

Model 470T

Digital Pressure Transducer

Pressure Ranges: Barometric
500, 600, or 800 - 1100 hPa/mb and PSIA

NEW!

Now Features
Extended
Temperature
Range

Applications

- Automatic Weather Reporting Systems
- Barometric Pressure compensation for Wavelength of Laser Beams
- Pressure Transfer Standard
- Altimeter Calibration Recertification
- Lab or Production Process Monitoring
- Altitude Chambers
- Weather Data Buoys

Features

- Meets AWOS Specifications
- Wide Temperature Range
- $\pm 0.02\%$ Full Scale Accuracy
- Bidirectional RS-232 Digital Communications I/O Port
- Engineering Unit Conversions for Pressure and Altitude
- Digital Altimeter Setting Indicator (DASI) and Corrected Altimeter Mode
- Hi and Lo Alarm Setpoints
- Zero/Tare Function
- Low Power Consumption
- Min/Max Value Tracking



Setra's Models 470T high accuracy digital pressure transducer is an extremely versatile microprocessor based instrument. It is a combination of Setra's unique SETRACERAM® sensor, advanced Setra digital electronic circuitry and sophisticated firmware providing a system accurate to better than $\pm 0.02\%$ full scale in a small, low power package.

The Setraceram® sensor is one of the keys to the 470T's extremely high accuracy and stable performance. Its patented design takes advantage of fundamentally simple and stable material principles to produce a variable capacitance output, which the digital circuit resolves internally to 1 ppm. The digital circuit and firmware processes raw data into a fully conditioned (linearized and temperature compensated) output reported directly in engineering units with 0.02% F.S. accuracy.

Pressure and altitude data are accessible through a bidirectional RS-232 I/O port, which is user programmable for continuous, internal or on demand printing at an adjustable (300-9600 baud rate). The data is reported in a simple string of ASCII characters in response to a command consisting of ASCII character, for example, P (for PRINT) instructs the device to report a pressure reading.

The Model 470T provides a wide variety of functions and modes of operation which are easily accessed through the communication port:

CONVERSION: changes the reported data to one of 7 predefined engineering units for pressure (hPa, PSI, mbar, in Hg, mm Hg, in H₂O, mm H₂O, a user definable conversion factor or one of two units of altitude (ft, m)

F(p): converts true pressure to a Digital Altimeter Setting Indication of sea level pressure.

SETPOINT: sets high and low alarm points which will trigger if the pressure data is outside the user defined window.

MIN/MAX: tracks and reports on command the minimum and maximum pressure data encountered during a sample period.

ZERO: tares all or part of the displayed reading.

SETUP: accesses a number of setup functions such as baud rate adjustment, internal diagnostics, zero and span calibration

PRINT: reports data in the engineering units currently in use.

U.S. Patent nos. 4168518

Pressure Ranges			
Type of Pressure	Pressure Range	Report	Altitude Range ¹
Barometric	600 to 1100 hPa/mb	600.00 to 1100.00	-1000 to 13,800 ft.
	800 to 1100 hPa/mb	800.00 to 1100.00	-1000 to 6,400 ft.
Absolute	0 to 10 psia	10,000	10,300 to 100,000 ft.
	0 to 20 psia	10,000	-1000 to 100,000 ft.
	0 to 50 psia	50,000	-1000 to 100,000 ft.
	0 to 100 psia	100,000	-1000 to 100,000 ft.

¹ Altitude is calculated using a polynomial from the International Meteorological Tables, Volume 114*. Ranges greater than 20 psia not recommended for altimeter certification.



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<http://www.setra.com>

setra
800-257-3872

Model 470T Specifications

Performance Data

Accuracy ¹	± 0.02% FS ² at 21°C (70°F)
Non-Linearity Method)	± 0.012%FS (Terminal)
Hysteresis	0.010% FS
Non-Repeatability	0.010% FS
Thermal Effects³	
Compensated Range °C (°F)	-20 to +65 (-4 to +150)
Zero Shift %FS/100°F	0.004
Span Shift %FS/100°F	0.002 Altitude Resolution 1 ft. (4 ft. for 100 psi range)
Stability	0.005% FS, 24 hours
	0.02% FS, 30 days
	0.05% FS, 1 year
Operating Power	5 VDC ±1%, 70 mA max.
Pressure Media	Clean dry air or other gases (non-condensable)

- RSS of Non-Linearity, Non-Repeatability and Hysteresis.
- FS = 300 hPa/mb for 800 - 1100 hPa/mb range
FS = 500 hPa/mb for 600 - 1100 hPa/mb range
FS = 600 hPa/mb for 500 - 1100 hPa/mb range
- Unit calibrated at 70°F. Maximum thermal error is computed from this datum.

