

## Model 278 Barometric Pressure Transducer

500 to 1100 hPa/mb; 600 to 1100 hPa/mb; 800 to 1100 hPa/mb



Setra's Model 278 barometric pressure transducer is designed for use in environmental applications that require excellent accuracy, fast dynamic response, and long-term stability and reliability.

To withstand the environmental extremes typically found in Automated Weather Station (AWS) and environmental monitoring applications, the Model 278 housing is constructed of stainless steel and polyester. A removable 5-pin terminal strip module is provided for easy connection to data logger and signal connections, and a 1/8" Barbed fitting is used for pressure connection. The transducer's footprint (3.6" x 2.4" x 1.0") makes it ideal for use as a new or drop-in replacement to existing configurations.

The Model 278 is operable in temperatures from -40°C to +60°C (-40°F to +140°F). Users may choose 0 to 2.5 VDC or 0 to 5 VDC output, a 3 or 4 wire circuit and an excitation range of 9.5 to 28 VDC.

This unit consumes low levels of power (3mA nominal) while in operation. Its sleep mode feature reduces power consumption to 1  $\mu$ A, and provides instant startup for applications where pressure readings must be taken quickly.

### Principles of Operation

The Model 278 utilizes Setra's Setraceram™ capacitive sensor and proprietary custom IC analog circuit. This fundamentally simple design and thermally stable glass fused ceramic sensing capsule is coupled with Setra's sophisticated capacitance charge-balance IC circuit where accurate signal conditioning and environmental compensation is performed. The Setraceram™ sensor provides excellent thermal expansion coefficient and low mechanical hysteresis, which contributes to the long-term stability of the Model 278.

### Applications

- Automated Weather Station (AWS)
- Data Buoys and Ships
- Agricultural Metrology System
- AWOS/ASOS Systems
- Laser Interferometer
- Wind Tunnel
- High Accuracy Barometric Pressure Measurement
- Data Logger

### Benefits

- ▲ Long-term Stability Better Than 0.1 mb/yr
- ▲ Sleep Mode for Instant Startup (<1 sec.)
- ▲ Low Power Consumption
- ▲ Calibration NIST Traceable
- ▲ Removable Terminal Strip Module for Easy Wiring
- ▲ Footprint Configured for Easy Drop-in Replacement
- Meets CE Conformance Standards

### Features

- 0 to 2.5 and 0 to 5 VDC Output
- Operating Temperature Range -40°C to +60°C
- Wide Operating Voltage 9.5 to 28 VDC

TEESING

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800-257-3872

# Model 278 Specifications

## Performance Data

Pressure Range hPa/mb	500	600	800
Temperature @	Accuracy (hPa/mb)*		
20°C (+68°F)	±0.6	±0.5	±0.3
0 to 40 °C (+32° to +104°F)	±1.2	±1.0	±0.6
-20 to 50°C (-4° to +122°F)	±2.0	±1.5	±1
-40 to 60°C (-40° to +140°F)	±2.5	±2.0	±1.5
Non-Linearity	±0.5	±0.4	±0.25
Hysteresis	±0.06	±0.05	±0.03
Non-Repeatability	±0.04	±0.03	±0.02

Resolution	0.01 mb
Long Term Stability	0.1 mb/Yr
Warm-up	<1 sec. from Shutdown Mode (Warm-up shift <0.1 mb maximum)
Response Time	<100mSec
Proof Pressure	1500 hPa
Burst Pressure	2000 hPa

\*The root sum squared (RSS) of end point non-linearity, hysteresis, non-repeatability, and calibration uncertainty.

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

## Environmental Data

Temperature	
Operating	-40° to +60°C (-40°F to +140°F)
Storage	-60° to +120°C (-76°F to +248°F)

## Physical Description

Case	Stainless Steel and Polyester
Pressure Fitting	1/8" (ID dia.) Barbed Fitting
Electrical Connection	5-Pin Terminal Block
Dimensions	3.6" x 2.4" x 1.0"
Weight (approx.)	4.8 oz (135g)

## Electrical Data

Electrical Circuit	3 or 4 Wire
Excitation**	9.5 to 28 VDC
Output***	0 to 2.5VDC 0 to 5VDC
Output Impedance	<10 Ohms
Output Noise	<50 Microvolts
Current Consumption	3 mA Nominal (Operating Mode) 1 µA (Sleep Mode)

\*\*Internal regulation minimizes effect of excitation variation, with <0.02 mb output change over 9.5VDC to 28VDC range..

