

Multi-Sense™ - Model 231

Wet-to-Wet Low Differential Pressure



Setra's Model 231 Multi-Sense™ Wet-to-Wet differential pressure transducer all-inclusive design provides users with field accessible re-ranging, choice of output and field zeroing.

Choose from three configurable units, each offering 4 unidirectional and 4 bidirectional switch selectable pressure ranges from 5 psid up to 50 psid, 10 up to 100 psid, or 25 up to 250 psid. Each can be reconfigured in the field for 0-5 VDC, 1-5 VDC, 10 VDC, or 4 to 20 mA output. (The 4 to 20 mA output is operable as a true 2-wire device.) Its jumper selectable port swap feature eliminates costly re-plumbing if the unit is improperly installed or if the transducer is simply replaced. An optional LCD display is available for on-site indication of gauge or differential pressure.

The Model 231 is designed with Setra's own dual pressure sensors, which incorporate thin film sensing technology. This technology offers exceptional thermal accuracy and signal linearity. Utilizing this technology, the Model 231 is resistant to long-term drift caused by dopant migration and Fermi-level effects, intrinsic in piezoresistive and silicon based technologies, which are exaggerated at elevated temperatures and by extended pressure cycling.

Unlike oil filled sensors, the 231 is not oil filled. The integrity of the weld between the 231 sensor and single-piece machined pressure fitting is guaranteed to withstand millions of pressure cycles. This design not only assures leak proof operation but also enhances the overpressure and burst pressure specifications as well as protecting the sensor from installation related stress, thereby ensuring zero stability.

3-VALVE MANIFOLD

The Model 231 can be supplied with an optional 3-Valve Manifold assembly for ease of installation and maintenance. The 3-Valve Manifold is a machined brass body requiring no internal pipe connections, thereby eliminating the risk of internal leaks. The manifold's rugged, yet compact, construction requires minimum space for installation and use. If the Model 231 is ordered with the 3-Valve Manifold, the system is shipped completely assembled and ready for wall or pipe mounting. (Order as Pressure Fitting Code 3V.)

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

Patent Pending

Applications

- Energy Management Systems
- Process Control Systems
- Flow Measurement of Various Gases or Liquids
- Liquid Level Measurement of Pressurized Vessels
- Pressure Drop Across Filters

Features

- True 4 to 20 mA Output
- 0-5, 1-5, and 0-10 VDC Output
- Field Selectable Pressure Ranges
- Field Selectable Output
- Field Accessible Push-Button Zero
- Dual Sensors
- Hinged Cover
- Field Selectable Port Swap
- Optional LCD Display
- All Cast Aluminum, NEMA 4 Rated Housing
- Meets CE Conformance Standards

Benefits

- Hinged Cover for Easy Access to Switch Selectable Features
- Dual Pressure Sensors Provide Independent High and Low Pressures
- LCD Display for In-Situ Viewing of Hi, Lo, and Differential Pressure
- Field Calibration Saves Time and Money
- Port Swap Feature Eliminates Re-Plumbing Existing Installations
- Reduce Inventory
- Save Installation Costs



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

setra
800-257-3872

Model 231 Specifications

Performance Data

Accuracy RSS* (at constant temp.)

Pressure Ranges A, B, C	±1.0% FS
Pressure Range D	±2.0% FS

Pressure Ranges

	A	B	C	D
MS1	50	25	10	5
MS2	100	59	29	10
MS3	250	125	59	25

Thermal Effects**

Compensated Range °F (°C)	+32 to +150 (0 to +66)
Zero Shift %FS/100°F (50°C)	2.0 (1.8)
Span Shift %FS/100°F (50°C)	1.0 (0.9)
Warm-up Shift	TBD
Response Time	1 to 5 sec. (selectable)
Maximum Working Pressure	Maximum Range of Pressure Ordered

*RSS of Non-Linearity, Non-Repeatability and Hysteresis.

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

Pressure Media

Liquids or Gases Compatible with 17-4 PH Stainless Steel
 Note: Hydrogen not recommended for use with 17-4 H stainless steel.

Environmental Data

Temperature	
Operating* °F (°C)	-20 to +185 (-28 to +85)
Storage °F (°C)	-20 to +185 (-28 to +85)
Vibration	10g from 5Hz to 2000 Hz
Shock	200g

*Operating temperature limits of the electronics only.

Pressure media temperatures may be considerably higher or lower.

