlier project completion and quicker time to market.



- Industry Standard For High Accuracy
- Captures Dynamic Pressure Changes
- Small Footprint

Model 239 Features:

- Optional High Accuracy: 0.073% FS
- Fast Response Time: <10ms
- Fast Warm-Up: <0.1% over 5 min.
- Low Thermal Error
- CE & RoHS Compliant

Applications

- Exhaust Pressure
- Leak Detection Systems
- Filter Pressure
- Medical Instrumentation
- Part Integrity Testing
- Cleanrooms

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ORDERING INFORMATION

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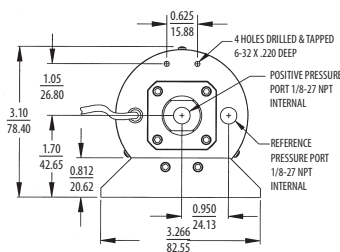
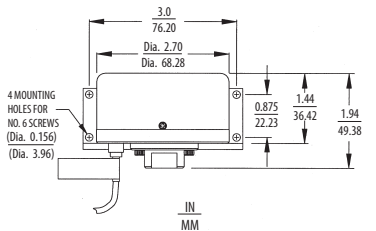
Model	Pressure Ranges		Pressure Fitting	Output	Termination	Accuracy	Options ⁴
2391=239	Unidirectional	Bidirectional	1F 1/8" NPT Int.	11 4 to 20 mA ⁷	02 2' Cable 22 GA	W ±0.14% FS	N None
	0R5WD 0 to 0.5 in. W.C.	R25WB ±0.25 in. W.C.		2S ±2.5 VDC ¹	10 10' Cable 22 GA	9 ±0.073% FS	1 303SS Housing Positive Port
	001WD 0 to 1 in. W.C.	0R5WB ±0.5 in. W.C.		2B 0 to 5 VDC ²	25 25' Cable 22 GA		3 Compensated Temp. Range (-65 to 250°F) ⁶
	2R5WD 0 to 2.5 in. W.C.	001WB ±1 in. W.C.		27 1 to 5 VDC	Y1 2' 30 GA 9-Conductor ³		4 Viton O-Ring
	005WD 0 to 5 in. W.C.	2R5WB ±2.5 in. W.C.		28 1 to 6 VDC	Y3 5' 30 GA 9-Conductor ³		D Mate with Datum
	015WD 0 to 15 in. W.C.	005WB ±5 in. W.C.		2C 0 to 10 VDC	Y4 10' 30 GA 9-Conductor ³		E Special Excitation Voltage ±24 VDC
	030WD 0 to 30 in. W.C.	7R5WB ±7.5 in. W.C.		2T 0 to 5 VDC ¹	Y6 25' 30 GA 9-Conductor ³		G Special Excitation Voltage ±15 VDC
	005PD 0 to 5 PSID	015WB ±15 in. W.C.					L Etched SS Tags
	010PD 0 to 10 PSID	2R5PB ±2.5 PSID					M Remote Full Scale Sensitivity ⁵
	250LD 0 to 250 Pa	005PB ±5 PSID					R Remote Calibration (Adjustable) ⁵
	500LD 0 to 500 Pa	125LB ±125 Pa					S Remote Calibration Adjustment (Fixed) ⁵
	10CLD 0 to 1000 Pa	250LB ±250 Pa					Y Clean for Oxygen
	20CLD 0 to 2000 Pa	500LB ±500 Pa					
	50CLD 0 to 5000 Pa	10CLB ±1000 Pa					
	010KD 0 to 10 kPa	25CLB ±2500 Pa					
	015KD 0 to 15 kPa	50CLB ±5000 Pa					
	035KD 0 to 35 kPa	75CLB ±7500 Pa					
	070KD 0 to 70 kPa	035KB ±35 kPa					

¹25 and 27 are for Bidirectional Pressure Ranges Only
²2B is for Unidirectional Pressure Ranges Only
³Y1-Y6 = Red Jacket Cable (Previously the standard for voltage outputs.)
⁴Both boxes must filled in alphanumeric order:
 • If No options: N + N
 • If 1 option: Option Code + N
 • If 2 options: Option Code + Option Code
⁵Options M, R & S are for voltage units and Y1-Y6 Termination Codes
⁶2x Thermal Effects Specification
⁷Not available with 9-conductor cable

Example: Part No. 2391005PB1F1102WNN = Model 239, ±5 PSID pressure range, 1/8" NPT Int. fitting, 4 to 20 mA Output, 2' Cable Length, ±0.14% FS Accuracy, No Options.