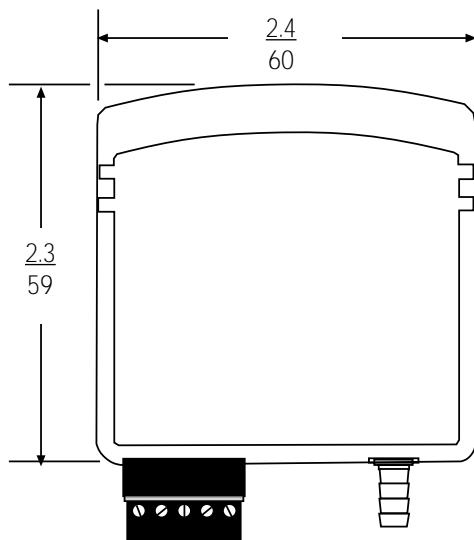
\*\*\* Zero output saturates at about 20 mV

## Pressure Media

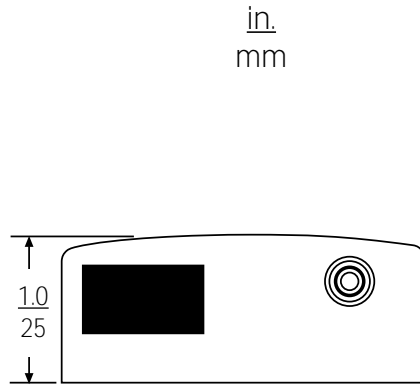
Non-condensing air or gas.

*Specifications subject to change without notice.*

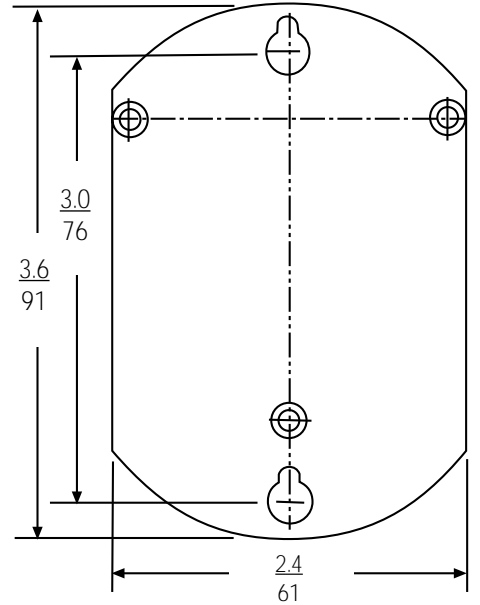
## Outline Drawing



Transducer Front View



Transducer Bottom View



Bracket

## ORDERING INFORMATION

**Example:** Part No. 2781600MA1B2BT1 for a 278 Barometric Transducer 600 to 1100 hPa/mbar, Absolute Pressure, 1/8" Barbed Fitting, 0 to 5 VDC Output, 5-pin Terminal Block.

2 7 8 1

**Model**  
2781 - 278

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**Pressure Range**  
500M = 500 to 1100 hPa/mb  
600M = 600 to 1100 hPa/mb  
800M = 800 to 1100 hPa/mb

A

**Pressure**  
A = Absolute

1 B

**Pressure Conn.**  
1B = 1/8" Barbed Fitting

□ □

**Output/Excitation**  
2Y = 0 to 2.5 VDC/9.5 to 28 VDC  
2B = 0 to 5 VDC/9.5 to 28 VDC

T 1

**Electrical Conn.**  
T1 = 5-Pin Terminal Block



While we provide assistance on all Setra products, both personally and through our literature, it is the customer's responsibility to determine the suitability of the product in the application.