



Model 239

High Accuracy Low Differential Pressure Transducer

Features

- Industry standard for high accuracy
- Captures dynamic pressure changes
- Small footprint
- 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

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.



Specifications

Performance data

Accuracy RSS ¹ (at constant temp)	±0.14% FS
Non-linearity (BFSL)	±0.10% FS
Hysteresis	0.10% FS
Non-repeatability	0.02% FS
Warm-up shift	<±0.1% FS residual shift after 5 minutes
Setting time	<100ms
Acceleration response	<0.0002 PSIG
Natural frequency	2000 Hz nominal
Operable line pressure	Vacuum to max 250 PSIG
Line pressure effect	2%/100 PSI

Thermal effects²

Compensated range °F(°C)	+30 to +150 (-1 to -65)
Zero/ span shift %FS/100°F (%FS/50°C)	<+1 (<±0.9)/<+1 (<±0.9)

Environmental data

Operating temperature ³ °F(°C)	0 to +175 (-18 to +80)
Storage temperature °F(°C)	-65 to +250 (-55 to +120)

Approvals

CE, RoHS

¹RSS of Non-Linearity, Hysteresis, and Non-Repeatability.

²Units calibrated at nominal 70°F. Max thermal error computer from this datum. x 2 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.

Physical description

Pressure fittings	1/8" -27NPT internal
Electrical connection	2' multiconductor cable
Weight (approx)	8 oz
Vibration	2g from 5 Hz to 500 Hz
Internal volumes	Positive port 0.03 in ³ negative port 0.1 in ³
Max volume change at FS	0.001 in ³
Acceleration	10g max
Shock	50g operating

Electrical data (voltage)

Circuit	4-wire (+Exc, -Exc, +Out, -Opt)
Excitation ⁴	22 to 30 VDC (reverse excitation protected)
Output impedance	<10 ohms
Output noise	<200 microvolts RMS (in band, 0Hz to 10kHz)
Output ⁵	See ordering information (for unidirectional ranges) ±2.5 VDC (for bidirectional ranges)

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)

⁴Internal 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.

⁵Calibrated into 50K oh load. Operable into 5000 ohms or greater. Zero output factory set to within ±20mV. ±0.4%FS (±20mV on 5VDC span)

Proof pressure

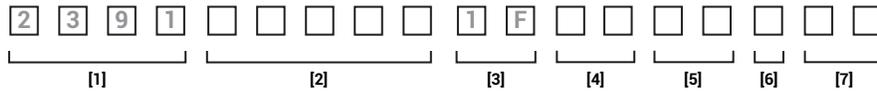
Pressure range		Proof pressure	
Unidirectional	Bidirectional	Positive	Negative
0 to 0.5 in. W.C.	±0.25 in. W.C.	5 PSI	2.5 in. W.C.
0 to 1 in. W.C.	±0.5 in. W.C.	7 PSI	5 in. W.C.
0 to 2.5 in. W.C.	±1 in. W.C.	10 PSI	12.5 in. W.C.
0 to 5 in. W.C.	±2.5 in. W.C.	20 PSI	25 in. W.C.
0 to 15 in. W.C.	±5 in. W.C.	50 PSI	75 in. W.C.
0 to 30 in. W.C.	0 to ±15 in. W.C.	50 PSI	150 in. W.C.
0 to 5 PSID	0 to ±2.5 PSID	75 PSI	25 PSI
0 to 10 PSID	0 to ±5 PSID	100 PSI	50 PSI

Pressure range		Proof pressure	
Unidirectional	Bidirectional	Positive	Negative
0 to 250 Pa	±125 Pa	0.5 BAR	1250 Pa
0 to 500 Pa	±250 Pa	0.7 BAR	3000 Pa
0 to 1000 Pa	±500 Pa	1.25 BAR	6250 Pa
0 to 2000 Pa	±1000 Pa	3.5 BAR	18500 Pa
0 to 5000 Pa	±2500 Pa	3.5 BAR	37000 Pa
0 to 15 kPa	±7500 Pa	3.5 BAR	37000 Pa
0 to 35 kPa		5 BAR	1.75 BAR
0 to 70 kPa	±35 kPa	7 BAR	3.5 BAR

Ordering information

Example part number: 2391005PB1F2S02WNN

Model 239, ±5 PSID pressure range, 1/8" NPT Int. fitting, ±2.5 VDC, 2' Cable Length, ±0.14% FS Accuracy, No Options.