Physical Description (Model 231)

Case	Die Cast Aluminum, Powder Coated
Pressure Fittings	1/8" NPT Internal
Electrical Connection	1/2 in. Conduit
Weight	1.5 lb
Sensor Cavity Volume	0.2 cc

Electrical Data (Voltage)

Circuit	3-Wire
Excitation	12 to 24 VAC/DC
Output	0 to 5 VDC
	0 to 10 VDC
	1 to 5 VDC

Output Impedance <10 Ohms

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

Electrical Data (Current)

Circuit	2-Wire
Output*	4 to 20 mA, Clipped and Cropped

External Load 0 to 1000 Ohms

Minimum supply voltage (VDC) = 12 + 0.02 x (Resistance of receiver plus line).

Maximum supply voltage (VDC) = 30 + 0.004 x (Resistance of receiver plus line).

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

3-Valve Manifold Assembly

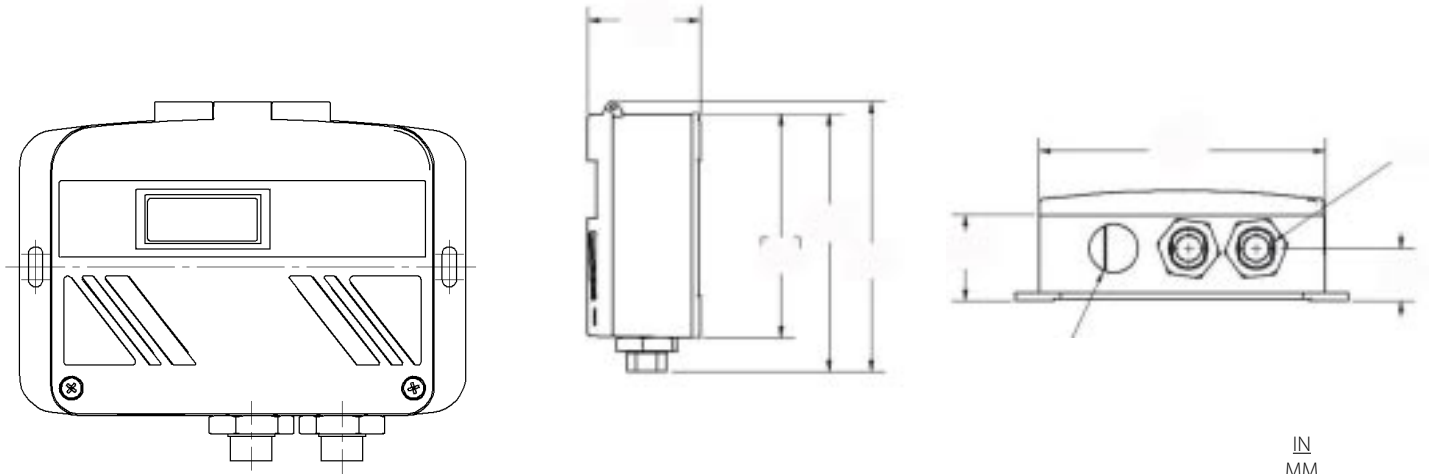
Physical Description

Manifold Block	Brass
Valves (3)**	V1 for Connection to +port V2 for Connection to -port V3 for Equalizing Pressure
Valve Type	90° On/Off
Process Connections	1/4"-18 NPT Internal Thread
Dimensions	6" x 11"
Weight	3 lbs.

*Order assembled with the Model 231 (Code 3V) or order separately as Option 891.

Specifications subject to change without notice.

Outline Drawing



IN
MM

SSP231 Rev. 1 12/7/06

Code all blocks in table. ORDERING INFORMATION

Example: Part No. 20311MR12M11A1 is a Model 231, ±5 up to 50 psid, 1/8" NPT Fitting, 4 to 20 mA Output, 1/2" Male NPT Conduit

2 3 1 G	—	[] []	—	[] []	—	[]
Model 231G = 231		Ranges Unidirectional & Bidirectional MS1 = 5, 10, 25 50 psid ±5, ±10, ±25, ±50 psid MS2 = 10, 20, 50, 100 psid ±10, ±20, ±50, ±100 psid MS3 = 25, 50, 125, 250 psid ±25, ±50, ±125, ±250 psid		Option 3V = 3-V Manifold assembled w/Model 231 2F = 1/8" -NPT Standard		Option N = No Display D = LCD Display

Please contact factory for versions not shown.

While we provide application 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.

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