GENERAL SPECIFICATIONS

DIMENSIONS



PROOF PRESSURE

Pressure Range		Proof Pressure		Pressure Range		Proof Pressure	
Unidirectional	Bidirectional	Positive	Negative	Unidirectional	Bidirectional	Positive	Negative
0 to 0.5 in. W.C.	±0.25 in. W.C.	5 PSI	2.5 in. W.C.	0 to 250 Pa	±125 Pa	0.5 BAR	1250 Pa
0 to 1 in. W.C.	±0.5 in. W.C.	7 PSI	5 in. W.C.	0 to 500 Pa	±250 Pa	0.7 BAR	3000 Pa
0 to 2.5 in. W.C.	±1 in. W.C.	10 PSI	12.5 in. W.C.	0 to 1000 Pa	±500 Pa	1.25 BAR	6250 Pa
0 to 5 in. W.C.	±2.5 in. W.C.	20 PSI	25 in. W.C.	0 to 2000 Pa	±1000 Pa	3.5 BAR	18500 Pa
0 to 15 in. W.C.	±5 in. W.C.	50 PSI	75 in. W.C.	0 to 5000 Pa	±2500 Pa	3.5 BAR	37000 Pa
0 to 30 in. W.C.	0 to ±15 in. W.C.	50 PSI	150 in. W.C.	0 to 15 kPa	±7500 Pa	3.5 BAR	37000 Pa
0 to 5 PSID	0 to ±2.5 PSID	75 PSI	25 PSI	0 to 35 kPa		5 BAR	1.75 BAR
0 to 10 PSID	0 to ±5 PSID	100 PSI	50 PSI	0 to 70 kPa	±35 kPa	7 BAR	3.5 BAR

Performance Data		Physical Description	
Accuracy RSS ¹ at constant temp	±0.14% FS	Pressure Fittings	1/8" -27NPT internal
Non-Linearity (BFSL)	±0.10% FS	Electrical Connection	2' Multiconductor cable
Hysteresis	0.10%FS	Weight (approx)	8 oz
Non-Repeatability	0.02% FS	Vibration	2g from 5 Hz to 500 Hz
Warm-up Shift	<±0.1% FS residual shift after 5 minutes	Internal Volumes	Positive port 0.03 in ³ Negative port 0.1 in ³
Setting Time	<100ms	Max Volume Change at FS	0.001 in ³
Acceleration Response	<0.0002 psi/g	Acceleration	10g Max
Natural Frequency	2000 Hz nominal	Shock	50g Operating
Operable Line Pressure	Vacuum to Max 250 PSIG	Electrical Data (Current)	
Line Pressure Effect	2%/100 PSI	Circuit	2-Wire
Thermal Effects ²		Output ³	0 to 20 mA ⁴
Compensated Range °F(°C)	+30 to +150 (-1 to -65)	External Load	0 to 1000 ohms
Zero/Span Shift %FS/100°F(50°C)	<+1 (<±0.9)/<+1 (<±0.9)	Min. Supply Voltage (VDC)	17 + 0.02 x (resistance of receiver plus line)
		Max. Supply Voltage (VDC)	42 + 0.004 x (resistance of receiver plus line)
Environmental Data		Electrical Data (Voltage)	
Operating Temp. ³ °F (°C)	0 to +175 (0-18 to +80)	Effect of Power Supply	
Storage Temp. °F (°C)	-65 to +250 (-55 to +120)	Variations	<0.003 mA/Volt
Pressure Media		Output Noise	<10 microamperes RMS (0Hz to 10kHz)
Positive Pressure Media: Gases compatible with stainless steel, hard anodized 6061 aluminum (Buna-N O-ring)		Electrical Data (Voltage)	
Reference Pressure Media: Clean dry air or other gases (non-corrosive, non-condensable)		Circuit	4-Wire (+Exc, -Exc, +Out, -Opt)
Approvals		Excitation ⁵	22 to 30 VDC (reverse excitation protected)
CE, RoHS		Output Impedance	<10 ohms
		Output Noise	<200 microvolts RMS (in band, 0Hz to 10kHz)
		Output ⁶	See ordering information (for unidirectional ranges) ±2.5 VDC (for bidirectional ranges)

¹RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
²Units calibrated at nominal 70°F. Max thermal error computer from this datum. x2 for 0.5 and ±0.25 in W.C. changes.
³Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
⁴Zero output factory set to within ±0.07 mA. Span (FS) output factory set to within ±0.07 mA.
⁵Internal regulation minimizes effect of excitation variation, with <±0.005% FS output change. Will operate on 28VDC aircraft power per MIL-STD-704A & not be damaged by emergency power conditions.
⁶Calibrated into 50K oh load. Operable into 5000 ohms or greater. Zero output factory set to within ±20mV.