Environmental Data

Temperature	
Operating °C (°F)	-40 to 75 (-40 to 167)
Storage °C (°F)	-40 to 85 (-40 to 185)

Digital Interface

Bidirectional RS-232 interface.
Access data, functions, and comands via an RS232 compatible remote terminal, data acquisition system or data storage device. 300, 600, 1200, 2400, 4800, 9600 Baud Rate, adjustable. The dats is reported in a simple string of ASCII characters in response to a command of an ASCII character, for example, P (for PRINT) instructs the device to report a pressure reading. Typical data printouts:

<p style="text-align: center;">System Status</p> <pre>Elev: + 120 feet Max: + 15.552 PSI A Min: + 11.793 PSI A Hi A: + 16.000 PSI A Lo A: + 11.000 PSI A</pre>	<p style="text-align: center;">Datalogging</p> <pre>600. sec/reading 14.595 PSI A 14.596 PSI A 14.598 PSI A</pre>
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Typical Data Printouts

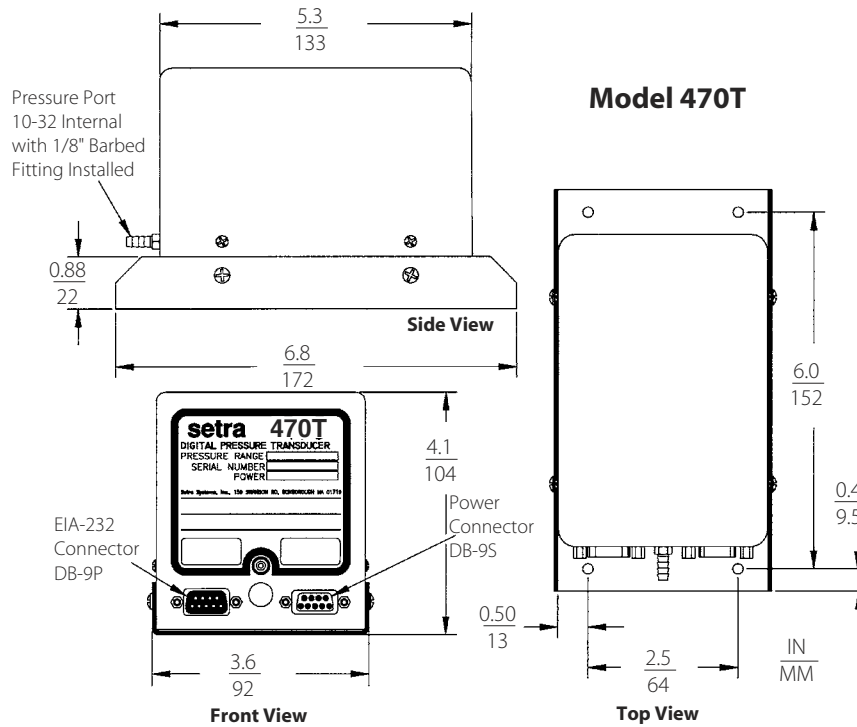
Physical Description

Pressure Fitting	Barbed Fitting for 1/8" I.D. Tubing
Pressure Connection	10-32 Internal Thread
Electrical Connections	
Excitation	DB-9S (9 Pin D-Subminiature Female): Pin: 3 GRD, 0 + 5 VDC
Communications	DB-9S (9 Pin D-Subminiature Male): Pin: 2 TXD, 3 RXD, 5 GRD
Weight	Approximately 2.4 lbs.

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

Specifications subject to change without notice.

Outline Drawings



Example: Part No. 470T1600MA1B

4 7 0 T	[] [] [] []	A	1 B	4 S	D 9
Model 470T	Pressure Range 500M = 500 to 1100 hPa/mb 600M = 600 to 1100 hPa/mb 800M = 800 to 1100 hPa/mb 010P = 0 to 10 PSI 020P = 0 to 20 PSI 050P = 0 to 50 PSI 100P = 0 to 100 PSI	Pressure A = Absolute	Pressure Conn. 1B = 1/8" Barbed Fitting	Output/Excitation 4S = RS232/5 VDC	Electrical Conn. D9 = 9-Pin D-Sub