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 1µA, 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.

NOTE: Setra quality standards are based on ANSI-Z540-1. The calibration of this product is NIST traceable.

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

When it comes to a product to rely on - choose the Model 278. When it comes to a company to trust - choose Setra

setra

ISO-9001 Certified

800-257-3872

Visit Setra Online:
http://www.setra.com

159 Swanson Road, Boxborough, MA 01719/Telephone (978) 263-1400; Fax: (978) 264-9282

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 Stabilty	0.1 mb/Yr
Warm-up	<1 sec. from Shut-down 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

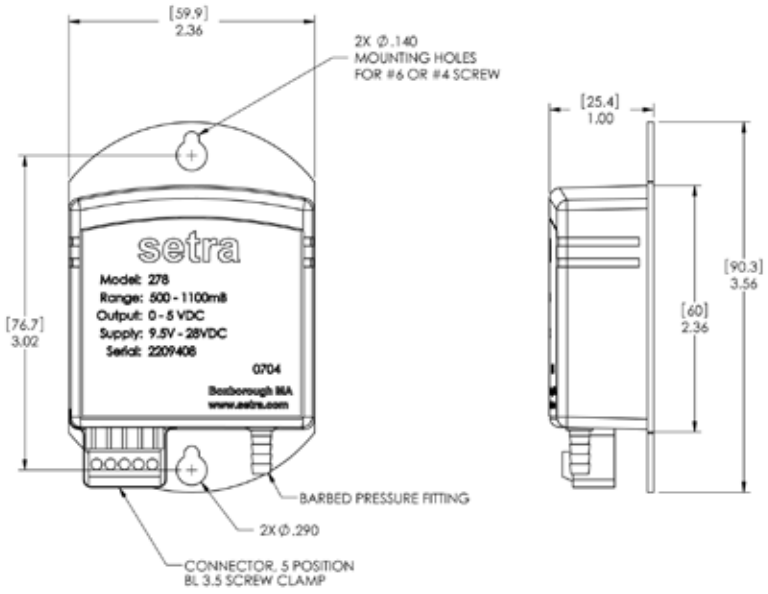
Electrical Circuit	3 or 4 Wire
Excitation**	9.5 to 28 VDC
Output***	0 to 2.5VDC 0 to 5 VDC
Output Impedance	<10 Ohms
Output Noise	<50 Microvolts
Current Consumption	3 mA Nominal (Operating Mode) 1 µA (Sleep Mode)

**Internal regulation minimizes effect of excitation variation, with <0.02 mb output change over 9.5 VDC to 28 VDC range..
*** Zero output saturates at about 20 mV

Pressure Media

Non-condensing air or gas.

Outline Drawing



mm
in.

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.

2781	—	☐☐☐☐	—	A	—	1B	—	☐☐	—	T1

Model
2781 - 278

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

Pressure
A = Absolute

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

Electrical Conn.
T1 = 5-Pin Terminal Block

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

159 Swanson Road, Boxborough, MA 01719/Tel: 978-263-1400
Toll Free: 800-257-3872; Fax: 978-264-0292; email: sales@setra.com