[1]	[2]		[3]		[4]		[5]		[6]		[7]	
Model	Pressure range		Pressure fitting		Output		Termination		Accuracy		Options ⁴	
2391 Model 239			1F	1/8" NPT Int.	2S	±2.5 VDC ¹	02	2' Cable 22 GA	W	±0.14% FS	N	None
					2B	0 to 5 VDC ²	10	10' Cable 22 GA	9	±0.073% FS	1	303SS housing positive port
					27	1 to 5 VDC	25	25' Cable 22 GA			3	Compensated temp. range (-65 to 250°F) ⁷
					28	1 to 6 VDC	Y1	2'30 GA 9-conductor ³			4	Viton O-ring
					2C	0 to 10 VDC	Y3	5'30 GA 9-conductor ³			E	Special excitation voltage ±24 VDC ⁷
					2T	0 to 5 VDC ¹	Y4	10'30 GA 9-conductor ³			G	Special excitation voltage ±15VDC ⁷
							Y6	25'30 GA 9-conductor ³			L	Etched SS tags
											M	Remote full scale sensitivity ⁷
											R	Remote calibration (adjustable) ⁷
											S	Remote calibration adjustment (fixed) ⁷
											Y	Clean for oxygen

¹ 2S and 2T are for bidirectional pressure ranges only

² 2B is for unidirectional pressure ranges only

³ Y1-Y6 = Red jacket cable

(Previously the standard for voltage outputs.)

⁴ Both boxes must be filled in alphanumeric order:

• If No options: N + N

• If 1 option: Option code + N

• If 2 options: Option code + Option code

⁵ Options M, R & S are for voltage units and Y1-Y6 termination codes

⁶ 2x Thermal effects specification

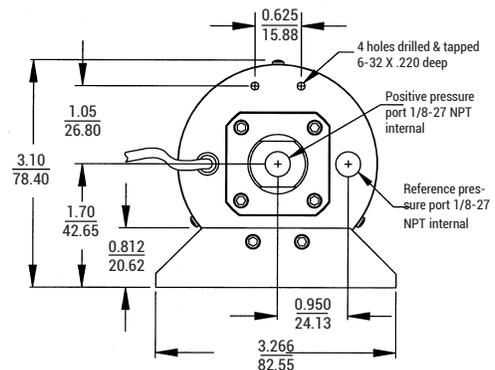
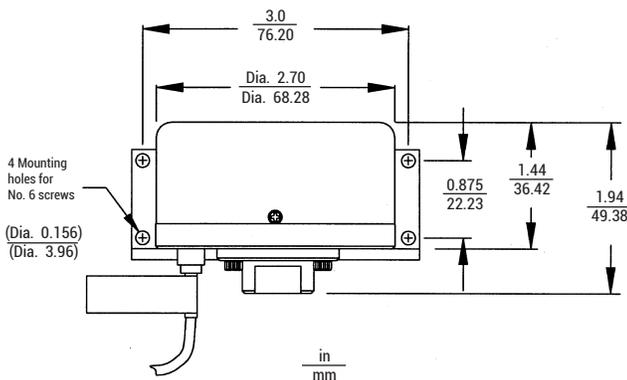
⁷ Option 3 can only be ordered with 22 GA wire and cannot be ordered with options E,G,M,R, and S.

Both boxes must be filled in alphanumeric order:

- If No options: N + N
- If 1 option: Option Code + N
- If 2 options: Option Code + Option Code

Specifications subject to change without notice.

Dimensions





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