



Model 227

Ultra-High Purity Pressure Transducer

Features

- Variable capacitance technology
- High resolution & longterm stability
- Small cavity, efficient purge cycles
- Semi F19/F20 compliant 316L VIM/VAR wetted materials
- EMI/RFI immunity prevents false shutdown
- Optimal non-incendive approval for use in potentially hazardous locations available for 4-20mA output units
- CE & RoHS compliant

Applications

- Modular 1-1/8" surface mount gas sticks and panels
- High purity gas delivery systems
- Semiconductor process tools

Setra's Model 227 transducer is designed for high density, surface mount gas sticks and panels, required for today's 300 mm tools. The Mode 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.

316L VIM/VAR stainless steel wetted materials

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.

Versatile configuration options

Available with 5 VDC, 10 VDC, or 4 to 20mA output, the Model 227 offers $\pm 0.25\%$ Full Scale or 1.0% of Reading accuracy. The Model 227 comes with a industry standard 1-1/8" C-Seal surface mount 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 local readout.

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.



Specifications

Performance data

Accuracy RSS ¹ (at constant temp)	±1.0% Reading ; ±0.25% FS
Non-linearity, BFSL	±0.15% FS
Hysteresis	0.20% FS
Non-repeatability	0.02% FS
Thermal effects²	
Compensated range °F(°C)	+15 to +150 (-9 to +65)
Zero/Span Shift %FS/100°F(°C)	2.0 (1.8)

Environmental data

Operating/storage ³ temperature °F (°C)	-40 to +185 (-40 to +85)
Current unit ordered w/ option "N1"	-22 to +176 (-30 to +80)
Operating limit °F (°C)	

Pressure media

Liquid or gases compatible with 316L stainless steel.

Approvals

Non-incendive: Certified for use in potentially hazardous locations:

North America: Optional listed to ANSI/ISA - 12.2.2011 standards for Class 1, Division 2, Group A,B,C,D Hazardous Locations

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

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

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

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

⁴Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.

⁵Zero 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)

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

⁷Zero output factory set withing ±0.08 mA. Span (Full Scale) output factory set to within ±0.08 mA.

Specifications subject to change without notice.

Overpressure capability

Full scale range (or equivalent)	Minimum proof pressure PSIG	Design pressure PSIG	Minimum burst pressure PSIG
25	40	180	1500
50	75	365	3000
100	150	365	3000
250	350	600	5000
500	650	900	7500
1000	1250	1500	7500
3000	3500	3000	10,000

Design Pressure calculated per ASME BPVC.IV-2015 HG-502.3

Proof Pressure: The maximum pressure that may be applied without changing performance beyond specifications (±1% FS zero shift).

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

Physical description

Electrical connection	6ft. multiconductor cable, bayonet connector or D-SUB connector
Case	Stainless steel
Pressure fitting	Down mount "C" seal
Vent	Through zero/span access holes
Weight	6.5 oz (184g)

Electrical data (voltage)

Excitation	10 to 30 VDC for 5V FSO 13 to 30 VDC for 10V FSO
Circuit	3-Wire (Exc, Out, Com)
Current consumption	<8mA
Output ⁴	0 to 5 VDC or 0.2 to 5.2VDC ⁵ 0 to 10VDC or 0.2 to 10.2VD5 ⁵

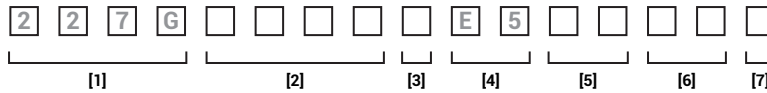
Electrical Data (Current)

Circuit	2-Wire
Output ⁶	4 to 20mA ⁷
External load	0 to 800 ohms
Maximum supply voltage (VDC)	30 + 0.04 x (Resistance of receiver plus line)
Minimum supply voltage (VDC)	10 + 0.02 x (Resistance of receiver plus line)

Ordering information

Example part number: 227G100PGE511D1F;

