

# Model 270

## SETRACERAM™ for Barometric, Gauge or Absolute Pressure

The Model 270 is Setra's highest performing analog sensor for barometric, absolute and gauge pressure measurements. Its decades worth of installations have built a reputation of reliability and remains the trusted choice for critical installations. The ceramic sensor on the 270 delivers high performance; its  $\pm 0.03\%$  FS accuracy over a wide temperature range outperforms competitive transducers in the environmental sensing market. The 270 offers multiple options to fit the needs of difficult applications, making it easier to install and gather higher quality data for your project.

### High Accuracy For Demanding Applications

The Model 270 pressure transducer is the most accurate analog sensor Setra manufactures. The available 0.03% FS accuracy is perfect for vital installations where precise measurements determine success or failure of the application.

### Improved Performance With Ceramic Sensor

The 270 utilizes a variable capacitance sensor that is made using ceramic material fused together with glass and gold to form the SETRACERAM™ pressure element. This stable material and design offers class leading thermal performance and low hysteresis, allowing integration into demanding installations. The ceramic sensor enables improved performance compared to other stainless steel sensors, enabling the 270 to give accurate measurements and better test results.

### Flexibility in Installation

The 270 offers mechanical and electrical options that can be installed into existing applications. These options reduce engineering design time, allowing for earlier project completion.



- Highest Accuracy Analog Sensor
- Captures Dynamic Pressure Changes
- Robust For Severe Weather Detection

#### Model 270 Features:

- High Optional Accuracy:  $\pm 0.03\%$  FS
- Stable Ceramic Sensor
- Repeatability Within 0.01% FS
- Excellent Long-Term Stability: 0.1% FS/YR
- Low Power Consumption
- Instant Warm-Up
- Fast Response Time

#### Applications:

- High Accuracy Barometric Pressure Measurement
- Weather and Environmental Data
- Data Buoys and Remote Weather Stations
- Engine Test Cells

# Model 270

SETRACERAM™ for Barometric, Gauge or Absolute Pressure



## ORDERING INFORMATION

2 7 0 1 - [ ] [ ] [ ] - [ ] - [ ] - [ ] [ ] [ ] - [ ] [ ] [ ] - [ ] [ ] [ ] - [ ] [ ] [ ]

Model	Pressure Range		Units	Pressure Type		Fitting		Output		Termination		Accuracy		Options		
2701 = 270	600	600-1100	M	mb/hPa	A	Absolute	1F	1/8" NPT Internal	2B	0 to 5 VDC (24 VDC EXC)	02	2' Cable	N	±0.05% FS	NN	None
	800	800-1100	M	mb/hPa	G	Gauge (PSI units only)			3B	0 to 5 VDC (12 VDC EXC)	10	10' Cable	Y	±0.03% <sup>2</sup> FS	C	11 PT Cal. Certificate
	005 <sup>1</sup>	0-5	P	PSI							25	25' Cable			D	Mate with Datum
	010	0-10	P	PSI							XX	Consult factory for other cable lengths			F	Nema 4 Enclosure
	020	0-20	P	PSI											L	Etched SS Tag
	050	0-50	P	PSI											2	-13 to 150°F Compensated Range <sup>2</sup>
	100	0-100	P	PSI												

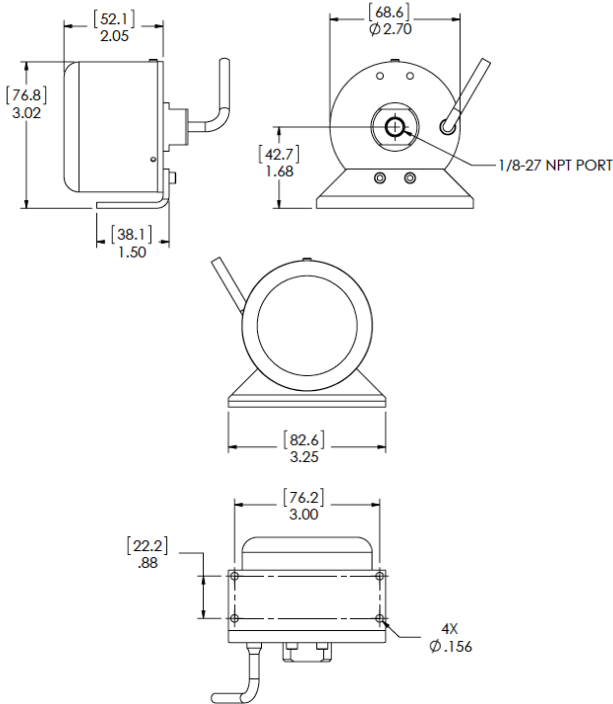
<sup>1</sup>Available in Gauge Pressure Type Only  
<sup>2</sup>Accuracy "Y" and Option "Z" cannot be combined

