

# Model 227

## Ultra-High Purity Pressure Transducer

Setra's Model 227 transducer is designed for high density, modular block gas sticks and panels, required for today's 300 mm tools. The Model 227's 1-1/8" footprint optimizes valuable space, and its rugged design makes it ideal for pressure measurements that require long-term stability, high accuracy and exceptional insensitivity to environmental extremes.

Unlike many other designs with large dead-ended cavity volume, the 227 has a small swept sensor chamber for easy purgeability. All wetted parts are 316L VIM/VAR stainless steel passivated to 5 Ra (7 Ra. max) finish, which eliminates surface irregularities and provides the proper surface chemistry for corrosion resistance, assuring contaminant-free gas distribution.

Available with 5 VDC, 10 VDC, or 4 to 20mA output, the Model 227 offers +\_0.25% Full Scale or 1.0% of Reading accuracy. The Model 227 comes with a industry standard 1-1/8" C-Seal or W-Seal downmount interfacing base with choice of a multiconductor cable, 4-pin bayonet connector, and 9 or 15 pin D-sub connector for electrical termination. When coupled with the Model 328 1-1/8" rotatable display, this package provides the ultimate in pressure measurement and display.

Side access to the zero and span adjustments beneath the rotating protective cover, and choice of absolute, gauge or compound pressure ranges complete this unique design.

### Principle of Operation

Setra's patented variable capacitance sensor features a 316L stainless steel diaphragm and an insulated electrode plate. A variable capacitor is formed between the sensor body and the electrode plate. An increase in pressure causes a slight rounding of the diaphragm, which decreases the capacitance. The capacitance change is detected and converted to a highly accurate linear DC electric signal by Setra's unique custom integrated circuit, utilizing a patented charge balance principle.

Setra's entire ultra-high purity series is based on Setra's proven capacitive sensing technology with highly accurate and stable voltage or current output signals that are virtually EMI/RFI immune.



- Variable Capacitance Technology
- High Resolution & Longterm Stability
- Small Cavity, Efficient Purge Cycles

### Model 227 Features:

- Semi F19/F20 Compliant 316L VIM/VAR Wetted Materials
- Superior Stability Avoids Downtime
- EMI/RFI Immunity Prevents False Shutdown
- Optimal Non-Incendive Approval for Use in Potentially Hazardous Locations Available for 4-20mA Output Units
- Meets CE Conformance Standards
- RoHS Compliant

### Applications:

- Modular 1-1/8" block Gas Sticks and Panels
- High Purity Gas Delivery Systems
- Semiconductor Process Tools

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### ORDERING INFORMATION

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Model	Gauge, Absolute, or Compound Ranges				Pressure		Pressure Fitting		Output		Electrical Termination		Accuracy	
227G= 227	025P	0 to 25 PSI	1R7B	0 to 1.7 Bar	A	Absolute	E5	Down Mount "C" Seal (1.125" Base)	11	4-20mA	06	6ft. Multiconductor Cable	F	±0.25% FS (w/ Cal. Cert)
	050P	0 to 50 PSI	3R4B	0 to 3.4 Bar	C	Compound			2B	0-5 VDC	B1	4 pin Bayonet Connector	J	±1.0% Reading (w/ Cal. Cert)
	100P	0 to 100 PSI	007B	0 to 7 Bar	G	Gauge	E6	Down Mount "W" Seal (1.125" Base)	2C	1-10VDC	D1	15 pin, D-sub Connector*		
	250P	0 to 250 PSI	017B	0 to 17 Bar					33	0.2-5.2VDC	D9	9 pin, D-sub Connector*		
	500P	0 to 500 PSI	035B	0 to 35 Bar					59	0.2-10.2VDC				
	10CP	0 to 1000 PSI	070B	0 to 70 Bar					N1	4-20 mA*				
	30CP	0 to 3000 PSI	200B	0 to 200 Bar										
	Compound Ranges Only													
	Z01P	-14.7 to 85.3 PSI												
	Z02P	-14.7 to 235.3 PSI												
	Z03P	-14.7 to 985.3 PSI												
	Z05P	-14.7 to 2985.3 PSI												
	Absolute Ranges Only													
	10CT	1000 Torr												
	15CT	1500 Torr												