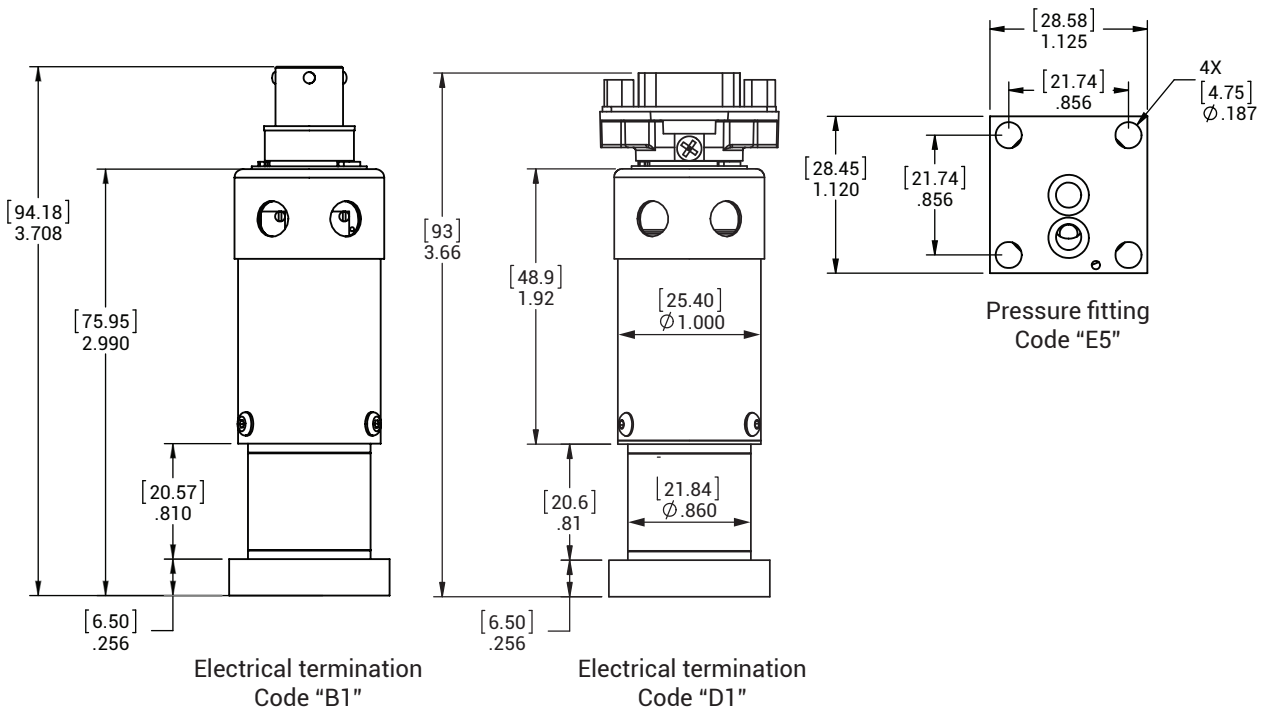
227 Transducer, 0 to 100 PSIG, Down Mount "C" Seal Flange, 4-20mA Output, 15 pin D-sub Connector and ±0.25% FS Accuracy:



[1]	[2]	[3]	[4]	[5]	[6]	[7]
Model	Pressure ranges	Pressure type	Pressure fitting	Output	Electrical termination	Accuracy
227G Model 227	025P 0 to 25 PSI 050P 0 to 50 PSI 100P 0 to 100 PSI 250P 0 to 250 PSI 500P 0 to 500 PSI 10CP 0 to 1000 PSI 30CP 0 to 3000 PSI 1R7B 0 to 1.7 Bar 3R4B 0 to 3.4 Bar 007B 0 to 7 Bar 017B 0 to 17 Bar 035B 0 to 35 Bar 070B 0 to 70 Bar 200B 0 to 200 Bar 10CT 1000 Torr ¹ 15CT 1500 Torr ¹ Z01P -14.7 to 85.3 PSI ² Z02P -14.7 to 235.3 PSI ² Z03P -14.7 to 985.3 PSI ² Z05P -14.7 to 2985.3 PSI ²	A Absolute C Compound G Gauge	E5 Down mount "C" seal (1.125" Base)	11 4-20mA 2B 0-5 VDC 2C 0-10 VDC 33 0.2-5.2 VDC 59 0.2-10.2 VDC N1 4-20 mA ³	06 6ft. multiconductor cable B1 4 pin bayonet connector D1 15 pin, high density D-sub connector ⁴ D9 9 pin, D-sub connector ⁴	F ±0.25% FS (w/ cal. cert) J ±1.0% reading (w/ cal. cert)

¹ Absolute ranges only. Only available with pressure type code "A".
² Compound ranges only. Only available with pressure type code "C".
³ With Hazardous Location Approvals
⁴ Not Available with N1 Output Option

Dimensions



[mm]