Example: Part No. 2701800MA1F2B02YNN = Model 270, 800-1100 mb/hPa pressure range, Absolute, 1/8" NPT internal fitting, 0 to 5 VDC Output, 2' Cable Length, ±0.03% FS Accuracy.

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

## DIMENSIONS



## PROOF PRESSURE

Type of Pressure	Pressure Range	Maximum Pressure
Barometric	600 to 1100 hPa/mb 800 to 1100 hPa/mb	20 psia
Absolute	0 to 10, 20, 50, 100 psia	1.5 x rated
Gauge	0 to 5, 10, 20, 50, 100 psig	1.5 x rated

## GENERAL SPECIFICATIONS

Performance Data		Environmental Data	
Accuracy RSS <sup>1</sup> (at constant temp)	±0.05% FS	Temperature	
Non-Linearity		Operating °F(°C)	0 to +175 (-18 to +80)
End Point	±0.05% FS	Storage °F(°C)	-65 to +250 (-54 to +120)
Best Fit Straight Line	±0.03% FS	Vibration	2g from 5Hz to 500 Hz
Hysteresis	<0.01% FS (TYR)	Acceleration	10g
Resolution	Infinite, limited only by output noise level (0.005% FS)	Shock	50g Operating, 1/2 sine 10ms
Thermal Effects <sup>2</sup>		Pressure Fitting	1/8"-27 NPT Internal
Compensated Range °F(°C)	+30 to +120 (-1 to +49)	Electrical Connection	2' Multiconductor Cable
Thermal Zero Shift %FS/°100F (%FS/50°C)		Weight (approx.)	9 ounces (0.25 Kgm)
Barometric	±0.2 (±0.18)	Electrical Data	
Other Ranges	±0.1 (±0.09)	Electrical Circuit <sup>3</sup>	4-Wire (+Exc, -Exc, _Out, -Out)
Thermal Coefficient Sensitivity	±0.1 (±0.09)	Excitation <sup>4</sup>	24 VDC (22-32 VDC) 12VDC (11-15 VDC) Reverse Wiring Protection
Long Term Stability	< ±0.1% FS/YR	Output <sup>5</sup>	0 to 5 VDC <sup>6</sup>
Warm-Up	< ±0.04% FS shift after 20 minutes at constant temp.	Isolation	The insulation resistance between all signals leads tied together and case ground is 100 ohms minimum at 25 VDC
Time Constant	<10 milliseconds to reach 90% final output with step function pressure input	Output Impedance	<5 ohms
Pressure Media	Non-condensing air or gas compatible with hard anodized aluminum, alumina ceramics, gold, fluorocarbon elastomer sealant & Buna-N O-Ring.	Output Noise	<200 microvolts RMS (0 Hz to 100 Hz)
		Current Consumption	8 mA (0.2 Watts)

**Approvals**

CE

<sup>1</sup>RSS of Non-Linearity, Hysteresis, and Non-Repeatability. Higher accuracy units available on special order.  
<sup>2</sup>Units calibrated at nominal 70°F. Max thermal error computer from this datum.  
<sup>3</sup>For best performance, either negative excitation or negative output should be connected to case (ground). Both leads cannot be connected to case (ground). Units calibrated at the factory with negative excitation connected to case.  
<sup>4</sup>Internal regulation minimizes effect of excitation variation, with <±0.005% FS output change. Will operate on 28 VDC aircraft power per MIL-STD-70A and not be damaged by emergency power conditions.  
<sup>5</sup>Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.  
<sup>6</sup>Zero output factory set to within ±5mV. Span (Full Scale) output factory set to within ±5mV.