\*Not Available with N1 Output Option  
\*with Hazardous Location Approvals

Example: Part No. 227G100PGE511D1F for a 217 Transducer 0 to 100 PSIG, Down Mount "C" Seal Flange, 4-20mA Output, 15 pin D-sub Connector and ±0.25% FS Accuracy

### PROOF/BURST PRESSURE

Full Scale Range (or Equivalent)	Minimum Proof Pressure PSIG	Minimum Burst Pressure PSIG
25	40	1500
50	75	3000
100	150	3000
250	350	5000
500	650	7500
1000	1250	7500
3000	3500	10,000

### GENERAL SPECIFICATIONS

Performance Data		Physical Description	
Accuracy RSS <sup>1</sup> (at constant temp)	±1.0% Reading ±0.25% FS	Electrical Connection	6ft. Multiconductor Cable, Bayonet, Mini-Din Connector or D-SUB Connector
Non-Linearity, BFSL	±0.15% FS	Case	Stainless Steel
Hysteresis	0.20% FS	Pressure Fitting	Down Mount "C" Seal or "W" Seal
Non-Repeatability	0.02% FS	Vent	Through Zero/Span Access Holes
Thermal Effects <sup>2</sup>		Weight	6.5 oz (184g)
Compensated Range °F(°C)	+15 to +150 (-9 to +65)	<b>Electrical Data (Voltage)</b>	
Zero/Span Shift %FS/100°F(°C)	2.0 (1.8)	Excitation	10 to 30 VDC for 5V FSO 13 to 30 VDC for 10V FSO
<b>Environmental Data</b>		Circuit	3-Wire (Exc, Out, Com)
Operating <sup>3</sup> /Storage Temp °F (°C)	-40 to +185 (-40 to +85)	Current Consumption	<8mA
Current Unit Ordered w/ Option N1 Operating/Storage Temp °F (°C)	-22 to +176 (-30 to +80)	Output <sup>4</sup>	0 to 5 VDC or 0.2 to 5.2VDC <sup>5</sup> 0 to 10VDC or 0.2 to 10.2VDC <sup>6*</sup>
<b>Pressure Media</b>		<b>Electrical Data (Current)</b>	
Liquid or gases compatible with 316L Stainless Steel.		Circuit	2-Wire
<b>Approvals</b>		Output <sup>6</sup>	4 to 20mA <sup>7</sup>
Non-Incendive: Certified for use in potentially hazardous locations:		External Load	0 to 800 ohms
North America: Optional Listed to ANSI/ISA - 12.2.2011 Standards for Class 1, Division 2, Group A,B,C,D Hazardous Locations		Maximum Supply Voltage (VDC)	30 + 0.04 x (Resistance of receiver plus line)
ATEX 94/9/EC Zone 2 Approval to EN60079-0:2012 and EN60079-15:2010 II 3G Ex nA IIC Gc -30°C<Ta<+80°C		Minimum Supply Voltage (VDC)	10 + 0.02 x (Resistance of receiver plus line)

<sup>1</sup>RSS of Non-Linearity, Non-Repeatability, and Hysteresis

<sup>2</sup>Units calibrated at nominal 70°F. Maximum thermal error computed from this datum.

<sup>3</sup>Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher or lower.

<sup>4</sup>Calibrated into a 50k ohm load, operable into a 5000 ohm load or greater.

<sup>5</sup>Zero output factory set to within ±25mV (for 5 VDC output) or ±50mV (for 10 VDC output). Span (Full Scale) output factory set to within ±25mV (for 5 VDC output) or ±50mV (for 10 VDC output)

<sup>6</sup>Calibrated at factory with a 24VDC loop supply voltage and a 250 ohm load.

<sup>7</sup>Zero output factory set withing ±8mA. Span (Full Scale) output factory set to within ±8mA.



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### DIMENSIONS

